



The Standards People

ETSI Research Conference 2023

Maximizing the Impact of European 6G
Research through Standardization

CONFIDENTIAL6G

Confidential Computing and Privacy-
preserving Technologies for 6G



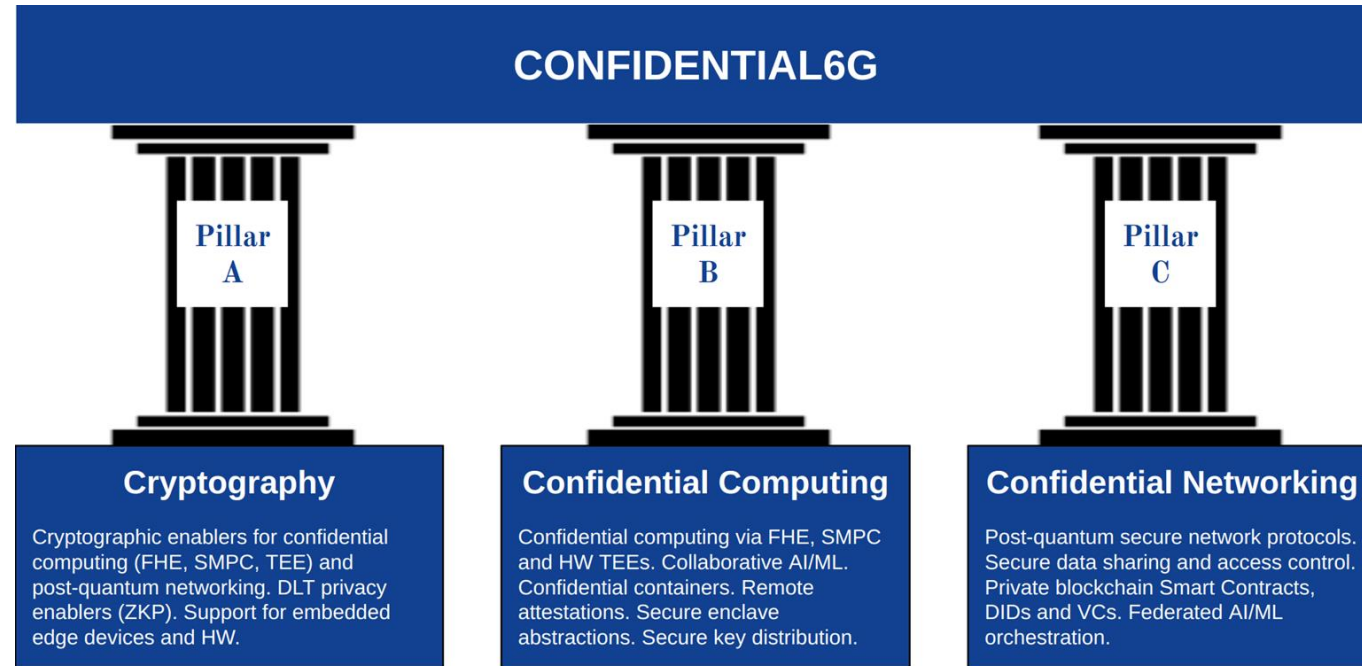
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Project vision

6G infrastructure must ensure **reliability, trust and resilience on a globally connected continuum of heterogeneous environments** supported by the convergence of networks and IT systems, in order to enable new future digital services to flourish.

