

ICT-52 Workshop on 6G

Welcome Hexa-X 6G Vision

hexa-x.eu

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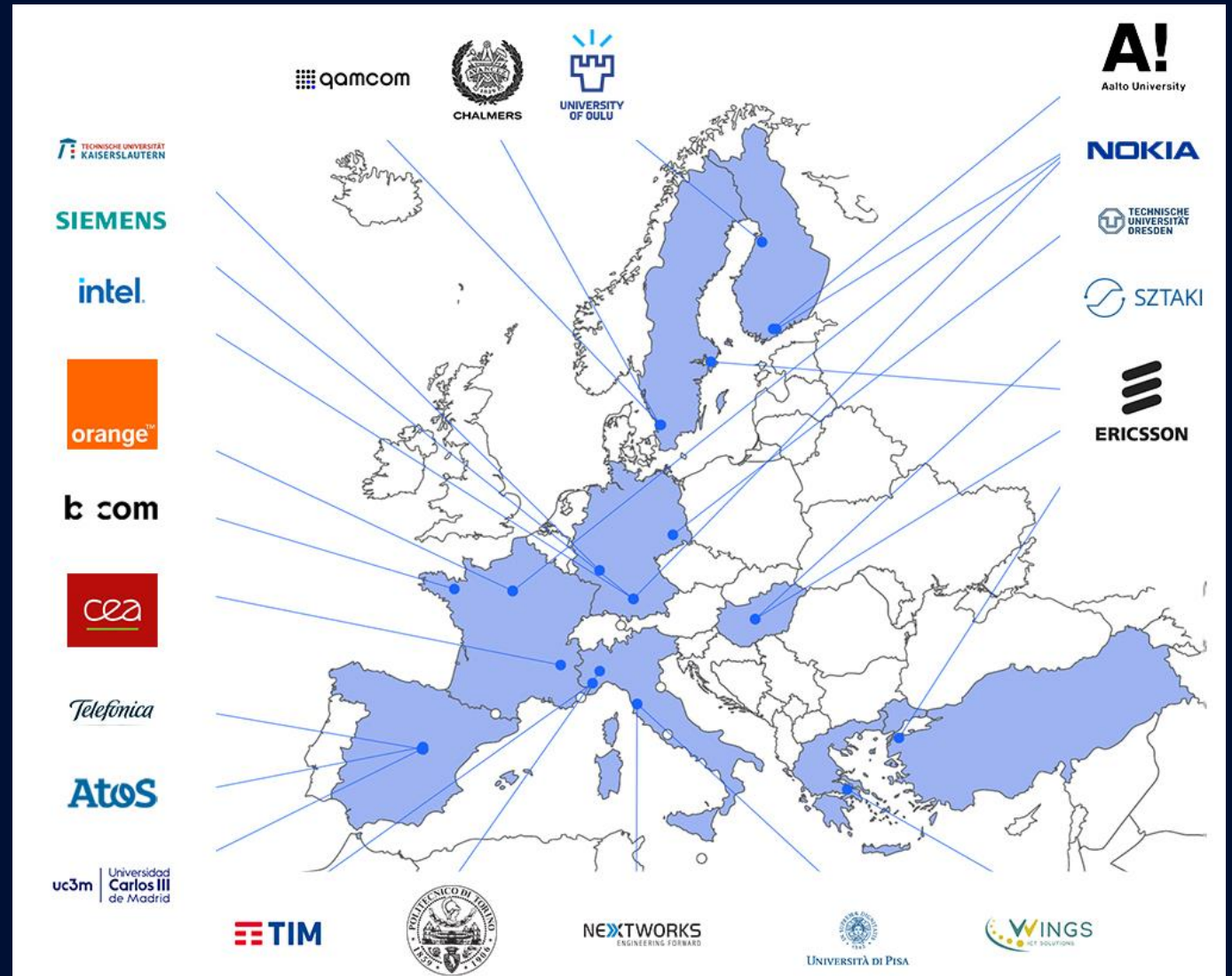
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Hexa-X overview



- Hexa-X is the European flagship research initiative to develop the foundation and contribute to industry consensus leading to 6G
- The focus is on structuring, framing, and developing technology for connectivity needs in the 2030 timeframe
- Funded through EU H2020 ICT-52
- 25 partners
 - NW vendors
 - Operators
 - Industry
 - Academia
 - SMEs
- Nokia is overall leader
- Ericsson is technical manager



