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# The German Internet Industry 2016-2019

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**Arthur D Little**



**20**  
YEARS  
eco

WE ARE SHAPING THE INTERNET.  
YESTERDAY . TODAY . BEYOND TOMORROW.

**eco**  
■ ■ ■

Association of the Internet Industry



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## Preface



### **eco – Association of the Internet Industry e.V. marked its 20th anniversary in 2015, and we have reason to celebrate.**

Though not about our actual anniversary – because age in itself is clearly not a merit. We can be pleased by – perhaps even proud of – the fact that the German Internet industry is doing so well. This study shows that between 2012 and 2015 the focus area “Network, Infrastructure and Operations” grew annually by 10 percent on average – and that is, according to the results of the study, a “relatively low rate of growth”. In the same period, the layer “Services & Applications” grew by 25 percent to reach a growth rate of 40 percent; “Paid Content” flourished, experiencing a 23 percent hike; while the area of least growth, “Aggregation and Transactions”, increased by a “mere” four percent per annum.

All in all, these figures correspond to the forecasts made in the previous study in 2013. The sector even fared slightly better than expected – at a time when Germany had difficulties increasing GDP by more than one percent.

Now we have put the Internet industry through its paces with Arthur D. Little for the third time, involving an impressive number of experts and visionaries from all segments – and I wish to thank them all for their contributions. We’re pleased with the findings: the German Internet industry will continue onwards and upwards in the coming years. If this keeps up, the Internet will even overtake our very own traditionally strong German sectors, such as the chemical industry.

However, we should not make the mistake of patting ourselves on the back and becoming complacent. In the Internet age, nothing would be more negligent than to rest on the laurels of previous success – and we’ve got numerous hurdles to clear before we will

find ourselves in a truly digitalized economy in which we can bring the dream of a social Industry 4.0 to life.

Regardless of how impressive the successes of the German Internet industry may be, we should never forget that the Internet is perhaps the first truly “globalized” phenomenon we’ve experienced. Data is mobile. Anyone who does not offer the best possible working conditions for these wealth-generating data streams may find that their own growth forecasts collapse.

In order to illustrate the possibilities and dependencies of the Internet, we again used our tried and tested layer model in this study. This model demonstrates unquestionably that competitive infrastructure is a fundamental requirement for economic success of any kind. This affects not only the Internet industry, but also every single company that wants to succeed in digital and global competition.

The Internet industry is one of the most innovative sectors in Germany. And I repeat: we can be proud that we’re doing so well. Yet, with every year that the economy becomes more and more dependent on the Internet industry, the burden of responsibility for our infrastructure also grows. This responsibility should not lie only with our sector. It should be shared by all those who are dependent on the digital infrastructure.

Let’s work together to ensure that our vision comes to life.

Best wishes,  
**Harald A. Summa**  
 CEO  
 eco – Association of the Internet Industry

## Foreword



### **Digitalization involves a transformation process that will shape our daily life and our society, and forever change the DNA of our economy.**

Increasing numbers of people shop online or do their banking there. Internet platforms are competing with taxi drivers and hotels, dental crowns are being manufactured using 3D-printing technology rather than by dental technicians, and we are connecting our own four walls through smart home products.

In the data economy, the Internet plays a central role. Wherever increasing amounts of data are being processed and analyzed for new business models or established processes, the information and communication technologies and the open and free Internet are central factors in innovation. The Internet has become a fundamental factor along the value chain: in production, in retail, and in the service sector; almost nothing works without a high-performance network.

To make the most of all this potential, Germany will make improvements in the area of digital infrastructure. In international comparison, we are a good distance behind the leaders in terms of average broadband speed. As a first step in catching up, we will ensure national coverage of 50 Mbit/s by the end of 2018, and create the prerequisites for even better broadband availability and usage. Fifth-generation mobile networks also play an important role in this. Additionally, a perceptible acceleration of fiber-optic expansion is needed not only at the level of aggregation networks, but also in the last mile to households and companies. We are also strengthening public access to the Internet through a secure and reliable framework for wi-fi operators.

The Internet-driven data economy and, in particular, Industry 4.0 (cyber physical systems) – the Internet

of Things, with billions of connected objects, smart data, cloud computing, working practices in the digital world, automated driving, IT security, and e-health – offer Germany great chances for growth as an industry location. This can also be seen in this study. According to the study, the Internet industry will grow by a further 12 percent per year until 2019. Just the surge in online retail from the current 15 percent market share demonstrates that the Internet will increasingly challenge and permanently change a wide range of economic sectors.

Politics has the task of gently shaping this transformation with all participating players. The German Federal Government is undertaking this within the context of the Digital Agenda. For the Federal Ministry of Economics, the three supporting pillars of sustainable digitalization are digital transformation, digital innovation, and digital sovereignty. The objective is to ensure competitiveness and good, qualified employment in Germany. To do so we need a technical and regulatory framework that enables innovation and avoids upheavals – with secure IT systems, a sophisticated data protection system, and balanced intellectual property law.

The successful shaping of the digital economy and society can only be accomplished if all those involved – from industry, society, academia and politics – work together to make the most of the opportunities of digitalization and overcome the forthcoming challenges. An important partner in this is eco – Association of the Internet Industry, which I wish at this point to thank for their important work.

I wish you much interesting insight from the new “Study of the German Internet Industry 2016 –2019” by, among others, eco.

Yours,

**Sigmar Gabriel**  
Federal Minister  
for Economic Affairs and Energy



# 1. Introduction



## The Internet has profoundly changed our lives and become very important for the German economy.

Since 2010, mobile data traffic has been growing by more than 50 percent annually (BuddeComm 2014), while ambitious Internet companies have been transforming sectors and changing them permanently. In the meantime, the Internet has become an indispensable component of our everyday lives and of the working lives of almost 80 percent of Germans. A large range of companies are participating in this boom in the Internet industry, and these contribute a considerable share of the gross domestic product. In particular, innovative applications such as cloud computing services and established business sectors such as e-commerce illustrate the enormous growth potential and importance of the Internet industry.

In comparison to the study undertaken in 2013, in which the market volumes and employment levels in the individual sectors were quantified, this study takes the next step of highlighting the variety and importance of the Internet industry in Germany. In addition to the analyses made previously, there is a considerably stronger focus on topics such as market dynamics, competition, profitability, maturity, and M&A activities in the individual segments in this study. This year's study, "The German Internet Industry 2016 – 2019", builds on the model introduced in the first publication (2009), in which the Internet industry was portrayed in four layers. The model has been adapted slightly to reflect the dynamism of the market. In Chapter 1.2, the underlying model of the German Internet industry is illustrated in a coherent infographic.

The facts and figures ascertained are based on a detailed market model and comprehensive forecasts from renowned experts. Building on these, Chapter 2 provides a thorough demonstration and explanation of the individual figures and results for the respective layers, as well as other parameters.

Chapter 3 offers a detailed representation of the four layers and 19 segments of the Internet industry. Every segment is analyzed according to eight categories.

To commemorate the 20th anniversary of eco, Chapter 4 is dedicated to the development, importance and activities of the largest Internet industry association in Europe.

In Chapter 5 of the study, conclusions are drawn, and a prognosis for the future of the Internet industry is given. Among others, German Federal Minister Sigmar Gabriel answers important questions in an insightful interview. Finally, in Chapter 6, the methods applied and definitions used are described in detail.

Arthur D. Little wishes you interesting reading!

Yours

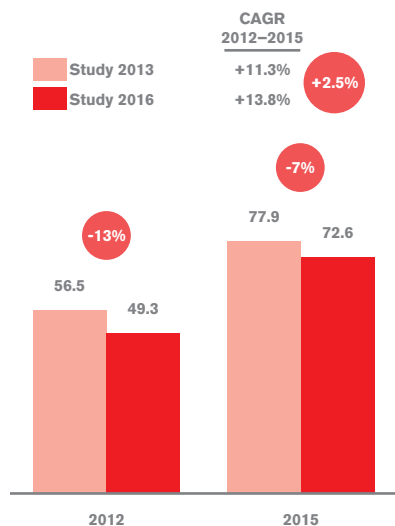
**Lars Riegel**  
(Principal)

**Dr. Michael Opitz**

(Practice Leader TIME Central Europe)

## 1.1 Reality check of the claims in the previous studies

**FIG. 1** Revenues – Comparison of the figures from the 2013 and 2016 studies



Source: eco, Arthur D. Little

The market sizes and growth trends given in the study from 2013 were mostly confirmed. In order to quantify the Internet industry's contribution of value more precisely and to take into account the rapidly developing market dynamics, the definitions of a range of segments were adjusted slightly. On the one hand, this has led to a slight decline of 13 percent in the market volume for 2012, which is now estimated at 49.3 billion euros. On the other hand, the German Internet industry grew, contrary to expectations, 2.5 percent faster annually between 2012 and 2015 than was forecast in 2013. This led to a market volume of 72.6 billion euros in 2015.

A detailed consideration of the individual layers illustrates the positive growth forecast from the 2013 study, and clarifies the adaptations made.

In Layer 1 (“Network, Infrastructure & Operations”), the prognosis of a relatively low growth rate of 10 percent annually is confirmed. A substantial difference from the 2013 study is that the market volume of the segment Fixed Internet Access Network declined as a result of the exclusion of leased lines and IP VPNs, and that a stronger upswing in mobile subscriptions and increased data use led to further growth in the segment Mobile Internet Access Network.

In Layer 2 (“Services & Applications”), the continual growth trend, particularly in the attractive market segments Public IaaS, PaaS and SaaS, was confirmed. The leveling-off of growth at 25 to 40 percent annually, depending on the segment, is a result of the redefinition of the sector to pure public (versus private) cloud services.

Layer 3 (“Aggregation & Transactions”) continues to generate the highest revenues and is the driving force of the Internet industry. As a consequence of the changing dynamics and the size of the layer, the business segment E-Commerce was separated into the sub-segments B2B and B2C. The upswing in these two segments in particular has resulted in approximately four percent more growth per year between 2012 and 2015 than was expected in 2013.

Layer 4 (“Paid Content”) grew, contrary to expectations, faster between 2012 and 2015 than was forecast in the 2013 study (23 percent annually). This is a consequence of the considerably reduced market volume for the Gambling segment. The reason for this is an adjustment of the definitions of the market segments involved in the 2016 study. (See definitions in Chapter 6.)

## 1.2 Infographic explaining the underlying concepts of the market model

The layer model of the Internet industry that was developed by eco and Arthur D. Little in their third joint study is the basis for the infographic and the calculations of the analyses presented in Chapter 2, “The German Internet industry in facts and figures”. The model was adapted from its first incarnation in the 2009 study in order to represent the connections between the different layers simply and visually. New segments were created, and existing ones were extended to reflect the dynamics of the Internet industry and advancing digitalization.

**The Internet industry is represented in the model as four layers that build on each other:**

### Layer 1: Network, Infrastructure & Operations

This layer represents those who enable stationary or mobile access to the Internet through transmission paths and access points. This infrastructure is the basis for all kinds of Internet services, and is employed by private users and businesses as well as providers in other layers of the Internet industry. Companies in this layer include colocation and housing providers such as Equinix and Interxion; providers of fixed-line Internet access networks such as Deutsche Telekom and Kabel Deutschland; providers of mobile Internet access networks such as T-Mobile, Vodafone and Telefónica/E-Plus; Internet backbone/transit and CDN providers such as Deutsche Telekom and Level 3; and Internet exchanges such as DE-CIX.

### Layer 2: Services & Applications

The provision of diverse services and content for companies and private persons on the Internet, represented in this layer, builds on the network infrastructure. Business models include the administration of Internet addresses and the uploading of Internet pages, as well as the provision of various public cloud services. Hosting and domain providers can be found in this layer – for example, 1&1 (United Internet) and Host Europe – as well as public cloud services such as Amazon Web Services, Windows Azure and Salesforce.com.

### Layer 3: Aggregation & Transactions

The stakeholders in the third layer use the services of layers 1 and 2 in order to aggregate content for layer 4 and make the content accessible. They are also responsible for initiating and implementing transactions with other products. B2B e-commerce businesses are in this layer, as are numerous providers of B2C e-commerce platforms such as Amazon.de and otto.de. Providers of subscription-based portals and classified marketplaces such as XING and ImmobilienScout24, advertisers and online marketing companies such as Google and Axel Springer Media, and transaction services such as PayPal und SOFORT Überweisung are all in Layer 3.

### Layer 4: Paid Content

In this layer are companies that generate content or buy in content, and use it for marketing purposes or offer it online for a fee. Internet content includes all forms of media content accessible through the Internet. The content is web based or reuses offline media and content for the various platforms and services. Companies that can be found in this layer include gaming and gambling providers such as Supercell, Goodgame Studios and PokerStars.com; TV, video and music providers such as Netflix, maxdome, Spotify and Deezer; and e-publishing companies such as Random House and Springer Science+Business Media.



# The model of the Internet industry 2016 by eco and Arthur D. Little

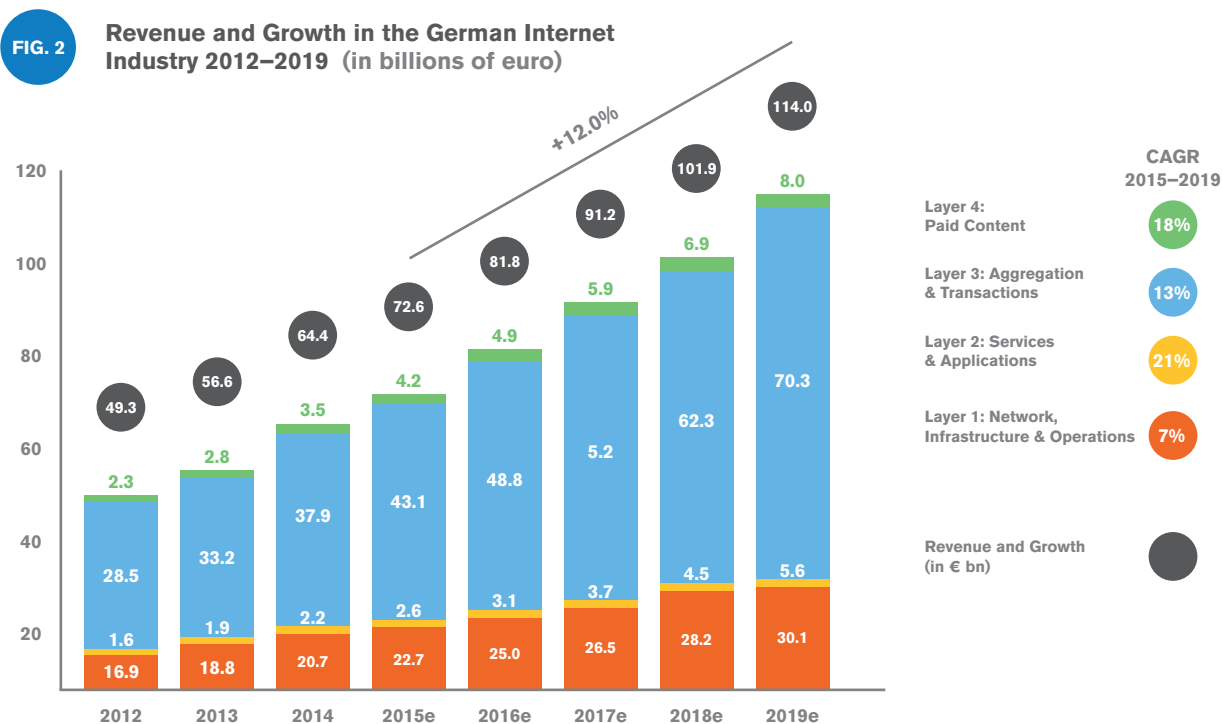
The four layers and their 19 segments





## 2. The German Internet Industry in Facts and Figures

### 2.1 Projections 2012–2019



Source: eco, Arthur D. Little

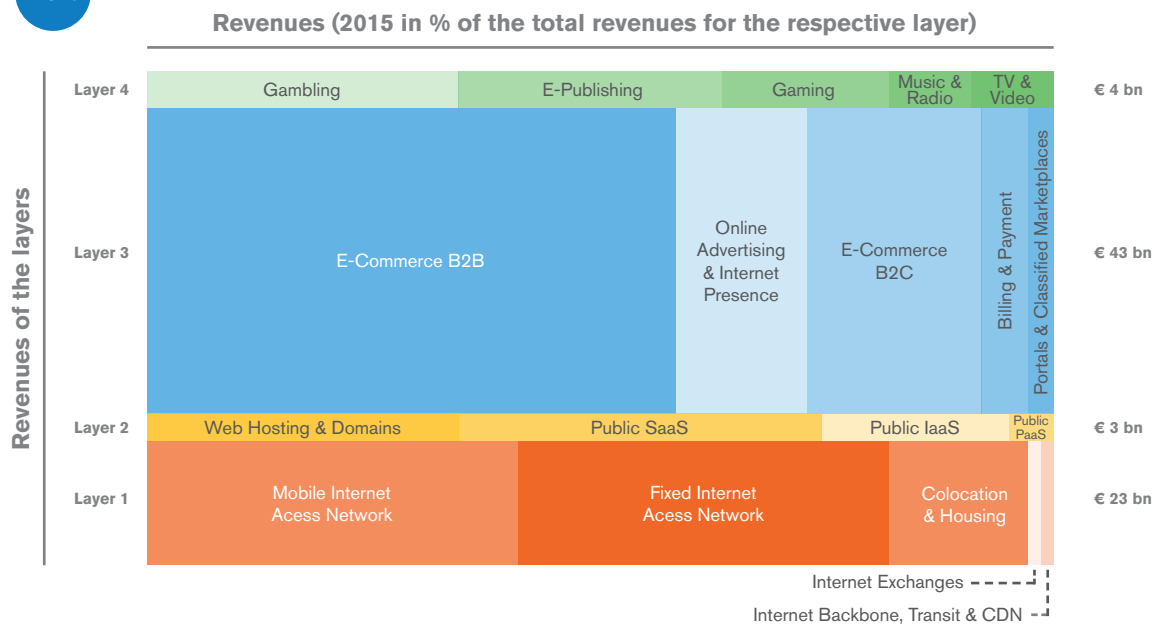
The market volume of the Internet industry in Germany in 2015 amounted to almost 73 billion euros. Due to continuing growth, the revenues will increase to approximately 114 billion euros by 2019. The German Internet industry will maintain strong growth in all market segments. The entire market will exhibit extreme dynamism – in 2015–2019, we expect a growth of 12 percent annually. Thus, the Internet industry will remain one of the most dynamic industries in Germany in the coming years.

Between and within the layers, the distribution and the forecast growth in revenue varies substantially. The highest revenues are generated in the layer Aggregation & Transactions. With an annual growth rate of over 13 percent (see Fig. 2), we assume that this layer will also remain the strongest source of revenue in 2015–2019. For 2019, we estimate that there will be a total volume of over 70 billion euros – more than 60 percent of the total revenue from the German Internet industry.

The size of Layer 3 is, above all, a result of the revenues of the dominating segments E-Commerce B2B and E-Commerce B2C. While Layers 2 to 4 demonstrate relatively even growth of 13 to 21 percent annually, Layer 1 (“Network, Infrastructure & Operations”) is forecast to achieve growth rates in the one-digit range (7 percent) as a result of the increased maturity and saturated markets. We anticipate the largest growth potential in Layers 2 and 4 in particular, with a relatively low market volume of 2.6 and 4.2 billion euros, respectively.

This separate representation of the German Internet industry in 2015 offers a good overview of the distribution and size of the segments and layers.

FIG. 3



Source: eco, Arthur D. Little

As can be seen in Fig. 3, the segments Fixed Internet Access Network and Mobile Internet Access Network dominate Layer 1 and, with more than 40 percent each, have the largest revenues in the layer. The segments Web Hosting & Domains and Public SaaS play the greatest roles in Layer 2 in terms of value, with Public SaaS making up nearly 50 percent of the public cloud computing market. The E-Commerce B2B segment constitutes around 55 percent of the market volume of Layer 3, whereas the segments Gambling and E-Publishing dominate Layer 4 (with 38 and 28 percent revenue share, respectively).



**Philipp Justus**

Vice President,  
DACH & CEE,  
Google

**Challenges:** “Making the industry fit for Mobile is one of the greater challenges, not only for Google, but for all of Germany as a business location. This becomes clear when you see that in the last three years alone, Germans’ multi-screen media use has increased by 500 percent.”

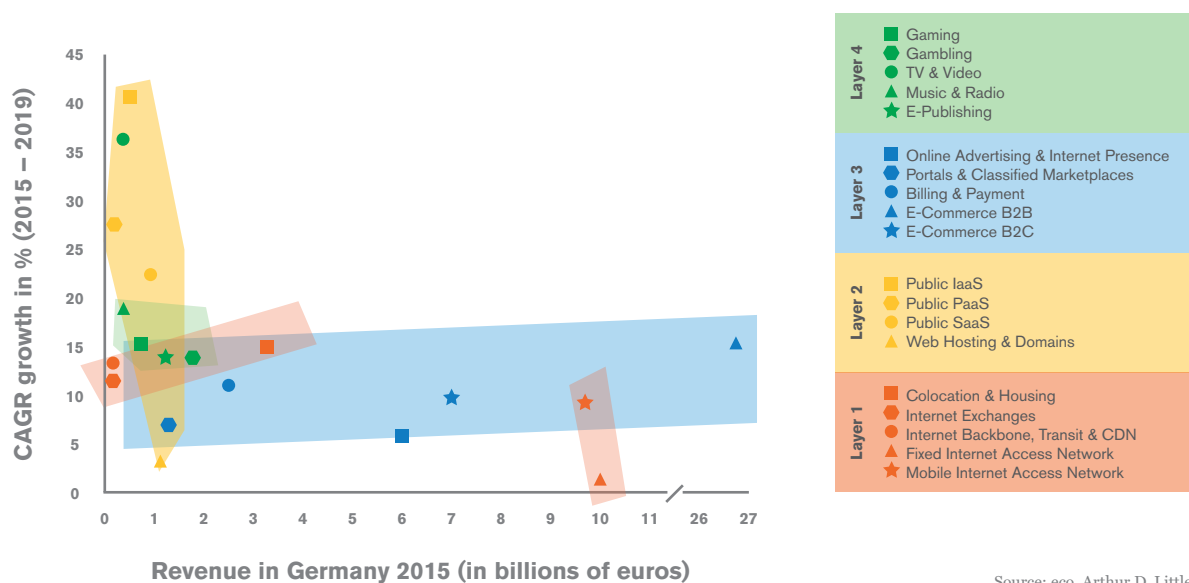
**Status:** “Digitalization is affecting every single company and all sectors, and it is opening up undreamed-of opportunities for worldwide growth. Around 1 million people in Germany are already working in the digital economy today<sup>1</sup>.”

**Business Climate:** “Because the Internet, as a cross-sector technology, is relevant for all industries, the importance of the Internet industry will continue to increase. In many areas, however, Germany is not in the lead – for example, fiber-optic expansion and broadband provisioning. We must not get left behind internationally.”

<sup>1</sup>) The Internet industry is part of the digital economy.

The detailed comparison of all 19 segments by revenue quantity in 2015, and annual growth 2015–2019, is presented in Figure 4.

**FIG. 4** Revenue and Growth of the 19 Segments of the German Internet Industry



On average, the segments – including Layers 1 and 3 – demonstrate moderate growth. Whereas the traditional telecom business areas, Fixed Line and Mobile Internet Access Networks, are, from a revenue perspective, relatively large and show stable, moderate growth, the Colocation and Housing segment, with growth of approximately 17 percent, is one of the rising stars of Layer 1.

