

Data Logistics 4 Logistics Data (dl4ld)

MOVING FROM INTERNET EXCHANGES TO DATA EXCHANGES!

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TNO



AIR FRANCE KLM



ORACLE

ciena

THALES

e:ofenedex:



Gemeente Amsterdam

TRANSFIDES

Lightning talk @ Internet2 TechEx, San Francisco, Oct 17, 2017

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Supported by NWO and C2D grants
SARNET, DL4LD and NWA VWDATA.



Main problem statement

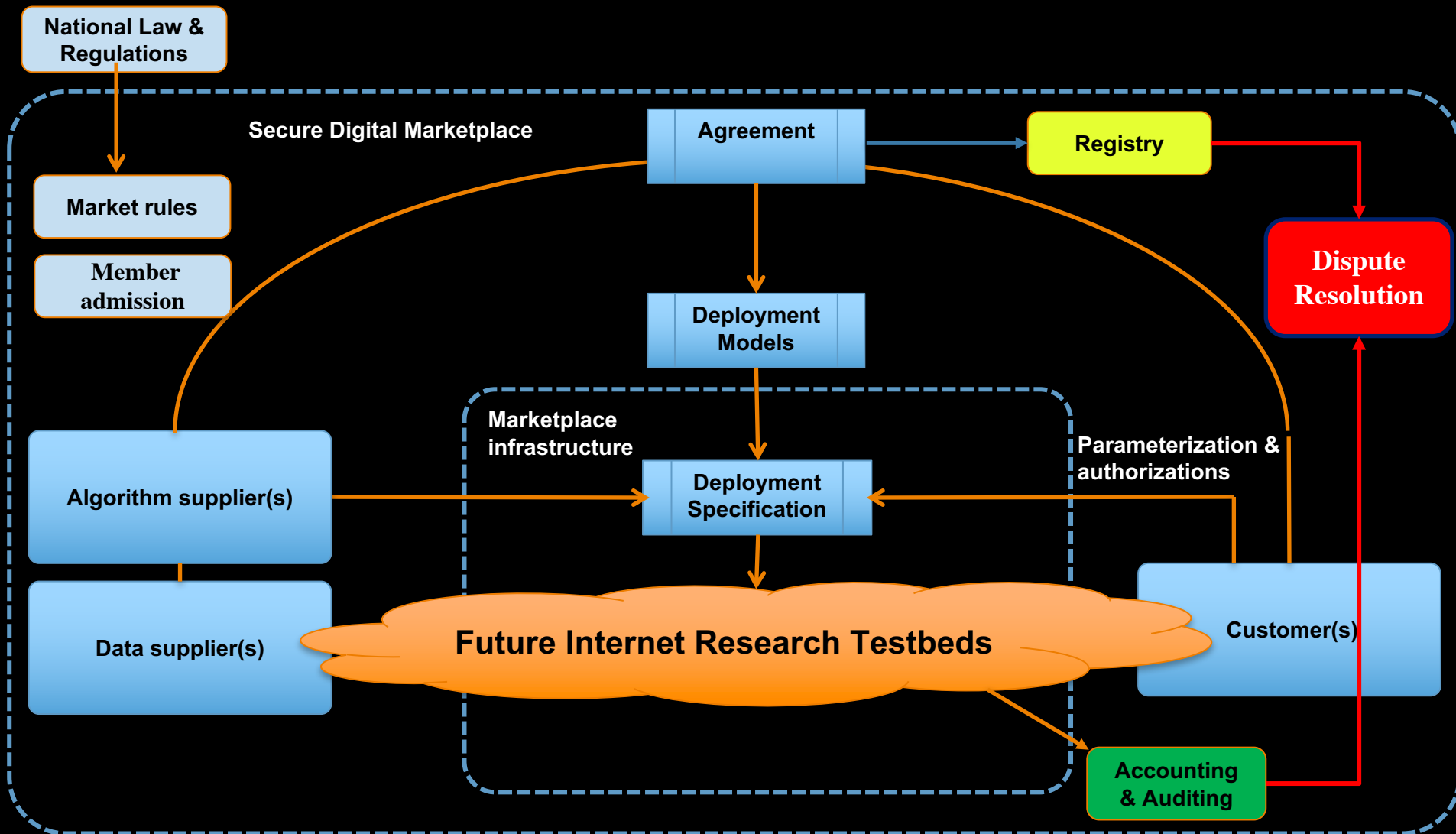
- Organizations that normally compete have to bring data together to achieve a common goal!
- The shared data may be used for that goal but not for any other!
- Data may have to be processed in untrusted data centers.
 - How to enforce that using modern Cyber Infrastructure?
 - How to organize such alliances?
 - How to translate from strategic via tactical to operational level?
 - What are the different fundamental data infrastructure models to consider?

