invidis
CONSULTING

YEAR BOOK

2018/2019

DIGITAL SIGNAGE & DOOH

**Stefan Schieker (left)
and Florian Rotberg**

DEAR READER,

the start of consolidation took much longer than anticipated. But in the past two years the digital signage industry has been gripped by numerous M&A activities. Not only in national markets but especially cross-border. Consolidation is necessary to create financially stable and professional system integrators and software provider, which can provide global solutions to global customers.

Looking back at the development of digital signage in the past years, digital concepts have seen the biggest change. Ten years ago, Digital Signage was typically a silo solution – today almost all concepts are fully integrated and connected to back-office systems. Enterprise customer and consumers demand media-agnostic seamless experiences and not stand-alone digital touchpoints.

For this yearbook we have placed a great focus on digital experiences and the role of digital touchpoints along the customer journey. In practice, unfortunately, digital experiences are still too often treated as digital layers on top of existing retail concepts. Full concept integration from day one is key. Engaging experiences cannot be achieved with digital icing on a cake.

For eight years we have been analyzing the DACH region for our annual yearbook - increasingly also covering the EMEA region. Since then this yearbook has grown into the bible of the industry. Tens of thousands of copies have been distributed free of charge at trade fairs or downloaded from invidis.de. We hope our latest edition will be as popular with our readers as the past editions.

We will continue to serve the global digital signage industry, but also end-customers, investors and other interested parties with insights, analysis and outlooks totally free of charge. This would not be possible without our advertisers. Thank you for your continuous trust and support.

invidis provides the industry and customers with daily newsletter on invidis.de. We also would like to meet you at one of our Digital Signage Summits across EMEA and the Americas. DSS is the world's leading digital signage conference series organized with our event partner ISE.

Florian Rotberg   and   Stefan Schieker

**VISUALART
SHAPING THE
FUTURE OF DIGITAL
COMMUNICATION**

8

MARKET DEVELOPMENT

All the facts & figures of the
DACH Digital Signage market

12

**MARKET: CONSTANTLY
CHANGING BUSINESS
ENVIRONMENT**

Global Players are disrupting the
market – how will it change?

**DS SOFTWARE
MARKET**

Who is leading, who is losing?
The Top 5 players are
changing ranks.

40

52

**STORYTELLING AND
DIGITAL SIGNAGE**

Engaging Storytelling
with Screens

CONTENT

DIGITAL CANVAS ON 132 SCREENS

CONCEPT

Having grown up online, fashion retailer 18Montrose decided to open its own store in London. The result is a mixture of shop, hip gallery and nightclub. The core of the concept: Different fashion brands rotate in exhibiting their products at the downtown London store. This enables the online retailer to sell off products faster while the labels sponsor the dedicated promotion. 18Montrose organizes events around the promotions communicating with the broad customer base via app. Fashion could hardly be staged more elaborately.

INSTALLATION

The garments, shoes and accessories are displayed in three rows in the store - on the sides of each aisle and on small free-standing fixtures. Each aisle is equipped with 18 vertically aligned screens above the merchandise. An additional video wall consisting of 20 displays is installed at the end of each aisle. The outer aisles feature only one row of screens and half-size videowall at the end. A mirror wall creates an optical doubling. A total of 132 large-format displays are thus installed. All 46" video wall screens were supplied by NEC and integrated by Multimedia Plus. Mirage Associates supplied the software and four media servers (Dataton Watchout). Because the store doubles as a nightclub hybrid, a flexible playout of digital signage content was necessary. The displays and CMS can be controlled onsite remotely.

LOCATION

London is not only one of the largest, but also one of the most expensive cities in Western Europe. And yet she is popular with residents and tourists alike. At the same time, London is home to many media and technology companies. London is also Europe's capital for Digital out of Home and Digital Signage at the Point of Sale (PoS).

PRO JECT

18MONTROSE

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WORLDWIDE DISPLAY MARKET USD 12.6BN GROWTH 2017 +22 %

EMEA MARKET SHARE UNITS: 23 %/+ 8 %

GROWTH 2017 EMEA +8 % DE/AT/CH +21 %

2017 | EMEA 1M PROFESSIONAL DISPLAYS (LFD >32")
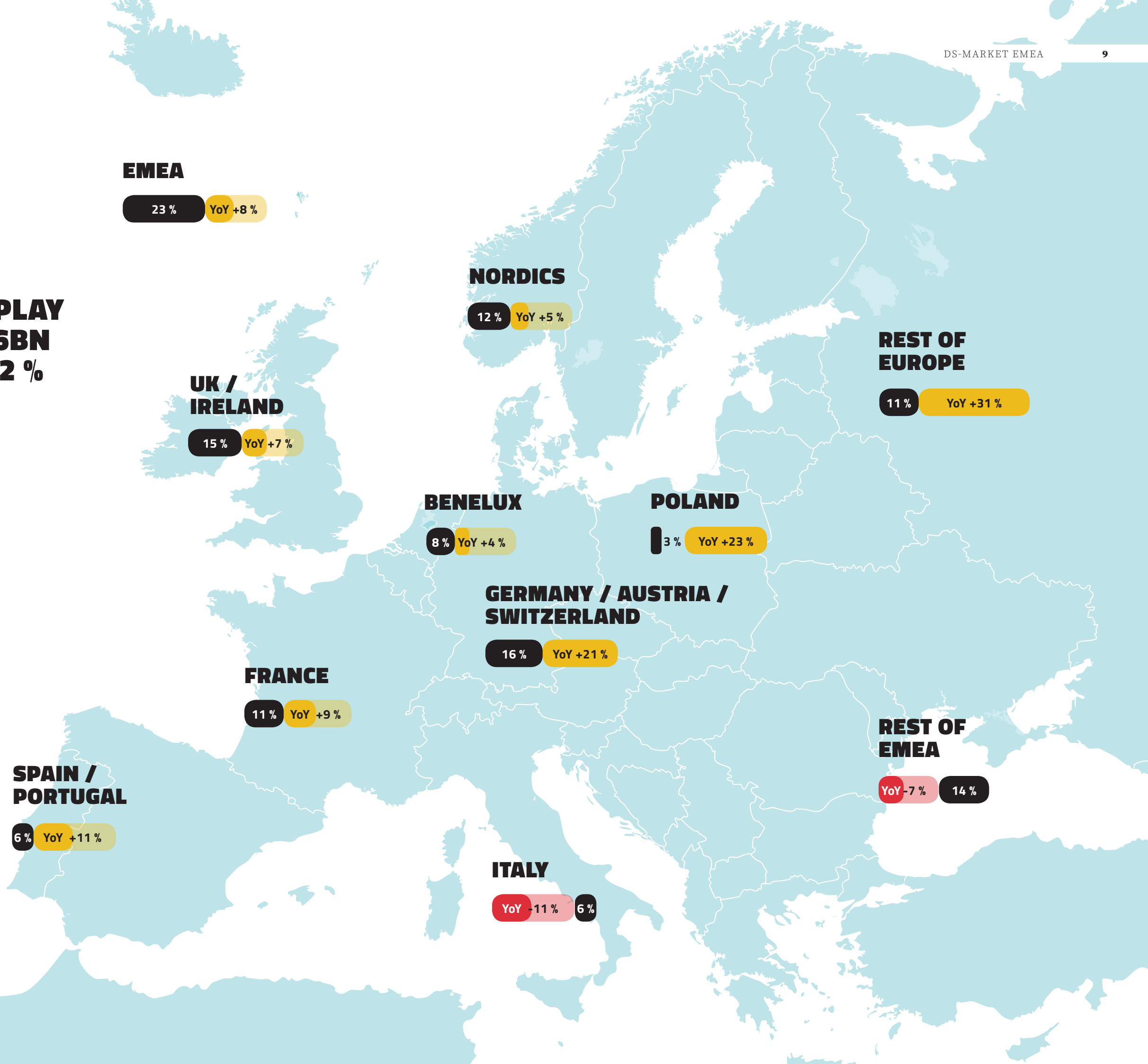
Source: © 2018 Futuresource
Market Share EMEA: Units 2017
Professional Screens >32"
YoY: Units 2016 vs 2017
= year-on-year comparison

YoY

EMEA
23 %   YoY +8 %

NORDICS
12 %   YoY +5 %

REST OF EUROPE
11 %   YoY +31 %

UK / IRELAND
15 %   YoY +7 %

BENELUX
8 %   YoY +4 %

POLAND
3 %   YoY +23 %

GERMANY / AUSTRIA / SWITZERLAND
16 %   YoY +21 %

FRANCE
11 %   YoY +9 %

REST OF EMEA
YoY –7 %   14 %

SPAIN / PORTUGAL
6 %   YoY +11 %

ITALY
YoY –11 %   6 %

DIGITAL SIGNAGE   VALUE CHAIN

CONCEPT   DESIGN & INTEGRATION   OPERATIONS

STRATEGY	SOLUTION DESIGN	TECHNICAL DESIGN/ ENGINEERING	HARDWARE / SOFTWARE	TEMPLATES, CONTENT	SYSTEMS INTEGRATION	INSTALLATION / DEPLOYMENT	SERVICE/ MAINTENANCE	CONTENT-MANAGEMENT
Strategy	Concept incl. Goals, Effect and APIs	Concept technical design	HW & SW selection	Coding, Templates, API	Integration of components and software to a solution	Installation, commissioning and. deployment	Service and Maintenance	Content creation and modification

DIGITAL SERVICES STACK

Visual (digital)	Audio	Scent	Embedded Systems/ Sensors (i.e. RFID)	Analytics	Others e.g. Building Automation

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DIGITAL SIGNAGE VALUE CHAIN: CONSTANTLY CHANGING BUSINESS ENVIRONMENT

There are many reasons to adapt: changing customer expectations, market players entering or leaving, new disrupting technologies. In the Digital Signage industry, all this and more has been true since its beginnings. The value chain is always affected by these influences.

A few years later, it was the software providers who came into focus: "What's the best software?" was a classic question put forward by interested customers. Many of them used to think that software had to be looked at and bought separately. But that has changed: the more complex - or networked - the projects become, the more important it is to have end-to-end providers.

With the increasing presence of IT solutions and cloud services, Digital Signage also ushered in the era of integrators. They were (and still are) the go-to people of the customers: they choose a fitting supplier to integrate, install and operate the hardware. The solution now focuses on a software-based platform that you can't buy off the shelf. If it was left to the customer, they would be simply overwhelmed to find the right software. She has lost her former silo role and increasingly has to take over networking with other systems. For this reason, the connection between system integrator and software is an essential one.

System integrators need to master a variety of project complexities, from simple signage (highly standardised) to immersive 360-degree installations. This breath of possibility requires a great deal of experience with the Digital Signage

software platforms used to master the special challenges of Digital Signage software. In contrast to most other digital media such as online or TV, the responsibility of system integrators in Digital Signage projects includes both the output and the playback platform on site. Thousands of media players and displays need to be programmed and controlled.

The demands of digital touch-points in retail have changed significantly. While digital elements were previously added to existing store concepts, today a complete integration of digital elements has become standard practice. The effect and the benefits at the point of sale depend on the interaction of hardware integration and content. Unlike web or mobile, content must be tailored to the immediate environment surrounding the digital display.

The size and spread of projects are also changing. While small regional pilots were initially the norm, large international projects are now standard practice - bringing with them completely new requirements for system integrators. As a rule, global rollouts can only be realised with international partnerships, despite the fact that there are only a few specialised Digital Signage providers who are able to

handle the logistics and financing of worldwide projects with their own resources. Here, large IT systems houses are increasingly coming into play, and as a result bring a number of strengths such as logistics, installation and technical operations to the table. Even with first hand support - which is often required 24/7 in several languages - smaller providers simply can't keep up. Global suppliers, on the contrary, score with high economies of scale and support centres at low-cost locations.

Digital Signage wouldn't be nearly as complex if content design and production didn't play such a fundamental role in its success. Simply put, this is a specialist area that remains something of a mystery for large IT firms and is generally too expensive for agency groups and consulting firms. While technical platforms remain relatively easy to exchange, concept and content competence - as well as the understanding of the content of customer needs - are without doubt the key to successful projects.

Measurability is also beginning to play an increasingly important role. In addition to providing unique design concepts and experiences, customers expect Digital Signage providers to secure a return on investment (ROI). This needs to be measurable and can be proven with business insights / analytics.

The ideal Digital Signage partner is more than a mere service provider. It should serve as a kind of sparring partner to the customer, who can optimise Digital Signage experiences through continuous feedback. Successful integrator-customer relationships are often characterised by the fact that Digital Signage providers are increasingly becoming partners who develop a deep understanding of the customer's business models. In the end, the integrator becomes something of a trusted advisor.

EVOLUTION OF DIGITAL SOLUTIONS

GENERATION 1.0	GENERATION 1.5	GENERATION 2.0	GENERATION 3.0
Display on the wall "Hang & Bang"	Touch devices are everywhere	Cross Channel seems the solution	More professional, centrally managed
Silo Applications	Website in-store	Every department gets its chance	Data driven, fully connected projects
Result: "Digital doesn't work"	Result: "Digital still doesn't pay off"	Result: lots of pilots, still no Rollouts	Result: international Rollouts
Consequence: CONTROL PROLIFERATION	Consequence: FRUSTRATION	Consequence: CONFUSION	Consequence: POSITIVE RoI/ SOLID KPIS

STEP BY STEP TO THE NEXT LEVEL

LCD-Displays, LED-Screens, Projectors: Complementing not replacing each other, they all have a reason to exist. As each technology advances new use cases evolve.

While in 2016 6.8% of all professional displays had a resolution of UHD / 4K, market researchers at Futuresource have predicted more than a tripling to 21.2% by the end of 2018. Increasingly, professional users also rely on smaller display diagonals - in parallel, the industry is increasingly offering LCD screens in sizes smaller than 65 inches.

While Digital Signage is catching up with the needs of end users, there are still barriers to the introduction of the 8K LED screen. Nevertheless, there are some offers on the market - Sharp was the first company to launch such a 70-inch model. Having said that, the earliest likely introduction of 8K to flagship projects will probably become a reality in Europe from 2020.

High resolutions are not only associated with displays. 4K and Ultra HD are also on the rise with projectors as well as LED screens.

The well-known trend towards interaction remains consistent. Whether PCAP touchscreens, coveralls for video walls or IR-based solutions, more and more installations are incorporating screens as both a playback station and a medium of exchange. Many years ago, the kiosk systems, which use smaller displays for customer input - such as ticket vending machines - were pioneered. Furthermore, there is an expectation of users to be able to navigate a screen with a swipe movement.

This is something which applies to almost all application areas, in addition to vertical markets such as retail. Currently in high demand are interactive screen technologies and the corresponding software solutions in the corporate environment such as meeting rooms or the education sector. While the broad public education sector (schools,

elementary schools) has definite potential for growth, universities and colleges are increasingly incorporating large interactive walls within its speciality institutes, for instance for technical courses. Unsurprisingly, most schools and elementary schools lack the necessary funds for extensive DS installations.

Collaboration is increasingly important within the corporate environment, and is something that is expected by employees. Solutions with BYOD functions are the rule. The simultaneous increased in the need for security in companies and institutions means that certain hardware or software functions can be switched off when sensitive discussions are being conducted. At the bottom of the scale, Samsung has released its electronic flipboard, opening up new markets in the process.

Thanks to newer and cheaper chips, Ultra HD projectors continue to conquer the market. Laser-phosphorus-based solutions are also much more common than before. In order to improve the quality of AV installations, the industry is increasingly turning to very bright projectors, even in indoor installs. All in all, the market now offers numerous solutions with brightness levels between 4,000 and 6,000 lumens, in addition to the 20,000-lumen monsters. More and more models are coming onto the market, which allow additional functions and special lenses and projections in 180 °, 270 ° or 360 ° variants. As a result, projection mapping installations are becoming more frequent.

LEDs are playing an increasingly important role in visual technologies. According to a forecast by Futuresource, 32% of the video wall market volume could already be served by NPP LEDs with small pixel pitches by 2020. Up until now, solutions with the proven SMD architecture are in use. NPP

has established pixel pitches from 0.9 to 2 mm, which are priced most competitively for installations.

However, COB (Chip on Board) provides a competing architecture. While the SMD LEDs are mounted on the circuit board, within COB technology they are directly integrated, which translates to significantly cheaper mass-produced manufacturing costs. In addition, COB LEDs are less sensitive than traditional SMDs. The only drawback, however, is that they do not achieve the radiance that one would expect from an SMD equivalent. COBs have been manufactured as part of series products since 2018 by first suppliers such as Absen.

It's expected that MicroLEDs will continue to gain momentum in the future. This was also demonstrated at ISE 2018 with the first professional solutions. The LEDs are arranged in the micrometer range and also act as their own light source. This technology works without a colour filter and backlight. Depending on the provider, MicroLED solutions

may sometimes have similar effects to visible black levels in OLED screens. However, there is only one perfect technology in terms of black level - and that technology remains OLED.

OLED has now well and truly arrived on the professional market. In addition to flagship projects, global installations are also on the rise. There are also large rental houses that are relying on OLED technology. Manufacturer LG Electronics, for example, announced the best first quarter of the company's history in April 2018 - not least because of the OLED boom.

FOLLOW THE CUSTOMER

As far as system integrators are concerned, the consolidation of the DS industry is continuing. Nevertheless, it is not only global players that are winning tenders. Regional players can also compete successfully. It is also striking that classical integrators are no longer the only ones active in this market sector.

Local partners are still in demand despite the fact that large providers are increasingly emerging due to industry consolidation. The relationships between small integrators and their customers - which have often grown over the years - have ensured that tailor-made concepts can beb tailored to customer needs. Larger international projects are also handled by local partners. The strategy is simple: Follow the customer.

But many of these long-standing supplier relationships are increasingly being questioned. As a rule, this is because customers are becoming more professional and, increasingly centralise the purchase of Digital Signage services. Furthermore, customer requirements for Digital Signage concepts (especially 360 ° experiences) are increasing significantly.

Both trends mean that Digital Signage providers are increasingly having to offer complex solutions, with customers increasingly looking for suppliers with experience in major international projects.

It is also striking that two kinds of Digital Signage providers are now facing each other: the established ones, who also build up 360 ° experience skills, and - especially in large international projects - global IT system houses, who are rather inexperienced in the Digital Signage market.

In order to be successful, traditional DS vendors must acquire sufficient 360° experience projects, build up economic competence, and gain greater financial strength in order to win against major IT systems vendors. DS vendors should also take new partners (leasing companies) on board by buying or building ecosystems. For the major IT system houses, the challenge is to build up DS competence, especially for 360 ° concepts and platform solutions, or to acquire them through acquisitions.
This also explains why there has been a lot of movement in the M&A market. Both DS specialists looking for size and IT system houses in search of specialised knowledge. As sad as it may be, there is still no ideal supplier for large corporate customers who can deliver both size and competence on a global scale.

In recent years, more and more global consulting firms and agencies have entered the Digital Signage market. The question then arises as to why global consulting firms such as Accenture - with an annual turnover of 29 billion euros (half of which is digital sales) - are dealing with the relatively small Digital Signage market. The answer is simple: Customers are looking for trusted names and experts to guide them through the technological jungle. Large worldwide consultancies bring with them a leap of faith in terms of competence, but have the necessary size from the customer's point of view. As a solutions business, Digital Signage is by no means an off-the-shelf product, but a complex tailor-made platform. The fact that global players have so far not been very successful on the market is due to the complexity of Digital Signage, which is often grossly underestimated. Technology and data meet marketing and creative processes.

But the gaps are closing with global providers as well as with the predominantly nationally active Digital Signage integrators. They can be divided into four types: pure players (full-service system integrators), AV integrators (technical integrators, usually with limited conceptual and content competence), IT system houses and others (including content agencies, Business consulting and B2B backend providers).

