Designing User Friendly and Secure Services of e-State
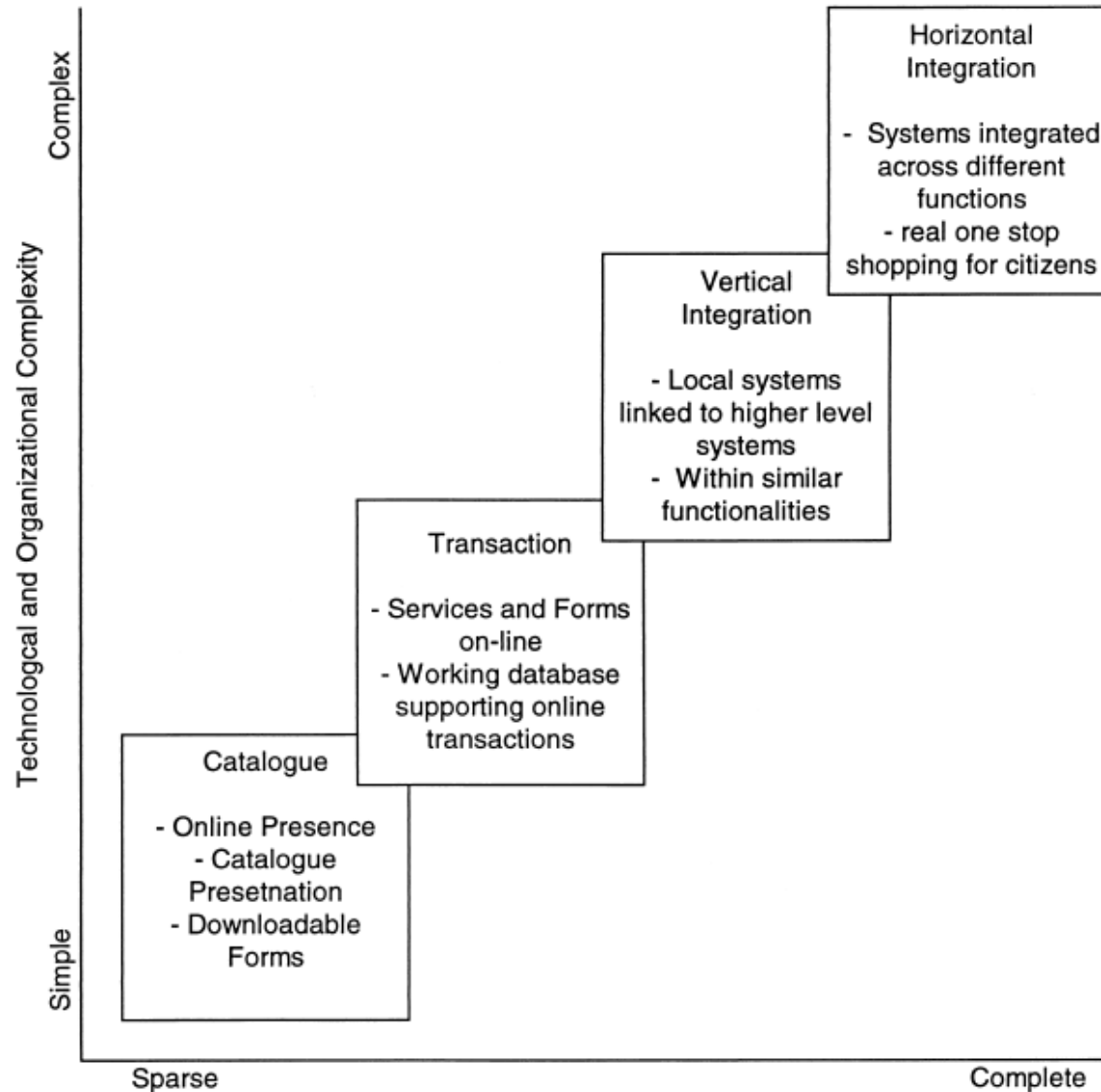
Prof Kuldar Taveter
Regina Sirendi
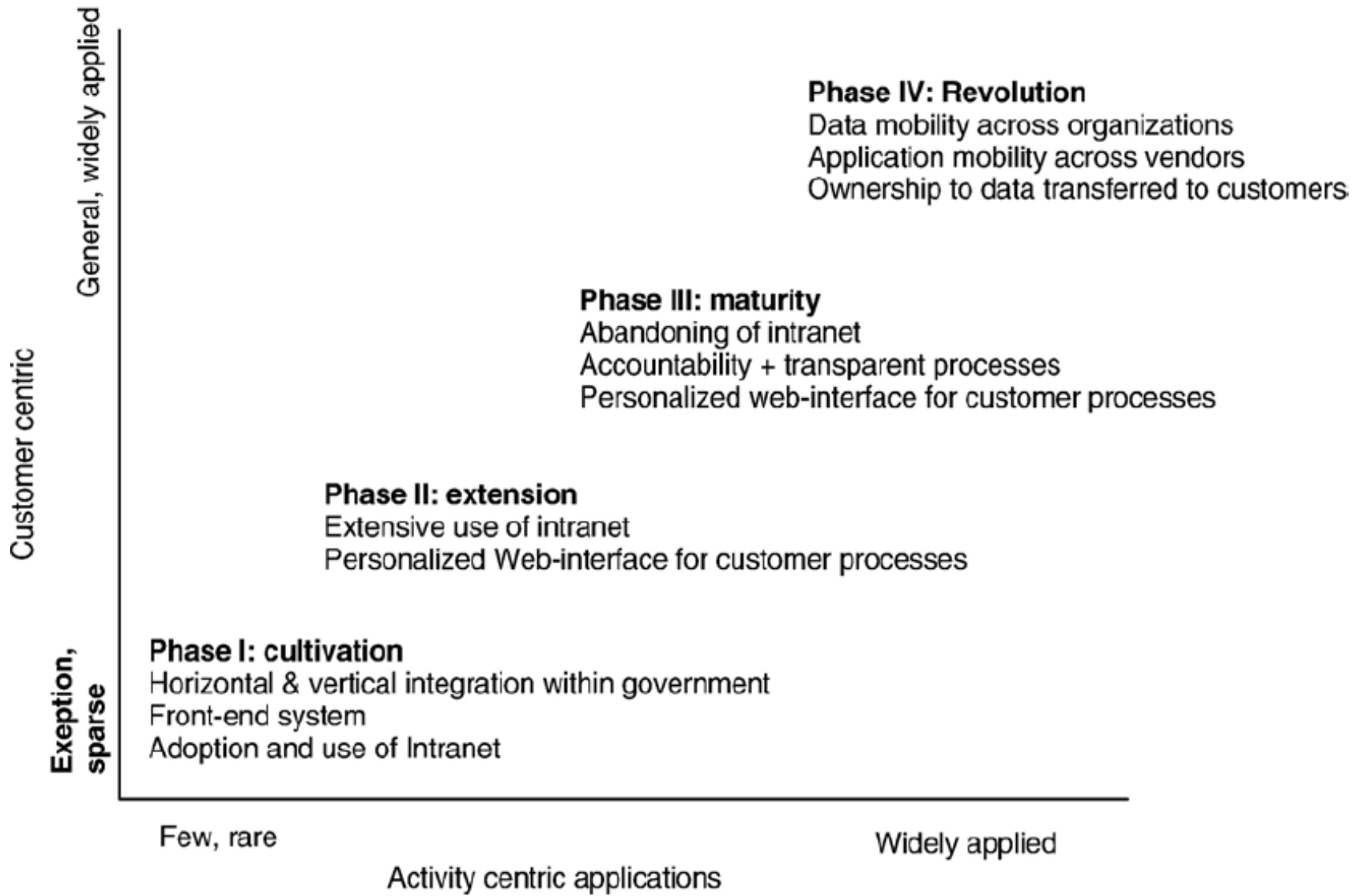Department