YEARBOOK 2024
DIGITAL SIGNAGE & DOOH

SIGNAGE & SOFTWARE

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Healthcare & Hospitality Displays:
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Dear Readers,

Signage and Software is this year's main topic of the invidis yearbook 2024. Probably the most complex topic we have dared to cover so far. No component in the digital signage value chain is less transparent and more difficult to compare than CMS solutions. But software and service are also the winners in the value chain – every second digital signage euro is invested outside of hardware.

Florian Rotberg & Stefan Schieker

Over the past decade, digital signage software has evolved from a siloed application to an open, data-driven platform. CMS are only a real ready-to-use product in the long-tail business; in general, CMS solutions are significantly customized. The industry is still miles away from widely established standards and even less from a dominant world-leader. But the launch of Samsung VXT has the potential to shake up the market as well as the growing importance of digital experience platforms and headless CMS, which could take over central roles from dedicated digital signage CMS.

The digital signage software world has never been as exciting and potentially disruptive as it is in 2024. For us, the perfect time to focus on Signage & Software. And for everyone who wants to compare CMS platforms, we have developed a new CMS comparison platform, the invidis Digital Signage Software Compass. A premium offer from invidis – probably the first independent CMS comparison tool. Find more at compass.invidis.net.

Of course, the yearbook topics from previous years – Engaging Experiences, Business Critical and Green Signage – are still very relevant and are covered throughout this yearbook.

In 2011, invidis started publishing the yearbook – the 'bible of the industry' has since then been downloaded hundreds of thousands of times and distributed as a print edition. Always just in time for the DSS Europe conference in Munich, we analyze the status of the global digital signage industry and identify trends and drivers. Sharing our condensed invidis know-how in German and English free of charge is only possible thanks to the advertising support of the industry, for which we are very grateful.

Yours

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PS: This year's cover was designed by Studio B12/B12 Gruppe – one of the many hidden digital signage champions in Germany.

Photo: invidis

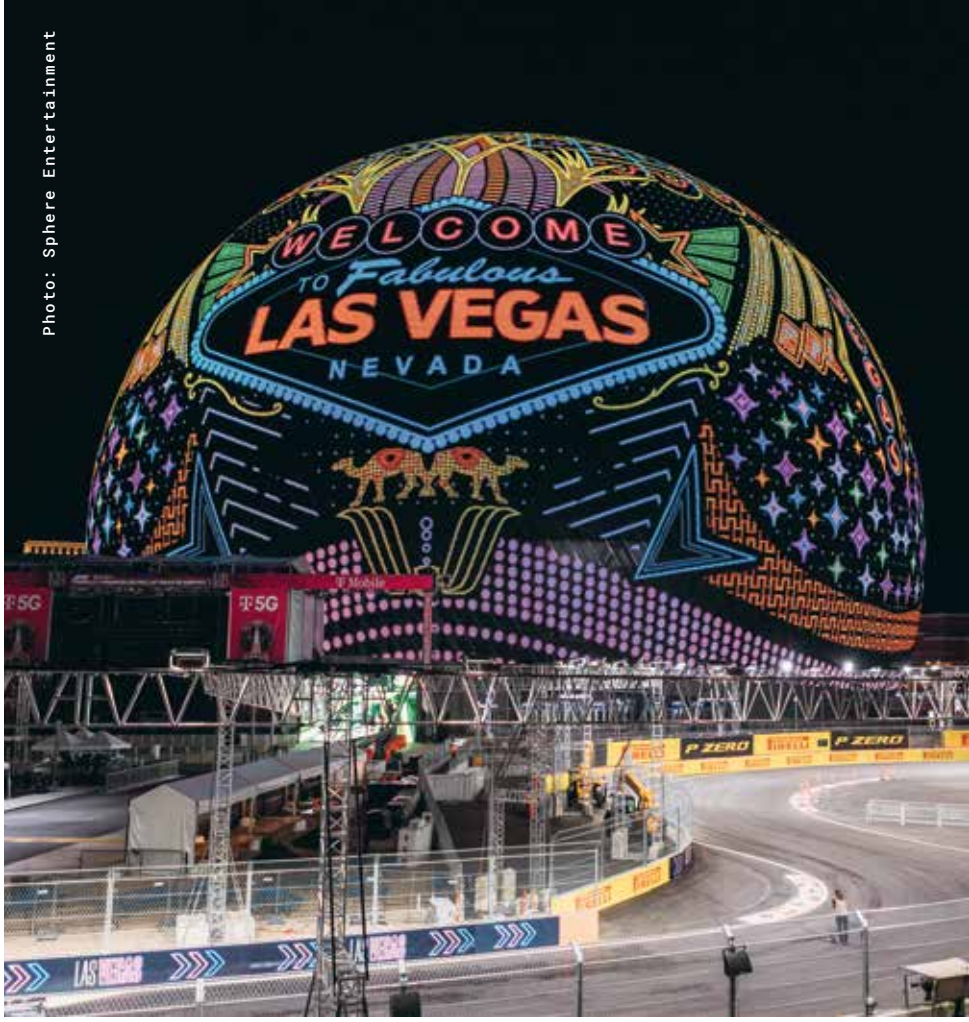

Photo: Sphere Entertainment

Photo: Ocean Outdoor


Photo: DynaScan

DIGITAL SIGNAGE MARKET


SAMSUNG
kramer
Martin
NEC
KNX

Photo: Integrated Systems Events

The sun rises over ISE 2024 in Barcelona.

DIGITAL SIGNAGE TRENDS

Dawn of a New Digital Signage Era

From the power of platforms, over e-paper, to IOT for B2B: This year's digital signage innovations – many of them software-based – could be experienced at ISE 2024. A glimpse into the industry's future.

Balthasar Mayer

ISE 2024, which took place in Barcelona at the beginning of the year, was not only a magnet for visitors. The show was also more than just spectacular, with large, impressive LED installations at Samsung, LG and Lang AG, for example. In addition to the crowds of visitors and the eye-catchers, it was possible to get a feel for the trends of 2024 in Barcelona if you spend a lot of time in the halls. With the industry shifting towards a "software-defined" approach, the most crucial developments were uncovered through extensive interactions and visits to various booths. The invidis team engaged with a majority of the relevant exhibitors, gaining insights into the trends and drivers shaping the landscape of 2024 and beyond.

1. Trade Shows are Back!

Can anyone still remember the discussions after Covid-19 about the future of trade shows? With more than 73,000 visitors from 155 countries, ISE 2024 broke all records and proved that B2B shows that have a thought-out concept and a strategic vision are extremely important for manufacturers, vendors, service providers, and buyers alike.

The show floor buzz and the networking atmosphere was overwhelming – in some cases better than the current business sentiment.

2. Platforms

The future of digital signage in general does not (only) depend on advancements in displays and software. It's about how the industry integrates with an increasingly interconnected technological landscape. To become a B2B mass market, the industry must move away from siloed approaches to technology and solutions. Samsung's hotly debated VXT which officially launched during ISE fits right into this trend.

VXT is the industry's first approach to platform economy. This concept mirrors the success of consumer-oriented giants like Apple, Amazon, and Google. These incredibly successfull platforms all offer a global marketplace for third-party apps and solutions explicitly tailored to the platform.

There are other products out in the field, like Wave from PPDS. And several manufacturers have hinted at similar platform concepts slated for future release. But no one in the market seems as determined as Samsung.

Read more about platforms and VXT on page 42.

3. Remote Device Management

Remote device management (RDM) is essentially nothing new, but in Barcelona, its significance for business critical operations and sustainable touchpoint concepts became evident. RDM-enabled pre-emptive maintenance not only enhances operational efficiency but also leads to cost savings.

RDM's popularity also extends beyond digital signage: Kramer, for example, launched Panta Rhei, a ProAV control platform that combines setup management, control systems, and collaboration solutions.

In addition to manufacturer-agnostic platforms like SignageOS, more and more hardware suppliers like Dynascan introduce new RDM platforms that support both their own and third-party devices. This shift reflects the need to break down silos, particularly as B2B end-users typically operate a mixed fleet of screens from various vendors.

Remote device management as a topic can be found on page 32.

Photo: invidis

4. Internet of Things for B2B

Photo: invidis

Beyond VXT, Samsung set another major non-hardware trend: industrial IoT solutions for digital signage. IoT solutions, which have transformed the residential AV market and building automation, offer highly standardized and scalable sensors based on open protocols like Matter, making IoT more accessible.

Samsung's B2B IoT platform, built on the Smartthings connected home service, allows users to wirelessly control devices, which aims at saving energy and enhancing security. Samsung is integrating this platform into its professional signage solutions, turning screens and LED displays into IoT hubs that can connect with sensors from various manufacturers.

Despite this integration, there remains a niche for sensor specialists like Nexmosphere that continue to innovate with specialized B2B sensors such as infrared, weight, and lidar sensors.

More on IoT on page 55.

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5. Transparent Screens


Photo: invidis

There was one hardware trend at ISE that was hard to miss: the prominence of transparent LED screens, exemplified by the large Muxwave display at the south entrance of the Fira Barcelona. In an otherwise highly commoditized visual solution industry, transparent screens are the latest trend. Among LG's transparent OLED solutions there was a new curved display designed for retail environments.

Samsung also captured attention with a striking prototype of a transparent MicroLED display. A very similar product was spotted at the booth of the Taiwanese manufacturer AUO.

An article that dives deeper into the potential of transparent digital signage can be found on page 68.

6. Artificial intelligence

AI was – oh wonder – omnipresent. Less as a hype topic, but more as an enabler for new functions and features. Integration has become more advanced, and the use of AI has matured. Artificial intelligence is now integrated in almost all new technologies and programs: From detecting screen failures to adjusting the brightness or improving picture quality.

Generative AI was also present in Hall 6 as an enabler for content creation – almost all software developers have integrated GenAI in one way or another. Signagelive, for example, showcased an automated content service using AI-generated moving images and auto-translation, and Intuiface presented an interactive solution that demonstrated the interaction of multiple GenAI platforms.

The article on page 56 will analyze the role of AI in signage software.


Photo: B12

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7. IT Security

It has been mentioned many times by invidis, and it cannot be emphasized enough: it is almost impossible to overestimate the importance of IT security. Requirements for appropriate certifications are now standard for larger clients, and more and more digital signage providers are implementing ISO 27001 certification or its US equivalent, SOC 2.

And it is becoming increasingly more difficult to sell hardware "Made in China" in business critical or security critical projects in the West. Consequently, manufacturers are relocating assembly lines to Eastern Europe or even opting for "Made in Germany," such as mainboard manufacturer Kontron.

Find more about IT security in our industry on page 54.

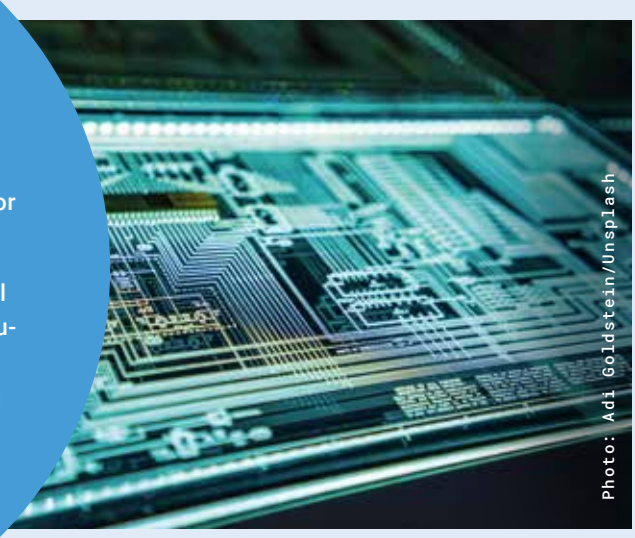

Photo: Adi Goldstein/Unsplash

8. Green Signage

Photo: invidis

At first glance, green signage appeared less prevalent at ISE 2024 compared to the previous year. This observation, however, is misleading. While corporate and ESG initiatives were less emphasized, many newly launched products incorporated Green Signage features. This includes advancements in energy-efficient displays and LEDs, such as Cold LED technology, as well as increased usage of recycled materials and improvements in sustainable manufacturing, packaging, and transport.

Read more on Green Signage development on page 26.

9. LED

Photo: invidis

LED is THE coming technology for digital signage, central in the transition towards a B2B mass market solution. The latest LEDs offer enhanced energy efficiency and provide full control for switching screens on and off. For instance, Sharp/NEC showcased an electrical ballast management device facilitating complete shutdowns and safe restarts of LEDs.

Furthermore, the pursuit of ever smaller pixel pitches continues: many manufacturers unveiled displays with pitches as small as 0.4 millimeters, and Aoto presented a prototype of a 0.39 millimeter screen.

While LEDs with ultrafine pixel pitches make for spectacular eye-catching displays, the use-cases are currently limited due to costs. Typical applications include security-related command-and-control installations and automotive R&D, where price sensitivity is comparatively lower.

More on the MicroLED The Wall from Samsung on page 78.

10. E-Paper

Photo: invidis

ISE 2024 was a breakthrough for e-paper displays. The ultra-low-power technology has emerged as a new professional and highly sustainable display category. Numerous visual solution manufacturers showcased large-format e-paper displays in color, both on the show floor and behind closed doors. PPDS led the commercialization of e-paper displays, with the introduction of the Philips Tableaux in 2023, followed by companies like Sharp/NEC.

The advantages of e-paper make it ideal for various application scenarios. The exciting thing is that many of these applications do not put e-paper in competition with LCD and LED, but rather with printed posters – opening up the digital signage market to millions of new touchpoints.

Read more on e-paper on page 74.

APAC

Bustling with Unknown Potential

The Asia-Pacific region is not only the largest producer of digital signage hardware but also the largest sales market. A bustling market that is largely unknown to European and American providers.

Florian Rotberg

The APAC region can be divided into five digital signage zones: East Asia (Japan, Korea, and Taiwan), Oceania (Australia and New Zealand), Southeast Asia (Thailand, Malaysia, and Indonesia), and the two most populous countries, China and India. We consider the Middle East to be part of EMEA from a digital signage perspective, as it is characterized by European experts and brands.

From Japan to New Zealand

East Asia and Oceania have digital signage concepts similar to Europe and North America, especially concerning requirements, technological expertise, and the cross-channel customer journey integration. The city states Singapore and Hong Kong also show a high demand for data-driven digital experiences.

Screen landscape in Seoul, Korea

Photo: invidis

Each market has its own linguistic and cultural needs when it comes to digital interaction and the role of mobile.

Labor costs are high, and sophisticated CMS solutions, remote device management, and service offerings are in demand. Monthly "X-as-a-Service" is becoming more and more popular.

Sustainability and IT security awareness is less pronounced than in Europe, albeit expected to grow within the next years like in North America. We expect to see more IT security measurements being taken, but also green signage activities – despite considerably lower B2B electricity costs.

Australia and New Zealand, though small markets with low populations, have mature digital signage and DooH markets.

This makes it difficult for international providers to efficiently develop business there. Despite this, European companies like Signagelive and Visual Art are successful in these markets with their modern software platforms.

Southeast Asia

In ASEAN markets like Thailand, Indonesia, and Vietnam, simple digital posters are the main form of digital signage. Generally, these are independent touchpoint concepts that do not need complex CMS or RDM systems.

When screens or peripherals fail, employees handle orders and information. Digital signage is considered nice-to-have but business critical, as labor is cheap and abundant. The complexity of digital signage also decreases significantly in rural areas compared to cities.

Digital signage and DooH installations in Southeast Asia, especially in the major metropolitan areas, can also be of a high standard, especially in specific industries that have again great similarities with western digital signage concepts:

- Convenience store chains such as 7-Eleven are masters in monetizing very small sales areas with in-store media networks and in-store digital media.
- Luxury retail brands in fashion, beauty, or automotive adopt global touchpoint concepts.
- International brands like Zara, H&M, Adidas, and Nike integrate global digital signage concepts into self-operated stores.

DooH is highly popular in Southeast Asia's major cities, mainly in the form of large LED billboards, media façades, and in shopping malls. However, the screen quality varies and seldom meets current professional standards.

Programmatic integration is rare, except for standardized networks in transport sectors like subways and airports. Individual and often large iconic spaces dominate, providing high reach and visibility in city centers and along traffic arteries.

When it comes to CMS platforms, integrators in the premium segment rely on well-known European and North American solutions. The broader market, in contrast, is reluctant to pay for software and to maintain complex interfaces. Many integrators opt for free CMS solutions or software with low one-off license fees. The added value of software solutions, database connections and scheduled service concepts is missing.

China: Faster and bigger

China is and remains a special case in the digital signage world. Almost all digital signage hardware is either produced in China or assembled using Chinese components. When it comes to their own technical concepts, the Chinese tend to favor big and spectacular displays, yet simple in design.

LED is ubiquitous in China. No wonder, as China is also the largest producer. Every second square meter that is manufactured here remains in China and is not exported. Whether it's massive media facades or small digital posters, LED is prevalent, even though the pixel pitch used may not always be optimal.

Similarly, for displays, bigger is seen as better, although professional screens aren't always utilized. In China, digital signage tendering and deployment are notably fast-paced, often surprising Western integrators with their speed. Orders

→

Large LEDs are omnipresent in China. Photo: invidis

are processed and commissioned in the same amount of time it would take to write an order in Europe.

That's why companies like M-Cube, Trison & Co., along with their Chinese subsidiaries, focus on handling complex digital experience orders from Western and domestic premium brands. They leave the installation of the endless 3D outdoor LED displays to the thousands of domestic integrators, who not only work incredibly fast but also adopt new skills swiftly.

DooH in China is primarily a single-point billboard business, except for subways and airports where JC Decaux dominates with its LED and LCD screens. Political regulations on DooH in public spaces are significant; it's considered a mass medium, requiring government agencies to have direct access to CMS to remove unwanted content if needed.

Despite the vast range of digital signage and DooH in China, the broad market hasn't fully embraced the added value of CMS platforms, with free software dominating the market.

invidis Fun Fact: Due to historical reasons, Korean display providers Samsung and LG have minimal presence in China and Japan. In China, companies like BOE, TCL, and Hisense dominate, while in Japan, the local heroes Sharp/NEC and Panasonic are traditionally strongly positioned in the market.

India, the big growth market

The subcontinent is seen as the prime growth market in the Asia-Pacific region. India, often referred to as the sleeping giant, is awakening, leading to increased demand for professional digital signage and DooH offerings. Similar to Brazil, India imposes high import duties on hardware, encouraging major manufacturers to establish production facilities in the country. Korean, Chinese, Taiwanese, and Japanese manufacturers are already planning their own factories there.

India may be less developed compared to other APAC markets, but its potential is immense. Suppliers across Asia quickly turn their attention to the subcontinent. Many digital signage and IT companies have a presence in the country, either with their own software development studios or by using Indian service providers. Indian digital signage integrators and especially the large IT integrators have built their business models around software and services. This is a good omen for CMS providers and integrators, even though the maturity level of digital signage projects is still low. Exceptions are, as in other APAC regions, premium and luxury brands.

Whether in East Asia, Australia, India, or China, digital signage is still in its infancy in many areas, and the coming years will reveal how quickly the potential can be realized.

invidis in APAC

As a digital signage partner, invidis is also active in the APAC region. In China (Beijing), Asia (Bangkok) and India (Mumbai), invidis organizes the digital signage programme and networking events for digital signage and DooH as part of the Infocomm Asia trade fairs. invidis has also been active in the Middle East for more than ten years – particularly in the UAE and Saudi Arabia.

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M & A

The Deals Are Back Again

The mergers & acquisitions outlook points to gradual rebound in the deal market in 2024. Financial investors and strategic buyers alike are active.

Florian Rotberg

The M&A market has been in limbo for the past two years as both buyers and sellers navigate through the post-pandemic economy. Many acquisitions were postponed as the financial performance in the digital signage industry has still been lacking pre-pandemic times. Valuations plummeted in 2022 and 2023, and the deal flow almost dried out.

One important exception in 2023 was L-Gam's acquisition of Trison, Europe's largest pure-play digital signage integrator. Another major deal – but not mainly driven by digital signage – was Munich-based Cancom's acquisition of K-Businesscom, formerly known as Kapsch. PE-owned Zeta Display acquired Austria-based Peakmedia and in spring 2024 UK-based Beyond Digital. M-Cube – majority owned by HLD – acquired the Dutch ISV Notice Branded Media.

In general, the digital signage M&A market seems to gradually rebound in 2024. With rising valuations, the chances are improving that sell- and buy-side are aligning. Market players willing to sell are numerous, but it takes two to make a market. And the buy-side has been reluctant to invest in digital signage business – not only because of high interest rates, but also as many of the digital signage businesses are relatively small, financially under-performing and miss convincing USPs.

Even growth in the digital signage market remained relatively flat in 2023. A few market players grew double-digit and developed exceptionally well. Especially international integrator groups like Trison, M-Cube and Visual Art could win major contracts while smaller market players struggled. The focus for signage integrators lies in increasing service contracts to become less reliant on initial hardware sales and deployment revenues.

On the software-side, leading ISVs with modern tech stack and an international footprint were able to grow faster than the market. Selected ISVs could grow their Annual Recurring Revenue (ARR) by 20 percent and more. Average software license rates are under pressure across the industry, increasing the need to offer additional subscription services like remote device management services (RDM).

As the year 2024 is progressing into summer, M&A interest is peaking again. While signed deals are still rare, the M&A buzz is back in the market as financial investors and strategic buyers fear to miss the right time while valuations are relatively low.

High on the agenda are transatlantic deals, combining market leaders in Europe and North America. While digital signage requirements on both sides of the Atlantic differ a lot, retailers and brands are pushing digital signage providers to supply global services. Therefore, investors are looking to acquire regional integrators to expand the on-site service footprint. Outsourcing these services is common practice, but leads often to quality issues.

Main digital signage M&A drivers

A strong customer portfolio, recurring revenues and a strong management are the baseline of any transaction. Technological innovation and digitalization are another main driver as digital signage end-users become more reliant on technology to remain competitive. Transactions are driven by the need of digital signage market players to acquire technical talent and intellectual property.

ESG factors are becoming the focus of corporate decision-making. M&A activity in 2024 is expected to reflect the growing importance of sustainability, thus pushing the demand for vendor-agnostic RDM solutions, tools and services to extend hardware lifecycles and energy-efficient operations.

Private equity investors will be back in the M&A driver's seat in 2024, mainly pushing consolidation. Strategic investors like IT-integrators and (Chinese) visual solution manufacturers will remain active acquiring specialists to round-up their portfolios.

Geopolitical dynamics will also influence digital signage M&A strategies. Companies will carefully exploit political uncertainty and trade tensions to pursue cross-border acquisitions that offer strategic advantages. Manufacturing sites outside of Mainland China, e.g. in Southeast Asia or India, but also in Eastern Europe will enable to operate globally while navigating regulatory challenges.

The boom in in-store retail media networks and programmatic DooH will drive M&A activities in North America, Europe and the Middle East. The value chain is still cluttered with numerous specialists and regional champions. A consolidation is long overdue.

VISUAL SOLUTIONS

Change of Guard

LCD is still the dominant digital signage technology. But the rise of LED seems unstoppable.

Florian Rotberg

Since digital signage solutions first emerged over 20 years ago, large-format LCD displays have been the dominant technology. Only the invention of the flat screen formed digital signage as a new communication channel. There was hardly any space for bulky CRT screens, but a LCD display could suddenly be easily installed on walls, suspended from the ceiling or integrated into furniture without much effort. With increasing screen sizes up to 100 inches, large format displays have become the de facto digital signage standard.

But the long-standing dominance of displays is being challenged by LED. While things still look different in terms of unit numbers, the industry will in the foreseeable future achieve higher sales with LEDs than with displays. Market researchers are still divided as to when the tipping point will be reached – Futuresource sees the changing of the guard as early as 2025/26. invidis shares the view that a switch is likely in the near future for the following reasons: Sales growth in the professional display market is leveling off, while LED digital signage sales will double from 2022 to 2026. In the next two to three years, LED will become the leading visual solution technology recording the highest sales.

No digital signage without LCD

But LCD will remain the bread-and-butter platform for digital signage for the foreseeable future. The strong price pressure – particularly due to the dominance of Chinese LCD panel manufacturers and OEMs – ensures that large-format displays remain the most affordable technology. Displays continue to have a few major advantages: very high resolution in standardized form factors, enormous economies of scale due to their almost identical design with consumer TVs and lower power consumption.

Samsung's dominance as the world's leading display provider did not change in 2023. The Koreans have been confidently leading the global market for about more than ten years – including EMEA. LG Electronics and Philips (PPDS/TPV) follow at a distance in Europe. Market success in the display market continues to be based on a broad solution portfolio and a strong partner ecosystem. Without system integrators – digital signage, ProAV and IT – the B2B market is hard to crack.

New display technologies such as e-paper are also gaining attention and have the potential to expand the existing digital signage market.

All-in-one changes the game

But the future of XXL digital signage clearly lies with LED. Since the market launch of fine pixel LED based on COB technology (aka MicroLED), LED has become the dominant technology for screens larger than 100 inches. With a few exceptions in command and control rooms, LEDs have replaced LCD-based video walls. Especially with the emergence of all-in-one LED solutions, LED has become a serious alternative to LCD displays for larger screens. Even integrators with no experience in digital signage can now order all necessary LED components, usually pre-installed and configured, under one order number. All-in-one LEDs can be installed on site fully calibrated and ready for use in two to three hours while keeping the ease of use of professional LCDs. This includes supporting established SoC platforms and operating systems, access to established digital signage ecosystems and even remote control.

invidis estimates the global digital signage market – excluding China – at around 23 billion euros in 2023. Visual solutions and complementary hardware account for around half of the market, while the other half is generated from services and software. The hardware share of the overall market has been falling for years and will continue to drop to around 45 percent in the next five years.

Business-critical digital signage applications are driving the software and service share as they require greater operational security. These include, among others, Network Operations Centers. The now dominant SaaS software subscriptions with continuous updates and upgrades and global scalability are also more expensive than mostly outdated on-premise license models.

According to our invidis market model, the digital signage market will continue growing faster than the global economy, on average by 11 percent.

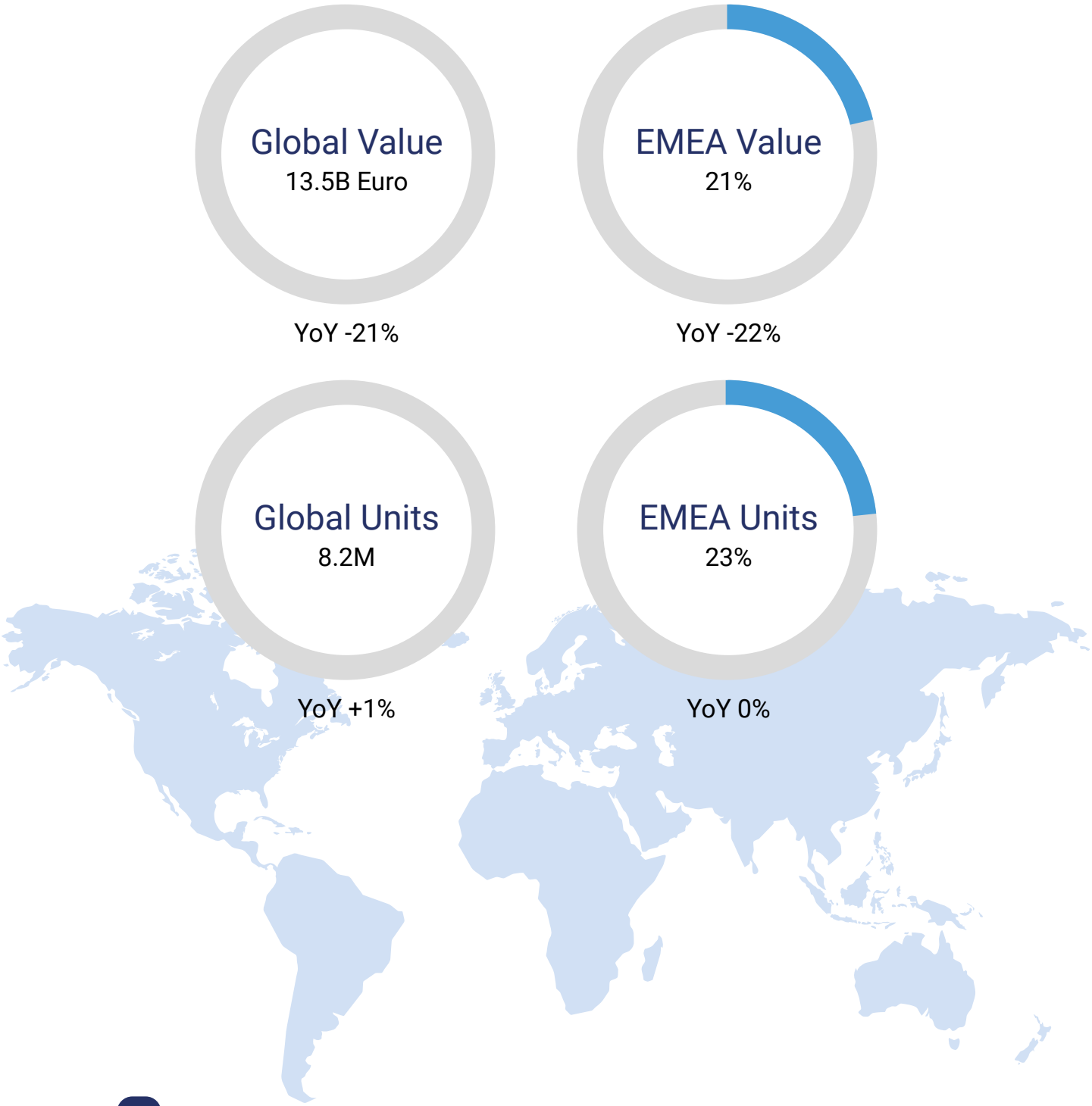
Top 3 EMEA LFD Manufacturer 2023

COMPANY	MARKET SHARE
1. Samsung	47,2 %
2. LG	19,8 %
3. Philips	8,2 %

Notes: Refers to volume and the digital signage market.
Source: invidis consulting, Futuresource

Large Format Displays 2023: Flat Year after Record 2022

invidis Yearbook 2024



Source:
2024 Futuresource
2023 Market in Units / Value in EUR
(Professional Screens >32")
YoY: 2023 vs. 2022
Preliminary data for Q4 2023

EMEA 2023: 1,9 Mio. LFD
YoY Growth: 0%

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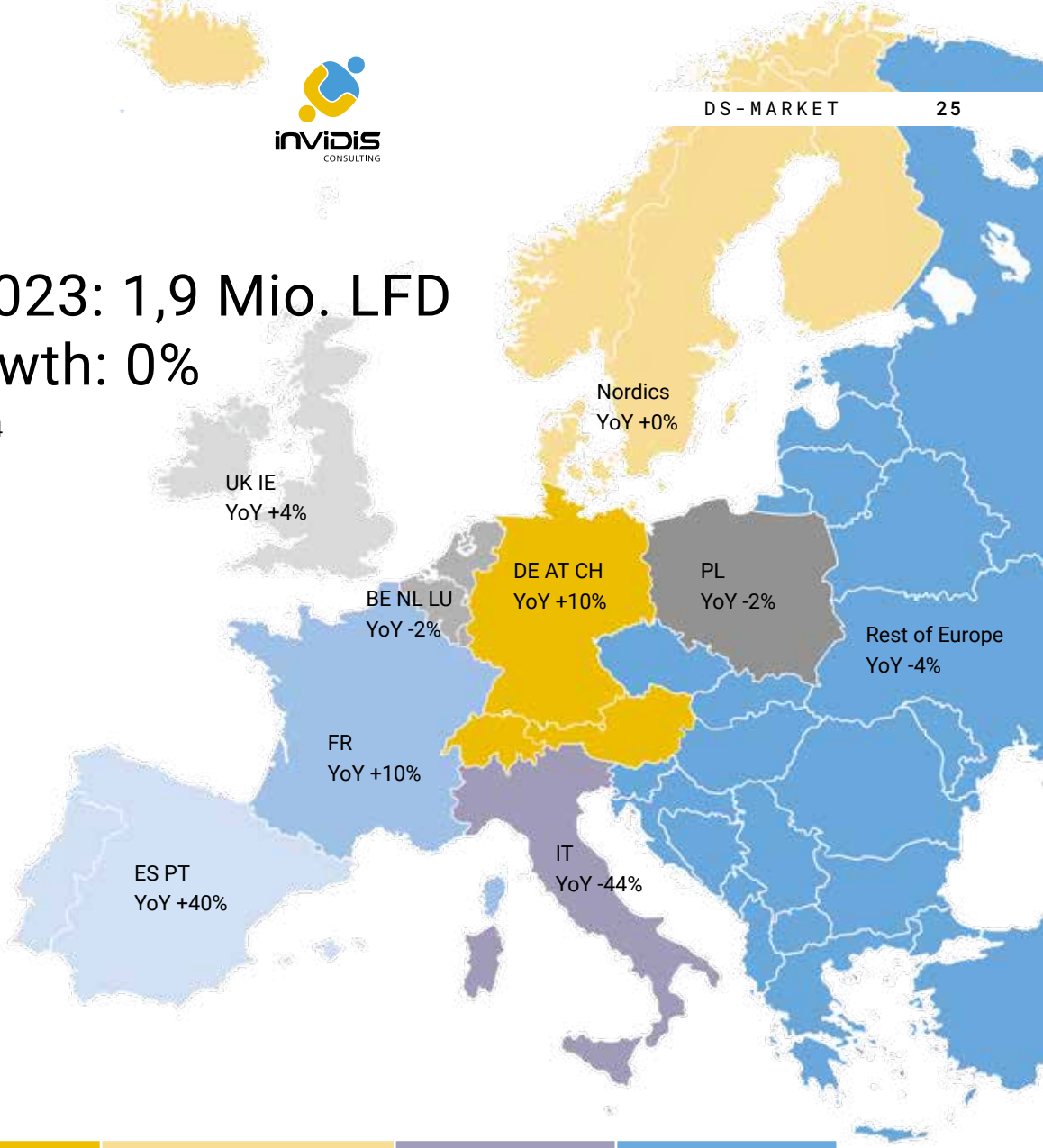
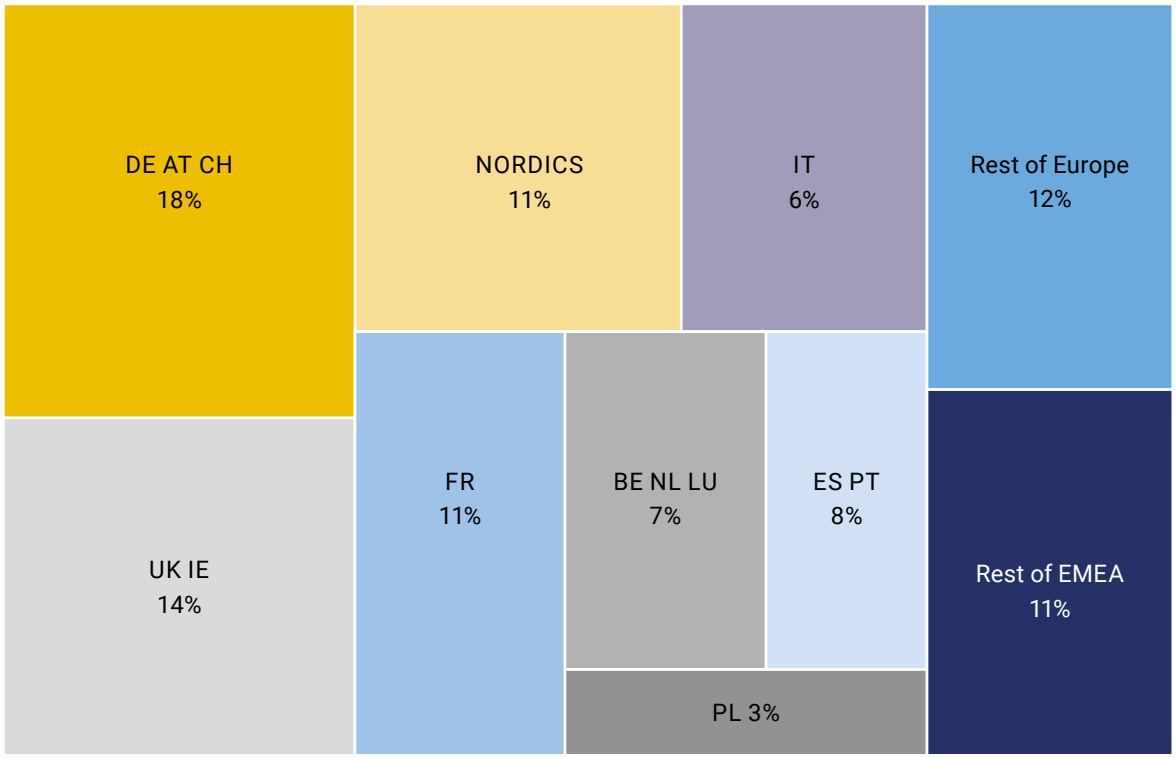


"Source:
2024 Futuresource
2023 Market Share in Units
(Professional Screens >32")
YoY: 2023 vs. 2022"

Rest of EMEA
YoY +0%



EMEA Market Shares

Note: All figures are based on reports from companies or on estimates by an advisory board
Source: Futuresource, invidis consulting GmbH, company informations

Displays need to last longer and be better reparable for digital signage to become a greener industry.