ICT-52 projects working on 6G

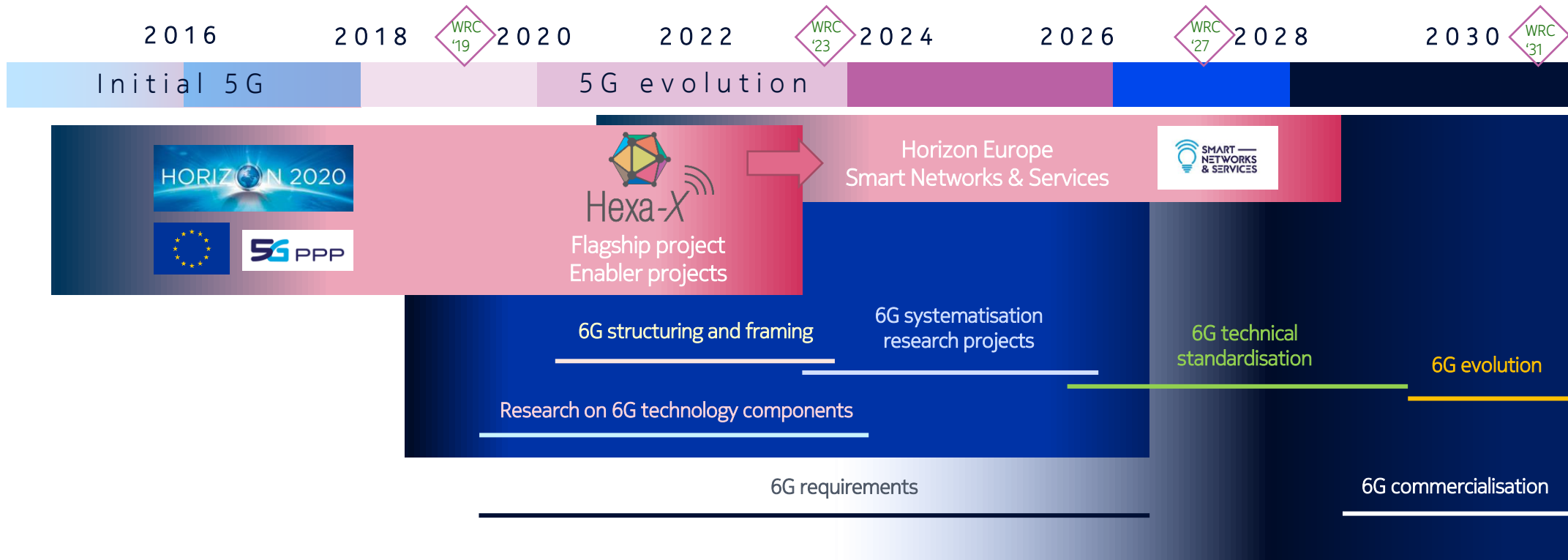


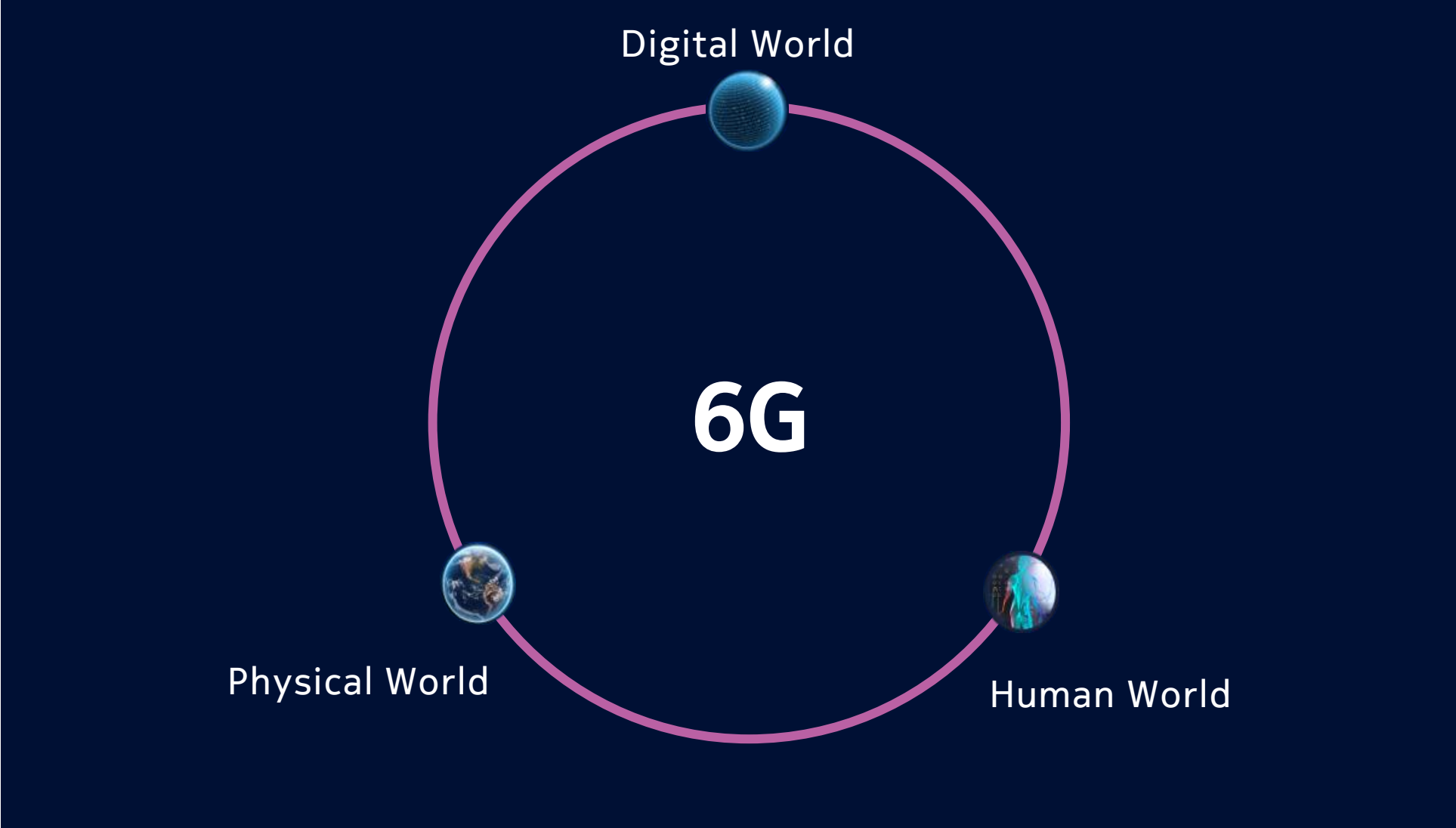
H2020-ICT-52-2020: 5G-PPP Smart Connectivity beyond 5G

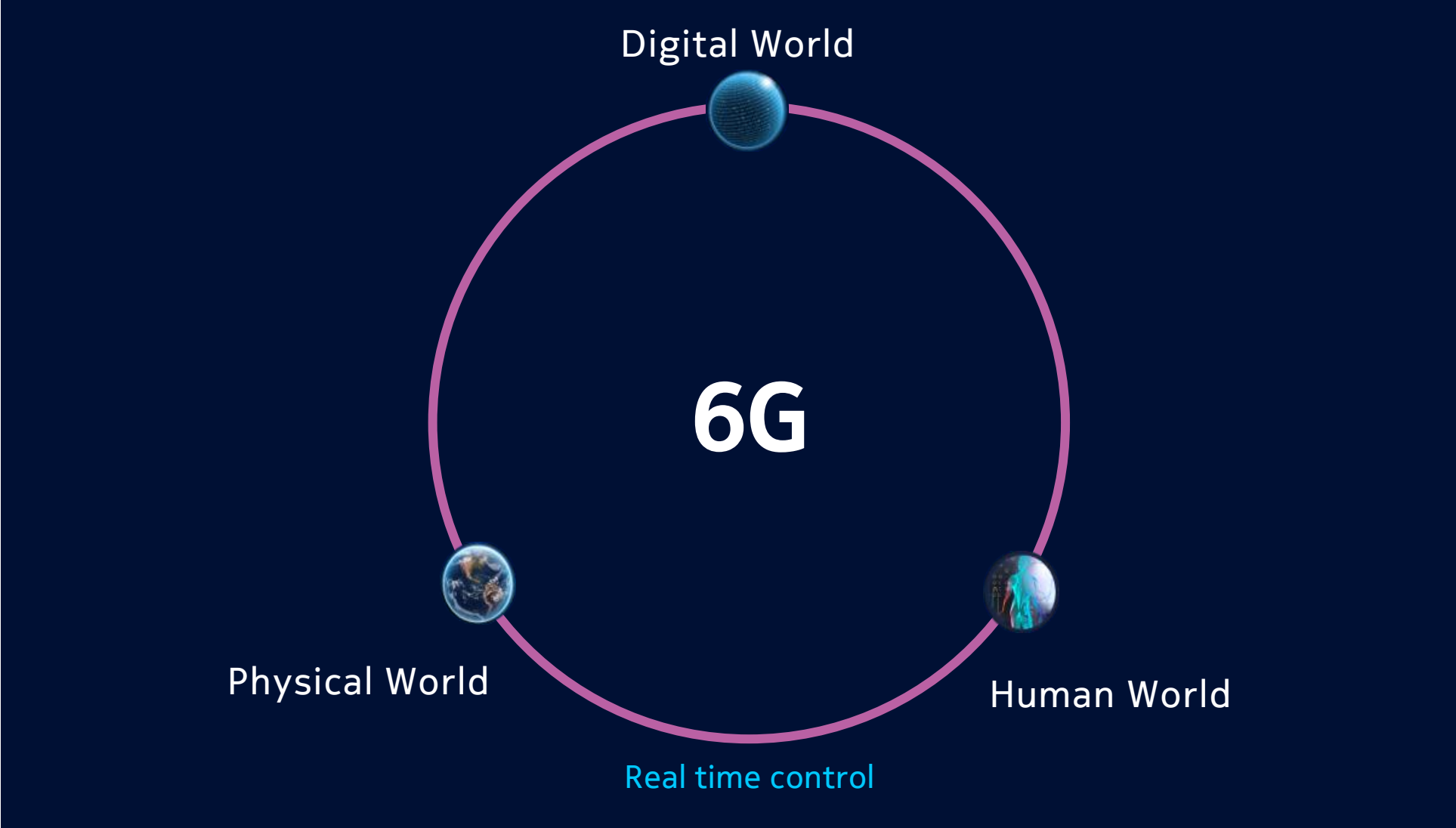
The logo for 6GBRAINS, showing a profile of a human head with a brain and a Wi-Fi symbol inside, with the text "6GBRAINS" below it.	The logo for AI@EDGE, featuring a stylized brain icon and the text "AI@EDGE" inside a purple hexagonal frame.	The logo for DAEMON, with the word "DAEMON" in black and a yellow circle with a black outline replacing the letter "O".
The logo for DEDICAT 6G, featuring a stylized cat head with a Wi-Fi symbol inside a circle, followed by the text "DEDICAT 6G".	The logo for Hexa-X, featuring a colorful hexagonal shape with internal lines and three curved lines to its right, with the text "Hexa-X" below it.	The logo for MARSAL, showing a stylized head profile with a Wi-Fi symbol and the text "MARSAL" below it.
The logo for REINDEER, featuring a stylized reindeer head and the text "REINDEER" below it.	The logo for RISE-6G, featuring a stylized sun with rays and a blue arrow pointing upwards, with the text "RISE-6G" below it.	The logo for TeraFlow, featuring a stylized circuit board icon and the text "TeraFlow" below it.

