A DIGITAL UNION BASED ON EUROPEAN VALUES

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The need to balance
economic and social integration

FEPS
Primer Series

DIETZ

This book has been produced with the financial support of the European Parliament.

Bibliographical information of the German National Library
The German Library catalogues this publication in the German National Bibliography; detailed bibliographic information can be found on the internet at: *http://dnb.dnb.de*.

ISBN 978-3-8012-3108-8

FEPS Editors: L. Andor, A. Skrzypek
FEPS Project Coordinator: E. Gil, C. Reder
FEPS Expert Review: G. Rinse Oosterwijk

Published by
Verlag J.H.W. Dietz Nachf. GmbH
Dreizehnmorgenweg 24, D-53175 Bonn

Published in association with the
Foundation for European Progressive Studies
www.feps-europe.eu
European Political Foundation – N° 4 BE 896.230.213

FEPS
Primer Series

– Vol. 5

Cover design and typesetting: Rohtext, Bonn
Cover picture: Shutterstock / greenbutterfly
Printing and processing: Bookpress, Olsztyn

Printed in Poland 2024

Find us on the internet: *www.dietz-verlag.de*

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Foreword

The digital transition will significantly affect the work, education and social life of all Europeans. Digitalisation impacts public service delivery and, through social media, even affects our democratic processes.

Europe currently lies between a rock and a hard place regarding the digital industrial revolution. Silicon Valley-based Big Tech platforms dominate the European market, pursuing their particular brand of data capitalism, while the Chinese model represents a dystopian version of the digital surveillance state. The challenge is to align our European digitalisation model with the social market economy, vital public services and a robust civil society.

The EU is a technology taker, but it has become the global technology regulator. Over recent years, European policymakers have proposed a whole raft (and a veritable alphabet soup) of digital laws – GDPR, DMA, DSA, DGA, AIA, you name it – to obtain more transparency and accountability from the dominant tech firms and the digital infrastructures they control. These laws are also aimed at countering monopolistic power over digital market spaces and the polarising effects of social media on democratic processes. This proactive agenda is shaping tech policy around the world.

But is it enough to bring us to a human and society-centric tech ecosystem, especially with developments such as artificial intelligence (AI) applications inundating us? This primer is meant to provide the reader with a grounded understanding of the technology and policy relevance of the developments that have been taking place and are expected to shape the debate in the coming years. We also aim to raise some thought-provoking ideas on what needs to be done to help European tech policy establish itself on firm foundations and foster a progressive vision of society.

This agenda cannot only be defensive and we cannot look to Big Tech for technological fixes to solve such problems as poverty, poor

public health and failing education. While those problems are as acute as ever, there is one immediate challenge that we need to address: our public institutions and how we work and live are being reshaped to serve Big Tech's profitmaking and power. Therefore we must develop an alternative vision and programme for digital tech that aligns with European values.

Gerard Rinse Oosterwijk
FEPS Digital Policy Analyst

Introduction

Technology continues to evolve very quickly, crossing frontiers and changing the way people live their lives. Our society is run on code: whether we are seeing our doctors, using our phones or paying our taxes, we are almost constantly interacting with software and algorithms. And technology, data, AI and 5G have all left the technology corner to become the flesh and bones of mainstream domestic politics, geopolitics and diplomacy.

In recent years, the European Union has dived into the digital diplomacy landscape. Its strategy for competing with other global giants is demonstrated by the so-called 'Brussels effect', namely the EU's ability to act as a super regulatory power through its broad influence. The size and nature of the EU legislative process, within the framework of which 27 Member States can negotiate and share such a large market brings enviable leverage. Recently, a lot of effort has gone into making the most of this power by ensuring that data collected in Europe benefits European citizens and businesses, and fosters economic growth.

Europe's response to the colossal events of the Covid-19 pandemic and then the war in Ukraine has accelerated the pursuit of digital and technological sovereignty and reinvigorated alliances in the digital realm.

The purpose of this primer is threefold. First, to create a shared understanding of the evolution of the digital ecosystem from the internet to decentralisation, and to fully comprehend the changes that foundational models are bringing into our world.

Second, to appreciate the full range of activities undertaken by the EU, aimed at giving structure to the EU's ambition to achieve technological sovereignty.

Third, we will face the problem that, despite all its ambition, Europe is still lagging behind in technology. Sovereignty, conceived here as Europe's ability to stand tall in a complex global supply

chain, requires a multi-layered approach, the creation of internal demand, a new role for government and a determination to digitise public services.

There is no easy recipe for growth, but one thing is certain: growth must combine innovation, productivity and respect for human dignity. We cannot call it progress if we manage to obtain the first two at the expense of the last.

PART I:
Setting the stage

The internet

The internet is often cited as our era's greatest innovation, and indeed it is almost impossible to envisage life without it. It has reshaped the way we engage with others globally and its many applications (apps) aid us in our daily routines. But what exactly is the internet?

The internet is a vast network connecting computers all over the world through approximately 1,200,000 kilometres of cables, both underwater and underground. Each cable carries glass fibres that transmit data in the form of light pulses. To protect these fibres from corrosion and shark attacks, they are wrapped in layers of insulation and buried under the seabed using specialised ships. When anyone accesses the internet, data is transmitted via these cables, requesting access to data stored on other machines. When accessing the internet, most people use the world wide web.

