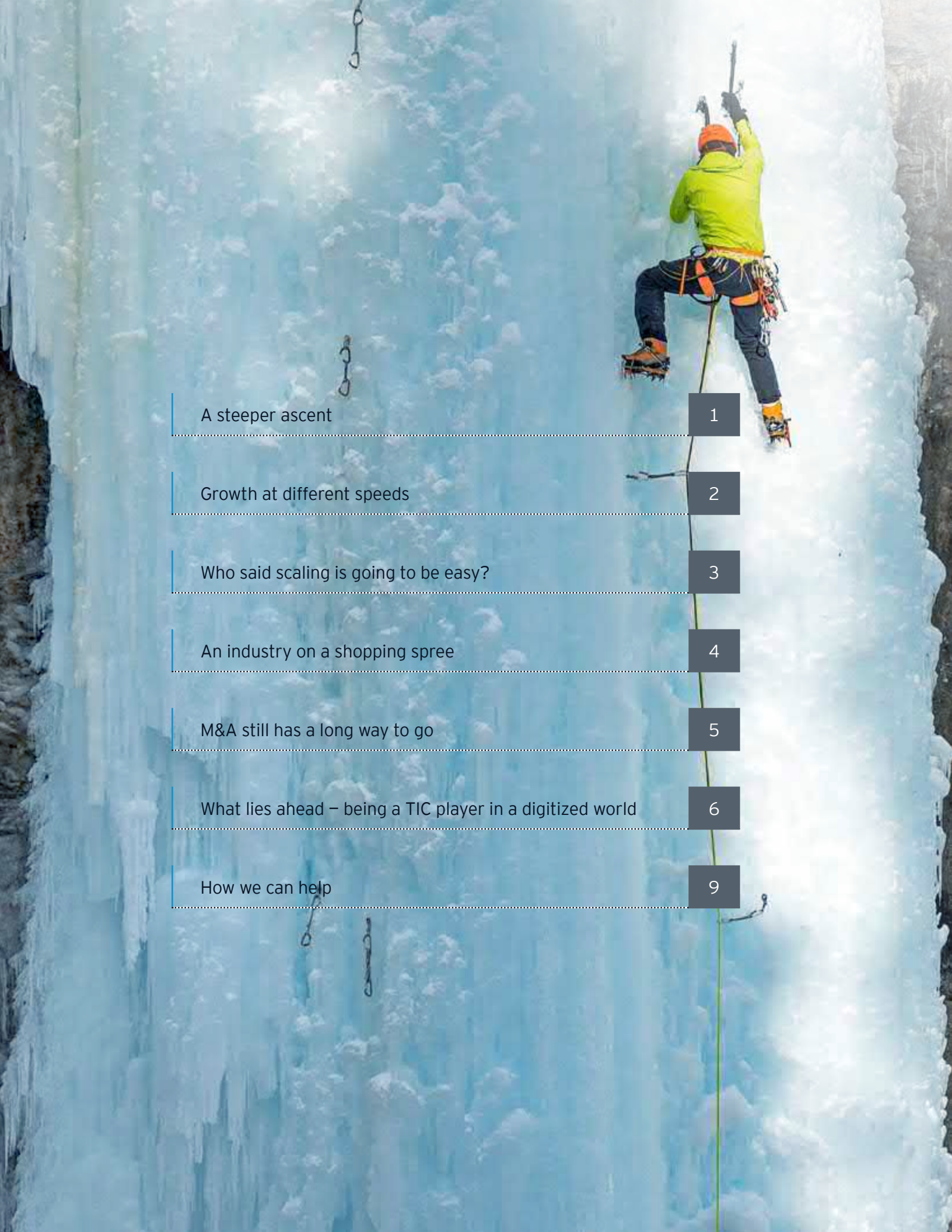


# A steeper ascent

Growth in the testing, inspection and certification (TIC) industry







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# A steeper ascent

Providers of testing, inspection and certification (TIC) services have been fortunate to see their playing field grow for many years now. But achieving growth appears to be increasingly challenging, as organic growth of the large and increasingly complex TIC players is slowing somewhat. Not surprisingly then, the pace of acquisitions in the TIC industry is notably high, mostly driven by the top 12 TIC players as well as by private equity-owned growth platforms.

