



DYNAMOS:

Dynamically Adaptive Microservice-based OS

A Middleware for data-exchange marketplaces

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About me

Education

Master Software Engineering - University of Amsterdam (2023)

Thesis: DYNAMOS

Work

Cloud consultant - developer - devops engineer - hotel manager

Personal

Born in '87

Lives in Utrecht



Data exchange marketplaces

AMdEX

AMdEX translates your data sharing agreements into machine-readable policies, that can automatically be enforced.



Use cases:

- SQL data analysis (hospitals, universities)
- Federate Machine Learning (airlines, predictive maintenance)
- Sharing anonymous sensor data (smart buildings)

Create dynamic data exchange scenarios

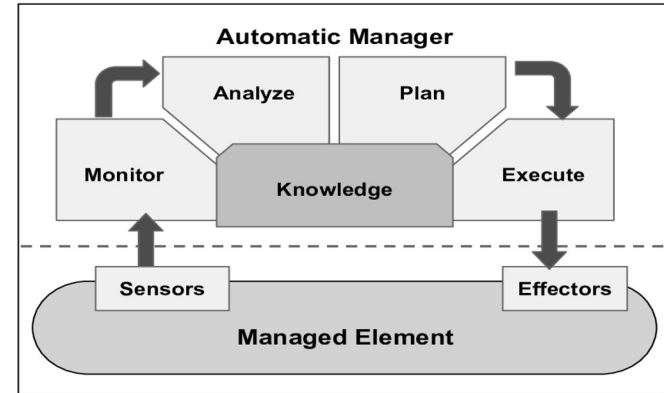
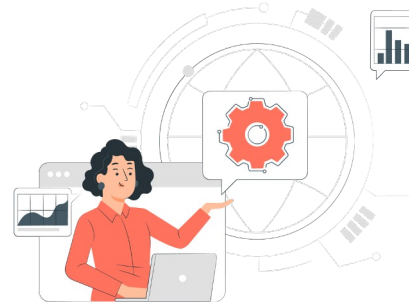
Using a set of core data exchange microservices

Some challenges

- A distributed data marketplace
- Compose different service patterns per request
- Dynamically adapt data-exchange patterns
- Comply with legal policy

DYNAMOS offers

1. Easy setup through testbeds
2. Data is passed from one microservice to another using a uniform interface
3. Self-adaptivity through MAPE-K feedback loops

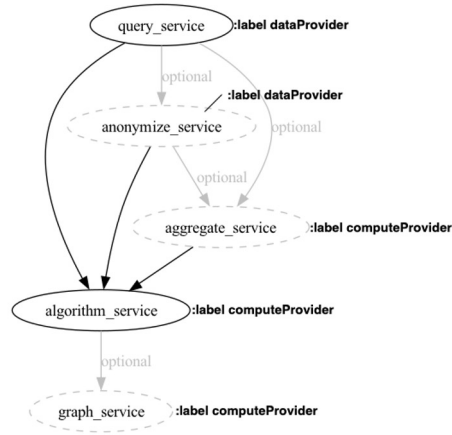


How it works



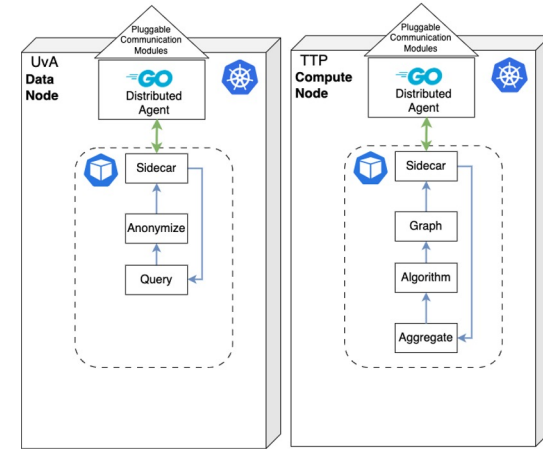
1.

