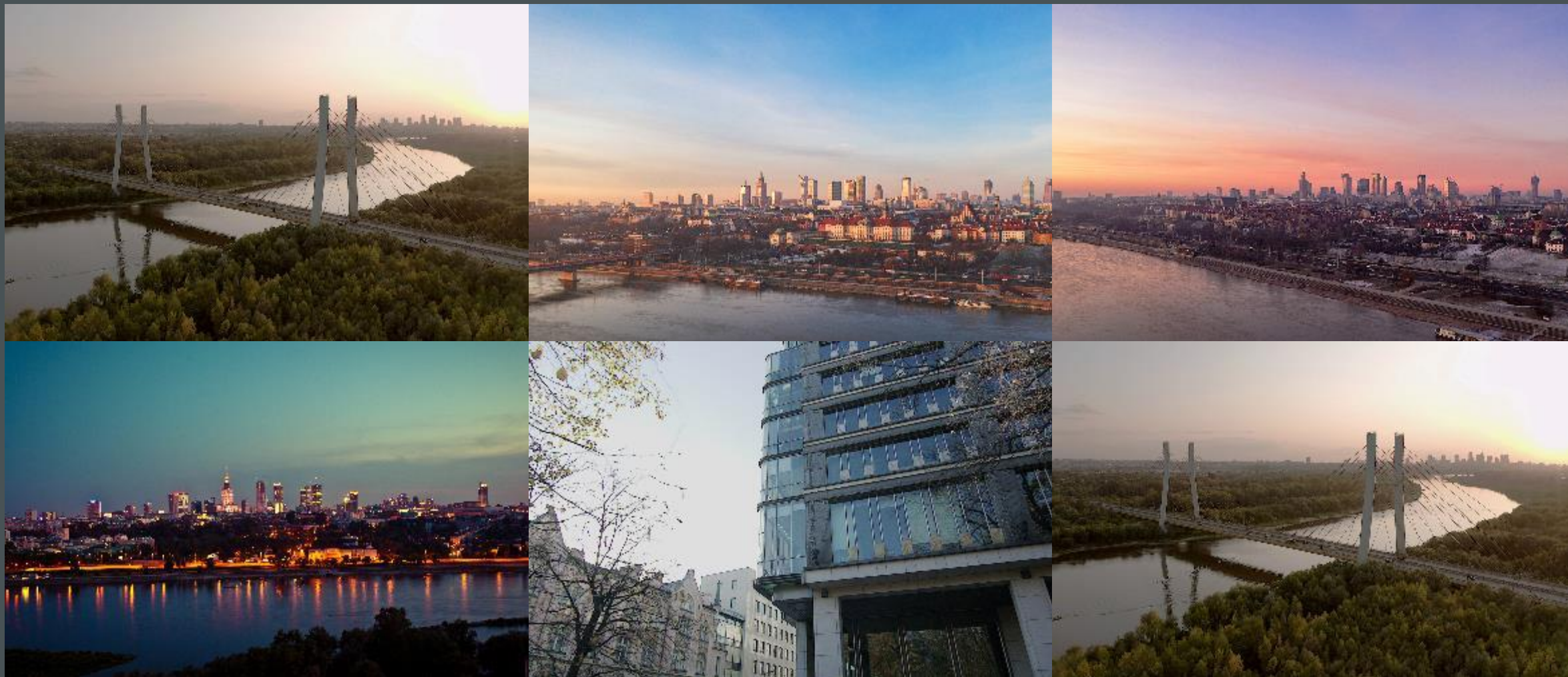


Wykorzystanie technologii w cyfrowej transformacji infrastruktury rynku kapitałowego

Spotkanie Rynku Kapitałowego

grudzień 2022

Trendy IT na 2023



Top Strategic Technology Trends 2023

- 1 Digital Immune System
- 2 Applied Observability
- 3 AI TRiSM
- 4 Industry Cloud Platforms
- 5 Platform Engineering
- 6 Wireless-Value Realization
- 7 Superapps
- 8 Adaptive AI
- 9 Metaverse
- 10 Sustainable Technology

gartner.com

Source: Gartner
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Gartner[®]

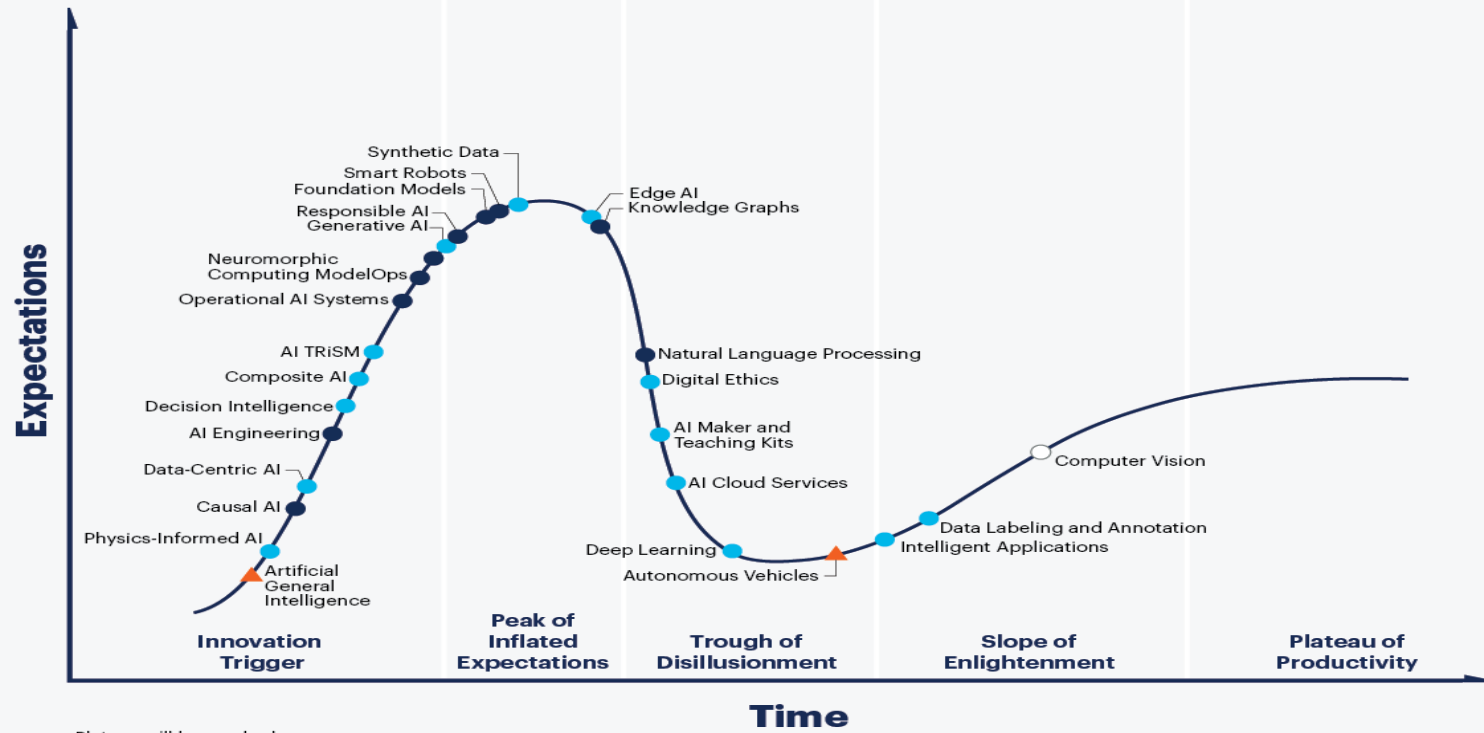
TRENDFORCE
2023
Top 10
Technology Trends

