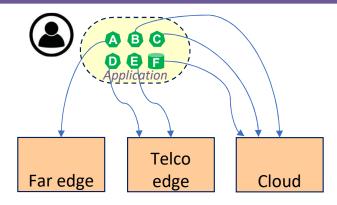# FLUIDOS MetaOS

Flexible, scaLable, secUre, and decentralIseD Operating System

Ir Albert H Seubers (Martel Innovate BV)

FLUIDOS is all about transparency

a) Current silos-based computing continuum

b) FLUIDOS computing continuum

The **FLUIDOS computing continuum** defines *multiple*, *dynamic*, *secure* **virtual spaces**, spanning across multiple *technological* domains and *administrative* boundaries, with *deployment* transparency, *communication* transparency, and *resource* transparency.

FLUIDOS technological pillars

- Node and Protocols
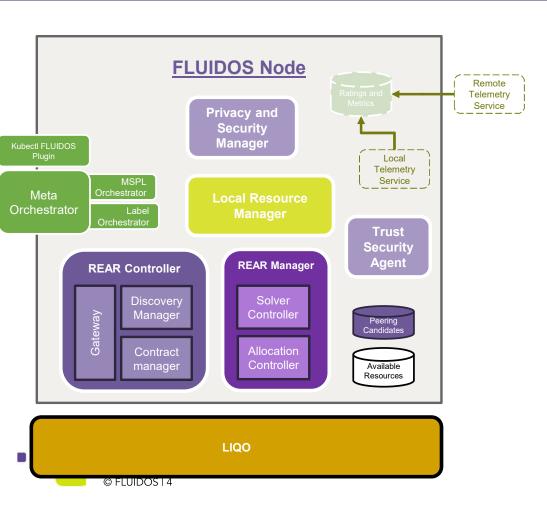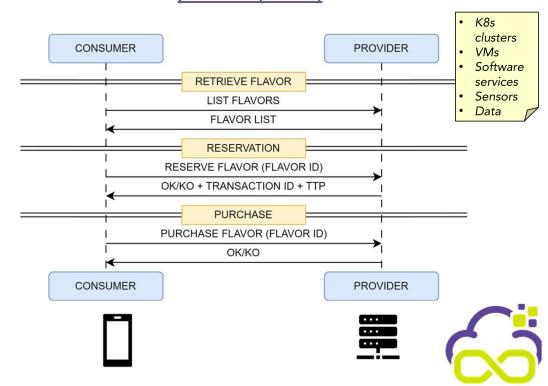- Meta-orchestrator
- Security
- Energy
- Open-source

Use cases

FLUIDOS Node

- Privacy and Security Manager
- Ratings and Metrics
- Remote Telemetry Service
- Kubectl FLUIDOS Plugin
- Local Telemetry Service
- Meta Orchestrator
  - MSPL Orchestrator
  - Label Orchestrator
- Local Resource Manager
- Trust Security Agent
- REAR Controller
  - Gateway
  - Discovery Manager
  - Contract manager
- REAR Manager
  - Solver Controller
  - Allocation Controller
- Peering Candidates
- Available Resources

LIQO

© FLUIDOS 14

REsource Advertisement and Reservation protocol (REAR)

CONSUMER — PROVIDER

- RETRIEVE FLAVOR
  - LIST FLAVORS
  - FLAVOR LIST
- RESERVATION
  - RESERVE FLAVOR (FLAVOR ID)
  - OK/KO + TRANSACTION ID + TTP
- PURCHASE
  - PURCHASE FLAVOR (FLAVOR ID)
  - OK/KO

CONSUMER — PROVIDER

- K8s clusters
- VMs
- Software services
- Sensors
- Data
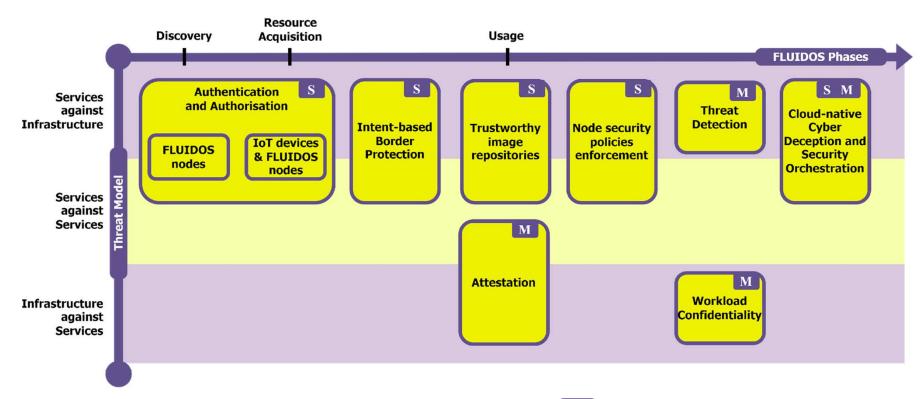
(2) Meta orchestrator

Intents

Service Handler API

Native K8S

Medium-level security policy language (MSPL)

Model-based K8S

More!

MSPL-based Meta-orchestrator

Model-based Meta-orchestrator

Node Meta-orchestrator

"local" K8S scheduler via standard deployment

Available Resources

REAR Manager

"Local" FLUIDOS node

(3) Security

Less carbon

Reduce operational carbon

Energy efficiency

Reduce embodied carbon

Use cleaner electricity

Less infrastructure

Load shifting (Computing)

Increase utilization rate

Spatial load shifting

Electricity mix

Temporal load shifting

Load shifting

Data centres

Edge computing

IoT / deep edge

Effective infrastructure

Load predictions

Energy predictions

AI predictions

© FLUIDOS | 7

(5) Open-source

Kubernetes (K8s, K3s, etc), Liqo, KubeEdge
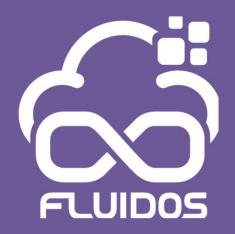
https://github.com/fluidos-project

Use cases

Smart Viticulture

Seamless deployment of services at device/edge/cloud level, with reduced devops overhead

© FLUIDOS | 9

Intelligent Power Grid

Increased resiliency and survivability properties of critical ICT services for smart grids

Robotics Logistic

Improved battery usage and decreased hardware cost through processing offloading

FLUIDOS

https://www.fluidos.eu/

@fluidosproject

https://www.linkedin.com/company/fluidos/

https://www.youtube.com/@FLUIDOS-Project

https://github.com/fluidos-project