COMPETITIVE LANDSCAPE
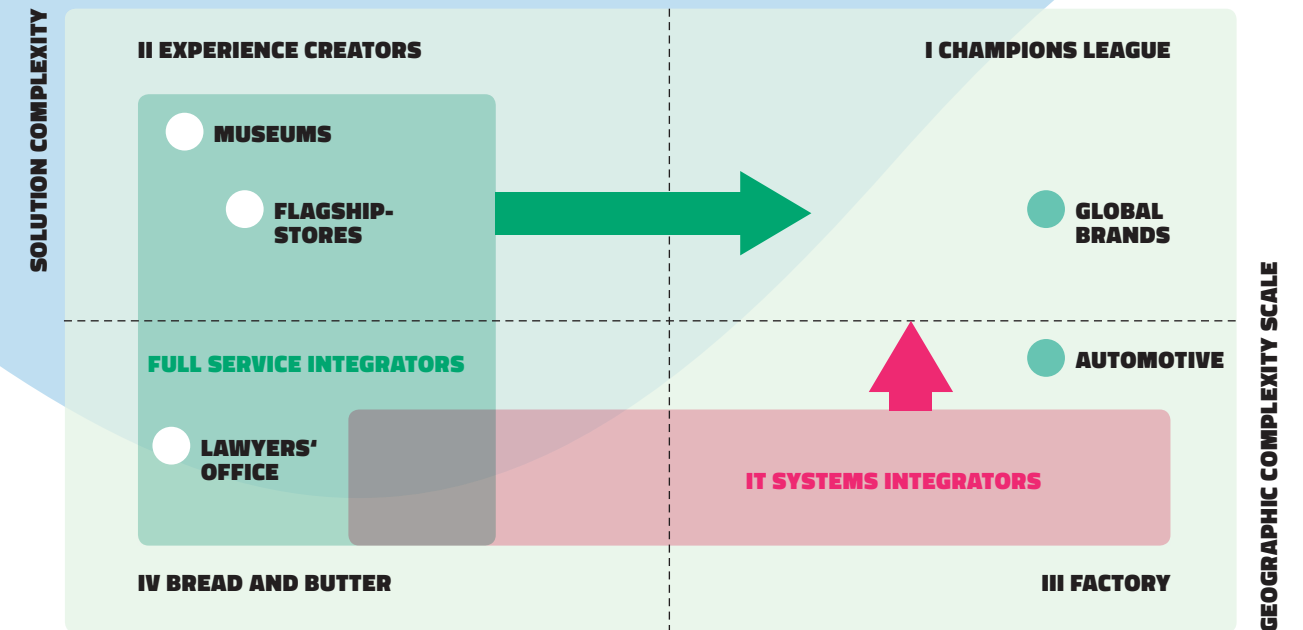
MAIN CONSOLIDATION TRENDS

— *Establishing of End-to-End Supplier (e.g. Stratacache/Scala)*

— *Geographical Reach (e.g. Zeta-Display in Nordics and now expanding to BeNeLux)*

— *New Market Entries (Adobe-Experience-Manager, Consulting Firms, Agency Groups, B2B-Backend-Provider, Shopfitter)*

— *Simple Signage (scalable digital poster networks) vs. Full Experience (360°-Experience, Omnichannel)*

In addition to global consolidation trends, the market's own drivers play a role in the consolidation of the European digital signage industry. Between April 2017 and March 2018 invidis consulting counted more than 50 acquisitions in the most important European markets. The Munich-based consulting firm has identified five main drivers for M&A:

— *Capability Expansion – No survival of one-trick ponies (Installation, Instore Music, IoT, LED)*

— *Category Expertise (Specialist for vertical markets)*

— *Critical Mass (Software installed base, Operations)*

— *Geographic Coverage (cross-border, Pan-European and Global player)*

— *Buying Business (reducing dependency from top customers, bulk risk)*

RELEVANT IT SYSTEM INTEGRATORS AND AGENCIES WITH DIGITAL SIGNAGE BUSINESS UNITS, TOTAL REVENUE 2017 (TOP DS CUSTOMERS)

— *Accenture (Daimler), 29bn. Euros*

— *Atos (McDonald's ->2017, Sephora), 13bn Euros*

— *CapGemini (McDonald's), 12,8bn Euros*

— *T-Systems (BMW), 6,9bn Euros*

— *Arvato (Audi), 3,8bn Euros*

— *Ceconomy (spin-off Metro Group), xplace (Porsche), 22bn Euros*

— *Econocom (Caverin), 2,9bn Euros*

— *Arcadis, 3,2bn Euros*

— *Publicis Pixelpark, 9,69bn Euros*

NEW TRENDS AND NEW CHANCES –
SOFTWARE FOR DIGITAL SIGNAGE

If one thing has changed a lot in classic Digital Signage, then it's the software.
On the one hand, the consequences of this market trend are confusing. On the
other hand, there are plenty of opportunities for service providers and users.

Safe, stable platforms are needed in every market segment.
This doesn't just mean operational safety. Safe in this context
also means knowing how long the provider and its solution
already have been on the market - and how long they
will be available.

Due to complexity and price, DS software solutions are
currently divided into four categories: **simple signage,
classic DS software, specialist solutions** - such as for
touch interaction - as well as **experience and omni-
channel software.**

Within this spectrum, integrators are increasingly taking
on an advisory role. The most important element at question
here are the needs of the customers - and only those
in the position to answer this can find a solution matching
the complexity of existing and future tasks and challenges
(that's why the internal processes at dealers, banks or in-
dustrial companies have to be questioned). It's also neces-
sary to clarify which user groups in the companies will serve
the solutions. This industry trend is thus allowing integra-
tors to further differentiate their offerings.

In order to remain profitable in the future, integrators
should continue to rely on existing software platforms
or CMS - and implement well-designed individual midd-
leware and user-friendly UX solutions for the users. The
integrator would ideally provide the software change, where
necessary.

The flagship **experience** is the market driver per se across
all channels. Previously, digital silos governed the industry.
For example, there was one CMS for offline (for example for
print and instore), for online, for mobile, for Digital Signage
and for social media. Now that all channels are digital, the
era of silo solutions is coming to an end. In fact, such stand
alone solutions are generally only needed for a very small
and limited selection of projects (see below).

Adobe is a new major player in the market. The company
has decades of media and printing experience, compelling
digital solutions and workflows known to many creative
minds. Because Adobe is the standard in the agency envi-
ronment, asset management has its fans. With the "Adobe
Experience Manager" there is now a solution primed for
Digital Signage - "Screens". Of course, such a powerful tool
doesn't come cheap. Including internal conversion and the
necessary consulting processes, one can assume an invest-
ment in the high six-digit range. To our knowledge, as of
mid-2018 at least one very large international company
uses this solution in Germany.

Specialised Digital Signage software has its justifica-
tion: For example, those who equip a very small number
of digital touch points with interactive solutions (who use
temporary installations - such as at trade fairs) are usually
dependent on it. Suppliers such as Intuilab often rely on a
direct sales model. The primary focus here is on agencies
and business end users - and not on integrators. Even pilot
projects and demanding small installations should conti-
nue to hire specialists.

Generally, classic **DS software** is in use from major players
such as Scala, Grassfish, Navori or Easescreen. The conso-
lidation process in this sector is likely to continue for some
time. The aforementioned software companies rely on 360°
experiences.

Simple Signage is also not to be forgotten. Anyone using
digital posters is usually excellently served. Big players like
Samsung and Magic Info and the typical SoC solutions ba-
sed on the operating system Tizen now have a great market
presence, with LG's webOS also belonging to this category.
Projects where low licensing costs play an important role
are implemented with Simple Signage. However, this also
means that this part of the business model will soon be eli-
minated for small DS-CMS vendors. Around 50% of all large
format displays now have integrated SoC - across all ma-
nufacturers. The advantage of this solution is an incredibly
mature device management. In addition to Samsung, who
uses an encrypted-based solution with Knox integrating
mobile, we can keep an eye on Google with Chrome OS.

SPECIALIST FOR DOOH – THE BROADSIGN-STORY

Digital outdoor advertising without Broadsign software is unimaginable. The successful software provider experienced difficult times. But they left that behind and are now rushing from success to success.

Which outdoor advertiser doesn't rely on Broadsign? More than five years ago, the software provider began developing into a specialist for Digital out-of-home solutions.

For creation, planning, play-out and for booking, there are tools that address particularly large Digital Signage or DooH networks. In-house technologies and partnerships allow SSP and DSP tools for media providers and buyers to enable the automated processes that make DooH even more lucrative for both sides. With numerous demand-side platforms, cooperation occurs on a global basis - since the beginning of 2018 also with Splicky of Jaduda from Germany. In addition, the Canadian company concentrated very early on with campaign measurability. This fulfils important requirements for users who want to determine their ROI or measure specific successes of campaigns.

After its founding in 2004, Broadsign was reorganised eight years later after a three-month bankruptcy. Even during the difficult times, the entire system continued to operate and the day to day business was handled properly. Even during this period, Broadsign still managed to attract new and well-known customers. The original 100 shareholders became one: the JEDFam Group.

Currently about 11 billion ads are delivered via Broadsign every month, with 130,000 screens running under the solution worldwide. There are now 30 billion impressions per month in 52 countries worldwide.

11

BILLION ADS
VIA BROADSIGN

MAKE SCALA GREAT AGAIN

COLOSSUS AND CATALYST – THE SCALA STORY

COLOSSUS AND CATALYST – THE SCALA STORY

The story of Scala begins in 1987 with the name Digital Vision. The current name, which is based on the Milan Opera House, was introduced in 1990. While success was initially great, partners became slowly annoyed by Scala's inflexibility. Now the company is shining again thanks to an new investor.

Digital Vision, 1987. Times change. Just three years later, Scala, founded in Norway, became Scala. The rise began with a Commodore Amiga-based Digital Signage system that ported the company to MS-DOS in 1996. As the market continued to develop, Scala relocated its headquarters to the United States. The strong presence in Europe remained. After 20 years, an impressive ecosystem exists in most markets, which includes a number of well-known and competent Digital Signage integrators. Scala is the industry's Tesa film: a synonym for "Digital Signage CMS", with many tenders calling for "Scala or a similar system". The software vendor successfully expanded to Japan and extended its development capabilities in India. For many years Scala kept its prime position in the market, which is reflected in its number of installations.

However, Scala's successful run was put on pause at the beginning of the 2010s. Younger and more flexible systems gained market share due to the fact that they adapted faster to new market demands. Many Scala system integrators opted for a two-supplier strategy, with Swiss-based company Navori or Grassfish from Austria offering attractive alternatives. In addition, Samsung Magic Info and Google Chrome joined the party. They set trends with less powerful but easy-to-personalise solutions. Scala was no longer the only player at the table.

While Scala may have dominated the market due to its unsurpassed high number of installations, new business made more and more competition. A number of management changes in both the US and Europe did not help matters much either. Trust was lost when Scala began using the 'Direct Touch' strategy. The partners were supposed to accept Scala's direct approach to end customers - a move which ruffled the feathers of even the most loyal customers. Needless to say, system integrators were disappointed.

One of the running gags was the new "Berlin Release", a project which was delayed for years. The partners continued to invest in staff in the form of Scala specialists, but the gap to competing Digital Signage software solutions increased. More and more partners started developing their own middleware on Scala. The new platforms aim to provide a modern user interface for customers and to add additional functionality.

As custom-developed middleware solutions became more powerful, Scala partners began to experiment with new software solutions. The resulting freedom allowed them to replace the CMS for their customers without any visible changes. On paper, this strategy looked good and the Scala partners seemed to enjoy this new flexibility. However,

many attempts failed to migrate existing installations to a new CMS platform. With customers seeing no additional benefits, it only increased the cost of an already quite expensive digital touchpoint platform.

Suddenly, retailers were faced with new challenges: omni-channels, beacons and analytics were in demand. Customers realised that additional new platforms were needed to centrally manage digital assets and create and publish social media across all platforms. On the other hand, a new Digital Signage CMS was not the top priority.

Scala's investors - some of which have been on board for decades - were looking for new sources of investment... for 10 years. And while Scala is the world leader in Digital Signage software, sales haven't lived up to the expectations on the market.

Chris Riegel, owner of Stratacache in Cincinnati, finally won over longtime investors and bought the company back in 2016. In late summer, during the US election campaign, Riegel closed the deal and posed with a red baseball cap with the slogan "Make Scala Great Again". This was followed by further company acquisitions through Stratacache, whose goal is to become a global DS expert. The acquisition of Scala succeeded in changing the dynamics in the industry within a matter of weeks. A long-awaited consolidation process is currently underway, a process which shows no sign of letting down.

The past two years have been a wild ride for many within the industry. Stratacache's acquisition was a much needed catalyst for the building of global players. Many system integrators now find themselves weighing up their options - to stay with the existing CMS provider or to participate in a CMS. The other software providers struggle to keep up with the colossus that is part of the Stratacache group, which, according to company figures, has an annual turnover of around 500 million US Dollars.

500 MILLION US-DOLLARS

MEDIA-PLAYER

The competition is fierce, and so is the price. If you're in the market for a media player, there are many products on offer. The market is heterogeneous as far as providers are concerned:

In addition to the sheer quantity of manufacturers, internationally active companies meet local players who sell their players with their own software - sometimes on a USB stick. Platform-independent solutions with numerous equipment options, media players for screens and video walls with high resolutions or players for installation directly behind the screen compete with solutions integrated into screens, such as SoC, for example. Proprietary solutions auch as webOS or Tizen can be useful in many scenarios. Powerful computers - including fanless and noise-free computers - are also on offer.
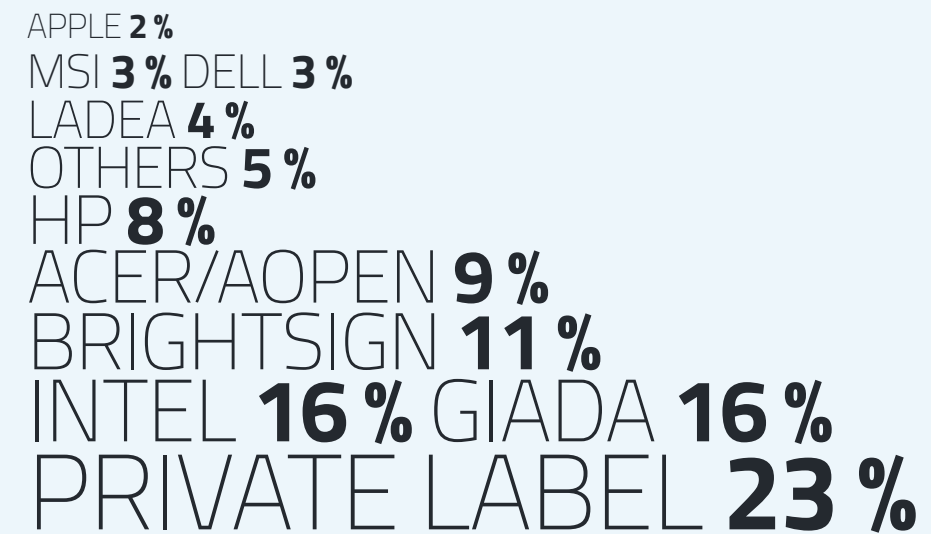
With the high proportion of 4K screens on the market, demand for powerful Ultra HD players is increasing. This is also reflected in the rise in average prices in 2017 (see chart). In the low-cost segment, players like the Rasp-berry Pi are becoming increasingly popular.

Compared to previous years, Windows and Android-based players are more common than those based on the Linux platform. There are also other alienated solutions: For example, the Apple TV 4K has prevailed in Apple's own Digital Signage applications. This is due to the outdated hardware regarding the Apple Mini compared to the smarter and much cheaper solution offered with the mobile chip.

Suppliers such as Brightsign have large market shares. Interestingly, Brightside was one of the first companies in the industry to offer SSD storage, which has been standard for a long time. Suppliers who can advertise with worldwide service and high availability of products have the clear advantage. These include companies such as Giada and IAdea, with Acer and Intel NUCs also playing a significant role. In addition, there are also companies that have been active on the market for many years, such as Aopen. Scala also presents its own players.

Intel-based solutions are in the majority on the UK laptop market. However, as the example from Apple TV shows, mobile chips from other providers could gain in importance. After Intel established a standard with OPS to connect players easily to the screen, the group has now launched SDM (Smart Display Module). With its new SDM modules,

APPLE **2 %**
MSI **3 %** DELL **3 %**
LADEA **4 %**
OTHERS **5 %**
HP **8 %**
ACER/AOPEN **9 %**
BRIGHTSIGN **11 %**
INTEL **16 %** GIADA **16 %**
PRIVATE LABEL **23 %**

- invidis surveyed 180 EMEA Digital-Signage-Systems integrator about Mediaplayer preferences (Jan-Feb 2018)
- Markets covered in phase I: DACH, BENELUX, Nordics, CEE, Russia
- The results reflect the preferences of major full service Digital-Signage-Integrators, market share of SoC is considerably higher with non DS focused systems integrator
- Others include Spinetix, Lenovo, Shuttle and SoC

PREFERRED MEDIAPLAYER SUPPLIER IN 2017
n=180 Countries: DE, AT, CH, BE, NL, SE, DK, NO, FI, RU
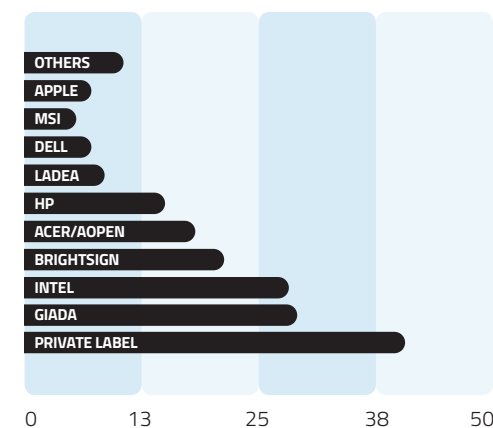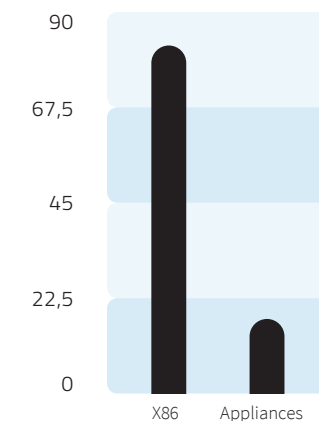
Category	
OTHERS	
APPLE	
MSI	
DELL	
LADEA	
HP	
ACER/AOPEN	
BRIGHTSIGN	
INTEL	
GIADA	
PRIVATE LABEL	

0   13   25   38   50

SHARE X86 VS APPLIANCES

90
67,5
45
22,5
0

X86   Appliances

large format displays can be built with a much smaller depth. High-brightness expert DynaScan - the industry's first manufacturer - launched SDM-compatible screens in the first quarter of 2018.

Street prices in Euros
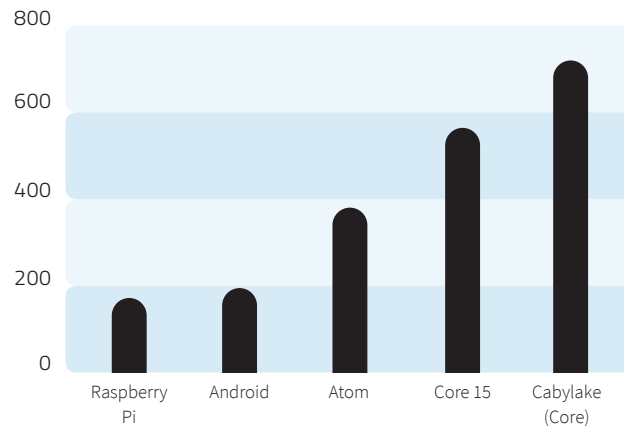
- Majority of SI integrate private label Mediaplayers (exclusive branding, more difficult comparison with competitors)
- Concept (Munich based Giada distributor) sold more than 20.000 Mediaplayer in 2017 (YoY +54 %) - share in surveyed market is probably considerable higher than in EU25
- Brightsign reported 80k Mediaplayer for Europe in 2016 (9 % market share), 45k for comparable markets

DATA ON THE MEDIA PLAYER MARKET

External players still dominate the market. The x86-based solutions utilising Intel's trusty processors continue to be the strongest, even with the OPS standard. Prices float between the 150 and 800 euros range. For Android players, a price increase of about 25% has been seen compared to the previous calendar year.

invidis' market analysis shows that Intel, Giada and Brightsign dominate the market. Intel's NUCs are particularly popular among IT system integrators and are widely incorporated into smaller projects. Important distributors are Delo and Littlebit. For sounds for media players, Chief, Nicol and Vogels are particularly popular.

SDM specification (Smart Display Module) players will replace OPS systems, since narrow displays require much smaller dimensions and depths - often offering the same or higher performance. There are two SDM standards: SDM-S (Small) and SDM-L (Large). High-speed PCIe is standard with SDM - eliminating the need for external I / Os. The new standard was designed to be compatible with upcoming 8K screens.

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ESL:

MORE THAN JUST PRICES –
STORYTELLING AT THE SHELVES

Whether Media Saturn, Carrefour or pharmacies: Electronic Shelf Labels (ESL)
are on the rise. Success stories are however mostly limited to electronics and
food retailers.

ESL projects are fundamentally different from classic Digital
Signage concepts. Content on the electronic labels comes
exclusively from back-office systems such as inventory ma-
nagement. As a result, basic CMS functions are sufficient.

ESL was previously limited to the display of prices. But only
very few traders changed their prices frequently enough in
order to warrant an investment in ESL. Whereas Amazon
changes prices for a product up to 80 times per week, on
average, most retailers rarely come up with more than one
change per week. Having said that, there are around 5,000
weekly price changes in electronics retail chains.