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We take a look at how competition has evolved over the last years, which factors have been driving markets and who performs best in an M&A-driven environment. Interesting targets are still plentiful, few players benefit from M&A in terms of profitability, and some are more focused on working to round out their service portfolio.

As growth becomes harder to achieve, it is even more important to make the right decisions about what to focus on in the future and how to tackle the challenge of adapting the proposition in a world of rapidly evolving technology. We therefore take a look at key technology trends relevant to the TIC industry.

# Growth at different speeds

## Top 12 working hard to sustain their pace

For many years, TIC market growth appeared to be unshakable, and its trend knew only one direction: up. Market size has now reached approximately EUR140b-150b and is estimated to be growing at an organic rate of about 3% to 4% per annum (p.a.), still above GDP (please see charts on the right). We estimate that more than 50% of the broader quality assurance market is still captive.

Growing globalized demand for regulation of materials, products, systems and processes; ever-increasing trade flows; globally integrating supply chains; and increased corporate outsourcing of R&D activities as well as of quality assurance work to third parties have supported the long-term expansion of the TIC industry.

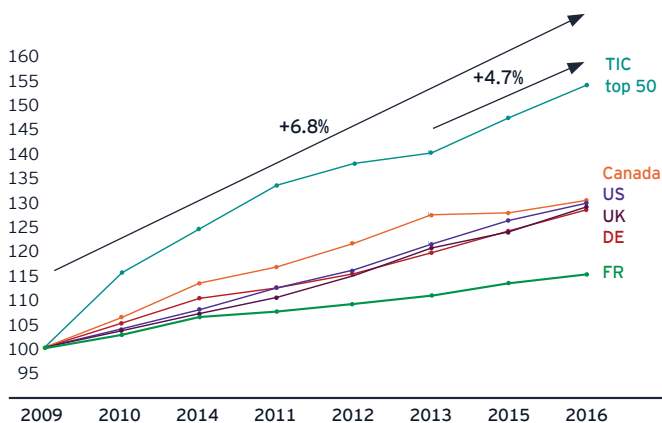
Revenue growth of the larger 50 TIC players has been significantly higher than market growth, with 6.8% p.a. growth since after the financial crisis. While overall growth slowed somewhat from 2014 to 2016, the top 50 TIC companies still grew at 4.7% p.a., outperforming large economies by about 2 percentage points p.a.

Upon closer inspection, however, growth of the largest companies was driven increasingly by acquisitions while organic growth slowed to below 2% p.a. for the largest players in 2016.

Within the top 50, smaller TIC players have caught up to the top 12 and have significantly outpaced their larger peers in 2015 and 2016.

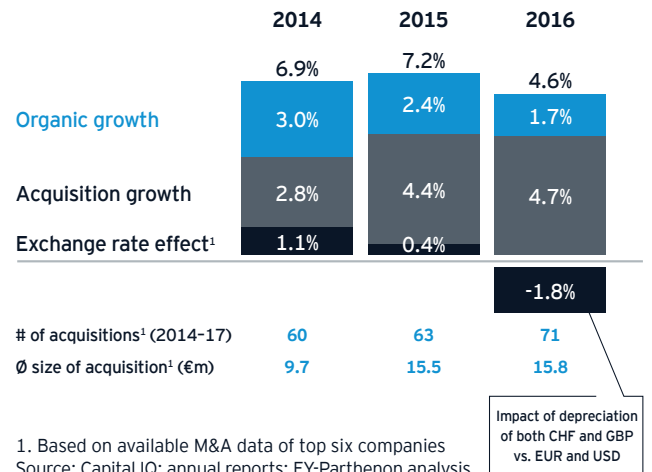
Growth comparison, TIC top 50 companies vs. GDP of large economies, 2009-16

Index (2009=100)

