SMART EUROPE

Jeremy Rifkin

BIG IDEAS

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BIG IDEAS

A green digital economy could change the future of the Old Continent. The new Smart Europe will be based on three elements: new communication technologies, new sources of energy and new modes of mobility. But the transition will require a transformation of the continental infrastructure.

Digitalisation, the Internet and renewables will play a major role in the so-called Third and Fourth Industrial Revolutions: sensors embedded in devices will allow an immediate connection between humans and machines, providing updated data and information. Big Data and analytics, used to develop algorithms, will be able to increase productivity, address climate change and diminish the cost of goods and services. Sun, wind and renewable energies will make advanced economies less dependent on fossil fuel and nuclear power, boosting the development of sustainable economic models.

Over the last few years, Jeremy Rifkin, advisor to the European Union and main architect of the Third Industrial Revolution long-term economic stability plan, has been promoting the importance of this approach, enabling collaboration in "vast virtual and physical global networks to create a more ecologically sustainable and equitable quality of life".

This is the fourth essay in the *Big Ideas* series created by the European Investment Bank.

The EIB has invited international thought leaders to write about the most important issues of the day. These essays are a reminder that we need new thinking to protect the environment, promote equality and improve people's lives around the globe.


SMART EUROPE

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GDP is growing at a slower rate and productivity has been declining for more than a decade, while global unemployment remains a critical social issue in regions around the world. However, a new economic paradigm is emerging that is going to radically change the way we organise economic life.

The European Union is embarking on a bold new course to create a high-tech 21st-century smart green digital economy. To grasp the changes taking place, we need to understand the role played by technological forces. Every great economic paradigm has three elements: new communication technologies to manage economic activity; new sources of energy to power economic activity; and new modes of mobility to move economic activity.

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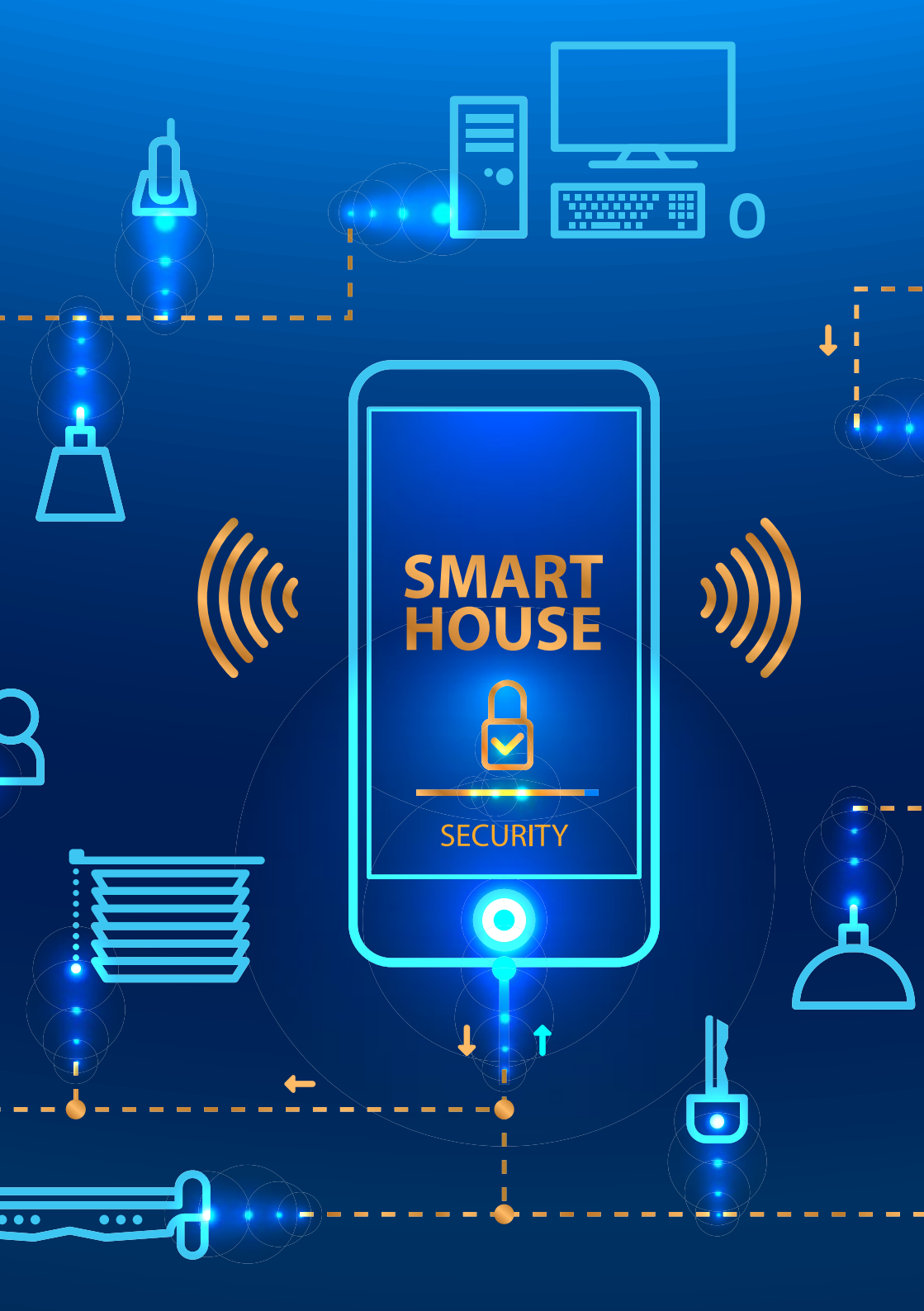
SMART
HOUSE
SECURITY

