Digital Transformation in the EU 2035
A Glimpse into the Future
“A digital revolution is transforming the world as we know it at unprecedented speed.”

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It is universally accepted that digital transformation is happening. What remains deeply uncertain, however, across both political and economic spheres, is the way in which it will unfold and, perhaps most importantly, with what effects. Where are technological developments heading? Who will drive them? How will the digital space be regulated, and by whom? How will humans and machines interact in the future? A myriad of different forces are shaping digital transformation. Some of them are obvious, while others are lurking in the shadows.

Capturing this complex landscape of forces is challenging, and yet absolutely essential in formulating robust but flexible strategies to drive digital transformation. The decisions public and private stakeholders make today, both individually and cooperatively, will determine what kind of world we live in, in the future. The European Union (EU) finds itself at the center of this change. Driven by its member states, and related national and regional political and economic developments, and caught in the dynamic transnational context that characterizes the digital sphere, the EU as a Public Administration finds itself at the eye of what is quickly shaping to become a digital storm.

Consequently, it is essential to look forward and determine policies and strategic options that not only react to technological, social, political, economic, environmental and military developments in digital transformation, but that actively shape them. To be able to do so, a clearer picture of existing, emerging and future trends and driving forces, and the way these interact with each other, is necessary. However, conventional policy or strategy analysis is, for the most part, neither designed to nor able to do this efficiently.

While predicting the future is impossible, scenario analysis can give much deeper insights into potential future developments, by cutting through complexity and capturing uncertainty. Scenarios are stories of the future, describing alternative worlds that we might find ourselves in. Analyzing these scenarios can help stakeholders to frame strategies and make decisions that proactively build a positive future and avoid the potential pitfalls of destructive developments.

In answering the question of what digital transformation could look like in the European Union in 2035, we have developed four possible scenarios:

**Scenario 1: EUtopia**

A united EU has successfully mastered digital transformation and is benefitting socially, politically and economically from its advantages. Due to the technology-enabled freedom of the EU’s digitally literate citizens and its enabling role for both the public and private sector, digital transformation has made Europe thrive, and it has become a global leader in the digital field. The proactive management of digital transformation has also led to an effective containment of its dark side. However, threats remain, and the EU must constantly fight to stay at the helm of change and ensure its own future security and growth.

**Scenario 2: EUsed**

Only a few European member states have been able to cope with digital transformation. These states are home to innovation hubs and big national tech giants that hold monopolies across the entirety of Europe, providing stable jobs and ensuring a general functioning of the economy by safeguarding the EU from economic decline. However, other global players are in the driving seat of digital transformation, playing the EU like a pawn in the digital game. This inequality between member states is also seen within member states’ societies: while those able to adjust to digitalization have become digital winners, those unable to do so are left behind. This has led to political and economic fragmentation – the EU is at the verge of collapse and is only held together by the dependency of digital losers on digital winners, and the blatant necessity to cooperate on digital issues. In the absence of a strong European Union and a lack of responses from national governments, civil society movements outside of the established political structures provide alternative social and political structures. Equally, parties and organizations at the extreme ends of the political spectrum, particularly the far right, have used this situation to gain political and social influence, and the digital sphere has become a paradise for cyber criminals and a breeding ground for a dark economy.
Scenario 3: EUSSR
The challenges of digital transformation have led to a focus on security within the EU, resulting in a close and strong, but repressive, Union. The EU is thus able to effectively contain the dark side of digital transformation. As a consequence, the EU has become a global leader in digital security. However, with a heavily regulated European market, the EU is dependent on external innovation from global players in other fields. While most EU citizens live comfortably and safely, with a stable job in the public security sector or with international tech giants, opportunities for political participation are almost non-existent. Although certain limitations of freedom are widely accepted as the price for European security, participatory democracy has suffered severely.

Scenario 4: EUUniformity
Digital transformation is driven by a strongly united and closely cooperative EU that has successfully managed to strengthen and protect European values and grow closer by focusing on European security as the basis for ensuring peace, freedom and prosperity in the EU. The EU provides the primary political organs and institutions for governance, uniting member states and fulfilling both legislative and executive functions. Through state-driven innovation and strong public-private partnerships, the European economy has become vibrant and is continuing to grow. Due to the high levels of digital security, and EU-wide investments in digital infrastructures and digital literacy, citizens profit from digital transformation and the dark side of digital transformation has been managed effectively and successfully. Nevertheless, in this secure and stable context, a dullness has settled over European politics, making member states more and more uniform and creating more and more dissent across European societies. With political participation possible only through the EU- and state-controlled channels, calls for more political freedom and civil society involvement are becoming louder and louder.