of Informatics
Tallinn University of Technology
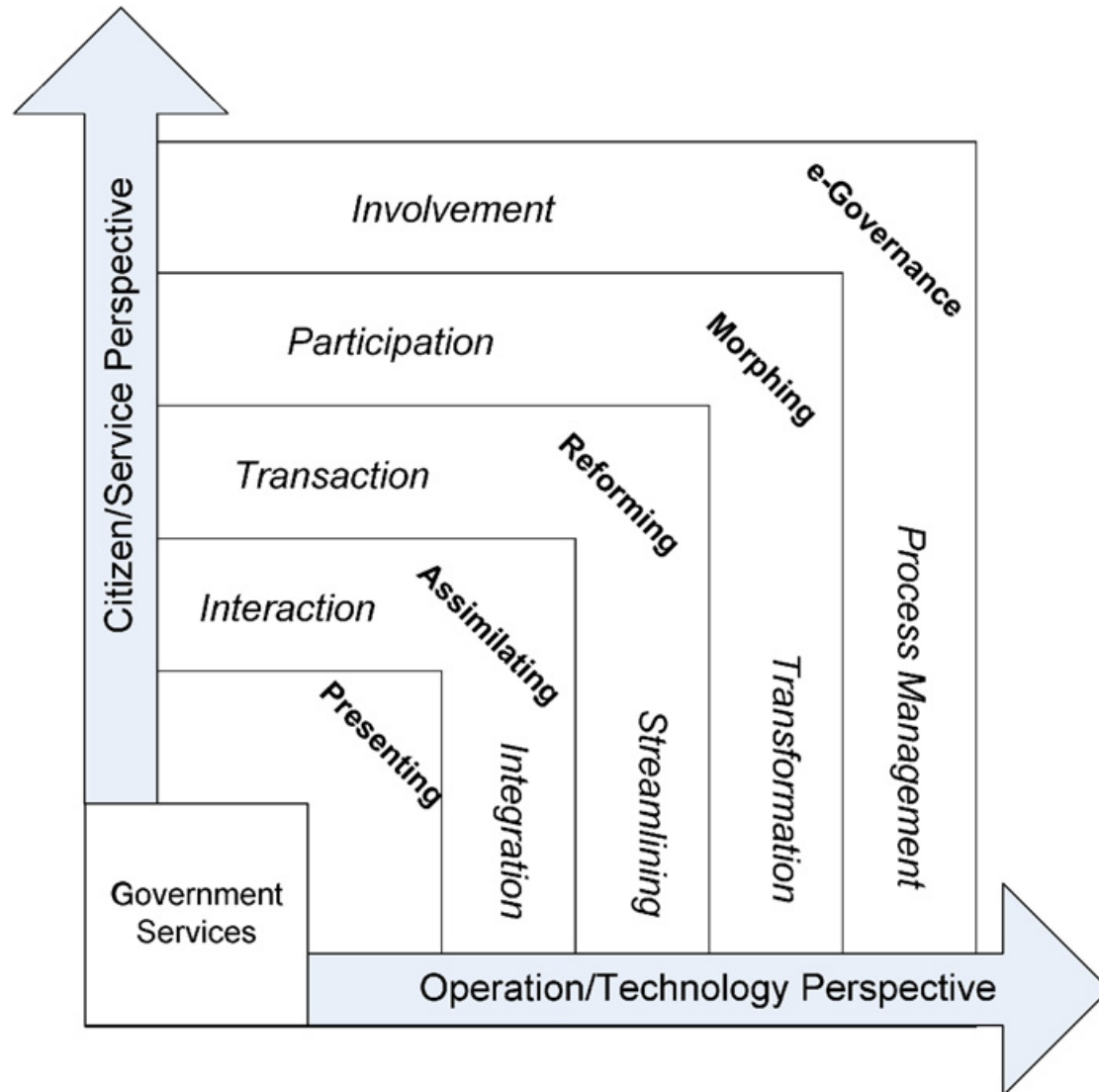
E-government stage models by Layne & Lee (2001)