- 01** Advanced Foundry Processes Reach Transistor Structure Transition Period, Mature Processes Focus on Diversified Specialized Development
- 02** Development Trends Focus on Automotive IC Design, Third Generation Semiconductors on the Rise
- 03** New DRAM Generation Takes Shape, Development of 200+ Layer NAND Flash Accelerates
- 04** Automotive MLCC Development Accelerating Due to Rising Assisted Driving Penetration Rate
- 05** Carbon Neutrality Accelerates EV Transition, Battery Battle Rages as Reduced Subsidies Resurface Cost Issues
- 06** Production Capacity and Technology Secured, Chinese Panel Makers Expand Influence In Small-size AMOLED Market
- 07** Micro LED Diversifies Into More Applications, TV and Automotive Displays Drive Mini LED Backlight Penetration
- 08** Looking Forward to 2023, Proportion of 5G Smartphones Expected to Increase to 60%
- 09** AR/VR Products Become Cornerstone of Green Production, Accelerate Metaverse Popularization
- 10** Large-scale Commercial Use of 5G FWA Adopted Globally in 2023, Accelerates Popularization of Home Broadband

2023
BearingPoint
Top 5 Tech Trends
BearingPoint.

- 1. Generative AI**
Accelerating innovation with new data
- 2. Metaverse**
Merging digital and real
- 3. Cloud native platform**
New ways of developing products
- 4. Embedded Data & Analytics**
Companies get lost without prioritized use cases
- 5. Zero Trust at Scale**
Cybersecurity at the core of IS architecture

Hype Cycle for Artificial Intelligence, 2022



Plateau will be reached:

- less than 2 years
- 2 to 5 years
- 5 to 10 years
- ▲ more than 10 years
- ⊗ obsolete before plateau
- As of July 2022

[gartner.com](https://www.gartner.com)

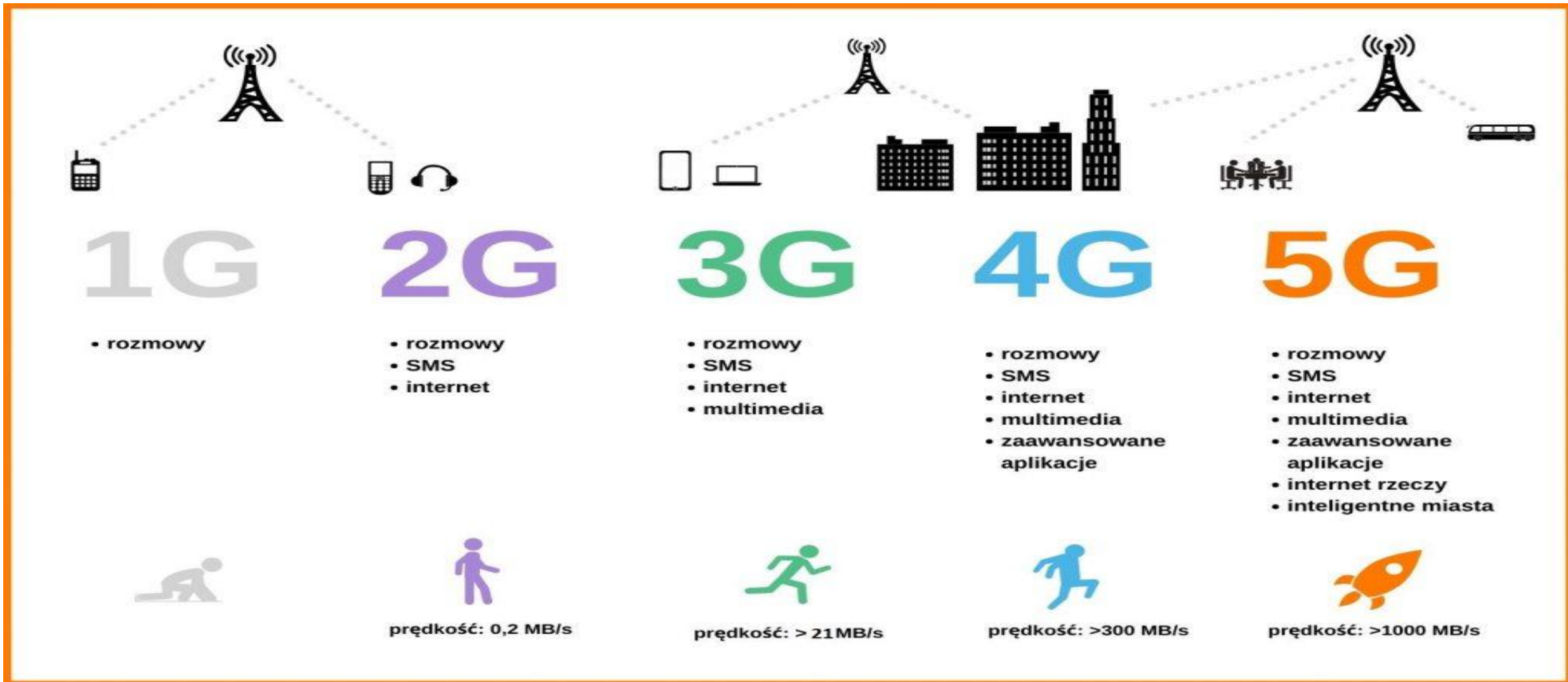
Source: Gartner
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Gartner