Layer 2 brings together the still relatively small but strongly growing Public Cloud segments. While Public IaaS in particular, with more than 40 percent annual growth, is the rising star of the Internet industry, market saturation has led to slowing of growth to around four percent per annum for the Web Hosting & Domains segment.

The segments comprising Layer 3 show moderate annual growth rates of six to 15 percent. Above all, the E-Commerce B2B and E-Commerce B2C segments are clear drivers of value creation – both for Layer 3

itself and for the entire Internet industry – with annual growth rates of between 12 and 15 percent. In contrast, we estimate moderate annual growth of six percent until 2019 for the Online Advertising & Internet Presence segment.

Similar to Layer 2, Layer 4 includes a range of segments with enormous growth potential and yearly growth rates of between 15 and 37 percent. TV & Video, with approximately 37 percent growth, is the rising star of Layer 4, while the remaining four segments are, measured on the basis of market volume, still relatively small. However, they will gain in importance and weight in the German Internet industry in the coming years.

## 2.2 The Impact of the Commercial Internet on Germany as an Industry Location

The German Internet industry accounts for a considerable proportion of turnover in Germany, and is the sector in the German market that is growing by far most dynamically.

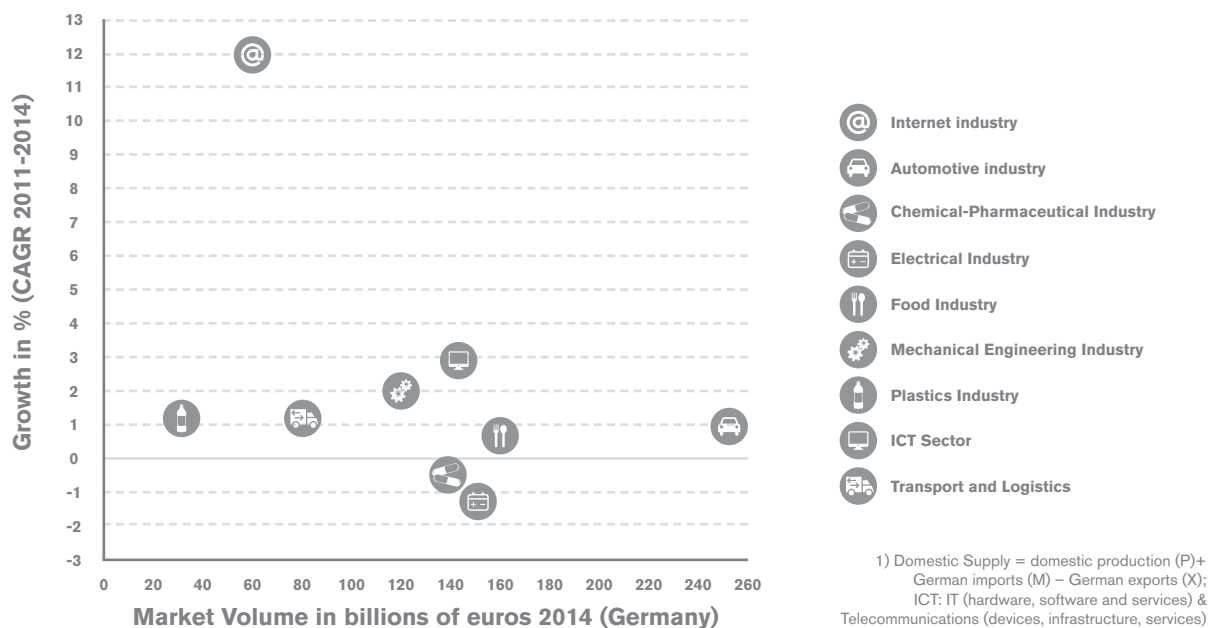
Whereas the Internet industry is set to grow by 12 percent in 2015–2019, large German sectors increased by one to four percent in 2011–2014, or even shrank slightly (chemical-pharmaceutical industry, electrical industry).

If sustained growth in all sectors continues into the future, the Internet industry will overtake the automobile industry (based on German domestic

supply) in 2028. This forecast is based on the assumption that the annual market growth between 2011 and 2014 will be reflected in future developments. The growth of the sectors of the Internet industry has been calculated in the source study at 12 percent per year until 2019. Other important sectors, such as the German mechanical engineering industry, will be overtaken as early as 2021, based on the German domestic supply.

FIG. 5

German Domestic Supply – Revenue and Growth of Selected Sectors



Source: Verband der Chemischen Industrie, Zentralverband Elektrotechnik und Elektronikindustrie, BITKOM, EITO, VDMA, BMWi, Statista, Destatis, DSLV, Bundesverband der deutschen Ernährungsindustrie, eco, Arthur D. Little



Dr. Stephan Zoll

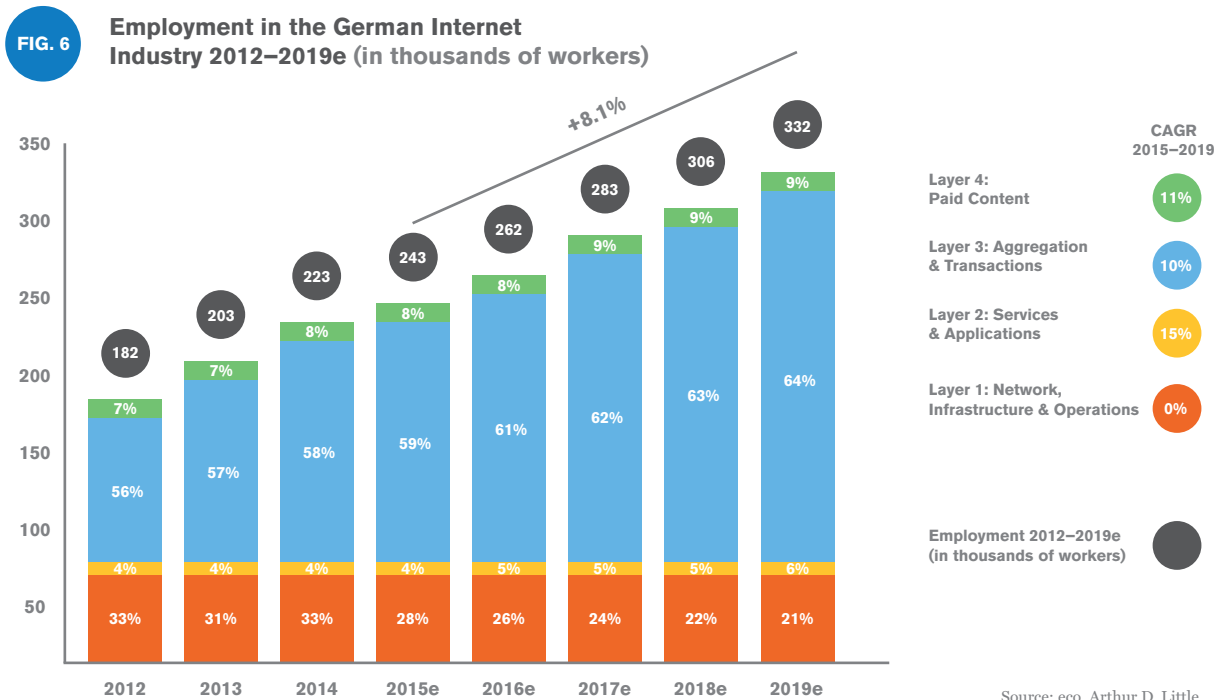
Vice President,  
eBay  
Germany

**Challenges:** “One of the biggest challenges for eBay is certainly to keep pace with technical changes and with the growing demands of consumers. Whereas even a few years ago the smartphone didn’t play a role as a sales channel, it is now an essential component in retail.”

**Status:** “An enormous amount has been done in the last few years within the Internet industry. Digitalization has been recognized as a general cross-sector topic, and, as such, it is not just the “Internet industry” that is dealing with IT topics. And yet we also see that, to a certain extent, the dangers of the Internet, rather than the opportunities, are still placed in the foreground.”

**Business Climate:** “Due to the massive influence that digitalization has on retail, we in the Internet industry are still at the beginning of the development. Germany is one of the two most important markets outside of the USA for eBay, and therefore we will continue to invest strongly here.”

The German Internet industry will also create further employment in the next five years, which will result in approximately 332,000 jobs by 2019.



The number of workers employed in the German Internet industry will rise from 243,000 in 2015 to 332,000 in 2019. This corresponds to an annual increase of more than eight percent. The greatest proportion of employment can be found in Layer 3. It is to be expected that increasing productivity will work against a stronger rise in employment rates.

It should be highlighted that no increase in employment is expected in Layer 1. The lay-offs in the segments Fixed and Mobile Internet Access Network will be compensated by the rise in the number of employees in the other segments.



**Hartmut Thomsen**

Managing Director  
SAP Germany  
SE & Co KG

**Challenges:** “One big challenge for the success of the German Internet industry is without doubt the lack of overarching standards. Both unified framework conditions for a European Digital Single Market and a unified European Data Protection Directive are preconditions for German and European companies to keep pace with the competition from America and Asia.”

**Status:** “The Internet industry is without question an important trailblazer for the German economy as a whole in the area of digitalization. The digital ecosystem is the model of the future, which is why companies that want to remain competitive into the future should be a part of the Internet industry. Traditional companies can learn a lot from the Internet sector.”

**Business Climate:** “The German Internet industry finds itself in an outstanding starting position. Digital business models will increasingly become a part of daily life in companies – also in the German Mittelstand (SMEs). Megatrends such as the Internet of Things, big data, smart homes and connected cars will gain even more relevance and generate demand for corresponding services. What needs to be created is an awareness that digitalization used in the right way means simplification and not increasing complexity.”





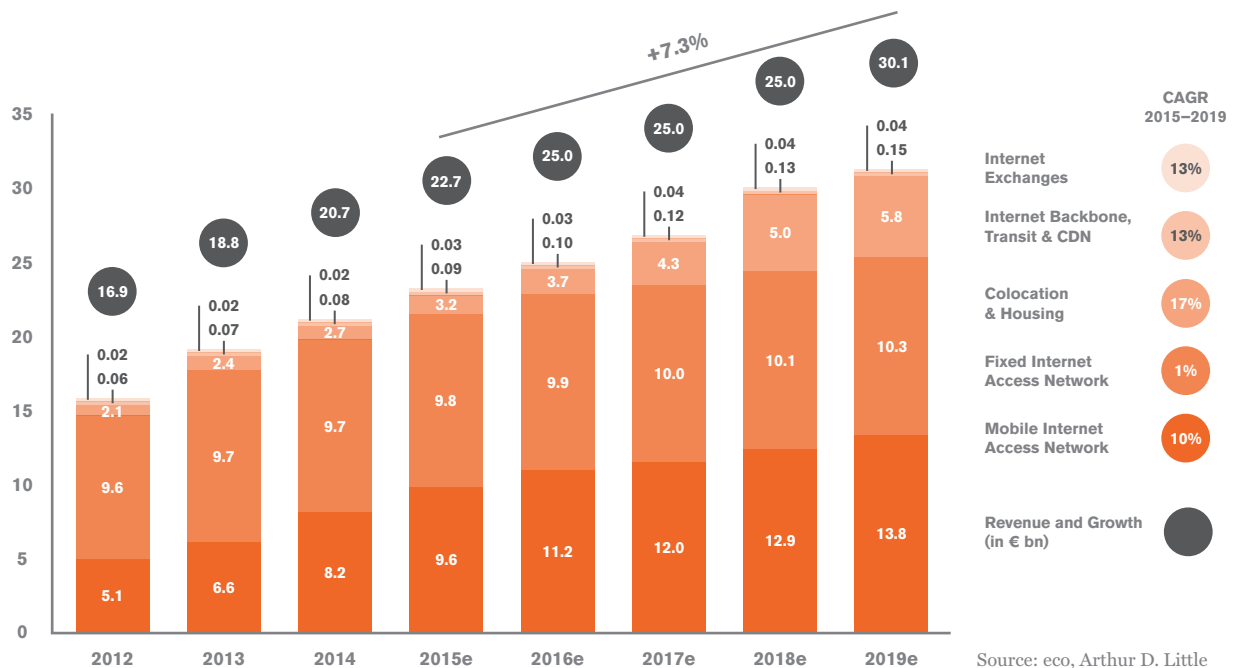
# 3. A detailed look at the individual layers and segments of the Internet industry

## 3.1 Network, Infrastructure & Operations



FIG. 7

### Revenue and Growth in Layer 1: Network, Infrastructure & Operations (in billions of euros)



This layer represents organizations that enable stationary or mobile access to the Internet through transmission systems and access points. This infrastructure is the basis for all kinds of Internet services and is employed by private users and businesses as well as providers in other layers of the Internet industry. Companies in this layer are colocation and housing providers such as Equinix and Interxion; providers of landline Internet access networks such as Deutsche Telekom and Kabel Deutschland; providers of mobile Internet access networks such as T-Mobile, Vodafone and Telefónica/E-Plus; Internet backbone/transit and CDN providers such as Deutsche Telekom and Level 3; and Internet exchanges such as DE-CIX.

- Although Fixed Internet Access Network is the segment with the highest turnover, at 9.8 billion euros (2015), an annual growth rate of only 1 percent is projected, as prices in this segment are stagnating due to strong competition.
- In terms of market volume, the Mobile Internet Access Network segment is in second place with around 9.6 billion euros (2015). However, it has an expected average growth rate of 10 percent as a result of rapidly increasing data traffic.
- The Colocation & Housing segment has relatively high revenue, at around 3.2 billion euros (2015) and an average annual growth rate of 17 percent.
- The relatively small segments Internet Backbone, Transit & CDN and Internet Exchanges are forecast to have average annual growth rates of 13 percent.



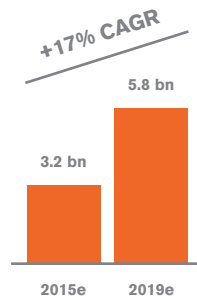
# Colocation & Housing

The growth in the segment Colocation and Housing is driven by the steadily increasing IT outsourcing trend in many sectors. Their aim is to reduce fixed capital resources and running costs and to meet the rising need for computing capacity, which is rapidly growing in all sectors. While the German market is consolidating and intensely competitive, leading colocation providers achieve attractive EBITDA margins of up to 60 percent.



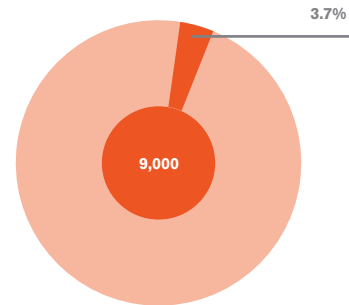
## Revenue in Germany (€ bn)

- Rapid growth in the German colocation<sup>1</sup> market.
- Around 20 percent of German data center space is already occupied for outsourcing, colocation or server housing.
- The space required for colocation will rise by approximately 15 percent per annum by 2019, while the prices per square meter will increase moderately.



## Employment 2015e

- Calculated on the productivity of leading providers, around 9,000 employees work in the Colocation & Housing segment. This is around 3.7 percent of employees in the German Internet industry.
- Comparatively high productivity due to the increasing scalability of the capital-intensive business model.



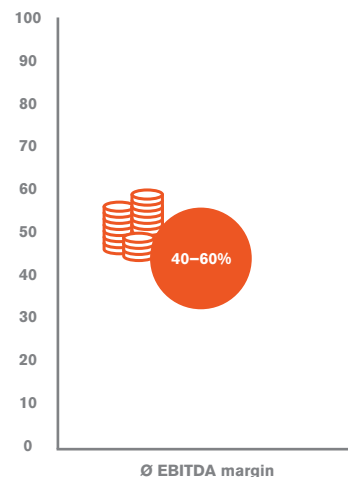
## Export/Import

- Demand is mainly met by foreign companies (Interxion, Equinix, NTT). They cover around 50 percent of the German market.
- Deutsche Telekom is the only German provider that has similar volume to international providers.
- On the other hand, around 30 percent of German providers' revenue is generated abroad.



## Profitability (%)

- Relatively high EBITDA margins due to the capital-intensive business model.
- Large colocation providers such as Equinix and Interxion have EBITDA margins of around 45 percent.
- The gross profit margin is between 50 and 65 percent.

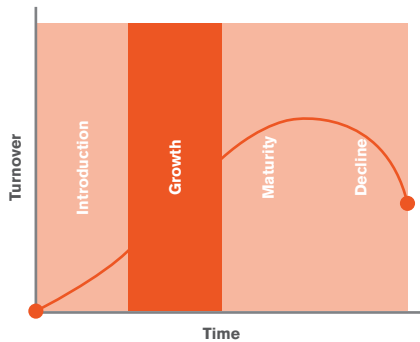


<sup>1</sup>) Colocation and Housing: The accommodation and connection of one's own server in an external data center (Housing), as well as the provision of a rack for the company's hardware and the necessary infrastructure for the operation of the server (Colocation).



## Market Maturity & Trends

- The Colocation and Housing market is in the growth phase.
- An ongoing IT outsourcing trend is driven by
  1. the growing demand of key customers for data capacity and computing capacity
  2. the efforts to reduce fixed capital and running costs
  3. the relocation of data centers to hubs close to customers



## Strategic Orientation of Companies

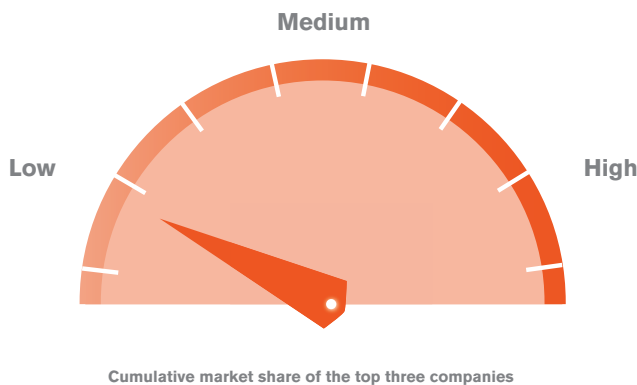
- Increase in market share through M&A activities as well as increased investments in the building and expansion of data centers.
- Portfolio diversification and increased range of services offered (e.g. cloud, connectivity, security).
- Exploitation of economies of scale to reduce costs.

**2015:** NTT Com acquired e-shelter to strengthen its position in the European market and meet the increasing demand for data center and cloud services in the DACH region.



## Market Concentration

- Leading companies have a market share of around 10 percent. A current wave of consolidations will lead to higher market concentration.
- High levels of competition as customers are relatively flexible in choosing and changing providers.
- Numerous small providers with a market share of less than one percent.



## M&A – Size & Valuation of Deals (2014)

- One relatively small transaction in 2014.
- Acquisition of the German company e-shelter by NTT in 2015.
- The average EV/revenue multiple of four large international deals since 2011 is around 6.0x.





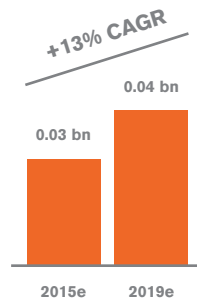
# Internet Exchanges

The Internet Exchange segment is a market self-regulated by the market participants, of which the market leader, DE-CIX, has a share of over 85 percent in Germany. Globally, we can see numerous service providers expanding internationally in the field of Internet Exchanges. These providers often have EBITDA margins of up to 50 percent globally.



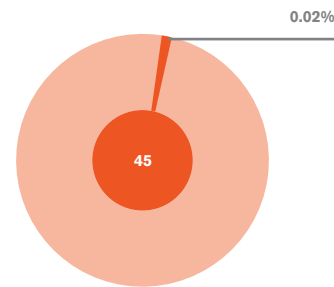
## Revenue in Germany (€ bn)

- Steadily increasing data traffic of between 20 and 30 percent per annum is driving the necessary capacity in Internet hubs.
- Simultaneously declining prices for the exchange of data.
- As a result, “only” growth of around 13 percent per annum.



## Employment 2015e

- Productivity in Internet Exchanges is comparatively high. This is due to the advancing scalability of the capital-intensive business model.
- The staff of DE-CIX GmbH are the main group of employees in the Internet Exchange segment in Germany. At the start of 2015, 45 people worked at DE-CIX, and this increased to around 80 by the end of the year.
- However, in total there are already 1,500 people working in the areas of Peering and Interconnection in Germany.



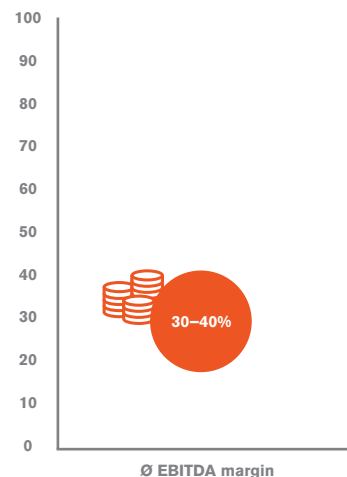
## Export/Import

- The German company DE-CIX is the global market leader of distributed, scalable high-performance Internet Exchanges for the exchange of data on the Internet.
- German demand is met predominantly by domestic companies.



## Profitability (%)

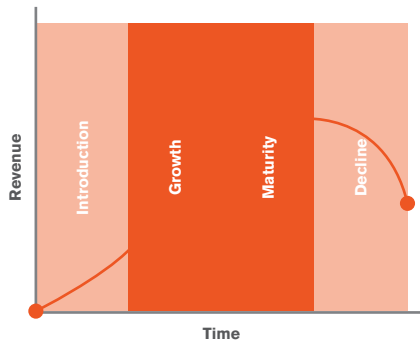
- The EBITDA margins of providers are between 30 and 40 percent in Germany and internationally.
- Providers such as AMS-IX and LINX even have EBITDA margins of around 50 percent.





## Market Maturity & Trends

- This segment is towards the end of the growth phase, driven by the development of infrastructure and increasing internationalization.
- Steady decline in prices.



## Strategic Orientation of Companies

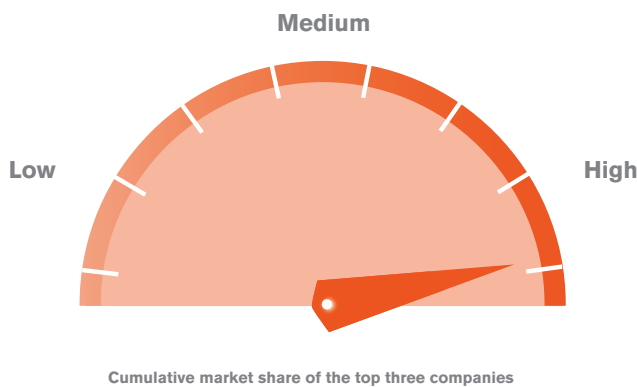
- Differentiation through the establishment of a strong brand (low latency times, high capacity).
- Portfolio diversification (e.g. connectivity, further development of existing technologies).
- Geographical expansion (nationally and internationally).

**2013-15:** DE-CIX established new revenue channels through international expansion (e.g. New York). An improved platform (Apollon) reduced latency times and expanded capacity in order to differentiate the company from competitors.



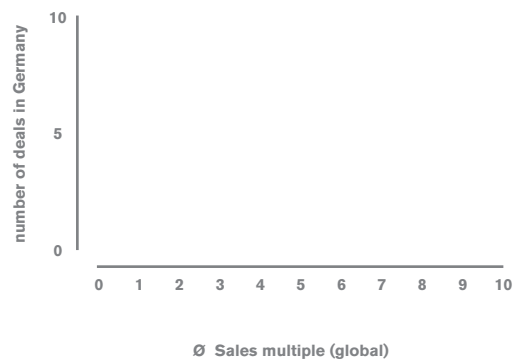
## Market Concentration

- DE-CIX is the undisputed market leader in Germany, with over 85 percent market share.
- Increasing number of competitors, including ECIX and NL-ix.