Extension of the Layne & Lee model by Andersen & Henriksen (2006)

Phase IV: Revolution
Data mobility across organizations
Application mobility across vendors
Ownership to data transferred to customers

Phase III: maturity
Abandoning of intranet
Accountability + transparent processes
Personalized web-interface for customer processes

Phase II: extension
Extensive use of intranet
Personalized Web-interface for customer processes

Phase I: cultivation
Horizontal & vertical integration within government
Front-end system
Adoption and use of Intranet

General, widely applied

Customer centric

Exeption, sparse

Few, rare

Widely applied

Activity centric applications

# Merged e-government stage models by Lee (2010)

Levels of e-government services

1. Information (website)
2. One-way interaction (application form can be downloaded)
3. Two-way interaction (application form can be submitted)
4. Transaction (pre-filled forms can be completed and submitted, payments can be made, status can be followed)
5. Proactive and integrated (service is proactive and as much as possible automated, e.g. submitting tax file declarations in Estonia)
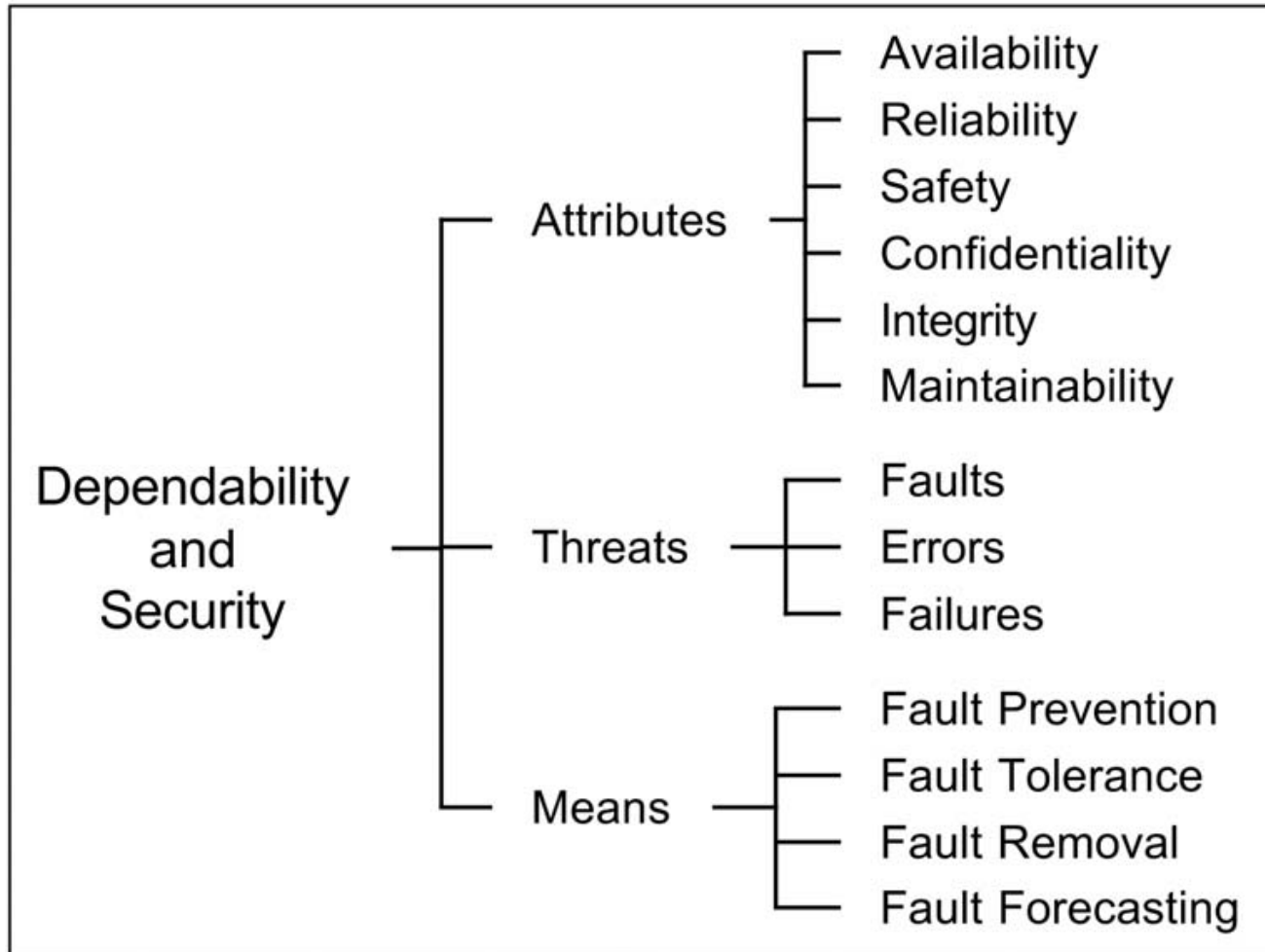
Proactiveness in e-governance

- Flipping the service delivery from "pull" to "push"

- Seamless delivery of timely information and services

- Rooted in needs, preferences, circumstances, life events, and location

- Personalised, adaptive, discreet, unobtrusive

Secure e-government services
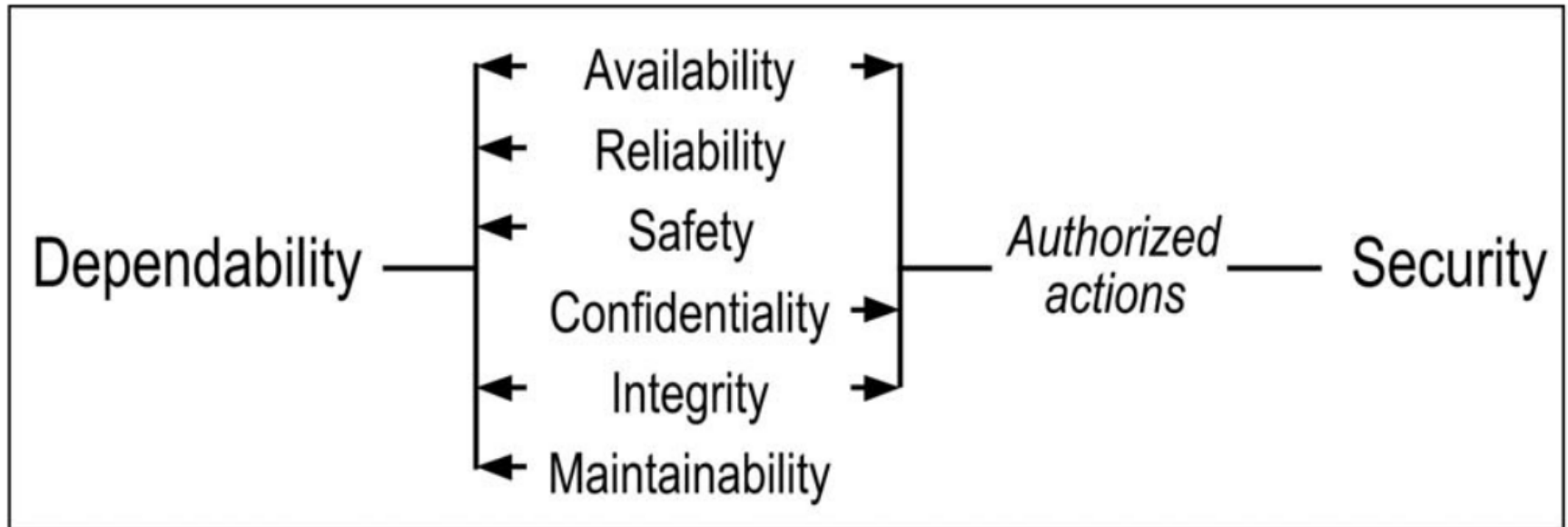
Means to attain dependability and security