Digital transformation is already changing our present. These four scenarios demonstrate how different our worlds of tomorrow could be. Let’s venture into the future and see where it takes us – and where we want to go.

Enjoy the ride!

Risk Advisory and the Center for the Long View
The process of digital transformation is shaped and influenced by a large number of factors. These driving forces, or drivers, have different origins, vary in their impact, and their actual effect is often uncertain. Drivers are those factors that will or could influence how the future of the digital transformation in the European Union could look in 2035. The drivers are interlinked and interact with each other in complex ways. Understanding the complexities that are behind the drivers of change is crucial in building robust, yet flexible strategies on digital transformation.

In our driver analysis, we applied a comprehensive threefold approach that combines Artificial-Intelligence based analysis with expert interviews and traditional desk research. By combining cutting-edge technology and human intelligence, to scan and analyze the vast knowledge landscape, we are able to draw a holistic picture of driving forces that not only builds on current trends, but also includes those that are emerging or that might emerge in the future.

To ensure this holistic outlook, we use the STEMPLE framework: analyzing social, technological, economic, military, political/legal and environmental factors. We use these categories to create a holistic picture of all potential drivers of the future of digital transformation in the EU. Looking at digital transformation in the EU, 91 such drivers, such as social scoring, the EU economic climate and sustainability were shortlisted as the basic building blocks for our scenarios.

To gain a better understanding of the development of these 91 drivers, a diverse, interdisciplinary, expert group rated each individual driving force on its likely future impact and the uncertainty of its development. This enabled us to focus on two groups of drivers: those that are highly impactful and highly uncertain, and those that are highly impactful but very certain in their development (Figure 1). While the former form the basis of our scenario framework in the so-called “Our zone of interest”, the latter are what can be called “trends”. The zone of interest contains 34 drivers, including, for example, digital innovation, global governance, net neutrality, social scoring, the role of individual leaders as drivers of policy-making, global economic climate, role of sensors, spread of “fake news”, interoperability of military technology and the role of the public sector in digital transformation. Additionally, 37 drivers were identified as “trends”. Examples are the digital single market, digital commission, Internet weapons of mass destruction, lifelong learning, digital user expectations, increasing levels of digital literacy, digital trade agreements, and smart cities.

While each of the identified drivers is unique, individual drivers interact and influence each other to form broader developments in the future of digital transformation in the EU. If we focus on the most uncertain and most influential drivers in the Zone of Interest, interrelated driving forces can be grouped into clusters, called “critical uncertainties”. These critical uncertainties form the basis for our scenario framework.
Understanding the complexities that are behind the drivers of change is crucial in building robust, yet flexible strategies on digital transformation.
Critical Uncertainties of Digital Transformation in the EU

The Defining Questions of the Future

In the process of digital transformation, different groups of intractably interrelated drivers shape the future of European politics, society and economy. To understand the complex interaction of these highly uncertain and impactful drivers influencing the future of digital transformation in the EU, it is crucially important to identify and explore key clusters of uncertainties as a framework for our scenarios.

These critical uncertainties are overarching key themes constituted of a number of interrelated zone-of-interest driving forces, that have the potential to decisively steer the development of the future of digital transformation in the EU in one direction or another. They are phrased as questions and are characterized by two extreme oppositional endpoints. From the zone-of-interest drivers, five critical uncertainties for the future of digital transformation in the EU were formulated. Following a correlation test, two critical uncertainties with no or only minimal correlation were chosen to form the axes of our scenario framework.

Critical Uncertainty 1
Driving Principle of Society – Freedom versus Security

The first selected critical uncertainty is the question: “What is the driving principle of society?” It combines the following zone-of-interest drivers: the importance of data and privacy protection in society, the role of sensors, social engineering, predictive policing, data protection and privacy regulation, the importance of traditional values, and social scoring.

