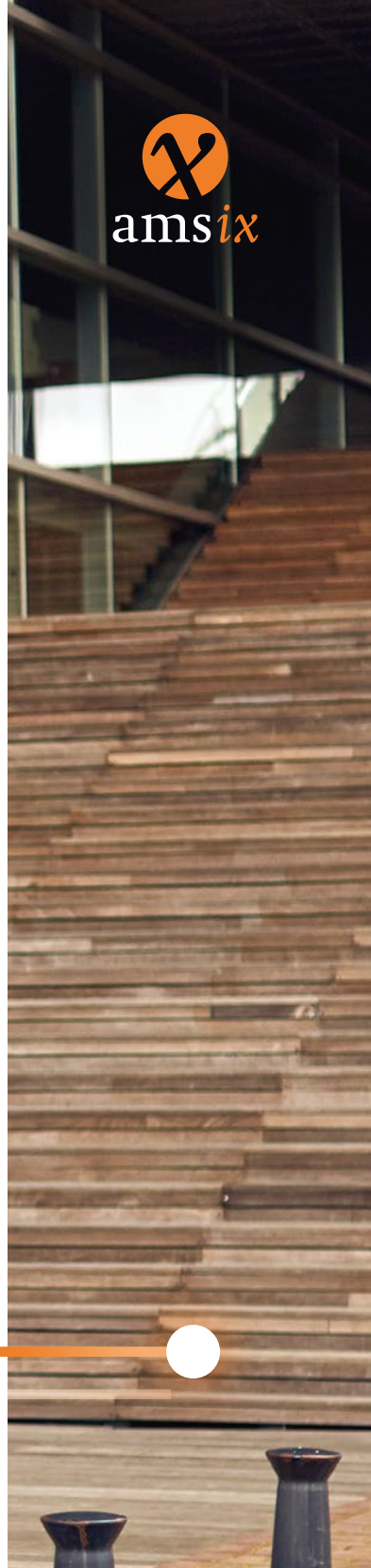# Annual
Report 2022

ams*ix*

A Better Society through a Better Internet

AMS-IX Annual Report 2022

The highest peak traffic measured in Amsterdam in October 2022 was clocked at 11.6 Terabit per second. The growth of the platform in Amsterdam and seasonal factors that influence the behavior of Internet users were the main reasons behind this record. Moreover, the new peak is also a result of many networks upgrading their port capacity to facilitate the exchange of larger traffic volumes.
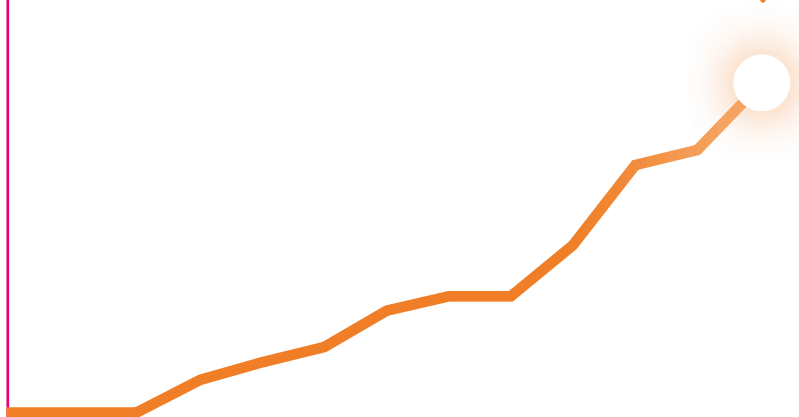
Peak traffic
11.6 Tbps
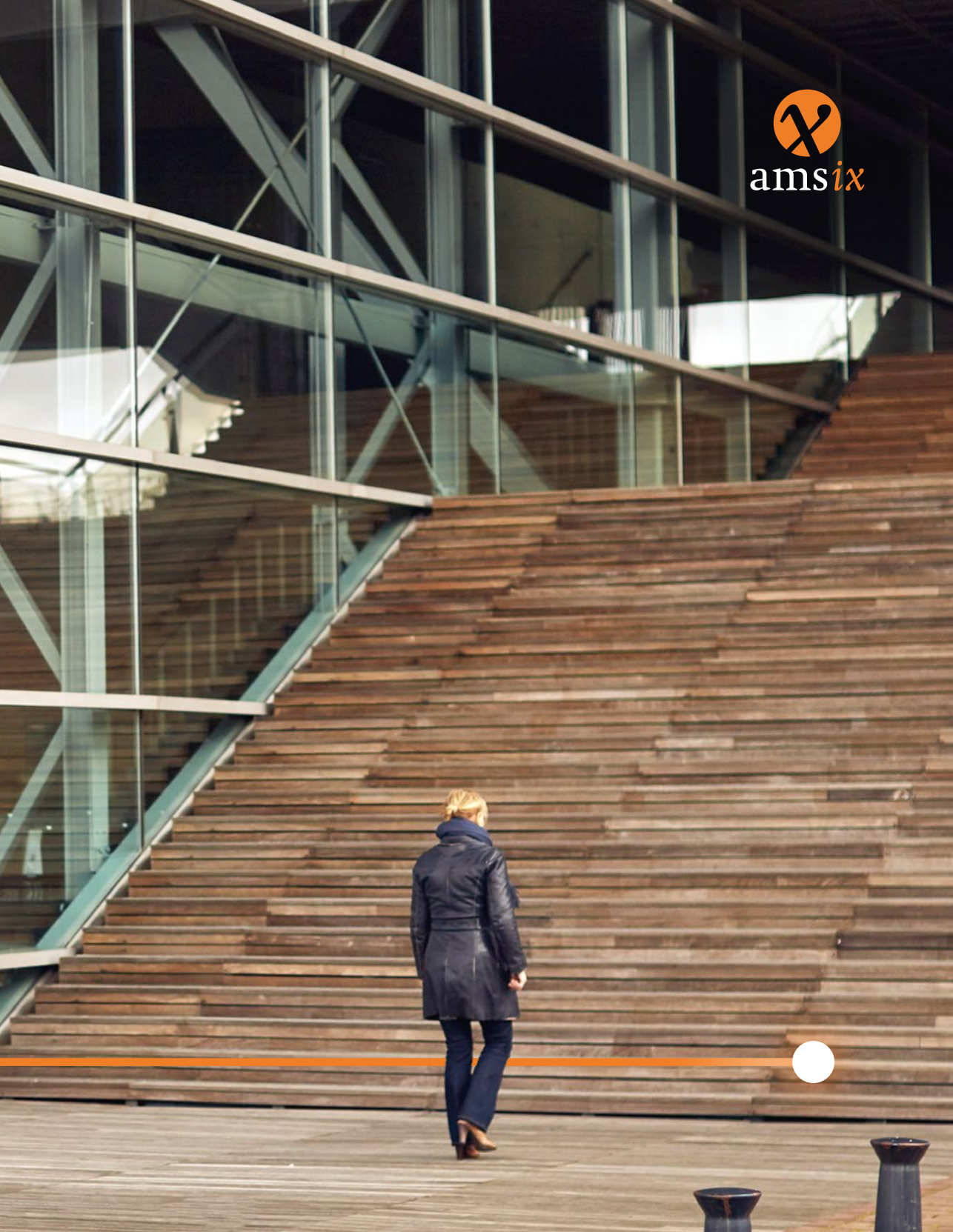
Corresponds to

464,000 4K video streams per second
6.2 Million TikTok videos per second
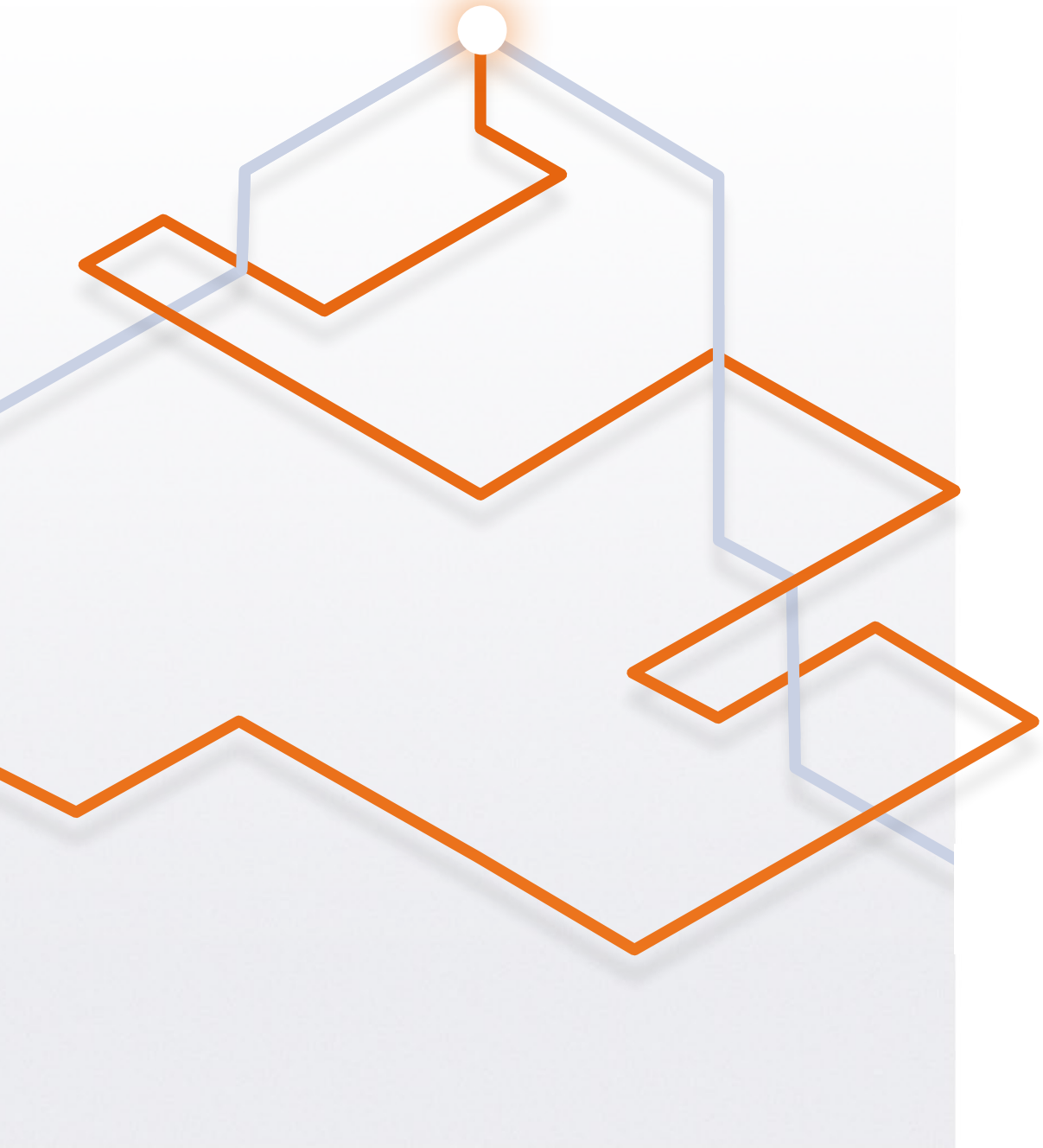**2.3 Million** HD video streams per second
58 Million gamers simultaneously playing Minecraft

Connecting you
to everyone
and everything

Contents

Peter van Burgel
Chief Executive
Officer

Word from the CEO

Better Society through Better Internet

AMS-IX CEO Peter van Burgel reflects on a dynamic year for the digital world

"The Internet is a game-changing invention that has revolutionized the way we communicate and share information. In the early days of the Internet, its primary social impact was the democratization of knowledge, providing access to information for people from all corners of the globe. However, as the Internet has evolved, that potential has been hindered by commercial and political interests. Unfortunately, the Internet is increasingly being used for control, repression, and even warfare, which is a grave concern. Additionally, society is facing challenges in terms of misinformation, fake news, security and privacy. At AMS-IX, we are deeply committed to improving the Internet for the betterment of society. We believe that a better Internet can make a positive impact on the world and we strive to contribute to this goal in any way we can.