The ESL pioneer, however, is the French food retail indus-
try, which has been relying on dynamic price displays via
ESL for many years for legal reasons. Early pilots in the tele-
communications industry showed even greater potential.
In 2008, T-Mobile Austria tested ESL at the point of sale. Alt-
hough the focus upon price display was not used here, the
availability of larger ESL enabled the additional display of
product features. The breakthrough for the world's largest
ever ESL rollout (more than 10 million labels) was introdu-
ced at over 1,000 Media Saturn stores in Europe throughout
2015/16 - an investment sporting an almost three-digit mil-
lion Euro figue.

In principle, ESL has the potential to provide support for
retailers in four key areas: dynamic price display, additio-
nal customer service, process optimisation and employee
information (availability, end of life). Many case studies for
ESL have focused upon customer communication and cus-
tomer experience.

creating
digital
experience

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With the latest larger and multicolour ESL generations, near real-time size and color availability as well as QR codes are now increasingly displayed alongside price and product features. As part of a one-to-one communication, one of these options is the individual display of allergens, dietary requirements and customer loyalty card benefits. Added to this is the product search feature. Perhaps of even greater importance than customer-centric service features are process simplification features for merchants, such as avoiding bad pricing and cross-channel price transparency. Ultimately, this means that prices can remain consistent across all channels.

According to Michael Rodin-Lo, founder of Umdasch Digital, the ROI bandwidth for pure dynamic pricing is considerable, ranging from a few months to more than 10 years. Rodin-Lo has been a specialist for ESL projects since 2008 and has realised many rollouts. The shortest ROI was found in a used car dealership, whose ESL investment was recuperated after just 42 days. The longest ROI can be found in the food retail sector. While the 10 year cycle may not appear to make financial sense, ESL is nevertheless often introduced for competitive reasons.

In a technological sense, ESL providers differ principally through two radio technologies: the most widespread (including the market leader SES Imagotag), the transfer of the content of access points to the labels and a return channel, in essence providing the confirmation of the change. Other providers like Pricer rely on infrared, however this technology requires a larger number of transmitters.

At the beginning of ESL, neon-based tube systems were also tested. For this, their starters were exchanged and modulated to the label information using light frequencies. While the approach may have been something of a technological one-way street, it also suffered from the fact that labels hidden by customers or goods were not updated.

The next approach was a throwback from TV remote technology. In fact, infrared is still used today in an albeit modified form by Pricer. The radio technology which dominates today was still too expensive in the early days of ESL. "For IR, we had to attach large bowls equipped with 200 IR sensors to the ceiling for every 100 m² of space. Technology-related reflection problems and expensive wiring made IR just too expensive and unreliable."

Today, labels are based almost exclusively on the E-ink technology which can be found in e-book readers. Bistable grey LCDs were too pressure and temperature sensitive in practice, and full-colour LCDs used by Digital Signage displays consume too much power - a crucial factor in the art of ESL. ESL should run without a change of battery for five years. Technically, much longer terms are possible, but battery warranties generally run for a maximum of five years.

The increasing electrification of shelving systems in retail enables LED-lit shelving, but also the supply of electricity to ESL, which opens up a number of new options. Content can be updated virtually every minute and image refreshment speeds up significantly, and enables information regarding product availability. The Swiss shelving system provider Vitra has developed a large portfolio of electrified systems and adapters for ESL purposes.

In addition to electrification, mixed operation of various ESL technologies will surely play an increasingly important role in the future, especially as existing labels are supplemented by new electronic ones. Unfortunately, due to the fact that transmission protocols of individual manufacturers are not compatible with one other, mixed operation is normally a complex end to end procedure. To address this problem, Umdasch Digital has developed a middleware that enables the joint management of labels from different manufacturers in one store.

Although the drop in ESL prices has been enormous in the past, according to market observers, there isn't any significant room for further price reductions. Technologically speaking, E-Inks with a maximum of three colours are at the end of their development cycle. The next big thing will be the use of ESL in the fashion field. So far, the labels are still too heavy for the majority of hanging textile products. The first producers of such solutions are combining ESL functionality with retail security and RFID, and will go into production months ahead of sale (source tagging).

ESL PER STORE (AVERAGE)

Large Projects 10.000+
- Consumer Electronics

Medium Projects 3.000+
- Furniture
- Pharmacies
- Sporting Goods

Small Projects
- Telecommunication
- Automotive

RELEVANT ESL-SUPPLIER

- SES Imagotag
- Pricer
- Altierre
- Hanshow
- SoluM
- Displaydata

INVIDIS COMMENTARY

While there can be no talk of an ESL boom as such, the two largest ESL providers - SES Imagotag and Pricer - reported great interest from retailers at euroCis 2018. According to industry rumours, there are several hundred million Euros in order potential in the sales pipelines of ESL providers. The number of products and vendors is becoming increasingly confusing - despite the fact that the majority of them rely on the same E-Ink platform from Taiwan. Product differentiation takes place largely via the solution (software) and partly via the design.

So far ESL solutions have been limited to three trading areas: supermarkets, electronics and DIY stores. Here the competitive pressure through online is at its highest. And with an average of 10,000 to 40,000 products, it's also the most extensive range to manage. The ESL standard use case called Dynamic Price Display is already in use across three trading sectors.

The challenge for Digital Signage integrators is the deep networking of ESL with merchandise specific management systems of retail groups. The Digital Signage industry, which specialises in communications and marketing, isn't (yet) ready to sufficiently exploit its know-how in database-driven price changes.

Standard ESL projects are not yet suitable for creativity and customer experience. This is something which will certainly change in the future as ESL displays become larger and more colourful and usage increases. One of these trends is intelligent shelving systems, which in the future will provide a kind of smart retail platform. Both LED light, sensors, voice assistants and ESLs can be invisibly powered by the system and are offer complete flexibility in order to be rebuilt in store, thus providing a completely new experience at the PoS. In this sense, the shelving system itself becomes a digital visual touchpoint. First prototypes could be seen at the NEC Displays and Vitra stands at ISE.

In addition, large investment volumes make a general contractor for Digital Signage integrators increasingly difficult. Without appropriate financing, large ESL projects are difficult to be realised in today's climate.

As the importance of ESL increases, so too will the demands on content and customer experience. The current food retail and DIY market projects will therefore bypass most Digital Signage integrators. Integrators such as Xplace - who recently realised the world's largest ESL rollout at Media Saturn - as well as some retail technology integrators are already competitive in this area.

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DACH-MARKET:

THE CONSOLIDATION WAVE IN THE INDUSTRY CONTINUES. THIS IS ALSO QUITE NOTICEABLE IN SWITZERLAND, AUSTRIA AND GERMANY.

OVERALL MARKET: THE TIME OF THE GIANTS HAS COME

The acquisition of Scala by Stratacache acted as a catalyst for the consolidation speed of the European digital signage industry.

The DACH market is no exception. Long-standing relationships between integrators and suppliers have been dissolved by Scala's transformation from a software to an end-to-end provider. Established Eco-System Partners reposition themselves.

The mostly owner-managed digital signage providers - integrators as well as software providers - are feeling increased pressure from falling margins and license prices. More and more large IT system houses and consultancies are also entering the digital signage market. The Bavarian IT system house Cancom, which operates nationwide and has grown to a turnover of more than 1 billion euros with many takeovers in recent years, has long been involved. Other IT system houses such as T-Systems offer several dozen solutions, including digital signage. But the balancing act between technology and marketing often overstretches traditional IT system houses. Therefore, specialists have to be brought on board as subcontractors.

Another interesting angle is the market entry of large consulting firms, which have strengthened their product portfolio with acquisitions of digital agencies. This is why Accenture - which took over the Hamburg-based agency group SinnerSchrader in February 2017 - won the global retail digital signage budget of a German premium car manufacturer. However, large advertising groups such as Publicis with its digital subsidiary Pixelpark are also playing an increasingly relevant role in DS tenders. Bertelsmann's service subsidiary Arvato has also played a prominent role for years.

The more customers look for holistic digital concepts (experiences, omni-channel etc.), the better positioned are the large agency groups. However, "size" alone is not enough to operate successfully in the digital signage market. Many failed attempts by IBM, Hughes, BT and Co. have proven this point. But the market is changing, projects are getting bigger and more international. In this environment, global, international players can exploit their advantages. Above all, Trusted Brand (trustworthy brand) and financial strength count.

On the AV side, there are currently few competitive players in the digital signage market. These are primarily fighting for the dominance in the conference room business, an area that is increasingly being standardized. Instead of proprietary AMX protocols and individual installations, ready-made conference room solutions are becoming noticeably more important. Huddle Corner, Microsoft Surface/NEC Infinity Board or the completely new digital flipchart (Samsung Flip) are just a few examples. New opportunities are opening up for DS and IT integrators rather than new competitors are entering the classic DS arena.

M&A in the DACH digital signage industry has so far been rather limited. Major investments included the Bielefeld-based Gundlach Group (acquisition of ISS Hamburg and majority stake in Seen Media) and the spin-off of Cittadino (DooH business in Tank&Rast and Digital Signage in Acer) in 2016, while last year Ströer acquired the DooH and Digital Signage business from Neo Advertising (Hamburg) and the Swiss Richnerstutz acquired Stuttgart-based Netvico. A generation change took place at ICT AG. The management and the SME financier BWK took over the AV specialist from Kohlberg.

In Switzerland, JLS Digital (Lucerne) was acquired by the Swiss investment foundation Renaissance. Many other takeovers and mergers within the DACH region, but especially throughout Europe, are also looming in 2018/19.

Under the radar, many smaller integrators shifted their focus away from digital signage and towards other solution worlds and thus no longer play a role for new projects/tenders.

INTEGRATORS ARE BECOMING INCREASINGLY INTERNATIONAL

The role of integrators is changing dramatically due to consolidation: Large and globally operating providers are becoming increasingly important in the field of digital signage.

Especially globally operating IT companies and telcos, agency groups or consulting firms can win large rollouts through existing business relationships, trusted brands and their financial strength. Top players are especially group divisions or investor owned companies. Smaller and founder-led digital signage integrators can only win tenders for large projects in exceptional cases.

To date, the global players have been active in selected verticals - above all automotive. For large projects, only technical integration capabilities are usually required, since existing agency groups handle content creation across all media, even though special templates or DS-specific tasks are supplied by integrators.

The detailed knowledge of digital signage is either integrated into the Group through takeovers or brought in by subcontracting to specialists for the project. Signage projects are also in some cases integrated into larger strategic projects or projects for digital processes. These and other trends are transforming the industry. Just one example to illustrate this: the consulting firm Capgemini took over a large part of the McDonalds technical teams as part of an innovation joint venture. Near the US headquarters of the fast food giant, a team of several hundred employees is now being set up, including those responsible for digital signage in the restaurants. Even if the JV is only responsible for North America for the time being, it will certainly also want to have a part in defining the strategy for other markets in the future.

In this context, a look at the current digital signage projects of German automobile manufacturers is interesting. Without exception, large group subsidiaries are responsible for the global DS rollouts. BMW is supplied by T-Systems, Daimler relies on Accenture and Audi on Arvato (Bertelsmann), while Porsche works together with xplace, which belongs to Ceconomy.

The DACH market for integration has also further evolved since last yearbook. This is particularly noticeable in Germany. Places 1 and 2 in 2017 are the same as in 2016, with xplace and CANCOM Didas, but PMS Perfect Media Solu-

tions can now claim third place - up from fifth rank twelve months earlier. Gundlach SEEN MEDIA, the largest full service integrator with full content agency service, continues to hold fourth place, while Radio P.O.S. moved up to fifth place. The top 5 suppliers plus the global players represent half of the market in Germany.

Many projects in Germany were renewed: after about five years of operation, the technology was replaced. It was noticeable that - although some of the tenders were also carried out - existing partners were also able to win over most of the follow-up projects. The change to a new integrator was therefore avoided. There were, however, changes on the software side: the existing solutions were replaced more frequently by new ones. There was strong activity in the food retail sector, where Kaufland launched a nationwide rollout. Especially around the food discount chains like Aldi and Lidl there is a lot of movement with pilots, although no final decisions have yet been made. Also noticeable: Digital signage is now becoming a quasi-standard in banks, insurance companies and pharmacies.

The dozens of medium-scale projects rolled out in 2017 were particularly noteworthy. They often did not attract public attention like Tank&Rast, Media Markt or Kaufland, but they are also full-fledged projects, often with connections to back-office systems. Also, tobacco networks exclusively at petrol stations / PoS continue to be very successful and have been renewed, rolled out and equipped with larger screens despite the impending ban on tobacco advertising.

The Swiss market remains more or less insulated because most market leaders only operate on the domestic market. The strong Swiss franc and high wage costs continue to hamper growth, especially in international projects. For the majority of Swiss system integrators, the focus is on national projects. However, Swiss providers are also increasingly active in the European consolidation process. For example, Westiform and Richnerstutz each took over German DS companies in neighbouring Baden-Württemberg. The rising star in 2017 is the software provider Navori from Western Switzerland, which benefited best from European market shifts. The Swiss distributor LittleBit also scored points

with its innovative solutions - partly also as a white label - for partners. JLS in turn has a new owner, Renaissance Capital, in 2017. The full-service integrator specializing in the banking sector has received more project inquiries than ever before in 2017/18. The Swiss market is generally characterized by long-term customer relationships. This also benefits Screenfood, which in recent years has developed from a software provider to a full-service provider. This makes Lucerne (JLS, Screenfood) kind of like the secret DS capital of Switzerland.

And this is the situation in Austria: Feratel has led the market for many years. The Innsbruck based company is continuously installing signage in ski areas, at lifts and in the hotel industry. Unlike almost all other market participants in AT, Feratel is content driven. Another significant specialist supplier is Umdasch Digital Retail. The digital retail subsidiary of the Linz-based shop fitter traditionally comes from the ESL environment, and also integrates digital signage and retail analytics for customers worldwide.

Kapsch is comparable to T-Systems - the leading ICT system house in the market. Digital signage is not the primary solution in sales, but since many of the largest Austrian companies purchase ICT services from Kapsch, DS also plays a role. Kapsch integrates the two leading national digital signage software solutions Grassfisch and easescreen. DMS best reflects the role of the classic full service integrator, who masters the whole scope of conception, integration and agency / content, similar to Gundlach SEEN Media in Germany. Not listed are Panatronic and Omega, the two most important distributors for digital signage in Austria. Panatronic in particular offers value-added services in addition to the classic distribution of displays.

DIGITAL SIGNAGE SOFTWARE - MAJOR CHANGES IN THE TOP 5

Software is becoming more important in the field of digital signage - a well-known fact. This and the increase in the market have led to a 14.7% increase in the number of licenses in the DACH market. There were also major changes in the top 25.

In the region, mdt Medientechnik occupies first place in 2017, which means that the supplier passed Grassfish and was also able to further increase the gap to the current No. 2. In 2016, the two competitors were even closer together. With projects such as McDonalds Germany or Ikea Germany as well as a reseller programme with Igepa and Flyeralarm, the company from Longuich achieved the top position.

The Austrian Grassfish lives from the large base of installations and puts great emphasis on IoT with the Experience Manager, an area that continues to increase in importance. Pichler / Easescreen are in third place. They won over Kaufland, but the rollout will only be noticeable from 2018 onwards.

Scala fell to 4th place in 2017, mainly because the company was busy internally with the takeover by Stratacache and the strategy change to direct business. But we expect a return to the top 3 within a short time.

Online Software, which holds 5th place in the ranking, and Engram (8th place) are typical vertical market specialists who offer solutions optimally tailored to the target group (food retail and Sparkassen). Due to the close integration (Online Software with food retail photo database and print/online solution) and Engram (certification Sparkassen Informationszentrum SIZ), both have a very strong strategic position in their target markets. In the future, these providers will also have a good chance of connecting new digital touchpoint solutions to their platforms for their existing partners.

The sixth-placed Radio POS has so far been a hidden champion - especially PoS projects in the tobacco sector account for the large number of licenses. In addition, the shoe trade is also served as a special market.

With MagicInfo, manufacturer Samsung pushes into the front ranks in the DACH region and reaches 7th place in the software statistics. Even if Samsung's MagicInfo is not aggressively pushed into the market, the solution is very attractive for many customers in combination with screens from the manufacturer.

The development of providers such as Broadsign, Heineking Media and Ayuda, which all benefit from the high demand in the DooH market, is also interesting. The growth of the business in these cases depends on the expansion plans of Ströer, WallDecaux and at Heineking on those of the shareholder Madsack. A consolidation of the software base is certainly also on Ströer's agenda in the future, because the acquired companies such as Neo Advertising or UAM tend to have a common platform. This is the only way to ensure smooth integration into the Group's own programtic platforms.

It will be interesting to see which platform the new Swiss DooH giant Tamedia with its subsidiaries Neo Advertising CH (previously: Brightsign user) and the marketer and future network operator Goldbach Media will choose.

DISPLAYS
NEW BASIS FOR FIGURES

Based on the data from Futuresource, invidis presents a new display ranking. Samsung, NEC Display Solutions and LG make the top. The overall development in units and turnover remains positive.

Starting with this yearbook invidis uses data from Futuresource for the ranking, as the previous data service provider Meko no longer captures Professional Screens. Sales of DS displays in the DACH region reached a value of over 390 million Euro in calendar year 2017 with exactly 172,761 screens. Compared to 2016, the volume of displays sold increased by 21% and sales by 17%.

This makes DACH the second most important regional market in the EMEA region after Great Britain and Ireland. The gap to UK/IRL has also narrowed, both in terms of volume and revenue: As of 2016, DACH accounted for 16% of EMEA revenues, this figure was 17% in 2017. During the same period, UK/IRL's sales fell by two percentage points, from 21% to 19%.

The triumvirate of display manufacturers in DACH are Samsung, NEC Display Solutions and LG. The latter manufacturer still suffered from the introduction or focus on OLEDs in 2017, but in the course of 2018 LG recorded a noticeable upswing with OLED professional screens, as the company had announced in the first quarter of 2018. Samsung, number 1 in the ranking, is far less dominant in the DACH region than in other Western and Eastern European markets. Nevertheless, Samsung's market share in DACH is one percentage point above the EMEA average. At EMEA level, LG is in second place with a market share of 17%, followed by NEC, which achieved a share of 11% in EMEA in 2017.

Sharp is in fourth place in the ranking, having expanded its screen portfolio in several segments from model year 2018. We would like to point out that Sony is listed under "Other" in the ranking, although the company would nominally have a 6% share - and thus would be ahead of Sharp. The reason for this: Bravia devices are mainly used on the market in the AV segment and not in the digital signage sector. Panasonic and Philips share 5th place, the latter also recorded an upswing in business in the first months of 2018, just like LG.

All LCD display manufacturers continue to feel the competition from LEDs in video wall devices - but only in the premium segment. And laser projectors have also gained in importance in the market.

From a customer's point of view, the smaller suppliers are also interesting. Specialists such as Iiyama (Touch) and Dynascan (High Brigthness) can score points in the niche. Companies such as BenQ and Toshiba are also expanding their positions. Already in 2017, Toshiba more than doubled the number of its products, and its partner base also grew very strongly. Toshiba announced in January 2018 that the company was already aiming to double its sales in 2018. BenQ and Acer are pursuing a partially similar strategy worldwide: In addition to expanding the screen portfolio, they are also focusing on strengthening the DS portfolio outside the displays segment. With the majority takeover of Aopen (Acer) or ComQi (by the BenQ subsidiary AUO), the respective group can include further elements of the value and know-how chain.

THE DS-MEDIA PLAYER RANKING

A heterogeneous market with two groups of manufacturers: the established specialists ranks 1, 2 and 5, followed by well-known IT suppliers.

Well-known IT manufacturers and established producers of digital signage media players dominate the market.

Two well-known producers of players, Giada and Bright-Sign, are in first two places. Fifth-placed IAdea also belongs to the " well-established ones ". For Intel, the top dog in the processor industry and a company that has successfully introduced various standards for slot players into the Digital Signage market, the survey puts the company in third place among the providers.

In fourth place, Acer has achieved a very good market position, especially for a company that has only discovered Digital Signage as an independent business market for a few years. And as the figures show, the offer is well received by the market.

Classic IT brands are in positions 6 to 9: HP is a provider with international experience in all areas of the PC market. The same applies to Dell, which is developing its digital signage activities beyond the media player market, especially in the USA. MSI also has a significant market share. Founded in 1986, the Taiwanese company is also active in the PC sector, where it is also a strong consumer brand. With its own operating system - and if you add iOS and tvOS, there are three of them - Apple has a special position. The wide variety of products on offer is reflected in the wide adoption of white label solutions. Private label media players achieve significantly higher sales figures than a single manufacturer would be able to achieve. This trend can also be seen in the market figures for the sales of the providers covered by "Other".