What is design?

- A specification of an **artifact**, manifested by an **agent**, intended to accomplish **goals**, in a particular **environment**, using a set of **components**, satisfying a set of **requirements**, subject to **constraints**

What is an artifact?

- The entity (or class of entities) being designed. Note: this entity is not necessarily a physical object.
- Classes of artifacts:
  - **physical artifacts**, both simple, such as boomerangs (single-component), and composite, such as houses (made of many types of components)
  - **processes**, such as business workflows
  - **symbolic systems**, such as programming languages
  - **symbolic scripts**, such as essays, graphic models, animations, and software
  - **laws, rules and policies**, such as a criminal code
  - **human activity systems**, such as software design projects, committees and operas

E-government service or <u>public service</u> as a sociotechnical (human activity) system

- A software intensive system that has defined operational processes followed by human operators and which operates within an organization

- A system that contains both a social aspect, which may be a subsystem, and a technical aspect

Service design

- Creates ecosystems of connected services
- Considers all the links in the customer-provider chain across:
  - Channels;
  - Organizational silos;
  - Information Systems.
- Requires holistic thinking about *customer experience*

Agent-oriented modeling (MIT Press, 2009)
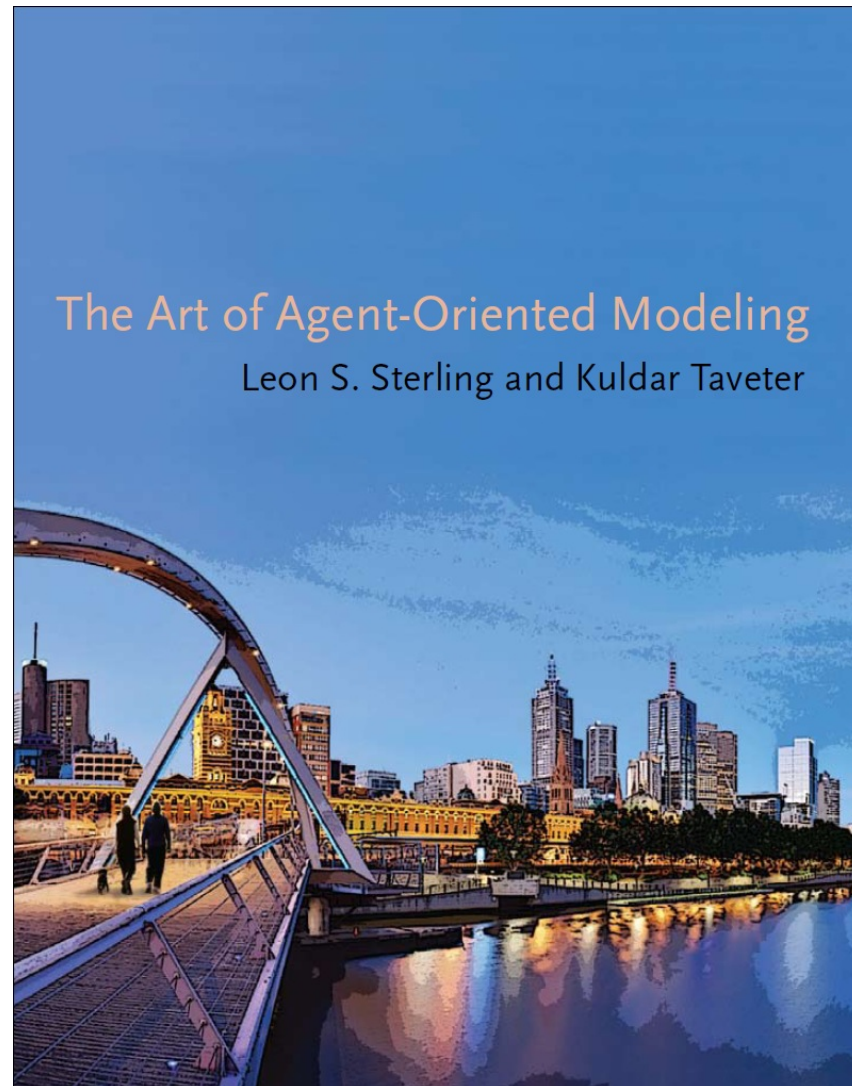
Conceptual space for design