Photo: Leon Seibert/Unsplash

GREEN SIGNAGE

The Sustainability Clock is Ticking

Mandatory reporting and product passports: The new sustainability regulations passed by the EU could trigger a further push towards sustainable signage.

Balthasar Mayer

Just three years ago, green signage seemed like a problem of the future. Now, it has already become a mainstream topic in the industry. While customer demand for sustainable products is not new, the pressure for sustainability from authorities, particularly the EU, is increasing. The EU has expanded the scope for companies that are obliged to produce a CSRD report (Corporate Sustainability Reporting Directive), meaning smaller companies also need to prove they undertake measures to lower their carbon footprint.

Moreover, product requirements are growing. Beyond energy consumption, the EU is now emphasizing extending the lifespan of electronic devices, focusing on reparability. Through new eco-design guidelines and digital product passports, the EU aims to prolong the life cycle of products across all categories, from textiles to electronics. The goal is to promote products that are easier to repair, such as those using screws instead of glue.

Only high-end products are refurbished

While repairing cell phones poses a significant challenge for manufacturers, it should be easier for professional display suppliers. In the early days of digital signage, displays had sturdy metal housings with plenty of space for large displays.

However, in recent years, display manufacturers have focused on making displays thinner, lighter, and cheaper to assemble. Screws have been replaced by adhesive, and metal housings by plastic. Some manufacturers have gone overboard with product design optimization, resulting in displays that are more susceptible to damage

during transport, often arriving curved instead of flat due to inadequate packaging.

This trend has made repairing screens more complex and reduced the incentive for recycling. Although it's technically possible to replace components like backlighting, power supplies, or motherboards, it's often not financially viable. Refurbishment remains common only for high-end projects.

While standard LEDs allow for individual repairs, newer technologies like very fine pixel pitches or chip-on-board and sealed surface solutions are less likely to be repaired due to their complexity.

Ecodesign directives with product passport

The EU plans to implement the digital product passport by the end of 2024, which will force manufacturers to optimize their eco-design. The focus of the new rules and directives is to significantly improve the circular economy, energy efficiency and other sustainability aspects of products. The regulation lays out performance and information requirements for almost all product categories in the EU market. The framework makes it possible to define numerous requirements, including those relating to reusability and recycling.

One of the EU's goals is to reduce e-waste, as it's a rapidly growing waste stream in Europe, with less than 40 percent currently being recycled. This requires a change – not only to reduce emissions, but also to prevent the release of hazardous chemicals into the environment and curb the waste of resources.

It will take some time before these new EU regulations, primarily developed for top-selling consumer products, become relevant for the industry. However, consumer TVs, for example, are already high on the agenda. Moreover, B2B customers are increasingly interested in sustainable technology. Demand has noticeably shifted in Scandinavia, and the DACH region (Germany, Austria, Switzerland) is expected to follow suit soon.

Many medium-sized integrators argue that sustainability is only appealing to customers once it affects the price. However, the 2022 energy crisis demonstrated that legal frameworks can change rapidly, making adaptation unavoidable. With initiatives like the Ecodesign Directive, new CSRD obligations, and the digital product passport, the EU is leading the way forward.

Photo: Rinson Chory/Unsplash

Global crises continue to disrupt supply chains.

LOGISTICS

Under Attack

Once again, international supply chains have been disrupted, this time by attacks from Yemeni rebels. The transport situation remains tense.

Balthasar Mayer

The status of global supply chains has been an ongoing problem since the Covid-19 crisis. Multiple incidents have shown how vulnerable international logistics – i.e. shipping, which still accounts for the lion's share of transport volumes – is and will remain.

Bottlenecks in the supply chain already disrupted the logistics of digital signage hardware during the pandemic, and a damaged container ship blocked the Suez Canal in spring 2021. Now the most important shipping route for European ports is once again dominating the news and threatening to disrupt supply chains again.

The new tensions came at the end of the last year as the Middle East crisis, which began with Hamas' attack on Israel, continued to worsen:

Yemen's Houthi rebels attacked more than 20 merchant ships in the Red Sea – as a consequence, many shipping lines were avoiding the dangerous but much shorter route and preferred a 14 days detour around the African continent. In just four weeks, average freight rates worldwide have risen by 60 percent according to the Shanghai Containerized Freight Index.

Worldwide every third container was affected – the attacks in the Red Sea are causing havocs with global supply chains. Most container shipping companies chose the detour around Africa, transport capacity was scarce.

In the meantime, the logistical situation has eased, according to the Kiel Trade Indicator updated in March 2024: Although the number of container ships passing through the Red Sea and the Suez Canal fell again in February compared to January, and the number of ships around the Cape of Good Hope tripled, no greater negative consequences were to be expected for the global economy as a whole or for the German economy in particular, as both freight rates to Europe and the volume of goods arriving in the North Sea are stabilizing.

But the situation is still tense and shows that international trade will be disrupted again and again in a world with ongoing multiple crises. For manufacturers and distributors, careful planning is the first necessary step, and long-term strategies to face the problem must be implemented, for example the ongoing trend of localizing the production for certain markets.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DIGITAL SIGNAGE SOFTWARE

The CMS Basics

How is digital signage software structured and which components are relevant? What is the difference between content management and playout? A CMS basic course.

Stefan Schieker & Florian Rotberg

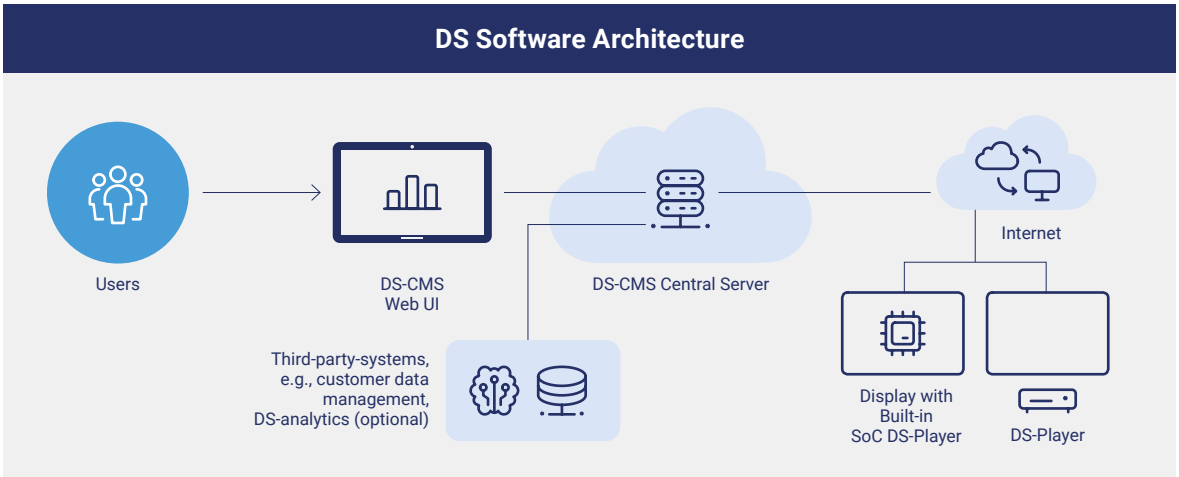
This yearbook's special revolves all around digital signage software. And although the topic is incredibly multifaceted, a basic understanding about CMS work and the requirements of digital signage is necessary to choose the best platform.

Digital signage software solutions enable users to play content such as images, videos and/or sound on a local device – display, projector, speakers, etc. Sounds easy, but it is not.

In everyday life, digital signage comes in a wide range of use cases, for example:

- Retail: promotional screens, interactive touchscreens for additional products and services, promotions, product information, retail media networks
- Quick-service restaurants: digital menu boards, ordering kiosks, drive-thru displays, mandatory nutritional information
- Corporate: employee communication, room booking information, screens in meeting rooms, canteen, route guidance
- Manufacturing: employee communication, KPI and production data visualization
- DooH: programmatic, special formats (large-format LEDs, forced perspective posters, retail media)

The market also offers a range of dedicated solutions for special purposes such as schools, control & command rooms, and live events.



Basically, digital signage software is divided into two areas: the server/cloud side with the CMS and the local/media player side with the playout software. Source: invidis

From software product to solution

For smaller projects, digital signage products are used “out-of-the-box”. Here, users have limited configuration options. For larger networks of 20 displays or more in multiple locations, digital signage software is a solution that needs to be customized to specific customer requirements by either the software provider (ISV) or the digital signage integrator.

Digital signage software typically consists of two components:

1. Server/cloud-side content management system (CMS)

2. Local/media player side playout software

In larger, distributed networks, a third component is required:

3. Remote device management (RDM)

This is the rough classification, although further details need to be taken into account for all three components.

The server/cloud side

Content management is the core of every CMS software. That includes

- storage and management of media assets and content resources
- adapting content to the specific requirements of digital signage (composer tools and templates)
- creating playlists and distribution to individual players in the network.
- managing data, analytics and triggers
- monitoring media player networks
- users and roles definition and management.

Users access these features through a web or app interface. While the core feature categories are the same for most digital signage CMS, there are wide differences in how these features work in detail.

For many customers, it is important that the CMS can be adapted to their specific needs, for example in terms of workflows, content complexity or player network management.

A central element of adaptation to customer needs are integrations with existing (backend) systems, for example with an ERP for information on product availability, a PIM (Product Information Management) for product information, a DAM (Digital Asset Management), for media resources or specific data, or analytics feeds.

Integrations with external databases are implemented via APIs. The ease with which APIs can be managed is one of the differentiating features between digital signage CMS.

The edge/media player side

For most digital signage users, the local or media player side of the software remains invisible. Except for the configuration screen, which is used when pairing/registering the device with the CMS or when displaying error messages – which should not be the case with a good digital signage software system.

The main purpose of playout software is to display content locally on a screen. Therefore, it communicates with the central CMS to download the playlist content and save it locally.

Typical operating systems used in digital signage – Windows, Linux, Android, Tizen, WebOS – use different technologies and codecs to display content, so the player software must be specifically tailored for each supported operating system.

While most digital signage software systems use local browsers to display the content, complexity remains high because not only do browsers differ between operating systems, but browser functionality can also differ between different versions of the same operating system.

Modern player software components also automatically adapt the content to the connected

→

screen, for example in terms of orientation, resolution, or computing power.

Remote device management

Most digital signage CMS solutions offer basic monitoring features. These include:

- Online/offline status
- Heartbeats and system errors
- Storage space information
- Device location/IP address
- Display orientation

Large and especially mission-critical digital signage networks require a dedicated RDM solution that offers far more monitoring and remote control functions.

The main reasons for using RDM solutions are:

- System stability and high uptime, for example with “auto-healing” functions, especially for business-critical networks
- Reduction of service costs, as any fault that can be resolved remotely saves expensive on-site services
- Sustainability, basically energy management of the player and screen, software and operating system updates for a longer service life of installations

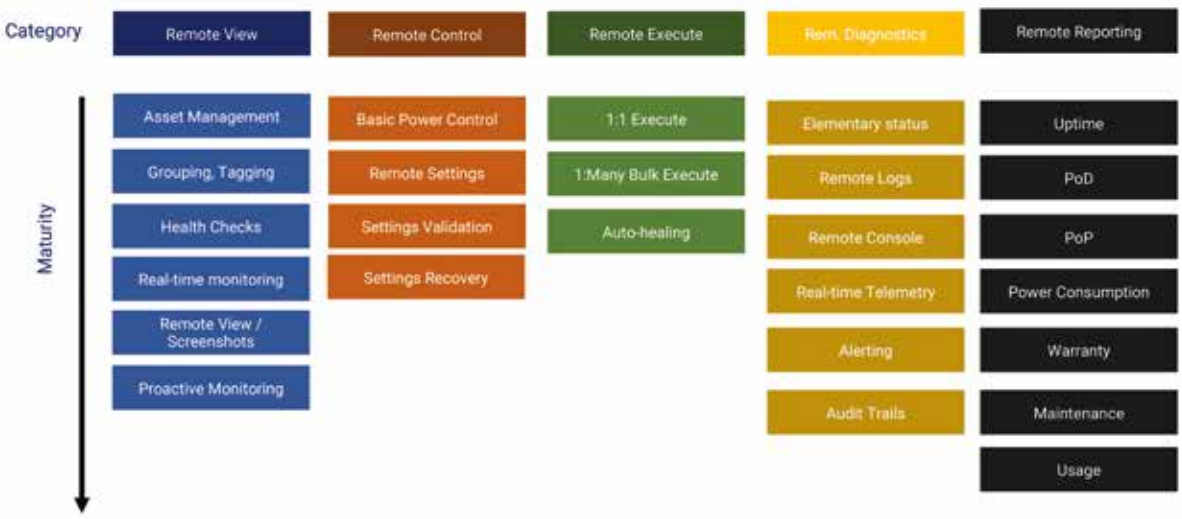
However, the best RDM solution is of no use without appropriate business processes. It is not sufficient to just collect the information about the system, actions must be defined and executed. For large networks, dedicated Network Operation Centers (NOC) take over this role.

Large integrators, especially IT integrators, combine the management of different customers' networks in one place in order to realize the 24/7 operation of a NOC in a cost-effective manner.

Challenge of software selection

Digital signage end customers are looking for individual solutions, often with unclear requirements or over-specifications. Most requirements can be solved efficiently with existing features.

Thousands of different digital signage CMS are available on the market. Keeping track of everything is difficult because software is offered as an ISV product, as an ISV solution and as integrated solutions from integrators. Due to a lack of standards and companies dominating the market, end customers have to rely heavily on advice from integrators and experts.



Remote device management contains five basic functions, which come in different maturity levels. Source: invidis

SOFTWARE ANALYSIS

Cutting Through the CMS Jungle

The range of CMS solutions available is vast and can be confusing, even for experts. But what are the similarities and differences? We've identified the most important ones in our big CMS check.

Florian Rotberg & Marco Wassermann

The range of digital signage software solutions is overwhelming – several thousand CMS products are available on the market, many of which seem similar at first glance. New ones are appearing daily, especially solutions based on service clouds like AWS, Azure, and Google Cloud, because those are comparatively easy to develop. Even experts like invidis consulting struggle to keep orientation in this jungle.

Not only has the number of solutions multiplied, the variety of features has also increased. While the market used to be dominated by end-to-end software suites that offered everything from composer and media asset management to playout and device management, modular solutions with a highly focused feature set are increasingly in demand.

Today, customers often prefer using multiple CMS platforms for digital signage, web, and mobile over monolithic silo solutions. Their overlapping feature sets are overkill from an IT architecture, operational and cost perspective. Instead, headless CMS, supplemented by digital signage-specific modules, are gaining traction. Unlike mobile and web, digital signage hardware lacks standardization, requiring dedicated solutions.

In the past 18 months, invidis has analyzed the market and compared digital signage solutions based on 120 metrics. The results will be available in the invidis Software Compass (*see page 52*) – the first independent, in-depth comparison of digital signage software products. Here is a summary of the most important findings.

Differences and similarities

The foundation of every CMS is its underlying IT architecture. Products from new providers, however, have the advantage of being built directly for the service cloud, and are therefore free from legacy systems.

Yet, nearly all established companies are also transitioning to the cloud, albeit at different rates. In the medium term, the service cloud will become the dominant IT architecture in the digital signage market, as with other software solutions.

In terms of the tech stack, there are two main approaches:

- Platforms based entirely on service cloud (like Microsoft Azure, Amazon AWS, Google Cloud Platform), which utilize serverless components from the cloud providers. Once a developer chooses a service cloud platform, they are generally committed to that provider. This approach is often favored by new providers due to its alignment with current trends, global scalability, and popular developer environments.

- Other ISVs, especially legacy providers, developed their digital signage CMS using es-

tablished development environments such as Python, Javascript, C#, or PHP. For a long time, on-premise hosting was the norm for digital signage. However, large end customers are now also adopting private and public clouds. On-premise hosting remains popular in certain industries and regions. For instance, Telelogos is the leading digital signage CMS for Chinese banks.

However, even digital signage solutions developed in traditional environments are now mostly hybrid. ISVs use service-cloud-based container applications, offering flexibility and scalability similar to cloud-native solutions.

While some customers and industries still prefer on-premise solutions, the future for large CMS providers with over 100,000 active licenses is clearly in cloud-native platforms. However, transitioning to a full cloud model is complex and costly for ISVs. While new customers are typically set up directly on modern tech stacks, many providers still have legacy customers to support. Yet, in the foreseeable future, on-premise solutions will become obsolete.

API first

Until a decade ago, digital signage setups were often isolated installations, sometimes even on physically separate networks for security reasons, with external data playing a minor role. Today, digital signage without external data integration is nearly inconceivable, with data often needed in “near real time”.

This demands interfaces (APIs) through which data from ERP, CRM, and other backend systems can be transferred to the digital signage system. Given that API requirements are continually evolving, documented standard APIs are absolutely essential.

Modern software solutions follow the API-first concept, where applications are designed and developed as a set of APIs before the user interface (UI) is created. We believe there's no alternative to this approach in the digital signage industry today, yet many CMS providers lack publicly available API documentation.

Cloud-first providers like Intuiface and Nowsignage set a good example by providing publicly available API documentation to all partners. This allows partners and users to securely connect front-end functions (such as events or triggers) with the back end (data, UI, device monitoring).

During our analysis of the top CMS platforms, we repeatedly found a lack of clear API documentation and transparent API version management. The discrepancies in quality, documentation, and partner support are significant, and there's a

RDM and security

For larger and especially for business-critical networks, additional RDM features are necessary, often available only through separate tools. This typically involves digital signage-specific RDM tools, provided by manufacturers like Samsung, Philips, etc., for their devices. General IT tools like Teamviewer lack the specific features required for monitoring and remote control in digital signage.

The most established solution is the multi-platform RDM from SignageOS, particularly useful for mixed networks. Analyzed tools also vary considerably in terms of software security, both in certification and tech stack. The IT security philosophy of cloud-native providers often differs from that of long-established providers.

Both architectural approaches can provide secure and certified digital signage solutions. With non-managed on-premise solutions, the user or their service providers bear the responsibility. We consider software security one of the most critical features, and if in doubt, we wouldn't compromise on it. You can find more on this topic in the article on page 54.

shortage of comprehensive developer knowledge bases. Some providers still prioritize API second over API first, partly because their previous business models didn't include opening up APIs. However, with changing times, API first is becoming imperative.

User interface

Content scheduling for digital signage is traditionally done via playlists. However, this can be time-consuming when managing large networks. Now, scheduling is often done dynamically via "rules-based playlists" or fully automatically.

Different CMS follow different approaches. Generally, attributes or meta tags are assigned to each screen, like location, target group, or product range. The system manages selection, playout time, and frequency, as seen in systems like Cingerine. In digital-out-of-home (DooH) networks, even content – such as advertising spots – is increasingly assigned programmatically based on media type, CPM price, and network type.

There are major differences in the user guidance of larger digital signage networks. Only two-thirds of the CMS solutions analyzed offer functions required for managing large networks, such as grouping, tagging, and support for dynamic content data feeds.

Some CMS still struggle with the simple integration of data sources. We categorize these sources into standard (like social media, weather, news), semi-automatic (parsers), and manual integration. Particularly with the latter two, some platforms show operational weaknesses in everyday use. In some cases, only ISVs can integrate third-party data sources for a fee. The benchmark for the digital signage industry is Intuiface and Wallboard – nowhere else is integration easier and more reliable for partners.

Other important features for managing large networks include content approval functions and role and user management. When choosing a CMS platform, integrating existing company processes is crucial. Enterprise customers won't change their processes for a CMS solution – the software must adapt to the customer. To this end, most CMS solutions offer Single Sign-On (SSO) connections for integration with the customer's active directory systems.

One of the pain points of digital signage is managing heterogeneous networks. Even if identical players and screens are used initially, networks typically evolve into a mix of different players, displays, manufacturers, operating systems, resolutions, and formats over time. This diversity poses a challenge for content management. Some providers rely on auto content conversion – the automated adaptation of content. Although miracles are not yet to be expected, new AI tools promise significant advancements in the near future. Currently, Deneva offers one of the best solutions for auto content conversion.

CMS platforms provide dedicated composer tools for designing templates, widgets, and apps (*see also page 48*). The range of composers varies, from rudimentary to professional. WYSIWYG composers should become standard by the end of 2024, but not all platforms offer composers that make content creation immediately visible to users. The benchmarks in the test are Wallboard and Intuiface.

Alternatively, some providers program templates using their own SDKs, but this often lacks sufficient documentation.

Multi-platform support

In contrast to most other media platforms, playback platforms in digital signage sometimes differ considerably. Not only do they need to support different operating systems like Windows, Linux, Android, or ChromeOS, but also manufacturer-specific platforms such as Tizen (Samsung), WebOS (LG), or appliances like Brightsign.

Each platform must be controlled individually to ensure correct display of digital signage content. Some CMS platforms are specifically developed and optimized for certain hardware platforms and operating systems, such as Brightsign, Cingerine, Screenly, and Videri. The advantage of these platform-specific solutions lies in the optimization of the CMS for the media player, which is often more energy-efficient, cheaper, and stable compared to standard players. However, this

performance advantage comes with the limitation that changing hardware providers can be difficult.

Support for various platforms varies significantly among CMS providers. There's a distinction between dedicated native clients for an operating system (OS) and browser or Progressive Web App (PWA)-based multi-platform clients. PWA-based clients are popular due to their lightweight nature and ability to manage content download and system heartbeats. However, managing multi-platform clients for digital signage can be complex, especially with different operating system and browser versions in use.

Middleware solutions like SignageOS are a popular alternative. SignageOS supports over 100 different hardware and operating system platforms via an API, allowing CMS providers to support just one API while the middleware handles the rest.

Features such as content download management, automatic content deletion, player synchronization, and player APIs are important indicators of a CMS platform's maturity in content management.

One of the biggest secrets of digital signage operation is the remote management of devices from different manufacturers, because each combination of screen and operating system must be monitored individually.

Most CMS offer only basic RDM functions. While software updates are generally supported, firmware and OS updates often require players to go offline temporarily.

Proof-of-Plays depend on the screen-hardware combination and are easier for SoCs. RDM tools should also monitor reliable startup and shutdown. Among the CMS reviewed, Waapiti's RDM functionality was the most impressive.

chromeOS

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Beginning of a new digital signage era? Alex Lee from Samsung presenting the VXT platform in January 2024.

Photo: invidis

PLATFORMS

Envisioning a Mass Market

The digital signage value chain is being reorganized. The platform concept, pioneered by Samsung, could be the solution to propel digital signage out of its niche into a much broader market.

Florian Rotberg

The digital signage industry has come a long way. While the focus was initially on selling hardware, the industry is now heavily involved in the solution business. Sophisticated in-store experiences can no longer be realized by thinking in silos – they require a holistic approach. Planning customer journeys across all channels brings completely new demands for integrators, architects, and brand managers.

According to Futuresource, professional display sales stagnated at 8.2 million large format displays worldwide in 2023, with turnover falling by 21% to 13.5 billion euros. These numbers are staggering but may also be explained by the overall crisis this year in combination with the ongoing transition from LCD to higher-priced LED solutions. Unfortunately, reliable LED sales data isn't yet available.

Nonetheless, 2023 was tough for the visual solutions industry, which is accustomed to success.

Value creation is now shifting towards software and service providers, with hardware – once dominant – becoming less crucial or more interchangeable. To help mitigate falling prices, many hardware manufacturers now offer extensions, refurbishments, and financing.

The start of a new path

Amidst these market shifts, the launch of Samsung VXT took center stage during ISE in early 2024. After extensive preparation, the global display market leader introduced a new digital signage platform, the Visual Experience Platform (VXT), developed from scratch. This platform isn't just a modern successor to Magicinfo CMS; it marks Samsung's first venture into software provision alongside its hardware business.

Samsung's software partners have always met the electronics company's venture into the software business with suspicion. However, the Magicinfo CMS, despite its initial reputation as "Tragicinfo," improved over time, evolving from an on-premise solution to a competitive cloud-based CMS with a subscription model. Yet, Samsung couldn't compete with leading CMS platforms, possibly also to avoid conflict with its ecosystem partners.

VXT is by no means a successor to Magicinfo; it represents a new direction for Samsung. This global platform is not primarily a CMS but an open technology and sales platform with an app store. By taking the platform path, Samsung is opening up the digital signage market to new end customers, on the one hand, and to all providers, on the other. Whether independent software developers (ISVs), integrators with their own CMS platforms, or (retail) technology providers, all can now easily offer their solutions and services worldwide. The aim is nothing less than the democratization of digital signage, transforming it into a mass market.

Platform economy and digital signage

The basic idea behind software platforms is simple: an open environment allows third-party providers to join and expand the system through standardized interfaces. Digital platforms, operated by trusted companies, offer reliability and foster loyalty. The more users a platform has, the more all market participants benefit – known as the network effect. Successful platform examples include Amazon, Uber, and Booking, which provide access to a large number of customers for many providers.

According to a 2019 study by Harvard Business School, MIT, and the University of Surrey, the top 43 listed platform providers achieved nearly twice the growth rate, profit, and valuation over 20 years compared to the 100 largest companies in the same sectors, but with only half the number of employees.

To offer digital signage to numerous companies, global platform providers are essential, not just from Samsung's viewpoint. Display manufacturers are ideally positioned to establish such sales and technology platforms. Contrary to industry concerns, VXT isn't meant to replace other CMS but to efficiently make them available to a global clientele. The VXT content management system and remote device management solutions are just one app among hundreds.

Large installed base required

Independent software providers know the challenges – software development and support are costly and require sufficient scaling. A new development costs between one and two million euros and is needed every ten years. This development effort should be spread over a broad base of users or subscriptions. With less than 100,000 active standard licenses costing between 10 and 15 euros, software platforms can hardly succeed in the long term.

However, large companies building global platforms are able to leverage their existing business to reach the required user numbers and generate new leads simultaneously.

Limitations of platforms

Platforms are most effective for highly standardized offerings that are easy to compare, which contrasts with the current state of digital signage

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– complex, less standardized and an unusual mix of technology and content. Therefore, platforms are not the right distribution model for complex, global enterprise tenders. In the entry-level segment, however, easily accessible solutions have an advantage. Intuiface, for instance, has demonstrated for years how a low entry barrier using a no-code CMS can lead to large projects. Similarly, Telelogos, available in the SAP Appstore, benefits from easy access and certification by the ERP giant.

Platforms like Samsung VXT or PPDS's Prostore automate the sales process and generate new leads. While platform fees are due upon contract signing, they are considerably lower than other sales channels.

Promoting technology standards

In addition to the business model, platform models also bring standardization of interfaces. Not only Samsung's own SoC platform – it's likely that only partners with native Tizen support will be released for the platform – but also other industry interfaces for remote device management, analytics, payment service providers, as well as service and support, could be standardized. For the industry, it would be a progression if well-documented and well-maintained open APIs were increasingly used. It would mean that fewer special solutions need to be developed and maintained.

Apart from Samsung Tizen, LG WebOS, ChromeOS, and Windows, there's hope for a standardized Android and Linux interface instead of the numerous ones used today. Having fewer interfaces, compared to the current well over one hundred, would be beneficial. The rapidly increasing IT security requirements alone demand a small number of secure and certified protocols and interfaces.

Major service cloud providers like Amazon (AWS), Microsoft (Azure), and Google (Cloud Platform) are already ensuring increased standardization on the provider side and could also act as a sales platform. Digital signage providers already achieve significantly higher conversion rates when customers use the same service cloud platforms.

Who are future competitors?

Samsung is currently the first digital signage provider to actively offer its platform worldwide. Other visual solutions providers, such as PPDS (Philips) and LG, have similar concepts in development. Almost all relevant display and LED providers are working on remote device management solutions, and some are also developing often rudimentary CMS solutions. However, only a handful of providers will be able to establish large platform businesses, and not all of them will succeed.

Outside the digital signage sector, companies like Adobe with the Experience Cloud, Salesforce, SAP, Oracle as ERP providers, or IT providers such as Microsoft and Google could enter the market. However, it's probably too early for them to do so – for now, the industry is observing how Samsung VXT performs in the market.

Little enthusiasm from partners

After its global launch, skepticism about VXT prevailed in the industry, despite the attendance of key managers from Samsung Electronics at ISE for the first time. The responsible Vice President, Alex Lee, is also unusually open and approachable for a Samsung manager.

However, established industry giants are concerned that Samsung will now also enter the software business, potentially diminishing the value for integrators. Samsung will need to build trust, and partners would be well advised to examine the platform closely.

After all, the platform economy concept could revolutionize the digital signage value chain and turn the small digital signage market into a mass market. To the benefit of many market participants – but under changed framework conditions. Digital signage must be easy to buy, install, and operate. This is where VXT, and likely similar platforms launching in the coming months and years, come in.

It's not yet clear who will establish themselves, but there may be no alternative to platforms for the industry's further development and expansion to broad B2B markets.

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SOFTWARE RANKING

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To guarantee that their platform always meets the latest innovation and security standards, digital signage software providers generally require a large number of licenses.

Florian Rotberg

In the digital signage software industry, size matters: Developing and maintaining modern platforms requires significant capital. Tech stacks evolve rapidly, pushing established digital signage CMS providers to regularly update or recreate their products. Typically, a complete overhaul is needed every 8 to 10 years, costing around 1.5 to 2 million euros.

Modern cloud-based solutions on AWS, Azure, and Google Cloud are cheaper, making it easier for new providers to enter the market. While not groundbreaking, these solutions suffice for standard deployments. Despite consolidation and exits, the market has maintained a four-digit number of participants for years.

Size for success

However, it's widely understood that software providers need at least 100,000 active licenses to stay viable. Market leader Stratacache boasts an installed base of over 2.5 million, although not all licenses operate under the SaaS model.

Many ISVs struggle with direct sales in the long term. Indirect sales through partners and distribution are slow to scale, although they yield acceptable average license prices. Support, especially across different time zones and languages, is often financially unfeasible for smaller providers. An exception is Intuiface, which has established a successful direct sales model in the international digital signage industry.

Consolidation ahead

The industry is undergoing consolidation, a process only briefly interrupted by the pandemic. We are once again seeing great interest and rising company valuations.

By the end of the decade, we anticipate 5 to 10 major players dominating half of the market for large projects. In addition, however, there will still be hundreds of specialists and regional champions. The road towards one standard software is still a long one.

Disruption and change

The global digital signage market will be undergoing its largest transformation yet in the next three to five years. Long-awaited consolidation will result in a few globally significant providers and dozens of specialists.

In the long-tail business, hundreds of small providers will persist in their efforts and may even find temporary success. Sales will become more professionalized, and major tenders will only be won by leading providers – either ISVs or integrators with their own software – due to IT security and certification requirements.

