MARVEL

EVENT DETECTION (ROBBERY)

EVENT DETECTION (FALLING PERSON)

EVENT DETECTION (FIRE)

TRAFFIC MONITORING

EVENT DETECTION (CAR CRUSH)

Multimodal

Extreme Scale Data Analytics

For Smart Cities Environments

MARVEL Benefits

A privacy-aware solution for revealing valuable insights to improve quality of life

Event detection and situational awareness in a smart city environment to support decision-making

Breaking technological silos

Tested in real-world complex settings for ensuring accurate, cross scale, and in-time predictions

Contribution of extremely large audio visual processed datasets to support the European Data-driven Economy

MARVEL Functionalities

Innovative technologies for data management, acquisition, distribution, and storage

AI-based multimodal perception and audio-visual scene recognition

E2F2C distributed ubiquitous computing architecture

Federated learning and edge processing

GPU-accelerated stream processing

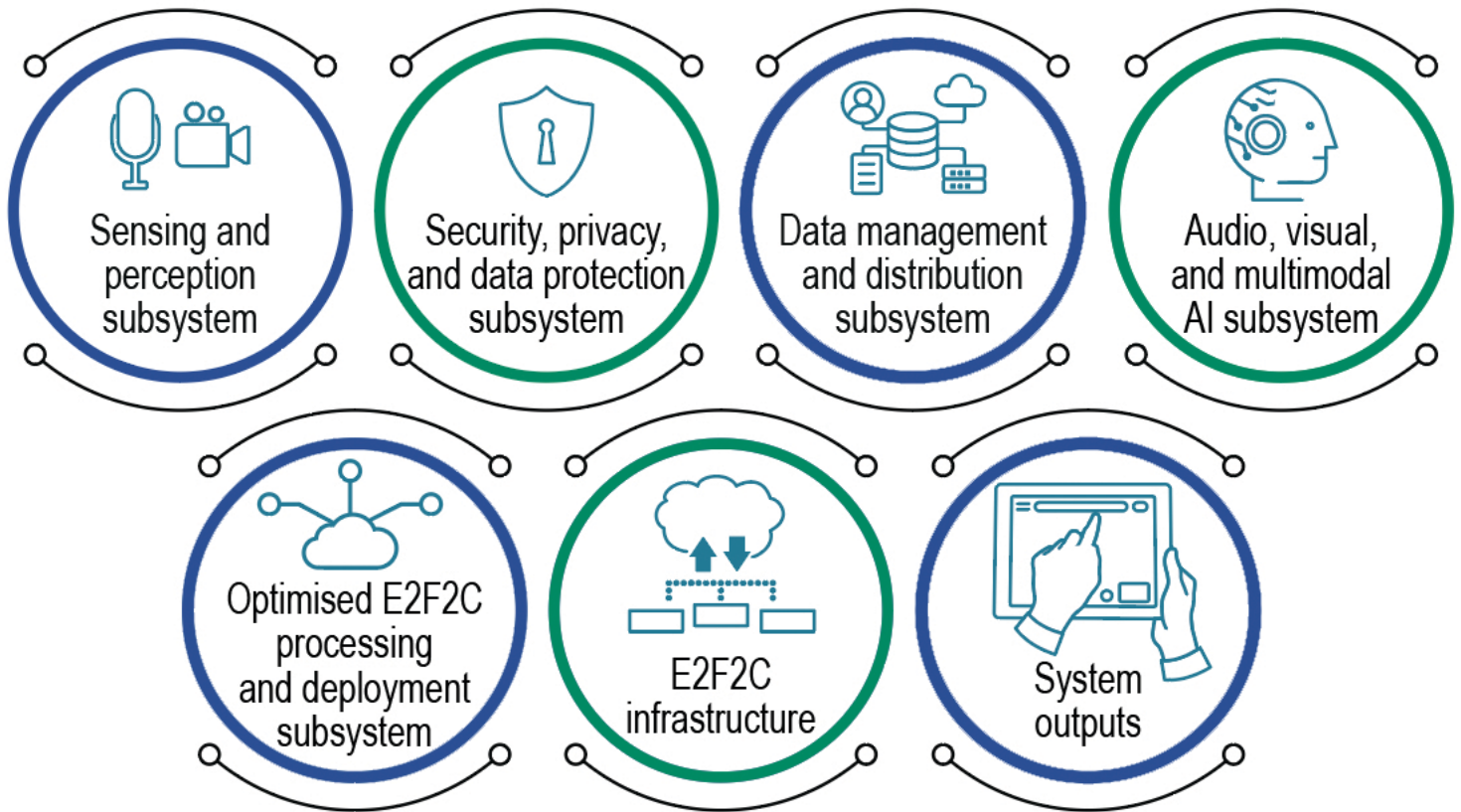Data privacy, anonymisation, and security assurance

Security at the edge and trusted execution environments

Data Corpus-as-a-Service

Decision-making and data visualisation

MARVEL architecture

29 technological components grouped into seven subsystems:

Sensing and perception subsystem

Security, privacy, and data protection subsystem

Data management and distribution subsystem

Audio, visual, and multimodal AI subsystem

Optimised E2F2C processing and deployment subsystem

E2F2C infrastructure

System outputs

MARVEL in Smart Cities

City Monitoring in Trento
Inform local authorities and emergency services of potential anomalous events that may lead to dangerous situations
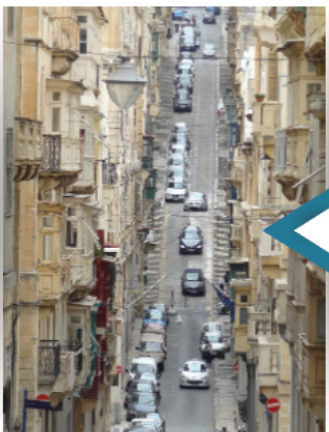
Road Traffic Management in Malta
Data monitoring and analysis for planning infrastructure upgrades and implementing mobility management measures

Crowd Monitoring and Security in Novi Sad
Data collection using drones and experimental evaluation in controlled environments to support the Trento and Malta use cases

MARVEL Consortium

A unique group of 17 organisations from 12 countries, highly complementary in terms of technical competence, as well as business and market experience.

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