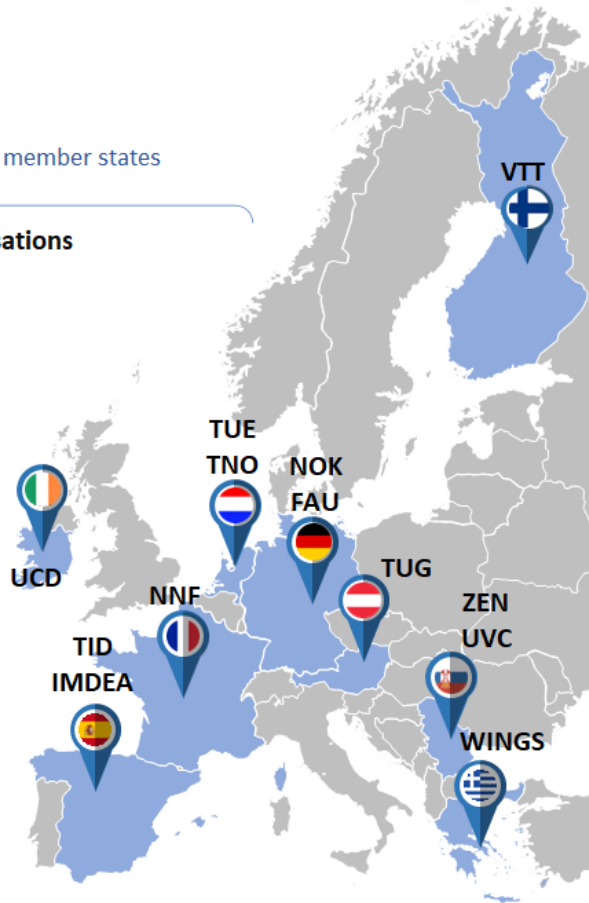
CONFIDENTIAL6G will **develop tools, libraries, mechanism and architectural blueprints for confidentiality in 6G**. These will include **cryptographic enablers**, which are the prerequisites for building more sophisticated software components, followed by **platforms and applications that will further secure and privacy-preserving compute and communication (network) processes, including secure multi-party computation and federated AI/ML orchestration**. The design of future systems will be supported by in-depth, state-of-the-art cryptographic quantum-resistant protocols and formal security proofs.



Consortium overview

13 consortium partners
8 EU member states

7 Academic & research organisations
3 Industrial partners
3 SMEs



Complementarity and diversity of competences

Area of expertise	Partners												
	WINGS	NNF	NOK	TID	TUE	UCV	ZEN	VTT	TNO	IMDEA	TUG	UCD	FAU
Project lead	****	****					**						
Fully homomorphic encryption Enablers and Algorithms		*	***	**	***	**	**	**	****	****	****	*	***
Collaborative and Federated ML	**	****	****	****	*	***	**	****	****	****	***	****	****
Quantum-safe TLS			****	**	****	*		***	****	***	***	**	****
Trustworthy AI suite: Input data protection, Bias identification, and Explainability		**	**	****	*	**	*	**			*	***	***
Distributed Ledger Technology (DLT)		****	***	***	***	***	****	***	***	***	***	****	****
Confidential Edge and IoT	**	***	**	****	**	****	***	****		**	****	**	****
Identity and Reputation Management	**	*	***			**	****	***		*	**		****
Confidential Orchestration		****	**	***		****		****		*			
Integration, Prototyping, Demonstration, Evaluation	****	****	***	****	**	****	****	****					



WPs

Use Cases (WP5)

Use case 1: Predictive Maintenance in Aviation

Use case 2: Confidential Computing Platform for Telecom Cloud Providers

Use case 3: Intelligent V2X

Confidential Computing (WP3)

Embedded TEE tools and libraries

Embedded FHE

Collaborative AI/ML using TEE

Collaborative AI/ML using FHE and SMPC

Compute in the secure enclave (TEE)

Compute over encrypted data (FHE)

Remote attestations

HW support - TEE

HW support - FHE

Confidential Networking (WP4)

Confidential containers orchestration

Federated AI/ML orchestration

Secure data sharing and access control using DLT

Blockchain quantum-safe consensus

Blockchain Smart Contracts with FHE

Blockchain ZKP (application)

Blockchain DIDs and VCs

Quantum-safe TLS (implementation)

Confidential Toolkit - Cryptographic Enablers (WP2)

TEE libraries and enablers

FHE libraries and enablers

SMPC libraries and enablers

Quantum-safe TLS enablers

Blockchain enablers: ZKP, DID, VC



Use-Cases



Use Case 1:
Predictive maintenance for airline consortium using blockchain-based data sharing platform and federated AI/ML orchestration (ALU, NOK, WIN, UCD)




Use Case 2: Privacy-preserving confidential computing platform that enables mitigation of internal threats for telecom cloud providers (UVC, VTT)



Use Case 3:
Intelligent connected vehicle, mission-critical services, OTA updates, FL/ML and vehicle to infrastructure communication (ZEN, TID, WIN)




To validate the constituent components that will be integrated into a unified fully-functional platform an iterative small-scale validation in 3 use cases will be organised.



Thank You!



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