Global Ranking
Digital Signage-CMS 2024

invidis.com

1M+

1M+ LICENSES

1. Stratacache (Scala etc.)
2. Samsung (Magicinfo & VXT)

500K+

500K+ LICENSES

3. Uniguest

200K+

200K+ LICENSES

4. CRI (Reflectview, Clarity etc.)
5. Poppulo (FWI)
6. Navori Labs
7. Broadsign
8. LG CMS Cloud Solutions
9. Brightsign
10. Vertiseit (Grassfish, Dise)

100K+

100K+ LICENSES

11. Spectrio
12. Appspace
13. Telelogos
14. Easescreen
15. Visix
16. Xibo
17. Korbyt
18. Zetadisplay
19. Mood Media

<100K

LESS THAN 100K LICENSES

Deneva (ES)
Dimedis (DE)
Intuiface (FR)
Novisign (IL)
Nowsignage (UK)
Nsign.tv (ES)
Pads4 (NL)
Raydiant (US)
Signagelive (UK)
Wallboard (US)

(Selection, in alphabetical order)

INTEGRATOR-EXCLUSIVE CMS

Coates (AU)
Econocom (ES)
M-Cube (IT)
Mood Media (US)
Visual Art (SE)
Zetadisplay (SE)

(Selection, in alphabetical order)

OTHER

Adobe Screens
Videri

(Selection)

Note: The invidis Software Ranking 2024 refers exclusively to active licenses.
Even if the calculation is significantly more complex and may deviate from the previously published figures, this is a realistic reflection of market developments.

New players coming from unexpected directions – such as Canva – will shape the digital signage software market in the future.

Photo: invidis

FUTURE OF SOFTWARE

New Boys in Town

The digital signage software market is set to look very different in the future. New players, from hardware manufacturers to creative platforms and DooH start-ups, are disrupting traditional distribution and buying models.

Florian Rotberg

Over the past five years, the digital signage market has seen remarkable development. The focus is shifting from hardware to software and services. While hardware has come to be regarded as interchangeable, software and services are becoming more important. In the early days, software accounted for less than 5 percent of projects due to one-off license costs. Today, differentiation is happening more through software and services that can be subscribed to via monthly payments.

Today's platform offerings, which make up 15 to 20 percent of project costs, are very different from past CMS licenses. The evolution from product to solution to platform has changed the market. Many small CMS providers have become insignificant, new ones emerge regularly, and hardware manufacturers are discovering recurring software and service revenues as the new holy grail. How will this shift towards software and services continue to shape the business?

Hardware OEMs in the software market

The digital signage software market is getting uncomfortable – the launch of Samsung VXT marks the first time that a major hardware manufacturer has dared to enter the market with a platform beyond just a CMS (*see also page 32*). In the future, VXT will offer everything from remote device management and CMS, to an app store and a DooH platform – not limited to Samsung's Tizen OS and compatible with established software solutions. Samsung's global sales power is likely to convince independent software vendors (ISVs) to offer their solutions via the VXT Appstore for long-term sales.

Samsung is leading the charge, but almost all major visual solutions providers are investing in or testing "recurring software and service revenue" businesses. Display manufacturers without the financial capacity are partnering with external platform providers to operate platforms for them.

The new generation of software and service offerings differs from the past; they are not free add-ons for displays but aim to provide a long-term revenue stream, especially as display margins decrease. These platforms learn from past mistakes and are not limited to their own products; they're now manufacturer-independent.

Visual solution providers like TPV (PPDS/Philips) are taking a less disruptive approach with their remote device management solution, Wave, and Prostore. Similarly, Brightsign offers first-generation media players in exchange for new, more powerful, and energy-efficient players in a large-scale replacement program. In addition to new hardware, the upgrade also offers the option of integrating new Brightsign cloud services into the subscription model. With over 2 million digital signage media players, some in use for ten years, there's considerable potential for Brightsign and its partners.

New offerings

New platform offerings and modular tools like Remote Device Management (RDM) are driving innovation in the digital signage software market that is still dominated by medium-sized businesses. They help to establish new subscription-based business models and increase the visibility of new value-creating tools.

In some vertical and geographical markets, price competition for standard CMS offerings is intense. However, new modular platform offerings are creating visibility for the value of individual components such as RDM. The much-maligned VXT, in particular, is entering new price dimensions. The CMS is priced between 20 and 40 US dollars, with RDM costing an additional 10 to 20 US dollars per month.

These subscription models now allow software providers to establish direct relationships with end customers, whereas licenses used to be processed indirectly via partners. This newly formed relationship leads to improved product quality through direct feedback. Not all market participants – especially integrators – have come to terms with the new distribution of roles in the value chain. However, direct subscription models are becoming standard in the B2B market worldwide.

Alternatively, digital signage integrators are developing their own software or considering acquiring established providers like Stratacache, M-Cube, Zetadisplay, Visual Art, Spectrio, and CRI. This approach allows them to offer everything from a single source.

IT and ProAV integrators, regardless of size, have so far stuck to the traditional division of roles between integrator and ISV. However, they may struggle to compete with fully integrated providers on price for certain projects in the future.

To have or not to have?

Until now, the Composer has been the heart of every CMS, the function that enables users to create digital signage content. However, the era of monolithic software suites dominating the field may soon come to an end. Many end customers now prefer modular headless CMS architecture to avoid duplication, reduce costs, and deliver content more efficiently across all channels.

One of the first consolidated components is digital asset management (DAM) solutions. These maintain videos, images, and texts centrally in a shared database, transferring them to the CMS via APIs. This eliminates unnecessary duplication and effort.

External composers in digital signage are likely to be driven by generative AI tools from major creative platform providers like Adobe Firefly and Canva, or individual integrations from OpenAI. Leading digital signage software companies have been discussing internally for some time now whether separate composers will still be necessary in the future, or if cross-CMS composers will become standard.

Certain digital signage functions such as template programming, scheduling, distribution,

→

playout, device management, and proof-of-play reporting will still require dedicated tools. However, there's a lack of standards in the digital signage industry, both in software and hardware.

Endless disruption

Disruption in the digital signage software world isn't limited to media-independent DAM or composers. New players like DooH specialist Framen are challenging the established value chain. They question whether software should cost network operators anything or if there are alternative ways to finance it. Framen, a Berlin-based start-up, aims to revolutionize the DooH and digital signage market and has gained support from notable investors. Axel Springer, Europe's largest newspaper publisher, now holds a majority stake in Framen, providing legally secure access to GenAI platforms. These capabilities are currently unmatched in the digital signage market, and the Berlin start-up knows how to use this advantage.

Framen's in-house CMS not only offers full programmatic DooH connectivity but also an intelligent, GenAI-supported composer, making it easy to create digital signage and DooH content. Soon, they'll introduce Dynamic Content Optimization (DCO), automatically adjusting campaign motifs and content based on real-time data.

With the Axel Springer publishing house behind it, Framen developed a new CMS solution.

Photo: FRAMEN

In retail media networks, the motif – whether photo, video, text or price – is automatically adjusted in size and design if the sales figures at the checkout are not satisfactory. The platform also already translates thousands of news items fully automatically with GenAI.

Do DXPs still need a digital signage CMS?

Established digital signage software providers are facing disruption not only from free offerings like Framen but also from a different direction: global retail and QSR chains are developing their own customized solutions, completely abandoning third-party CMS solutions.

QSR menuboards and promotional displays in supermarkets are highly integrated, data-driven digital signage solutions. They often serve as playout channels for multi-million-dollar DXP (Digital Experience Platform) platforms. The central DXP platform handles intelligence such as campaigns and pricing based on real-time ERP and CRM data, requiring only a small software player for digital signage playout.

For global corporations and their digital consultants (Accenture, Deloitte, EY), digital signage screens are just one of many playout channels integrated into the DXP framework. Stand-alone digital signage experience platforms are viewed as too complex, expensive, and slow. Adobe, with its Adobe Experience Manager (AEM), long relied on the dedicated digital signage player Adobe Screens to fill the missing gap with a standard solution. In recent months, however, the creative software group has lost interest in Adobe Screens and is debating on whether to continue investing in the solution.

With around 40,000 active licenses, Adobe has never really been able to establish itself in the market. This is because globally active Adobe AEM enterprise customers prefer in-house development over Adobe Screens due to additional subscription fees.

While more Fortune 500 customers are toying with the idea of using powerful customized software players instead of a CMS, something that will always be missing is remote device management.

The new killer application

There are certain challenges specific to digital signage that require dedicated solutions. One of those critical applications is remote device menagement (RDM). This is because business-critical digital signage and DooH networks require professional monitoring and active management. Much like in IT, Network Operations Centers (NOC) and RDM tools are crucial for maintaining such infrastructure.

Today, screens have become business critical in various settings such as airports, train stations, production facilities, and QSR restaurants. If screens fail, operations come to a stillstand, suffering immense costs and lost sales.

Digital signage-specific RDM tools offer features like remote view, control, execution, diagnostics, and analytics. Since many screens use SoC (System on Chip) with Tizen, WebOS, and Android, traditional IT tools are insufficient for digital signage applications.

While most display manufacturers offer their own tools, they often have limited functionality and support only their products. Cross-manufacturer-tools are rare due to the lack of standards and complex development. However, most network operators have mixed networks with displays and hardware from different manufacturers.

The requirements for RDM tools are evolving to include soft factors like color calibration, as true color reproduction is crucial for many brands, especially in digital in-store touchpoints. The only established multi-platform provider is SignageOS, supporting over 100 different displays, players, and operating systems.

INVIDIS COMPASS

How to Choose the Best Software?

In-depth and independent: The invidis Digital Signage Software Compass is the first tool to provide an independent, detailed comparison for the multitude of software solutions on the market.

Florian Rotberg

Analyzing hardware is a piece of cake compared to analyzing software. While you can easily measure performance metrics like SoCs, display brightness, or power consumption, software is much more complex: There are tons of features that often sound the same but are not. Some of them only reveal their limitations at third glance. Then there are features that every solution refers to under a different name. Moreover, digital signage software is often customized for clients. So, how do you compare it?

With the invidis Software Compass, invidis has developed a comparison tool that is exclusively based on data verified by our own experts. With the launch, 25 leading CMS platforms are available for comparison, with many more being added continuously.

What makes comparison so complex

Most ProAV and digital signage integrators stick to platforms they know unless they've developed their own software. For end customers and IT integrators who are new to digital signage, choosing the right CMS platform is a 'mission impossible'. Even big players in the market with revenues beyond the one-billion-dollar mark look for guidance in the CMS landscape.

Eighteen months ago, we decided to address this issue. There are dozens of software comparison tools online, offering what seems like an independent comparison of digital signage solutions. However, these comparisons rely on data from the providers themselves and lack independent verification. These so-called comparison portals are mainly lead generation tools. Additionally, different customers have very different software requirements, which these tools often overlook.

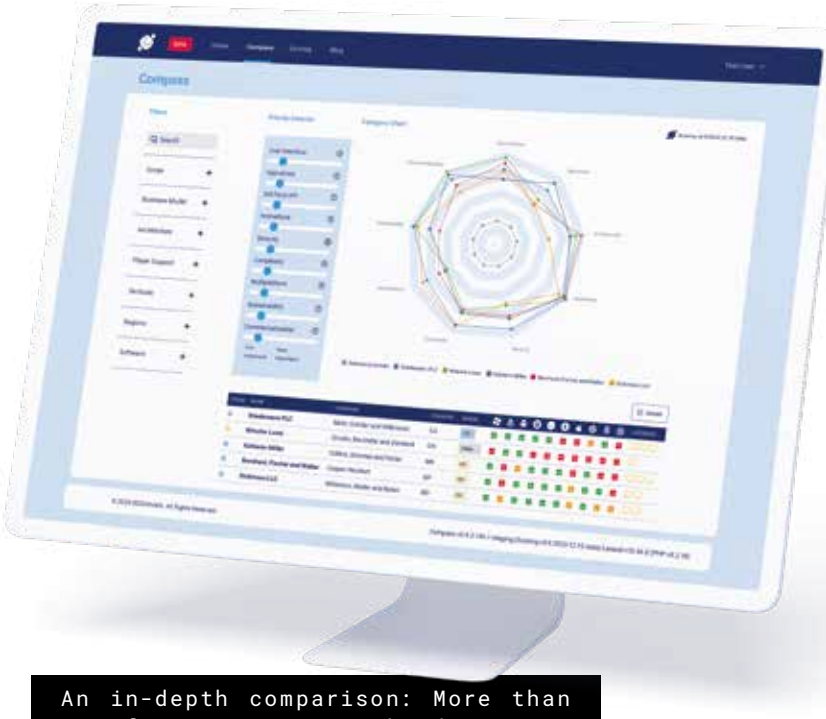
Our goal, on the other hand, is to cut through the jungle of solutions and make digital signage software comparable for customers.

The first independent portal

We rose to the challenge and created the invidis Compass, the industry's first independent comparison tool. We documented 120 features for each provider, verifying them through personal interviews. We analyzed corporate strategies to assess the solutions' future viability and evaluated the completeness of their offerings, identifying strengths and weaknesses.

We developed the Digital Signage Compass to provide:

- A comprehensive platform covering digital signage software topics
- Expert knowledge with editorial independence and neutrality
- Transparency in a fragmented market
- An independent guide to signage software



An in-depth comparison: More than 120 features are weighted against each other in the Software Compass. Graphic: invidis

invidis Software Compass – the most important facts

Where to find the Compass?
compass.invidis.net

How do I get access?
Through an annual subscription

What's the price of the subscription?
2,750 euros *(2,000 euros until June 24)*

Which solutions are compared?
We are starting with 25 of the most popular software solutions. More will be added gradually.

The invidis Software Compass is a premium offering from invidis consulting, continuously evolving. It starts with 25 of the world's leading digital signage software solutions, analyzed over recent months, with many more in the pipeline. New features of the covered platforms will also be added regularly.

Users – end customers, integrators, and software market companions – can evaluate their individual requirements based on ten categories to find the right software solution for them.

The invidis Digital Signage Software Compass is designed for:

- End users looking for the perfect digital signage solution
- IT/AV/DS integrators without a software platform
- Integrators with their own software solutions looking for alternatives /for benchmarking
- Independent software vendors (ISVs)

Introductory offer

For the launch of the invidis Compass, we're offering an annual subscription at an introductory price of 2,000 euros net until the end of June 2024. From July onwards, the regular annual subscription will be 2,750 euros net. One subscription is enough for company-wide use.

In addition to the most comprehensive software comparison in the industry, subscribers to the invidis Software Compass also get access to exclusive invidis industry analyses and market commentaries.

The invidis Digital Signage Software Compass is a comprehensive resource and platform for digital signage software topics, offering expert knowledge, editorial independence, and transparency in a fragmented market. Our current focus is on digital signage content management systems, soon to be complemented by remote device management (RDM).

Photo: Sikov/Adobe Stock

IT security has become a core discipline for digital signage software developers in recent years.

CYBER THREATS

Security First

Digital signage software is breaking out of traditional silos and integrating with other ecosystems, which significantly increases the importance of IT security.

Florian Rotberg

Digital signage software is subject to the same security requirements as other professionally used software solutions. What's to be avoided are system vulnerabilities in the software code that hackers may use to access programs, steal data, and damage systems.

To prevent software threats, security should be an important part of software development and testing. In the past, smaller software providers had often underestimated the issue of security, thinking challenges like phishing, DDOS attacks, or attacks on cloud services and the software supply chain were a challenge global providers had to face. However, experience has shown that digital signage platforms with a manageable number of licenses are just as vulnerable as office tools used by millions.

Now, software security is a top priority for most major providers, driven both by customer and cybersecurity insurer scrutiny. This is where providers whose tech stacks are based on large service cloud providers like Amazon, Microsoft, and Google have a certain advantage, as their serverless components and container applications are tested by global developer teams.

Other providers rely on alternative operating systems or software integrations. Google, for example, promotes ChromeOS, which allegedly has never been hacked, and Brightsign offers a robust "self-healing" operating system. Cingerine, on the other hand, opts for a software combination similar to that used in security routers.

Attacks on the software supply chain

The IBM Cost of a Data Breach 2023 report looked into attacks originating from the software supply chain. It found that in 12 percent of surveyed companies, attackers breached a software provider's network and deployed malicious code. This compromised software was then used to attack

the customer's data or system. Digital signage software developers are therefore under increasing scrutiny.

The study also revealed that the average cost of a data breach resulting from software supply chain compromise was 4.63 million US dollars. It took an average of 294 days to detect and contain the breach.

For independent software vendors (ISVs) and integrators with proprietary software, security should be considered at every stage of development and deployment, with regular testing. Companies nowadays place a lot more importance on cybersecurity when evaluating software providers. Instead of just filling out long Excel spreadsheets as in the past, sophisticated penetration tests are now common. These are often conducted by external experts on behalf of cybersecurity insurance companies, rather than the companies' own IT departments.

The digital signage industry, traditionally still made up of medium-sized businesses, is having a hard time when it comes to cyber security. Providers with older technology stacks and lacking IT security-certified processes, such as ISO 27001, often fail in tenders or even lose existing customers.

EU AI Act and other regulations

New laws, like the Cyber Resilience Act and the EU AI Act, are on the horizon for European companies, including digital signage providers and their customers. Global companies also face regulations from other jurisdictions, like the US and China. Previously voluntary reporting of cybersecurity incidents and practices has become mandatory.

The use of GenAI tools, such as large-language models like ChatGPT, must comply with legal requirements. The previously frequent trial-and-error principle with public and confidential data must be controlled throughout the organization. Some digital signage providers are turning to private GenAI models to ensure customer data protection.

As more companies adopt an identity-first security approach, the cybersecurity focus is shifting from network security to identity and access management (IAM). IAM solutions protect remote access to company resources like apps, files, and data. A typical example is multi-factor authentication (MFA). However, secure access is not just limited to employees, but also includes contractors, suppliers, business partners, and individuals using private devices.

Integration of IoT devices

Gartner predicts that by 2026, 64 billion IoT devices will be connected to the internet globally. Up to now, these have mainly been personal devices, like fitness trackers, voice assistants such as Amazon Echo and Google Home, and home appliances.

In digital signage projects, IoT devices have played a minor role, largely because they typically use specialized B2B sensors, which are less common and therefore less susceptible to B2C cyber attacks. However, Samsung's IoT for Business, introduced at ISE 2024, is opening up the professional digital signage industry to the millions of B2C devices based on Smartthings or Smartmatter.

The increasing number of devices offers potential entry points for malicious actors. Unlike PCs, most IoT devices have limited computing and storage capabilities, making it challenging to install firewalls, antivirus software, and other security programs. Consequently, IoT attacks are among the most discussed issues in cyber security.

ARTIFICIAL INTELLIGENCE

Faster, Safer, More Beautiful

Generative AI is revolutionizing content in all fields – the digital signage sector is no exception to that. Many digital signage providers are already working on the AI software of the future.

Florian Rotberg & Balthasar Mayer

Artificial intelligence is especially suitable for monitoring large amounts of data points and detecting anomalies. Artificial intelligence takes over routine tasks in network operation centers (NOC) and remote device management, tasks which today are either provided by expensive personnel or not at all. As beautiful as most dashboards look like in pitches, in practice proactive network and endpoint management is still the exception and not the rule.

GenAI in the spotlight

The general public is currently mesmerized by GenAI à la ChatGPT, generating texts, images, videos or even code from prompts. Almost all digital signage providers are testing the possibilities of automating content creation via AI tools.

The best experiences for end customers are GenAI-supported tools for content creation and automatic content adaptation. Creative tools like Adobe Firefly generate thousands of individual photos in minutes and dynamic content optimization (DCO) optimizes digital signage content for the target group and real-time data from the checkout.

One of the thought leaders in digital signage is Signagelive. The UK company has been testing various AI-based tools since the launch of OpenAI two years ago. Signagelive provides users AI-based content-optimization for text, pictures, templates and recently added video. The ISV integrated the AI video rendering software from the Serbian start-up Plainly. This allows users to automate the manual process of adapting individual spots to different locations.

Previous AI tools for the creation and playout of digital signage content mostly use HTML5. The integration of Plainly in Signagelive aims to bypass the need for HTML5 through AI video rendering. This means that the automation should work independently of the computing power of the screens in the digital signage network.

Using different channels

The French no-code ISV Intuiface also integrated standardized interfaces to GenAI and Large Language Model (LLM) programs early on. Now the company introduced the Intuiface Coding Assistant, creating Intuiface code automatically. This means that digital signage experiences can be created with little or no coding knowledge.

Predefined and user-generated prompts can be sent to LLMs which provide the individual code in real time. Depending on the selected GenAI tools, text, images or even sound can be altered in seconds. At ISE 2024, Intuiface presented the integration of Whisper – an AI-based audio tool processing voice prompts by microphone. The Intuiface-based museum way-guiding application displayed immediately the fastest route to the exhibit.

The future of coding

As shown by the Intuiface showcase, artificial intelligence has also become an integral part of software development. AI-based software development enables organizations – not only digital signage businesses – to find sufficient human software developers. ISVs with an older tech stack are particularly often looking for new and additional developers, as many recent university graduates prefer modern Integrated Development Environments (IDEs).

AI increases efficiency by speeding up the development process and automating manual tasks. Code development in particular is being revolutionized by AI tools. But the tools also provide coding errors, hallucinations or security holes. The role of human quality assurance is becoming increasingly important as automation increases.

Standard tasks can be developed reliably with GenAI tools, also because the corresponding data is widely available. However, the time savings for developing complex code for customer-specific business logic have so far been small.

Security also affected

The testing of security vulnerabilities – penetration testing or pentest for short – is also carried out by tools with AI algorithms and LLM models, which make the identification of vulnerabilities and malicious software in a network and computer system easier and faster. Traditional penetration testing methods can take a long time to manually scan a network and identify potential vulnerabilities. But hackers are also upgrading in this way, so a holistic cybersecurity concept is becoming increasingly important with regard to AI (*see also page 54*).

AI is also playing an increasingly important role for display manufacturers. Samsung, LG & Co. rely on AI as hardware accelerators and graphics optimizers for scaling content and improving image quality. The next hardware case for AI will be dedicated AI chips in media players and SoCs, which, like graphics chips, carry out dedicated AI computing operations more efficiently than the CPU. The next AI revolution will take place on the edge; AI has already become standard in the service cloud.

SUSTAINABILITY

Green Software

Not only hardware manufacturers can contribute to a more sustainable digital signage industry. Software developers can follow rules to make their products more energy-efficient.

Florian Rotberg

Sustainability is primarily the task of hardware developers, system integrators and network operators – with this assumption, most software developers put the pressure for more sustainability away from themselves.

But ISVs and software developers also play their part in green signage and can take actions that matter, such as choosing sustainable data centers, using computing resources efficiently and reducing data volumes.

Efficiency and awareness

The Canadian DooH platform provider Broadsign is considered an ESG role model in the digital signage industry. For two years, the software company has consistently converted its organization, products, and actions towards sustainability.

Among other things, like net zero ambitions, Broadsign follows the Green Software Foundation's Principles of Sustainable Software Engineering. The non-profit organization is supported by Accenture, Google, Intel, Microsoft, Siemens, and other large corporations.

The principles of Green Software, which are being constantly adapted, are:

- **Carbon Efficiency:** Build applications that emit the least amount of carbon possible.
- **Energy Efficiency:** Build applications that use the least amount of energy possible.
- **Carbon Awareness:** Consume as much electricity as possible with the lowest carbon intensity.
- **Hardware Efficiency:** Build applications that use hardware with the least amount of embodied carbon possible.
- **Measurement:** Focus on step-by-step optimizations that increase the overall carbon efficiency.
- **Climate Commitments:** Understand the exact mechanism of carbon reduction.

Quite a few topics, but they are closely linked to each other. Based on these principles, software patterns and practices can be deducted.

For Broadsign, this meant switching to energy-efficient cloud-based, micro-service computing in green data centers. North American customers were relocated to Azure data centers in Quebec that are powered completely by sustainable electricity – primarily hydroelectric. Microsoft Azure and Amazon AWS data centers around the world were selected based on sustainability considerations.

Integration on all business levels

Developing energy-efficient and hardware-friendly applications is not a sprint but a marathon. Especially when companies like Broadsign have made several acquisitions in recent years and operate software with different origins.

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TECHN


STATISTICS
Per 90
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0.52
85
Non-Penalty xG
0.37
51
Shots Total
2.76
63
Assists
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71
Shot-Creating Actions
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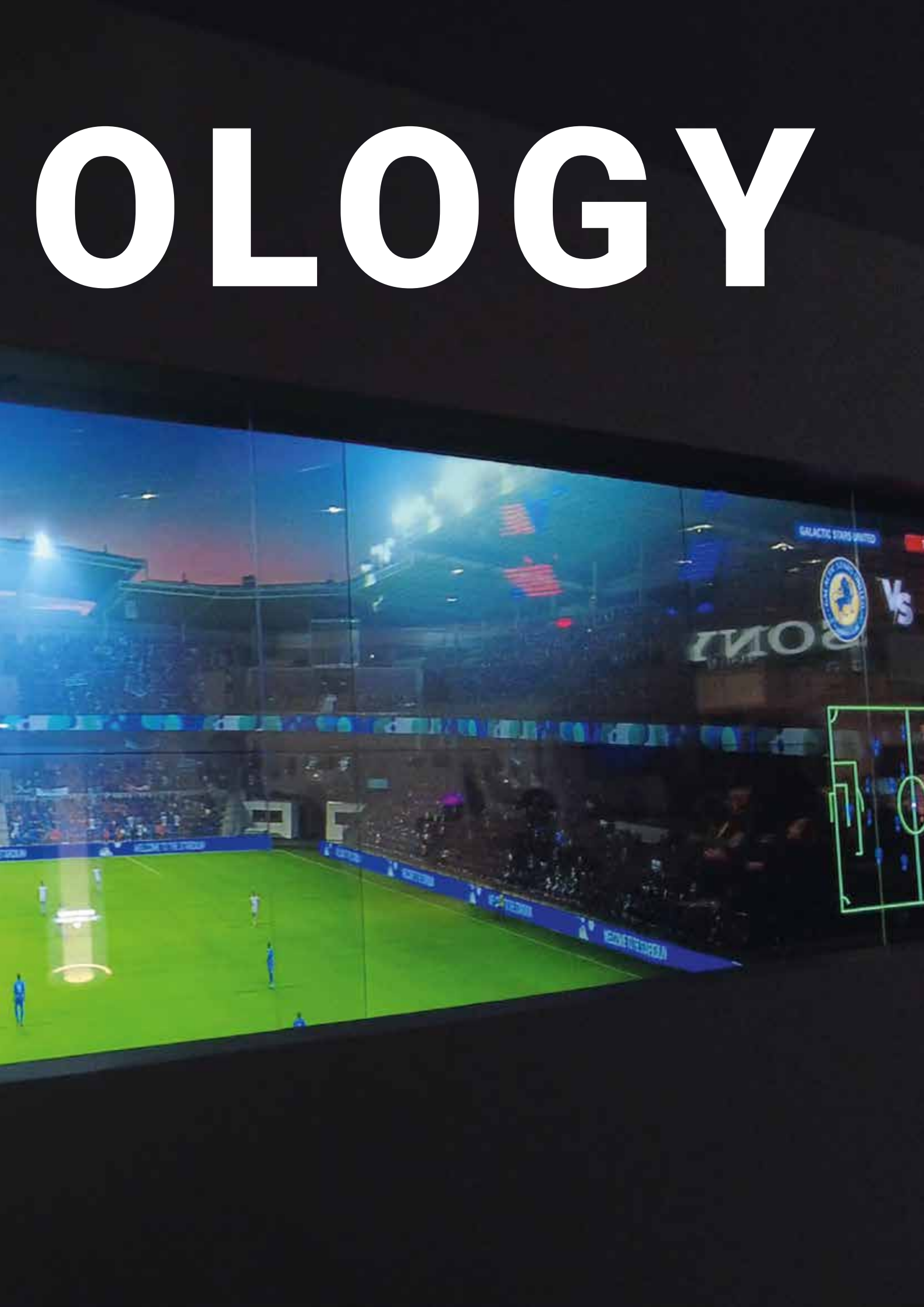
85

OLOGY



LAS VEGAS SPHERE

A Whole New LED World

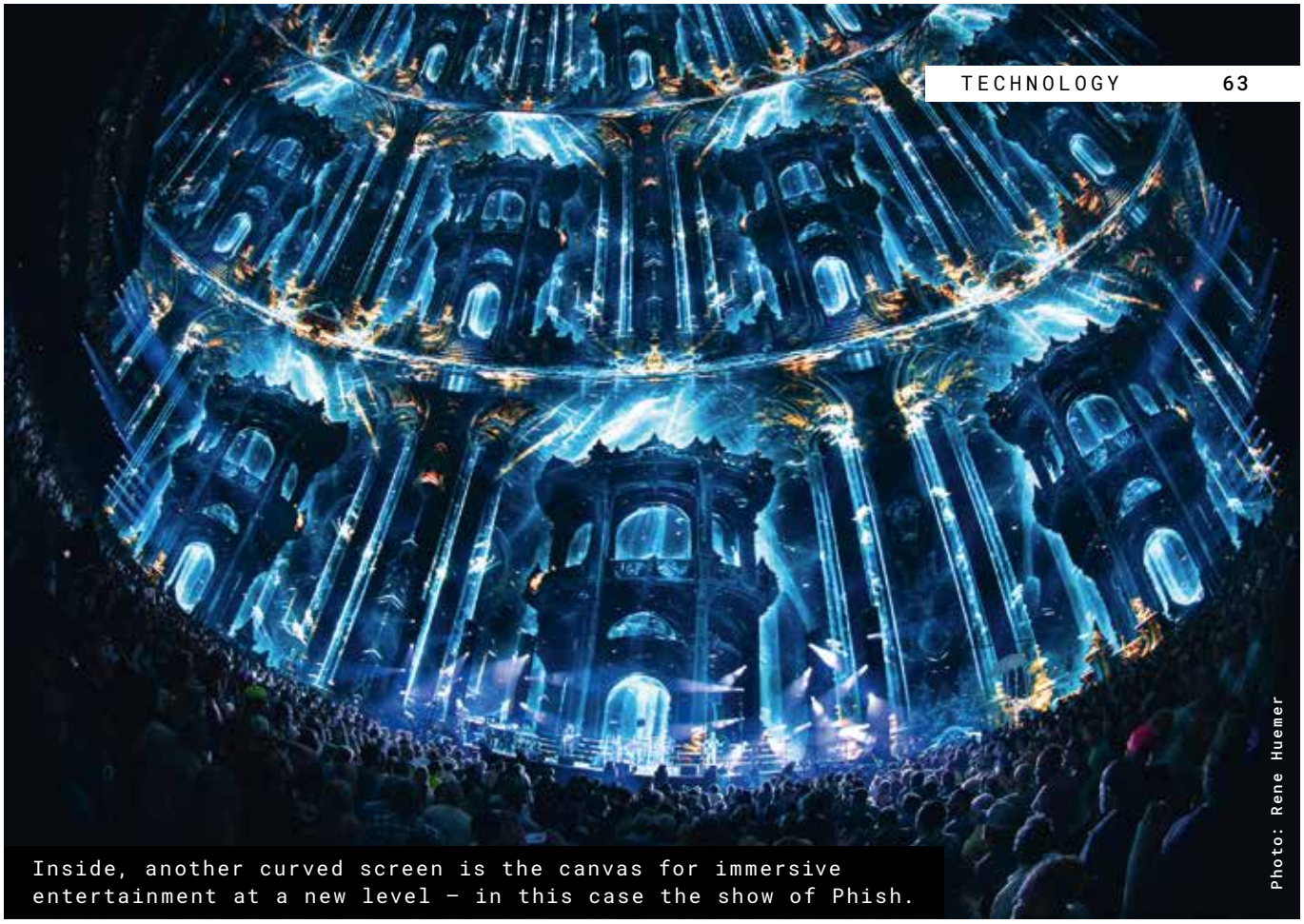
More than 1 million units, just on the outer facade: With a huge tailormade LED structure, the Sphere in Las Vegas redefines immersive experiences – inside for events, outside for advertising.

Dave Haynes

When the giant LED-clad Sphere was switched on for the first time in Las Vegas on July 4th 2023, the world was wowed and the architecture community intrigued by the potential for designing and using big urban structures as media facades. The record-breaking entertainment facility, that was built for a staggering 2.3 billion US dollars, has altered the Vegas skyline, and also triggered a wave of new interest and activity from different stakeholders, reaching from marketing over creation to architects.

Fireworks for a giant LED structure: The Sphere in Las Vegas went live last year.

Photo: Andy Gillmore



Inside, another curved screen is the canvas for immersive entertainment at a new level – in this case the show of Phish.

Photo: Rene Huemer

Saco Technologies, the Montreal company that designed and manufactured the custom LED display technologies for both outside and inside Sphere, is fielding new interest from architecture and engineering companies around the globe.

"I think there were a lot of people and projects that were waiting to see if something of this magnitude could be pulled off successfully," says Jonathan Labbee, Co-CEO of Saco, "and now that it has, it has awakened a new level of giant projects around the world."

Long list of mega-projects

Saco already had high profile mega-structures on its reference list – most notably the dynamic custom LED lighting arrays on Dubai's Burj Khalifa, the world's tallest structure. Some 28 kilometres of Saco's V-Stick LED light sticks clad the east face of the skyscraper, turning it into a massive screen that's used after dark for such things as movie promotions.

Projects in oil-rich parts of the Middle East tend to involve extra zeroes in the capital budgets, so it's not surprising that Saudi Arabia, UAE and Qatar are the place where many of the more ambitious projects are surfacing.

"We normally work with the architects," explains Labbee, "so the architects who represent the owners and the property developers are coming to us with more and more intricate and large projects, which is super-fun … because not only do we develop technology, but we've designed an entire workflow, and toolset, in order to design and efficiently manufacture and install and run these types of projects."

"We're getting large resorts in the Middle East right now, which is in a big flux of change, especially in Saudi Arabia," adds Labbee. "So there are a lot of these giga-projects or mega projects spawning all over the place, and we're getting a lot of inquiries on that side, which is great."

There were also advanced plans developed for a sister Sphere to rise up in the east end of London near the 2012 Summer Olympics primary events area, but that has stalled out because of planning objections involving concerns such as light pollution.

Sphere was originally developed and owned by Madison Square Garden Entertainment Corp., but it has since been spun out as its own company. However, the two companies are run by the same executive chairman and CEO, James Dolan.

→


Photo: Alive Coverage

Impression from the Phish show

A façade like no other

The Sphere officially opened in late September 2023 – with the rock band U2 playing a series of sold-out shows backed by purpose-created visuals on the venue's vast indoor display. An immersive, experiential movie called Postcard from Earth – shot by filmmaker Darren Aronofsky for this venue – also runs on the big screen. More events are planned and executed – for example, the show of the band Phish in April this year.

The height of the Sphere is 366 feet, or about 111 metres. The width of the Sphere is 516 feet, or about 157 metres. It is touted as the largest spherical structure in the world.

