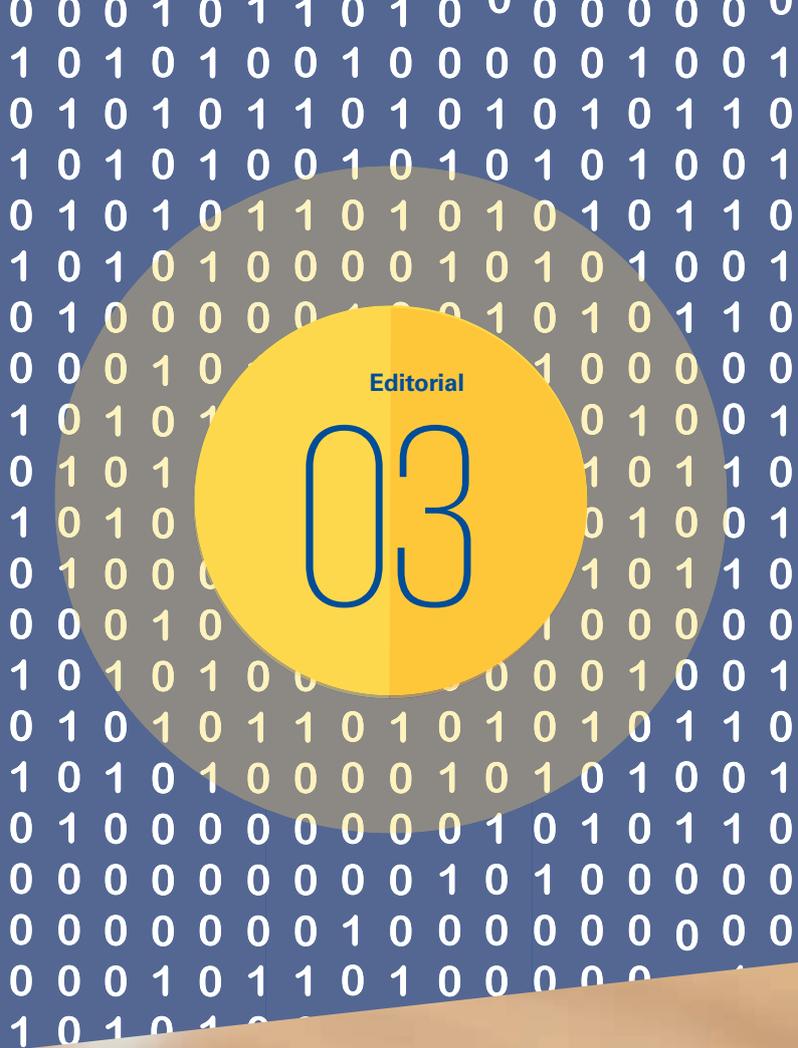


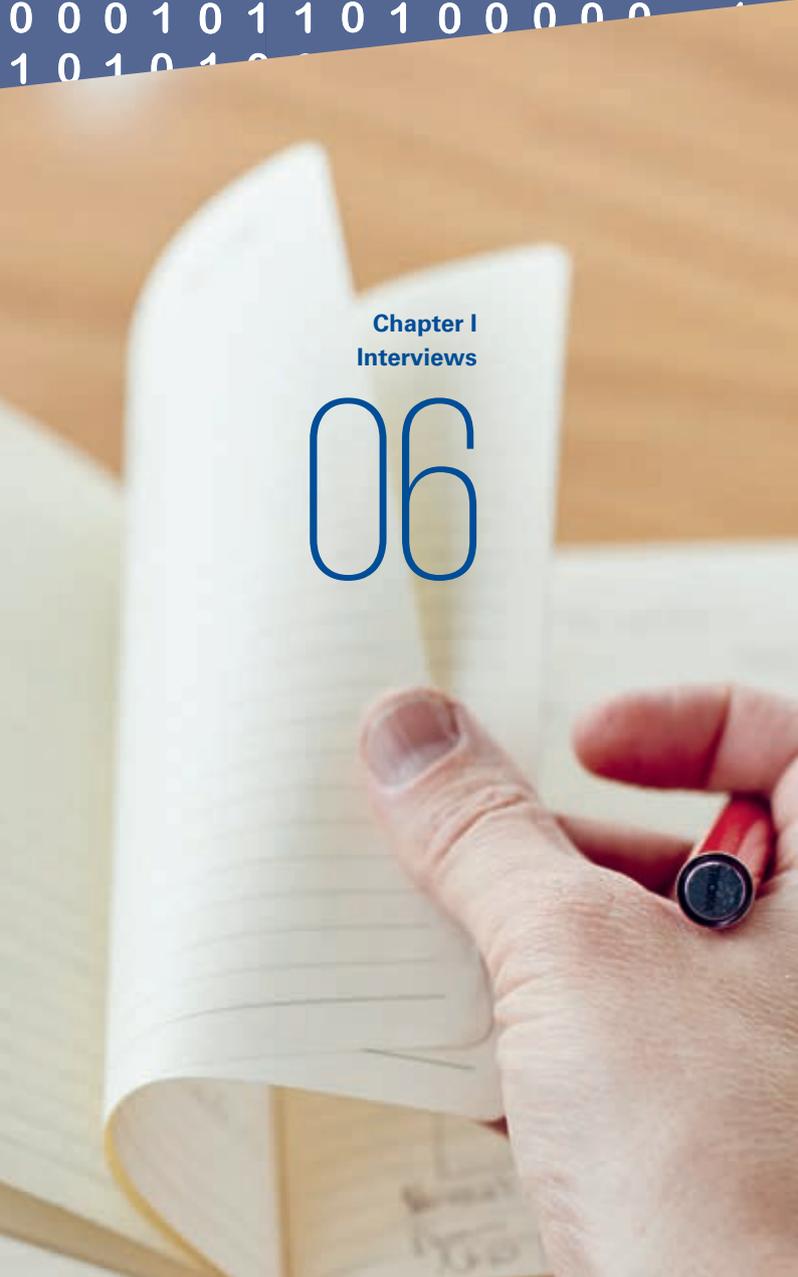


Clarity on Dynamic Audit

**How technology reshapes the audit
and delivers more value**



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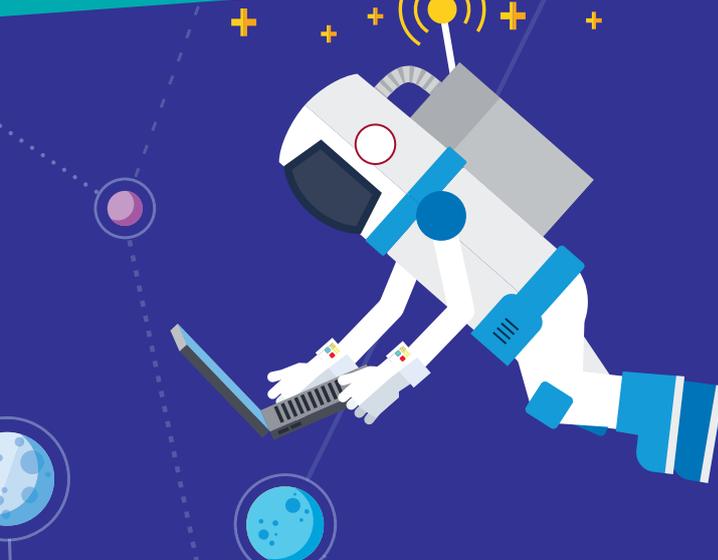


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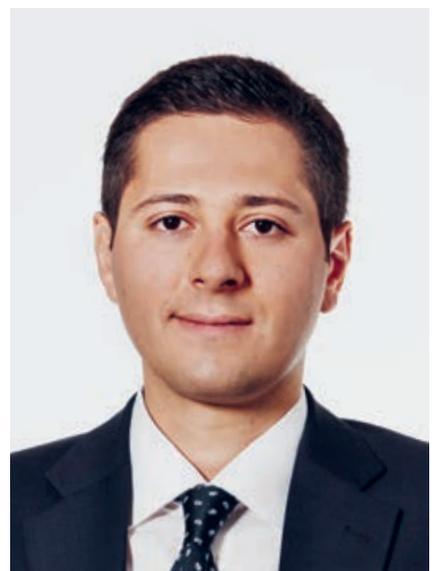
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How technology reshapes the audit and delivers more value

Lukas Marty*(Large picture on the left)**Partner, Head of Audit,**Member of the Executive Committee**KPMG Switzerland***Mark Meuldijk***(Top picture on the right)**Partner, Head of Assurance Technology**KPMG Switzerland***François Rouiller***(Middle picture on the right)**Partner, Head of Markets Audit Corporates**KPMG Switzerland***Teodor Pistalu***(Bottom picture on the right)**Director Data Analytics**KPMG Switzerland*

What if your auditor would tell you how to improve and streamline business processes in procurement or sales? What if he (or she) would pinpoint with surgical precision where and how you could increase efficiency and ultimately improve profits? Or give you specific insights into upcoming new risks?

This has become realistic as technology reshapes the audit. Audits have become more efficient and more relevant. They help shed a different light on your company and thus help you make better-informed decisions for your business.

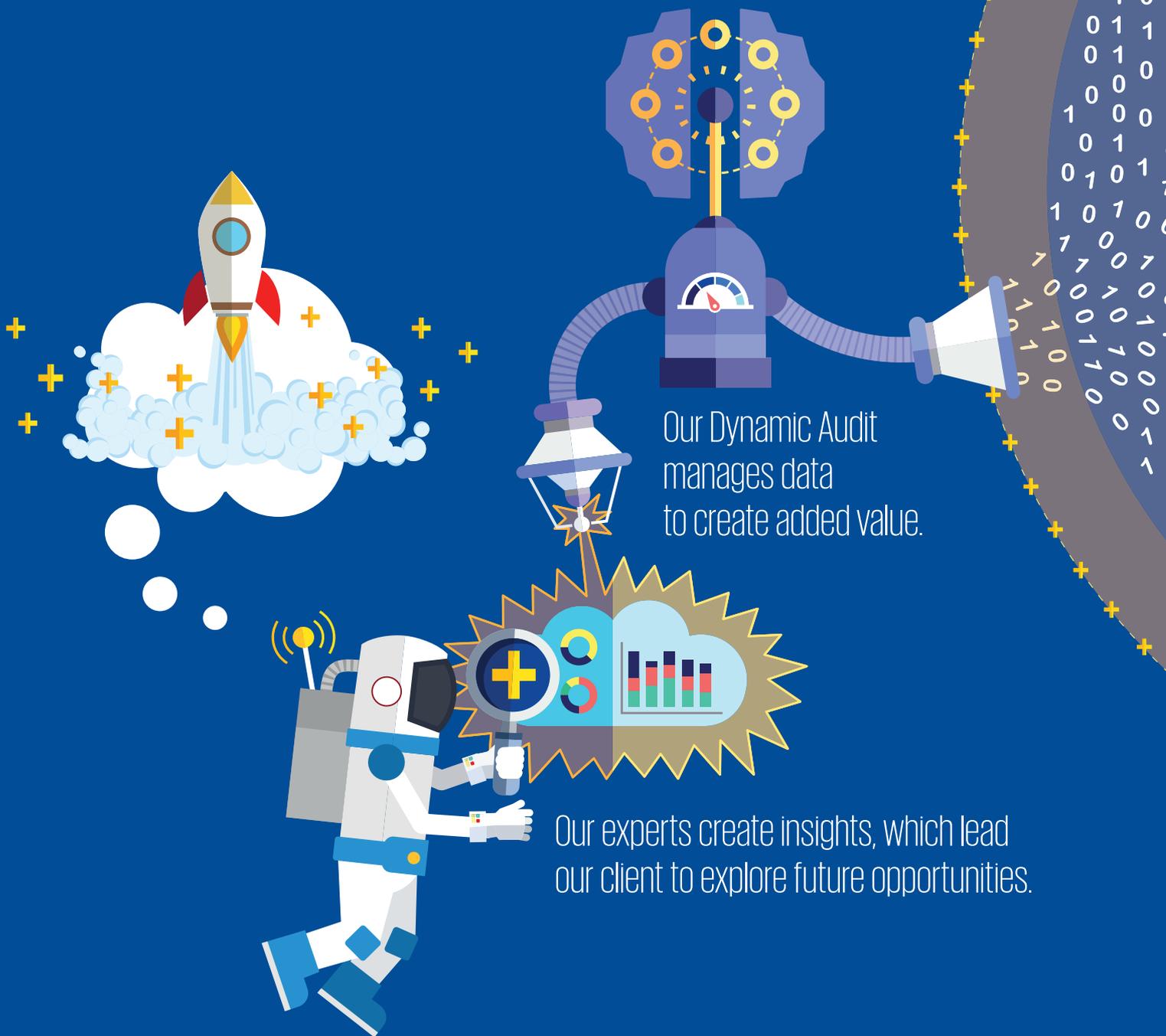
Data analytics and other technological developments raise the bar to the next level in the audit domain; audits become more aligned with your agenda, more real time, more forward-looking and more precise; technology also brings exciting opportunities for benchmarking; and as emerging technologies – varying from artificial intelligence and machine learning to the blockchain and predictive analysis techniques – become mature, there will even be more potential to reshape the audit.

