Testbeds to Prototype Tomorrows Digital World

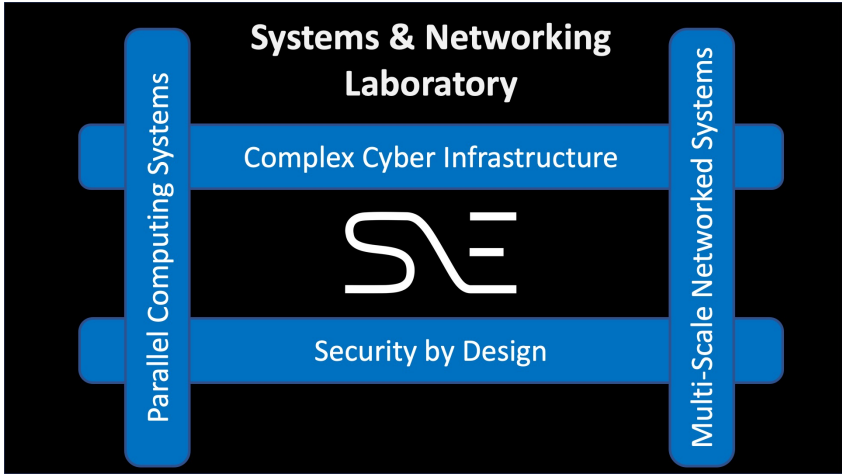
Fabric Partner Description from UVA

Paola Grosso, Joseph Hill, Chrysa Papagianni, Leon Gommans, Cees de Laat
and many others!

Multiscale Networked Systems research group
Complex Cyber Infrastructure research group
University of Amsterdam

Introduction

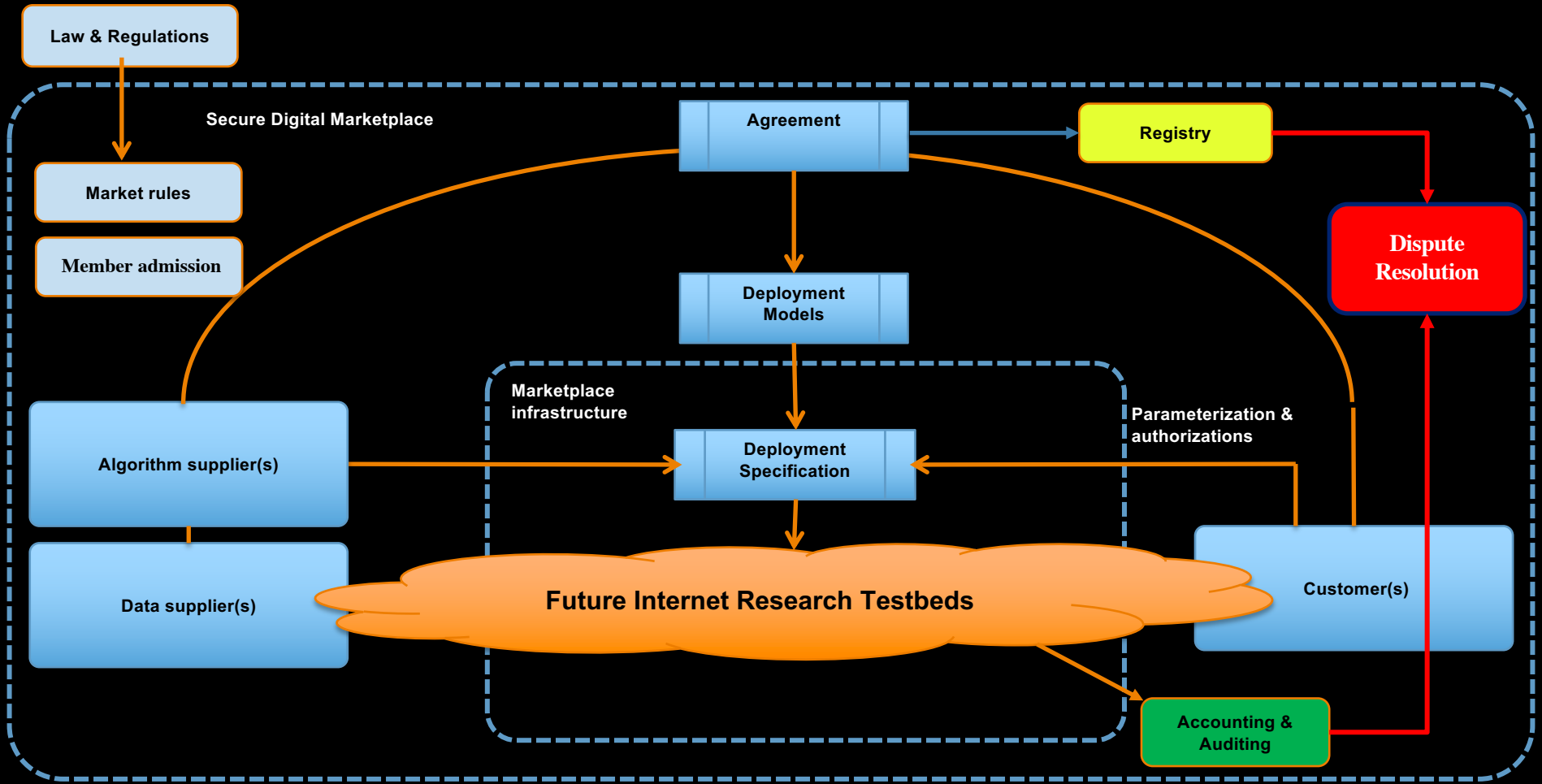
- The Systems and Networking Laboratory at the UvA conducts research on leading-edge computer systems of all scales, ranging from global-scale systems and networks to embedded devices. Across these scales our particular interest is on extra-functional properties such as performance, programmability, productivity, security, trust, sustainability and, last but not least, the societal impact of emerging systems-related technologies. We have four groups working together:
- Involved in Fabric related research
  - MNS
  - CCI
- Funded by a.o.:
  - Dutch Science Foundation
    - SecConNet, DL4LD, EPI, DAS6
  - EU
    - Slices-DS
  - UvA
    - DSC, AMDEX
  - AF-KLM, EQUINIX, TNO

