

ENGLISH ISSUE



invidis
CONSULTING

YEARBOOK

2017/2018

DIGITAL SIGNAGE & DOOH



**digital
signage
summit
events**

OFFICIAL
MAGAZINE

Meet our new P-Line

Innovations on Display:
technology evolves



SMOOTHIES		SANDWICHES	
Banana	3.95	Beef	5.10
Blueberry	4.10	Cheese	4.40
Strawberry	4.10	Chicken	4.30
Green	3.60	Tuna	4.60
Mango	4.10	Avocado	4.90
Orange	3.95	Turkey	4.95
Veggie	4.10	Salmon	5.20



philips.com/professionaldisplaysolutions

PHILIPS

EDITORIAL



DEAR READER,

The title of our first article (Digital Signage Market EMEA) says it all: the European crisis has been overcome. While Great Britain finds itself in a difficult situation thanks to Brexit, throughout the rest of Europe, the growing demand for displays, media players, software and content – including interactive, UHD / 4K and Omnichannel – continue to drive the market forwards. The DACH industry also has good reason to be satisfied. Even though consolidation on the integrator side has only begun, the market in 2016 proved to be stable and secure.

In this yearbook, we will provide you with eight focus points and specials which demonstrate how the most important areas within the industry are developing. In our retail focus, for example, Coop and Deichmann demonstrate thought-out solutions in the field of Omni and Multichannel. In Retail Technology, the article on Osram shows how light can be used consciously and dynamically in shop concepts. With the incorporation of Beacons and apps into installations of all kinds, Digital Signage solutions are much more advanced than they were years ago.

Saturn and Media Markt show us how the market is changing: Electronic shelf labels (ESL) have won a permanent place at more than 1,000 of its stores across Europe. Artificial intelligence is also on the way to gaining a significant foothold in the industry.

In this edition, we look not only at the recent past, but also to the present and the future. Thanks to Garamantis, we can also look back at the development of multi-touch technology – the beginnings of which were first seen in 1963. More than any other, multi-touch has revolutionised our access to technology as a whole.

The focus of Digital Out-of-Home is simultaneously a focus on Ströer and Wall. 7Screen isn't as close to its competitors as it would like to be.

We would like to thank all companies who have supported us with their data and their time in the previous year. Equally, the DBCI would not have been possible without their input. Thanks to this information, we are once again publishing a yearbook which covers the DS and DooH industries, in addition to showing trends and relevant developments.

The DACH market has consolidated itself as the largest market in Europe, with Southern Europe bouncing back on a solid path of growth. In general, the industry is moving forwards, and rewards market participants who have been able to adapt their concepts over the past few years of successful market observation.

Going forward, let's continue to monitor, analyse and adapt our capabilities to the needs of our customers. In doing so, we will continue to strengthen the double-digit growth of both the Digital Signage and DooH markets and help keep potential future crises at bay.

Warmest regards

F. Rotberg
Florian Rotberg

IMPRINT

Publisher: invidis consulting GmbH
Grillparzerstr. 12a, 81675 Munich / Germany
Managing Director: Florian Rotberg
Editor-in-chief: Jörg Sailer,
invidis consulting GmbH (responsible)
Editorial staff: Stefanie Schömann-Finck,
Thomas Kletschke, Florian Rotberg,
Burkhard Gruss
Advertisements: Christine Koller,
invidis consulting GmbH (responsible)
Cover, Layout, Infographics:
Markus Winkler, eego – visuelle Kommunikation
Company Profiles:
Meike Hannig | Kommunikationsdesign
Photos: istockphoto.com, unsplash.com

© 2017 invidis consulting GmbH Munich
All rights reserved. It is not permitted to reproduce or distribute this issue, in full or in part, without the written approval of invidis consulting GmbH. The articles, graphics and tables contained in this yearbook are based on the invidis Digital Signage and DooH rankings. The accuracy of the information contained therein cannot be guaranteed.

LINKS

English Digital Signage & DooH News
www.digitalsignagesummit.org

Digital Signage Summit Twitter
twitter.de/ISE_DSS

CONTENT

- 3 Imprint
- 3 Editorial

6 DIGITAL SIGNAGE

- 8 Digital Signage Market EMEA**
Crisis Averted. While display markets have largely recovered, the UK is struggling with the effects of Brexit. Electronic shelf labels and LED modules remain particularly popular.
- 12 Infographic Digital Signage Market EMEA**
How much market share do the various professional display manufacturers have? How are the brands developing? Two pages of data regarding the digital signage market in the EMEA.
- 14 Digital Signage Market DACH**
Strong and Stable – The Market in 2016. The Digital Signage market is becoming visibly more mature. However, the market was disrupted in 2016 thanks to the turbulence created by developments at LG, with consolidation on the integrator side barely underway. The coming months and years promise to be very exciting indeed.

22 FOCUS MULTITOUCH

- 24 Everything You Ever Wanted to Know About Multi-touch**
It was the pure laziness of his colleagues that first inspired a Danish man to invent the capacitive touch screen. The first large, coloured multi-touch table was to be found in the cinema, with large infographics.
- 26 Infographic Multitouch**
How multitouch technology is revolutionising our access to technology

28 FOCUS RETAIL

- 30 French Car Showroom Gets Dynamic LED Wall**
A large 23 metre wide LED wall was recently installed in the showroom of Starterre in Lyon.

- 31 Visual Production in Jockey Shop-in-Shops**
With its new shop-in-shop concept, Jockey is using a digital and modern approach for its customers in Germany, Austria and Switzerland.
- 32 Deichmann Goes For In-store Interaction**
Europe's market leader in the shoe retail sector is no stranger to classic Digital Signage. Now, interactivity and omnichannel are set to make an appearance throughout its stores.
- 34 Coop's New Store Concept**
During the course of 2017, the Swiss grocery retailer Coop will carry out a countrywide roll-out. The new store concept with four categories is already taking shape.

36 FOCUS RETAIL TECHNOLOGY

- 38 The Robots Are Coming**
Humanoid robots offer retail and other industries new ways of interacting with their customers. A Japanese robot called Pepper is now conquering the European retail industry.
- 39 Alexa, Google Home and Co. – AI in Retail**
Artificial intelligence is changing business and communication worldwide. Large corporations such as Amazon, Google and Apple are on the advance, while mobile operators Deutsche Telekom and Orange are also launching their own solutions.
- 40 World's largest Electronic Shelf Label Roll Out at Saturn and Media Markt**
A total of 10 million electronic shelf labels have been installed in more than 1,000 branches of Media Markt and Saturn across Europe. The two sister companies have increasingly come to incorporate various other retail technologies into their stores.
- 41 An Illuminating Collaboration – Beacons and Lighting**
With the combination of location-based services and LED lighting, Osram has developed an ecosystem that generates real sales growth at the PoS. Einstein is the name of the solution which is already being used in Swiss stores.

42 FOCUS MUSEUMS

- 44 Projections in a Former Prison – The Faengslet Museum**
An old Danish prison has been transformed into a museum, with the multimedia exhibition taking shape over five years and four project phases.
- 45 An Olympic Experience – the Norges Olympiske Museum**
The history of the Olympics stretches from ancient times to the present. The Norwegian Olympic Museum depicts it all with its audio-visual installation.
- 46 A Sporty Affair – the FIFA World Football Museum**
Football fans from all over the world are sure to get their money's worth in Zurich: AV and LED signage provide a contemporary performance at the FIFA World Football Museum.
- 47 An Interactive Maltese fortress – The Gozo Citadel**
The famous Knights Hospitaller fortress on Malta has been transformed into a museum with interactive Digital Signage.

48 FOCUS CORPORATE

- 50 Digital Signage in Industry**
Digital Signage screens are employed for various purposes at Gebauer & Griller: for production, for administration and for welcoming guests. This addresses various target groups.
- 51 Daimler Trucks North America and its Employment of Digital Signage**
With video walls and generous touchscreen solutions, Daimler Trucks North America is making use of numerous digital AV media. In addition to the presentation of its brand, the focus is also on other useful features.
- 52 Insurance Company Gets Modern AV Newsroom**
Swiss insurance company AXA Winterthur is making use of an AV newsroom to keep up-to-date with company-relevant news and to communicate with the outside world. Its motto: Online first.
- 53 South African Telecommunications Collaboration**
The South African telecommunications Group Telkom SA has equipped its Experience Center (EC) with a rear projection video wall, multitouch screens and collaboration software.

54 TECHNOLOGY SPECIAL

- 56 Virtual Worlds – The Breakthrough of AR and VR**
They have their origins in the arts and are the drivers of digitalisation in industry, medicine and are increasingly used in conjunction with Digital Signage in trade. Revenues from virtual reality (VR) and augmented reality (AR) are projected to increase tenfold within the next three years.
- 59 DIGITAL OUT OF HOME-SPECIAL**
- 60 Rise and Fall**
While Ströer and Wall conquer the main roads, 7Screen's progression is halted.
- 62 Ströer Leads the Way With Programmatic Buying**
With automated marketing processes remaining a dominant industry topic, Ströer leads the way with its new real-time target group data solution.
- 66 DooH Networks DACH**
190 Networks in Germany, Austria and Switzerland market their displays – we show them to you

70 CATEGORIES

- 70 Digital Signage Business Climate Index**
The „DBCi“ is an early indicator for the Digital Signage- and DooH markets and gives a detailed market overview of our focus themes.
- 72 Company Profiles**
Here you can find several companies from the digital signage and DooH branches assorted by category.

CRISIS AVERTED

WHILE DISPLAY MARKETS HAVE LARGELY RECOVERED, THE UK IS STRUGGLING WITH THE EFFECTS OF BREXIT. ELECTRONIC SHELF LABELS AND LED MODULES REMAIN PARTICULARLY POPULAR.

The professional display market in Europe and the Middle East grew by almost 12 percent last year. This increased the number of large-format screens (32" and larger) from approximately 700,000 to 800,000. As has been the case in the past, individual large scale projects can have a positive effect within individual markets.

The figures certainly reflect continuing strong demand in Europe's largest market, Germany. The former problem children - France, Spain and Italy - again recorded noticeably higher demand. In addition to catch-up effects, the many innovative concepts that have entered the market are certainly reasons for recovery and rising demand. There is also good news from Russia: while the market weakened there in the past due to the recession and currency problems, it could grow in 2016 by 12 percent. The Scandinavian and BeNeLux markets remain stable and strong.

Although the UK is still one of Europe's leading markets, the planned withdrawal from the European Union has had a strong dampening effect on the market. Numerous projects were stopped or put on hold due to the ongoing Brexit debacle. Although these projects are supposed to be resumed in the current and coming year, this is not very likely given the negative developments in British retail and gross domestic product. The UK slipped to third place in 2016, and France took second place. The market leader remains Germany.

In addition to the UK, the example of Turkey shows how strongly political developments can affect the Digital Signage market: 18 percent fewer displays were sold last year.

Only large format displays were included in the EMEA ranking. In addition, however, there are other formats and screens that are increasingly gaining in relevance and promise a great deal of exciting development for the future.

These include small- and microdisplays with a screen diagonal of less than 32 inches, as offered by Samsung and LG. Electronic Shelf Labels (ESL) experienced a boom last year. MediaSaturn Holding equipped its outlets with ESL across Europe. The number of units installed in the retail sector is now moving into the millions, and shows no sign of slowing down.

Conceived for Digital Signage projects, projectors – thanks to laser technology – can now be integrated into shop buildings without any additional lighting. The development of LED technology is also particularly interesting. The narrow pixel pitch (NPP) SMD (Surface Mounted Device) modules compel with more brightness, brilliance and lower power consumption, and are bringing significant growth to the Digital Signage market. Relevant for Digital Signage, the narrow pixel pitch (the distance between the individual LEDs) is now less than 2.5 millimetres. Because even high resolution content can be easily viewed from a small distance, LED walls are increasingly serving as an alternative

The professional display market in Europe and the Middle East grew to approximately 700,000 to 800,000 screens



PHOTO: PLANAR / LEYARD

Throughout Europe, more than 1,000 Saturn and Media Markt stores have been kitted out with over 10 million ESLs displaying electronic price information.



PHOTO: XPLACE GMBH

to LCD video walls or boardroom installations. According to Futuresource, demand for narrow pixel pitch rose by 126% worldwide last year. Due to a significant decrease in price, fine pitch LED products are increasingly central to smaller projects. Prices depend on pixel pitch and range from a few hundred to over 10,000 euros per square metre.

If integrators are able to sell LED modules to customers and end users despite the price hurdle, they then face the next challenge: planning and installation. Because such modules are not simply 'off the shelf' products, their implementation requires a great deal of knowledge and a lot of experience from the integrator side. And: service has become much easier, since most new products have front access for maintenance. The cumbersome and time-consuming rear maintenance that traditionally plagued technicians is now a thing of the past. In addition, installations no longer have to be mounted on self-supporting structures, and can be attached directly to a wall frame, thus saving around a metre of space.

Distributed LED SMD modules come almost exclusively from the Chinese city of Shenzhen, the world's LED mecca.

In contrast to professional displays, the modules are not turnkey products, and issues such as quality control, electro-technical approval and European importation can present a Pandora's box of challenges. NEC and Samsung offer their own import and LED solutions independent of third-party suppliers. Some of the biggest Chinese LED manufacturers, like Absen, offer fully certified products for the EU market.

There are currently only a few tailor-made projects where modules are in use - mainly for price reasons. While it is difficult to get an overview of the market as well as reliable market figures for Europe, Futuresource estimates the global LED market at 3.5 billion USD, with NPP (2.5mm and smaller) accounting for 9% (volume) and 32% (value), respectively.

The trend in the market and the observations of integrators clearly show that LED technology is becoming increasingly important. As with all hardware, a decrease in price is to be expected, which in turn will make the products more competitive. invidis and its partners will closely monitor and analyse the market in the current year and expect to be able to publish meaningful figures for the first time in 2018.

DIGITAL SIGNAGE-TRENDS 2017

INCREASING DEMAND FOR...

81%

LARGE FORMAT DISPLAYS 70" AND BIGGER



65%

SUN-LIGHT READABLE LARGE FORMAT DISPLAYS

58%



VIDEOWALL DISPLAYS WITH NARROW BEZEL AND DEDICATED VIDEOWALL FUNCTIONS

DISPLAYS

82%



INTERACTIVE CONTENT WITH TOUCH FUNCTIONALITY

68%



CONTENT WITH UHD/4K RESOLUTION (ULTRA HIGH DEFINITION)

CONTENT

73%



CONTENT CONCEPTS FOR OMNI CHANNEL SOLUTIONS

78%

INTERFACES FOR CONNECTING EXTERNAL SYSTEMS TO THE CMS

58%

SOLUTIONS FOR LARGE FORMAT DISPLAYS WITH INTEGRATED MEDIA PLAYER (SOC)

SOFTWARE

57%

FUNCTIONS TO ADAPT THE WORKFLOW TO THE CMS

MEDIAPLAYER

52%

MEDIA PLAYER APPLIANCES WITHOUT FAN

52%

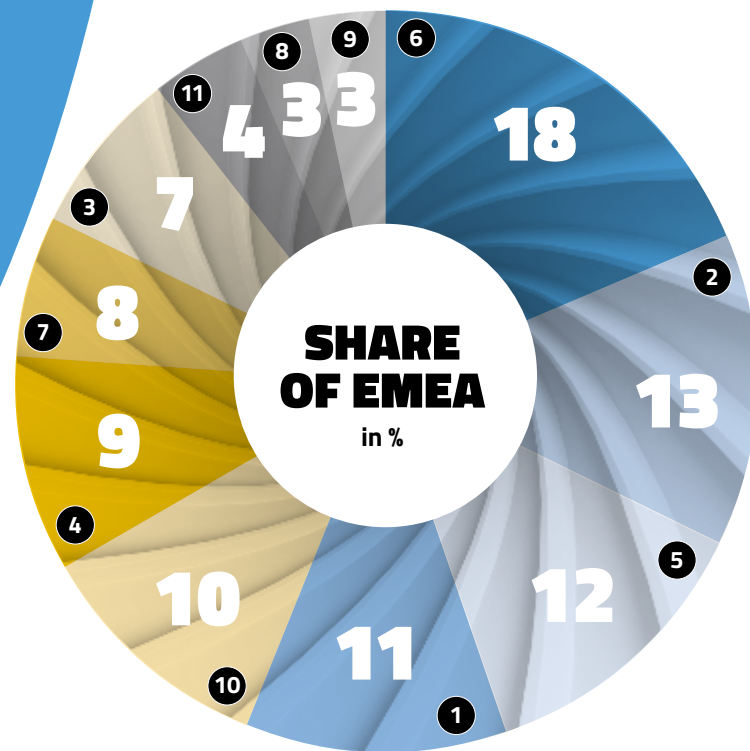
SOLUTIONS WITH SMALL FORM FACTOR

30%

MEDIA PLAYER WITH ANDROID

DIGITAL SIGNAGE IN EMEA 2016

TOP MARKETS FOR PROFESSIONAL DISPLAYS



FRANCE
TOP 3 TARGET MARKETS
RETAIL
CORPORATE COMMUNICATION
BANKING

SPAIN, PORTUGAL
TOP 3 TARGET MARKETS
RETAIL
CORPORATE COMMUNICATION
SHOPPING MALLS

GREAT BRITAIN & IRELAND
TOP 3 TARGET MARKETS
RETAIL
SHOPPING MALLS
CORPORATE COMMUNICATION

BENELUX
BELGIUM, THE NETHERLANDS, LUXEMBOURG
TOP 3 TARGET MARKETS
RETAIL
CORPORATE COMMUNICATION
DOOH

NORDICS SWEDEN, DENMARK, NORWAY, FINLAND, ISLAND
TOP 3 TARGET MARKETS
RETAIL
CORPORATE COMMUNICATION
EDUCATION

RUSSIA
TOP 3 TARGET MARKETS
RETAIL
CORPORATE COMMUNICATION
SHOPPING MALLS

POLAND
TOP 3 TARGET MARKETS
RETAIL
TRANSPORTATION
CORPORATE COMMUNICATION

TURKEY
TOP 3 TARGET MARKETS
RETAIL
PUBLIC
EDUCATION

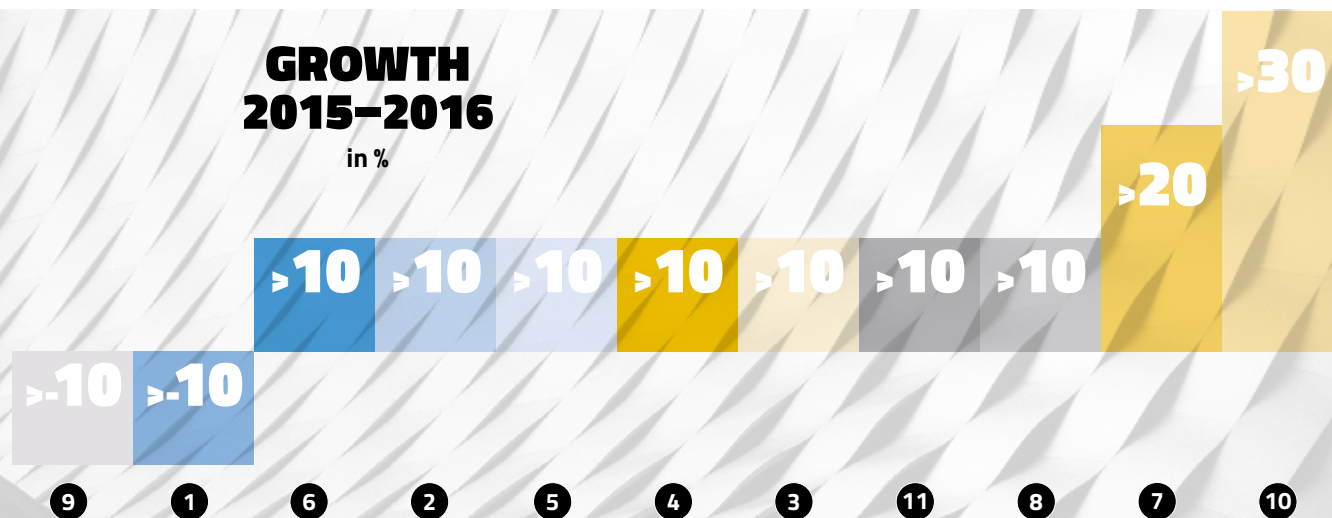
DACH GERMANY, AUSTRIA, SWITZERLAND
TOP 3 TARGET MARKETS
RETAIL
CORPORATE COMMUNICATION
BANKING

ITALY
TOP 3 TARGET MARKETS
RETAIL
CORPORATE COMMUNICATION
SHOPPING MALLS

GCC SAUDI ARABIA, BAHRAIN, QATAR, KUWAIT, UAE
TOP 3 TARGET MARKETS
RETAIL
SHOPPING MALLS
DOOH

GROWTH 2015-2016

in %



STRONG AND STABLE – THE MARKET IN 2016

THE DIGITAL SIGNAGE MARKET IS BECOMING VISIBLY MORE MATURE. HOWEVER, THE MARKET WAS DISRUPTED IN 2016 THANKS TO THE TURBULENCE CREATED BY DEVELOPMENTS AT LG, WITH CONSOLIDATION ON THE INTEGRATOR SIDE BARELY UNDERWAY. THE COMING MONTHS AND YEARS PROMISE TO BE VERY EXCITING INDEED.



