
The Global Big Data Hub infrastructure inspired by PRP

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Fading Trust in Internet

Trust

Dependency

Research Gap!

1980  

2017
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?
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

NLIP iShare project

Campus / Enterprise Scale

Cybersecurity Big Data
NWO COMMIT/
SARNET project
3.5 FTE
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

- Law & Regulations
- Market rules
- Member admission

Secure Digital Marketplace

- Agreement
- Registry

Dispute Resolution

Deployment Models

- Algorithm supplier(s)
- Data supplier(s)

Deployment Specification

- Marketplace infrastructure
- Parameterization & authorizations

Future Internet Research Testbeds

- Customer(s)
- Accounting & Auditing

Market rules

Member admission

Future Internet Research Testbeds

Algorithm supplier(s)

Data supplier(s)
SC16 Demo

DockerMon

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

http://se.delaat.net/sc16/index.html#5
Networks of ScienceDMZ’s & SDX’s

Internet
Peer ISP’s
Supercomputing centers (NCSA, ANL, LBNL)

ISP
SDX
NFV
SDN

Ownership/trust relation

client 1
client 2
client 3
client 4
client n

DMZ
Contains a
DTN

Petabyte email service 😊
Program

• 10h45 Cees de Laat, UvA
  – Intro

• 10h55 Leon Gommans, Air France KLM & UvA
  – Exploring Digital Marketplaces.

• 11h15 Panel of stakeholders Flash talks (~3 min each):
  • David Groep (NIKHEF):
    – Trust & Science, the need for Data control.
  • Craig Waldrop (EQUINIX):
    – Enabling the Data Economy & Avoiding the Pitfalls.
  • Rodney Wilson (CIENA):
    – Data Markets in the Fog, IOT & 5G
  • Leon Gommans (KLM).

• 11h25 Panel discussion moderated by Cees de Laat

• 11h45 End of session.

• More information:
  – http://delaat.net/dl4ld