## M&A – Size & Valuation of Deals (2014)

- There were no M&A activities in the compact Internet Exchange segment in Germany in 2014.





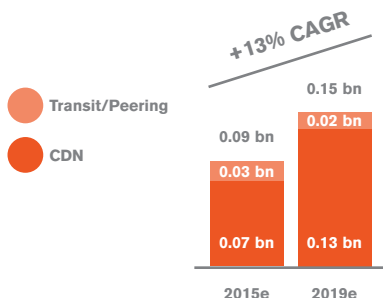
# Internet Backbone, Transit & CDN

The sub-segment CDN dominates this segment in terms of market volume and will grow rapidly in the coming years, with an average annual growth rate of 20 percent. The reason for such growth is increasing data traffic, for example, as a result of booming OTT content and HD/4K usage. While Deutsche Telekom covers demand in the less profitable Transit sub-segment, global champions such as Akamai, Level 3 and Cogent are leaders in the area of CDN.



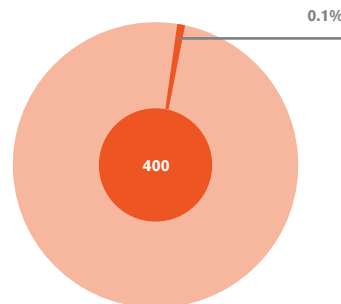
## Revenue in Germany (€ bn)

- Overall negative development.
- Negative revenue development in peering/transit business (minus two percent per annum) due to strong competition and sinking prices.
- Growth of almost 20 percent is expected in CDN revenue, due to the boom in data traffic (30 to 40 percent).



## Employment 2015e

- Calculated on the productivity of leading providers, around 400 employees work in the Internet Backbone, Transit and CDN segment. That is around 0.1 percent of employees in the German Internet industry.
- Average productivity, in comparison to other segments in the Internet industry.



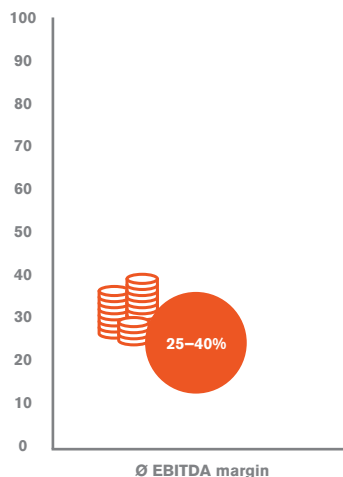
## Export/Import

- German demand for transit is met mainly by Level 3, Cogent and TeliaSonera.
- Content providers such as Amazon, Apple, Google and Netflix have their own CDN structures, which make up around half of the total Internet data traffic.
- Foreign providers such as Akamai and Limelight are leaders in the area of CDN.



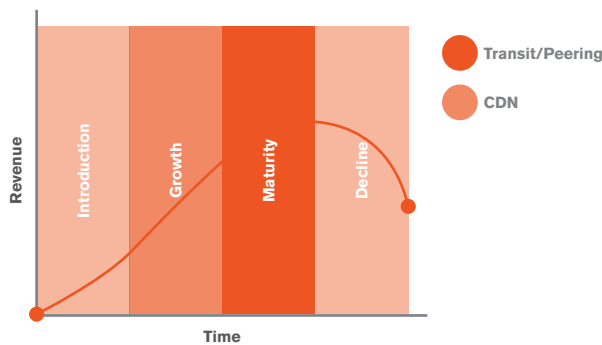
## Profitability (%)

- Transit is not profitable, and is subsidized by other business areas.
- Relatively high EBITDA margins of around 30 percent for large CDN providers, whose profitability is characterized by the depreciation-intensive business model



## Market Maturity & Trends

- Intensive price pressure between providers.
- Trend for telecommunication providers to set up their own CDNs.
- Increase in use of OTT content as well as HD/4K is leading to a rise in demand among end customers for transit/peering and CDN services.



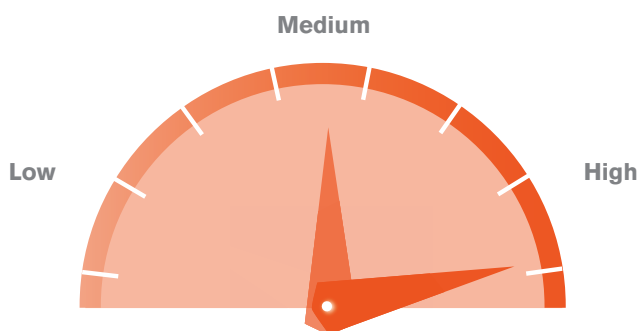
## Strategic Orientation of Companies

- Differentiation through increasing transfer speeds for video content.
- Pure CDN providers are specializing or expanding their portfolios to stay competitive (geographically and functionally).
- Offer of premium CDN services (e.g. online security).

**2014:** Partnership between Level 3 and China Telecom Global in order to bring video cloud solutions to China. Level 3 gives customers access to the high-volume Chinese markets.

## Market Concentration

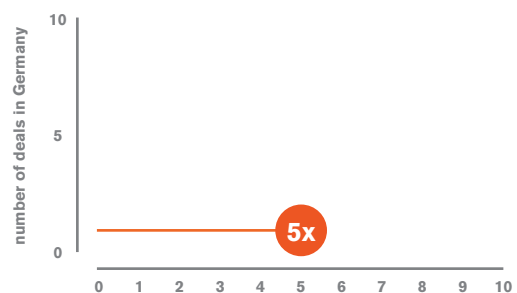
- In the Transit sub-segment, the market is highly concentrated.
- In the CDN sub-segment large providers such as Akamai, Level 3 and Cogent have an accumulated market share of more than 50 percent.



Cumulative market share of the top three companies

## M&A – Size & Valuation of Deals (2014)

- Only one small transaction in the area of CDN in 2014.
- The average EV/revenue multiple of three large international CDN deals since 2011 is around 5.0x (including Edgecast's takeover by Verizon in 2013).
- No deals in the transit/peering area.



Ø Sales multiple (global)





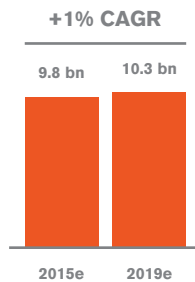
# Fixed Internet Access Network

The Fixed Internet Access Network segment has a high market concentration. The takeover of Kabel Deutschland by Vodafone in 2013 was a major step in the wave of consolidations in the German telecommunications sector. Still, 60 percent of demand in Germany is met by German providers. The growing demand for high-performance B2C fixed network Internet connections has led to a slight increase in market volume for the capital-intensive Fixed Internet Access Network segment. While Germany is the leader in the EU in the usage of fixed broadband connections (83 percent of households<sup>1</sup>), only 21 percent (2014) of subscribers have high-speed broadband connection (>30 Mbits/s; place 21 in the EU<sup>1</sup>).



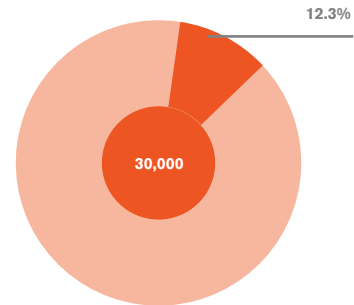
## Revenue in Germany (€ bn)

- Around 30 million B2C<sup>2</sup> fixed-line Internet connections in Germany.
- The growing demand for B2C fixed-line Internet connections has led to a slight increase in the market volume for the segment.



## Employment 2015e

- Calculated on the productivity of leading providers, around 30,000 employees work in the segment. This is around 12.3 percent of employees in the German Internet industry.
- Steadily increasing productivity of employees.
- Providers of fixed-line telecommunications services are continually reducing their staff numbers. (The number of employees has shrunk by nearly three percent annually since 2005.)



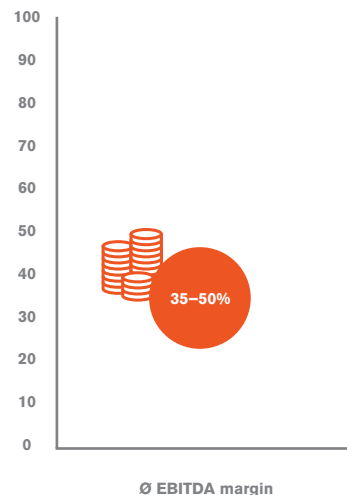
## Export/Import

- German companies (Deutsche Telekom and 1&1) meet around 60 percent of demand in Germany. (Since the acquisition of Kabel Deutschland by Vodafone, Kabel Deutschland is considered to be a foreign company, as its headquarters are in Great Britain.)
- Deutsche Telekom AG is active in Europe, with around 9 million fixed-line connections.



## Profitability (%)

- The EBITDA margin<sup>3</sup> of the big providers (total landlines) varies greatly, and is between 35 percent (Deutsche Telekom) and almost 50 percent (Kabel Deutschland).
- Large providers profit from the economies of scale as a result of owning the network infrastructure (Deutsche Telekom, Vodafone).



1) European Commission, 2015

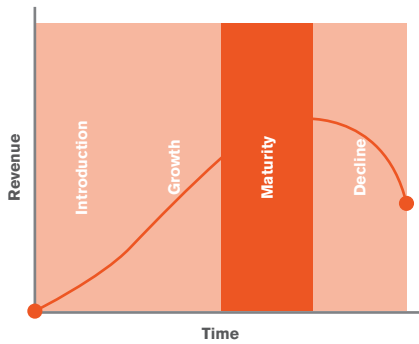
2) Fixed-line Internet, excluding mobile broadband connections (e.g. USB dongles, data cards).

3) Smaller players (e.g. 1&1) were not considered.



## Market Maturity & Trends

- Data volume over broadband connections is increasing by around 30 percent annually.
- Increased competition from mobile alternatives is putting pressure on the fixed-line Internet.
- Increasing demand for high-speed Internet.



## Strategic Orientation of Companies

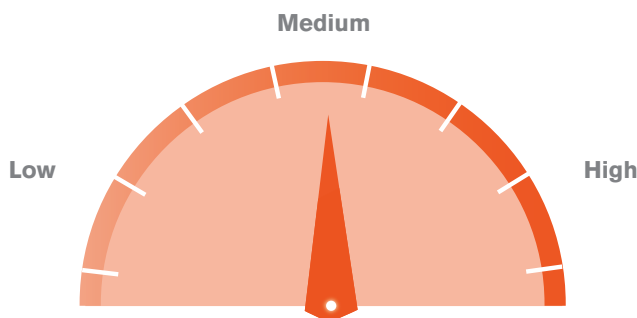
- Focus on increasing value by bundling products (Internet, telephony and TV), high-speed Internet and service quality.
- Increasing efficiency by, for example, implementing advanced analytics.
- Large investments in order to enable blanket coverage of high-speed Internet (VDSL/vectoring expansion, FTTH rollout).

**2013:** Vodafone bought Kabel Deutschland to get access to fixed-line Internet and to establish itself as a provider of mobile and fixed lines and TV.



## Market Concentration

- The three largest providers have a total market share of 66 percent. Deutsche Telekom dominates, with more than 40 percent market share.
- Strong competition between telecom and cable companies in the fixed-line sector.

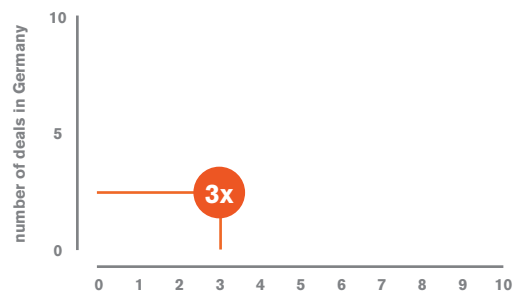


Cumulative market share of the top three companies



## M&A – Size & Valuation of Deals (2014)

- Two transactions in 2014, including the takeover of Versatel by United Internet
- The average EV/revenue multiple of four large international deals since 2011 is around 3.0x. (The takeover of Kabel Deutschland by Vodafone achieved almost 6.0x.)



Ø Sales multiple (global)



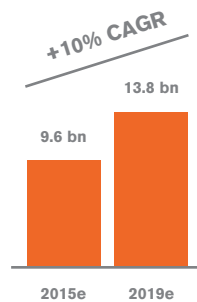
# Mobile Internet Access Network

Rapidly increasing mobile data traffic is characteristic of the Mobile Internet Access Network segment, as the improved transfer rates under the 4G standard allow the use of data-intensive apps. Data services (excluding SMS text messaging) already accounted for around 40 percent of mobile network revenue in 2015. When revenue from voice telephony is considered, the mobile network market has only increased by around two to three percent CAGR. While the German market is largely served by foreign providers (55 percent market share), the German number one, T-Mobile, is an export success, with more than 70 percent of its mobile phone customers abroad.



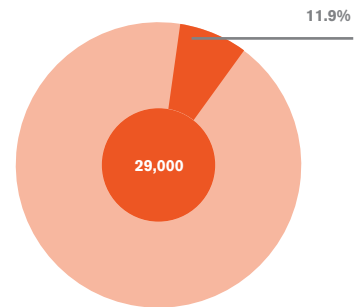
## Revenue in Germany (€ bn)

- Germany is number one in Europe in terms of mobile phone users at a relatively high price level.
- In 2015 almost 115 million SIM cards (including M2M) were estimated to be in use – with a growing tendency.
- The boom in data traffic is driving market growth.
- In 2015 data services (excluding SMS text messages) already accounted for 40 percent of mobile network revenue.



## Employment 2015e

- Calculated on the productivity of leading providers, around 29,000 employees work in the segment. That is around 11.9 percent of employees in the German Internet industry<sup>1</sup>.
- Comparatively high productivity, as telecommunications operators are reducing their staff. (Staff numbers have dropped almost three percent annually since 2005.)



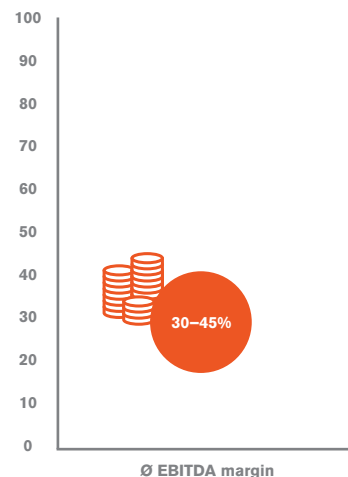
## Export/Import

- German companies (T-Mobile, Freenet and 1&1) meet around 45 percent of demand in Germany<sup>2</sup>.
- Around 55 percent of German demand is met by foreign operators (Vodafone and Telefónica).
- T-Mobile is one of the largest mobile network operators in Europe – more than 70 percent of its mobile customers are outside of Germany.



## Profitability (%)

- The EBITDA margin in the overall mobile network industry (voice and data) varies from provider to provider, and is between 30 percent (Telefónica) and 45 percent (T-Mobile).
- Large operators profit from the economies of scale of owning the network infrastructure (T-Mobile, Vodafone).



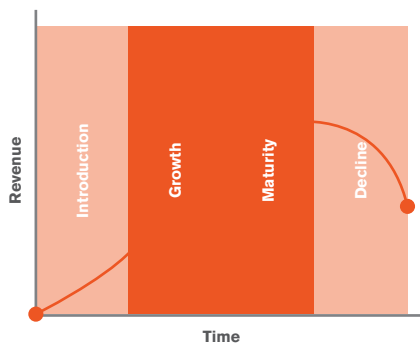
1) Calculated based on total mobile network revenue.

2) Aliquot employment calculated in correlation with the revenue share of mobile Internet.



## Market Maturity & Trends

- Rapidly increasing mobile data traffic due to improved transfer rates and the use of data-intensive apps.
- Pricing pressure between mobile providers in order to increase market share.
- Increased competition from OTT providers.



## Strategic Orientation of Companies

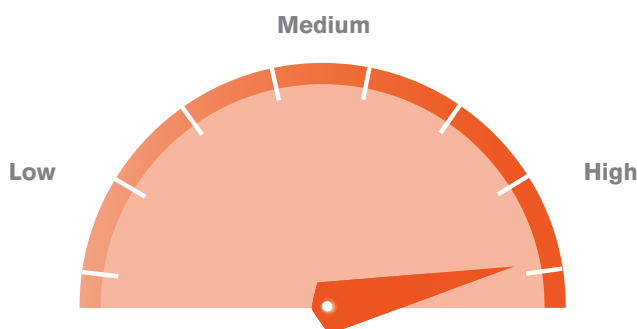
- Differentiation through plan structures, network availability and additional services.
- Exploitation of new sources of revenue (M2M, cloud, e-commerce, monetization of 4G).
- Necessary network innovations are gaining in importance (LTE & 4G).
- OTT providers are in the market and are developing their own infrastructure.

**2013:** The merger of O2 and E-Plus allowed Telefónica to keep up with the top players. The network quality is to be improved through investments and economies of scale in order to stay competitive in the long term.



## Market Concentration

- Three large operators (Deutsche Telekom, Telefónica, Vodafone) dominate the German mobile network market (market share of around 85 percent).
- The remaining 15 percent is shared between MVNOs such as Drillisch.
- Globally, mobile network markets are usually dominated by three to four providers.

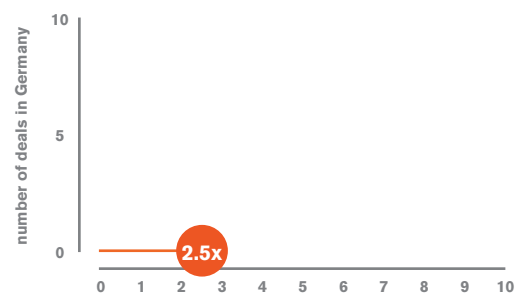


Cumulative market share of the top three companies



## M&A – Size & Valuation of Deals (2014)

- No transactions in 2014.
- The average EV/revenue multiple of three large international deals since 2011 is around 2.5x (including the takeover of E-Plus by Telefónica).

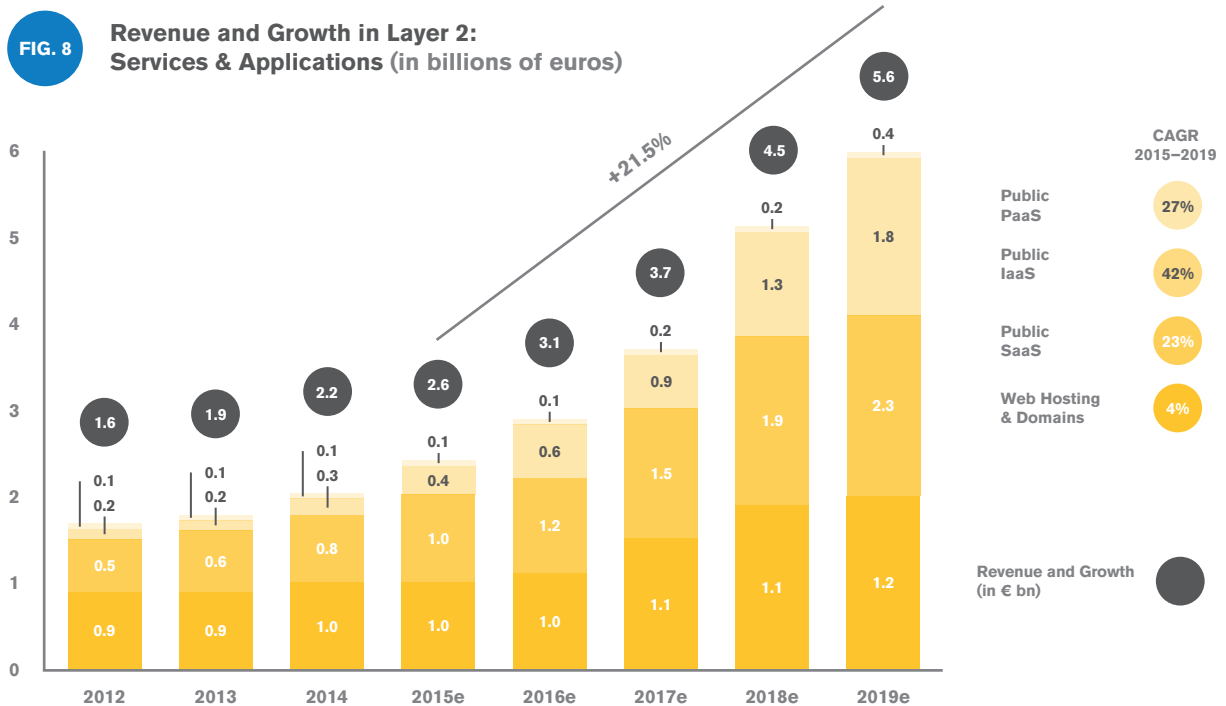


Ø Sales multiple (global)

# 3. A detailed look at the individual layers and segments of the Internet industry

## 3.2 Services & Applications





This layer represents companies that build on the network infrastructure and enable the provision of varied services and content for companies and private individuals on the Internet. Their business includes among others the administration of Internet addresses, the uploading of web pages and the provision of various public cloud services. Hosting and domain providers such as 1&1 (United Internet) and Host Europe as well as providers of public cloud services such as Amazon Web Services, Windows Azure, and Salesforce.com can be found in this layer.

- Web Hosting & Domains is still the Layer 2 segment with the highest revenue, with around 1 billion euros (2015). However, Public SaaS has caught up quickly in the last few years and will be the strongest segment in 2016. Due to the high levels of penetration of websites and domains, an average annual growth rate of only four percent is expected in the next few years.
- Increasing cloud penetration in the B2B and B2C areas will result in increased relevance of the three public cloud segments. They are expected to increase by up to 42 percent annually (Public IaaS) by 2019.



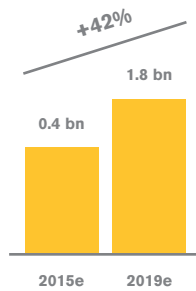
# Public IaaS

The Public IaaS segment is one of the drivers of growth in the German Internet industry, with average annual growth of over 40 percent. The revenue multiples for companies in this segment are correspondingly high (~ 8x). Reasons for this are the development of IaaS as a commodity service and the trend toward enterprise IaaS as well as multi-cloud sourcing concepts. Although large US companies dominate the German market, the rising demand for IT integration solutions and on-site service, as well as increasingly strict data protection requirements, are benefiting local (German) companies.



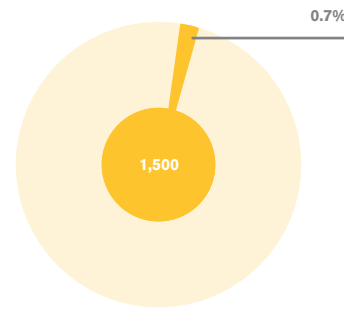
## Revenue<sup>1</sup> in Germany (€ bn)

- The IaaS market accounts for around one-quarter of the German public cloud market (around 40 percent in 2019).
- The IaaS penetration of German companies is around 10 percent (2015), but varies greatly between companies. A surge is expected in the future, which should be mirrored in the development of the market volume.



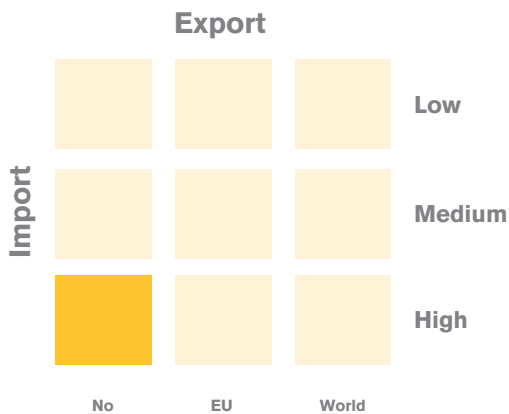
## Employment 2015e

- Calculated on the productivity of leading providers, around 1,500 employees work in the IaaS segment. This is around 0.7 percent of employees in the German Internet industry.
- This high level of productivity will increase in the coming years as the personnel requirements for IaaS infrastructure decreases.