On the one hand, the driving principle of society can be security, while on the other hand, it could be freedom. With security as the driving principle of society, the digital transformation will be focused on creating a secure Europe, even if this entails the limitation or loss of the individual or collective freedom of EU citizens. In a society driven by the principle of freedom, however, the retention and promotion of such freedoms will be key, and society accepts the potential security costs this entails. Naturally, freedom and security are not mutually exclusive. However, the movement across the spectrum from one to the other varies significantly and distinctly across different scenarios. This is the case when adding the second axes of the scenario framework.

Critical Uncertainty 2
Next-level Economy – Functional versus Dysfunctional

The second selected critical uncertainty is the question: “What does the next-level economy look like?” It comprises the following zone-of-interest drivers: the digital urban-rural gap in EU member states, the interoperability of digital technology, unemployment levels, the global economic climate, the EU economic climate, entrepreneurship, digital innovation, and the role of blockchain.

Digital transformation will alter the economy of the EU. On the extreme ends of the spectrum, the next-level economy can either be dysfunctional or functional. The first case is characterized by an unhealthy next-level economy that shows no growth, or only unsustainable growth, due to an inability to cope with or master digital transformation. In the second case, the next-level economy is healthy and growing in a sustainable fashion because public and private decision maker were able to use digital transformation to their advantage.

The combination in a two-by-two matrix of these two critical uncertainties, the driving principle of society and the state of the next-level economy, creates four visions of the future. These alternative worlds tell four different stories of what the future of digital transformation in the EU could look like in 2035. All four scenarios must fulfil five criteria: they have to be plausible, challenging, balanced, relevant and divergent. Each scenario gives a different answer to the central question of this scenario study: What could the future of digital transformation in the European Union look like in 2035?
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Fig. 2 – Scenario Framework – Four possible scenarios for digital transformation in the EU 2035

What does the next-level economy look like?

- 1. EUtopia
- 2. EUsed
- 3. EUSSR
- 4. EUniformity

What is the driving principle of society?

- Freedom
- Security
- Dysfunctional
- Functional
The Future of Digital Transformation in the EU in 2035

Four Possible Future Scenarios

Scenario 1: EUtopia

Society in the EU is driven by freedom and the next-level economy of the EU is functional.

Digital transformation has built a stable and strong European Union that has become a leading light in the world. A focus on public-private partnerships in the early 2020s has resulted in a leap of technological advancement in the EU. Individual member states have focused on particular fields of technological development and were thus able to find their place, strengthening the European bond. The European economy is vibrant, sustainable and growing, and no member state is left behind. As a "United States of Europe", the EU is in the driving seat of digital transformation and plays a leading role in shaping digital transformation globally.

Technology has enabled freedom within the EU and has created a digital European space that fosters constructive cross-national political, economic, social and cultural exchange. European citizens engage more actively with each other, and the lines between the national and the European have blurred. Consequently, pressing political topics like climate change and migration are discussed and tackled on a European level. EU and member states’ initiatives to engage citizens through technology have flourished. As a result, democracy has become more direct and citizens use technology to put pressure on governments.

However, this freedom has also given a space to those opposing the shared European values that define both the political and economic sphere. While technological developments have led to the creation of a myriad of jobs in the private and public sector, and (digital) European mobility has widened the playing field for employees, those unable to adjust to the new realities of digital transformation are left behind, clinging to the analogue past. Political groups from the far right and the far left have capitalized on this and utilize digital spaces to mobilize their supporters.

Mitigating the dark side of digital transformation remains a problem, and compromise between public and private actors and the citizens is necessary to strike the precarious balance between protecting freedom while also ensuring security. Although the EU is subject to frequent attempted attacks on the system, particularly through cyber terrorism, European society has become resilient through the active management of digital transformation and the resulting political and economic stability. Digital education has not only significantly increased digital literacy, but also led to the ability of citizens to cope with information complexity and digital threats like fake news and digital manipulation. In a European society driven by the principle of freedom, each individual citizen constitutes a bulwark against digital threats, thereby ensuring their security through digital maturity and enlightenment.

By 2035, digital transformation has not only permanently changed the nature of the EU, but has also allowed the Union to tackle political, economic and social challenges, and to become a global leader in the digital field. However, although the dark side of digital transformation is effectively mitigated for the moment, threats to the EU, its member states and its citizens are still lurking in the shadows.
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Digital transformation has rolled over the European Union. While a few member states have been able to cope with this, the majority of Europe has been left behind. This has led to a large disparity between digital winners and digital losers, both across and within member states: while the winners take it all and utilize the misfortune of the others to sustain economic growth in their own state, all others falter in this “survival of the fittest” scenario. European states stand more in competition with each other than in unity. The European Union is facing collapse and is only held together by the dependency of those states unable to cope with digital transformation on those that are capitalizing on it. The former are reliant on the support of the latter, while the latter utilize the former for their own gain. It is the stark necessity of cooperation in digital transformation that defines the union – the European idea and the EU as a Union is dead.