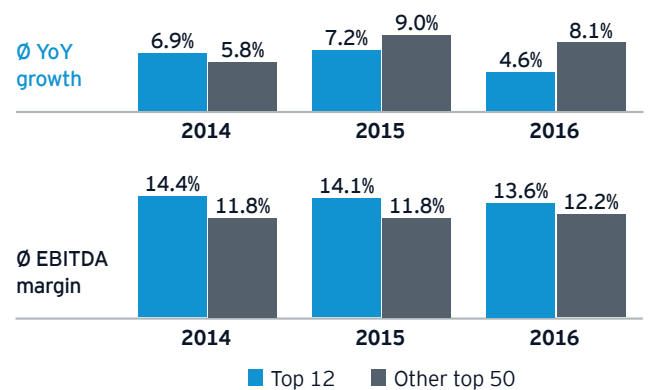


Source: BvD; Capital IQ; BEA; BACH; Statistics Canada; ONS; EY-Parthenon analysis

Top 12 organic vs. acquisition growth, 2014-16



Top 12 vs. other top 50 TIC players' growth, 2014-16



Source: Capital IQ; annual reports; EY-Parthenon analysis

Acquisitions compensate for lower organic growth.



# Who said scaling is going to be easy?

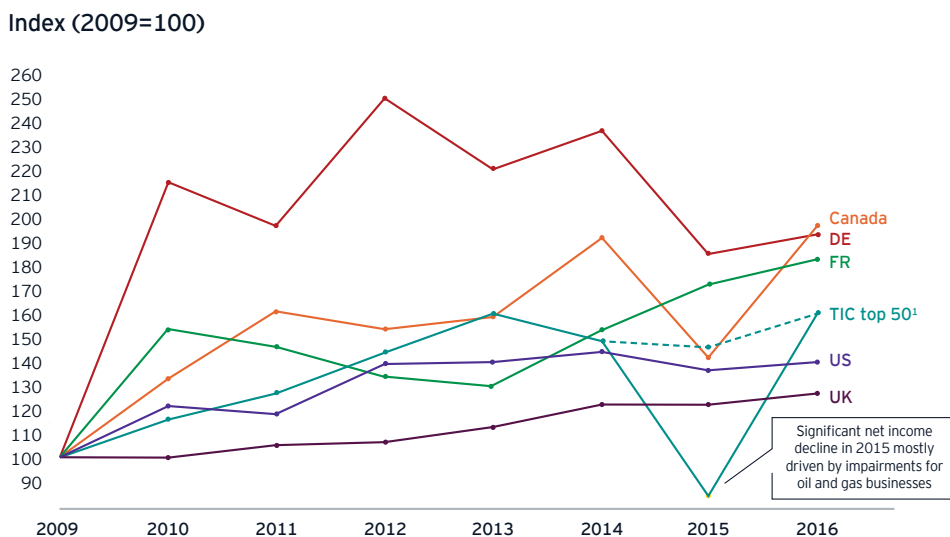
## Bottom-line growth not keeping up

In most industries, consolidation drives corporate earnings. Although margin expansion is a secular global trend across all large economies, it is somewhat surprising that earnings growth of the TIC sector has underperformed some of the broader economies. Increasing size does not fully translate into earnings power.

Some of this is due to the impact of sectorial specialization. Companies with higher shares of their business within oil and gas, mining and metals, and marine have underperformed their peers.

The fact that large TIC players have grown their top line much faster than GDP but their bottom line (in several cases) more slowly than the broader economy indicates that average TIC margins, despite being attractive, are not expanding like those of other sectors. This points toward limited pricing power and poor efficiency gains of TIC players. Furthermore, TIC enjoys fewer of the structural benefits of other industries that can optimize their supply chains and manufacturing, e.g., through offshoring. Within TIC, employees have some negotiation power, operating leverage is limited for many services and capacities can mostly not be relocated abroad.

