



STRATEGIC FORESIGHT UNIT

# OECD SCENARIOS FOR DIGITAL TRANSFORMATION



# OECD Scenarios for Digital Transformation

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*The following is a summary of the draft foresight scenarios that were developed in 2017 as part of the OECD's 'Going Digital' initiative. The draft scenarios explore alternative possible futures of digital transformation and are designed to inform public policy and help decision makers prepare for the unexpected. This summary is intended to serve as a backgrounder for participants in participatory foresight interventions aimed at exploring implications for specific governments or areas of policy.*

Over the coming years, digital transformation will drive rapid – and potentially accelerating – change on an unprecedented global scale. This pace and scale of change creates a high level of uncertainty for policy-making. The increased potential for sudden discontinuities and highly divergent outcomes mean that the future cannot be assumed to resemble a linear extrapolation of current trends. In this context, individuals, organisations, and governments must identify key uncertainties and prepare for a range of alternative future scenarios. Doing so can help ensure that strategies and policy frameworks put in place today will be resilient and adaptive in the face of the various potential directions that digital transformation could take.

We begin by positing a number of possible common elements that, while by no means guaranteed, could plausibly come to exist across a range of different future trajectories for digital transformation by 2035. These provide a starting point for exploring how a more hyper-digital world could look different from today.

- Universal connectivity – all humans globally have access to a smartphone or equivalent device connected to the Internet
- Decentralised energy production – all humans can access some low cost renewable electricity
- Digital business models continue to disrupt most industries, enabling new forms of value creation
- Production of physical goods is increasingly local and automated
- Global trade is increasingly carried out through digital files, with a decreasing share from physical goods being transferred across borders
- A large proportion of early 21<sup>st</sup> Century work tasks have been automated
- Virtual work and work through on-line platforms predominate

Beyond these possible common elements of future digital transformation are a range of key uncertainties. These are issues on which there is significant debate and divergence about the potential direction of change and likely future outcomes:

- **Data control:** Will the increasingly vast amounts of data generated through online activities and the Internet of Things (and the conversion of this data into value through artificial intelligence) be controlled by individuals, governments, corporations, intermediary organisations or nobody?
- **Market structure and concentration:** Will network effects and economies of scale cause global data-driven markets to be connected through only a few online platforms serving as intermediaries? Or could an abundance of data and accessible AI lead to a

decentralisation of economic activity to a large number of smaller organisations and firms?

- **Internet and international trade:** Will the principle of a globally connected ‘open Internet’ continue or will there be stronger cyber boundaries between nations, regions, or different technology platforms? How could this affect international trade – will digital trade be free or be confronted with new barriers?
- **World of work:** To what extent will automation replace or complement human activities? How many new human jobs will be created, and what kind of skills will they require? Will an automated world see higher or lower unemployment, and to what extent will traditional employment contracts be replaced by self-employment and gig-work?
- **Well-being:** Will further digitally-driven development worsen inequality? What will be the effects of constant connectivity, including on younger generations, on mental health, and cognitive development? Will digital transformation improve well-being through better prevention, diagnosis, and treatment of illness? Will distributed ledger technologies foster greater trust, or will individuals feel increasingly powerless in the face of the rapid changes occurring around them?
- **Security and privacy:** Will improved security measures lead to lower levels of digital risk or will more sophisticated malware and greater integration of the physical and digital worlds increase risks and conflict? Will a more interconnected world lead to the end of privacy, or will technologies be developed to strongly protect privacy at the source of data collection?
- **Role for governments:** Will a growing number of governments take a more active role in facilitating digital transformation by providing unique digital identities to citizens and building the infrastructure digital firms operate in? Will global governance continue to be dominated by national governments or will it include a larger role for non-state actors such as corporations, sub-national governments, civil society organisations and citizens? Will the same mechanisms of governance (e.g. legislation, regulation, enforcement) continue or will they be replaced by effective new models based on big data analytics, transparency, and voluntary compliance?

#### Four alternative scenarios of a hyper-digital future in 2035

In this context of high uncertainty and complexity, the OECD has developed four draft *Going Digital Scenarios* that represent broad alternative trajectories for the future. None of the scenarios (summarised below) are predictions, and it is assumed that none of them are likely to come about as described. Rather, the aim of the scenarios is to provide a sense of a broader range of future possibilities than is commonly considered, and to use this exploration to identify new opportunities and challenges and develop more robust and agile policies. The content of the scenarios will continue to evolve and deepen through workshops on specific issues.

**Scenario 1 “iChoose”:** This is a world where individuals have taken their online data and identities into their own hands, and are using this in active ways to further their economic opportunities, civic participation, and personal development. Governments and firms are at the service of the empowered individual and have responded with a series of regulations and innovations

aimed at giving individuals greater say over their digital lives. This has greatly broadened opportunities, but also created new and larger inequalities. Collective solutions to grand challenges are driven by new grassroots and civil society initiatives working with existing intermediary, multilateral and corporate structures.

