



Choosing a Digitally Competitive Netherlands

A whitepaper by VodafoneZiggo
October 2026

TABLE OF CONTENTS

1	Foreword	3
2	Introduction	4
3	Analysis	6
4	Recommendations	13
5	Interviews	14



Foreword

The Netherlands has some of the best digital connectivity in the world. That achievement is the result of decisions made over decades by businesses, research institutions and government. It is a position we can rightly take pride in.

Yet the familiar warning from the financial world applies here too: past performance is no guarantee of future results. From geopolitical shifts to the rise of AI, the global technology ecosystem is undergoing profound and unprecedented change. How these developments unfold will shape the way we live and work in the years ahead.

The Netherlands wants to play a leading role in shaping that future. VodafoneZiggo shares this ambition and is committed to helping achieve it. We see digital competitiveness as essential to sustaining a resilient and prosperous society. Keeping the Netherlands an open and welcoming place to live and work is an integral part of that ambition. The business environment influences whether companies and talented people choose to make their home here and remain part of our economy. A strong position also allows us to collaborate more effectively and build connections that will stand the test of time.



” Connecting people, organisations and sectors is what we do best, and where we want to make a difference.

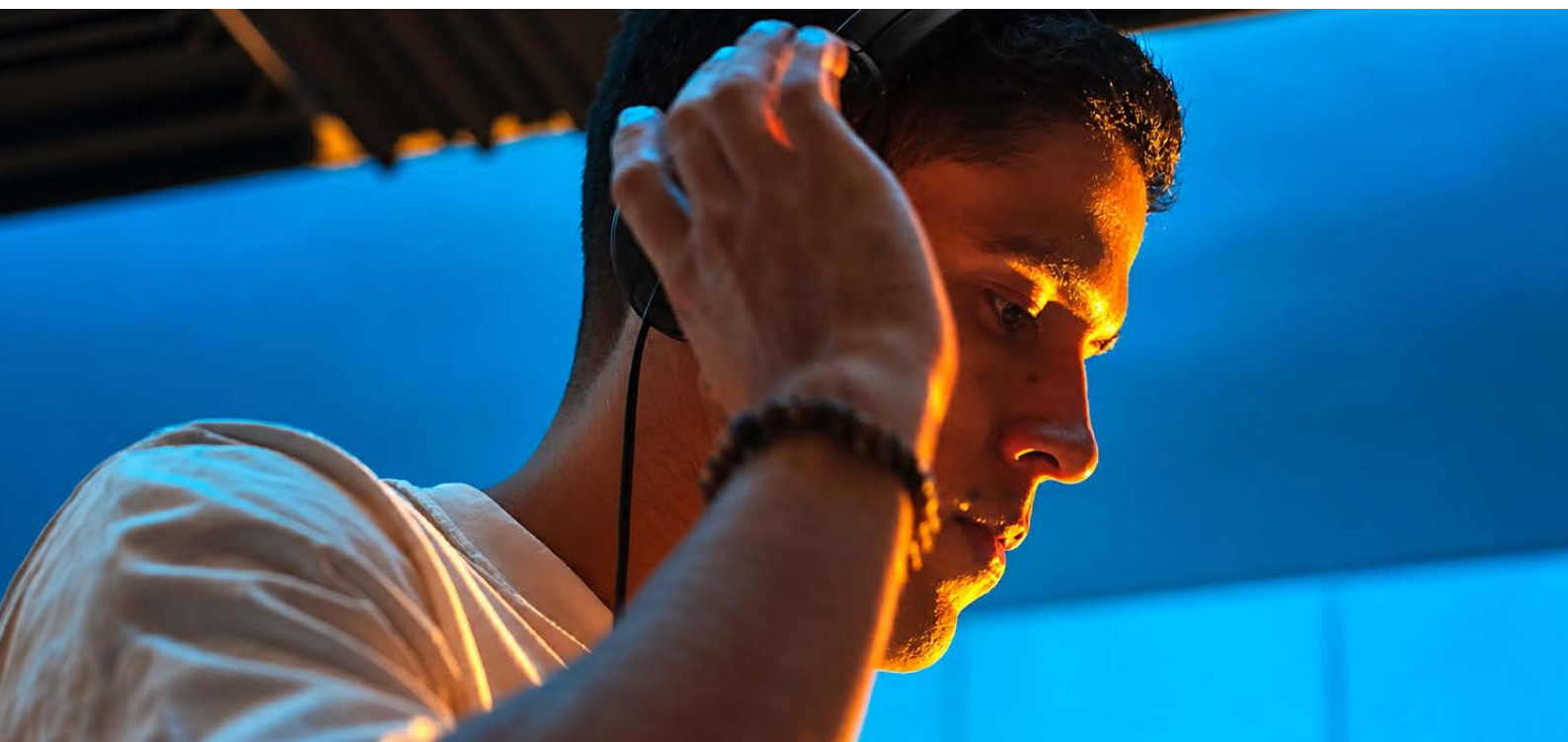
At VodafoneZiggo, we know that we are one part of a much wider ecosystem, spanning technology and telecoms, media and IT, life sciences and health, and the creative industries. The value of what we build comes from what others can do with it, just as we depend on the work of others. Our role is to bring people together, through both the infrastructure we provide and the relationships we build. Connecting people, organisations and sectors is what we do best, and where we want to make a difference.

That is why we initiated this whitepaper. We care deeply about the Netherlands and want to take a clear-eyed look at the question it faces: how can we preserve the strengths of our ecosystem, forge closer connections and make it stronger in a rapidly changing world?

Twelve leading figures whose work shapes our digital competitiveness took part in the conversations behind this paper. We are grateful for their candour and generosity in sharing their insights. Their contributions give the paper a depth that no single perspective could offer. What emerges is a shared conviction that we can strengthen this ecosystem, and a shared ambition to do so through decisive, coordinated action.

Their insights reinforce what we see every day: collaboration is the key to lasting success. It is encouraging to find that ambition shared so widely across the ecosystem. With this whitepaper, we hope to help turn it into collective action. Doing so will require foresight, joined-up planning, a consistent direction and the courage to act. VodafoneZiggo is ready to play its part.

Stephen van Rooyen
CEO VodafoneZiggo



Introduction

Digitalisation has rapidly become a key driver of economic growth, innovation and international competitiveness. As global competition for technology, talent and capital intensifies, the debate is moving beyond whether the Netherlands should invest in its digital economy. The question now is how to increase that investment and make it more effective.

This whitepaper aims to inform the choices ahead. It draws on conversations with representatives from business, government, academia and the wider technology ecosystem, alongside Dutch and international data. Together, these sources identify the strengths the Netherlands can build on and the conditions it needs to strengthen its position.

The central message is clear: the Netherlands does not need to do everything alone. By targeting investment at its existing strengths and bringing expertise, infrastructure and capital together more effectively, it can secure a strong position in the European and global technology ecosystem.

Executive summary

The Netherlands is well placed to strengthen its digital competitiveness. Its talent, high-quality digital infrastructure and established technology clusters provide a strong foundation. The global context, however, is changing rapidly. Technology plays an increasingly important role in economic growth and countries' strategic standing, while competition for capital, talent and technological expertise continues to intensify.

The analysis identifies five key insights:

- **The Netherlands can build on its talent, readiness to adopt technology and strong technology clusters.** The population has relatively strong digital skills, and new technologies are adopted quickly. The country also benefits from an internationally oriented labour market and established regional technology clusters.
- **Strong digital infrastructure is becoming essential to economic growth and investment.** Reliable connectivity is now a basic requirement across almost every sector, much like energy. AI, cloud computing and data are driving further demand for network capacity, computing power and energy.
- **Key positions in the digital value chain can strengthen the Netherlands' strategic resilience.** The country does not need to develop every technology itself. It does need to choose where to build a position that gives it strategic importance.
- **A better environment for growth can help more Dutch-based technology companies scale internationally.** This means ensuring access to growth capital, predictable regulation where it is needed and simpler procedures, backed by a government that actively supports the adoption of new technology.
- **A shared long-term agenda and an ecosystem-wide approach can help Dutch technology clusters grow.** These clusters thrive when businesses, research institutions, talent and investment reinforce one another. Focused collaboration and sustained investment can broaden and deepen those connections.

These findings point to a clear course of action. The Netherlands can strengthen its international position by building on what it already does well and making clearer choices about where it wants to excel. It should target investment at digital infrastructure and key technology sectors, plan ahead for the capacity it will need, and create an environment in which companies can grow and scale. Potential bottlenecks need to be identified and addressed before they become obstacles. This will allow the Netherlands to develop its strongest clusters further and make a greater contribution to Europe's technology ecosystem.

Analysis

Introduction

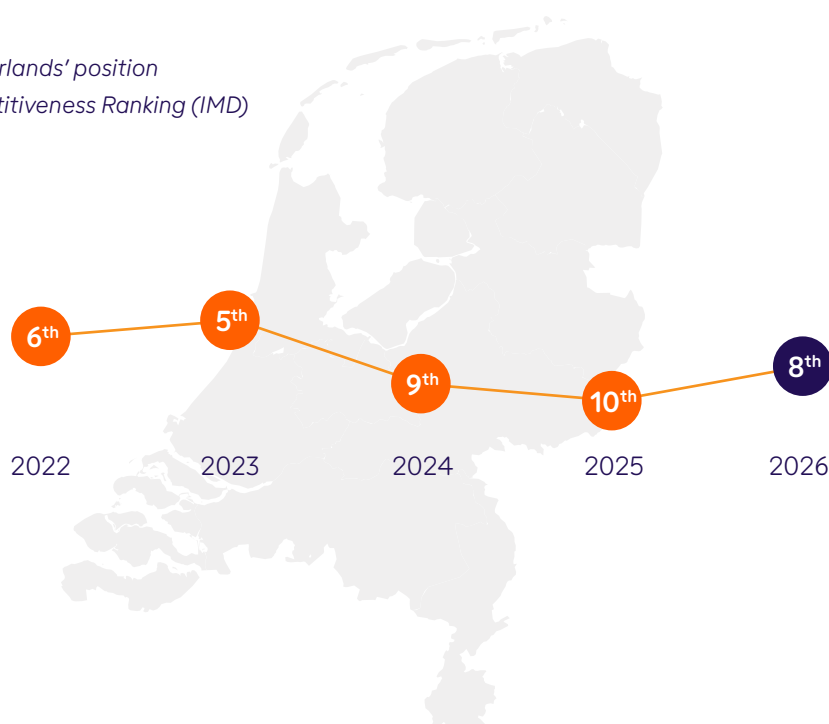
Over recent decades, the Netherlands has built a strong position in the digital economy. Its well-educated workforce, high-quality digital infrastructure and established technology clusters provide a solid platform for international growth. International rankings reflect these strengths: in 2026, the Netherlands ranks eighth in the IMD World Competitiveness Ranking (see Figure 1).¹ It is also among Europe's leaders in connectivity and digital skills. 98.3 per cent of households have access to a high-quality network, and 82.7 per cent of the population have basic digital skills.²

The competitive landscape is changing quickly. Technology is becoming ever more important to productivity and economic growth, while geopolitical tensions and competition for capital and talent are intensifying. New AI, cloud and data applications are placing greater demands on infrastructure. The conditions for staying competitive are changing as a result. Businesses increasingly consider the full picture: the availability of talent, infrastructure and capital, together with the regulatory environment.

The twelve conversations conducted for this whitepaper, with stakeholders from business, government and the wider technology ecosystem, point to a clear priority. The Netherlands does not need to lead in every technology and, as an open economy, cannot develop everything itself. It needs to identify more clearly where it can distinguish itself internationally and build on its strengths in those areas. That means investing in an environment where new technologies can emerge and grow, choosing strategic positions in global value chains, and bringing policy, expertise and capital into closer alignment.

The following chapters explore how to move from the Netherlands' current strengths to the choices and investments needed to turn them into lasting economic growth and international competitiveness.

Figure 1: The Netherlands' position in the World Competitiveness Ranking (IMD)



¹ [IMD: World Competitiveness Ranking 2026](#)

² [Europese Commissie: Netherlands 2024 Digital Decade Country Report](#)

1. The Netherlands can build on its talent, readiness to adopt technology and strong technology clusters.

The Netherlands is one of Europe's most digitally advanced economies, with a population and business community that are quick to adopt new technologies. A large proportion of residents have digital skills, and Dutch companies use advanced digital technologies at above-average rates. This makes the country an attractive market for launching and developing new applications. The interviews support this view. The ACM, for example, highlights the Netherlands' leading role in the use of new digital services. Philips also sees it as an excellent place to test innovations, thanks to its depth of expertise and willingness to experiment.

” The Netherlands is remarkably open to experimenting with innovation. There is a wealth of expertise and an acceptance that things will not always work first time. That makes it an ideal testing ground. *Rob de Bie, Philips*

A skilled workforce is another important advantage. The Netherlands combines high educational attainment and widespread digital skills with an internationally oriented labour market. That labour market is a source of strength, although challenges remain. The number of ICT professionals has risen sharply: 622,000 people worked in ICT occupations in 2024, up from 336,000 in 2010.³ Specialist talent is still in short supply, and the skills employers need are changing ever faster. This makes an adaptable labour market increasingly important, with opportunities for employees to keep developing through upskilling and retraining. Randstad stresses that this adaptability is crucial to putting technological change into practice: without enough people with the right skills, investment in digitalisation cannot deliver its full potential.

” However advanced our infrastructure and ambitious our plans are, every transition will come to a halt without the right people in the right roles. *Jeroen Tiel, Randstad*

Specialised niches offer the Netherlands an opportunity to build a position that is difficult to match internationally. The strongest prospects lie where digital technology meets sectors in which the country already has deep expertise, established businesses and a strong user base. Philips illustrates this in healthcare, where innovations can be tested and adopted relatively quickly within a high-quality healthcare system. ASML makes a similar case for industrial AI, which applies digital technology directly to existing industrial expertise. Rather than seeking scale in every field, the Netherlands can focus on niches where new technology and established strengths reinforce each other.

The Netherlands also benefits from regional technology clusters that bring expertise, companies and talent together. The Amsterdam Metropolitan Area and Brainport Eindhoven are two examples. Each has its own strengths, yet both show how proximity helps knowledge and talent circulate more quickly. Recent research found that former employees of major technology companies have founded 270 companies based in the Netherlands in recent years.⁴ Clusters like these help turn specialist expertise into new businesses.