THE THREE INTERNETS

In the 19th Century, steam-powered printing and the telegraph, coal and locomotives gave rise to the First Industrial Revolution. In the 20th Century, electricity, the telephone, radio and television, cheap oil, and internal combustion vehicles led to the Second Industrial Revolution. Today, the European Union is facing a Third Industrial Revolution based on the convergence of three significant technologies – a digitalised Communication Internet, a digitalised Renewable Energy Internet, and a digitalised Automated Mobility Internet – which is transforming the way European regions manage, power, and move economic activity.

These three Internets ride atop an Internet of Things infrastructure that will reconfigure the way the continent manages, powers, and moves economic activity in the 21st Century. In the Internet of Things era, sensors will be embedded into every device and appliance, allowing them to communicate with each other and with Internet users, providing up-to-the-moment data on the managing, powering, and moving of economic activity. Currently, 14 billion sensors are attached to warehouses, road systems, factory production lines, the electricity transmission grid, offices, homes, stores, and vehicles. These sensors continually feed Big Data into the Communication Internet, Energy Internet and Mobility Internet. By 2030, it is estimated there will be more than 100 trillion sensors collecting and transmitting data.

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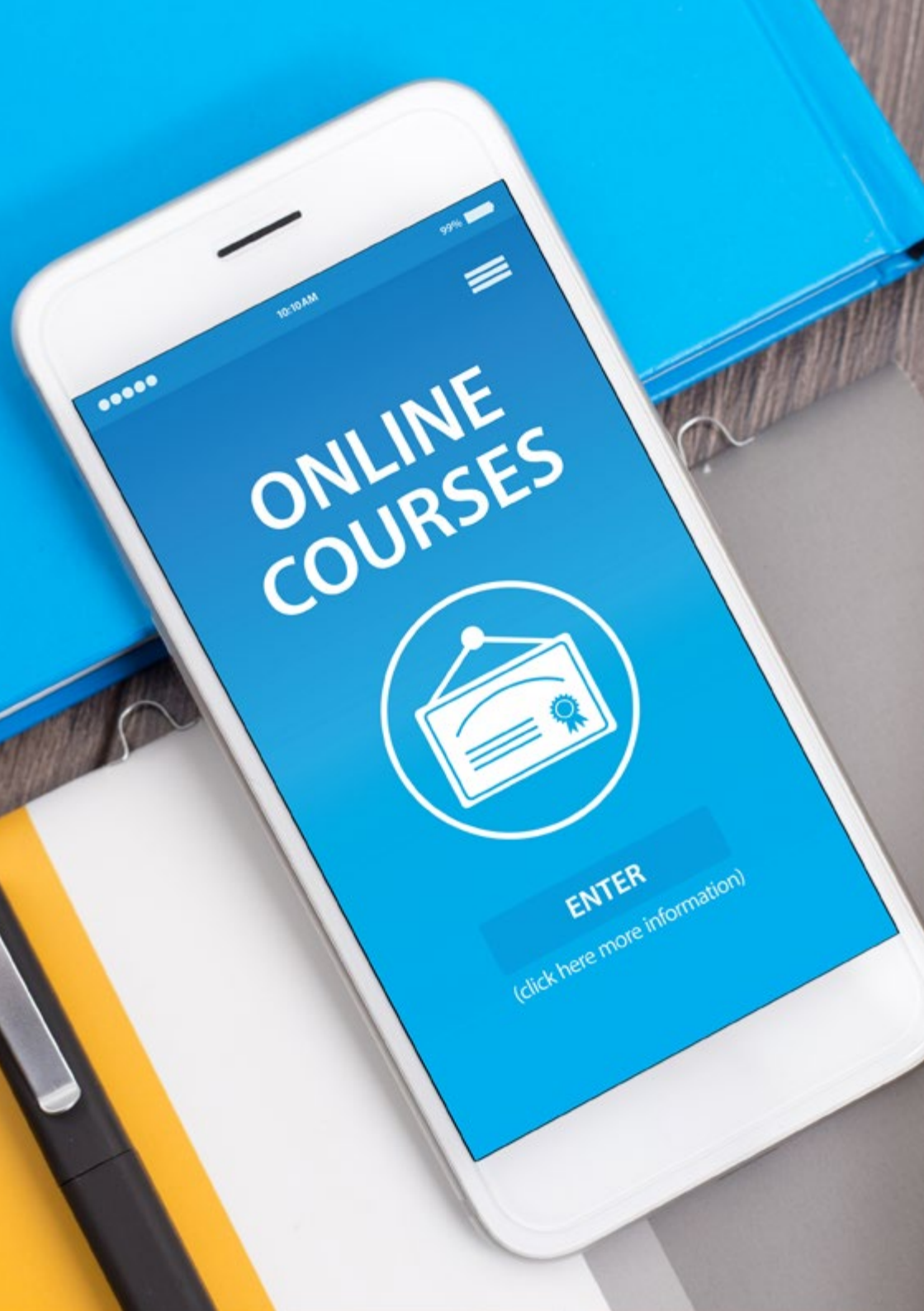
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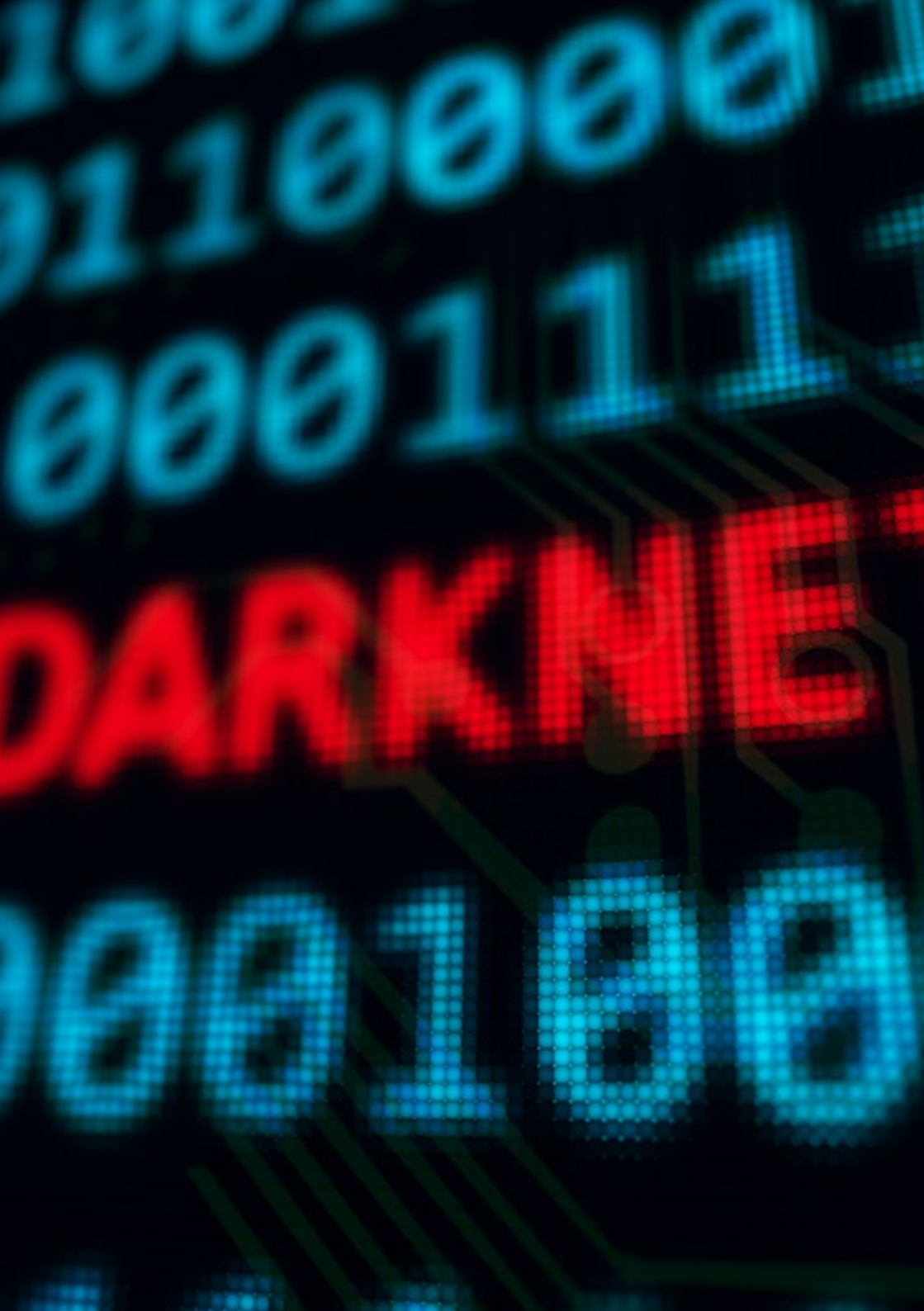