The digital transformation in business – and the explosion of data volumes – is happening and auditors have to anticipate this. In a world where the speed of change has dramatically increased, stability and reliability of systems, processes and applications have become of utmost importance for businesses.

Traditional audits will have to be modernized to keep up with quality requirements and expectations from society and regulators. Auditors will play a key role in building trust in processes and algorithms. In addition, insights from the use of technology will also help management make better decisions and boards will have the information needed to ask the right questions for fulfilling their supervisory role. Altogether, KPMG can help by using technology in a smart way to inspire confidence and empower change within companies.

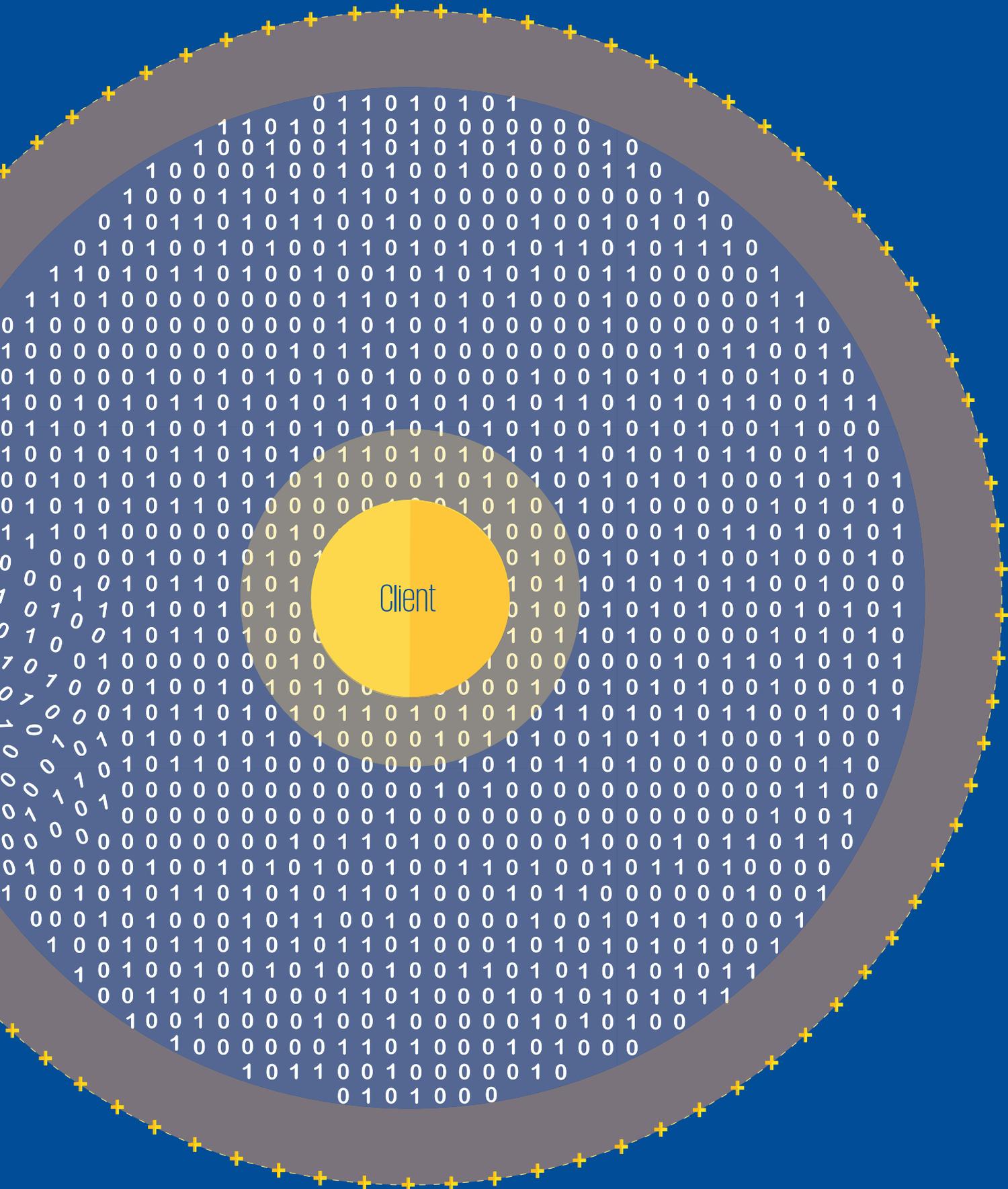
There's no doubt auditors can and should bring new value to clients. Now that technology offers tremendous potential, you should not settle for less.

With our Dynamic Audit and our experts, we help our clients manage their complex data, and get insights to create added value and explore future opportunities.



Our Dynamic Audit manages data to create added value.

Our experts create insights, which lead our client to explore future opportunities.





Alex Glanzmann
CFO of Die Post AG

Technology is about people

The impact of promising new technologies on finance organizations and the audit should not be underestimated. We should also be aware that to succeed with technology, we need to work on the competences of the people that are involved. Says Alex Glanzmann, CFO, Die Post.

Die Post has huge data volumes and flows which can be used way more extensively than in the current practice. Glanzmann points out an example: "In a hypothetical situation, and bearing in mind our clients' privacy and data protection, with the use of technology, we could predict if a customer is at home within a certain time frame to receive a package. Yet we don't use this knowledge: We go to the home, write a note and deliver the parcel to the nearest post office. With smart predictive analytics we could prevent this, and thus be more efficient and increase our customers' experience." He continues: "With effective use of our data, we could proactively approach clients with time offers for package delivery that best suit their needs. We need to process and analyze such big data and

integrate the information in the decision making and our processes."

How will technology affect the finance function? One surely would need a crystal ball to obtain a full view. Glanzmann doesn't have one but is pretty sure about one thing: Data analytics and artificial intelligence are technologies that will play an important role. "The cognitive capability to read and understand unstructured documents is not so far away and will certainly change the way we work. Utilizing artificial intelligence to identify specific elements from documents and the huge volume of data, should provide the next thrust in innovation that will influence day-to-day business activities. Artificial intelligence will also have its impact in the domains of audit, control and compliance. We will do less sample-based testing and more and more activities will be automated. Within Post we now already have two clear examples of that: smart automation of invoice processing and cognitive reading through and responding to unstructured e-mails from customers."

"Utilizing artificial intelligence to identify specific elements from documents and the huge volume of data, should provide the next thrust in innovation that will influence day-to-day business activities."



The digital shift reaches beyond implementing tools and adapting processes. It's (also) about people. About what their daily activities are and about the competences they need. "New technology inevitably means a change in competence profiles of employees. Routine activities will be automated and even the more complex activities, such as intricate management tasks, will be supported by artificial intelligence. Therefore, competence profiles will alter: Employees will move towards more guiding, analyses and consulting roles as opposed to standard routine transaction processing activities. And the same is true for management: Their roles will evolve as well. The key is to get a combination of business understanding and technology knowledge in the workforce, in order for management to successfully apply new technologies in financial processes. And to excel in collaboration skills, as cross-functional collaboration will become increasingly important."

Such challenges need time and competence and currently the Finance function is still too occupied with processing data, cleansing data and reporting data in an informative way. There is insufficient time available to really dig into data and drive value out of this. There is a need for change.

What's your view on how the audit profession (in general) is currently innovating?

"In fact, I think the same combination of business understanding and technology knowledge is necessary for innovation in the audit. Utilizing

new technologies can presumably improve audit efficiency, and new, additional valuable know-how can be gained in the realm of transactional processes. The interplay between the clients' business comprehension (identification of risks, assessment of business developments, etc.) – which can still only be provided by human cognitive abilities – and efficiency improvements in audit through the use of new technologies is promising.

"The key is to get a combination of business understanding and technology knowledge in the workforce, in order for management to successfully apply new technologies in financial processes. And to excel in collaboration skills, as cross-functional collaboration will be increasingly important."

The audit profession is well under way, for sure. External auditors are applying big data-analysis that enables them to reach meaningful conclusions.

Financial audit may not pop in mind when talking about technology, but based on my experience it is clear that some auditors are early adopters of new technology in order to make the audit more effective and insightful."

What do you expect from your auditor with regard to these new technologies?

"Apart from using technology to further improve the audit... being a good sparring partner in this exciting domain. The finance function needs change and an outside-in perspective can help on questions such as: How can we use techniques, like robotics, to improve finance processes, and how can we drive finance to the next level? It's of great value to me to have talks with our auditors on these topics. As long as we find and keep the balance between what makes sense and which areas are less relevant in relation to the audit mandate."

What are the most challenging aspects for auditors to achieve technology innovation in the audit?

"The challenge is to implement technologies that really add value. Today, there are some good technologies in place, but given the diversity in systems and data, the auditor is not yet able to provide an end-to-end analysis and view. Also, the insights that are provided should really make sense and be complete and accurate. This urges the

need for better technology, but also for an in-depth understanding of our business. Again, this calls for a multidisciplinary approach."



David Haldimann
*Global Head
Risk Management
& Taxes
at Dufry Group*

Tax technology is at the heart of our business

Swiss-based company Dufry operates more than 2,000 retail shops on airports in 63 countries. Dufry owns more than 20% of the market share in airport travel retail and is therefore the world's leading travel retailer. Dufry AG is publicly listed in Switzerland and in Brazil. The headquarters of the group are located in Basel, Switzerland. The stakes are high when it comes to being compliant with tax regulations, as this topic is in fact at the heart of the business model of duty-free shopping. Head of Tax David Haldimann shares some insights on how technology can contribute to this.