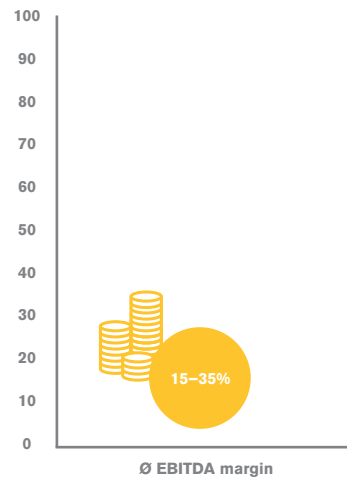
## Export/Import

- The German IaaS market is heavily dominated by US companies, which can offer low prices due to massive economies of scale.
- The rising demand for IT integration solutions, on-site service, legal certainty and data protection requirements is benefiting European and German companies (e.g. T-Systems).



## Profitability (%)

- The EBITDA margins of established IaaS companies are between 15 and 35 percent due to rising returns to scale and a capital-intensive business model.
- The market leader, AWS<sup>2</sup>, has a rapidly increasing margin of more than 20 percent (Q2/2015).

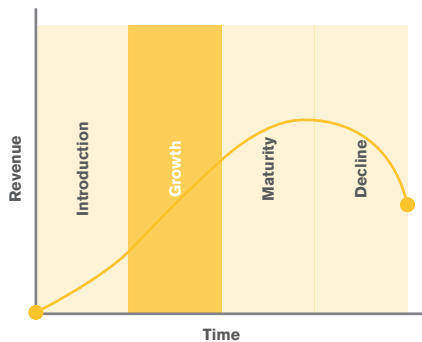


1) Revenues are based only on public cloud, the flexible provision of computing capacity over the Internet. The market volume of public and private IaaS was worth € 0.5 bn in 2015.  
 2) AWS: Amazon Web Services



## Market Maturity & Trends

- The market is in an early growth phase.
- The trend toward Enterprise IaaS and multi-cloud sourcing concepts drives the Public IaaS growth.
- IaaS is becoming a commodity.
- Increasing virtualization of in-house data centers is revitalizing the B2B-IaaS market.
- Providers of private and managed cloud services are attempting to increase market share (BT, T-Systems).



## Strategic Orientation of Companies

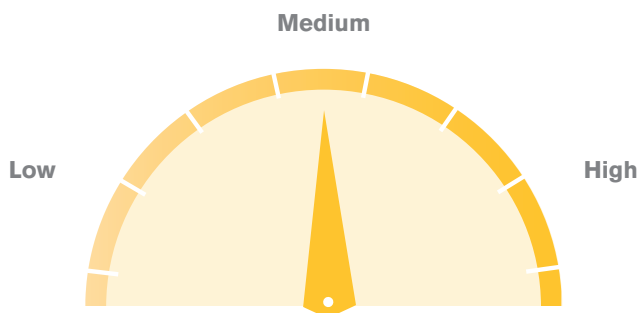
- Demand-driven level of automation of the platform.
- Differentiation through the offer of raised security standards and additional services such as traffic management (including CDN) and load balancing.
- Expansion of the partner landscape and ecosystem in order to offer ICT integration.
- Enablement of open-source/open-stack compatibility for hybrid/multi-cloud scenarios.

**2014:** AWS<sup>2)</sup> took its first data center in Germany into operation. This offers customers increased data protection and the possibility of storing personal data securely in Germany.



## Market Concentration

- The cumulative market share of the top four companies (AWS<sup>2)</sup>, Microsoft, IBM and Google) exceeds 50 percent.
- AWS is the leading provider, with a market share of around 30 percent in Germany.



Cumulative market share of the top three companies



## M&A – Size & Valuation of Deals (2014)

- The segment is currently quiet in terms of transactions in Germany.
- Two smaller transactions in 2014.
- The average EV/revenue multiple of four large international deals since 2011 is approximately 8.0x.



Ø Sales multiple (global)

<sup>2)</sup> AWS: Amazon Web Services





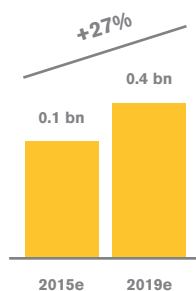
## Public PaaS

The relatively small segment Public PaaS is strongly connected with the segment Public IaaS. PaaS is almost exclusively used in the B2B area, and mainly in bigger companies. Established PaaS providers have high EBITDA-margins of 20 to 30 percent, similar to the IaaS segment. PaaS companies also enjoy a strong valuation, with an eightfold return. The German market is heavily dominated by US companies, though data protection will also lead to growth potential for European companies.



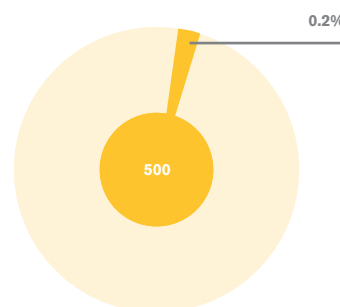
### Revenue<sup>1</sup> in Germany (€ bn)

- The PaaS market is around one-tenth of the German public cloud market (to remain stable until 2019).
- PaaS is almost solely to be found in the B2B segment, in particular in larger companies.



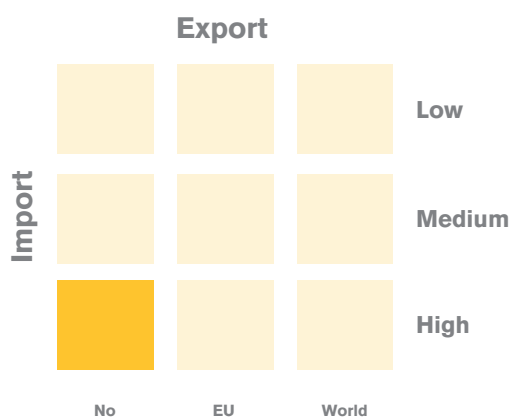
### Employment 2015e

- Calculated on the productivity of leading providers, around 500 employees work in the PaaS segment. This is around 0.2 percent of employees in the German Internet industry.
- Comparatively high and rising productivity, consistent with the IaaS segment.
- A further increase in productivity in the next few years is to be expected.



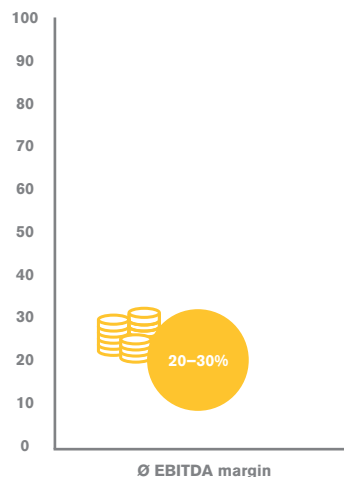
### Export/Import

- The German PaaS market is heavily dominated by US “scale” players.
- Small businesses (e.g. cloudControl) in particular have trouble competing, as PaaS customers prefer providers with a broad range of cloud ecosystems.
- Good access to ISVs as an opportunity for German players.



### Profitability (%)

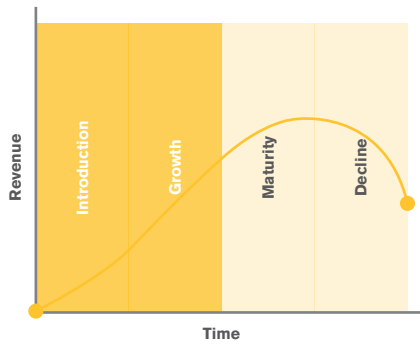
- The EBITDA margins of established PaaS companies are between 20 and 30 percent.
- This level of profitability is in line with that of the IaaS segment.



1) Revenues are based only on public cloud, the flexible provision of computing capacity over the Internet. The market volume of public and private PaaS was worth € 0.25 bn in 2015.

## Market Maturity & Trends

- IaaS and PaaS are very closely linked.
- PaaS is increasingly used as a tool in order to accelerate the “time to market” of applications.
- PaaS is crowding out traditional company platforms, while the application-oriented PaaS direction is already a commodity.



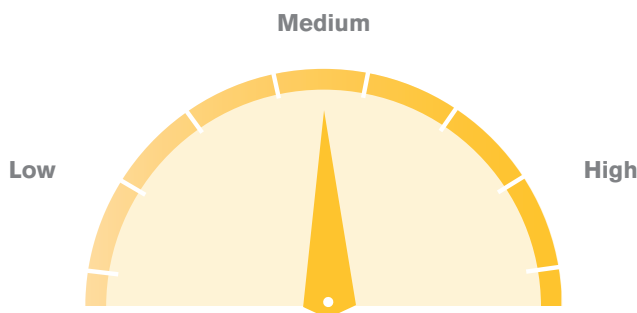
## Strategic Orientation of Companies

- Extension of platforms and tools in order to explicitly address developers and companies.
- IaaS and PaaS are combined as a continuous and automated platform.

**2014:** Salesforce.com connected its PaaS platforms Force.com and Heroku. They now offer an integrated system in the market that gives customers greater flexibility and improved service.

## Market Concentration

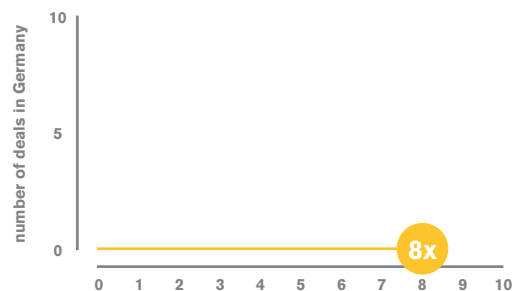
- The cumulative market share of the top five companies (Amazon, Microsoft, Google, Salesforce, HP) is almost 70 percent.
- AWS<sup>2</sup> is the leading provider, with a market share of around 30 percent. However, Microsoft Azure is growing rapidly in the PaaS market.



Cumulative market share of the top three companies

## M&A – Size & Valuation of Deals (2014)

- No movement in terms of transactions in the PaaS segment; not a single transaction in 2014.
- High company value – the average EV/revenue multiple of four large international deals since 2011 is around 8.0x.



Ø Sales multiple (global)

2) AWS: Amazon Web Services



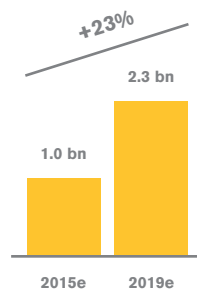
## Public SaaS

In the PaaS segment 30 to 40 percent of revenue is generated in the B2C area, while the SaaS penetration of German companies is steadily increasing in all segments, currently around 20 percent. Although the German Public SaaS market is served mainly by foreign companies, German companies are gaining in significance (including the German software giant SAP). Numerous smaller promising SaaS providers do not yet have the critical mass to enter the profit zone.



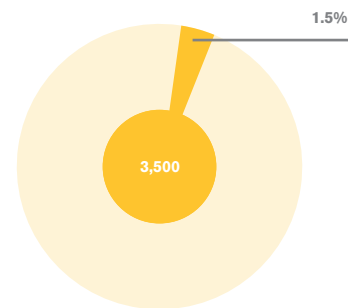
### Revenue<sup>1</sup> in Germany (€ bn)

- Between 30 and 40 percent of SaaS revenue is generated in the B2C area.
- The SaaS penetration of German companies is steadily increasing in all industrial sectors, currently around 20 percent.
- SaaS apps for CRM, email/collaboration and communication make up around 66 percent of the SaaS market.



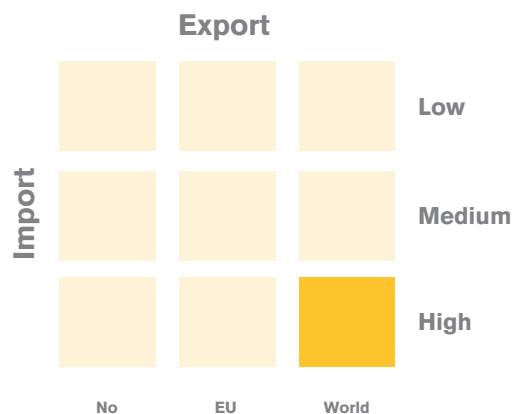
### Employment 2015e

- Calculated on the productivity of leading providers, around 3,500 employees work in the SaaS segment. This is around 1.5 percent of employees in the German Internet industry.
- Comparatively high productivity due to advanced scalability and the automation of services.



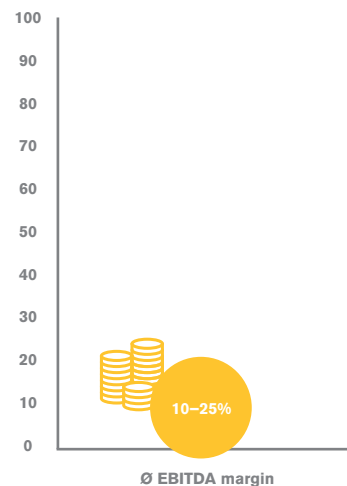
### Export/Import

- The leading companies in the German SaaS market are foreign (e.g. Salesforce, Sage, IBM, Microsoft).
- SAP, as one of the world's leading software publishers, is also represented in the SaaS segment and steadily becoming more important due to innovative solutions (in the areas CRM and ERP, among others).



### Profitability (%)

- Profitability is predominantly due to the economies of scale achieved in the SaaS area, as well as the level of maturity of the solution. The EBITDA margin is usually between 10 and 25 percent.
- Many relatively small, yet quickly growing SaaS providers have not yet achieved the critical mass to enter the profit zone.

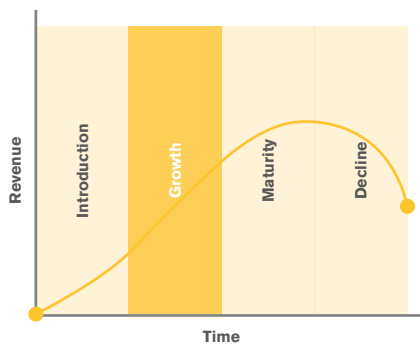


1) Revenues are based only on public cloud, the flexible provision of computing capacity over the Internet. The market volume of public and private SaaS was worth over € 3.4 bn in 2015.



## Market Maturity & Trends

- Market participants (corporate and private users) demand access to software and data everywhere and at any time, combined with a good user experience.
- SaaS is becoming more important in German industry as a replacement for and supplement to legacy IT systems.



## Strategic Orientation of Companies

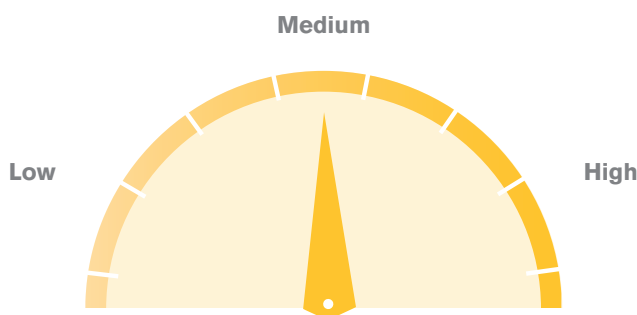
- Marketing of SaaS added value in comparison to desktop solutions (e.g. cost benefits, flexibility).
- Digital transformation from classical software company to SaaS provider (new sales, architecture, provision and servicing models).
- Creating ecosystems and standardized integration offers in order to increase customer loyalty

**2014:** Strategic partnership between Salesforce and T-Systems. T-Systems sells Salesforce's CRM platform and so extends its own SaaS (cloud) range of offers. Furthermore, T-Systems provides data center space.



## Market Concentration

- The cumulative market share of the top four SaaS companies is around 30 to 40 percent. (These include Microsoft, Salesforce, Apple.)
- Many small providers are trying to establish themselves in the quickly growing SaaS market (e.g. Box, NetSuite, Google Apps).

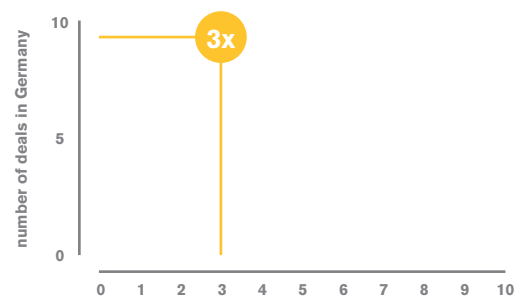


Cumulative market share of the top three companies



## M&A – Size & Valuation of Deals (2014)

- A lot of movement in the SaaS area in terms of M&A activities.
- Nine transactions in 2014.
- The average EV/revenue multiple of four large international deals since 2014 is around 3.0x.



Ø Sales multiple (global)



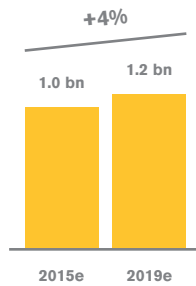
# Web Hosting & Domains

The Web Hosting & Domains segment is already in the maturity stage. In Germany we can see very high domain and website penetration. (Seventy percent of companies have their own websites.) Providers are constantly extending their portfolios of services and expanding into new markets. B2B/B2C cloud services are an obvious extension of product portfolios. A consolidation wave is occurring worldwide and has led to a number of takeovers in Germany. Due to the relatively high gross margins, leading providers of hosting and domain services still have very attractive EBITDA margins of between 30 and 40 percent.



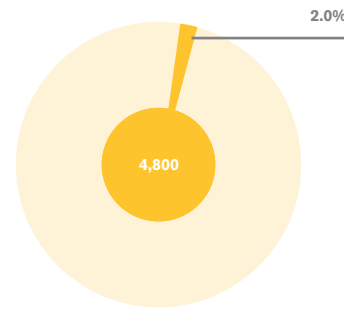
## Revenue in Germany (€ bn)

- Germany has the highest domain and website penetration in Europe, and consequently only moderate growth can be expected in the coming years, despite new top-level domains.
- Almost 70 percent of companies in Germany have their own websites (among the highest penetration rates worldwide).
- There are more than 20 million domains in Germany (of which around 70 percent are “.de” domains).



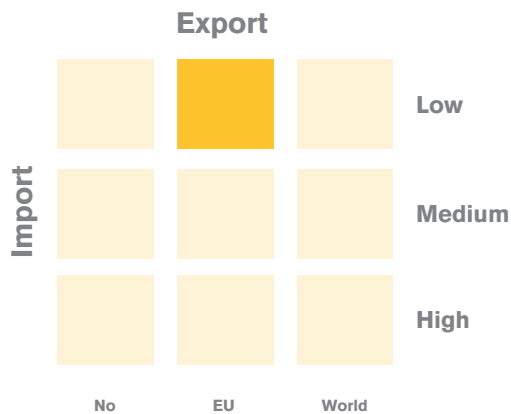
## Employment 2015e

- Calculated on the productivity of leading providers, around 4,800 employees work in the Web Hosting & Domains segment. This is around 2.0 percent of employees in the German Internet industry.
- Compared to other segments, the productivity is average to low. Reasons for the high staffing levels in this segment are often call centers and IT departments.



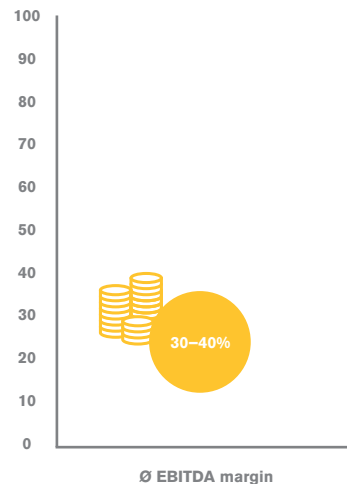
## Export/Import

- The majority of the demand in Germany is met by German companies (more than 80 percent).
- German companies are also active internationally. I&T's foreign subsidiaries are market leaders in numerous European countries, such as Spain and, recently, Poland.



## Profitability (%)

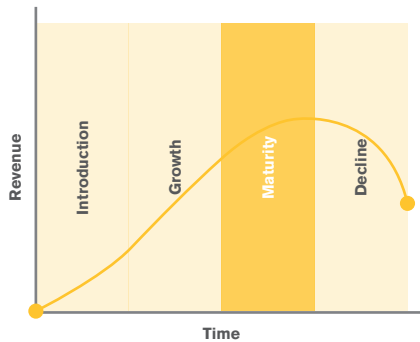
- High EBITDA margins due to the high gross margins of the large German and international providers.
- Germany has one of the highest gross margins in Europe.





## Market Maturity & Trends

- The market in Germany is quite saturated. However, there is still potential for growth for small companies.
- German companies have a high level of domain and website penetration.
- Consolidation and stiff competition for market share in the Web Hosting & Domains segment.



## Strategic Orientation of Companies

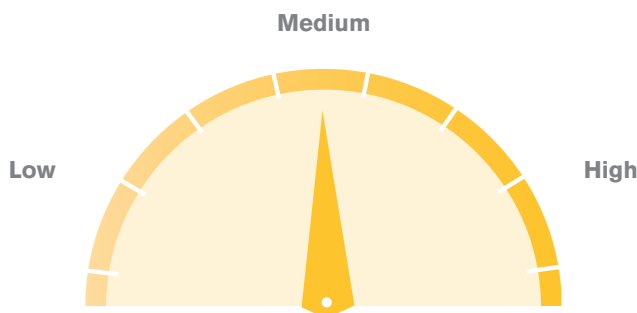
- Attracting new customers with discount prices. Renewal of services at higher prices (with correspondingly high churn rates).
- Pan-regional expansion plans through acquisitions, as well as entrance into the cloud market as a reaction to the mature German market and potential in other markets.

**2015:** Over the last few years 1&1 has strengthened its position in the domestic market and found new sources of revenue (including upselling of cloud services). Other markets were opened through targeted acquisitions (Arsys/Spain, home.pl/Poland).



## Market Concentration

- The three largest providers have a market share of around 40 percent.
- The market leader is 1&1 with 20 percent market share, followed by Strato and Host Europe with almost 10 percent market share each.

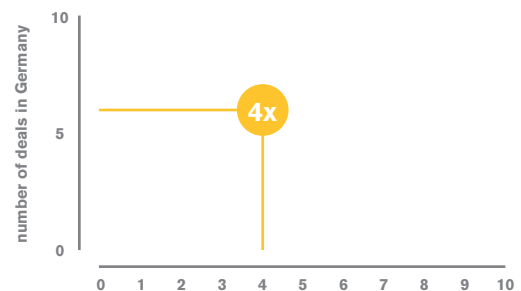


Cumulative market share of the top three companies



## M&A – Size & Valuation of Deals (2014)

- Six transactions in 2014.
- The average EV/revenue multiple of four large international deals since 2014 is around 4.0x.
- The most recent activities are the takeover of home.pl by United Internet in Poland in 2015 and the takeover of Intergen AG by Host Europe in 2014.



