IOTCRAWLER

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www.iotcrawler.eu

https://iotcrawler.eu/index.php/for-developers/

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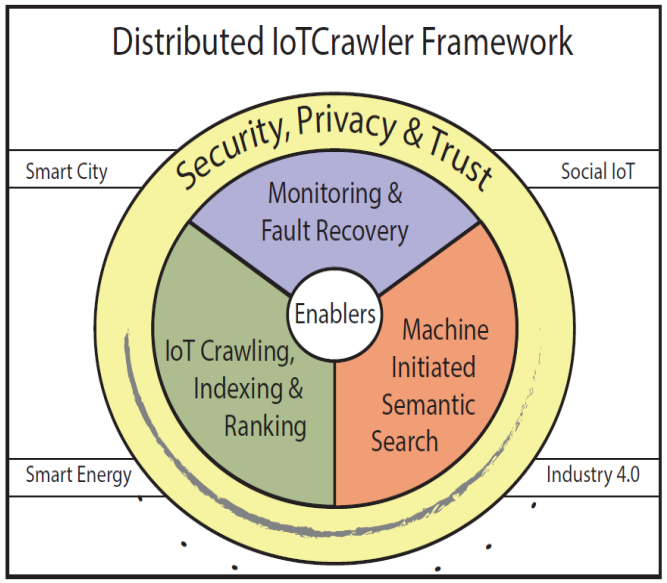
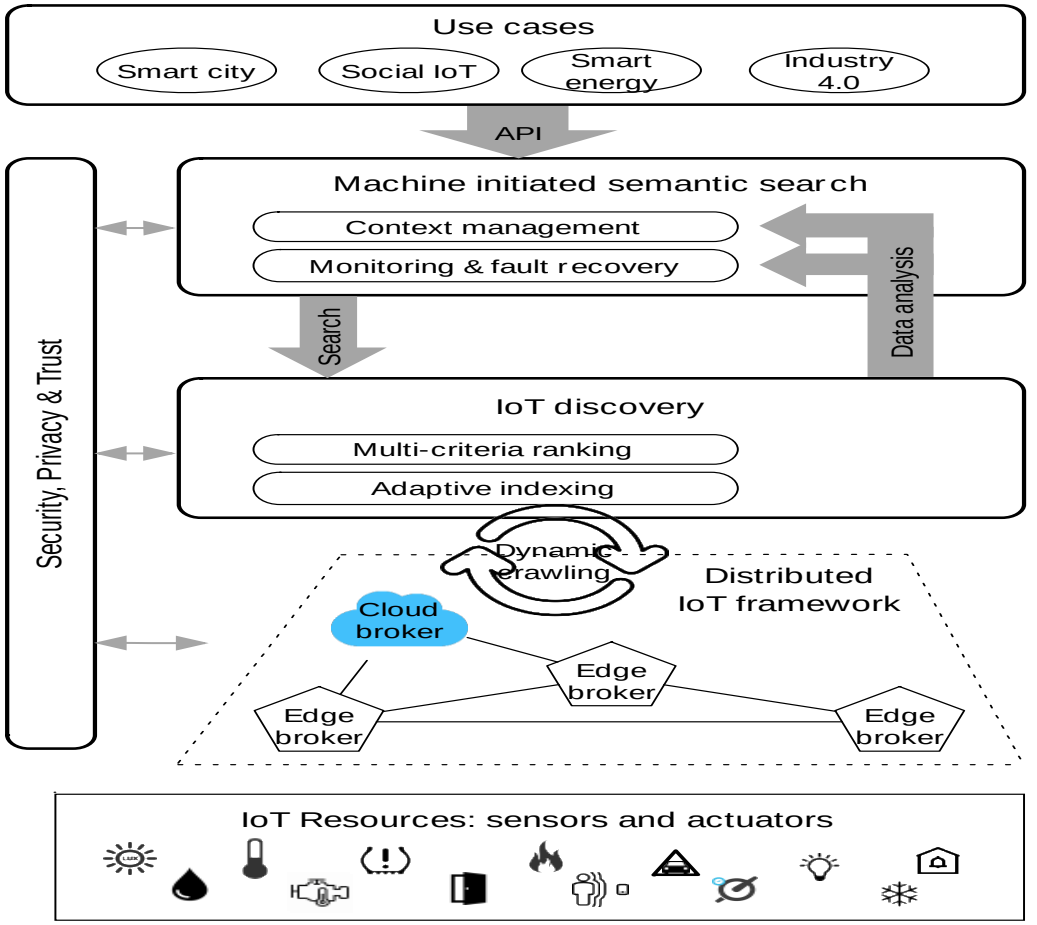
Vision and principles