To be successful in the business of global travel retail it is key to have proper control of tax – especially indirect taxes such as excise and custom duties and VAT. Not only is this a prerequisite for obtaining and maintaining the concessions to operate the shops, this also is an important success factor in managing an efficient supply chain and thereby sustaining profits. Simply put: If you processes around indirect taxes are faulty or inefficient, they will eat your margin rapidly.

Managing the supply chain and transactional taxes is complex given the geographical diversification of the activities and the growth of the company in recent years. Revenues have almost tripled over a four-year period following major acquisitions of The Nuance Group and the World Duty Free Group. The impact of these acquisitions was also felt in the tax function. Against this background, Dufry implemented technology to centrally manage and store documents.

Haldimann is very satisfied about how this tool contributes to maintaining grip and points out that "less is more" is a basic principle: "Our reporting system has always been very effective and efficient as we only collect and distribute the real 'need to know' information. We don't want handmade templates to mushroom. The same is true for how the tax function uses technology to monitor compliance, audits and risks. We focus on the relevant information. The system is very helpful and helps us deal with the growth of our activities. We definitely have a better view on tax compliance, the associated risks and how they impact our business now."

"Our reporting system has always been very effective and efficient as we only collect and distribute the real 'need to know' information. We don't want handmade templates to mushroom."



When asked about the future potential of technology for the tax function, Haldimann points out two important domains where he sees progress in the next years.

The first one is further simplification and centralization of the (documentation of) transfer pricing processes further to Dufry's centralized supply business models. Currently, Haldimann and his colleagues are thinking about how to improve risk tracking and monitoring. The second one is to better measure the performance of local tax departments, by developing and implementing meaningful Key Performance Indicators (KPI).

What is Haldimann's view on the increased transparency on tax in relation to the use of technology by governments? With the introduction of Country-by-Country, tax authorities are expected to share tax data across borders. How does this relate to the deployment of tax technology by governments?

"First of all, we have nothing to hide. Therefore, we have no fear to share data. Historically there has always been an information asymmetry between tax payer and tax authority. This is now changing. But I am not worried about that. It will be interesting to see how tax authorities will use the mass data they obtain. The potential of technology for monitoring and auditing is huge, but at the same time it's not just a matter of plug and play.

To reap the results of technology, one must invest in change management and one must have business insights.

"Technology not only enables higher transparency and efficiency - and closer cooperation with tax authorities - but also offers ways to improve our business. We operate in a complex environment and if we have real-time and in-depth information on exceptions, we can improve our business and profitability."

If I look at the difficulties companies are having to manage immense data volumes, I'm not sure how governments can do much better. For now, I haven't seen many tangible results."

How do you compare the use of technology in connection with direct taxes (e.g. corporate income and capital tax) versus transactional taxes data (e.g. excise and customs duties, withholding tax and VAT/GST)?

"In the case of Dufry, indirect taxes are as relevant as direct taxes, as these are in the heart of our business. Compliance with the strict requirements of the law and authorities is essential for our success. Technology not only enables higher transparency and efficiency - and closer cooperation with tax authorities - but also offers ways to improve our business. We operate in a complex environment and if we have real-time and in-depth information on exceptions, we can improve our business and profitability. It's better to prevent than to detect."

How will robotics and process automation change your tax department in the future? Will the skill set of tax staff change given the technological developments?

"The impact of such technology is of course very profound in many domains. However, I expect that the tax function will not be the first one to jump on this bandwagon. In practice, the tax function must fight for every dollar to invest in technology. As to the skill set: The profile of our staff has already changed in the last years. We need people who are process and project oriented. People who understand how information is processed and know how to closely work together with IT specialists."



Stefan Preuss
*Deputy
Head of Internal Audit
at Swisscom AG*

Data analysis is a must-have skill for auditors

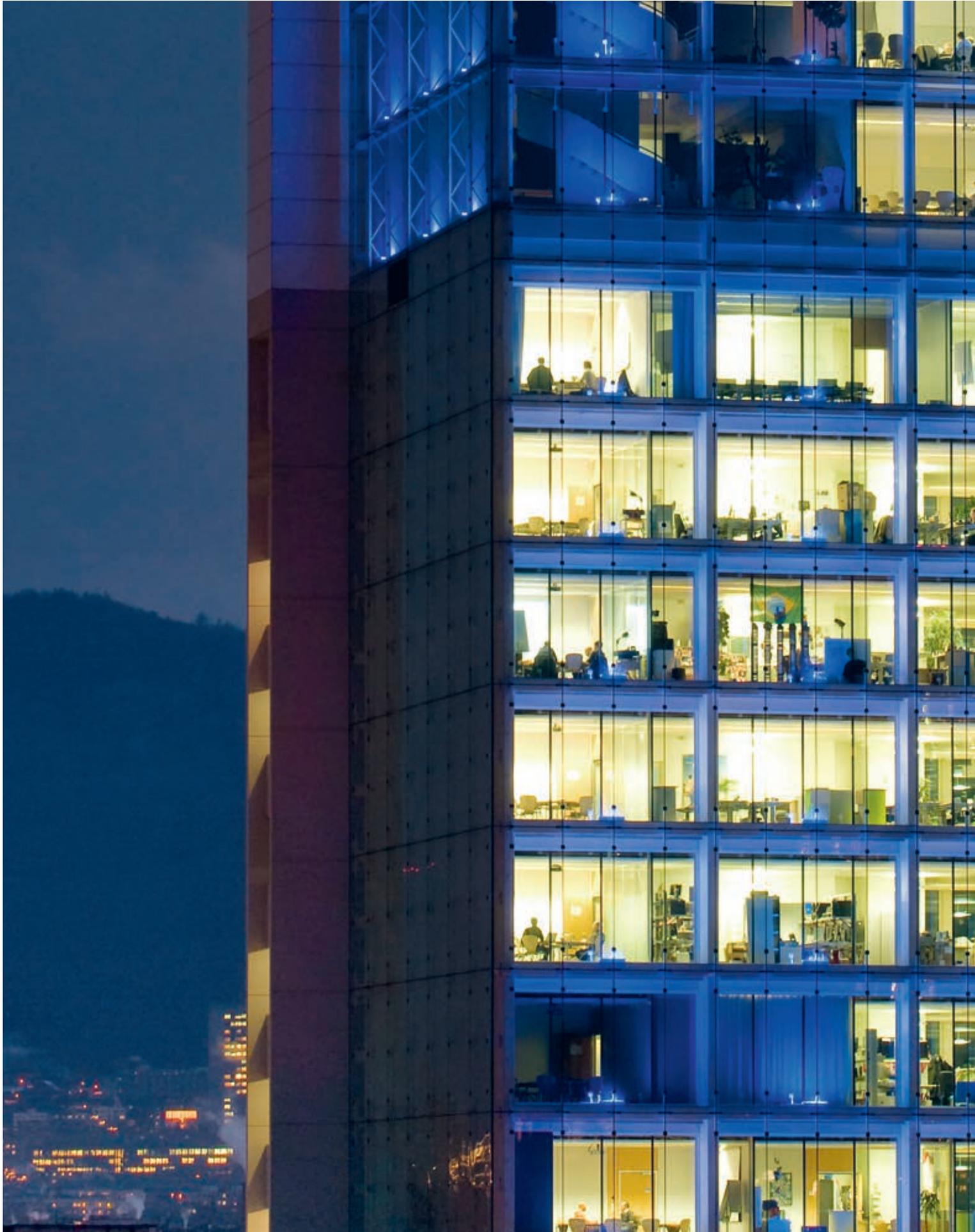
Swisscom is very active in the start-up scene. The search for digital business models is an important strategic pillar of the company. Stefan Preuss, Deputy Head of Internal Audit, shares his view on how new technology is (re)shaping Internal Audit.

It's needless to say that Swisscom – like many major telco companies - has gone through tremendous changes. New technology has been the name of the game and has affected Swisscom as a whole in nearly all areas. Twenty years ago, the majority of revenues was generated by public telephone cells and fixed-line services. This has now decreased to roughly 30% and the company invests 1 billion CHF per year in new technologies, ranging from the all-IP conversion in the network to the use of machine learning in customer care and the introduction of the electronic patient data files in the health businesses.

In such a highly dynamic context, it is challenging for Internal Audit to keep pace. One of the objectives, says Preuss, is to make good use of automated evaluation systems, which combine technologies such as data analysis, machine learning and process automation: "Today's 'always on' mind-set means that when the service is not available we have an issue. Service stability for our customers is key. Internal Audit and IT play a large role here."

Although Internal Audit may not be in the driver's seat when it comes to technology innovation, this department surely plays an important role: "Digitization requires standardized, 'simple' processes. And here, Internal Audit has the greatest potential to support the use of new technologies within the company. In order to bring these technologies to use, internal processes must be digitized and, above all, simplified."

"Today's 'always on' mind-set means that when the service is not available we have an issue. Service stability for our customers is key. Internal Audit and IT play a large role here."



In Preuss' view, data analysis is at the heart of the audit profession. "It's a must-have skill for auditors these days. When I started at Swisscom, data analytics was new. Swisscom has made a big step and now we need to keep it up. Data analytics has triggered more collaboration between our service lines. Our internal auditors now have a much deeper understanding of the internal business processes as they are using advanced analytics to review these. In many audit department you find strict segregation between auditors and data analysis specialists. I am convinced that we should expect the data analysis competence as a standard capability of any auditor. Data analysis combined with the internal auditor's special perspective in the company is, in my opinion, still the greatest added value Internal Audit can bring."

In the future, as technology advances, machine learning will be a key asset to run faster and more automated audits and decision making. Machine learning, however, will not be able to replace an auditor's network and understanding of the organization's dynamic: "It would rather complement today's auditors and allow them to be more effective and efficient."

Do you expect that using technology will help you unveil emerging risks? E.g. in a continuous risk assessment context?

"Given the current pace of technological change and the ongoing redefinition of the telco business I'm very wary of the term 'continuous.' Because continuity is usually not a good friend of technological disruption."

"Given the current pace of technological change and the ongoing redefinition of the telco business I'm very wary of the term 'continuous.' Because continuity is usually not a good friend of technological disruption. It leads to the illusion of perpetual stability and continuity while, at the same time, we deal with volatility and an increasing change of speed."

Continuous risk assessment would only be effective if kept up to date with the changes in the organization and the industry."

What's your view on the most important challenges for auditors to achieve technology innovation?

"Speaking perspective of Internal Audit, it is difficult to drive innovation in a company directly simply because of limited resources and budgets. What we are doing is taking the role of an early follower for newly implemented technologies. At the same time we should also leverage technologies from the ecosystem such as our external auditors and technology partners. It is quintessential that we have properly educated people familiar with the new technologies. In my opinion it is not useful to employ internal auditors over the whole working lifetime. Therefore we changed our internal HR policies and established Internal Audit as a 'training' department."

How do you view the auditor of tomorrow?

"A good auditor is a good communicator, multiplier and facilitator in a group environment like Swisscom. Communication, networking and the human factor, are and will remain vital in the future. Technology will help in efficiency and in automating processes, but not where it comes to human judgment and rationale. All the same, I expect to see advanced robo-auditors coming in the next ten years."

It starts with the why





What is the rationale for embedding new technology in the audit approach?

Back in 1974, the "audit expectation gap" was firstly defined as the difference between the actual and the expected audit performance. Today, there is still an audit expectation gap between what stakeholders in society expect from an audit and what an audit actually delivers.