Ø Sales multiple (global)

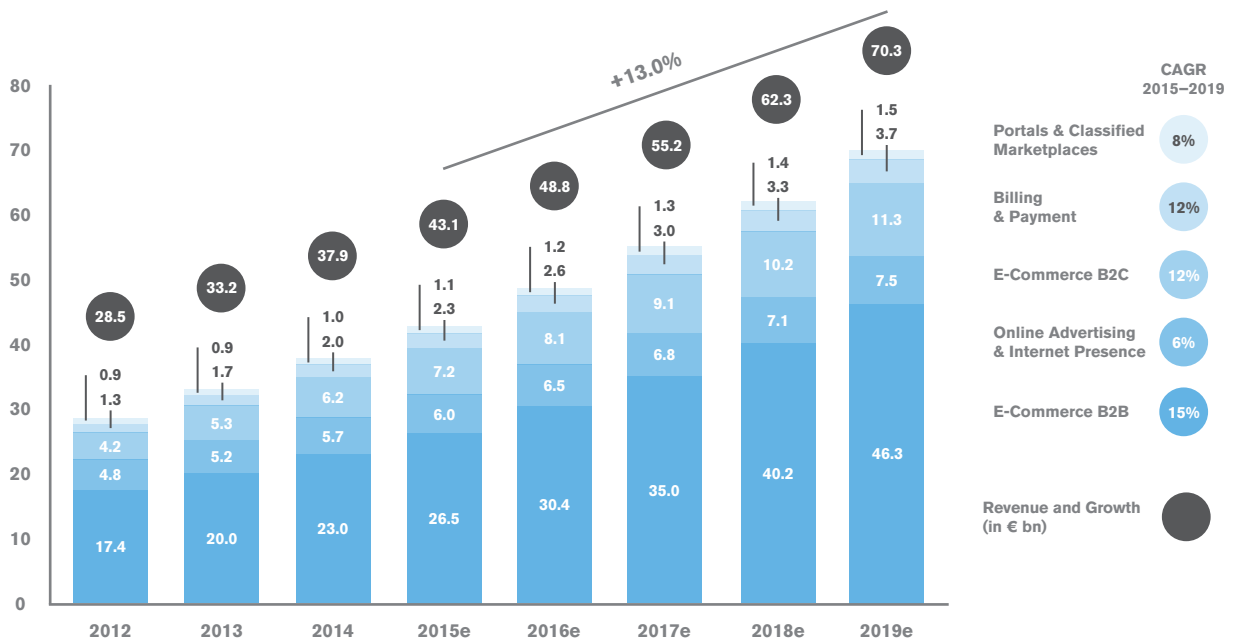
# 3. A detailed look at the individual layers and segments of the Internet industry

## 3.3 Aggregation & Transactions



FIG. 9

### Revenue and Growth in Layer 3: Aggregation & Transactions (in billions of euros)



Source: eco, Arthur D. Little

In Layer 3 are players that use the services of Layers 1 and 2 to aggregate the content of Layer 4 and make it accessible. They are also responsible for initiating transactions with other products and implementing them. This layer includes the B2B E-Commerce sector and numerous providers of B2C e-commerce platforms such as Amazon.de and otto.de. Operators of subscription-based portals and classified marketplaces such as XING and Immobilienscout.de, advertisers and online marketing companies such as Google and Axel Springer Media, and providers of transaction services such as PayPal and SOFORT Überweisung are all to be found in Layer 3.

- E-Commerce B2B is the segment with the highest revenues in Layer 3, with around 27 billion euros (2015) and an expected annual growth rate of 15 percent. The growth of this segment depends partly on a surge in B2B direct online sales for traditional companies and partly on the general trend toward e-procurement.
- In third place is the segment Online Advertising & Internet Presence, with 6 billion euros and an expected average annual growth rate of six percent, as the share of online advertising in the media mix of companies is steadily growing.
- With a market volume of around 7.2 billion euros and an expected average annual growth rate of 12 percent, E-Commerce B2C is in a firm second place. Even though the segment has already reached maturity, it is still growing due to the increasing digitalization of the retail industry and the travel market.





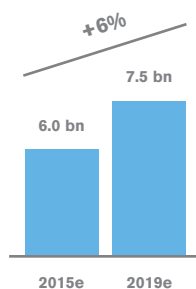
# Online Advertising & Internet Presence

The Online Advertising & Internet Presence segment is rapidly gaining in significance within the advertising sector, despite trends such as ad blocking. Online advertising already accounts for 25 to 30 percent (of the net advertising expenditure) of corporate media mixes. Around half of this is spent on keyword advertising. There is a lot of activity in the M&A market, with almost 30 deals in 2014, as seen in the recent takeover of T-Online by Ströer (2015).



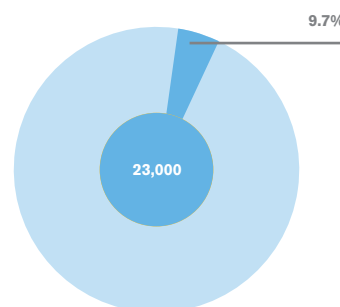
## Revenue<sup>1</sup> in Germany (€ bn)

- Germany has the biggest online advertising market in Europe after Great Britain. This is driven primarily by the strong economic growth in Germany.
- Keyword marketing accounts for almost half of net online advertising expenditure.
- Online advertising spending is the driver of advertising expenditure.



## Employment 2015e

- Calculated on the productivity of leading providers, around 23,000 employees work in this segment. This is around 9.7 percent of employees in the German Internet industry.
- Lower productivity than other segments due to the personnel-intensive business model.



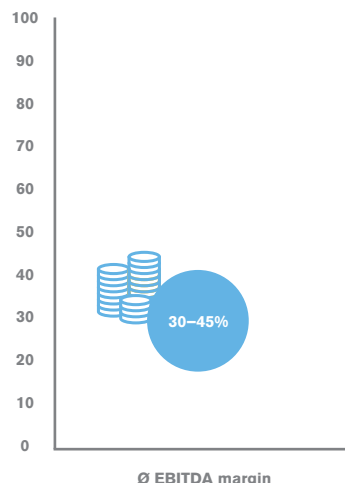
## Export/Import

- Foreign companies dominate the market for advertisers (Google and Facebook) with more than 80 percent market share.
- Online marketing and Internet presence is covered by German companies (including Interactive Media, Axel Springer Media, Impact), with more than 70 percent market share.



## Profitability (%)

- Relatively high EBITDA margins of the leading providers in this segment.
- EBITDA margins of advertisers are between 30 and 40 percent.
- The profitability of online marketing and Internet presence is over 40 percent.

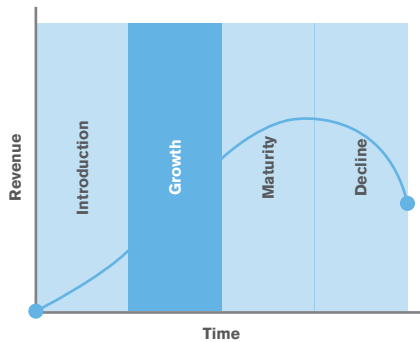


1) Revenue for online advertising includes keyword marketing, commission and production costs (e.g. for advertising and media agencies).



## Market Maturity & Trends

- Online advertising already accounts for 25 to 30 percent (of the net advertising expenditure) of corporate media mixes, depending on the sector.
- Spending on online advertising is increasing steadily relative to other channels.
- Innovative and specialized online agencies are gaining in significance (data interpretation, advertising management, advanced analytics).



## Strategic Orientation of Companies<sup>2</sup>

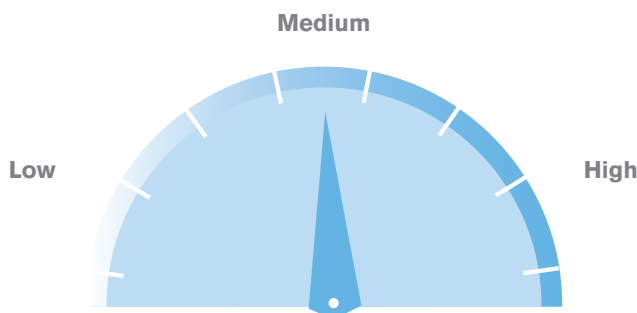
- Use of interactive target group dialogues and intelligent tracking tools in order to address customers more effectively.
- Digital presence in order to cement customer relationships and address new target groups.
- Investments in video Internet and mobile advertising, which are gaining impact.

**2013:** In the course of optimizing their media mix, VW invested around 16 million euros in online advertising in 2013. This is an increase in online advertising expenditure of more than 50 percent in comparison to the previous year, which underlines the rising status of online advertising.



## Market Concentration

- Advertisers: Google has a market share of over 60 percent, primarily due to keyword marketing, while Yahoo and Facebook follow up with around 10 percent each.
- Online marketing war: five to six competitors each have market shares between eight and 15 percent.

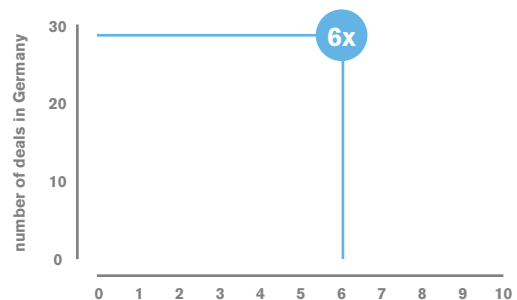


Cumulative market share of the top three companies



## M&A – Size & Valuation of Deals (2014)

- 28 transactions in 2014.
- The average EV/revenue multiple of four international deals since 2014 is around 6.0x.
- The most recent activity is the acquisition of T-Online by Ströer (2015), with the aim of extending its portfolio and entering the rapidly growing online advertising market.



Ø Sales multiple (global)

<sup>2)</sup> From the perspective of the companies advertising



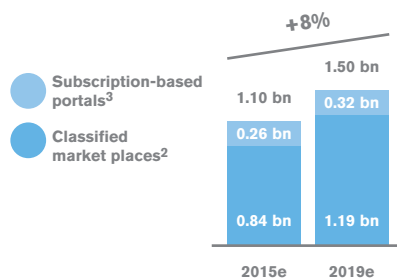
# Portals & Classified Marketplaces

In the Portals & Classified Marketplaces segment, performance-dependent payment models are gaining in importance. While the demand in both sub-segments is covered equally by domestic and foreign companies, German companies are accelerating their export push in numerous niche markets (e-recruiting, real estate portals, etc.). The numerous niche markets are, as a rule, occupied by the dominant market leaders.



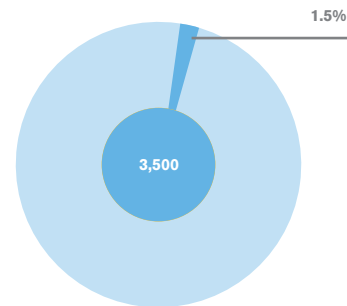
## Revenue<sup>1</sup> in Germany (€ bn)

- Two sub-segments with different business models
- Classified marketplaces<sup>2</sup> (for example, real estate and automotive platforms) with strong growth (nine percent p.a.) and business models based on listing fees.
- Subscription-based portals<sup>3</sup> (for example, online dating exchanges and business networks) with moderate growth (five percent p.a.).



## Employment 2015e

- Measured on the productivity of leading providers, around 3,500 employees work in this segment, which corresponds to around 1.5 percent of workers in the German Internet industry.
- In comparison to other segments, high productivity as a result of the high economies of scale of the dominant market leaders.



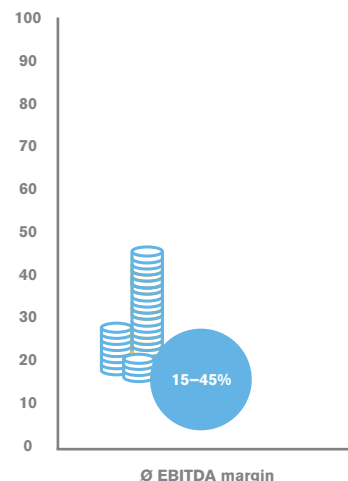
## Export/Import

- In both sub-segments, German demand is met equally by domestic and foreign companies.
- Increased expansion or export acceleration by German companies in numerous niche markets (for example, ImmobilienScout24/real estate and StepStone/recruiting).



## Profitability (%)

- The EBITDA margin is highly dependent on the business model of the niche market.
- While dating and job platforms, for example, demonstrate a rather low EBITDA margin (15 to 20 percent), business networks and established automotive and real estate marketplaces have somewhat higher profitability (25 to 45 percent).



1) Excluding advertising revenue (traffic monetarization not included)

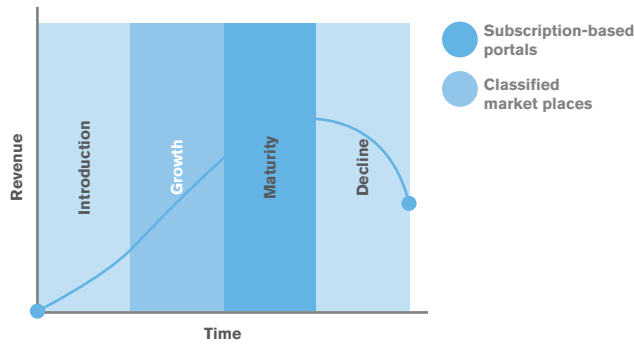
2) Classified marketplaces: placement of goods and services through the medium of digital advertisements (however, the purchase process does not occur on the website, as a rule)

3) Subscription-based portals: payment of a performance-dependent fee by at least one of the registered parties



## Market Maturity & Trends

- Many start-ups are attempting to become established in increasingly small niches.
- Classified marketplaces create market transparency, which represents substantial added value for end customers and companies.
- Performance-dependent payment models gaining in importance.



## Strategic Orientation of Companies

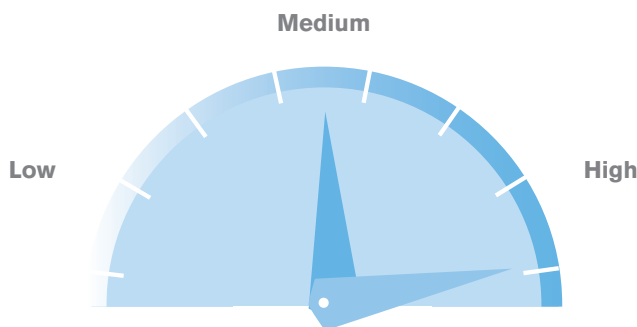
- Differentiation in the use of innovative and efficient algorithms.
- Expansion in related business sectors (for example, combining business network and e-recruiting).
- Mergers and strategic partnerships to achieve economies of scale.

**2015:** Oakley Capital (GB) acquired two German online dating services: ElitePartner and Parship. This aims at cementing the company's market position, as the market for dating services has become more competitive and providers such as Tinder are penetrating the market with new innovative business models.



## Market Concentration

- Dominating companies can be found in the numerous niche markets.
- Smaller niche markets, such as online dating portals, with medium market concentration.
- Larger niche markets (for example, business network portals, job portals, and real estate platforms) with high market concentration of, for example, two market leaders with a combined market share of up to 80 percent, are not infrequent.

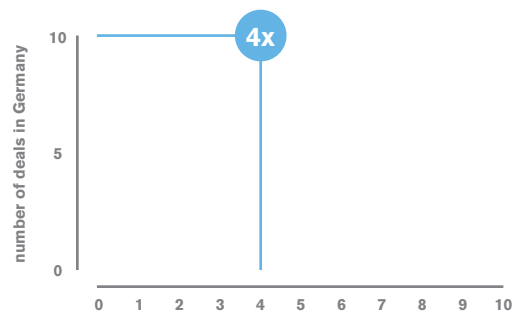


Cumulative market share of the top three companies



## M&A – Size & Valuation of Deals (2014)

- Relatively active segment with 10 transactions in 2014
- The average EV/revenue multiple from three international deals since 2014 is approximately 4.0x.
- The most recent activity is the acquisition of Immowelt by Axel Springer (2015).



Ø Sales multiple (global)



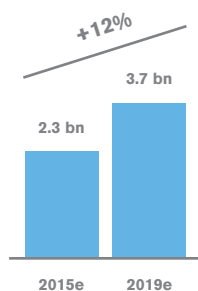
## Billing & Payment

The Billing & Payment segment shows around 12 percent growth per year, driven by the improved availability of online payment processes and their increasing affinity. In addition, the trend toward e-commerce with online ordering of goods and the consumption of online services is leading to more online payments. The range of online payment systems has so far been dominated by foreign companies; however, German providers plan further online payment processes and financial technology (fintech) innovations.



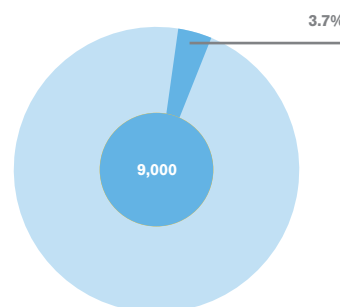
### Revenue in Germany (€ bn)

- Online users are increasingly employing online payment methods – E-Commerce B2C is the main driver of value.
- The number of PayPal users in Germany, for example, is already approximately 20 million.
- Three percent of the transaction volume generated online can be assumed to be attributed to billing and payment providers.



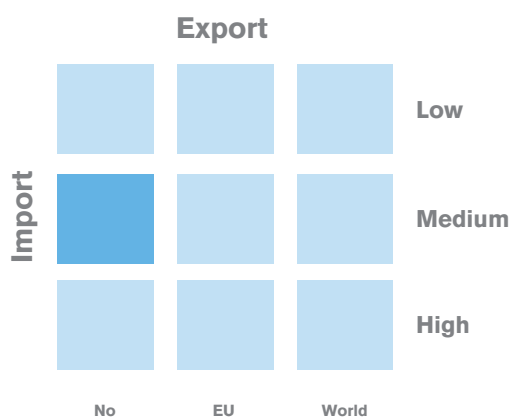
### Employment 2015e

- Measured on the productivity of leading providers, around 9,000 employees work in the Billing & Payment segment, which corresponds to around 3.7 percent of workers in the German Internet industry.
- In comparison to other segments, average productivity is strongly driven by the service intensity of the business model.



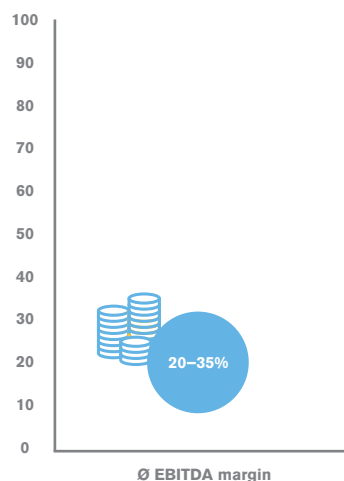
### Export/Import

- In the e-payment area, there are no German providers on par with PayPal.
- As a result, the range of innovative payment systems has so far been dominated by foreign companies (led by PayPal).
- However, innovative German companies such as SOFORT GmbH are also active abroad and on the advance.



### Profitability (%)

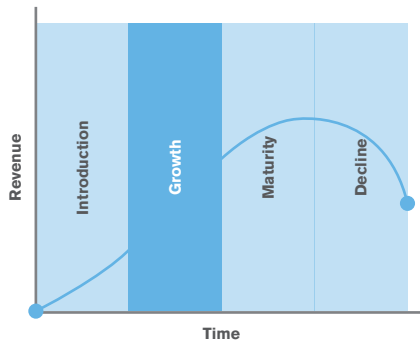
- The EBITDA margin of established market participants ranges between 20 and 35 percent.
- As a result of the worldwide presence of the market leader, PayPal, and the associated economies of scale, this company has an EBITDA margin of over 30 percent.





## Market Maturity & Trends

- The use of e-payments is growing constantly.
- Mobile payments are gaining in importance (PayApp).
- One German cross-institution payment process was already launched end of 2015.
- E-money and e-wallets are predicted to be trends in the coming years.



## Strategic Orientation of Companies

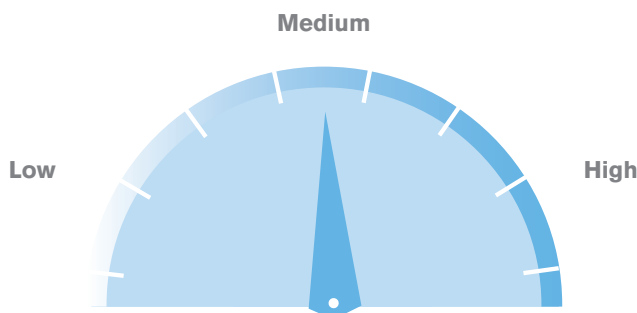
- Adaptation of payment methods to customer wishes (for example, with regard to security, deployment and ease of use).
- Trend toward international deployment and cross-channel capability of payment processes.
- Development of customer loyalty programs and coupon solutions.

**2015:** Launch of a new multi-institute online payment process called Paydirekt as a competitor to the front-runner, PayPal. German banks want to provide users and retailers with a fast, secure and simple payment process with the Girokonto (checking account) solution.



## Market Concentration

- The top five payment processes used on the Internet are PayPal, invoice, direct debit, credit card, and pre-payment.
- Of these, PayPal is by far the most frequently used (for approximately 30 percent of online payments).
- Smaller German providers are ClickandBuy and Giropay.

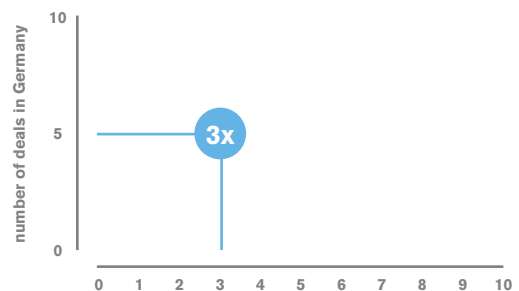


Cumulative market share of the top three companies



## M&A – Size & Valuation of Deals (2014)

- Five transactions in 2014.
- The average EV/revenue multiple of two international deals since 2014 is at approximately 3.0x.
- The most recent activity is the acquisition of Global Collect by the Ingenico Group (2014).



Ø Sales multiple (global)



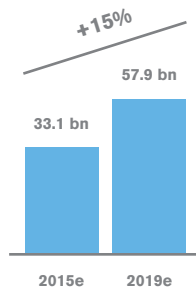
## E-Commerce B2B

The E-Commerce B2B segment is one of the largest segments in the German Internet industry. One of the value drivers is that 75 percent of German companies already predominantly use e-commerce in procurement. The segment is also growing rapidly – many German companies are increasingly using additional distribution channels in B2B e-commerce. Additional services offered with online ordering and the high level of automation, combined with low costs, make e-commerce very attractive in the B2B segment. In the German economy, we are seeing the dominance of automated orders via electronic data interchange (EDI).



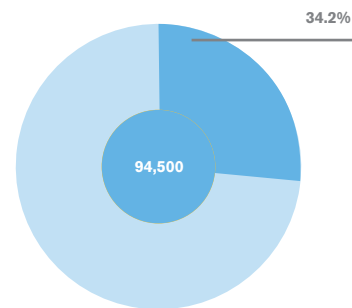
### Revenue in Germany (€ bn)

- Almost 75 percent of companies in Germany undertake procurement predominantly via e-commerce.
- In e-commerce B2B, online revenues are generated via both website/online shops and automated data exchange<sup>1</sup>.
- The assumed value contribution of the generated revenue in the E-Commerce B2B segment is two percent.



### Employment 2015e

- Measured on the productivity of leading providers, around 94,500 employees work in the e-commerce B2B segment, which corresponds to around 34.2 percent of workers in the German Internet industry.
- In comparison to the E-Commerce B2C segment, the B2B segment demonstrates higher productivity as a result of greater automation and larger order volumes.



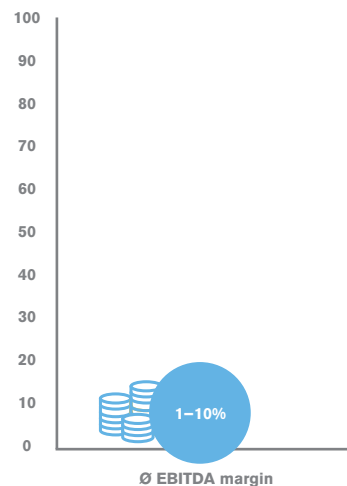
### Export/Import

- The demand is, to a large extent, covered by German companies – lower market share for foreign platforms.
- German companies are increasingly using multichannel strategies, including online sales, in the B2B segment.
- German B2B online shops are operating successfully on an international basis.