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TOTAL DIGITAL SIGNAGE MARKET
GERMANY, AUSTRIA AND SWITZERLAND 2009-2017
IN mEUR

YEAR	DISPLAYS	INTEGRATORS	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	930
2016	250	345	56	353	55	58	1.160
2016*	335	345	56	353	55	58	1.202
2017	391	393	66	465	66	71	1.453

* includes Content, Hardware, Consulting, MediaRemark: Data is based on company information or invidis consulting / Yearbook Advisory Board.invidis changed the system of tracking digital signage licenses in 2015/2016 and changed scope of „Others"Source: invidis consulting GmbH, „invidis Digital Signage Yearbook 2018/19" and Futuresource

invidis CONSULTING

TOP 20

DIGITAL SIGNAGE INTEGRATORS GERMANY 2017

RANKED BY TURNOVER

RANKING	CATEGORY*	COMPANY	TURNOVER IN mEUR
1	TSI	xplace	30 – 50
2	TSI	CANCOM GmbH	30 – 50
3	TSI	PMS Perfect Media Solutions	10 – 20
4	FSI	Gundlach SEEN MEDIA GmbH	10 – 20
5	FSI	ICT AG	10 – 20
6	FSI	Radio P.O.S. GmbH	5 – 10
7	TSI	heinekingmedia GmbH	5 – 10
8	TSI	Nordland Systems GmbH	5 – 10
9	TSI	BenHur	5 – 10
10	FSI	echion Corporate Communication AG	1 – 2,5
11	TSI	ipos 24/Interactive Point of Sale GmbH	1 – 2,5
12	FSI	Acer Being Signage (formerly Cittadino)	1 – 2,5
13	FSI	NEXGEN smart instore GmbH	2,5 – 5
14	TSI	Videro	1 – 2,5
15	FSI	komma,tec redaction GmbH	1 – 2,5
16	TSI	Media-NEL	1 – 2,5
17	TSI	eyefactive GmbH	1 – 2,5
18	FSI	MuSe Content	2,5 – 5
19	FSI	netvico GmbH	1 – 2,5
20	FSI	Visual Art	1 – 2,5
21	TSI	Global Player (incl. T-Systems, without Ceconomy/xplace)	30 – 50

* TSI: Technical Service Integrator; FSI: Full Solution IntegratorRemark: Data is based on company information or invidis consulting / Yearbook Advisory Board.Source: invidis consulting GmbH, „invidis Digital Signage Yearbook 2018/19"

TOP 10

DIGITAL SIGNAGE INTEGRATORS AUSTRIA 2017

RANKED BY TURNOVER

RANKING	CATEGORY*	COMPANY	TURNOVER IN mEUR
1	FSI	feratel media technologies AG	2 – 5
2	TSI	Umdasch Digital Retail	2 – 5
3	TSI	Kapsch BusinessCom AG	2 – 5
4	FSI	DMS Digitale Medien Systeme GmbH	2 – 5
5	TSI	Peakmedia	2 – 5
6	TSI	Dicube	1 – 2
7	TSI	NarComm DACH GmbH	1 – 2
8	TSI	A1 Telekom Austria	1 – 2
9	TSI	IT.PARK GmbH	bis 1
10	TSI	Wincor Nixdorf International GmbH	bis 1

TOP 10

DIGITAL SIGNAGE INTEGRATORS SWITZERLAND 2017

RANKED BY TURNOVER

RANKING	CATEGORY*	COMPANY	TURNOVER IN mEUR
1	FSI	JLS Digital AG	10 – 15
2	FSI	ScreenFOODnet	5 – 10
3	FSI	Westiform Holding AG	5 – 10
4	TSI	Kilchenmann AG	5 – 10
5	TSI	Habegger AG	2 – 5
6	TSI	Richnerstutz	2 – 5
7	TSI	B+T Bild+Ton AG	2 – 5
8	TSI	ESAG AG	2 – 5
9	TSI	screenIMAGE Systems AG	1 – 2
10	TSI	Bison IT Services AG	1 – 2

TOP 25

DIGITAL SIGNAGE SOFTWARE SUPPLIER DACH 2017

RANKED BY ACTIVE LICENSES

RANGING	COMPANY	ACTIVE DS LICENSES 2017*
1	mdt Medientechnik GmbH	50 – 75.000
2	Grassfish Marketing Technologies GmbH	50 – 75.000
3	Pichler Medientechnik e.U./easescreen	25 – 50.000
4	Scala BV	25 – 50.000
5	Online Software AG	25 – 50.000
6	Radio P.O.S.	20 – 25.000
7	Samsung Electronics GmbH (MagicInfo)	20 – 25.000
8	engram GmbH	15 – 20.000
9	heinekingmedia	15 – 20.000
10	BroadSign International LLC	15 – 20.000
11	~sedna Gmbh	15 – 20.000
12	screenFOOD AG	15 – 20.000
13	SalesTV GmbH	7,5 – 10.000
14	Net Display Systems (Deutschland) GmbH	7,5 – 10.000
15	komma,tec redaction GmbH	7,5 – 10.000
16	STiNO GmbH	7,5 – 10.000
17	dimedis Gmbh	7,5 – 10.000
18	Navori SA	5 – 7.500
19	Videro AG	5 – 7.500
20	Cittadino GmbH	5 – 7.500
21	BrightSign, LLC	5 – 7.500
22	netscreens digitale Schaufenster GmbH	5 – 7.500
23	netvico GmbH	5 – 7.500
24	Ayuda	5 – 7.500
25	SpinetiX	bis 5.000

* Active licenses on 31 December 2017 / Remark: Data is based on company information or invidis consulting / Yearbook Advisory Board /
Source: invidis consulting GmbH, „invidis Digital Signage Yearbook 2018/19"

TOP 10

MEDIA PLAYER DACH

RANKED BY UNITS

RANGING	COMPANY	MEDIA PLAYER DACH
1	Giada (Concept Intl)	20 – 25.000
2	BrightSign, LLC	15 – 20.000
3	Intel NUC	15 – 20.000
4	Acer	10 – 15.000
5	IAdea	5 – 10.000
6	HP	5 – 10.000
7	Dell	5 – 10.000
8	MSI	2 – 5.000
9	Apple	2 – 5.000
10	Andere	5 – 10.000
	Private Label (White Label media player sold under own brand)	25 – 50.000

Source: invidis consulting GmbH, „invidis Digital Signage Yearbook 2018/19"

TOP 7
PROFESSIONAL DISPLAYS DACH
RANKED BY UNITS

RANKING	COMPANY	MARKET SHARE
1	Samsung	38 %
2	NEC	19 %
3	LG	10 %
4	Sharp	4 %
5	Philips	3 %
6	Panasonic	3 %
7	Others (incl. Sony)	23 %

Source: invidis consulting GmbH, „invidis Digital Signage Yearbook 2018/19" and Futuresource

CUSTOMER JOURNEY

WELL THOUGHT-OUT CONCEPTS ARE REQUIRED TO DELIGHT CUSTOMERS IN THE LONG TERM. A MEMORABLE CUSTOMER JOURNEY IS OFTEN ALSO DIGITAL – BUT IT DOESN'T HAVE TO BE.

EMOTIONAL APPEAL

STORYTELLING & DIGITAL SIGNAGE

Digital Signage as a medium has its similarities to some other media, but works according to its own rules. If these are observed, storytelling via screens is an effective tool.

Digital Signage is neither TV nor mobile web content, even if moving images or response design are part of the tool kit. This is fundamental and should be carefully considered, especially in the retailing sector, but not only there.

Fundamentally, DS is a one-to-many medium which addresses groups of people. So the whole group is addressed. In specific areas, however, digital signage can also take the form of a one-to-one medium: If a retailer sets up an interactive touch kiosk, the customer is addressed personally.

Even as a one-to-many communication medium, digital signage can - and should - stand for a personalized and particularly targeted approach. Regardless of whether it is emotional or functional content. In DS installations, the former is mostly used - but functional content also occurs, for example in networks at airports. Either message can be tailored to the situation. For this purpose, you should consider the location where a screen is installed, the target groups to be found there and, above all, real-time conditions. It is important to quickly convey the context in order to create a call to action. And context can best be created with data.

If you use real-time data for a campaign, you can advertise ice cream during sunshine and perhaps recommend a Gore-Tex jacket to people out in the rain. Weather data can also be used in other ways: Mc Donald's, for example, used local weather information in the UK and combined it with icons that matched its own portfolio. The informa-

tion "Weather forecast: Rain on Tuesday" became a "TUE" under which falling french fries graphically announced the expected drops. Accordingly, a graphically simplified cup of steaming coffee was used as a symbol of the expected heat on another day of the week. More about special creative concepts for Digital-out-of-Home can be found in other sections of this yearbook.

Moreover, sensors can be used to trigger a specific content whenever people are in the vicinity or want to leave a defined area in front of the screen. Here, too, timely communication is a way to attract even more attention.

Depending on the data source used, Digital Signage supports local retailers in a specific way. If they connect DS to their ERP system, only those items that are actually available in the store are advertised at any time. This avoids potential frustration for the consumer. And the retailer promotes offers that really do leave the store.

In general, customers do not accept outdated messages on screens. Actually a commonplace. But you will still find otherwise flawless installations on which, for example, yesterday's news feed from the daily newspaper is displayed. While many Digital Signage networks have long been broadcasting the latest daily news from providers such as Welt TV (formerly N24), Tagesschau and major newspaper publishers.

THE RULES FOR EFFECTIVE DS CONTENT

— *Content must be current
(data driven content near-real time)*

— *Real-time Data enables creative campaigns*

— *DS is not TV or Online – campaigns need to deliver message without sound and interaction*

— *Content should be adapted to surrounding (mindset, dwell time, passage) of touch point*

— *Limit use of text*

— *Big images rule*

EMOTIONS AND DIGITAL - MAY GO TOGETHER, BUT DO NOT HAVE TO

We hardly know of any good examples of great largely digital retail experiences. Nevertheless - or perhaps because of this - everyone is talking about the need to create outstanding experiences in retail. The reason is the advancing digitalization on all levels: Online and mobile commerce as well as IoT devices and AI systems like digital language assistants challenge bricks-and-mortar retailers. Against this background, local retailers and cities are faced with a similar task: more traffic per se and more recurring traffic from customers are being sought. Convenience is on the agenda because online retailers like Amazon have made shopping so simple, especially for functional and less emotional products. Retailers must therefore deliver new convenience experiences. The question is: how?

Not every great shopping experience has to be digital. Some small and specialized dealers score with their services and a rather analog flair. An example can be found in the adjacent box. How do you well use digital to appeal to all senses in order to create emotions? Screens can be one

way. Music works well in many fashion stores when the distraction is not too strong. Scent is one of the most subtle methods when it is gentle. If it is too intense, it can drive people away. Cultural differences have to be taken into account here as well: In a US store, the scent may be more prominent than in a European one.

Not the superficial, screaming content is the solution, but an appealing and very unique atmosphere, which is sustainable rather than a quickly fading Wow!

Convincing digital experiences can, however, be found in other vertical markets. There are some projects that are worth a closer look for retailers and brands. If you ask people where they had an experience, they typically tell about experiences in the fields of cinema, theatre, concerts, restaurants and entertainment. There are for example theme parks that offer a mobile game for people standing in line. Whoever wins it is the first to get on the roller coaster as a reward. What counts here are fun, excitement and instant rewards.

The question for brands and retailers is whether they can't take these examples as sources of inspiration for creating innovative retail experiences? We think they can. Owner-managed businesses, on the other hand, have a personal story to tell in which Digital has a much smaller role to play.

In general, all senses can be activated at the point of sale, visual and acoustic impressions, scents, light and haptic experiences. A connection between the haptic and digital world, for example, cannot be created online. An important factor is the skillful orchestration of the components, in other words what Design is all about. Don't try to create a purely digital experience in a real-world store - use space and the physical environment. This is all about creating an emotional connection to the brand. A coffee shop in a

bookstore is not yet an experience. What works - another example from practice - are yoga courses in the store that is if you are a yoga brand.

The discounter Penny occasionally lets a DJ play in a market and attracts enthusiastic party-goers. And in doing so, they are working towards a real experience: in the summer of 2018, for example, Penny built up its own temporary outside branches at major open-air festivals. This is cool practical value in a pure way: No one has to leave the festival area to quickly buy an extra air bed or a supply of drinks. And the message is already clear that you are the discounter for the trendy youth. They may forget things, but not the shopping experience they had at the Hurricane or any other festival where they saw and heard their favourite acts.

ELIMINATING PAIN POINTS - CREATING RETAIL EXPERIENCES

A good choice to improve the Customer Journey: Identify the pain points that annoy customers in the store. And eliminate them. Amazon did nothing else when it prevented the queues in its Amazon Go stores by eliminating the cash registers. Because long waiting times are annoying - in every industry.

FIVE TIPS TO REDUCE QUEUING TIMES

— *During peak times in Quick Service Restaurants, the number of possible order options can be radically limited on the digital menu boards.*

— *A retail bank can display average waiting times on a screen in the shop window. Recommending day parts in which fewer customers are expected.*

— *DIY stores can use Dynamic Packing via electronic shelf labels (ESL). The labels can display matching and complementing products in other departments which are on stock. The retailer can increase higher average revenues.*

— *Airports display live walking time to gates on Flight Information Boards. Informing customers how much time they have left before boarding. That leads to increased spending in travel retail and F&B outlets.*

— *Amusement parks reduce the perceived waiting time in the queue by offering mobile based games. The winner receives a Fast Pass to jump the queue.*

ANALOG SHOPPING EXPERIENCE AT ITS BEST

If you shop here, you know what you want: a pair of Levi's jeans. Presented neatly and stacked metres high on shelves or in one of the two glass displays. A very specific wash, all possible sizes and lengths, shrink-to-fit models made of heavy denim in the cut of the 1940s to the late 1960s - all this can be found in the small workwear shop that Alexander Bertrand runs in second generation.

Clearly, the 63-year-old stands for his products. If anyone wears denim with authenticity, it's this man with now grayed, longer hair. Matching biker boots are also on offer, as well as a small selection of workwear. Otherwise the focus is clearly on jeans from this one manufacturer. And among those on the rare models on the market. Some customers come from Düsseldorf to Munich-Schwabing to get their 501 in twelve ounce Cone Mills Red Selvedge Denim (14 ounces after washing), just as it was launched in 1955 and is now produced in the USA again.

The largely analog retail experience begins for the customer with the shop window. Mannequins and decoration are oldschool. When the glass door is open, you can see the shelves and the two glass displays. An old cash register is used of course. And receipts are filled in by hand without asking. The paper bags are branded with the jeans brand

logo and refer to the shop founded in 1931. Almost everything here is vintage, but by no means old-fashioned.

The in-house blues band "Radio Bluebottle" regularly performs in the evenings. Other dealers would have a DJ play - here the slide guitar is picked up, the tube amplifier is flicked and the bass is being played. If you like, just sit down and perhaps open the lager you brought with you. In front of the door the band bus is parked, a genuine vintage Citroën Type H. The classic car advertises "Betrand Workwear" in Hohenzollernstraße.

But somehow Alexander Bertram is also multichannel: Orders by web or phone, shipping of the desired items - no problem. Social media channels are also used sparingly. He does not need a complicated CRM system - he knows his customers. No one can fool him when it comes to merchandise knowledge. The customers are served politely and without hurry, usually respectfully addressed with their first names; and the prices are the same as the manufacturer's normal retail prices. An analog shopping experience at its best.

OMNICHANNEL CONCEPTS NEED WELL THOUGHT-THROUGH CUSTOMER JOURNEYS

What pleases today can be boring tomorrow. For retailers, this means being flexible and always taking customers to a new customer journey.

Same customer, different mindsets; one family, but different behaviours: Retailers must always be aware that Omnichannel concepts can only deliver sustainable economic success if they provide multiple and well thought-out customer journeys. Retailers must be cognizant from the outset: Whatever works today, the identical customer may reject it tomorrow.

A practical example: A mother of two children, married and employed. At home or in the office, she is just ordering clothes for her daughter and her son online from a fashion chain store - after all, the little ones have just grown again. On her tablet, she puts the goods in the shopping cart and pays by credit card. Now just a quick trip to the city, because she also wants to treat herself to something new. And which store does she enter? - A branch of exactly the same brand she ordered from half an hour ago for the children.

That's the way she is. Maybe it is the haptic experience that is important to her, or the atmosphere in the shop. Then

the disappointment: A line has formed in front of the fitting rooms. But today's office day was stressful enough. A small glitch means a change in the customer journey. And in this case: the abandonment.

The next day is Friday. The office day was a success, the children are looking forward to the weekend, they go shopping together. Later they will meet father and husband in the café. And that she actually waits longer in front of the fitting room today, she doesn't even notice. Fortunately, there is no queue at the cash desk either. Because although she works for an IT company, she would never use the alternatively set up self-scanning terminals.

In principle, customers want an instant reward: those who want to consume want to do so as pleasantly and as quickly as possible. Independently of the sales channel. And when you enter a shop, you usually expect more than just an extension of the online shop. Because ordering on the mobile web is always possible.

The last argument also means that a pure Extended Shelf in the store does not work. Nobody expects only a shelf with the order options from the webshop. Many retailers, on the other hand, have placed Virtual Shelves or touch terminals in their stores with high expectations and virtually just run their website on them. However, the entering customer has a different expectation: In addition to the information that can be found on the web, she seeks a product experience and can benefit from services and assistance.

DIFFERENT REQUIREMENTS FOR CUSTOMER JOURNEYS

— *Waiting vs. Passage*

— *Browsing vs. Search*

— *Assisted vs. unassisted (service vs. self-service)*

— *Group Shopping vs. individual Shopping*

— *Inspirational vs. Convenience Shopping*

IDEAS FOR THE CUSTOMER JOURNEY IN A MODERN PHARMACY

— *Formerly products on shelves, now large digital touchscreens*

— *Storage robots allow new store designs, the classic pull-out cabinets behind the counters are no longer needed (stockroom can be located on another floor*

— *Unlimited language options on displays*

— *Displays are operated by pharmacist/PTAs, storytelling possible (target groups by origin or occasion, example: Chinese tourists)*

— *Would also be interesting for face recognition (age, gender) but acceptance is very low (example Austria: Pharmaceutical company Bayer had to dismantle face recognition systems in pharmacies)*

Dealers need to provide added value to customers, such as a wide range of accessories and services. Ideally, the customer is not left alone with the service offering. Together with the sales assistant, digital shelves work very well. However, this also requires a different user interface. So you cannot simply copy the user interface of the website.

Inspiration terminals usually work very well. If you shorten the waiting time of your customers in a travel agency with beautiful pictures, you create an ideal emotional atmosphere for the subsequent selling conversation. Inspiration is also key in a changing room. Here you can present your customers individual styles. Alternatives, colour options - and ideally the possibility to have the matching additional pieces delivered to the fitting room in the right size. In this environment, as well, the customer will have entirely different expectations. That's why such a digital tool works so well in this context. Especially when the extra services on site are adapted to it.

Most retailers have a good understanding of customer journeys, but often the individual mindset is not sufficiently considered. After the channel-centered way of thinking

retail must now embrace the customer-centered way of thinking. The prerequisite: a mere customer segmentation based for example on socio-demographic data is not sufficient, but an analysis segmented by customer situation is required. Every customer chooses the channel that best suits his or her situation. Silo and stand-alone thinking must give way to consistency across all touchpoints. In principle, every customer journey starts at home. There's no such thing as The Journey. Every customer has her own individual journey - each time. The retailer can ultimately only offer building blocks for the individual journeys. In addition, always remember: The customers themselves do not think in terms of customer journeys.

What does this mean for the design of digital touchpoints? A touchpoint provides almost unlimited flexibility. But the user interaction needs to be designed considering the users mindset. In what situation is the customer in when interacting with the touchpoint? This is also important for the user interface. The user experience including content needs to be consistent and seamless across all digital and non-digital media.

WOW OR ROI

HOW CAN DIGITAL PAY OFF?

Strengthening the brand by showing customers and passers-by spectacular digital installations is an excellent marketing concept. However, it is also advisable to focus on achieving a higher return on invest (RoI) for digital signage projects. In other words, striving to optimize top and bottom-line.

We all know them: huge video walls in flagship stores of well-known brands, in lobbies of large companies, and at trade fair stands, which first take visitors' breath away and then elicit the famous "wow" from them.

Such installations certainly strengthen the respective brand, but are unlikely to have any further positive economic effects for the most part. This needs to be realized at an early stage: digital technologies are not cheap after all. Especially not if you include the creation of content and ongoing operations - which also include personnel costs. And lighthouse projects of this kind are very rare.

Hard RoI criteria apply to the majority of projects. Because only if the return on investment can be measured and proven, companies are really willing to invest in digital signage or omnichannel projects. So how can digital pay off?