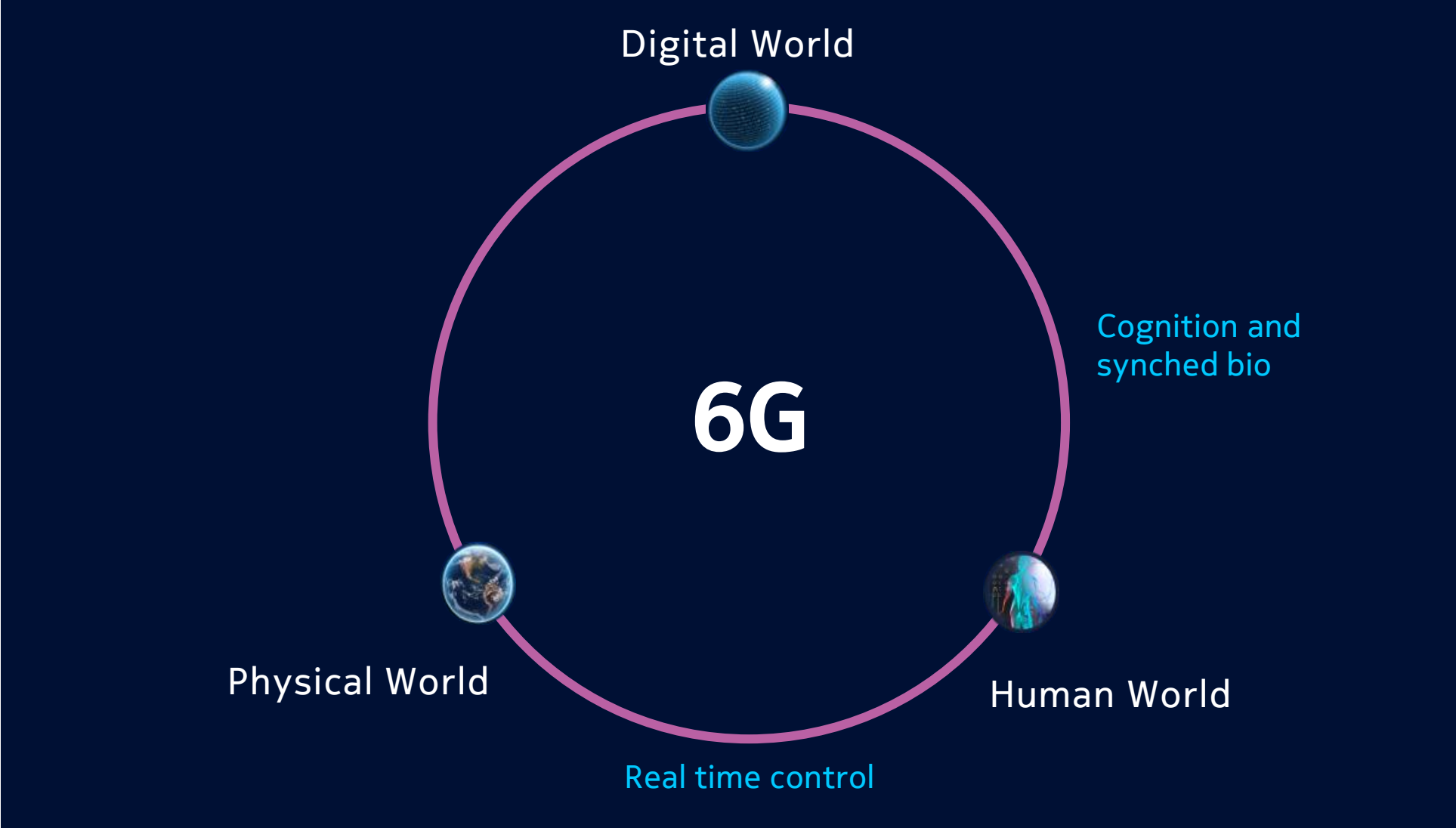


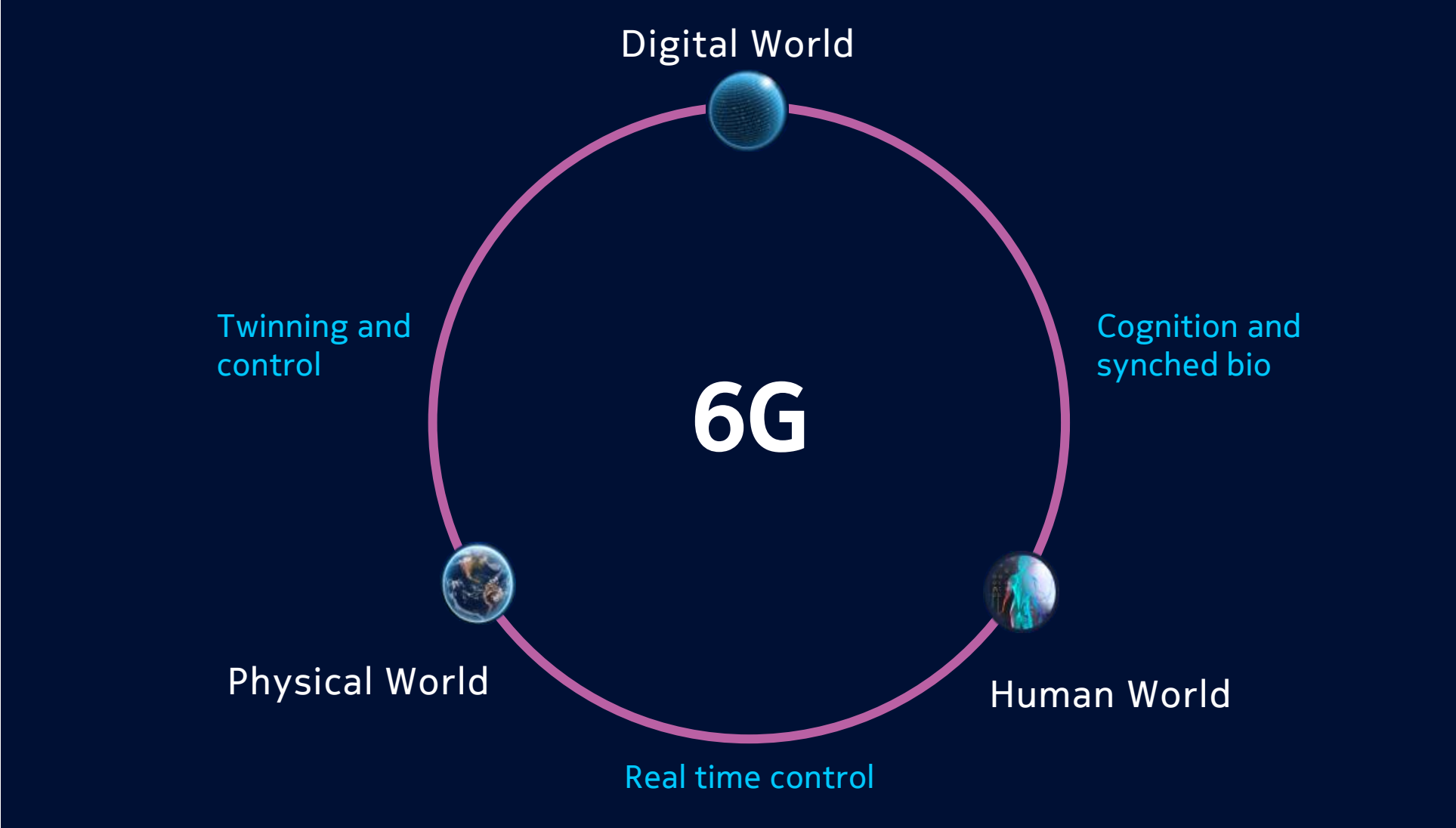
Timeline







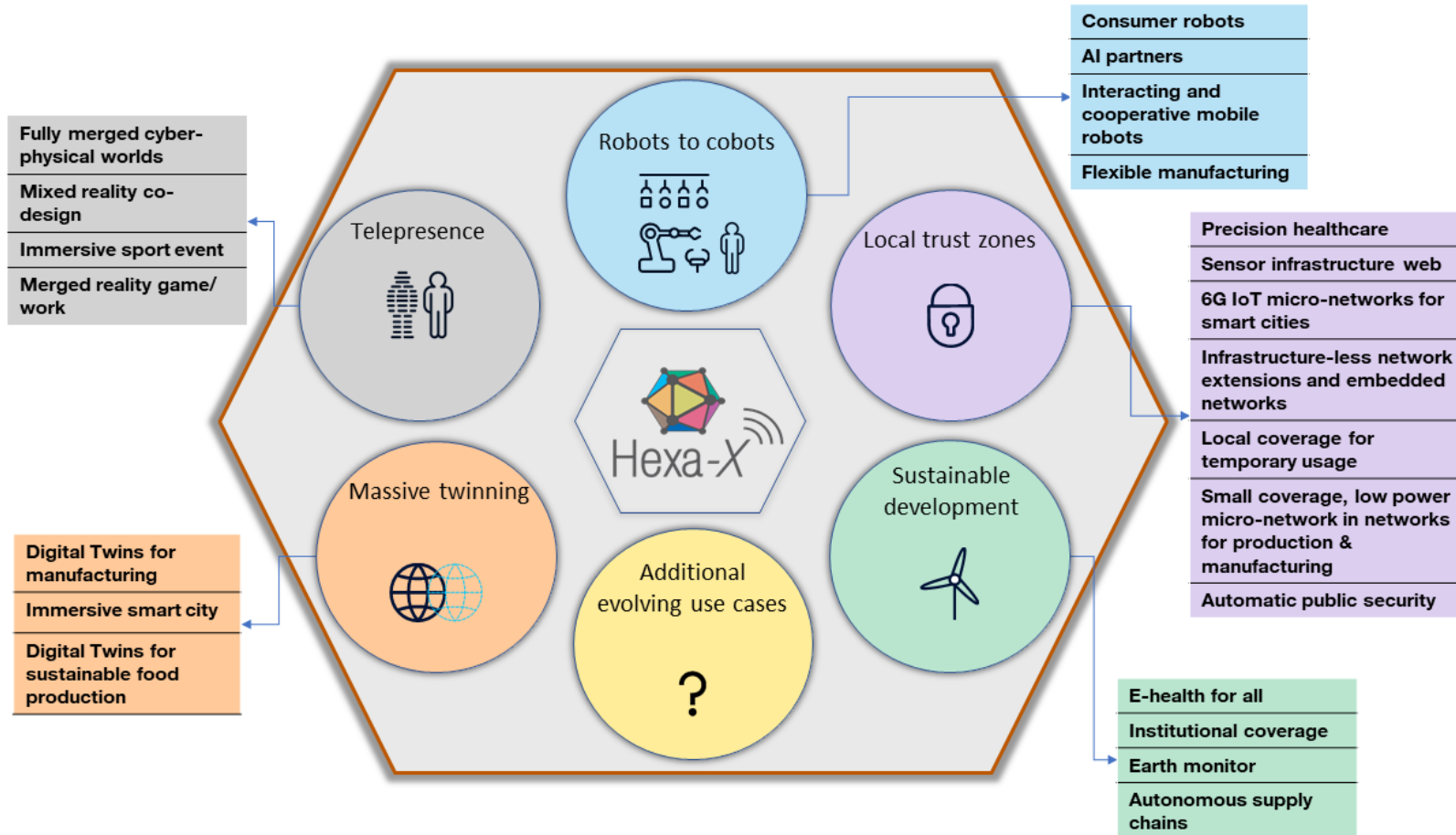