³ [*CBS: Digitalisation and the knowledge economy 2025*](#)

⁴ [*Dealroom: Anchor Firms and the Dutch Innovation Economy*](#)

2. Strong digital infrastructure is becoming essential to economic growth and investment.

Digitalisation now runs through almost every part of the economy, making digital and economic competitiveness increasingly inseparable. Companies depend on reliable connectivity and digital infrastructure to operate day to day and keep their businesses running. Digital infrastructure has become a basic utility: like energy, it helps determine where businesses can grow and new economic activity can take root. Investment decisions reflect this shift. The NFIA reports that companies considering new investments now routinely assess digital infrastructure.

” For the international companies we attract, digital infrastructure has become as standard a consideration as tax arrangements or the labour market. *Hilde van der Meer, NFIA*

The Netherlands is well placed in this respect. Its fixed and mobile networks are among the best in Europe. Some 98.3 per cent of Dutch households have access to a Very High Capacity Network, also known as a gigabit network, compared with an EU average of 78.8 per cent. Every household is covered by at least one 5G network.⁵ This is an important economic advantage as more and more activity depends on high-quality digital infrastructure.

The demands on that infrastructure are evolving. Mobile data usage in the Netherlands almost doubled in three years, from 1.6 billion gigabytes in 2022 to nearly 3 billion in 2025.⁶ New AI, cloud and data applications will increase the need for network capacity, computing power and energy still further. Meeting that demand will require high-quality networks, sufficient data centre capacity, available capacity on the electricity grid and access to spectrum. Planning must therefore look beyond today's needs and ensure that the country's digital infrastructure can support tomorrow's economy. This requires timely, predictable policy decisions on scarce resources.

” Digital infrastructure is an enabler for everything built on it.
We need to keep leading the way to maintain and strengthen our competitiveness.
Fernando Kuipers, Professor of Internet Science at TU Delft

Infrastructure takes years to plan and build, so investment decisions must anticipate future demand. VNO-NCW argues that investment needs to happen before constraints emerge. Electricity grid congestion shows the consequences of allowing infrastructure to fall behind economic development. Digital infrastructure likewise requires long-term investment, sufficient space and timely approval of permits.

” We need to make room now for long-term investment and action, and remove barriers before they hold us back. *Coen van Oostrom, VNO-NCW*

⁵ [European Commission: Netherlands 2024 Digital Decade Country Report](#)

⁶ [ACM: Telecommonitor Q4 2025](#)

3. Key positions in the digital value chain can strengthen the Netherlands' strategic resilience.

The Netherlands has distinctive strengths in several critical parts of the global digital ecosystem, particularly semiconductors. The Dutch semiconductor industry has grown rapidly: according to Statistics Netherlands (CBS), its revenue reached € 46 billion in 2025, up from € 21 billion in 2019.⁷ Its importance goes beyond those figures. Dutch companies operate in crucial parts of the global value chain, with specialist expertise and technologies that few others can provide.

Further up the technology stack, the picture changes. In cloud computing, generative AI and digital applications, the Netherlands and Europe rely heavily on technology and capacity from outside Europe. The OECD reports that the three largest cloud providers together control more than 60 per cent of the global market.⁸ Cloud infrastructure is essential to training and deploying AI models, so this concentration also creates dependencies across the AI value chain.

” What I am missing are areas where others depend on us; chokepoints in AI, like the one we have with ASML in the semiconductor value chain. *Constantijn van Oranje, Techleap*

The interviewees agree that removing these dependencies entirely is neither realistic nor desirable. As an open economy, the Netherlands benefits from sharing knowledge and accessing technologies developed elsewhere. The priority is to distinguish between dependencies that are acceptable and those that create vulnerabilities, while identifying where the country can build strengths that others depend on.

” For too long, Europe has treated digital autonomy and competitiveness as two separate challenges. *Melanie van der Horst, alderman for the Municipality of Amsterdam*

The semiconductor industry shows how this interdependence can work. The Netherlands relies on overseas production capacity, materials and markets, while providing technology and expertise that other parts of the global value chain need. These strengths give the country strategic influence in an interconnected global economy.

⁷ [CBS: Dutch semiconductor industry generates € 46 billion in revenue in 2025](#)

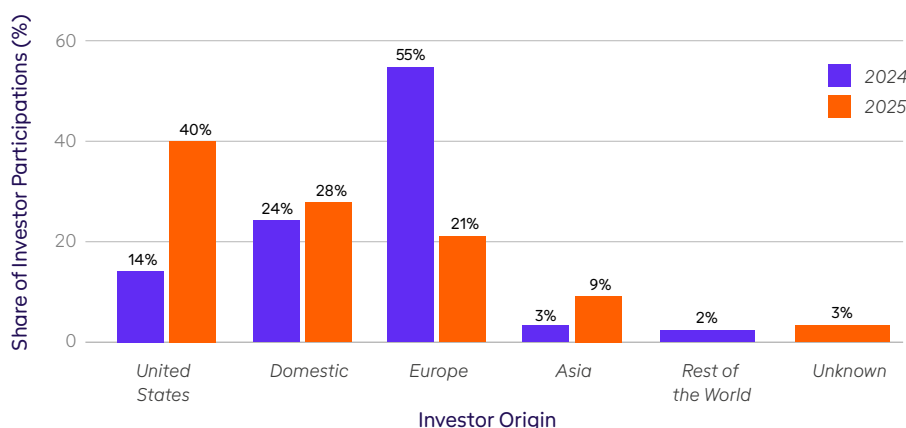
⁸ [OECD: Competition in artificial intelligence infrastructure](#)

4. A better regulatory environment for growth can help more Dutch-based technology companies scale internationally.

The Netherlands has a strong record of producing innovative technology companies. Helping them grow into international businesses is more challenging. Its technology ecosystem includes 11,301 active companies and attracted € 2.64 billion in venture capital in 2025. Yet only 21.6 per cent of Dutch start-ups became scale-ups, compared with a European average of 24.1 per cent.⁹ The US figure was more than twice as high, at 52.2 per cent. A strong start-up ecosystem does not, on its own, ensure that companies can achieve international growth while remaining based in the Netherlands.

” We have many promising technology companies coming through. Let's make sure they have what they need to thrive. *Clare Jones, Polarsteps*

Figure 2: Origins of investors in Dutch funding rounds (Techleap)



European investment also needs to keep pace with technology companies' funding requirements. In Dutch funding rounds of € 50 million to € 100 million in 2025, US investors accounted for 40 per cent of participating investors, while the European share fell from 55 to 21 per cent (see Figure 2).¹⁰ Overseas capital remains important to growth. These figures nevertheless show that European investors are increasingly struggling to keep pace with larger rounds. Companies need access to the right funding when they are ready to expand internationally or make major investments.

A supportive investment climate is essential to scaling. Technology companies need workable, predictable rules so they can plan and invest for the years ahead. Start-ups and scale-ups also face a significant administrative burden from regulation. Simpler procedures and more consistent rules would give businesses the confidence to continue investing and growing in the Netherlands.

⁹ [Techleap: State of Dutch Tech Report 2026](#)

¹⁰ [Techleap: State of Dutch Tech Report 2026](#)

- ” Simplifying and speeding up processes and procedures is crucial. Not by lowering standards, but by making it easier to do business. *Marc Zegveld, TNO*

Finally, government can help companies move from innovation to commercial scale. It can do more to act as an early customer and use regulatory sandboxes. Within these controlled environments, government, researchers, businesses and regulators agree on the outcome they want to achieve, then work together to establish the technical, legal and practical steps needed to get there. By engaging early, government can help shape the development of new technology, rather than waiting to regulate it after the fact. This makes the investment environment more stable and predictable, helping innovations move faster from testing to adoption and scale.

- ” For me, this largely comes down to three things: creating a regulatory environment that encourages investment, removing outdated rules, and giving government a more strategic role as a major early customer for digital services. *Martijn Snoep, ACM*

5. A shared long-term agenda and an ecosystem-wide approach can help Dutch technology clusters grow.

The Netherlands' strongest technology clusters share a common feature: companies, research institutions, talent and investment are close enough to reinforce one another quickly. Brainport Eindhoven and Amsterdam's technology ecosystem illustrate this. In 2019, Noord-Brabant accounted for more than 33 per cent of private R&D spending in the Netherlands, totalling € 3.9 billion. Of that, € 3 billion was invested in the Eindhoven region. The Amsterdam Metropolitan Area is another major centre of investment in research and development, with companies spending € 1.5 billion on R&D that year.¹¹

The companies interviewed describe the benefits of being part of these clusters. Booking.com sees how proximity in Amsterdam encourages the exchange of ideas between government, research institutions and businesses. ASML attributes much of its success to close collaboration with companies in the Eindhoven region. A cluster's strength comes from the wider network of companies, knowledge and expertise around it.

” Thinking with the ecosystem in mind is what has made the ASML model unique: working with our suppliers, because we are system architects. We would not have been nearly as successful without them. *Amal Tourabi, ASML*

Each region can develop its own specialism in a technology field suited to its strengths. The Netherlands is large enough to support several clusters, yet small enough to keep them accessible and connected and to coordinate their development. Deputy Mayor Van der Horst points out that promising initiatives sometimes remain too small or too local to achieve sufficient scale and impact internationally. Connecting regional specialisms more closely and continuing to invest in established ecosystems can help individual clusters reinforce one another and create greater economic value together.

” Bringing people together works better than spreading them out. Talent is keen to come to Amsterdam, or at least to be associated with it. Other ecosystems show how proximity encourages connections and the exchange of ideas between people and networks. *Maurice Hoogeveen, Booking.com*

The next step is to take a more deliberate approach to systems thinking. Fernando Kuipers, Professor of Internet Science at TU Delft, stresses the importance of understanding the connections across the entire technology value chain. A clear understanding of how different technologies and applications interact will help the Netherlands make more informed choices about where it can stand out internationally. Bringing regional clusters and technological specialisms together as one ecosystem can further strengthen the country's international competitiveness.

11 [CBS: R&D expenditure exceeds € 18 billion in 2020, R&D expenditure exceeds € 18 billion in 2020](#)

Recommendations

The Netherlands has a strong foundation to build on. Strengthening that position requires clear choices by government, businesses and research institutions, and a coordinated approach to infrastructure, talent, capital, regulation and technological specialisation. The recommendations below focus on developing existing strengths, reducing vulnerabilities and creating better conditions for companies to grow and scale from the Netherlands:

1. **Build on the Netherlands' existing strengths:** Target public and private investment at areas where the country already holds a strong international position, such as digital infrastructure and semiconductors. Use focused policy, research and investment to encourage new businesses and applications around these strengths, increasing their contribution to future economic growth.
2. **Make strategic choices about where the Netherlands wants to lead:** Determine where the Netherlands wants to secure a leading position in the digital value chain. Use these choices to sharpen policy priorities and prevent resources from being spread too thinly.
3. **Invest now in the digital capacity the future will require:** Government and businesses should develop a shared long-term vision for computing power, network capacity and workforce needs. Use it to guide investment, permitting and spatial planning, and prevent capacity shortages from holding back future growth.
4. **Provide a stable and predictable business and investment environment:** Give companies sufficient certainty about regulation, permitting and access to essential resources, including digital infrastructure and spectrum. Make timely decisions on scarce resources based on their social and economic value, so businesses can plan long-term investments.
5. **Strengthen the Netherlands' role in a strong European market:** Put Dutch strengths to work in building Europe's technological capacity and scale. At the same time, remove barriers within the European single market and make it easier for companies based in the Netherlands to grow and scale across Europe.
6. **Focus investment on established ecosystems:** Pool more public and private resources in clusters that already bring together companies, research institutions and talent. Target investment at shared infrastructure and training, rather than spreading similar initiatives across many regions.
7. **Develop an international edge in promising niches:** Choose a limited number of applications where the Netherlands can combine its existing sector expertise with AI and other digital technologies. Bring government, research institutions and businesses together around these priorities to help successful applications reach international markets from the Netherlands.

INTERVIEWS



"The tech sector is increasingly becoming the engine of our economy."

Constantijn van Oranje, Envoy at Techleap, on the choices the Netherlands needs to make now to remain internationally competitive.

What exactly does Techleap do, and what is your role within the organisation?

Techleap primarily supports the Dutch tech sector, particularly start-ups and scale-ups. We do this by working with government and other stakeholders to improve policy, collecting data and addressing bottlenecks, and working directly with entrepreneurs who are ready to scale. Our organisation has reinvented itself several times over the years. We now have a public arm focused on deep tech and the wider ecosystem, funded by the Ministry of Economic Affairs and Climate Policy, alongside a privately funded community of around 500 companies. We have also recently established an AI hub and co-working space. As Managing Director, I try to keep sight of the wider landscape while staying focused on what matters, so we continue to have the greatest possible impact.

How competitive is the Netherlands in the digital economy?

I find the distinction between 'digital' and 'competitiveness' somewhat artificial these days: the two are inseparable. Our fixed and mobile network infrastructure is still good, including compared with other European countries. However, I see that development of our data centre sector has stalled while other countries are accelerating, mainly because of limited access to electricity. We produce interesting tech companies, but we do not occupy critical positions in AI software and large language models. On the hardware side, with ASML, BESIX, ASMi and companies such as Nearfield Industries, we are well positioned.

What level of ambition is needed to keep the Netherlands internationally competitive in the years ahead?

I certainly see that ambition, and I share it, but I think our government could act with greater focus and decisiveness. Make this an overarching priority, develop policy and implement it consistently. The tech sector is increasingly becoming the engine of our economy and will ultimately produce the innovations needed for tomorrow's healthcare, defence and social security. If you look narrowly through the lens of today's politics, you see that decisions, such as those in the debate about Box 3 taxation, are driven by the budget framework for 2026 rather than by structural growth or our ability to attract foreign businesses and investment. I think we risk driving away capital and talent, even though this is not fundamentally a budget problem.

What role does digital infrastructure play in this?

For me, this is the baseline: the foundation of the economy of the future. Connectivity, digital infrastructure and security are essential requirements, just like legal certainty or a stable democracy.

” The entire data centre sector faces criticism over energy consumption, and it is difficult to translate the abstract argument that we need more computing power into what that means for people in the Netherlands, not today, but tomorrow.