Today, private enterprises and government agencies can use Big Data and analytics to develop algorithms that increase productivity, address climate change and dramatically lower the cost of producing, distributing, consuming, and recycling goods and services. This makes European businesses more competitive and will fundamentally change the way we manage economic activity in the global economy. The marginal cost of some goods and services in a Smart Europe will even approach zero, allowing millions of people connected to the Internet of Things to produce and exchange things with one another for nearly free in the growing Sharing Economy. Already, a digital generation is producing and sharing music, videos, news blogs, social media, free e-books and massive open online college courses at near zero marginal cost. The near zero marginal cost phenomenon brought the music industry to its knees, shook the television industry, forced newspapers and magazines out of business, and crippled the book publishing market. The zero marginal cost phenomenon also gave rise to new enterprises like Google, Alibaba, Facebook, Tencent, Twitter and YouTube, and thousands of other Internet companies that made big profits by creating new applications and establishing the networks that allow the Sharing Economy to flourish.

Economists acknowledge the powerful impact the near zero marginal cost has had on the information goods industries but, until recently, they have argued that the productivity advances of the digital economy would not benefit the conventional brick-and-mortar energy industry or other sectors that offer goods and services. This firewall has now been breached. The evolving Internet of Things will allow conventional businesses to make and distribute their own renewable energy, share driverless electric vehicles, and make their own products using 3D-printers at a low marginal cost in the market exchange economy, or at near zero marginal cost in the Sharing Economy, just as people do now with digital information.