Five shop-in-shop concepts called The Village: At this year's Euroshop, Vitra showed how store concepts can benefit from Digital Signage.



PHOTOS: COOP

Electronic shelf labels, seen here in the fresh food section of a Coop branch, are the current market drivers; thus strengthens the position of specialist distributors in the DS market.

After last year's long-awaited consolidation, rapid growth and permanent changes to the Digital Signage market are a thing of the past. The market-leading integrators and distributors expanded upon their top positions in 2016 with sufficient financial resources coping with large-scale projects. As a result, they recorded tremendous growth rates and sales of more than ten million Euros. While other companies benefited little from growth at the top, they kept their respective market positions.

The German-speaking distributor market grew by 18 percent. All services, content and software providers profit from the well-running hardware business. Taking into account the continued decrease in hardware prices, these sectors also experienced faster growth than the hardware market in 2016. The real market driver was Electronic Shelf Labels (ESL), whose demand exploded in the past year. With these, vendors such as xplace are leaving the classic Digital Signage business and accessing new markets. Expansion is evident with distributors: ESL is offered by specialised distributors who have had little activity in the Digital Signage market so far.

TOP 5 TREND-BUCKING PROJECTS

xplace, in particular, has profited spectacularly from the ESL business: From 2105 to April 2017, the integrator and full service provider equipped 1,000 Saturn and Media Market stores with electronic price tags. This equates to 10 million ESL – and unsurprisingly the company's turnover exploded. In Germany alone, 430 store fittings were successfully carried out. The ESLs not only serve to update prices, but are also linked to the data-based product selection and the supply chain. Furthermore, it is also planned that customers will be able to access additional products with Near Field Communication (NFC) in the near future.

Cancom Didas, which last year overtook T-Systems as the leading IT system house in Germany and knocked it off second place, also recorded an above-average increase in sales. The reason for the advance of the Munich-based company can be attributed to the takeover of Didas in 2014, which enabled Cancom to build up the necessary competence to be able to act professionally on a large scale within the market. In addition, IT systems are often already set up with IT projects for enterprise companies and can be positioned optimally as service providers from the outset for emerging Digital Signage projects. The top 5 integrators differ from the rest of the market players thanks to their strategic methods for customer acquisition. They have their own departments that can professionally process the large and growing number of tenders and create offers accordingly. Small and medium-sized enterprises can not support them either in terms of personnel or financial resources and therefore concentrate on smaller projects and calls for tenders which generate correspondingly less turnover.

FULL-SERVICE UND NICHE AS KEY SUCCESS FACTORS

Despite this similarity, the top segment of the market remains very heterogeneous. Gundlach Seen Media, for example, is the only full-service integrator in the Top 5. Thanks to the merger of Seen Media and Gundlach Intelligent Solutions, the company now has a comprehensive internal structure, including its own content agency.

PMS Perfect Media Solutions also maintains a special position among the market leaders. As a tobacco and petrol station project specialist, the company has to work within EU guidelines, which stipulate that tobacco advertising is only permitted at the point of sale. As it is to be expected

DIGITAL SIGNAGE MARKET
GERMANY, AUSTRIA, SWITZERLAND
2009–2016
IN MILLION EUR

YEAR	DISPLAYS	INTEGRA-TORS	SOFTWARE	DOOH	MEDIA PLAYER	OTHERS*	TOTAL
2009	106	112	15	67	15	15	330
2010	100	135	18	96	19	21	389
2011	132	174	21	117	26	26	496
2012	157	186	24	145	30	31	573
2013	183	210	30	168	39	36	666
2014	190	235	35	218	44	40	762
2015	220	276	49	286	49	50	920
2016	250	345	56	353	55	58	1.117

* Contains Content, Hardware, Consulting, Media.
Note: All information comes from company reports or estimations by an advisory board.
No direct comparison between 2014 and 2015 possible due to a new calculation of software licenses and "others"
Source: Meko Ltd, invidis consulting GmbH "invidis Digital Signage & DooH Yearbook 2017/18"

that such advertising is to be prohibited in the medium term, competition in this advertising sector is very low, and as a result PMS has been able to benefit from its niche. To cushion the risk of an imminent total ban on smoking, PMS has begun to direct its efforts to IP-Streaming and Digital Signage in the enterprise environment. Among other things, PMS was responsible for the Elbphilharmonie in Hamburg.

Although Scandinavian full-service providers Zeta Display and MultiQ are very successful and accelerate consolidation through acquisitions abroad, they have so far lagged behind the German market. This could be attributed to the sheer size and strength of the German market, which has thus far frightened away Nordic companies.

AUSTRIA UND SWITZERLAND STAGNATE

The Austrian market remained stable in 2016. Although it recorded growth in the higher single-digit range, it lagged behind the developments of the German market. Feratel media technologies continues to operate successfully on the tourism market. The Kapsch BusinessCom as an IT system house is similar to T-Systems in Germany. Although it does not push the Digital Signage business, the firm manages to achieve regular turnover in this area due to the demands of its large customer base. The only full-service integrator in Austria is DMS Digital Media Systems, which, like the German Gundlach Seen Media, is in the position to cover various areas and projects within the realm of Digital Signage.

TOP 20
DIGITAL SIGNAGE INTEGRATORS
GERMANY
2016
BY REVENUES

RANG	CATEGORY*	COMPANY	REVENUE in Mio. EUR
1	TSI	xplace	50–100
2	TSI	CANCOM Didas	30–50
3	TSI	T-Systems International	20–30
4	FSI	Gundlach SEEN MEDIA	10–20
5	FSI	PMS Perfect Media Solutions	5–10
6	TSI	Nordland Systems	5–10
7	FSI	Radio P.O.S.	5–10
8	TSI	heinekingmedia	5–10
9	FSI	ICT AG	2,5–5
10	FSI	NEXGEN smart instore	2,5–5
11	FSI	MuSe Content	2,5–5
12	TSI	BenHur	1–2,5
13	TSI	Videro	1–2,5
14	TSI	eyefactive	1–2,5
15	FSI	echion Corporate Communication	1–2,5
16	FSI	Acer Being Signage (ehem. Cittadino)	1–2,5
17	FSI	komma,tec redaction	1–2,5
18	FSI	netvico	1–2,5
19	TSI	Media-NEL	1–2,5
20	FSI	Visual Art	1–2,5

* TSI: Technical Service Integrator; FSI: Full Solution Integrator
Note: All information comes from company reports or estimations by an advisory board.
Source: invidis consulting GmbH "invidis Digital Signage & DooH Yearbook 2017/18"

The Swiss market remains more or less isolated, as most market-leading companies only operate on the domestic market. Overall, there were hardly any perceptible changes. ScreenFoodnet has developed into a full-service integrator in 2016 and is still one of the top companies in Switzerland. Luminator CH, actually a US-American company, is relatively new to the market. At the end of 2015, Luminator CH took over the transport division of Gorba / Invertag and BMG MIS, thus securing new expertise and a successful market position.

As they increasingly try to establish themselves as a solutions provider in order to expand their businesses and generate more sales, the developments of the software

and hardware providers have proved very interesting in the DACH market. In mid-2016, the sale of Scala to the American Stratacache was a big surprise. Managing Director Chris Riegel wants to transform the company with further acquisitions and growth to become the first full-service provider for Digital Signage with a billion-Dollar turnover.

To this end, Riegel is expanding its portfolio with hardware and services. With the software market leader Scala, Stratacache has succeeded in instigating a real coup. The company has not only been able to benefit from additional software expertise, but also for the first time a promising access to the European market through the customer and partner network of Scala. In turn, Scala itself benefits from

PHOTO: PLANAR



Where one waits, one looks around: this is why displays can be particularly worthwhile. No wonder the display market in the DACH region is growing.

the international positioning. The two companies form a real heavyweight duo and have the potential to bring around significant change to the market. Its strength will surely put pressure on the competition and push consolidation forward even further. It will be interesting to see to what extent Stratacache / Scala will look towards direct customer access in Europe in order to become more independent of its partners.

NEW ORIENTATION OF HARDWARE PROVIDERS
Acer caused a stir among hardware suppliers. Globally, the company is expanding upon its B2B service portfolio by purchasing Taiwanese Digital out of home network operators and Digital Signage integrators. This was the case in Germany at the beginning of 2017, when Acer took over the Digital Signage division of Cittadino, which then again took the Acer subsidiary Acer Being Signage. The Taiwanese are planning a more hardware-independent future and are focusing on cloud services and Digital Signage solutions. The former Cittadino is now the nucleus of the global digital signage subsidiary Acer Being Signage with the customers TUI, Thomas Cook and Tank & Rast. With this acquisition, Acer is now able to offer customers offerings from the entire spectrum of Digital Signage.

In the past, other display manufacturers have also tried to make themselves independent of the hardware business and its steadily falling prices. While many companies started their own software offerings, they weren't able to offer enough development to meet current needs. Only

TOP 10
VENDORS PROFESSIONAL DISPLAYS
GERMANY, AUSTRIA, SWITZERLAND
2015
BY REVENUES

RANG	COMPANY	MARKET SHARE in %
1	Samsung Electronics	39.5
2	NEC Displays	20.4
3	LG Electronics	6.9
4	Philips Professional Display Solutions	5.6
5	Sharp	3.9
6	Panasonic	3.3
7	Data Modul Weikersheim	2.3
8	AG Neovo	2.2
9	iiyama	1.7
10	Sony	1.5

Source: Meko Ltd, invidis consulting GmbH "invidis Digital Signage & DooH Yearbook 2017/18"

TOP 10
DIGITAL SIGNAGE INTEGRATORS
SWITZERLAND
2016
BY REVENUES

RANG	CATE-GORY*	COMPANY	REVENUE in Mio. EUR
1	FSI	JLS Digital	10–15
2	TSI	Westiform Holding	5–10
3	FSI	ScreenFOODnet	5–10
4	TSI	Luminator CH (Gorba/Invertag)	2–5
5	FSI	B+T	2–5
6	TSI	Kilchenmann	2–5
7	FSI	Habegger	2–5
8	TSI	ESAG	2–5
9	FSI	screenIMAGE Systems	1–2
10	TSI	Bison IT Services	1–2

* TSI: Technical Service Integrator; FSI: Full Solution Integrator
Note: All information comes from company reports or estimations by an advisory board.
Source: invidis consulting GmbH "invidis Digital Signage & DooH Yearbook 2017/18"

Samsung has – thus far – been able to successfully offer further Digital Signage services. One reason for the rather hesitant approach of the hardware vendors is that they do not want to enter into direct competition with their partners. Nevertheless, it must be assumed that in the medium term, there is no way to build up further reserves in the future.

LG SUFFERS CRASH LANDING

Although the display market in DACH has grown by around 11 percent, the developments within the sector have been turbulent. For example, LG's crash in Germany is unprecedented (However, this can be attributed to almost all internal reasons). Numerous employees of the Digital Signage area left the company when it moved its German centre to its European HQ in Schwalbach near Frankfurt in 2016. The loss of personnel had a particularly hard impact on its German business. Despite competitive products, LG wasn't able to convince in the face of stiff competition, and as a result, its market share was halved. The extent to which LG can recover in the current financial year depends on the success of its OLED product series. Their flat, double-sided and curved displays attracted great interest at well-attended

TOP 10
DIGITAL SIGNAGE INTEGRATORS
AUSTRIA
2016
BY REVENUES

RANG	CATE-GORY*	COMPANY	REVENUE in Mio. EUR
1	FSI	feratel media technologies	2–5
2	FSI	DMS Digitale Medien Systeme	2–5
3	FSI	Pichler Medientechnik	2–5
4	TSI	Kapsch BusinessCom	2–5
5	TSI	A1 Telekom Austria	1–2
6	FSI	NarComm DACH	1–2
7	FSI	IT.PARK	up to 1
8	TSI	Wincor Nixdorf International	up to 1
9	TSI	Panatronic	up to 1
10	TSI	Dicube	up to 1

* TSI: Technical Service Integrator; FSI: Full Solution Integrator
Note: All information comes from company reports or estimations by an advisory board.
Source: invidis consulting GmbH "invidis Digital Signage & DooH Yearbook 2017/18"

trade fairs such as ISE in Amsterdam. Now, however, the brand must convince through continuous and reliable operation. If this can be achieved, LG presents a significant value alternative over its competitors.

But one man's curse is another man's blessing: other display manufacturers such as NEC – who has seen a growth of 40 % - naturally profit from LG's current debacle. This growth can be attributed to factors such as an outstanding partner system and a specialisation of professional displays instead of a broad portfolio. Even the more active midfield players such as Philips, Panasonic and Sharp have profited from these latest developments.

Overall, the stable market conditions were punctuated by some significant ups and downs. Due to the already low sales activity, any project losses or project profits had a very clear impact. At the other end of the scale, Samsung remains the undisputed market leader. One in every four large format displays in the DACH market comes from the Koreans – twice as many as from NEC.

Also noteworthy is the development of LED in the Digital Signage market. The global LED screen market is almost exclusively dominated by Chinese manufacturers



PHOTO: VITRA

Tuned and effective: This is true not only for the presentation of the goods on the shelves but also for the integration of the right screens. The screen on the right wall is in a simple wooden frame that matches the shop setting.

TOP 20
DIGITAL SIGNAGE SOFTWARE VENDORS
GERMANY, AUSTRIA, SWITZERLAND
2016
BY LICENCES

RANG	COMPANY	LICENCES*
1	Grassfish Marketing Technologies	50,000–60,000
2	mdt Medientechnik	50,000–60,000
3	Pichler Medientechnik/easescreen	30,000–40,000
4	Online Software	30,000–40,000
5	Scala	30,000–40,000
6	engram	10,000–20,000
7	~sedna	10,000–20,000
8	Samsung Electronics (MagicInfo)	10,000–20,000
9	screenFOOD	10,000–20,000
10	BroadSign International	10,000–20,000
11	heinekingmedia	10,000–20,000
12	SalesTV	10,000–20,000
13	komma,tec redaction	5,000–10,000
14	STiNO	5,000–10,000
15	Net Display Systems (Deutschland)	5,000-10,000
16	netscreens digitale Schaufenster	5,000–10,000
17	dimedis	5,000–10,000
18	Videro	5,000–10,000
19	netvico	5,000–10,000
20	Brightsign	5,000–10,000

* Number of active software licences 31st December 2016
Note: All information comes from company reports or estimations by an advisory board.
Source: invidis consulting GmbH "invidis Digital Signage & DooH Yearbook 2017/18"

EVERYTHING YOU EVER WANTED TO KNOW ABOUT MULTI-TOUCH

IT WAS THE PURE LAZINESS OF HIS COLLEAGUES THAT FIRST INSPIRED A DANISH MAN TO INVENT THE CAPACITIVE TOUCH SCREEN. THE FIRST LARGE, COLOURED MULTI-TOUCH TABLE WAS TO BE FOUND IN THE CINEMA, WITH LARGE INFOGRAPHICS.

Almost all new technology comes into the world through various developments and chance aberrations. There are countless interesting anecdotes and comprehensive statistics that demonstrate the manner and speed with which new technology spreads. The Berlin multitouch specialists at Garamantis Interactive Technologies have collated some interesting information about the topic of multi-touch. Usually, the Berliners are to be found on the road with interactive projects either in the core team, working on a project with other specialists, or together with Ars Electronica.

In one recent Garamantis project, for example, the company worked with the German Federal Ministry for Economic Cooperation and Development (BMZ) at a trade fair on a project about the cultivation of foodstuffs and their global trade routes. In the future, an exciting multitouch implementation will also take place with the ministry as well as at another trade fair.

The start-up – which was founded in 2014 – has brought together for the first time all the information on the ubiquitous multi-touch technology and poured it into a large infographic. The graphic is aimed at anyone who wants to become a ‘multi-touch expert’ in just a few minutes, and especially at companies and agencies who want to utilise and optimise this technology within their respective fields.

The infographic includes several important multi-touch milestones. For example, at the beginning of the 1970s, when Denmark’s Bent Stumpe built the first capacitive screens, the work of scientists at CERN was made significantly easier thanks to the fact that buttons and switches were suddenly deemed unnecessary. In addition, it shows the development of the first multi-touch displays at Toronto University as well as the first multi-touch smartphone – which came, not from Cupertino, but from IBM.

You can find out more about multi-touch from the infographic overleaf.