### Profitability<sup>2</sup> (%)

- As a result of the pure intermediary function and the trade business model of e-commerce B2B platforms such as Mercateo, the EBITDA margin is comparatively small.
- One reason for the small margin is that the majority of revenue from E-Commerce B2B is generated by companies that use online sales as an additional distribution channel, but whose focus is on offline sales.



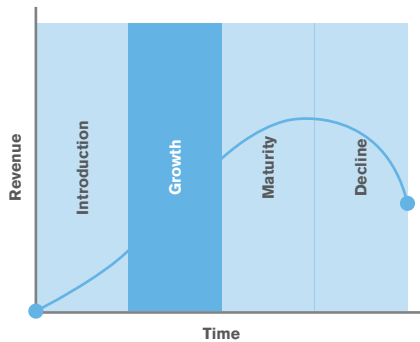
1) This refers to orders via electronic data interchange (EDI) between two IT systems, without human intervention.

2) The EBITDA margin is only valid for pure e-commerce B2B online merchants, which form a smaller share of the revenue. (E-commerce B2B is driven by the B2B omnichannel strategies of many companies.)



## Market Maturity & Trends

- The E-Commerce B2B segment is in the growth phase.
- Mobile services, online self-service and automation with “predictive functionalities” are gaining in importance.
- Strong increase in B2B direct sales via the Internet.



## Strategic Orientation of Companies

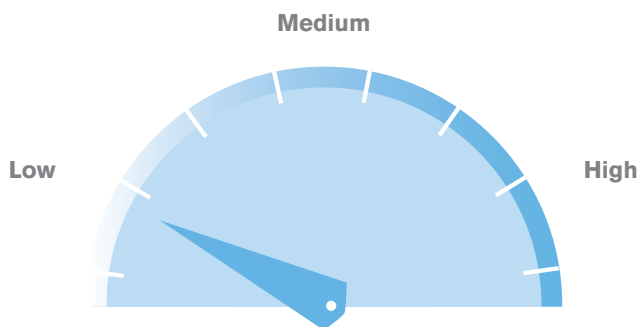
- Opening up of new markets (for example, B2B services) via online activities.
- Broadening of the product spectrum (one-stop shop) and creation of numerous niche providers.
- Premium service standards (for example, next-day delivery, best-price guarantee).

**2015:** Screwfix opened hardware stores in Germany, and is a B2B niche player with premium service standards. It offers small hardware stores with intensive on-location service and an online shop with the option of delivery directly to the contractor’s building site.



## Market Concentration

- Heavily fragmented market without dominant players (focus is on the digital direct sales of many companies).
- In comparison to the E-Commerce B2C segment, the B2B market has fewer dominant online portals acting as intermediaries (for example, Mercateo).

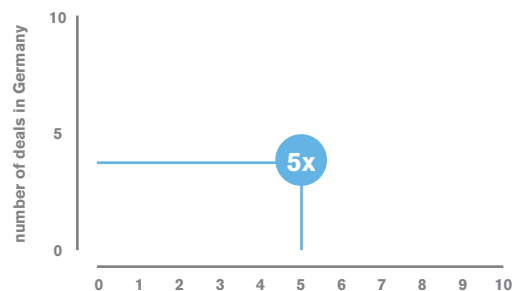


Cumulative market share of the top three companies



## M&A – Size & Valuation of Deals (2014)

- Relatively little activity
- Four transactions in 2014.
- The average EV/revenue multiple from four international deals since 2014 is approximately 5.0x.



Ø Sales multiple (global)





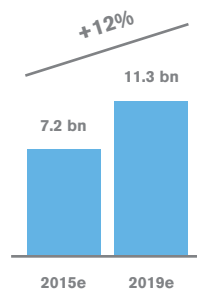
## E-Commerce B2C

The E-Commerce B2C segment is on the advance and growing constantly (12 percent p.a.). The growth is driven by the increasing online affinity of users – more than half of Germans already purchase online regularly. Trends such as mobile shopping and increasing digitalization will further improve the online shopping experience. In 2014, 15 percent of retail revenue was already generated through e-commerce.



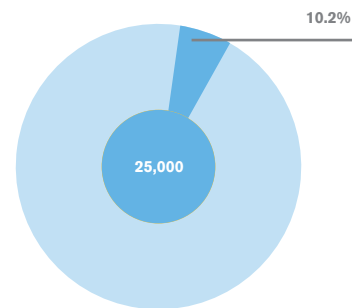
### Revenue in Germany (€ bn)

- Germany is number one in Europe, measured on absolute online revenue.
- Online retail already accounts for 15 percent of retail.
- The online revenue from goods and services in 2015 equated to more than 70 million euros.
- The assumed value contribution of the generated revenue in the E-Commerce B2C segment is 10 percent<sup>1</sup>.



### Employment 2015e

- Measured on the productivity of leading providers, around 25,000 employees work in the E-Commerce B2C segment, which corresponds to around 10.2 percent of workers in the German Internet industry.
- High productivity and, above all, significantly higher than in classic bricks-and-mortar retail, yet lower than in the E-Commerce B2B segment.



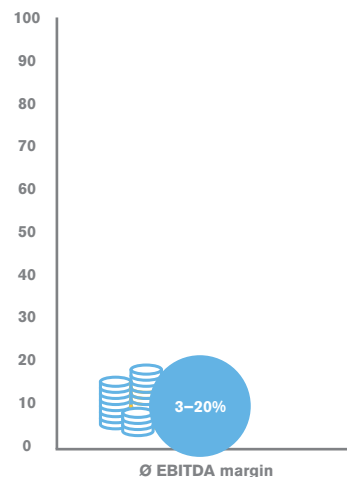
### Export/Import

- 40 percent of the German B2C demand is covered by global-scale players such as Amazon, eBay and Expedia.
- In addition to this, there are many smaller German companies, led by the Otto Group, Zalando and Unister, that not only cover German demand, but are also export oriented.



### Profitability (%)

- The EBITDA margins of goods in e-commerce are consistent with the profitability in the retail segment as a whole.
- Higher margins (15 to 20 percent) can be seen in e-commerce for services.
- Online platforms, for example, demand between 10 and 20 percent commission as intermediaries.

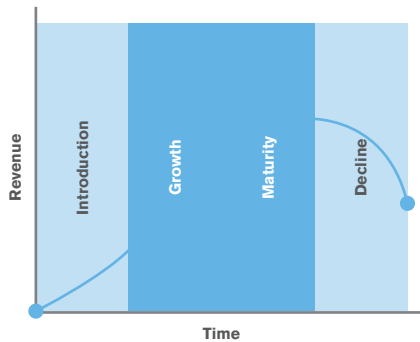


<sup>1</sup>) This includes the value contribution of goods and services (for example, travel, tickets) that are ordered online; the value contribution is based on the total value of the fulfilled transactions, minus the direct costs of the sold goods or services. Leading platforms demand commission of up to 20 percent of the value of the transaction.



## Market Maturity & Trends

- E-Commerce B2C, as a whole, is in the later growth phase, and in certain sub-segments is in the maturity phase.
- Innovation is changing retail (digitalization, mobile shopping, etc.).
- Stronger competition as a result of simplified market entry.
- Online intermediaries are supplanting a range of established business models (for example, bricks-and-mortar travel agencies or brokers).



## Strategic Orientation of Companies

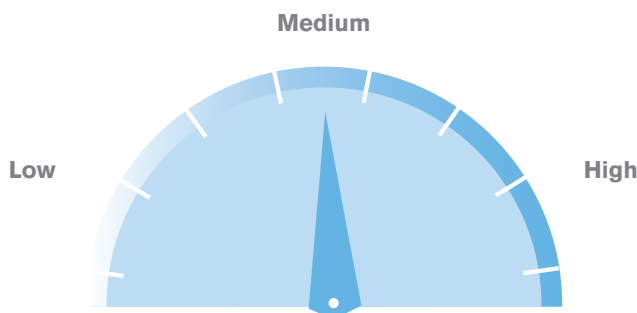
- Strong growth and market penetration strategy of the mass-market players (including Zalando, Cyberport).
- Differentiation through high level of service (free delivery, loyalty programs, discounts).
- Personalization based on individual customer needs (big data management).
- Establishment of small niche providers and consolidation.

**2016:** Otto has successfully driven its digital transformation from home-shopping retailer to multichannel retailer, and is today one of the leading players in the e-commerce market (six to seven billion euros of e-commerce revenue).



## Market Concentration

- The three largest goods e-commerce players (Amazon, Otto, eBay) have approximately 50 percent market share.
- The three largest services players (Expedia, Unister, Booking) have approximately 20 percent market share.
- Countless e-commerce companies as a result of the multichannel strategies of many retailers.

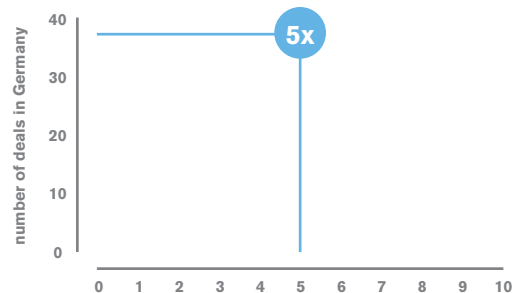


Cumulative market share of the top three companies



## M&A – Size & Valuation of Deals (2014)

- Lots of activity in the online transaction area, with more than 30 transactions in 2014.
- The average EV/revenue multiple from five international deals since 2013 is approximately 5.0 percent.



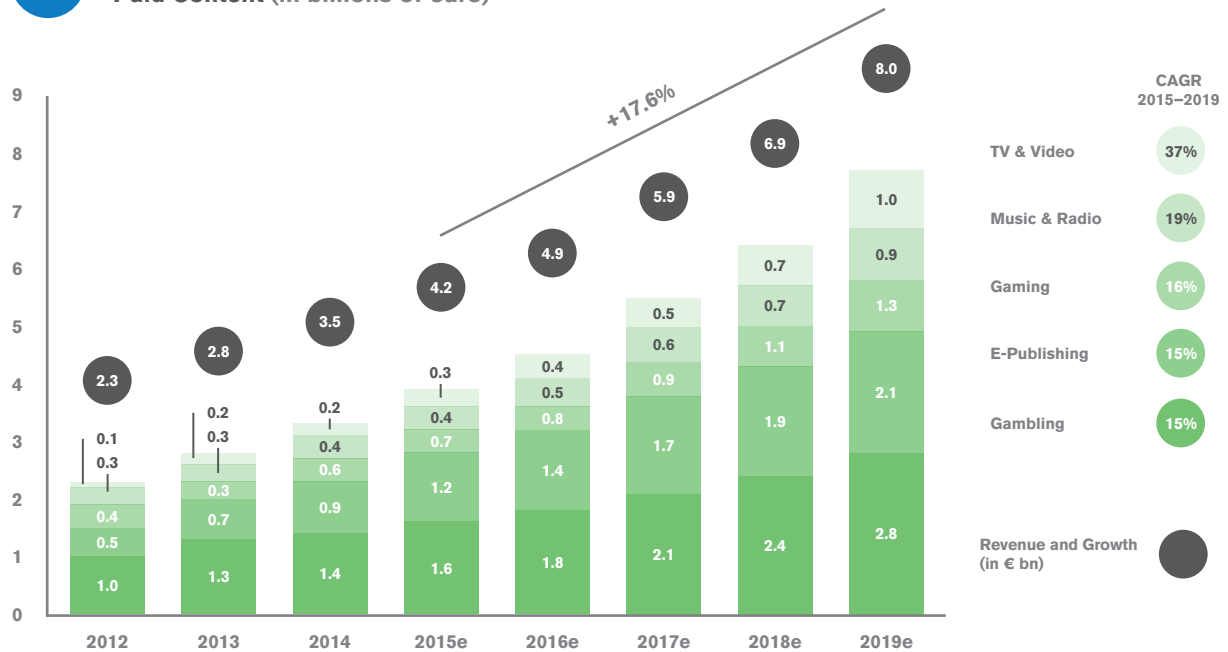
Ø Sales multiple (global)

# 3. A detailed look at the individual layers and segments of the Internet industry

## 3.4 Paid Content



**FIG.10** Revenue and Growth in Layer 4:  
Paid Content (in billions of euro)



Players in this layer generate content or purchase it from third parties, and make it available for marketing or other use for a fee via the Internet. All forms of media content accessible via the Internet can be counted as Internet content. These are offered for a range of platforms and services, both web based and for the reuse of offline media and content. Included in this layer are gaming and gambling providers such as Supercell, Goodgame Studios, and PokerStars; TV/video and music providers such as Netflix, maxdome, Spotify, and Deezer; and e-publishing companies such as Random House and Springer Science+Business Media.

- Gambling is the segment with the greatest revenue in Layer 4, at approximately 1.6 billion euros (2015); the expected average annual growth rate of 15 percent is based on the ever-increasing use of online gambling possibilities such as online poker and online sport betting.
- At approximately 0.7 billion euros (2015), Gaming is the third-largest segment measured on market volume, while the expected average annual growth rate of 16 percent will be made possible through fast Internet and low latency.
- E-Publishing, with a market volume of approximately 1.2 billion euros (2015), is in second place in Layer 4, with an expected average annual growth rate of 15 percent; more and more readers are transferring from printed media to e-books and e-magazines.
- The two smallest segments, Music & Radio and TV & Video, have the highest expected annual growth rates of 19 percent and 37 percent, respectively; among other things, fast broadband Internet and changing user behavior will increase the demand for music- and video-streaming subscriptions.



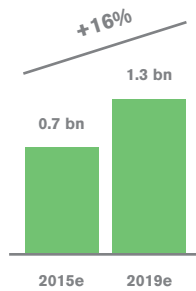
# Gaming

The segment Gaming has reached the online mass market in Germany and, to a certain extent, become established as a common form of use. Around 18 million Germans regularly use mobile- and browser-based games. Technical drivers of this victory march are the availability of fast Internet connections and low latency times – which also make graphic-rich offers more attractive. A further increase in user numbers (five to 10 percent p.a.) is expected in the coming years. Despite the dominance of foreign companies, several German gaming providers are successful – these, however, are largely successful abroad. As in the entire gaming sector, German providers are fighting to reach critical mass for their games.



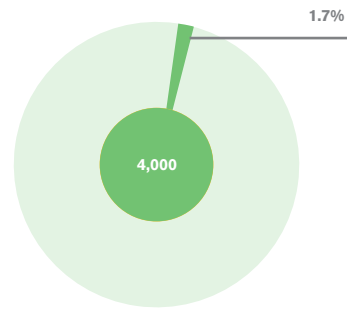
## Revenue<sup>1</sup> in Germany (€ bn)

- Online/browser-based games and game apps already account for 30 percent of the total market for digital games.
- Micro-transaction business models (virtual goods and additional content, including game apps) are a draw-card, driven through low entry barriers and improved quality of online games and devices.



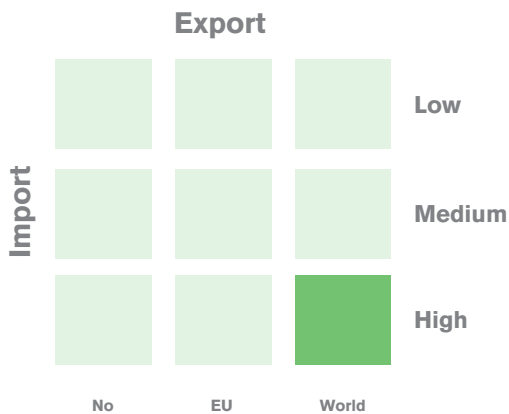
## Employment 2015e

- Measured on the productivity of leading providers, around 4,000 employees work in the Gaming segment, which corresponds to around 1.7 percent of workers in the German Internet industry – in comparison to the 18 million players, this figure is relatively low.
- In comparison to other segments, low productivity as a result of the high need for personnel (IT/games development).



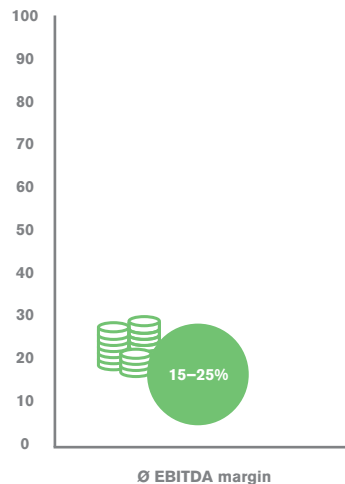
## Export/Import

- German developments cover approximately 20 percent of the German demand for online/browser-based games and game apps.
- Strong competition from Scandinavian vendors<sup>2</sup>.
- Worldwide export push for German companies (e.g. Gameforge, more than 75 countries).
- No German AAA publishers with own development.



## Profitability (%)

- The EBITDA margin of the large German providers is between 15 and 25 percent as a result of international expansion, among other things, which serves to reach higher user numbers and therefore economies of scale.
- Sub-scale (smaller) players are struggling to reach the profit zone.

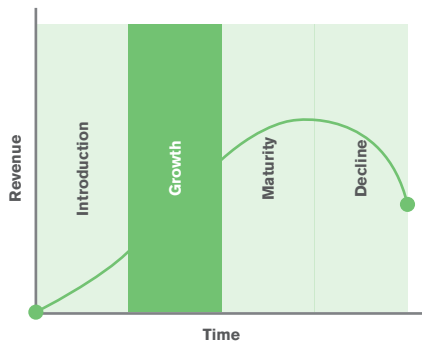


1) As a result of the increasing merging of the online gaming market with the digital gaming business, the size of the German online gaming market can be estimated at up to 1.7 billion euros (2015). 2) For example, Supercell, Rovio Entertainment. 3) For example, Bigpoint, Godgame Studios, GameDuell and Gameforge.



## Market Maturity & Trends

- Approximately 18 million Germans (30 percent of Internet users) show a preference for mobile- and browser-based games.
- Fast Internet and low latency enable the growing user numbers (five to 10 percent p.a.).
- Free-to-play is a widespread business model.
- Content and telecommunication providers are pushing into the market.



## Strategic Orientation of Companies

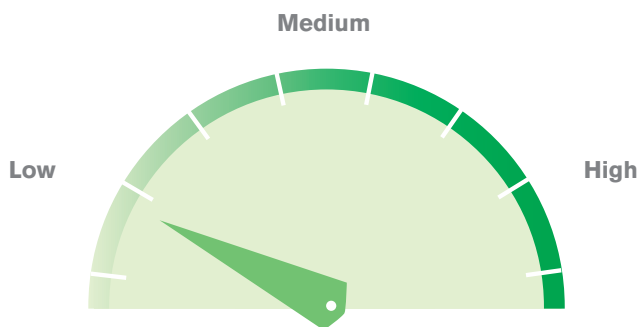
- Conception of digital games to address international target groups (a broad mass).
- The free-to-play model is used to gain new players.
- Micro-transactions are gaining in importance for the monetization of non-subscription games.

**2012:** Goodgame Studios turns to the free-to-play model for their online games “Big Farm” and “Goodgame Empire”. Through this, many new users should be attracted and subsequently monetarized.



## Market Concentration

- Although Supercell dominates the market for mobile games (approximately 25 percent), there are numerous small competitors for online and browser-based games.
- German providers<sup>3</sup> are especially well positioned in the international market.
- Numerous companies with one-hit online games.

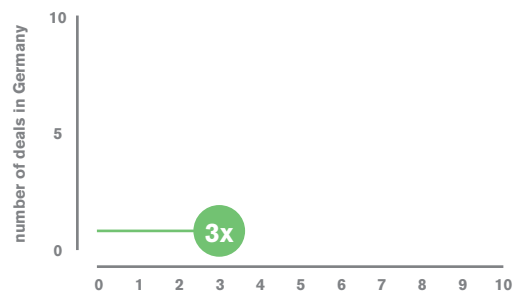


Cumulative market share of the top three companies



## M&A – Size & Valuation of Deals (2014)

- Almost no M&A activities. Only one transaction in 2014.
- The average EV/revenue multiple of three international deals since 2012 is approximately 3.0x.



Ø Sales multiple (global)



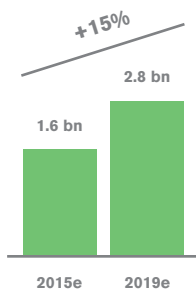
# Gambling

The Gambling segment enjoys high popularity in Germany, and will continue to grow in the coming years at around 15 percent per year. Fifteen percent of gross earnings from gambling are already generated online. The market is overwhelmingly dominated by foreign providers. This is a consequence, in part, of the lack of a legal framework in Germany, which has resulted in many German companies relocating their headquarters abroad.



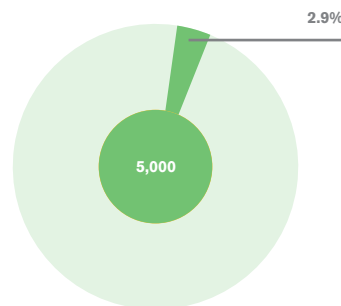
## Revenue<sup>1</sup> in Germany (€ bn)

- In Germany, online gambling<sup>2</sup> is legally a gray zone. (Online gambling licenses are only granted by one German state, Schleswig-Holstein).
- Fifteen percent of gross earnings from gambling are already generated online.
- The Online Casino sub-segment is, with more than 50 percent of gross online earnings from gambling, the most popular online gambling segment.



## Employment 2015e

- Measured on the productivity of leading providers, around 5,000 employees work in the Gambling segment, which corresponds to around 2.9 percent of workers in the German Internet industry.
- Comparatively high productivity as a result of high levels of automation and scalability.



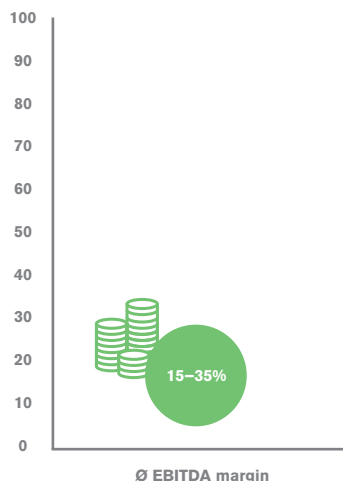
## Export/Import

- The majority of German demand is met by foreign companies.
- As a result of the lack of a legal framework for online gambling in Germany, numerous companies have relocated their company headquarters abroad (to, for example, Malta or Gibraltar).



## Profitability (%)

- The EBITDA margin of the large German providers is at 15 to 30 percent – the productivity of poker providers is almost 40 percent.
- Online market leaders have higher EBITDA margins than offline providers (five to 10 percent).
- Cost of marketing as main cost (approximately 25 percent of revenue), distributed over a large range of channels.

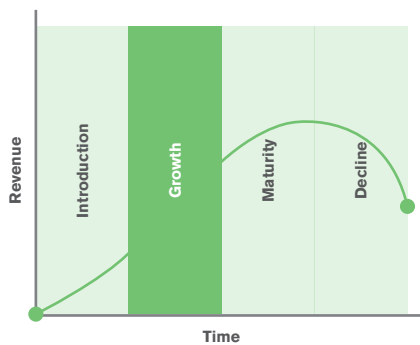


1) Revenue is the gross earnings from gambling, meaning the sum of earnings from gambling input that remain with the providers after the deduction of the payment of winnings. In comparison, gambling input in the online gambling market, at over 20 billion euros, is far more than the gross earnings.  
 2) Segments in the online gaming market: sport betting, online casino, and online poker.