DARKNET

Those are the upsides of the transition to the new smart digital infrastructure of the Third Industrial Revolution.

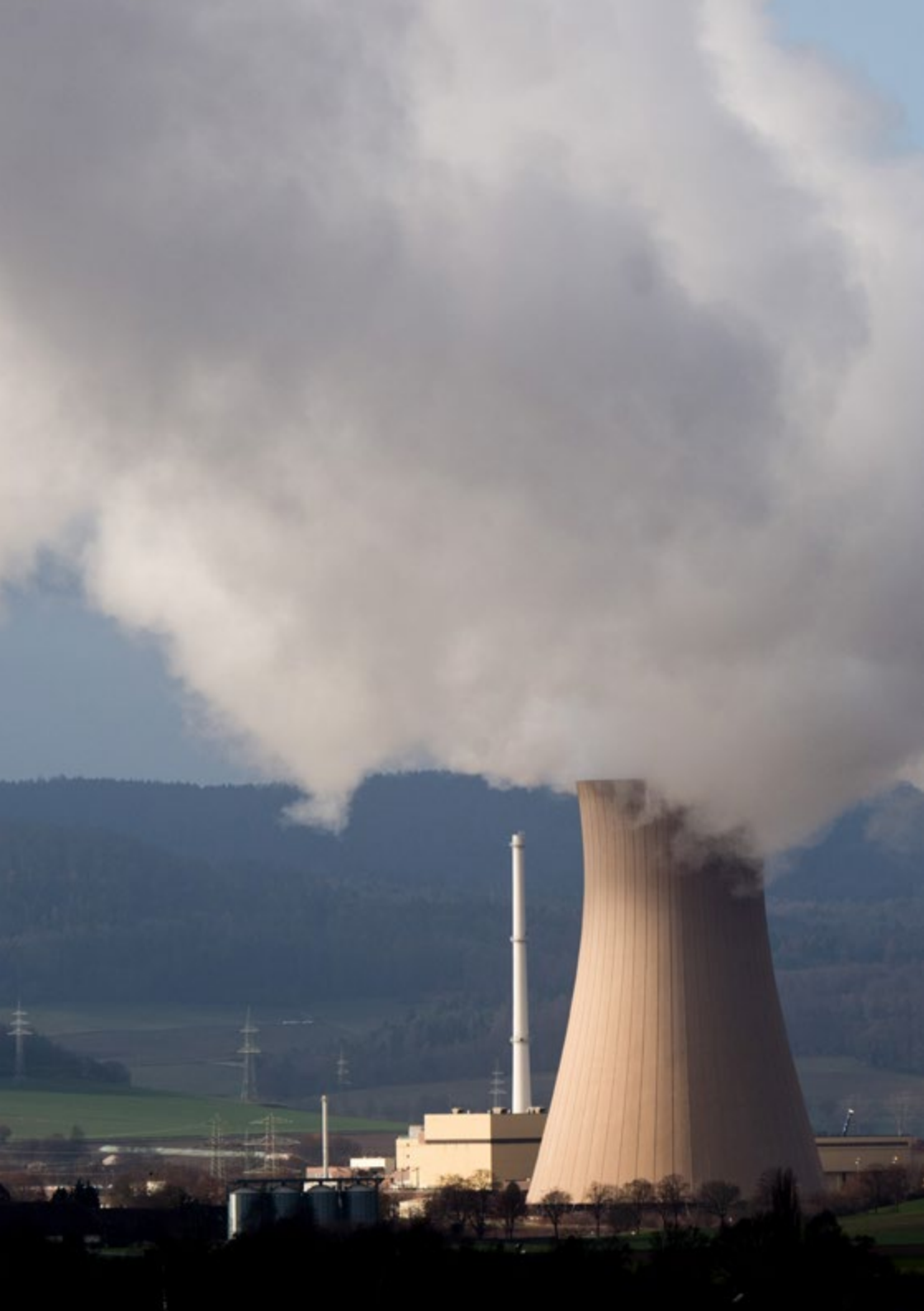
There also are downsides. How do we deal with network neutrality? How do we ensure that everyone has equal access to this new Internet of Things platform that is the nervous system of the Third Industrial Revolution? How do we make sure governments don't use this platform for political purposes? How do we prevent giant monopolistic companies from using the data for their own purposes? How do we guarantee privacy when everyone is connected? How do we safeguard data security in a connected world? How do we prevent cybercrime and cyber terrorism that could disrupt the system and take it down, paralysing the economy and society? The next three generations are going to be immersed in a new political movement to ensure the Darknet doesn't prevail, so we can engage in a distributed digital nervous system and begin to enjoy a vast expansion of social entrepreneurialism.