MULTITOUCH

HOW MULTITOUCH TECHNOLOGY IS REVOLUTIONISING OUR ACCESS TO TECHNOLOGY



POSSIBLE ADD-ONS OR MULTITOUCH INSTALLATIONS

NFC	PERSON SENSOR	EYE TRACKING	OBJECT RECOGNITION
Near Field Communication technology can provide another interface, for example to smartphones or NFC chips in objects.	With many parallel touch inputs, a multitouch system does not initially know how many different users are active and where they are. A built-in personal sensor solves exactly this problem and, for example, directs content to the users.	As a further simplification of the interaction with a multitouch system, eye tracking can be used for triggering and simplifying inputs.	While necessary to work with large markers until a few years ago, today's multitouch systems can recognise any object via camera.

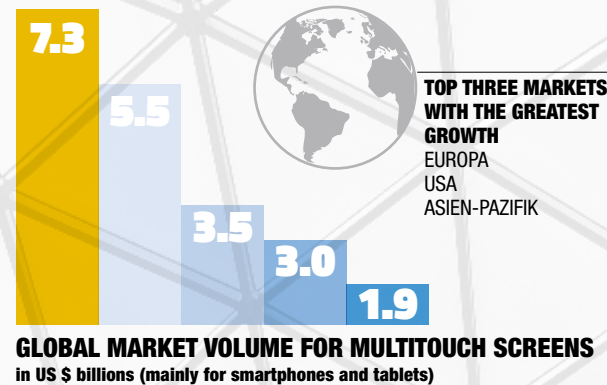
MULTITOUCH INSTALLATIONS: IMPLEMENTATION FORMS

TABLE	TERMINAL KIOSK	WALL	PROJECTION
up to six users ideal for collaboration or games	only one user ideal for information or control	maximum number of users depends on size ideal for presentation different viewing distances possible	any size and number of users suitable for immersive rooms





RESPONSIBLE FOR THE USER EXPERIENCE: MULTITOUCH SOFTWARE

MINUS	PLUS
Web-based applications top-down and left-right navigation a page or user-limited view web pages / Internet browsers PowerPoint presentations PDF slideshows	Liquid imaging at 60 frames per second (FPS) (graphics) hardware near application development intuitive user experience design direct feedback to users multiuser experience (e.g. free-moving elements) playful approach

MARKET DATA



MEANINGFUL CONFIGURATIONS FOR FLUID INTERACTION

PC POWER				
				
1x	1x	4x	12x	
FULL-HD	4K	FULL-HD ALS DISPLAY WALL	FULL-HD ALS DISPLAY WALL	
i5 CPU Nvidia GTX 4GB GPU-RAM	i7 CPU Nvidia GTX 6GB GPU-RAM	Intel Xeon Nvidia Quadro 8GB GPU-RAM	Dual Intel Xeon 3 x Nvidia Quadro 8GB GPU-RAM	

FUNFACTS

Modern multitouch surfaces allow up to **50 SIMULTANEOUS INPUT POINTS**.

In 2002, scenes from the US science fiction thriller *Minority Report* depicted **GESTURE-CONTROLLED MULTITOUCH** computers.

Apple filed a patent in 2004 and also tried to register the word **"MULTI-TOUCH"** as a protected trademark. This was rejected by the US Patent Office because the term was considered too general.

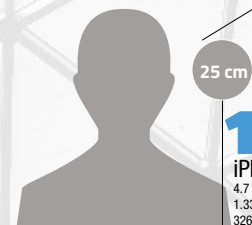
Besides ground-breaking computer effects, the Disney feature film *'Tron'* foresaw the **VISION OF A COLOURED MULTITOUCH TABLE** as early as 1982.

The largest multitouch wall in the world was erected in 2012 by the MultiTouch group in England. The surface is composed of **24 INDIVIDUAL MULTITOUCH SCREENS** and achieves a combined resolution of almost 50 megapixels.

USEFUL INFORMATION REGARDING PIXEL DENSITY

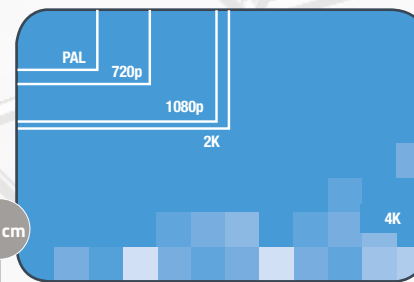
Apple coins the term 'retina display' in its product advertising: this is supposed to denote a screen with such high pixel density that the human eye cannot distinguish individual pixels from a typical viewing distance.

% Percentage of attainment of the retina resolution



105%
iPhone 7
4.7 Zoll
1.334x750 Pixel
326 ppi

127%
iMac 5K
27 Zoll
5.120x2.880 Pixel
218 ppi



37%
55" Full HD Bildschirm
55 Zoll, 1.920x1.080 Pixel, 40 ppi

74%
55" 4K UHD Bildschirm
55 Zoll, 3.840x2.160 Pixel, 80 ppi

62%
65" 4K UHD Bildschirm
65 Zoll, 3.840x2.160 Pixel, 68 ppi

THE MOST RELEVANT MULTITOUCH TECHNOLOGIES

PROJECTED CAPACITIVE TOUCH (PCT, PCAP)

A thin wire mesh is protected by glass. When touched, the current flow changes on the wire matrix. This technology is among the most widely integrated – especially in smartphones.

- + Favourable price, insensitive to light irradiation
- Wire mesh and visible, slightly reduced light permeability through wire mesh

INFRARED FRAMES

A frame attached to the display creates an 'infrared curtain' in front of the actual display. When touched, the infrared matrix is interrupted.

- + Cost-effective expansion of normal displays, very large areas possible (touch-walls)
- Sensitive to light irradiation, increased frame around display.

IR LEADS

PLEXIGLAS
"TOTAL INTERNAL REFLECTION"

CAMERA-BASED SYSTEMS

Infrared light is irradiated from below or laterally in the glass and reflected downwards by fingers on the glass where the camera is placed.

- + Optimal for marker recognition on the glass
- Highly dependent on ambient light, no flat displays are possible

PRESSURE STRENGTH DETECTION

EMITTER
LCD PANEL
SENSORS

INGLASS TOUCH

FlatFrog-developed system, in which infrared light radiates directly sideways through the glass and is measured by sensors at the glass edge. A camera is not required.

- + Precise touch control, pressure sensitivity, high transparency
- Sensitive to moisture residues (e.g. briefly after touch)

HISTORICAL TIMELINE

- 1963** Ivan Sutherland (MIT) presents Sketchpad
- Late 1960** IBM builds first touch screens
- 1972** Bent Stumpe (Denmark) builds first capacitive touch screens
- 1977** Double-sided capacitive touch screens from CERN
- 1982** Toronto University develops the first multitouch display
- 1992** First multitouch smartphone: IBM Simon
- 1999** iGesture Pad and TouchStream keyboard by Fingerworks
- 2005** Reactable Tangible User Interface der Music Technology Group
- 2006** Jeff Han presents on @TED
- 2007** iPhone 1 market launch
- 2008** Microsoft Surface Table
- 2009** Microsoft Windows 7 with multitouch support
- 2016** MacBook Pro with touch bar

GARAMANTIS
INTERACTIVE TECHNOLOGIES

Sources:
www.billbuxton.com/multitouchOverview.html · www.lifehack.com.au/2016/11/a-brief-history-of-touch-computing · www.marketsandmarkets.com/Market-Reports/multi-touch-nui-technology-market-459.html · www.slideshare.net/Amoutdevries/multitouch-interaction-overview · www.strategyr.com/MarketResearch/Multi_Touch_Screens_Market_Trends.asp · de.wikipedia.org/wiki/iPhone · en.wikipedia.org/wiki/Multi-touch · en.wikipedia.org/wiki/Pointing_device_gesture · en.wikipedia.org/wiki/Retina_Display · support.apple.com/de-de/HT202471 · www.techpowerup.com/172331/worlds-biggest-multi-touch-wall-unveiled · Icons designed by Freepik from Flaticon

ÜBLICHE TOUCH-GESTEN



FOCUS RETAIL

FRENCH CAR SHOWROOM GETS DYNAMIC LED WALL

A LARGE 23 METRE WIDE LED WALL WAS RECENTLY INSTALLED IN THE SHOWROOM OF STARTERRE IN LYON.

With an annual turnover of €195 million, Starterre is one of the largest car dealerships in France.

Starterre wanted to impress customers with an AV solution for point of sale presentations, using interactive displays and large screens. French integration specialist IPOView was commissioned to develop and install dynamic Digital Signage systems that would form the visual solution.

IPOView's installation involved several screens and interactive displays on which the dealership can present its entire vehicle selection to customers. A particular highlight of the installation is a 53 square metre LED wall measuring 23 metres x 2.3 metres, built from LED modules with a 4mm pixel pitch. For this purpose, 21 Absen N4 LED displays are integrated into a formation consisting of eight modules installed one above the other, giving an overall resolution of 3,317,760 pixels.

The indoor LED wall can be seen both from inside the dealership and outside on the street, where dealership advertisements appear in the line of sight of passing motorists on the nearby city ring road. The large LED screen contains a sensor that adjusts the brightness to the ambient light as prescribed by French law.

A 3-channel HD streaming player and dynamic signage software use external data such as traffic information to play video content. The dealership can also display various media content in different areas of the LED display simultaneously.

Prior to the installation, a feasibility study on the technical specifications of the premises, as well as the functional and aesthetic requirements of the customer, was drawn up, and the integrator determined the technical and software solutions required for optimum content management. The day-to-day business at the dealership was uninterrupted during the five day installation.

With a pixel pitch of 4 millimetres, the LED modules provide a total resolution of more than 3 million pixels.

PHOTO: ABSSEN EUROPE/CHARLOTTE BUSSCHAERT

PHOTO: JLS DIGITAL AG

Jockey is aiming to take an active role in shaping the status quo. Technically, the company relies upon Digital Signage.

VISUAL PRODUCTION IN JOCKEY SHOP-IN-SHOPS

WITH ITS NEW SHOP-IN-SHOP CONCEPT, JOCKEY IS USING A DIGITAL AND MODERN APPROACH FOR ITS CUSTOMERS IN GERMANY, AUSTRIA AND SWITZERLAND.

Founded by S.T. Cooper & Sons in 1876, Jockey International has been owned by the same family for the last 140 years – in which time the company has seen many changes.

The company, which recently achieved revenues of around 1.4 billion US dollars throughout a total of 120 countries worldwide, has a history of consistently shaping the Zeitgeist.

In markets such as the USA, the company's brand name has become synonymous with men's briefs in much the same way that the brand name Tempo is known for handkerchiefs in Germany. The most expensive Jockey slip in the world is worth 300,000 dollars – pop art artist Andy Warhol, self-confessed bearer of "Y-Front briefs", famously transformed this into a work of art. Normally, however, the products fall into the middle price segment.

The manufacturer still sees itself today as a manufacturer of modern underwear. The new shop-in-shop concept,

which has been implemented throughout six locations in the DACH markets, takes this into account.

At Karstadt in Bremen, Hamburg, Frankfurt and Nuremberg, as well as at Jelvoli in Zurich and in Vienna Airport, Jockey shops are being kitted out with its new concept.

This new concept is based largely upon moving pictures and digital point of sale technology. As the general contractor for digital marketing, JLS Digital AG was responsible for everything from the concept to the implementation and subsequent operation of the moving picture content.

Large format screens with integrated players configured by the Lucerne-based specialist were also installed, with content centrally managed and updated via Wi-Fi. A shop fitter was also brought on board during the integration. In terms of content, the brand tries to give a high quality impression and focuses on emotion and feeling.



Deichmann is responding to the fact that customers are increasingly using interactive services.

DEICHMANN GOES FOR IN-STORE INTERACTION

EUROPE'S MARKET LEADER IN THE SHOE RETAIL SECTOR IS NO STRANGER TO CLASSIC DIGITAL SIGNAGE. NOW, INTERACTIVITY AND OMNICHANNEL ARE SET TO MAKE AN APPEARANCE THROUGHOUT ITS STORES.

There's no escaping the fact that Deichmann's branches are part of the German inner city furniture. In recent years, the shoe retailer has been focusing on traditional Digital Signage at the point of sale and in its shop windows.

As early as 2008, a pilot scheme tested interactive elements such as video walls and kiosks. In the following years, the use and acceptance of technologies that support interaction have become more widespread – a fact which has prompted the shoe retailer to finally adopt more interactive elements within its stores.

The 1913-founded shoe dealer Deichmann SE is still 100% owned by the founding family. The market leader in

European shoe retailing employs more than 37,300 people worldwide. Aside from its German and Austrian stores, Deichmann has subsidiaries in 21 countries. Furthermore, the group is also active with other brands: Switzerland (Dosenbach / Ochsner), the Netherlands (van Haren) and the USA (Rack Room Shoes / Off Broadway).

Currently, the digitalisation at the point of sale at Deichmann and van Haren is being carried out: starting in 2017, 25 stores are being equipped with Digital Signage, self-service terminals and mobile devices as sales assistants. The digital solutions were developed by full service partner Bütema AG from Bietigheim-Bissingen.

With the help of the Digital Signage solution, product

PHOTOS: BÜTEMA AG

Mobile devices are used as sales assistants.



Successful triple entente: customer, salesman and DS solutions

notifications and videos are played alongside service notices such as return options. The InStore Assistant – which has been tested on iPads – has been developed to assist sales staff. With a simple scan of an item, information regarding products, colours and sizes in all branches can be accessed. The employee is also able to order articles via smartphone when necessary.

Wall-mounted self-service systems with 32" touch screens enable customers to query their own articles. Scanners are used to collect articles and can be ordered directly from the terminal by connecting to the omnichannel-enabled system. Delivery options including ship-to-store or ship-to-home are also available.

COOP'S NEW STORE CONCEPT

DURING THE COURSE OF 2017, THE SWISS GROCERY RETAILER COOP WILL CARRY OUT A COUNTRYWIDE ROLL-OUT. THE NEW STORE CONCEPT WITH FOUR CATEGORIES IS ALREADY TAKING SHAPE.

In the Swiss retail market alone, Coop earns revenues of over 19 billion Swiss Francs annually. In order to continue its lead in the highly competitive food retail market, the Group decided upon a new store concept based on the experience gained in a laboratory shop in Bern-Schönbühl with more than 400 test customers.

At the Swiss food retailer, there are now four different supermarket categories: shops in categories A, B and C, with larger stores in the B or C categories, as well as the

larger megastores. In 2017, 40 new stores will be converted in line with the new concept, with the first megastore concept to be opened in the Schwyz canton in late autumn in the Schwyz canton.

The smaller supermarkets will also rely extensively on Digital Signage with electronic shelf labels (ESL), modern shop fitting, LED lighting and self-checkouts. In terms of Digital Signage, all larger supermarkets, which have butchers and cosmetic areas, are equipped with screens. This also applies to the supermarket opened in late 2016 in Zumikon, Canton Zurich, which serves as a benchmark model for the roll-out. Six large format displays are installed on the meat display, each with small video walls in a 1 x 2 matrix configuration.

Coop wants to introduce full LED lighting into its supermarkets, with brand new electronic shelf labels also to be introduced. In a move which acknowledges changing customer habits, all new supermarkets will be fitted with pick-up stations – multichannel and omnichannel. Where possible, self-checkout counters will also be installed, even in the supermarkets of the smallest category, A.

As is currently the case in the food retail industry, more and more optical and thematic islands are to be created in larger supermarkets. In the case of Coop, this means beauty islands in the cosmetics sector, a “Chääshüsli”, the presentation of freshly baked bread in front of a brick wall, and meat counters adorned with glass fridges.

As of December 2016, Coop has a total of 865 locations throughout Switzerland.



ELs making an appearance at the deli counter.

Thanks to the electronic price tags, retail can react quickly and automatically to price changes.

FOCUS RETAIL TECHNOLOGY

THE ROBOTS ARE COMING

HUMANOID ROBOTS OFFER RETAIL AND OTHER INDUSTRIES NEW WAYS OF INTERACTING WITH THEIR CUSTOMERS. A JAPANESE ROBOT CALLED PEPPER IS NOW CONQUERING THE EUROPEAN RETAIL INDUSTRY.

It's funny, interacts intelligently and isn't afraid of contact: the humanoid robot from SoftBank Robotics from Japan is currently gaining popularity worldwide.

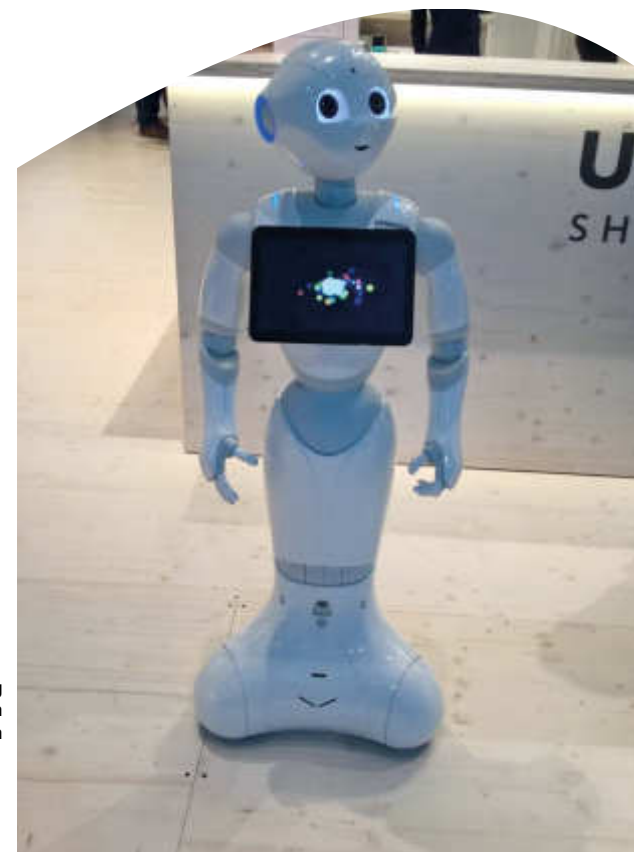
Well-known Pepper applications include MasterCard and Pizza Hut at various locations in Asia, in Oakland International Airport's Airport Information Centre in the USA, and test markets of Carrefour in Spain. In addition, textile retailer Uniqlo is already using the robot in selected regions.

Meanwhile, Pepper has become known to audiences worldwide. The bulk of the small white robots with childlike features and bright voices are still in use in Japan – coincidentally, the only market in the world where Pepper is marketed as a consumer product.

Equipped with voice output, camera and tablet with delicate arm and hand movements (the feet are concealed rollers), Pepper has found a good compromise between humanoid characteristics and practicality for interaction. If he offers a hand, or if someone grasps it, the feeling is anything but unpleasant. In concentrating upon feel, developers consciously chose a small body size to ensure that users of all ages don't have any fear of contact. The catch: some users may be susceptible to back pain when bending down during longer interactions.

In the coming years, it's likely that the use of Pepper will become more widespread in Europe. What's more, with prices of 1,700 US dollars (plus 134 dollars monthly for maintenance and 89 dollars per month for insurance with a 36-month term), the costs are not exactly what you'd call astronomical (all prices: 2016).