Connecting communities

AMS-IX's connectivity services are more than just a means to access the Internet - they are a catalyst to build communities that support economic growth which in turn helps grow prosperity for more people. As a provider of the digital highway, we build the infrastructure that drives economic growth, especially in local

communities. Our commitment to a better Internet extends beyond faster connections, but also encompasses regulation and combatting negative effects that can impede progress. Through our global footprint, we are able to make a difference in places where the Internet has not yet been established in a way that allows for open and neutral access to information. We believe that our work is about more than just providing a service, but about making a positive impact on the world. Our organization is dedicated to making a difference in the long term, and we strive to be at the forefront of discussions and initiatives that drive progress. This commitment results in being invited to many different corners of the world to support local organizations in establishing and growing Internet Exchange services. Sometimes by establishing an actual Internet Exchange, sometimes by supporting a local organization with knowledge and skills or by sponsoring local events, driving down the cost of doing business.

"Our organization is dedicated **to making a difference in the long term.**"

maintaining an independent position to protect that neutrality and to defend the greater good, while also acknowledging the potential dilemmas that may arise, particularly in times of geopolitical conflicts and even war. Despite challenging market circumstances, AMS-IX remains committed to supporting organizations that promote neutral Internet governance, such as ISOC, RIPE and the various NOG foundations. We believe that these organizations should continue to operate independently and for the public benefit in order to safeguard the principles of an open and free Internet, and we support them in various ways.

Online Safety is a top priority for us, and we are investing in technology and services (either direct or via partners) to make the Internet a safer place. We engage in discussions and debates with governments, industry leaders and governance bodies such as ISOC, and IGF to advocate for better regulation.

Last but not least, Sustainability is an important aspect of our business, and we are committed to reducing the impact of the connectivity sector across the energy chain. This includes exploring new solutions that use less energy.

Building a Sustainable Internet

In 2022, AMS-IX set out specific impact ambitions during employee sessions, focusing on three key themes to contribute to a sustainable future for the Internet: Neutrality and Independence, Online Safety, and Sustainability.

Neutrality is a core principle for us, and we strive for technical neutrality on our platform, ensuring that all users are treated equally and data is not prioritized. We also believe in

AMS-IX's global expansion

Earlier this year, I explained that AMS-IX has seen the total traffic on our Amsterdam platform double in the past four years, which indicates the continued growth of the digitization of our society. However, AMS-IX must also contend with the law of diminishing returns and increasing competition in the Netherlands. Therefore, part of the growth strategy is about investing in other parts of the world where growth potential is greater and we can bring our knowledge and expertise to help grow the Internet, such as in Asia, Africa, and South America. In addition, we support partners worldwide in enhancing and extending the Internet in their respective countries through assisting in the development of Internet Exchanges. At the same time, we are determined to defend our position as a market leader in Amsterdam through recruiting new customers and by launching new services. This not just for the benefit of Dutch members and customers, but also because Amsterdam remains a major global connectivity hub for customers over the world.

To remain relevant in a market that is under pressure, AMS-IX is diversifying and focusing on growth, not just for the sake of growth, but because we have something valuable to contribute to the global Internet. We are actively rolling out new locations to help local communities. Our growth strategy centers on adding value and collaboration with local partners, whereby most of the new locations we enter come about because we are being asked to come and help build an Internet Exchange. These local partners have the specific knowledge of a market, speak the language and know the local customs, so important to build a successful business. As we expand our global footprint, we are demonstrating our value more and more. As a business with a mission to give back, we are exploring opportunities to invest in local communities to grow the digital expertise and skills. Sometimes with a local partner, sometimes with government support, like the initiatives by the Dutch government to improve the Internet for the Dutch Winward Islands. A contribution to a better Internet in that area benefits the local economy but also positions us to potentially expand further in South America.

2022 priorities and accomplishments

In 2022, our focus was on developing "organizational maturity" which we translated into five "Business Objectives" as shown on the right.

We achieved a lot during the year, including opening multiple international locations such as Egypt (EG-IX), Singapore, Kolkata, and Hyderabad in India, as well as new partnerships in Kuching, Bangkok, and the Gulf region. Additionally, we made significant progress in terms of organizational

Business Objectives 2022

- Deploying 10 new locations

- Migrating customers to the new portal ams-ix.me

- Resolving Technical Debt

- Hardening our security

- Deliver 3 innovative POCs (Proof of Concept).

execution power. For example, at the beginning of the year, "technical debt" was a major pain, but by the end of the year, we had resolved a significant amount of it, and have a clear understanding of the necessary activities and efforts needed to move the needle further.

While we did not fully achieve all of our "Business Objectives," we have seen an organizational growth process that will bring long-term benefits. This reflects our commitment to continuously improve and strive for excellence in all our endeavors, supporting our goal to drive down cost for our customers.

Financial results

Net Revenue for 2022 grew with 6% (€1.3 million) to €23.7 million, primarily driven by strong Public Peering business combined with a growing percentage of new business. Total capacity in Amsterdam grew to 48.94TB and the total number of ASNs globally grew to 1082 from 1076 last year. The traffic growth rate stabilized somewhat in 2022 after Covid-19 pandemic, but public peering remains a strong driver in AMS-IX' overall business.

Last year was a challenging year in many ways. High inflation, long lead times on equipment, access to talent remains challenging and war in Europe. Regardless, AMS-IX managed to keep the gross margin at a healthy level whilst tightly managing both cost and spend.

Personnel cost increased by 26% and is mainly driven by hiring additional staff and outsourced personnel in support of projects like our Digital Transformation and resolving technical debt combined with compensating AMS-IX employees for the increased cost of living, i.e. inflation.

With €3.4 million total investment in fixed assets, investments went up compared to 2021, primarily driven by the investments in the switching platform. Depreciation however was low compared to earlier years with €1.6 million which is explained by a combination of complete write off of earlier investments and long lead times and subsequent delays in deploying new equipment.

Other operating expenses increased by €1.4 million resulting from increased spend on marketing and travel following the end of Covid-19 related travel restrictions and investments in software and services.

Continued organizational maturity and growth in 2023

In 2023, our main objective is to again make significant progress in "organizational maturity" and our Digital Transformation. To achieve this, we have set clear goals ensuring our teams are aligned and focused on achieving them. In 2022, we made significant investments in creating focus within our organization, including defining specific "Business Objectives", core values, and building our execution power. This will lead to increased productivity, effectiveness, and efficiency across the company going forward.

A key priority for 2023 is to ensure that all of our customers are transitioned to our new portal, ams-ix.me, in order to maintain high levels of service quality and deploy new services for our customers to continuously develop the user experience and interaction. We have several growth opportunities for expanding our international footprint and developing new services. For example, our plans for a data exchange align with market demands and opportunities, and we are excited to explore these possibilities in the coming year.

*"Our team continued to provide a **high-quality service.**"*

A message of gratitude

As we reflect on the past year, I would like to express my deep gratitude to our members, customers, and partners for their continued support and trust in AMS-IX. I also want to recognize the hard work and dedication of the AMS-IX team. Despite the challenges posed by the COVID-19 pandemic and ongoing global conflict, our team has risen to the occasion and continued to provide a high-quality service, which really makes me proud. Unfortunately, the year came to a somber close when we lost one of our own. Inga Zender, a member of our Customer Success team, passed away unexpectedly around Christmas, leaving a deep impact on everyone at AMS-IX. The team provided support to Inga's Polish family, making arrangements for local matters and holding a ceremony in her honor at our office.

I would like to thank the AMS-IX Board, for their efforts in ensuring the well-being and personal development of our employees. We have taken steps to empower our personnel with the necessary competencies and skills, and it is clear that our team is a group of ambitious and evolving individuals who are leading the organization through this transition. I am proud to see that employee engagement remains at an elevated level and that AMS-IX continues to be a great place to work.

Our common goal, "Better Society through Better Internet," is what drives us forward. As we look ahead to 2023, I am confident that we will continue to achieve great things and make a positive impact on society through the power of the Internet. Thank you for your support, and let's work together to make the world a better place."

AMS-IX
in 2022

jun

AMS-IX and Quanza are upgrading the switching platform supporting the Internet Exchange

Our yearly MORE-IP event

mar

apr

EasyAccess
expansion

**EasyAccess expansion
and new 10GE pricing**

**Telecom Egypt and AMS-IX launch
EG-IX, to first Open Access Internet
Exchange in Cairo, Egypt**

may

**Launch of the new Internet
Exchange in Singapore**

**AIM and AMS-IX sign partnership to
build six new Internet Exchanges in
the Gulf Regio**

aug
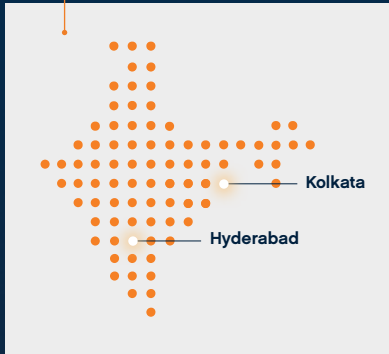
AMS-IX Kolkata and Hyderabad are live

Kolkata

Hyderabad

AMS-IX and irix are building a new Internet Exchange in Kuching, Sarawak

nov

Launch of the new Internet Exchange in Bangkok

sep

AMS-IX and MDXi, an Equinix Company, sign MOU to launch neutral Internet Exchange services in Lagos, Nigeria

New Analytics Features Announced for IX-API during European Peering Forum

11

New Peak traffic record in Amsterdam: 11 Tbps

AMS-IX presents the Data Exchange during Dutch Design Week

Who We Are and What We Do

Our purpose

AMS-IX is short for 'Amsterdam InternetExchange'. We operate multiple interconnection platforms worldwide. For nearly 30 years, our leading platform in Amsterdam has played a crucial role at the core of the internet as one of the world's l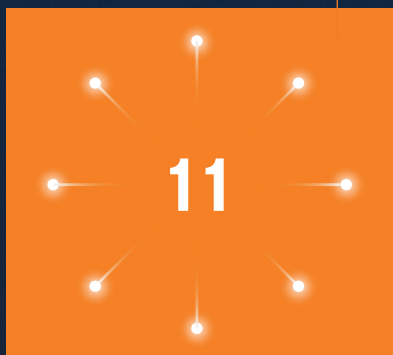argest internet traffic hubs. By connecting to us, customers, such as internet service providers, telecom companies and content providers, can rest assured that their global IP traffic is routed in the fastest most efficient, secure, stable, and cost-effective way. Thanks to AMS-IX, all these customers can offer their end-users lower latency and more engaging online experiences. We are proud of what we do: contributing to a better society through better internet.