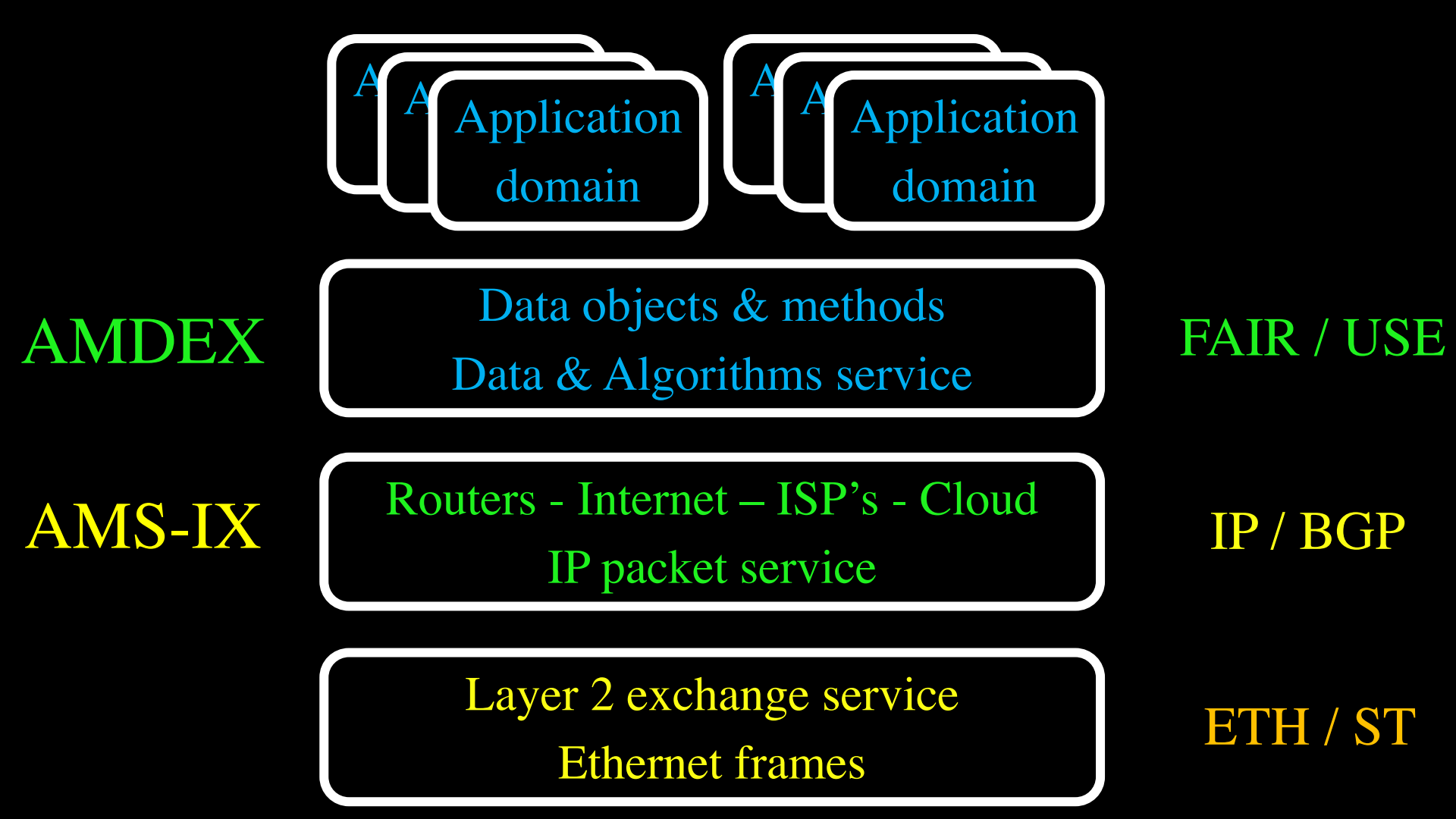


Scientific Achievement

- In our current projects we research methods to exchange data between parties that work together for a common goal but otherwise compete. The challenge is to keep control on data, algorithms so that it is only used for the agreed purposes.
- Applications are industrial / maintenance data, health records, smart city data
- The approach is to use modern computer science such as SDN, Virtualization, Encryption, Auditing, etc. to program agreements into the infrastructure.
- The different testbeds [FABRIC, 2STIC, BRIDGES, SLICES-DS, DAS6, PRP] that come together in Amsterdam enable us to research this next generation data aware Internet Exchange architecture & methods in our OpenLab.
- Building an outreach Industry Lab / testbed [AF/KLM, Equinix, Dell, Nokia, ...]

Secure Digital Market Place Research

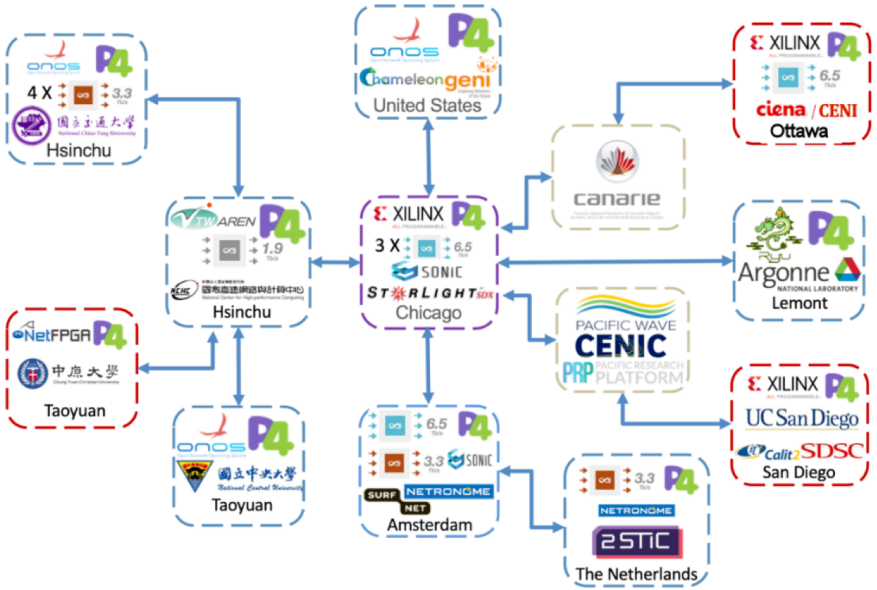



Application domain
Application domain
Data objects & methods
Data & Algorithms service
Routers - Internet – ISP's - Cloud
IP packet service
Layer 2 exchange service
Ethernet frames
AMDEX
AMS-IX
FAIR / USE
IP / BGP
ETH / ST

2STiC

SECURITY, STABILITY AND TRANSPARENCY OF INTER-NETWORK COMMUNICATIONS

https://www.2stic.nl/enabling-trust-in-network-services-through-secure-stable-and-transparent-internets.html



2STiC testbed

High performance and large scale deployment to test novel protocols

Cyber Infrastructure Challenge

- Building a Data Exchange / Digital Data Market that allows trustable exchange of data and algorithms while adhering to policy and law attached to the objects.
- For more information:
  - https://dl4ld.nl
  - https://enablingpersonalizedinterventions.nl
  - https://mns-research.nl/open-lab/
  - https://cci-research.nl/
  - https://delaat.net/
  - https://www.cs.vu.nl/das6/
  - https://2stic.nl/
  - http://slices-ri.eu/
- For recent tech demonstrators see project pages and:
  - https://sc.delaat.net/