Motivation layer

DESIGN

System design layer

IMPLEMENTATION

Deployment layer
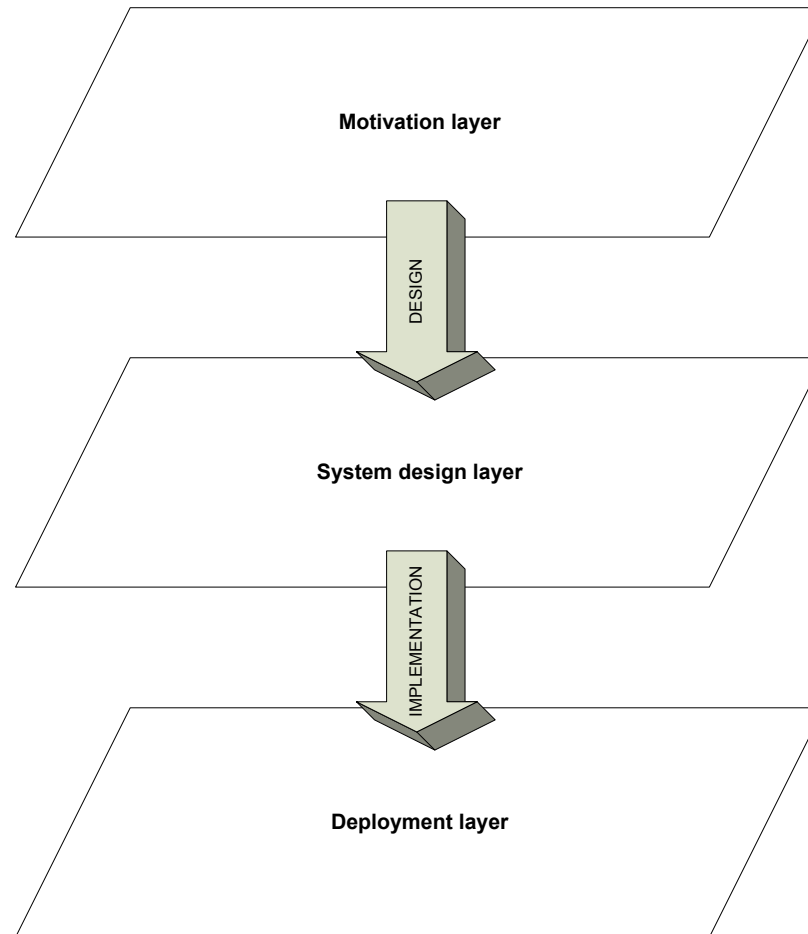
Three perspectives required

- Interaction
- Knowledge
- Behaviour

Conceptualizing proactive public services

	Viewpoint aspect		
Abstraction layer	Interaction	Knowledge	Behavior
Analysis	Role models and organization model	Domain model	Goal models
Design	Agent models, acquaintance model, and interaction models	Knowledge model	Scenarios and agent behaviour models
Prototyping	Interaction prototyping	Knowledge prototyping	Behavior prototyping

Notation for goal models

Symbol	Meaning
▱	**(Functional) Goal:** **To-Do goal**
☁	**Quality Goal:** **To-Be goal**
♡	**Quality Goal:** **To-Feel goal**
🧍	**Role**
————	**Relationship between goals**
– – – – –	**Relationship between goals and quality goals**

What is the role of government?

