
# symbIoTe

## Symbiosis of smart objects across IoT environments

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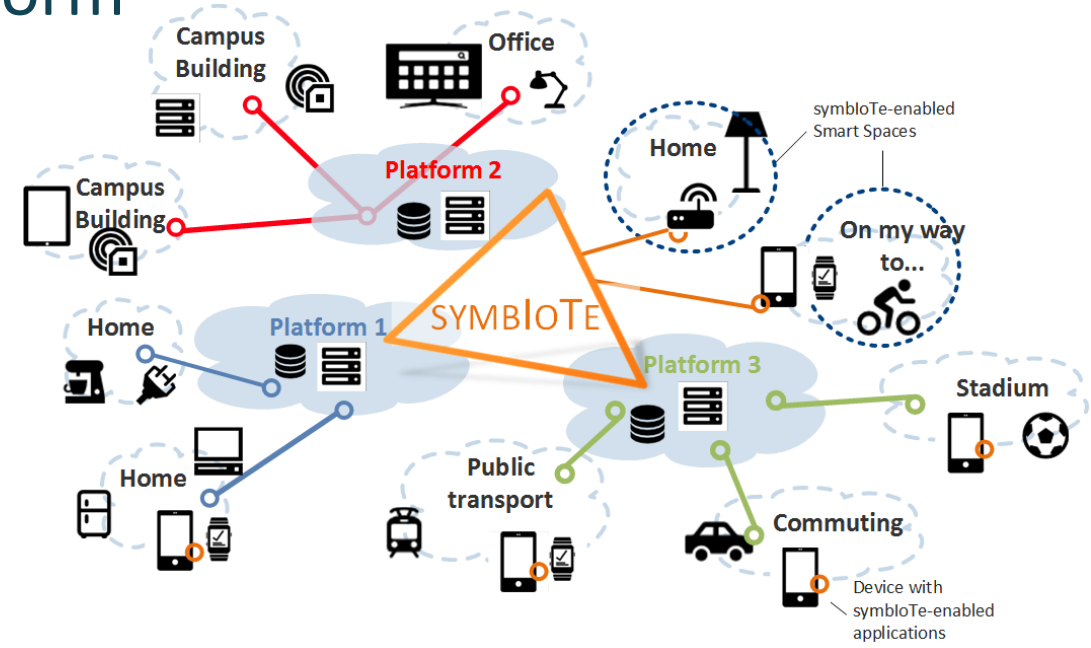
# symbIoTe in a Nutshell