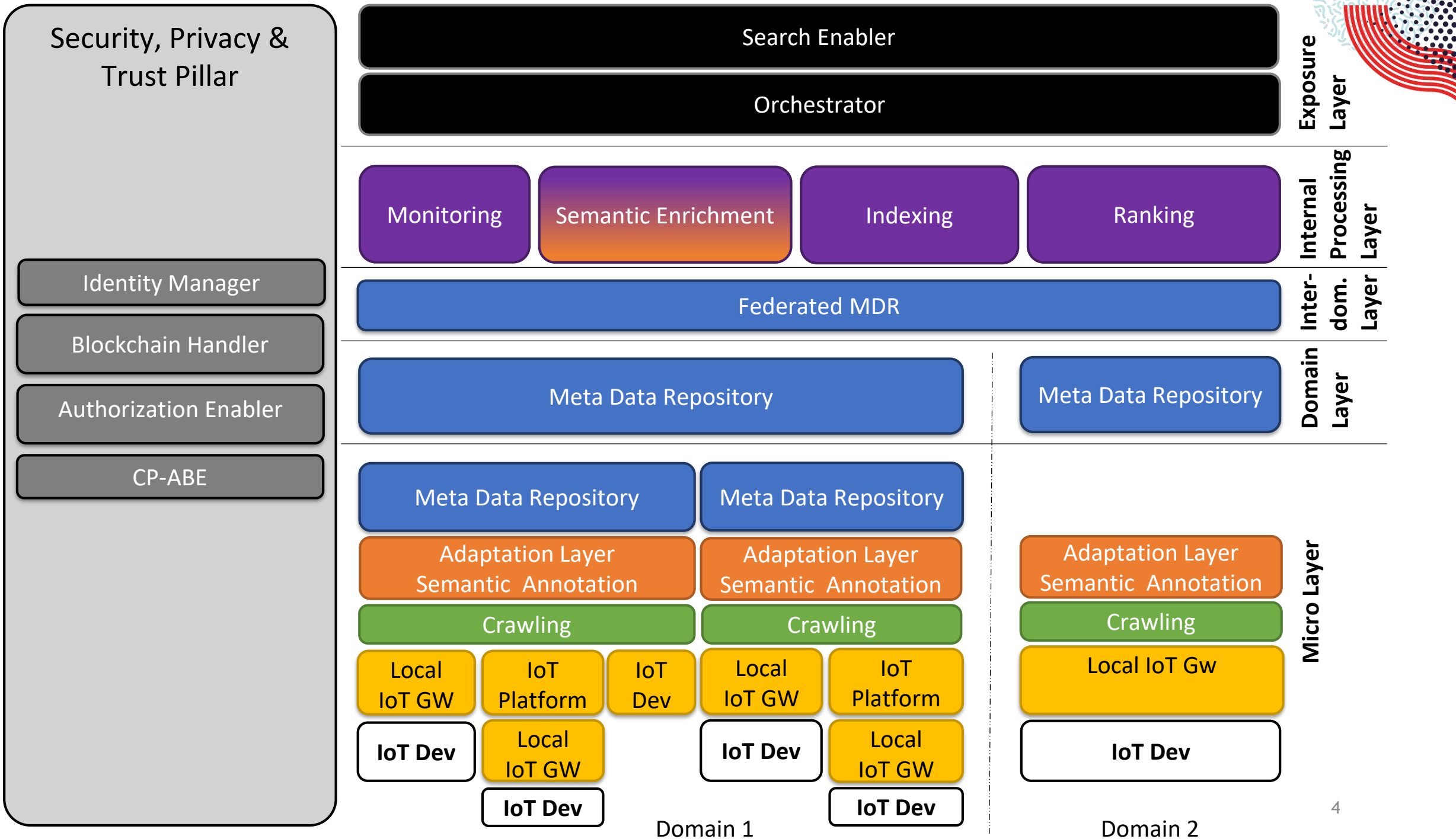
- To develop the next generation of Internet search engines that support crawling, discovery, search and integration of IoT data.
- To provide tools and mechanisms to respond to machine initiated search, offer adaptive and dynamic solutions for resource ranking and selection,
- To develop distributed crawling and indexing mechanisms to enable real-time discovery and search of massive real world (IoT) data streams in a secure and privacy- and trust-aware framework.
- To integrate the security and privacy properties of smart object within the registry and lookup procedure
- To change the way that data (especially IoT data) is published, discovered and accessed in large-scale distributed networks.
- Providing enablers for security-, privacy and trust-aware discovery and access to IoT resources in constrained IoT environments
- To pave the way for creating new applications and services that rely on ad-hoc and dynamic data/service query and access.
- Horizontal Openness (aka. federation of autonomous systems)
- Ownership decoupling from specific applications and secure data sharing.
- Semantics decoupling: data and higher-level query concepts are left to applications



