

# Five technology mega-trends impacting society

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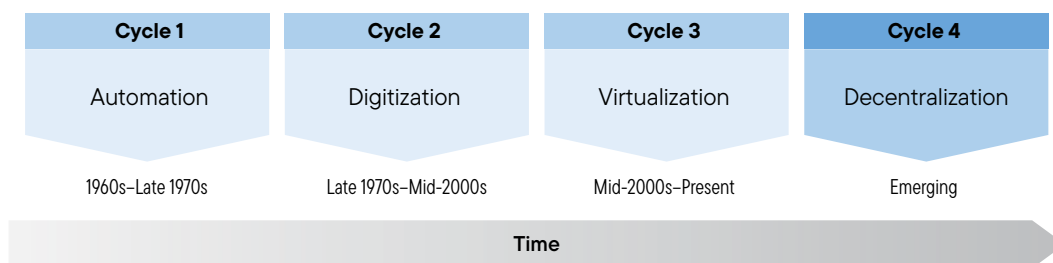
## Introduction

I am in the process of completing a three-part series of papers about technology megatrends impacting society and what to expect with the Web3 revolution. This article recaps the innovation cycles that gave rise to these megatrends featured in my first paper—“Evolution of commercial technologies and impact on business delivery.” It also offers a preview of the five megatrends that I will discuss in more detail in my second paper coming out in the first quarter of 2023.

## Tech-driven innovation cycles create new business approaches

Since the 1960s, commercial enterprises have benefited from a rapid evolution in the technologies available to them—adapting many innovations originally designed for the military and previously deployed only to large universities. As these new commercial technologies have emerged, they alter what is possible for businesses and their customers. The push to adopt new capabilities requires enterprises to rebuild their delivery infrastructure. This cycle of new technology changing business abilities, and thus prompting upgrades to an organization’s platform, has now happened three times since the 1960s, and we are on the verge of a fourth innovation cycle.

## Waves of Commercial Technology Innovation



Source: Franklin Templeton Industry Advisory Services.

The first cycle, automation, was when computers became more compact, resulting in more efficient business tasks and more centralized data processing. In the 1970s, the second cycle of digitization began with the emergence of personal computers as well as commercial off-the-shelf software. Networking also progressed, with the internet becoming publicly available in the late 1980s and websites exploding by the early 2000s. We are currently finishing up the third cycle, virtualization, that features the introduction of cloud computing, APIs and big data. These new technologies have allowed for the embedding of our social interactions into digital networks and have fostered new commercial platforms that allow individuals and businesses to interact at-will across a range of business activities.

The fourth cycle on the horizon is decentralization, where peer-to-peer interactions shift away from intermediated platforms to commercial protocols where users and resource providers are incentivized to share in the ownership of the networks they use most frequently and participate in the financial rewards those networks generate. For more in-depth information on these four cycles, please explore our recent in-depth report “Evolution of commercial technologies and impact on business delivery.”

### **Megatrends being enabled by tech-driven innovation**

As these tech innovation cycles unfold, the impacts of continual innovation are becoming more cumulative—resulting in the emergence of five megatrends that reflect broader changes about how society operates. An introduction to these megatrends is provided here, and a more in-depth exploration of these trends and how they are likely to alter society will be forthcoming in our new report due out in first quarter (Q1) 2023.

These megatrends have already profoundly changed the power that individuals wield in society and the value drivers of commerce. The emerging fourth cycle of innovation might witness the culmination of these changes and prove to be the most disruptive yet. Indeed, society may be on the cusp of an even more dramatic evolution than the advent of the internet.

#### **Megatrend #1: Democratization of access**

The first megatrend relates to how the rails of commerce are becoming increasingly democratized. Commerce has become more open, offering individuals and enterprises unprecedented access and control over their buying and selling channels.