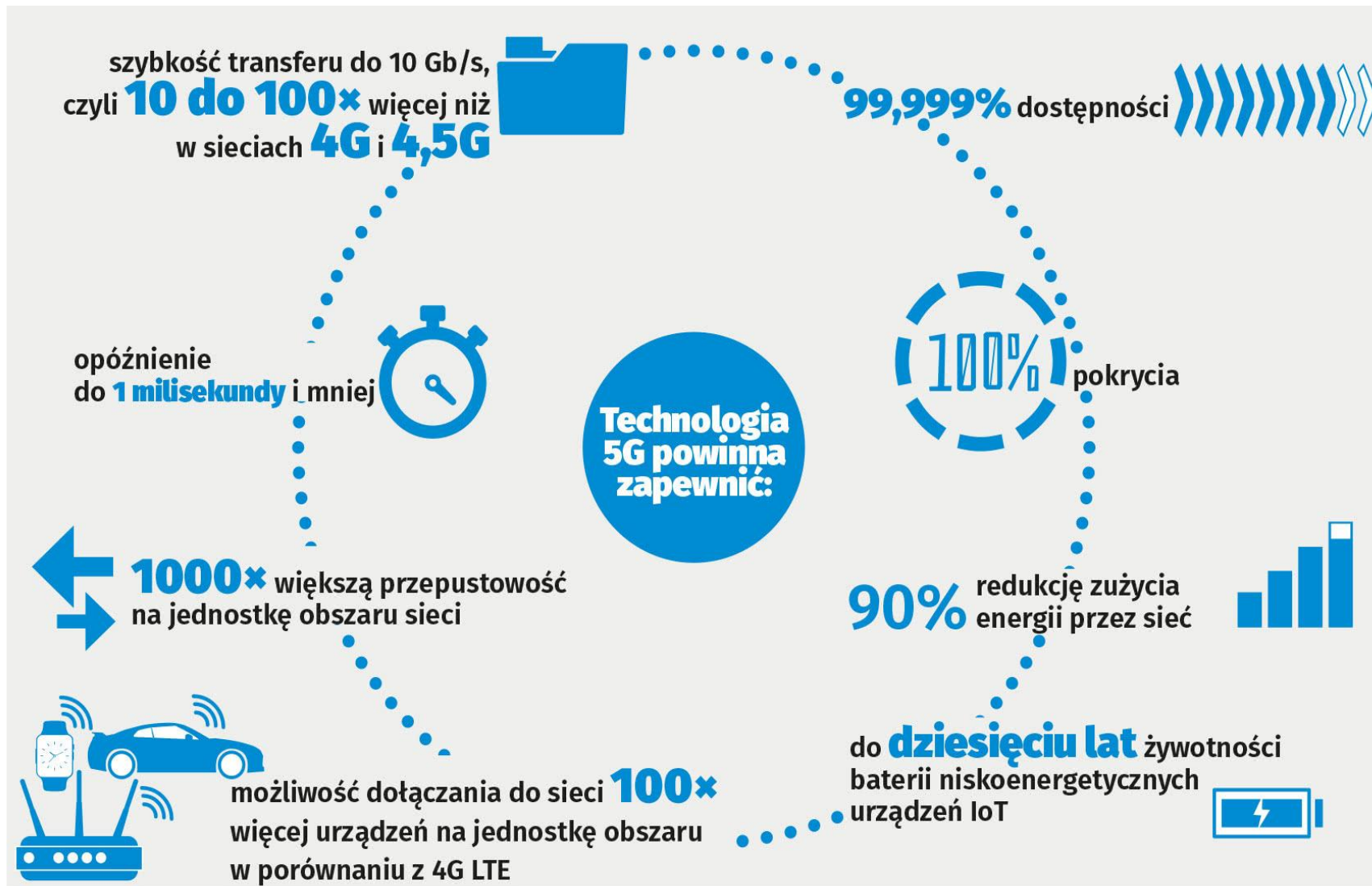
Technologia 5G



5G - krótka charakterystyka



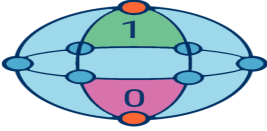


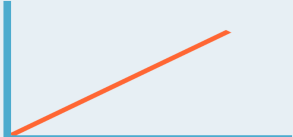
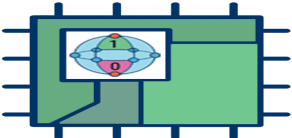
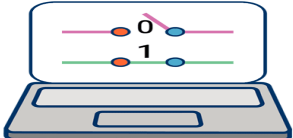
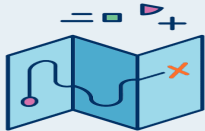
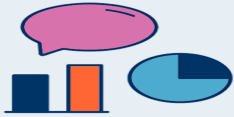
5G - co przyniesie



