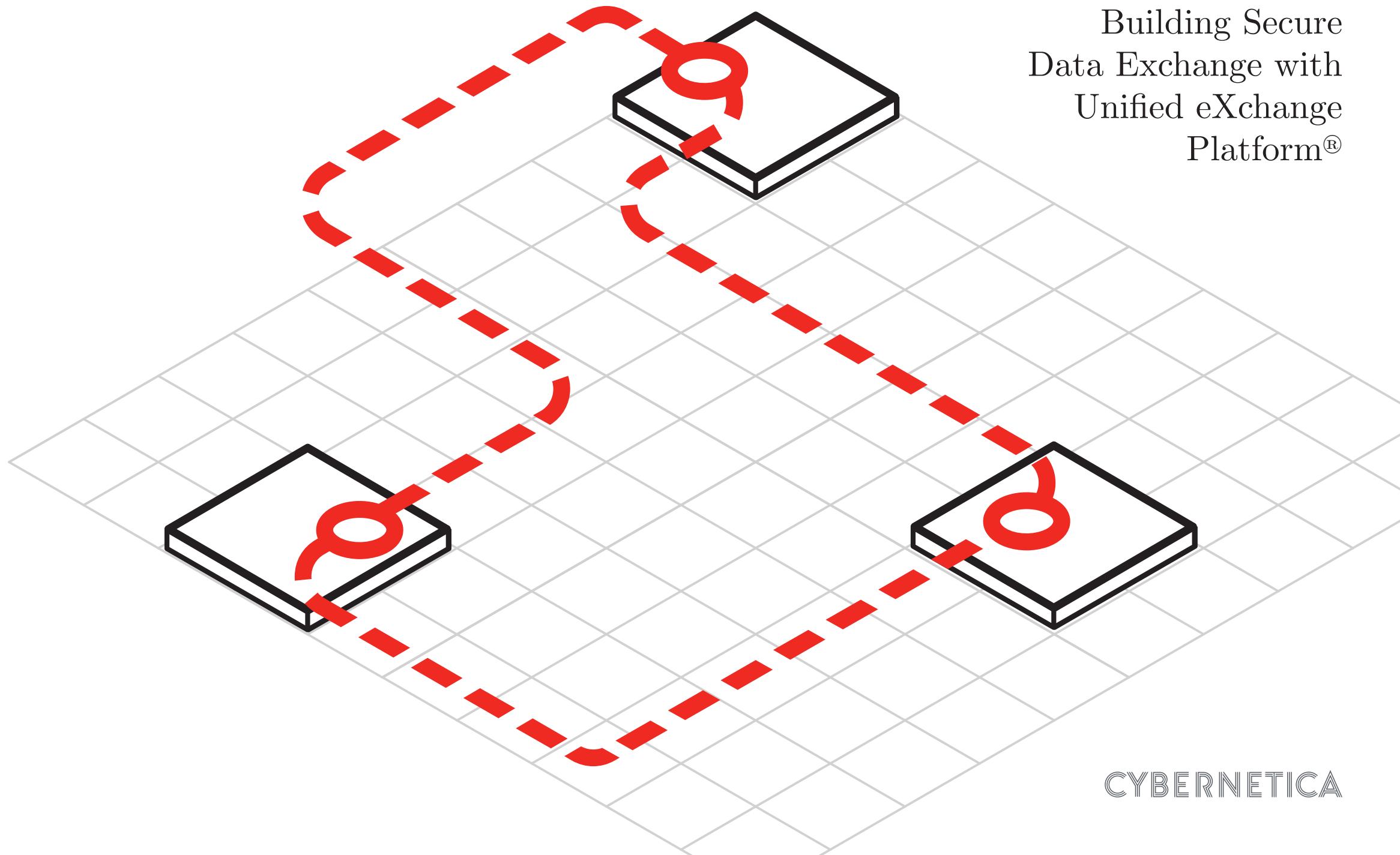


Building Secure
Data Exchange with
Unified eXchange
Platform®



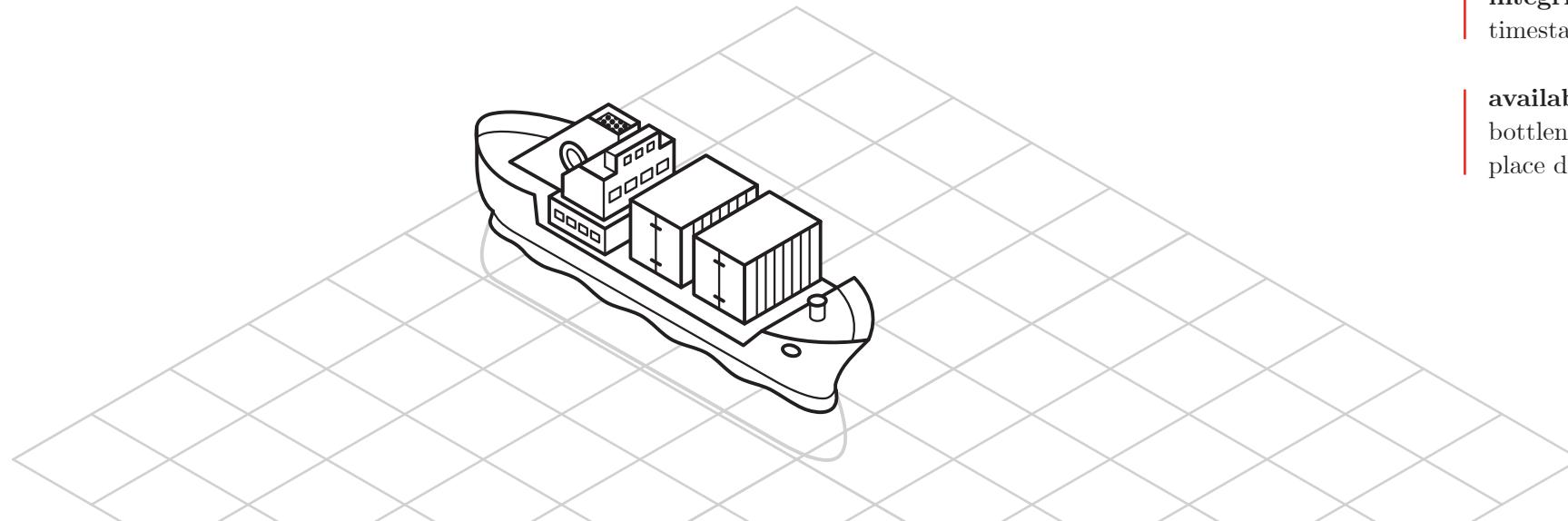
Unified eXchange Platform

(UXP) helps to create a secure data exchange ecosystem for digital and web services. UXP is developed by Cybernetica based on the experience we have gained through the creation and continuous improvement of the Estonian X-Road system for nearly two decades and our independent research in the fields of interoperability, information security and information governance.

UXP brings together data from organizations, information systems, and databases. It provides crucial components for interoperability and data exchange in a secure and standardized way. UXP allows service providers to retain control over their systems and data, yet making them a member of an infinitely scalable and decentralised data exchange network.