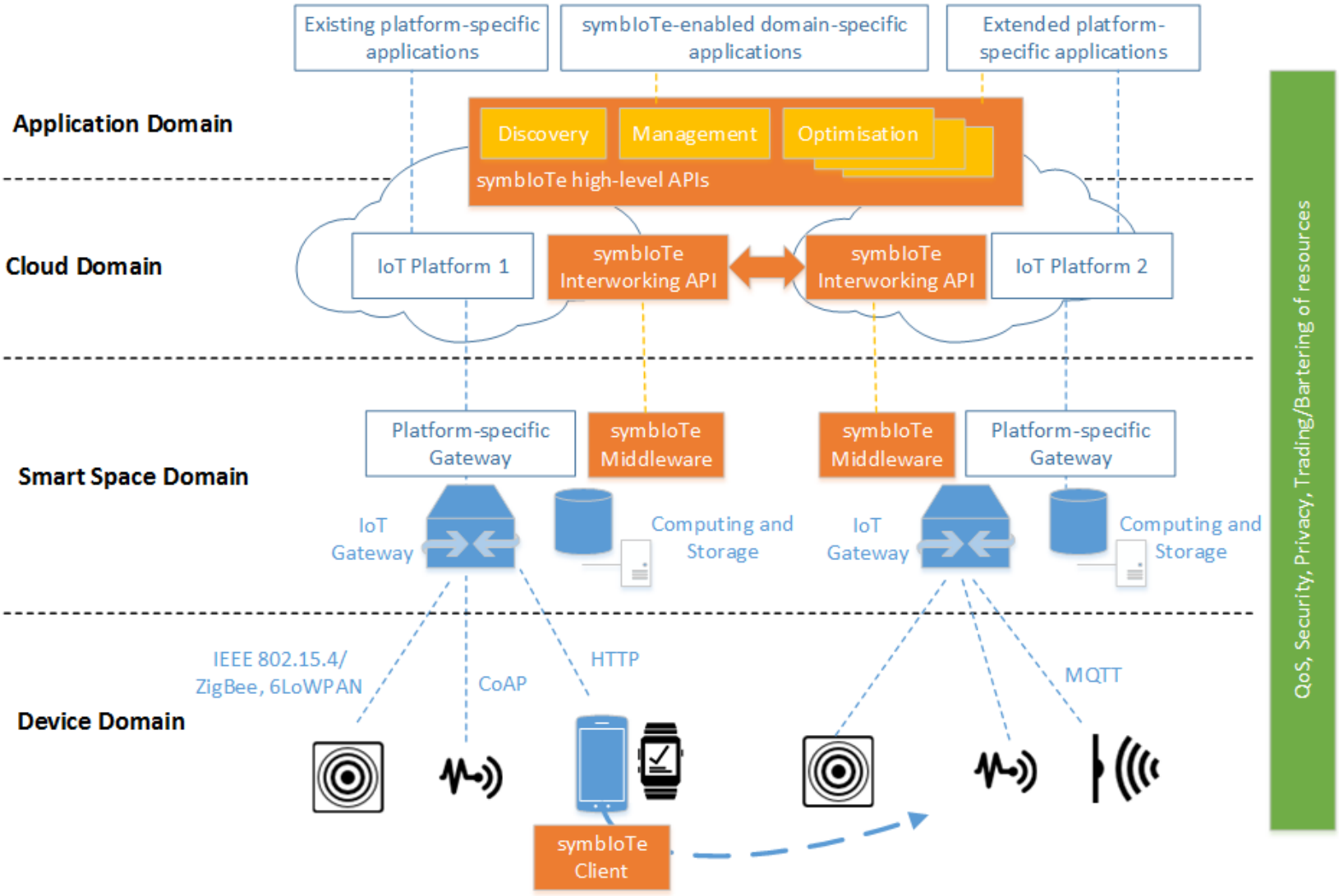
- an interoperability framework across IoT platforms enabling cooperation
  - offers an abstraction layer for a “unified view” on various platforms and their resources
  - provides unified and trusted discovery and secure access to physical and virtualized sensing/actuating IoT resources
  - offers flexible integration of smart space infrastructure within symbIoTe-enabled environments and device roaming in visited platforms
  - allows stakeholders to overcome market barriers and assure optimal collaboration and cooperation on top of the available often fallow resources

# Vision & Objectives

- Interoperability of IoT platforms for rapid cross-platform application development
- Hierarchical, adaptive and dynamic IoT environments
- Security, access scopes and identity management
- Realistic cross-platform deployments
- Open source and commercialization