In principle, there are two approaches: top-line and bottom-line. Both can result in a notable RoI. While the first approach is aimed at sales growth through various measures, the second is aimed at cost savings (see box). By selling advertising or (anonymized) data, a retailer can tap additional revenue sources.

In addition, a reduction in the investment itself can play a role. Flexible elements (multi-use displays) reduce the initial investments. Through flexible lifetime concepts, chain stores extend the useful life of hardware and software, such as the further use in B and C locations. Alternative forms of financing such as leasing are also effective. From the point of view of a brand or retailer, a smart combination of digital technologies can enable new business models. For example, Fast Fashion is made possible by systematic digitalization, which also includes acceleration of the supply chain.

ROI INCREASE VIA TOP-LINE AND BOTTOM-LINE

TOP-LINE/SALES GROWTH

— *Frequency increase: for example by means of shop window displays, back wall/pull-in screens or campaigns (social media, apps) in connection with in-store activities*

— *Higher throughput: e.g. personnel management with the help of analytics, targeted shortage or expansion of the range of menu boards, automatic check-out (example: Amazon Go)*

— *Additional sales: possible with transaction terminals, inspiration screens in fitting rooms, promotion displays, better targeting (e.g. app, beacons)*

— *Higher average basket size (cross-selling): can be achieved through dynamic bundling on ESL, employee tablets (better advice, up-selling, size availability, less walking, more customer service time), style/complement inspiration*

— *Avoidance of walk-outs: Measures such as entertainment in the checkout area (shortening of the perceived waiting times), self-service terminals, appointment scheduling tools*

BOTTOM-LINE/COST SAVINGS

— *Process cost savings: such as automatic price labelling with ESL, digital posters and replacement of analogue processes (eliminates costs such as printing and distribution), no need for dusting off shelves (pharmacies) by using touchscreens*

— *Automation of processes (personnel costs): e.g. self-check-out, automatic check-out (Amazon Go), stocktaking with RFID labels, shelf replenishment robots*

— *Error avoidance: e.g. use of ESLs across the board, consistent campaign management (playout control)*

THIS IS HOW IT WORKS - RETAIL EXPERIENCES AND TOUCH POINTS

Not every installation is permanently successful. But well thought-out concepts and implementations reach the target groups at the point of sale. On the occasion of the DSS Europe 2018 in Frankfurt invidis collected some outstanding examples from Europe - and assessed why they work so well.

DIGITAL STORYTELLING: THE LOBBY BECOMES AN EXPERIENCE ZONE

One of the most spectacular digital signage areas are LED installations, which come in a wide range of quality. Simple video walls or LEDs, for their part, often show listlessly curated content. But at the top end of the scale are Vanity Walls as brand ambassadors for customers and employees. The Champions League features interactive, dynamic video art - lobby experience zones.

High-quality video walls, that are increasingly integrated into the architecture, are becoming an eye-catcher in many company headquarters. Just like elegant floor finishings, lobby video walls are part of the brand presentation. But not only DAX 30 companies invest in lobby experiences, but also tech companies or banks and law firms.

In the USA, lobby experiences have been established for some time already, which is also related to special local regulations. In New York City or San Francisco, for example, for new office buildings, a lower single-digit percentage of the investment sum must be spent on publicly accessible art. High-quality lobby experiences thus fall under the obligatory promotion of the arts.
The case is similar at the Orlando airport. In the check-in area, 700 screens of 55" each with a total length of 475 m were installed for signage and as video art experience. Here, too, local regulations require a minimum investment in art.

But in Europe, too, lobby experiences are increasingly being installed as part of the enterprise architecture. A huge Samsung video wall with dynamically generated content was installed at Adidas' headquarters in Herzogenaurach already a few years ago. Even if, to be fair, the content concept cannot keep up with the US experiences.

And in Stockholm, at the Swedish SEB Bank, an elaborate installation was also integrated into the new head office. In addition to video art, dynamic, data-generated content is playing an increasingly important role. Examples include the Salesforce Head Office on Mission Street in San Francisco, Terrell in Washington D.C., and the Netflix office in Hollywood.
The potential is massive - in Europe as well. We invited Michael Luck Schneider from the New York-based digital agency ESI-Design as keynote speaker for DSS Europe 2018, one of the leading developers of lobby experiences in the world.

THE SHOP WINDOW TURNS INTO A STAGE

Shop windows are the image of a brand and windows into the store. Therefore, the ideal stage for stories - storytelling has been established in this area for many decades. But digitalization creates new dynamic and interactive opportunities to enter into dialogue with passers-by and customers. Why not address customers emotionally with the "Handbag Stories", as Chanel demonstrates? Here, the product tells the story in exciting moving images, how it is created, what distinguishes it from the other products - ultimately: why the brand is so extraordinary.

ROBOTS AND ONLINE PICK-UP IN THE STORE

The reopening of the 4,500 m² Zara flagship store in London's Westfield Stratford Mall was also the beginning of a small retail revolution: for the first time, Inditex has integrated a fourth category into a store alongside its departments for women, men and children - simply titled Online. Two kiosk terminals serve as "automated online order collection points". A fully automated local warehouse integrated into the store can process 2,400 orders simultaneously; customers can also use Self-Check-out for fashion for the first time and receive advice via a connected mirror.

Inditex is a pioneer of digital touchpoints and back office solutions. The Spaniards use RFID almost across the board from production to the store, install digital signage solutions in all of their 2,200 stores and now also integrate "seamless online and offline" in stores. Inditex comes closest to the often praised, but so far hardly implemented, omnichannel strategy.
The flagship store in London's most famous shopping center Westfield Stratford is also the first Zara store with integrated, robot-controlled warehouse, digital pick-up terminals and self-checkout. The individual elements were previously publicly tested in a branch at the company headquarters in A Coruna, Spain. invidis has already been able to do some digital trial shopping there.

In the Stratford store with the new fourth department "Online", customers identify themselves at the kiosk terminal using a QR code generated by Zara during the online order process or a PIN code. Within seconds, the logistics robot collects the ordered products and packs them together in optimized sizes. The advantage for customers: Online orders placed before 2 p.m. can be picked up on the same day and tried on directly in the store. Returned products can be sold instore again immediately.
All of Zara's new service initiatives are aimed at a seamless,

convenient and enjoyable shopping experience. Other Digital Signage installations are display-based interactive mirrors that use RFID to identify the garment selected by the customer and recommend suitable clothing and accessories. The "complete style" is shown to the customer in the mirror display.
Another small revolution is the end of the checkout line. Zara employees are equipped with iPads so they can advise customers directly at the shelf and process app-based payments. Zara and the Inditex Group have developed two apps for this. The cashier area as well as first self checkout terminals are still available for cash and card payments. The big Zara advantage - all garments are already RFID tagged, so customers do not have to scan the products individually for self-checkout. However, in order to disable the loss prevention feature, each item must still be individually passed over the sensor surface at the self-checkout points.

An interesting feature of the flagship in the British capital is the fact that the two-story store has no shop window on the ground floor. The complete width of the store is designed openly and thus allows full view of the retail architecture and the current collection.
In spring 2018, Zara also attracted great attention with an Augmented Reality app, which made Zara products accessible via AR for 14 days (a collection cycle) in 120 flagship stores worldwide. But in contrast to the still very complex AR campaign, the new shop concept is scalable and will also be implemented in other flagships in the future.

Also worth mentioning are the new 86" Digital Signage installations directly next to the products. Until now, Zara

focused on Digital Signage on wall-sized LEDs in the checkout area and in some cases on pillar-wraps (curved LEDs around columns).

FASHION - BETWEEN WELL-BEING OASIS AND EXPERIENCE

One of the most underestimated touchpoints in fashion retail is the fitting room. Because more than half of the purchase decisions made in the fitting room are negative, since the light is usually bad and the often not more than 3 m² small cabins offer no experience whatsoever. Intimissimi and Primark introduce experience into the fitting room with two very different concepts.

In the middle of the pulsating heart of Munich, hearts have been beating faster for some time now. With a completely new concept for fitting rooms, lingerie specialist Intimissimi has created a very private stage for its customers in the Kaufinger Strasse branch. The "Youzon" fitting room gives those who love sophisticated fashion the opportunity to admire themselves in an intimate atmosphere away from the hustle and bustle of shopping. In the lingerie manufacturer's 5 m² large and tastefully designed oasis of well-being, a wide variety of digital lighting elements create an individual fitting experience.

Change of scenery: At the other end of town, Primark opened its most recent branch in Germany. On 6,000 m² sales area the Irish fast-fashion supplier integrated 66 standard fitting rooms with 2 to 3 m² each - quite the opposite of an oasis of well-being. But one of the cabins stands out: in the womenswear department a fitting room was designed as an experience zone. The showroom fitting room is large enough for eight people. A service for all girls who like to do their Primark shopping with their friends. Needless to say, the large fitting room offers seating, power outlets and

USB charging facilities, and free Wi-Fi is available throughout the store.

Two very different concepts, both pursuing the same goals: to create emotional brand and product experiences at the PoS. The strength of brick and mortar retail compared to online is to make products and services tangible in an appealing setting. Fitting in fashion retail plays an essential role here. This is where the buying decision is made.

At Intimissimi, soft, smooth light flows from behind the main mirror and reveals fit and materiality at close range. Homogeneous-indirect lighting via reflectors makes flat structures vivid without glare. The "Lightshower" ceiling light gives the "Youzon", developed by Ansorg, a softly flattering and uncompromisingly clear general lighting. A backlighting of the upper body emphasizes the contours of the customer and makes the hair shine. All used luminaires have continuously adjustable white light and excellent colour rendering. A light aura opposite the main mirror ensures that the customer perceives herself as a radiant appearance in the mirror. Via a compact touch panel, the customers can create the right lighting mood for underwear, swimwear, nightwear and sportswear themselves in the comfortable fitting room. An experience that online shoppers can only dream of when trying on at home.

Intimissimi retail architect Filippo Mercanti explains this attention to detail: "We want to maintain the high standards we set for the production of our collections in the store as well. The quality of the products should therefore correspond to a high standard shopping experience on site."

In comparison, Primark relies on classic downlights in the fitting rooms. However, other, social experiences are at the forefront. "Sharable Moments" are an extremely important factor in the design of shopping experiences today. Nowadays flagship stores can hardly do without locations that

are optimized for in-store selfies. The simplest solution is mirrors with hashtags and dealer logos. More and more retailers and brands are developing selfie-optimized "stages" near the fitting rooms.

And where are the Magic Mirrors? The experience of fashion retailers with Magic Mirrors is very varied. Up to now, large-format mirror displays in the fitting room have presented five central challenges: content, display quality, privacy, costs and fingerprints.

Most Magic Mirror display concepts integrate a delayed mirror function (time-shifted video) as well as endless shelf functionality. The integration of cameras is necessary to "project" selected products on the display onto the customer. Permanently integrated cameras in the fitting room are culturally not accepted and are very problematic in terms of privacy laws.

Customers can experience and choose colors options, and complementing products or styles on the display. The ongoing content management is practically impossible for multi-brand retailers. Quality requirements of the presentation are also an issue. Also the representation of colours on mirror displays under the usual downlight conditions is unfortunately unsatisfactory.

The cost of life-size interactive mirror displays in fitting rooms is still too high for a reasonable RoI. Professional tablets or smaller LFDs, on the other hand, can offer added value in selected locations if the staff service can be provided. The order function "other size / other colour" from within the fitting room is highly appreciated by customers. But the frustration is very high if the selected products cannot be delivered to the fitting room within a few minutes. And finally, fingerprints on mirror displays are a big problem in reality. In this case, cleaning several times a day is the only solution.

Whether a feel-good oasis or a group fitting room: if the story is designed with the target group in mind, unique experiences in brick and mortar retail can inspire emotions and promote sales.

COLLABORATION GETS INCREASINGLY MOBILE

Collaboration screens and software are an integral part of everyday business life. However, the long-term trend is also subject to changes on the part of professional users and providers.

In the past, collaboration screens were installed in just a few, but well-equipped rooms of a company. Large international corporations from many different industries were the first users. In addition to the corporate boardrooms, in which board members can view presentations or hold virtual conferences, media-equipped rooms for other departments have been created. Permanently installed large format screens - with or without touch - as well as cameras and audio technology, media controls and complex cabling characterize the first generation of such installations of conference rooms.

The next trend was BYOD: Bring Your Own Device. This broke up the previously rigid and fixed IT structure in companies. Every user should also be able to work with his own devices within the company network. As a result, the requirement to be open to different operating systems was stated by many departments. Restrictions continue to apply only in security areas. This trend, which originated in the IT and computer industry, had a direct impact on the AV industry.

More and more hardware manufacturers quickly launched collaboration screens mostly based on proprietary software that enable classic laptops to be used alongside iPads and smartphones to jointly work on a large display screen. In addition, as the world of work became more digital and international, more and more departments and employees were demanding collaborative technologies.

Thus the Conference Room became the Huddle Room: In some places also called Buddle Corner, it is considerably smaller, but offers the same functionality with collaborative screens and teleconferencing possibilities. In many cases, companies were looking for ways to quickly install a numerous Buddle Spaces within their existing buildings. In addition, the companies wanted to be able to flexibly use these rooms. So they were looking for further flexibility, especially with the screens - since the software usually already supported this requirement.

Expensive fixed installations were replaced by cheaper interactive solutions and mobile screens. Lightweight collaboration screens can be moved through the building on trolleys and frames. In addition, new hardware solutions are available, such as the Samsung Flip, which was introduced at the beginning of 2018. It also lowered the price level for collaborative technology. It is a new product, which is actually already a category of its own, addressing also medium and small companies. In addition, user groups with little computer affinity can quickly gain access. Microsoft followed suit. In May 2018, Redmond announced the Microsoft Surface Hub 2, a 50.5-incher that can be quickly moved around on trolleys and can be used in a configuration of up to four touch displays. It is to be launched on the market in 2019. The design principle and the use case is similar to that of the Korean competitor. Like for the Surface Hub in 84 and 55 inches, Microsoft can count on numerous customers, as the company guarantees the seamless integra-

tion of all Windows services like no one else on the market. At the same time, the Windows software world has been opening up to BYOD for years.

Other vendors focus on special features such as sophisticated touch technologies to sell their screens (always with BYOD capability). There is also room for smaller manufacturers or finishers who have pinpointed the needs of their customers and transformed them into concepts. High-end devices can also find acceptance on the market as mobile variants.

A good example of this is "ML-Audio and Carbons". The manufacturer from Mainz has designed its Commwall in such a way that it is modular and easy to transport. The solution is available in screen sizes from 46 to 85 inches, with displays from various manufacturers, glass front, touch capability that can be retrofitted on site and its own proprietary loudspeaker solution. This system is invisible and has subwoofers and a unit for mid and high frequencies. A DSP high-power amplifier is also included. This meets the requirements for a system that not only delivers very good images but also excellent sound. Cameras can be integrated. All cameras and microphones can be disconnected immediately by pulling out a plug and via automatic retraction - for safety reasons, for example. Numerous colour and finishing options are part of the solution. The manufacturer has put a lot of effort into mobility of the solution in particular: a transport case that fits in elevators, an integrated lifting device and trolleys are all designed in such a way that the system can be transported by just one person - also a well-appreciated feature in the rental business.

GLASS, ART AND A SCREEN

CONCEPT

Apple operates stores in basically all major cities worldwide. They are much more than a retail space. Apple stores a living stage for the company's products, solutions and a living brand image. Most of the recently opened apple stores are designed to open-up to the neighborhood. They want to provide a cultural platform for the community. Obviously selling Apple products and services are still the main driver for the stores, but Apple can afford to offer more than that.

INSTALLATION

Apple operates two flagship stores in Dubai: the first ever Apple store in the Middle East opened in the Mall of the Emirates and a second in The Dubai Mall. Just a few steps from Burj Khalifa, the tallest building in the world, The Dubai Mall store is one of the most iconic Apple stores worldwide. The two-story store is clearly visible from the outside and located on the first floor of the world's most visited shopping mall (80m+ visitors annually).

The iconic glass façade which is part of Apples brand identity is missing at The Dubai Mall store. Due to heat and intense sun the architects needed to adapt the California concept. The architectural firm Foster + Partners designed eleven motorized "solar wings" on the façade, which open in the evening and enable shoppers the view on the fountain and Burj Khalifa. Inspired by the traditional Arab Mashrabiya, each "Solar Wing" consists of 340 carbon fiber-reinforced polymer poles. With a width of 55 meters, the panels form a one of the world's largest kinetic art installation. A terrace is open for the public to enjoy apples products and the unique view.

Inside the store Apple installed one of the large fine-pitch LED screens which are now common in most Apple stores. The MoE store was the first one ever with an LED wall and real trees. It took Apple a long time to gain trust in the reliability of digital touch points beyond their own products. Digital can fail – there is no guarantee. Today Apple is a strong believer of LED screens and they are a key element of most stores.

PRO JECT

APPLE-STORE DUBAI MALL

The LED screens are used for training but mainly for image purposes. The most brilliant high resolution is played on the screens entertaining and informing visitors of Apple stores about the local training program and newest products. Apple created an environment where digital touchpoints have mainly a supporting act. It is not about promotion and tough selling. It's part of the architecture and store design. Only a few retailers worldwide can afford to use LED screens just as a living canvas.

LOCATION

Dubai is one of the world's most buzzing trading centers with a century long trading tradition. The city is one of the fastest growing metropolitan areas in the world with 90% of the population being expats. Smart City initiatives are visible everywhere as Dubai prepares for Expo 2020

MORE INSIGHTS FOR RETAIL - RETAIL ANALYTICS

Brick-and-Mortar retail knows too little about the buying patterns of their customers. This can be improved with retail analytics - requiring the right technology, experts and experience for actionable insights

Retail is still more of an art than a science. Learned over decades and full of commonly held beliefs. However, with all the change – real and perceived – in the industry, there is a growing insecurity whether the fundamentals and rules are still in place.

At the same time, the online world provides an abundance of data that holds the promise of full customer transparency – if you have the resources to process and analyze all that information.

Therefore, many brands and retailers are looking to technology to provide tangible facts and figures. While online customer behavior is fairly well understood, in the offline world the standard is – if at all – people counters and cashier / transaction data.

And indeed, there is a large number of technologies out in the market that can be used to capture data in the offline world. It ranges from simple light barriers over Wifi triangulation, ultrasound, and beacons, to IoT devices, cameras and 3D sensors (see also info box). To buy the equipment you can choose from a wide spectrum of companies, from startups / mid-sized companies like modcam, Xovis, or Dilax, to large corporations like Intel, Bosch, Cisco, or Axis. All these companies will provide the respective analytics tools for their sensors, as well as basic dashboards. However, you will need an additional data analytics and dashboard software provider if you want to combine several data sets or sources and perform the respective data analytics techniques. Here again, there is a large number of big and small solution providers on the market – the likes of IBM Watson, Microsoft, and a host of startups.

From the paragraph above you can see one of the first challenges you will face when you try to implement analytics: the field is still quite young and confusing, and it is hard to find the right supplier for your purpose. However, this question gets us closer to the core of the matter, and that is "What is the purpose of your analytics?". Or put differently, "what are the insights you can act on?"

For us, this is the starting point for any analytics project. Understanding the levers in your business and pinning down the information you need to optimize them. Only then you can start to look for technology that will help you to answer these question (and you will know whether the potential benefit will be larger than the technology investment). Technology alone can only be a tool and as such will it not be the solution.

In our practice, we have seen a wide spectrum of questions that could be answered by analytics. Some of them are ex-post insights, some are used for real time management, and some for predictions (currently the cutting edge, see also AI)

Typically, you can group these "insights" questions along the sales funnel:

Footfall: How many people walk by my store? How many enter? Are they first time or repeat / loyal customers? How can we improve entrance conversion? Do promotions have an impact on footfall, visit time, or frequency? Etc.

Behavior: How do customers move through the store? Which categories do they visit? Where do they stop? What do they touch? How do changes in store layout, promotions, product placements change the movement / stop / touch patterns? Are customers using our app in store? Etc.

Conversion: Which journeys convert? Which do not convert? Do staff interaction impact conversion rates? Etc.

In addition, you can use analytics to optimize store operations with real time information or predictions on footfall for staff planning, or to trigger promotions or digital messaging in store.

Depending on what level of detail you want to analyze, investment in analytics technology can be significant. However, usually not all stores need to be covered with the full spectrum of devices and for some insights a temporary ins-

tallation may be enough. And just like with digital signage, hardware is only part of the equation. You also need staff resources and analytics expertise to extract the insights from the data you generate.
In summary, the technologies exist to make retail "more of a science" and to generate tangible data. However, in practice the market is still very fragmented, and technology driven. Only very few companies can offer business driven solutions that can help you to "turn data into dollars (or Euros)".