In the two years since its launch in 2014, about 7,000 Pepper units were sold. Pepper can also be rented. In March 2017, SoftBank Robotics concluded that around 20,000 Peppers were in use worldwide. As a result, one could consider Pepper to be the iPhone of the humanoid robots: its usability and appealing appearance have made the little fellow into a success. In contrast to more intelligent representatives of its species, Pepper isn't just significantly cheaper – it's by far the most human.



Pepper at the UmdaschShopfitting booth at EuroShop 2017 with a solution of their partner Grassfish

PHOTO: UMDASCH SHOPFITTING



PHOTO: AMAZON

Whoever uses Alexa from Amazon or similar systems, is a follower of so-called artificial intelligence.

ALEXA, GOOGLE HOME AND CO. – AI IN RETAIL

ARTIFICIAL INTELLIGENCE IS CHANGING BUSINESS AND COMMUNICATION WORLDWIDE. LARGE CORPORATIONS SUCH AS AMAZON, GOOGLE AND APPLE ARE ON THE ADVANCE, WHILE MOBILE OPERATORS DEUTSCHE TELEKOM AND ORANGE ARE ALSO LAUNCHING THEIR OWN SOLUTIONS.

A two-letter abbreviation, AI has had a magical sound since early 2017. Artificial intelligence – a concept which has been in development for decades – has now finally left the laboratories and is taking flight.

As with most trends in technology in recent years, many of the developments come from demand from the consumer market.

Voice input systems, for instance, have actively been used by consumers for some time. One of these virtual self-learning assistants is Siri, which Apple offers within its iOS operating system.

Developers at Google are also placing great emphasis on artificial intelligence. With the Google Home service, users benefit from contextualised information with the help of self-learning intelligence. Users can activate Google's intelligent Wi-Fi loudspeaker with the simple "OK Google" command.

However, this has already led to undesirable publicity. In February 2017, a TV advertisement explaining the system with simple voice commands produced unwanted actions,

such as turning on lights or turning up speakers. An advertising campaign for a Disney film, which took place in mid-March 2017, also caused a stir. Despite these hiccups, users are bound to accept personalised advertising in the future as well as in the classic web or mobile channel.

Amazon's Alexa also works according to the same principle. During the course of 2017, the very first Alexa applications – such as those of Online Software AG linking AI and Digital Signage – have been launched. Here, we've already seen an app of a notable food retailer activated via Alexa – a first step indicative of where the journey will continue.

European corporations are also developing their own AI-based systems, which can be used in retail and other industries. Telecom companies Orange and Deutsche Telekom want to bring their own AI system – Djingo – onto the market. At the end of April 2017, Djingo has already been developed in such a way that tweets can be published and music can be played by the system.

WORLD'S LARGEST ELECTRONIC SHELF LABEL ROLL OUT AT SATURN AND MEDIA MARKT

A TOTAL OF 10 MILLION ELECTRONIC SHELF LABELS HAVE BEEN INSTALLED IN MORE THAN 1,000 BRANCHES OF MEDIA MARKT AND SATURN ACROSS EUROPE. THE TWO SISTER COMPANIES HAVE INCREASINGLY COME TO INCORPORATE VARIOUS OTHER RETAIL TECHNOLOGIES INTO THEIR STORES.

Out of the Metro into independence: for a long time, the former Media-Saturn Holding (MSH) belonged to the majority of the Metro AG. In February 2017, Metro decided to bring Europe's largest electrical retailer as Ceconomy AG onto the stock market.

At the beginning of the year, there was also significant news regarding the used and developed retail technologies: all European Saturn and Media Markt stores now use Electronic Shelf Label (ESL).

The installation was, in fact, the world's largest completed ESL project. Throughout Europe, more than 1,000 Saturn and Media Markt stores have been kitted out with over 10 million ESLs displaying electronic price information.

The Göttinger-based integrator and full service provider, xplace was responsible for the digitalisation of Media Markt and Saturn stores, which has been underway since 2015.

In Germany alone, 430 branches benefitted from the installation, including 268 Media Markt stores. xplace supported hardware logistics, data integration and the installation of the communications infrastructure, as well as service and training. The provider also developed global ESL dashboard software, which combines all the technical data from the markets and enables automated reporting. The ESL hardware comes from SES-imagotag.

In addition to price updates, the ESLs are also able to perform other operations. They provide the basis for further background functions such as data-assisted sorting design and the delivery chain. In the future, customers will be able to retrieve further product information from the price labels by Near Field Communication (NFC).

The retail group also uses other digital services such as smartphone navigation systems for its stores, robots that advise customers and virtual reality glasses that allow customers to plan home digital equipment installations.

Especially with regards to larger flagships – such as the new Saturn in Cologne, which is to open in spring 2018 – new technologies are usually introduced here first.



PHOTO: XPLACE GMBH

More than 1,000 Saturn and Media Markt stores use Electronic Shelf Labels throughout Europe.

AN ILLUMINATING COLLABORATION - BEACONS AND LIGHTING



Light by means of Einstein by Osram in the Swiss The Gallery Shop

WITH THE COMBINATION OF LOCATION-BASED SERVICES AND LED LIGHTING, OSRAM HAS DEVELOPED AN ECOSYSTEM THAT GENERATES REAL SALES GROWTH AT THE POS. EINSTEIN IS THE NAME OF THE SOLUTION WHICH IS ALREADY BEING USED IN SWISS STORES.

To put it bluntly, light is normally treated as an afterthought. However, Einstein – Osram's Beacon-incorporating location-based services system – is proving otherwise.

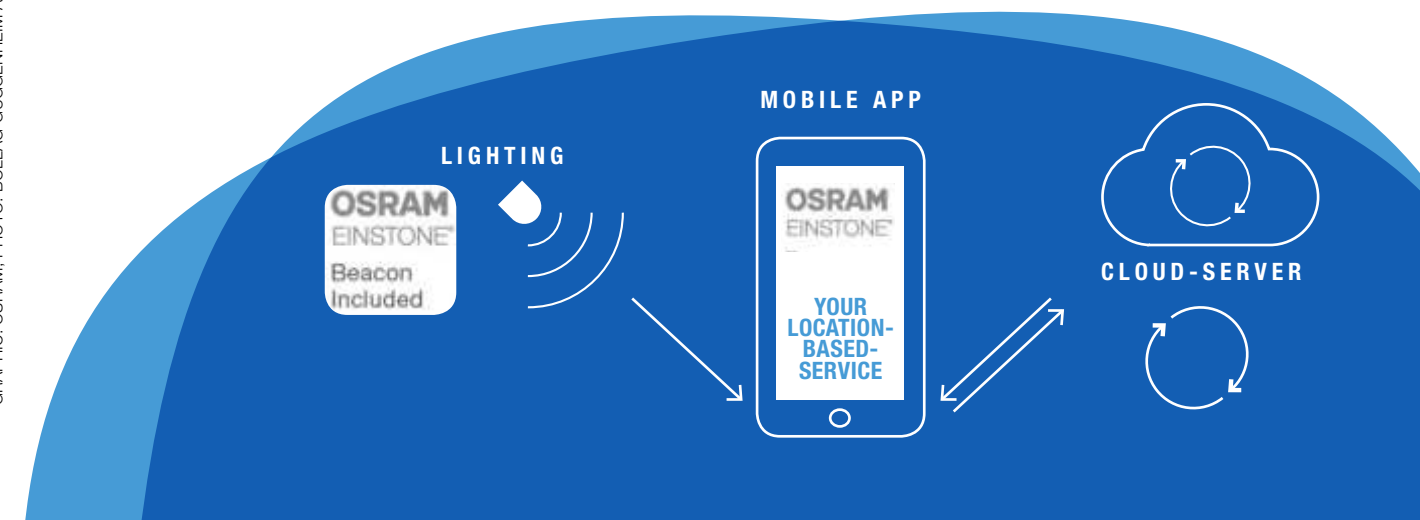
As countless examples have shown, the investment is worthwhile for both big and small retailers. For example, Bollag-Guggenheim Fashion Group AG operates Guess, Marc O'Polo and The Gallery brands in Switzerland. In a total of 23 of these stores, the integration of Einstein has significantly increased sales and improved customer loyalty at the point of sale, increasing revenues between 8% and 10%.

Einstone uses Beacons and beaconsmind software – as well as the Bluetooth Low Energy (BLE) Standard – for communication between the beacons and the mobile devices of customers. With various CRM and PoS systems, all infrastructure can be linked. The beacons are installed

together with Osram lighting solutions in the ceiling. Together with the retailer's app (via SDK), real-time campaigns and push messages are made possible. Data analysis is then visualised on the dashboard, which is in turn fed with data from offline, online and mobile.

Osram has already implemented a kind of lighting solution for blind people using Einstein technology. With an activated smartphone, an activated app and BLE activation, a blind person can receive notifications in a shop, museum or place of interest with a vibration alert. Within Beacon proximity, text messages are played out to guide the user. Although these messages are automated, the user can receive them at their desired speed, with audio messages changing depending on the context. For example, a message may read: "On this shelf you will find this product". With this very accessible solution, one can't help but feel curious as to where and how Einstein will be used in the future.

GRAPHIC: OSRAM, PHOTO: BOLLAG-GUGGENHEIM AG



FOCUS MUSEUMS



Projectors play an important role in the former prison; with smaller and large format displays as well as touch screens completing the DS concept.

PROJECTIONS IN A FORMER PRISON – THE FAENGSLÆT MUSEUM

AN OLD DANISH PRISON HAS BEEN TRANSFORMED INTO A MUSEUM, WITH THE MULTIMEDIA EXHIBITION TAKING SHAPE OVER FIVE YEARS AND FOUR PROJECT PHASES.

The Faenslætmuseet in Horsens, Jutland, presents serious topics in a refreshing way. Numerous participants transformed the building – used as a prison from 1853 to 2006 - into a popular attraction, where history is told in an exciting interactive manner.

Throughout its history, numerous criminals and political prisoners were imprisoned here. In addition to infamous murderers, fraudsters – one was even a Danish minister – also served time here during the German occupation in the Second World War. After the war, gang members were also incarcerated in the prison.

The museum directors have a lot of stories to tell: everyday life in a prison, executions, spectacular escape plans and life stories in general. The solution is an interactive one. With RFID cards received at the entrance, visitors slip into various roles: those of guards, prisoners of war, or detainees. At several locations in the museum, the RFID tags are used to provide additional interesting AV information. To this end, more than 60 Panasonic laser projectors are incorporated within the installation.

The experts at Kvorning are responsible for the exhibition concept, which draws heavily on moving image as the guiding medium. Actors and amateur actors made up of real prisoners and museum attendants were filmed before a green screen in order to be utilised in the various projection role-plays. Given the amount of surfaces (white walls in the hallways, coloured cell walls and other places) in the museum, the high-brightness playback and presentation of these recordings is almost exclusively achieved via projection technology.

Approximately 30 large and small flat panel displays from various manufacturers - including Panasonic and Sharp – together with touch screens and media players from BrightSign are also in use. Good sound quality is achieved throughout with active speakers.

In addition to general contractor Kvorning, AV integrator AV-Huset and other specialists were involved with the project. The last of four installation phases was completed in May 2017, with the total cost of the AV installations amounting to 2.4 million Euros.

PHOTO: PANASONIC

AN OLYMPIC EXPERIENCE – THE NORGES OLYMPISKE MUSEUM

THE HISTORY OF THE OLYMPICS STRETCHES FROM ANCIENT TIMES TO THE PRESENT. THE NORWEGIAN OLYMPIC MUSEUM DEPICTS IT ALL WITH ITS AUDIO-VISUAL INSTALLATION.

In 1997, Lillehammer opened the Norwegian Olympic Museum three years after hosting the Winter Olympics. The complete history of the Olympics – from the ancient world to the present – is told here. After nearly 20 years in Lillehammer, the museum was moved to the town of Maihaugen, which also brought with it a reason to update the museum's outdated media technology.

System integrator Bright Norway required a total of eight months for the Digital Signage and AV modernisation, which has been running in parallel since June 2015. In February 2016, the now 500 square metre Norwegian Olympic Museum was reopened to the public, with video installations and interactive digital systems providing additional exhibition material.

The so-called Lysgaardsbakkene (ski jump) provides an exhibition highlight: an interactive model of the Olympic ski jumping hill with a diameter of 3.5 m has been placed in the centre of the museum and is projected with real-life interactive moving images. An AV Stumpfl Media Engine Raw media server complete with Wings VIOSO calibration software is used for uncompressed 4K processing and functionality with 60fps for action videos and animations. This ensures the processing and warping of native video content via four projectors, which are connected by edge blending.

Bright Norway was responsible for all large format projection and the recording of the multimedia and presentation sequence throughout the museum. The entire media content was created by CentreScreen London, including an interactive newspaper as a projection and a large-format AV installation on a 5.5 metre wide and 1.5 m high AV wall showing 2D animations of the Olympic Games

of the ancient world. The interior design of the exhibition rooms was undertaken by Mather & Co. Furthermore, a 6.8 m wide and 1.5 m high panorama wall and a curved media wall with dimensions of 14.5 mx 2.7 m are utilised for projection.

The content comes predominantly from the IOC multimedia library and Norwegian TV archives. The overall design has been created to imitate the northern lights, which are reflected and cast onto the ski slopes and ski lanes within the exhibition. The appropriate blue and green tones were therefore integrated into Mather & Co's exhibition design.

Projections provide a DS focus in the Norwegian Olympic Museum.



PHOTO: NORGES OLYMPISKE MUSEUM/CAMILLA DAMGÅRD

The FIFA World Football Museum attracted 100,000 visitors in its first nine months.

A SPORTY AFFAIR – THE FIFA WORLD FOOTBALL MUSEUM

FOOTBALL FANS FROM ALL OVER THE WORLD ARE SURE TO GET THEIR MONEY'S WORTH IN ZURICH: AV AND LED SIGNAGE PROVIDE A CONTEMPORARY PERFORMANCE AT THE FIFA WORLD FOOTBALL MUSEUM.

The FIFA World Football Museum opened in 2016 and has already been a hit with visitors from many countries. In the first nine months after the opening, the museum attracted 100,000 guests from a total of 140 nations.

The museum, which was established by FIFA, is located in a converted former insurance building. The renovation and conversion of the building cost a total of 140 million Swiss francs, with around 30 million Swiss francs invested in the museum alone.

In addition to a complete history of football, the museum also focuses on current topics. Entertainment and seriousness find a harmonic balance within the museum, as is evidenced by the regular e-gaming competitions held on the Playstation. Discussions about women's football also have a place within the museum, with further seasonal events adding to the location's roster of attractions.

With more than 1,000 exhibits presented over an area of about 3,000 square metres, there's really something for everyone at the museum. AVS Systeme AG from the Swiss town of Hünenberg installed various AV media in various

museum sectors. In addition to a media and room control, a background music system as well as the networked Digital Signage solution can be found over several floors.

LED modules have been installed in stairs in the exhibition areas, along with an interactive learning environment with tablets in the in-house learning laboratory. Video walls comprising LCD screens can be found in the bistro as well as in the museum shop. A curved widescreen was donated to the in-house cinema.

The "Sportsbar 1904" features three large LED fine pitch screens and a computer for up to 16 streaming channels, such as football matches. SiliconCore Lavender LED modules were installed with a 1.2 mm pixel pitch and 2.400 x 1.350 pixel resolution.

The entire museum gives visitors a sense of fascination and excitement. With companies able to rent out the conference rooms in the venue, this excitement is sure to work wonders at the corporate level, too. In the conference rooms, an AV and video conferencing system and simultaneous interpretation facility are available.

AN INTER- ACTIVE MALTESE FORTRESS – THE GOZO CITADEL

THE FAMOUS KNIGHTS HOSPITALLER FORTRESS ON MALTA HAS BEEN TRANSFORMED INTO A MUSEUM WITH INTERACTIVE DIGITAL SIGNAGE.

Malta's island of Gozo has been home to various cultures since the first fortifications were built around 1,500 BC. The Phoenicians began by constructing what is now known as the citadel of Gozo. Other cultures followed, including the Romans.

In the middle ages, a fortress was built upon the large rocks on Gozo, and it was further developed by the Knights Hospitaller from 1530 onwards.

This impressive historical relic is now to be inducted into UNESCO's list of world cultural heritage sites – a fitting addition, given the fact that artefacts from all epochs are to be found here.

After restoration works were completed in 2014, the museum opened its doors in 2016. The installation includes the latest in state of the art museum technology with interactive AV. The experts at Sarnier International were responsible for the planning and implementation of the project.

Sarnier were tasked with creating a modern and interactive visitor centre amidst the ancient and abandoned water reservoirs of the citadel. As Malta is a popular destination

for tourists from many countries, the information within the exhibition is presented in several different languages. In the first half of the year alone, it played host to over 100,000 visitors.

Interestingly, the architectural elements of the complex have been skilfully incorporated as projection surfaces and brought to life by complex image masking techniques. The visitor centre consists of three main areas, with the exhibition area being divided into seven zones.

A tunnel connects the exhibition area to the show area. Up to 30 people can watch the main eight-minute show. As part of a tour, each of the multi-lingual zones provides interactive display content. The last zone is a 360° AV projection show, for which 16 projectors deliver images onto the dome of one of the water reservoirs. The technical specialists at Sarnier International used the Wings VIOSO media server from AV Stumpfl for blending and warping.

Another highlight is the tunnel walls, which have been equipped with an installation of 30 screens, each with its own full HD player. A further five full HD players are used for content playback of additional individual projections.

NATURAL ORIGINS
ORIGINI NATURALI

Interactive solutions for contemporary installations: the Gozo citadel.

**FOCUS
CORPORATE**

DIGITAL SIGNAGE IN INDUSTRY

DIGITAL SIGNAGE SCREENS ARE EMPLOYED FOR VARIOUS PURPOSES AT GEBAUER & GRILLER: FOR PRODUCTION, FOR ADMINISTRATION AND FOR WELCOMING GUESTS. THIS ADDRESSES VARIOUS TARGET GROUPS.

PHOTO: DICUBE



Digital Signage is also proving popular in production sites and factories to strengthen internal communication, as here at Gebauer & Griller.

Gebauer & Griller is an Austrian industrial company specialising in supply to the automotive, elevator and escalator industry, in addition to various specialist industrial applications. Founded in 1940 as a trading agency for raw materials and semi-finished products, the company quickly became a worldwide production operation.

The Vienna-based Austrian family business is one of the world's leading suppliers of cables and wires. In addition to its headquarters, there are also further locations in Linz and Poysdorf, with further sites abroad from India to Germany and China to Mexico. In the 2015/2016 financial year, Gebauer & Griller achieved a total turnover of around 425 million Euros. Around 3,200 people are employed by the specialist.

The portfolio of the company operating in the B2B sector ranges from wirewound cables and nickel-based alloys

through complex data bus and elevator control cables to the first use of aluminium battery cable assemblies in automobiles. Tinned flat wires for the photovoltaic sector complete the Gebauer & Griller range.