## Market Maturity & Trends

- Increasing popularity, as online gambling can be played at home on the PC simply and conveniently.
- Mobile share of online revenue is increasing steadily.
- Implementation of legal gambling through the granting of licenses.



## Strategic Orientation of Companies

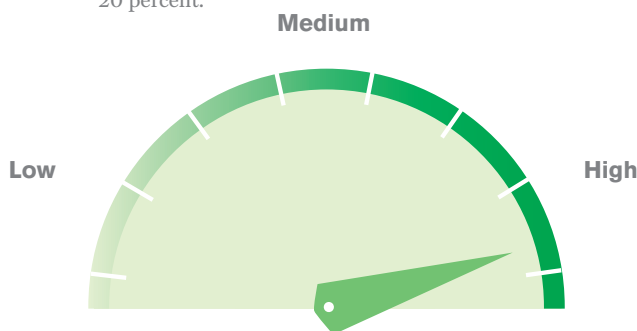
- Inorganic growth, in order to expand geographical presence, product portfolio and customer base.
- Establishment or expansion of marketing subsidiaries, in order to address customers in a more targeted manner.
- Image improvement, among other things, through player protection (for example, budget limits) and sponsoring.
- Advanced analytics to increase gambling turnover.

**2012:** Schleswig-Holstein enacted a new gambling law and granted 26 betting licenses, as well as 23 licenses for online poker and casino portals. In 2013, the law was abolished, but the licenses remain valid for six years.



## Market Concentration

- Strong gambling platforms in the German market.
- Tipico, bwin, and bet-at-home dominate the online sport betting market at more than 50 percent market share.
- PokerStars and Full Tilt Poker dominate the online poker markets – approximately 75 percent market share.
- Leading online casino providers are Sunmaker and Stargames, with a combined market share of around 20 percent.



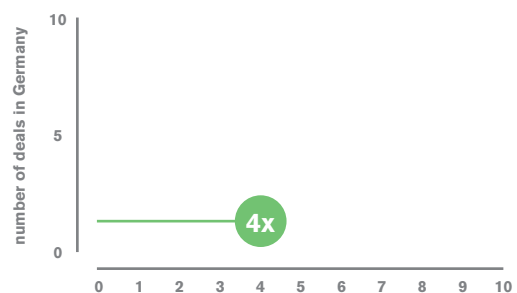
Cumulative market share of the top three companies



## M&A – Size & Valuation of Deals (2014)

- Two transactions in 2014
- The average EV/revenue multiple of three international deals since 2013 is approximately 4.0x.

There were two large international deals in the past few years – the acquisition of PokerStars by Amaya Gambling (2014) and the merger of Betfair and Paddy Power (2015).



Ø Sales multiple (global)





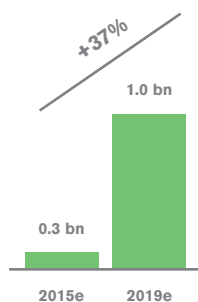
## TV & Video

The TV & Video segment is also a growth leader in the German Internet industry, with annual growth of nearly 40 percent. Improved broadband capacity and devices enable user-friendly streaming of content and a move away from linear TV. The forecast for the doubling of growth in customer numbers for Online TV & Video by 2019 can give under-performing providers hope for economies of scale. The coming years will show which providers can assert themselves and become established in this highly contested segment. More information on this can be found in the “Flow of Funds” study by ADL.



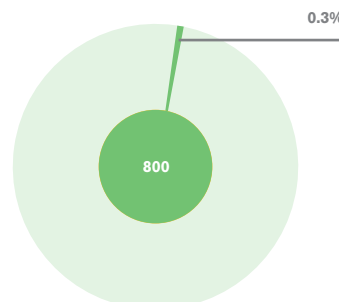
### Revenue<sup>1</sup> in Germany (€ bn)

- The customer numbers for Online TV & Video will more than double by 2019.
- The strongest growth in revenue is to be expected in the SVOD<sup>2</sup> business model, at 40 to 50 percent p.a.
- The highest average revenue per user (ARPU) has been attained in the business model EST<sup>3</sup>, already at around 50 euros p.a.



### Employment 2015e

- Measured on the productivity of leading providers, around 800 employees work in the TV & Video segment, which corresponds to around 0.3 percent of workers in the German Internet industry.
- Comparatively high productivity as a result of scalable business models and the strong online and partner sales and low service intensity.



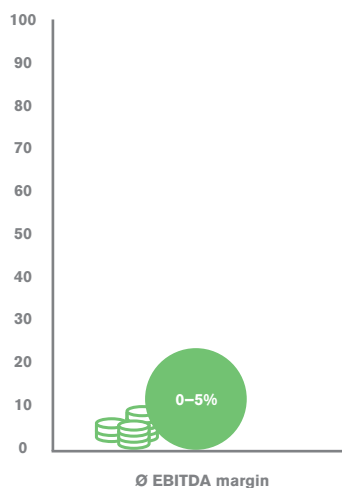
### Export/Import

- The majority of the German demand for paid online TV & video is served by foreign providers (more than 66 percent).
- There is only one German company, Maxdome (ProSiebenSat.1), represented in the top five companies (market share of approximately 15 percent).
- Further free-TV broadcasters (for example, RTL and public broadcasters) with VoD offers.



### Profitability (%)

- As a result of its lack of maturity, the segment is not yet profitable (as a result of the high marketing costs and inexpensive loss leaders, among other things).
- Strong growth and increasing market acceptance suggest growing profitability.
- For the scale players, an EBITDA margin of approximately 15 to 25 percent is to be expected.



1) Excluding advertising revenues

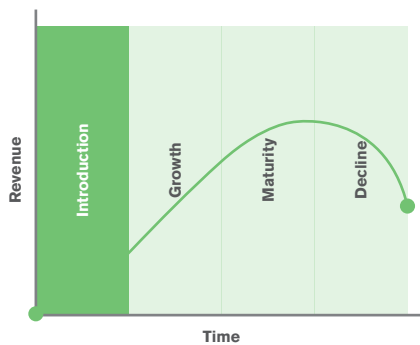
2) SVOD: subscription video on demand (for example, Netflix)

3) EST: electronic sell-through



## Market Maturity & Trends

- A quickly growing, but highly contested market.
- The first scale players will have an attractive position in the market.
- Consumer demand is turning away from linear TV.
- Change in consumer attitude: from giveaway mentality towards increased willingness to pay.
- Improved broadband capacity and user-friendliness of devices are growth drivers.



## Strategic Orientation of Companies

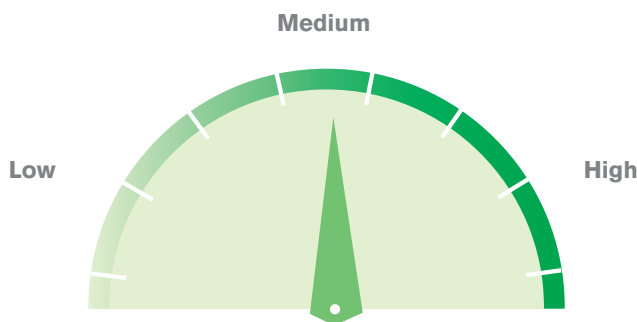
- Steady expansion of online content portfolios, to gain customers and achieve economies of scale.
- Battle for the right to attractive content, through to own production and enhancement of customer experience.
- High advertising costs and inexpensive loss leaders, in order to establish VoD offers in the market.

**2015:** The online video library Maxdome secured a comprehensive set of rights to the Hollywood studio Walt Disney Pictures. The additional films and series acquired through this deal are expected to result in new customers and strengthen the company's market position.



## Market Concentration

- The top three providers have a combined market share of between 50 and 60 percent.
- Amazon Prime Instant Video is the market leader with around 33 percent market share.
- The remaining top five providers have a market share of eight to 15 percent, respectively.



Cumulative market share of the top three companies



## M&A – Size & Valuation of Deals (2014)

- There were no M&A activities in Germany in 2014.



Ø Sales multiple (global)



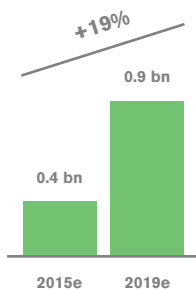
# Music & Radio

The Music & Radio segment is characterized by the transition from music download to streaming consumption. The digital market already accounts for more than one-quarter of the entire music market and has definitely arrived in the mass market. This is demonstrated, for example, by the cooperation of Napster and Aldi, which resulted in a streaming offer over the discounter’s distribution network. Service providers have so far shown only minimal or even negative profitability, of which the main costs (70 to 80 percent) are the license fees to the rights owners. Similar to the TV & Video segment, improved profitability is to be expected in the coming years as a result of further distribution in the market.



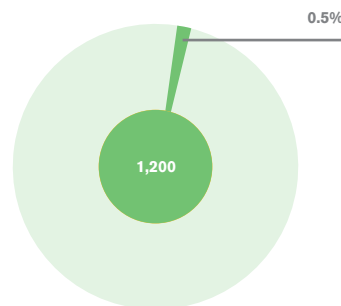
## Revenue<sup>1</sup> in Germany (€ bn)

- While paying customers for streaming services are constantly increasing, the more than 6 million download customers are stagnating.
- A jump of around 30 percent p.a. is expected, particularly in the music-streaming market.
- The digital market already accounts for more than one-quarter of the entire music market.



## Employment 2015e

- Measured on the productivity of leading providers, around 1,200 employees work in the Music & Radio segment, which corresponds to around 0.5 percent of workers in the German Internet industry.
- Comparatively high productivity as a result of the scalability of the business model and the strong online and partner sales.



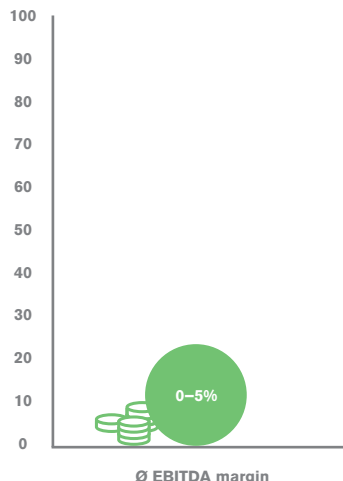
## Export/Import

- The majority of German demand for paid music services is filled by foreign providers.
- The most important players in the German digital music market come from the US (Amazon and iTunes) and Sweden (Spotify).
- Aside from these, there is the cooperation between Aldi and Napster, which offers global music streaming.



## Profitability (%)

- As a result of the immaturity of the market, providers of digital music have a one-digit EBITDA margin or are making a loss.
- The license fees are the main cost for music providers (70 to 80 percent of revenues go directly to the rights owners<sup>2</sup>).

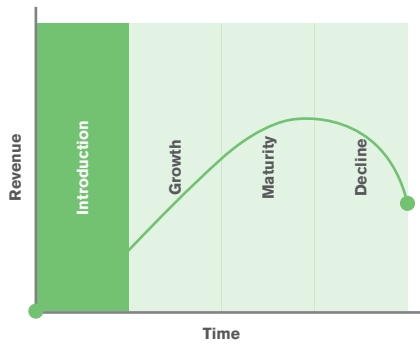


1) Excluding advertising revenues  
 2) Copyright collectives, labels, artists



## Market Maturity & Trends

- Change away from music downloads to streaming subscriptions
- Increasing reduction in illegal downloads.
- Video streaming in the music area increasing in Germany.
- Strong competitive pressure (e.g. Simfy).



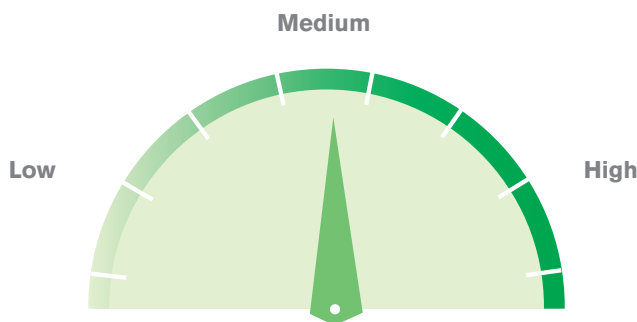
## Strategic Orientation of Companies

- Cooperation with strategic partners (for example, telecommunication providers) and offers of attractive bundles (for example, Apple Beats 1 radio) to increase streaming customer bases.
- Free services as loss leaders for paid subscription services.
- Enhancement of the customer experience (for example, Spotify's "discover weekly" feature).



## Market Concentration

- The top three companies in the market are Amazon, iTunes and Spotify (download and streaming).
- Dominating audio streaming platforms are Spotify, Napster, Deezer and Ampya.
- Dominating download platforms are Amazon, iTunes and Musicload.

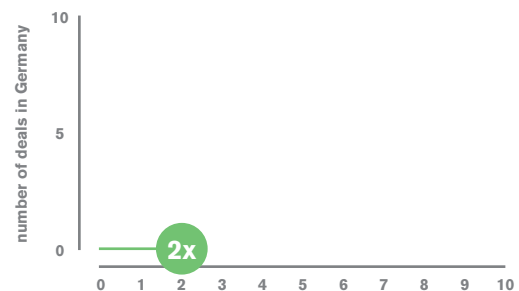


Cumulative market share of the top three companies



## M&A – Size & Valuation of Deals (2014)

- There were no M&A activities in Germany in 2014.
- The average EV/revenue multiple of two international deals in 2015 is approximately 2.0x.



Ø Sales multiple (global)



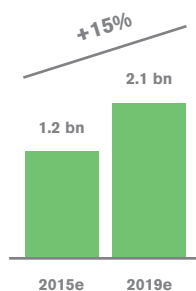
# E-Publishing

The E-Publishing segment is driven by the price advantage of e-books and e-magazines in comparison to print media, as well as by an improved range of titles and availability of reader devices. In 2014, e-books already accounted for approximately eight percent of the entire German book market. While the demand on the German market is covered mainly by domestic providers, many of these providers are increasingly active worldwide. One example is Tolino. The union of book retailers with Deutsche Telekom as a technology partner is now present in six European countries: Germany, Austria, Switzerland, Belgium, Italy, and the Netherlands.



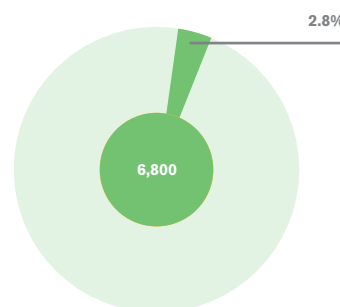
## Revenue<sup>1</sup> in Germany (€ bn)

- In 2014, e-books already accounted for approximately eight percent of the entire German book market (15 percent in 2019).
- The digital e-magazine/e-paper market has the strongest growth, at almost 25 percent p.a.
- Academic literature relies heavily on electronic publishing.



## Employment 2015e

- Measured on the productivity of leading providers, around 6,800 employees work in the E-Publishing segment, which corresponds to around 2.8 percent of workers in the German Internet industry.
- In comparison to other segments, low productivity as a result of the high need for personnel (marketing and distribution).



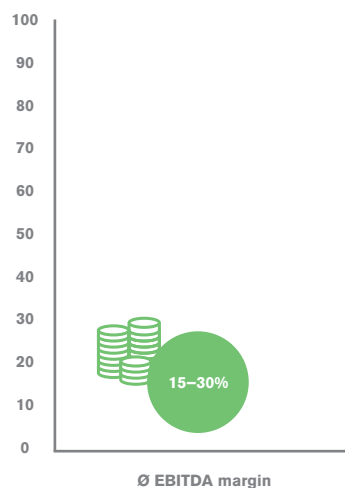
## Export/Import

- The majority of the German demand for e-publishing is served by German publishers.
- Tolino, as a competitor platform to Kindle, also exports, although so far only to European countries.
- Publishers such as Axel Springer and the Bertelsmann subsidiary Random House are also very successful throughout Europe and worldwide.
- Axel Springer SE generates around half of its turnover in international markets.



## Profitability (%)

- The average EBITDA margin of large providers in the e-publishing area is currently at 15 to 30 percent.
- As in many other sectors, returns to scale lead to increased EBITDA margins of up to 30 percent for large providers.

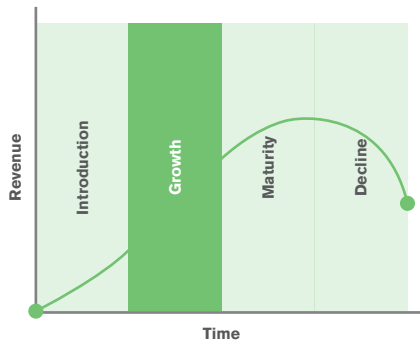


1) Excluding advertising income: The e-publishing market consists of e-books (general, school and reference books) and e-papers (magazines and newspapers).



## Market Maturity & Trends

- The increasing penetration of tablets and e-book readers encourages the transition to e-books.
- E-books are increasingly supplanting the physical printed book.
- E-books and e-magazines demonstrate a price advantage (from 10 to 30 percent) over print equivalents.



## Strategic Orientation of Companies

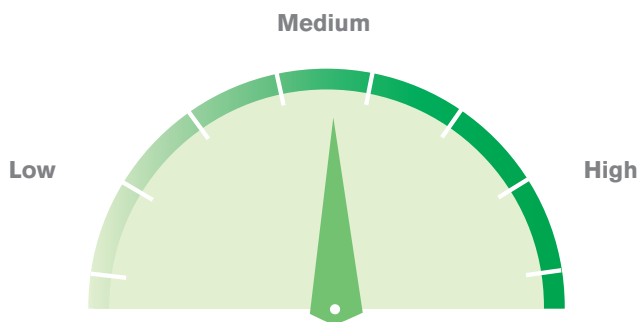
- Reduction of the hardware price.
- Development of additional digital products (e.g. apps) and expanded communication offers with differentiated products (e.g. exclusive content) to increase customer loyalty.
- Rapid expansion of the e-book range allows a broad customer base to be addressed.

**2015:** With “BILDPlus” and numerous combined offers (with content from the German national football league, among other things), Axel Springer is in the leading position in the newspaper market, with more than 300,000 paid digital subscriptions. More than 53 percent of the total revenues already come from digital areas (including job platforms, etc.).



## Market Concentration

- The market leaders for e-books (B2B and B2C) are Springer Science+Business Media, Random House, and the Westermann publishing group (combined market share of around 30 percent).
- The Market leaders for e-magazines/e-papers are Bauer, Burda, and Axel Springer (market share of around 50 percent).

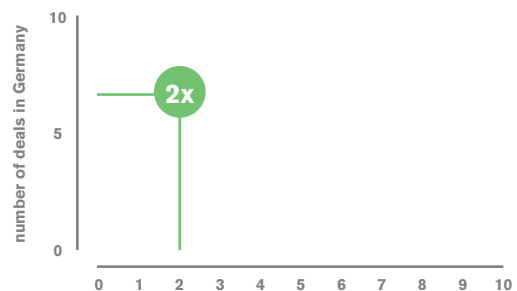


Cumulative market share of the top three companies



## M&A – Size & Valuation of Deals (2014)

- Seven transactions in 2014.
- The average EV/revenue multiple from three international deals since 2013 is around 2.0x.
- One large deal in the last few years was the acquisition of Springer Science+Business Media by BC Partners (2013).



Ø Sales multiple (global)

## 4. 20 Years of eco in Germany

As the largest Internet industry association in Europe, eco has been developing markets, fostering technologies and shaping framework conditions for the last 20 years. With its strong network of around 870 member companies, the association moves industries: whether applications, content, e-business, infrastructure, New Work, laws and regulations, or security – in the eco Competence Groups, a large network of experts advance Internet topics in their enormous variety. More than 100 eco events per year offer thousands of participants the opportunity to exchange knowledge with experts and network with business partners. These include the annual eco Congress, the eco Gala, the Internet Security Days, the Internet Week Cologne, LocalTalks, PolITalks, and workshops.

### Political Engagement

In the Capital Office in Berlin, eco represents the political interests of its members in national and international committees and keeps them informed about current developments and legislative undertakings. With legal and technical know-how and many years of experience in lobby work, the eco Policy and Law Department and its team create framework conditions that open optimal development possibilities for the Internet industry. The interests of companies flow, via agreed industry positions on the relevant topics, directly into political debate. The eco Capital Office is also politically active in Brussels, both with its own events and via EuroISPA, the European umbrella association for Internet service providers.

### 4.1 eco is shaping the Internet

The beginnings of eco – Association of the Internet Industry e.V. now lie 20 years in the past. At the establishment of the association in Cologne, no one could have imagined how profoundly the Internet would change the economy and private life. Before officially founding eco, CEO Harald A. Summa thought that “if 100,000 people were to use the Internet, it would be great.” In fact, according to the German Federal Bureau of Statistics, 80.2 percent of German households are now online. This means that the Internet has become more popular than cars in the last two decades.

#### Security from the outset is an important focus

Many of the numerous initiatives that eco has breathed life into are dedicated to the topic of security. The fight against viruses, worms, Trojans, and botnets was one of the association’s earliest objectives. The same goes for spam – although it was not only important for eco to filter unwanted messages, but also to reliably deliver the wanted ones. Added to this is the Complaints Office for illegal content, thanks to which unlawful Internet sites can be taken offline as quickly as possible, in particular those that endanger young people.

#### Shaping requires infrastructure

eco realized very early that the Internet could only be successfully shaped with investment in infrastructure – and has run the Internet exchange point DE-CIX in Frankfurt as a wholly owned subsidiary since 1995. Its locational advantage reaches far outside the borders of Germany and encourages many international companies to establish a physical presence there.

#### The Internet is nowhere near finished

Whether it is in the area of policy and law, security or New Work, the list of tasks for eco is not getting any shorter – but actually longer. Key concepts such as blanket data retention, third-party liability for wi-fi providers, net neutrality, Internet governance, IT security, and data protection show that there are still many open questions, including some fundamental ones. The Internet industry is still young. Digitalization of the entire economy has only just begun. “The Internet is nowhere near finished,” according to Summa. “There is still room to move in the question of how the Internet will develop in the next 20 years. For us as an association, this means the best is still to come!”

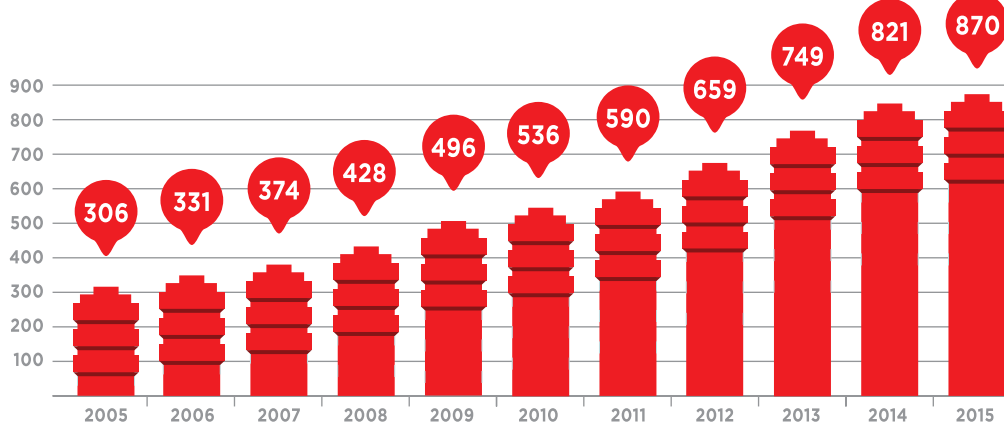
## 4.2 The Development of eco in figures

eco's members are as varied as its work: Among the approximately 870 member companies, there are Internet service providers, telecommunication companies, domain providers, hardware manufacturers and software vendors, cloud services providers, data center operators, content providers and many others.