MOST COMMONLY USED TECHNOLOGIES FOR IN-STORE CUSTOMER COUNTING AND TRACKING

TECHNOLOGY	USED FOR	PROS	CONS
Light barriers	People counting in defined entrance and low traffic situations	Cheap	Not very precise
WiFi	- Movement tracking over larger areas - precision in the range of meters	- Low cost - Large coverage areas	- Requires mobile devices with Wifi turned on - Usually assumes one device per person
Ultrasound	Movement tracking with higher precision	- Independent of customer devices - Less privacy concerns	Separate infrastructure
Beacons	Movement tracking	- Low cost - Allows for direct customer messaging	Requires an app running of the customers' mobile devices
Cameras/2D sensors	- Counting and movement tracking with high precision - Potentially also age, gender, and mood recognition	- Existing security cameras can be leveraged - Independent of customer devices	New installations relatively expensive
Optical 3D sensors	High precision Independent of customer devices	- High precision - Independent of customer devices	High cost for sensors and installation

DIGITAL SIGNAGE IN RETAIL –

DIGITAL UPGRADE AT KAUFLAND

Among other things, the food retailer counts on self-checkout terminals and electronic shelf labels. And most importantly improving customer journeys. The national deployment will be followed by an international rollout.

Kaufland, the big box food retailer and sister company of LIDL (Schwarz Group), has been modernizing its stores since summer 2018. The project covers several areas: numerous self-checkout cash registers have been deployed to new branches complementing electronic shelf labels and a new digital signage concept. Kaufland gained already plenty experience with the first generation of digital signage in selected stores. But this time digital signage is part of a more holistic customer journey concept. Moving images are now adding more dynamics to the retail space of the

retail giant. The concept now being pursued is much more catchy and engaging. The digital signage rollout will be also be expanded to all international stores. Upgrades of the stores are not limited to digital, also wall panels and other fixtures are modernized in a modern wood-finish look.

Kaufland generated sales of around 21.6 billion euros in seven European countries in fiscal 2017/16. The retailer operates a total of 1,270 stores in Germany, the Czech Republic, Poland, Croatia, Bulgaria, Slovakia and Romania. There are currently 660 branches nationwide. They are usually between 2,200 and 15,000 m² in size. In this case, the modernization also includes the analog elements.

Previously, the first generation of digital signage was rolled out to more than 370 Kaufland stores. Typically, the screens were installed at the entrance and at the service counters. As part of the general modernization of existing stores and new openings, additional stores will be equipped too. Till the end of 2018 120 branches are scheduled to receive the upgrade. Digital signage screens are installed at various locations from the entrance to the checkout.

"Our concept includes digital touchpoints that are unique to food retail. As a rule, the branches are equipped with 21 screens informing consumers from the entrance to the checkout area," says Lydia Jesser, International Sales. Outdoor screens are located directly in front of the main entrance or close-by. Inside the store the large-format displays are installed in the fruit and vegetables, health and beauty, promotion area, service counters and at the cash desks. The displays ensure that customers are targeted

continuously along the customer journey with eye-catching information. The digital channels alternate between product promotion and image content.

The project involved well-known German digital signage market players. The outdoor Digital Signage totems were manufactured by ST-Digital. The company developed a tailor-made solution for Kaufland. Data Modul - a leading specialist supplier of open frame display and embedded computer solutions - developed and manufactured the screens. Kaufland decided against standard displays as they preferred a customized housing and components. The software solution was developed in cooperation with Austrian software vendor easescreen. In contrast to most other projects did Kaufland refrain to engage a system integrator as a general contractor. Sourcing, project management and content management is all done inhouse.

To enable local ownership, branches can manage certain parts of the content themselves. While they are not supposed to create their own content, at least they can control which of the HQ content is played on the screens locally.

WE HAVE TO TALK - TYPICAL PITFALLS IN DS PROJECTS

The overall quality of Digital Signage installations has made great progress over the past few years. However, we all still see (too) many examples of failed or badly implemented projects when we walk through malls, high streets or offices. And we are not talking about the occasional error message or black screen that even excellent device management and service cannot avoid completely – it still is technology, and it fails from time to time.

What we are talking about are things like low brigh tness screens in shop windows, dated, static or wrong resolution content on large displays, expensive screens hidden behind merchandize, screens hanging on walls in odd positions and with cables sticking out everywhere and you could probably add tons of examples immediately.

While mistakes happen in any project, we as an industry should care about learning our lessons quickly from these failed projects. Otherwise we risk that clients consider Digital Signage as an expensive and unreliable adventure.

So, what are the most common pitfalls and challenges that we experience in Digital Signage projects? Broadly, you can group them in four areas: Concept, Integration, Content, and Operations.

Many projects go wrong already in the concept phase. You can easily spot these kinds of projects as the digital elements will seem like misfits in their environments – unused kiosks, displays without a purpose or clear message. Typically, these situations occur when C-Level management sees the new store plans for sign off a couple of months before opening and then goes "oh, and we need to add some

digital in there as well". The project team will walk out of the meeting and start to call any Systems Integrator they know in great panic. No time to think about customer journeys or purpose of digital touchpoints. No time to discuss expectations and success measures between the involved departments, not to speak of ROI measurements. Any questions about scalability are postponed to "phase 2". And of course, budgets and timelines are fixed. You can imagine what the result will look like.

If you now say: "no, we took our time and created a great concept in our digital department together with a competent Integrator", you might still fall into the integration trap. Digital Signage projects are not silo projects, in fact, they are highly complex cross-functional tasks. The digital elements are integral part of your customers' experience – and customers will not make a difference whether it is store design, merchandizing, digital signage, or your app or mobile presence. Everything needs to act and to feel seamless. Therefore, separate design / planning processes for store and digital, separate digital platforms for stores and online / mobile, or missing links to core company platforms like ERP systems will eventually lead to trouble. Some examples? Wrong brightness of screens, wrong orientation of screens (nobody will see them), architecture-driven non-standard screen / videowall formats, promotions for products that are not available in that store, etc.

Integration also plays a major role when it comes to content for your Digital Signage system. Digital Signage is a very specific communications channels – no, it is not online (resolution and private 1:1) content, not (static) print, and not TV (without sound) – and therefore it needs specifically designed content. On the other hand, that does not mean that you need a completely separate content production which would be prohibitively expensive. Nevertheless, your content creation team needs to be aware of the specific requirements of Digital Signage content, like resolution, orientation, formats. In addition, content creation / adaptation for Digital Signage needs resources. This is true for first time and continuous content updates. You will notice whether or not a company has planned these resources when a 4x6 video wall plays a four times repetition of their current promotion flyer, or in an extreme case, a 820 display video wall just shows three small windows of scaled TV content with large frames around them.

If you got everything right up to this point – congratulations! But there is one more thing to consider: operations. Digital Signage systems exist in a tough real-world environment, be it stores or offices. Your remote device management (if you have one) can tell you what your screens and players do, but what they cannot tell you is what happens around them. Good Digital Signage installations support operations, and therefore local staff. That means that digital touchpoints need to smoothly integrate into the selling process and maintenance of the systems must be as easy as possible. Therefore, it is essential to involve staff both in the design and the operations of the Digital Signage system. Without this kind of local ownership, you will end up with unused digital devices, blocked screens, or even worse with employees pulling the plug because they perceive the systems as annoying.

Although most of the points above may seems quite obvious, in practice, just missing one aspect will jeopardize the success of your project.

MOST COMMON PITFALLS AND CHALLENGES

CONCEPT

— *No consistent stories / customer journeys*
— *Missing „purpose" for digital elements*
— *No data management, analytics and controlling concept (ROI!)*
— *Digital concept not scalable (flagship vs. rest of stores)*

INTEGRATION

— *Digital planned after / separately from physical store concept*
— *Missing links between online and physical retail*
— *Missing links to backend systems*

CONTENT

— *Content production without store signage mindset*
— *Only 1st time content creation considered*

— *Content updates and / or operations not budgeted*

OPERATIONS

— *Digital not linked to processes*
— *No "operations model" for digital (and no, it's not only IT)*
— *Missing local staff ownership*

RECOMMENDATIONS

— *Take your time to create a solid concept*
— *Create a cross-functional team and ensure C-level sponsorship / support*
— *Get funding and operations support also for ongoing operations*
— *Tap into the knowledge and experience of Digital Signage consultants and integrators*

AI AND SENSORS
ENABLING NEW INTERFACE

Digitalization means advancement. That is why retail and digital signage have undergone continuous transformation in recent years. At the top of the list at the moment: Artificial Intelligence (AI).

Actually, AI is not as new as many people think. Researchers have been working on self-learning systems for a long time. What is new, however, is that Artificial Intelligence is now widespread. With Alexa, Cortana and Siri, the first systems are in widespread use. Google Duplex will accelerate the development: In May 2018 Duplex showed that an AI can now perform tasks such as booking hotels or making appointments in an excellent and very human-like manner. Natural conversations between man and machine are now possible.

In conjunction with advances in robotics, AI will also receive another boost. Boston Dynamics robots that can run and jump are to be launched on the market from 2019. At the same time, they can take on delicate tasks - such as safely placing an egg in a package - or detecting wanted persons. It is possible that these or similar robots could be used as harvesters or on construction sites. One thing is clear: robots, especially intelligent robots, will be meeting us more and more often in a few years' time.

Whether as a language assistant or as the intelligence of a comprehensive technological tool - one goal should be: Take the A(rtificial) out of AI. For the management consultancy Deloitte, the three Ds are the decisive factors when it comes to the future of the digital and digitised economy: data, digital and design.

In general, AI requires data as fuel to get smart and to grow. AI for Image recognition and for natural dialogues is mostly cloudbased. Application areas in retail and other industries are likely to be novel interfaces that will sooner or later massively augment the keyboard and touch, if not replace them altogether. Imagine a talking fitting room or a gym room equipped with this technology. When perspiration is involved, you will certainly like to communicate by means of a voice-controlled AI. Or in a fitting room with one that recommends additional clothes without having to use a touch screen. At least for the moment we think that AI which directly addresses people is more suitable for use in a more private environment. A talking shelf in the supermarket may seem unusual or even frightening.

Sensors can already be found much more frequently. In the future, they will be used as a data source for the AIs. These include optical sensors such as cameras, radio-based sensors such as RFID, beacons and NFCs or electromechanical and gyroscopic sensors. Thanks to the connection via new mobile radio standards, the use of sensors continues to be massively fired up. In general, they must be meaningfully networked (IoT).

For Digital Signage providers, this opens up a new field. Because not only API triggers want to be processed, but dozens or even hundreds of sensor signals. This will require a new quality of data management. Solutions to manage these kinds of tasks are currently the Grassfish Experience Hub or NEC's Leaf Engine, a middleware that has been developed and maintained for several years. The field of sensors also has enormous potential for integrators when it comes to new products and services. Think of combined loss prevention systems, with RFID and ESL (Source Tagging), which cover all colour and size variants, for example in the fashion sector. Sensors have long been used for services such as maintenance, for example in outdoor advertising, where Ströer uses beacons exclusively for service documentation and requests - in conjunction with an app for employees.

Already now, sensors provide information on product availability, health status, customers (analytics), supply chain processes and store operations. Large retail companies also rely on sensors for shelf replenishment.

In the future, sensors and AI will provide companies with even better information about what people do in shops and where goods are located.

PRO JECT

NATIVE 13K

NETFLIX GOES BIG

CONCEPT

Netflix has changed how many people consume media. TV is losing especially younger audience to YouTube and Netflix in particular. The California based media company invests billions of USD annually to produce exclusive content.

INSTALLATION

The company decided to install one of the most spectacular digital signage lobby experiences in their Hollywood office. A huge LED wall with a resolution of 12,544 x 1,792 pixels and complementing projectors and audio dominates the Netflix lobby in Southern California.

The LED screen spreads across three walls: a 1.9mm LED-Screen covers the lobby 24 meters wide and 3.65 meters high. The installation combines an 8K projection screen and 110 individually illuminated LED elements. A total of 23 million pixels are played out - or 46 million if the second layer is included. Motion graphics content is played out with a native resolution of 13K.

An easy-to-use interface makes it easy for reception staff to control the most frequently used functions. These include pausing scheduled playlists to welcome high-profile guests; editing content schedules; pausing playback; and adjusting volume and brightness.

In general, the audio content can be used independently or synchronously with the moving image content. The installation is controlled by a AEPIMS Pro from D3, which is able to process content up to 16K. The solution includes a video processor, a scaler, a switcher and a media server in one hardware unit.

LOCATION

Los Angeles is the heart of the film industry. The nearby Silicon Valley is also the center of many high-tech companies. No wonder that digital-out-of-home campaigns are particularly popular here and that many particularly sophisticated media installations can also be found in company headquarters.

YEAR BOOK

2018/2019

D O O H

MULTISCREEN & EDITORIAL CONTENT -

THE 7SCREEN APPROACH

Large German airports, shopping centres and numerous motorway service areas, Megaboards in cities and a fast-food chain: The touchpoints at which 7Screen is active, offer numerous possibilities for advertisers. This still young company differs in many ways from the top dogs of the DooH-industry.

In a sense, the Munich-based company is a newcomer: 7Screen entered the DooH market at the end of 2015. The company is part of ProSiebenSat.1 Media. In building up its marketing portfolio, the DooH specialist was able to draw on existing networks supplied by Cittadino - for example at Tank&Rast and at ten German airports with 791 screens.

By far the largest subnetwork is the "Highway" network with a total of 3,714 screens at 593 locations along German motorways. Large outdoor travel boards and displays in restaurants and shops together reach 97 million monthly contacts.

Similar to Ströer, 7Screen relies heavily on editorial, non-commercial content from its sister companies. In addition, the broadcasting group has built up a powerhouse in the area of marketing and merging online and mobile besides its traditional TV business. The DooH subsidiary links the other channels with Digital-out-of-Home. Right from the start, the focus was on multi-screen communication.

Large outdoor LED boards are also marketed in Germany. In this area, the company is present in 13 cities to date. So far, North Rhine-Westphalia has been a regional focus. Other sites are located in the geographical center and in the southwest. The lighthouse of the "Urban" subnetwork is Hamburg with the large media facade of the St. Pauli

clubhouse. In 2018, the year in which major events such as the World Cup will take place, these locations will offer an attractive environment for advertising companies.

Shopping centres are a classic DooH theme that 7Screen also covers. Including supermarkets in Germany, the company now markets 2,260 screens. Of these, 251 displays are located in 31 shopping centres and 2,009 screens in 385 supermarkets - a total of 42 million contacts each month. Not to forget the 1,111 screens in 492 German Burger King branches.

According to the company, altogether 307 million monthly contacts are reached in the DooH segment. The video views in the online segment are accordingly 302 million contacts per month. Via mobile 106 million views are reached in the same period. In classic TV, the market share in 2018 was 27%.

Since 7Screen has adopted its programmatic approach, the company has been able to leverage the multiscreen approach even more. In the course of a day, consumers are reached via mobile, DooH and online, and in the evening via classic television.

7Screen should remain on your watch list in the coming years. After all, the provider is backed by one of the most experienced media groups, which routinely deals with advertisers and agencies.

DOOH: BOOM AND CONSOLIDATION

2017/2018 clearly shows: DooH is still in motion. New concessions were awarded and new advertising faces were rolled out. There were several mergers and acquisitions. And advertising companies are relying more than ever on Digital out of Home.

DEVELOPMENT OF OUT OF HOME ADVERTISING

Out-of-home advertising as a category has performed outstandingly well. Business was so good that the final Nielsen report for the 2017 advertising year was revised upwards. Gross expenditure for out-of-home, including Digital-out-of-Home, reached 2.23 billion euros. This is an increase of 12.4 % compared to 2016. The out-of-home market share is now at 7 %. Ten years earlier, this figure was 3.7%. Ultimately, this is the result of a continuing shift in budgets in favor of the media, which advertisers consider relevant to reach consumers along their customer journeys. DooH or OoH in connection with mobile marketing play an important role for this development.

ADVERTISING RIGHTS BY COUNTRY

In **Germany**, new tenders of important DooH advertising rights were issued or rewarded in several large cities. For example, at the end of 2016, the state of Berlin invited tenders for advertising rights valid from 2019. Lot 1 of the RFP included the DooH rights. The decision was taken in January 2018 in favour of Wall-Decaux (JCDecaux). Further digitalization is expected, the concession runs for 15 years. Munich had so far held back DooH for its own property. Since April 2018, 25 of the 40 Soho screens at stops have been marketed. The concession is held by DSMDecaux - a cooperation between DSM Deutsche Städte-Medien (Ströer) and WallDecaux. By the end of 2018, there could also be changes in the Munich S-Bahn. A new tender process is expected, possibly including passenger TV rights. mcR&D in Berlin (Berliner Fenster, Münchner Fenster) - Germany's largest independent passenger TV provider to date - certainly has the potential and ambition to expand its network further. Meanwhile, Ströer is rapidly expanding its roadside portfolio in Germany (see below).

Switzerland has also recently been a place where lucrative DooH rights could be obtained. In the summer of 2017, the largest out-of-home tender to date was awarded: Rail operator SBB had invited bids for the advertising rights that expire at the end of 2018 and will apply from January 2019. APG|SGA, majority owned by JCDecaux, was awarded a new contract for all advertising faces in the stations and trains. Further digitization is planned. However, the competing Neo Advertising filed a lawsuit against the decision. This legal dispute had not been settled by the editorial deadline of this yearbook. In Lausanne, too, massive investments were made in new digital advertising media at the "Métro m2". In this case, APG is also the media owner with the concessions. New licences were also granted or existing ones extended for the Swiss Retail-DooH. Just one example is the Mall of Switzerland, the second largest Swiss shopping center, which was initially equipped with 19 DooH screens (APG). Furthermore, Clear Channel Switzerland was able to launch new digital services both in public spaces and in shopping centres, including the city of Lucerne and the Signy shopping centre. Apart from a few APG|SGA projects, there is really only one provider for Swiss passenger TV: Livesystems with its passengertv, which offers an enormous national reach. With gasstationtv the company has also developed a sister network at petrol stations. Since autumn 2017, the company has also built up its strong in-house department that produces its own editorial content, which still gives it a clear edge over the big out of home advertisers.

In **Austria** Gewista is well established. In addition to numerous screens in Vienna, the company and its subsidiary announced that it will equip other major cities in the country. Most recently, for example, Graz was developed. Further digital initiatives have been announced for 2018. Infoscreen Austria, which belongs to Gewista, is also an important player with passenger TV, screens in underground stations, buses and trams. For 2018, the provider, launched as First Mover in 1998, will focus on expanding live content in its programs to boost attractiveness for advertisers.

OFFER EXPANSION

Not only new advertising rights create growth, but also new technologies. Media sellers such as Goldbach have long had attractive packages of different, previously separate advertising formats in their portfolio. Media owners offer precisely localized playout of mobile ads - up to 10 meters away from a screen. With automated bookings and ad servers, more and more processes are being established that offer new opportunities for providers and customers. In addition, there are initiatives to test new approaches in the home market. Ströer is a good example of this. The group rolls out its roadside LED screens throughout Germany. So far, the main focus has been on medium-sized cities with high spending power. There were already 180 of the large screens at roadsides by early 2018. JCDecaux is left behind in this case. As far as Digital out of Home Advertising at large motorway rest stations is concerned, media seller 7Screen, which belongs to ProSiebenSat.1, is particularly successful. Around 170 travel boards on the exterior areas of petrol stations are bookable since 2018.

CONSOLIDATION

Smaller providers are growing in local or other niches - this can be observed in parts of the Ruhrgebiet, for example, where local companies such as Sign You Mediascreen advertise with LED screens in Essen and Oberhausen (Retail-DooH in outdoor areas of the Centro shopping centre and in houses in downtown locations). Some have to give up - like Movina in Berlin - or are acquired. Consolidation therefore continues. One of the examples was the acquisition of Neo Advertising Switzerland by Tamedia media group. The strengthened company is expected to be much more competitive with APG than before. Moreover, they now also have the means to bring about court decisions on major contracts, as not only the SBB case illustrates.

DOOH CONTENT

HOW TO DESIGN DOOH CONTENT

Dwell time matters - a waiting situation is not a passage situation. And the contents must reflect this difference. Also worth considering: Readability and font size are important when it comes to content.

More and more customer groups are relying on digital outdoor advertising: not only national or international brands are shifting budgets into the medium DooH; regional or local advertisers are doing the same. In addition, various screen types have established themselves in the meantime.

In addition to the established portrait screens at railway stations and in shopping malls, landscape (horizontally) aligned LED screens are becoming a common sight along roads. The new form factor and especially the new surrounding of the screens require a lot more attention than screens in semi-public spaces. For example, content played out on screens in the immediate vicinity of streets must be adapted to not distract traffic.

There are big differences between the perfect content for a waiting or a passage situation. While content on cross-platform screens at a subway station can show varied content including fast moving graphics, content for roadside screens or displays in passage situations need to be adapted to the surrounding.