With the company wanting to modernise and optimise its communications as well as to supplement its Digital Signage, a digital information system was created to present information for both the factory halls as well as employee areas. In this way, an up-to-date external presentation as well as modern internal communication could be achieved.

The Austrian Digital Signage specialist DiCube took over the planning and implementation of the project, using various large format screens, Digital Signage software and various adaptations. This included, for example, processed data from production and other IT systems. Screens were also installed in the foyer to welcome guests.



AV and Digital Signage now play an important role in the headquarters of Daimler Trucks North America.

DAIMLER TRUCKS NORTH AMERICA AND ITS EMPLOYMENT OF DIGITAL SIGNAGE

WITH VIDEO WALLS AND GENEROUS TOUCHSCREEN SOLUTIONS, DAIMLER TRUCKS NORTH AMERICA IS MAKING USE OF NUMEROUS DIGITAL AV MEDIA. IN ADDITION TO THE PRESENTATION OF ITS BRAND, THE FOCUS IS ALSO ON OTHER USEFUL FEATURES.

Daimler Trucks North America was looking for an AV solution for its new corporate centre in Portland, Oregon, which would fit in with the look and feel of the US subsidiary of Germany's Daimler AG.

Size, immersion and spectacle have a long and proud tradition with truck manufacturers. Daimler, for example, previously created a gigantic projection mapping installation in one of the world's most spectacular locations – the iconic Hoover Dam. Here, more than 39,000 m² of space was mapped in an impressive one-off marvel to launch the Freightliner Inspiration Truck.

Unsurprising then, that the company recently invested heavily in AV and Digital Signage technology to inform customers and visitors about its products at its own company headquarters.

Daimler Trucks' North American (DTNA) headquarters in Portland spans approximately 25,000 m². Integrated solutions include Planar: Clarity Matrix LCD Video Wall

Systems, Planar PS Series LCD touch screens and touch screen monitors from the Helium series.

A video wall of vertically oriented screens can be found in a 6 x 3 matrix covering a side wall of the hall. Another video wall consisting of screens installed side by side in portrait mode builds a further part of the ensemble.

With regards to played content, DTNA presents its brand and includes the integration of social media feeds such as Instagram, Facebook and Twitter. Much like the lighting and the interior design, the content has been devised to be presented in a crisp and sharp manner. Can a bus or lorry be shown on screen in a more appealing manner?

In addition to marketing and attractive content, practical and useful services such as interactive floor plans – where rooms in the building can be conveniently searched for via touch – are also covered. Apart from this interaction, real-time traffic information is also displayed which, for example, gives local traffic information.

PHOTO: PLANAR

INSURANCE COMPANY GETS MODERN AV NEWSROOM

SWISS INSURANCE COMPANY AXA WINTERTHUR IS MAKING USE OF AN AV NEWSROOM TO KEEP UP-TO-DATE WITH COMPANY-RELEVANT NEWS AND TO COMMUNICATE WITH THE OUTSIDE WORLD. ITS MOTTO: ONLINE FIRST.

While large media companies have long been focusing on central newsrooms, the concept is now also being applied within other industries. AXA is one such company that is outside the media sector, but operating its own newsroom, complete with AV technology and Digital Signage – and this supports its “online first” strategy in its own company communications.

AXA Winterthur provides private and corporate clients with a range of insurance solutions. Around 40% of companies in Switzerland are insured by the 1875-founded company, which employs about 4,000 people and has 1.9 million customers. In 2015, the company achieved a total turnover of 11.1 billion Swiss Francs (approx.. €10 billion/ US\$11 billion).

As a result, AXA’s communication department is equipped to cater to the media, the public and its own employees, with

the newsroom used in emergencies as well as for everyday tasks: the insurer uses the central element for continuous matching with communication planning.

In total, four large format screens, a public address system and a backlight were installed. Service provider Habegger was involved with both the construction of the interactive newsrooms and the development of the application.

In usability, ‘keeping it simple’ is the order of the day. Fittingly, an iPad is utilised as a central control element for switching between various functions – such as live RSS newsfeeds, presentations and live TV. With audiovisual communication becoming increasingly prevalent, the newsroom has also been designed to be used as a studio for filming.

The AXA Winterthur AV newsroom with four large format screens and a public address system



PHOTO: HABEGGER GROUP

PHOTO: BARCO



In the truest sense of the word: Digital Signage, where you go, stand and see.

SOUTH AFRICAN TELECOMMUNICATIONS COLLABORATION

THE SOUTH AFRICAN TELECOMMUNICATIONS GROUP TELKOM SA HAS EQUIPPED ITS EXPERIENCE CENTER (EC) WITH A REAR PROJECTION VIDEO WALL, MULTITOUCH SCREENS AND COLLABORATION SOFTWARE.

Telekom is active in 38 countries in Africa with mobile communications, IT and other related business areas. In 2015, the company achieved a turnover of more than 2 billion Euros.

The company operates and maintains a National Network Operations Center (NNOC) – with 272 rear projection cubes, it’s the largest in South Africa – and the Information Technology Center (ITC) with 132 rear projection cubes for visualisation. In 2016, the company invested once again with the establishment of the Experience Center in Johannesburg.

The visualisation of data also plays an important role in the Experience Center. AV experts from Questek Advanced Technologies and manufacturers who had also worked with the two other major projects - NNOC and ITC - ten years previously were brought on board for the EC project.

An interactive and collaborative solution was sought to enable business customers to get to know Telkom’s satellite, data, voice, Internet and network solutions.

The defining central feature of the EC installation is a 6.9 m x 1.4 m collaboration video wall from Barco. This 11.1 mega

pixel wall was equipped with Barco’s own multi-touch option (49-channel touch interface).

The video wall, which incorporates seven rear projection cubes covering the digital canvas, boasts impressive luminance and resolution of 230 cd / m² and 6,300 x 1,920 pixels respectively, thus allowing the desired content to be enlarged when necessary. Content consists of a mix of data, visualisations and video.

Additional AV technology ensures seamless screen interplay. Six Barco laser phosphor projectors are installed on the ceiling, which have been installed to help users find their way around the center.

If particularly interesting content is played on the large video wall, ceiling projectors point the right way to the interactive screens, where further information is displayed. In addition to multi-touch tables, large format screens have been installed with ClickShare operating as the software of choice. To this end, three ClickShare CSC-1 devices have been installed to provide connectivity to laptops and mobile devices (Android, iOS).

VIRTUAL WORLDS – THE BREAKTHROUGH OF AR AND VR

THEY HAVE THEIR ORIGINS IN THE ARTS AND ARE THE DRIVERS OF DIGITALISATION IN INDUSTRY, MEDICINE AND ARE INCREASINGLY USED IN CONJUNCTION WITH DIGITAL SIGNAGE IN TRADE. REVENUES FROM VIRTUAL REALITY (VR) AND AUGMENTED REALITY (AR) ARE PROJECTED TO INCREASE TENFOLD WITHIN THE NEXT THREE YEARS.

Grandpa was a surrealist: the theory of virtual reality goes back to the French dramatist Antonin Artaud. As early as 1938 he penned a series of essays entitled 'Theatre and its Double', in which he laid out his argument for a theatre creating – not imitating – its own reality. The difference between the sign and the signified was thereby eliminated. The English edition of Artaud's 'Le Théâtre et son double', published in 1958, contains for the first time the phrase virtual reality – coined by translator Mary Caroline Richards.

In the field of computer technology, the virtual has been employed since 1959. Since 1994, there are dedicated languages such as the virtual reality Markup Language (VRML, 'Vermal'), X3D, and many others to describe three-dimensional interactive vector graphics, such as the Web. In the mid-1990s, Augmented reality appeared for the first time, a sister of VR (see box).

Nearly a quarter of a century after VR and AR appeared, both are now considered to be forms of mass media. In consumer markets, especially with gamers, completely virtual worlds are no longer restricted to the monitor screen. VR glasses like Oculus Rift, HTC Vive or Samsung Gear are used, all of which designed as standalone glasses or for use with suitable smartphones. In the summer of 2017, a British study by SlotsMillion found that 92% of the British have already heard of, with a further 23% having already tried VR (see graphic). In the same year, 43 million people used VR worldwide – a figure which is expected to have quadrupled to almost 171 million users in 2018.

Virtual reality and augmented rare used in all conceivable B2B and B2C scenarios, for example, within the construction and maintenance industries. In medicine there are also currently major research projects on specific applications, such as surgery. Tour operators are also using VR to make



Holovis demonstrates how gigantic and impressive projections can be used thanks to projection mapping on uneven surfaces.

PHOTOS: HOLOVIS

AUGMENTED, VIRTUAL AND MIXED REALITY

Augmented reality (AR) is an extended reality: it's about the relationship between a real object and programming code. The user of a smartphone or tablet holds the device above an object in the room. AR is then used to project layers with information about the object, so that additional information can be displayed on the mobile terminal and interactions can be triggered. Currently, software development kits (SDK) are being used by third party vendors such as Vuforia. It's expected that Apple and Google will soon offer native AR in their own mobile operating systems.

Virtual reality (VR) works with completely non-existing objects, landscapes and scenarios. Highly detailed VR content can be output via 4K monitors. This method is already widely in use in the automotive industry. When it comes to computer games or experience worlds, VR glasses like the Oculus or cardboard systems like the one from Google – which work with smartphones and lenses – are currently in use.

Mixed reality (MR) is the combination of virtual reality and reality. If, for example, a game is played over a VR spectacle in mixed reality and a stimulus from the real world is added, this is classed as MR. The HoloLens from Microsoft is an example of mixed reality glasses. Similar to AR, it can incorporate, for example, a piece of furniture from the home, and like VR, it can display a wide range of other virtual content. Acoustic elements such as speech, music and noise can also be played back with the HoloLens.

long-haul trips a little more exciting for holidaymakers, for example with a spectacular parachute jump over the high-rise skyscrapers of Dubai. The latest craze is the immersive 360-degree cinema for the banking sector. An internationally active financial services provider is relying on knowledge transfer with VR with a group of 10 to 20 managers, guided by a moderator, are guided by an animation of complex products. Siemens also relies heavily on VR. One of its last projects is a cardboard app for the Mobility business unit, which is constantly being updated and informs the Group's customers in its railway division. Both of the aforementioned projects were completed by Studio B12 from Braunschweig.

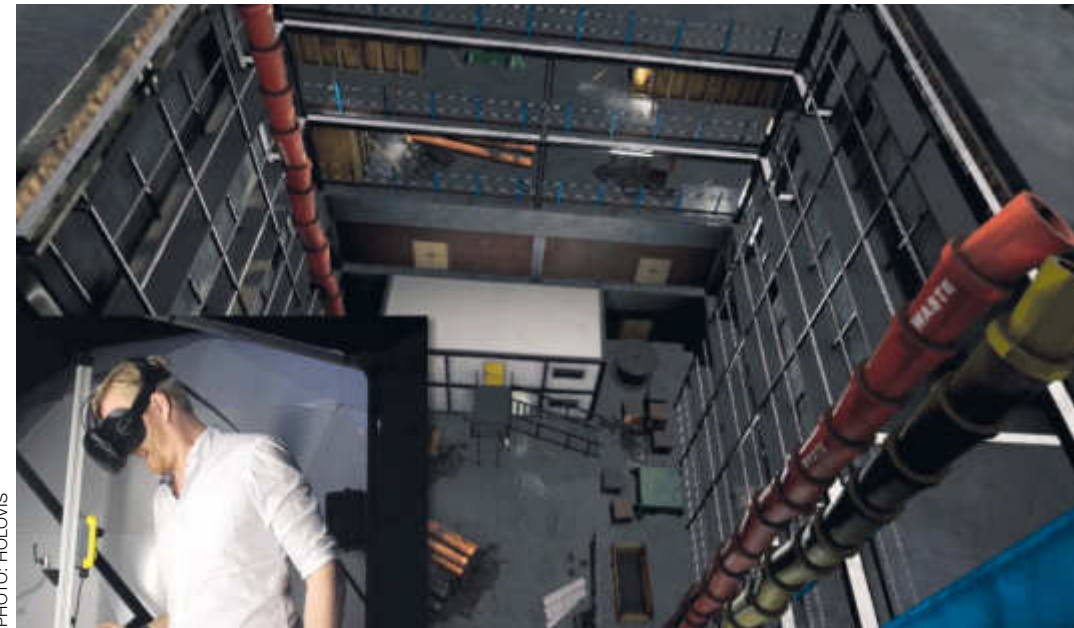
According to insiders, while marketing applications of immersive technologies may not have taken off, industrial applications could prove to be particularly lucrative. Traditionally, a plant engineer has had to send a group of hundreds of engineers around the world every few months to explain devices and train users. In the future, VR projects – probably employing the current most powerful and widely

used computer game engines Unreal or Unity – will make this process much cheaper. The cost: a maximum of 200,000 Euros for the special app plus around 10,000 Euros for a pair of computers and VR glasses.

A project implemented by Vectorform in Munich demonstrates that entire power plants can already be experienced in virtual reality. US-based energy company DTE Energy is training in VR. Other industries such as automotive (BMW) and high-tech (Trumpf Laser) have long since been domestic customers.

Augmented reality is also booming. Virtual objects are placed over real objects, functions can be tested, and product properties changed. In contrast to VR, the AR developers have to pay close attention to the environment. Lighting conditions, surrounding objects: All this must be taken into consideration when programming. "This is one of the reasons why AR is currently used mostly in large showrooms and flagship stores," explains Martin Tabery of Vectorform from Munich.

What may have looked like science fiction just a few years ago is now reality: the use of augmented and virtual reality. Anyone wearing appropriate glasses will see the world with different eyes.



The advantages of AR and VR bring together mixed reality media. The Startup Magic Leap is working intensively on a mixed reality solution. Prototypes have only been shown to selected persons. Since 2016, Google is also working with the company. An existing MR product is the HoloLens from Microsoft, which is also used routinely here. In the summer of 2017, for example, retailer Saturn launched a 'HoloTour' through several of its large stores to promote individual products. Users could use the HoloLens to search for specific products such as a certain Dyson vacuum cleaner.

The virtual and talking figure 'Paula' guided users visually and aurally. When users reached the point in the store where the featured product appeared, HoloLens blended graphically prepared virtual additional information – as well as Paula's voice explanations – to supplement the physical product on display. At the end of the tour, the customers returned the data glasses and were able to take another picture that reminded them of their mixed reality tour through the electronics store. As a result, information was communicated in an immersive, gamified and entertaining way. What's more, Saturn's place in the digital point of sale premier league is confirmed.

Augmented reality and virtual reality will soon become an even bigger business for service providers. According to IDC estimates, Sales in AR and VR reached about 6.1

billion US Dollars in 2016. The market researchers expected an increase of 131%, to 14 billion Dollars, for 2017. IDC is currently also expecting sales to reach \$ 143 billion by 2020 – a ten-fold increase in market volume in three years.

An increasing number of projects worldwide continue to drive the three technologies forward. After Apple bought the German AR specialist Metaio some time ago, the company is to bring out AR in the Autumn of 2017. "I hope that the native AR integration in Apple's macOS and iOS will open new doors and possibilities within the sector," comments Peter Werner, Studio B12 Managing Director. According to Werner, Google will also continue to push AR. Colleague Tabery agrees: "With this, augmented reality will experience the next push."

A future vision of virtual reality goes one step further: British Startup Improbable plans to map complete cities – and later even the whole planet – in virtual reality in order to allow extremely complex simulations for traffic and urban planners to be carried out. With this, the utopian ideals of literary figures – such as the 1:1 scale map envisioned by Jorge Luis Borges, and the ideas discussed in 1893 by author Lewis Carroll – would finally be realised, or in other words, made into reality.



YEARBOOK

2017/2018

DOOH

RISE AND FALL

WHILE STRÖER AND WALL CONQUER THE MAIN ROADS, 7SCREEN'S PROGRESSION IS HALTED.

The market has remained pretty stable in the past year: The Cologne-based Digital Signage expert Ströer is still the market leader, followed closely by Wall. Both firms concluded 2016 with positive figures and an expansion of their respective digital networks. Of particular importance are the street advertising media billboards that both companies have installed – and will continue to build – on busy streets.

While 'digital roadside' has long been part of the typical street scene in Great Britain or Russia, it has traditionally been something of a rarity in German cities. The reason for this is the strict legal conditions for street advertising – conditions which are now gradually weakening. While applications are still under scrutiny – and in case of doubt rejected by the cities, both Wall and Ströer received important approvals in the past year in Berlin, Düsseldorf, Wuppertal and Cologne. With other cities soon to follow, the future is looking good.

PURE ADVERTISING VS. FRAMEWORK PROGRAM

The two companies follow their own philosophy when it comes to large roadside advertising. In addition to its digital large-screen displays (Digital City Lightboards) showing exclusively static content (except for the peeling effect with the change of displayed advertising), Wall is increasingly relying upon the portrait format Digital Deluxe Net. These digital City Light poster formats are not only integrated into pedestrian zones or bus stops, but are increasingly positioned free standing in the middle of large traffic junctions in Berlin or Düsseldorf. Wall is consistently implementing the digitalisation strategy of JCDecaux – its parent company, and offers digital posters marketed by location and time of day.

Ströer does the same with its digital megalights. The LED surfaces do not supplement, but rather replace static

posters. In principle, they also allow playback of moving images, however this is still prohibited in Germany on busy streets. However, In contrast to Wall, Ströer also uses an editorial framework such as weather or news. This creates a lucrative environment for advertisers, which are increasingly being acquired in the region. The advertising billboards should thus become a local platform, something of a roadside yellow pages. Ströer therefore offers year-round bookings with a rotating change of design on a monthly basis – an attractive offer for Ströer customers. The Cologne Digital Signage expert has thus established a very successful marketing concept.

ROADSIDE HAS HIGH POTENTIAL

A quick look outside of Germany demonstrates the even greater potential of roadside. The Russian DooH provider, Gallery works with the leading internet search engine, yandex. yandex uses mobile phone signals to determine the live data of drivers and sends them to Gallery. In this way, the company can adapt advertising output, for example, to the speed of the vehicles: in the event of a traffic jam, the motifs change more frequently than during fast-moving traffic. Although such a scenario has yet to be implemented on the German market, Ströer clearly has the potential to do so with its impressive digital portfolio and wealth of data.

While Wall and, above all, Ströer are moving the market and continually pushing forward, 7Screen has yet to make an impact upon the market's two big players. Despite ambitious plans and a large team at the beginning of 2016, the Munich firm soon became disillusioned.

Upon entering the market, 7Screen's goal was to become the second strongest force in the DooH market, thus aiming to place itself with the likes of Ströer. Both companies pursue the same strategy: multiscreen marketing, connecting DooH, TV, online content and automated booking and

playback processes. However, while Ströer had built up the Digital Signage market, it was largely unknown territory for 7Screen. The harsh lesson that had to be learnt was that DooH works differently than television or online.