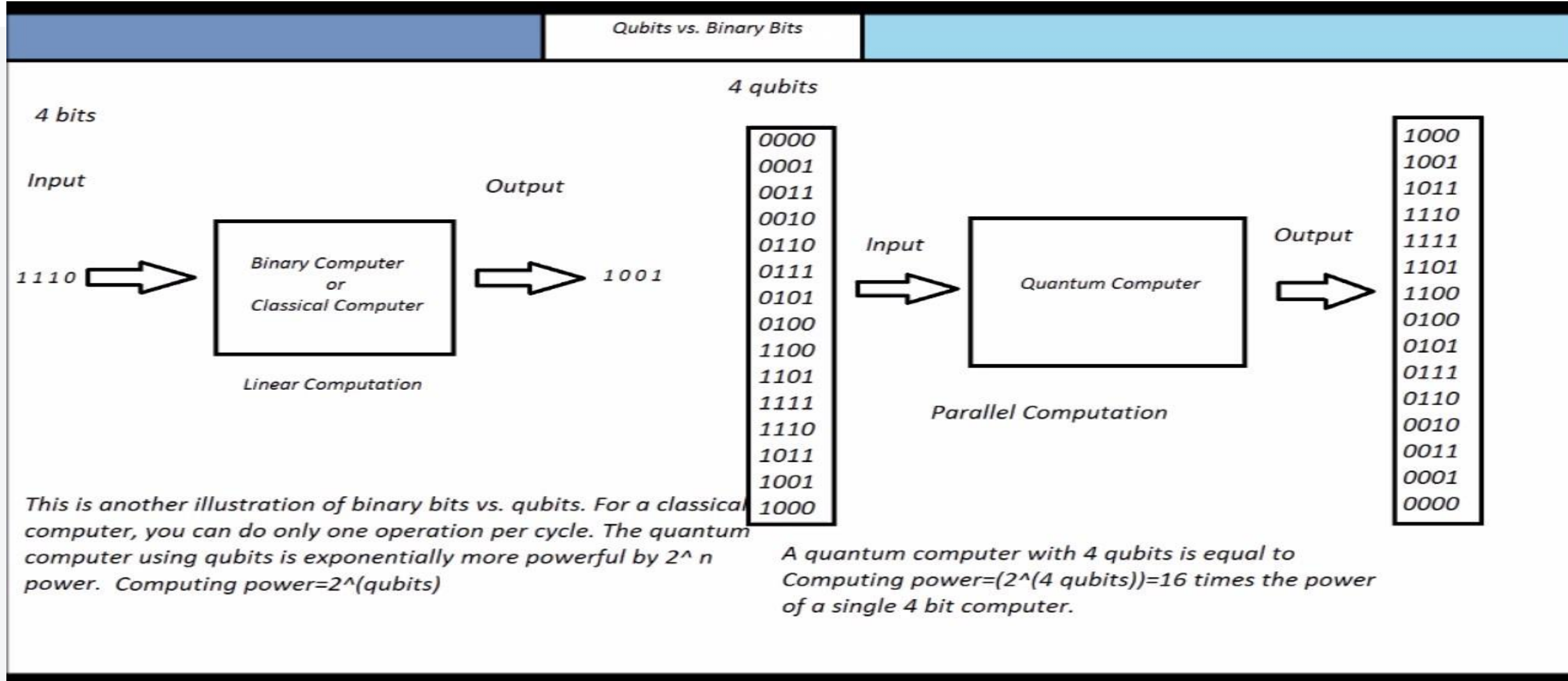
Komputery kwantowe



Jakie różnice

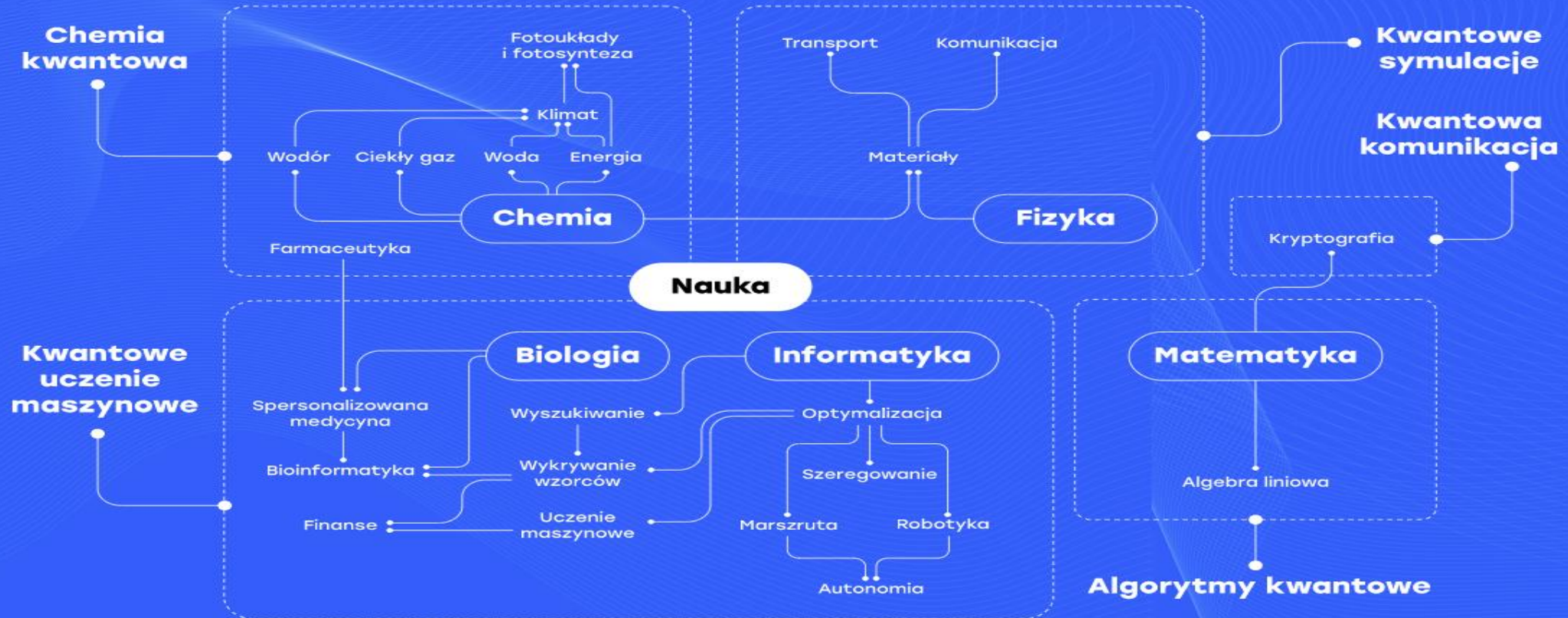
Quantum Computing	Vs.	Classical Computing
 <p>Calculates with qubits, which can represent 0 and 1 at the same time</p>		<p>Calculates with transistors, which can represent either 0 or 1</p> 
 <p>Power increases exponentially in proportion to the number of qubits</p>		<p>Power increases in a 1:1 relationship with the number of transistors</p> 
 <p>Quantum computers have high error rates and need to be kept ultracold</p>		<p>Classical computers have low error rates and can operate at room temp</p> 
 <p>Well suited for tasks like optimization problems, data analysis, and simulations</p>		<p>Most everyday processing is best handled by classical computers</p> 