Financial information is an essential element of capital markets and our economy. Society not only expects this financial information to be of a high level of quality, transparency and credibility, but also seeks for trust in other areas, like corporate governance, risk management, (financial) forecasts, etc. We must not question if these expectations are justified. Instead, auditors must find new ways to better serve those needs.

Additionally, think of the fact that we move into a world where our behavior and/or our decisions – both business related and personal – are increasingly dominated by algorithms fueled by data. If this trend continues, users will probably start asking questions on the trustworthiness and quality of these algorithms as well – the black boxes that guide their decisions. More simply put: They want to know if algorithms are evil or good. Auditors are the ones that are best positioned to create the basis for trust in this area.

Therefore, one of the reasons to embrace new technology in the audit is in fact to answer the changing needs in society.

However, there's another important factor. The new possibilities of, for instance, data analytics now provide the opportunity to rethink the execution of the audit. Data analytics has become more mature; technologies are user-friendly, reliable, powerful and easy to deploy. The use of data analytics techniques in the audit enables auditors to better identify risks (i.e. financial reporting, fraud and operational) and to tailor their approach. In fact, many clients simply demand that their auditor is armed with a proper set of tools to 1) help mitigate compliance and reputational risks, 2) improve business processes and financial reporting, and 3) provide insights to ultimately foster better decisions and actions within an organization to create additional value. Examples are smart analyses on key controls, analyses to improve working capital, deep reviews of processes that will reveal anomalies or inefficiencies, and challenging valuation issues.

Audit technology responds to a need for efficiency and quality. It delivers additional value to clients and supports companies in their efforts to meet stakeholders and public expectations. That's the why.

The merits of new technology in the audit: Everyone is served better



Management gets better insights that lead to better business decisions; one of the clear advantages is that management can get a focused view on their organization, as data analytics slices through all silos of data and through organizational boundaries. With the proper tools and solid expertise this can be converted into actionable information.

The board can obtain quality information which in turn is the foundation for better questions, which is one of the key prerequisites for maintaining solid oversight. Having the right information has always been a great asset for board members. We are able to shed a different light on their company.

Shareholders and the public profit from a higher degree of assurance, as technology-driven audits can enhance the robustness of the audit. Their expectations become higher over time. There is a strong public opinion that auditors shouldn't hide behind rules but should find ways to improve the assurance.

How our dedication to excellence unlocks the value of technology

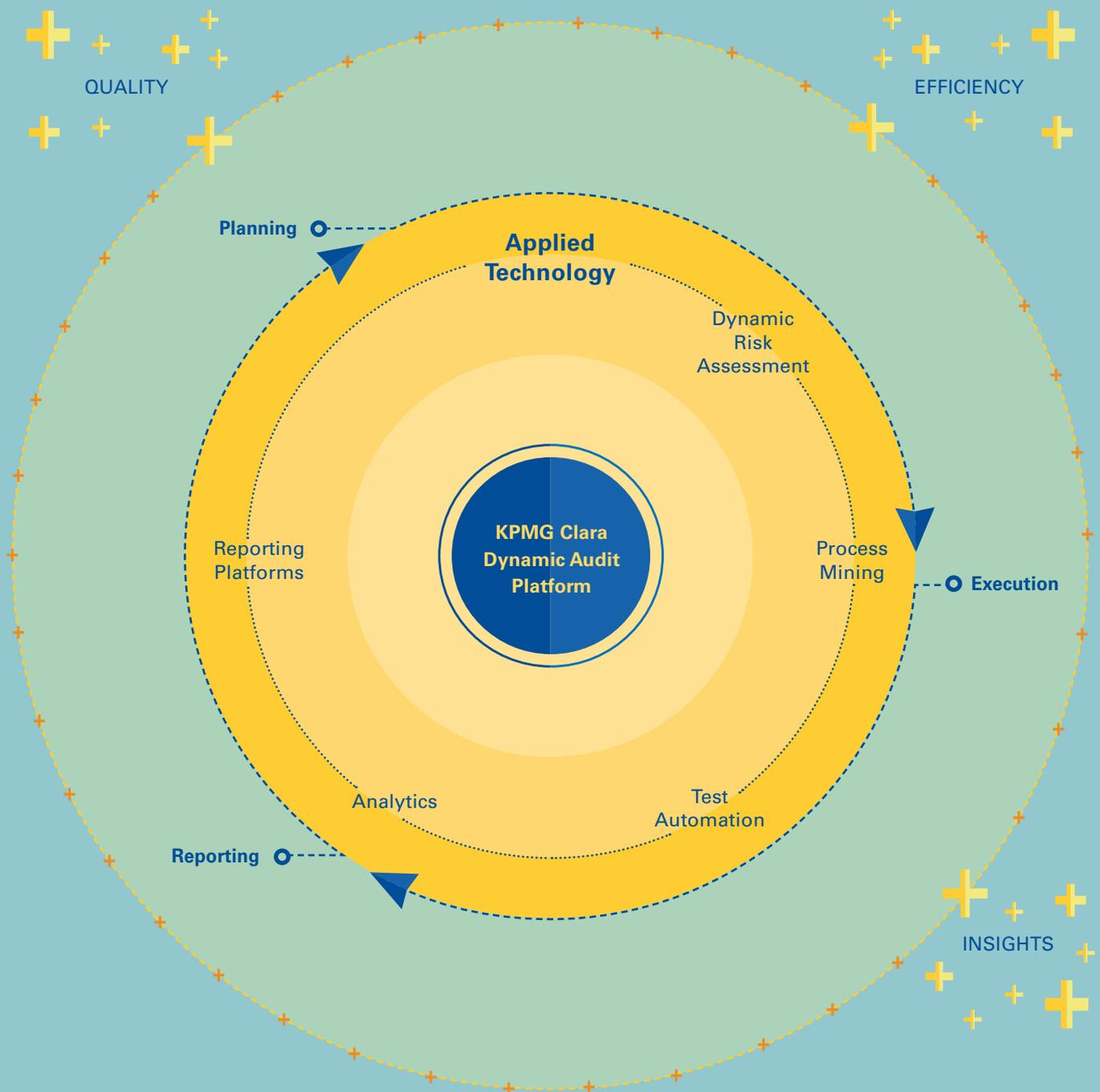


KPMG continually strives to bring efficiency, better quality and greater value through technology innovations to its audit process. The speed of this is largely determined by our vision, enthusiasm and dedication. Other important factors are the regulatory conditions, the return on investment and the fact that we live in

a global environment where changes in one country are strongly related to others. Change doesn't come easy.

Nonetheless, we succeed in making major steps, together with clients.

INTEGRATED AUDIT APPROACH FOR MORE VALUE



The context

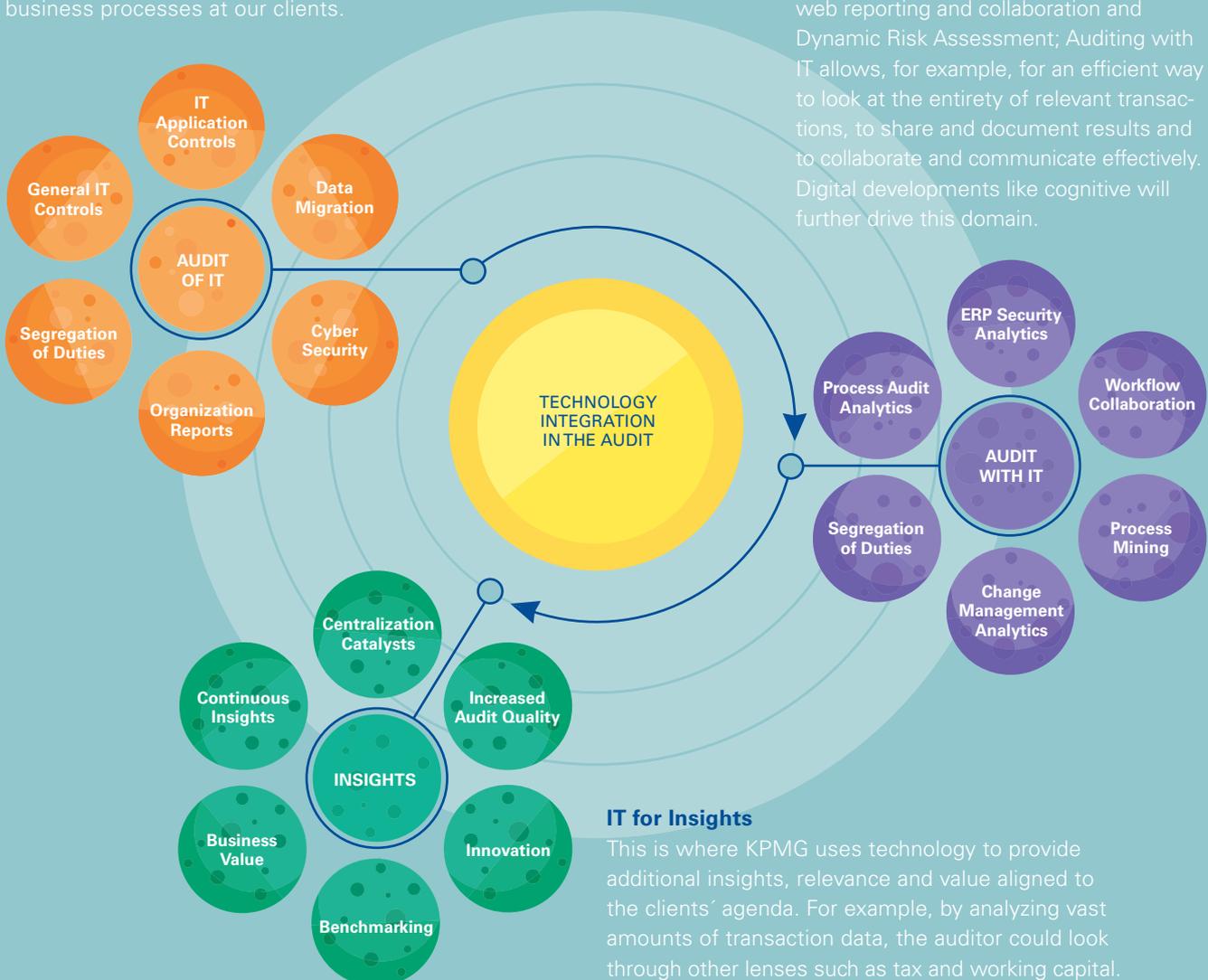
KPMG distinguishes three angles of looking at technology integration in the audit which are imperative in today's world: the Audit of IT, the Audit with IT and IT for Insights.

Audit of IT

The Audit of IT involves testing key IT controls in and around relevant financial systems. Our focus lies on significant general IT controls, application controls and segregation of duties. The purpose is to gain comfort that the systems themselves, their operations and controls and the output they produce significantly mitigate risk for financial reporting. The Audit of IT needs to adapt to digitalizing business processes at our clients.

Audit with IT

This is where technology supports the audit, like the digital audit workflow and documentation environment, data analytics, web reporting and collaboration and Dynamic Risk Assessment; Auditing with IT allows, for example, for an efficient way to look at the entirety of relevant transactions, to share and document results and to collaborate and communicate effectively. Digital developments like cognitive will further drive this domain.