Those who wait are open for storytelling. Engaging story content they need colour combinations with light-dark contrasts, rather bright and strong colours as well as striking details. Fonts should be used according to the principle "less is more" and "larger is better". On the other hand passing by a screen limits the opportunity to notice to a few seconds of a spot. Ideally the spot should be divided into separate attention windows.

For each of these sequences, all relevant key messages must be displayed simultaneously. A reduction to a few distinctive elements is essential here. For example, a 10-second spot can be divided into two sequences of five seconds each. Only one key visual or message should be displayed per sequence - between two and three key visuals are recommended per spot. In each sequence the creatives should be limited to one motion element.

Basically, readability is the be-all and end-all. For example, content on an iPad needs to be readable from a distance of 0.5 meters, this corresponds to a distance of 60 to 70 meters for a large LED screen on the road.

Text elements in a DooH spot for a passage situation should be limited to about 20 %. Call to Action and keywords work best. At 80%, the image is the most important visual of the content. Products should be presented as large as possible. Striking colors also play a key role to achieve high recall with consumers. The brand or product shot should be visible at least 90 % of the time.

Within this framework, designers can freely create spots and content. Another option is a playful use of the media. For example, to show a testimonial that "runs" against the edge of the screen.

Content on larger roadside LED screens show very limited motion. Ströer is in the process of deploying 1000 LED Screens in Germany. Therefore, they have invested time and resources to define content standards which are compliant with road safety regulations. Motion of content is limited to a central object, no extensive motion, rapid color changes or flashes are allowed. Ströer dubbed the effect "Cinemagram". For example, a bakery advertising animates only the steam above the coffee cup.

THE 1X1 FOR SPOTS IN PASSAGE SITUATIONS
— *Reduction of all contents*
— *Be brave with colour and contrast*
— *Split into sequences*
— *Focus on the image (80 %)*
— *Keywords (20 %)*
— *Sustained brand presence (90%)*
— *Use large motifs*
— *Roadside screens: Movement only for one element*

PICCADILLY

LIGHTS UP AGAIN – OCEAN OUTDOOR GROWS THROUGH ACQUISITION

An ultra-modern digital advertising space is back in operation again since autumn 2017: At a location everyone knows - from movies, sightseeing and photos.

At London's Piccadilly Circus, international brands showcase their advertising in a most impressive way. The new iconic LED screen covers 783 square meter made of 5,500 LED panels. The outdoor LED was supplied by US manufacturer Daktronics. The largest advertising face in Europe - marketed as "Piccadilly Lights" - measures 17.56 x 44.62 meters. The famous intersection in the British capital is thus once again a "shining example". for DooH, after a commercial break due to renovation.

As modern as the display is, it is located in a historical place and is part of the history of analogue and digital outdoor advertising: illuminated advertising was introduced here in 1908. It's been blinking ever since. The lights remained off only for special occasions. The deaths of celebrity people like Winston Churchill in 1965 or Princess Diana (1997) were such exceptions. In 1998 the advertising faces at Piccadilly Circus were transformed to digital. Since then advertising is replaced more often on special oaccasions like the "Lights Out London" campaign in June 2007.

The advertising rights are managed by the Ocean Outdoor, which also holds rights to the premium shopping centres Westfield London and Westfield Stratford. Additional large premium, mostly iconic LED advertising media in the UK complement the company's portfolio. In 2017 Ocean Outdoor accounted sales of £67 million and generated an EBITDA of £16 million. Ocean Outdoor was acquired by financial investor Ocelot Partners in the first quarter of 2018 for £200 million.

At the time of transaction, the outdoor advertiser announced that it also wanted to position itself more broadly through acquisitions. And Ocean kept their word. In early June Ocean Outdoor announced that it had acquired the Scottish media owner Forrest Media, which had built up a considerable portfolio of large LED road side screens, particularly in Glasgow and Edinburgh. Colported purchase price: £32 million.

GROWTH ON ALL CHANNELS - STRÖER'S STRATEGY

Growing on the one hand, maintaining focus on the other: Ströer focuses on acquisitions and on the German advertising market. Both are paying off.

At the end of 2017, Ströer took over UAM Media and Neo Advertising - two important steps that mark the growth course for DooH. At the same time, the decisions show how the Group has further adjusted its strategy, even if not everything changes radically: The focus continues to be on Germany, Europe's largest advertising market. Because except for JCDecaux, no major OoH player has yet succeeded in positioning itself internationally.

In general, it is not easy to grow organically in out of home advertising because contracts for advertising rights are long-term and often run for more than ten years. Already, Ströer holds the most advertising rights in this country. At 30,000 private locations, the media are marketed just as well as 600 municipal advertising rights. In addition, there are 123 regional transport operators and Deutsche Bahn - the latter with 6,000 stations - as well as ECE's shopping centers. Today Ströer markets 6,283 digital touchpoints in Germany and 80,000 faces. The national competitors have differing portfolios: Wall/Decaux focuses exclusively on municipal advertising rights and AWK specialises in private locations, with a similar number of private locations as Ströer. Up to now, the company only marketed its own networks and only had a limited portfolio of PoS - with screens

in shopping centres and at German railway stations, the company was already the top dog. In addition, roadside LED screens were added in numerous German cities. But also other providers had built up large DooH networks. So it made sense to accelerate growth through acquisitions. Ströer secured a majority stake in Neo Advertising from Hamburg. This means that the company is now also directly present with digital advertising media at the point of sale and it markets an additional 50,000 DooH displays in one go. Also new: While previously only own networks were marketed, since the acquisition of the UAM Media Group a further 80,000 public screens have been added at thousands of locations, which appeal to consumers in 18 living and leisure settings. This accounts for well over half of the national DooH turnover with less than 5 % of touchpoints.

Infoscreen is also being pushed again. For more than a decade Ströer had not further increased the number of DooH projections in the subway and suburban railway sector. All high frequency locations were initially covered with about 300 projections. Ströer currently has more than 500 projections - the target is 1,000, which is why already equipped stations will receive additional installations and new underground stations will be integrated into the Infoscreen network.

The peculiarities of the German market also show in the case of LED screens. Berlin, Hamburg or Munich are not London. In federal Germany, the attractive locations in the major cities have already been equipped with megalights (3 themes in rotation). There's plenty of inventory. In cities like London, on the other hand, premium space is being digitized to generate more turnover per location. This is why Ströer Roadside is growing through local or regional advertising, which for the first time can use professional digital roadside networks. In line with a bottom-up strategy, the network expansion of the LED portfolio began in smaller cities; major cities followed.

Local advertising customers can be optimally won through the Ströer sales department Regiohelden - but need help with the content concepts and graphic design of the campaigns. For this purpose, the company founded the in-house agency Ströer Media Creation, which develops and designs the campaigns with easy-to-understand packages. Prices range from 500 to 1,400 euros. Local campaigns are usually sold for twelve months and shown on different roadside screens throughout the city throughout the year. Ströer plans to set up 1,000 digital Roadsign LED screens in Germany - preferably in the middle of the road to advertise on both sides. The cost of digital faces is still around 30 times the cost of large poster faces. While print is estimated at 1,500 to 2,000 euros, the cost of Megalights is

around 25,000 euros - a connection to the power grid alone can cost up to 10,000 euros. LED screens are estimated at 60,000 euros. In addition to screens with 4 mm pixel pitch, the most important cost drivers are the provision of data and electricity.

Unlike LC displays, LED screens require visual control to detect technical problems. That is why they are checked daily. In other markets a webcam is often used. Ströer has a team of 2,000 external employees who install, maintain, clean and check the advertising faces. The panels are only operated with minimum brightness - at the beginning with 1 %. On the one hand, because LEDs lose brightness over time. On the other hand, it is a strategic reason - many municipalities are often surprised by the brightness of the LED screens after installation. The media owner also can generate economies of scale with the sites, as he also sells turnkey LED advertising faces to other DooH network operators or site operators, including service.

The example of the city of Cologne illustrates Ströer's current strategy. The group operates 300 of its own DooH touchpoints - displays in railway stations, information screens, roadside LED screens and uprights in shopping centres. The new acquisitions UAM and Neo bring another 1,400 digital touchpoints to the table; a total of 1,744 are now available in Cologne via Ströer. This enables campaigns along the Customer Journey in public spaces and at the PoS. Currently on the agenda: the further standardization of various CMSs. The Ayuda ERP and CMS used are fundamental for joint marketing, connection to platforms for programmatic booking and the playout of campaigns and content.

MORE DATA AND MORE DIGITAL –
JCDECAUX

Pure Advertising, no editorial content but much more digital outdoor. This is the global recipe for success of media owner JCDecaux worldwide. Also, in focus: data collection and data driven campaigns.

JC Decaux is the only Out-of-Home media owner with a real global footprint. The French group is active in more than 80 countries and generated around 3.5 billion euros in fiscal 2017. More than 45% of sales are generated with street furniture - a category JCDecaux invented and in which the Group is global market leader. The network consists of more than 1 million advertising faces in 4,000 cities worldwide.

The Group has a number of things in common with its competitors - and there is one thing that still sets it apart from the digital out-of-home scene. Like most OoH media owner, JC Decaux is increasingly focusing on Digital out of Home. Especially in Great Britain; but also, in markets such as the USA or Australia. JCDecaux has rolled out large national DooH networks, which continue to grow.

Unlike Ströer, JCDecaux offers an advertising only media platform and does not focus on digital storytelling. This means that JCDecaux does not interrupt advertising with editorial content. Ströer and other DooH Media include near real-time news content to be more relevant for the audience. JCDecaux and its subsidiaries around the world believe in pure advertisement, pure digital poster networks. This strategy is most likely not to change in the foreseeable future, neither in France nor at JCDecaux's DACH networks of Wall, Gewista and APG|SGA.

Nevertheless, JCDecaux is now speeding up its data initiative. The French OoH giant launched a dedicated data division in mid-2018. Following various local initiatives, in which data has been is at the center of the processes. Main driver is to provide more effective data-driven solutions for cities, airports, public transport, retailers and advertisers. Smart City initiatives revolve all around collecting data via sensors and providing valuable insights to municipalities, businesses and citizens. JCDecaux and all the other DooH media owner hope to improve quality and relevance of their media networks as well as offering valuable insights to advertising rights licensors. Data is the new street furniture.

Enriching out-of-home advertising with data in a meaningful way, needs effective tools. Typically the stronghold of Google, Facebook, Amazon & Co. But OoH need to catch up with own solutions to tap into new media budgets beyond OoH.

The Group has also realized national data-driven campaigns on the German market. Lufthansa created a data-driven campaign for the DigitalDeluxeNet of media owner WallDecaux. The airline collected numerous data points to create a location based campaign with real-time fares for the closest airport, actual distances and flight time to the advertised destinations.

In the summer of 2018 WallDecaux in Germany accounted for 346 digital advertising faces in total. This included 207 Digital City Light Poster (DCLP), 53 roadside Digital City Light boards (DCLB) and 74 screens of the Digital Underground (DUB) in Berlin. WallDecaux expanded its initially limited digital network beyond Berlin by adding Hamburg, Cologne, Leipzig, Düsseldorf and Dortmund to its digital portfolio. This year Munich joined with 25 screens - and growing to 40 screens - the growing network of WallDecaux digital cities. The Bavarian capital remains a special place, as WallDecaux and Ströer operate through a joint subsidiary. In addition, JCDecaux operates and sales digital media at the airports in Frankfurt and Düsseldorf.

WORLDWIDE DOOH REVENUES 2017

NET IN mEUR

GERMANY
224

AUSTRIA
59

SWITZERLAND
182

ITALY
41

FRANCE
194

NETHERLANDS
29

UK
527

POLAND
46

CZECH REPUBLIC
18

TURKEY
44

RUSSIA
89

TAIWAN
82

SOUTH KOREA
250

SINGAPORE
67

HONG KONG
257

JAPAN
2.418

INDIA
106

CHINA
2.205

AUSTRALIA
240

USA
3.402

CANADA
229

Source:
PwC Entertainment & Media Outlook 2017–2021
DACH revenues updated by DMI based on
Nielsen Media Research Feb 2018

addition, Neo Advertising was acquired by TAMEDIA. At the end of 2017 TAMEDIA also announced the intent to acquire Goldbach – the largest independent DooH sales house in the country. The acquisition is still pending governmental approval but is most likely to go ahead later this year. TAMEDIA will then control – own or through exclusive sales contracts – basically half of the Swiss DooH-market.

Both new subsidiaries have changed their market strategy just recently. Neo Advertising now operates 12,000 digital and static OoH advertising faces primarily in the French-speaking part of Switzerland. Goldbach Media shifted from a pure sales house strategy to a mixed business model. In the past Goldbach aggregated most Swiss DooH networks except for market leader APG. This changed with the successful tender for operating networks in three shopping centers in the Wastern part of the country. Even the networks are comparable small, the new

strategy of investing in and operating DooH networks is a complete change of strategy. The sales house lost its neutrality – one of the main reasons most media owners handed over their sales to Goldbach. The service provider has turned to be a competitor.

It remains to be seen how the market will react on the tectonic changes. But the smaller media owners won't have much choice, as the market is too small for international players to enter. The market remains competitive, as digital campaigns are increasingly planned across many media platforms (Online, Video, DooH). And Clear Channel remains as a small, but competent additional player in the Digital out of Home market.

APG|SGA VS TAMEDIA-GOLDBACH
TECTONIC SHIFTS OF THE DOOH-MARKET IN SWITZERLAND

Market leader APG|SGA experiences growing competition. TAMEDIA merges with Goldbach Media and acquired Neo Advertising. How the market will react remains to be seen.

Currently Switzerland is one of the most dynamic markets for DooH. The market experienced tectonic shifts with the market entry of TAMEDIA, one of the largest publishing houses of Switzerland. APG SGA continues to be the market leader. For APG, which is majority owned by JCDecaux, an old industry law applies: "Whoever owns the advertising rights at the train stations dominates the market." APG|SGA could defend the latest SBB tender this year enabling the media owner exclusive rights to all train stations nationwide. They could secure seven out of eight lots.

Nevertheless, APG recorded with 300m SFR 4.7% less

turnover in 2017. Main reason for the drop in sales were discontinued OoH contracts which had been awarded to competing OoH media owner e.g. Neo Advertising. Nevertheless, APG expanded its digital portfolio in 2017 and in the first half of 2018. One of the more prominent new networks is the "Mall of Switzerland" - the second largest mall in the country.

But competition has increase for APG. Not only in the western part of Switzerland with Neo Advertising. The Geneva-based DooH company transformed from a pure DooH-player to a digital and static OoH media owner. In

DIGITAL-OUT-OF-HOME
NETWORK OVERVIEW 2018
GERMANY

MEDIA	MEDIA OWNER	MEDIA SALES	LOCATIONS	SCREENS
Transportation - Station				
Ströer Station Video	Ströer	Ströer	175	1.301
Ströer Infoscreen	Ströer	Ströer	98	502
DUB - Digital Underground Berlin	Wall	WallDecaux	25	74
X-City Hannover Station	X-City / Ströer	X-City Marketing	5	31
Digital Poster Gallery U-Bahnhof Friedrichstraße Berlin	Wall	WallDecaux	1	12
Super Motion	Ströer	Ströer	2	6
Transportation - Airports				
Bremen (BRE)	Flughafen Bremen	Flughafen Bremen	1	14
Berlin-Schönefeld (SXF)	Cittadino	7Screen Media	1	50
Berlin Tegel (TXL)	Cittadino	7Screen Media	1	110
Düsseldorf - 7Screen (DUS)	Cittadino	7Screen Media	1	128
Düsseldorf - FDG (DUS)	Flughafen Düsseldorf	DUS Airport	1	361
Düsseldorf - Ströer	Ströer	Ströer	1	40
Hamburg (HAM)	Flughafen Hamburg	7Screen Media	1	68
Hamburg - 7Screen (HAM)	Cittadino	7Screen Media	1	24
Hannover (HAJ)	Flughafen Hannover / Cittadino	7Screen Media	1	86
München - 7Screen (MUC)	Cittadino	7Screen Media	1	130
München . FMG (MUC)	Flughafen München	Flughafen München	1	123
Nürnberg (NUE)	Cittadino	7Screen Media	1	30
Stuttgart (STR)	Flughafen Stuttgart	Flughafen Stuttgart,7Screen	1	342
Köln/Bonn (CGN)	Flughafen Köln-Bonn	7Screen Media	1	26
Dresden (DRS)	Flughafen Dresden	7Screen Media	1	1
Frankfurt (FRA) - diverse Digitale Touchpoints	Media Frankfurt	Media Frankfurt	1	342
Leipzig (LEJ)	Flughafen Leipzig	Flughafen Leipzig	1	9
Highway				
7Highway - Classic POS (Cashpoint, Counter, Rack)	Tank & Rast	7Screen Media	539	3.279
7Highway - Digitale Travelboards	Tank & Rast	7Screen Media	191	191
7Highway - Digitale CLP	Tank & Rast	7Screen Media	233	271
Digitale Spiegel Sanifair	Tank & Rast	Cittadino	350	1.000
Education & Offices				
Digitales Schwarzes Brett	Diverse	DSB / Heineking Media	4.000	8.800
Unicum TV	Diverse	Unicum TV / DHW	58	335
Campus-TV	Diverse	Ströer UAM	142	253
Executive Channel Network (ECN)	ECN	ECN	48	70

MEDIA	MEDIA OWNER	MEDIA SALES	LOCATIONS	SCREENS
Roadside				
DigitalDeluxeNet Berlin	Wall	WallDecaux	207	207
Roadside Screen	Ströer	Ströer	187	187
Digitale CLB	Wall	WallDecaux	50	50
Diverse LED-Videoboards (Einzelflächen)	Diverse	Diverse	212	317
Passenger TV				
Berliner Fenster	Berliner Fenster	MCR&D	1.106	3.768
Münchner Fenster	Berliner Fenster	MCR&D	574	3.000
Fahrgast TV Hamburg	Diverse	BusSpot	685	1.343
X-City Hannover Flotte	Diverse	X.City Marketing	195	1.066
Fahrgast TV Leipzig	Diverse	MCR&D	246	880
Fahrgast TV Dresden	Diverse	MCR&D	83	418
Fahrgast TV Düsseldorf	Diverse	BusSpot	74	272
Fahrgast TV Diverse Mittelstädte / Regionen	Diverse	Diverse	1.152	2.721
POS				
Media Markt-TV	TV	Ströer UAM	268	32.160
Saturn-TV	TV	Ströer UAM	162	19.440
Medimax-TV	Diverse	Ströer UAM	116	8.120
DooH.de (diverse Heineking Media)	Diverse	DooH.de	4.211	4.843
Viewento (EDEKA TV)	EDEKA Händler	Viewento	680	3.191
7Shop - Supermarket (REWE TV)	Cittadino	7Screen Media	385	2.009
Lotto	Cittadino	7Screen Media	1.416	1.416
Neo Advertising (EDEKA TV)	EDEKA Händler	Ströer Neo Advertising	345	1.366
real,- ShopKontakt	Echion	Echion	266	1.076
Instore-TV Sports Channel	Diverse / Intersport	Goldbach Germany	447	954
Getränke Channel	Trinkgut (EDEKA)	Goldbach Germany	120	120
Budni-TV	Budnikowsky	Goldbach Germany	67	67
Shopping Center				
Ströer Mall Video	Ströer	Ströer	112	2.524
Goldbach Mall Channel	Diverse	Goldbach Germany	33	372
7Shop - Shopping Mall	Diverse	7Screen Media	27	227
Ströer Digital Dream	Unibal Rodamco	Ströer	1	5

DIGITAL-OUT-OF-HOME
NETWORK OVERVIEW 2018
GERMANY

MEDIA	MEDIA OWNER	MEDIA SALES	LOCATIONS	SCREENS
Entertainment & Leisure				
Hairstyling-TV		Ströer UAM	148	577
Active-TV		Ströer UAM	161	499
CinemaxX TV		Cinemaxx	30	400
Sun-TV		Diverse	204	268
Cash-TV		Diverse	217	217
Cinema-TV		Ströer UAM	23	158
Cinestar		Cinestar	13	46
Stage-TV		Diverse	9	21
Hospitality				
McDonald's-TV		Ströer UAM	792	1.269
King Channel by Burger King		Ströer UAM	498	1.139
Gastro Channel	Einzel Restaurants	Diverse	199	460
Sausalito's-TV		Ströer UAM	17	67
Healthcare				
TV-Wartezimmer		TV Wartezimmer	1.700	5.400
TeleApotheke	Meditec	Meditec	1.000	1.000
Apovid	Apovid	SK2 Media / Ströer UAM	500	800
Vetiprax-TV		Vetiprax	429	429
Total				124.652

(without Hotel-TV, Taxi-TV)