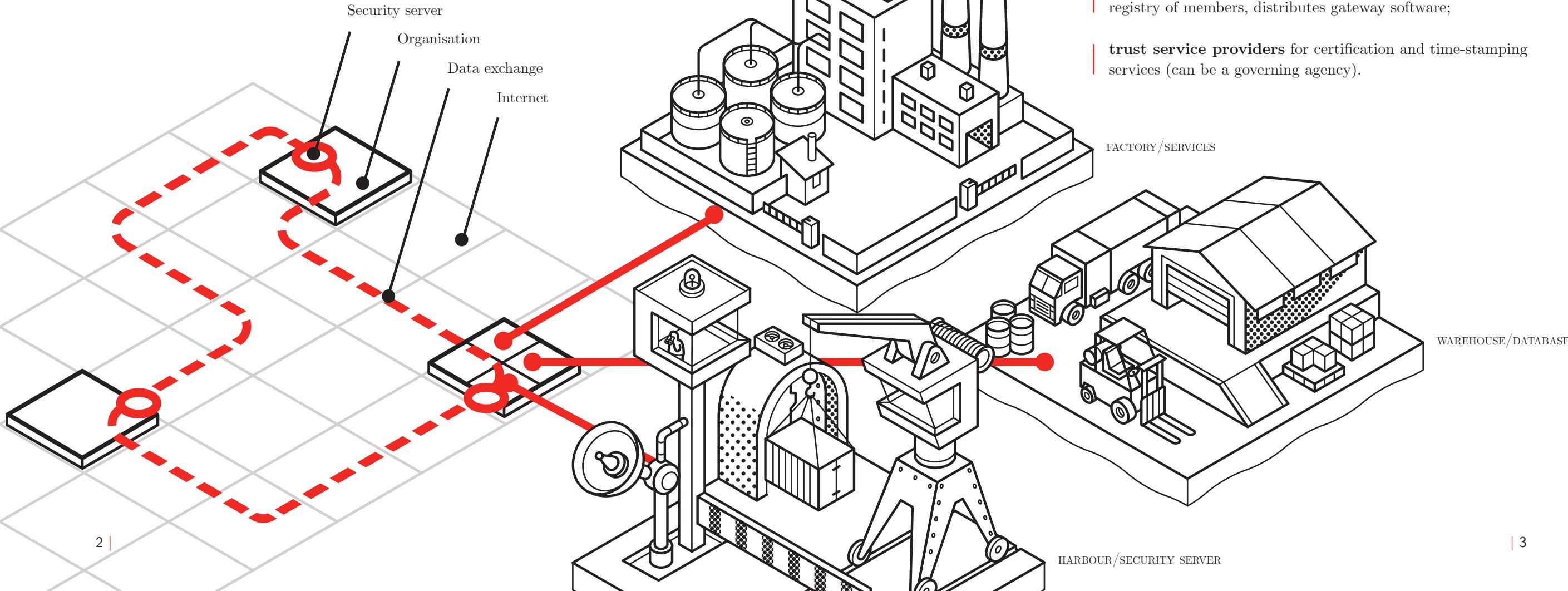
Data exchange is driven by:

- | **confidentiality** of transferred information. Direct communication between members is encrypted, which is why there is no need for a central intermediary that intercepts data;
- | **integrity** of data, assured by an elaborate mechanism of logging, timestamping and digitally signing all transactions, and users of services;
- | **availability** of data. A distributed architecture eliminates potential bottlenecks, i.e. there is no central intermediary and data exchange takes place directly between members.



The Core Idea

of UXP is easy to explain through an allegory of the sea, islands, and harbours which are replaced by the Internet, organisations, and security servers in UXP context.



The UXP system needs at least the following participants:

- members** that communicate with each other. Each member has an information system to be connected with other members' systems;
- governing agency** that coordinates communication activities, creates and distributes security policy, maintains and distributes registry of members, distributes gateway software;
- trust service providers** for certification and time-stamping services (can be a governing agency).