HERE COMES
THE SUN

HERE COMES THE SUN

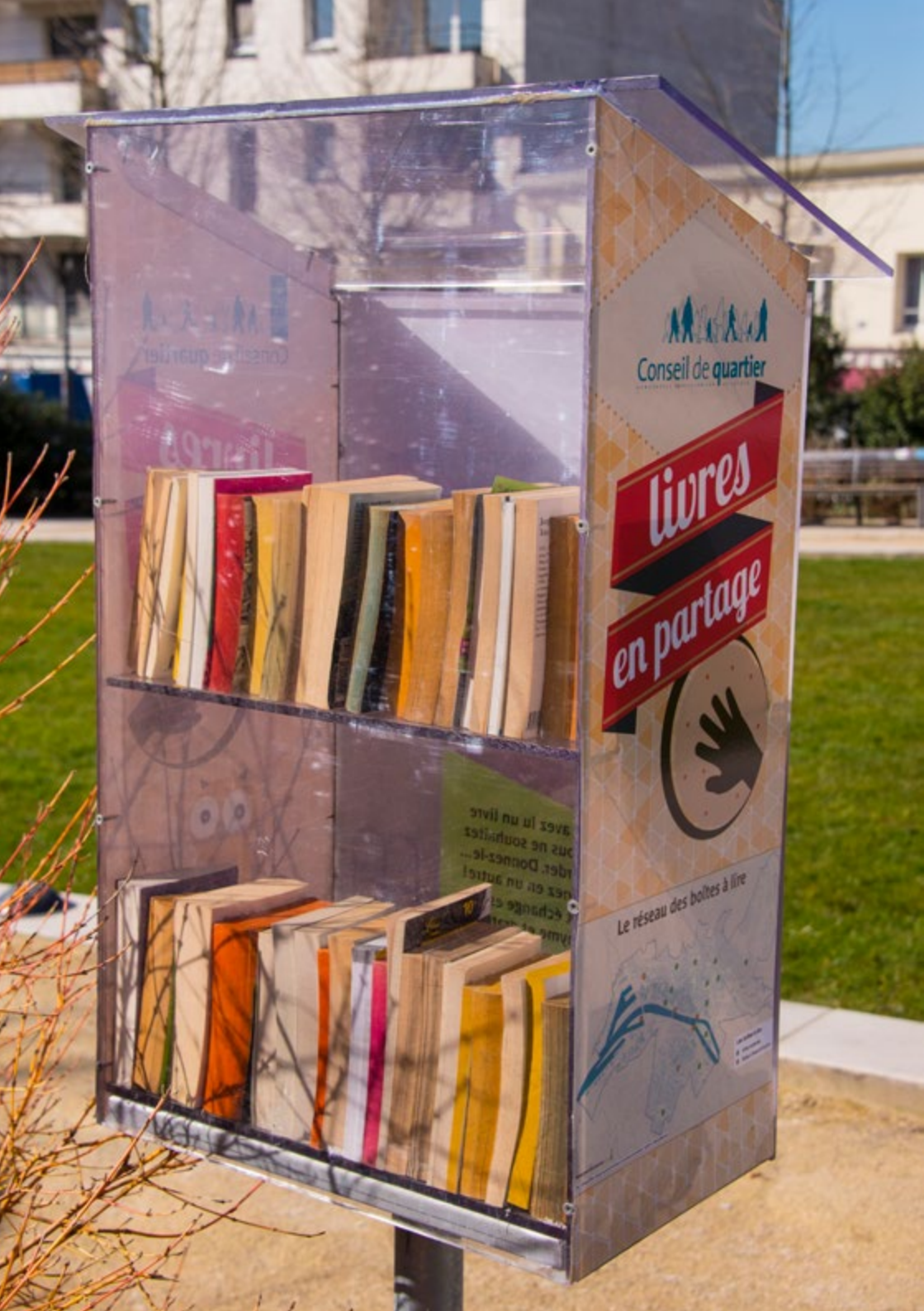
The transition into a Third Industrial Revolution and Smart Europe will require a transformation of the continental infrastructure. The communication network in Europe will have to be upgraded with the inclusion of universal 5G broadband and universal free Wi-Fi. The energy infrastructure will need to be transformed from fossil fuel and nuclear power to solar, wind and other renewable energies. Millions of buildings will need to be retrofitted and equipped with renewable energy harvesting installations and converted into micro power plants. Storage technologies will have to be built into every layer of the infrastructure to secure intermittent renewable energy. The electricity grid will have to be reconfigured into a smart digital Energy Internet to accommodate the flow of energy produced by millions of green micro power plants. The transportation and logistics sector will have to be digitalised. The introduction of electric and fuel cell transportation will require millions of charging stations and thousands of hydrogen fuelling stations. Smart roads, equipped with millions of sensors, feeding information on traffic flows and the movement of freight will also have to be installed.

> **“ Transforming the energy regime and electricity grid from fossil fuels and nuclear power to solar, wind and other renewable energies is extremely labour-intensive and will also require millions of European workers and spawn thousands of new businesses.**



Semi-skilled, skilled, professional, and knowledge workers will be employed across every region of Europe to construct and operate the three Internets and the Internet of Things that make up the digital platform of a Third Industrial Revolution economy. There are tens of millions of residential buildings as well as tens of millions of commercial and industrial buildings in Europe that will need to be retrofitted and transformed into distributed Big Data nodes, micro power generating sites, and electric charging stations for electric vehicles over the coming decades. This vast transformation will create millions of jobs while saving millions of existing jobs in manufacturing, engineering, electric utilities, transport and logistics, ICT, construction, and real estate sectors, as well as the retail and agricultural sectors. The business at hand in Europe will be to provide both retraining for the existing workforce and the appropriate skill development for students coming into the labor market to ease the transition into the new business opportunities and job categories that come with a massive build-out of an Internet of Things infrastructure.

Transforming the energy regime and electricity grid from fossil fuels and nuclear power to solar, wind and other renewable energies is extremely labour-intensive and will also require millions of European workers and spawn thousands of new businesses. The reconfiguration of the electricity grid into an Energy Internet will generate new installation jobs and give birth to thousands of clean Web app start-up companies. Installing electricity storage technologies across the entire economic infrastructure to manage the flow of green electricity will generate comparable mass employment and new businesses as well. For electric vehicles, installing millions of charging stations along roads, rail lines, and in parking spaces is labor-intensive employment that will require a sizable workforce.