The role of government
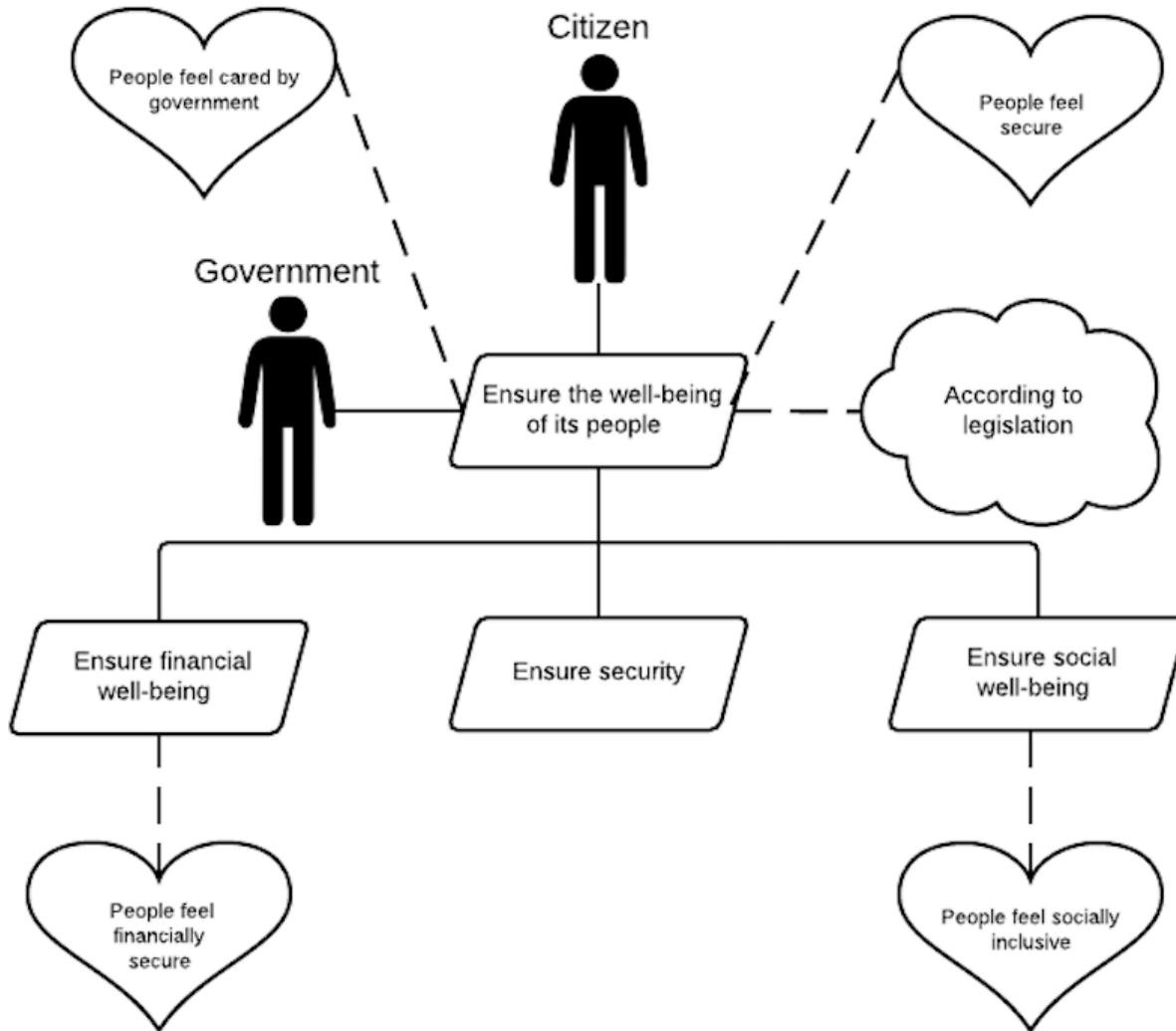
What is a good public service?