With only a few states having been able to ride the wave of digital transformation, transformative impulses come from outside the EU, mostly from Asia and the Middle East. The EU has been relegated to reacting to developments and is often being manipulated by global players. This has led to the establishment of monopolies, with big national corporations that are able to tolerate the ups and downs of the externally-driven economy operating across Europe. This has resulted in the establishment of innovation hubs in some European regions, where entrepreneurship flourishes and new business opportunities are created by a digital elite. Europe is fragmented, economically and politically. Social inequality has led to political discontent and an increase in influence for right-wing political parties and groups. Protests are frequent and sometimes turn violent. Europe has been unable to prepare its society for digitalization or to support its citizens through the digital transformation. Automation has led to widespread unemployment, and digital literacy and retraining initiatives were too late and fruitless. As governments failed to cope with this change, society has organized itself in new parallel structures, including new sects and political activist groups, while traditional non-governmental structures and organizations have declined in importance and influence. In struggling with these issues, the EU has become inward looking and isolated.

Social and political discontent with the status quo has put freedom as a central principal of society. With low levels of trust in governments, citizens organize themselves outside of the established party system and stand up for topical political and economic issues, such as climate change or unemployment. However, for many, freedom has come to primarily mean breaking free of the rule of the digital winners and the rigid EU structures. Nationalist parties have formed alliances within and beyond the EU, and agreements between small groups of like-minded member states have become the norm, effectively rendering the European Union Institutions incapable of fulfilling their mandates.

The dark side of digital transformation has become more problematic. Through ineffective regulation and a lack of cooperation between EU member states, the digital sphere has become a haven for criminals within Europe. A dark economy has spun its web across Europe and is nourished by the dysfunctional nature of the European economy. This passive and internally divided European Union finds itself on the point of collapse, unable to cope with the exponentially fast pace of digital transformation. While it is still functioning, the future is looking bleak.

Scenario 2:
EUsed

Society in the EU is driven by freedom and the next-level economy of the EU is dysfunctional

Digital Transformation in the EU 2035  | A Glimpse into the Future
were severely curbed in Europe. Because of this, economic growth dipped in the mid-2020s. Now, the European Union is controlled by a few international digital-platform based giants that hold monopolies and enjoy a large amount of lobbying power. They profit from clear regulations within the EU and the European security expertise, and in turn provide digital innovation in other fields from the global market. While the European Union passively manages change, these giants are the real drivers of digital transformation, and find their source of creativity and innovation outside the EU.

The majority of the European population has a stable, reasonably-paid job, with one of the few international digital giants or in the public-sector driven cybersecurity field. As a consequence, most European citizens live in economic stability and are satisfied with their job. However, this creates a high dependency for the EU on these international corporations and the global market. There is little mobility in Europe and economic growth is severely limited by the lack of freedom and creativity, casting a shadow over the future.

Society enjoys a large amount of security, European citizens feel comfortable and protected from the growing number of digital threats, whose mitigation is at the core of the daily work of the EU. This is achieved by a strong police and military involvement within European member states on the one hand, and a strong control over individual citizens’ behavior, through EU-wide measures such as social scoring, on the other. The EU resembles an autocratic fortress. In its heavy-handed bureaucracy corruption is rife. However, because technology is strongly state- and thus EU-controlled, participation in civil society is difficult and politics is closed to public involvement or opinion; there is very little independent media or open debate. Information is tightly controlled by the EU.

However, despite the EU repression, society is pretty stable. Through cooperation and strong regulation, the European Union has been able to deal with many of the most pressing issues, such as climate change and social inequality between member states. Although European values have become more inward-looking with the focus on security, values such as tolerance, cultural openness and European unity form the core of European society.