Conseil de quartier
livres
en partage
Le réseau des boîtes à lire

The prospect of every building being outfitted and equipped to mine Big Data and use analytics to create algorithms and apps to dramatically increase aggregate efficiency and productivity and reduce marginal costs in the managing, powering, and moving of economic activity marks a giant leap forward for humankind. And if what we do produce is shared – our cars, our homes, our toys – in an emerging sharing/circular economy, nothing needs to go to the landfill, all of which reduces humanity's collective ecological footprint, mitigates climate change, and takes society into an ecological age.

The vision of millions of families, thousands of communities, and hundreds of thousands of businesses generating their own renewable energy in and around their buildings, at near zero marginal cost, and sharing it with one another across a national and continental renewable Energy Internet changes the very notion of collective responsibility for European society and the planet we live in. In the Biosphere Era, every European citizen becomes a steward of the clean renewable energy that covers the Earth, paving the way to a more sustainable world.


POWER TO
THE PEOPLE

POWER TO THE PEOPLE

To date, three political jurisdictions have developed fully integrated Third Industrial Revolution roadmaps and accompanying deployment initiatives to transition their economies. The region of Hauts-de-France, the Metropolitan Region of Rotterdam and The Hague, and the Grand Duchy of Luxembourg are flagship regions that provide learning laboratories for addressing the opportunities and challenges that come with the paradigm shift to a Smart Europe.

These three regions have established a new milestone in the governance of economic and social development to reflect the nature of the new Third Industrial Revolution infrastructure being readied for deployment. The coming together of the Communication Internet, the Renewable Energy Internet, and the automated Mobility Internet, atop an Internet of Things platform, not only changes the way these regions manage, power, and move economic activity, but also the political process itself. While the First and Second Industrial Revolution infrastructures were designed to be centralised top-down, proprietary, and vertically integrated, the Third Industrial Revolution is best advanced in a distributed, collaborative, open and laterally-scaled fashion, changing the very nature of governance.