- During the age of automation, proprietary computer systems were built to enhance the efficiency of commerce—increasing the velocity at which transactions could take place and allowing for economies of scale in terms of pricing.
- The digitization era began to open these proprietary systems, exposing processes and data that had only been available to employees and allowing individuals to access and arrange their own commercial transactions via the web. For example, buying airplane tickets directly instead of using a travel agent.
- With virtualization, processes have moved beyond the company perimeter and are becoming distributed via platforms and networks that allow individuals and businesses to not only access and initiate transactions, but to contribute and leverage their own resources. For example, allowing others to rent your home on Airbnb.
- As the decentralization cycle takes hold, these commercial platforms are evolving into commercial protocols. Just as individuals can call up a website using web protocols, such as HTTP, new offerings will allow individuals to access process-focused protocols via the web that allow them to initiate their own contracts, create and collateralize their own assets and earn financial incentives that position them to be owners of the networks they use most frequently.

#### **Megatrend #2: Decomposition of business value**

The second megatrend shows how the drivers of business value are changing, moving from the in-house manufacture and distribution of tangible goods that can be measured by capital expenditures to a more intangible set of differentiators that increasingly rely on a broader ecosystem to fulfill key processes.

- Automation placed the focus on enhanced manufacturing abilities, with enterprises able to quantify how much they were investing to improve their throughput and scale.
- A shift away from tangible to intangible enterprise value began in the digitization cycle as automation shifted from the manufacturing plant to the front office. This allowed for a surge in the creation of innovation and intellectual property—the delivery of which became a differentiator—thus positioning knowledge-based services as a new value driver.
- In the current age of virtualization, business value is increasingly tied to powerful platforms that drive network effects. Successful businesses either foster or rely on these network effects by connecting into the ecosystems they enable, allowing the platform provider to fulfill key parts of their business process.
- As the coming decentralization cycle unfolds, affiliations with a network are likely to evolve with processes from diverse providers becoming embedded into the network, as enterprises distribute their business value by turning their processes into open-source code that can be accessed by developers and inserted into any relevant transaction flow.

### **Megatrend #3: Expanding power of the crowd**

The third megatrend focuses on evolution in the communication channels that individuals utilize to share their experiences around commercial transactions and how use of these channels has given them a voice that allows them to impact, and perhaps ultimately shape, business offerings and messaging.

- Interactive voice technologies and call centers emerged to support consumers in the automation cycle, allowing them to report feedback and concerns, but in a one-on-one manner that left consumers uncertain about the impact of such engagement.
- The emergence of bulletin boards, online forums and blogs during the digitization cycle provided consumers asynchronous feedback mechanisms that could be viewed and shared among many potential and actual buyers, as well as viewed by targeted enterprises. This marked the first steps toward the emergence of a crowd voice.
- Social media—the hallmark of the virtualization cycle—has created a synchronous feedback loop between consumers and commercial enterprises, elevating in many instances the views and opinions of individuals over the official brand messaging and advertising of the company itself and encouraging the engagement of a new class of influencers to shape opinions.
- The coming decentralization cycle marks the emergence of a peer-to-peer economy and directly involves consumers via new governance processes that incentivize the most active participants of a network to become owners and a part of the community that sets the business strategy for the commercial protocol.

### **Megatrend #4: Institutionalization of the individual**

Institutions use their organizational resources to pursue long-term goals for their underlying members, accessing many financial and social opportunities to achieve their success. The fourth megatrend explores how individuals have been gaining access to these same levers to optimize the use of their personal resources to meet their own long-term goals.

- The automation cycle supported a massive improvement in record-keeping that allowed for the creation of the credit card that could be issued at scale—allowing individuals to purchase items on credit and extend their buying power, just like institutions.

- Digitization provided individuals a powerful new tool—the personal computer—and created new channels for individuals via the internet, allowing them to access and engage experts and transact directly with suppliers via their online websites, giving individuals more abilities that were previously reserved solely for institutions.
- Virtualization has allowed individuals to become part of far-reaching online communities and commercial platforms, which in turn has allowed them to shape their own personal brand via social media, connect to allied networks, and utilize their personal assets to earn revenues—all activities that institutions have traditionally pursued.
- Decentralization should close any remaining gaps between individuals and institutions as participants in commercial protocols will be able to raise capital directly by issuing NFTs that encapsulate their personal assets and by using their broader set of digital holdings as collateral to borrow against, loan or stake without needing the approval or facilitation of an intermediary.