Scenario 3: EUSSR

Society in the EU is driven by security and the next-level economy of the EU is dysfunctional

By 2035, the European Union has tamed the digital beast by applying a strong hand both politically and economically. Digital transformation, as a cross-border issue, has brought the member states together in a close and stable European Union with repressive European institutions, often referred to as “Brussels Dictatorship” internationally. Europe has become a global leader in digital security. However, the high level of security within the EU comes at the cost of freedom.

Following a series of security-focused EU-wide regulations on digital issues, like digital taxes, data protection, and human-machine interaction, in the early 2020s, the freedom to innovate and the entrepreneurial spirit were severely curbed in Europe. Because of this, economic growth dipped in the mid-2020s. Now, the European Union is controlled by a few international digital-platform based giants that hold monopolies and enjoy a large amount of lobbying power. They profit from clear regulations within the EU and the European security expertise, and in turn provide digital innovation in other fields from the global market. While the European Union passively manages change, these giants are the real drivers of digital transformation, and find their source of creativity and innovation outside the EU.

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Digital transformation, as a cross-border issue, has brought the member states together in a close and stable European Union with repressive European institutions.
Digital transformation has forced the European member states to think and act collectively. By focusing member state and EU resources on digital development, European states have been able to proactively drive digital transformation. Peace and economic prosperity are seen as the preconditions to ensure the survival of European values, and the decision to focus on security to protect them has thus been a conscious one.

The choice to focus on security has led to the establishment of a tight net of regulation surrounding the digital sphere. Because this regulation also curtails the freedom necessary for entrepreneurship and creativity, innovation has become state-driven. Strong public-private partnerships have brought together the expertise of the private and public sector. Through massive funding initiatives in the early 2020s, the European Union and member states’ governments have actively steered digital development in the direction of security. This has gone hand-in-hand with digital literacy projects and lifelong learning initiatives that have been consistently closing the digital generation gap. Large investments in digital infrastructure have enabled a closing of the digital gap between, and within, member states. The economy is healthy, and digital security in Europe has enabled economic growth in a stable environment, which has led to social satisfaction.

EU-wide digital initiatives have fostered a vibrant exchange between European member states, strengthening European identity and values. Through the combination of the functional economy and high levels of security, the dark side of digital transformation has been managed efficiently, for example through the rooting out of darknet within the EU. This has led to a significant reduction in cyber crime and has produced a feeling of security in the European population. European unity and the security enjoyed by member states has allowed the EU to formulate cohesive policies on political issues. Through EU-controlled and member-state implemented nudging, citizens are pushed to fulfil their responsibilities in ensuring the implementation of policies, for example in curbing CO2 emission or ensuring lifelong learning. The EU has become an attractive destination for highly skilled migrants. Strong and clear regulation on migration, and digital and physical integration measures, have also led to a successful management of the migration crisis of the 2010s and a sustainable Europe-wide migration policy that has been effectively applied to counterbalance demographic change. Digital transformation has significantly changed society; developments like digital health care, robot care and digital classroom assistants, allow a much more individualized approach to social services like healthcare and education.

However, strong EU and state supervision has reduced the room for political and economic maneuvering and a dullness has settled on European politics, with member states becoming more and more uniform. While the strong digital surveillance and the exponential growth of sensors in public places have been widely accepted as a price for security, there is also a growing unease about the closeness of the private and public sector and the lack of opportunities for citizens to influence politics outside of EU- and state-run initiatives. Discontent about the lack of self-organizing channels for citizens to voice their opinion on political issues has been growing, and calls for more freedom, both in political and economic terms, are gaining traction. While those willing to work within the European system are able to grow and make profit, those seeking a more creative and experimental space are not accommodated within the EU. Equally, the European island of security is not unchallenged from the outside and – although there are severe punishments for crimes and terrorism – threats, particularly from outside the European Union, persist.

Scenario 4: EUuniformity

Society in the EU is driven by security and the next-level economy of the EU is functional
Conclusion

Telling Our Story: The Future of Digital Transformation in the EU 2035 – and Beyond

These are just four possible scenarios for the future of digital transformation in the European Union 2035. Taking a glimpse into these alternative futures makes one thing blatantly clear: digital transformation must be proactively managed. However, the discussion cannot stop there – concrete and robust, yet flexible, strategic options must be drawn up and then translated into actionable policies and strategies. To achieve this and to ensure implementation, the different stakeholders from the public and private sectors and from civil society need to cooperate.