What is working well in the Netherlands' digital infrastructure today?

Our fixed and mobile networks are among Europe's best. We have historically strong internet infrastructure and, on the hardware side, ASML and companies such as Nearfield Industries and Accelera AI. So the basic conditions are in place. I would even say that AMS-IX gave us a very strong position, but I see that position starting to erode. The entire data centre sector faces criticism over energy consumption, and it is difficult to translate the abstract argument that we need more computing power into what that means for people in the Netherlands, not today, but tomorrow.

computing power into what that means for people in the Netherlands, not today, but tomorrow.**Where do you see the greatest need for improvement?**

For me, the central issue is electricity supply. Renewable energy is currently priced at the same level as fossil energy, even though it has the potential to be almost free. We need to move from expensive, scarce energy to cheap, abundant energy. Imagine what our economy could achieve with an abundant energy supply. And it is possible. That is why we need to electrify demand, in industry, mobility and hydrogen production, and continue investing in innovation in batteries, hydrogen, chips and data centre cooling. I also believe we need to make critical infrastructure and source code independent and protected, regardless of who happens to own them today.

What impact does AI have on our digital infrastructure?

We rely heavily on American and Chinese models, with Mistral as a European alternative. As long as that diversity exists, we are reasonably resilient. But if both major powers cut us off, we have neither the models nor the computing power to run our AI. We do not have our own sovereign European cloud either, and we should. What do you see as the biggest threats to the Netherlands' ability to remain internationally competitive? We lack areas where others depend on us: chokepoints such as the position ASML occupies in the chip supply chain, but in AI. As a result, we have little leverage if the Americans put pressure on us. We are also vulnerable because of our dependence on China for raw materials, particularly battery cells and the basic materials used in our energy and communications sectors.

And where do you see the greatest opportunities?

The Netherlands sometimes feels like a society that has reached its final destination: we have achieved almost everything we want. But that will not remain the case automatically. That is precisely why we need to deliberately create room again: simplify rules, be willing to take risks and accept mistakes. This requires a clear long-term vision, implemented consistently, with business treated as a partner rather than a villain. We also need to invest in people and skills. We must remove barriers to growth for entrepreneurs, such as the obligation to continue paying wages for two years when an employee is ill. That is too heavy a burden for start-ups and small businesses.

Which bottlenecks need to be addressed to seize these opportunities, and what role should government play?

Start-ups should be seen as an integral part of industrial policy, rather than a side issue within 'entrepreneurship'. I would like government itself to become a demanding, consistent customer of scale-ups. At the moment,

Techleap is constantly asking questions of government. I would much rather see government come to us with a clear request and ask us to deliver.

If you could give the State Secretary or European Commissioner one urgent piece of advice, what would it be?

My advice would be consistency, translated into three concrete steps: finance AI infrastructure privately wherever possible, while facilitating it through permits; tackle grid congestion and electricity shortages at their root; and let government lead the way in digital working and the use of AI.

What can we do to strengthen the Netherlands' digital economy, and what kind of coalition is needed?

I think we first need to know what we want ourselves, and then take that agenda to Europe. At present, our own positions are inconsistent: we advocate budget discipline while wanting to invest more in defence and infrastructure; we receive a relatively large share of European research funding while also seeking to cut it. We risk remaining focused on supply, whereas China has mainly stimulated demand through the electrification of industry and mobility. As a result, its renewable energy sector is now growing faster than ours. A cheaper green energy base for our companies would certainly be valuable and would make us less dependent.

A portrait of Martijn Snoep, a middle-aged man with dark hair, wearing a dark suit, white shirt, and dark tie. He is looking directly at the camera with a slight smile. The background is blurred, showing vertical lines in shades of blue and red.

"Full digital independence is neither achievable nor desirable."

Martijn Snoep, Chair of the Netherlands Authority for Consumers and Markets, on digital dependence and what the Netherlands needs to do to remain internationally competitive.

Organisation and role: ACM is a regulator with a broad remit, overseeing the effective functioning of almost all markets in the Netherlands, working with other regulators where their responsibilities overlap. Much market supervision is coordinated or harmonised at European level. ACM therefore works closely with the European Commission and national regulators in other EU Member States, largely applying the same rules. The organisation has around 900 employees.

How competitive is the Netherlands in the digital economy?

I see a mixed picture, depending on which level you look at. At the infrastructure level, the Netherlands is in a strong position. A nationwide cable network developed early on alongside the fixed network of former state monopoly PTT, giving us two fixed networks that increasingly competed with each other. The Netherlands also encouraged a competitive mobile market early on, partly through sound government policy, partly through regulatory oversight and partly through companies' own investments.

The picture is less positive when it comes to digital services. Many digital services, including cloud and key IT services, are delivered over Dutch infrastructure by foreign, mainly American, companies that face little competition from one another.

The Netherlands leads in the use of new digital services, thanks to a highly educated population comfortable with English, an attractive tax environment and curiosity about new technology. It is much less prominent in developing and providing those services.

A small, open economy under pressure to buy as cheaply as possible mainly benefits American providers, which enjoy economies of scale, professionalism and innovative strength. Bol is a striking exception: something of a small European village holding out against Amazon, like the one in Asterix. Bertelsmann established Bol early on as an online bookshop,

and Ahold has developed it into a marketplace since 2012. Alongside Poland, the Netherlands is one of the few countries with a company able to compete seriously with Amazon.

What level of ambition is needed to keep the Netherlands internationally competitive in the years ahead?

We see ourselves as a kind of plumber: we constantly examine markets and, where something is not working properly, take a tool from our toolbox to improve how they function or prevent deterioration. We do not drive innovation ourselves, but we help preserve the conditions for sufficient innovation, open markets and competition, while keeping an eye on possible negative effects.

” For me, digital infrastructure is the absolute foundation: without it, no digital service is possible.

We prefer to see ourselves as a steward of the market rather than a police officer. We make sure the market remains attractive and transparent, and that everyone has a chance to establish themselves without one player crowding out the rest. Our toolkit is broad and goes beyond fines. We also advise government, talk to market participants, bring parties together and conduct research to understand how markets work and inform society about them. Sometimes people think a market is not functioning well when it is doing better than they realise, and sometimes the reverse is true.

How would you assess the quality of the Netherlands' digital infrastructure?

Overall, it is good. We have little to complain about, but it needs constant attention. Duplicating infrastructure is possible and creates necessary competition, but given the enormous economies of scale, it is unrealistic to aim for many parallel networks. There will always be relatively few providers.

That creates a delicate balance. To maintain sufficient competition between infrastructure providers, for example, we blocked the acquisition of Delta's fibre activities by KPN, which already had a strong position, specifically some of the activities outside Delta's home market in the south-west of the Netherlands.

Because market forces alone do not generate enough competitive pressure here, with few players and high barriers to entry, this will probably remain a regulated sector. However, regulation must be proportionate to its purpose: preserving competition and protecting consumers. We must avoid regulation stifling competition instead.

We try to be a predictable regulator, making clear what we look at and how we reason. We work with a horizon of around three to five years, deliberately taking a cautious approach, because forecasts further into the future often turn out to be wrong, even those made by the best specialists.

That can create tension with companies making substantial long-term investments. An incorrect long-term assessment by a regulator carries a risk for society, whereas a company's incorrect investment decision primarily carries a financial risk for its investors.

I believe independent market supervision, a European requirement, also benefits companies because it prevents politically motivated favouritism towards certain businesses, as happens in some countries outside Europe. Imagine being a company that falls out of favour with the political leadership.

What is working well in the Netherlands' digital infrastructure today?

What works particularly well, in my view, is competition and real freedom of choice, which drive innovation. Without competitive pressure from cable, KPN might have had less incentive to accelerate the switch from copper to fibre. It is now doing so precisely to avoid falling behind cable. Conversely, Ziggo is continuing to develop its offering to compete with KPN. Some countries envy this.

Where do you see the greatest need for improvement?

I deliberately do not want to give a definitive judgement here, because nobody knows exactly what the world will look like in five to ten years. What needs to improve, therefore, is our ability to remain flexible and respond quickly to change. We gather companies' own views and then try to find common ground, or support infrastructure development that keeps as many future scenarios open as possible. We deliberately act later in the process than the companies themselves, which know their markets better.

I do notice that digital infrastructure is increasingly described as 'strategic' or 'critical'. Our own role does not change substantially as a result: infrastructure remains essentially organised nationally, even as it becomes more closely connected with European infrastructure. After all, retail customers want their own language, preferences, discount schemes and offers. In digital services, however, digital autonomy and sovereignty are important priorities for us. We recently published a joint paper with De Nederlandsche Bank and several other regulators (see the box above), expressing concerns about dependence on service providers and calling on the market to identify rules that obstruct the development of European or Dutch digital services. An earlier roundtable on this issue produced few concrete examples. So the question is whether the rules really are the problem, as is sometimes suggested.

What impact does AI have on our digital infrastructure?

I mainly see AI as a digital service delivered over infrastructure. It increases the importance of digital services in all production processes, and infrastructure must be able to support that. I find the questions about the services themselves more important: who provides AI services, to whom, which rules apply, and what happens if a provider from another country is prohibited from delivering them? These questions were still hypothetical ten years ago, but no longer are. One interesting current development is STACKIT's initiative with KPN to bring German cloud services to the Dutch market, alongside the fact that KPN once withdrew from IT services and is now returning to them. I see these strategic choices by market participants as an encouraging example of competition at work.

What do you see as the biggest threats to the Netherlands' ability to remain internationally competitive?

For me, the central issue is excessive dependence. Full independence is neither achievable nor desirable. It would run counter to every economic principle. But somewhat less dependence would be beneficial, especially for essential digital services. The Netherlands needs to become more resilient to coercion so that essential societal processes can continue even when service providers face sanctions. I think policymakers should focus on three things: an attractive investment and business environment, with access to capital, labour and good education; removing outdated rules that obstruct innovation; and a more strategic procurement role for government as a major buyer of digital services. As a 'launch customer', government can afford to take more risks than a commercial buyer, provided it is transparent.

For example, each year we publish an overview of rules that could be scrapped and actively ask companies about bottlenecks. But I see fewer results and less action than I had expected. I consider that harmful to the market, because it undermines the legitimacy of the rules that remain.

In practice, government makes too little use of this scope to act as a strategic buyer because of a culture of purchasing as cheaply as possible.

And where do you see the greatest opportunities?

Here I am speaking more as a citizen than as Chair of ACM. I believe the greatest opportunities lie in digital and other advanced technologies. Structurally, the Netherlands is a small, highly educated and largely urbanised country, making it particularly well suited to digital and advanced technology services in the broadest sense, and the related business services. Good digital infrastructure is a basic requirement for that.

Which bottlenecks need to be addressed to seize these opportunities, and what role should government play?

For me, this largely comes back to the three points I mentioned earlier: create an attractive legal framework for investment, remove outdated rules and give government a more strategic role as a major launch customer for digital and other services.

If you could give the State Secretary or European Commissioner one urgent piece of advice, what would it be?

I would offer two pieces of advice, one for each role.

To the State Secretary for the Digital Economy at the Ministry of Economic Affairs and Climate Policy, I would say: do everything you can to stimulate the digital economy, but do not forget to bring people along. If part of the population does not keep pace with digital developments, a social divide will emerge that could ultimately undermine investments. Alongside supply, traditionally the main focus of the Ministry of Economic Affairs, demand also needs attention, including through education and safeguarding consumer interests. We see a large group of people with limited digital skills who do not want to be helped through an app. That gap needs to be bridged. Otherwise, people may disengage and embrace populist parties promising a return to the good old days of paper.

To the European Commissioner, I would say: think European, keep Europe together, including digitally, and ensure the European single market works well. In my view, the challenge is to balance understandable national identity and pride with the need to develop a European identity alongside them. Europeans should be just as proud of a 'European champion' as of a national one. Politically, however, it is natural to focus on national interests: people tend to look after their own first. We need a counterweight to that at both national and European level.

What can we do to strengthen the Netherlands' digital economy, and what kind of coalition is needed?

I certainly see opportunities. Concrete examples include cooperation with other national regulators, as in the joint paper on digital dependence, and with the European Commission, including through joint investigation teams. I expect this share of our supervisory work to keep growing.

More broadly, rather than as a formal coalition, it is about how we position ourselves. We deliberately do not call ourselves a 'police officer' or a 'cartel watchdog', but operate with an open door. We invite companies facing difficulties to tell us about them. We then listen and see whether we can resolve the issue where doing so is in the public interest.

We are always guided by the facts. If the facts change, our position changes too. In my view, coalitions are not about pretending that interests always align, because they often do not. They are about finding a shared solution from different starting points.

The reason I do this work is to improve the economy. Our mission is to make markets work well for all people and businesses. We may be called the Authority for Consumers and Markets, but we are here for businesses as well as consumers.



"In the Netherlands,
we believe in building
profitable, sustainable
businesses."

Clare Jones, CEO of Polarsteps, knows from experience what the Netherlands needs to help tech companies grow internationally.

What exactly does Polarsteps do, and what is your role?

Polarsteps is an all-in-one travel app. More than 22 million travellers worldwide use it to share, plan, track and relive their adventures. We have a team of 100 people from all over the world and our headquarters are in Amsterdam. As CEO, my job is to enable this wonderful team to build an app that people truly love and enjoy using. As a company, we want to expand internationally while staying true to who we are.

How competitive is the Netherlands?

We have grown Polarsteps from Amsterdam into a company with millions of users around the world, and the Dutch environment has played a major part in that. The talent pool is incredible, the infrastructure works well and tech companies share a distinctive and strong culture of collaboration. You do not find that everywhere. There are tech events every week, and the tech ecosystem is open and welcoming, allowing us to learn from one another. In the Netherlands, we also believe in building profitable, sustainable businesses rather than relying on venture capital and blitzscaling. I am therefore very grateful for this warm, supportive Dutch tech ecosystem.

What level of ambition is needed to keep the Netherlands internationally competitive in the years ahead?

I am a strong advocate for European tech, particularly consumer products. We want the Netherlands to keep producing globally leading tech companies, and that requires a few things. First, more growth capital, especially for consumer-focused start-ups. Second, better financial incentives through employee equity, so people are properly rewarded for the risk they take by joining an early-stage company. Third, we need to preserve the scheme that allows employers to pay up to 30% of gross salary tax-free to certain overseas employees with scarce specialist expertise. This '30% ruling' is one of the reasons we have been able to build such a strong international team here in Amsterdam.