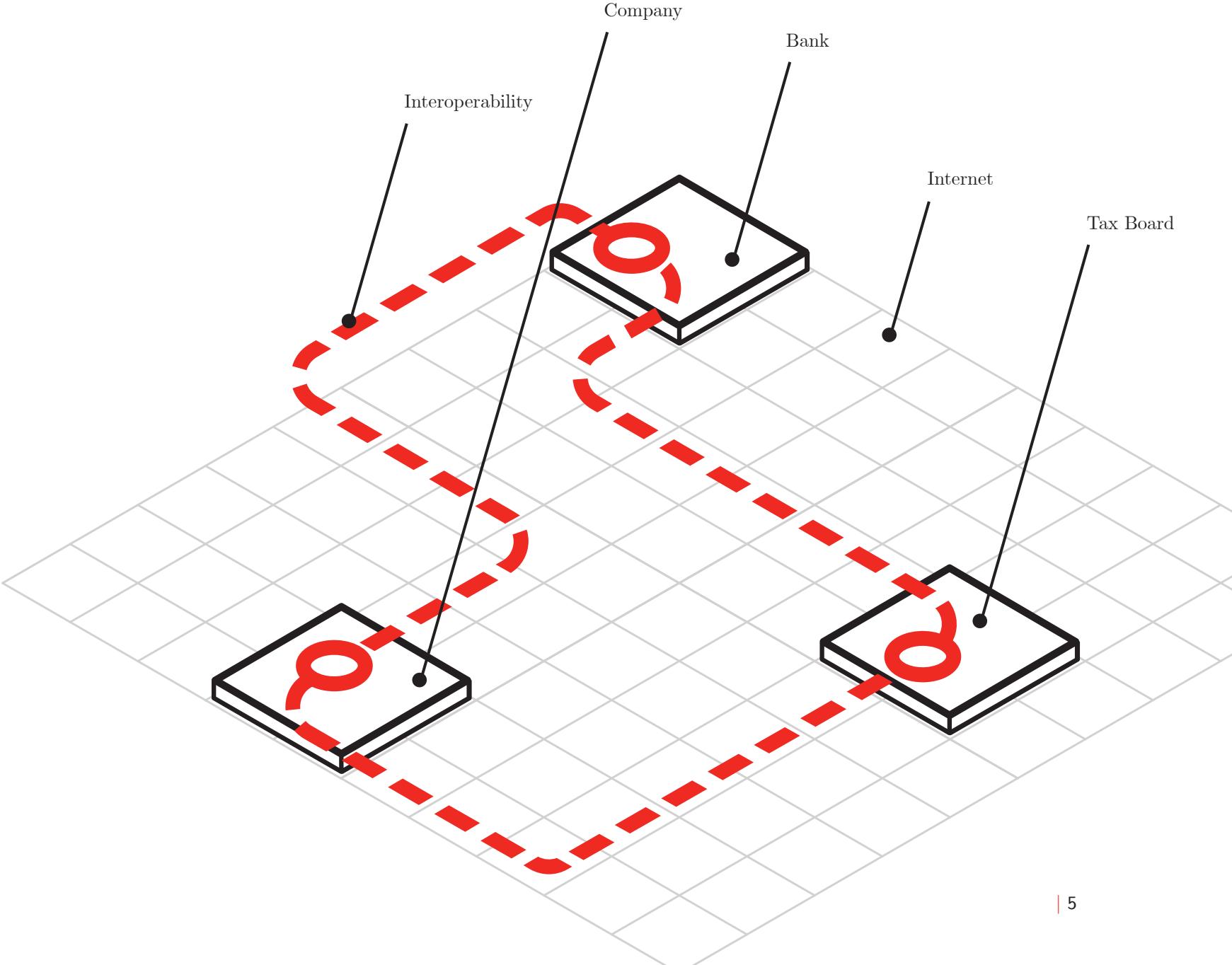
Developing

digital societies calls for requirements, like political leadership, investments, digital foundations, and infrastructure as the basis for e-governance. The interoperability layer between government registers and different digital public domains can serve as the basis of the national digital strategy, offering scalability with virtually limitless possibilities for building new applications and possibilities for use.

This ensures better interactions between the state and citizens by making the public sector more simple, secure, , and standardised. It offers the possibility to overcome geographical distances, improves connectivity and provides equal opportunities for citizens to participate in the digital society. The most crucial building block of this is an interoperability and secure data exchange ecosystem.

Secure data exchange is a priority for the country as a whole. The aim is to provide services to citizens and within government in an online and digital manner. These services will depend on buisness processes and data cross different organizations and domains.

Within healthcare this can mean accessing bringing together data from hospitals, medical practitioners, insurance providers for a holistic view of a persons medical history. Or within tax and customs this can mean integrations with banks, business registries, tax administration to provide a pre-filled tax declaration the citizen can file within a matter of minutes.