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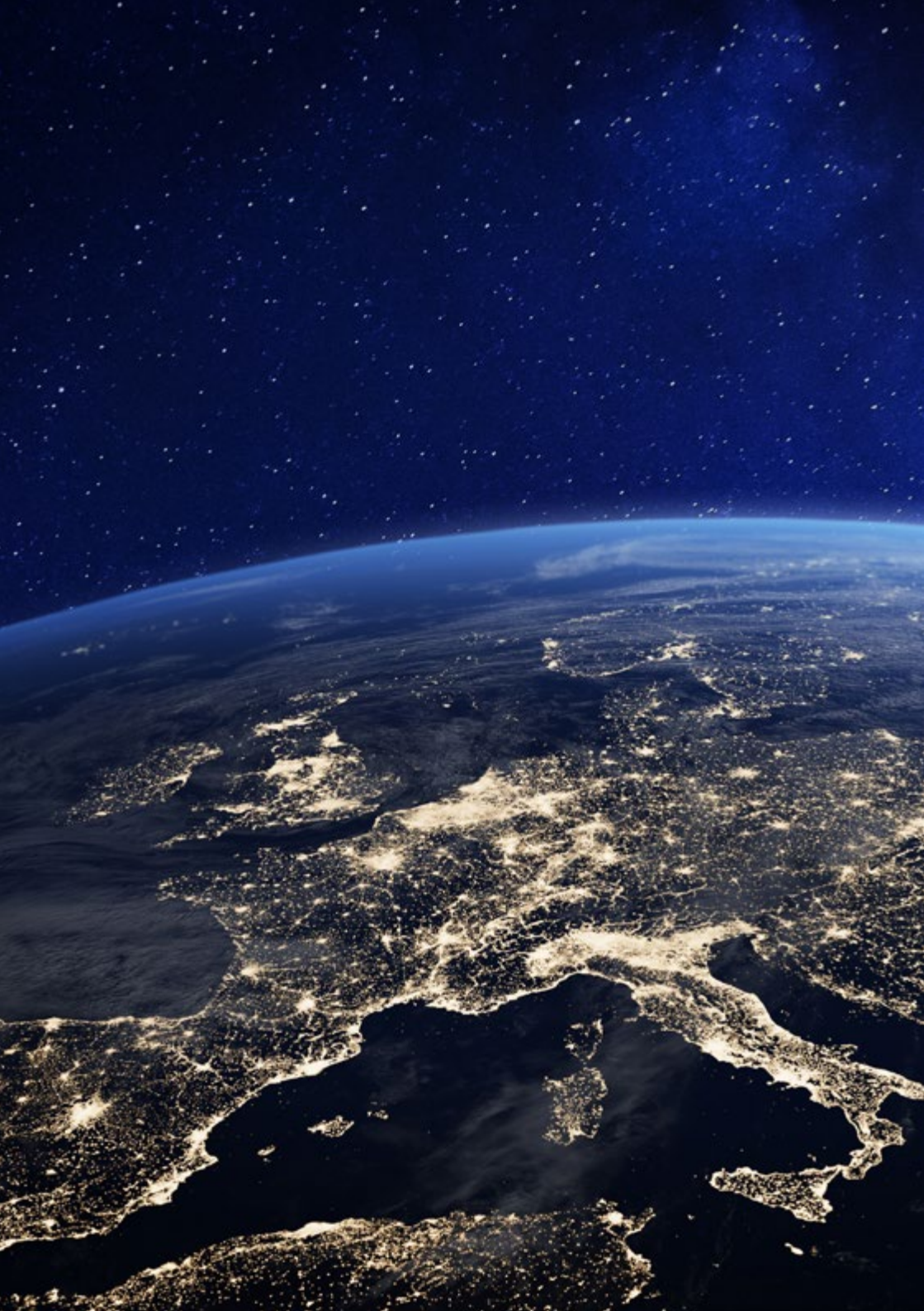
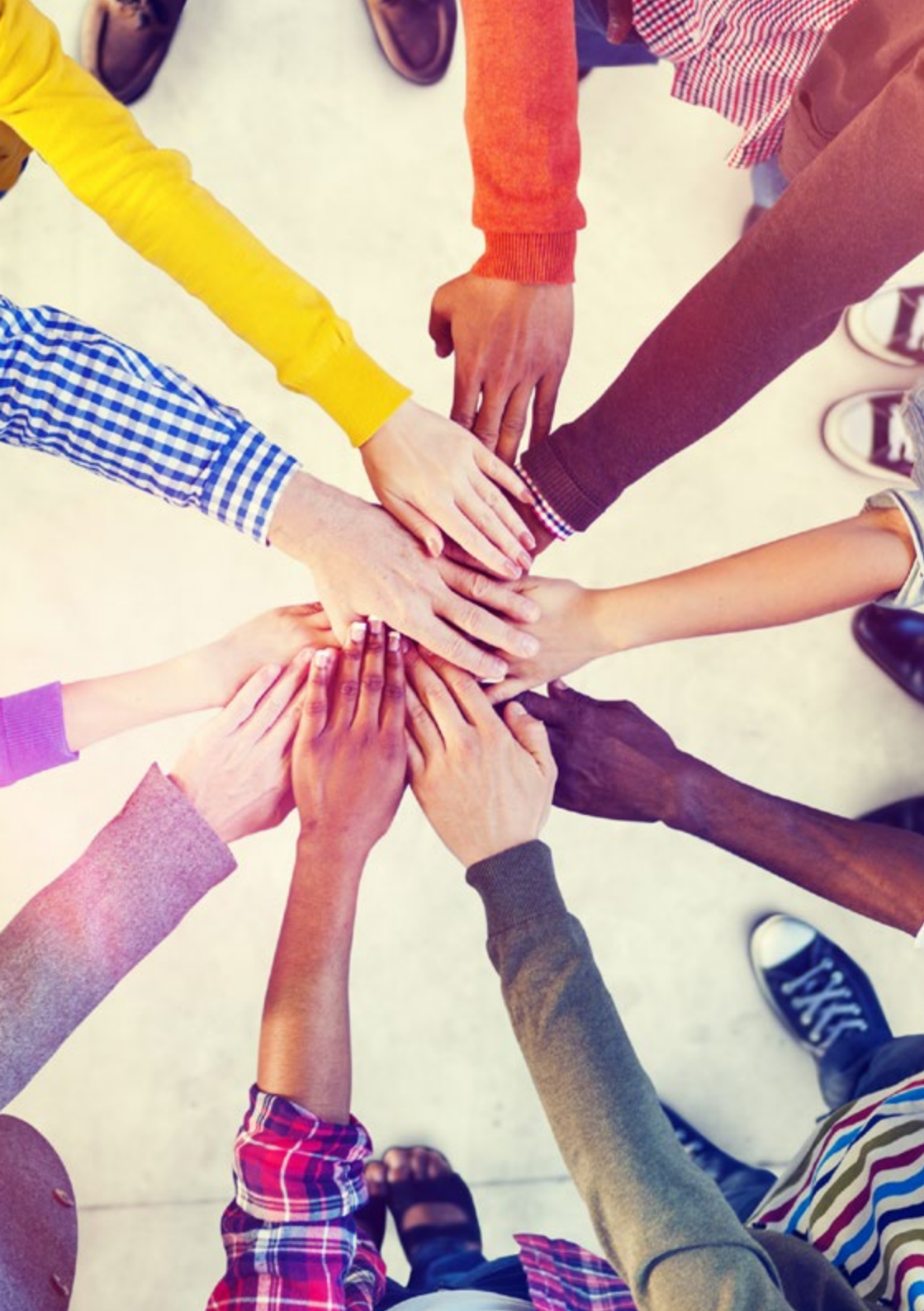


Recognising the new opportunities and challenges brought on by this new technological revolution, the governments of Hauts-de-France, the Grand Duchy of Luxembourg, and the Metropolitan Region of Rotterdam and The Hague entered into a joint-collaboration with the TIR Consulting Group (an organisation for which I serve as president). The objective is to transform their traditional role as a centralised overseer and planner to that of a lateral facilitator of a regional network of engaged stakeholders working together as equal partners to advance a new economic, social, and political vision that can take their regions into the smart digital era. Hundreds of social-economic actors from government, the business community, academia and civil society actively participated in the preparation of each of the metropolitan and regional roadmaps and accompanying deployment projects.

