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 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

Sharing Data via TTP

Organizations:
- Org. A
- Org. B
- Org. C

Processes:
- data
- software
- output

Compute to Data

Organizations:
- Org. A
- Org. B

Processes:
- data
- software
- output

Algorithm Result

Data Result
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