IT for Insights

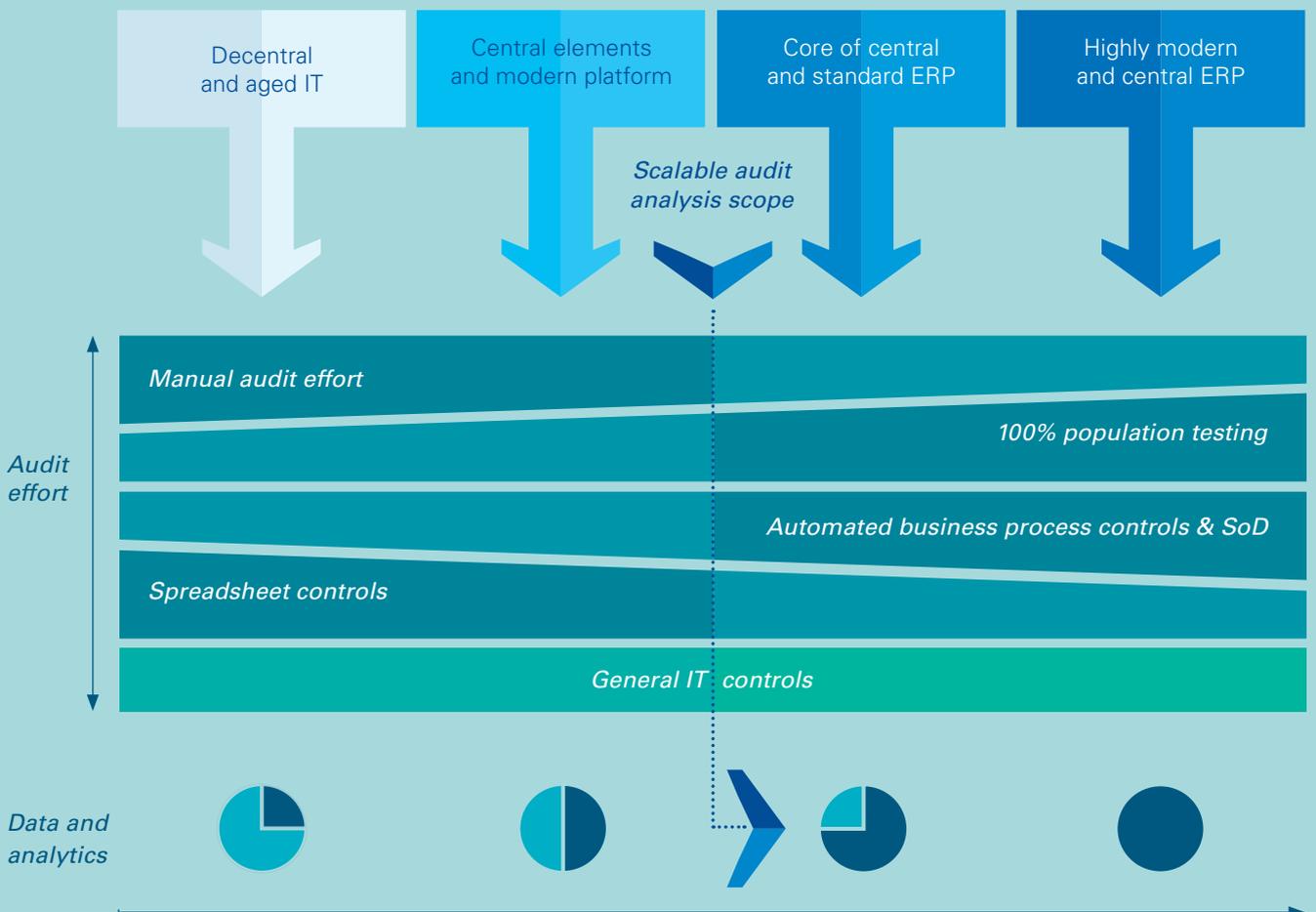
This is where KPMG uses technology to provide additional insights, relevance and value aligned to the clients' agenda. For example, by analyzing vast amounts of transaction data, the auditor could look through other lenses such as tax and working capital.

Maturity of IT systems

The options for Audit with IT depend on the IT situation and the future digital development of the client organization. We recognize that many organizations are working on further standardizing and harmonizing their IT application landscape, for instance moving to one single ERP platform and concentrating processes and activities in shared services. In addition, organizations are implementing more often well-known "off-the-shelf" and cloud-based applications. These standardized and harmonized environments make it easier for both our clients' internal control systems and the auditors to efficiently apply technologies in their audits. On the client side, concepts like benchmarking of processes and for auditors concepts like 100% population testing by using data analytics come into sight, replacing time-consuming and error-prone manual efforts.

Unparalleled speed and flexibility in getting answers to the questions of executives

Current technology offers new possibilities to extract information in ways that were unthinkable a couple of years ago. The speed and flexibility often comes as a pleasant surprise to many executives. Many still expect that developing tailor-made reporting takes a couple of months and includes extensive programming, testing and implementing procedures. However, in the current world, this can be done in a couple of weeks and in some cases even "on the fly." In-memory database technologies, like SAP HANA, contribute to this tremendous increase in speed. Concepts like continuous monitoring can be made reality. There has been talk about these concepts for more than ten years, but now technology finally enables it.



The fundamentals of Audit with IT

We are aware that success in audit using technology is not just about applying the technology, but also and moreover about making sure that outputs generated by this technology are embedded into the proper context and aligned with management needs. The KPMG Audit with IT approach uses Dynamic Risk Assessment and data analytics capabilities to ensure delivery of an innovative, efficient and high-quality audit, resulting in actionable insights and value-added reporting.

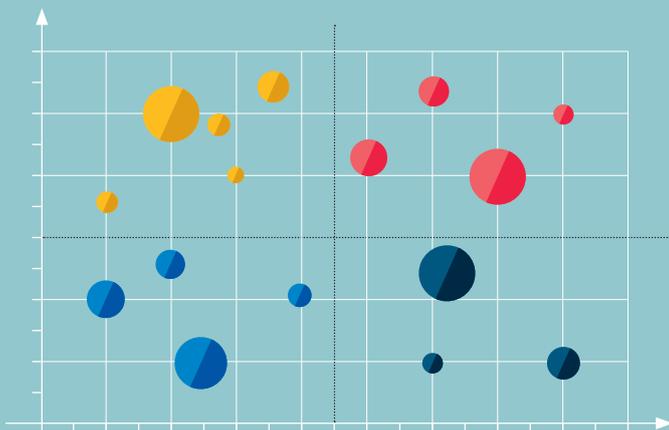
Until recently, there used to be a number of barriers to systematically deploy data analytics. It was hard to get the data from companies – because of technological challenges or security concerns, the complexity was high as auditors

had to deal with multiple bespoke (accounting) systems with different standards and types of data; and obtaining large sets of data could turn out to be time-consuming.

Today, many of the hurdles have been or are being removed: Businesses are relying more and more on standardized and centralized financial systems; computing processing power, system memory and network capacity increase at a tremendously high pace and new database technologies boosts data processing speed. As a consequence, the aforementioned barriers are starting to disappear, giving an opportunity for auditors to use technology fundamentals in their audit approach. We will further explain these 3 fundamentals:

TECHNOLOGY FUNDAMENT #1: DYNAMIC RISK ASSESSMENT

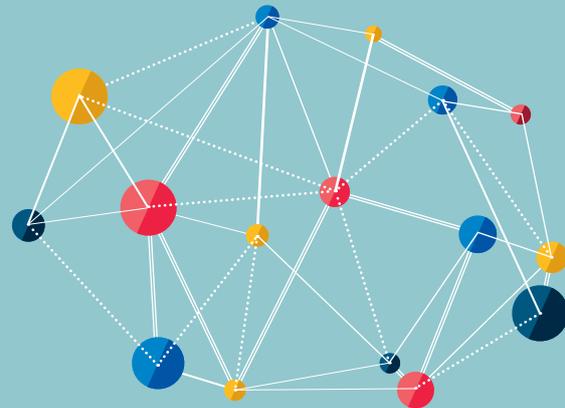
Traditional two-dimensional risk map



Dynamic Risk Assessment (DRA) takes a four-dimensional view of risk. Whereas traditional methods focus on risks in isolation, DRA shows the interrelationships between risks and where one risk might impact another.

DRA is an evolution in risk assessment that applies actuarial theories, sophisticated algorithms, mathematics and advanced data analytics together in a KPMG proprietary methodology to identify, connect and visualize risk in four dimensions.

Interconnected view



This view takes into consideration risk interconnectedness and the speed with which risks can impact business operations. Combining the latest in applied science with insights from management and extensive benchmarking, DRA modeling allows our audit professionals to see where risks can be expected to form critical clusters or trigger “contagion” in other risks.

By exposing the expected contagion effects between global and enterprise risks, we objectively measure the genuinely significant threats.

These fresh insights equip our audit professionals with new levels of risk assessment that enhance audit quality. They will also be able to provide clients with new insights that these clients may use to drive better-informed

decisions¹ within their organizations about how best to tackle and monitor these threats.

Focusing on systemic business risks helps produce better audit evidence, reveals new insights and enhances audit quality.

¹ There are some regulatory limitations in using the full methodology for audit clients

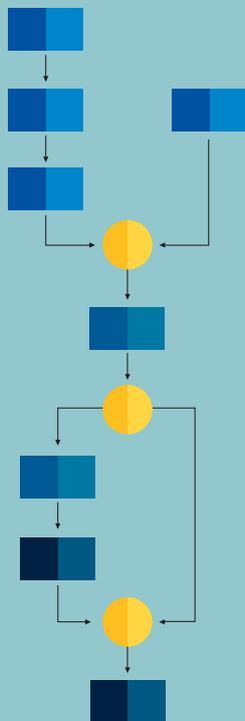
TECHNOLOGY FUNDAMENT #2: DATA ANALYTICS ON TRANSACTIONAL AND MASTER DATA

Data analytics enables the testing of 100% of transactional and master data instead of just samples. For example, analytical tools can provide almost complete comfort over the correlation between the cash and goods movements in companies. This reduces the work on manual audit procedures, increases the quality of the audit and enables to focus on what really matters for the audit – e.g. nonroutine transactions and higher-risk areas.

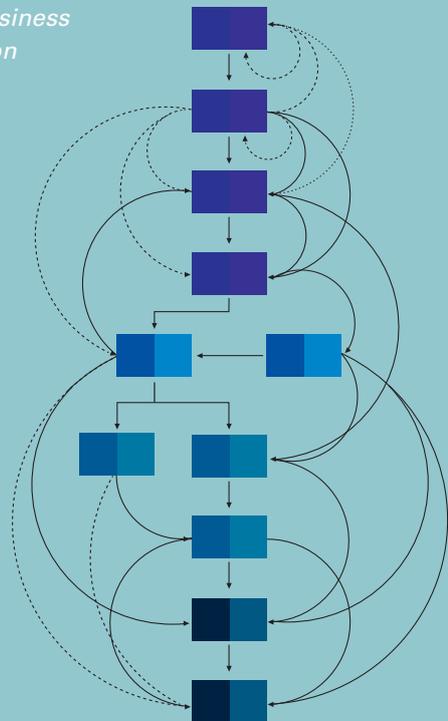
Results can be visualized in interactive dashboards, enabling drill-down from a big picture view to a transactional level view that enables the auditors to perform further root cause analysis.

TECHNOLOGY FUNDAMENT #3: PROCESS MINING

Process design



Actual business transaction



Gaining a good understanding of how an organization’s business processes operate is key for performing a good quality audit. By analyzing the process flows, auditors identify risk and control areas that are key for ensuring the reliability of financial reporting.