Most computers are connected to the internet with no need for wires, utilising wi-fi and a modem linked to a socket. The modem is then connected to an external box through wires, which are then routed to a series of cables located underground. In combination, these cables function to convert radio waves into electrical signals to fibre optic pulses, and vice versa.

Routers (also known as junction boxes) are located at every connection point in the underground network. Their primary responsibility is to determine the optimum pathway for transferring data from the user's computer to the computer they intend to connect with.

The internet transmits data worldwide, crossing over land and sea. Network providers communicate with each other until the data

reaches its nearest endpoint. After this, it passes through local routers until it reaches the computer with the matching IP address.

Computer systems can communicate on the basis of a set of guidelines known as the Transmission Control Protocol (TCP) and the Internet Protocol (IP). This is somewhat similar in functionality to the postal service. Information is sorted and packaged into a standardised envelope that must include the sender's details, the recipient's details and the contents of the envelope. IP explains how the addressing system used for data transmission works, while TCP provides instructions on how to organise and transmit data.

Turning to internet speed, bandwidth determines how much data can be downloaded per second. For browsing the internet, checking emails and updating social media accounts, a speed of 25 megabits per second is typically sufficient, but streaming 4k movies, playing online video games or live streaming may require speeds of 100–200 megabits per second. The quality of the underground cables linking users to the rest of the world significantly influences download speeds. Fibre optic cables transmit data at a much higher rate than their copper counterparts, and the speed of the home internet is often affected by the infrastructure available within the local region.

The World Wide Web: from websites to decentralisation

The internet is a globally connected network that has evolved over time, revolutionising the ways we communicate, consume information and conduct business. Its history dates back to the early 1960s, when it was originally known as ARPANET, a project funded by the United States Department of Defence.

However, it wasn't until Tim Berners-Lee designed the World Wide Web in the 1990s that the internet as we know it today truly began to take shape. The web allowed for the easy sharing of information and the creation of user-friendly interfaces that could be accessed by anyone with an internet connection.

THE TECHNOLOGY EXPLAINED:
the birth of the World Wide Web in a nutshell

Tim Berners-Lee, while at the European Organization for Nuclear Research (better known as CERN), hatched a plan for an open computer network to keep track of research at the particle physics laboratory located in the suburbs of Geneva, Switzerland. Berners-Lee's modestly titled 'Information Management: A Proposal', which he submitted to obtain a CERN grant, would become the blueprint for the World Wide Web.

But in thinking about the problem of incompatibility, he realised that it would be even better if visiting scientists, after they returned to their home labs, could still share their data, regardless of where they were based.

Berners-Lee also created the three main innovations that go hand in hand with the WWW: HTTP (hypertext transfer protocol), URLs (universal resource locators, which were originally known as URIs or universal resource indicators), and HTML (hypertext markup language). HTTP allows you to click on a link and be brought to that document or Web page. URLs serve as an address for finding a document or page. And HTML gives you the ability to put links in documents and pages so they connect with one another.

What is Tim Berners Lee doing now? Tim founded the Web Foundation with the aim of ensuring that the web works for everyone. His advocacy efforts focus on equal access, digital literacy and, most pertinent to this primer, the 'weaponisation' of the web, made possible by the concentration of power among a handful of companies.

The rise of internet service providers (ISPs), the introduction of dial-up and the development of search engines were pivotal moments in the mainstream adoption of the internet. ISPs enabled individuals and businesses to connect to the internet through paid subscriptions and paved the way for faster, more reliable connections. Dial-up al-

lowed users to connect to the internet through phone lines, albeit at a much slower speed.

The development of search engines such as Yahoo! and Google made it easier for users to navigate the vast amount of information available on the internet. Before search engines, users had to know the exact URL or rely on directories to find what they were looking for.

From Amazon to eBay, online shopping quickly became the way of the future, with online payment processing quickly becoming a cornerstone of e-commerce. Today, the world of e-commerce continues to evolve. From virtual storefronts to mobile apps, there are so many convenient ways to shop online.

Over the past two decades, social media has transformed the way people interact with each other online. Platforms such as Facebook, X (formerly Twitter), Instagram, YouTube and Snapchat have unique features that have revolutionised communication, content sharing, and information consumption. Facebook has become the world's largest social network, X (Twitter) is known for its bite-sized updates on every topic under the sun, Instagram has had a massive impact on visual storytelling, YouTube has revolutionised the way we consume video content, and Snapchat introduced the concept of disappearing messages. Each platform has had its own unique impact and has contributed to the ever-evolving social media landscape.

Online shopping and social media have profoundly changed the way we organise our life, connect and share our lives online. But what has changed our lives most dramatically is the mobile internet or smartphone. The first smartphone, IBM Simon, was launched as early as 1993, but it was the iPhone that revolutionised the mobile industry. Today, more people browse the internet on their mobile devices than on desktop computers.

The mobile internet era has also brought forth the emergence of mobile apps. From social media to gaming, there seems to be an app for everything. The rise of app stores and the app economy has provided developers with a new platform on which to innovate and (hopefully) prosper. Mobile app revenue has now surpassed that of PC and console games combined. The mobile internet has opened