Use Cases & Services



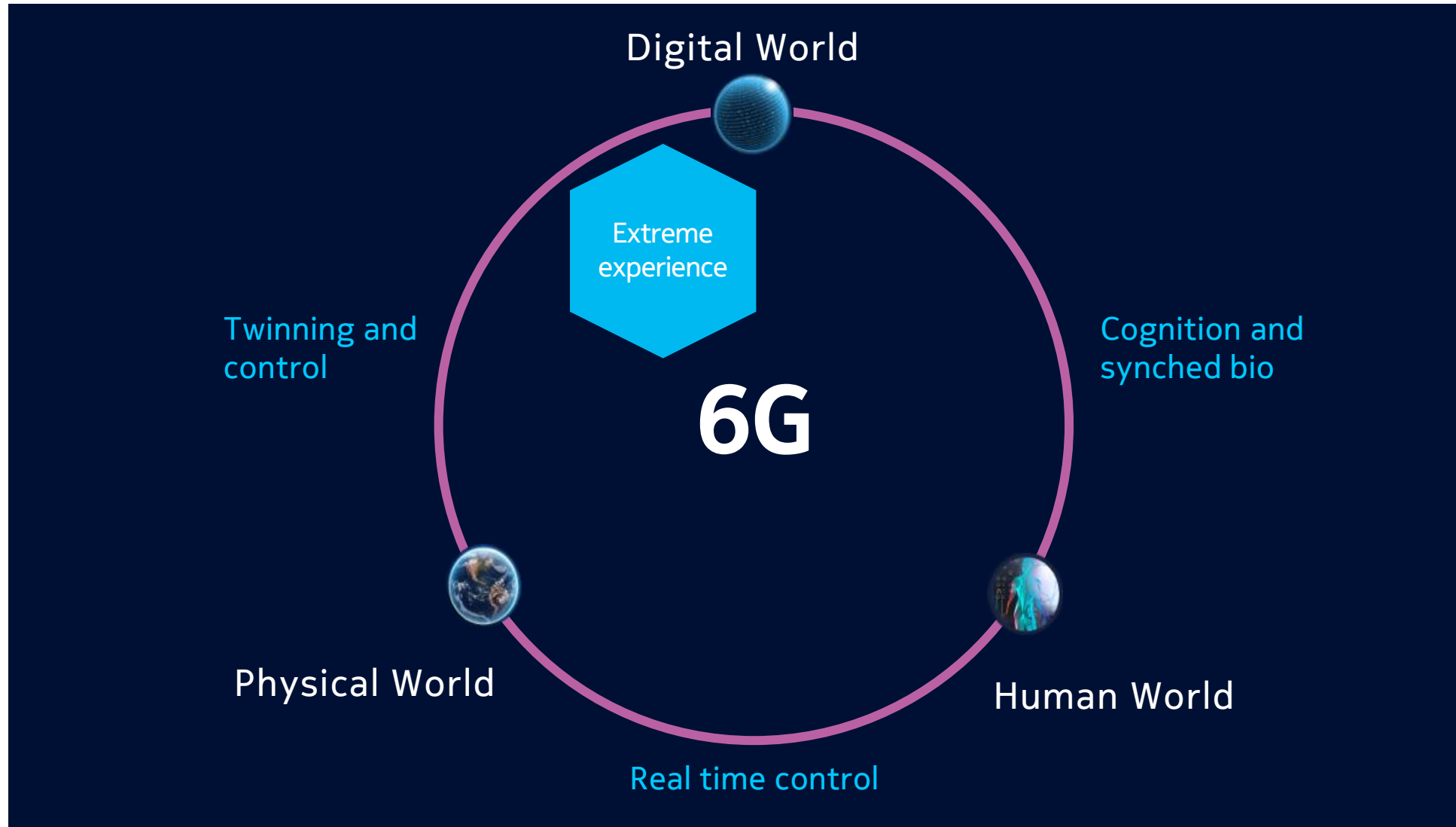
23 use cases, clustered in to 5 families