Check policy and additional requirements



2.

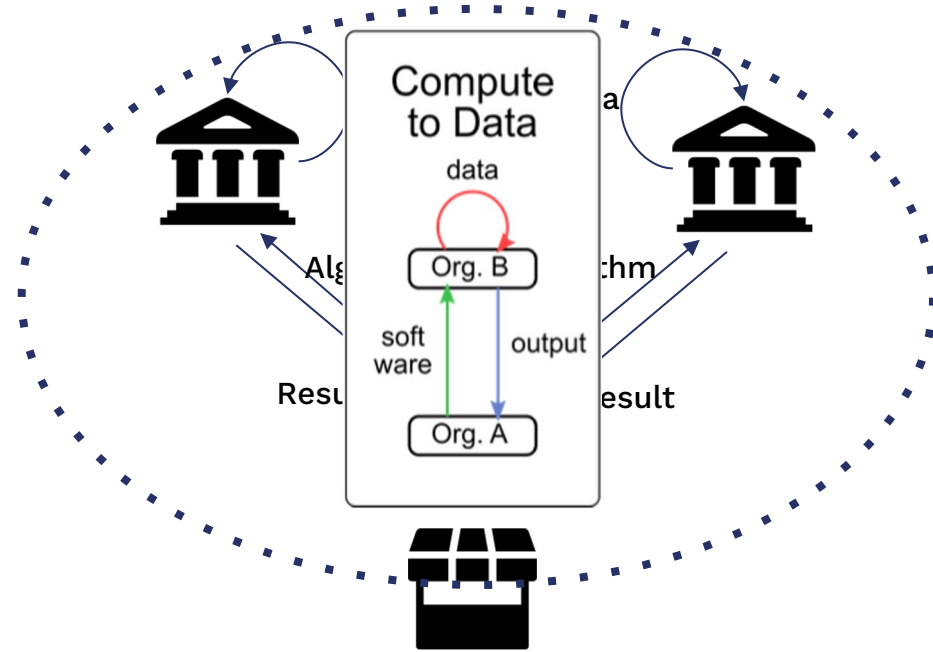
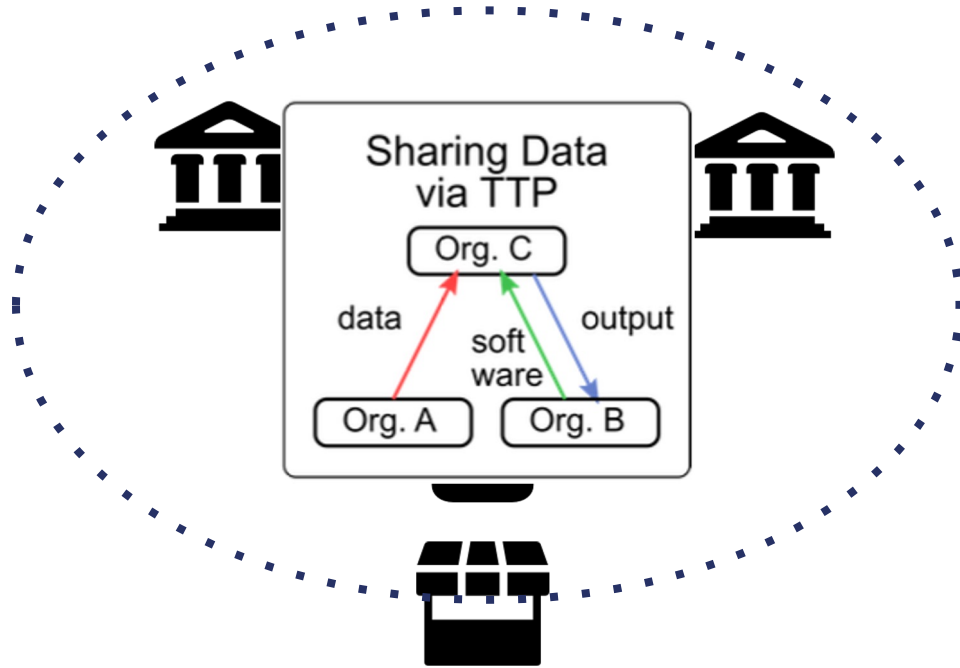
Generate microservice chain