Jak działają



Zastosowania

Zastosowanie obliczeń kwantowych



Na rynku finansowym

Quantum computing applications

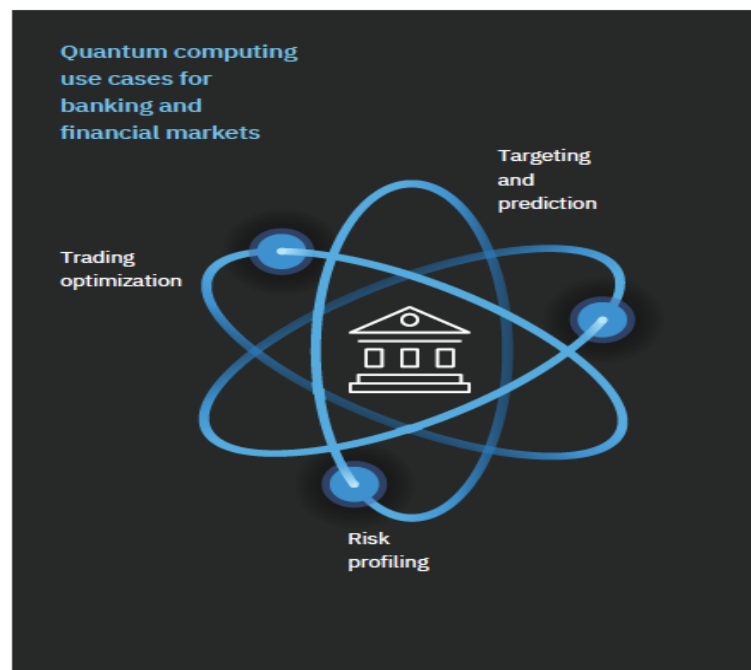
Banking and financial markets

The financial services industry has a history of successfully applying physics to help solve its thorniest problems. The Black-Scholes-Merton model, for example, uses the concept of Brownian motion to price financial instruments—like European call options—over time.⁶⁶

Applying emerging quantum technology to financial problems—particularly those dealing with uncertainty and constrained optimization—should also prove hugely advantageous for first movers. Imagine being able to make calculations that reveal more profitable arbitrage possibilities that competitors are unable to see. Beyond that, employing behavioral data to enhance customer engagement and enabling faster reactions to market volatility (for example, intraday versus overnight risk calculations) are some of the specific benefits we expect quantum computing to deliver.

While broad commercial applications may remain several years away, quantum computing is expected to produce breakthrough products and services that will likely solve very specific business problems within three to five years.⁶⁷ Quantum computing can also enable financial services organizations to re-engineer operational processes, such as front-office and back-office decisions on client management; treasury management, trading, and asset management; and business optimization, including risk management and compliance.

Quantum computing's specific use cases for banking and financial markets can be classified into three main categories: targeting and prediction, risk profiling, and portfolio optimization.



DLT blockchain

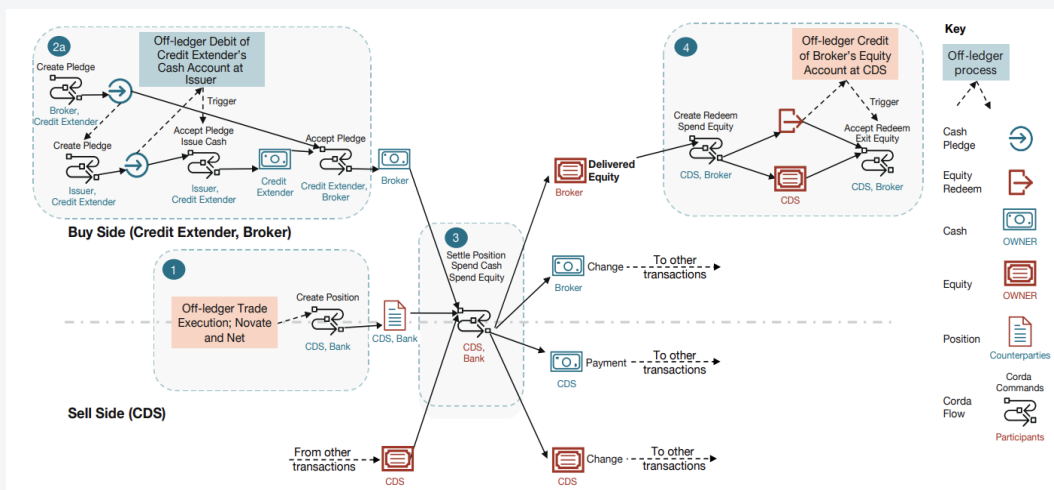


Wyzwania procesów DvP oraz PvP w sieciach DLT

Projekty realizujące DvP na wspólnej platformie dla CBDC oraz stokenizowanych aktywów

Projekt: JASPER

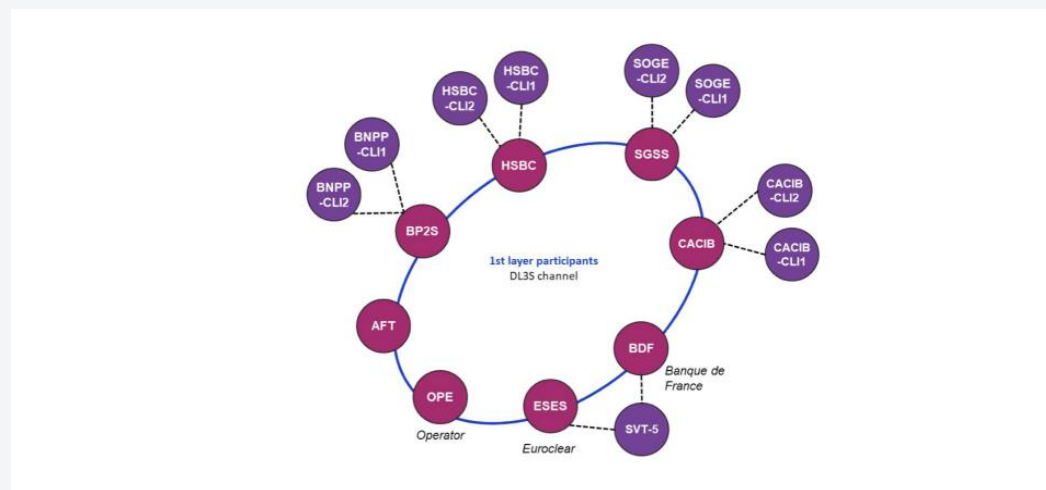
Bank of Canada, CSD, uczestnicy rynku
Platforma: Corda



https://payments.ca/sites/default/files/2022-09/jasper_phase_iii_whitepaper_EN.pdf