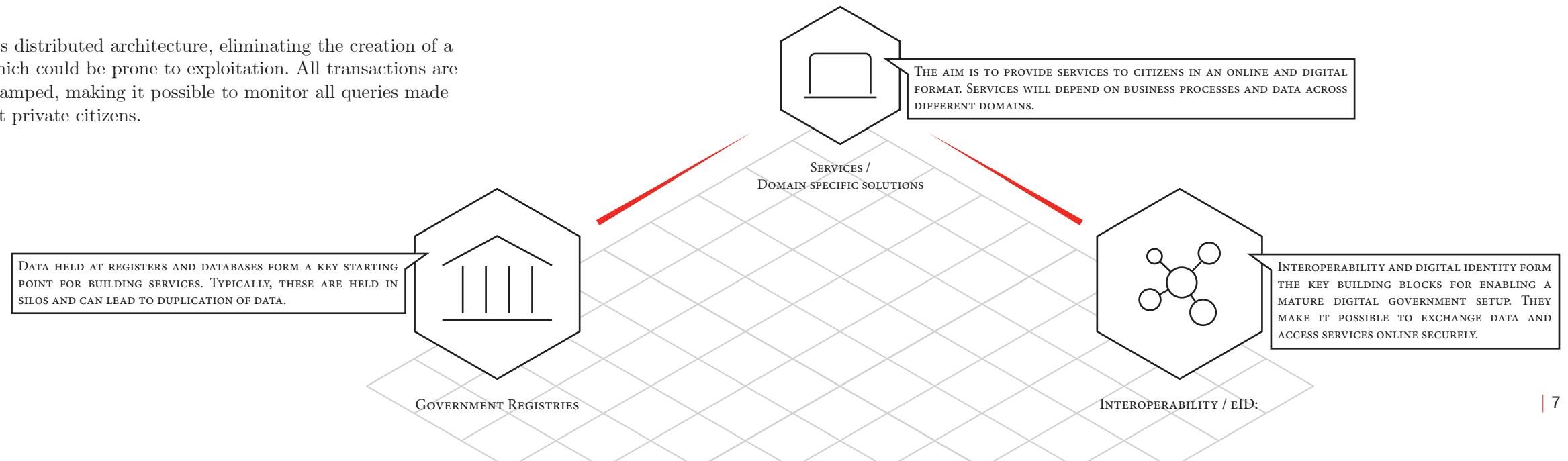
Implementing UXP brings along the following advantages:

- | **seamless data exchange** by connecting databases and ensuring communication between the members of the ecosystem in an efficient and secure way;
- | **an experienced and trusted partner to support the ease of deployment;**
- | **reliability** of the system, with no downtime;
- | **security** measures to guarantee the protection and integrity of your data. UXP is secure-by-design, its decentralised architecture has no single point-of-failure;
- | **less paperwork**, bureaucracy, and time spent on futility;
- | **scalability** into any size of infrastructure, with an unlimited amount of security servers that can be linked together into local or international applications;
- | **privacy** due to its distributed architecture, eliminating the creation of a superdatabase, which could be prone to exploitation. All transactions are signed and timestamped, making it possible to monitor all queries made by officials against private citizens.

Throughout the years, Cybernetica has been contributing to building up the Estonian digital society. Our history and focus make us the founders of the Estonian cyber industry.

Our routes date back to 1960, when the Institute of Cybernetics under the Estonian Academy of Sciences was founded. With strong emphasis on R&D and secure software development ever since, we have worked with the Estonian Government in developing critical e-Government systems, such as the Interoperability and Secure Data Exchange framework the X-Road, i-Voting, ID card and others.