Auditors traditionally gain an understanding of the design of these processes by performing walkthroughs together with business management. These walkthroughs are time-consuming, especially when the organization is large and complex.

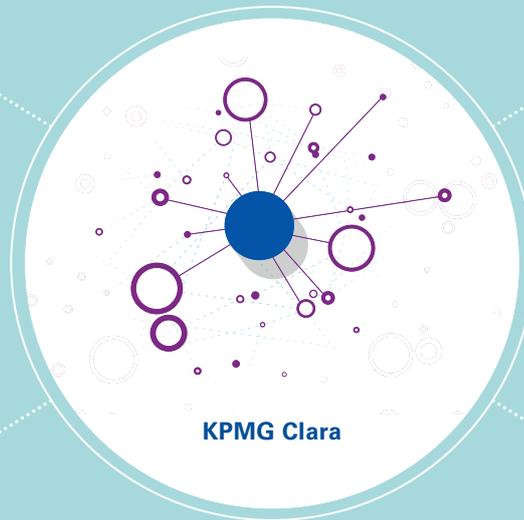
Introducing KPMG Clara - powering Dynamic Audit

A better way to see audit evidence

Lets you know whether sufficient audit evidence has been obtained

A differentiated client experience

Powerful new insights and perspectives



Advanced capabilities at your fingertips

Seamless access to KPMG's advanced audit capabilities leveraging data, automation and visualization

A more meaningful work experience

Increased focus on higher risk and judgmental business acumen

At KPMG we're bringing together our existing powerful data and analytics capabilities, innovative new technologies, and our proven audit workflow into a new smart audit platform called KPMG Clara.

KPMG Clara will help us to see a client's business from different perspectives and provide a lens that will allow clients to see aspects of their audit from close up, allowing them a more seamless and meaningful audit experience and collaboration.

Through capabilities like the automation of data extraction and account analysis, KPMG Clara will make the most of a client's investments in technology, meaning we'll require less of their people's time. It will also enable us to focus more on areas of high risk and what they mean for the audit and our clients' business.

We will continue to enhance it over time, adding capabilities and harnessing new technologies as they mature – innovations such as predictive analytics and cognitive technologies such as artificial intelligence and machine learning. KPMG Clara is the beginning of a new era for KPMG's Dynamic Audit – a gateway into the digital future.

Bringing insights to improve processes and develop business

The same technology that KPMG uses for the Audit with IT can be used for insights.

As executives often face the challenge of having a single view of information in their organization, technology will also help in breaking through information silos and organizational boundaries. This will typically require to combine data from diverse systems in multiple departments, and moreover to combine data from different entities in a group.

Another important option is the benchmarking of processes and controls between organizations and between entities within organizations. We can analyze how similar processes, like order to cash, are operated in the different business units and how they compare against better practices. Hence the identification and sharing of efficiency insights in the client's organization will contribute to business effectiveness.

There are many more specific examples where clients experienced the value of technology in KPMG's audit. We mention some:

IDENTIFYING REMARKABLE JOURNAL ENTRIES

Journal deep dives can sift through a whole transaction set with different lenses on, and as such, identify other insights in line with efficiency, information security and fraud prevention. A KPMG client, for example, had a vast numbers of small manual journal notes entered into the system by one user. This "user" entered so many journal notes in one year that one person would have had to effect an entry every 10 minutes, without taking breaks or a vacation the whole year through. Further investigations led to the discovery that several employees were sharing the same user account, therefore posing a security risk. Following this discovery, the client defined a more efficient process by using new technology for processing low-value purchases.

TIGHTENING THE GRIP ON CREDIT NOTES

Data analytics can be key to reveal process issues and increase efficiency. A good example came from a project at a bicycle manufacturer, where reducing the number of credit notes proved to be very relevant for the client. The team aimed to have a better understanding of the risk exposure across credit note transactions by better understanding the operation of SAP approval processes and controls. Data analytics enabled an analysis of 100% of the client's processed credit note transactions. This revealed that a significant volume of credit note transactions were being processed manually, circumventing the standard approval process and controls, and that employees were assigned incompatible duties. The root causes for this (such as wrong pricing, forgotten discounts, products damages, etc.), on a relatively large number of credit notes, revealed opportunities for process improvements.

EXPOSING SECURITY WEAKNESSES

An international chemical client discovered a number of security weaknesses as a result of automated IT Security routines that are part of the financial statement audit. These routines test the appropriateness of the security measures in safeguarding information. This approach resulted not only in efficient testing of the controls in scope, but also enabled a lower risk exposure by identifying security weaknesses in not-in-scope areas. The client was able to envision early security threats as well as their consequences and potential countermeasures, thereby improving business resilience and preventing reputational harm.

PINPOINTING FLAWS IN DATA MIGRATION

Pinpointing flaws in data migration can have a direct positive impact on a client's end users. A client in the transportation sector, for instance, received a clear view and actionable items from KPMG on incomplete and/or inaccurate records as part of the go/no-go decision in a data migration project. The data analytics routines to obtain these actionable items were part of the financial audit and aligned to an ERP implementation project. The request of the client concerned the nonfinancial data. The audit team used data analytics capabilities to reperform the data migration. As a spin-off they also showed the client how to efficiently test a data migration in future. As these nonfinancial data were crucial for, amongst others, the planning and maintenance scheduling of the fleet of the client, this project had a direct positive impact on the client's end users' satisfaction.

RAISING THE BAR IN TAX COMPLIANCE WITH TECHNOLOGY

Paying a fair and right amount of tax has become a major topic in the public debate; governments issue new tax laws and regulations and impose heavy fines; disclosure requirements on tax payments enter a new reality; and authorities invest in new and sometimes state-of-the-art technology to monitor tax streams which gives them powerful instruments in the digital age.

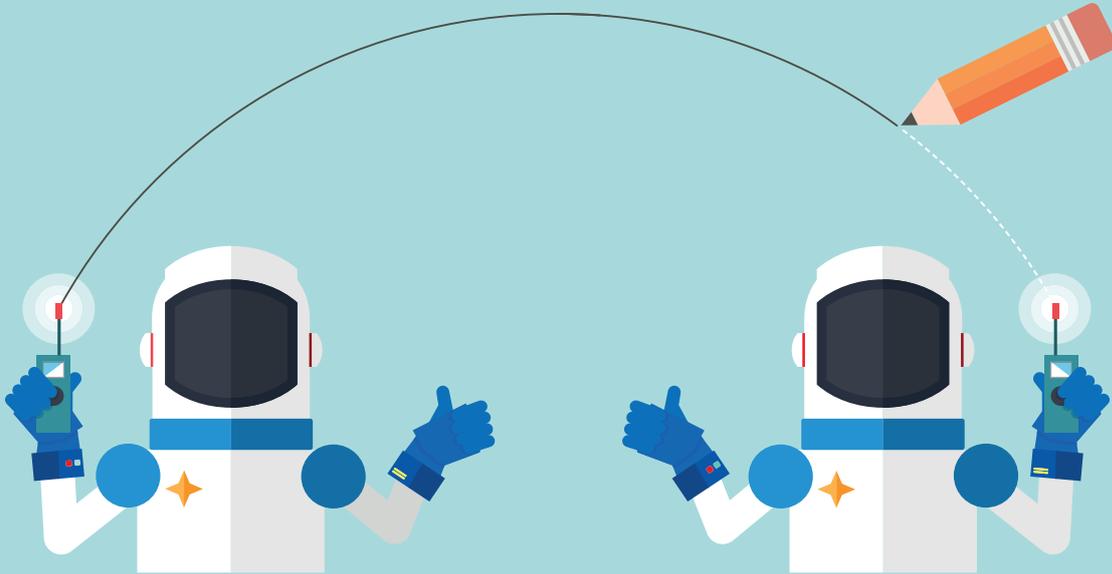
In our global economy, tax structures have become extremely complex. The variety in VAT flows, for example, for companies that sell, produce and deliver goods in different countries is huge. There are so many variances and extreme data volumes that companies have difficulties in catering for all of them. Mistakes are easily made and a monitoring has proven to be very difficult. The result: a higher risk of not reporting the correct amount to the tax authorities, or paying too much VAT to the tax authorities. This leads to opportunities for improving working capital, potentially heavy fines, but, perhaps more importantly, a significant blow to the reputation.

Automation technology can help in this challenge as it can collect and analyze transactional data stored in multiple systems. The enormous amount of data is thereby translated into accurate and actionable data, anomalies and errors in tax processing can be detected and corrected.

An example of this is a multinational business where we found recorded sales invoices lacking a determination of the VAT treatment. Out of 635,000 invoices worth over 5 billion, KPMG identified 3,000 invoices worth 5 million of revenue where no tax treatment was allocated. Thanks to the use of technology, underpayments of VAT could be detected and reputational and financial damage prevented.

So, again, smart use of technology brings us to a new level of accuracy and speed in insights which can contribute to satisfy the needs of tax authorities and the general public.

Closing the value gap in Internal Audit



Results from a recent KPMG and Forbes survey² call attention to a "value gap" between the priorities of the audit committee and executive management and the outcomes typically reported by the Internal Audit (IA) function. While the term "added value" is considered a common desired outcome, what characterizes "added value" often remains abstract.

To determine how IA can provide "added value," it's worthwhile examining the misalignment between what IA functions are delivering and what the organization perceives as valuable.

The largest discrepancies are mostly related to questions of how key organizational risks and sustainable profit generation are addressed. The risk assessment performed by IA is mostly considered to be adequate and "gets the job done." However, in terms of comprehensive detection and response to emerging risks, only very few survey respondents believe that IA is adequately delivering on these requirements. Stakeholders expect IA to become increasingly proactive in responding to the key organizational risks in the future.

The expectation described above presents an opportunity for IA if addressed using an audit approach that also leverages technology. It highlights the need for a more intense collaboration with other assurance functions such as compliance, legal, external audit, internal controls and risk management efficiently delivered through a combined technology platform.

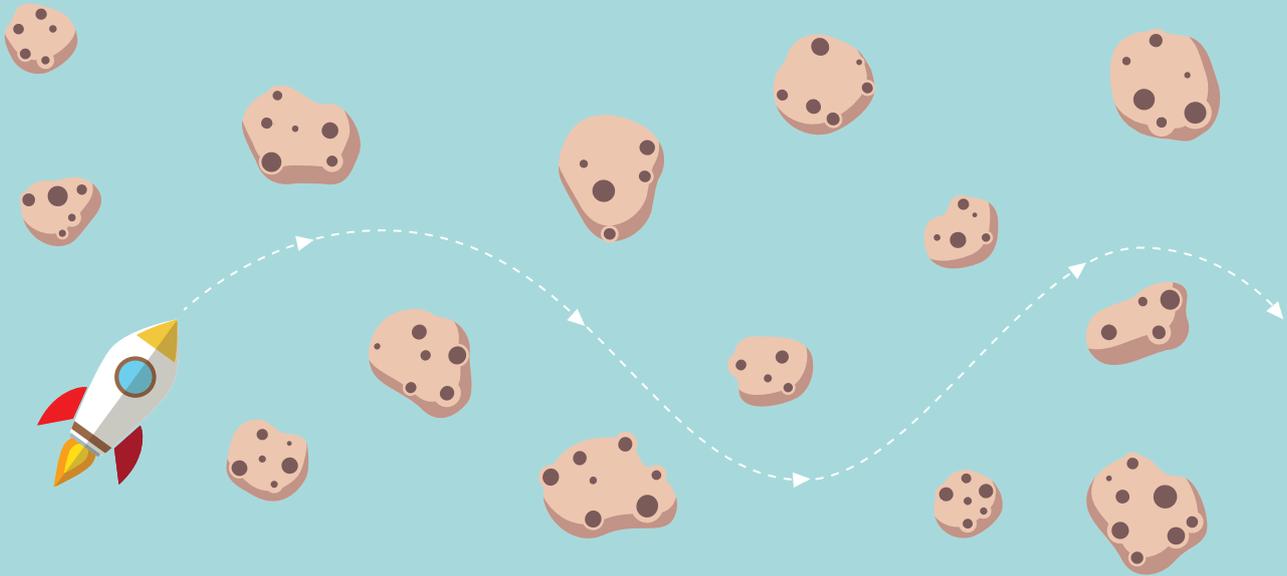
KPMG believes that if IA were to perform risk assessment through an integrated technology platform, similar as to what the external auditors are developing, that fully leverages data and analytics (D&A), knowledge and expertise, then the potential for IA to add value would raise significantly.