Our services

- Internet Peering
  Internet Peering: Exchange internet traffic with a multitude of networks via one single connection.

- Mobile Peering
  Exchange your global roaming data securely with other mobile providers.

- Private Interconnect
  Connect privately with one of your customers, suppliers or business partners.

- EasyAccess:
  One-stop-shop combining IP transport and peering service allowing you to connect remotely to our platform from 250+ locations.

Wordwide access

Our interconnection platforms are accessible from 500+ locations around the world.

You can either connect directly from one of the Data centers where we have a presence, or remotely either via our EasyAccess service or via one of our trusted partners.

● AMS-IX location
● Powered by AMS-IX

Amsterdam

Chicago

Caribbean

Bay Area

Cairo

Manama

India
Mumbai
Kolkata
Hyderabad

Hong Kong

Singapore
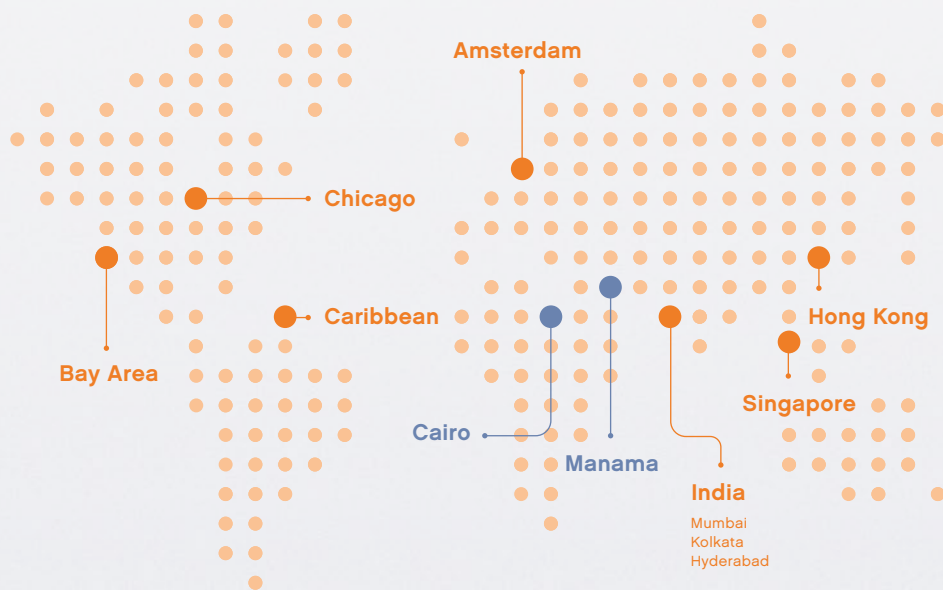
- IX-as-a-Service
  Managed solution for running your own Internet Exchange.

- Cloud Access
  Enhance the quality of your Cloud connection by connecting to the networks of Microsoft, Google or Amazon directly.

- Anti-DDoS
  Mitigate Distributed Denial of Service attacks via our interconnection platform.

- Closed User Group
  Connect privately with 2 or more organisations outside the public internet.

Innovate

To remaining relevant in a consolidating market. AMS-IX is investing in both Market and Product Innovation to develop new value-added services for its members and customers

Optimise

Every organisation needs to continuously optimise to increase efficiency and drive down cost. At AMS-IX, we are constantly looking for more efficient ways to run the platform and business. Therefore, we continue to invest in our Digital Transformation and create benefits from economies of scale for our customers

Grow

Size does matter. Scaling up will support the push for more value to our members and customers. Additionally, to support the greater good of the Internet and the interests of our members and customers, size matters to remain relevant and having a 'seat at the table' of the multiple realms of influence, such as the EU, local government and the various Internet organisations

Our long-term strategy: innovate, optimize, and grow

Our mission

Nothing fails like success; to remain relevant, AMS-IX stays abreast of trends and changes in the market and anticipates customer needs. We claim our place at the table with other stakeholders to take part in the dialogue on the future of internet. Maintaining leadership in our industry means following a moving target. We have a vision on relevant developments, such as maintaining a safe and secure internet, handling privacy, and protecting an open, available, and reliable internet. We ensure we clearly articulate our position on these topics.

This has brought us to a point at which we need to re-examine the internet we know and love, re-consider our role, and assume responsibility. What can we – who embody AMS-IX and are its heart, head, and hands – do to help internet evolve so that it contributes to a better society? The answer is reflected in our mission to be the leading exchange of a responsible internet.

Our ambition and strategy

Our ambition is to be one of the world's top three independent internet exchanges. In many respects, AMS-IX already is the leading internet exchange, operating multiple interconnection platforms. To remain in the lead, we need to execute on the three closely connected pillars of our long-term strategy: innovate, optimize, and grow.

Our core themes

Handling the highest traffic peaks, providing internet exchange services around the world, providing the greatest value for our customers in terms of types of networks and services, and being recognized as a thought leader in our industry. We want to retain our leadership so that we are in a position to take responsibility and contribute to a better internet. We aim to achieve this by caring about independence, online safety, and sustainability.

The Way the Web Works

AMS-IX is one of the largest interconnection platforms in the world. But what is an interconnection platform? How does it fit in the workings of the Internet? And why is it useful to connect to AMS-IX?

On the surface, the World Wide Web looks like a huge, homogeneous network connecting everyone and everything. But when you take a closer look, you can see that this is not really the case. The Internet can rather be described as a network of networks. Currently, the Internet consists of more than 55.000 networks from various companies, all with their own infrastructure, technology needs, background and commercial vision or ideals. The glue that holds all these 55.000 networks together is the Internet Protocol (IP). The protocol defines a common language, making sure that traffic can be exchanged from one network to another. And in order for networks to exchange IP traffic, they need to physically connect to one another. This process is called peering. And this is where interconnection platforms come in.

There are three ways networks can connect with one another:

IP TRANSIT
You interconnect with another party via a transit provider. A transit provider provides the service of allowing network traffic to cross (or "transit") their computer network to the larger Internet. The transit provider requires a fee for their services.

PRIVATE PEERING
You interconnect directly with another party to exchange traffic without any third parties involved. Since the interconnection is beneficial for both sides there are usually no costs involved. The downside of this form of interconnection is that it quickly becomes unmanageable when there is a high demand for connectivity.

PUBLIC PEERING
You interconnect with another party using an interconnection platform, e.g. AMS-IX. An interconnection platform is a place where multiple networks connect and exchange IP traffic. With only one connection to an interconnection platform you can reach all the other parties that are also connected to the platform.

Peering via an interconnection platform is just one of the ways networks can interconnect. AMS-IX operates several of these interconnection platforms around the world.

AMS-IX Amsterdam
The platform in Amsterdam is extra special. It was founded nearly 30 years ago and is one of the first interconnection platforms. Moreover, AMS-IX is one of the largest platforms in the world, with over 875 networks in Amsterdam connected to it. This number corresponds to a variety of companies ranging from Internet Service Providers, Cloud Providers, Content Providers (social media, streaming services), Gaming companies, Healthcare Platforms, E-commerce companies, Applications providers (CRM, HR, ERP), Payment Service Providers, Video Conferencing Solutions and many more.

Why connect to AMS-IX

There are several benefits when connecting to AMS-IX:

Low latency and optimal traffic flows
An interconnection platform has a lot of networks attached to it. Therefore, if a network connects to AMS-IX, it helps them ensure that IP traffic flows via the fastest and most efficient route. This reduces the amount of latency on the network. For example: before AMS-IX was founded, a lot of internal internet traffic in the Netherlands ran via Miami. AMS-IX made sure there was a more direct and efficient route for traffic.

Cost-effectiveness

Connecting to AMS-IX saves costs. Traffic that you can exchange directly with other parties locally at low cost does not need to be sent via more expensive transit providers.

A rich ecosystem

AMS-IX is a very diverse and international interconnection platform. More than 80% of the connected parties come from outside the Netherlands.

Better control

Connecting directly to a network means that companies know which routes the IP traffic takes (which is not the case with IP transit). This can be very important for companies with high demand for quality connections, like gaming companies. An online customer portal enables networks to monitor traffic in real-time.

Increased network redundancy

Connecting to an AMS-IX location gives networks a greater resilience. The platform in Amsterdam is for example distributed across 16 different data centers. As a result, the chance of the entire infrastructure failing is extremely small.

Bart van der Sloot
Chair

Board Statement

Scaling Up and Digital Transformation Start Paying Out

In an insecure world dominated by the ongoing war in Ukraine, AMS-IX began to see the benefits of its investments in scaling up, such as launching new national and international locations, and in digital transformation, including implementing a new organizational structure, processes, and systems that contribute to improved efficiency and customer experience.

New challenges in an insecure world

At the time of writing this statement (February 2023), the world around continues to be insecure and unpredictable. The ongoing war in Ukraine and the earthquakes in Turkey and Syria dominate the news. It is heartwarming however, to see that the internet community at large gets together and tries to help where possible. A good example is the Keep Ukraine Connected initiative, providing equipment and tools to the Ukrainian internet community.

Growing scale

For AMS-IX 2022 was a very successful year. The international activities accelerated by opening new internet exchanges in e.g. Singapore, India (Kolkata, Hyderabad) and Egypt and contracts signed for exchanges in Malaysia, Nigeria and Thailand. These exchanges contribute both to AMS-IX' mission of "building a better internet to contribute to a better society", as well as to growing the scale of AMS-IX operations, which is imperative to drive down operational costs per exchange and generate funds for innovation.