### Number of Staff and Revenue of Member Companies

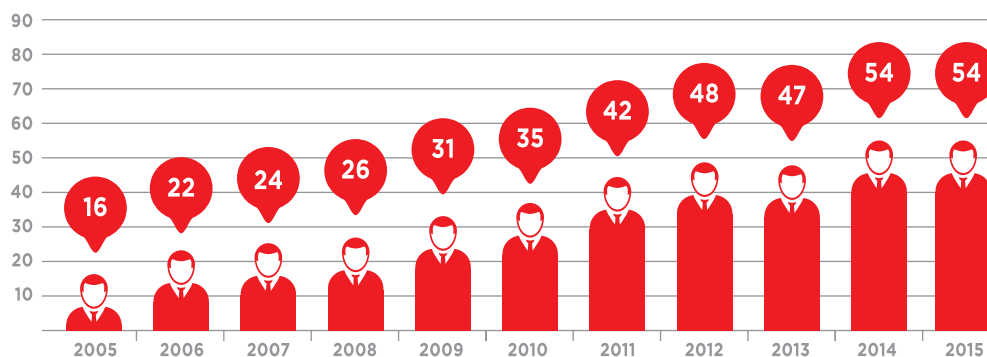


### eco Member Companies



 Number of eco member companies

### eco Staff



 Number of eco staff

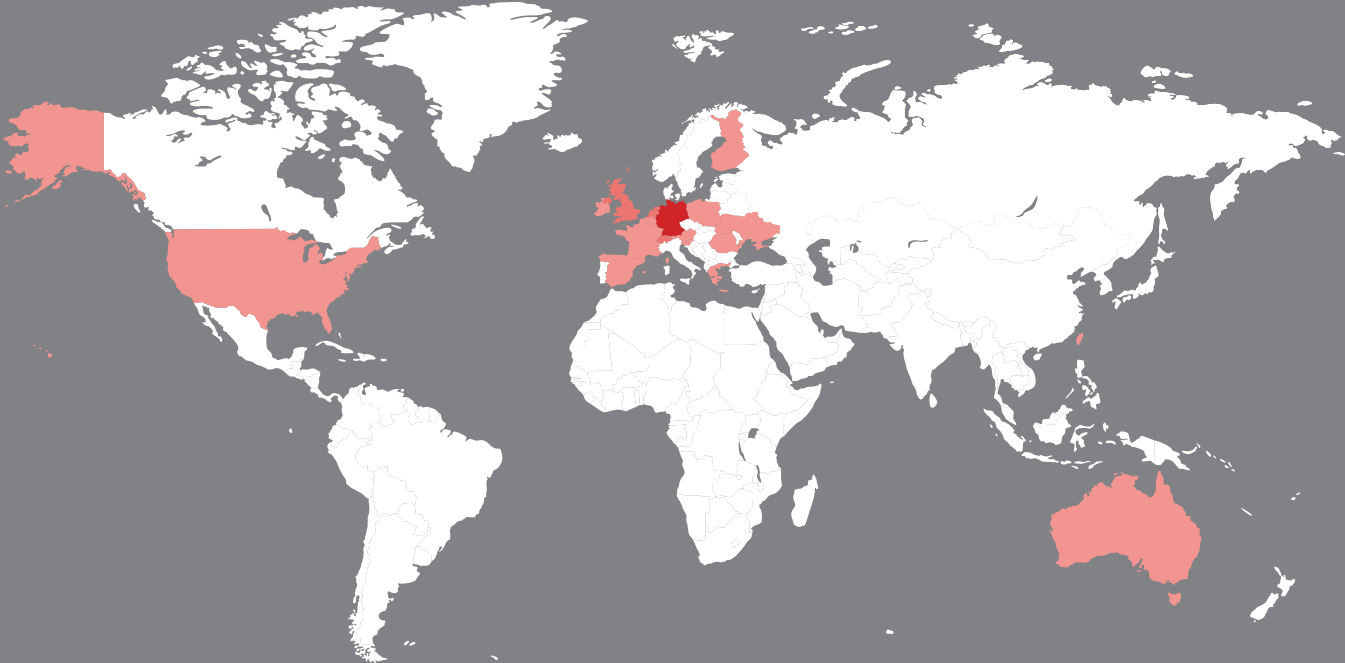
The Internet industry has changed rapidly over the last 20 years, and companies are now operating much more globally. eco is also increasingly active in international markets and involved in international committees – because the Internet is not limited by geographical borders. The association is constantly expanding and taking care of its international association and business relationships. This is resulting in continual growth in international member companies.



### 4.3 Worldwide Distribution of Member Companies

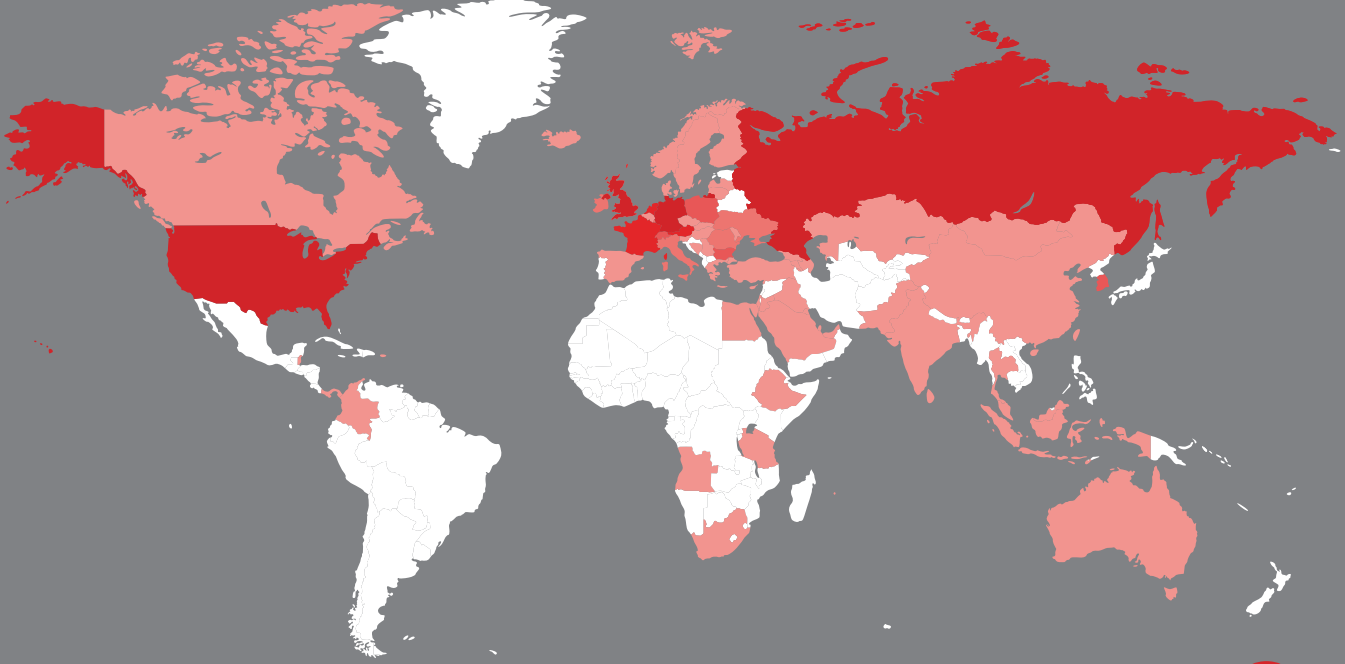
#### Headquarters of eco Member Companies

Distribution 2005



#### Headquarters of eco Member Companies

Distribution 2015



## 4.4 eco Services



### Advanced Cyber Defence Centre

With 28 partners from 14 countries, ACDC improves the security of networks and systems against botnets and malware. There are 10 national Anti-Botnet Support Centers in the EU.



### botfrei.de

Helps with the removal of malware from computers and makes them more secure in the long term. 25,000 registered users and 4.5 million page visits in the forum.



### Certified Senders Alliance

Ensures that wanted marketing emails are delivered to the receiver. More than 100 certified senders and almost 40 international ISPs and technology partners.



### Datacenter Star Audit (DCSA)

The quality standard for data centers. Almost 50 data centers have been certified.



### DE-CIX

Worldwide leading Internet hub. More than 650 providers from over 60 nations exchange more than 20 petabytes of data.



### eco Complaints Office

Internet users can report illegal online content here. More than 130,000 complaints were received in 2014. These were examined, and the necessary steps were taken.



### eco Legal Consultations

A strong team of lawyers with a variety of specializations offer their collective know-how to members on all legal questions related to the Internet in Germany and the EU directives.



### EuroCloud Deutschland\_eco

Association of the cloud computing industry in Germany, with 130 member companies. The EuroCloud network is represented in 22 European countries.



### EuroCloud Star Audit

Certification of cloud services ensures transparency and supports both providers in the conception of their services and users in their choice of service.



### Initiative CEBRA

Provides e-business knowledge and qualifies participants with a certificate as “Counsellor e-Business Related Assignments”. More than 250 certified companies.



### Initiative-S

Scans company websites for malware, and helps in their cleaning and long-term protection. Scans more than 30,000 domains daily.



### Cooperative Studies in IT Security (KITS)

Trains tomorrow's IT security experts in cooperation with the Darmstadt University of Applied Sciences (h\_da). More than 20 KITS students in 2015, 19 partner companies and 45 professors.

## 5. Conclusion and Forecast

The Internet industry will remain one of the fastest-growing industry sectors in Germany in the coming years, and will make a major contribution to the digitalization of society. The comparison with other economic sectors highlights the fact that the Internet industry, with a historic growth rate of more than 10 percent per year in the years 2011–2014, has rapidly gained on and overtaken other sectors.

This is reason enough for eco and Arthur D. Little to analyze this promising sector for the third time. The new study, “The German Internet Industry 2016–2019” is based on an extensive analysis of the individual segments, and it forecasts steady growth in all market segments: in 2015, the German Internet industry turned over approximately 72.6 billion euros. By 2019, the revenue is expected to increase by close to 60 percent to 114 billion euros, which is an annual growth rate of around 12 percent (2015–2019). As a result, employment levels will also develop very positively. However, increasing productivity in the individual segments will lead to annual growth of eight percent in employment figures, resulting in a total of 332,000 jobs in 2019.

### In general, five trends boost the development of the Internet industry:

#### High Quality Internet Access Everywhere:

The constantly improving speed and availability of broadband Internet (mobile and fixed line) will have a particularly strong influence on the future of the Internet industry. This technical progress enables countless services to be accessed directly over the Internet, and is revolutionizing and transforming individual industry segments.

#### Commoditized Cloud Computing Services:

More and more players from the B2B and B2C areas are making use of cloud computing services, and thus use virtualized IT infrastructure on a needs basis on internal or external networks.

**Multi Channel Retailing:** Many companies are using the e-commerce channel as an additional sales avenue to traditional methods such as bricks-and-mortar shops.

**Mobile First Applications:** Applications for mobile devices are being used more and more to execute processes that were previously only possible on stationary devices or in other ways. This includes, for example, m-payment and m-commerce.

**Online Content:** The consumption of media content and information is being relocated increasingly to the Internet. Wide broadband coverage, low latencies, and the flexible and increasingly simple use of content (music, videos, books) via the Internet promise significant growth potential continuing in the coming years.

The sustained upswing is perceptible in almost all segments of the Internet industry: the layer with the highest turnover in 2019 will be Aggregation and Transactions, at around 70.3 billion euros. Here, growth is driven mainly by the segments E-Commerce B2B and E-Commerce B2C. The greatest growth, however, is to be expected in Layers 2 and 4: in total, the market volume of both layers will almost double between 2015 and 2019. The cloud computing segments (Public IaaS, PaaS and SaaS) and the TV & Video segment from the Paid Content layer are developing considerably more strongly than the total market, with an annual growth rate of more than 20 percent.

The third study by eco and Arthur D. Little shows that the Internet will continue to be one of the most important economic motors in Germany. It will not only influence its own industry; it is a growth driver for the entire German economy.

## Interview with Sigmar Gabriel



**Sigmar Gabriel**  
Federal Minister for  
Economic Affairs  
and Energy

### **In your opinion, what are the decisive growth drivers for the future of the German Internet industry?**

“Digital technologies are being used more and more, and all areas of industry and society will become more connected. Of course, this will change and reorient the value chain; new business models, growth, and employment will be created. The developments driving this are, among others, Industry 4.0 (cyber physical systems), cloud computing, 3D, mobile apps, and social collaboration. I also see great opportunities for smart services in all sectors.”

### **How do you rate the status of the German Internet industry with regard to the entire economy and in the political context?**

“I would like to see us maintaining the competitiveness of our national economy in the era of the global and data-driven economy. The Internet industry makes a quite important contribution to this. Many business models would not even have come into existence without the Internet. More and more people are going online, in their free time as well as at work. The increasing interconnection in fundamental areas such as health, traffic, energy, and education will enable the development of smart services. A well-constructed digital infrastructure is necessary for this.”

### **What Internet-relevant political undertakings will be of primary importance for the development of Germany as an industry location in the next five years?**

“With worldwide interconnectedness and the pervasive dependence on IT in all areas of society, the vulnerability of the state, of industry, and of society increases. Cyber security will therefore become one of the fundamental requirements for the success of the digital society. Everyone involved and everyone affected must work together.

And we need an intelligent, innovation-friendly legal framework in Germany and Europe. It must take account of the developments brought about by digitalization, encourage innovations and new ideas, and at the same time protect our high standards for good work, data sovereignty, and the self-determination of consumers. A range of legal areas overlap here: competition law, data protection, consumer protection, and intellectual property. Together, we need to bring these out of the analog world and finally get them up to speed for the digital era.”

# 6. Methods, Definitions and Market Description

In this study, the figures for revenue and employment in the Internet industry in Germany and the detailed segment profile were determined on the basis of data from eco and Arthur D. Little, as well as from a range of secondary sources from associations (bvh, EITO, Bitkom, VATM, BIU, ZVEI, etc.), from publications by the German Federal Bureau of Statistics and other services (e.g. Statista and Destatis), and from numerous expert interviews.

## Definitions

### Revenue (Domestic Supply) in Germany

The revenue of the German Internet industry is the total of the revenues of all 19 segments of the Internet industry. The revenue therefore corresponds to the domestic supply of all services from the Internet industry purchased in Germany. The revenues of the individual segments were calculated using a bottom-up approach.

### Employment 2015e

Employment was calculated on the basis of the average productivity of each segment. The average productivity is based on benchmarks from leading companies in the respective segment. Productivity is a figure calculated based on revenue and number of employees.

### Export/Import

The import and export activities were classified for each segment in the Import/Export matrix. The cashflow of the revenues is described.

The Import axis (“Low”, “Medium” and “High”) is based on a three-tier qualitative assessment. Thus, it is shown whether the German demand in the respective segment is covered by domestic (“Low” import) or foreign (“High” import) companies.

The Export axis (“No”, “EU”, “World”) is based on a three-tier qualitative assessment. It is shown whether the German companies in the respective segment predominantly cover the domestic demand (“No” export), or whether and how strongly companies export to foreign countries. In the latter case, segments that export predominantly to the EU (“EU” export) or are active worldwide (“World” export) are differentiated.

The nationality of a company depends on the headquarters of the parent company. However, in the case of a financial investor (for example, a private equity fund), it is not the investor’s headquarters that count, but rather the headquarters of the respective company from the Internet industry.

## Profitability

Profitability is calculated with the help of the EBITDA margin as a financial indicator. As a result of strong fluctuations in profitability, the average EBITDA margin is given. The financial indicator is based on benchmarks from leading companies in the respective segments.

The EBITDA margin describes the relationship between the profit EBITDA (profit before interest, tax, depreciation on investments and depreciation on intangible assets), and the revenue of the companies under examination.

## Market Concentration

The market concentration (“Low”, “Medium”, “High”) is determined on the basis of the accumulated market share of the three largest companies (measured on revenue) of the segment or sub-segment. An accumulated market share of 0 to 40 percent implies a low market concentration, an accumulated market share of between 40 and 80 percent implies a medium market concentration, and above 80 percent is considered a high market concentration.

## M&A Activities

To calculate the number of M&A deals in Germany in the individual segments, all deals in Germany in 2014 were drawn upon. The calculation of the average revenue multiples is based on a selection of the defining German and international revenue multiples from the deals carried out in the respective segment since 2011.

## Market Description

Layer & Segment	Description
<p><b>Network, Infrastructure &amp; Operations</b></p> <p><b>Colocation &amp; Housing</b></p> <p><b>Internet Exchanges</b></p> <p><b>Internet Backbone, Transit &amp; CDN</b></p> <p><b>Fixed Internet Access Network</b></p> <p><b>Mobile Internet Access Network</b></p>	<p>All services and applications that can be accessed over the Internet are stored on servers in data centers – which are known as “Internet Data Centers”. As a result, only those data centers were examined that offered their services to both private and business customers; company internal data centers were not taken into account.</p> <p><b>Housing:</b> The accommodation and network connection of one’s own servers in an external data center.</p> <p><b>Colocation:</b> The provision of at least one complete rack for the company hardware and the infrastructure necessary for the operation of the server.</p> <p>Alongside the provision of space or racks for one or more servers, the service portfolio also includes the Internet connection, power supply and the cooling, and the provision of security systems and support services.</p> <p>The Internet’s public network hubs, which serve as exchange points for data and networks from various backbone providers.</p> <p>The costs for the operation of public Internet hubs are mainly covered by the payment of a flat sum to the operator of the exchange for a connection to the switch infrastructure of the exchange point by the participating providers.</p> <p><b>Internet Backbone (basic infrastructure of the Internet):</b> The leasing of fiber-optic infrastructure and related service offers and data transmission services.</p> <p><b>Transit/Peering:</b> The exchange of data between Internet service providers.</p> <p><b>CDN:</b> A content delivery network is a connected system of cache servers that use geographical proximity as a criterion for the provision of web content.</p> <p>Includes all location-bound broadband Internet access via the fixed-line Internet.</p> <p>Includes all location-bound broadband Internet access via the mobile Internet network.</p>
<p><b>Services &amp; Applications</b></p> <p><b>Public IaaS (Infrastructure as a Service)</b></p> <p><b>Public PaaS (Platform as a Service)</b></p>	<p>A standardized, highly automated cloud computing service in which computing resources, supplemented by storage and network capabilities, are owned by a service provider and offered to customers on demand. The customers are able to configure this infrastructure themselves with the help of a web-based graphic user interface, which serves as an IT operations management console for the complete environment.</p> <p>A cloud computing service that provides hardware and software tools necessary for the development of applications on infrastructure owned by the provider. As a result, PaaS frees users from the necessity of owning their own hardware and software through which applications can be developed and used.</p>

## Market Description

Layer & Segment	Description
<p><b>Services &amp; Applications</b></p> <p><b>Public SaaS (Software as a Service)</b></p> <p><b>Web Hosting &amp; Domains</b></p>	<p>A cloud computing service that makes available software that is owned and administered by one or several providers. The provider delivers software on the basis of a range of collective code and data definitions, which can be offered in a one-to-many model by all contract partners on a pay-as-you-go or subscription basis.</p> <p><b>Web Hosting:</b> The storage and, if necessary, the provision of applications and services on a server in a data center. The server hardware is generally not owned by the company that makes use of this service.</p> <p><b>Domains:</b> a logical subnet of an international network (the Internet) that is accessible via a particular domain name.</p>
<p><b>Aggregation &amp; Transactions</b></p> <p><b>Online Advertising &amp; Internet Presence</b></p> <p><b>Portals &amp; Classified Marketplaces</b></p> <p><b>Billing &amp; Payment</b></p> <p><b>E-Commerce B2C</b></p>	<p><b>Online Advertising:</b> Every form of influence of behavioral characteristics, distributed for a fee via the medium Internet.</p> <p>Online advertising revenue sources include keyword marketing, commission for intermediaries, and production costs for, for example, advertising and media agencies.</p> <p><b>Subscription-based Portals:</b> Internet platforms with the primary objective of connecting users (jobs, partners, friends). At least one of the parties pays a non-performance-related fee, and the majority of revenue is generated through this business model.</p> <p><b>Classified Marketplaces:</b> Electronically supported advertising portals through which sellers and customers can be informed about goods and services that are available for sale or lease. The potential buyer/rental customer can contact the seller/leaser, if interested.</p> <p>Advertising income is not included in this segment, as this is already included in a separate segment.</p> <p>This covers all forms of digital payment of goods and services purchased via the Internet (based on the total transaction volume).</p> <p>This includes all accrued service charges (percentage that is assigned to the provider).</p> <p>Websites or applications that sell goods and services to end customers via the Internet.</p> <p>The creation of value is based on the total value of the fulfilled transactions, minus the direct costs of goods and services sold. The deducted share is an estimation based on business reports by selected leading companies.</p> <p>Advertising income is not included in this segment, as this is already included in a separate segment.</p>

## Market Description

Layer & Segment	Description
<p><b>Aggregation &amp; Transactions</b></p> <p><b>E-Commerce B2B</b></p>	<p>Websites or applications that enable business-to-business purchases, sales and exchange of goods and services via the Internet. This includes e-commerce processes that are carried out via computer networks other than the Internet, such as electronic data interchange (EDI).</p> <p>The creation of value is based on the total value of the fulfilled transactions, minus the direct costs of goods and services sold. The deducted share is an estimation based on business reports by selected leading companies.</p> <p>Advertising income is not included in this segment, as this is already included in a separate segment.</p>
<p><b>Paid Content</b></p> <p><b>Gaming</b></p> <p><b>Gambling</b></p> <p><b>TV &amp; Video</b></p> <p><b>Music &amp; Radio</b></p> <p><b>E-Publishing</b></p>	<p>Provision for a fee of an interactive “gaming medium” on an Internet platform or as an app. Revenue generation through subscriptions, downloads, and micro-transactions.</p> <p>Advertising income is not included in this segment, as this is already included in a separate segment.</p> <p>Provision for a fee of (interactive) gambling on an Internet platform or as an app. Revenue generation through wagers (win-lose), purchase of digital lottery tickets, etc.</p> <p>Advertising income is not included in this segment, as this is already included in a separate segment.</p> <p>Temporary fee-based use of television or video content via the Internet.</p> <p>Advertising income is not included in this segment, as this is already included in a separate segment.</p> <p>Temporary fee-based use of music and podcasts via the Internet.</p> <p>Advertising income is not included in this segment, as this is already included in a separate segment.</p> <p>Purchase of written material such as articles, magazines and e-books via the Internet.</p> <p>Advertising income is not included in this segment, as this is already included in a separate segment.</p>



## Arthur D Little

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eco, with more than 870 member companies, is the largest Internet industry association in Europe. Since 1995, the eco Association has been instrumental in the development of the Internet in Germany, fostering new technologies, infrastructures and markets, and forming framework conditions. In the Competence Groups, important experts and decision makers of the Internet industry are represented and current and future Internet themes are driven forward with our team of around 60 staff.

Special eco services help to make the market more transparent for providers and users. The eco seal of approval ensures quality standards. With consultations for members and services for Internet users, we increase security, improve youth protection, and provide support in questions of legality.

As an association, one of eco's most important tasks is to represent the interests of its members in politics, and in national and international bodies. As well as having headquarters in Cologne, eco has an office in the German capital, Berlin, and is represented at all relevant political decision-making processes in Brussels.

## Contact

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WE ARE SHAPING THE INTERNET.  
YESTERDAY. TODAY. BEYOND TOMORROW.