Projekt: EUROCLEAR

Euroclear, Banque de France
Platforma: Hyperledger Fabric



https://payments.ca/sites/default/files/2022-09/jasper_phase_iii_whitepaper_EN.pdf

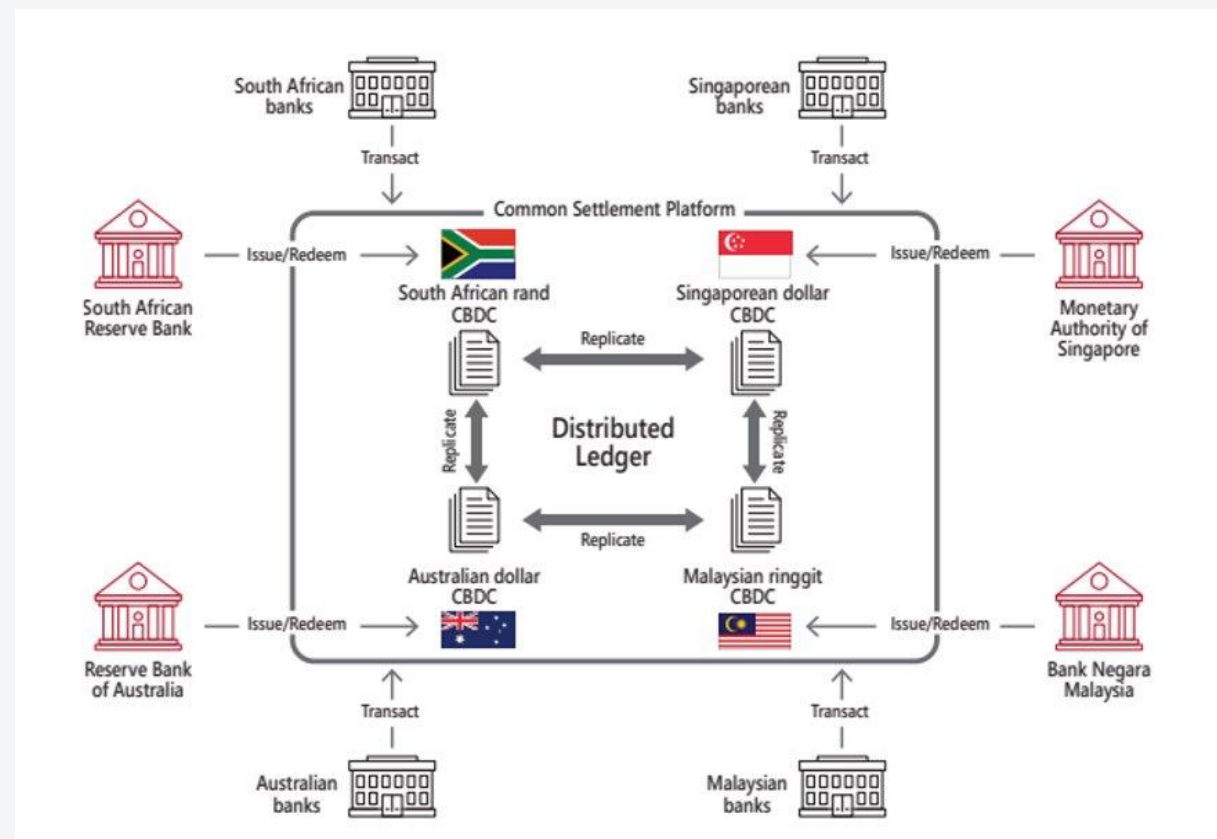
Wyzwania procesów DvP oraz PvP w sieciach DLT

Wspólna platforma do rozrachunku PvP w ramach wielu CBDC

Projekt: DUNBAR

Bank for International Settlements (BIS) Innovation Hub Singapore Centre, Reserve Bank of Australia, Bank Negara Malaysia, the Monetary Authority of Singapore and the South African Reserve Bank

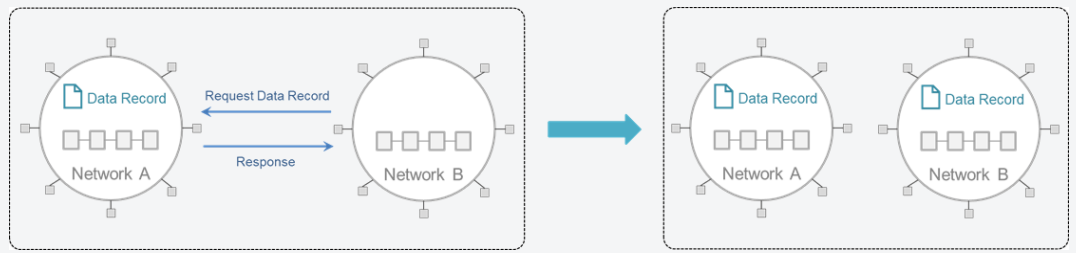
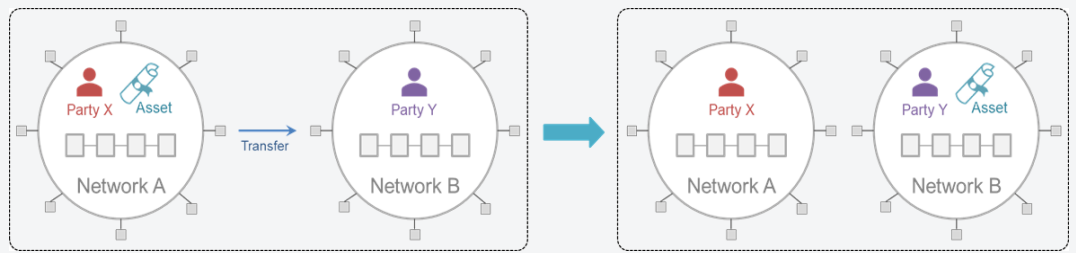
Platforma: Corda oraz Quorum