What role do digital infrastructure and connectivity play in Polarsteps' day-to-day work?

They are hugely important to us for two reasons. First, Polarsteps operates a hybrid working model, and our team members often work from home or are travelling themselves. Working in the cloud means we can do our jobs from almost anywhere. Second, they are essential to the product itself. The app needs to work reliably for millions of travellers at the same time, wherever they are in the world. That means a stable app people can trust, even when they venture off the beaten track, and digital infrastructure that can handle all their stories, photos and videos, so they never lose the memories of a journey that matters to them.

What is working well in the Netherlands' digital infrastructure today?

From our perspective, the Netherlands' infrastructure is very solid. In fact, it is one of the fundamental reasons Amsterdam works so well for a company like Polarsteps. The internet and mobile networks are reliable, which is extremely important to us. Much of what we develop depends on people being able to connect and synchronise their data wherever they are. There are also many other Dutch companies developing software and infrastructure that support the ecosystem.

” We need to take bigger risks so we can build here in Europe and retain control rather than losing it to the US.

What do you see as the biggest threats to the Netherlands' ability to remain internationally competitive?

I think one of the biggest threats is a lack of capital, particularly the shortage of growth capital for consumer-focused start-ups and scale-ups. If we do not address that, preserve measures such as the 30% ruling and create better financial incentives, we risk losing founders and talent to other countries. We need to take bigger risks so we can build here in Europe and retain control rather than losing it to the US.

We also need to create a more supportive regulatory environment for smaller companies. Regulation exists for good reasons, but the legal support needed to comply is extremely expensive for small businesses, particularly because rules are often designed with large companies in mind. There must be ways to help small businesses and scale-ups, for example through exemptions from certain rules or free compliance support, so they can meet their obligations while still investing in growth and their teams.

And where do you see the greatest opportunities?

Amsterdam is exactly where I would want to build a billion-dollar consumer business. It is a city full of passionate people determined to achieve great things, with a government that encourages international professionals to work at leading tech companies. Amsterdam is safe and healthy, and it is a major city where much of the future is taking shape. We need to keep investing to ensure it stays that way.

Which bottlenecks need to be addressed to seize these opportunities, and what role should government play?

Government could provide more support for investment by backing initiatives that bring capital to the Netherlands and creating an investment climate that encourages international investors to commit capital here. It should also do more to support start-ups and scale-ups so they can comply with regulations without placing a heavy burden on small teams' time and budgets.

To seize these opportunities, we need continued collaboration between the public and private sectors. Techleap and Prosus are good examples: they are committed to building and strengthening a thriving environment for start-ups and scale-ups here. We have a large pipeline of promising tech companies. Let us make sure they get what they need to flourish. And let us continue to cherish what makes the Netherlands such a wonderful place to work: strong protections, investment in public and community life, a welcoming environment for people from other countries, and much more.

A close-up portrait of Hilde van der Meer, a woman with curly brown hair, looking slightly off-camera with a thoughtful expression. She is wearing a light-colored top and a necklace.

"For such a small country, our position in the world is remarkably strong."

Hilde van der Meer, Commissioner of the Netherlands Foreign Investment Agency, emphasises the importance of maintaining an outward-looking approach.

Could you briefly describe your organisation and your role?

The Netherlands Foreign Investment Agency (NFIA) is an executive agency of the Ministry of Economic Affairs and Climate Policy, jointly overseen by the Ministry of Foreign Affairs. NFIA has been operating for almost fifty years and has 25 offices abroad, often based in embassies and consulates. Our people actively seek out companies we would like to attract to the Netherlands. We therefore make a deliberate decision in advance about whether to work with a company, looking specifically for businesses that complement and strengthen our economy. That reflects our approach: a small country with big ambitions, an attractive business environment and a clear view of future development. We help new companies establish themselves in the Netherlands, but retaining the 18,000 foreign companies already here and helping them expand is at least as important. We do this alongside regional development agencies, major cities and NDL through the Invest in Holland network: a well-coordinated ecosystem that has proved its value over the years. We want to preserve and strengthen the Netherlands' strong starting position.

How would you assess the Netherlands' current digital competitiveness?

When you look at the Netherlands, some things are of course not going as well as they used to. But I do not feel that our digital competitiveness is weaker than a few years ago. It remains an important draw for foreign companies. That is down both to the systems we have in place and to how Dutch people use them: we are quite tech-savvy. And this is no longer relevant only to IT and tech companies. Sectors such as life sciences and health, and agrifood, also have an essential need for good digital infrastructure. Innovative new companies now routinely include digital infrastructure among their investment criteria. It has become a real enabler for us, and right now it is in very good shape in the Netherlands. That does not mean we can stop working on it.

What are your ambitions for keeping the Netherlands digitally competitive?

Digital technology is now woven into our assessment of which companies are relevant to attract, simply because it is clearly embedded in government's long-term policy. You need a digital foundation to remain competitive and develop the ecosystems we want to build. In practical terms, we select a number of subsectors within the digital domain and proactively search worldwide for companies with capabilities we do not yet have here: businesses that help solve a problem, fill a gap in an ecosystem, accelerate progress or contribute to European digital sovereignty. Behind this is a conviction that the Netherlands should not try to do everything itself. We are too small, and too much is happening around the world. Take the AI Factory now being developed in Groningen: it will grow faster and become larger if you actively build connections with organisations from abroad than if you try to fill it solely with Dutch initiatives. Of course, we would also love to create our own next ASML or Booking, but that cannot be our only ambition. Between 20 and 30% of our economy already depends on foreign companies. As a small country, we cannot afford to turn inward, so we will keep looking outward.

What role do digital infrastructure and connectivity play in your organisation's day-to-day work?

Digital infrastructure is part of our daily work. The foreign companies we attract now assess it just as routinely as tax arrangements or the labour market. When we promote the Netherlands, for example, we highlight Amsterdam's role as a major internet hub, our data centre capacity, low latency and high security of energy supply. Each of these carries significant weight in companies' investment decisions.

How would you assess the quality of the Netherlands' digital infrastructure, and what is working well today?

Our digital infrastructure is still excellent. It is under pressure, but foreign companies still see Amsterdam's major internet hub, substantial data centre capacity, low latency and high security of energy supply. These are important investment criteria. The pressure mainly concerns the future: some of the subsea cables connecting to the Netherlands are becoming obsolete and need replacing, and growing data volumes mean we need additional cables too. That requires investment. Energy itself is not really the problem, because we generate enough, but the grid is not yet ready for the future. This is a serious bottleneck that, fortunately, is now widely recognised and, more importantly, is being tackled with determination and creativity.

What could or should be improved in the Netherlands' digital and other infrastructure?

Permitting processes in the Netherlands simply take too long, whether for data centres, telecom masts or cables. Compared with other countries, that is a real disadvantage. We see it in our day-to-day work: major investment projects take an enormous amount of time to secure grid connections, especially now that new waiting-list rules mean businesses no longer have priority unless they can ease pressure on the grid by reducing peak loads. At the same time, I see a typically Dutch ability to adapt. Three years ago, we had little idea what we could do about this; now promising intermediary companies are emerging with battery and gas turbine solutions that effectively take over the problem for businesses.

What impact do you think the rise of AI has on digital infrastructure?

AI is so important that it is setting all kinds of developments in motion, such as the AI Coalition. But it also brings challenges for which we do not yet have all the answers, from electricity consumption to sovereignty and protecting individuals. We listen carefully to the ministries that commission our work, which consider the Netherlands' social and economic challenges. We translate that into a search for companies offering suitable solutions. Companies with general-purpose AI solutions are not yet looking particularly closely at the Netherlands, but there are many opportunities in niche areas, such as AI in healthcare and life sciences. One thing that strikes me is that the Netherlands is well positioned in AI ethics and data privacy. Some foreign companies are concerned about the European legislation coming their way, but if you comply with European rules, you are almost automatically compliant elsewhere in the world too. So it offers opportunities as well. More broadly, I see sovereignty and resilience becoming increasingly decisive factors for established companies. They closely follow European decisions and what those mean for their position. We therefore see ourselves very much as part of Europe.

What do you see as the biggest threats to the Netherlands' ability to remain internationally competitive?

For such a small country, our position in the world is remarkably strong, but that also makes us vulnerable. We are a crucial hub, and if something deeply troubling happens somewhere in the world, our position immediately draws us into it. That can be highly disruptive. We also need to get the basics, such as electricity, in order quickly, and lengthy permitting processes

are a real problem. Talent remains a concern too: there is a shortage of people with the right skills, partly addressed in recent years by people moving here from abroad and international students staying after graduation. That contribution receives little attention, while companies often tell us that the situation elsewhere is even more difficult than it is here.

Where do you see the greatest opportunities for the Netherlands to remain internationally competitive?

Right now, the global map of new AI hubs is being drawn. We should not try to compete with the major big tech AI providers, but look for niches where we can excel, such as digital healthcare, where the Netherlands is a global leader. We are still a digital gateway to Europe, and we can develop that into a secure digital gateway. We have a major cybersecurity cluster in The Hague and a large tech cluster in Eindhoven, where more and more cybersecurity solutions linked to chips and devices are being developed. That combination offers real opportunities.

” However important we may think we are, we are really only a ladybird.

What should the Netherlands do to seize these opportunities and prevent these threats? What role do you see for government?

We cannot replicate everything big tech does in Europe, so we need to make smart choices and focus on our own niches to remain relevant in a geopolitically turbulent world. For government, the main thing is to actually make those choices and stick to them, for example by focusing on the key technologies in the National Technology Strategy. And do not be afraid of dependencies: you simply cannot do everything yourself.

If you could give the State Secretary or European Commissioner responsible for digitalisation one urgent piece of advice, what would it be?

However important we may think we are, we are really only a ladybird. We want other countries to depend on the Netherlands, and that is only possible if we accept that we too will remain dependent on other countries. This is the basis of the Netherlands' economic model. We should recognise it, embrace it, communicate it and strengthen it.

Do you see opportunities to work in a coalition to strengthen the digital economy?

Certainly, in several areas. We participate in the Subsea Cable Coalition, whose task is to bring new subsea cables to the Netherlands, and work closely within the HSD security cluster on cybersecurity. We also engage with ecosystems throughout the Netherlands, from Wageningen to Brainport, and valuable hubs such as the Energy Hub in Arnhem and the WaterCampus in Leeuwarden, to identify missing companies and then find them around the world. I think this public-private cooperation and ecosystem approach are among the Netherlands' major strengths, particularly as we are constantly both competing and collaborating with other European countries that also have strong clusters. Our scale helps: the Netherlands is small and easy to navigate, and cooperation has been part of our culture ever since we set out to keep water out of the polders.



"Mutual dependence is fine, as long as it comes from a position of strength."

Amal Tourabi, Head of Government Affairs at ASML, on strengthening the entire semiconductor value chain, the impact of AI and the position of the Netherlands and Europe in global supply chains.

Could you briefly describe your organisation and your role?

I am Head of Government Affairs for ASML in the Netherlands. We maintain relationships with policymakers in The Hague. But Government Affairs at ASML is not solely a Dutch matter, even though our headquarters are here. We are a global team, with colleagues in Brussels and Berlin, Washington, D.C., and increasingly in Asia. Our team coordinates closely, because our Dutch priorities naturally intersect with developments in Europe, and vice versa. Frank Heemskerk, who oversees the overall function as Executive Vice President of Public Affairs and Country Manager for the Netherlands, is also responsible for community engagement. We recognise that our growth affects the region, so we invest a fixed amount per employee in the communities around us, through a range of projects, including housing, education, sport and culture.

” The point is for Europe, with more momentum than ever, to take steps from a strong position.

How would you assess the Netherlands' current digital competitiveness?

I would like to broaden that question to include Europe, because the two are closely connected. Politicians in both the Netherlands and Europe now recognise the urgency: this is an extremely important issue for the coming years. That awareness is positive, but further steps are still needed. Looking at our high-tech competitiveness, which includes digitalisation, there are a few sectors where we are very strong, such as semiconductors, our own sector. We have skilled, talented employees. The quality of that talent in the Netherlands and Europe is high, including compared with Asia and the US. Availability remains a challenge, though, so we must keep the door open to talent and experts from abroad. It is a fragile system that benefits from consistency and predictability. Our international colleagues in particular tell us that stable policy, through the highly skilled migrant scheme, makes coming here attractive because they know what to expect.

What are your ambitions for keeping the Netherlands digitally competitive?

Talent quality and knowledge development in the Netherlands and Europe are holding steady. But if you look further along the chain, at chip design, manufacturing and applications, Europe simply does not perform well enough. We believe you need to invest across the entire value chain to remain competitive in the future. Europe represents a substantial share of global consumer demand and is therefore an important market, but much of the value flows elsewhere because we mainly buy rather than develop and produce ourselves. That is why we established the Tech Creators Coalition, bringing together aerospace and defence companies, the automotive sector, AI businesses, and telecoms and electronics companies to determine what that European stack should look like. This should lead to a partnership with government, in which industry is willing to invest and government, in the Netherlands, the EU and other Member States, creates and maintains the conditions needed to generate momentum. We are investing a great deal of our own time in this. It does not mean we want to put a fence around Europe: our partners in Asia and the US remain incredibly important, and neither can do without the other. The point is for Europe, with more momentum than ever, to take steps from a strong position. Mutual dependence is fine, as long as it comes from a position of strength.

How would you assess the quality of the Netherlands' digital and other infrastructure, and what is working well today?

For us, it is now possible to deliver our growth plans in the Netherlands. I think there are many lessons to learn from the Beethoven programme and other sectors about how to make progress despite constraints such as grid congestion and nitrogen emissions. We are noticing that the urgency is now genuinely recognised. The new government policy gives sectors clearer priority, and real choices are being made, both in the Netherlands and in Europe. Now it is time to implement and build on them.

What could or should be improved in the digital and other infrastructure of the Netherlands and Europe?

The concern is the ability to act decisively: too little is actually being done. Grid congestion, nitrogen restrictions and permitting affect everything, from talent policy to building new sites. We have not handled grid congestion particularly well in recent years, nor nitrogen emissions. I am optimistic that we can learn from that, but we need to address these issues in time. We also need to make the Netherlands and Europe attractive places for industrial companies to invest. That is only possible through a demand-led approach, supported by the right government conditions. Digital and other infrastructure must then respond to that demand and those needs, in that order.