Approach

- Strategic:
 - Translate legislation into machine readable policy
 - Define data use policy
 - Trust evaluation models & metrics
- Tactical:
 - Map app given rules & policy & data and resources
 - Bring computing and data to (un)trusted third party
 - Resilience
- Operational:
 - TPM & Encryption schemes to protect & sign
 - Policy evaluation & docker implementations
 - Use VM and SDI/SDN technology to enforce
 - Block chain to record what happened (after the fact!)



Secure Digital Market Place Research



Big Data Sharing use cases placed in airline context

Global Scale



Aircraft Component Health Monitoring (Big) Data
NWO **CIMPLO** project
4.5 FTE

National Scale



Cargo Logistics Data
(C1) DaL4LoD
(C2) **Secure scalable policy-enforced distributed data Processing**
(using blockchain)

City / regional Scale

Campus / Enterprise Scale

NLIP iShare project



Cybersecurity Big Data
NWO COMMIT/
SARNET project
3.5 FTE



iSHARE
powered by NLIP



SAE Use Case envisaged research collaboration

Funding Agency



Big Data Hub / Spoke or Industry initiative funding



International Networking



Regional / National Networking



Local University



Aircraft MRO, OEM & Operators



Industry Standards Body



SAE AeroSpace Group
HM-1 working group
Use Case on aircraft sensor Big Data

Data Processing models

- Bring data to computing
- Bring computing to data
- Bring computing and data to (un)trusted third party
- A mix of all of the above
- Block chain to record what happened
- Block chain for data integrity
- Bring the owner of Data in control!
- Data owner policy + PEP technology

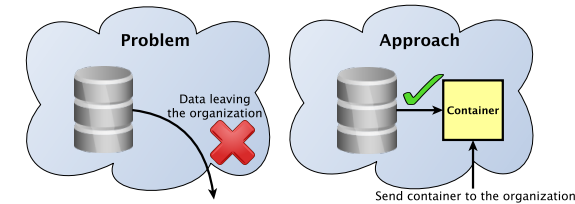
SC16 Demo

DockerMon Sending docker containers with search algorithms to databases all over the world.

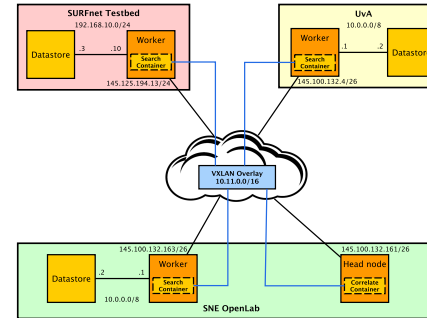
<http://sc.delat.net/sc16/index.html#5>

Problem Description

- Scientific datasets are usually made publicly available
...but data cannot always leave the organization premises
- On-site data processing can be challenging because of incompatibility of systems or lack of manpower
- Can a container-based system perform remote on-site data processing efficiently?
- What are the networking issues to solve?



Underlay and Overlay



Main features:

- Networked containers
- VXLAN overlay
- Containers that perform data retrieval and computation
- Containers built on-demand
- On-site data processing
- Distributed data source
- Multiple sites with datasets

The Game

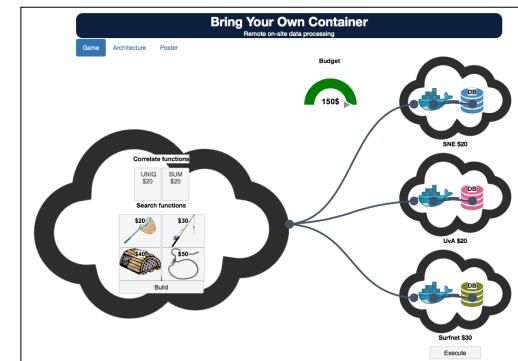
Our SC16 demo is a gamification of the remote dataset processing architecture.

How many different animal species can you find? You have a fixed budget and each function and processing will cost you money!

In our game you will:

- Select a correlate function to combine the results of the different sites.
- Pick different search functions, represented as tools, to find animals in the remote datasets.
- Build containers with the search and correlate functions.
- Execute the containers on the sites of your choice.

Will you have the best score?



Q&A

- More information:
 - <http://delaat.net/dl41d>