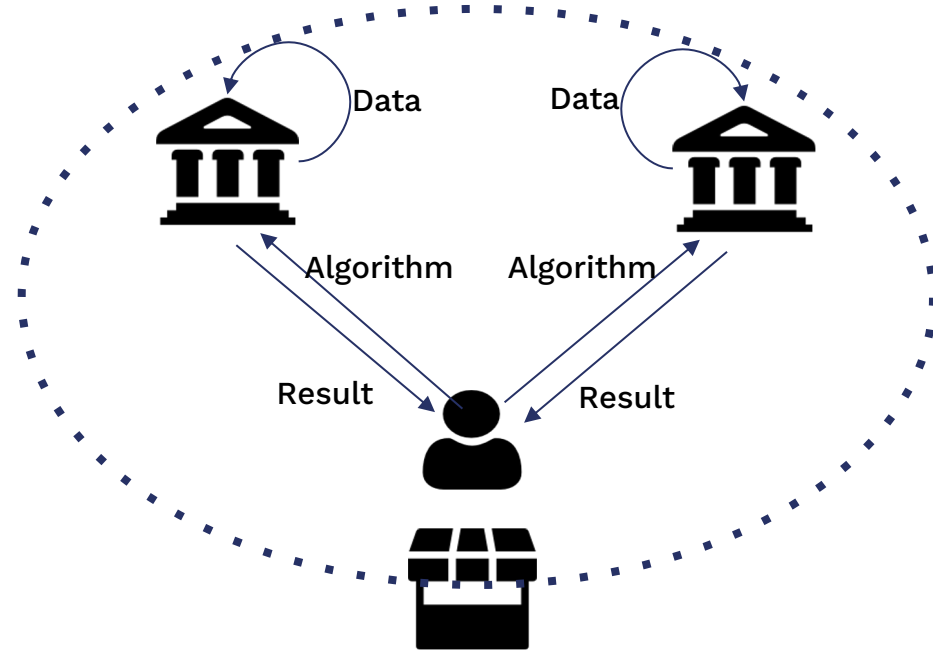
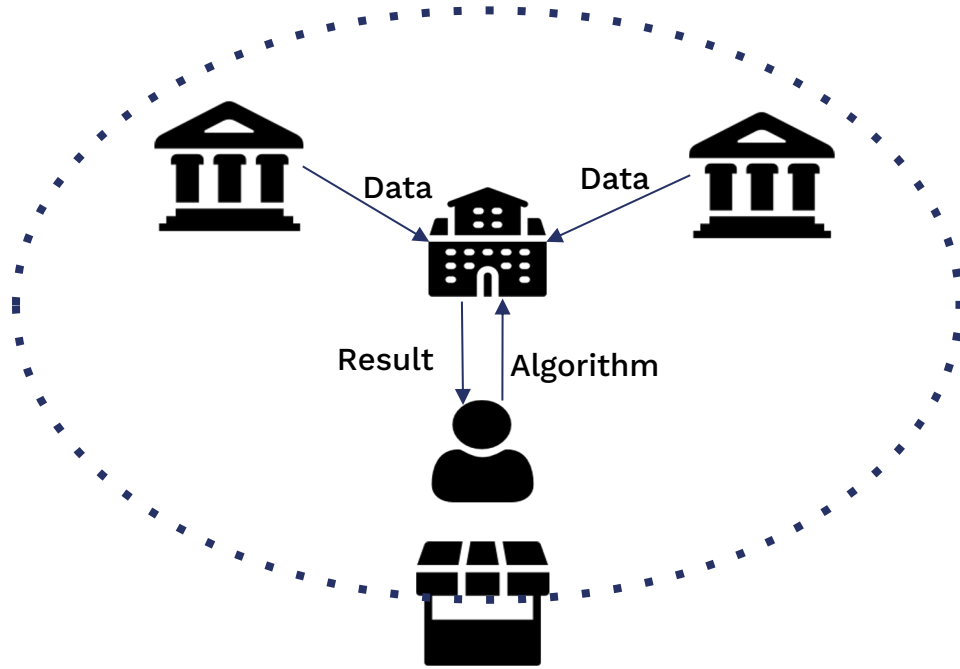
3.