While some people may believe that these international locations are "just to make AMS-IX look big" and that these are a risky adventure that may result in huge losses (to be compensated by the port fees in Amsterdam), it is good to understand that these new locations are typically owned by a local partner and that AMS-IX provides the platform and support under the IX-as-a-Service umbrella, with guaranteed coverage of the costs for AMS-IX and most of the risk and reward with the local partner.

Efficiency improvements enabling innovation

The growth in locations was not the only factor contributing to improved efficiency. The results of the Digital Transformation program and a structured step-by-step approach to resolving technical debt also helped to free up time for innovation, which is budgeted at about 2% of revenues. I expect that during 2023, we will see tangible results from various initiatives, some of which are closely related to our core business, such as the recently launched Data Center Interconnect service. Others may be further away from our core business but still linked to it, such as the Amsterdam Data Exchange (AMdEX).

Our markets

In 2022, the IP interconnection market in the Netherlands continued the trend of the previous years, with continued price decline in alternative interconnection services (especially IP Transit), alternative locations growing as an interconnection hub (e.g. Marseille), consolidation in access networks (where large networks increasingly tend to avoid IXes) and concentration of content traffic into fewer than 10 content providers (driving migration from IX services to Private Network Interconnects – PNI's). With prices of equipment, power and colocation increasing however, the price declines are flattening out.

Another noticeable development was the emergence of new internet exchanges, typically trying to penetrate the market with free or low-cost ports to lure in new customers. At AMS-IX we will carefully monitor these developments and ensure members and customers perceive the value of an exchange with a professional support team, solid security arrangements and acting as "one of the voices of the internet community" in e.g. political and regulatory debates.

Outside the Netherlands the opportunities seem endless, even in countries with established member based or commercial exchanges. The "neutral and trust based" AMS-IX brand gets us invited to the table with many new partners, with especially good traction in the Middle East and South East Asia.

A stable team

In 2022 the AMS-IX organization and Management Team continued to stabilize with reduced employee attrition and sickness levels. The year ended sad however: Inga Zender of the Customer Success team passed away unexpectedly around Christmas. This had a big impact on everyone, but the team stepped up and offered its support to Inga's Polish family to arrange local matters and conduct a ceremony at the AMS-IX office.

Recruiting and retaining talent is an ongoing challenge for any technology company these days, but we believe that the AMS-IX activities, its culture (embracing diversity and inclusion) and its brand, in combination with competitive employment conditions, will enable the AMS-IX team to thrive in the years ahead.

Looking ahead

I have great confidence in AMS-IX' ability to create long term value for its members and other stakeholders. We have a seasoned and energetic management team, which is well aligned and has a constructive relation both with its employees and with the Board. We have a talented and enthusiastic pool of employees, a solid strategy and healthy financials.

As we have seen in various growth and innovation initiatives, we should not underestimate the importance of AMS-IX' neutrality and transparency, which have always been at the heart of AMS-IX. This really sets AMS-IX apart from other parties and enables AMS-IX to move into markets where such a governance structure is of importance to build trust and acceptance. In all my dealings with the AMS-IX team, I really recognize these values – which will contribute to driving our success in the future.

On behalf of the Board,

Bart J.R. van der Sloot
Chair

Board Report

The "AMS-IX Board" is the Executive Board of the AMS-IX Association (managing the Association's business) and is also appointed as the General Shareholder Meeting and Supervisory Board of AMS-IX B.V..

In its role of Supervisory Board, it appoints and supervises the CEO and ensures the Management Team (MT) of AMS-IX B.V. executes an agreed strategy to create long term value, while having proper controls in place to manage the business (including financials and risks).

In 2022 there were 4 Board Meetings, all joined by all Board members (except for BM 144), with a mix of remote and in person participation. In these meetings the MT of AMS-IX B.V. is also present, typically to present the results of the previous quarter in their area of responsibility (in the quarterly Management Report) and to present or discuss plans.

Bernhard Pusch
Telstra

Board member since
12 Dec 2019
Next re-election **Dec 2023***
End term of office **Dec 2032***
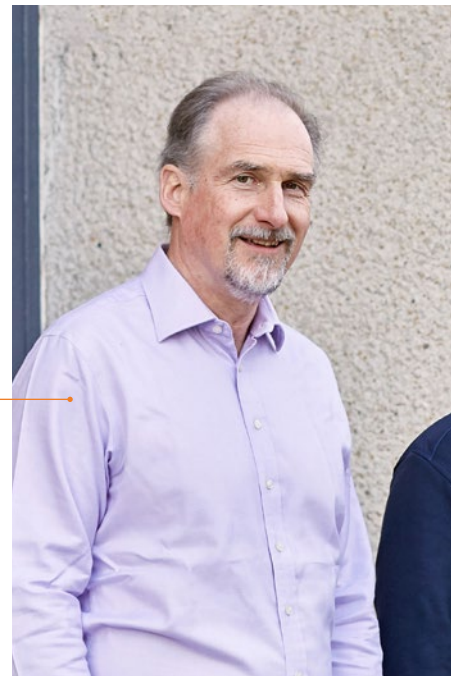
* Please refer to "Board Developments".

Eric Loos
BICS

Board member since **20 Dec 2016**
Next re-election **Jun 2025***
End term of office **Jun 2028***

Jan Thielemans
Arcadiz Telecom

Board member since **12 Dec 2019**
Next re-election **Jun 2023***
End term of office **Jun 2032***

Michael Ourabah
BSO Network

Board member since **14 Dec 2018**
Next re-election **Jun 2024**
End term of office **Jun 2030***

Bart van der Sloot
Leaseweb

Board member since **20 Dec 2016**
Next re-election **Jun 2025***
End term of office **Jun 2028***

Meetings and Activities of the Board in 2022

In addition to these formal Board meetings, the Board members and MT members are regularly in contact to discuss specific topics. These are typically covered in the "Finance Committee", "Governance and Compliance Committee" and the "Compensation Committee". The goal of these informal conversations is to ensure the Board remains well informed about the AMS-IX B.V. operations.

The Chair of the Board and the CEO of the MT have a biweekly call to share updates and review progress.

Board developments

To align the timing of membership of the Board of the AMS-IX Association and of the Supervisory Board of AMS-IX B.V. to June, Eric Loos and Bart van der Sloot stepped down as Association Board Member 6 months prior to the end of their term – during GM57 in May 2022. They were reelected for a new 3-year term during the same GM.

Board membership of Bernhard Pusch and Jan Thielemans ended in December 2022, reducing the Board of the AMS-IX Association to 3 members per the start of 2023 (Eric Loos, Michael Ourabah and Bart van der Sloot).

The current Board intends to propose Bernhard Pusch and Jan Thielemans as Board Members in June 2023,

February 10
Board Meeting 142
remote/in person 5 of 5

May 17
Board Meeting 143
remote/in person 5 of 5

June 1
General Meeting 57
in person (during MORE-IP)

July 12
Board Meeting 144
remote/in person 4 of 5

November 11
Board Meeting 145
remote/in person 5 of 5

December 7
General Meeting 58
remote

provided they are still employed by an AMS-IX Member. This will give a better distribution of Board changes over the years.

To ensure continuity in the Supervisory Board activities, the Board of the AMS-IX Association adopted a resolution that Bernhard and Jan will remain a member of the Supervisory Board of AMS-IX B.V.

There were no changes in the committees of the Supervisory Board.

The Governance and Compliance Committee, together with the CEO, CFO and AMS-IX Legal Counsel, have concluded the work on various documents to further improve AMS-IX' governance, including a Code of Conduct, Sanctions Policy and Service Agreement between the Association and AMS-IX B.V. (outlining the services that AMS-IX B.V. provides to the Association to manage the activities of the Association). A Code of Conduct training will be rolled out during 2023 (also for Board Members).

To further professionalize governance and ensure compliance with applicable law and regulation, the Board, the CEO and the CFO have joined a Governance Education program at the Nyenrode University during 2022.

Remuneration

Participation on the Board is voluntary. There is no monetary remuneration or compensation for the activities. Travel and hotel expenses are covered by the AMS-IX B.V.

Closing

The Board would like to express its respect and thank the AMS-IX MT and all employees for a great 2022.

Amsterdam, February 21, 2023.

Bart J.R. van der Sloot
Chair

Corporate Governance

Corporate Governance

AMS-IX places great value on its corporate governance structure. This provides the organisation with a significant degree of independence and neutrality, which contributes to our growth, continuity and global expansion. In this section, the corporate governance structure is explained in greater detail.

Governance Structure

AMS-IX consists of two separate legal entities: the AMS-IX Association and the AMS-IX Limited Company (in Dutch, Besloten Vennootschap or B.V.). The AMS-IX Association is the single shareholder of the Limited Company and the organisation and its staff are incorporated in the Company. The Executive Board of the Association consists of five people and also acts as the Supervisory Board of the Company.

AMS-IX B.V.

AMS-IX B.V. is empowered to take the majority of the decisions, within the boundaries set by annual and long-term plans approved by the Association and/or Supervisory Board. During quarterly board meetings, the Supervisory Board validates whether plans have been executed according to budget and business plan and approves the annual plans and budgets as well as items outside the scope of management control. The Company Management Team reports to the Supervisory Board on a quarterly basis. Chief Executive Officer of the Company is Peter van Burgel. Mr. van Burgel chairs the Management Team, which further consists of a CTO, CCO and CFO. In addition, the Company consists of technology, commercial and financial departments, as well as human resources and support staff. Next to operating the Internet Exchange in Amsterdam, the AMS-IX Company also operates AMS-IX Caribbean in Curaçao, AMS-IX Mumbai in India, AMS-IX Chicago and Bay Area in the United States and AMS-IX Hong Kong.

AMS-IX organisation structure

AMS-IX bodies	Association	Corporation
Meeting acts as	General Assembly	Shareholders meeting
Board acts as	Executive Board	Supervisory Board
Management acts as		Management

Alex de Joode
Head of Legal, Regulatory
and Compliance

Word from the Head of Legal, Regulatory and Compliance

Defending an Open, Free and Safe Internet

Alex de Joode highlights the crucial role of AMS-IX in the political arena

As a non-profit association with over 300 affiliated parties, AMS-IX represents the interests for an open and free internet. In terms of regulation, we take into account both the impact on the organization and its customers, and the potential consequences for society as a whole.

EU legislation
With a significant presence in Brussels, where most legislation originates, AMS-IX is an active member of EuroIX, a group representing all European Internet Exchanges and EuroISPA,

a European lobby organization. These memberships and my election as its president for a year at EuroISPA, gives us significant influence in the EU policy making process. Once decisions are made in EU parliament, AMS-IX works closely with Dutch authorities to ensure the best possible outcome for the industry in the Netherlands.