The outside surface of the building is called the Exosphere, and has an area of 580,000 square feet, or about 53,880 square metres. Conventional outdoor LED product would not be able to conform to the contours of the Sphere, so Saco used interlocking triangles dotted with hockey puck-like discs, called S-Poks – each containing 48 LED diodes. The S-Poks support 256 million colors.

There are roughly 1.2 million LED units installed, and the distance between each S-Pok is eight inches, or about 20 centimetres. That equates to a pixel pitch of 200 millimetres, while most of the big casino resort LED marquees along the nearby Las Vegas "strip" are using pitches of less than 10 millimetres. It is a display meant to be viewed from a distance. Puck-like Saco LED discs – 27,000 of them – also dot the rooftop of Sofi Stadium in Los Angeles.

Inside the Sphere, the curved screen that somewhat wraps around the seating area is 160,000 square feet; or about 14,860 square metres. Saco's LEDs have a 9-millimetre pitch and the resolution is a mind-wobbling 16K.

Directional audio is hidden and passes through the screen. That involves some 1,600 permanently installed and 300 mobile X1 matrix array loudspeaker modules, from Berlin-based audio tech company Holoplot.

About 10,000 seats in the building – maximum capacity is 20,000 – are equipped with a sophis-

ticated haptics system that lets ticketholders literally feel the experience, including motion, different temperatures and wind.

Customized 7thsense video wall processing and show controls, connection boxes and data extenders round out the infrastructure.

"I can tell you," says Labbee, "when the client first turned on that Exosphere, I think it was like a huge 'Wow!' moment for everybody, including ourselves. It was spectacular, and then when we had the chance of going to the opening for U2, that, I've got to tell you, was pretty emotional. I don't think any one of us could have imagined what it would look like in its finished format."

"We'd been working on this for five years, and we'd see it in sections, and we'd see the whole master plan. We'd see all this stuff on computer screens or in real life as mock-ups. But when you see the finished scale on the interior, it is mind-boggling," says Labbee.

New display format

Spheres or domed structures have been around for decades, and there are specialty LED manufacturers in China that include big LED balls in their product line-ups. Just a few hundred metres away from Sphere, the main public lobby of the Resorts World casino complex includes a big LED-clad sphere as something of an attraction and events and services marketing tool.

Nothing else, though, has been done at Sphere's scale – and one of the interesting, perhaps unanticipated outcomes of the project has been a steady parade of clever creative efforts that fully work with the shape – from giant basketballs, golf balls and snow globes to moons and jack-o-lanterns.

Sphere has its own creative team and testing environment, and Labbee says the company has also put together templates that help third-party creatives understand how to work with a display canvas that is wildly different from conventional screens and billboards.

"I have to say the creative guys have done an incredible job of coming up with some very interesting and creative ways of making Sphere look amazing, and you really never get tired of looking at it. I mean it's populating my Instagram feed and probably everybody else's. It's just incredible what they're able to put on there, and I think that they've been very clever in getting collaborations from different types of artists and collaborators."

Lighting up cities

While changeable LED mood lighting is increasingly common on the office towers that create city skylines around the world, full motion media facades on buildings are still relatively rare – with most of them in China.

In western countries with tighter local approvals and community feedback, like what was experienced in the derailed London Sphere project, it's unlikely versions of this project would pop up in big cities as giant ferris wheels have done.

"You have to think of the Sphere as the extreme, right?" reasons Labbee. "It has a completely adaptive skin. So the skin, when there's no media on it, obviously, it's this dark surface, but the media at that point is designed for the environment. So, in Las Vegas, it's appropriate to have this very kind of flashy razzle-dazzle stuff."

"But if you were doing something in San Francisco, or somewhere in the UK, where you need it to be more subtle, the content would move maybe at a different speed and be produced in a different manner," he adds. "Maybe it'll be more focused on lighting effects rather than full crazy commercials and that kind of thing. So, having adaptive skin is actually a really good thing in any environment, because you can tailor it and adapt it as you move along."

While custom display projects like Sphere and the Burj Khalifa get the attention, Labbee says it is less known that Saco's main business is more conventional LED jobs, with finished product available to order. Saco LED product is used, for example, on the award-winning experiential Moment Vault display at Orlando's main airport. Saco has also done a lot of work with temporary displays that move around from venue to venue with touring acts like Madonna, Elton John and U2.

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The Sphere was targeted to take about three years to design, manufacture and install, but the pandemic stretched that to five. Working out of a 218,000 square foot facility in Montreal, Saco scaled up to 380 people to deliver the Sphere project. But in more normal times, it has about 120 staff.

Labbee concedes there will inevitably be other companies that will bid on the kinds of grand-scale projects that Saco has been delivering. But his company has 35 years of experience, and more to the point, a track record of successfully delivering jobs of this size that competitors can't also tout.

"I think it would be very difficult. I mean, also, there's a mindset that goes along with it. We don't choose the path of least resistance," he says. "I think the people that work here would get bored. But at the same time, you have to evolve over years, adapt the tool sets in order to accomplish these very difficult geometries, because everything needs to support it from the back, as well."

Labbee emphaizes that you have to be able to do proper wiring diagrams, power layouts and all that comes with it. "Because it affects the entire architecture of that building. So we're doing this kind of work by choice, let's put it this way!"

Las Vegas and the Sphere match perfectly together.

Photo: Sphere Entertainment

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DIGITAL ON GLASS

Window of Opportunity

Transparency for architects and designers is quite literally an emerging window of opportunity for the digital signage industry, as the technologies that blend visuals with glass evolve and mature.

Dave Haynes

Transparent LCD technology has been around for more than a decade, but it will always have limits on size and how it can be used. However, new technologies using tiny LED light emitters are opening up a wide range of possibilities for architects, media owners and commercial property developers.

Imagine the full glass curtain wall of a large building abruptly switching from the clear glass surface people would expect, to something that looks and behaves like a large format LED billboard – and is fully visible even in broad daylight.

The digital signage and ProAV communities got a real-world-look at what's possible during the 2024 Integrated Systems Europe trade show in Barcelona – when the host venue installed and switched on a micro-thin LED-on-foil-display on the inside windows of the main entryway. The resulting display greeted attendees, but also ran revenue-generating promotional video messaging from major exhibitors.

That technology was applied to an existing glass surface, but the big step forward the industry is now seeing is LED sandwiched into laminated

Large-format transparent LED in Barcelona: Muxwave screen on the Fira Gran Via

Photo: invidis

Transparent MicroLED from Samsung

sheets of commercial building glass – so that new or renovated structures can are able to in with windows that can double, full-time or on-emand, as digital signs.

The road to clear

Transparent LCD and, more recently, transparent OLED have both demonstrated the potential for screens that can show full-motion visuals, but also allow a view through to products or even raw surfaces like building walls that have 'character.' They've also functioned as an information overlay to a larger screen visible through the transparent screen.

But transparent flat panels have distinct limitations:

- Screens are fixed sizes, just like conventional commercial displays, so they can't easily fill large sheets of glass like windows or glass room dividers.
- Transparent LCD displays rely on LED lights around the periphery, and have limited brightness. OLED displays are self-emissive and gorgeous, but like transparent LCDs they don't have the brightness properties to win a battle with natural light.

Projection film applied to glass can turn things like sidewalk-level shop windows (the Chicago start-up Visual Feeder leases distressed retail sites, for example), but even with brighter, longer-lasting laser projectors, they're best suited to delivering visuals once the sun goes down.

Mesh LED displays – lightweight versions of conventional cabinet-based LED display products – have greatly improved in recent years, in both the quality of the visuals and the industrial design of the back sides of products. They can look stunning for people looking at the display side, but inside shops and other buildings, the view is unavoidably compromised by the necessary grill and grid system that holds the display together.

LG caused a stir several years ago when it introduced a film that could be applied to glass surfaces and offer high levels of transparency. But the pixel pitch – the distance between LEDs embedded in the film – limited the output to low resolution visuals best viewed from long distances. The finest pitch available is 14 millimetres, with a transparency rated at 53 percent.

Other transparent plastic LED-in-film-products have emerged from China, but many suffer from limitations similar to those of rigid mesh LED systems, they can look quite good from the front, but the plastic-clad systems, used to run wires and both power and control the LEDs, compromise the visual appearance of the back sides.

Samsung showed transparent MicroLED at ISE 2024 – near-microscopic lights embedded in glass. But the display – using R&D product from

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white-label display manufacturer AUO – is likely years from being commercialized, and having costs that will make sense for the people who design and specify built spaces.

Foiled window-scapes

That big curtain glass window-scape on the entry to the Fira Gran Via in Barcelona uses a product from the Chinese manufacturer Muxwave. The company is arguably the noisiest and most known among several that are marketing displays that are effectively sheets of a super-thin, almost screen-like material that holds and interconnects tiny LEDs.

The sheets are adhered to the inside of windows, and the displays have sufficient brightness to enable full motion visuals to pop even in full daylight conditions. The approach is reminiscent of static advertising printed on sheets of super-thin perforated vinyl, that are then applied to objects like commuter rail cars and buses to create rolling ad displays. The perforations allow light to pass through windows, and for people inside to see out.

In the case of the Fira Gran Via window, the view from inside is only nominally compromised by the film, and people working outside of the ProAV and digital signage industries might not even notice it.

Glass sandwiches

Instead of augmenting existing glass surfaces, several technology companies have started marketing product that embeds LEDs inside building-grade glass – so during the construction or renovation of properties, the glass that goes up for windows has nearly-invisible screens built in.

Methods vary, but the general approach involves LED lights connected and powered by tiny wiring that's sandwiched between sheets of commercial glass and then fitted in place just as they would be as regular building windows. The difference is they're active and visible in full daylight.

A Korean company, Captivision (also marketed as G-Smatt), has been in the market for several years and has window-based displays installed around Asia and in deep-pocketed Arab countries like Dubai and Qatar.

The Chinese firm Nexnovo, known mainly for its transparent mesh LEDs, has expanded into building glass, and now markets something called laminated photoelectric glass offering up to 92 percent transparency and 5,000 Nits.

A Pennsylvania company already active in what it calls performance glass – or safety-rated, construction-ready glass – has launched a spin-out company operating from the same building, making LED embedded versions of its glass available to its architecture and construction clients.

Clear Motion Glass is specifically in the glass business, working with architects and engineering companies. It sources a super-thin LED mesh grid from a Chinese manufacturer and puts it between sheets of laminated glass.

"We use EVA, which is ethyl vinyl acetate," explains company founder Todd Stahl. "Then we'll actually put the LED mesh grid on top of that, then we put another piece of EVA, then we go with the finished component of the sandwich, another piece of glass, and we stick them in an oven, we run a certain cycle, and about four hours later, we have a laminated piece of LED glass."

The glass panels can be as large as six feet by 10 feet, and multiple panels can be stitched together, with barely evident seams, to use in applications like glass curtain walls.

Stahl says he was concerned from inception about servicing and the risk of dead LED lights inside baked sheets of glass. That concern also gets raised by customers.

"We actually have a pre-laminating process we run to replicate what is going to go through the stressors of the lamination process," Stahl says. "And if we find a bulb or a diode that might not be working, we can replace it after that pre-cycle of lamination."

"Now, on the flip side, let's say it's out there, it's in the field," he adds. "If we use annealed glass on the front surface, so, annealed is not tempered, but the backlight would be tempered, so you're

still dealing with a safety-rated tempered and laminated window. We actually have a drilling process where we can drill a core out of the glass, and we can actually replace that LED diode. What our experience is that once they come through lamination so far, with all the panels we've been working on we have not had one go out."

The company is just emerging from R&D and start-up mode, and while there are no installed and active jobs to reference so far, "we're working on probably over 50 to 60 current projects that are in the design phase," says Stahl. "But almost everyone we're working with has signed NDAs."

Reactive windows

Most glass-based LED projects are about experience, wow factor and revenue, but a Dutch start-up is taking a very different approach with its glass product.

Videowindow has started marketing its Biophilic Glare Control – patented technology that can create a dappled natural light experience by rendering a canopy of leaves that is tied in to light sensors and Videowindow's software. The term biophilic refers to designs that connect to nature, and those designs are rendered on switchable glass – the kind of glass that can be dimmed by software controls.

While the technology allows for monochrome messaging for environments like airport gate areas that have a lot of glass, the focus is more on improving the waiting experience for travelers (by reducing glare) while also lowering energy costs for cooling and heating.

Transparent future?

The world's biggest architecture firms now have in-house digital expertise, and entire buildings are being designed to be active and changeable using LEDs for displays and ambient lighting. So It only makes sense that the glass surfaces that are major components of any building will also be regarded as potential displays.

LED glass from Clear Motion Glass

Photo: Clear Motion Glass

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E-PAPER

Supersizing Shelf Labels

Almost no energy consumption, readable even in direct sunlight: A new digital signage category is emerging with large-format e-paper displays. The first display manufacturers already launched commercial e-paper solutions.

Florian Rotberg

For a long time, e-paper displays were primarily found as monochrome displays on ESL. Millions of digital price tags can be found in food retailers, electronics stores and increasingly at Starbucks & Co. More than 600 million 3-inch ESLs have been rolled out in the past seven years alone. But e-papers are now available in color and in screen sizes relevant to digital signage. Upcoming e-paper displays are aiming to replace printed large-format posters in public spaces.

E-paper films are now widely used in many areas - here on a concept art car from BMW, the BMW I5 Flow Nostokana

Photo: BMW Group

More and more digital signage providers are offering e-paper displays. Philips (PPDS), Dynascan and Sharp are the first large format display manufacturers to integrate e-paper-based displays into their existing digital signage ecosystems. All three rely on colored e-paper displays from E Ink. The Taiwanese manufacturer is the undisputed e-paper world market leader with more than 90 percent market share. In addition to leading ESL providers such as BOE (Vusion), visual solution manufacturers are developing professional digital signage solutions around E Ink's e-paper screens.

Green and in color

E-paper technology was developed by Xerox in the 1970s but was never commercialized. The breakthrough was achieved by a team from MIT who further developed the technology based on electrically charged particles in colored oil in the 1990s. With the help of Philips, among others, the then only monochrome e-paper technology was brought to market readiness.

Today, E Ink offers the latest generation of Spectra 6 e-paper displays with 60,000 colors, almost 180 degree viewing angles and paper-like, high contrast. The big advantage: The content of e-paper displays is changed by briefly applying an electrical voltage and then remains stable for several weeks. This means that the displays do not consume any energy in standard operation. However, showing video or animated content is not technologically possible because it takes several seconds to display new colored content.

The Spectra 6 technology enables a wide range of colors for the first time. This is made possible by an ink system with four colors that reach the surface depending on the voltage level.

In contrast to ESL, e-paper displays have not yet played a major role in the digital signage market due to the limited application scenarios. But with the increasing demand for sustainable digital signage solutions and significantly increased display sizes, e-paper is becoming an interesting alternative to printed posters. According to E Ink, e-paper displays are approximately 12,000 times more efficient in terms of carbon emissions than comparable LCD displays and 60,000 times more efficient than printed posters.

As always, the comparisons should be viewed with caution, but it remains undisputed that colored e-papers, with reduced application options compared to LCDs, consume almost no electricity. Philips supplies the current Tableaux e-paper generation via POE, Sharp relies on batteries.

From small to extra large

While e-paper has been standard at ESL for years and is installed in millions of e-book readers as Amazon's Kindle, e-paper for digital signage is quite new. With screen sizes of 24 inches and larger and especially color displays, e-paper now became interesting for digital signage. An 88-inch color e-ink based video wall was introduced at Touch Taiwan in April 2024. The six-element wall has ultra-narrow bezels that appear even narrower than LCD video walls. E Ink calls the latest DooH solution Low Carbon Advertising Displays and hopes for great market interest. E Ink is also planning larger, large-format e-paper displays with AUO and other display manufacturers.

In Germany, Deutsche Telekom is testing e-paper displays for DooH networks in cooperation with Philips. E-paper displays are fixed to roadside telecom cabinets providing local DooH marketing and circumventing regulations. In Germany, non-self-illuminating DooH screens under one square meter do not require approval.

The latest E Ink Kaleido e-paper displays will also be available as an outdoor version. They have an operating temperature between -15 and +65 degrees Celsius. Temperature-resistant screens are required, especially for use in Europe and North America as a DooH screen and for departure boards transit stops.

E Ink also offers its own e-paper technology as a film for cars – a spectacular example was the new Art-BMW Flow I5 Nostokana – and for architectural use as an e-paper tile. The E Ink Prism Tiles can display digital signage content as well as graphics and patterns and are already being used in corporate lobbies.

OUTDOOR DIGITAL SIGNAGE

The Endurance Test

Wind, weather, and vandalism – outdoor digital signage systems need to protect a screen against extreme weather conditions. Here is how specialized manufacturers achieve this.

Florian Rotberg

A high-brightness screen plus weather-proof housing? Outdoor displays need more than that. Developing smart city kiosk systems or display totems for outdoor applications is a complex business. The companies that produce them take them through a rigorous test procedure to ensure they withstand moisture, dust, and harsh weather – and fulfill the standards of IP classes according to EN 60529.

Against water and dust

The first digit of the IP rating shows how well the enclosure protects against solid objects like tools, fingers, dirt, and dust, which can damage circuits. Dust especially can harm electronics quickly, like in subway stations due to brake dust.

The second digit shows how well the enclosure withstands moisture and wetness, including water drops, splashes, and submersion. Ideally, outdoor digital signage systems should have an IP65 rating to fully protect electronics from dust and normal water pressure. While IP68 offers maximum protection, it's not always necessary, unless facing extreme conditions like saltwater spray.

Against wind and vandalism

In addition to water, the wind load needs to be taken into account, especially for the event of major storms. A stable ground foundation is essential not only in Asia but also in Europe due to increasing storm frequency.

The impact resistance of the protective glass is also important, especially for free-standing smart city and DooH totems. The higher the IK value, the better the resistance to vandalism. IK values range from 1 to 10 according to EN 50102. While IK values up to 05 generally protect against fist blows, IK10 is needed for protection against objects like baseball bats.

Heat ages electronics

The biggest challenge for high-brightness displays is heat management. Sunlight-readable displays emitting up to 5,000 nits generate a lot of heat, and sunlight itself can raise ambient temperatures to 80 degrees Celsius. When designing outdoor totems, this must be considered. Typically, open-frame displays are used to allow both the display and the electronics to stay cool. Taiwanese manufacturer Dynascan, for instance, cools not only the back but also the space between the glass and the display, where solar radiation generates the most heat.

It's crucial that the cooling system is entirely separate from outside air to prevent dust from entering the housing. Instead, the heat must be dissipated via heat exchangers. To ensure smooth operation in all temperatures, Dynascan conducts extensive climate chamber tests in both summer and winter conditions.

This is where large specialized outdoor kiosk manufacturers have an advantage. Smaller manufacturers, in comparison, often do not have the resources for such comprehensive testing. Large display manufacturers, on the other hand, might test the screens diligently, but the overall construction of the totem or kiosk must also meet outdoor standards.

At Dynascan, digital signage totems are extensively tested, including tests against water ingress.

IP protection classes according to DIN EN 60529

IP	First digit: Protection against foreign particles	IP	Second digit: Protection against water
0	No protection	0	No protection
1	Protection against particles of over 50 mm ø	1	Protection against dripping water
2	Protection against particles of over 12,5 mm ø	2	Protection against dripping water (15° angle)
3	Protection against particles of over 2,5 mm ø	3	Protection against falling spray water (up to 60° against vertical)
4	Protection against particles of over 1,5 mm ø	4	Protection against splashing water on all sides
5	Protection against dust in harmful quantities	5	Protection against water spray from any angle
6	Dust-proof	6	Protection against strong water jets
	Example: IP65 Dust-proof + protected against water spray from any angle	7	Protection against temporary submersion
		8	Protection against permanent immersion
		9X	Protection against high-pressure jets

The IP protection class is made up of two digits. Standard outdoor systems usually comply with IP65.

SAMSUNG THE WALL

Hightech Made in Europe

In Slovakia, Samsung manufactures its MicroLED flagship The Wall for European customers – around the clock and under strict clean room conditions. invidis visited the factory for first-hands insights.

Balthasar Mayer

A spartan corrugated metal sheet building with a simple door and a sign above reading “Entrance The Wall”. The entrance is inconspicuous, but it leads into the most modern production facility on the Samsung factory site in Galanta, Slovakia. From here on, staff and visitors can only continue in a full-body protective suit. This is where the premium MicroLED product The Wall is produced – in Europe, for Europe.

Compared to the rest of the Samsung factory, where around 1,000 employees work, the The Wall section is small, but has a lot to offer: 180 employees work around the clock here to manufacture The Wall because the complexity and high added value of the manufacturing process do not allow the machines to stand still. The LEDs are not just assembled but manufactured from scratch – LED chip after LED chip is placed on the board with high-tech precision.

Samsung Electronics has been based in Galanta, around 60 kilometers from the Slovakian capital Bratislava, since 2002. The location is the largest

Visiting the The Wall factory is only possible in protective gear.

Photo: Samsung

Samsung production facility in Europe; the core business is the assembly of Samsung TVs in sizes beetween 40 and 85 inches.

The Wall as a flagship

Since the launch of the first series in 2018, sales numbers of Samsung's MicroLED flagship solution have developed very well: The Wall has even become an industry synonym for high-quality LED walls, with pixel pitches between 1.68 and 0.63 millimeters. Today Samsung offers three series: IWA, IWB and IAB. In addition, Samsung has recently launched the IVC series, a The Wall solution for virtual productions.

In order to meet the increasing demand for the product, Samsung set up the manufacturing site in Slovakia in 2022. The implementation process, with support from the parent plant in Ho Chi Minh City, Vietnam, took three months, with production starting in April 2023.

With the Galanta production site, Samsung has not only been able to increase production capacity for The Wall, but also brought the value chain closer together – nearshoring: manufacturing closer to the sales markets. This not only reduces the carbon emissions of transportation – it also guarantees more delivery security in an increasingly shaky political and economic climate.

Building a modern LED fab costs roughly 1 billion euro, compared to 10 billion euro for a latest generation display plant. More and more premium brands are therefore setting up factories inside the big trading blocs. In Europe, besides Samsung, Chinese manufacturer Leyard produces the latest LED solutions – for local customers as well as for export to USMCA.

One of three factories

Galanta is one of three factories worldwide that produces The Wall. Each location covers certain regions of the world: Ho Chi Minh City ships to Asia and the Middle East, Mexico to North and South America, and Galanta in Slovakia to Europe.

The Slovakian plant specializes on two products: The Wall IWA and the all-in-one solution IAB. This means Galanta covers more than 90 percent of The Wall solutions sold in Europe.

"Samsung has built up production to respond to market demands," explains Ben Holmes, Marketing Director of Samsung Europe. "If the market changes, we will react to it again." In other words: Currently there are no plans to manufacture additional The Wall products in Slovakia; If there is a need for it in Europe, that could change.

Overall, the demand for fine pixel pitch LED is growing rapidly – as market data by Omdia, among others, show. While the proportion of solutions with a pixel pitch of less than 2 millimeters in the overall European DV LED market was 14 percent in H1 2019, it grew to 51 percent in the first half of 2023 – of which, according to Mark Taylor, European Head of LED, Samsung holds a market share of 38 percent.

A wealth of applications

When it comes to verticals, The Wall in Europe is experiencing growth in the corporate sector, among other use-cases – which also explains the popularity of the all-in-one solution.

However, there is also potential between standard applications and the really large, spectacular installations. Samsung illustrated that at ISE 2024 with various use cases.

Command and control scenarios are still a big topic. And not only in the narrower sense, but also in fields like medicine or in educational institutions. Samsung recently completed a project with a university that used The Wall to analyze individual movements in large flocks of birds.

The dense pixel pitches are also popular for design rooms in the automotive sector, as demonstrated by applications at Lucid and Hyundai. The manufacturer also sees potential for The Wall in virtual production setups outside of traditional film and broadcast sets. More and more companies are building production studios, for example to allow the CEO to communicate in a live broadcast.

In the future, if other market areas grow strongly in Europe, Galanta will respond.

MEDIA PLAYERS

Behind the Screen

Displays play the main role when you look at energy consumption in digital signage networks. But one needs to have a look at the media player, too.

Marco Wassermann

When talking about digital signage, we tend to focus on the actual display, somehow neglecting the accompanying internal or external player. Improvements during the past years have made players more powerful and put their energy consumption patterns more into the center.

Before 2015, a digital signage player was typically an Intel x86-based desktop PC within a compact case. With the rise of the (Intel) NUC technology, the size of the players and also the energy usage decreased rapidly. Additionally, other embedded technologies like Brightsign- or ARM-based platforms like Raspberry players are getting more powerful and can replace traditional PC-based players.

Finally, the rise of more powerful SoC-built-in players has dramatically increased performance which means integrators of today have multiple choices both regarding performance and energy-saving options.

The topic external media players vs. built-in SoC and slot-in players is hotly debated. An external player consumes additional electricity. On the other hand, the built-in SoC player cannot be deactivated. But more sophisticated touchpoint concepts require sufficient computing power, which is only available with external or slot-in media players. From a Green Signage perspective, slot-in media players have an advantage compared to external players as they share a common power supply infrastructure with the display.

In general, Android media players use less energy than their PC counterparts. Android needs less processing power, so you can use a player with less energy consumption.

Compared to the power consumption of a display, the players use only a small amount of energy. In the end, it is more efficient to replace existing displays with energy-saving models.

In a digital signage installation, not only displays and players are used, but also other components are needed to connect these, like network switches, routers, Wi-fi access points, HDMI splitters, range extenders, cables and connectors. These components have in common that they usually have the same power consumption regardless of the load that passes through them. A network access point usually consumes the same amount of energy regardless of how many clients are connected to it. Therefore, the only option to reduce the carbon footprint is to avoid unnecessary or additional components.

Saving Components

In digital signage installations, licenses are often calculated according to the number of playout players, even if they play the same channel at the same location. This often leads to installations where one player distributes the picture to many identical displays via an HDMI splitter distribution. This means that the additional HDMI splitters consume more power.

The best solution would be to use the existing SoC players in the displays and thus avoid additional components. But often the customer only looks at the monthly license fees and not at the energy costs. Additionally, some CMS developers do not make it easy for customers to change to a different model, e.g. depending on channel and location, with their licensing policy.

LG

Brighter OLED

Microlenses, algorithms and the ‘dragonfly technology’: This year, LG Electronics introduced several improvements to its OLED technology. Will this help with the adoption in digital signage?

Balthasar Mayer

A decade ago, LG Display launched commercial OLED displays for the first time. The form factor was fascinating from day one, but other issues such as lifespan, brightness and power consumption were not yet sufficient for digital signage use at the beginning.

Newest OLED update in

However, development progressed, and this year, LG introduced a new improvement called 'Meta Technology 2.0'.

With this advancement, OLED is applicable to large formats for the first time. As a result, LG Electronics' sister company LG Display unveiled an 83-inch OLED TV panel for the first time at CES 2024 in Las Vegas. The new OLED technology is expected to be integrated into many large OLED TVs ranging from 55 inches to 88 inches in the future.

Technology of the dragonfly

LG Meta Technology 2.0 comprises three main components: the 'Micro Lens Array Plus' (MLA Plus), the 'Meta Multi Booster' brightness optimization algorithm, and the 'Detail Enhancer' algorithm.

The Micro Lens Array technology contains a layer of micrometer-sized convex lenses – approximately 42.4 billion in a 77-inch 4K screen – that maximize light emission within the OLED panel, achieving peak brightness values. The production of these lenses, however, is a major technical challenge.

LG Display has conducted extensive research to optimize the angle of the lenses with MLA Plus and to emit even the minimal light that would otherwise be lost due to internal reflections. MLA Plus is also referred to as 'Dragonfly Eye Technology'. The numerous microlenses provide a wide viewing angle of 160 degrees while maintaining detail, akin to dragonflies that perceive their 360-degree field of vision through millions of convex lenses.

LG can achieve further software-based improvements with the 'Meta Multi Booster', which analyses every scene in great detail to improve not only the maximum brightness, but also the color brightness for a refined and optimized picture quality.

Color brightness now doubled

The new maximum brightness of 3,000 nits is achieved by combining these technologies. Color brightness doubles to up to 1,500 nits, 114 percent brighter than conventional OLEDs.

While there are currently no plans for digital signage integration, this could potentially be a breakthrough, as a lack of brightness has often been a knock-out criterion. Comparative tests will need to demonstrate how the technology performs in the challenging everyday digital signage environment, including the numerous retail lights and sunlight.

MARKE
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MARKET DEVELOPMENT IN 2023

Scale Does Matter

The evolution of the digital signage market in 2023 was characterized by mixed developments. While global players could grow their business and gain market share, medium and small businesses have been struggling.

Florian Rotberg

At first glance, the development of the global digital signage market in 2023 was disappointing, but it can be explained. After the end of the pandemic in 2022, demand for digital signage exploded – driven by post-pandemic related catch-up effects, the boom for energy-efficient digital signage solutions because of the energy crisis triggered by the Ukraine war and concerns about the reliability of the international supply chain.

The overheated market grew by more than 20 percent in 2022 while the digital signage industry entered 2023 with full warehouses. Naturally, demand fell in 2023, albeit much more than expected. Projects in retail in particular – with 50 percent the most important vertical market for digital signage – were postponed or canceled entirely. When retail is weak, the digital signage industry also feels it. The sharp rise in interest rates – and thus higher financing costs – and inflation, at unusually high levels, also dampened demand for capital-intensive digital signage projects.

At the end, demand for digital signage solutions consolidated worldwide, and 2023 ended at around the same level as the previous year. The industry did not plan for zero growth or even a slight decline – depending on the market researcher and market definition – after the boom year of 2022. Especially Asian hardware manufacturers had planned for another solid growth for 2023 based on the record numbers in 2022. The zero-growth reality met overambitious planning scenarios leading to wide disappointment.

2024 will still be a challenging year for the digital signage industry with low-single-digit market growth; a return to double-digit growth will not be realistic until 2025.

Growth happens elsewhere

But a look at the revenue data for the digital signage industry shows a very mixed picture. International integrators such as Trison or Visual Art were able to increase their sales by 20 percent or more. For larger market players, positive sales developments continued in the first quarter of 2024, like Vertiseit reporting +15.9 percent or CRI with +24 percent sales growth.

Since the end of the pandemic, there has been an increasing divergence in sales development among system integrators relevant to the digital signage market, not only in Europe. The large, internationally positioned pure-play and IT integrators with relevant digital signage business often record double-digit growth rates, while small and medium-sized providers lose market share or are just able to maintain sales level by sacrificing margin.

Increasing project requirements for IT security, certifications, sustainability and international scalability bring new challenges that are difficult

for smaller market players to meet. In the coming years, the trends towards platform economics and digital signage-as-a-service will further consolidate the integrator and ISV market around the large market players.

Digital signage integrators are increasingly faced with the question of whether they should continue to operate on the market independently of a CMS provider or offer their own CMS. Many of the internationally successful integrators, first and foremost Stratacache with Scala, consistently rely on a fully integrated offering with in-house CMS solutions. Other integrators, including Trison, but especially heavyweights such as AVI-SPL, Diversified and Econocom, choose from a basket of CMS offerings the best solution for their customers. But CMS-agnostic strategies are increasingly challenged, as CMS platforms and continuous API adjustments have become a strategic customer lock-in, and software and services have become a large part of total project revenue.

Photo: invidis

Companies like Stratacache/ Scala will be able to achieve further growth.

More changes in the software market

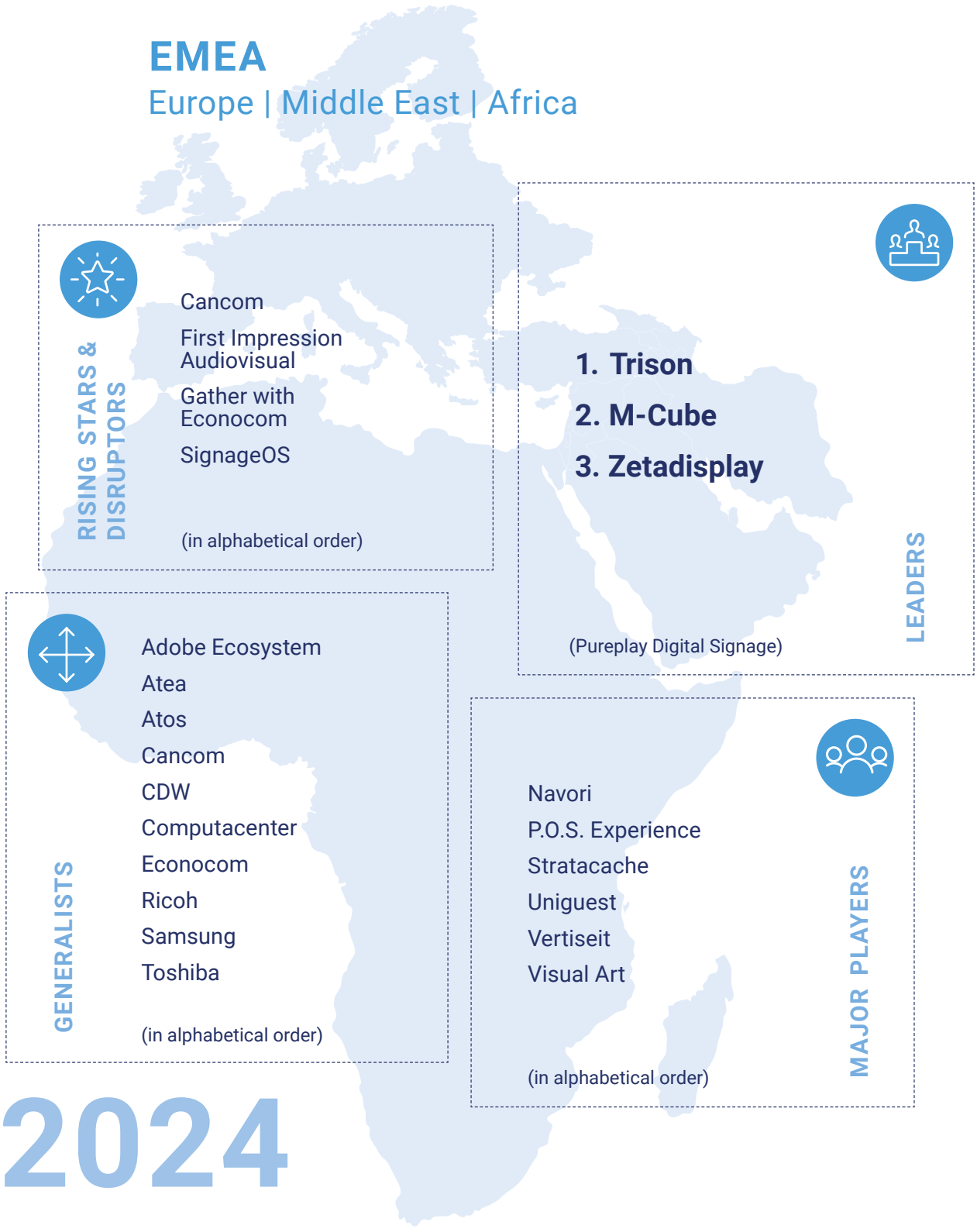
The invidis Digital Signage Software Ranking (*can be found on page 46*) is one of the most cited market overviews from invidis – and changes in the software ranking are also impacting the market compass overviews. This year we have rebuilt the ranking from scratch and consistently placed even more focus on recurring licenses. The market entry of Samsung VXT casts already its shadow and the industry is preparing for it.

