Policy Design and Optimization in Information Sharing

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Kick off meeting for the DL4LD Operational Mobility Center case
Systems and Networking Laboratory

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Content

➢ My role in the DL4LD project
➢ Policy design and optimization
➢ Methodology
My role in the DL4LD project

Policy
Strategic level

Planning
Tactical level

Operations
Operational level
Policy design and optimization

➢ What is policy?
  ➢ Specified as **Event-Condition-Action** (ECA) rules that determine the **actions** to be **performed** under certain **situations**

➢ In ArenA case: Access control policy
  ➢ **Access control policies**: rules that determine permissions on **who** can **perform** what on **which** **entities** under **what** **situations**
  ➢ **Aim**: lower down the risks of authorization

Policy design and optimization

Risk on:
- System security
- Data security
...

Risk on:
- Individual safety
- Public security
...

Policy design and optimization

➢ The calculation about risk

The risk of giving authorization $R_A$
The risk of NOT giving authorization $R_{NA}$

 Parties
Ope Mobi Cen
Police
Fire department
Hospital

 Operations
Add
Delete
Change
View

 Datasets
Seats
Age/gender
Cameras
Sensors

$R_A + R_{NA}$

$R_A + R_{NA}$
Policy design and optimization

➢ Test and evaluate different policies
➢ Generate the optimized policy in trade-off
➢ Core problem:
  Risk evaluation

\[
RL(T_1) = P(T_1|A) \cdot I(T_1)
\]
\[
RL(T_2) = P(T_2|NA) \cdot I(T_2)
\]

quantitative and qualitative (cardinal and ordinal)
Policy design and optimization

Contracts

Market Policies

Government Law
Methodology

- Analytical investigation
- Agent-based modeling
- Simulation experiments

![Diagram showing methodology with nodes for preference, belief, outcome, aim, plans, actions, and feedback connections between market/coalition level and individual level.]
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