It's essential for us to safeguard the interests of all organizations, as the large tech companies within our network have their own regulatory departments. For example, the Network Information

Security Directive requires a certain level of security in products to prevent hacking. This may impact some parties and must be locally implemented. We have therefore taken a stance for our members. Also we recently sent a letter to address the issue of "double dipping," where operators, and eventually their customers, are charged twice for the same service from third parties such as Netflix. This practice fundamentally alters how the internet operates, and we are opposing it by advocating for change and expressing our stance to policy makers.

The Impact of the Digital Services Act

EU lawmakers agreed and accepted the Digital Services Act (DSA) by the end of 2022. The purpose of the DSA is to promote fairness, trust, and safety in the digital space. The e-commerce directive from 2000 excluded parties from responsibility for user actions, giving big tech companies significant power with no accountability. The EU commission deemed it necessary to update the e-commerce directive, leading to the creation of the DSA.

The DSA has little impact on most of our affiliate customers. As the DSA states, transit parties are not liable and hosters are limitedly liable, only if they are aware of illegal activity on their platform. The DSA imposes additional obligations on big tech companies that position themselves as platforms, but the majority of customers remain unaffected with no obligation to monitor for illegal activity. This means they can continue operating in Europe without the threat of significant changes in regulation.

Argumentation diagrams

AMS-IX and ECP develop argumentation diagrams on subjects on the intersection of digital and society. An argumentation diagram is a neutral overview of arguments for and against a certain theorem. By making these diagrams, AMS-IX aims to make complex digital subjects with big societal effects understandable for a wider audience, which helps to strengthen public debate. Our first argumentation diagram was about encryption and was created in 2021. In 2022 we created a second argument diagram, this time around censorship, including our point of view around the blocking of two Russian television stations in the first quarter of 2022. We believe censorship should be openly discussed and made explicit, rather than through backdoor regulations. Our third argumentation diagram was published in December 2022 around the Temporary Intelligence Service Act. Our aim is to support objective and neutral decision-making on the law.

The sea cable dossier

The Netherlands has always played a key role in the internet industry, driven in part by the fact that many sea cables

landed in the country. However, as these cables reach the end of their lifespan and no new cables are being added, this presents an unacceptable situation. We are advocating for timely action to update the Netherlands' business proposition in this regard. We have received a commitment from the Ministry of Economic Affairs that they will appoint a dedicated coordinator, and on January 30th 2023, the Minister of Economic Affairs met with us to discuss the issue and find a way

forward. If no action is taken, the cables may be routed to countries with an competing internet exchange, reducing our relevance. This has high stakes, not only for AMS-IX as it directly affects our business, but also for the competitiveness of the Netherlands, therefore we work in a broad coalition. Additionally, we are also exploring ways to improve connectivity, via sea cables, in overseas areas such as Curaçao.

Child Sexual Abuse Material

The Dutch Notice and Take Down policy, a voluntary agreement between hosting providers, was updated to remove Child Sexual Abuse Material (CSAM) within a 24-hour time frame. However, research by the Technical University of Delft showed that only 10 hosting parties were responsible for 99.9% of all CSAM, and one large party hosted 93% of it. We opine that the (former) Minister could have resolved the issue by working with these 10 parties rather than the entire Dutch internet community. The large party has now said goodbye to its imageboard customers and as a result, the content is now accessible in Moldova instead of The Netherlands, where customers were previously capable of scanning and filtering uploads to detect CSAM and remove any known CSAM images. As a consequence, roughly 7 million images are now uploaded unfiltered. Despite this setback, the Dutch Ministry of Justice and Safety can claim that the problem has been resolved in the Netherlands.

AMS-IX cares about a safe and open internet. We do this by working with partners, participate within working groups, and initiate debates to find a middle ground solution. We supported the initiative to set up an independent administrative body, the Authority for Terrorist and Child Pornographic Material, to act as a 'hammer' against those entities that fail to cooperate with the child pornography center. We firmly believe that reducing the availability of illegal content on the Dutch part of the internet through a public-private partnership is a good solution.

Bad hosting

Bad hosting has also been a topic in the past year among the Dutch Cloud Community. There is a perception among politicians, police and media that AMS-IX can shut down bad content, but we can't and we also don't look into content. We handle 11 terabits per second, so even if we could, it would be technically impossible to monitor it all. We are very much focused on the PA and PR aspects of bad hosting in the Netherlands to make sure people understand AMS-IX does not involve itself with content. We are part of the internet infrastructure and therefore not the appropriate entity to enforce content limitations through legislation. We endeavor to convey this message in our outreach efforts.

Mike Baron
Chief Commercial
Officer

Word from the CCO

Achieving a Superior Internet Experience

AMS-IX CCO Mike Baron reflects on commercial accomplishments and aspirations

The internet has become an integral part of our lives, and its significance is only set to increase in the years to come. As such, it is crucial to ensure that the internet is safe, secure, and affordable for everyone. To achieve this goal, AMS-IX prioritizes the development of neutral internet exchanges, the enhancement of the local internet experience, and the reduction of global internet costs.

A strategic approach to doing global business

Our commercial team is focused on expanding and strengthening the global presence of AMS-IX through the development of a robust internet infrastructure. This is achieved by setting up internet exchanges in strategic locations, which attracts international content providers to our platform and improves business activity. This, in turn, fosters increased prosperity and job opportunities in the region. By taking a leading role in critical decision-making areas for internet usage, we aim to enhance internet speed, safety, and sustainability, resulting in a better internet experience for all users. Our growth strategy prioritizes working with local partners to reduce investment costs and risks, while also establishing a local presence to facilitate community engagement and development.

Making waves internationally

In 2022, our company made significant strides in serving the current international market and expanding our global reach. Our business is stable in our existing locations in Chicago, Bay Area, Caribbean, Hong Kong, Mumbai and Manama and we successfully launched internet exchanges in Cairo, Hyderabad, Kolkata and Singapore, with many customers already connected. In addition, we have signed agreements to implement internet exchanges in Bangkok, Kuching and Lagos.

Looking forward to 2023, we have plans to deploy at least 8 new internet exchanges. This strategic expansion of our network will help to attract international content providers to these locations, fostering increased business activity and driving prosperity and job opportunities in the regions. The potential for a local internet exchange to drive digital transformation in smaller cities is exemplified by Kuching, a city in Borneo, Malaysia. By establishing a local internet exchange that can manage national and international traffic, the city can gain access to digital payment services and make progress towards its smart city goals. To further accelerate growth in our existing international locations and jumpstart other activities abroad, we plan to work more closely with local professionals in 2023, tapping into their expertise and partner networks.

"AMS-IX has set its sights on expanding and diversifying the Dutch internet exchange community."

Streamlining our operations

Our team contributes to optimizing AMS-IX's work processes. For instance we now have a dedicated business analyst who translates ideas and wishes within the company into what the development team can build, while also analyzing the impact on existing processes. Our team played a supporting role in enhancing our Salesforce and migration teams by providing them with user requirements and test functionalities. Collaboratively, we are working towards migrating customers from our previous portal, my.AMS-IX, to the new AMS-IX.me. Despite the complexity of this task, we have made substantial progress by dividing it into manageable parts and commencing the migration process, which will ultimately benefit our clients.

AMS-IX's customer base is stable and steadily growing. On our platform in Amsterdam we do see some churn, primarily due to network consolidation, but we are pleased to report that the total number of connected parties (ASNs) increased to 889 ASN at the end of 2022. Looking ahead to the next year, AMS-IX has set its sights on expanding and diversifying the Dutch internet exchange community to create stronger, more connected networks. We have a strong focus on customer satisfaction and new service offerings, as outlined in our innovation chapter, that will bring added value to our customer base.

As part of our commitment to shaping the future of the internet in a positive way, we are actively participating in several initiatives in the Netherlands that prioritize online safety and data sovereignty. By doing so, we aim to provide our customers with a secure, reliable and sustainable platform for their internet traffic. With this approach, we are confident that we can further bolster the growth and expansion of our community and strengthen AMS-IX's position as a leading global provider of internet exchange services.

It takes a lot of time and energy, but it also **really pays off**

Revitalizing connections in the post-pandemic era

After all the years of COVID, we've regained the opportunity to maintain and establish new partnerships. We are visiting so many places again, and there are major opportunities, both nationally and internationally. A huge number of partners want to work with us and grow together. I've never seen this before and I am grateful for this. We have attended many events this year, which are moments where we get to interact with our customers and partners. That personal contact is very important. Our MORE-IP event was a highlight in that sense, as we brought together the Dutch internet exchange community, but there were also many international customers and partners. In my team, it's all about building new internet exchanges together or building on existing ones. It is therefore crucial to attend events with partners. The results in 2022 speak for themselves. We have signed up 10 Internet Exchanges. That's not something you can just do virtually, especially when you are going to other regions. For instance, in the Middle East, the relationship and trust you have with each other is just paramount. It takes a lot of time and energy, but it also really pays off.

Partner case study – Batelco

Building a Strong Digital Ecosystem in the Middle East

Hani Askar, Chief Global Business Officer at Batelco, discusses the value of an Internet Exchange for the Gulf region

"Batelco is the top telecommunications company in Bahrain and our presence extends beyond the country, encompassing operations in Saudi Arabia, Jordan, Egypt, and other areas. As part of the Beyon Group, a technology group with aspirations of becoming a top regional operator and expanding globally, Batelco has invested heavily in infrastructure, including data centers, Internet

exchanges, IP networks, and submarine cables, to support its expansion goals. To further boost international growth, Batelco has acquired companies in unique locations such as Diego Garcia, the Isle of Man, Guernsey, Jersey, and the Maldives. Our expansion beyond Bahrain is motivated by the need to diversify and reduce reliance on the highly competitive home market.

Our mission is to make Bahrain into a transit hub for Internet traffic. In order to achieve this goal we have a strategy to attract more traffic to our network and promote growth, including the establishment of an Internet exchange. In 2019, Batelco partnered with AMS-IX to launch a neutral internet traffic exchange platform in Manama, Bahrain's capital. We chose AMS-IX due to its strong reputation and because their priorities fit our strategy, even though they were initially not ready to offer an 'IX as a service'. However, we were confident that they were the right partner to deliver, and they did. Our joint goal is to improve Bahrain's digital infrastructure and increase traffic on the platform to support a vibrant society. We are proud to have created one of the best internet exchanges in the region in just a few years.

Batelco's decision to establish an exchange in the capital of its home country is rooted in Bahrain's historical

Hani Askar
Chief Global Business
Officer at Batelco

significance as a center point of trade for countries in the Arabian Gulf. We see becoming a transit hub as an opportunity, given that Bahrain's population of 1.5 million is surrounded by a total of 400 million people in neighboring countries. The value of an exchange lies in its connected networks and related services. Today over 90% of all Bahrain operators are connected to the exchange. Moreover, we are proud to have connected to Amazon's cloud services, which expands our reach and benefits our customers. This partnership has also enhanced our profile and helped to attract other partners, accelerating our growth on the global stage.