What impact do you think the rise of AI has on digital infrastructure?

AI is the game changer: it affects everything. Robust digital infrastructure that meets future demand is crucial. AI will at least double the size of the semiconductor sector within a few years, and that will also shape Europe's competitive position. For us, there are two sides to this. We use AI ourselves to make production more efficient and improve our products for customers. At the same time, AI will drive demand in our sector in the years ahead. That is also Europe's challenge: we need legislation and regulation that keep pace and allow European businesses to compete.

What do you see as the biggest threats to the Netherlands' ability to remain internationally competitive?

Constant political changes create uncertainty, and that is a major risk. Large projects require long-term vision and planning. At ASML, we also work with ten- to fifteen-year horizons. The business environment here is most attractive when companies know how they can grow over the coming decades and deliver major projects on that basis. The highly skilled migrant scheme has already changed six times in recent years. Debates about issues such as Box 3 taxation or the innovation box tax regime create the same kind of uncertainty. So we need industrial policy that is both stable and strategic, including access to capital, innovation support instruments, a well-functioning European single market and efficient permitting.

Where do you see the greatest opportunities for the Netherlands to remain internationally competitive?

That is the glass-half-full perspective: the presence of certain sectors and companies in the Netherlands, and simply the fact that the Netherlands is an attractive place to do business in today's world. The geopolitical landscape is shifting rapidly, and the Netherlands and Europe potentially occupy an interesting position within it. Europe accounts for a very small share of ASML's sales, less than 1%. Our largest market is Asia, followed by the US. The sector's anticipated growth therefore offers enormous opportunities for this region, provided the right conditions are created and Europe acts on them together.

What should the Netherlands do to seize these opportunities and prevent these threats? What role do you see for government?

I think the urgency needs to be high enough to make this a priority at the very top of government. That does not mean individual ministers have no important role, but clear leadership is essential, as is close cooperation with business. This need for top-level ownership applies to the European Commission as well as Member States. Von der Leyen is personally involved and has appointed an Industrial AI Envoy to work on that strategy and concrete accelerator projects.

If you could give the State Secretary or European Commissioner responsible for digitalisation one urgent piece of advice, what would it be?

Make sure all legislation and regulation fit together. For us, for example, the Chips Act is only a small part of the picture. The AI Act and tax legislation are just as important. The whole package needs to be coherent. Really, you should want to call it an 'Ecosystem Act'.

Do you see opportunities to work in a coalition to strengthen the digital economy?

Certainly. ASML is open to working with the wider ecosystem, and we already do so with all kinds of companies across different sectors. The most obvious area is informing policymakers and politicians. If we need to explain an important issue in The Hague, we always seek cooperation with other companies, for example those with intensive R&D activities, or with industry associations. It is particularly powerful to explain an issue to politicians from the perspectives of telecoms, semiconductors and aerospace at the same time.

What would your organisation like to do with VodafoneZiggo in this context?

Technological competitiveness is an issue we both care deeply about. That makes it particularly important to reinforce each other's messages. VodafoneZiggo's interview series and whitepaper are a good example of how we can work together.

A portrait of Maurice Hoogeveen, a middle-aged man with short brown hair and a light beard, smiling. He is wearing a dark green turtleneck sweater. The background is a blurred indoor setting with warm lighting and some greenery on the right.

"We need to be able to develop faster than our competitors."

Maurice Hoogeveen, Head of Public Affairs for the Netherlands at Booking, calls for greater predictability and more targeted investment in the Dutch tech environment.

Could you briefly describe your organisation and your role?

Booking.com is a tech company that started in the Netherlands and remains largely Dutch. Our headquarters are in Amsterdam, where around 6,500 people work, more than half our global workforce. By employee numbers, we are the largest company in Amsterdam within the ring road. Alongside Spotify, Booking.com is one of Europe's larger tech success stories: a leader in our market, although not dominant. I focus on the Netherlands, our headquarters market. That brings different questions from those we face elsewhere, which fit well with this interview series, because we are truly part of the Dutch ecosystem. Much of the leadership is based here too: our CEO divides his time between New York and Amsterdam, and our Global Head of Public Affairs and European Director are also here.

” Telecoms are a bit like tap water: you only complain when they stop working.

How would you assess the Netherlands' current digital competitiveness?

I mainly look at it through the lens of Amsterdam's tech ecosystem, from the smallest start-up with two or three people to Booking.com and everything in between. We compete not only in our own market, with the Airbnbs of this world, but just as much for talent. Alongside Eindhoven, Amsterdam is one of the Netherlands' talent magnets. Overall, the Netherlands is doing quite well, but we will gradually lose ground unless we act. International comparisons, such as those by Dealroom, ranked Amsterdam third in Europe a few years ago; it is now around seventh. That means less investment in start-ups and scale-ups, limiting their ability to grow and potentially affecting talent and the business environment. So we should not take today's well-functioning ecosystem, with impressive companies such as Booking.com and Adyen, for granted in the future, especially in the age of AI.

What are your ambitions for keeping the Netherlands digitally competitive?

We certainly want to contribute. Part of that is the natural ability of our country and company to attract people. Between 70 and 80% of the people we recruit for purely technical roles come from outside the Netherlands. Of those international employees who later leave Booking.com, around 70% stay here and move to other tech companies, start-ups and scale-ups, including in management roles, bringing experience of scaling at a large tech company. A recent report found that Booking.com, as the largest player, was linked to the most founders of new Amsterdam start-ups: 88, compared with 66 for Adyen. That is a natural contribution we make by being based here and attracting talent, and we will keep doing it. It works both ways, too: those start-ups and scale-ups bring dynamism and innovation. In theory, we could move elsewhere if another ecosystem were better, but that is not what we want. We opened a new headquarters here relatively recently, invested heavily, and our people live here. In practical terms, we invest in AI research with the University of Amsterdam, for example, and work with the Amsterdam Economic Board and the city government on what else is needed to strengthen Amsterdam.

What role do digital infrastructure and connectivity play in your organisation's day-to-day work?

Fundamentally, they are very important, of course, but they work so well that we hardly discuss them. Telecoms are a bit like tap water: you only complain when they stop working. We have no physical product. Everything is in the cloud, and you simply need to be able to carry out your digital activities. If the Dutch telecom network unexpectedly went down, I think our platform could largely keep running. But once billing and other processes operated from the Netherlands stopped working, things would quickly become complicated. So, just as with water and electricity, we need to look ahead to future demand and make sure now that we will be able to meet it.

How would you assess the quality of the Netherlands' digital infrastructure, and what is working well today?

Our mobile networks are among the best in the world, and I believe our fixed networks are too. The Netherlands has organised that very well.

What could or should be improved in the Netherlands' digital infrastructure?

Data centres are an interesting question for the future, although they are not directly relevant to us. Still, they have to be located somewhere, so they matter for infrastructure overall. AI requires good connections, but also computing power nearby, and I think we could use more of that. It is not directly necessary for Booking.com's own operations, but it is for the ecosystem around us. If you want that ecosystem to remain strong, you need to keep investing; otherwise it will lose ground.

What impact do you think the rise of AI has on digital infrastructure?

Tomorrow's infrastructure will need to process the enormous volumes of data AI generates and will continue to generate. In practical terms, AI is incredibly important to our productivity. Almost everyone now uses AI tools, from coding to my own public affairs work. We need to be able to develop faster than our competitors, and we want only the best AI solutions ourselves. Booking.com was one of the first partners within ChatGPT: when you make a booking there, it goes through Booking.com. We are also developing our own platform so that the same AI functionality will become available there. That does not mean we are immune to the wider debate about whether booking platforms will still be needed if everything can be done through an AI assistant. Our position is that travel remains a complex puzzle involving many partners, such as hotels. Our specialist expertise gives us an advantage that general-purpose AI platforms will not easily match, but it keeps us focused on remaining the best.

What do you see as the biggest threats to the Netherlands' ability to remain internationally competitive?

It is less about any one specific scheme and more about consistency: predictability and stability. What we have seen in recent years with the expat scheme, and earlier with the innovation box tax regime, makes long-term investment very difficult if you do not know whether conditions will be the same in a few years. What you really hope for is that politicians maintain a stable baseline and broad policy direction. Then everyone knows where they stand and can innovate. You can make all kinds of additional investments, but it starts with a stable, predictable foundation. Frequent policy changes make that foundation vulnerable. To some extent, this is inherent in politics: it naturally tends to shift towards what appeals to today's voters, which is a different force from what an ecosystem needs over the long term.

Where do you see the greatest opportunities for the Netherlands to remain internationally competitive?

Amsterdam is currently the Netherlands' strongest AI hub, supported by our company and other tech businesses, universities and start-ups. We need to tell that story better, although the Ministry of Economic Affairs and Climate Policy generally understands it. My point is that if you want to reverse the decline in international rankings, it makes sense to direct AI investments towards the ecosystem where things are already happening, rather than spreading them around.

Other approaches have also been discussed, such as a more academically focused AI institute or earlier plans for AI factories in Groningen. From an ecosystem perspective, these are not particularly logical, because they place a facility far from where the talent already is. Concentrating resources works better than spreading them out. Talent is keen to come to Amsterdam, or at least to be associated with it, and other ecosystems show that proximity encourages the exchange of ideas between people and networks. That effect is local to regional, even in a small country such as the Netherlands. Booking.com itself was founded in Enschede, incidentally, so this is no criticism of other places. But understanding how an ecosystem works allows you to invest more intelligently.

What should the Netherlands do to seize these opportunities and prevent these threats? What role do you see for government?

First, ensure a stable tax framework. Then invest intelligently in the ecosystem by concentrating resources rather than spreading them out. I also see that understanding of how such an ecosystem works is not yet widespread enough.

In Eindhoven, you could wake people in the middle of the night and they would be able to explain exactly how Brainport fits together. It is somewhat different for Amsterdam's digital tech ecosystem, with companies such as Booking.com, Adyen and Just Eat Takeaway and all the start-ups around them. I think that is also harder for a city like Amsterdam. It is very diverse, with ten other sectors arguing just as strongly, and rightly, that they matter. That makes it harder to make clear choices.

A company such as ASML is also easy to explain: a large factory and highly skilled technical talent. With a digital ecosystem, you more often have to go back to basics to explain the story, and there is no industry association telling it for the sector as a whole, as there is in hardware technology.

If you could give the State Secretary or European Commissioner responsible for digitalisation one urgent piece of advice, what would it be?

If I could offer one piece of advice, it would be to ensure stability and predictability in tax arrangements for tech. That is the foundation. Only then can you make further smart investments in the ecosystem.

Do you see opportunities to work in a coalition to strengthen the digital economy?

We work with others in various ways, formally and informally. For example, we are a member of VNO-NCW, which addresses much of the tax agenda, beyond tech alone. There is also an annual R&D Top 50 ranking. Last year, we ranked third, alongside companies such as Philips. We work with that group of R&D companies too, asking what we need to move the Netherlands forward. These coalitions are often informal, as they are on issues such as Box 3 taxation, but generally work well.

The Amsterdam Economic Board is also a platform that brings companies and the city government together. In recent years, it has increased its focus on tech and AI across the wider Amsterdam area, which we naturally welcome.

What would your organisation like to do with VodafoneZiggo in this context?

Talent could be one point of connection. If VodafoneZiggo, like us, employs a great deal of international talent because it is also a technical company, we ultimately both operate in the digital domain and share an interest in strengthening it together.

A portrait of Coen van Oostrom, President of VNO-NCW, looking slightly upwards and to the right with a thoughtful expression. He has light brown hair and is wearing a dark blue suit jacket over a light blue shirt.

"The future calls
for sustained
cooperation."

Coen van Oostrom, President of VNO-NCW, explains where digitalisation offers opportunities for the Netherlands, which bottlenecks in digital infrastructure need attention and why AI matters for higher productivity.

The Netherlands is entering a new phase of digitalisation. For VNO-NCW, this brings together two developments. Almost every company faces the challenge of translating digital technology into growth, productivity and new business opportunities. At the same time, the economy itself is changing: digital businesses account for an increasing share of it and help shape our future earning capacity. VNO-NCW's aim is therefore clear: help existing businesses make the digital transition and create the conditions for digital companies and tech start-ups and scale-ups to grow. That earning capacity is not an end in itself, but the foundation for shared prosperity and a high quality of life. As President, I want us to achieve results together that make the Netherlands stronger, more innovative and a better place to live.

The Netherlands has a strong starting position. At the network level, our physical and telecom networks are among the best in the world. Our country also occupies a unique position in the semiconductor industry through ASML. The greatest opportunity now lies in the layer above: applications that turn expertise from strong sectors into scalable digital products and services. The Netherlands can lead internationally here, provided we focus and act faster. The application layer is where technology gains economic value. This is precisely where Dutch companies can build a distinctive ecosystem and establish a strong position in AI.

That requires a broader view of digital competitiveness. The Netherlands needs good connections and computing capacity today, but it must also ensure now that a functioning end-to-end chain will be in place for the longer term, from subsea cables and other physical infrastructure to valuable applications running on that infrastructure. We need to rebalance dependencies, for example in the cloud, by strengthening our own digital capabilities. We also need decisive policy on digital infrastructure. Subsea cables involve security, maintenance and European sovereignty. Lengthy procedures for antennas unnecessarily delay the rollout of 5G and 6G. Data centres need room to grow alongside the economy. And the growth of AI shows that computing power alone is not enough: transport infrastructure and capacity for company-specific applications also need to be available in time.

The lesson is simple: investment in infrastructure needs to happen before a bottleneck emerges. Grid congestion shows what happens when we look ahead too late. Digital infrastructure is capital-intensive and requires a horizon of decades rather than a few years. Private investment is the driving force, but the conditions set by government must be predictable, consistent and geared towards the future. Growth needs to become easier. That means room for infrastructure, fast permitting, a stable investment climate and policy that puts our shared long-term interests first.

VNO-NCW brings parties together and connects separate initiatives. One example is the establishment of the AI Coalition more than five years ago, which has since helped create a strong ecosystem. New challenges continue to emerge. SMEs, for example, deserve particular attention. They are the backbone of the economy, but differ greatly in knowledge, capacity and scope for investment. We need to ensure that every business can participate, from its first introduction to AI through to developing a new or improved business model.