This is not news. However, by basing this process on scenario thinking, a number of key benefits emerge that potentially serve as game changers in the long-running debates on digital transformation strategies and policies. Scenario analysis not only aligns different, and sometimes oppositional, stakeholders. It also creates a shared understanding of the status quo and of current and future driving forces that will define change. And, by telling stories of the future, it defines different visions of where we could be heading.

This study, therefore, is just the beginning of our very own story of the future. It very clearly illustrates two key points:

Firstly, to build a future of digital transformation that we want to live in, stakeholders from both the public and private sector need to focus on concrete strategies and their implementation, shifting away from focusing solely on the status quo and toward looking into the future.

Secondly, while mitigating the risks and threats from the “dark side” of digital transformation is crucial, digital transformation offers a myriad of opportunities and possibilities, both economically and politically. Consequently, we need to consider both the risks and opportunities, and move away from the paralyzing fear that so often serves as the basis for decisions on the digital.

The four worlds of EUtopia, EUsed, EUSSR and EUniformity can serve as a solid basis for this. What will our story of the future be? It is up to us to shape digital transformation in the public and private sector. Let’s make sure we tell the story we want to be part of.

We look forward to telling it with you.

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Methodology

The Center for the Long View Dynamic Strategy Approach

This report on the future of digital transformation in the EU 2035 is based on the seven-step scenario methodology of the Center for the Long View (CLV).

The Center for the Long View has developed its dynamic strategy approach to support and enable stakeholders and decision-makers to build robust and future-proof strategies in a world characterized by uncertainty. This approach builds on prevalent scenario-design and scenario-planning methodologies and follows seven distinct steps, which will be explained below. Within the scope of this study, we focused on steps one to five. However, to ensure the strategic validity of scenarios in the long run, steps six and seven are essential. The CLV scenario design combines academic frameworks and working methods with innovative technology, and human experience and intuition. Within that we follow the guiding principles of scientific research, including objectivity, reliability and validity.

**Step 1: Definition of the Focal Question**

In a first step, the “focal question” is defined in order to set the focus of the study and create a common understanding of the opportunities and challenges that are the subject of attention. In this process, each individual component of the focal question phrasing is analyzed and defined individually, to ensure a shared understanding of the focal question and set a firm foundation for further steps in the scenario analysis. This step also enables our analysts to explore the fringes and dark corners of the focal question. Furthermore, the current expectations and assumptions of the client or audience must be determined, as intrinsic biases might alter or hinder a clear understanding of the key topic.

Preliminary research, including a first analysis by the CLV’s AI-based research tool, Deep View, support the process of finding and agreeing on a focal question. The focus of this initial research is a holistic and general identification of key topics that are relevant to the study. The focal question of this study was: “What could the future of digital transformation in the European Union look like in 2035?”

**Step 2: Identification of Driving Forces**

Once the focal question is determined, it guides the identification of relevant future drivers and developments. Drivers are defined as those factors that can or will have an influence on the central topic in the future. The overarching goal of this second step is to create a list of the most relevant trends and developments affecting the chosen key topic.

The CLV process of identifying the future drivers is threefold. The main focus lies on the CLV Deep View analysis. Deep View is an AI-based trend-sensing tool that uses proprietary natural-language processing software to conduct extensive analyses of new, blogs, Mergers and Acquisitions transactions, and patents. Using the LexisNexis database, Deep View reads and understands the output of more than half a million sources within seconds, creating trend-based knowledge maps of interrelated current and developing topics. These insights enable our analysts to scan and capture the vast knowledge landscape on both broad and specific topics with a maximum of objectivity and efficiency, allowing a much more detailed analysis of driving forces. Multiple Deep View searches with different focuses enable the identification
of current and future developments related to the focal question at different levels of depth.

This AI-based analysis is supplemented by traditional desk research, picking up Deep View insights and focusing on prevalent trends in relevant key reports and publications. In addition to this, our analysts work with experts in the field to critically evaluate the validity of the Deep View and desk research results, and gather further input for additional analysis. Expert interviews also lead to a better understanding of the concerns of different and opposed interest groups, giving analysts insights into current debates.

Based on this three-fold approach – using Deep View, desk research and expert exchanges – our team of analysts develops a detailed list of drivers that will, or could, affect the focal question. To ensure a holistic outlook on the focal question, we employ the STEMPLE framework: focusing on social, technological, economic, military, political/legal and environmental factors. Naturally, these seven categories are not mutually exclusive, and drivers can often be grouped into two or more categories. However, employing the framework ensures the driver list is well-rounded.