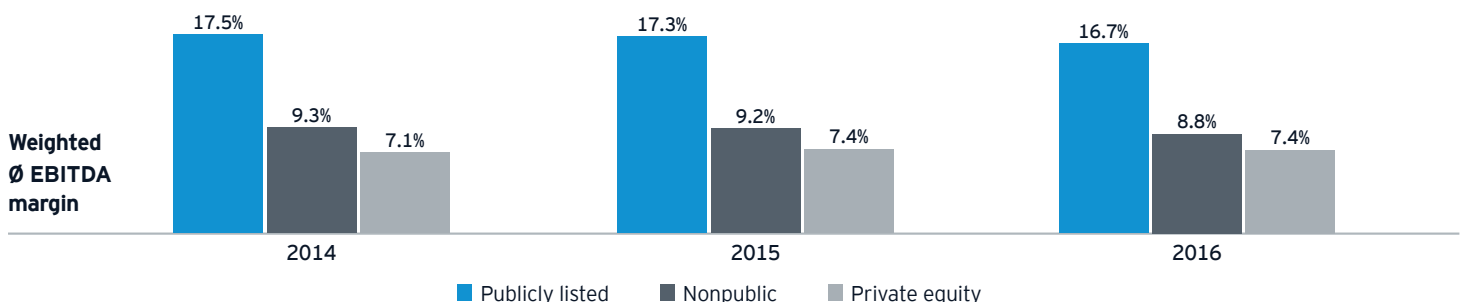
Corporate earnings<sup>1</sup> growth, TIC companies vs. large economies, 2009-16



Governance and ownership structures also play a strong role for margin levels and indicate that there is room for improvement, especially for nonpublic companies, including (somewhat surprisingly) larger TIC companies owned by private equity investors.

1. Nonfinancial institutions  
 2. Based on 33 complete time series  
 Source: BvD; Capital IQ; BEA; BACH; Statistics Canada; ONS; EY-Parthenon analysis

Top 50 TIC players by governance, 2014-16



Source: BvD; Capital IQ; BEA; Bundesanzeiger; annual reports; EY-Parthenon analysis

# An industry on a shopping spree

Because M&A plays a key role in large TIC companies growing faster than the broader economy, we have taken a closer look at the activities of the largest firms.

Their M&A activity is staggering: the top 12 TIC players by revenue in 2017 have acquired more than 370 companies over the last five years – counting only acquisitions that have been made public. We think the actual number of takeovers is significantly higher.

Among the largest companies, Eurofins stands out in many aspects. Its strategy is different, and its growth and margins are higher compared with other large players, driven by acquisitive growth and specialization in the very attractive life sciences TIC sector.

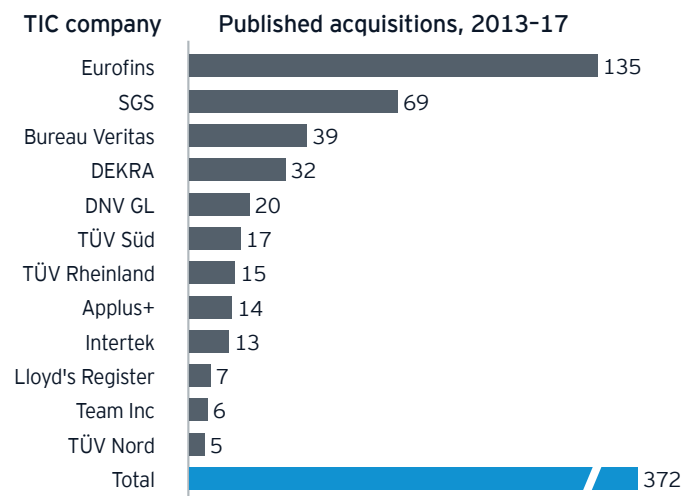
We observe three key characteristics regarding M&A in the TIC sector:

- ▶ Small national specialists in North America and Europe are in highest demand.
- ▶ The acquisition frequency of the top three acquirers is accelerating; their acquisitions made up more than 80% of the number of transactions in 2017.
- ▶ Average acquisitions are fairly small and are estimated to be approximately EUR10m-15m in revenue.