” AI offers an opportunity to improve productivity sooner.

Success in the AI era is not guaranteed. Digital businesses are mobile and can leave if the ecosystem, talent pool or future prospects fall short. AI can also widen differences between sectors, companies and employees. Education and the labour market therefore need to adapt faster, with a smooth transition from learning to work and opportunities for lifelong development. International talent remains important. Digital technology is also not an end in itself: it needs to be used from the perspective of the student, employee, entrepreneur and citizen.

Productivity needs to rise, to keep society functioning and continue funding shared prosperity, rather than simply to secure quarterly profits. Education and a healthier population able to work for longer can contribute, but take time. AI offers an opportunity to improve productivity sooner. How successfully AI is adopted across our economy will therefore help determine how adaptable the Netherlands becomes in the years ahead.

The future calls for sustained cooperation. VNO-NCW wants to continue working with companies such as VodafoneZiggo to remove infrastructure bottlenecks, make tomorrow's economic capacity needs visible and connect digital infrastructure with AI. In doing so, we are building both a strong digital economy and a Netherlands that seizes its opportunities within a strong Europe.

A portrait of Marc Zegveld, a middle-aged man with short brown hair and glasses, smiling. He is wearing a dark suit jacket over a light-colored shirt. The background is blurred, showing what appears to be an office or public space.

"Digital infrastructure is becoming critical to societal resilience."

Marc Zegveld, Managing Director of ICT, Strategy & Policy at TNO, on why the Netherlands must invest not only in robust digital infrastructure, but also in the technologies and applications built on top of it.

Could you briefly describe your organisation and your role?

As Managing Director at TNO, I lead the ICT, Strategy & Policy (ISP) unit. TNO is an independent research organisation with a statutory mission: to use pioneering applied research to accelerate societal transitions and strengthen the Netherlands' earning capacity. Economic competitiveness and quality of life are inseparable in that mission. I see societal and digital resilience as integral to that quality of life: they are the foundation for protecting our prosperity and values. Within ISP, we work on digital transformation for public and private organisations. We combine advanced technology, from networks and cybersecurity to AI and data spaces, with strategy and policy. That combination gives organisations practical ways to act in a rapidly changing world.

How would you assess the Netherlands' current digital competitiveness?

I would immediately extend that question to Europe, because our competitiveness depends on our place within it. On the software side, in hyperscale cloud, advanced AI and platforms, we simply lack globally leading tech companies. SAP and a handful of others have strong positions, but we are not dominant. We are rightly proud of ASML as a global leader in the semiconductor layer, but we need more strategic strengths like that across the chain. Dominance is not a goal in itself; these strengths give us leverage and a real negotiating position. Digital infrastructure is becoming decisive for societal resilience. Anyone who lacks an indispensable position anywhere in the stack will ultimately lose control over their data, their capacity to innovate and the quality of their public services.

What are your ambitions for keeping the Netherlands digitally competitive?

That is our reason for existing: translating technology into practical opportunities for action. Specifically, we focus on how government can act as a launch customer to help bring innovations from the laboratory to market. We also advise on the enabling conditions: which laws and regulations encourage innovation without undermining public values? And how do you

translate this entire chain of strategic, technological and legal complexity into clear requirements and open standards that industry and government can put to work immediately?

What role do digital infrastructure and connectivity play in your organisation's day-to-day work?

We always approach infrastructure from two angles: the technology and the innovation ecosystem. The physical foundation, fibre, mobile networks, 5G and eventually 6G, is the lifeblood of our economy. But infrastructure needs to be seen as an integrated digital stack. It starts with chips and photonics, continues through networks to cloud and AI, and ultimately supports applications that serve society. That interconnectedness is central to our R&D. There is little point in optimising one layer if the others do not develop alongside it. Innovation emerges when you work across layers. We put that into practice by building ecosystems. Within national 6G initiatives, for example, we work with more than a hundred public and private partners to safeguard the Netherlands' earning capacity and digital sovereignty.

” We need to look ahead to the next technological transition now.

How would you assess the quality of the Netherlands' digital infrastructure, and what is working well today?

Compared with other European countries, the Netherlands is exceptionally well positioned in digital infrastructure and connectivity. We have one of Europe's densest and most reliable networks. But that strong starting position should not be a reason to sit back. We need to look ahead to the next technological transition now.

What could or should be improved in the Netherlands' digital infrastructure?

I see three priorities. First, 6G: the layer where networks, cloud and advanced chip technology come together. If Europe does not do this, other geopolitical blocs will. Think of grid congestion: do not be satisfied with 5G, but prepare now for the next standard before capacity limits become a problem. Second, the cloud and computing layer, where Europe needs to catch up significantly through cross-border cooperation on sovereign infrastructure. Finally, the top layer of services: developing business models and applications that serve society on that foundation, so everyone can benefit.

Question 8: What impact do you think the rise of AI has on digital infrastructure?

We need to move away from the idea that a software agent is simply a 'digital colleague'. We are rapidly moving towards autonomous multi-agent networks that independently execute transactions, share data and make decisions. Once software has those powers, oversight after the fact is no longer enough. If you give agents operational freedom, the safeguards need to be embedded in the IT architecture: which systems can an agent access autonomously, and what limits apply?

That requires guardrails tested in advance, digital authorisations and robust logging.

At TNO, we study this as a whole. In sandboxes, we technically test where multi-agent interactions become unpredictable. On the policy side, we help translate AI governance and the European AI Act into safe frameworks. Innovation can only accelerate once control mechanisms are built in from the outset.

What do you see as the biggest threats to the Netherlands' ability to remain internationally competitive?

I see several. First, the willingness to invest and the availability of risk capital, less at the start-up stage than in the transition from scale-up to unicorn. Second, Europe remains too fragmented. Mario Draghi's analysis gets to the heart of the problem: we harmonise too slowly to compete with the US and China at continental scale. Third, and perhaps the biggest problem, is the determination to deliver. Take the Wennink report, which I consider an excellent report. How many variations have already been written in response? There is nothing wrong with those initiatives in themselves, but at some point you need to ask: are we actually going to do this?

Where do you see the greatest opportunities for the Netherlands to remain internationally competitive?

I think the opportunity lies in what makes Europe distinctive compared with America and China. In the US, data is mainly commercialised by tech giants; in China, it is dominated by state control. Europe chooses its own, values-based model: a 'third way', in which data sovereignty, public values and digital trust form the foundation of economic success. That could make us distinctive and attractive to companies and countries looking to invest in Europe.

What should the Netherlands do to seize these opportunities and prevent these threats? What role do you see for government?

Alongside acting as a launch customer, simplifying and accelerating processes and procedures is crucial, by making it easier to do business while maintaining requirements. I still find the comparison with renovating a building in central Amsterdam alarming: construction costs make up only half the bill, with the rest spent on processes, procedures and approvals. The same happens at a macro level when building networks. This requires a different way of thinking. Agree on the scope and the deadline for society, such as the timely rollout of nationwide 6G coverage or the digitalisation of our critical infrastructure, and adapt procedures to those goals rather than the other way round. Involve stakeholders from the beginning, rather than only at the last moment when these realities become unavoidable. Build public support into the design of the future, and stick to the agreed framework and objectives.

If you could give the State Secretary or European Commissioner responsible for digitalisation one urgent piece of advice, what would it be?

Commit to real harmonisation and standardisation at European level. If a European standard is imposed on Microsoft or Meta, Brussels should be responsible for it, not The Hague. That approach should be applied much more widely across the entire digital stack. Within the Netherlands, I would favour a government that acts much more as a catalyst and develops things together with others for the longer term. That is why I think initiatives such as the Delta Institute, which began as 'Herprogrammeer de Overheid' ('Reprogramme Government'), are excellent. We need many more like them. We do not need a single grand architecture run from one office that organises everything for everyone, because that is not how things work. But we do need a set of shared principles to guide our approach. And then we need to act on them.

Do you see opportunities to work in a coalition to strengthen the digital economy?

Absolutely, because strengthening our digital economy simply cannot be achieved by one organisation alone. No government, telecom operator or tech company owns the entire digital stack. Public-private partnerships and innovation ecosystems are therefore indispensable. In practice, we see how effective this becomes when parties unite around a concrete technological challenge. Future Network Services (FNS) is a leading example: it brings together government, telecom companies, chip developers and research institutions to lead in 6G and future networks. Another current example is the Dutch AI Factory, where we are working with SURF, the AI Coalition and partners in Groningen and elsewhere to build sovereign, sustainable AI computing infrastructure for the Netherlands and Europe.

But there is one essential condition for these coalitions to have real impact: government needs to set a clear, long-term mission. Too often, partnerships turn into discussion groups with no firm commitments. You need a clear destination that holds regardless of changes in government. Take the energy transition and the digitalisation of the electricity grid to resolve grid congestion. Agree that this system must be fully robust and digitalised by 2035. Then work backwards from that goal: which standards, interoperability arrangements, legislation and technological innovations are needed, and when? Building a consortium around such a firm objective and committing its members to delivery creates a real ability to follow through.

What would your organisation like to do with VodafoneZiggo in this context?

I see three concrete areas where TNO and VodafoneZiggo can reinforce each other. First, the development of 6G. Within national and European programmes such as Future Network Services (FNS), we need to ensure that the Netherlands and Europe remain leaders in the next generation of communications networks. This involves bringing together the semiconductor layer, smart network architecture and AI into a coherent, sovereign stack.

Second, digital resilience and post-quantum cryptography (PQC). Network infrastructure is the lifeblood of our society and economy. With the rise of quantum technology, today's encryption will come under pressure over time. We need to start making critical networks and business-critical communications quantum-safe now. Working with a company such as VodafoneZiggo, we can use testbeds and sandboxes to explore how to migrate networks and business services to these new cryptographic standards in a way that prepares them for the future.

Third, programmable and intelligent networks. Telecom networks have long since evolved beyond passive channels for transmitting data: they are dynamic platforms. Making networks programmable through open APIs and standards allows capabilities such as advanced network slicing to connect directly to business-critical applications, including smart energy grids, industrial automation and healthcare. Together, we can investigate how to integrate network infrastructure and AI applications seamlessly, so business customers receive connectivity with guaranteed security, data sovereignty and quality.



"The Netherlands is very willing to experiment with innovation."

Rob de Bie, Head of Business Development Hospital Patient Monitoring at Philips, on the Netherlands' strong digital foundation, the transition from innovation to practical use and what it takes to deploy technology at scale.

Could you briefly describe your organisation and your role?

Philips is a health technology company active across several areas, from personal health products such as toothbrushes and shavers to the entire patient journey in hospital. We make MRI scanners for diagnosis, treatment equipment used for procedures such as angioplasty, and IT systems that radiologists and cardiologists use to prepare and document treatments. I work in Hospital Patient Monitoring, the division that monitors patients' vital signs, from today's hospital systems to tomorrow's wearables. My background is in healthcare: I trained at Vrije Universiteit Amsterdam and spent years working in intensive care units in the Netherlands before moving to Philips. I am responsible for business development for high-acuity care in Europe.

How would you assess the Netherlands' current digital competitiveness?

The Netherlands is one of the most digitalised countries in the world. Electronic patient records have long been standard here, while other countries still rely heavily on paper. Another striking feature is that Dutch hospitals have almost no isolated local networks left: everything is connected. That reflects a mature, well-organised digital foundation.

” The difficulty lies in scale and implementation.

What are your ambitions for keeping the Netherlands digitally competitive?

The Netherlands is very willing to experiment with innovation. We have a high level of expertise and accept that not everything has to work perfectly the first time. That makes our country an ideal testing ground. The difficulty lies in scale and implementation. We are very good at pilots, but it is hard to move from a pilot to sustained scaling across the healthcare system. Hospitals need government support for that, for example in how care is funded. The Netherlands still largely uses

diagnosis-treatment combinations: you are paid to diagnose and treat, with little or no payment for prevention, let alone keeping people fit, even though that is where the greatest health gains can be made.

What role do digital infrastructure and connectivity play in your organisation's day-to-day work?

A central role. In Hospital Patient Monitoring, we can now monitor patients outside hospital walls using a range of wearables. But consumer devices such as a Garmin or Apple Watch are not currently medically certified. The certification process, including under the EU Medical Device Regulation (EU MDR), does little to speed things up. At the same time, that oversight is understandable: this is medical data and requires care. We encounter this tension between speed and safety every day.

How would you assess the quality of the Netherlands' digital infrastructure, and what is working well today?

The foundation is good. I often use this example: if I ask people to produce their financial information, it is generally not a problem. If I ask for their latest blood test results, it quickly becomes more difficult. That illustrates that the Netherlands' general digital infrastructure, its connections, speed and reliability, is in good shape. Cybersecurity is high on the agenda here, and rightly so. In healthcare specifically, there is more room for improvement: cloud adoption has not yet reached scale.

What could or should be improved in the Netherlands' digital infrastructure?

The problem lies less in the hardware and software themselves: those are available. The bottleneck is more about adoption and the openness of systems. Healthcare still makes too little use of open standards. Many medtech companies use their own communication protocols, making data difficult to exchange. At Philips, we deliberately pursue an open ecosystem, accessible to those who can make relevant use of it, but secured through certificates and built on widely understood standards such as HL7 FHIR and the newer SDC, which Philips is actively helping to develop. That allows medtech partners, hospitals, start-ups and scale-ups to innovate faster. Continued investment in the electricity grid is also needed in this area. As we make greater use of AI and the cloud, we need more grid capacity.

What impact do you think the rise of AI has on digital infrastructure?

AI requires more computing power, so we need to keep investing, including in energy availability. Current infrastructure is good enough for regular use, but once large volumes of data are processed in the cloud and care decisions depend on the results, latency becomes an issue. A brief interruption in a video stream is no problem; in acute care, it is a different matter. Every second of delay counts. That is also one reason digital infrastructure is included as a separate prerequisite in the MedTech Growth Plan, the sector's contribution to the Wennink report presented on 12 December 2025. Without well-functioning AI and data infrastructure, further digitalisation of healthcare is not sustainable.

What do you see as the biggest threats to the Netherlands' ability to remain internationally competitive?