The survey responses do not only identify a "value gap," but also highlight specific actions that would heighten the value of the IA function and create a new standard of delivery by:

- Embracing technology and the benefits of D&A to increase audit quality, improve the quality of audit evidence and facilitate the discovery of new insights;
- Leveraging an audit management platform that automates significant portions of IA service delivery and allows consistent and full execution of your IA methodology;
- Sharing technology platforms with other assurance functions in order to reach a common understanding of data analysis results;
- Providing actionable and relevant insights with respect to key risks and increasingly focusing on emerging risks, derived from data extracted from a common technology platform.

² KPMG survey "Seeking value through Internal Audit," 2016

Main challenges for the next step



What are the main hurdles for auditors to effectively use the data analytics technologies described?

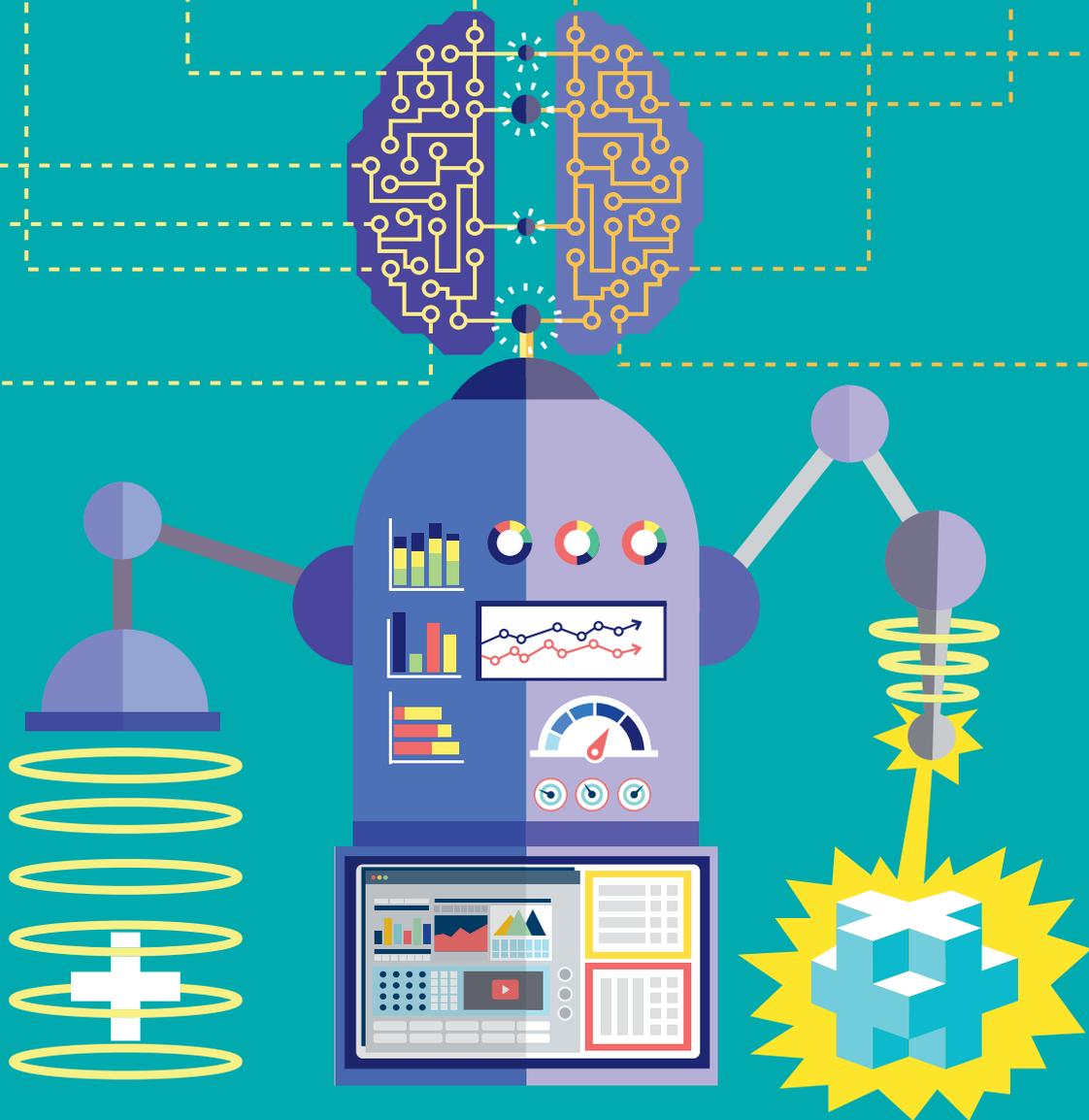
Investments need to be made, especially when it comes to tailor-made value-adding applications. Use cases differ strongly from sector to sector and from company to company. The challenge for the audit industry is to develop concepts that can be applied in many organizations. "Build once, apply many" is the mantra in this respect as this is the best way to come up with sound and economically viable solutions.

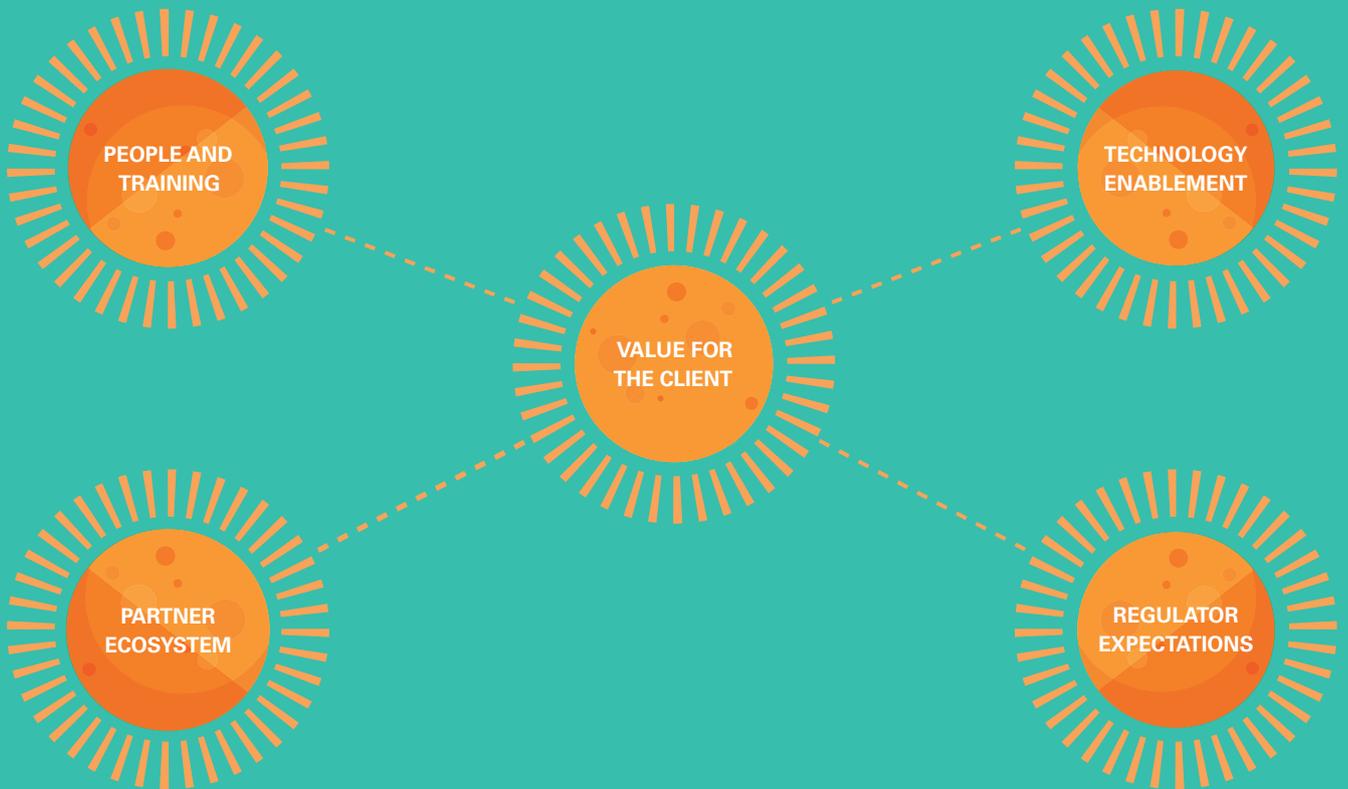
The learning curve is challenging. It surely needs a different mindset from auditors who have to break with many of their traditional routines. An innovative culture is essential. Professionals need to start thinking in digital possibilities. The longer-term solution is to start educating digital-driven auditors from school and university onwards. Same applies for organizations which today move more towards digital-driven businesses. Also, they invest in enabling the data driven workforce.

Rules and regulations may hold back the adoption as the requirements for audit evidence are defined based on (manual) traditional audit approaches and not fully aligned with innovative approaches based on technology. Regulators need to critically assess suitability of current regulations in the light of digital change, whilst maintaining the public trust.

Audit firms need **new competencies** to take the next steps. At KPMG, we are hiring not only the best-in-class auditors but also talented professionals who are tech-savvy and who combine sound business instincts with analytical skills. Moreover, we have opted for a collaborative approach with digital business partners to achieve our ambitious goals in this domain. We believe that only an ecosystem of multidisciplinary specialists can offer our clients the best.

Resetting the Audit





Predictions are hard to make on how technology in the audit will evolve in the next five to ten years. The new reality shows some companies are already "piloting" and building cases for replacing some accounting processes that do not involve judgment by digital labor through Robotics Process Automation. As these processes are run without human intervention, their outcome and impact on financial statements will have, in the future, to be verified automatically via the use of cognitive self-learning machines and artificial intelligence.

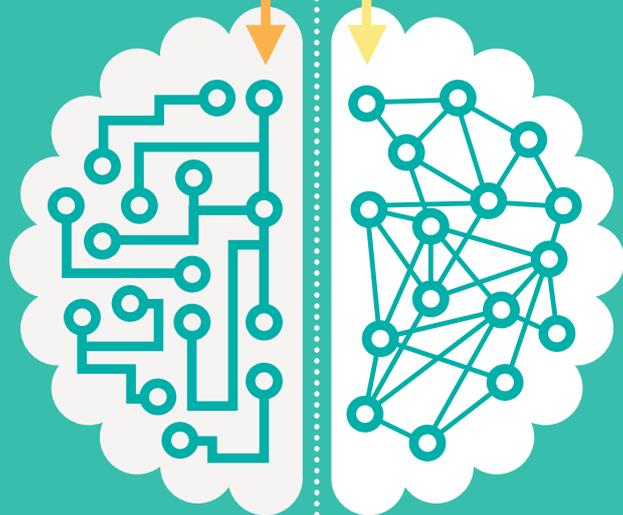
Some of these technological developments are on the verge of becoming common practice. Others are more far-fetched.

