SAFE-6G

A Smart and Adaptive Framework for Enhancing Trust in 6G Networks

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SAFE-6G KPI/KVI

- **What have we done so far related to KPI & KVI definition?**

  - In related project task, it has been analysed the main documents released by reference working groups from 5G-PPP & SNS (**Test, Measurement, and KPIs Validation** WG, **Vision and Societal Challenges** WG),

  - Created an Excel file consolidating all the KPIs defined in TMV and the target values for some ICT projects, which will serve as a reference when evaluating the technologies used in SAFE-6G. Additionally, it helps us to identify gaps in the definition of cybersecurity/AI KPIs primarily, where we see SAFE-6G can contribute.

  - Generated reference templates for both KPI and KVI following the specifications of these working groups, which will be used in the project.

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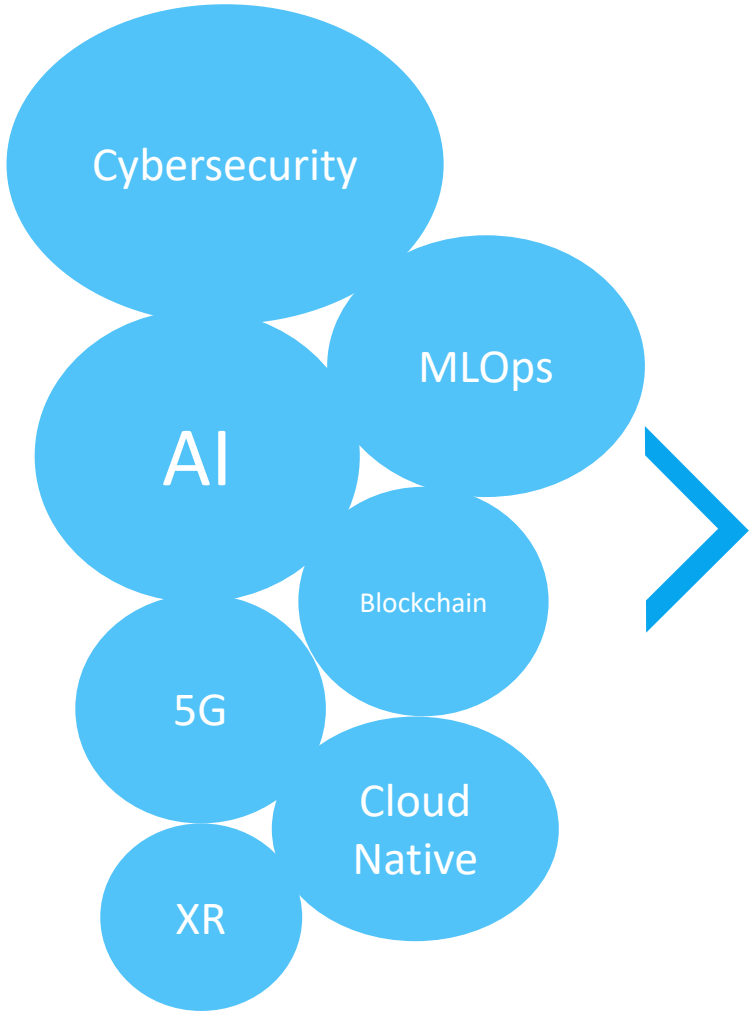
SAFE-6G main technologies



KPI	
Capacity	Peak Data Rate
	User Experienced Data Rate
	Network Capacity
	Service Bandwidth
	Area Traffic Capacity
	Connection Density
Latency	User Plane Latency
	Control Plane Latency
	E2E Service Latency
	New Latency contribution components
	E2E Application Latency – for Video processing services
	Mission critical QoS of services – latency related
	Runtime Delay
	Service Setup Delay
	Slice Setup Delay