<https://www.bis.org/publ/othp47.pdf>

Wyzwania procesów DvP oraz PvP w sieciach DLT

Modele interoperacyjności platform

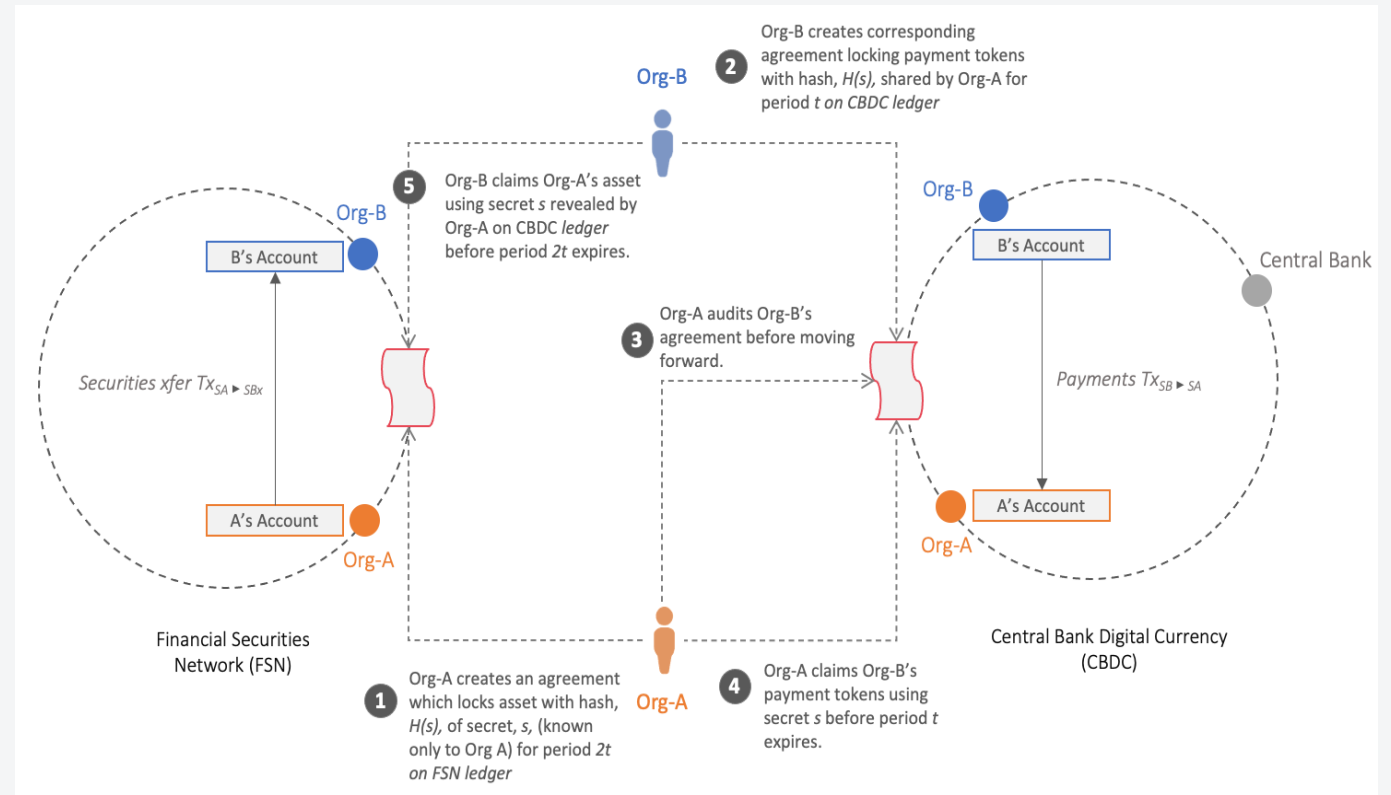


Wyzwania procesów DvP oraz PvP w sieciach DLT

Model DvP uwzględniający interoperacyjności platform DLT i wymianę aktywów

Opis procesu DvP

- Org-A blokuje tokeny dla Org-B wprowadzając hash hasła, którego znajomość pozwoli zrealizować transfer
- Org-B blokuje płatność w sieci CBDC dla Org-A, realizowaną pod warunkiem ujawnienia hasła zgodnego z hash wprowadzonym przez Org-A
- Org-A weryfikuje kontrakt Org-B
- Org-A odbiera środki ujawniając hasło zgodne z hash
- Org-B odbiera tokeny podając hasło użyte do ich zablokowania przez Org-A