**Scenario 2 “Platform governments”:** In this scenario, a number of governments have taken a highly active role in digital transformation and gained increasing effectiveness and relevance as a result. These governments are developing their own online platforms to manage interactions with citizens, business, and civil society. This provides these governments with a foundation of reliable data on which to build more efficient and responsive public services and to enable a more competitive and productive market economy. However, in some cases this increased power by governments has created concerns about the potential for abuse and infringement of citizen liberties.

**Scenario 3 “Corporate Connectors”:** Large, global technology corporations have become one-stop shops for virtually every aspect of our lives. Socialising, shopping, entertainment, health monitoring and diagnosis, many education courses, and even some social security provision are all provided by private-sector online platforms. Through their constant interactions with their members, these new corporate ecosystems are better attuned to the popular will and have earned more trust than most governments. On the basis of this legitimacy, they are taking a more active role in global governance and in addressing challenges such as climate change and digital security. However, concerns over concentration of power have led to calls for new approaches to ensure continued transparency and competition by the corporate connectors, and to enable citizens to hold them accountable for advancing societal goals.

**Scenario 4 “Artificial Invisible Hands”:** A super-abundance of data, artificial intelligence and universally accessible tools of digital innovation have created a world where economic activity is highly decentralised and in a constant state of disruption and churn. Automation has advanced rapidly, with AI replacing many of the coordination functions previously performed by firms and other large organisations. AI enables humans to understand their motivations and behaviour better than they ever could alone, and can guide them to make choices that improve their well-being – individually and collectively. A total loss of privacy is matched with the ability of big data and algorithms to help root out corruption, overcome cognitive biases and selfish interests, and develop solutions to the world’s grand challenges. However, questions are intensifying about the future of human autonomy and control in face of the growing capabilities of AI.

## Scenarios – Draft Summary Table

Scenario	Scenario 1 - iChoose	Scenario 2 - Platform Governments	Scenario 3 - Corporate Connectors	Scenario 4 - Artificial Invisible Hands
Summary description	Empowered individuals in a multilateral world.	States as platforms. Splinternet.	Global tech platforms are the new world order.	AI-enabled abundance and panopticon.
<b>Economy</b>				
Data	Decentralized control by individuals	Control by governments	Control by large technology firms	Ubiquitous ("Data is the new air")
Firms and market structure	Millions of new SMEs, Micro-multi-nationals, entrepreneurs	Mix of sizes of firms. Firms accountable to societal purposes.	Large platform firms dominate, but enable proliferation of global suppliers	Many business activities replaced by AI
Trade	Global (digital) free trade. Most atoms stay within 100km	Within national / regional blocks	Within walled garden ecosystems of platforms	Fluid and changing patterns shaped by AI.
Internet	Global commons	Diverging systems, splinternet	Walled gardens	Universal
Productivity Growth	High (rapid diffusion, disruption)	Medium (But possibly higher social value)	High-Medium(Both enables and stifles innovation)	Extreme
Consumer surplus	High	Low or Medium	Medium or High	Extreme (post scarcity)
<b>Labour &amp; Skills</b>				
Work	Mostly virtual work in global market. Low un-employment.	Workers protected from sudden disruption. Low UE and medium real earnings.	1% platform owners, 9% elite global knowledge workers, 90% flexible work or unemployed	Post-scarcity. AI facilitates voluntary endeavours with non-financial rewards.
<b>Well-Being</b>				
Inequality	High earnings inequality due to superstar effect.	Low-Medium earnings inequality.	High inequality of wealth and human augmentation.	Potential AI-fostered equality of well-being
<b>Security &amp; Privacy</b>				
Cyber-risk(from hacking, ransomware, etc)	Low. Universal strong encryption and robust system.	Medium. States protect citizens from cyber-attack but add back-doors for surveillance.	Low-Medium. Strong protection for those who can afford it. Insurance for rest.	Low. Evolving AI pushed updates keep systems secure.
Privacy	Strong privacy protections, but increasing sensors	State surveillance	Corporate surveillance	Equiveillance (surveillance of all by all)
<b>Governance</b>				
Role of Government	Foundational, regulatory, corrective.	States and cities as platforms. Deep role in digital space.	Task sharing with private platforms	Nation-states just one node in global AI-enabled coordination.
World Order	Effective multilateral collaboration.	Nation-states (incl EU) and cities are dominant units.	World integrated by cross-border platforms.	Neither states nor firms dominant.
<b>Big Themes</b>				
Overall Benefits	Liberty Prosperity	Stability Equality	Prosperity Security	Abundance Happiness
Overall Risks	Inequality	Tyranny	Plutocracy	AI Apocalypse?

**Questions for consideration:**

- 1) How could digital transformation affect your policy area? What if digital transformation occurred much faster and deeper than expected?
- 2) What are some key uncertainties regarding the future impact of digital transformation on your policy area? (These are areas where two or more significantly divergent outcomes are plausible – such as low or very high technological unemployment.)
- 3) How might the four draft scenarios relate to your policy area? Where might the different sides of key uncertainties in your area fit under the scenarios?

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