There is international competition for talent and capital. Hubs such as Boston, Zurich/Basel and Munich are attracting increasing investment, and the Netherlands needs targeted action to avoid losing ground. Europe also sometimes makes things difficult for itself: thirty-two countries each translate European regulation, such as the NIS2 Directive, into their own practices slightly differently. This proliferation of national versions, also known as gold-plating, costs time and money we do not have.

An ageing population also poses a risk, including ageing among healthcare professionals themselves. A large share of doctors are relatively old and will leave the workforce over the next five to seven years, while the number of healthcare workers has grown by only around 1.5% over the past fifteen years. Today's healthcare professionals will therefore themselves be patients in ten years' time. We need people who can innovate and have the time and attention to do so.

Where do you see the greatest opportunities for the Netherlands to remain internationally competitive?

The Netherlands already has a strong starting position: we spend around 12% of GDP on healthcare and have a strong medtech ecosystem with leading universities, hospitals and businesses. The MedTech Growth Plan aims to make the Netherlands Europe's number one medtech hub and the world's number three by 2035. Through targeted investment in innovation, testing and scaling capacity, data and AI, talent and a predictable investment climate, the Netherlands can combine better, affordable care with more jobs, export growth and new medtech companies.

That this ambition is being taken seriously became clear this summer, when the Ministries of Health, Welfare and Sport and Economic Affairs announced € 102.5 million for the first project under the plan. Philips is adding another € 50 million of its own.

What should the Netherlands do to seize these opportunities and prevent these threats? What role do you see for government?

Above all, government can provide stable, predictable policy and ensure data is available across hospitals. During COVID, one of the biggest bottlenecks was simply transferring data from one hospital to another. Even now, patients moving between hospitals are sometimes given a CD-ROM with their latest scan, rather than having it digitally available to their new clinician. Changing this is in government's own interest if it wants to improve and strengthen healthcare. Government can also help simplify European regulation rather than adding layers to it. The fewer national versions of the same European rule, the faster we can implement it in our systems.

If you could give the State Secretary or European Commissioner responsible for digitalisation one urgent piece of advice, what would it be?

In the Netherlands, we like to demonstrate that we can monitor patients outside hospital. But we then need to actually scale it up. Without scale, these initiatives remain pilots. That will not be enough to sustain healthcare.

Do you see opportunities to work in a coalition to strengthen the digital economy?

Certainly, and we are already doing so. Philips is and remains a Dutch company: our headquarters are in Amsterdam, and more than 9,000 of our approximately 65,000 employees worldwide still work in the Netherlands. Our CEO, Roy Jakobs, actively contributed to Peter Wennink's report and helped coordinate the MedTech Growth Plan, the sector-wide programme developed in response to it. We also have concrete collaborative projects, for example with TNO and, through the Polaris project, with companies such as NXP and Thales, working together on innovations in medical technology and connectivity. We are also part of the Brainport Eindhoven region, where cooperation is the key to success.

What would your organisation like to do with VodafoneZiggo in this context?

The MedTech Growth Plan includes the concept of a monitoring hub: monitoring patients across a region from different locations in the Netherlands. Philips is good at making data available and understanding hospital workflows. We know what happens on the hospital floor. But to then move that data securely from A to B, for example through private 5G, you need companies such as Vodafone and Ziggo. My invitation to VodafoneZiggo would therefore be to explore the opportunities these initiatives offer, for example in secure connectivity and private 5G, so that together we can help meet growing demand for healthcare.



"AI is, in certain areas, the key to boosting labour productivity in a persistently tight labour market."

Jeroen Tiel, CEO of Randstad, on the impact of AI on the labour market, the importance of lifelong learning, and what the Netherlands needs to seize the opportunities of digitalisation.

Could you briefly tell us about your organisation and your role?

As CEO of Randstad Netherlands, I see it as our responsibility to ensure that the workforce keeps pace with rapid societal and technological transitions. Randstad is much more than a staffing company: we connect people with jobs, addressing the needs of both today and tomorrow. Every year, we help around 175,000 people find employment. We are also undergoing a transformation ourselves, becoming a digital-first company where AI and data enable us to match people with jobs faster and more effectively, creating more room for personal interaction when it matters most.

How do you assess the Netherlands' current digital competitiveness?

The Netherlands has a fantastic starting position and ranks among the world's best when it comes to networks and technology. But our competitiveness ultimately depends on whether we can actually deliver on our ambitions. Peter Wennink put it very clearly: our economy, and with it our prosperity, will gradually decline unless we make the labour market our number one priority. I couldn't agree more.

AI has the potential to be a major driver of labour productivity, but we are not yet seeing enough of that impact across the wider economy. AI is currently viewed primarily as a way to 'do more with less'. But productivity is about much more than that. It is about applications that create value and ease workloads in sectors facing the greatest shortages, such as healthcare, defence and engineering, supported by a workforce that is ready to embrace them. That is where the biggest challenge lies.

What are your ambitions for keeping the Netherlands digitally competitive?

At Randstad, we believe in an adaptable labour market. People won't lose their jobs to AI, but they may lose them to someone who knows how to use AI. Four things are therefore crucial:

- **Productivity as a response to labour shortages:** Labour shortages are here to stay, particularly as our population ages. AI is often seen as a way to do more with fewer people, but its potential goes much further. We need technology that increases productivity where shortages are most acute. At the same time, digitalisation itself requires large numbers of skilled workers to install networks and lay cables.
- **Lifelong learning as an attractive proposition for employees:** Reskilling and upskilling need to become a genuine infrastructure for lifelong development, one that employees themselves find attractive. Anyone considering a career change needs to know: what's in it for me? A better income, greater adaptability, and the ability to avoid becoming AI-illiterate. This applies across all sectors, including SMEs.
- **Preventing a technological divide:** I prefer to speak of a technological divide rather than an AI divide. We must prevent technology from creating new divisions in society. The number of entry-level jobs for graduates of universities and universities of applied sciences is already declining substantially, for example in the financial sector and at major consultancy firms, where analytical tasks are increasingly being performed differently through AI.
- **Skills over contracts:** Security no longer lies in the type of employment contract you have, but in your ability to develop. We should focus on income security rather than job contract security. Think of people leaving the financial sector who could be reskilled to work in sectors facing labour shortages. That will only succeed through partnerships between government and employers.

What role do digital infrastructure and connectivity play in your organisation's day-to-day operations?

Digital infrastructure is an essential foundation. We use data and AI to match talent with opportunities and support their development more quickly and intelligently. But infrastructure goes beyond networks. It is a virtuous cycle of state-of-the-art networks, an attractive business environment and an adaptable workforce capable of supporting change.

What do you consider the greatest strengths of our current digital infrastructure?

The foundation is excellent: our networks and 5G infrastructure rank among the best in the world. But the real question is whether we can make effective use of them. The challenge for the Dutch economy is to translate that technological promise into tangible results in the workplace. And that ultimately depends on the people who need to work with the technology.

” Security no longer lies in a job title, but in people's ability to adapt.

Which specific trends in digital infrastructure and connectivity do you see as most important for the Netherlands' future competitiveness?

The defining trend is that skills are becoming outdated faster than ever before. Education has traditionally lagged somewhat behind the needs of society and business, but what is new is the speed at which those needs are changing. As a result, security no longer lies in a job title but in people's ability to adapt. Unless we invest heavily in reskilling and upskilling now, our major transitions will grind to a halt.

How satisfied are you with the current quality and availability of digital infrastructure in the Netherlands? Where do you see room for improvement?

We can be satisfied with our technological foundation. The challenge lies in adoption. Employees are already experimenting extensively with AI, while many employers, particularly SMEs, remain hesitant. Yet TNO research shows that involving employees in the use of AI for routine tasks can deliver time savings of 40 to 50%.

We also need to be willing to make choices in education. It is a great strength of our society that people are free to pursue whichever field of study they choose. But as a society, we have a vested interest in encouraging people to enter engineering, AI, healthcare and defence. Not by restricting choices, but by investing more in these fields, for example through reduced tuition fees. That requires political decisions, which are never easy, but it is the right direction.

What role do you see Artificial Intelligence (AI) playing in the future of digital infrastructure and the Netherlands' competitiveness?

In certain areas, AI is the key to increasing productivity, but it is also transforming skills and jobs at an unprecedented pace. That means fixed contracts and job titles are becoming less important, while reskilling, upskilling and labour mobility are becoming increasingly essential. This can only work across sectors. We also need to prevent AI illiteracy. Everyone, across all professions and at every level, must have access to this technology.

What are the biggest opportunities and threats to the Netherlands' digital competitiveness in the medium term?

The biggest threat is an implementation gap. The plans are ambitious, and the financial calculations probably add up, but without the people needed to execute them, we will fall short. VNO-NCW has also pointed this out: billions are being allocated, but the human capacity to deliver is missing. The defence sector says it needs huge numbers of technicians. The energy sector says the same. But one technician cannot work in two places at once. Think of it like the Dutch national football team: you can select the right players, have the best pitches and provide the finest training, but if there is no ball, you cannot play.

It is also worrying that many young people are dropping out before they have even properly entered the labour market, while internships and entry-level training opportunities are scarce. These young people are our future. The Netherlands has a distinctive position in digital technology. That is where our greatest opportunity lies, provided we approach it together as an ecosystem.

What concrete actions are needed in the short term to maintain or strengthen the Netherlands' lead in digital infrastructure?

First, the labour market needs to transform much faster into a skills-based ecosystem. The focus should no longer be on jobs or contract types, but on what people can do and how adaptable they are. Second, we need to make choices. Right now, everyone is working on their own piece of the puzzle. Talent is scarce, so we need to establish national priorities for reskilling and upskilling.

What specific role do you see for government and policymakers?

Government needs to take the lead in ensuring that policies are feasible from a workforce perspective. What should the labour market look like in three to five years, and what will it take to get there? The development of a National Talent Strategy, with a cross-sectoral perspective, is a positive sign. But a workforce budget should be added as a third pillar alongside our policy ambitions and financial planning. We also need political stability, a solid implementation agenda and a business environment that remains attractive to international talent.

If you could give the State Secretary for Digitalisation one urgent piece of advice, what would it be?

Make talent development and the human capacity to deliver the foundation of digital policy. Introduce a workforce budget alongside the financial budget: a reality check on whether our plans can actually be implemented. That may lead to uncomfortable conclusions, but that is precisely why it is necessary. Because no matter how advanced our infrastructure is or how ambitious our plans are, every transition will come to a halt without the right people in the right places.

Do you see opportunities to strengthen the digital economy through partnerships or coalitions?

One hundred percent. This can only succeed through cross-sectoral cooperation, with government taking the lead alongside education providers, technology companies, labour market experts and employers. Take the sectoral training and development funds. The technology sector does not have a dedicated fund of its own, so the traditional approach will not be enough. We need to use existing funds across sectors to equip the entire workforce with digital skills.

The defence sector offers a good example of how this can work. It needs technicians, nurses and logistics planners, all roles that are also in short supply elsewhere. That is why the Ministry of Defence is exploring partnerships with a wide range of organisations. Rather than recruiting people away from hospitals, for example, it could reach agreements with logistics companies to share access to truck drivers, with Defence facilitating their training. Public-private cooperation is always part of the solution.

What would your organisation like to work on with VodafoneZiggo in this context?

I see two areas where Randstad and VodafoneZiggo could create powerful synergies. The first is the skills of the future. VodafoneZiggo builds the digital highways, while Randstad brings labour market insights and direct access to the workforce. By combining those strengths, we can identify which skills will be needed tomorrow and how people can be reskilled accordingly. The second is digital inclusion. The digital transition must be accessible to everyone, both employees and employers. Nobody should be left behind. We can choose to see this as a problem, but above all, it is an enormous opportunity.



"For too long, Europe has treated digital sovereignty and competitiveness as separate challenges."

Melanie van der Horst, Amsterdam City Councillor for Digital Affairs, on what it takes to build a digitally strong and autonomous city, from infrastructure and AI to public oversight and control.

Could you briefly tell us about your organisation and your role?

The City of Amsterdam serves hundreds of thousands of residents, businesses and visitors every day. Digitalisation affects virtually every aspect of life in the city and the wider region: how you apply for a passport, how traffic flows, how safe our streets are and how our economy functions. As Alderperson for Digital Affairs, I am responsible for the city's digital development. The most important question I always ask is: what does this mean for the people of Amsterdam? Are we creating societal value? I see digitalisation as a means of empowering and supporting people, not as an end in itself. We want Amsterdam to be a city at the forefront of technology, but in a way that inspires trust: inclusive, secure and subject to democratic oversight.

How do you assess the Netherlands' current digital competitiveness?

The Netherlands has an excellent starting position: a strong knowledge base, an attractive business environment and digital infrastructure that is internationally significant. Building on that infrastructure, we can further develop our ecosystem in AI, semiconductors, quantum technology and cybersecurity. The European Commission recognises the Netherlands as a frontrunner in digital innovation for good reason. But a strong starting position is no guarantee of future success. We face a shortage of ICT talent, investment is lagging behind, and I see a pattern that concerns me: we are very good at conducting research and launching pilot projects, but less effective at scaling them up.

What are your ambitions for keeping the Netherlands digitally competitive?

We have fantastic startups and researchers, but too often, successful Dutch innovations only grow into major companies once they have moved elsewhere. To achieve digital autonomy, we need to ensure that Europe has competitive alternatives to offer, perhaps not always on price, but certainly on value and values. For too long, Europe has treated digital autonomy and competitiveness as two separate challenges. They are inextricably linked: without digital autonomy, sustainable European competitiveness is not possible.

What role do digital infrastructure and connectivity play in your organisation's day-to-day operations?

Modern government cannot function without reliable digital infrastructure. Public services, traffic management, cameras, street lighting, sensors and data applications all depend on that foundation. Connectivity has become as essential a public utility as electricity and water. In our Digital City Agenda, we anticipate that demand will only continue to grow. It is important not to reduce digital infrastructure to a purely technical issue. Where are networks located? Who manages them? How much capacity is available, and for whom? These are not simply ICT questions. They directly affect the people of Amsterdam. Can an ambulance arrive on time? Do traffic lights function properly during rush hour? Is your data secure? That is why digital infrastructure is a matter of public interest.

How do you assess the quality of Dutch digital infrastructure, and what is currently working well?