RESTART FOR 7SCREEN

It's fair to say that the Munich-based company underestimated the DooH-specific challenges of different software platforms of third-party networks. A quick changeover to a common platform is difficult to implement in the case of external marketing and complicates the planned automation of bookings and output. 7Screen's competitors Ströer and Wall use their digital networks almost exclusively on their own technically standardised networks. The SevenOneMedia subsidiary secured the exclusive marketing of the Cittadino networks at airports and Rewe Rhein-Main. While the 'Tank & Rast' network was supposed to be the growth platform – which now includes LED posters in the outdoor areas of the service areas – expansion of the travel boards experienced

significant delays, which ultimately halted growth of 7Screen at large. At the airports, the old Deutsche Telekom displays were renewed with considerable effort and received a content upgrade with Pro7Sat Group content.

At the beginning of 2017, founding director Eva Adelsgruber was replaced by Group Manager Reinhard Risse. As Risse will continue to be the Director of Online Sales at SevenOne Media, the company is now hoping for a better interlinking in the marketing of the various media.

There is definitely potential for the Munich-based firm: The networks at the airports are attractive, at petrol and service stations 7Screen has a monopoly position and the investment in new displays only increases attractiveness of touch points. The extent to which 7Screen is able to take advantage of these positions and transfer its marketing expertise to the DooH market this year will have to be seen. After the ambitious but very bumpy start, 7Screen is now likely to be more realistic about the market and adjust its goals accordingly.



STRÖER LEADS THE WAY WITH PROGRAMMATIC BUYING

WITH AUTOMATED MARKETING PROCESSES REMAINING A
DOMINANT INDUSTRY TOPIC, STRÖER LEADS THE WAY
WITH ITS NEW REAL-TIME TARGET GROUP DATA SOLUTION.

Right time, right place – crucial factors for a successful advertising campaign. In order to address exactly the desired target groups, marketers, agencies and advertisers are looking increasingly into automating their processes. However, technical changes are merely building blocks that have little to offer without comprehensive user data. In 2016 Ströer again pushed ahead and installed 50,000 beacons on its advertising media. The Cologne-based company is thus the first to provide target group data in a real-time manner – and to adapt the readings accordingly.

Seeing as no other market participant is able to compete at the moment, this is nothing short of revolutionary. In addition to the Out-of-Home data with beacons, Ströer is also in the position to collect those regarding purchased online apps such as Promiflash and Erdbeerlounge or Giga. As a result, a whole new approach to advertising is opening up. For example, in order to target young people getting off a train, appropriate advertising spots using public video could be quickly put up on digital advertising on the platform to address the relevant target group.

BEACONS FULFIL NEW PURPOSE

While this is already possible today, it isn't possible with real-time data. Currently, providers have to satisfy themselves with data which they receive from, for example, mobile telephone operators, social media or WLAN operators. As a result, the advertising is therefore adapted on the basis of 'historical' data. An example: it may be that at 6 pm the spot for the 25 to 35-year-old favourite beer is pre-programmed to run, but because of a train delay, hardly anyone from this target group sees the spot. Only in-store network operators such as Media Markt – who already collect data at the point of sale – have been able to offer a similar model as Ströer until now.

It is also interesting to note that the original purpose of Beacons has changed. Initially intended to create one-to-one communication or to foster interaction with passers by, the data will now be used to deliver efficiently with one-to-many communication. And this is not the only change: Ströer deviates from the transmission loop with the adjustment of the target group and spot, in addition to the converting its price model. Instead of using touchpoints as before, the marketing will take place from the middle of 2017 onwards. This is how Ströer is becoming the first market player to tailor its Out-of-Home marketing of the online world.

TARGET: PROGRAMMATIC BUYING

With online setting the new standard within the industry, Ströer's developments make excellent sense. The combined marketing package of online, DooH – and ideally TV – is the goal of network operators. In order to achieve this, however, they have to adapt themselves to the online world. In short, this means one thing: Programmatic Buying and advertising. The individual Digital Out-of-Home touchpoints are no longer viewed as part of a network, but are individually marketable. Addressable Public Video changes the established network business model. The technological challenge presented here is far less than the marketing challenge. Networks leverage better and poorer sites; therefore the premium that can be achieved is relatively high for individual marketing activities.

A large number of advertising agencies have already implemented appropriate strategies and are producing campaigns in such a way as to automatically adapt to different advertising media and target groups. This may be, for example, as simple as changing the text within a particular advertisement. But it is precisely this automatic creation that is increasingly changing the work of creatives. On the market and the network side, the challenge is still the technical standardisation of the play-out systems. However, great progress has been made here. At least within the networks of large advertising billboard companies, the technical implementation of such a playback no longer presents a significant challenge. Ströer, for example, has long since combined Digital out-of-home and online.

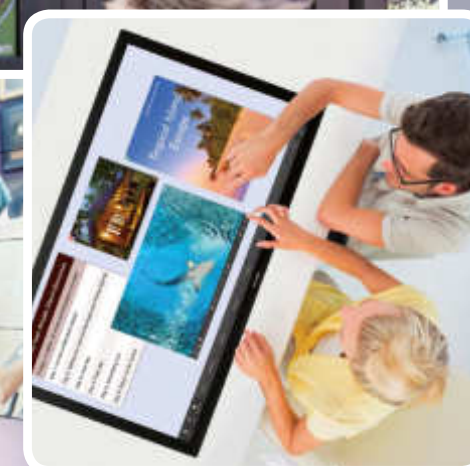
HALF-AUTOMATED ISN'T ENOUGH

Given this head start, Ströer is well on the way to implementing Programmatic Buying. Looking at the overall market, however, automated booking and sales processes for Digital Signage advertising are still in their infancy. For one, there is still a lack of uniform standards regarding network and usage data. Furthermore, because corresponding platforms are not yet mature and fully co-ordinated, cross-network marketing is rarely a possibility both on the buyer and seller side. Ströer has certainly given an important signal to all market participants. With the clear move of the market leader in the direction of programmatic buying, the topic will remain up for discussion – and also a reality – in the DooH market in the next few years. For the other market players, the rethinking and remodelling of their own marketing strategies presents a very big challenge.

digital signage



The trade magazine
for digital advertising and
information systems



The professional trade magazine
4 times a year everything about the topics of hardware, software, content and marketing

TOP 30
DIGITAL OUT OF HOME NETWORKS
GERMANY
2017

NETWORKS	OWNER	MARKETER	CATEGORY	LOCA-TIONS	DIS-PLAYS
Media Markt-TV ¹⁾	Media Saturn Holding	UAM, red blue	Retail – Electronics	260	31.200
Saturn-TV ¹⁾	Media Saturn Holding	UAM, red blue	Retail – Electronics	157	18.840
Medimax (EP) TV ¹⁾	Medimax (EP)	UAM	Retail – Electronics	129	9.030
TV-Wartezimmer	TV-Wartezimmer	TV-Wartezimmer, UDS	Healthcare – Doctor's Office	7.000	7.000
Brand Views	Brand Views	Brand Views, UDS, UAM	Leisure – Restaurant/ Bars	500	6.000
DOOH.de	heinekingmedia	DOOH.de	Divers	3.854	3.854
Berliner Fenster	Berliner Fenster	mc R&D	Transport – Public	1.106	3.768
Touchpoint 7HIGHWAY	Tank & Rast	7Screen, Cittadino	Travel Services	593	3.524
Viewento Edeka-TV	Viewento	Viewento	Retail – Fast Moving Consumer Good (FMCG)	680	3.191
Mall Video	Infoscreen	Infoscreen	Shopping Mall	100	2.357
Digital Touchpoints POS REWE	Cittadino	Cittadino, Neo Advertising, Goldbach, UDS, UAM	Retail – Fast Moving Consumer Good (FMCG)	407	2.130
Touchpoint 7SHOP supermarket	-	7Screen, Cittadino	Retail – Fast Moving Consumer Good (FMCG)	385	2.009
Digital Touchpoints POS Lotto	Cittadino	Cittadino	Retail – Lottery	1.416	1.416
McDonald's TV	McDonald's Deutschland	UAM	Leisure – Restaurant/ Bars	856	1.385
TAXI Channel	fleet ad	Goldbach	Transport - Public	10	1.371
Neo Advertising EDEKA TV	EDEKA	Neo Advertising, Cittadino, reflexmedia	Retail – Fast Moving Consumer Good (FMCG)	249	1.366
APOVID	Apovid	Apovid, Goldbach, UAM	Healthcare – Pharmacy	600	1.250
Station Video	Infoscreen	Infoscreen	Transport - Station	171	1.155
Touchpoint 7EAT Burger King	-	7Screen, Piranha Media	Leisure – Restaurant/ Bars	476	1.084
real,- Shop Kontakt	echion Corporate Communication	echion	Retail – Fast Moving Consumer Good (FMCG)	266	1.076
Fahrgast TV Nürnberg	VGN	Omni-Media	Transport – Public	258	1.068
Fahrgastfernsehen Hamburg (U-Bahn)	Hamburg Hochbahn	Ströer, Omni-Media, public broadcast	Transport – Public	504	1.008
fahrgast tv Leipzig	Leipziger Verkehrsbetriebe	videowerkstatt.net, mc R&D, Omni-Media, Goldbach	Transport – Public	304	1.007
SPORTS Channel	Ridotto Group	Goldbach	Retail – Sports	447	954
Intersport TV	Das Mediativ	Ridotto	Retail – Sports	430	870
Fahrgast-TV mobil Hannover	üstra	X-City Marketing, Ströer, mc R&D, Omni-Media, public broadcast	Transport – Public	144	864
FITNESS Channel	Sporttime Media	Goldbach	Leisure - Sports	205	803
Münchner Fenster	Berliner Fenster	mc R&D	Transport – Public	92	636
Touchpoint 7AIRPORT classic	-	7Screen, Cittadino	Transport - Airport	7	618
Kaufland Instore-TV	Kaufland	reflexmedia, Goldbach, TIP Werbeverl	Retail – Fast Moving Consumer Good (FMCG)	187	520

¹⁾TV sets on the retail floor included in the networkg
Note: The table is based on company information (report/rate card). Period of survey May 2017.

TOP 30
DIGITAL OUT OF HOME NETWORKS
AUSTRIA
2017

NETWORKS	OWNER	MARKETER	CATEGORY	LOCA-TIONS	DIS-PLAYS
Media-Saturn TV ¹⁾	Media Saturn Holding	red blue, Goldbach Media	Retail – Electronics	47	7,050
y-doc	y-doc	y-doc, Goldbach Media	Healthcare – Doctor's Office	1,175	1,175
Wien lokal INFOSCREEN	INFOSCREEN Austria	INFOSCREEN, Gewista	Transport – Public	742	775
Graz lokal INFOSCREEN	INFOSCREEN Austria	INFOSCREEN, Gewista	Transport – Public	598	598
Linz lokal INFOSCREEN	INFOSCREEN Austria	INFOSCREEN, Gewista	Transport – Public	534	534
Vita TV	TV Wartezimmer GmbH	y-doc, TV-Wartezimmer	Healthcare – Doctor's Office	526	526
Digital Media U-Bahn-Stationen	Gewista	Gewista	Transport – Station	7	389
Digital Media U-Bahn Stationen Wien	Gewista	Gewista	Transport – Public	7	389
Innsbruck lokal INFOSCREEN	INFOSCREEN Austria	INFOSCREEN, Gewista	Transport – Public	300	300
Gesundheits-TV	SMG Screen Media	Goldbach Media, y-doc	Healthcare – Pharmacy	196	286
sitour Ski Network	feratel media technologies	Sitour Marketing	Leisure – Sports	15	250
monitor werbung	peakmedia	peakmedia, Goldbach Media	Retail – Shop Window	104	219
Apomotion	Herba Chemosan	Herba Chemosan, y-doc, Goldbach Media	Healthcare – Pharmacy	158	208
Intersport Austria TV	Das Mediativ	ridotto, Goldbach Media	Retail – Sports	73	194
TV-Wartezimmer	TV Wartezimmer	y-doc, TV-Wartezimmer	Healthcare – Doctor's Office	169	169
BUS Screens Salzburg	Stadt Salzburg	Goldbach Media	Transport – Public	80	120
Flughafen Wien Gepäcksbänder	Flughafen Wien	Flughafen Wien, Goldbach Media	Transport – Airport	1	120
Digilight	Digilight	Digilight, Goldbach Media, ÖBB	Transport – Station	45	104
SCHOOL Screens	Coffe2watch	Goldbach Media, MIP	Education	103	103
Flughafen Wien Mega Wall	Flughafen Wien	Flughafen Wien	Transport – Airport	1	78
UNI Screens	MIP Media in Progress	MIP, Goldbach Media	Education	30	76
Klagenfurt lokal INFOSCREEN	INFOSCREEN Austria	INFOSCREEN, Gewista	Transport – Public	75	75
oruvision	oruvision	oruvision	Leisure – Tourism	57	75
KINO Screens	United Cinemas International Multiplex	Goldbach Media	Leisure – Cinema	3	63
CAT INFOSCREEN	INFOSCREEN Austria	INFOSCREEN, Gewista	Transport – Public	2	60
Shopping Mall-TV (SCS)	Aeneas	Aeneas, Goldbach Media	Shopping Mall	2	60
Digital Media Outdoor Wien	Gewista	Gewista	Outdoor	3	34
PatientenTV	SMG Screen Media	y-doc	Healthcare – Doctor's Office	32	32
railscreen mall	ÖBB	ÖBB, Goldbach Media	Shopping Mall	2	31
Digital Media Graz	Gewista	Gewista	Outdoor	9	9

¹⁾TV sets on the retail floor included in the networkg
Note: The table is based on company information (report/rate card). Period of survey May 2017.

TOP 30
DIGITAL OUT OF HOME NETWORKS
 SWITZERLAND
 2017

NETWORKS	OWNER	MARKETER	CATEGORY	LOCATIONS	DISPLAYS
Interdiscount	Interdiscount/Div.v.Coop	Goldbach Media, Mediabox		189	6,179
Media Markt ¹⁾	Media Saturn Holding	Goldbach Media, Mediabox	Retail – Electronics	27	5,420
meTV ¹⁾	Migros-Genossenschafts-Bund	Goldbach Media, Mediabox	Retail – Electronics	102	4,284
passengertv	passengertv AG	passengertv AG	Transport – Public	2,454	4,092
Canal TPG	TPG Publicité	TPG Publicité, Goldbach Media, Mediabox	Transport – Public	1	960
gasstationtv	gasstationtv AG	passengertv AG	Pump Stations	110	710
Neo Advertising Digital Shopping Media	Neo Advertising	Neo Advertising, Mediabox	Shopping Mall	54	686
APG SGA TrafficMediaScreen ²⁾	APG SGA	APG SGA	Transport – Public	6	665
City Kanal Basel	Moving Media Basel	Goldbach Media, Mediabox	Transport – Public	400	550
Healthcare & Beauty Channel	Excom Media	Excom Media	Healthcare – Pharmacy	490	500
Adscreen Kinofoyer	WerbeWeischer Schweiz	WerbeWeischer	Leisure – Cinema	55	433
CanalPoste	Die Schweizerische Post	Die Post, Goldbach Media, Mediabox	Retail – Stationary	260	420
Tamoi Zapfsäulen und Shops	Tamoi	Goldbach Media, Mediabox	Pump Stations	48	271
Neo Advertising CoopPronto TV	Neo Advertising	Neo Advertising, Mediabox	Retail – FMCG	223	223
Clear Channel Play Zurich Airport ³⁾	Clear Channel	Clear Channel	Transport – Airport	7	212
kkiosk	Valora Schweiz AG	Goldbach Media, Mediabox	Retail – FMCG	91	182
APG SGA Shopping ePanel	APG SGA	APG SGA	Shopping Mall	25	164
Amscreen BP & Socar Tankstellen Shops	Amscreen Group	Goldbach Media, Mediabox	Retail – FMCG	128	128
Avec.	Valora Schweiz AG	Goldbach Media, Mediabox	Retail – Convenience	45	118
Signactive	Signactive	Goldbach Media, Mediabox	Leisure – Sports	30	108
APG SGA Rail ePanel	APG SGA	APG SGA	Transport – Station	13	76
APG SGA Escalator ePanel	APG SGA	APG SGA	Transport – Station	2	76
Clear Channel Digital Shopping Media	Clear Channel	Clear Channel	Shopping Mall	13	72
Avia Tankstellen	ROAD AG Media	Goldbach Media, Mediabox	Pump Stations	72	72
Neo Advertising Palexpo Coverage	Neo Advertising	Neo Advertising, Mediabox	Trade Shows	2	61
Press & Books	Valora Schweiz AG	Goldbach Media, Mediabox	Retail – FMCG	30	60
Aperto Shops	ROAD AG Media	Goldbach Media, Mediabox	Retail – Convenience	47	57
APG SGA City ePanel	APG SGA	APG SGA	Outdoor	6	57
Migrolino Convenience Stores	Kilchenmann	Goldbach Media, Mediabox	Retail – FMCG	53	53
Neo Advertising Airport Genf ⁴⁾	Neo Advertising	Neo Advertising, Mediabox	Transport – Airport	5	48

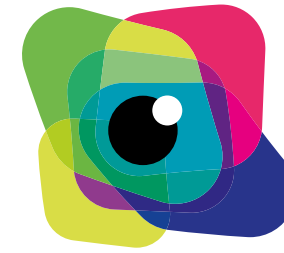
¹⁾ TV sets on the retail floor included in the network

²⁾ 6 regions with total 593

³⁾ Contains the single networks Flight Information Media, Baggage Claim Media, Baggage Claim Media Plus, Digital Branding Media, ad-e-motion

⁴⁾ Contains the single networks Digital Departures, Digital Business Lounges, Digital Shopping, Digital Welcome, Digital Culture

Note: The table is based on company information (report/rate card). Period of survey May 2017.



digital signage summit ise

7 FEBRUARY 2018
 AMSTERDAM
 NETHERLANDS

Europe's leading
strategy conference
for the Digital Signage
and Digital out of Home
(DooH) industry

DSS ISE is a half-day
conference taking place
during Integrated
Systems Europe 2018.