These three governments' roadmaps represent a real-world manifestation of one of the central tenets of the Maastricht Treaty that governs the European Union – the subsidiarity principle. That principle requires that all decision-making not embedded in formal EU competencies begins at the local, regional, or national level. The subsidiarity principle is quickly gaining prominence in cities and regions around Europe as the digital revolution crosses political boundaries, connecting communities in a smart continental digital space.



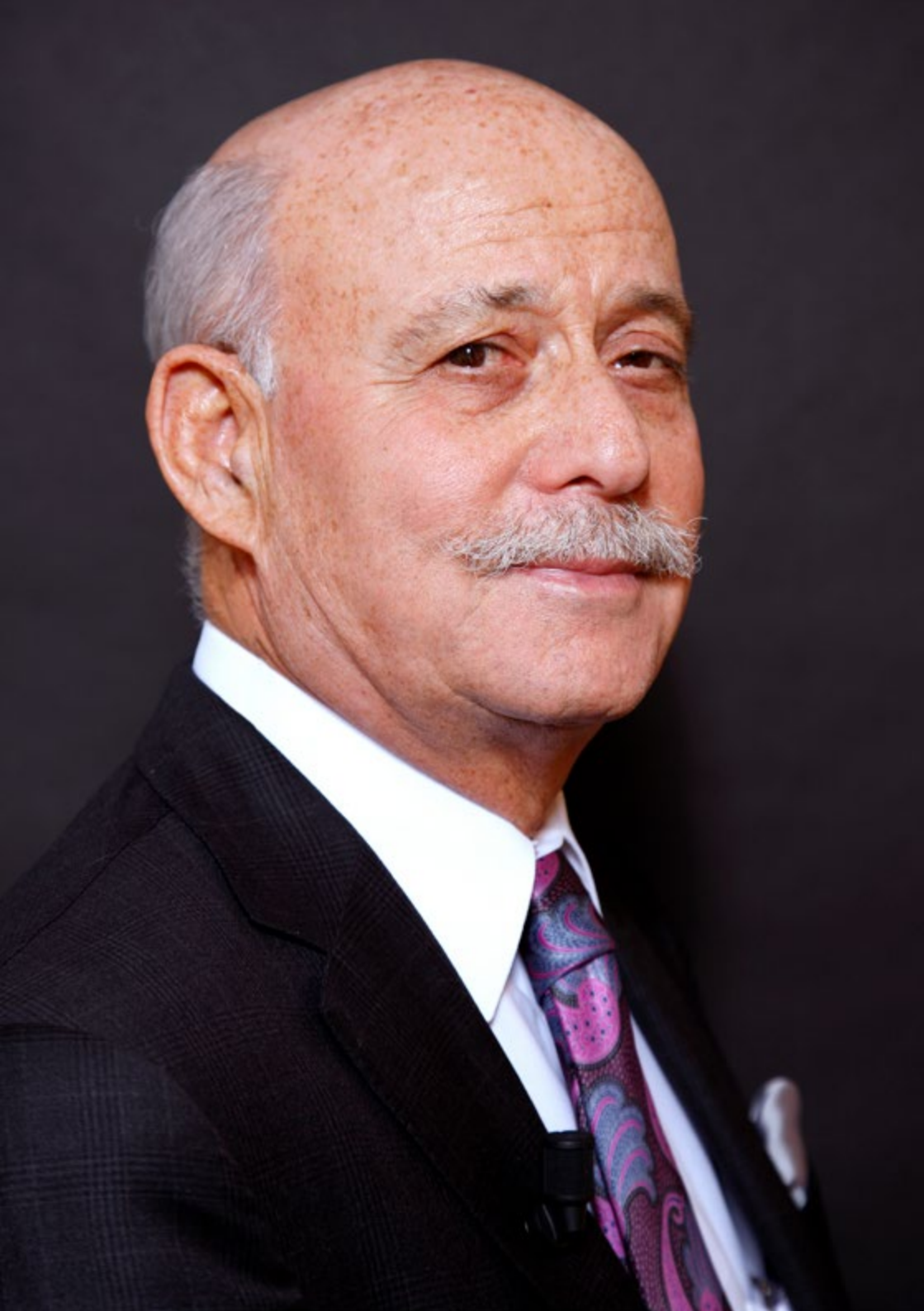
While the First and Second Industrial Revolutions spawned a more top-down, vertically integrated form of globalisation, the Third Industrial Revolution takes the human family into a more laterally networked framework – with cities, regions, nation states, and continental unions collaborating side by side in vast virtual and physical global networks to create a more ecologically sustainable and equitable quality of life.

These Third Industrial Revolution roadmaps, with their emphasis on broad local and regional stakeholder participation in the deliberation and execution of new technological infrastructure and the accompanying economic narrative and game plan, exemplify the deployment of the subsidiarity principle, and the shift from globalisation to glocalisation providing a precedent for similar local and laterally designed governance models in urban metropolitan areas and suburban and rural regions across the 28 Member States of the EU and around the world.

BIOGRAPHY

Jeremy Rifkin (1945) is an advisor to the European Union and the People's Republic of China.

His recent books include *The Zero Marginal Cost Society: The Internet of Things, the Collaborative Commons, and the Eclipse of Capitalism* and *The Third Industrial Revolution: How Lateral Power is Transforming Energy, the Economy, and the World.* He is the Executive Producer and narrator of the new film, *The Third Industrial Revolution: A Radical New Sharing Economy,* produced by VICE Media and now available in nineteen languages on YouTube.



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