In addition to the Internet exchange, we have invested over 200 million in international and terrestrial cables to

We are enthusiastic about the future of our exchange and are **dedicated to enhancing its growth**

expand our network capabilities and better serve our customers, as well as support our expansion goals. We are involved in two subsea Internet cable projects connecting Bahrain to the East and to the West. Our focus on infrastructure growth and traffic attraction is critical to our success, and we continuously seek ways to differentiate ourselves in the market and stay ahead of the competition. Investing in these areas is a fundamental part of our effort.

Although there are two other internet exchanges in the region, our exchange, which is only four years old, has achieved the highest traffic peak (over 500GE) in the Gulf region. Our success can be attributed to the exchange's superior performance in gaming and social media, low latency traffic, and user experience, which have attracted major operators from Kuwait, Saudi Arabia, and Qatar. Kuwait for example is one of the largest users

for gaming content and social media. Previously their users had no other option than to go to Europe to fetch the traffic. Today they have an option just 2 milliseconds away from them, which is Manama-IX. They can enjoy the short paths and low-latency connectivity from Bahrain.

We are enthusiastic about the future of our exchange and are dedicated to enhancing its growth and efficiency to deliver more value to our customers. The high cost of internet in the region has been a challenge, resulting from regulatory factors and limited licensed operators. However, through expanding our network and infrastructure, we have been able to lower prices and improve traffic flow, which ultimately benefits our customers. Our objective is to differentiate our internet exchange by introducing new services such as mobile peering, expanding our footprint, and broadening our product line to serve additional countries. Together with our esteemed partners, we will continue to work towards improving the region's digital ecosystem. Our partnership with AMS-IX, responsible for technical operations and marketing support, has been integral to our success thus far, and we look forward to exploring new opportunities for collaboration."

Ruben van den Brink
Chief Technology
Officer

Word from the CTO

Agile and Focused Towards New Objectives

AMS-IX CTO Ruben van den Brink highlights the technical progress

AMS-IX is dedicated to promoting an open, neutral, safe and sustainable Internet. Our technology and services have demonstrated the profound effect the internet can have on societies. In countries like Iran and Hong Kong, the internet has enabled citizens to mobilize and amplify their voices through protests, showcasing its ability to bring about positive change. We understand that the internet infrastructure is built and maintained by a global community, and it is our responsibility to handle it with care. From a technical perspective this means continuous investing in new technologies and infrastructure, as well as providing support to other organizations that embrace an open internet. Our goal is to provide a reliable and high-performance internet exchange for all users, so that everyone can access and share information freely.

The story of AMS-IX

AMS-IX is moving forward by focusing on its long-term strategy of "Innovate, Optimize and Grow." The main focus for the past year has been on defining "Business Objectives" to help set

All our efforts in 2022 on the technical side of the company give me great confidence that **we are set for growth and innovation in 2023 and beyond.**

priorities within the organization. The goals require the entire organization to collaborate, improving our execution power. In 2022 we have taken the time to talk about our story, which gives a clear perspective on the future and a common understanding of what kind of internet exchange we want to be. Given our dedication to neutrality, online safety and sustainability, my team and I devoted a lot of time on the creation of a clear technical roadmap and identified key projects that align with AMS-IX's vision and objectives.

Addressing and resolving technical debt

A business objective with a major impact on my team and the organization was resolving our technical debt. We needed to address technical debt as it was hindering our growth and innovation ambitions. The team created a complete overview and translated it into 21 projects, estimating time, impact, and actions required for most of them. While maintaining our current systems, we have identified the issues and are working to resolve them using a scrum-like approach. Some projects are yet to be estimated due to dependencies with other projects. Our team has implemented a backlog system to track progress and has a regular sprint rhythm in place to review and overcome any obstacles. I am impressed by the team's efforts in overcoming these challenges and delivering successful results. They truly made the impossible possible. It showcases our commitment to improvement and advancing the maturity of our organization. In terms of improvement, we are also looking to separate our development and operational activities in order to increase execution power even further. This will enable us to successfully undertake the transformation we aim for.

Improving the customer journey

We have fully embraced the transition to digital customer relationship maintenance and are focused on automating as much as possible to provide self-service options for our customers and members. To achieve this, we have launched a new customer portal, AMS-IX.me, and are currently migrating all customers to this platform. The portal offers a fully integrated and mostly automated sales process, from lead management to billing, and we continue to add new functionality. The migration process began in late 2022 and will continue throughout 2023 until all customers have been successfully migrated.

It is crucial to ensure our platform can adapt to future developments. As internet traffic continues to grow at a rate of approximately 20% annually, AMS-IX is constantly investing in enhancing the capabilities and capacity of its platform. In 2022, AMS-IX and Quanza, a Network & Cloud operator, announced a partnership to upgrade the exchange's switching platform. We signed a Master Service Agreement with Quanza, for providing the Juniper MX platform to construct the next AMS-IX switching fabric. Although there are challenges in terms of delivery times, this provided us with the opportunity to properly prepare for the migration. The migration will begin in Amsterdam where both organizations are based and will provide internet users with connectivity to the new platform at sixteen colocations across the Netherlands at speeds up to 400G.

Scalable quality solutions for future growth

AMS-IX prioritizes quality in everything it does to ensure that it can deliver high-quality solutions and services that meet the needs of its customers and support the overall mission of the company. To achieve this, we focus on creating scalable and flexible technology solutions that can support growth and expansion while maintaining high service quality. To minimize the need for additional staff and to quickly roll out new services, we have been working on creating systems that are efficient and easy to manage. Additionally, we focused on improving our flexibility and the ability to identify and troubleshoot problems quickly, so that we can respond to customer needs more effectively. All our efforts in 2022 on the technical side of the company give me great confidence that we are set for growth and innovation in 2023 and beyond.

Industry case study – Stichting Digitale Infrastructuur Nederland

Addressing Challenges in the Digital World

DINL Managing Director Michiel Steltman elaborates about building bridges

DINL was created in 2015 from the collaboration between several industry organizations, including AMS-IX. The goal was to give a voice to companies at the root of the internet, who had a core value of an open, inclusive and neutral ecosystem. Our goal is to educate and advocate for the functioning of the internet in all its aspects, while also addressing social issues and challenges.

Over the past 7 years, DINL has become a mainstream voice in the Netherlands, rooted in government policy and thinking about the internet. We aim to balance the three fundamental values at play in the digital world: economic interests, collective social interests such as safety and crime prevention, and personal interests of citizens, including protection of data. DINL targets three groups (public, media, and decision-makers in relevant ministries) with messages tailored to each group. We build personal networks, publish in the media, engage with decision-makers, educate politicians, for instance through the Digital Binnenhof Academy, and provide proactive information and research. DINL is supported by volunteers from the sector and operates as a collaboration for and by the participants. We advocate for public-private cooperation in dealing with digital problems and challenges. Solutions always lie in the middle, so government, companies, and civil society organizations should work together to ensure balance.

Our approach has been successful and is reflected in the digital agendas of various ministries including Economic Affairs, Justice and Security, and Interior Affairs. DINL actively promotes consultation between politics and industry to safeguard their interests and the interest of civil society. Our belief is that incorporating a multi-stakeholder perspective in digital discussions leads to better policies

Michiel Steltman
Managing Director DINL

and market solutions. In 2022 we again saw that our work is reflected in political agendas surrounding digitalization. Political agendas are increasingly focusing on the broader digital infrastructure, including data centers, internet nodes, and access networks. We are excited about this progress and look forward to the proposal for adjusting digital policy in Q1 2023.

We are proud to have achieved several impactful outcomes in the last year. For instance, the lack of adequate protection for undersea cable infrastructure was brought to attention, resulting in the formation of a new alliance with the Ministry of Economic Affairs to ensure that new cables are installed with the participation of the business sector, including AMS-IX. The aim is to safeguard critical infrastructure for

the long term. Another example of our collaboration with AMS-IX is the creation of argumentation documents and the facilitation of discussions about important topics such as encryption. Additionally, AMS-IX and DINL have actively played a role in combating illegal activities on the internet, particularly focusing on creating and improving instruments for the removal of Child Sexual Abuse Material (CSAM) and taking a stance to enforce penalties

"We believe that industry cooperation is **key to better public policy.**"

against a handful of organizations who refuse to cooperate, via a regulatory authority for systematic illegal activities online.

A major accomplishment was achieved in the security cluster, which is now focusing on addressing abuse and implementing a structured approach

to victim notification. Known individuals or parties with vulnerabilities sourced from public sources such as the DIVD (Dutch Institute for Vulnerability Disclosure) will now be informed proactively through channels such as the NBIP (Nationale Beheersorganisatie Internet Providers). This proactive approach is more efficient than sporadic notifications resulting from ethical hacking. Another significant achievement this past year was the shift to a "cloud first" policy by the government, enabling the storage of public data in the cloud and offering greater access to the government market and growth opportunities for the Dutch business sector.

Our upcoming year's agenda involves monitoring several new European laws, including NIS2, the Cyber Resilience Act, the Digital Operations Resilience Act, the Data Act, and GAIA-X, developments that will have a major impact on organizations in the digital infrastructure sector. To ensure their smooth implementation and harmonization, we will continue to collaborate with the industry and coordinate with regulators to, for example, avoid repeated inspections of security compliance from different

authorities. Sustainability is also a vital aspect of the agenda. It requires heightened focus on raising awareness about the environmental effects of digital. There is ample room for education to the public about how the sector performs, because industry is dedicated to setting a good example and informing the public

and stakeholders about the facts. Intensifying collaboration with other industry organizations is a top priority for 2023 and beyond. We aim to improve branch-wide coordination with security, data center, and telecom companies, because we believe that industry cooperation is key to better public policy.