# Architectural Sketch

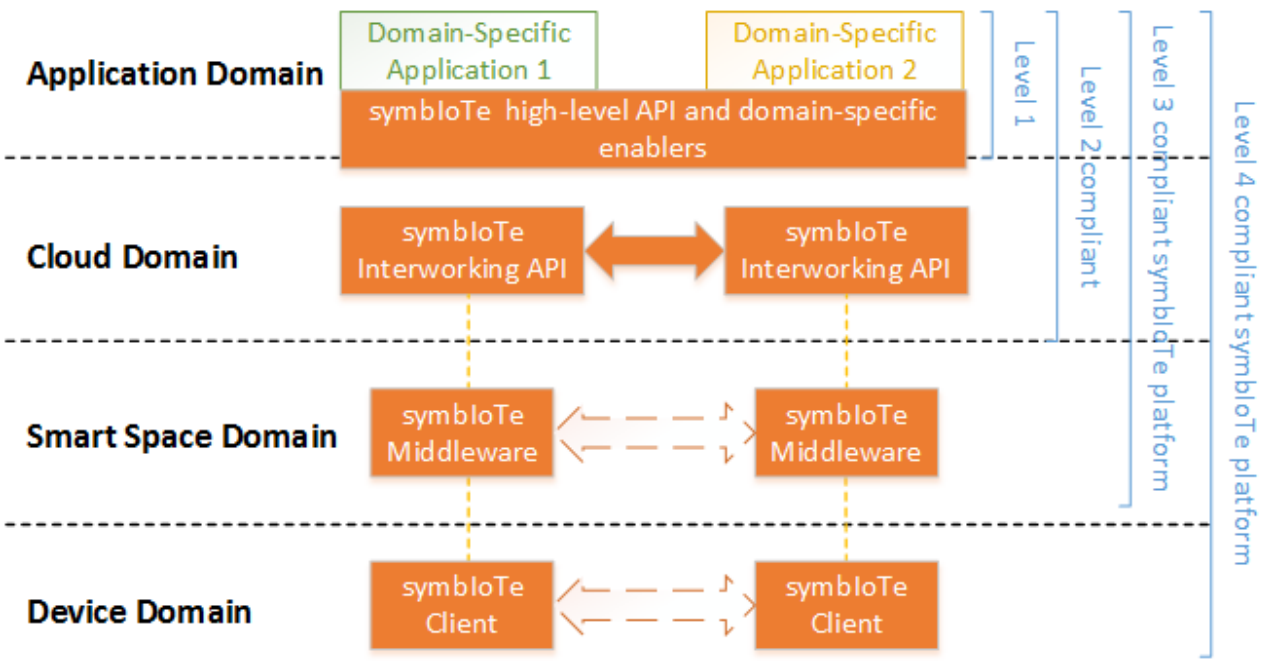


# Technical Approach

Layered approach: 4 domains motivated by the oneM2M architecture

- Application Domain
  - high-level API for managing virtual IoT environments
  - offers domain-specific enablers to ease the development of domain-specific applications
- Cloud Domain
  - interworking interface for the exchange of information between two collaborating IoT platforms
- Smart Space Domain
  - standardized API for resource discovery and configuration; enables device roaming
- Device Domain
  - heterogeneous devices capable of dynamically blending with the surrounding environment
- Cross-domain: security and privacy, QoS issues, resource trading and bartering

# The symbIoTe Stack




Level 1: lightweight symbIoTe

Level 2: platform federations

Level 3: adaptive symbIoTe smart spaces

Level 4: full symbIoTe stack with roaming things

# Use Cases

- Smart Residence
  - demonstrate  cross-IoT domain services in the Smart Home/Office
- Smart Yachting
  - automate the information processes between megayachts and mainland
- Smart Mobility and Ecological Urban Routing
  - integration of environmental with mobility data for green route calculation
- EduCampus
  - Federated cross-IoT domain Campus services
- Smart Stadium
  - Indoor location services for stadium visitors support

# Stakeholders & Benefits

- Innovative business models; incrementally deployable
- Application developers are able to use physical resources across platforms in a uniform way
- IoT platform providers can increase the number of users through multitude on innovative applications being built on top.
- Infrastructure providers gain competitive advantage due to dynamically configurable symbIoTe-enabled smart spaces.
- SMEs are symbIoTe's primary target group!

# Open Calls

| Call Type | Topic/Thematic area |
|---|---|
| 1st Open Call | Development of Level 1 symbIoTe compliant IoT platforms (Application Domain) |
| | Development of Level 2 symbIoTe compliant IoT platforms (Cloud Domain) |
| 2nd Open Call | Development of Level 3-4 symbIoTe compliant IoT platforms (Smart Space and Device Domains) |
| | Development of applications that benefit from the symbIoTe compliant platforms |
| | Deployment of symbIoTe middleware in real environment and conduction of small-scale trials |
| Contest | Offline 'hackathon'-style challenge on specific functionality for Level 4 symbIoTe compliant platforms (Device Domain) |

# The symbIoTe Consortium

# Thank you!

## Questions?

**Contact:**

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