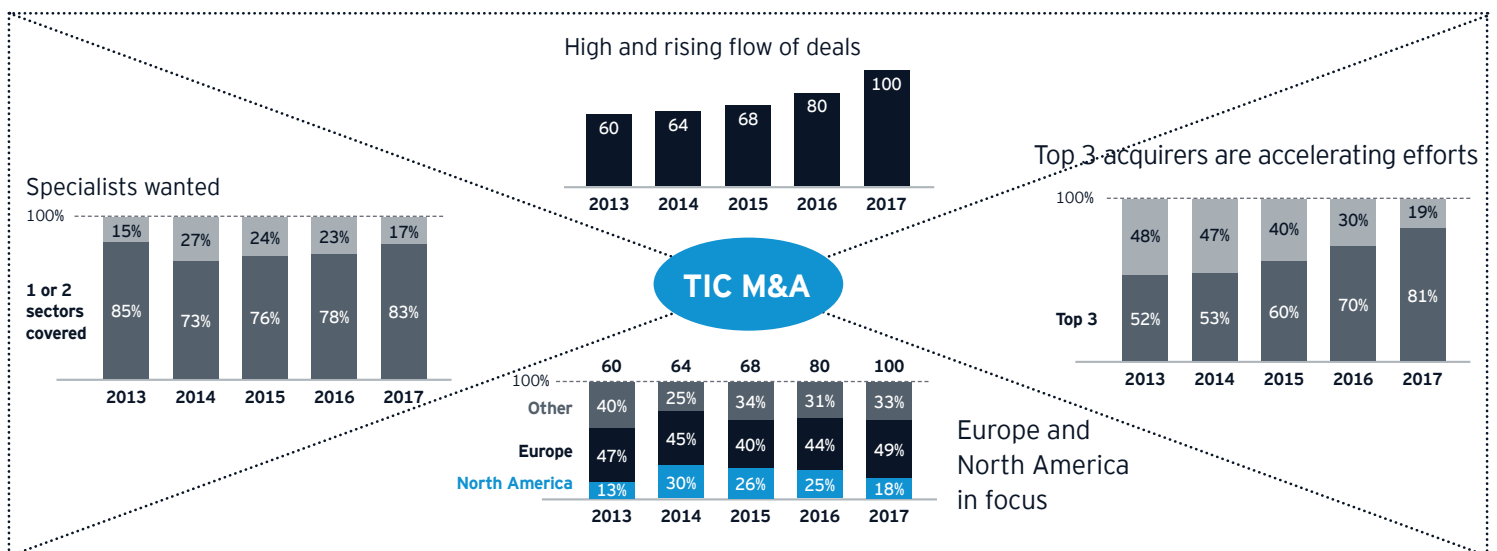
M&A drives strong growth for players and supports mid-tier TIC companies such as Socotec, Trigo and Kiwa in their internationalization efforts as well as their pursuit of operational leverage.

While driving top-line growth, M&A appears to rarely be margin-accretive, with only a few exceptions. On the contrary, some acquirers appear to be struggling after bigger M&A moves, and margins of the large firms are on a slight downward trajectory.

Acquisitions, top 12 TIC players, 2013-17



Source: Capital IQ; Mergermarket; Crunchbase; company websites; annual reports; press releases; desk research; EY-Parthenon analysis



Source: Capital IQ; Mergermarket; Crunchbase; company websites; annual reports; press releases; desk research; EY-Parthenon analysis

# M&A still has a long way to go

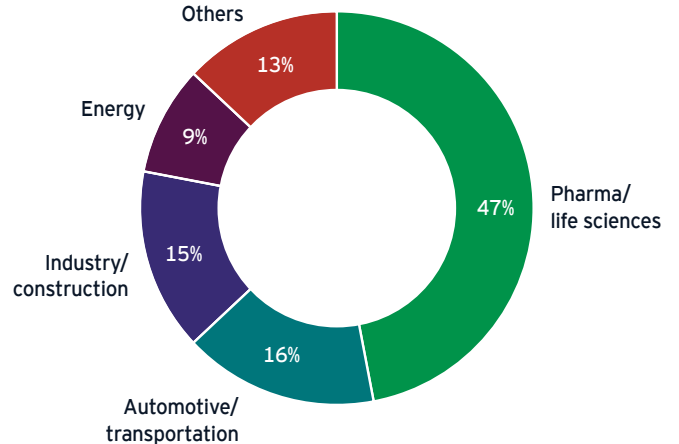
## High degree of fragmentation presents further opportunities

Despite the continuous consolidation activity of larger TIC players, the industry is still remarkably fragmented in its long tail. In Germany, for example, the market comprises thousands of accredited labs, the large majority of which belong to companies with less than 100 employees. A significant share of testing labs are operated in-house, by governmental institutions or corporations, supporting a sizable share of captive activities in the global TIC market.

Specialists in life sciences, environment and water as well as food and agriculture make up a large share of labs. They are very much in the focus of large acquirers and account for half of all acquisitions by the top 12.