7 February 2018
10:00 am – 2:00 pm
RAI Amsterdam Convention Centre
Tickets and further information:
digitalsignagesummit.org/ise

A JOINT VENTURE OF:

**Integrated
Systems
Events**



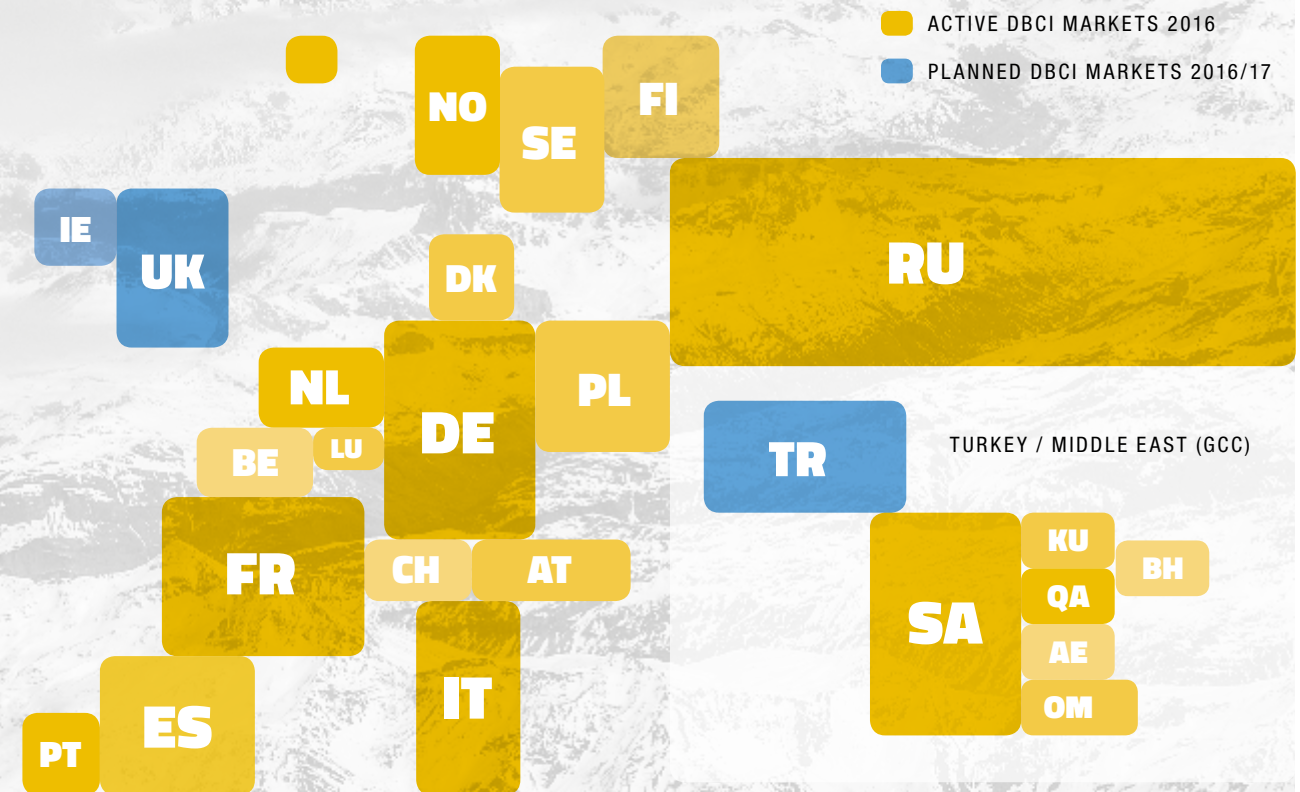


THE PULSE OF THE DIGITAL SIGNAGE AND DOOH INDUSTRY

FACTS ABOUT THE DSF EUROPE DIGITAL SIGNAGE & DOOH BUSINESS CLIMATE INDEX | DBCI

- The leading index for the Digital Signage and Digital out of Home industry in the EMEA region.
- DBCI registers the current business situation and provides a 6 months market outlook.
- Additional questions offer insights on current trends and drivers.
- DBCI offers transparency for market participants, investors and end-users in a fast growing and dynamic economic environment.
- Regular feedback by leading market players ensure high quality data for the relevant segments displays, integrators, software and Digital out of Home.
- DBCI will cover 80% of the EMEA public display market at the end of 2016.

EUROPE DIGITAL SIGNAGE & DOOH BUSINESS CLIMATE INDEX | DBCI



The DBCI is an invidis research product. © invidis consultin 2016

GRAPHIC: INVIDIS CONSULTING

INDUSTRY OVERVIEW

ON THE FOLLOWING PAGES YOU WILL FIND
COMPANIES FROM THE DIGITAL SIGNAGE AND
DOOH INDUSTRY SORTED BY CATEGORY.

COMPANY	PAGE
DISPLAYS	
Dynascan	84
Elo Touch Solutions	86
iiyama	87
Infinitus	88
Philips Signage Solutions	90
DISTRIBUTORS	
Concept international GmbH	82
INTEGRATORS	
Westiform	94
MEDIAPLAYER	
Concept international GmbH	82
Elo Touch Solutions	86
Philips Signage Solutions	90
Spinetix	93
Westiform	94
SERVICES	
dimedis GmbH	83
easescreen	85
Scala	91
SOFTWARE	
easescreen	85
dimedis GmbH	83
Net Display Systems	89
Scala	91
SmartSign	92
Spinetix	93

Supermini-PCs

Giada D67/F210/F105D



Concept International

CONCEPT
INTERNATIONAL GMBH

Concept International is one of Europe's leading distributors and assemblers for digital signage hardware. Every year, the Munich-based company supports more than 180 digital signage projects across Europe with a total number of more than 12,000 devices. With entry-level to high-performance mini-PCs by Giada, the distributor offers digital signage players with the latest Intel processor technology, suitable for all deployment requirements.

- Among the current bestsellers is the entry-level model **Giada F210**: With a top price and low operating costs it is particularly suited for high-quantity digital signage projects.
- The fanless **Giada F105D**, equipped with Intel Quadcore CPU and HD Graphics, offers the best value for money.
- Digital signage requirements in the 4K/UHD and high-end range are mastered by the ultra-flat and powerful **Giada D67**, which – propelled by Intel's Core-i CPUs – can run up to three flatscreens.

All devices feature Giada's patented JeHe Active Control (JAHc) technology. This ensures reliable switching on and off according to the configuration, even after power failures.

Concept's special offer to Digital Signage providers is the "Total Preparation Package": digital signage players are delivered with project-specific, burn-in tested and activated software configuration – which supports smooth roll-out and easy deployment in a breeze. System Integrators and Solution Vendors benefit from high project rebates.

CONCEPT INTERNATIONAL GMBH

SALES DEPARTMENT

ZWEIBRÜCKENSTR. 5–7

80331 MÜNCHEN

GERMANY

PHONE +49 (89) 961 6085-20

SALES@CONCEPT.BIZ

WWW.CONCEPT.BIZ



dimedis

dimedis

Founded 1996 in Cologne, the software company **dimedis** is specialized in trade fair- and digital signage solutions. FairMate is a visitor management solution and **kompas** a digital signage and wayfinding system. The customers are amongst others Messe Düsseldorf, Koelnmesse, Stockholmssmässan, Hamburg Messe und Congress, Messe Stuttgart, Reed Exhibitions Deutschland, Schalke 04, Borussia Dortmund, Bosch, snipes, a chain of supermarkets in France called "Casino" and shopping malls from ECE, SEC, mfi and Abu Dhabi Mall. More than 60 employees currently work for **dimedis**.

kompas Digital Signage Software

kompas® is one of the most powerful and flexible Digital Signage systems on the market. **kompas** offers Digital Signage users an intuitive interface built around drag-and-drop usability. More than 6,500 players in Europe with over 12.000 screens are controlled by **kompas**, making it the driving force behind one of the largest advertising networks in Germany. The **kompas** software is stable and relies on HTML5. Another part of the **kompas** family of products is the award-winning **kompas wayfinding**.

kompas received the VISCOM Digital Signage Best Practice Award in 2008, 2011 and 2015. And the POPAI Digital Award Gold for "Best Digital Media Technology" in 2011. www.kompas-software.com

DIMEDIS GMBH

PATRICK SCHRÖDER,
DIVISION MANAGER DIGITAL SIGNAGE

DILLENBURGER STR. 83

51105 COLOGNE

GERMANY

PHONE +49 (0)221 92 12 60 0

CONTACT@DIMEDIS.DE

WWW.DIMEDIS.EU



© Photo provided by Citybeacon

DynaScan



DynaScan Technology is the #1 manufacturer of high brightness displays. Founded in 1998, DynaScan is an award-winning industry leader in creating cutting-edge display solutions. With thousands of installations around the world, DynaScan displays are the proven solution for high ambient light applications. With brightness ratings as high as 7,000 nits, DynaScan high brightness LCDs shine bright in direct sunlight – making them the ideal solution for outdoor enclosures, semi-outdoor, and in-window applications. DynaScan offers the widest variety of sizes – 15 models ranging from 32"-84", in brightness levels from 2,500-7,000 nits – and are available in stand-alone and video wall configurations.

This year, DynaScan unveiled its new ‘DI’ Premium Indoor LCD Series with screen thicknesses as small as 29 mm, fanless cooling, and integrated Android media players. It introduced a unique 55" 3000 nit/1000 nit free standing double-sided display, and announced the new ‘DO’ Outdoor LCD Series featuring IP56 weather resistance and brightness levels as high as 5,000 nits.

With offices in Europe, North America, and Asia, DynaScan is equipped for international rollouts and support. DynaScan works closely with system integrators around the world to deliver premium LCD and LED display solutions for retail, banking, public information, and advertising.

DYNASCAN TECHNOLOGY, INC.

7 CHRYSLER

IRVINE, CA 92618

UNITED STATES OF AMERICA

PHONE +1 949 421 0348

INFO@DYNASCANDISPLAY.COM

WWW.DYNASCANDISPLAY.COM



www.easescreen.com

simple usage, striking effect

easescreen



easescreen – one solution for all applications

easescreen is a leading provider of digital signage solutions, that are used in over 80 countries worldwide. With the powerful modular software digital advertising and information systems can be created, managed and distributed comfortably to an unlimited number of networked displays on an individual basis. The audiovisual and interactive media content can be controlled, scheduled and updated automatically and/or manually in real-time - from one's workplace as well as from mobile devices.

Through the HTML5 client easescreen is completely platform-independent and compatible with all relevant digital output media. The software spans the range between serverless simple signage applications through to complex, interactive and data driven Digital Signage systems with any number of cascable server architecture.

The open software structure enables numerous extensions for diverse applications. So, there are interfaces to digital and media asset management systems as well as to hyper localisation and omnichannel solutions available, that help clients realize consistent digital communication and media strategies across all distribution channels.

PICHLER MEDIENTECHNIK E.U.

GRAZ HEADQUARTER:
WIENER STR. 287 · 8051 GRAZ
INFO@EASESCREEN.COM

VIENNA BRANCH:
ANTON-BAUMGARTNER-STR. 125
STIEGE 5 · TOP 102 · 1230 WIEN
SALES@EASESCREEN.COM

AUSTRIA

PHONE +43 316 672852

WWW.EASESCREEN.COM



Elo Touch Solutions



Elo Touch Solutions is one of the inventors of the touchscreen over 40 years ago and today a leading global supplier of touch-enabled technology, products and solutions with 20+ million installations around the world. We bring touch solutions to applications in retail, hospitality, digital signage, healthcare and many other environments. No matter the scale or size of the business, we have a modular solution that fits.

Elo has one of the largest interactive signage portfolios, with touchscreen displays in sizes from 10 inch up to 70 inch. The interactive digital signage family offers Android or Windows compatibility and provides a choice of multi touch or single touch versions as well as full HD and 4K resolution options. A range of accessories and peripherals extends the application functionality and installation flexibility. Using commercial-grade components only and housed in a durable chassis, the **Elo displays** are designed for public environments and 24/7 use.

The **EloView** software-as-a-service platform instantly turns any Elo Android-based touchscreen into a public-facing interactive experience portal. **EloView** enables this by providing device management, content delivery and integration with existing content management systems.

ELO TOUCH SOLUTIONS

KOLONEL BEGAULTLAAN 1C

3012 LEUVEN

BELGIUM

PHONE +32 16 70 45 00

INTERACT@ELOTOUCH.COM

WWW.ELOTOUCH.DE



iiyama



iiyama stands for high level proven expertise in the monitor business, a versatile display portfolio, quality and outstanding customer service.

Taking the best from our heritage of one of the first brands involved in the display industry and combining it with Vision and Technology facing the future, it is iiyama's aim to continue to build the number one brand in the display solutions field. iiyama values customer relations, delivering trustworthy commercial advice to B2B clients and end-users allowing them to make informed purchase decisions. Serving our clients with a professional support system is always at the core of our actions. Extensive warranty options are available for both B2B and B2C clients.

iiyama's portfolio includes desktop monitors for home and business use, professional gaming monitors, protective glass LCDs, CCTV monitors, Large Format Displays and a broad range of touchscreens including open frame monitors.

IIYAMA DEUTSCHLAND GMBH

WERNER-VON-SIEMENS STR. 4

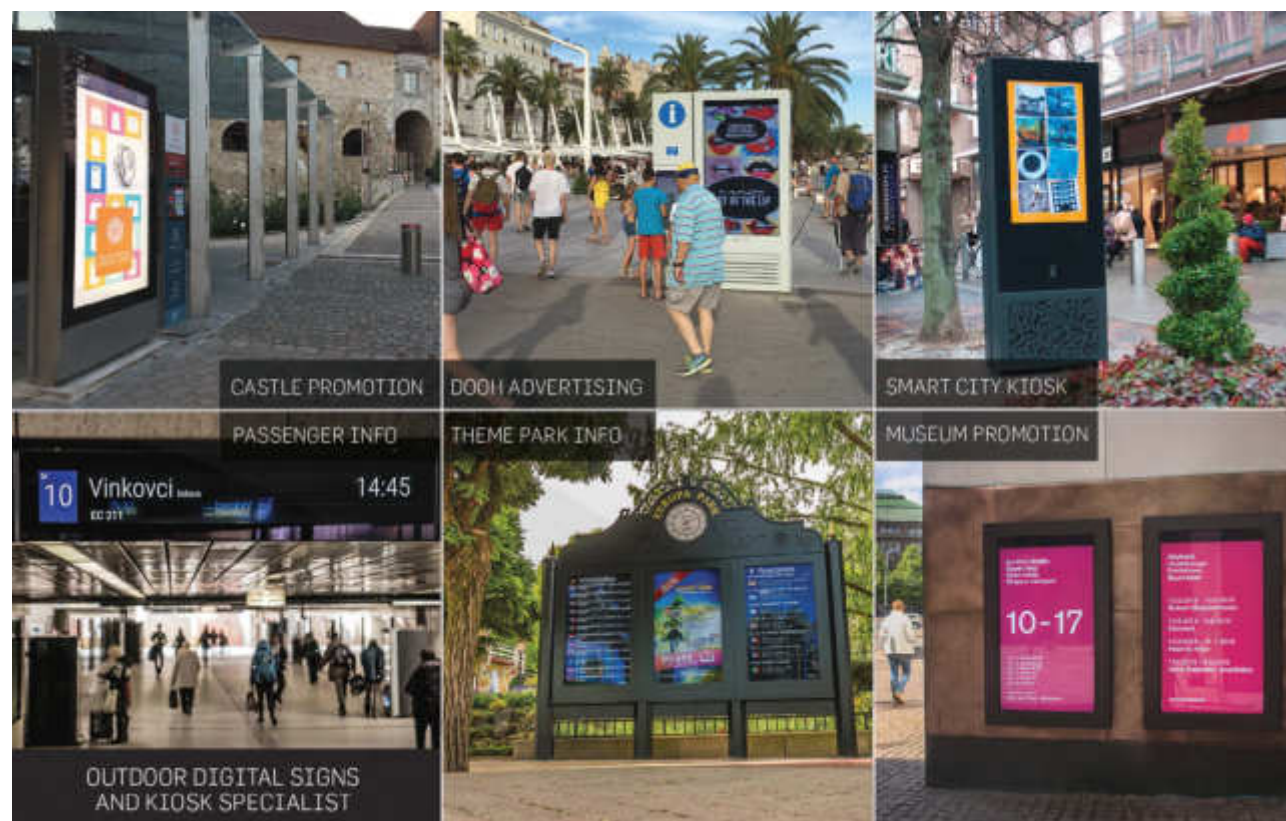
85296 ROHRBACH/ILM

GERMANY

PHONE +49 (0)8442 96290

SALES.DE@IIYAMA.COM

WWW.IIYAMA.DE



INFINITUS



Expert manufacturer of LCD and e-paper outdoor digital signs

We are specialists developers of harsh environment digital signs, under brand imotion®. Company was established in 2004 in Slovenia, EU. We are choice of system integrators in search of:

- High quality performance and reliability
- Minimal after purchase on-site servicing and
- Continuous pre and after-purchase technical support

One of our core advantages is fabrication and development of custom large format outdoor and indoor digital signs.

Our unique LCD thermal management technology

imotionG6 thermal management– Is our bespoke technology that can create perfect electronics operation conditions within inner enclosure (20-25°C). This results in 110% of constant luminance output and 30% extended life time of any integrated LCD panel. This feature guarantees best utilization of any integrated LCD panel for superb sun-readability, minimal degradation and longest life time of electronics.

INFINITUS D.O.O.

DIKRAN TAWITIAN,
HEAD OF MARKETING AND SALES

PREVALE 7

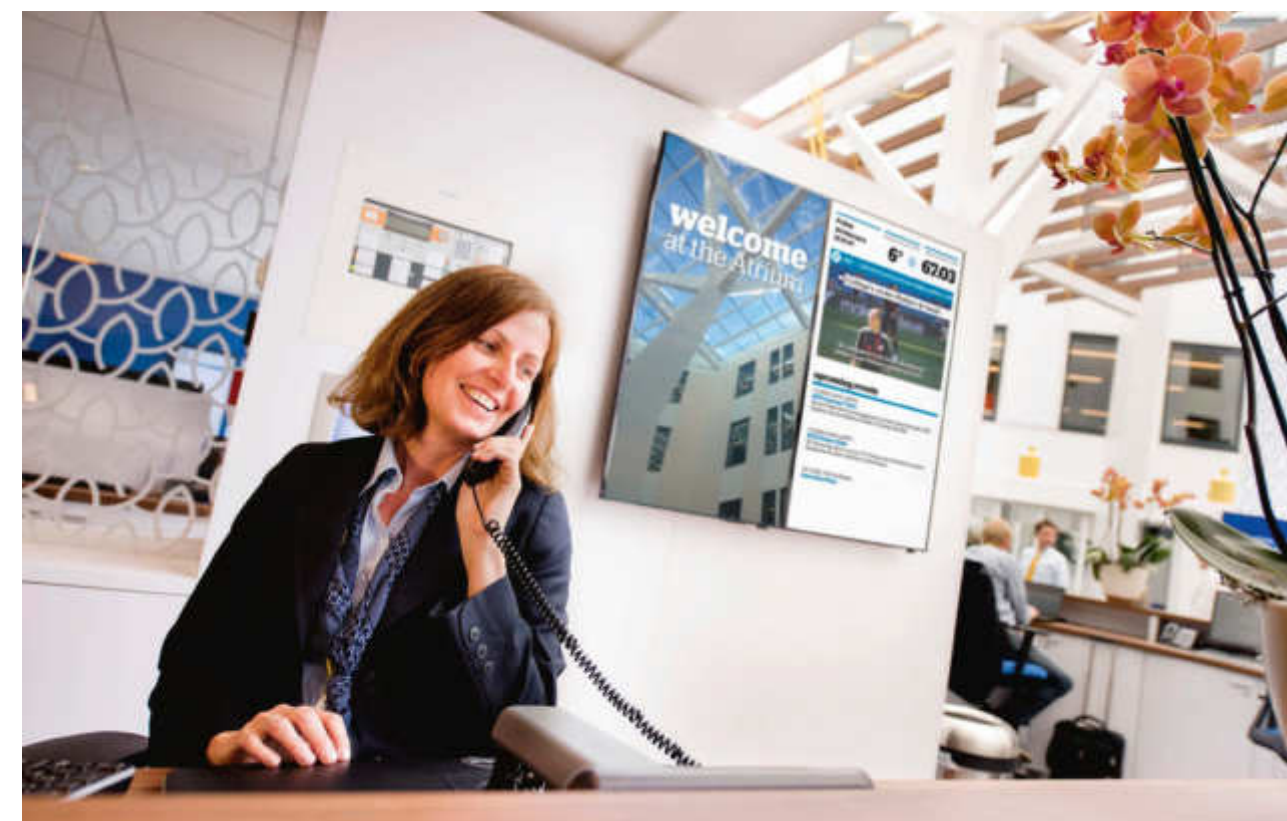
1236 TRZIN

SLOVENIA, EUROPE

PHONE +386 1 5128052

DIKRAN.TAWITIAN@INFINITUS-OUTDOOR.COM

WWW.INFINITUS-OUTDOOR.COM



NDS – PIONEERS IN DIGITAL SIGNAGE SOLUTIONS



DIGITAL SIGNAGE SOFTWARE

NDS (formerly Net Display Systems) develops data driven solutions that stand out. At the very beginning of the digital revolution, in 1994, they were one of the first digital signage software providers. Today, they continue to ride the wave of modern technology to provide next-level digital signage software.