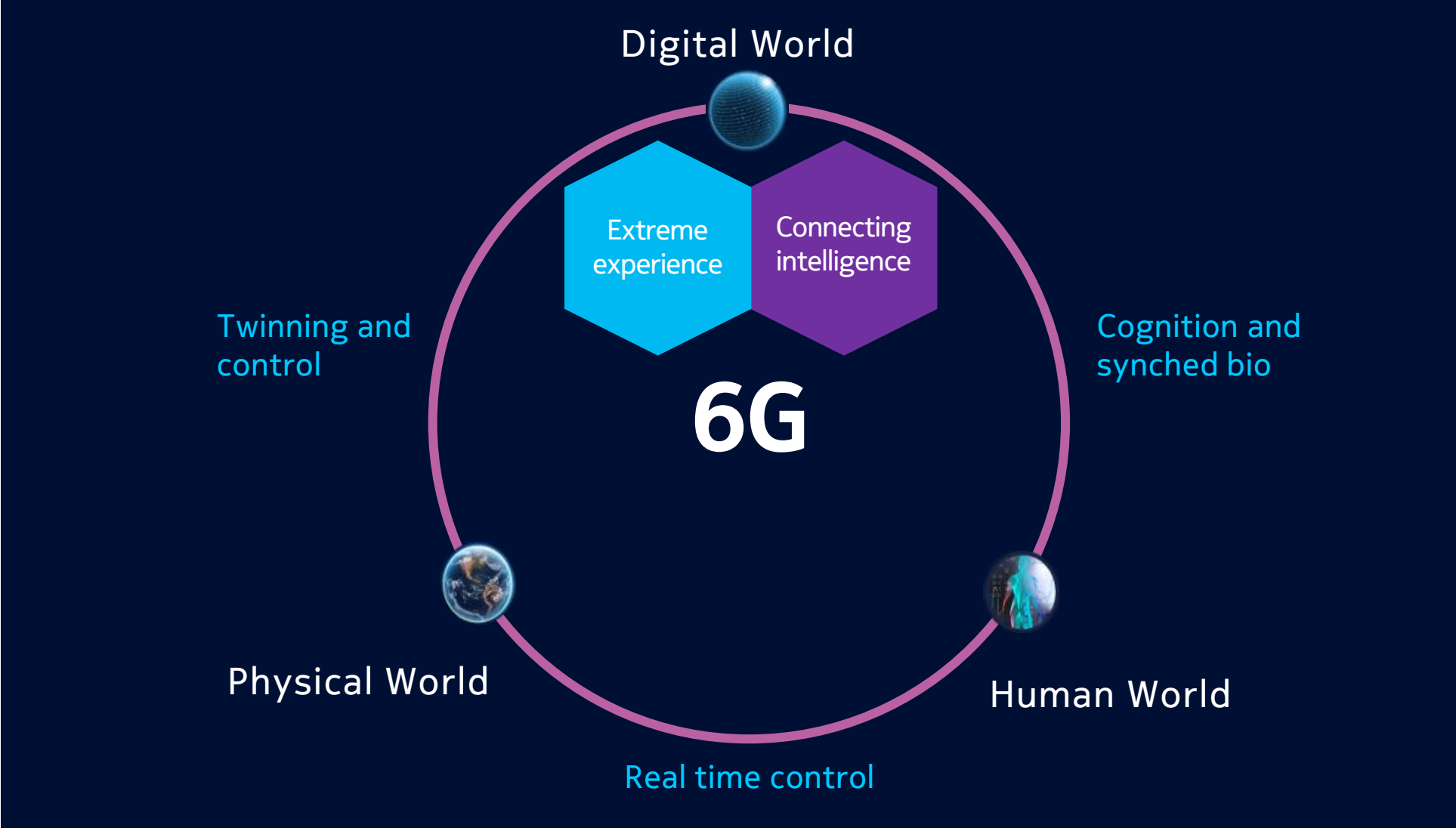
In addition to the use cases, 7 enabling services harnessing new capabilities have been identified:

- Compute-as-a-Service (CaaS) for resource-constrained devices
- AI-as-a-Service (AlaaS)
- AI-assisted Vehicle-to-Everything (V2X)
- Flexible device type change
- Energy-optimised services
- Internet-of-Tags
- Security as a service for other networks