Subsequently, the long-list of identified drivers is consolidated and reduced to a shortlist of around 100 drivers. This prioritization ensures a focus on the most relevant drivers and the selection of the right level of depth of analysis. Deeper insights into individual drivers of interest can be included in later steps of the scenario process, most notably in the scenario narratives and the review and formulation of strategic options. Each driver on the shortlist is then rated by a diverse expert group on its individual impact on future developments of the focal topic, and on the uncertainty of its particular development. This is done using a carefully set up online survey that allows each participant to voice their opinion on each individual driver. Based on this expert rating, drivers are divided in four categories: those with a high impact and a high uncertainty (forming the “zone of interest”), those with high importance but a low degree of uncertainty (which we refer to as “trends”), those with a low impact and a low uncertainty, and those with a low impact and a high uncertainty. In the following steps, we then focus on the driving forces located in the zone of interest and the trend section.

**Step 3 Definition of Critical Uncertainties**

Under the moderation of the CLV Scenario Team, a smaller group of diverse experts prioritizes and groups the highly impactful and highly uncertain zone of interest drivers into “critical uncertainties”. For each critical uncertainty, two extreme endpoints of possible developments are defined. While the focus in this step lies on the zone of interest, all drivers can be used for the design of our future scenarios, focusing primarily on the trends as building blocks of scenario narratives.
**Step 4 Establishing the Scenario Framework**

Building on the identified critical uncertainties, the fourth step aims at developing the scenario matrix. In order to design a valid scenario framework, every single critical uncertainty is tested for correlation against all other critical uncertainties. Only critical uncertainties that do not correlate with each other will allow us to build divergent scenarios. Every pair of critical uncertainties that shows no correlation is evaluated by the expert group and the most suitable and most interesting pair is chosen to form the axes of the scenario matrix. Combining the two scenario axes in a two-by-two matrix results in four quadrants, constructing four alternative future worlds.

**Step 5 Development of Scenario Narratives**

The scenario matrix serves as the framework defining the parameters of the scenario in each quadrant. Within these parameters, the remaining three critical uncertainties not used to form the axes and the trends, i.e. the drivers located in the trend section, serve as building blocks for the scenarios. The story line of each narrative describes an alternative future and its trajectory of development between today and the timeline defined in the focal question. All scenarios must fulfill five criteria: they need to be plausible, relevant, divergent, balanced and challenging. It is important that the narratives are developed in an informative but also appealing and interesting way. Crucially, we do not believe that each individual scenario will unfold in precisely the way it is described in the narratives. Instead, we see these four scenarios as extreme endpoints that allow a myriad of developments in between. As such, scenarios stretch our thinking and challenge the status quo.

**Further Steps Strategy Testing and Formulation, and Scenario Monitoring**

The CLV scenario approach includes two further steps, which are essential to ensure the validity of scenarios in the long run: the development of strategic options as well as the monitoring of the scenarios. In a sixth step, we use the scenario narratives to derive consequences and potential courses of action for relevant stakeholders, including the private and the public sector, and civil society organizations. Within this, existing strategies are tested against each scenario, and adjusted where necessary. At the same time, new strategic options, suitable for all and for individual scenarios, are formulated. To ensure the validity of these strategic options in the long run, consistent long-term monitoring of the scenarios is necessary.

This monitoring takes place in the seventh and last step of the CLV scenario process. To do so, the CLV has developed an AI-based modular tool, Gnosis. To be able to track developments and changes with Gnosis, we develop indicators for each scenario and monitor these over time. By putting the indicators into context of each other, any rapid or small alterations in our scenarios become evident, and the movement towards individual scenarios can be tracked.
Fig. 3 – The CLV Seven-Step Dynamic Strategy Approach
Contacts

Katrin Rohmann
Public Sector Leader | Risk Advisory
Deloitte
Tel: +49 (0)30 25468 127
krohmann@deloitte.de

Dr. Florian Klein
Head of the Center for the Long View
Monitor Deloitte
Tel: +49 (0)69 97137 386
fklein@deloitte.de

Annina Lux
Scenario Practitioner | Risk Advisory
Deloitte
Tel: +49 (0)30 25468 5131
anlux@deloitte.de

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Monitor Deloitte.

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