NDS maintains a brand presence through a worldwide extensive partner network. Their partners are dedicated and specialized professionals, who provide installation, training and support for PADS4.

PADS4 CUTTING EDGE DIGITAL SIGNAGE SOFTWARE

PADS4 is one of the leading digital signage software platforms, with flexible and scalable possibilities for every industry. It brings state-of-the-art solutions to collect, connect, and distribute your data. Just link with existing workflows and make your digital signage truly smart.

PADS4 has led the way for over 20 years. Active in more than 75 countries, powering 500,000+ displays worldwide. Smallest installation: 1 display. Largest: 16,000 screens.

PADS4 empowers your message.

NDS

BJØRN PIEPER

LUCHTHAVENWEG 59-1

5657 EA EINDHOVEN

THE NETHERLANDS

PHONE +31 88 2661166

SERVICE@PADS4.COM

WWW.PADS4.COM



Philips Professional Display Solutions

PHILIPS

Philips Professional Display Solutions – a subsidiary of TPV, the official global license partner for Philips branded professional display products and solutions – will celebrate the Philips brand's 40th anniversary in the professional display business in 2017 by unveiling an exciting combination of new products and services while presenting bespoke solutions from a range of new strategic software partnerships.

The ongoing success of **Philips Professional Display Solutions** has been built around the company's dedicated focus on the B2B sector and in particular on the combination of offering exceptional service, outstanding product performance and the introduction of genuine, ground-breaking innovations – such as the implementation of the Android OS, the unique CMND creation and management system, the full integration of player and controller within the display and the option of machine-to-machine communication.

Philips Professional Display Solutions will also continue with its unique implementation of its Android SOC (System On Chip) solution by expanding it throughout the Digital Signage product portfolio and into the Professional Smart TV range – thereby leveraging customer access to the world's largest software development platform.

Products and Services

Signage and display solutions including:

- Hospitality • Healthcare • Food & beverage • Public venues • Corporate display • Retail • Android OS • CMND – creation and management system

PHILIPS PROFESSIONAL DISPLAY SOLUTIONS

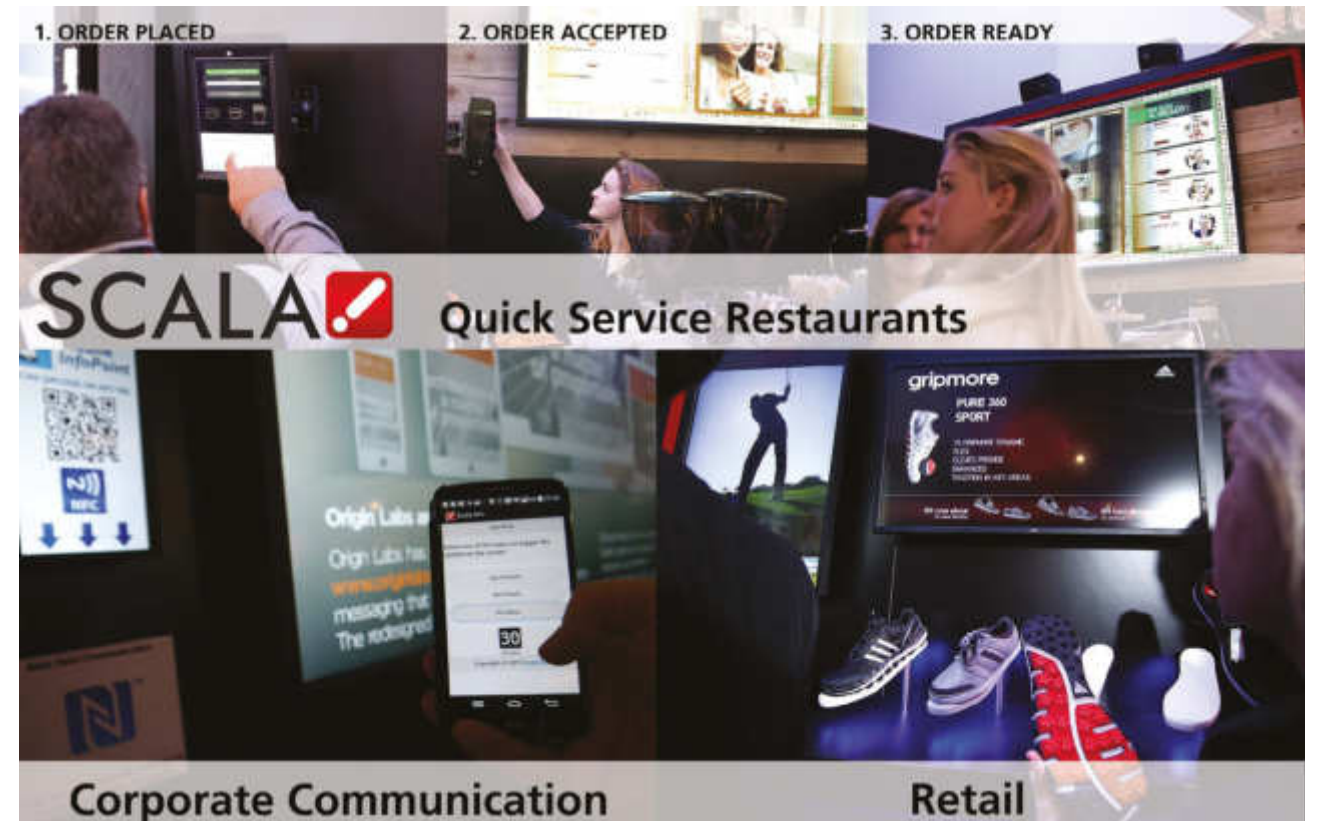
BUSINESS MANAGER EMEA

FRANCK RACAPÉ

MOBILE +31-6-5152-0372

FRANCK.RACAPE@TPV-TECH.COM

PHILIPS.COM/PROFESSIONALDISPLAY



SCALA

SCALA

COMMAND ATTENTION

Scala solutions allow you to create audience engagement experiences by connecting networks of digital signs, kiosks, mobile devices, websites and Internet-connected devices.

Scala, a STRATACACHE company, provides the platform for marketers, retailers and innovators to easily create and centrally manage deployment of these digital experiences, while retaining the flexibility to rapidly adapt to local business conditions and audience preferences in real time.

With 30 years of experience entertaining, informing and educating audiences, **Scala** is known globally for its innovation, and for leveraging emerging technologies to create award-winning solutions that are infinitely customizable.

Headquartered near Philadelphia, PA, **Scala's** network of partners and developers located in more than 90 countries drives more than 500,000 screens worldwide.

SCALA BV

HARRY HORN

BERGERWEG 170

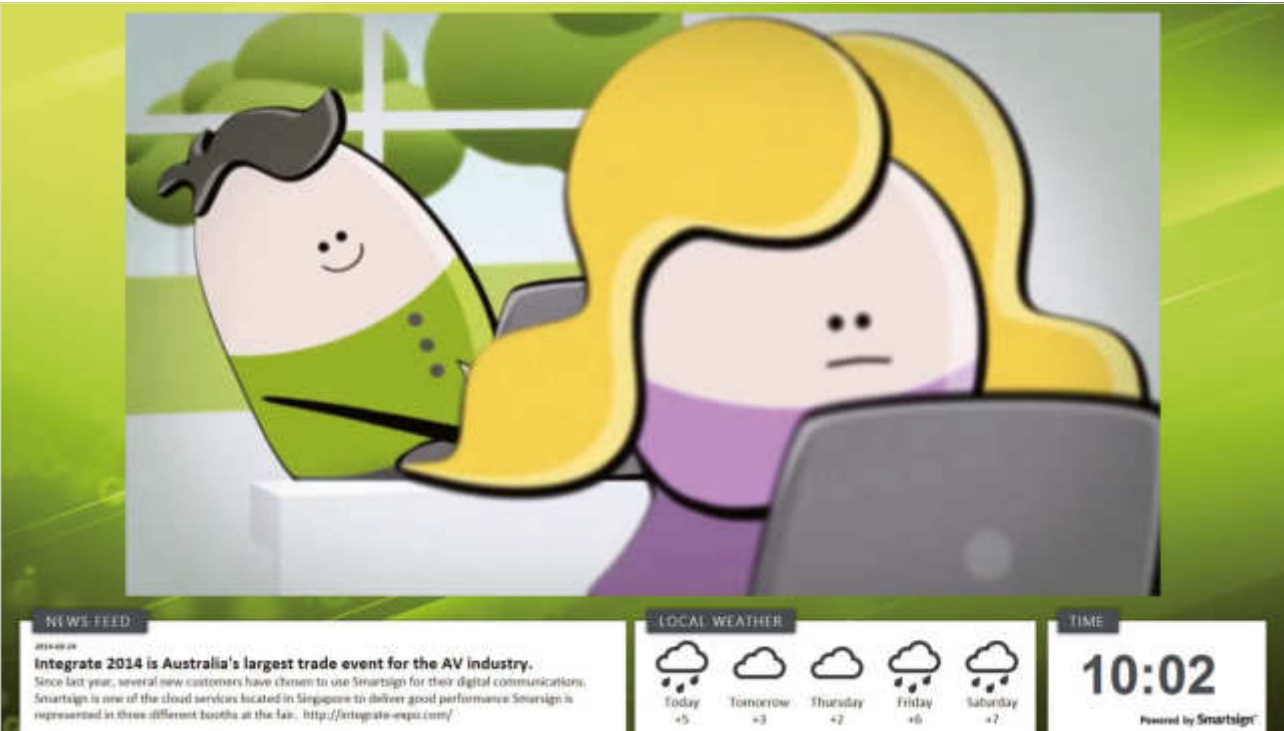
6135 KD SITTARD

THE NETHERLANDS

PHONE +31 (0)46 8080151

CONTACT@SCALA.COM

WWW.SCALA.COM



Smartsign



Smartsign – get your message through

Imagine a world where no boundaries limit your ability to communicate. An omnipresent solution that elevates your business above the noise and puts you in perfect control of your message. **Smartsign** can help strengthen and extend your communication. Thousands of companies worldwide rely on our comprehensive digital signage platform to manage, publish and verify custom content across the globe. On any platform, on any device.

Smartsign was founded in 1998 and develops and sells software for internal and external communication on both screens and other devices, e.g. smartphones. The company's headquarters are in Dalarna and Stockholm, Sweden. **Smartsign Manager** is a product used in more than 30 countries. Our user friendly interface and compatibility with all kinds of file formats makes the everyday usage of **Smartsign** really efficient. Setting up a professional information channel has never been easier.

Visit our website <http://www.smartsignmanager.com>

SMARTSIGN AB

DAN ARRIAS

MÅLAREGATAN 7E

784 33 BORLÄNGE

SWEDEN

PHONE +46 76 549 31 03

DAN.ARRIAS@SMARTSIGN.SE

WWW.SMARTSIGNMANAGER.COM



SpinetiX



About SpinetiX

At **SpinetiX**, we inspire businesses to unlock the potential of their story. We believe in the power of digital signage as a dynamic new storytelling platform to engage with people. For more than 10 years, we have been constantly innovating to deliver cutting-edge technology that helps our customers shine. Engineered in Switzerland, our comprehensive suite of solutions empowers businesses realize their full potential. Whether you're looking for a plug & play solution to bring your story to life or a fully customized solution to captivate your audience, **SpinetiX** is your partner to successfully grow your business.

Bring your story to life with DiVA

Share your story with **DiVA**, our plug and play solution for small businesses. Create and schedule instantly for maximum impact. Thanks to our user-friendly web interface, simply craft your content from our ready to use apps and templates. Digital signage doesn't get easier than this.

Captivate your audience with Elementi

Captivate your audience with **Elementi**, the ultimate solution to meet any digital signage need. **Elementi** is creatively engineered, powerful and scalable to simultaneously deliver brand and real-time content anytime, anywhere to any number of screens. Power-packed with over 250 widgets and our award winning HMPs, **Elementi** stands for digital signage with endless possibilities.

SPINETIX

SONNENBERGSTR. 9

6052 HERGISWIL

SWITZERLAND

PHONE +41 21 341 15 50

INFO@SPINETIX.COM

SPINETIX.COM



Virtual reception in entrance area via livestream



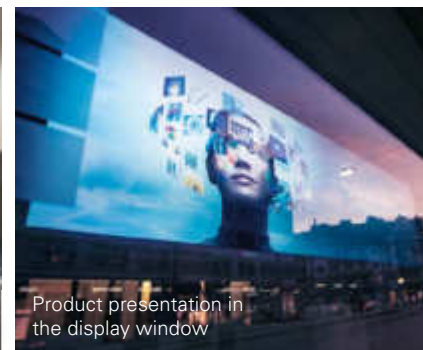
Information system inhouse



Dynamic media wall at the POS



Digital consultancy in a sales environment



Product presentation in the display window

Westiform



Westiform – making your brand shine

The family company has been making brands visible since 1959. From classic illuminated signage to directional systems and analogue POS advertising through to innovative digital signage solutions — as a general contractor Westiform offers everything from a single source. Our own production facilities in Germany, Switzerland and the Czech Republic and a specialised Digital Signage Centre of Excellence in Germany ensure the highest level of performance and flexibility.

Westiform services for your project:

- **Consultancy/conception** – Prototype construction, pilot installations, performance measurements, design
- **Hardware** – Selection of hardware taking into consideration project-specific general conditions, production and supply of customised systems.
- **Software** – Checking of the requirements for content management software and selection of the most suitable system
- **Integration** – Integration of hardware and software in the existing or new infrastructure
- **Installation** – On-site installation and roll-out with survey and documentation with the aid of an “on-site information and documentation tool”
- **Operation** – On-site service, operating, and monitoring the system and supporting the content management system

SWITZERLAND:
WESTIFORM AG
LORENZ KRATTIGER
FREIBURGSTRASSE 596
3172 NIEDERWANGEN
PHONE +41 (0)31 980 22 22
DIGITALSIGNAGE@WESTIFORM.CH

GERMANY:
WESTIFORM GMBH & CO. KG
HARALD RETTICH
KINZIGTALSTRASSE 2
77799 ORTENBERG
PHONE +49 (0)781 489 0
DIGITALSIGNAGE@WESTIFORM.DE

WWW.WESTIFORM.COM

THE EUROPEAN DESTINATION FOR THE GLOBAL DIGITAL SIGNAGE INDUSTRY

CONNECTING MARKETS & PEOPLE

Integrated Systems Europe is the world's largest exhibition for AV and systems integration. At the show's heart are the world's leading Digital Signage and DooH manufacturers and service providers who will showcase the latest cutting-edge products and solutions. This ensures that ISE 2018 will remain the destination of choice for all Digital Signage and DooH professionals. Make sure you are part of the big picture.

WWW.ISEUROPE.ORG

6-9 February 2018
Amsterdam, RAI, NL

**Integrated
Systems
Europe**

A JOINT VENTURE
PARTNERSHIP OF

CEDIA **infoComm**
INTERNATIONAL

Fanless Quad-Core Mini-PC



F105D

Intel® Celeron® N3450 Apollo-Lake
4x 1.1 GHz, Turbo: 2.2 GHz
Fanless, HD Graphics
3x USB 3.0, 1x COM, 1x GB-LAN

Super-Mini-PC Super-Mini-Price



F210

Intel® Atom x5-Z8300
4x 1.4 GHz, Turbo: 1.8 GHz
Fanless, HD Graphics
WLAN, 3G (optional)

Fanless Power-PC Intel® Core i5 Skylake



F302

Intel® Core i5 6th Gen. 6200U
2.5 GHz, Turbo: 2.8 GHz
Intel® HD Graphics 520
2x USB 2.0, 3x USB 3.0 + 1x Type C

Flattest Intel® Core i5 Kaby-Lake PC



D67

Intel® Core i5 Kaby-Lake, 7th Gen.
2x 2.5 GHz, Turbo: 3.1 GHz
Intel® HD Graphics 620
USB 3.0, 1x COM, 1x GB-LAN

Video-Wall PC for 6x Full-HD or 4x 4K



G330

Intel® Core i5, 6th Gen. Skylake
AMD Radeon HD7750, 2 GB DDR5
6x DisplayPort, 3G (optional)
Size: 350 x 235.5 x 43 mm

Protection Case for Public Displays



Panzerbox II

Sizes: 24" - 65" (also individual)
Protection against theft, vandalism
and frontal splash water,
Optional: heating and ventilation

Slot-in-PC for NEC, Samsung, Philips, etc.



P216

Intel® Core i3-6100U 2.3 GHz
Intel® Core i5-6200U 2.5 GHz / 2.8 GHz
3G / WIFI (optional)
For OPS slot in Displays

Touch Displays for Digital Signage



Android Signage Screen

Sizes: 10.1" - 21.5"
Quad Core Cortex A9, 4x 1.6 GHz
1 GB RAM, 8 GB ROM
Android 4.2 / 4.4, VESA Mount

NVIDIA Power Graphics meets Intel® Core-i



G302

Intel® Celeron / Core i5
NVIDIA GeForce GT730
2 GB DDR5 V-RAM
4x DisplayPort, 4K / UHD