Main areas

- Search and Discovery
  - Suitable schema evolution to the information/content discovery, description mechanisms such as the Resource Description Framework (RDF) and JSON-LD integrated on overlay networks based on DHT
  - Designing adaptive intelligent methods that can process quality of multivariate and multi-modal IoT data and provide knowledge-based and context-aware query and search and mechanisms for IoT data/services
  - GraphQL-based search enabler
  - Virtual sensor through machine learning algorithms and interpolation techniques
  - Common data property modelling maybe aligned with ETS-ISG-CIM
- Security and Privacy
  - Advanced cryptographic techniques based on Attribute-Based Encryption (ABE). Specifically, it analyses the application and extension of the Ciphertext-Policy ABE (CP-ABE) for privacy aware communications
  - Blockchain alternatives to simply encrypting transaction to allow a certain subset of nodes to exchange sensitive transactions without involving other nodes
  - Lightweight access control scheme for IoT integrated on a discovery and registry mechanism

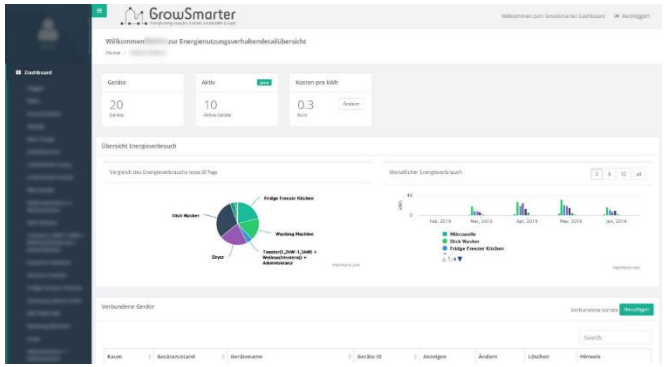


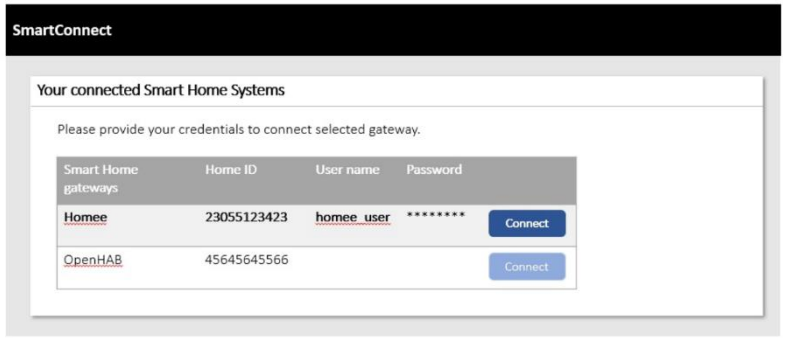

Security, Privacy & Trust Pillar
Identity Manager
Blockchain Handler
Authorization Enabler
CP-ABE
Search Enabler
Orchestrator
Exposure Layer
Monitoring
Semantic Enrichment
Indexing
Ranking
Internal Processing Layer
Federated MDR
Inter-dom. Layer
Meta Data Repository
Meta Data Repository
Domain Layer
Meta Data Repository
Meta Data Repository
Adaptation Layer Semantic Annotation
Adaptation Layer Semantic Annotation
Adaptation Layer Semantic Annotation
Crawling
Crawling
Crawling
Local IoT GW
IoT Platform
IoT Dev
Local IoT GW
IoT Platform
Local IoT Gw
IoT Dev
Local IoT GW
IoT Dev
IoT Dev
Local IoT GW
IoT Dev
IoT Dev
Micro Layer
Domain 1
Domain 2

WP outcomes summary – Prototypes(MVP)

- **3 early version MVPs** demonstrating the integration of IoTcrawler components.

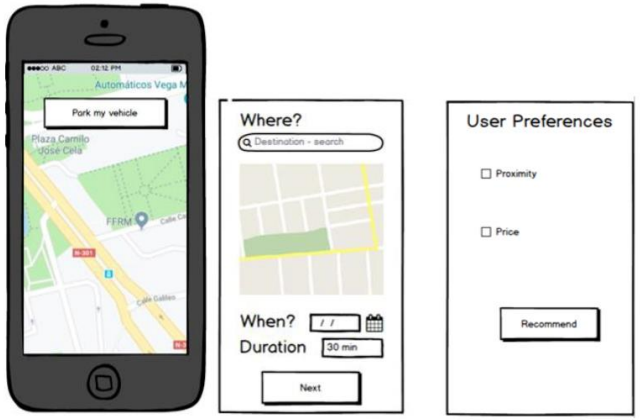
SMARTCONNECT (HOME)





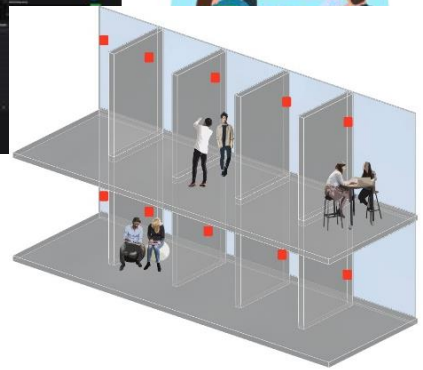
SMART PARKING

5.5.2 Wireframes for the Murcia concept



(Security focus MVP)

Standby Booking (SMART CAMPUS)



(ST-UP)

THANK YOU!

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