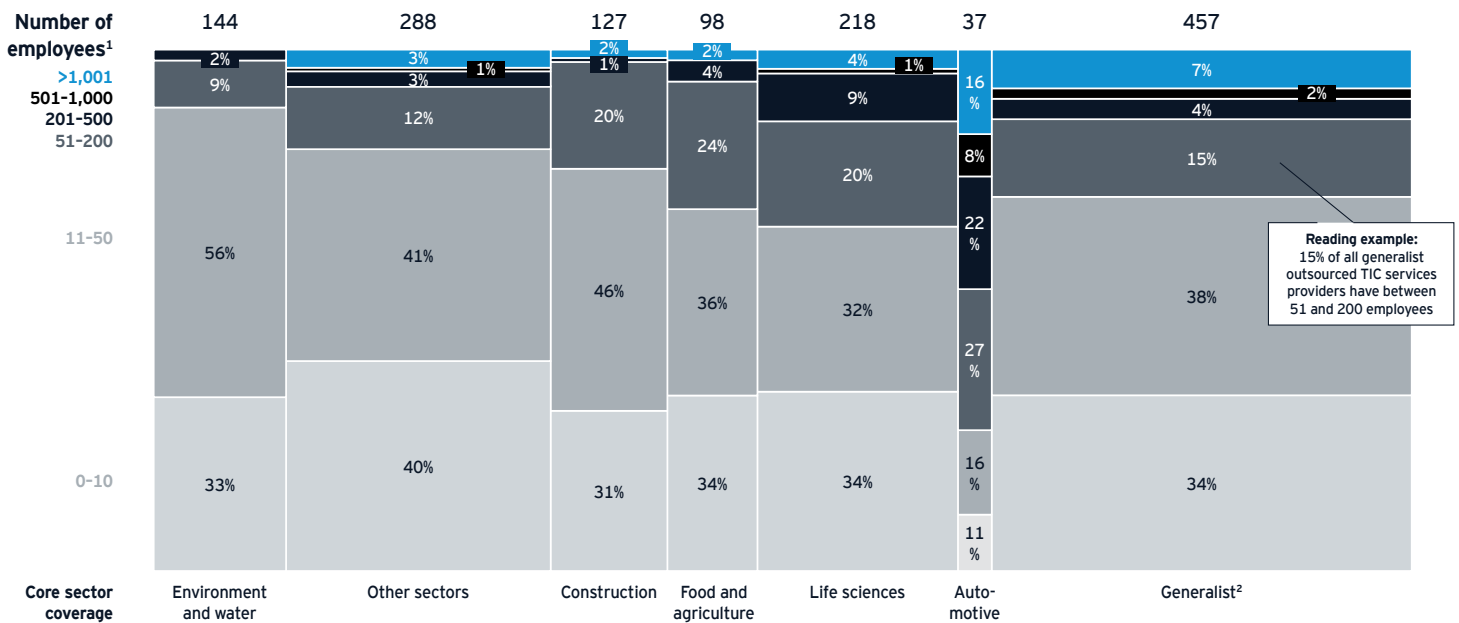
Especially in life sciences, where economies of scale play out comparably well, we expect an ongoing takeover effort by larger players, as already observed for medical labs.

Acquisitions by sector, top 12 TIC players, 2013-17



Source: Capital IQ; Mergermarket; Crunchbase; company websites; annual reports; press releases; desk research; EY-Parthenon analysis

Core sectors and number of employees of providers of outsourced TIC services, Germany



1. Worldwide if applicable

2. More than three core sectors

Source: Capital IQ; Mergermarket; Crunchbase; company websites; annual reports; press releases; desk research; EY-Parthenon analysis

# What lies ahead – being a TIC player in a digitized world

As with any other industry, the TIC industry is subject to macro-level changes (legislative, economic and technical) that require the adaptation of strategies.

On the legislative front, we observe the multiplication of standards and norms. The ever-growing number of regulations introduced by governments to standardize products and services as well as the growing range of activities and products that can be tested, inspected or certified are driving market growth. New local standards also influence the competitive landscape by giving local players a head start (e.g., Chinese players in China vs. European and US TIC incumbents).