Packet Loss	Packet Error Rate
	Layer2/3 packet transmission success rate
	Packet Loss Rate
	Frame Loss
	Signal Packet Loss
Compute	Edge computational resource usage
	Operation expenditure @edge
	Delta in network management decision
	Availability
	Resource utilization
	Computing resource utilization
Energy	Network Energy efficiency
	Device Energy Efficiency
	Reduced energy consumption
	VNF Energy consumption reduction

Security	Anomaly detection precision
	Security conformance
	Tenant data privacy
Localization	Localization accuracy
	Direction and orientation accuracy
	Localization related delays
	Localization (error) integrity
Service	Service availability
	Service reliability
	Service safety, integrity, maintainability
	CAPEX & OPEX reduction

AI/MLOps

SAFE-6G tech mainly contributes to **cybersecurity** and **AI**

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SAFE-6G Technologies

Cybersecurity
- SSI (Self-Sovereign Identity)
- SDP (Software Defined Perimeter)

XR and Digital Twins
- Metaverse
- Industry & Education

Orchestration
- Service/Network Mesh
- Cloud-Native
- Virtualization
- Cloud Continuum

AI
- Data science
- Chatbots

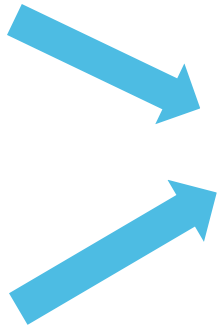
Ontology models/knowledg

5G
- USN (User Service Node)
- NSN (Network Service Node)

Blockchain
- Machine Learning

MLOps
- CI, CD, CT…

DevOps
- CICD
- gitOps



SAFE 6G challenge tech
- Cybersecurity
- AI
- MLOps
- DT

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SAFE-6G - Level of Trust (LoT) KVI

- The Level of Trust (LoT) as KVI is addressed by SAFE-6G
- It is strategically optimized within the SAFE-6G framework, which is designed to enhance trust in 6G networks through a holistic research approach
- The LoT as a KVI is intrinsically linked to the performance of the five core functions of the SAFE-6G framework: safety, security, privacy, resilience, and reliability. These functions are coordinated using (X)AI/ML techniques to ensure a user-centric approach to trustworthiness in 6G networks
- The LoT is not a static metric but a reflection of the ongoing interplay between the KPIs of the SAFE-6G functions, which are designed to adapt to the evolving needs and trust specifications of the network's users

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Thank you!

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6GSNS

SAFE-6G - Level of Trust (LoT) KVI

The technologies studied in the SAFE-6G project are expected to have a significant impact on Key Value Indicators (KVIs) like the Level of Trust (LoT). Here's an overview of the **expected impact**:

- **Enhanced User-Centric Trust**: The SAFE-6G project aims to develop a 6G-ready native trustworthiness framework that prioritizes user-centric safety, security, privacy, resilience, and reliability functions. By utilizing advanced (X)AI/ML techniques, these functions will be cognitively coordinated to optimize the LoT specified by each user or tenant. This means that the technologies developed will directly contribute to a more personalized and trusted network experience.
- **Cognitive Coordination**: The integration of (X)AI/ML techniques allows for the dynamic balancing of trust functions, which is crucial for maintaining and enhancing the LoT. As these technologies evolve, they will enable more sophisticated cognitive coordination, leading to improved LoT as a KVI.
- **Impact on System Architecture**: The SAFE-6G project explores innovative approaches to system architecture, which is fundamental for the robustness, adaptability, and efficiency of 6G networks. This will cater to the extreme use cases expected in 6G, thereby influencing KVIs like LoT by providing a more reliable and secure infrastructure.
- **Global Standardization**: The project's contribution to international collaboration and standardization efforts is vital. As 6G technology becomes globally standardized, the trust in the network is expected to increase, positively affecting KVIs such as LoT.
- **Security and Trust:** In the 6G era, there will be a greater need to trust the network. The technologies developed within SAFE-6G will play a crucial role in ensuring that security and trust are embedded into the network's architecture, thus impacting the LoT KVI

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