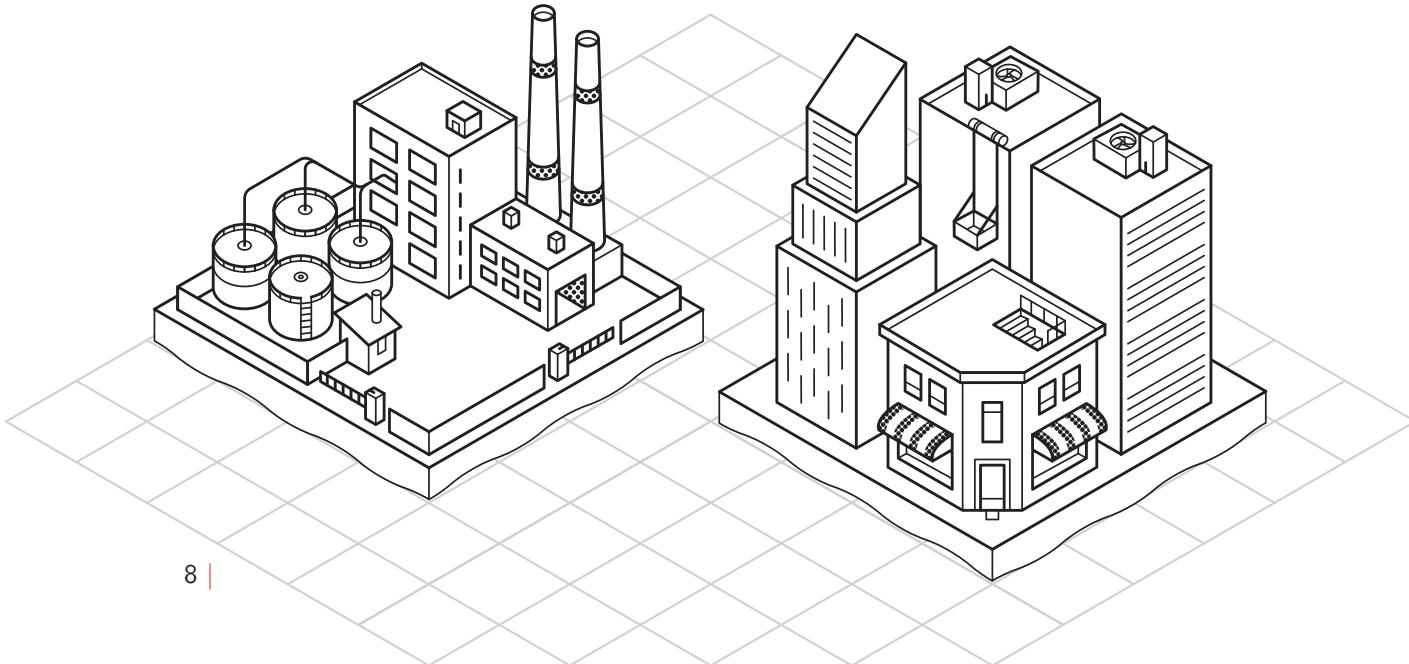
After concluding a deeper scientific research in 2001, we presented a model for the Estonian e-state architecture and legal framework. UXP has been heavily tried and tested since its launch as Estonia's X-Road in 2001. No downtime has been observed since and the system survived the world's first cyber conflict in 2007. The key aim in developing UXP has been to enable countries and businesses around the world to achieve similar success and benefits, while continuing our independent R&D devoted to this field.



Cybernetica has accumulated experience in developing, implementing and continuously improving interoperability and secure data exchange ecosystems around the globe with significant R&D going into the field. This has made us a trusted partner for governments and businesses across the world.

Working with Cybernetica brings along a team of world-class professionals who can deploy and support the creation of an interoperability framework. We make this possible by fitting our technology naturally into existing ecosystems, with full integration support and minimal changes required.

Our work has profound impact on how governments provide secure and meaningful services to citizens. This includes countries such as Japan, USA, Ukraine, and Greenland, with several African countries (e.g. Benin, Namibia, Tunisia) and many more projects underway.



Japan

Work with major banking and systems integration companies. First use cases around a Personal Data Bank model with one of the largest trust banks in Asia.

USA

Enabling a Trust Platform with the Center for Medical Interoperability (C4MI) within the healthcare space. The first use cases dedicated towards CDC to provide oversight of personal protective equipment (PPE) stock across different locations and jurisdictions.