ISVs and invidis reassessed installed customer bases built up over years in regards of the likelihood of converting them to a modern subscription model. For some ISVs lacking transparency, invidis reduced the active customer base in order to reflect a more realistic active license user base. In particular, white label on-premise contracts are now excluded, as customer control and the ability to upgrade do not lie with the ISV anymore.

Particularly worth mentioning are the recent developments at Broadsign, which now runs more than 400,000 DooH screens worldwide. New to the ranking are Xibo, the British provider that, in addition to the free open-source CMS, also offers a paid full-service CMS subscription, and Brightsign. The American media player manufacturer delivered more than 2.2 million digital signage appliances to date, a good 10 percent are operated with the Brightsign CMS, the vast majority of the purple media players run 3rd party CMS solutions.

Digital Signage
Market Compass

EMEA
Europe | Middle East | Africa



2024

spectrio

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RANKING

Digital Signage in the DACH Region

DACH 2024: Top 30 Digital Signage Integrators

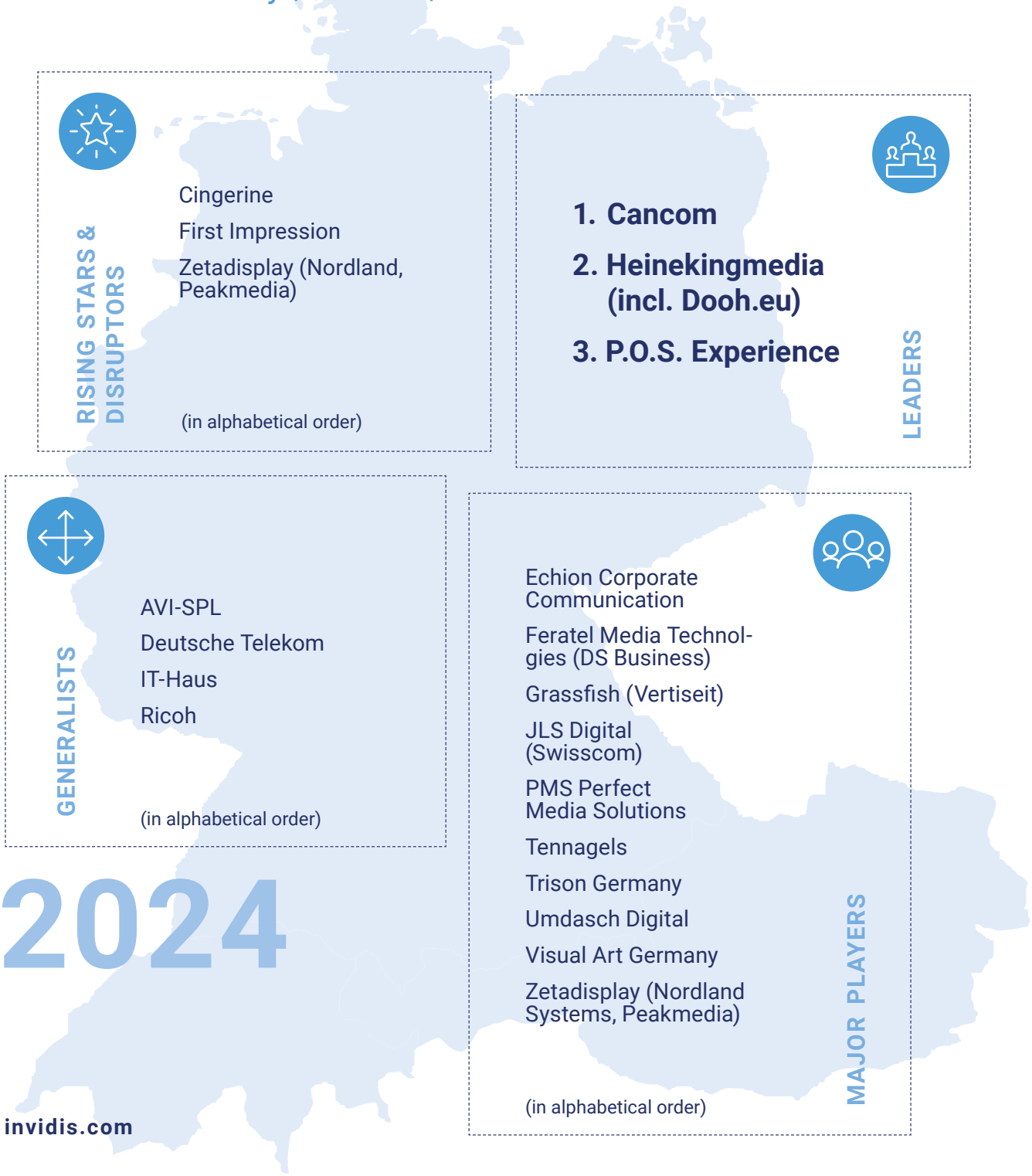
COMPANY	COUNTRY	CATEGORY*	REVENUE 2023 (IN MILL. EURO)
Cancom	DE, AT	TSI	50-75
Heinekingmedia Group (incl. DooH.eu)	DE	TSI	50-75
P.O.S. Experience	DE	FSI	30-50
JLS Digital (Swisscom)	CH	FSI	20-30
Zetadisplay (Nordland Systems, Peakmedia)	DE	TSI	10-20
Umdasch Digital	AT	FSI	10-20
Echion Corporate Communication	DE	FSI	10-20
Xplace	DE	TSI	10-20
PMS Perfect Media Solutions	DE	TSI	10-20
B12 Group	DE	FSI	5,0-10
Feratel Media Technolgies (DS Business)	AT	FSI	5,0-10
Grassfish (Vertiseit)	AT	TSI	5,0-10
Tennagels	DE	TSI	5,0-10
Visual Art Germany	DE	FSI	5,0-10
Trison Germany	DE	TSI	5,0-10
Stratacache (Scala)	DE	TSI	5,0-10
Kilchenmann	CH	TSI	5,0-10
Ben Hur	DE	TSI	2,0-5,0
IT-Haus	DE	TSI	2,0-5,0
ICT (DS Business)	DE	TSI	2,0-5,0
DMS	AT	FSI	2,0-5,0
M-Cube Germany	DE	FSI	2,0-5,0
AVI-SPL Germany	DE	TSI	2,0-5,0
Easescreen	AT	SW	2,0-5,0
4D Magic	DE	FSI	2,0-5,0
First Impression (Germany)	DE	FSI	2,0-5,0
MIB	DE	TSI	2,0-5,0
Evisco (DS Business)	DE	FSI	2,0-5,0
Bütema	DE	TSI	2,0-5,0
Cingerine	CH	SW	2,0-5,0

* TSI: Technical Service Integrator; FSI: Full Solution Integrator; SW: Software (Developer)
Note: All figures are based on reports from companies or on estimates by an advisory board
Source: invidis consulting GmbH, company information

Digital Signage **Market Compass**

DACH

Germany | Austria | Switzerland



RISING STARS & DISRUPTORS

Cingerine

First Impression

Zetadisplay (Nordland, Peakmedia)

(in alphabetical order)

LEADERS

1. **Cancom**
2. **Heinekingmedia (incl. Dooh.eu)**
3. **P.O.S. Experience**

GENERALISTS

AVI-SPL

Deutsche Telekom

IT-Haus

Ricoh

(in alphabetical order)

MAJOR PLAYERS

Echion Corporate Communication

Feratel Media Technologies (DS Business)

Grassfish (Vertiseit)

JLS Digital (Swisscom)

PMS Perfect Media Solutions

Tennagels

Trison Germany

Umdasch Digital

Visual Art Germany

Zetadisplay (Nordland Systems, Peakmedia)

(in alphabetical order)

2024

Cancom Headquarters in Munich

Photo: Cancom

CANCOM

Signage Across the Board

Since the beginning of the year, KBC subsidiaries in Austria and Eastern Europe also operate under the Cancom brand. How the new company positions itself and which services it focuses on.

Florian Rotberg

As of January 1, 2024, Cancom and K-Businesscom operate under the same branding – after the leading German integrator acquired KBC last year. But the consolidation is more than just a regional expansion to Austria, Eastern Europe, and Switzerland. “We complement each other perfectly in terms of expertise,” says Steffen Ludwig, Director Digital Media Solutions at Cancom. “It’s great to see the complex projects that our new colleagues in Austria have realized. Especially in the transportation sector, such as mountain railroads and train stations, as well as for DooH in general.”

Cancom in Munich previously pursued a very technical consulting approach, whereas in Vienna the focus was on the customer journey. "The joint team provides a change of perspective, which is good for all of us," says Ludwig. His specialist sales team now comprises 24 multimedia and digital signage experts.

Digital signage everywhere

Customers are approached via Cancom sales – 300 sales staff nationwide in Germany alone. "There are few relevant companies in Germany with which Cancom does not yet have a customer relationship," emphasizes Ludwig. In addition to the almost seamless IT team, a dedicated ProAV team within the Cancom organization is also available to him for installation and service.

Steffen Ludwig and his colleagues, along with the extensive sales team, successfully incorporate digital signage topics in any customer discussion in the communications environment. "Digital signage is one of our core technologies, and it slips into every consultation. Whether room signage or video conferencing systems – a connection to digital signage makes sense in any scenario."

Steffen Ludwig, Director Digital Media Solutions at Cancom

Trends as services

Cancom differentiates itself in the digital signage market with a focus on IT security, and in the past four years, it nearly doubled its ProAV/digital signage revenue. If required, Cancom hosts CMS solutions in accordance with the strictest IT security guidelines. For this, the company has its own fully redundant data centers in Germany and Austria.

According to Ludwig, most Cancom customers show interest in alternative financing models, from million-dollar projects to solutions in the thousands. Cancom even has its own banking license in Germany. "Almost everyone thinks X-as-a-Service is great, but so far many Cancom customers in the signage sector have stuck with the classic purchase model."

Green and remote

Last but not least, sustainability is a key consideration in all new projects for Cancom. Green signage has influenced decision-making, both internally and externally. "We choose hardware that is particularly energy-efficient and plan roll-outs as efficiently as possible. But sustainability at the expense of quality is not an option. A black screen is the worst thing that can happen."

Cancom actively explores remote device management to prevent system failures. Preferably, the company would like to provide customers with proactive monitoring, "but the willingness to pay for this service is currently limited". Cancom relies on its proven IT Remote Access Tools for digital signage projects. However, the mostly inhomogeneous digital signage hardware landscape in comparison to IT makes it more challenging than it looks from the outside, says Ludwig. But Cancom foresees an increasing willingness among customers to invest in this aspect and will be ready to deliver.

CREATIVE REALITIES

The One Million Mission

While big generalists like AVI-SPL and Diversified dominate the US market, CRI is relatively unknown outside North America, despite having 400,000 active digital signage SaaS licenses.

Florian Rotberg

Creative Realities is a digital signage integrator from Louisville, Kentucky. With a turnover of 46 million US dollars, the company does not play in the big ProAV league but is one of the largest pure-play digital signage specialists. Today, the company is listed under CRI, which was formed by merging three different integrators.

CRI targets retail, convenience, QSR, and entertainment vertical markets, serving major clients like Best Buy, Macy's, Verizon, and 7-Eleven, along with sports arenas and leisure centers. In 2023, CRI increased sales by 10 percent, and this year CEO Rick Mills aims for a 40 percent sales growth to over 60 million US dollars, with a major order already in the books.

CRI caters to large networks by using four different CMS solutions for retail, automotive, DooH, and QSR. They have installed 75,000 displays at Best Buy, 27,000 at Verizon stores, and the largest single-site installation is 3,800 displays at the Dallas Cowboys' AT&T football stadium. The latest contract involves providing digital signage equipment for over 1,000 bowling centers in the USA, aiming to deploy 12,000 displays and licenses within 18 months—an order worth 46 million US dollars, equivalent to the total turnover in 2023.

As a full-service integrator, CRI not only monitors 400,000 displays but also maintains one of the largest network operating centers (NOC) in the industry. Additionally, the company creates content for customers like 7-Eleven, provides retail analytics, and handles marketing for selected DooH and retail media networks.

CRI is a major player in the digital signage market of North America. While most of the Top 500 digital signage integrators have around 20 employees and sales of 2 to 4 million dollars with regional customers, CRI is well represented with several locations in the USA and Canada, employing 120 people.

To finance acquisitions and combat pandemic losses – when at the beginning of 2020, CRI had to write off 47 percent of planned sales in one week – the company took on high debts, which are now being paid off quickly since CRI is making good money again.

With a highly scalable digital signage platform, a new ERP system, and strong brand awareness, Rick Mills believes the company is well positioned. The goal is clear: to manage an installed base of one million displays as quickly as possible and achieve a turnover of 150 million US dollars. With the existing growth, this goal could be achieved organically in just over four years, but Louisville is also considering acquisitions — as long as the candidates fit the established SaaS business model and expand the geographical footprint. Given the size of the country, the aim of every integrator in the US is to be present in all major metropolitan regions.

Digital Signage **Market Compass**

NORTH AMERICA

USA | Canada

RISING STARS & DISRUPTORS

CRI
Moment Factory
SignageOS
Spectrio

(in alphabetical order)

LEADERS

1. **Stratacache (incl. Scala)**
2. **Mood Media**
3. **Uniguest**

(Pureplay Digital Signage)

BUSINESS PLATFORMS

Accenture Digital
Adobe AEM Ecosystem
Deloitte Digital
Microsoft
Oracle Ecosystem
Salesforce Ecosystem
Zoom

(in alphabetical order)

MAJOR PLAYERS

Appspace
AVI-SPL
AVI Systems
Brightsign
Broadsign
Daktronics
Diversified
Electrosonic
Korbyt (RMG)
Lenovo
Mvix
Poppulo (FWI)
Raydiant

(in alphabetical order)

2024

ZETADISPLAY

Growth Transformation

With a new management team, partly recruited from outside the industry, Zetadisplay is entering a new phase by adopting best practices from diverse industries beyond digital signage.

Florian Rotberg

When a new CEO joins a company, the questions arise as to its future course. This is also the case at the pan-European integrator Zetadisplay: Anders Olin succeeds Per Mandorf who successfully led the company through the turbulent pandemic and expanded the geographic footprint to the DACH region with acquisitions in Germany (Nordland) and Austria (Peakmedia).

In addition to CEO Anders Olin, new members of the management team include the two country managers for DACH, Stefan Hoffmann, who came from Google, and Jonas Wilhelm from Peakmedia as well as Diederick Sjardijn for Benelux and CFO Claes Pedersen, who joined Zetadisplay in the beginning of 2024.

Country managers will now take over the duties of Laila Hede Jensen as Chief Commercial Officer, who also left the company. “We need to be extremely close to customers – therefore half the management is responsible for customers now”, says Olin.

Zetadisplay is now full of new minds and fresh ideas. “We are one of the leaders in Europe directly present in seven markets, with a strong global customer base and a strong team. And we have an owner strongly committed to this investment, who wants to see the company grow – organically and with M&A”, Olin continues. He sees the company in a “growth transformation”. This challenge excites him, as he will be drawing on his experience of leading five similar growth transformations in different industries. “I see a great opportunity in the next five years to take Zetadisplay to the next level.”

Anders Olin, CEO of Zetadisplay

Learning from outside

Zetadisplay has rapidly grown in recent years through 11 acquisitions. For further growth, the new CEO is keen on identifying best practices beyond its own sector – from lead generation to software development and commercial services.

"I don't see the digital signage industry as a silo. This industry is just starting to mature, and it hasn't been benchmarked. It starts with people, processes, and tools."

The focus at Zetadisplay is on three topics: "Continue to grow and follow the customer, focus on global accounts and M&A." In the end, size and scaling are what counts to compete successfully in the market.

It looks like the integrator will soon become more agile and disruptive through adopting best practices from other industries. This is a fresh and more corporate perspective in an industry still dominated by small and medium businesses.

Acquisitions in Europe

The acquisition of Austrian Integrator Peakmedia in September 2023 gained attention in the DACH market. According to invidis analytics, this adds about 10 percent to Zetadisplay's topline and 40 to 50 percent to the existing DACH business. Peakmedia's customers include the Spar retail chain and Raiffeisenbanken Tirol.

The acquisition offers interesting opportunities to Zetadisplay. In addition to Austria and Germany, Peakmedia has installations in Central and Eastern Europe – including Slovenia, Hungary, Croatia and Romania – which could prove to be potential growth markets.

The company will for now continue to operate under the Peakmedia brand as part of Zetadisplay in order to utilize and build on the existing positive brand perception. At the same time, the integrator will be increasingly integrated into the group's wider offering.

At DACH integrator Nordland, which has been part of Zetadisplay since 2021, this integration is already much further advanced: the company has been operating as Zetadisplay Germany since the end of 2023.

The most recent takeover from Zetadisplay took place in the UK: At the beginning of April 2024, the company announced that it had acquired the British integrator Beyond Digital Solutions. Zetadisplay intends to strengthen its presence in the United Kingdom through the acquisition.

Photo: Alex Gretter

Retail Chain Spar – one of Peakmedia's Customers.

VISUAL ART

Into the Cloud

With 30 percent growth and the new cloud-native CMS platform, Visual Art believes it is well positioned. A particular focus will lie on retail media.

Florian Rotberg

In a challenging market environment, Visual Art is looking back on a very successful 2023. With a turnover of almost 30 million euros, the Swedes were able to increase sales by 30 percent – and have performed significantly better than the overall market.

"Last year was very good for Visual Art, even if the momentum slowed in the second half of the year," says CEO Pontus Meijer to invidis. The international customer portfolio with companies such as McDonalds, Subway, Lego, Circle K, 7-Eleven and Ocean Outdoor enabled the high growth. In addition to new business, the full-service integrator grew particularly with existing customers in new regions. In 2024, the company plans to grow again between 20 and 25 percent.

The most important development last year was the launch of the newly developed Visual Art Signage Player. The fully cloud-native CMS platform runs on all major digital signage hardware platforms and gives Visual Art – a longtime Samsung partner – more freedom of choice. The installed base of more than 75,000 displays is expected to be migrated to the new platform by the end of 2024.

Photo: Visual Art

Pontus Meijer, CEO of Visual Art

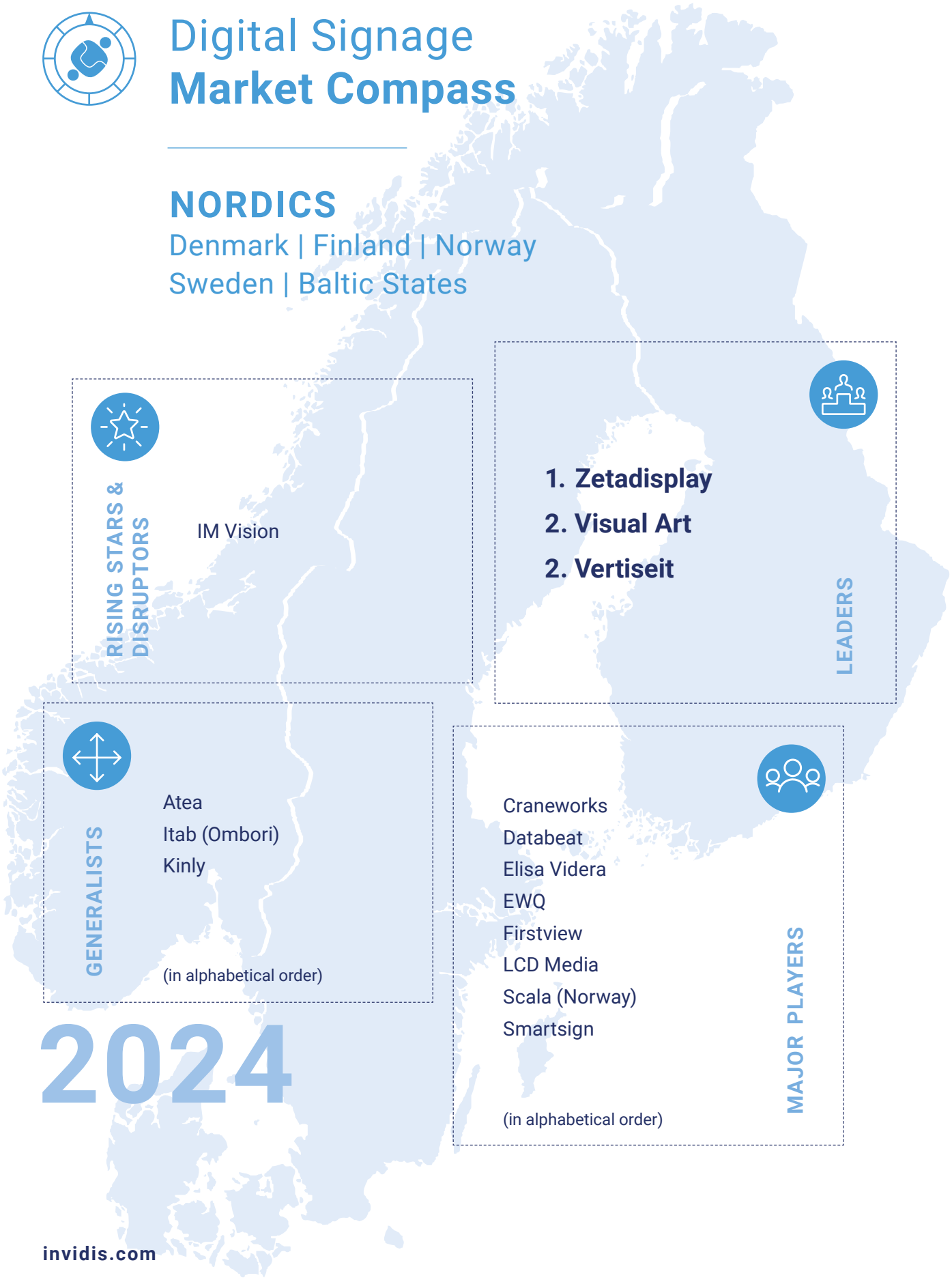
At the beginning of the year, Visual Art surprised with a staff announcement: the former CEO Andreas Lind rejoined the company as Retail Media Strategist. The DooH specialist left the integrator in 2019 with the curve-out of Visual Art's DooH business and sale to Ocean Outdoor. In his new role, Andreas Lind will advise Visual Art customers as a retail media expert.

Retail media is in Visual Art's DNA: Sweden's largest and most innovative supermarket chain has been one of Visual Art's most important customers for more than ten years: ICA was one of the first European retailers to display dynamic, data-driven digital signage content on large instore displays right next to the goods. Opening up additional revenue streams for the retailer – a foretaste of what is now called retail media networks (RMN).

Although instore DooH and retail media are based on the same digital signage technology, they are based on two different revenue models. "Our friends at Ocean Outdoor are the experts in audience marketing, aka DooH. Visual Art will not sell DooH campaigns," emphasizes Meijer. "Retail media on the other hand is transaction-based and connects to first party data e.g., check out-data. We see ourselves as a trusted advisor for retailers that do not have the retail media know-how inhouse."

Digital Signage
Market Compass

NORDICS
Denmark | Finland | Norway
Sweden | Baltic States



RISING STARS & DISRUPTORS

IM Vision

LEADERS

1. **Zetadisplay**
2. **Visual Art**
2. **Vertiseit**

GENERALISTS

Atea
Itab (Ombori)
Kinly

(in alphabetical order)

MAJOR PLAYERS

Craneworks
Databeat
Elisa Videra
EWQ
Firstview
LCD Media
Scala (Norway)
Smartsign

(in alphabetical order)

2024

GATHER

A New Big Player for Europe

The new Econocom audiovisual and digital signage unit is now trading under the brand “Gather with Econocom”. ProAV sales are expected to grow from 220 million to over 400 million euros by 2028.

Florian Rotberg

The French Econocom group is one of Europe’s largest IT systems integrators, with sales of 2.8 billion euros. Econocom brands itself as Europe’s leading digital general contractor. Until now, the IT service business is based on three pillars: Workplace, Infrastructure and Finance – even with its own banking license. While the pan-European organization is providing a wide range of ProAV and digital signage services for more than ten years, it has been just one of many non-core solutions.

Now Econocom establishes Audiovisual as a stand-alone fourth strategic pillar. The aim is to quickly achieve European market leadership under the new brand “Gather with Econocom”.

For many years, Econocom has been providing digital signage solutions to clients mainly in Spain and the Benelux states. In other markets, it was mainly active as a distributor. However, in his core markets, it was a leading digital signage integrator with the acquisitions of Altabox (Spain) and BIS (Benelux).

The new Gather unit includes the Belgian integrator BIS, the French integrator Exaprobe and various ProAV experts from the entire 11,000-staff Econocom organization, mainly in France, Spain, and Italy.

invidis talked to the Econocom senior management. The unit is managed by Gather director Jean-Pierre Overbeek and Econocom Deputy Managing Director Israel Garcia – both very experienced digital signage experts: Overbeek has been running the Belgian integrator BIS for 25 years while Garcia founded Altabox – both companies are subsidiaries of Econocom today.

According to Overbeek, Econocom’s new Gather brand identity was developed in particular to achieve greater visibility in Europe’s largest digital signage markets. Outside of Econocom’s home markets, the company is hardly known as a digital signage provider, therefore not sufficiently invited to tenders and lacking market share.

With 6,500 ProAV and digital signage installations in 95 countries annually, Gather is already one of Europe’s leading AV general contractors – a volume of projects only Trison can keep up with. Gather has its own offices in 16 countries. The annual turnover of 220 million euros is split roughly half between collaboration solutions and digital signage experiences. Consolidated sales are expected to almost double to over 400 million euros by 2028 via organic growth and acquisitions, especially in Europe’s largest markets.

Germany has been identified as one of the most important growth markets for the entire Econocom Group. Across all four pillars, sales in Germany are forecasted to grow 300 million euros from currently 240 million euros to more than half a billion. Besides Germany, Econocom has also identified the UK as one of the future growth markets.

Jean-Pierre Overbeek, Director of "Gather with Econocom"

Israel Garcia, Deputy Managing Director of Econocom

Photos: ECONOCOM

Forming a giant

Gather with Econocom wants to remain independent when it comes to CMS platforms. "We are currently working with Telelogos, NDS Pads and Scala, but we are guided by our customers," says Garcia. "Our advantage are 75 in-house software developers adapting digital signage CMS platforms to the needs of customers and developing and maintaining APIs to relevant IT platforms such as ERP, CRM, DAM."

But Econocom also offers its own CMS platform, originally a legacy of its Altabox acquisition. In the last three years, the legacy platform was replaced by "Econocom Real DooH". The new SaaS-based digital signage platform is built on a modern and secure architecture. Currently the inhouse platform runs already on around 5,000 digital signage devices.

Bundling AV activities in a separate business unit with its own brand image is intended to strengthen visibility and the digital signage profile in the market. "IT integrators generally lack ProAV and digital signage specific know-how. Gather in contrast has the necessary ProAV DNA. And the newly formed independent business unit should make this visible to the market. We are not an IT specialist that also offers digital signage, but rather one of Europe's leading ProAV specialists", says Overbeek. In order to quickly gain this visibility, Econocom will rebrand all subsidiaries and business units with the new Gather branding.

Many European corporations rely on Econocom as their digital signage general contractor and service partner. As usual, many names may not be mentioned publicly. In the German market, Econocom is primarily known for a major project for a premium car manufacturer. Gather also installed digital signage in 900 stores in more than 60 countries for a Spanish fashion retailer. Other major projects were implemented with Amsterdam-Schiphol Airport, Orange Espana and French technology group Dassault Systèmes.

invidis analysis

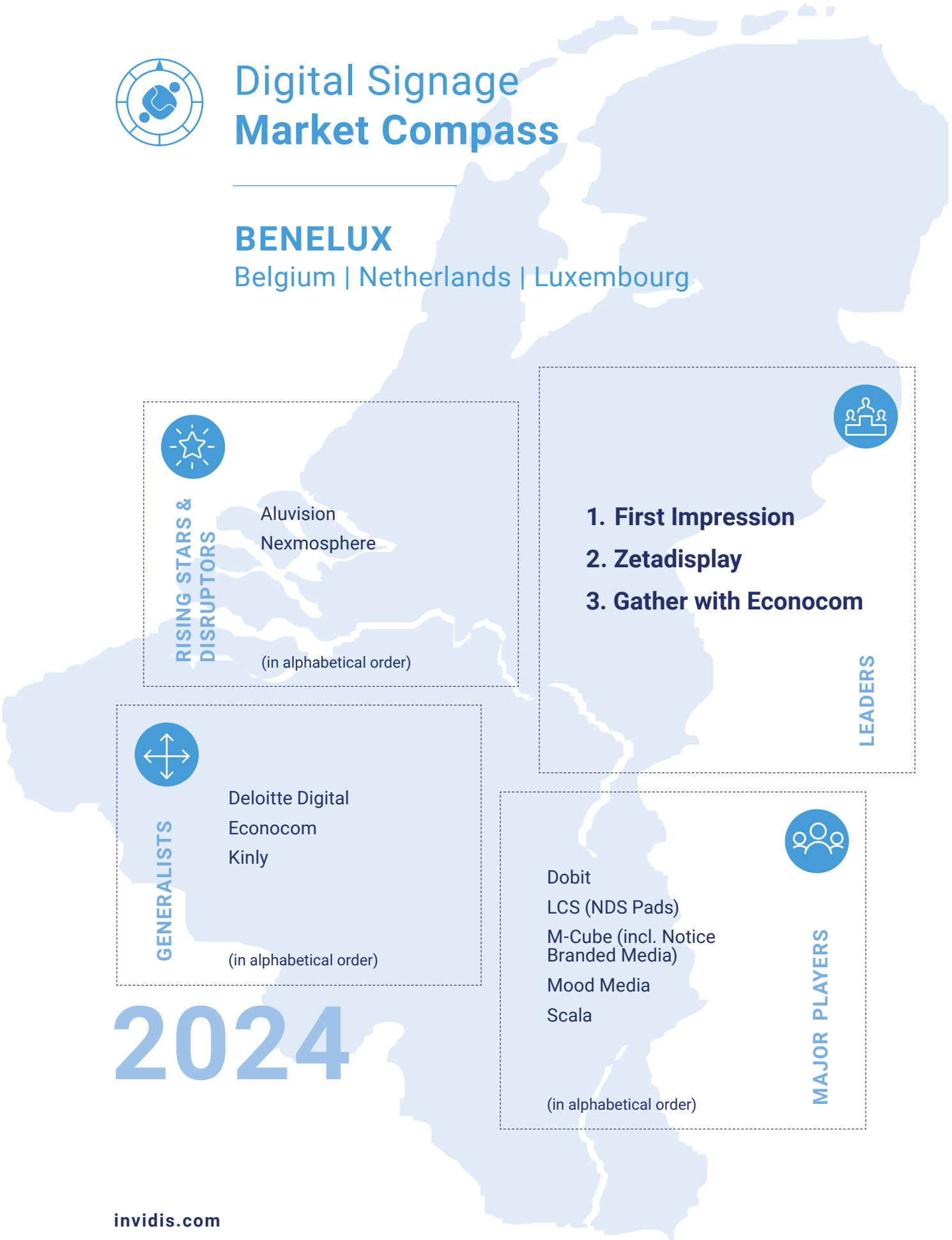
Econocom is spreading its digital signage wings across Europe. The new AV business unit is certainly better suited to operate successfully in the digital signage market than IT integrators. The biggest advantages include the professional structures with offices in 16 countries, the extensive as-a-service experience for state-of-the-art offerings and the financial capabilities.

For the DS sector, which is dominated by medium-sized businesses, the market entry of billion-dollar corporations means greater pressure to deal with new DS offering models such as X-as-a-service, general contracting and lifecycle management. Of course, Gather must also prove that they can establish themselves in new markets such as the DACH region. They undoubtedly have the financial strength and know-how, and market access and local contacts can be achieved through acquisitions.

Florian Rotberg

Digital Signage
Market Compass

BENELUX
Belgium | Netherlands | Luxembourg



RISING STARS & DISRUPTORS
Aluvision
Nexmosphere

(in alphabetical order)

LEADERS
1. First Impression
2. Zetadisplay
3. Gather with Econocom

GENERALISTS
Deloitte Digital
Econocom
Kinly

(in alphabetical order)

MAJOR PLAYERS
Dobit
LCS (NDS Pads)
M-Cube (incl. Notice Branded Media)
Mood Media
Scala

(in alphabetical order)

2024

Digital Signage
Market Compass

FRANCE

RISING STARS & DISRUPTORS

Cenareo

LEADERS

1. **Trison France**
2. **M-Cube**
3. **Manganelli**

GENERALISTS

Inovshop
Videlio

(in alphabetical order)

MAJOR PLAYERS

Activescreen (Elissor)
First Impression
Gather by Econocom
Glory (Acrelec)
Iagona (Intellicast, Neo Screen)
Interway (Instore Solutions)
Intuiface
LCS
Mirane (Madic Group)
Mood Media
Quividi
Telelogos
Uniguest

(in alphabetical order)

2024

TRISON

Breaking Through the Barrier

For the first time, Europe's largest pure-play digital signage integrator Trison exceeded the 100-million-euro sales mark in the last year. And with the new owner L-Gam, there are more ambitious goals for 2024.

Florian Rotberg

Photo: invidis/Frank Böhm

Alberto Cáceres, CEO of Trison

2023 was an extremely eventful and successful financial year for Trison: Since Alberto Cáceres took over as CEO of the then very Spanish digital signage integrator in 2017, sales have tripled and the sleepy Galician town of La Coruna has become home of a global market leader.