### **Megatrend #5: Quantification of behavior**

The final megatrend explores how each tech-driven innovation cycle has resulted in the creation and storage of a growing set of transactional and process-related data and how the mining of these data have helped to enhance commercial outcomes and become increasingly targeted and personalized.

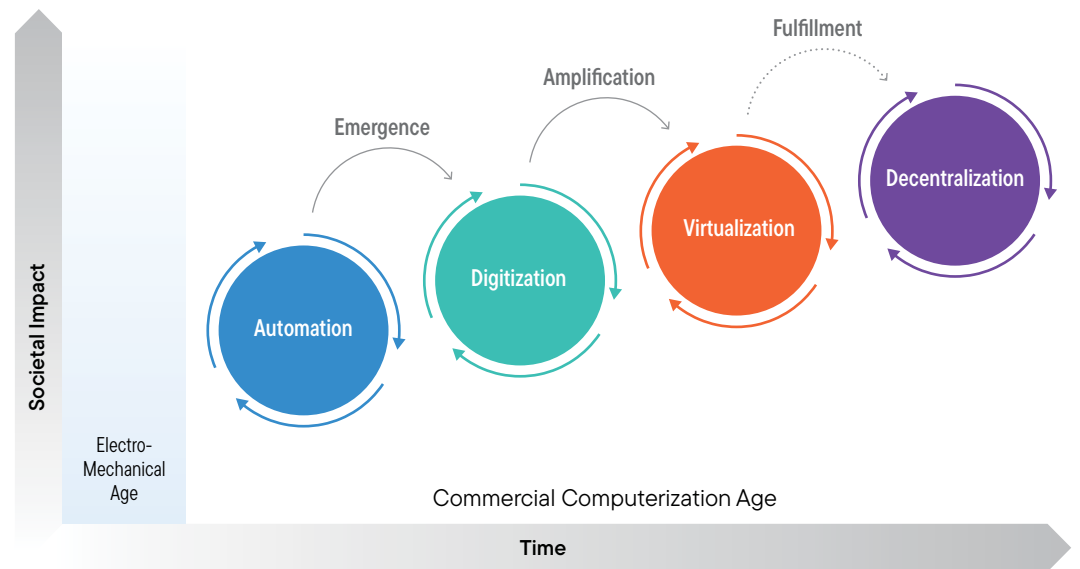
- Executive information systems emerged in the automation cycle, pulling together information from all the various branches and departments of an enterprise to give the C-suite insights into their business activities to enhance their decision-making.
- Growing use of specialized systems in the digitalization cycle—such as customer relationship management, enterprise resource management and point-of-sale transaction processing—allowed information to be gathered at a process level and analyzed to enhance service delivery and improve outcomes.
- Powerful new data processing techniques and artificial intelligence have been deployed in the virtualization cycle to target how individuals behave at each stage of a process and compare their activity to actions taken by similar cohorts with the goal of tailoring a user's experience and increasing the likelihood that the user will engage or transact.
- The decentralization cycle is likely to see algorithms extend beyond how individuals engage in a process to modeling the individual themselves across multiple processes and tying together insights about their activities and behavior to build customized offerings that are based on the individual's unique profile.

### **Impact on society**

Collectively, the megatrends previewed in this piece have been gaining ground as each new tech-driven innovation cycle unfolds. The megatrends emerged as the impacts of automation were being fully understood and transitioning to digitization. They became amplified as digitization progressed through the 1980s into the early 2000s and virtualization took hold, and they are likely to find their fulfillment in the coming cycle of decentralization.

If the megatrends progress as we anticipate, in the space of 60 or so years, consumers will have gained tremendous agency and become powerful drivers of commercial activity able to use their resources collectively or as individuals to direct and manage their own lives and livelihoods; while at the same time, commercial enterprises will have shifted from being powerful monoliths that manufactured and distributed their own goods and services

## Development of Megatrends Across Innovation Cycles



Source: Franklin Templeton Industry Advisory Services. For illustrative purposes only.

to become increasingly enmeshed in a broad networked ecosystem that brings together vast resources and efficiencies in a manner increasingly designed to appeal to the end-user's experience.

These concepts will be explored in more depth in our upcoming piece due to be released in Q1 2023.

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