Jan van Boesschoten
Innovation Lead

Aleksandar Mitrov
Head of Product
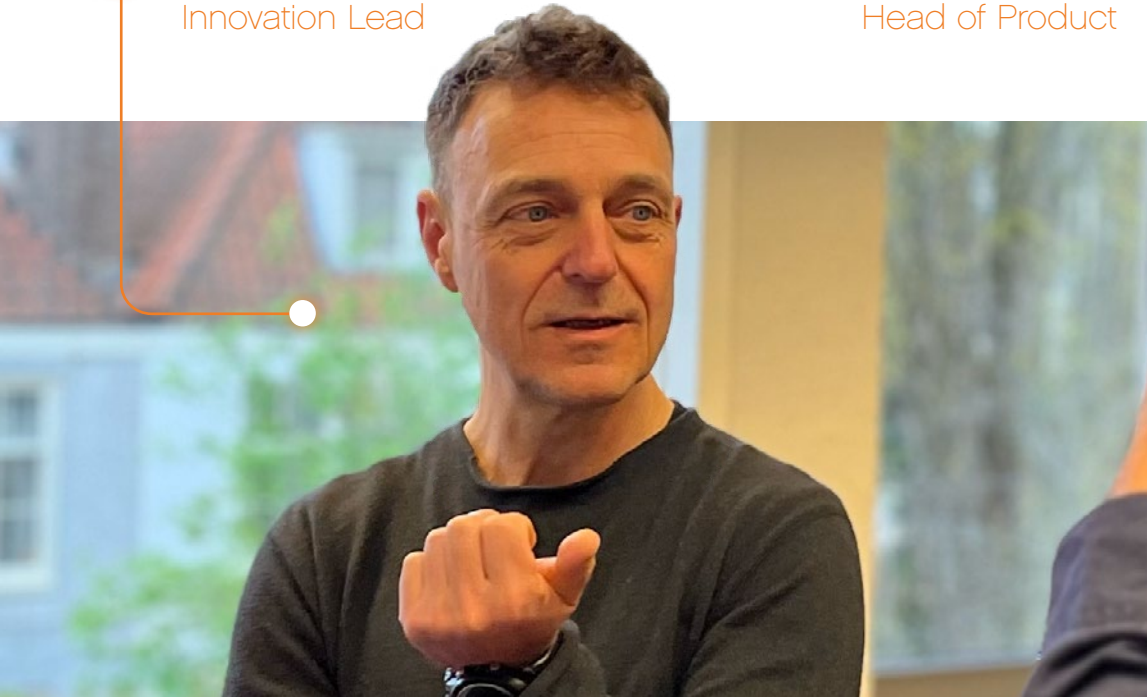
Word from the Innovation Lead and Head of Product

Diversifying for Future Growth

Innovation Lead Jan van Boesschoten and Head of Product Aleksandar Mitrov on driving innovation at AMS-IX

Innovation is not just an end goal, but a means to broaden our horizon in the ever-changing market. AMS-IX seeks to balance innovation and business development through collaboration with partners. By combining product and market innovation and taking a practical approach, we explore new possibilities and move quickly from ideation to execution.

Our strategy for meeting customer demands

Our strategy includes innovating our current product and service offerings, as well as launching new ones in the market. We experience continued demand for our peering services,

and we're committed to providing our customers expert advice in this area. Through our focus on differentiation, we remain fully dedicated to attracting more customers to our peering services.

We have an existing product called Closed User Groups (CUG), which has yet to gain traction. A closed user group can help specific communities exchange information securely, particularly in B2B or Gov2B settings. This is particularly relevant for the high-tech and health sector. In the coming year, we plan to launch Closed User Groups for specific segments and communities, and we have a proof

of concept ready in Eindhoven, that we can use in the future. Companies can communicate directly with their suppliers and the routing can be fully secured, even at the application level. This runs on the AMS-IX platform, which provides greater security and performance.

We plan to launch a new service called Data center Interconnect in February 2023, and we are working on another service which will allow customers to connect remotely with other partner Internet Exchanges directly from our platform in Amsterdam. In 2023 our customers will also have access to the peering communities of these other exchanges.

We also intend to roll out professional services for our customers, which will be offered through a layered approach consisting of four different services. The first service is the interconnectivity advisory service, which will provide expert advice on how to optimize connectivity between networks. The second service is the peering onboarding service, which will help customers onboard onto our peering platform and ensure they get the most out of our services. The third service is the IX growth service, which will assist customers in scaling up their connectivity to meet their growing business needs. Finally, we will be launching the AMS-IX incubator, which will provide support to startups by helping them navigate public funding and accelerate their growth.

With our extensive technical knowledge, network optimization expertise, and valuable market insights, we believe that we can really help our customers. Our professional services will be customized to each customer's unique needs, with a focus on configuring ports correctly and ensuring seamless connectivity. Our layered approach to professional services is designed

"We are committed to helping our customers optimize their connectivity and **grow their businesses.**"

to provide our customers with access to a broad range of expert advice and support, and we are committed to helping them optimize their connectivity and grow their businesses. We are confident that our professional services will be an invaluable resource for achieving these goals.

Broaden our horizon

AMS-IX focuses on product and market innovation, looking beyond adjacent services. To prepare for the next 10 years, we're considering what role AMS-IX will play as peering becomes commoditized. The 3 horizons model, a growth strategy framework by McKinsey,

helps us identify opportunities for future offerings. Next, we're taking a practical approach to innovation through workshops and speaker invitations to inspire our employees. We encourage our teams to share new ideas in an open environment. For example, to better understand the possibilities of the metaverse, we had a session with the management team to experience immersive technology and have an

open discussion about it. Followed by a VR laser game shooting in the office for the staff.

Obviously, most of our innovative efforts focus on data sharing. A good example is our collaboration with the University of Amsterdam, Amsterdam Economic Board, SURF and deXes as founding partners of the AMdEX project. Launched in April 2021, the

goal of AMdEX is to build a neutral infrastructure for the exchange of data in a way that respects the wishes of the data owner, giving them control over how their data is used and monetized. AMS-IX serves as the project's secretary and plays a key role in establishing partnerships. In 2021, several use cases for the AMdEX project were developed and in 2022, the AMdEX development team began translating those use cases into prototypes. We are now making good progress and expect to have a working MVP by the end of June 2023 and deliver a data exchange field lab at the same time.

Two other activities around data sharing that we have undertaken in the past year were our participation in the Dutch Design Week and our collaboration with the Hogeschool van Amsterdam. During the Dutch Design Week, we presented the Data Donor Club, where we emphasized the importance of data sharing for technological applications in preventive healthcare. We also stressed that data sharing can be exciting but also not without risks. Well-regulated conditions and safe systems are necessary to maintain control over what others do with your information.

Our collaboration with the Hogeschool van Amsterdam focuses on developing a consumer-focused personal data pod prototype, which allows individuals to manage and choose with whom they share their data. We are exploring ways to use APIs to gain control over external data collected about an individual, allowing users to specify how that data can be used and shared. For example, allowing access to the data but not allowing it to be sold or shared with third parties.

We actively seek collaborations and examine EU projects such as Horizon Europe to explore other innovative themes. Recently, we were a part of the Quantum Internet Alliance awarded funding, so we plan to collaborate with QuTech, SURF, and other consortium partners to build a Quantum Internet. This will not lead to new AMS-IX services in the coming years, but in the long term, it holds great potential for our business as we can shape the development of the Quantum Internet.

Additionally, we endorsed two National Growth Fund applications. One, submitted by Photon Delta, was focused on Integrated Photonics, which was awarded funding. We hope to continue this collaboration. We also endorsed a proposal for Future Network Services prepared by a group of partners.

In 2023, we will continue to innovate by developing new propositions, validating them, and seeking partnerships. We plan to present renewed propositions and new ideas at the Mobile World Congress Barcelona in February 2023.

Mona Moursy
Head of People
and Culture

**Word from the Head
of People and Culture**

A Thriving Workplace
for All

Head of People and Culture Mona Moursy
explains why AMS-IX is a great place to work

AMS-IX is a vibrant and dynamic workplace where 74 talented individuals from 27 different countries come together to achieve great things! Our company culture is not only internationally oriented, but also informal and collaborative, with a focus on both taking responsibility and fostering creativity. At AMS-IX, both employees and contractors experience a welcoming and supportive environment where they can flourish. Our core values are truly reflected in the actions and beliefs of our colleagues. Through workshops where questions such as "what is truly important to us?" "What defines our company's identity?" "What makes us proud?" were asked, the following three core values emerged: Excellence, Collaboration and Dedication. These values are lived out daily and are also becoming a recurring topic in performance evaluations.

"Our core values are **Excellence, Collaboration and Dedication.**"

Rewarding effort is a crucial aspect of **a good workplace**

Building a better workplace

Over the past two years, AMS-IX has been dedicated to becoming a better employer and an outstanding place to work. To gain a better understanding of our employees' experiences, we launched quarterly employee engagement surveys.

Starting in 2022, our focus is even more geared towards fostering personal and professional growth. We have announced that anyone who wants to pursue training, whether it's in their field or for personal growth, can make their interest known to their manager. We've gone so far as to not attach an individual budget limit, as we want to make it a custom fit for each individual. Currently, 8 colleagues are receiving one-on-one coaching and a number of colleagues are taking vocational training, which has received positive feedback. For colleagues in a managerial role we've launched a leadership training program. The three--day training covers managing oneself, managing others, and managing teams and is considered a foundational training. In 2023, we plan to delve deeper into these skills.
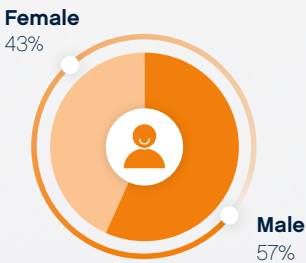
Rewarding effort is also a crucial aspect of a good workplace. To ensure fairness for all employees, we are currently conducting a Total Rewards benchmarking exercise and evaluating the need to adjust our remuneration based on the type of employer we want to be and on external market data. We aim to finish this process by the end of Q1 2023.

Encouraging a feedback-focused culture

We believe that constructive feedback is a valuable tool within an organization. It improves performance, builds trust and increases engagement. To this end, we are launching "Feedback Friday," a new initiative aimed at promoting regular feedback exchange. Through our improved People and Culture platform, INTUO, colleagues have the opportunity to provide and request feedback from both their peers and managers. We hope this feedback culture will lead to an even more positive and productive work environment, a more skilled and motivated workforce, and better performance outcomes for both our colleagues and the company.