Just down the road from Trison is the HQ of the global fashion group Inditex. Both companies are not collocated by coincidence – Inditex played an important role as Trison's first global customer.

That formed the cornerstone of becoming Europe's digital signage leader today: In 2023, Trison recorded digital signage sales of over 100 million euros for the first time, employing more than 350 people worldwide. In a difficult economic environment, Trison was able to increase sales by 25 percent and gain market share.

New owners

The company's growth and profitability also convinced L-Gam, the financial investors responsible for managing the wealth of the Principality of Liechtenstein. They acquired the majority of Trison shares from the Spanish investor Portobello last November. This successfully closed the sales process, which had stalled somewhat due to the uncertainties following the pandemic and the war in Ukraine.

According to a local newspaper, the asking price at the beginning of the sales process was around 200 million euros. What L-Gam actually paid remains, as usual, confidential.

"We are super happy to have L-Gam on board as the new owner," explains Cáceres in conversation with invidis. "L-Gam manages funds with 1.5 billion euros and enables us to grow organically and through acquisitions. Their commitment is long-term and we want to lead the company into a new dimension." The first focus for M&A lies on Germany and the USA.

Global automotive specialist

What started as a 'one-trick pony' has become a worldwide business. The CEO proudly outlines how global Trison's business is today. "We generate 60 percent of our sales with global projects, approximately 30 percent in Europe and less than 10 percent in Spain."

For example, the integrator now has a strong presence in the Middle East. A dedicated sales and project team takes care of customers in Saudi Arabia, the Emirates and neighboring markets. In contrast to the past, Trison is increasingly winning larger local projects there. Without local presence and cultural know-how, the Middle East remains closed to most providers.

Even though Trison owes the rise to become a leading integrator to Spanish fast fashion giant Inditex, today, international automobile companies and luxury goods manufacturers dominate its customer lists. “We are the world’s leading digital signage integrator for the automotive industry”, says Cáceres. Demand from automobile manufacturers, in particular, drove sales growth of around 25 percent in 2023. “We install and support automotive projects in 110 countries. And for the first time in 2023, we executed projects for a couple of Asian and Norh American manufacturers.”

Vertical specialization

Last year’s launch of Trison Sports – a digital signage specialist for sports stadiums – attracted a lot of attention in the market. Trison identified a new vertical market, hired experienced digital signage stadium specialists from Germany and Great Britain and launched a new business unit.

The flagship and largest project of the new Trison unit to date is the Bernabeau Stadium in Madrid. Real Madrid’s home stadium was basically completely rebuilt during ongoing match operations. Constructions finished a few weeks ago at the end of 2023. “It’s becoming an icon for European football. From the Digital Façade to the Megastore, we’re very proud of this project.” Other stadium projects are already being implemented – Cáceres doesn’t want to reveal too many details at the moment. Only so much: “We are active throughout Europe.”

The second Trison unit that was launched in 2023 is Trison Games. Based at Trison UK, more than 20 Trison experts develop apps and games for omnichannel experiences. “Our customers include stadium operators and shopping malls as well as amusement parks. It’s about gamification in public spaces to make waiting times more exciting and create emotional bonds with brands and destinations”, says Cáceres.

Inside the Trison headquarters

Photo: invidis

Software-agnostic

One of Trison's USPs is its software-agnostic approach. The company is following a multi-supplier strategy, unlike most other larger integrators. “We remain flexible and can adapt to customer requirements by choosing the best-fitting platform from a handful of suppliers”, says Cáceres. At the moment, Trison works with Grassfish, Navori and Deneva.

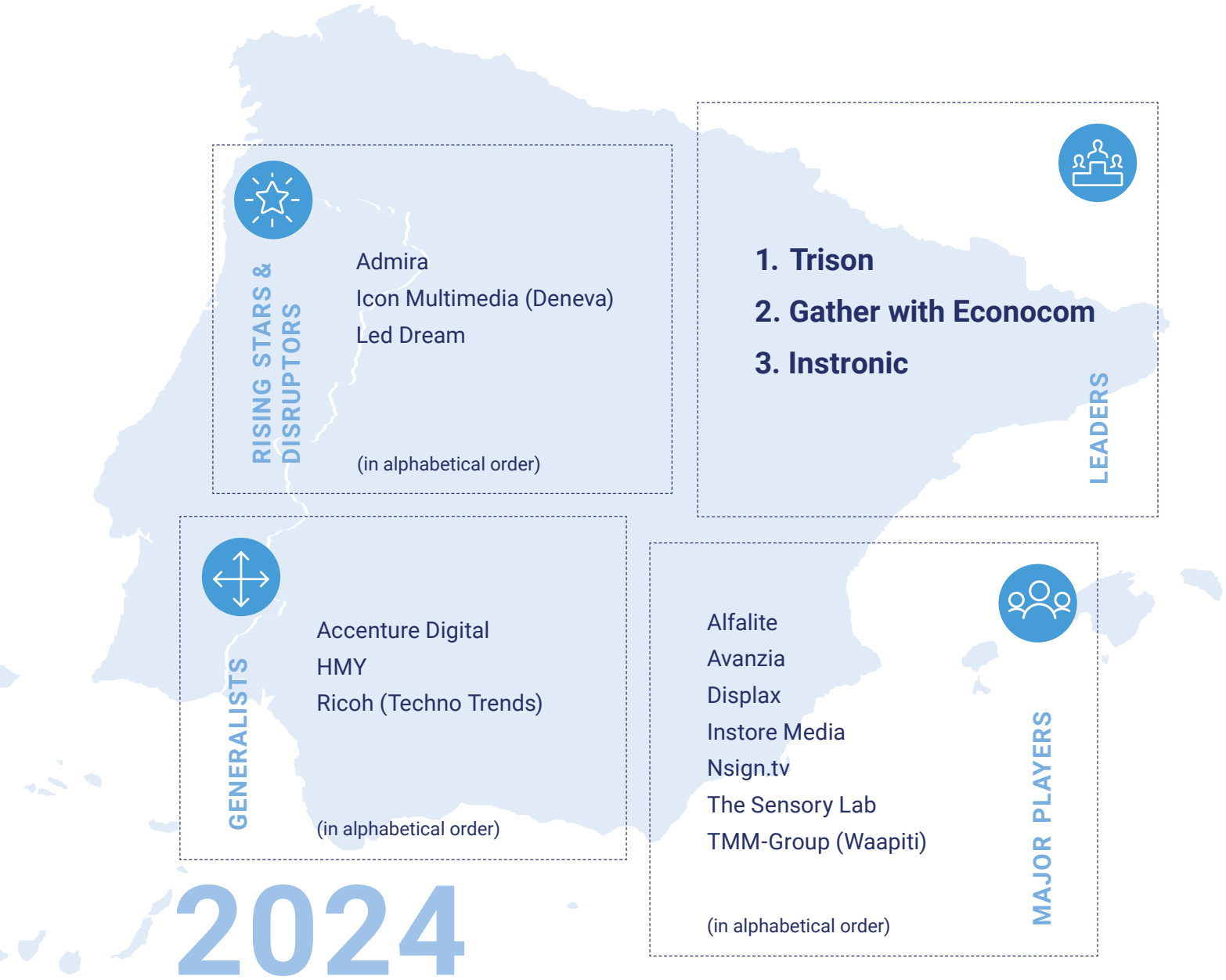
QSR projects are an exception. Here, Trison operates with the inhouse platform Signage Ninja. Originally developed by Peter Critchley and the Beaver team, today Trison UK, the Ninja Signage front-end has become the first choice for digital menu boards and similar applications.

Very positive outlook for 2024

If everything goes according to plan, Cáceres expects another growth of 20 to 25 percent for 2024. “But if we win a large global project, sales could grow even faster.” And Trison's management team is extremely ambitious to win global tenders – the pipeline is already filled.

Digital Signage
Market Compass

SPAIN & PORTUGAL



RISING STARS & DISRUPTORS

Admira
Icon Multimedia (Deneva)
Led Dream

(in alphabetical order)

LEADERS

1. Trison
2. Gather with Econocom
3. Instronic

GENERALISTS

Accenture Digital
HMY
Ricoh (Techno Trends)

(in alphabetical order)

MAJOR PLAYERS

Alfalite
Avanzia
Displax
Instore Media
Nsign.tv
The Sensory Lab
TMM-Group (Waapiti)

(in alphabetical order)

2024

Digital Signage **Market Compass**

UK & IRELAND

RISING STARS & DISRUPTORS

Nowsignage
The LED Studio

(in alphabetical order)

LEADERS

1. **Trison UK**
2. **M-Cube**
3. **Pixel Inspiration**

GENERALISTS

Amscreen
CDW
Computacenter
Esprit Digital
SDS Samsung

(in alphabetical order)

MAJOR PLAYERS

AVI-SPL
Evoke
Inurface Media
Mood Media
Pioneer Group
Scion Interactive
Screencloud
Signagelive
Skratch AV
Uniguest

(in alphabetical order)

2024

M-CUBE

The Catch-up Effect

After less growth than expected, M-Cube is preparing for a much stronger year in 2024 – and is positioning itself in the area of sustainability.

Florian Rotberg

Manlio Romanelli, President of M-Cube Group

The digital signage year 2023 was somewhat disappointing – not just for M-Cube. Even though the European digital signage integrator with Italian roots was able to increase sales organically in a single digit range, many scheduled projects were postponed.

M-Cube concluded 2023 with sales of around 65 million euros, marking the end of a lackluster year for the digital signage industry. Compared to the overall market, "our results are not bad, but we had actually planned for higher growth. Mostly due to delayed global retail projects, some of which have achieved only a quarter of the planned locations for 2023", explains Manlio Romanelli, President of M-Cube Group. Luxury brands in particular had slowed down the trend for renovations. Business for luxury goods has been booming since the pandemic, but new openings and major renovations are not that frequent at the moment.

At consolidated level, M-Cube was able to record a growth of over 13 percent, factoring in the Notice Group acquisition in the Netherlands. The integration of the Dutch Easyscreen provider was particularly successful. The digital signage entry-level platform opens access to many smaller projects and the team integrated quickly with M-Cube.

In general, M-Cube recorded good growth in digital signage software subscriptions last year, also because existing instore radio customers switched to the M-Cube digital signage platform. However, the demand for omnichannel solutions is lagging behind expectations. There is no lack of interest from customers, but these projects have an even longer lead time than digital signage.

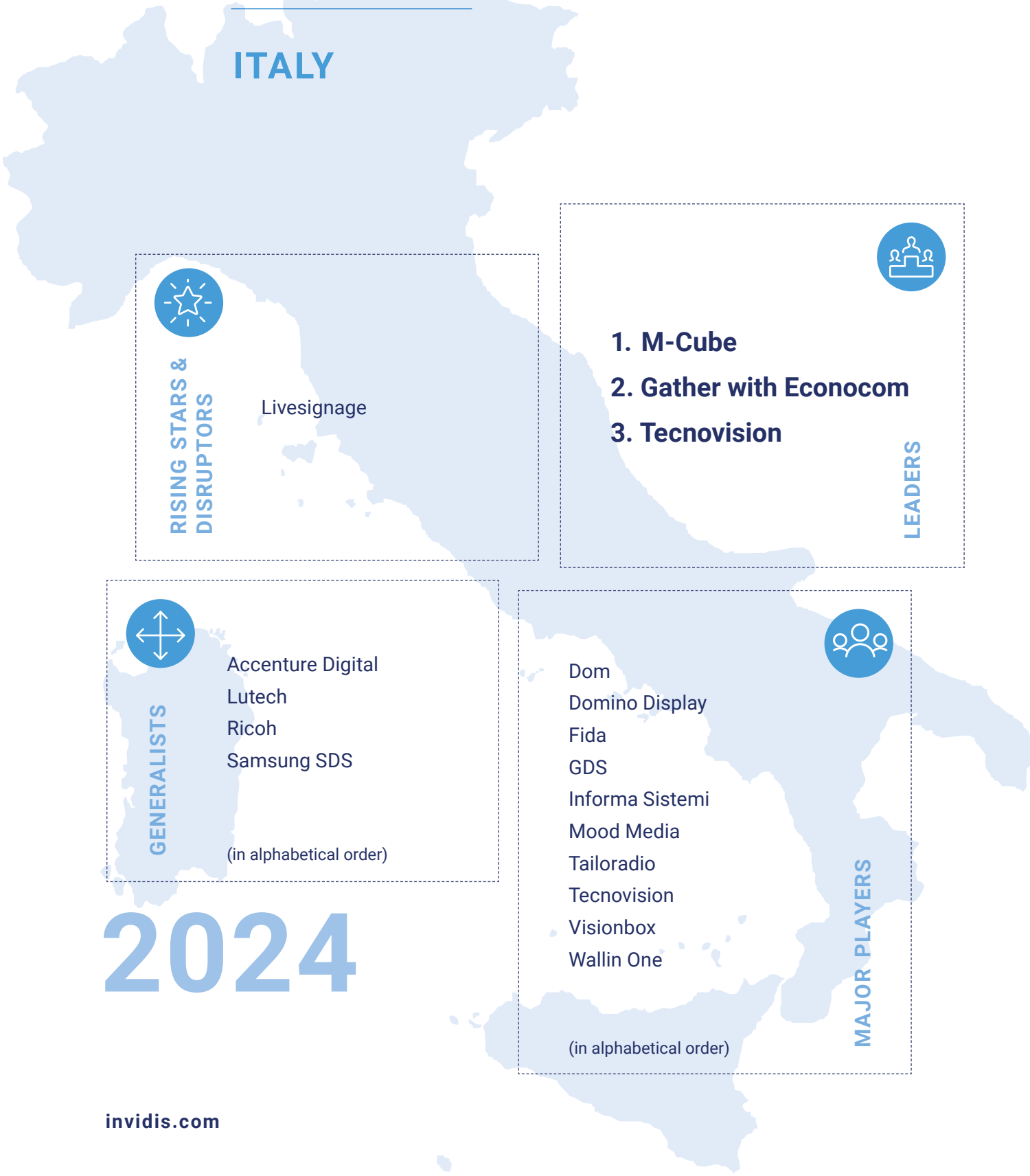
Restart of the market

Looking at the regions, digital signage performed best in Italy and Great Britain in 2023. The other European countries in which the M-Cube Group is active were more impacted by the negative economic situation, despite the upcoming Summer Olympics in France. Overseas operations – M-Cube is active in China and Hong Kong with its own subsidiaries– developed quite well, especially Southeast Asia with the ASEAN region.

But Romanelli sees major catch-up effects for the new year. "We see a restart of the market and are very confident." Not only regarding new projects, but also with new global tenders. "There is a lot going on in the market in the beginning of this year."

Digital Signage
Market Compass

ITALY



2024

AVI-SPL XTG

The Art of the Possible

How integrator giant AVI-SPL's XTG Team focuses on not only on the projects, but also on people's expectations.

Dave Haynes


Christine Rogers, AVI-SPL XTG

AVI-SPL had a decades-long history and reputation for designing, delivering and supporting audiovisual and unified communications projects all over the world, but the systems integration giant still had to take on a start-up mentality to win confidence and business in the rapidly emerging area of immersive and experiential spaces.

The Tampa-based company has more than 4,200 staff globally, and offices in 60-plus cities, but it took setting up a specialty business unit to properly address, win and then service projects that are often about big visual ideas – as opposed to AVI-SPL's primary work of kitting out workplaces with ProAV and IT solutions that help customers communicate more effectively.

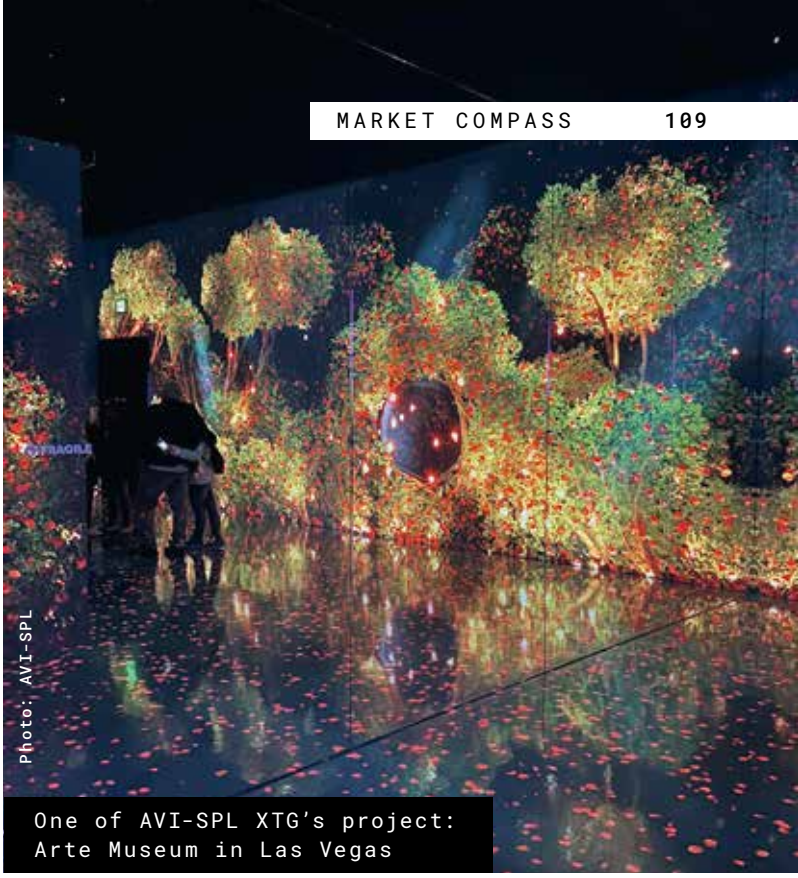
The Experience Technology Group (XTG) was established in 2015 as a business unit within Whitlock, another big US systems integrator that was acquired by AVI-SPL in early 2020. It started with three staff, and XTG now has 45 people across a variety of disciplines and skills.

The company's projects have varied from visually-driven workspaces for McDonald's, Verizon and T-Mobile, to Amazon's Spheres visitor center in Seattle and the Museum of the Future in Dubai, also described as the most beautiful building on earth.

XTG's business leader Christine Rogers, a VP with AVI-SPL, says working in creative and architect-driven experiential projects was not entirely foreign to the company. But it tended to be client-triggered work that AVI-SPL reacted to, as opposed to going out and winning it based on a plan, team and pedigree.

"We were not thought of," recalls Rogers, "and we found for meeting with groups like (architecture giant) Gensler, or others, I can't tell you how many times we heard, 'Oh, we didn't know you did that.'"

"So it really was important to create a separation, and talk about a specialty group. We can do what we do because of the size and power that we've got as a company. Building XTG as an overlay, and having support for all of that, really showed we've got the size, the talent, the skill, and the specialty group that is going to help bring it all together," Rogers adds.



One of AVI-SPL XTG's project: Arte Museum in Las Vegas

Pure play experiential design and creative technology companies may have a handful of sales and business development people chasing these specialized projects, but AVI-SPL has some 500 people in sales roles who can, at minimum, introduce XTG's capabilities.

"XTG, that title, explains the basic idea: experiential technology group," says Rogers. "It was the idea that experiences, in whatever format that might be, are the future of where we feel that the industry is going, and we wanted to be experts in doing that."

"We did a lot of research and developed an understanding of what would be the best way to be successful in doing that. It's not to compete with consultants or architects. It's not to start creating content. But it is to have an expertise in our niche, which is experiential design, almost the art of the possible."

"So often," explains Rogers, "you'll get end-users who have an idea about what they want … something cool, that visual unicorn, whatever it might be, but they don't necessarily know how to get it, what it might cost, or how it will integrate all of those things. So we put together a team that is pre sales, of design engineers, the cream of the crop, who will go in with customers and help them define what could be possible for their space, and then the things to think about."

What started out as a trio – sales, a program manager, and an experiential designer – is now a much broader roster of 45 covering everything from strategy to after-care on projects.

"What we realized in these experiential projects is that there are so many players that are different. You've got architects, experiential design firms, content creators, fabricators, and many others, and somebody needs to help manage those relationships, to create a symbiotic plan," says Rogers, of having project and program managers.

"We also have a team of people supplementing work – roles like design engineers, project engineers, commissioning specialists – because sometimes a regional AVI-SPL office either doesn't have the bandwidth, or the skill set, to deliver on these types of projects. So we can come in and help them from that aspect."

XTG also added service and customer success roles to help not only launch projects, but keep them running. "So we are really soup to nuts – a beginning-to-end, full-service support team for all of our regions, globally."

While having the company headcount, resources and experience to take on big projects, Rogers says success owes a lot to getting the right questions asked and answered in the initial meetings.

"My team gets tired of me saying this, but I call it marriage and wedding," says Rogers. "Don't go and spend 8 million dollars on your wedding, if you don't have the stuff to make your marriage work."

"So, we can go out for a meeting with a customer, and someone in the meeting will say, 'Hey, I've got 5 million dollars, and I want to put it all in a big visual project,'" adds Rogers. "And we say, 'Okay … but why? Why do you want to do that? Do you have a story? Do you understand the chapters of that story? Who's coming to your space? What do you want them to think and feel and do?'"

"Even though we're not the ones who create that story, sometimes our role is to get the customer to stop for a minute, and say, 'I haven't thought about these things.'"

STRATACACHE

The Retail Advocate

After the pandemic years, Stratacache is attacking again on several levels. CEO Chris Riegel has his sights set primarily on retail media networks.

Florian Rotberg

The fact that digital signage integrator Stratacache had a large – and expensive – presence at NRF 2024 in New York is no coincidence. Whether digital signage, DooH, retail media networks or, more recently, retail automation, Stratacache has long positioned itself as a link between retail and technology. And retail media networks (RMN) are currently the main focus.

Many in the AV industry struggle to understand how different the business of RMN is. "It's strategy and customer experience first – technology is the last piece. Retail Media is all about connecting with audiences and influencing behavior. Retail media is incrediblly data-intensive." According to Chris Riegel, the DooH and digital signage industries don't understand RMN well enough. In retail the interests of various stakeholders diverge. Retailers need external advice, "Scala is an advocate of the retailer".

Resurrection of retail analytics

Stratacache was an early believer in retail analytics – sensor-based data collection at the POS. In 2018 Chris Riegel acquired Finnish Walkbase – a retail analytics specialist. Today, Walkbase technology is fully integrated into the DNA of Stratacache and a platform for all sensor-tech in the digital signage group.

The missing adoption of retail analytics was a disappointment for the whole industry. Infrastructure, hardware and data analysis proved to be way too expensive for retailers. But the recent success of retail media networks could become the breakthrough according to Chris Riegel. "Retail analytics has a new role – signal acquisition to feed the AI machines."

In contrast to DooH as an audience media, "the business of RMN requires attribution, data is a must have. And retail analytics can take advantage of the already existing digital signage compute, eliminating costly dedicated edge computing. Everywhere you have a digital sign, you have a sensor."

Back on track

Regarding the financial figures, Chris Riegel is confident that Stratacache is back on track after three disrupting pandemic years. The recovery took longer than expected, especially in Asia, where market conditions remain challenging. But if the year develops as currently forecasted, "Stratacache global sales should hit the USD 1bn threshold in 2024." North America – Stratacache's most important market – is fully back to pre-pandemic level, while Europe is still slightly below at approximately 90 percent of pre-pandemic levels.

Still challenging is APAC where revenues sit at 50 percent compared to pre-pandemic. Australia, Japan and Singapore are developing well, but China is still challenging. Stratacache's main business in China are not local clients, but mainly western brands operating in China.

Currently Stratacache employs 1.100 staff – approximately 10 percent more than a year ago. In the next three years, Riegel plans to add another 1.000 staff, the growth will be mainly driven by demand for retail media networks and retail automation. Stratacache's latest venture is Scala Commerce, offering Scala-branded self-checkout systems and kiosk terminals for supermarkets, QSR and hospitality. The company based in Dayton, Ohio is expanding in new markets partner-

ing with companies like NCR and Diebold Nixdorf, while competing with the likes of Glory/Acrelec.

Too different for one platform

Stratacache's global breakthrough and Chris Riegel's strategic masterpiece was the acquisition of CM developer Scala. Even though Scala was at the point of acquisition a little bit dated, the brand is till today the strongest in the industry. Stratacache owns four CMS platforms: Scala, Activia (AMP) for QSR, X2O Media and RDM. For Riegel, there is no doubt: "Scala is the best pixel engine in the industry."

According to Riegel, the vertical market use-cases and required featuresets are too different to consolidate on one platform. "But scaling under the hood is an option." Nevertheless: Scala remains immensely popular – with new clients as well as with longtime integrators.

According to the latest invidis Yearbook ranking, Scala remains the CMS platform with the largest installed base worldwide. For 2024, Stratacache plans "immense updates for Scala". In recent years, Scala was reengineered for Linux and ARM complementing the Windows tech stack.

Confronting Chris Riegel with Samsung's latest VXT launch and other software platforms developed by visual solution manufacturers he remains confident: "Screen manufacturers are missing the right mindset. Mastering the art of software is foreign to them."

Finance options

Stratacache has the size and footprint to provide end-to-end solutions also for global enterprise and retail customers. Leasing and financing services are especially relevant for retail media networks. "We mastered the business model of building retail media networks at scale while allowing a retailer to avoid any capital injection. On behalf of the retailer, Stratacache takes care of everything. Technology, Software, Installation, Service, Support and even media sales via PRN if required."

Fully-financed services as offered by Stratacache are the worry-free option for retail media network owners who are often lacking the digital signage know-how and scale of services or wish to preserve their capital for other business priorities. The offering comes close to Signage-as-a-Service concepts often seen as the future for digital signage and DooH.

Chris Riegel, CEO of Stratacache

Photo: invidis

RETAIL MEDIA 101


ACHBAR!

IN-STORE RETAIL MEDIA

A POS Dream Come True

In marketing and advertising, one term seems to be on the lips of every industry player: retail media. But what exactly is retail media, and how is it different from DooH?

Antonia Hamberger

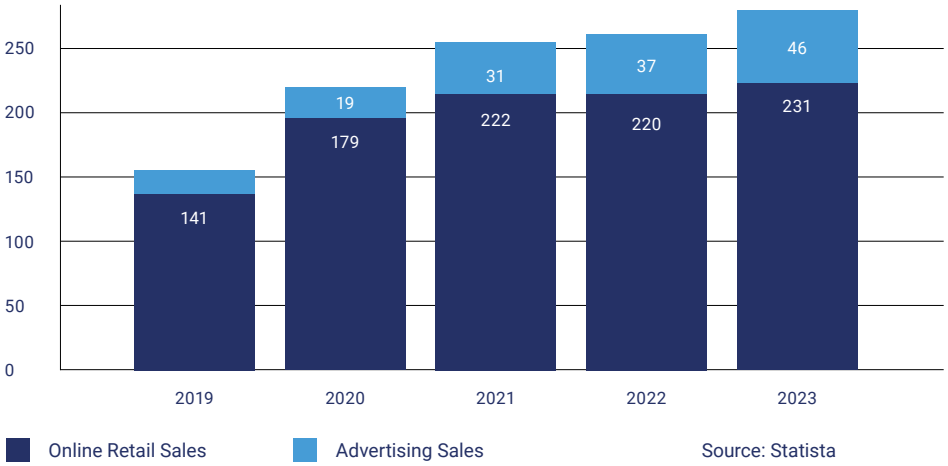
Retail media is a decade-old concept. Retailers have always used their store space to not only sell goods but also to monetize footfall with advertising, whether it be through printed leaflets or in-store promotion. The hype started with the shift to digital platforms, when online shops took on the search-based advertising model that Google had pioneered and that social media giants like Meta further capitalized on.

Just like with online and social, the core principle of digital advertising remains unchanged for retail media: understanding the audience and leveraging that knowledge to drive sales. Amazon is a prime example of this concept's potency. Nearly 40 percent of the page real estate is dedicated to advertising, showcasing sponsored products and recommendations tailored to the shopper's preferences.

In-store retail media networks are leveraging transactional data to create highly impactful campaigns.

Amazon revenue in advertising sales
compared to online sales

(in billion US dollars)

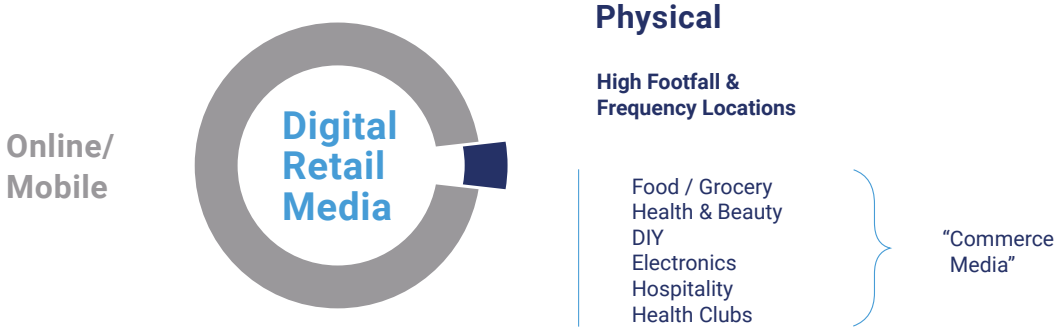


While Amazon's online retail sales are barely growing, the advertising business is showing high growth rates, most recently 22 percent YoY.

Amazon's success in the retail media space is undeniable. In fact, it's not an exaggeration to say that retail media is the lifeline of Amazon's profitability. Because the core retail business nowadays operates on very thin margins, it needs advertising revenue to bolster it up.

More than 95 percent of the retail media market today is covered by e-commerce platforms, with Amazon alone accounting for a market share of 54 percent in Europe – according to a Statista survey for 2023. With its incredible success, Amazon's advertising model now serves as a beacon of hope for brick-and-mortar retail. In segments like food retail, where the margins are similarly low, the advertising business promises a substantial new revenue stream. The challenge for large retailers like supermarket chains is how to translate this online retail media model to physical retail spaces. This is where it becomes tricky.

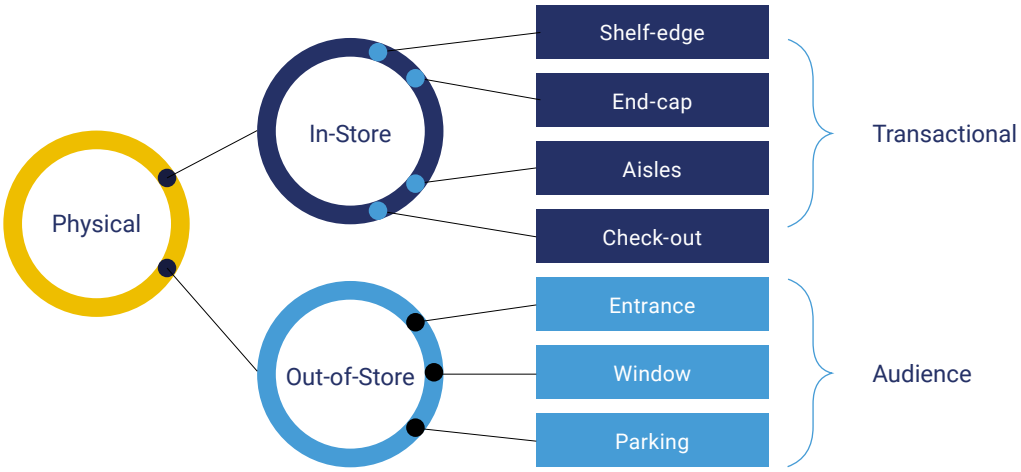
In-Store share
of retail media market



Only about 5 percent of the digital retail media market is covered by physical networks, which have extended from retail to other commercial areas, forming the term "commerce media".

In-store retail media vs. out-of-store retail media

The fundamental difference between in-store and out-of-store retail media is that the first uses transactional data, while the second leverages audience data. That makes out-of-store retail media more akin to digital-out-of-home.



Data – the backbone of retail media

In the virtual space, retailers can play out ads based on the user's search behavior. Brick-and-mortar stores lack such direct access to customers' preferences. They do, however, possess first-party data of closed transactions. Or simply put, they know what their customers purchase.

This is where in-store retail media networks fundamentally differ from digital-out-of-home: they are transaction-based instead of audience-based. With in-store campaigns, brands can directly measure their Return on Ad Spend (ROAS) using the retailer's checkout data and tracking tools. This works especially for product ads of brands that are sold in the store: If the campaign performs, product sales will increase.

DooH networks, in turn, cannot provide this level of attribution and measurement; they can only sell by the number of impressions. The same goes for out-of-store retail media, which include screens at the store entrance, in shop windows and in parking spaces. These are usually treated like DooH screens and are audience-based.

From this real-time checkout data, we also know that the impact of retail media campaigns can be significant: The Retail Practice Department of McKinsey, for instance, speaks of an average sales lift of 20 to 30 percent and an improvement in customer engagement of 15 to 30 percent.

This potentially high ROAS is what has started to attract more players in the value chain: DooH marketers have become keen on including retail media networks in their offering. Simultaneously, non-endemic brands have become interested in advertising on in-store screens.

Maximizing the POS potential

Many retailers are currently scaling and improving their retail media networks. This is where digital signage specialists come into play. The advertising space in a store is limited, and so is the attention of customers. Screens need to be placed where they most effectively deliver a 'call to action'. In supermarkets, landscape screens at the entrance usually display current special offers, while screens at the checkout line only play out future promotions.

For an even more effective call to action, the message on the screen needs to feel relevant to each specific customer. Retailers cannot offer the same level of personalization in-store as on online platforms – they don't have the luxury of shoppers plainly telling them what

they're interested in through a search bar. They can however mimic the online model to a certain extent with sensors and analytics.

A sensor on a screen can provide sociodemographic or behavioral data that complement the checkout data. This helps define the target group more clearly and may be used for programmatic booking options.

An even more sophisticated network connects these sensors to an analytics platform that integrates with the content management system. The CMS needs to be able to manage real-time data and use it as a trigger to play out personalized content in milliseconds. Mastering this real-time aspect currently presents the highest level of sophistication a retail media network can offer – and the key to opening new revenue streams.

From endemic to non-endemic brands

Building such a network is a lengthy process. Most retailers, especially outside of North America, are currently still in the process of rolling out digital signage screens, combining them into a single network and setting up marketing models.