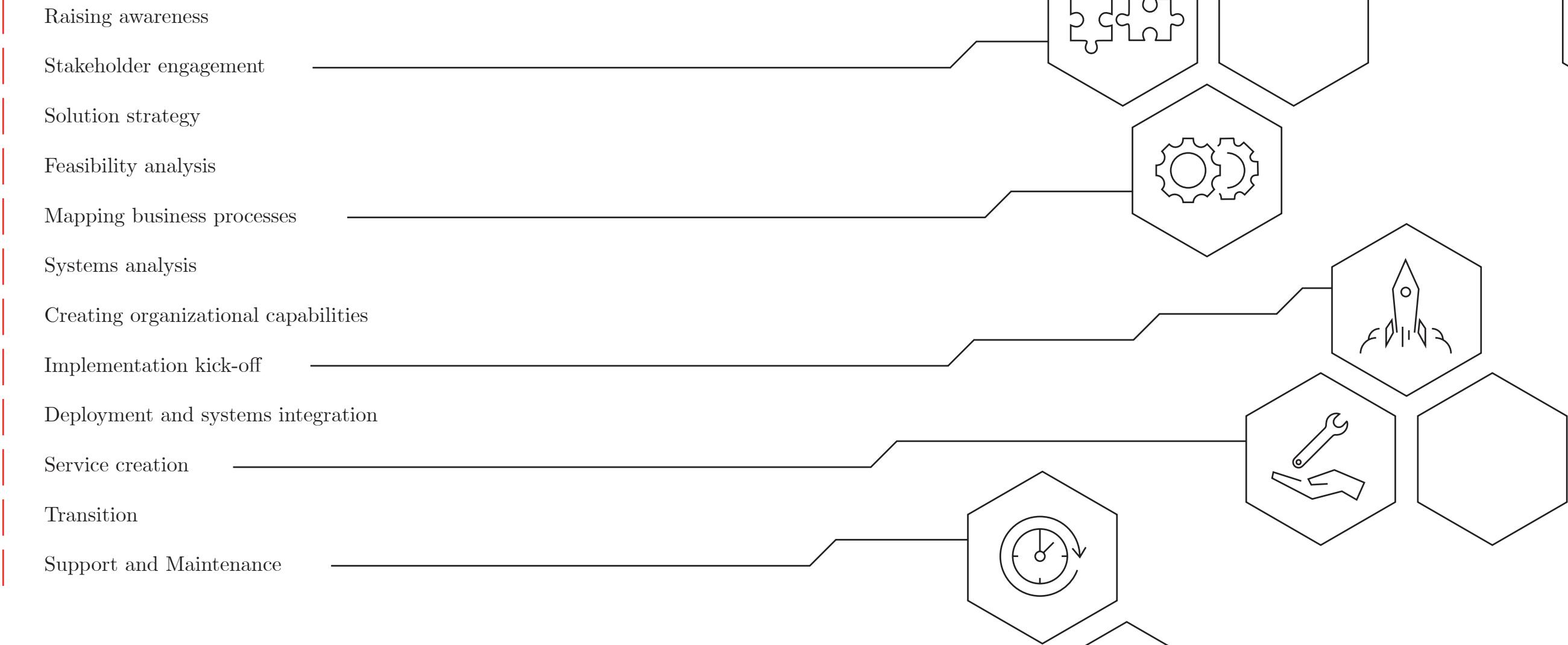
Ukraine

Building the secure data exchange infrastructure for a nationwide interoperability model. Key goals were around supporting transparency and empowering local municipalities in providing access to services for citizens.

Benin

Enabling the government to offer digital services to its citizens through an online citizen portal acting as the main gateway for interactions. This is accompanied by a nation-wide implementation of our interoperability technology on which the portal is based.

How we do it?



UXP is implemented in various sectors and countries all over the world, including:

- | eGovernment - Namibia, Haiti, Benin, Greenland, Ukraine, Tunisia
- | Commercial - Japan
- | Healthcare - USA, Japan
- | Defence - NATO ACT

About Cybernetica

Cybernetica is an R&D intensive ICT company that develops and implements mission-critical systems in over 35 countries in the world, including Indonesia, UK, USA, Japan and others. In addition to UXP, we focus on:

- | information security systems and solutions;
- | e-governance & and digital identity solutions;
- | tailor-made software development for governments and critical infrastructure providers;
- | maritime security and wide area radio communications & integrated surveillance systems.

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