Economically, globalization widens the scope of work for the TIC industry: global logistics networks and supply chains pose new challenges for producers (and their TIC service providers) to provide a guarantee on product quality or sourcing processes.

Finally, technological changes have had the strongest impact by far on the TIC industry. They affect TIC players in different ways:

- ▶ They create new kinds of risks and new areas of application for testing, inspection and certification.
- ▶ They improve and upgrade the methods of providing TIC services thanks to technologies such as automation, computer simulation and blockchain.

They bring about new ways of interacting with customers, giving rise to new business models and new positioning options along the TIC value chain.

## a. New applications and new risks

The steady digitization of goods and services is highly significant for TIC players because not only does it affect existing TIC services and processes, it also opens up new market opportunities. Products and services need to be tested and inspected in new ways, as they are increasingly complex and connected and come with new inherent risks.

Auto TIC is one of the prime examples of the above changes in applications and new risk. In 2017, Dekra invested more than EUR150m (almost 5% of group revenues) to focus on digital growth and, among other projects, to establish an international testing network for autonomous and connected vehicles: Dekra acquired the Lausitzring race track in Germany to establish a test center for new driving technologies. Deutsche Telekom uses the same site to experiment with 5G technology and test its applications for connectivity between vehicles. Other R&D sites focus on testing vehicle-to-everything (V2X) technologies or on improving standardization and certification in the world's largest automotive market, China.

In addition to creating new TIC applications, the growing connectivity between objects in the Internet of Things has also dramatically increased the risk of digital intrusion, tampering or simply functional failure. For all major players in the TIC industry, cybersecurity has become an area of intense interest. This is reflected in their M&A strategies. The partnership between TÜV Rheinland and VisualThreat, a leading automotive cybersecurity testing provider from California, is an example of this trend.

Automotive is one of the industries where cybersecurity will be of utmost importance. With the increasing autonomy of cars, tangible threats range from unauthorized data capture to theft, hijacking or remotely overriding crucial auto systems and controls – malfunctions of autonomous systems and their outcomes are the ultimate future reputation risk for car makers.



## b. New technologies for new quality processes

Simultaneously, technological innovations contribute to reshaping traditional inspection processes and even replacing physical testing altogether.

Automated systems, drones and integrated sensors are some of the technologies that have started to replace physical inspection, which is labor-intensive and prone to human error. TIC players value these new technologies, as they allow higher efficiency. However, they also create opportunities for new entrants.

The Toulouse-based startup Donecle, founded by former engineers from Airbus and Thales, aims to provide "lightning fast drone-based aircraft inspection." Thanks to their swarm of drones, they managed to cut the time required to inspect an aircraft cabin following a lightning strike to 20 minutes instead of 8 days by replacing human maintenance teams. These inspections are mandatory and quite frequent for airlines (lightning strikes 27,000 aircraft p.a. globally), implying tremendous efficiency gains, but also substantial challenges to TIC incumbents.

Three technology trends raise very fundamental questions on the future role and structure of lab assets within TIC: automation, computer simulation and blockchain.

Upon closer inspection, the level of automation of labs (e.g., in bioanalysis) is surprisingly low. There are several reasons for that. First, the substances to be tested are very diverse (air, water, plants, food, fabric, etc.), requiring specific processes as well as dedicated labware. Second, subprocesses often need to take place in different controlled atmospheres, especially when constant temperatures and ultra-pure air are required. Third, the transportation between different testing stations is still a very manual and labor-intensive process, although robotics may play an important role in this area in the future.

A Siemens Healthineers case study shows that automation cut turnaround times by 40%-45% by replacing manual labor in most processes – from sorting and transporting to re-routing and diluting. Automation in the life science sector, however, does not only extend to labs but also to the points of care themselves. Boston Engineering introduced a testing device for small blood samples that relieves medical practitioners from having to send samples to the lab and wait for test results, rendering traditional lab work obsolete.



We expect the level of lab automation to rise as larger companies, both TIC and instrumentation players, will look for spikes of differentiation through cost advantages, increased accuracy or speed and gradually more affordable robotics technology.

Computer simulation poses a very fundamental risk to future lab utilization and hence the long-term strategy concerning the portfolio of testing lab assets (e.g., in mechanical engineering). As an illustration, consider the automotive industry. Here, companies are moving toward relying solely on computer simulation for prototyping instead of using wind tunnels.