For many, the first step involves selling ad space to endemic brands. This is a safe choice for both advertisers and retailers – and has proven effective, recalling the average sales lift McKinsey measured. Yet, the real game-changer for retailers lies in opening screen networks to non-endemic brands. This is what many large supermarket chains like Lidl in Germany have started doing in 2023. Through this step, they essentially create their own DooH networks with all the advantages of retail media: access to first-party data and a clearly defined target group.

The concept of retail media is currently also expanding beyond traditional retail spaces: hotel chains such as Marriott and recreational facilities like gyms are rolling out their own networks. To reflect this broader scope, the term 'commerce media' has emerged to replace the retail media termn. Regardless of the terminology, the underlying principle of data-driven advertising remains the same.

In essence, we can say that although physical stores account only for a small segment of the entire retail media market, they represent a paradigm shift in the advertising landscape. Brands can now interact with their target group throughout the entire customer journey and on every point of sale. They can reach customers they would not be able to reach online: According to McKinsey experts, the audience in-store is 70 percent larger than on online retail platforms.

2024 – the year of retail media

The numbers alone answer the question of why retail media is causing such a stir: Growing at 21.8 percent, the fastest of any media form, retail media is expected to reach a global turnover of 140 billion US dollars this year.

The in-store share of these sales is also rising: McKinsey analyses show that 85 percent of Amazon advertisers currently also use at least one physical network. In the US, physical retail media networks are expected to generate sales of 326 million US dollars in 2024, doubling to over 652 million in 2027.

More importantly, however, in-store networks represent a future-proof form of advertising, enabling efficient targeting of active consumers independent of cookies.

The value of first party data

Their first party data is the reason why Amazon and Walmart have become such highly lucrative advertising platforms. This data is not only of great value to themselves but also to programmatic buying platforms that play out campaigns based on target group data. To enrich their database, programmatic Demand Side Platforms (DSPs) have started purchasing first party data from online retailers. An example is the platform The Trade Desk, which negotiated a data exchange deal with Rewe and Lidl. In the future, these deals could also include in-store data.

RETAIL ANALYTICS

A Second Chance for Sensors

Few retailers have been willing to invest in retail analytics in the past, but the emerging retail media boom could finally give the technology its breakthrough.

Florian Rotberg

The benefits of camera sensors in retail stores have long been clear: attached to digital signage screens placed throughout the store, these little devices can recognize the age, gender, and routes of customers in the store completely anonymously.

When combined with transactional data, they provide retailers with a complete picture of who buys what and when. This knowledge is not only incredibly useful for developing retail strategies but also for creating a profitable retail media network.

Sensor data, however, is only useful when analyzed correctly. Most retailers are already drowning in information, most of which is irrelevant. Only AI-supported analytics systems can filter out the signals from the noise, such as the solutions provided by Advertima, Quividi, Xovis, Axis or Cisco.

The prospect of new ad revenue could lead retailers to finally invest in retail analytics.

Photo: invidis

They all provide sensors that record and process shopper data locally, i.e. 'on the edge'. This approach is ideal for retail media platforms, using insights on gender, mood, posture, and merchandise interaction to play out targeted campaigns and deliver proof of play at the same time.

In the past, however, there was a gap at the POS that made sensor technology redundant: While retail analytics were able recognize and analyze shopper behavior, the connected DooH and retail media platforms lacked speed. Another gap persisted in the back office where reliable reporting and comparison with first-party data, like check-out data for measuring the Return on Ad Spend (ROAS), were lacking.

These gaps are now narrowing: even latecomers among retailers have begun to expand their retail media networks professionally and market them programmatically to reach those additional revenue streams. This programmatic integration requires audience data, ideally generated by sensors in real time.

In the wake of this retail media boom, many retailer corporations have established their own retail media units, which enables them to assess data in compliance with data protection regulations and addresses the issues at both the POS and back-office.

However, technology costs remain high, and the retail sector is currently not in the mood for big investments. Data protection concerns are also troubling retailers, with many customers wary of camera sensors. What's prompting companies to overcome these hurdles is the development of new high-margin revenue sources.

As global retail media sales are expected to exceed 140 billion US dollars in 2024 and in-store shares are rising, it could now only be a matter of time before every screen has a sensor.

Enter the World of Digital Signage

The Youtube Channel of invidis

youtube.com/invidisXworld

Photo: Walmart

In-store displays have future potential – big screen in the Walmart Retail Lab

NORTH AMERICA

The Future of In-Store Screens

In the US and Canada, many retailers are building up retail media networks. Although these in-store screens currently represent only a small portion of the advertising market, they are set to become a key part of retailers' core strategies.

Dave Haynes

Positioning digital displays inside stores to market to consumers at the so-called moment of truth – when shoppers finish browsing and start making buying decisions – is finally shifting from a logical concept to reality in stores.

But using digital signage screens and creative to influence shopping decisions of the consumer right in the aisles remains very much a story, right now, about where things are going, versus what is actually happening in most stores.

While retail media networks (RMN) are seemingly at the center of contemporary retailing strategies, less than one percent of the dollars being allocated for retail media networks in 2024 is for messaging on in-store screens.

U.S. in-store retail media spend this year is forecasted to equal 370 million US dollars, which equates to 0.6 percent of the roughly $60 billion total retail media spend. The big money goes to mobile and online, with search getting 62 percent of the spend and the rest going to display advertising.

The "customer experience management company" Merkle, which is part of the Dentsu media agency empire, published a 2023 Retail Media Research Report that explored the current state in US retail. Interest is high and investment for in-store media more than tripled from 2022 to 2023, but of 41 big retailers surveyed because they operate versions of RMNs, only three in five even had in-store screens in their media mix.

Of the five top priorities for investment identified by RMN operators, four did not involve on-site media – with the focus more on social media and email marketing.

So it is early days, but the scale and diversity already evident among retailers suggest activity will grow rapidly in the next three to five years.

Big mass merchandising retailers like Walmart already have RMNs, with Walmart Connect having a staggering 170,000 screens. But the US and Canada are seeing a broad cross-section of different retailers announcing and operating RMNs, from Saks in luxury and Ulta in beauty, to low-price operators like Dollar General.

Using screens and targeted, data-shaped messaging has long been marketed as a killer application in retail. But there have been many barriers to widespread adoption – arguably the biggest ones being capital costs and form factors.

10 to 15 years ago, retailers investing in digital signs around their stores were largely limited to TV-style commercial displays mounted to walls or suspended from ceilings. Smaller displays mounted at shelves and aisle endcaps tended to be more expensive than larger displays, despite their size. Access to power was a challenge, and retailers did not want technology that took the place of, or blocked access to, merchandised goods on shelves and counters.

Manufacturing advances have both lowered costs and made possible display technology that better incorporates screens into retail designs and meets merchandising needs and restrictions. Narrow and wide LCD displays, as well as fine pitch LED displays, are now being used by retailers that are as large and influential as Walmart to animate the headers of store shelf gondolas.

Particularly small and skinny versions of those LCD ribbons have lowered sufficiently in cost. They line store shelves immediately below product with them, functioning as marketing machines but also as more advanced variations on electronic shelf labels.

Costs for small form factor LCD displays have also dropped to a level that they are feasible to attach to shelves, powered by network cabling instead of conventional electrical wiring, greatly reducing labor costs to get power in place. There is even an Israeli start-up, Wi-Charge, marketing small displays that have built-in receivers that get power over the air – with no cords.

Three reasons for in-store RMNs

So why are retailers going down the RMN path?

First, digital presents recency – the opportunity to put purchase-influencing messages in front of shoppers just as they're deciding what to pick up and take to check-out.

Second, blended efforts – digital screens in stores were long managed and used as tracks largely separate from other consumer sales and marketing efforts, but retail media networks pulls online, mobile and in-store together.

Third, incremental revenue – there is plenty of historical data proving out that in-store messaging tends to deliver tangible lifts in sales on the items promoted on screens, but RMN operators are also looking at or actively incorporating non-endemic advertising on their screens. A women's apparel retailer, for example, might not sell beauty products like nail polishes or lotions, but its shopper profile is precisely who brands want to reach. So that apparel retailer can offset the costs of its RMN through revenues from that non-endemic media buy.

Right now, most of the big investment in RMNs is going to efforts outside of stores. But with time, understanding and experience, those screens in stores will have a big role in the shopping journeys of consumers.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Polleranlage
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DOOH


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Auf geht's
2024
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Zuhause in Leipzig
lwb
versenkbare
Polleranlage
einzeln einfahren

RECORD YEAR 2023

Is There More to Come?

The German outdoor advertising market performed well in 2023, with a 300 million euro increase for OoH and a record 41 percent share of DooH. Collaborations and innovative concepts suggest further growth on the horizon.

Antonia Hamberger

2023 was a record year for out-of-home (OoH) in Germany. While traditional linear television saw a loss of nearly 600 million euros, out-of-home advertising gained an additional 300 million euros in order volume. This made OoH a key contributor to the German advertising market's modest 0.3 percent overall growth in 2023.

Since 2019, the German OoH market has grown by 18 percent. Kai-Marcus Thäsler, managing director of the OoH organization FAW, described this growth as a "sensational success" and highlighted the impressive recovery after the Covid-19 lockdowns. "OoH made a brilliant comeback in 2021, and we were proud to stabilize this result in 2022. Increasing this level by more than 11 percent in 2023 shows the unique momentum that out-of-home advertising is enjoying," he said.

2023: DooH at 41 percent

DooH has significantly contributed to this success. Over 80 percent of the growth in the OoH sector is due to digital advertising media. In 2023,

Photo: invidis

With its success in 2023, DooH almost stands alone amids all media channels.

Blowup Media launched a DooH vertical garden in Düsseldorf in March 2023.

Photo: Ströer

DooH made up 41 percent of all out-of-home advertising, marking a 5 percent increase from 2022 and an 11 percent increase from 2019, before the Covid-19 pandemic.

The recent cooperation between the FAW and the IDOOH, the Institute for Digital Out of Home Media, aims to further strengthen this trend, as Thäsler explains. "By joining forces, FAW and IDOOH will create synergies for the benefit of advertising customers, advance new usage options for DooH, and thus enhance the position of OoH and DooH in intermedia competition. We believe there is much more to come," says Thäsler.

USP as only digital mass medium

The fourth quarter of 2023 was particularly strong for OoH: From October to December, OoH spending increased by 18 percent compared to the same period the previous year, amounting to an additional 139.97 million euros. Most of this growth was driven by DooH, which saw a 28.9 percent increase during this period. Consequently, digital screens achieved a record market share of 46 percent within OoH advertising in the fourth quarter.

The success of DooH can be attributed to its unique position as the only digital mass medium, whereas other digital advertising channels are one-to-one media. This distinction has helped DooH establish a presence on programmatic booking platforms, making it an attractive component of multichannel campaigns. Combining OoH with social media has proven particularly effective, as confirmed by an empirical study in the UK (*more on this from page 132 onwards*).

Most environmentally friendly

DooH has another advantage as a mass medium: it has a much lower CO2 footprint per impression compared to mobile and online advertising. Because one display achieves multiple impressions, IDOOH calculates CO2 emissions of only 5 to 6 grams per 1,000 contacts, using the Green GRP calculator from Mediaplus. This makes DooH the most environmentally friendly digital medium. Outdoor advertisers, in collaboration with FAW and IDOOH, aim to strengthen this green image in the advertising industry and among consumers.

New installations

A highlight in the German DooH market in 2023 was the launch of Vision One Berlin, Germany's first corner screen for forced-perspective outdoor advertising, installed at Alexanderplatz. Marketed by Met-Ads, Vision One uses transparent LED technology to create 3D effects similar to those at London's Piccadilly Lights. Installed behind the front glass of a restaurant, the permission process for the screen was significantly less complex than for conventional LED screens.

Ströer subsidiary Blowup Media has also shown an innovative way to obtain permits for large-format DooH with its "Vertical Garden" concept, which combines OoH space with a green wall. This approach not only convinces authorities but also enhances the green image of DooH, making it a marketing triumph for outdoor advertisers.

In March 2024, Blowup Media launched its sixth vertical garden location in Düsseldorf: "The Green

Photo: HYGH

Photo: FRAMEN

Young companies like Hygh and Framen continue to grow their networks.

Digital am Wehrhahn." This advertising space features a 100-square-meter LED screen surrounded by 180 square meters of greenery. The plants are not just ornamental; according to Blowup, they offset 3.6 tons of CO2 annually and provide an air-cooling effect in the immediate vicinity. These innovative concepts demonstrate how large DooH formats are possible in Germany.

Successful specialists

While OoH players like Met-Ads and Blowup are experimenting with new formats, the Berlin-based scale-up Framen is disrupting the DooH market with an innovative business model. Supported by majority shareholder Axel Springer, Framen is rapidly expanding its inventory, boasting over 14,000 screens in hotel lobbies, shared workspaces, and various stores, boutiques, and restaurants. Framen's approach is rather unique; instead of investing in their own screens, they provide infotainment content for existing Android-based displays.

In January 2024, Framen closed another financing round in the double-digit million range and received additional growth capital from Axel Springer to support its expansion into new markets.

While Framen's business model appeals to a broad range of locations, TV-Wartezimmer has established itself in a niche market. Celebrating its 20th anniversary in 2024, the company recorded over a 40 percent increase in turnover last year, marking its fourth consecutive record year.

Other market players are also driving the growth of DooH. Uze Mobility is working on connecting smart city concepts with mobile DooH through a cooperation with the Ministry of Transport and the integration with the nation's modular warning system for cases of emergency.

Hygh is expanding its network with a new investor, including screens at Budnikowsky drugstores. In retail media, the food discounter Netto has launched a DooH network with Digooh Media, and Viewento is now exclusively marketing Edeka NST.

Established outdoor advertisers like Ströer, Wall, and others are also investing in DooH. Goldbach is now enabling the programmatic marketing of Numbat's EV charging network. Additionally, a new player, Ocean Outdoor Germany, is entering the market (*see page 136*). It is not entirely clear how DooH will develop for other players in the market, but companies such as RBL Media are also likely to focus on its expansion.

Austrian and Swiss DooH

In Switzerland and Austria, developments continue with major out-of-home advertisers. APG|SGA, Livesystems, and the newly formed Goldbach NEO, created from Goldbach Switzerland and the acquired Neo Advertising and Clear Channel, are all contributing to the growth of DooH in the Swiss region.

In Austria, Gewista advanced its DooH program by introducing programmatic advertising for its Roadside network. Competitor Epamedia is expanding its DooH efforts using the Broadsign CMS. Monitorwerbung has also adopted programmatic methods and is now marketing Infinity Media's screens.

These developments illustrate the varied approaches within the DooH market. Both young companies with a strong digital focus and established players with extensive reach are driving innovation in the DooH market, setting new standards, and promoting further expansion.

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THE GROWTH DRIVER

Programmatic: A Closer Look

In 2023, one third of all DooH campaigns were booked programmatically. Although this booking channel offers huge growth potential for out-of-home, the value chain is not yet optimized for profit.

Antonia Hamberger

The out-of-home industry has big growth targets: across the different geographical markets, OoH advertising is heading towards capturing ten percent of the overall ad market. In this race, the hope lies primarily on digital-out-of-home, especially on programmatic DooH. And for good reason: digital advertising displays and programmatic booking channels currently show the highest growth rates in the OoH sector.

For example, JC Decaux, the world's largest out-of-home advertiser, saw DooH revenue grow by 20.8 percent in 2023, with an overall growth of 7.6 percent. Programmatic DooH, in turn, increased by a full 63.6 percent. German competitor Ströer even reported to have doubled its programmatic bookings from 2022 to 2023.

Most investments in the OoH sector currently go into financing DooH rollouts and expanding programmatic solutions. This includes generating high-quality target group data for each screen individually, as well as developing supply-side platforms (SSPs) and connecting them to various demand-side platforms (DSPs), which media agencies and advertisers use to book programmatic campaigns across various media channels.

Out-of-home is determined to become an integral part of the programmatic advertising landscape that originated online. By connecting their networks to programmatic platforms, outdoor advertising companies seek to tap into the same huge budget sources that flow into major online platforms like Google.

Regarding these growth rates and potential new ad budgets, there is ample reason to invest in programmatic expansion. However, the OoH market must remain realistic: With programmatic booking, OoH marketers and media owners are losing significant portions of the campaign budgets. Unlike direct booking, the programmatic channel involves both an SSP managing the supply side and a DSP handling the demand side. In addition, there are various intermediaries in between. In this prolonged value chain, only 10 to 40 percent of the budget remains with the media owner, while direct bookings typically yield around 75 percent.

As a result, the share of programmatically booked DooH campaigns is significantly higher than programmatic's share in the revenue of media owners and marketers. According to Statista, 30 percent of all DooH campaigns in the first half of 2023 worldwide were pure programmatic campaigns, while 34 percent were booked through a mix of programmatic and direct buy. However, programmatic bookings only represented 8 percent of JC Decaux's DooH revenue.

The difference may stem from those losses in the value chain, as well as the type of inventory marketers offer on programmatic platforms. They usually reserve their premium inventory for direct bookings to maximize profits. This prac-

A multichannel campaign by Universal displayed on DooH by Ocean Outdoor in the UK.

Photo: Ocean Outdoor

tice, in turn, has led the marketing world to associate programmatic DooH with 'remnant marketing'.

An image shift is in order

In the online world, negative associations with programmatic have been circulating for a long time. This is mainly due to “made-for-advertising websites” (MFAs), which deceive DSPs with false performance indicators like low prices per impression, but don't offer any brand safety.

The advertising industry is now taking steps to address those shady platforms. Global agency heavyweight Group-M, for example, has directed its specialist unit Nexus to bring transparency and standardization to the programmatic market.

To prevent advertising budgets from being wasted on low-quality inventory, Group-M has established an “SSP Code of Conduct” to regulate cooperation with SSP partners. This aims to standardize how marketers present their fees on the supply side. For its own DSP, called Group-M Premium Marketplace, the agency wants to ensure that only premium inventory is available.

Group-M is also collaborating with the Global Alliance for Responsible Media to create a certified standard for programmatically bookable inventory. In an effort to shed the negative connotation of the term programmatic, Group-M and the agency Initiative have shifted to using alternative terms such as 'advanced digital', associated with progressiveness rather than low-quality marketing.

The advantages of programmatic

Within the OoH industry, calls for standardization and a clear definition of programmatic are also getting louder. There are too many terms flying around that blur the essence of programmatic, such as Programmatic Direct or Programmatic Guaranteed, which are both essentially forms of direct sales with a DSP as an intermediary.

In its essence, programmatic refers to the automated booking of advertising inventory. In the OoH sector, this purchasing structure offers advantages for advertisers beyond turning residual inventory into profit. Firstly, programmatic enables efficient audience targeting with little wasted playouts, and secondly, it allows for the dynamic integration of real-time triggers and elements, making advertising messages more relevant.

For the industry to evolve and fully utilize the opportunities of programmatic, a new definition of the term is therefore needed, as well as a fresh image highlighting these benefits. And OoH marketers will need to claim more parts of the value chain for themselves.

NORTH AMERICAN MARKET

Media United

Digital-out-of-home is on the uprise in the US and Canada – also because of the ongoing consolidation of advertisement silos.

Dave Haynes

The North American digital-out-of-home ad sector is growing at a rapid pace and programmatic is gradually becoming a meaningful slice of the revenue pie, but the big story is arguably how a lot of somewhat competitive sectors are increasingly intertwined.

Digital signage in retail is increasingly associated as the in-store media aspect of multi-platform, multi-channel retail media networks. Streaming TV now has large ad-driven networks meant for venues, not homes. Adtech companies are expanding their reach from place-based networks to those in retail. And measurement/analytics technologies and tools that were mostly associated with advertising are also now being applied for retail and other types of non-DooH networks.

"We are seeing the worlds of ProAV, including digital signage, DooH, place-based media, CTV and retail media all converging," says Mark Boidman, Head of Global Media at Solomon Partners. "As a result, we expect continued M&A and consolidation amongst companies across these sectors."

DooH advertisement in the Shopping Center Westfield World Trade Center, New York

Photo: invidis

Boidman's firm, a New York investment bank, suggests the DooH sector is increasingly drawing money from traditional static OoH budgets, as well as from streaming video platforms and other strategic budgets.

Solomon Partners, which has long put part of its business focus on the DooH/OoH media sector, steadily looks at the market and estimates roughly 9 billion US-dollars in out-of-home ad spending in the United States this year, about 3 billion dollars of that involving digital. The majority of that spend relates to digital billboards, however, with place-based, digital ad networks seeing somewhere between 500 million and 1 billion dollars.

Boidman also suggests the fragmented state of media, and particularly TV, will drive more and more interest in digital OoH as a primary option for video advertising, because of the aggregated audience it realizes and delivers.

Industry veteran Jeff Gunderman, who has run media companies and is now educating the industry through his DooH Academy, says digital-out-of-home is now a big revenue growth driver in North America, with data suggesting double-digit year-on-year growth.

Programmatic ad buys and placement now represent about 15 percent of DooH, and Gunderman expects that will "continue to grow as brands and agencies continue to make data-driven media decisions."

John Dolan, Global Head of Media Sales for the Montreal adtech firm Broadsign, isn't convinced it is as high as 15 percent, but confirms it's growing, but the level of programmatic varies wildly by market. He noted the relatively small Netherlands market has some very sophisticated platforms in place and is seeing as much as half or even more of DooH media there placed via programmatic.

It's tougher in North America for many reasons, including the scale of the market and the dizzying number of adtech companies who loudly market their own approaches to what is also called P-DooH. Planning efforts are also challenged by the variety of media options and how they're categorized – with Dolan noting a digital display totem on city sidewalks is physically very similar to totems inside shopping malls … but in very different environments.

The DooH sector is winning trust and respect with the most important audience – consumers. Recent research from the US-based Out of Home Advertising Association found 73 percent of consumers have a favorable view of DooH ads, much higher than other mediums like television/video (50 percent), social media (48 percent), online (37 percent), audio (32 percent), and print (31 percent).

A notable emerging trend is how numerous place-based ad networks – such as EV charging station networks Volta and GSTV – which have screens embedded at gas station fuel pumps – are starting to go beyond marketing the attributes of their environment, to also tout the proximity of their screens to retail in the near vicinity.

Detroit-based GSTV, for example, says its Amplify ad targeting gives brand marketers the "ability to work in concert with existing brand plans means it can influence purchase decisions immediately at convenience retailers as well as significantly impact decisions directly prior to purchase across top retailers from big box, drug, dollar and grocery."

That approach is now backed up by OAAA research, which found DooH ads drive consumer action, with 76 percent of respondents indicating that DooH ads had recently prompted them to take action. The research, a survey of 1,000-plus US consumers, also found 51 percent of those who noticed directional DooH ads subsequently visited the advertised businesses, and then 93 percent of those respondents "completed a purchase, highlighting the tangible business outcomes generated by DooH ads."

A trend Dolan has picked up on is a spike in inbound market demand when it comes to international buying. "So we've seen a really big influx of multi-market buying, where the U.S. is a component of what a large brand is trying to execute. This year, we've seen a lot of large-scale campaigns where it's seven, eight or nine countries booked at a time, and the U.S. is just one of those components being planned out of Europe." Historically, those kinds of coordinated, multi-country media buys have been rare.

ICONIC DOOH

Advertising or Attraction?

The largest and greatest of all outdoor screens: iconic DooH sites are prestigious assets for cities. They bring buildings to life and display campaigns that resemble small blockbusters, transcending the label of mere “advertising.”

Antonia Hamberger

Piccadilly Lights in London, Coex Atrium in Seoul and, of course, New York's Times Square – they are among the most iconic digital-out-of-home locations in the world. Anyone who has not yet seen these huge, façade-filling screens live will probably recognize them from social media. The campaigns that are created for these spaces have little in common with regular DooH: they are small works of art that merge with their surroundings.

Particularly in Asia and North America, new architectural DooH highlights have emerged in recent years. But the way in which these screens are used has also evolved, with specialized creative studios developing new content production techniques for each different format: In 2024, for instance, Dior had its signature butterflies fly across several synchronized screens with a 3D effect. Samsung teased its Galaxy Unpacked event with simultaneous campaigns on different iconic DooH sites worldwide. And Taylor Swift published individual song lyrics on screens in the USA and UK before midnight each day in the week before the release of her album 'Midnights'. It’s the big brands, artists, and tech companies that use these screens, each time adding more “wow.”

Creating global momentum

Iconic DooH blurs the boundaries between out-of-home and immersive experiences. A movement that culminated in 2023 with the opening of the Las Vegas Sphere. The huge LED façade on the oversized spherical shape of the building sparked new ideas for brands and creatives. New-York-based BCN Visuals with Chief Creative Officer Davide Bianca is one of the studios that specializes in iconic DooH sites and was among the first to produce campaigns for The Sphere. For instance, their team was behind Microsoft's Xbox brand campaign “Power your dreams,” which set two world records at the same time: the first campaign with a 3D effect on a spherical shape and the largest campaign in terms of surface area to date (*for the Sphere see also page 62*).

“When you're dealing with brands like Xbox, Marvel, or Avatar, you have to ask yourself questions like: What will get people talking about this? How is the campaign bigger than what they did before?” Bianca says. What his team conjured up for Microsoft on the Sphere was an anamorphic staging of the Marvel superheroes on the building’s façade, but also an entire event: they invited influencers and VIP guests and booked the hotel rooms in Las Vegas with the best view of the Sphere. This operation ultimately extended the reach from a few thousand live viewers to an online audience of millions.

The social amplification level

Iconic DooH thrives on this extended online reach: a campaign like Microsoft's is expensive – half a million US dollars is reportedly paid for a day on the Exosphere, which is the official name of the Sphere’s LED façade. These campaigns must therefore be developed in such a way that

Xbox was one of the first brands to advertise on the Sphere with a Forced Perspective campaign.

triggers an immediate "wow" effect with the potential to go viral on social media.

The powerful synergy between social media and iconic DooH was confirmed by a neuroscientific study in 2023 conducted by Piccadilly Lights marketer Ocean Outdoor and the American Neuro-Insight Institute. The study investigated how iconic DooH touchpoints can enhance a social media campaign. The result: when consumers see a brand post on social media, they are 28 percent more likely to notice it if they have already seen it on a large DooH screen.

DooH is therefore an ideal multiplier for social media, and vice versa. This effect amplifies with more innovative, larger, and more experiential campaigns – precisely what iconic DooH screens are designed for.

The content challenge

The challenge is that this wow effect does not scale very well. Every screen – every canvas – needs its own production. For example, BCN Visuals begins each job with what they call a screen study. Part of this prep work often involves finding the "sweet spot" – similar to the best seats in a movie theater, it's the spot with the optimal view of the screen. The content is adapted precisely for this spot, as this is also where the campaign is recorded for social media. This sweet spot is especially crucial for animations using the forced perspective technique: the effect of content elements extending from the screen only works from the right angle. With L-shaped screens, this is typically along the extension of the screen's edge. With the Sphere, it's hundreds of meters away on the balconies of some big resorts and on Sands Avenue.

Living facades

Iconic DooH surfaces differ from regular roadside screens in another respect: they are part of the architecture of buildings or districts. A prime example is the LED screen that covers the Burj Khalifa in Dubai, illuminating the world's tallest building during night time. And a 16-hour flight away from Dubai, the Sunset Boulevard network in West Hollywood proves that large free-standing screens can also be architectural highlights.

Media façades and unusual screen formats exert a great fascination in every part of the world. In Europe, however, iconic DooH screens are rare, and when present, they are much smaller. Especially in the DACH region, large moving images in public spaces face opposition from authorities, making permits nearly impossible to obtain. One workaround that media owners are now exploring is green facades with integrated screens. A media façade entwined with green walls could thus become the European equivalent of Iconic DooH.

→

Iconic DooH Around the World

Las Vegas
The Sphere
(Photo: Sphere Entertainment)

New York City
Times Square
(Photo: Branded Cities)

Dallas
AT&T Discovery District
(Photo: AT&T Discovery District)

Los Angeles
Sunset Strip
(Photo: Orange Barrel Media)

Los Angeles
The Moxy/The Circa
(Photo: Branded Cities)

London
Piccadilly Lights
(Photo: Ocean Outdoor)

Beijing
Sanlitun
(Photo: invidis)

Seoul
Coex Atrium
(Photo: invidis)

Tokyo
Shinjuku Crossing (Photo: Charles & Keith)

Dubai
Burj Khalifa
(Photo: Porsche)

Hongkong
M+ Museum
(Photo: M+)

Hongkong
Sogo
(Photo: CVISION)

Singapore
Ten Square
(Photo: SG Mark)

BROADSIGN

“The Most Fun I've Had in My Life”

On the occasion of the company’s 20th anniversary, president, CEO, and owner Burr Smith explains his vision: Broadsign aims to transform the way brands buy, sell and target out-of-home advertising.

Florian Rotberg

In December, the metropolis of Montreal with its four million inhabitants reveals its most enchanting self: covered in deep snow, crispy cold, sunny and in the evening hours with colorful, glowing art. The OoH platform operator Broadsign, which has renovated its company headquarters in the city center to celebrate its 20th anniversary, has also spruced itself up.

Photo: Broadsign

Sees Europe as the world’s most innovative OoH market: Burr Smith, CEO of Broadsign

More than 120 of the 270 employees worldwide work in Montreal, most of them are back in the office again at least part-time. The newly renovated Broadsign office was designed for our new hybrid reality and feels like the hip work havens from Google or Meta. In addition to the HQ in Montreal, Broadsign staff are based in European offices in Germany and Spain as well as in Australia.

CEO and, via his family office Jedfam, owner of Broadsign is Burr Smith. Under his leadership, the Canadian solution provider has grown into the leading End-to-End OoH platform: Almost 400,000 DooH displays in 85 countries run on Broadsign, and a total of one million out-of-home advertising faces are managed and controlled via the platform. Many of the major OoH providers rely on Broadsign solutions, including JC Decaux, Ströer and Clear Channel.

Europe’s OoH is most innovative

Broadsign serves customers in 85 countries and plans to increase its presence in Asia soon. The company generates 40 percent of its business with European and North American customers respectively, and approximately 10 percent in the Australia/New Zealand region.

"North America is a huge market: massive scale alone is enough to operate digital-out-of-home profitably," says Smith. "Europe, the world's most innovative OoH market, is completely different. Like in Australia, only those who continuously reinvent themselves are successful in this industry, as each national market has its own rules; roles of agencies and market participants differ. Broadsign's success is built on providing a platform toolbox where every media owner can find the right solution mix."

In 2006, Burr and his family started investing into the company. "Broadsign always had great technology and the company's SaaS business model was very revolutionary for that time." But apart from a handful of customers, the company was struggling. It had run into financial difficulties, "potential customers were worried that Broadsign would not survive in the market in the long term."

Change of strategy

With a full takeover in 2012, Burr Smith was able to put the company on a sound financial footing. Another change in strategy in 2017 laid the foundations for today's success. "Until then, Broadsign was just a CMS provider. There was a legitimate concern that we were too small and insignificant for our larger customers, as pure CMS solutions are highly standardized and interchangeable."

"We decided to transform the CMS into a platform for which third-party providers would develop new solutions," says Smith. "The second important decision was that we focused on the potential of programmatic for DooH early on." In the following years, Broadsign acquired third-party providers Ayuda and Campsite to have full control over business-critical solutions. Today, the platform offers everything OoH customers need for OoH management – whether for static or digital screens.

The growth of 700 percent – partly through acquisitions – in the last five years confirms the success. Today, Broadsign is a very healthy company; and the expansion now also includes static OoH. It's quite unusual for a DooH solution provider to expand into the analog OoH space. With Broadsign Static, OoH companies gain access to real-time inventory availability and media-independent workflows.

"We pride ourselves on keeping all profits within the company. For us, Broadsign is a long-term affair of the heart that brings us a lot of joy," says Smith. "Running the company is the most fun I've had in my life." The family is no longer thinking of selling the company. It takes up to four years to develop new products – private companies are better suited for long term invests without the hassles of quarterly reportings. "We are unique with our platform; and Broadsign has a rewarding corporate culture."

Specialists needed

Out-of-home is still lacking standards for carrying out automated transactions, and workflows differ too much between stakeholders. "The industry is still primitive compared to online, but the potential is huge, as the growing market share shows," says Smith.

The Broadsign CEO is not worried about the influence of global adtech providers: "They have the scale, but cross-channel campaigns with OoH need specialists like us." The programmatic market is also changing rapidly. "The market is sorting itself out, technology and requirements are changing rapidly." Broadsign also has a DSP, but it is not offered in all markets. "We needed a DSP to enable a more complete end-to-end offering."

Broadsign now climate-neutral

It's not just the company that is close to Burr Smith's heart; he is just as passionate about sustainability: "We are now carbon neutral. We have trimmed all our activities, including the global AWS infrastructure, and put in place a recurring process for quality offsets, to be carbon neutral."

The tasks for the future are clear. According to Smith, OoH will gain further market share, once booking and playout become easier to manage. "We want to further automate and simplify the OoH industry," he says. "What the platform offers today is more than the sum of its parts."

OCEAN OUTDOOR

Favorable Timing

Ocean Outdoor is one of the major DooH players in the UK and Scandinavia. Now the company enters the German market.

Balthasar Mayer

In recent years, new players in the German DooH market have mainly come from the start-up scene. Now Ocean Outdoor, one of the biggest players in the European business, is entering the field. The subsidiary Ocean Outdoor Germany, managed by Christopher Samsinger, has been established this year.

Plans for this subsidiary have been in the making for several years, and with former Ströer SVP Christopher Samsinger on board, the plan became a reality at the beginning of 2024. Ocean's main shareholder, the American investment company Atairos, welcomed the move and even delisted the company from the stock exchange, as the expansion into Germany is part of a long-term strategy to achieve further internationalization at the desired pace.

According to Samsinger, the momentum is currently favorable, with the company focusing on a small number of prestigious locations with a wide reach, in line with the Ocean motto "The Art of Outdoor". There are already enough large networks in Germany, so "we can't fill everything with advertising space," says Samsinger. "We want to add something new to the market."

Although not yet visible, Ocean Outdoor has already been active in Germany through a long-standing Europe-wide cooperation with shopping mall giant Unibail-Rodamco-Westfield. Ocean screens can already be found in 18 German shopping centers, marketed by partner Goldbach. These, however, will not be the focus of Ocean Outdoor Germany, as Christopher Samsinger emphasizes: "When I started, I was told: 'You have to find your Piccadilly Lights in Germany'."