Wyzwania procesów DvP oraz PvP w sieciach DLT

Rozrachunek DvP i PvP w ramach różnych sieci DLT

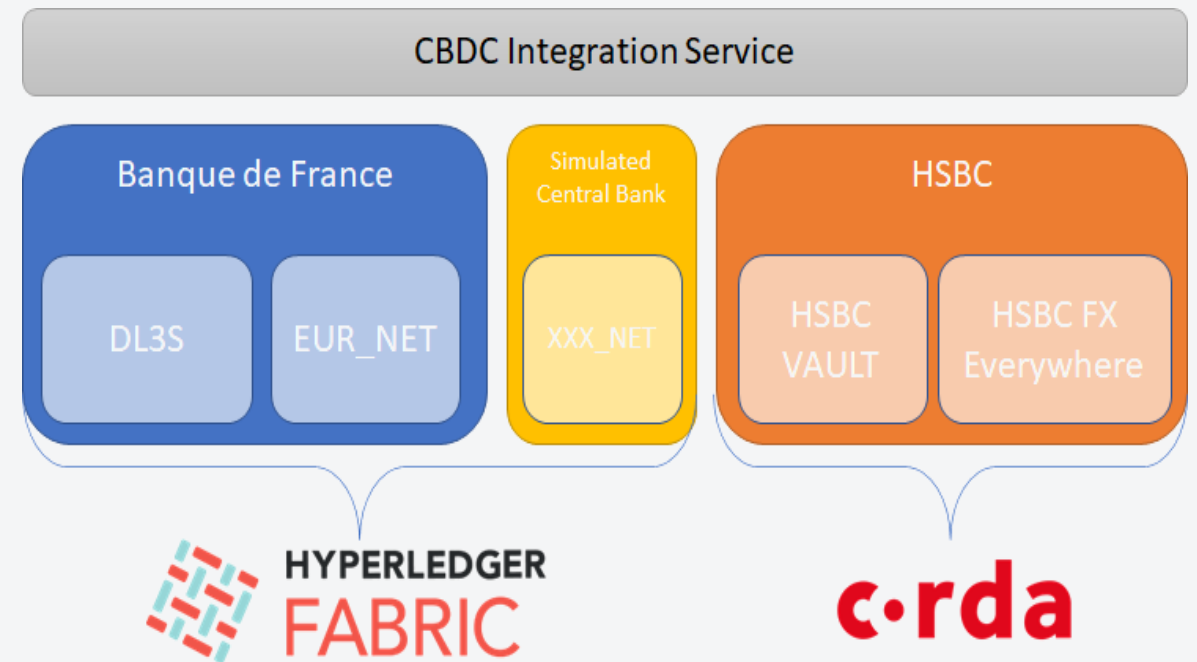
Projekt: DUNBAR

HSBC, Banque de France, IBM

Platforma: Hyperledger Fabric, Corda

Platforma integracji: Hyperledger Weaver

- Obrót obligacją cyfrową wraz z zapewnieniem pełnego cyklu życia, w ramach dedykowanej sieci DLT
- Rozrachunek w jednej z dwóch CBDC utrzymywanych w wyodrębnionych sieciach
- Rozrachunek PvP odrębnych CBDC w ramach odrębnych sieci oraz odrębnych technologii



<https://thefullfx.com/banque-de-france-leads-successful-cbdc-multi-ledger-test/>

Doświadczenia i aktualne projekty

Wykonane:

eVoting oraz obsługa WZA oparte o platformę Hyperledger Fabric

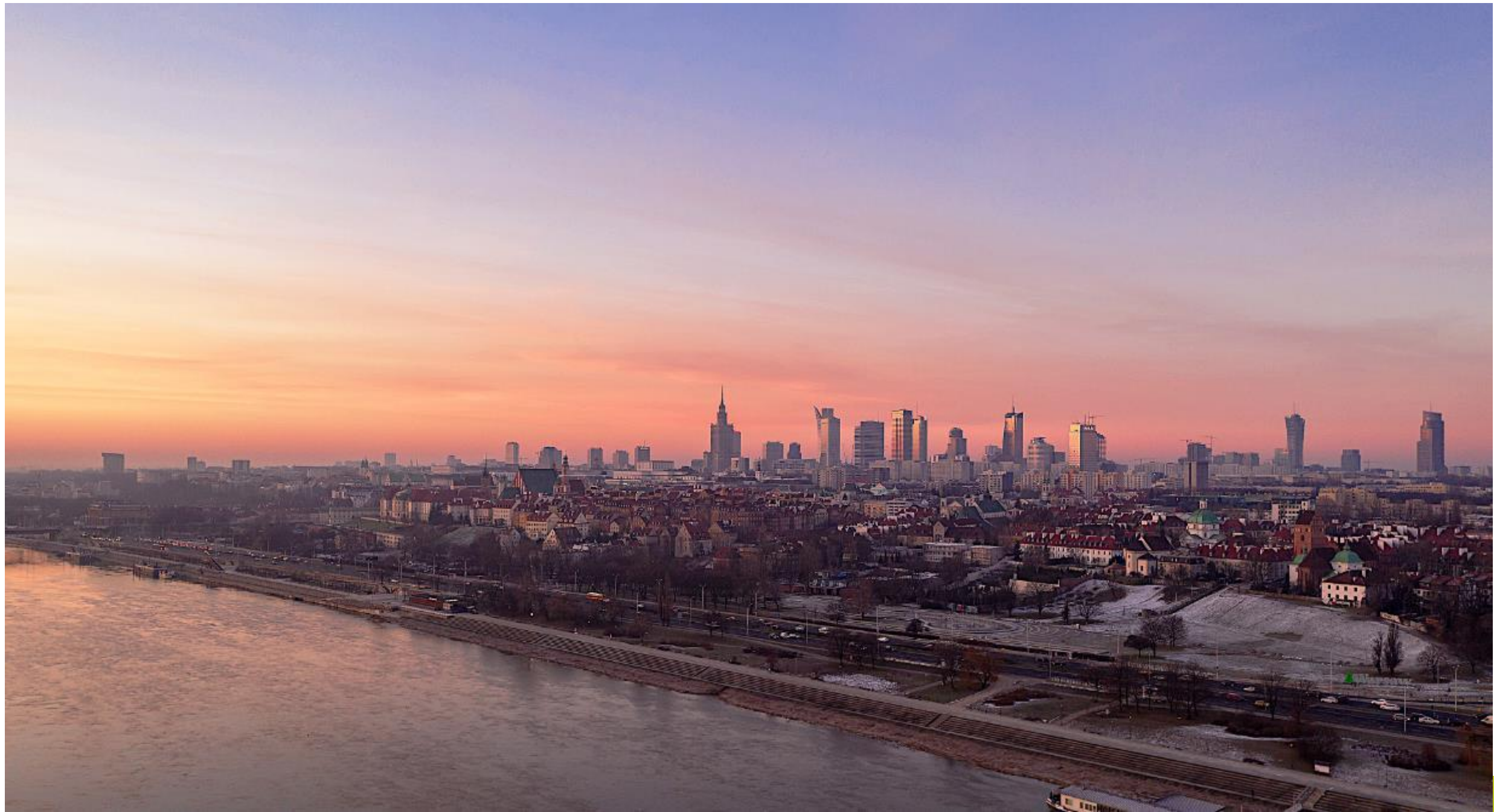
Infrastruktura piaskownicy regulacyjnej blockchain KNF

DLT Pilot Regime – studium wykonalności zaangażowania KDPW

Przyszły rok:

Proof of concept w zakresie uruchomienia infrastruktury rynkowej opartej na technologii DLT





Dziękuję za uwagę