Hexa-X Research Challenges



Hexa-X Research Challenges



Digital World



Extreme experience

Connecting intelligence

6G

Twinning and control

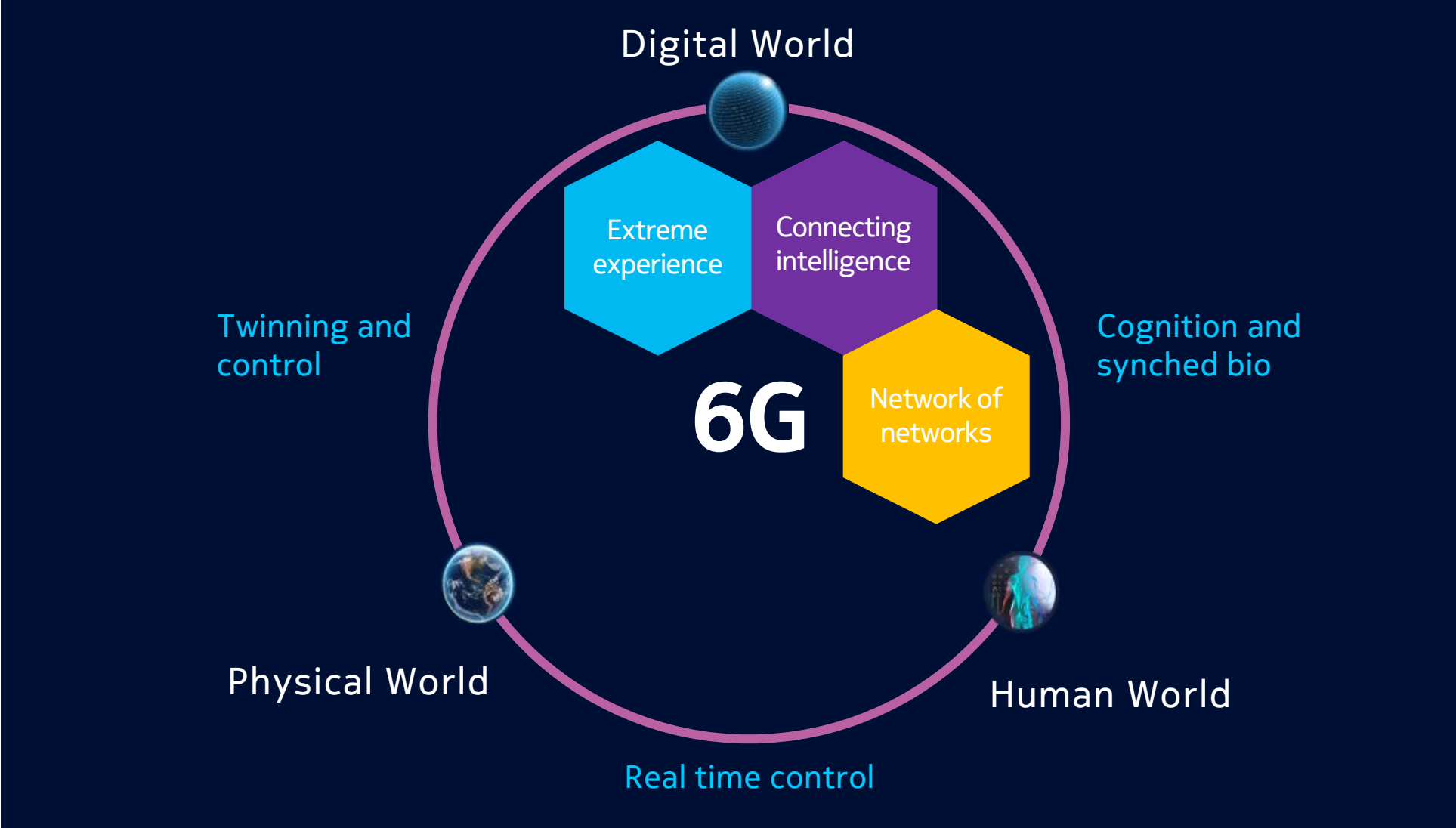
Cognition and synched bio

Physical World

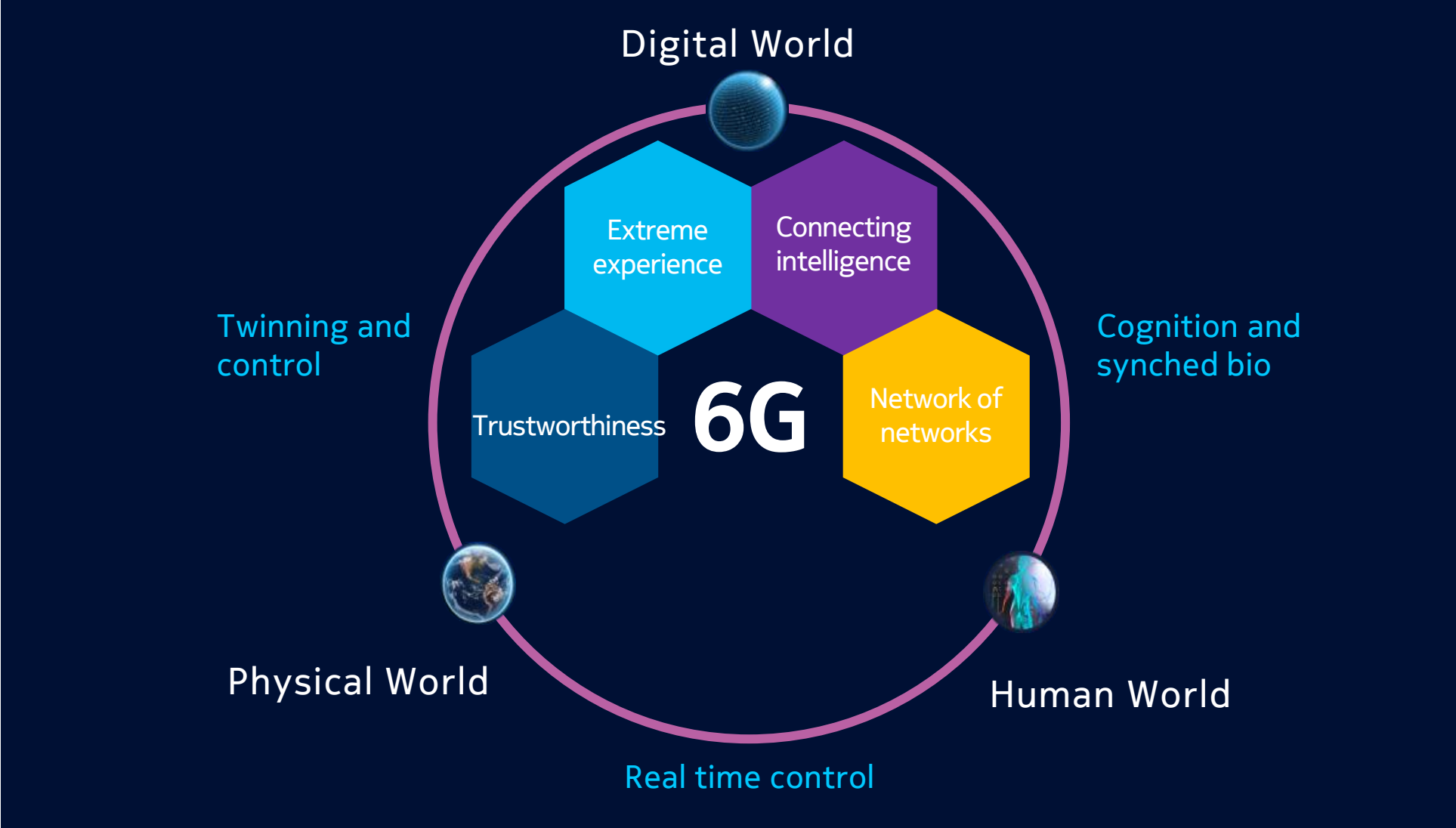
Human World

Real time control

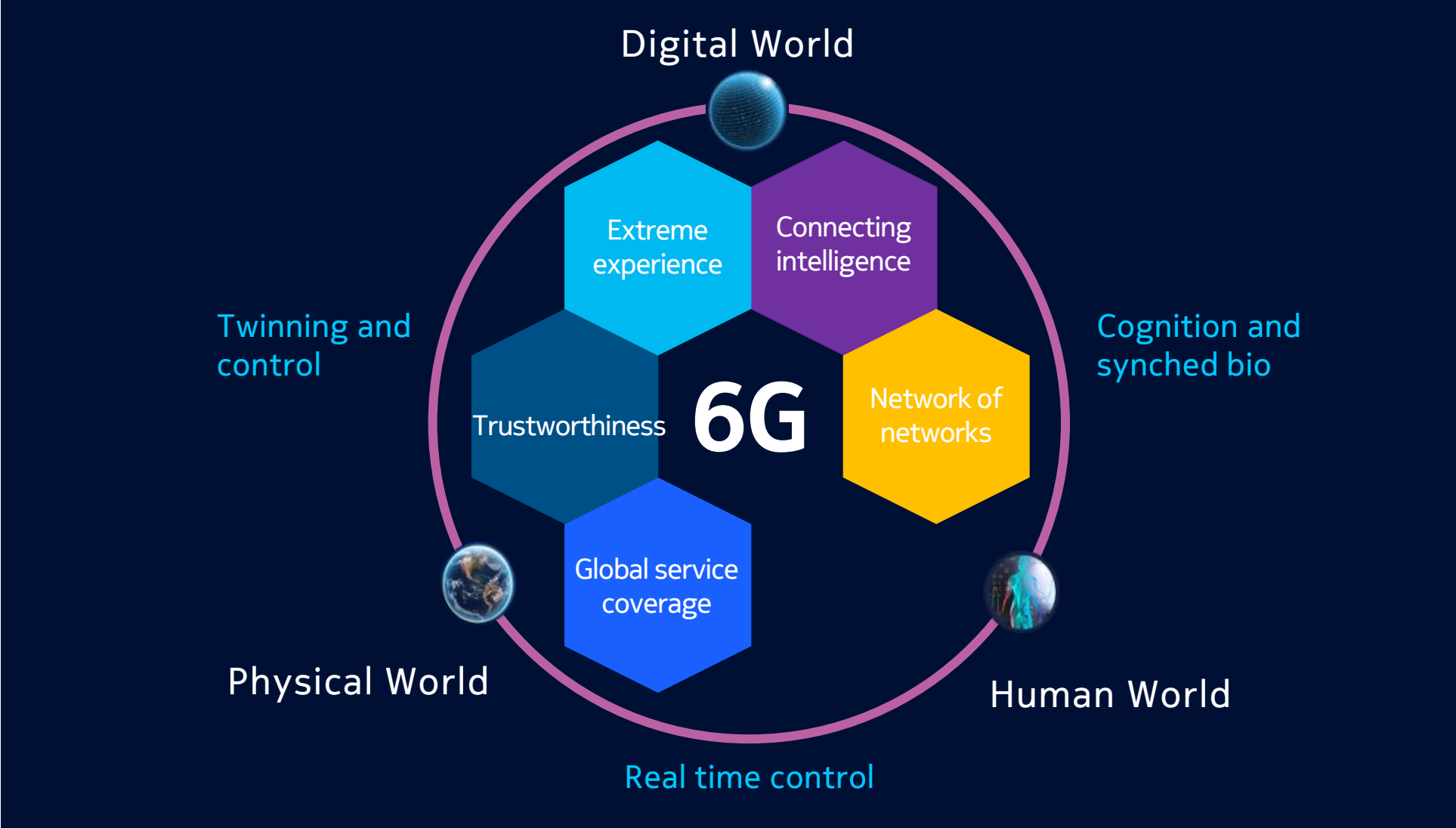
Hexa-X Research Challenges



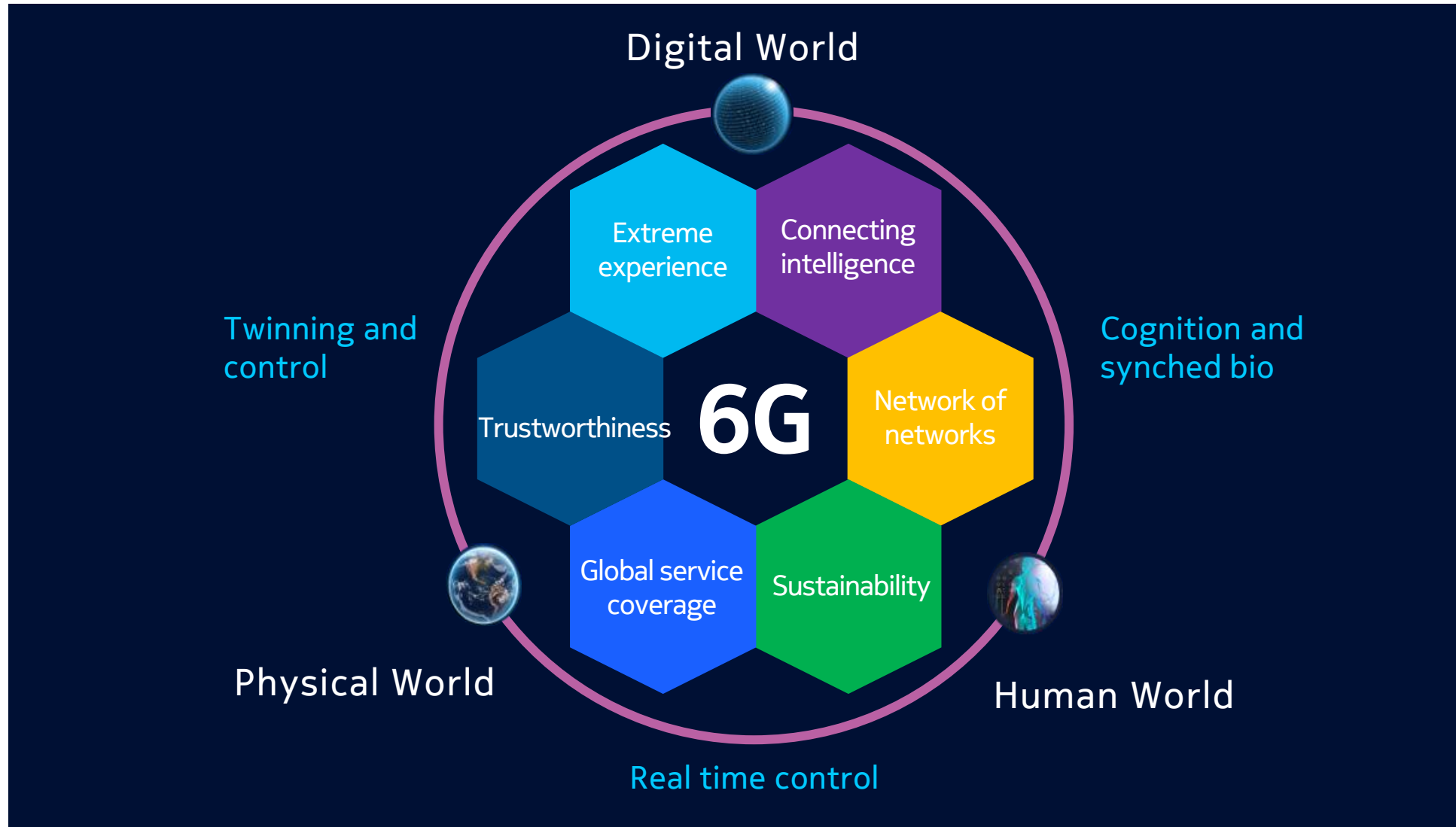
Hexa-X Research Challenges



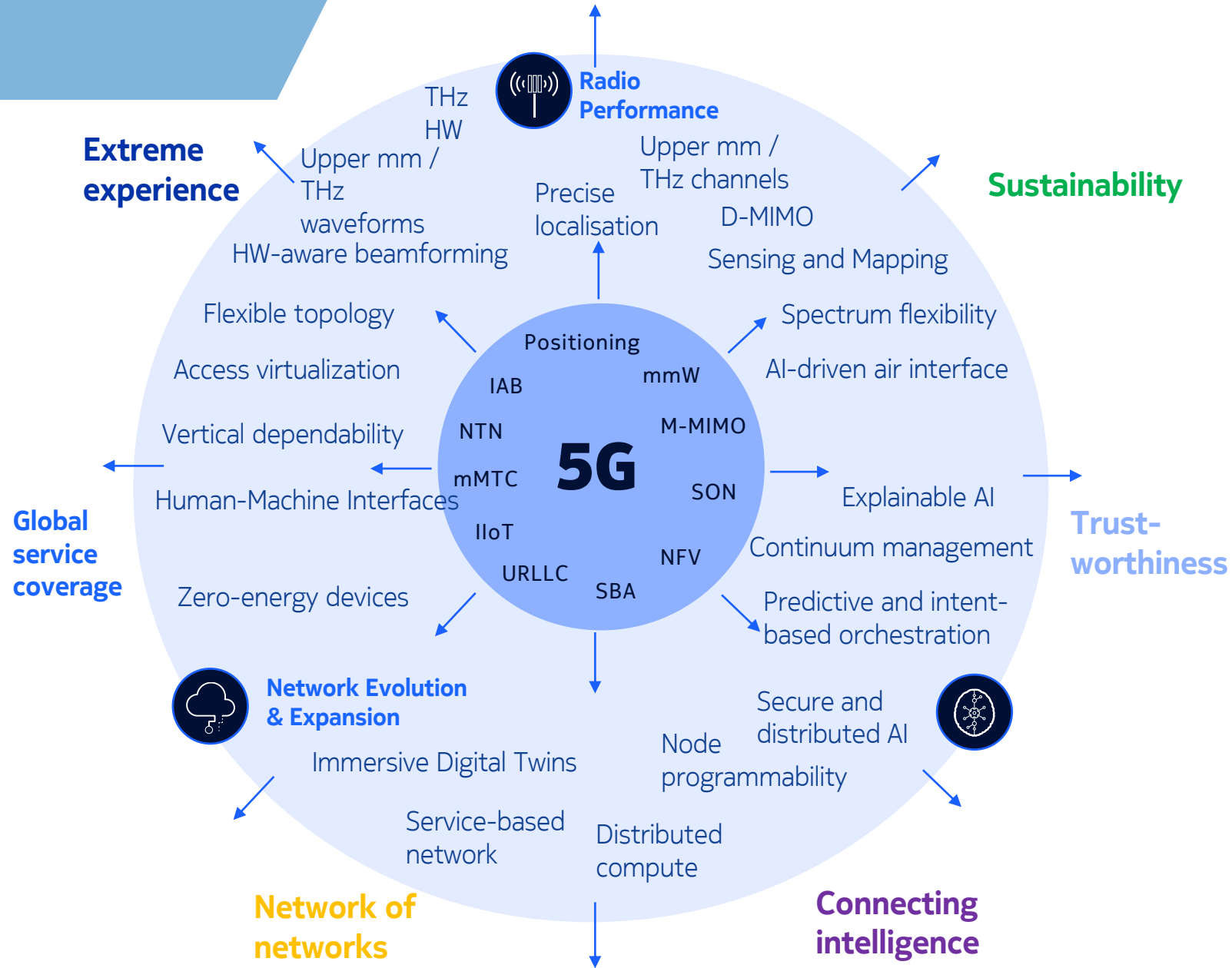
Hexa-X Research Challenges



Hexa-X Research Challenges



Ambitions



Needed capabilities



Extended KPIs

- Bit rates
- Connection density
- Traffic capacity
- Location accuracy