Ocean Outdoor sees its strength in large premium screens, and malls are the right place to start. In Centro Oberhausen, for example, they already installed a large LED halo. Additionally, in the new Westfield Überseequartier in Hamburg, expected to open in summer 2024 after problems with water damage, there will be a large premium screen called "The Entrance".

At the Centro Mall, Ocean Outdoor is planning to unveil the largest forced-perspective screen in Germany later this year, called "The Centro Lights". For the distribution of these large screens, Ocean will follow its own rules. Although the screens will be available for programmatic booking to gain visibility, Christopher Samsinger aims to sell premium campaigns through direct buy. Those premium campaigns include Ocean's deepscreen technology, which combines forced perspective presentations with interactive elements.

Currently, the focus lies on building the core team, though Samsinger keeps the exact headcount under wraps, stating, "Just this much: I conduct dozens of job interviews a week." Ocean Outdoor Germany has already joined the FAW and IDOOH, lacking only a large screen for a dream start – preferably in Berlin. Samsinger notes, "It has to do with the booking logic – international customers always want to start in Berlin."

Setting up such a screen can take years due to negotiations and permits, but Samsinger sees a window of opportunity right now for initiating large-scale DooH projects in the country. Ocean Outdoor Germany now aims to capitalize on this opportunity.

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STRÖER

Two Milestones

In 2024, Ströer celebrates 30 years of DooH – and gave itself a birthday present with the highest revenue in the Group's history achieved in 2023.

Florian Rotberg

On February 15, 1994, Ströer put two DooH displays into operation for the first time under the name Infoscreen. The two pilot screens were located in the Odeonsplatz subway station in Munich. Ströer thus laid the foundation for DooH in Germany. Now, 30 years later, DooH has developed from a sideshow in the somewhat dusty out-of-home market to an absolute success story. This is also reflected in Ströer's figures: with a 28 perccent increase in revenue in the past year, the German market leader was able to benefit disproportionately from the public video boom.

Ströer was able to increase its consolidated revenue by eight percent from 1.77 billion euros to 1.91 billion euros, thus achieving the highest revenue in the group's history. Profit (Ebitda adjusted) also grew by five percent to 569 million euros.

Several growth factors

Ströer's core business in particular – analog and digital-out-of-home – clearly bucked the trend of the overall advertising market in the fiscal year 2023 with revenue growth of 8 percent (whole market 0.3 percent), with year-end business showing the strongest momentum with an increase of 13 percent in the fourth quarter.

In 2023 as a whole, DooH developed as a key growth and revenue driver. The Cologne-based company achieved a 28 percent increase in DooH sales and doubled programmatic DooH sales.

Christian Schmalzl, Co-CEO of Ströer, comments: “In the past year, we saw many customers increase their share of out-of-home advertising – and the DooH offering is often the reason for this, as our advertising customers can address their target groups flexibly, quickly and in a targeted manner with digital-out-of-home.”

In addition to DooH, Ströer's other group divisions also contributed to revenue growth. Asam Beauty, with growth of around 28 percent, achieved revenue of more than 200 million euros for the first time – this is important for Ströer as the company is considering a sale or “spin-off” of the beauty subsidiary.

DooH growth booster

Ströer was able to maintain its revenue high in 2024: The company increased its revenue by 11 percent (9 percent organically) from 410 million euros to 453 million euros from January to March.

The strong developments at the end of the previous financial year thus continued in the first quarter. Profit (adjusted Ebitda) grew by 12 percent from 97 million to 108 million euros and Ebit (adjusted) increased by 33 percent to 35 million euros.

The Out-of-Home segment was the strongest growth driver in the first quarter of 2024 with an increase of 17.4 percent (reported: 15.7 percent). DooH already accounts for 38 percent of Ströer's core business – excluding OoH services – in the past quarter. This means that almost one in four OoH revenue euros is already generated on display and LED screens in public spaces. Ströer plans to expand the existing DooH network nationwide and “gain further significant market share” in the coming years.

JC DECAUX

DooH Delivers

Over the past 14 months, JC Decaux has further expanded the DooH share of sales further. The Viooh programmatic share grew to 8 percent.

Balthasar Mayer

The German DooH industry has enjoyed many records in recent months. With the sales figures presented for 2023, the out-of-home advertising group JC Decaux confirmed this trend for the international business. The Group's sales grew by 7.6 percent last year, organically 8.7 percent. In total, it amounted to 3.57 billion euros. That was mainly due to the digital business, but also the street furniture segment.

In 2023 as a whole, DooH sales increased by 20.8 percent, 22.7 percent organically. The share of total sales was 35.3 percent. The programmatic advertising revenues via the Viooh SSP, which represent mainly incremental revenue from data-driven campaigns and the acquisition of new advertising customers, grew by 63.5 percent in 2023 and reached 100.2 million euros, accounting for 8.0 percent of annual DooH revenue.

Revenues from analog advertising also increased in 2023, despite the conversion of some analog locations into digital spaces. JC Decaux intends to continue to focus on the targeted roll-out of digital screens in premium locations and on the further development of programmatic solutions.

Strong 4th quarter

The result was also influenced by the fourth quarter of 2023, according to Jean-François Decaux, Chairman and Co-Chief Executive Officer of JC Decaux, a "record quarter with the highest quarterly sales that our company has ever generated."

Sales generated with DooH grew in the fourth quarter of 2023 by 20.5 percent and 22.9 percent organically, respectively, and reached a record share of 38.2 percent of the group's total revenue in the fourth quarter.

2024 gets off to a good start

JC Decaux also got off to a positive start in the new year: the group increased its DooH sales by 28 percent in the first quarter of 2024 (27.9 percent organic). According to JC Decaux, this growth can be seen across all company segments and regions. However, the areas of street furniture, transportation media and large-format advertising were most successfull, whereby the most digitized markets acted as growth drivers.

Overall, adjusted revenue increased by 11.1 percent (11.0 perecent organically) to 801.6 million euros. For Q2 of this year, the Group expects sales growth of 12 percent , whereby the effects of the Olympic Games in Paris and the 2024 Uefa Soccer Championship in Germany are seen as potential growth drivers.

Ein Fokus bei JC Decaux: Flughafen-DooH

Photo: JCDecaux

Photo: Bravo Media

Combination of CGI and real signage

TECHNOLOGY

Faux DooH is Getting Real

The capabilities of CGI and the mechanisms of social media come together for fake DooH campaigns. Why this could be a problem.

Dave Haynes

Technology marketers have always been a little, let's say, relaxed about the accuracy and validity of their product assertions, so the influx in the last 12-18 months of what's been called Faux DooH is just a new chapter in a long-running story.

The good news, though, audiences are increasingly wise to what's going on, and creative producers have either decided or been scolded into being more honest about their efforts.

If you spend anytime online, you've probably seen:

- London double-decker buses with eyelashes that get mascara touch-ups when they roll past a giant brush mounted on a building;
- An iconic giant picture frame along a Dubai freeway turned into an Adidas ad celebrating Lionel Messi's World Cup win;
- A giant Barbie stepping out of its packaging on a plaza near Dubai's Burj Khalifa skyscraper.

They all generated huge amounts of social media buzz recently, which was the point, but like many, many other similar projects, there was little or no mention in social media posts and videos that these things were just CGI jobs.

It's an emerging medium that takes physical spaces – buildings and landmarks – and uses (usually) well-executed CGI work to give them a fun, augmented reality overlay that is then pushed out on social media as videos and images. It's been called Virtual DooH, Fake DooH or the one I have warmed to, Faux DooH.

Most of the entertainment we consume day to day has a degree of computer-generated visuals. But consumers know that's the case. It's entertainment. We're happily suspending disbelief to be entertained.

The problem with CGI effort is that the comments that append these social media posts suggest many to most people assume these things are real, with some of them even making plans to go see them. So people are being misled, and being set up for disappointment.

The counter argument is that these efforts get brands and other end-users thinking and asking about doing work that's outside the predictable norms.

David Title, who runs the New York City creative technology studio Bravo Media, has lots of direct experience getting phone calls and emails from people who saw CGI projects, assumed they were real, and wanted their own real-world versions. He's broken the news that what was seen wasn't real, but he sees that as an opportunity, rather than a problem.

"Is there a responsibility to do something, somewhere out there, that loudly says, 'This isn't real?' I don't know," says Title. "What it allows for is even small brands, challenger brands, and not-for-profits, to create the experience of their dreams and realize that, at a fraction of the cost of executing it in the real world."

"With digital out-of-home, in general, you're first buying for those views on the street," Title continues. "But the bonus is if your content is so good that it gets picked up and shared on the internet and across social media, and also picked up by the news. When that happens, it's a massive boost."

"So if you look at these virtual digital out-of-home campaigns, you're not getting those street views, but you're getting an exponentially higher number of impressions through social media. I think, in that way, it's such an exciting way to explore what's possible and also to play around with reality."

Faux DooH generates predictably mixed feelings among established media companies. If creative executions get brands excited about out-of-home-advertising, that's a positive.

But media companies are wrestling with how to deal with virtual creative that uses real media structures as the digital setting – like a high profile billboard in a major city that is virtually running an ad campaign, without making any arrangements or sharing any earnings with the media company or property group that manages and owns that display.

Why book a real campaign if a one can be 'faked' and the viewers earned through social media channels instead of in a city plaza? Richard Malton, the CMO for Ocean Outdoor, one of Europe's largest out-of-home media companies, is not a fan. In a blog piece, he argues: "Sure, it might be a cheap, easy tactic to build buzz, but how justifiable is it to PR fake activations on someone else's commercial real estate, if the people behind it aren't transparent about what they are really doing?"

"This is reflected in consumer brand approach – where scores are higher for actual DooH brand campaigns versus a socially amplified post of that campaign featuring the same content," Malton continues. "Of course, the social element is hugely important and another priming superpower of DooH, but it's a bonus, not a replacement. Anyone telling you different is selling you a pup."

The good news, alluded to at the start, is that these CGI-driven ad videos have grown common online, and they're often now identified in some way – sometimes overtly or using hash tags as clues for CGI ads, Fake OoH or Faux DooH.

They're fun, and they have a role in the media mix. But they're better when they're handled with care. Trust is a big component of brand marketing, and if consumers have a sense they're being misled, that trust can start to erode.


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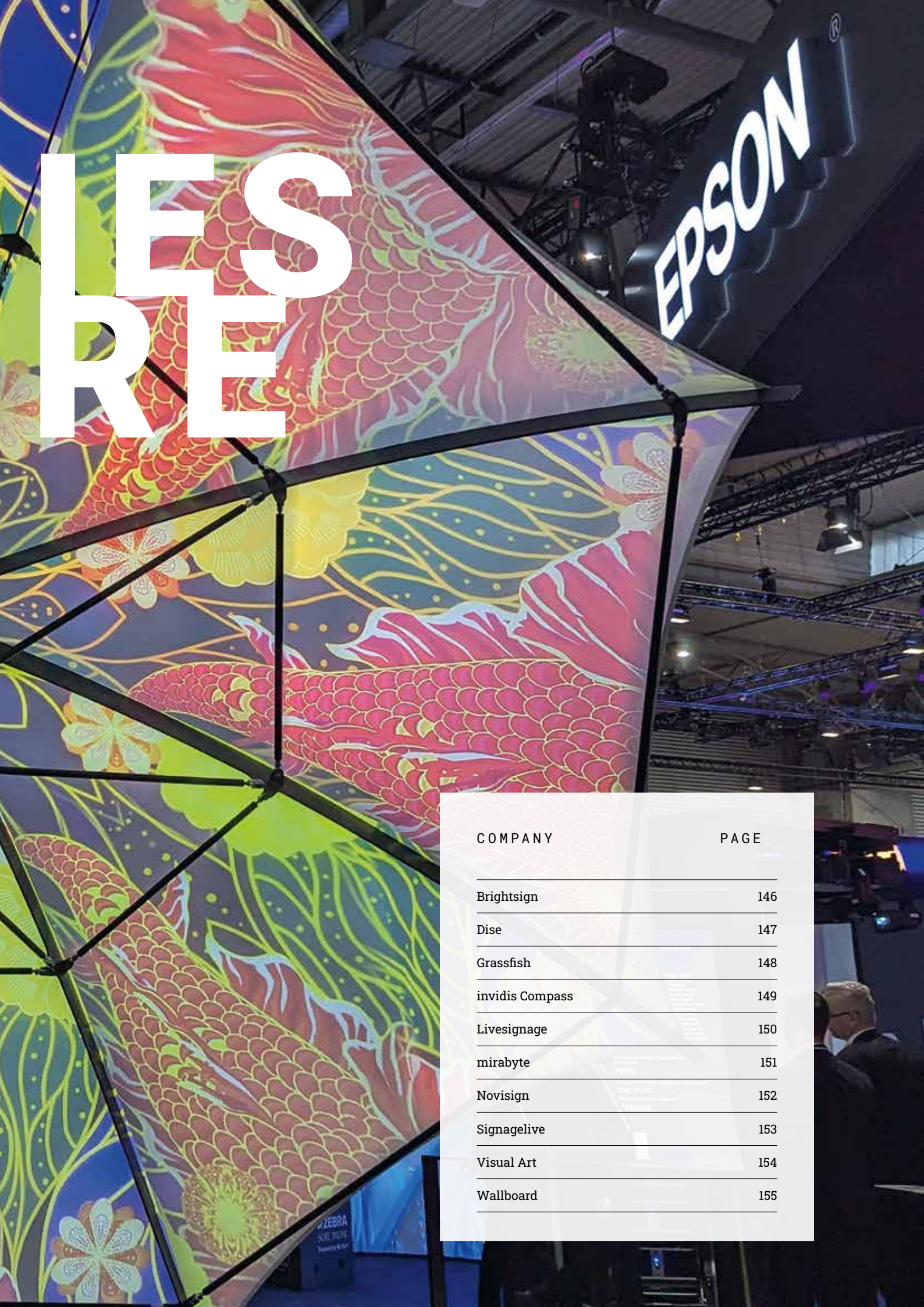

IES RE

COMPANY	PAGE
Brightsign	146
Dise	147
Grassfish	148
invidis Compass	149
Livesignage	150
mirabyte	151
Novisign	152
Signagelive	153
Visual Art	154
Wallboard	155

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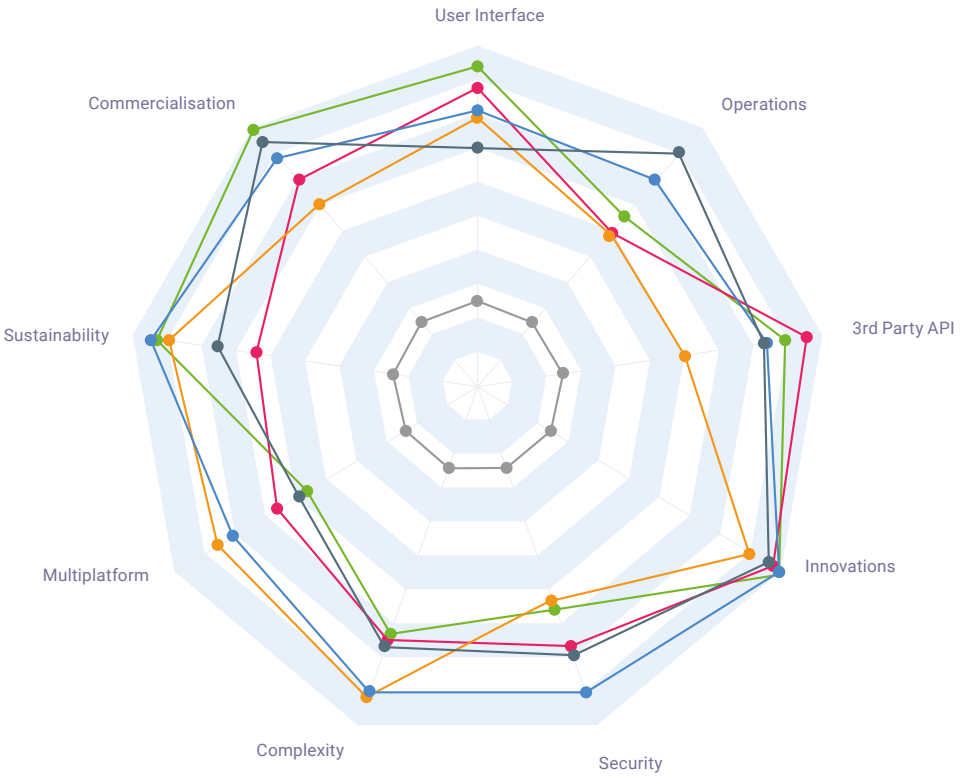

The **invidis Digital Signage Software Compass** serves as a comprehensive resource and platform for digital signage software-related topics, offering expert knowledge, editorial independence, and transparency in a fragmented market. Our current focus is on digital signage content management systems which will be complemented with remote device management (RDM) soon.

The Digital Signage Compass is designed for:

- End-users looking for the perfect digital signage solution
- IT/AV/DS Integrators without a software platform
- Integrators with own software solutions searching for alternatives / to benchmark
- Independent Software Vendors (ISVs)

The tool is not sponsored by any company. In contrast, invidis is investing heavily to provide the industry and end-users thoroughly vetted data. Our main goal is to provide an independent solution, which is why listing and verification are free.

We offer annual subscription to access the compass database with exclusive access to data, market insights and a personal MS Teams-based onboarding.

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Recognized for excellence, Livesignage won two awards at the **Digital Signage Awards 2024**, in the **Outstanding Company** and **Omnichannel Design and Execution** categories.

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We are one of the leading manufacturers of high quality mounting systems for media technology. The base for our range consists of our own product lines, individual solutions according to customer specifications and a selected assortment, which we constantly optimise and adapt to current market requirements.

In our modern administration, production and logistic center in Bad Oeynhausen we have access to an extensive portfolio and knowledge. Innovative solutions are the specialty of our team. Flat hierarchies enable practice oriented product development. We attach great importance to a well-founded consultancy and professional service – this is the only way to satisfy customers and offer a perfect solution.

Customer requirements are an essential part of our work. Right from the start, we are in close dialogue with our partners and provide support from the beginning until the end of a project. Our concept of quality is not limited to the end product, customer oriented service is also included here.

Solid partnerships have emerged through cooperation with our customers, constructive feedback and fair treatment on eye level. In this way, it is possible to take up innovation impulses and be constantly well prepared for the future.

HAGOR Products GmbH

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www.hagor.net

iiyama

As one of the world's leading manufacturers of screens and displays, iiyama stands for special expertise in the monitor market. Founded in 1973 in Nagano, Japan, iiyama has built a strong reputation as a provider of best-priced, high-performance display solutions and outstanding service. The long-established, customer-oriented company has been active in Germany with great success since 1993.

Initially, the portfolio ranged from low-priced LCD/LED entry-level monitors to high-quality business devices with ergonomic features for professional use. Over the years, the innovative company has developed into an expert for digital signage, LFDs and interactive LFDs. A clear focus is on (multi-) touch screens and smart large format displays. These range from the interactive desktop model for office use to the highly robust device for 24/7 use in high-use environments with screen diagonals between 10 and 105 inches as well as state-of-the-art (multi-)touch technologies with up to 50 touch points. iiyama relies in particular on projective capacitive (PCAP) models (FHD & UHD), although the company also offers the full range of resistive, SAW and infrared touch screens in various sizes and formats up to 105 inches.

iiyama's extensive portfolio includes high-quality stand and mounting systems as well as advanced Unified Communications products. For the perfect all-in-one solution, iiyama also offers a modular slide-in PC (Win11) – cable-free and ready for immediate use.

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www.iiyama.de

invidis consulting

invidis conuslting established itself as a consulting firm specialized in digital signage. The invidis name represents thought leadership and strategic consulting in the field of digital signage and digital technology in the real world, for example in retail or in offices.

invidis founder Florian Rotberg, Stefan Schieker – founder of Result MC Management Consultant –and the joint team of experts support clients worldwide. The focus is on scalable, sustainable digital concepts and strategies. Our services are diverse, as the following examples illustrate:

- We evaluate and develop business models and strategies for investors and M&A departments. In addition, we offer strategic due diligences on the buy- and sell-side.
- We conduct market and competition analyses for digital signage integrators and support them in M&A activities.
- We develop strategies for marketing managers regarding cross-platform experiences and content.
- We provide retail architects and store planners with customer journey and mindset analyses as well as digital touchpoint concepts.
- We provide CFOs and analysts with recommendations for action, based on retail analytics.
- We support CTOs with tenders; in addition, we evaluate providers and help with the connection of front-end and back-end solutions.

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Germany
Phone +49 (0)89 2000 416 17
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LG Business Solutions

LG: Driving Innovation in Digital Solutions

LG continues to transform the digital landscape with groundbreaking products and solutions that meet the evolving needs of partners and end-users. LG's commitment to innovation and excellence is evident in its portfolio, designed to support businesses and organizations in adapting to the future.

Within this portfolio is **LG MAGNIT,** LG's advanced MicroLED display, that redefines visual excellence and scalability. Designed for premium installations, it offers exceptional color accuracy and clarity. The **LG LED AIO** (All-in-One) series delivers versatile, easy-to-install solutions perfect for businesses seeking impactful displays with quick setup times. **LG Business Cloud** complements these with a secure platform for multi-site management, empowering better efficiency and optimization.

LG's expertise spans various industries, providing vertical-specific solutions tailored to unique requirements. LG has the products and know-how to deliver success, whether it's signage solutions for mission-critical systems, comprehensive multi-site management tools, or an innovative hospitality lineup.

Partner with LG for innovative solutions that drive success and elevate business.

LG Business Solutions

LG Electronics
Deutschland GmbH

Alfred-Herrhausen-Allee 3-5

65760 Eschborn

Germany

lg.com/de/business/information-display

Florian Sohn

Phone +49 (0) 151 465 65 694

florian.sohn@lge.com

ZetaDisplay

20 years of leadership and innovation in digital signage.

ZetaDisplay was founded 20 years ago in Sweden with the idea that an innovative mix of visual digital technologies, a specialized software platform and customer-oriented business creativity has the power to influence every arena, at every organization in every place. An idea that is as relevant now as it was then.

Today we actively drive the visual digital transformation of all types of physical environments with digital signage technologies and professional services. Our software platform, solutions and creative business concepts inspire, influence and guide millions of people every day in all types of public spaces indoor and outdoor.

ZetaDisplay is one of the leading European full-service digital signage solutions groups servicing major international European customers such as KFC, Burger King, Volvo, ARAL, Commerzbank, INTERSPAR, Mercedez Benz, KPN, INGKA and many more leading blue chip brands across Europe and globally with 120.000 active installations in over 50 countries.

ZETA DISPLAY

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The invidis Digital

invidis consulting

Florian Rotberg
Florian.Rotberg@invidis.com

STRATEGY UNIT

The invidis consulting strategy unit advises leading digital signage suppliers – hardware, software and integrators – as well as global brands in their search for digital experience concepts. They are also much in demand for their M&A expertise, consulting both the buyer and the seller side.

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IMPACT UNIT

The invidis impact unit advises digital signage providers on operational aspects of their business. Among other things, they support business development and sales teams, conduct technology assessments, and help companies achieve their sustainability goals.

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Photos: invidis

Signage Network

invidis editorial

Balthasar Mayer
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The invidis editorial team writes about news and trends in the digital signage and DooH industry from Monday to Friday on invidis.de and in the invidis newsletter. In 2024, they launched the international website invidis.com and the weekly format "invidis confidential." One of their other special projects is, of course, this yearbook.

Antonia Hamberger
Editor
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invidis operations

Christine Koller
christine.koller@invidis.com

The invidis operations team handles organization, media sales, and special projects like the Digital Signage Summit Europe, a conference jointly organized with Integrated Systems Events.

Merle Mommaal
merle.mommaal@invidis.com

invidis Media Kit

Advertise on all Channels.

German Newsletter Subscribers*
1,800+

Unique German Website-Visitors per Month**
34,000+

Yearbook Distribution***
36,000+

Linkedin-Followers
1,500+

Other Social Media Followers
(Youtube, Twitter, Instagram, Facebook)
2.400+

Newsletter

- Sent out from Monday to Friday about news and trends from the Digital Signage and DooH industry
- Published at 9 a.m. in German language
- Readers include executives and decision-makers

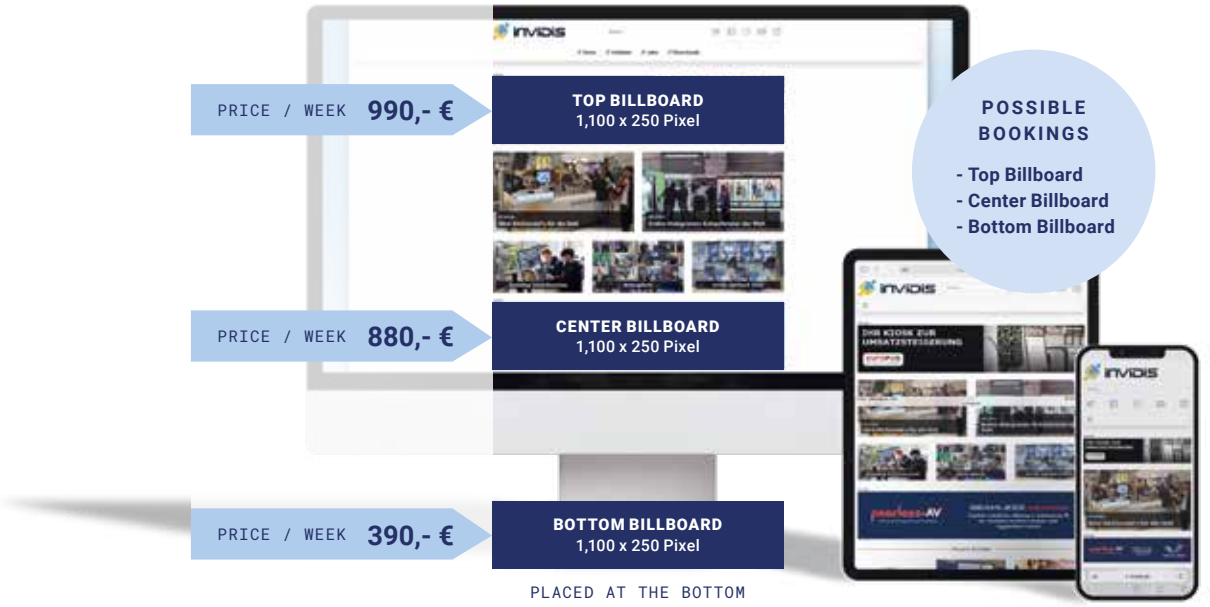
Subscribers*
1,800+

Open Rate**
42%

Click Rate**
18%

*As of February 2023 **Average 02/2022 – 02/2023 ***Total reach in 2022

Website



- The most important B2B trade portal for Digital Signage and DooH in German language
- Daily news, user stories, interviews and exclusive articles

Unique Visitors (per Month)*
34,000+

Unique PI (per Month)*
46,500+

Newsletter

AD TYPE	PRICE	FORMAT	SPECIFICATIONS
Top-Banner	**1,150,- € / Week**	690 x 157 Pixel	✓ Media Format: JPG, max. 100 KB ✓ Link: URL ✓ Delivery Deadline: Friday before Campaign Start
Banner Middle	**290,- € / Week**	690 x 157 Pixel	
Banner Bottom	**190,- € / Week**	690 x 157 Pixel	
Native Ad 1	**750,- € / Week**	200 x 150 Pixel Picture + Text	✓ Media Format: JPG , max. 100 KB ✓ Text: Titel max. 75 Letters, Body Text max. 350 Letters (incl. Blanks) ✓ Link: URL ✓ Delivery Deadline: Friday before Campaign Start
Native Ad 2	**590,- € / Week**	200 x 150 Pixel Picture + Text	
Native Ad 3	**390,- € / Week**	200 x 150 Pixel Picture + Text	

Website

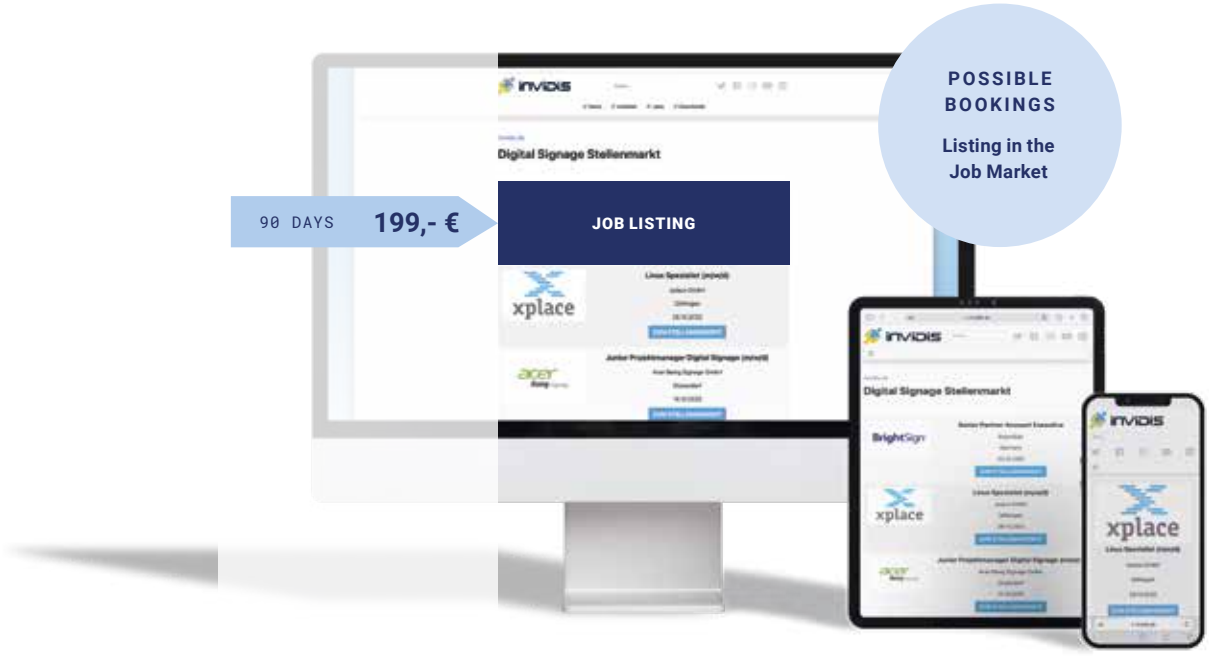
AD TYPE	PRICE	FORMAT	SPECIFICATIONS
Top Billboard	**990,- € / Week**	1,100 x 250 Pixel	✓ Media Format: JPG or GIF, max. 100 KB ✓ Link: URL ✓ Delivery Deadline: Friday before Campaign Start
Center Billboard	**880,- € / Week**	1,100 x 250 Pixel	
Bottom Billboard	**390,- € / Week**	1,100 x 250 Pixel	
Job Market	**199,- € / 90 Days**	Logo 1,200 x 750 Pixel + Text	✓ Media Format: JPG; min. 800 Pixel Width

All Prices are Net Prices plus VAT. Subject to Change without Notice.

* Average 02/2022 – 02/2023

invidis Media Kit

Online Job Market



- The invidis job market for the Digital Signage and DooH industry
- Here you will find the perfect target group for your job advertisement
- The job advertisement will also be posted in the invidis newsletter and thus receive a great visibility

Newsletter Subscribers*
1,800+

Website

AD TYPE	PRICE	FORMAT	SPECIFICATIONS
Top Billboard	**990,- € / Week**	1,100 x 250 Pixel	✔ Media Format: JPG or GIF, max. 100 KB ✔ Link: URL ✔ Delivery Deadline: Friday before Campaign Start ✔ Media Format: JPG; min. 800 Pixel Width
Center Billboard	**880,- € / Week**	1,100 x 250 Pixel	
Bottom Billboard	**390,- € / Week**	1,100 x 250 Pixel	
Job Market	**199,- € / 90 Days**	Logo 1,200 x 750 Pixel + Text	

We help you with your media planning:

Christine Koller I Tel.: +49 89 2000 416 17 I christine.koller@invidis.com

All Prices are Net Prices plus VAT. Subject to Change without Notice.

*As of February 2023

Yearbook

- The invidis yearbook offers an overview of developments in the Digital Signage and DooH industry and sets future topics on the agenda
- Published in English and German
- The yearbook is a vital information source for C-level managers globally
- Due to the focus topic, all yearbooks retain their relevance and are downloaded regularly

Bookings possible in the English and/or German Version

Yearbook Distribution *
36,000+

PDF-Downloads *
35,000+

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1,000

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1/2 Ad Vertical
1,890,- €

Yearbook

AD TYPE	PRICE	FINAL	TO DELIVER	SPECIFICATIONS
U4 Cover Page	3,290,- €	210 x 297 mm	216 x 303 mm	✓ Ad Format plus 3 mm Bleeding ✓ CMYK, no Spot Colors ✓ PDF (PDF/X-3:2002) with Embedded Fonts, or Fonts as Paths ✓ Alternatively: Indesign (INDD), Illustrator (AI/EPS) oder Photoshop File (PSD, TIF, EPS) ✓ In Case of Open Files, Embedded Pictures and Fonts must also be Delivered ✓ Resolution: 300 dpi (Pictures), 600 dpi (Logos, Characters) ✓ Line Width min. 0.25 Pt
U2 Cover Page	3,290,- €	210 x 297 mm	216 x 303 mm	
U3 Cover Page	2,990,- €	210 x 297 mm	216 x 303 mm	
2/1 Double Page	5,580,- €	420 x 297 mm	426 x 303 mm	
1/1 One Seite	2,790,- €	210 x 297 mm	216 x 303 mm	
1/2 Half Page Horizontal	1,890,- €	210 x 152 mm	216 x 158 mm	
1/2 Half Page Vertical	1,890,- €	103 x 297 mm	109 x 303 mm	
1/1 Company Profile	1,690,- €	210 x 297 mm	✓ Photo/Graphic (170 x 108 mm), Logo (50 x 50 mm) – Valid Formats: PSD, TIF, JPG, PNG, INDD, AI, EPS, PDF ✓ CMYK, 300 dpi (Pictures), 600 dpi (Logos, preferred as Vector Graphics, Fonts) ✓ Address/Contact Details ✓ Editorial Text (110 – 170 Words) ✓ In Case of Open Files, Embedded Pictures and Fonts must also be Delivered	

All Prices are Net Prices plus VAT. Subject to Change without Notice.

* for 2022

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