Gender of employees

Female
43%

Male
57%

FTE per department

Network
Operations

Sales

Facilities

Finance

Marketing

IT Support

Engineering

Development

Business
development

Products
and services

Age of employees

	%
	30
	20
	10

Age   <20   20<30   30<40   40<50   >=50
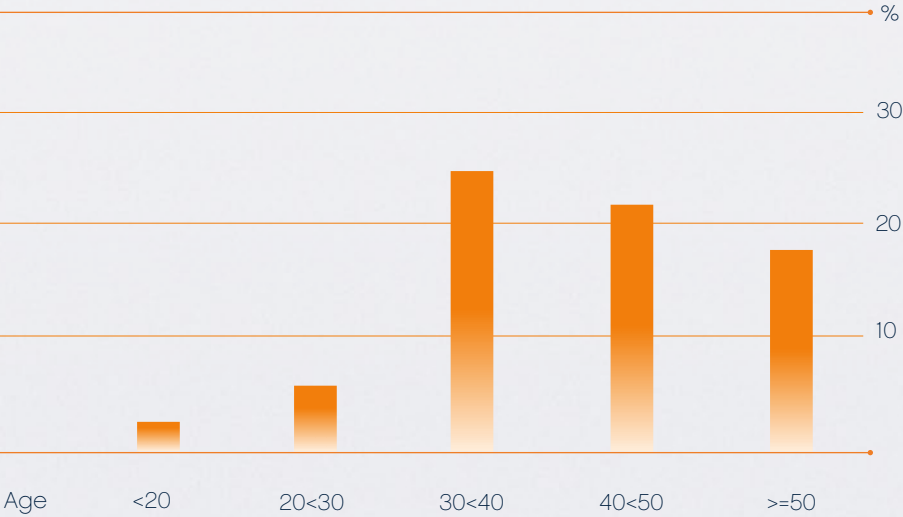
Showcasing our brand to attract new employees

Our employment communication has been doing well; we were able to fill a large number of vacancies in the past year, even though it took a bit longer than usual. Our strong brand and international profile stand out, particularly among technical personnel. Our focus in 2023 is to better express our core values through external means. Although they are already well-lived internally, we want to launch an external campaign to promote the brand, both for attracting new talent in the job market and simply because we are proud of our company.

2022
in Numbers

Traffic

Peak traffic
11,6 Tbps

Corresponds to

464,000 4K video streams per second
6,2 Million TikTok videos per second
2.3 Million HD video streams per second
58 Million gamers simultaneously playing Minecraft
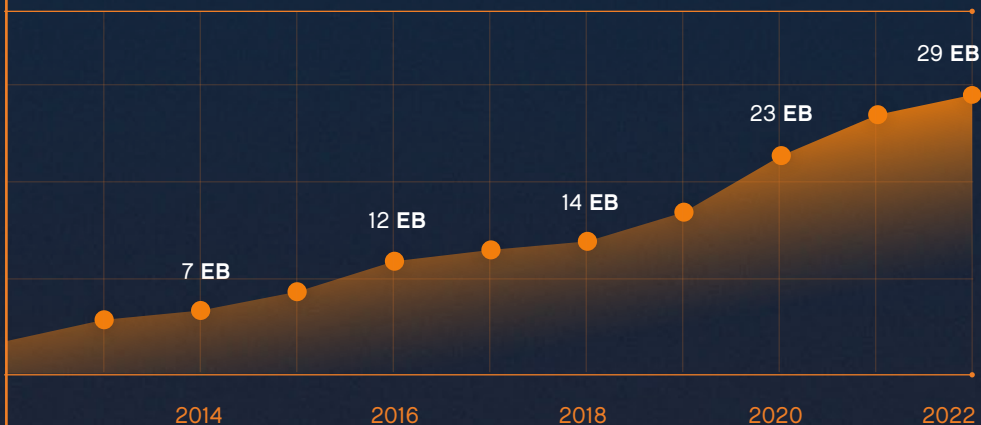
Total internet traffic volume
29.39 EB

+9% Growth
2.45 Exabyte Monthly average

Evolution - 10 years

	2014	2016	2018	2020	2022

Chart values: 7 EB, 12 EB, 14 EB, 23 EB, 29 EB

Mobile peak traffic

312 Gbps

+51% Growth

Evolution - 7 years

2
Gbps

312
Gbps

COVID-19
Lockdowns

2016   2018   2020   2022

Ecosystem

Connected networks

889

Customer demographics

Affiliation

Customer
57%

Member
38%

Partner
5%
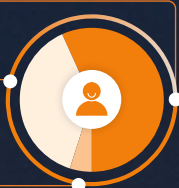
Origin

EU (Excl. NL)
50%

NL
20%

Outside EU
30%

Easy Access Customers

2022
46 customers

2021
38 customers

+15% Growth

Platform

Total

2021
1068 Ports

2022
1094 Ports

+2.4%

Active ports

Consisting of

1G ports

2021
103 Ports

2022
86 Ports

-16%

10G ports

2021
605 Ports

2022
580 Ports

-4%

100G ports

2021
103 Ports

2022
86 Ports

+19%

Added capacity
340 Gbps

Total capacity
49 Tbps

AMS-IX around the world

Total Connected Networks

1,081

1 Amsterdam
- **889** parties
- **1,094** ports
- **11.6** Tbps

2 Bay Area
- **23** parties
- **26** ports
- **25** Gbps

3 Chicago
- **24** parties
- **28** ports
- **25** Gbps

4 Caribbean
- **12** parties
- **16** ports
- **24** Gbps

5 Hong Kong
- **62** parties
- **85** ports
- **88** Gbps

6 Mumbai
- **49** parties
- **78** ports
- **58** Gbps

7 Manama
- **22** parties
- **31** ports
- **423** Gbps

New in 2022

8 Kolkata

9 Hyderabad

10 Singapore

11 Cairo

- ● AMS-IX location
- ○ Powered by AMS-IX
- Active ports
- Peak traffic
- Connected parties

Iris Vonk
Chief Financial
Officer

Word from the CFO

Delivering a Solid Financial Performance

AMS-IX CFO Iris Vonk breaks down the financial results for 2022

Net Revenues increased by EUR 1.3 million (6%) to EUR 23.7 million. The growth is primarily driven from the public peering business, with capacity in Amsterdam increasing to 48.94 TB at 31.12.2022 (31.12.2021: 45.40 TB). The total number of connected parties (ASNs) increased to 1,081 at the end of 2022 (2021: 1,076).

Gross margin increased slightly to 90.5% (2021: 89.9%).

Personnel costs (including outsourced personnel) increased by 26% (EUR 2.0 million) to EUR 9.7 million. The increase is mainly due to hiring additional staff on payroll and temporary outsourced personnel to support the implementation of our CRM and ERP tooling.

AMS-IX's number of employees at the end of 2022 increased to 67.4 full-time equivalent staff (2021: 61.4).
In 2022, total investments in fixed assets amounted to EUR 3.4 million (2021: EUR 1.0 million) - mainly comprised of switches and equipment.

The depreciation cost amounted to EUR 1.6 million, a decrease of EUR 1.6 million compared to 2021. The decrease is driven by fully depreciated equipment from 2017 which was depreciated in 5 years as well as the relatively low level of investments in 2020 (EUR 1.2 million) and 2021 (EUR 1.0 million).

Other operating expenses increased by EUR 1.4 million resulting from increased spend on marketing and travel following the end of Covid-19 related travel restrictions in 2021, increased investments in software and hired services to support our development of CRM and ERP tooling.

Financial income in 2022 includes credit interest paid and bank fees and exchange rate differences.

As per December 31, 2021, we have accounted for a Deferred Tax Asset of EUR 0.2 million (December 31, 2020: EUR 0.3 million), resulting from the losses incurred in our subsidiary AMS-IX USA Inc. The subsidiary was dissolved as per December 31, 2020 and the taxable losses have been utilized in 2019, 2020, 2021 and 2022. Management believes compensation for tax purposes of the remaining losses at 31.12.2022 is likely.

Company balance sheet

Assets	2022	2021
Non-current assets		
Fixed assets	4,717,541	3,082,247
Financial assets	167,134	853,844
	4,884,675	**3,936,091**
Current assets		
Accounts receivable	1,996,503	1,236,384
Taxes receivables	697,773	921,234
Other receivables	773,453	1,089,000
Accrued income	1,863,744	1,626,298
Cash & cash equivalents	15,978,084	13,667,893
	21,309,557	**18,540,809**
Total assets	**26,194,232**	**22,476,900**

Equity and liabilities

	2022	2021
Equity		
Share capital	41,500	41,500
Share premium	385,779	385,779
Legal reserves	-	-
Other reserves	20,079,301	14,068,507
Retained earnings	3,371,315	6,010,794
	23,877,895	**20,506,580**
Provisions	-	-
Non-current liabilities	-	-
	23,877,895	**20,506,580**
Current liabilities		
Financial lease obligations	-	-
Trade payables	625,751	740,144
Taxes and social premiums	191,910	-
Other payables	1,498,676	1,230,176
	2,316,337	**1,970,320**
Total equity and liabilities	**26,194,232**	**22,476,900**

Company income statement

	2022	2021
Net Revenue	23,745,251	22,515,301
External operating costs	2,265,356-	2,266,211-
Gross Margin	**21,479,895**	**20,249,090**
	90.5%	89.9%
Other operating costs		
Personnel costs	9,754,714	7,753,112
Depreciation of tangible fixed assets	1,588,887	3,241,878
Other operating expenses	5,665,754	4,237,789
Total other operating costs	**17,009,355**	**15,232,779**
Operating result	**4,470,540**	**5,016,311**
Financial income and expense	23,241	9,153
Result before tax	**4,493,781**	**5,025,464**
Income tax expense	1,122,466-	985,330
Share in results of subsidiaries and participating interests	-	-
Result after tax	**3,371,315**	**6,010,794**

Letter from the Auditor

To: Stakeholders of Amsterdam Internet Exchange B.V.

Opinion

The Summary of Accounts 2022 of Amsterdam Internet Exchange B.V., based in Amsterdam is derived from the audited financial statements 2022 of Amsterdam Internet Exchange B.V. In our opinion the accompanying Summary of Accounts 2022 are consistent, in all material respects, with the audited financial statements 2022 of Amsterdam Internet Exchange B.V. on the basis described on page 87 to page 89.

The Summary of Accounts 2022 comprise of:

- Company Balance Sheet
- Equity and liabilities
- Company Income Statement

Summary of Accounts

The summary of Accounts do not contain all the disclosures required by Part 9 of Book 2 of the Dutch Civil Code. Reading the Summary of Accounts and our report thereon, therefore, is not a substitute for reading the audited financial statements of Amsterdam Internet Exchange B.V. and our auditor's report thereon. The Summary of Accounts and the audited financial statements do not reflect the effects of events that occurred subsequent to the date of our auditor's report on those financial statements of May 10th, 2023.

The audited financial statements and our auditor's report thereon

We expressed an unmodified audit opinion on the audited financial statements 2022 of Amsterdam Internet Exchange B.V. in our auditor's report of May 10th, 2023.

Management's Responsibility

Management is responsible for the preparation and fair presentation

of the Summary of Accounts in accordance with the applied criteria. The board is responsible for overseeing the company's financial reporting process.

Our responsibilities

Our responsibility is to express an opinion on whether the Summary of Accounts is consistent, in all material respects, with the audited financial statements based on our procedures, which we conducted in accordance with Dutch law, including the Dutch Standard 810 'Opdrachten om te rapporteren betreffende samengevatte financiële overzichten' (Engagements to report on summary financial statements).

Bunnik, May 10th, 2023
The Audit Generation B.V.

Signed by:
A.M. van Diermen RA