Overall, the quality is high, and that deserves recognition. The Netherlands has a very strong foundation, with excellent broadband coverage, mobile networks and a well-developed internet and data centre sector. The European Commission also highlights our advanced connectivity infrastructure, with extensive broadband coverage and excellent 5G services. Less visible, but equally important, is the unique ecosystem we have in the Amsterdam metropolitan region. Businesses, knowledge institutions and public organisations are closely connected, and we are relatively well positioned to bring different parties together.

What could or should be improved about the Netherlands' digital infrastructure?

I see three priorities. First, digital resilience and autonomy. We are too dependent on a handful of global technology companies and too vulnerable to geopolitical shocks. Second, future-proofing our infrastructure. We need to anticipate the enormous growth in data traffic and demand for computing power. Rather than adding capacity after demand has already increased, we should plan ahead, using new technologies that consume significantly less water and energy. Third, public oversight and strategic direction. Digital infrastructure requires scarce space in our cities and has implications for energy, safety and quality of life. Governments therefore need to take a broader perspective and have a meaningful seat at the table. The market can achieve a great deal, but it should not be the sole decision-maker when it comes to what is socially desirable. That is an important responsibility for government.

What impact do you expect the rise of AI to have on digital infrastructure?

AI is changing the scale at which we need digital infrastructure: more computing power, more data centres, more data connections and more energy. At the same time, an entirely new layer of infrastructure is emerging around AI models, cloud services, chips and specialised hardware. AI is therefore not just about software. It is also a matter of infrastructure policy. Of course, AI also creates opportunities. We are exploring how it can improve public services and urban management, and make information more accessible. But people must always remain at the centre of our approach, with fundamental rights and public values protected. AI should empower people, not replace them in situations that require human judgement.

What do you see as the greatest threats to the Netherlands' international competitiveness?

One major risk is fragmentation. The Netherlands has many excellent initiatives, but they are sometimes too small or too localised to make an international impact. This is particularly evident in AI, where smaller companies struggle to adopt new technologies and innovation initiatives can become fragmented. The European Commission has also highlighted this issue. The Dutch Digitalisation Strategy provides an opportunity to overcome that fragmentation and bring initiatives together.

Where do you see the greatest opportunities for the Netherlands to remain internationally competitive?

Our greatest opportunity lies in combining our strong knowledge base with entrepreneurship and public-sector innovation. Amsterdam occupies a particularly strong position in this respect. Universities, businesses, startups, investors and a large international community all come together here. We need to strengthen the connections within that ecosystem. That is why Amsterdam is investing in AI infrastructure, talent, digital autonomy and responsible technology.

What should the Netherlands do to seize these opportunities and address the threats? What role do you see for government?

Government needs to take a much more strategic leadership role. Not by trying to develop every technology itself, but by

making clear choices and creating the right conditions. That means investing in education and digital skills, infrastructure and research. Strengthening European cooperation. Making government data available responsibly. And, importantly, ensuring that cybersecurity and digital autonomy become structural elements of our economic policy. Government must also become a good and demanding customer, acting as a launching customer for innovative solutions. When public authorities work together, they can encourage market players to develop products and services that align with public values. The Dutch Digitalisation Strategy is now built around precisely this approach: governments, knowledge institutions and private-sector organisations working together as a single ecosystem.

If you could give the State Secretary or European Commissioner responsible for digitalisation one urgent piece of advice, what would it be?

We do not have to produce everything ourselves. But we must retain the ability to make our own decisions. If Europe depends on just a few companies for cloud services, AI, chips, operating systems and digital infrastructure, our economic and political autonomy becomes vulnerable. My advice is to invest heavily in European digital infrastructure, preferably including a government cloud that prevents non-European companies from gaining access to sensitive government information through acquisitions. But do so in partnership with European companies and by drawing on European expertise. Build scale, use public procurement as a lever, and ensure that regulation does not make innovation impossible.

” Europe should not only have the world's best digital regulations.
It should also be able to build the world's leading digital companies
and infrastructure.

Do you see opportunities to strengthen the digital economy through partnerships or coalitions?

Absolutely. In fact, I believe we should be doing much more of this. Municipalities cannot tackle these challenges alone. We need to build coalitions between governments, telecom operators, technology companies, knowledge institutions and civil society organisations. Amsterdam already has a broad AI and technology ecosystem, with organisations such as Amsterdam AI and the ICAI Labs. For me, a successful coalition should not simply discuss technology, but use it to address concrete societal challenges. Think of digital inclusion, cybersecurity, smart mobility, AI in public services or energy-efficient digital infrastructure.

What would your organisation like to work on with VodafoneZiggo in this context?

I would like to challenge VodafoneZiggo to work with us on shaping the digital infrastructure of the city of the future. Not just by looking at increased bandwidth, but by exploring what Amsterdam will need over the next ten to twenty years to remain digitally strong, secure and inclusive. Together, potentially alongside other telecom operators, we could identify promising applications and best practices in areas such as 5G and IoT in public spaces, smart mobility, cybersecurity and digital inclusion. VodafoneZiggo brings expertise, infrastructure and innovative capabilities. Amsterdam brings societal challenges and public space. By bringing these worlds together, we can build not just a smart city, but a city that is digitally strong, socially inclusive and democratic.



"The Netherlands has a strong foundation, but it is increasingly under pressure."

Professor of Internet Science at TU Delft, on the need to think ahead, invest in 6G and strengthen the Netherlands' expertise in digital infrastructure.

Could you briefly tell us about your organisation and your role?

Even as a child, I was fascinated by technology, particularly taking things apart and occasionally putting them back together. That curiosity has stayed with me. I studied at TU Delft and earned my PhD in internet and communications technology. I co-founded PowerWeb, an interdisciplinary institute focused on smart energy grids, where digitalisation and the energy transition come together. After that, I wanted to establish something new, with room to move from ideas to action: the Do IoT Fieldlab on the Delft campus, short for Delft on Internet of Things. There, we created a testing environment with 5G infrastructure, the first standalone 5G network in the Netherlands, where companies can explore and test their ideas. Dozens of companies have since carried out pilots and projects there. I am currently involved in Future Network Services, the programme focused on 6G technology that brings together more than sixty organisations across five research areas. I lead the work on intelligent networks: architecture, orchestration and the software layer that sits on top of the hardware.

How do you assess the Netherlands' current digital competitiveness?

The Netherlands has a strong foundation, both by European and global standards. We have robust infrastructure, excellent universities and a highly educated population. But that position is under pressure because developments are moving incredibly fast. We are not the only country to recognise the importance of digital infrastructure. Countries around us see it too, and they are investing heavily, particularly with the rapid rise of AI. Digital infrastructure enables everything we build on top of it, including AI applications. We need to remain at the forefront if we want to maintain and strengthen our competitiveness.

What are your ambitions for keeping the Netherlands digitally competitive?

To remain digitally competitive, we need ICT talent, and our education system naturally plays an important role in developing it. We also have a clear ambition when it comes to research: we want to develop the next generation of technology. We regularly do this in collaboration with businesses, through co-creation, as we do within Future Network Services. The Do IoT Fieldlab operates in much the same way. For example, an entrepreneur came to us with an idea for hearing aids: instead of placing the computing power inside the device itself, the processing would take place in the cloud via a high-speed

connection, with the results transmitted back to the device. For something as essential as hearing, any delay is essentially unacceptable. The entrepreneur had no experience with 5G, but his use case required precisely the kind of innovation that 5G enables, because the connection is fast enough. Applications like these help us identify the technical requirements that guide our research.

What role do digital infrastructure and connectivity play in your organisation's day-to-day operations?

A fundamental one. We do not just study networks; we use them in education, research and the Fieldlab's experimental environment. Within Future Network Services, the research areas have deliberately been structured around the entire value chain: from chips and antennas to software and architecture, and ultimately to practical applications, such as drones operating beyond visual line of sight or applications in healthcare. Companies are not necessarily innovating on 6G technology itself. Instead, they gain early experience with it, giving them a head start once the technology becomes available.

How do you assess the quality of Dutch digital infrastructure, and what is currently working well?

Our digital infrastructure is often ranked among the top three in Europe, certainly in indices such as DESI. We also perform well globally when it comes to internet infrastructure. We have excellent coverage. Our knowledge base is strong too, although there is still a shortage of skilled professionals, and we need to continue educating and training people. What I also see as a positive development is growing awareness. Not only of the importance of digital infrastructure itself, but also of the risks associated with it, particularly around security and AI.

What could or should be improved about the Netherlands' digital infrastructure?

First and foremost, we need to think ahead and invest. We also need to develop and maintain the digital skills of the Dutch population and ensure that we train enough people. Beyond that, we should stop relying entirely on off-the-shelf solutions from Big Tech and invest in developing our own innovations and expertise in computing infrastructure. We are currently working on a project proposal focused on Dutch cloud technology, which we aim to develop together with European partners.

What impact do you expect the rise of AI to have on digital infrastructure?

To begin with, AI requires capacity and computing power, and AI-related traffic is growing faster than advances in AI chips can keep up with. That means we need to think carefully about how to pool resources and ensure sufficient capacity across our infrastructure. An AI factory like the one being developed in Groningen is a very positive development, but it cannot operate in isolation. We need to connect computing resources and build coalitions.

It is also about the applications themselves. If someone in Delft needs their hearing-related data processed in Groningen, the feedback will arrive too late. Some computing power therefore needs to be located close to the user, at the edge of the network, while other applications can be processed further away. That is why I prefer to talk about a 'digital continuum' of networks, computing and storage. At the same time, AI can make network management easier. When something goes wrong today, you can be confronted with a tsunami of alarms, with one signal triggering another. Using new root-cause analysis techniques, we are trying to identify the actual underlying cause of these problems. But that requires verification. You cannot simply let AI operate unchecked. It also requires security by design and zero-trust principles, because the same technology can hallucinate or be exploited by malicious actors.

What do you see as the greatest threats to the Netherlands' international competitiveness?

Falling behind on investment while countries around us continue to invest. Another threat is our dependence on Big Tech technologies. That is the downside of the geopolitical relationships we have become increasingly aware of. Grid congestion also remains a problem, because we will still need large data centres. However, these challenges can be better managed through federated infrastructure.

” You don't want to outsource your network technology, because ultimately, someone else will decide how your traffic is routed — and whether it even reaches its destination.

Where do you see the greatest opportunities for the Netherlands to remain internationally competitive?

Across the technology stack. The Netherlands is strong in semiconductors, with ASML as the most prominent example. But everything is interconnected through networks. You do not want to outsource your network technology entirely, because that ultimately means someone else determines how your data traffic is routed and whether it arrives at all. That creates opportunities for the Netherlands and Europe. Another area is digital resilience. Security and resilience are often seen as costs. And they are, but they also create opportunities. European regulations are coming into force that all companies will need to comply with. If you cannot demonstrate that your product is secure, you will not be able to bring it to market. Companies that excel in security and resilience will therefore have an advantage over their competitors. I genuinely see these capabilities as a source of competitive advantage, not merely as a basic requirement.

What should the Netherlands do to seize these opportunities and address the threats? What role do you see for government?

We need to keep investing, and we need to invest strategically. The Wennink report has set several things in motion. There is renewed discussion about another round of funding through the National Growth Fund, and proposals have been made for a National Agency for Disruptive Innovation, modelled on the American DARPA, from which the internet originated. Such an agency could support ambitious, moonshot-style ideas. I see these as positive developments, and I hope they will be followed by concrete action. The ability to act decisively is an essential and often underestimated aspect of successful policy. I also believe cooperation is more powerful at the European level than at the Dutch level alone. That does not mean the Netherlands cannot be a frontrunner in specific areas within Europe. ASML demonstrates that it can. But we should bring those strengths to the European team.

If you could give the State Secretary or European Commissioner responsible for digitalisation one urgent piece of advice, what would it be?

Systems thinking. That is my first piece of advice. We should not focus exclusively on areas where we are already strong, such as semiconductors or AI. Instead, we need to look at the entire technology stack and position ourselves intelligently within it. That does not mean the Netherlands needs to develop everything itself. But to make strategic choices, you need a thorough understanding of how the entire system works. And we should approach this at the European level.

Do you see opportunities to strengthen the digital economy through partnerships or coalitions?

That is at the very heart of what we do. Future Network Services is precisely such a coalition: more than sixty organisations working together across research areas ranging from hardware to software, from use cases to startups and scale-ups, alongside a dedicated programme focused on the ecosystem and policy. The Fieldlab operates in the same way, through co-creation with businesses and public authorities. This also involves making deliberate choices about the direction of technological development. Within Future Network Services, we have established an Ethics Board and appointed a PhD researcher specialising in ethics, because we want to develop AI technology in accordance with European norms and values. Consider the privacy implications of sensing technologies enabled by 6G, or bias in AI models. Responsible design is an integral part of our approach. Europe has historically been strong in this area. Thanks to European legislation, certain standards now apply worldwide.

What would your organisation like to work on with VodafoneZiggo in this context?

We are already working together. Within Future Network Services, we supervise two industrial PhD researchers who are employed by VodafoneZiggo and work on their doctoral research as part of their jobs. One focuses on root-cause analysis: using knowledge graphs and AI to identify what is actually going wrong in networks that have become so complex that the underlying cause of a problem is often difficult to pinpoint. The other focuses on network architecture: how network functionality can be deployed and relocated according to changing needs. This collaboration is extremely valuable to us. It gives us detailed insight into how a telecom operator actually works and access to data that is difficult to obtain in an academic environment. That enables us to conduct research that would otherwise not be possible. I would very much like to expand this collaboration, particularly with a focus on innovation. VodafoneZiggo's initiative to organise this series of interviews fits very well with that ambition.

Participants

Autoriteit
Consument & Markt



ACM

Martijn Snoep

VNO-NCW

VNO-NCW

Coen van Oostrom

techleap

Techleap

Constantijn van Oranje

ASML

ASML

Amal Tourabi

PHILIPS

Philips

Rob de Bie

TNO innovation
for life

TNO

Marc Zegveld

Booking.com

Booking.com

Maurice Hoogeveen

 polarsteps

Polarsteps

Clare Jones

 TU Delft

TU Delft

Fernando Kuipers

Netherlands Foreign
Investment Agency

NFIA

Hilde van der Meer

 randstad

Randstad

Jeroen Tiel

City of Amsterdam
Melanie van der Horst

Our digital infrastructure
is the foundation of
tomorrow's economy