Daimler claims that before being ready for series production, each car model has to undergo 150 physical crash tests. Thanks to computer-based simulation, up to 15,000 tests can be performed virtually, leading to significant cost savings. Virtual crash tests will soon include simulations of driver and passenger behavior (e.g., defensive actions such as braking or steering), which allows them to reflect reality more closely. Offering this service in the future requires quite different competencies than running physical testing sites, and a key success factor will be either to build these capabilities within existing TIC organizations or to build an ecosystem of partners.

Finally, the rise of blockchain technology is full of promise for TIC players, some of which have started to investigate its specific applications. One of the main advantages of blockchain is the distributed storage of information and transaction records, thus making it immune to undetected manipulation and keeping it safe from information tampering.

According to TÜV Rheinland, blockchain technology could be applied to avoid manipulation of car mileage at the time of sale, an increasingly common concern for buyers of used cars. However, fully operational blockchain systems remain rare.

In 2018, large players have launched proprietary traceability labels, offering players along the food value chain (including the end consumer) the possibility to trace the origins and journey of groceries by scanning a barcode on the packaging. As it is impossible for each player to manipulate the information linked to the supply chain (e.g., production and shipping quantities) or production itself (e.g., supplementing food with undocumented ingredients), such a label offers a very high level of transparency at much lower unit costs of certification. The big promise of blockchain solutions is to offer much more comprehensive transparency on origins of food and materials than traditional approaches to certification.

Project Provenance, a UK-based technology startup, offers a similar system and approach, pointing to non-TIC players potentially disrupting traditional relationships of incumbents. Technology is thus simultaneously creating opportunity and risk for TIC firms that may be left behind by innovative players.

## c. New business models

Lastly, digitization allows TIC players to reinvent or extend their business models, relying on approaches that have already changed the face of several other industries, such as e-commerce and platform models. It also enables nascent B2C models in an industry that is in essence B2B. But this may give technology-driven entrants an opportunity to enter a vast market. Judging from other industries that have been disrupted in the past, we think this might pose more of a risk for TIC players than an opportunity. It is certainly a call to action.

There are first examples of successful platform business models in the TIC industry. One example is a qualified marketplace for inspection and asset verification services, allowing clients to directly book an audit with a certified independent provider. The platform automatically matches the right contractor available for the job. It verifies the quality of the delivery and issues both a report and a set of indicators on a dedicated dashboard. These platforms position themselves as intermediaries between qualified inspectors and clients, relying on a scalable platform business model that is based on proprietary software. Some of these platforms already handle a five-digit number of inspections and verifications a month.



# How we can help



Despite still solid fundamental growth, the TIC market environment is changing rapidly, and growing organically is becoming harder for some of the largest players. M&A solves this problem momentarily for most, but growing profits in line with revenues is obviously a challenge for many.

While opening a new realm of opportunities, digitization significantly raises the level of uncertainty and risk of disruption for TIC players and sheds a sharp light on the question of the long-term role and scope of TIC lab assets. It is important to make the right choices on where to invest into physical assets and where to round out the portfolio with other solutions rooted in digital technology.

The right strategy and stamina in implementing necessary changes are key. As experienced professionals in TIC, teams from EY-Parthenon support leading market participants and investors in future-proofing and evolving their business models as an advisor. This involves strategic portfolio reviews, ideation and growth support, business modeling, integration support and profitability improvement programs with a focus on, for example, go-to-market strategy and pricing. We conduct M&A screenings as well as due diligence with respect to strategy, markets and commercial positioning. With the support of partners within the EY member firms, broad knowledge is provided across the entire functional breadth relevant to TIC.

The right strategy and stamina in implementing transformational change are key.



# Contacts



**Volkmar Schott**

*Partner, EY-Parthenon GmbH*  
EY-Parthenon  
EY-Parthenon GmbH  
volkmar.schott@parthenon.ey.com  
Munich



**Stephan Bindner**

*Partner, Ernst & Young Advisory*  
EY-Parthenon GmbH  
stephan.bindner@parthenon.ey.com  
Paris

For more information, please visit [ey.com/parthenon](https://ey.com/parthenon).

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