TOP 40
DIGITAL-OUT-OF-HOME NETWORK OVERVIEW 2018
GERMANY

	MEDIA	SCREENS		MEDIA	LOCATIONS
1	Media Markt-TV	32.160	1	DooH.de (diverse Heineking Media)	4.211
2	Saturn-TV	19.440	2	Digitales Schwarzes Brett	4.000
3	Digitales Schwarzes Brett	8.800	3	TV-Wartezimmer	1.700
4	Medimax-TV	8.120	4	Lotto	1.416
5	TV-Wartezimmer	5.400	5	Fahrgast TV Diverse Mittelstädte / Regionen	1.152
6	DooH.de (diverse Heineking Media)	4.843	6	Berliner Fenster	1.106
7	Berliner Fenster	3.768	7	TeleApotheke	1.000
8	7Highway - Classic POS (Cashpoint, Counter, Rack)	3.279	8	McDonald's-TV	792
9	Viewento (EDEKA TV)	3.191	9	Fahrgast TV Hamburg	685
10	Münchner Fenster	3.000	10	Viewento (EDEKA TV)	680
11	Fahrgast TV Diverse Mittelstädte / Regionen	2.721	11	Münchner Fenster	574
12	Ströer Mall Video	2.524	12	7Highway - Classic POS (Cashpoint, Counter, Rack)	539
13	7Shop - Supermarket (REWE TV)	2.009	13	Apovid	500
14	Lotto	1.416	14	King Channel by Burger King	498
15	Neo Advertising (EDEKA TV)	1.366	15	Instore-TV Sports Channel	447
16	Fahrgast TV Hamburg	1.343	16	Vetiprax-TV	429
17	Ströer Station Video	1.301	17	7Shop - Supermarket (REWE TV)	385
18	McDonald's-TV	1.269	18	Digitale Spiegel Sanifair	350
19	King Channel by Burger King	1.139	19	Neo Advertising (EDEKA TV)	345
20	real,- ShopKontakt	1.076	20	Media Markt-TV	268
21	X-City Hannover Flotte	1.066	21	Cash-TV	217
22	Digitale Spiegel Sanifair	1.000	22	Diverse LED-Videoboards (Einzelflächen)	212
23	TeleApotheke	1.000	23	DigitalDeluxeNet Berlin	207
24	Instore-TV Sports Channel	954	24	Sun-TV	204
25	Fahrgast TV Leipzig	880	25	Gastro Channel	199
26	Apovid	800	26	X-City Hannover Flotte	195
27	Hairstyling-TV	577	27	7Highway - Digitale Travelboards	191
28	Ströer Infoscreen	502	28	Roadside Screen	187
29	Active-TV	499	29	Ströer Station Video	175
30	Gastro Channel	460	30	Saturn-TV	162
31	Vetiprax-TV	429	31	Active-TV	161
32	Fahrgast TV Dresden	418	32	Hairstyling-TV	148
33	CinemaxX TV	400	33	Campus-TV	142
34	Goldbach Mall Channel	372	34	Getränke Channel	120
35	Düsseldorf - FDG (DUS)	361	35	Medimax-TV	116
36	Stuttgart (STR)	342	36	Ströer Mall Video	112
37	Frankfurt (FRA) - diverse Digitale Touchpoints	342	37	Ströer Infoscreen	98
38	Unicum TV	335	38	APG|SGA Rail eBoard	20
39	Diverse LED-Videoboards (Einzelflächen)	317	39	APG|SGA Rail ePanel	17
40	Fahrgast TV Düsseldorf	272	40	Clear Channel Digital Shopping Media	13

ABOUT US:
INVIDIS CONSULTING

Consulting, Custom-Research, Digital Architects – the Munich based expert team advises clients, publishes and organizes conference (for the past four years in cooperation Integrated Systems Events)

INVIDIS CONSULTING

— *is a boutique digital consultancy with expertise in digital signage, digital retail, digital-out-of-home, and smart cities based in Munich/Germany*

— *specializes in scalable and sustainable digital concepts and strategies*

— *advises clients across the world*

— *thinks strictly customer-centric, but with store operations and backend processes in mind*

— *makes "gut feelings" quantifiable and actionable with Retail Analytics*

— *supports management to better understand "retail experiences" and competitive dynamics*

— *helps clients to design deliverable strategies while keeping scope and budgets in focus*

— *has developed into one of EMEAs leading, supplier independent digital signage consultancies in the past 12 years*

— *is industry though-leader presenting more than 50 times annually at conferences around the globe*

WHAT WE DO FOR (EXAMPLES)

CEOs, Head of Strategy:
- Development of novel, digital business models and implementation strategies
- Technology and competitive market assessments

COOs, Head of Retail / Store Operations:
- Operations concepts for digital touchpoint platforms
- Customer flow and digital touchpoint optimization
- Digital staff support

CFOs, Analysts, sales managers:
- Actionable insights from Retail Analytics
- Comprehensive KPI systems (physical and digital)

CMOs, Head of Merchandizing, Head of Omni-Channel:
- Cross-platform experience and content strategies
- Customer journey design

CTOs, Head of Digital:
- Support of tender / RFP processes and supplier assessments
- Link of front-end and back-end solutions

Retail architects, Designers, Store Planners:
- Customer journey and mindset analyses
- Digital touchpoint concepts

Investors, M&A departments, Banks:
- Assessment and development of business models and strategies
- Strategic Due Diligence (Buy- and Sell-side)

Digital Signage Integrators:
- Market and competitive analyses
- Business model and strategy development
- M&A

INVIDIS PHILOSOPHY

Digital is not icing on the cake – Digital needs to be fully integrated to deliver RoI

Digital touch points should
- add value to the customer experience
- integrate & connect with retailer's backend systems i.e. ERP, CRM
- show current promotions which are relevant to the target group at that time & place
- enable staff to focus on customers and free them of standard information requests
- offer seamless user & brand experience across all platforms (offline, online, mobile, print etc)
- promote styles and complementing garments / accessories (in Fashion)
- open opportunities to purchase items (colour, size) which are not available in the particular store

What's most important
- less is often more. Digital touch points need to enhance the customer experience

INDUSTRY LEADING WORLDWIDE EVENT SERIES DIGITAL SIGNAGE SUMMIT (DSS)

DSS was started 13 years ago as a small side-kick event of an IT-Show in Munich. Targeted to invidis industry friends and family the conference and exhibition was small compared to today's DSS events. But in 2006 the digital signage industry itself was still tiny.

Samsung wasn't even offering display solution at that time. Sony, Pioneer and other AV companies were dominating the market. Of the early players only NEC and Philips are still active in the digital signage space.

Fast forward to today: DSS has grown to Europe's most important Digital Signage Conference with more than 700 delegates at DSS Europe in 2017. Today DSS has expanded far beyond Munich – additional DSS events take place in Amsterdam (ISE), Moscow (ISR), Dubai, Las Vegas/Orlando (Infocomm), Sao Paulo (Infocomm Brazil) and Mexico City (Infocomm Mexico).

Three years ago, invidis joined forces with Integrated Systems Events – the organizer of ISE. Since then all DSS events are organized as a Joint Venture. Combining the best of both worlds.

Following events are scheduled in the coming months:

- DSS Europe (Frankfurt/Main) 4-5 July 2018
- DSS Mexico (Mexico City) 15-16 August 2018
- DSS Russia (Moscow) 24 October 2018
- DSS ISE (Amsterdam) 6 February 2019
- DSS Brasil (São Paulo) 2-3 April 2019

Additional events and workshops are planned in North- and South America as well as in the Middle East.

For current information please visit digitalsignagesummit.org

DIGITAL SIGNAGE &

invidis.de - company profiles / job listings

Leaderboard (728 x 90 px)
Skyscraper (160 x 600 px)
Top Ad (336 x 280 px)

invidis.de is the leading German online platform for Digital Signage and Digital-out-of-Home (DooH). The B2B website informs daily (Monday – Friday) about all relevant industry developments. The fully independent editorial team reports neutral and according to highest journalistic standard.

FACTS & FIGURES (ANNUALLY)

Editorial Articles:	1.600 – 1.800
Unique Visitors:	200k – 250k
Page Impressions:	750k-1m

ADVERTISING OPTIONS

PRODUCT	BANNER	PI	RATE/* WEEK	RATE/* 4 WEEKS
Leader-board	728 x 90 px	30 %	195,- €	690,- €
	728 x 90 px	60 %	385,- €	1.390,- €
	728 x 90 px	90 %	545,- €	1.990,- €
Skyscraper	160 x 600 px	30 %	250,- €	890,- €
	160 x 600 px	60 %	440,- €	1.590,- €
	160 x 600 px	90 %	680,- €	2.490,- €
Top Ad	336 x 280 px	90 %	820,- €	2.990,- €

* All rates net/net (VAT applicable)

The invidis newsletter informs daily (Monday – Friday) about all current topics of the Digital Signage and Digital-out-of-Home. The readership includes integrators, hardware/software, Manufacturers, end customers, distributors, resellers, marketing experts, as well as creative and communication agencies
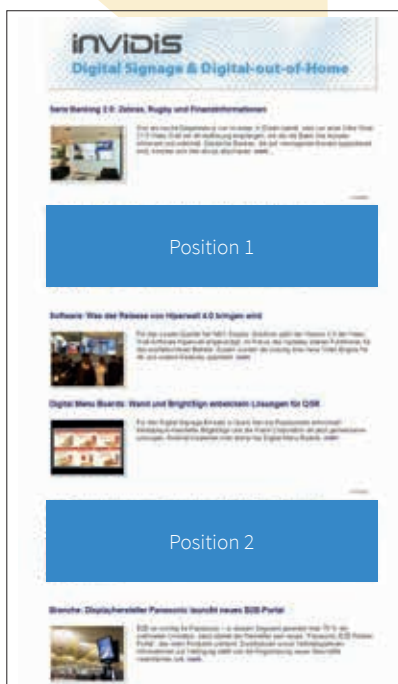
FACTS & FIGURES INVIDIS NEWSLETTER

> 1.900 Subscribers (2018)
30,3 % Opening rate
29,8 % Click rate

Position 1
Position 2

BANNER

PRODUCT	RATE/* WEEK	RATE/* 4 WEEKS
Position 1	590,- €	1.990,- €
Position 2	490,- €	1.690,- €

* All rates net/net (VAT applicable)

DIGITAL-OUT-OF-HOME

invidis.de - Online and Newsletter Advertising

Company Profile

Company Profile Logo Widget

EXAMPLE

invidis Digital Signage & Digital-out-of-Home company profiles are listed in our Supplier Directory. End-Customer, decision-makers and planners will find the right partners for their Digital Signage and Digital-out-of-Home (DooH) needs.

Job listings at invidis Digital Signage & Digital-out-of-Home job market reaches targeted readers with interest in the Digital Signage and Digital-out-of-Home market. Job listings are also featured as post in the newsfeed.

BANNER

PRODUCT	FREE OF CHARGE	PREMIUM (ANNUALLY) 590 €*
Company	✔	✔
Logo		✔
Adress		✔
Contacts		✔
Links		✔
Company and Prod. Description		✔
Automatic link in newsfeed		✔
Choice of max 3 categories		✔
Logo Widget		✔
Initial Posting in Newsfeed		✔
Initial Posting in Newsletter		✔

* All rates net/net (VAT applicable)

BANNER

PRODUCT	LISTING 100 €*
Job Listing	✔
Link to Job Listing	✔
Company logo	✔
90 days online	✔
Free extension beyond 90 days	✔
Link to company website / PDF	✔
Article on website / Newsletter / in Social Media	✔

* All rates net/net (VAT applicable)

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COMPANY	PAGE
Content	
Visual Art	113
Displays	
DynaScan	105
iiyama	107
infinitus	108
Leyard	109
Philips Professional Display Solutions	111
Distributors	
Concept international	104
Integrators	
Westiform	114
Media player	
Concept international	104
Philips Professional Display Solutions	111
Spinetix	112
Services	
Frontface (mirabyte)	106
Westiform	114
Software	
Frontface (mirabyte)	106
Spinetix	112
Visual Art	113
Accessories	
Lindy	110

INDUSTRY OVERVIEW

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

Concept International

CONCEPT
INTERNATIONAL GMBH

Concept International is an established Value Added Distributor, and according to Invidis, the no. 1 provider of digital signage player. The Munich-based company equips more than 200 projects per year with 20,000+ digital signage players by the manufacturer Giada.

With Giada's versatile product range, the distributor offers high-capacity PCs for entry-level to high end deployment requirements. The latest addition is the 4k-Android Player **DN72**. The ultimate recommendation for high-quantity digital signage projects is the **F210** micro pc with top price and low operating costs. Best value for money offers the energy-saving **F105D** booksize pc with three video outputs. All of these units operate fanless, allow convenient mounting behind flat screens and guarantee reliable continuous operation thanks to Giada's patented JeHe Active Hardware Control (JAHC) technology.

In addition to many years of experience, the Munich-based company is distinguished by individual PC configurations and reliable support beyond the usual product cycles. Concept's special offer to Digital Signage providers is the "Total Preparation Package": the mini pcs are delivered with project-specific, burn-in tested and activated software configuration, which supports easy roll-out and deployment in a breeze – even in high quantities. System Integrators and Solution Vendors benefit from special pricing.

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DynaScan

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 – 19 models ranging from 32"–100", in brightness levels from 700 -7,000 nits – and are available in stand-alone and video wall configurations. This year, **DynaScan** unveiled its new 100" 'DI' Premium Indoor LCD Series with ultra-quiet cooling (less than 35db), and a wide color gamut of 98%, ideal for the fashion retailers. In addition, **DynaScan** has launched its full outdoor series (DO) starting with the 55" , IP65, 3500 nits and maintenance free design.

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

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FrontFace

The Versatile Digital Signage Standard Software Solution

"FrontFace for Public Displays" and "FrontFace for Touch Kiosks" by **mirabyte** are powerful standard software solutions that can be used for all kinds of digital signage applications and interactive kiosk systems. Even though the FrontFace software products come with a rich set of features and functionality, they are still extremely easy and intuitive to use. This allows even less experienced users to easily create, manage and update digital signage applications such as information displays, welcome boards or advertising screens, as well as interactive touch screen terminals.

Thanks to the unique Print2Screen technology of FrontFace, it is possible to directly import content in brilliant HD quality with a single click into playlists and touch screen menus, from any Windows application that supports printing (e.g. Word, Excel, PowerPoint, etc.).

Additionally, the functionality of FrontFace can easily be extended by plugins: Besides the many standard plugins that are available (e.g. for integrating Exchange Server, Lotus Notes, Live TV or BI dashboards), it is also possible to develop custom plugins using the free plugin SDK to provide unique or highly individualized use cases and applications!

MIRABYTE GMBH & CO. KG

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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.

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INFINITUS

∞ INFINITUS

Expert manufacturer of LCD and e-paper outdoor digital signs

Specialist in outdoor digital signs

We are expert manufacturer of outdoor LCD and e-paper for public use. Wide range of our signs are sold under the brand imotion®. Established in 2004 in Slovenia, EU, we are the choice of system integrators in search of:
– High quality performance and reliability
– Minimal after purchase on-site servicing and
– Pre and after-purchase technical support

Custom digital sign development

One of our main strengths is building custom outdoor and indoor signs. We can create both, simpler brand-fit signs or more complex integrated devices for public communication, such as modern smart city public info points and added value DOOH signage.

INFINITUS D.O.O.

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LEYARD

LEYARD

Why Leyard for Digital Signage Solutions?

Electronic displays in high-traffic areas are changing the face of our public spaces and the possibilities for digital signage are everywhere. Whether used for informational messaging, advertising, entertainment or architectural ambiance, these digital signage displays can transform the experiences of shopping, working and socializing. **Leyard** is on the forefront of these trends with award-winning display offerings that are designed for the rigors of public venue installations, while delivering beautiful imagery befitting the world's leading brands.

Leyard offers a wide range of digital signage products that share a strong set of core characteristics:
• Reliable for Public Installations
• Configuration for Ultimate Control
• Designed for Designers
• Exceptional Value for the Integrator and Client

Leyard is a global leader in the design, production, distribution and service of digital displays, video walls and visualization products worldwide. The **Leyard** Group of companies and brands, which includes **Planar Systems** and **eyevis**, is composed of displays, entertainment and lighting system solutions. **Leyard** is the number one market share leader in the LED display market and fine pitch LED and offers indoor, outdoor, fixed and creative displays (Futuresource 2017).

LEYARD

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Lindy

A wave of digitisation is sweeping our world and increasingly shaping and altering how we act and live, our homes and workplaces, businesses, public facilities and spaces – even entire cities. Digital technologies are now everywhere. Everything is communicating with everything else: people with devices, devices with other devices, buildings with people, and buildings with other buildings. It's up to us to shape our digital future so it will yield the greatest benefits.

At **Lindy** we're convinced that, if we have the right ideas and persevere, we can protect the environment while enjoying safer, more rewarding lives. The basis for doing so, and the intelligence behind it, can be summed up in one word: connectivity. This is the prerequisite for all communication. And we are working to forge connections and make the whole universe of content available anywhere and in any setting.

For more than eight decades, connectivity has been the core of and driving force behind our activities. We provide state-of-the-art technologies and products that bring people and media together. And we accomplish this by connecting, sharing and converting analogue and digital signals while constantly extending the limits of transmission. Through it all, we think holistically and make sure that all components smoothly integrate. We develop intelligent, combined connectivity solutions to progressively merge our IT and AV worlds. And that really energises us at **Lindy**.

LINDY GROUP

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Philips – Professional Display Solutions

Philips has a long history of exceptional technical innovation. The brand is consistently recognised as a global leader in the areas of lighting, display technology, picture processing, Smart connectivity and intelligent remote-control operation.

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.

CMND is an end-to-end solution for connected professional displays. It covers system deployment, system operation, content creation and system maintenance all via one drag and drop interface. The bottom line: more engagement, more uptime, less frustration and lower total cost of ownership.

Philips – Professional Display Solutions will also continue with the 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.

**PHILIPS – PROFESSIONAL
DISPLAY SOLUTIONS**

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We are shaping the future.
One story at a time.

SpinetiX

SPINETIX™
N°1 IN DIGITAL SIGNAGE SOLUTIONS

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 to 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.

Solution-oriented as a philosophy.
Our Complete Digital Signage Solution consists of six elements, each skillfully designed to bring out the very best in your story:

- High value content
- Secure widgets
- Versatile software
- Powerful hardware
- Cloud services
- Worldwide training

From imagination to realization, we help you craft impactful viewing experiences that will inspire your audience, time after time.

SPINETIX

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Visual Art

VISUALART

About Visual Art

Digital communication is more important than ever – and tomorrow, it will be even more so. Therefore, our business goal is to shape its future. As a full-service digital provider, blending cutting-edge technical expertise with innovative creative talents, we provide a comprehensive service for digital communication at all levels.

We create content and communication for all types of screen-based media, although our core business lies within digital signage and Digital Out of Home (DOOH). With our cloudbased software, we run more than 25.000 digital screens 24/7 across the globe, and we are active in 15 countries. Our HQ is located in Stockholm, Sweden, but you also find us in Hamburg, Munich, Gothenburg, Malmo, Norway, Denmark, Finland and the US. Welcome.
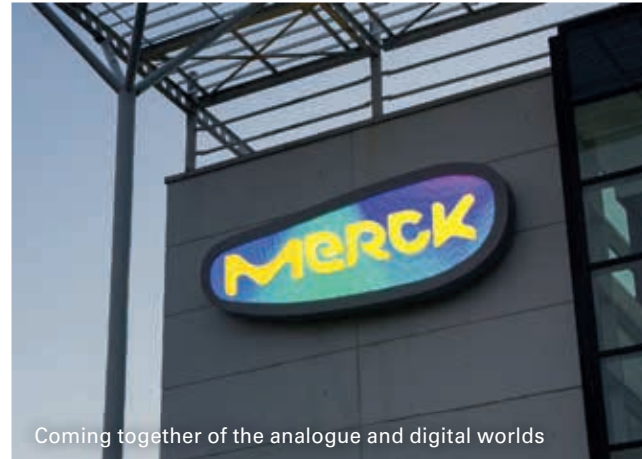
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Virtual reception in entrance area via livestream

Coming together of the analogue and digital worlds

Dynamic media wall at the POS

Visual messaging using LED screens

Interactive element: curved LED wall

Westiform

westiform
visual communication

Westiform – making your brand shine

From traditional analogue signage products, directional systems, advertising elements for Point of Sales applications and technical plastics, through to innovative digital signage solutions, **Westiform**, as a general contractor, offers everything from a single source. Our own production facilities in Switzerland, the Czech Republic and China 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 –** Design, support and testing of ideas for a project through to working concepts
· **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
· **Financing –** Individual finance and leasing concepts

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the crowd

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innovation ✦ you

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