In order to achieve optimal technological transformation auditors should focus on a number of key areas. We believe that in order to bring client value to a new level, auditors need to focus on four domains: embrace promising elements of technology, work closely with the regulator, build a solid partner ecosystem and invest in people and training.

Technology enablement

Machines and artificial intelligence (AI). Many tasks today in the audit are time-consuming and repetitive. They don't add value and are not challenging the intellect of the audit professional. Identifying data populations, selecting and drawing samples, and reading through information provided by the client are just a few of these tasks. Machines and AI-embedded technology will streamline repeatable and time-consuming tasks faced by auditors. As opposed to the logic applied via data analytics as we know it today, AI-enabled machines will apply rationale in the audit.

For instance, if used and trained correctly, AI will decrease the burden of seeking out relevant information, filtering to what is important, running automated reviews and generating result models. That will leave the auditor to review the outcome, interpret the result models and run their judgment to conclude. Think of how IBM's Watson already equals the competencies of doctors or culinary chefs. If these types of technologies are capable of taking care of high-precision tasks, they are also capable of learning how to audit.



Predict
 Prevent
 Monitor
 Prescribe
 Analyze
 Compare
Analytics-Based Auditing (Logic)
 Optimize
 Measure

Infer
 Hypothesis
Cognitive-Based Auditing (Rationale)
 Analogies
 Probability
 Asses
 Options
 Debate

Help me do things right Do Help me do the right things

Integrating **structured and unstructured data plus internal and external data** into AI-enabled data analytics. Data analytics in today's audit approach is mainly focusing on routine transactions in the company such as transactions and controls in the purchase-to-pay process and journal entries. We are witnessing a leapfrogging into the next phase where AI is ingested into analytics approaches in order to apply it to the nonroutine transactions.

The rise of **data lakes** with both micro- and macro-economic information as well as relevant anonymized industry and client data is just around the corner. These sources of data along with AI infused technologies will increase and enable more sophistication in data analytics within the audit, for instance in the domains of risk assessment, impairment testing, benchmarking, antifraud procedures, going concern, etc.

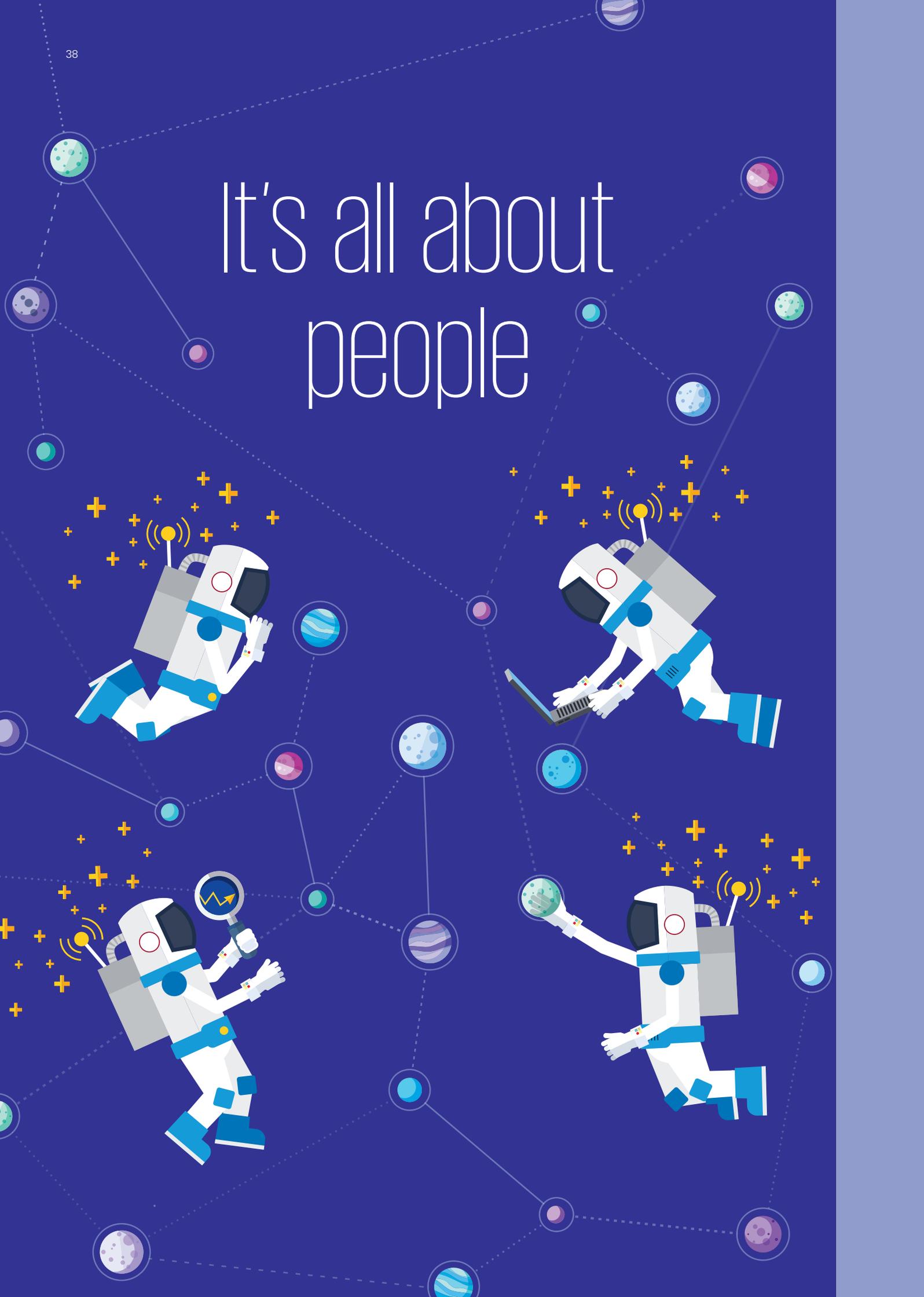
We will witness the **"always on" audit**. Currently, auditors mostly work with a data dump which is "taken to the office" to perform analytics. As technologies are advancing and so called in-memory databases and related applications such as SAP HANA are already the new reality offline, data dumps become something of the past. Audits at clients with these new technologies will be continuous and real time.

According to many experts, **blockchain** – the mechanism that is the foundation for cryptocurrencies such as Bitcoin – offers tremendous possibilities. In the years to come, we will see how much of the projected impact is real and how much is hype. One of the interesting features of the blockchain infrastructure is that it enables the use of smart contracts, authentication mechanisms and unbiased audit trail-based transactions. This happens on the basis of computer protocols that are self-executing. Trust in the outcome of blockchain-based transactions stems from the fact that the results are stored on the blockchain (a technology that provides an immutable record of transactions): There is no need for a third party to verify the blockchain and everyone can therefore trust the outcome and the history. This may radically alter the auditor's role and competence. The auditor has to become technologically savvy to audit a blockchain and for instance the cyber impact.

Adoption of Natural Language Processing (NLP). NLP is a promising new technology for auditors, as NLP tools can read stacks of documents or digital communications at the speed of light, thereby replacing time-consuming manual procedures. A smart application of NLP enables a scan of the used language and can thereby identify risks or warnings on the basis of predefined criteria. It also gets better at monitoring the sentiment in the language of written documents now that artificial intelligence is rapidly gaining ground. These cognitive technologies can take audit quality to the next level, as they allow auditors to review large samples - even up to 100% of the documents. It also improves insights for both auditors and clients.

We move to a world where our behavior and/or our decisions are increasingly dominated by algorithms fueled by data. In fact we have more or less become dependent on systems to take decisions. There hardly is any doubt that this trend will continue in the years to come. We will end up with forward-looking digital assistants that tell us what's best to do. In our personal lives, but also in professional decisions and in boardrooms. This also means that we need to be sure about the quality of the algorithms. We must know if the algorithms provide the right results. Is there a role for audit firms in **trusted data analytics**? Auditors are providing the trust in these data analysis ecosystems.

It's all about people



At KPMG we are convinced that the stakes are high and have made great strategic efforts to develop the next-generation audit.

The faster we are able to adapt to changes – in technology and in client expectations – the more successful we will be in the long run.

We invest both in developing modern technology, and people who are responsible for creating value with it.

We work on altering routines in current audit approaches. We actively work on changing the attitude of audit professionals and client expectations. Both auditors and clients must be aware of the evolving potential of technology in the audit.

Another aspect is that we need multitalented people for this transformation. We need people who have expertise in the field of audit, have a deep understanding of the business issues of their client and a great knowledge in the field of algorithms and data science. To achieve that, we focus on building teams who bring together skills and experience seamlessly.

How Human Resources contributes at KPMG

Our HR efforts concentrate on the following areas to make this digital change happen

Recruitment

New talent is essential for future success. We are in the process of altering the profiles of the talents that we are looking for. We are not only looking for the best students in curriculums such as economics or business, we also welcome bright minds in computer sciences, informatics or mathematics. We are looking for curious people with drive and an explicit interest in interdisciplinary thinking and strong communication skills.

Training

At the same time, on-the-job learning and on-the-job coaching are important. Besides, we are designing mid-management multidisciplinary working sessions to learn from one another from practical experiences and success stories in combination with peer coaching.

Education

The educational programs for our professionals have been adapted and focus on increasing specialist expertise and stimulating the proper mind-set. We work closely with ExpertSuisse (Swiss Expert Association for Audit, Tax and Fiduciary) and a task force of its members to redesign the Swiss CPA education.

Rotation

A seamless integration of IT and audit is at the core of successful application of technology in the audit. We focus

on exchange and integration of accounting skills and IT skills and continuously strengthen IT literacy among auditors or increase audit understanding in our IT experts. For this reason, we offer short-term rotations between departments. We designed an Audit-Advisory Rotation Program for Graduates, which offers a combination of audit and advisory experience with the ultimate goal to finish the program with the Swiss CPA.

Workplace

Having the skills of the future is one thing, but providing a workplace that allows collaboration, innovation and sharing information in a digitalized work environment is also necessary: Therefore we foster flexible working models and flexible contractual agreements, and implement modern innovative offers.

We have no blueprint for the future, as the potential of technology cannot be predicted. People who join our practice will become part of a profession that is undergoing a fundamental change. The challenge is to be agile and flexible. To adapt to changes continuously.

We do not feel threatened by digital change. Instead we embrace it and have built our strategy on it. We look forward to the future with great passion, curiosity and enthusiasm.

Clarity on publications

This series of publications from KPMG Switzerland provides insights, analyses and studies on a range of topics. All publications are available as hard copies as well as online. For more information, please contact kpmgpublishments@kpmg.ch

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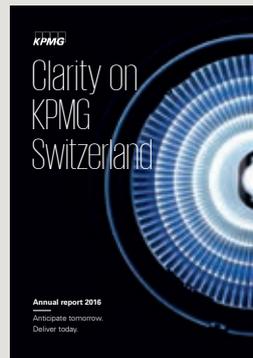
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