Needed capabilities



E2E KPIs

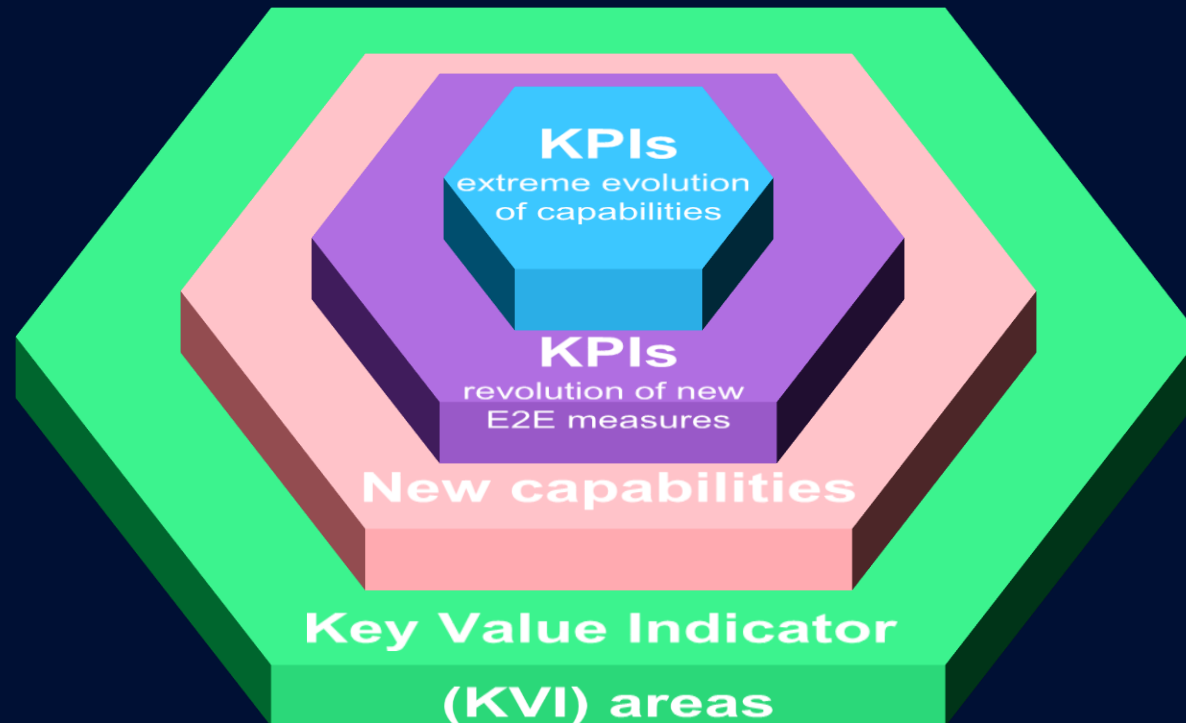
- NW energy efficiency
- Dependability
- Coverage
- Service availabilitiy



New capabilities

- Integrated sensing
- Local compute
- Ubiquitous AI
- Embedded devices

Needed capabilities



KVIs:

- Sustainable 6G
- 6G for sustainability
- Trustworthiness
- Digital inclusion

Conclusion

- 6G will be much broader than the radio-access technology
A flexible platform providing connectivity, data, compute, intelligence, and sensing
- New results available at hexa-x.eu/deliverables/
 - D1.2 Expanded 6G vision, use cases and societal values - including aspects of sustainability, security and spectrum
 - D2.2 Initial radio models and analysis towards ultra-high data rate links in 6G
 - D3.1 Localisation and sensing use cases and gap analysis
 - D4.1 AI-driven communication & computation co-design: Gap analysis and blueprint
 - D5.1 Initial 6G architectural components and enablers
 - D6.1 Gaps, features and enablers for B5G/6G service management and orchestration
 - D7.1 Gap analysis and technical work plan for special-purpose functionality
- Note also e.g. M. A. Uusitalo, P. Rugeland et al, “6G Vision, Value, Use Cases and Technologies from European 6G Flagship Project Hexa-X”, IEEE Access, Nov 2021

Thank you!

HEXA-X.EU



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