Create ephemeral data-exchange job(s)

DEMO

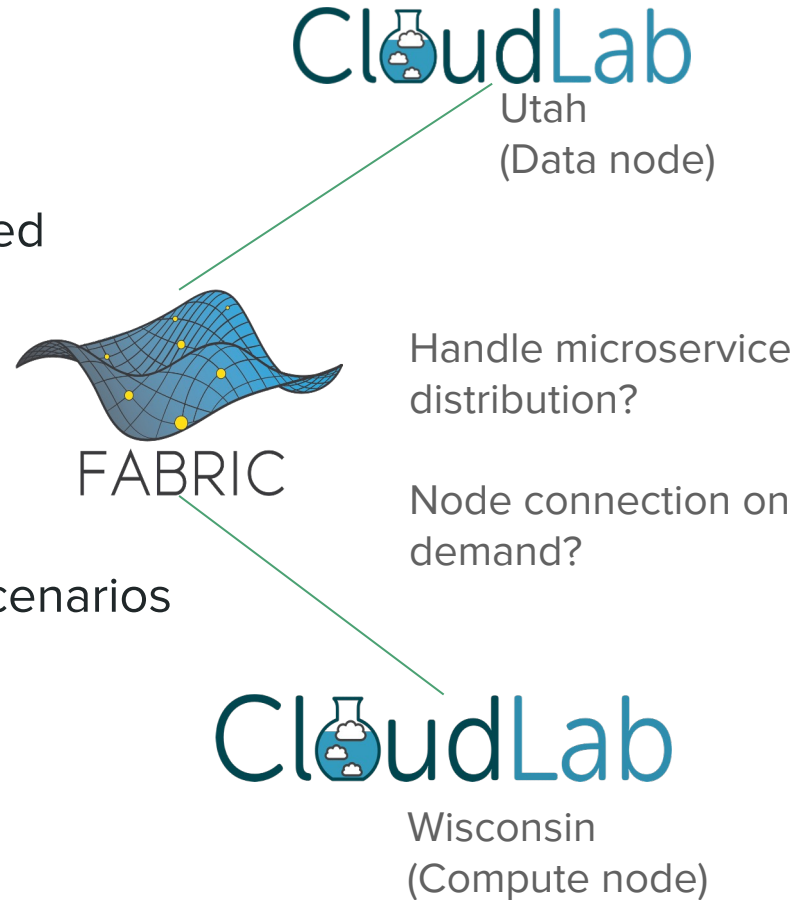


DEMO



Future research

- Link Fabric into DYNAMOS for full distributed scenarios and large data sets
- Experiment with security and networking components
- Experiment with different data exchange scenarios



How to use



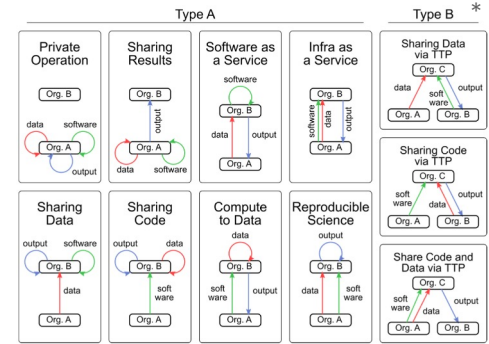
1.

Install or clone
DYNAMOS profile



2.

Clone DYNAMOS



3.

Start experiments