Good public service
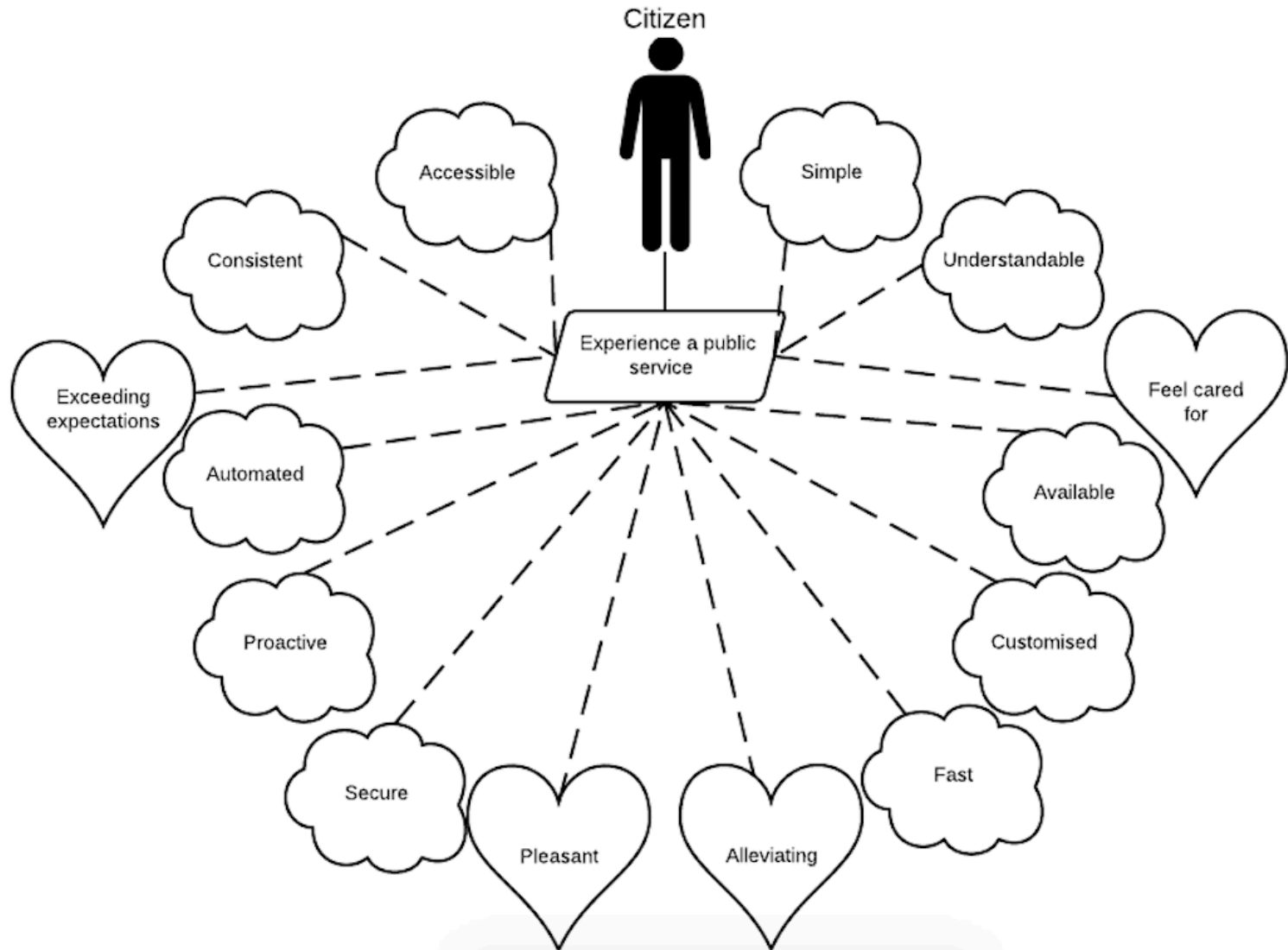
Replacing weapons permit
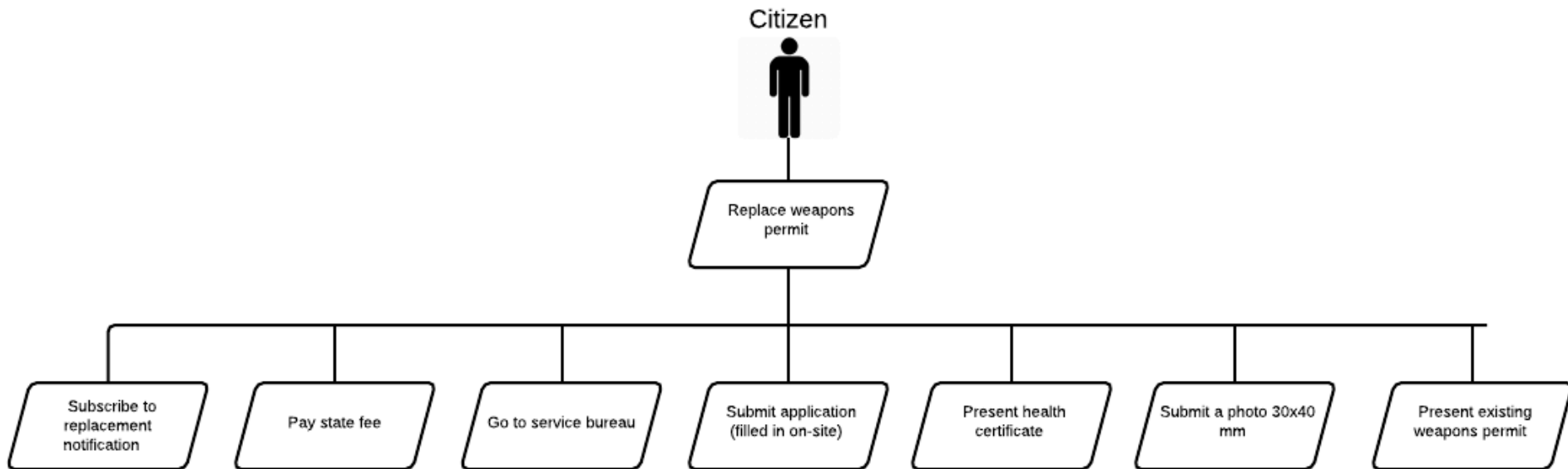
The search for a good public service
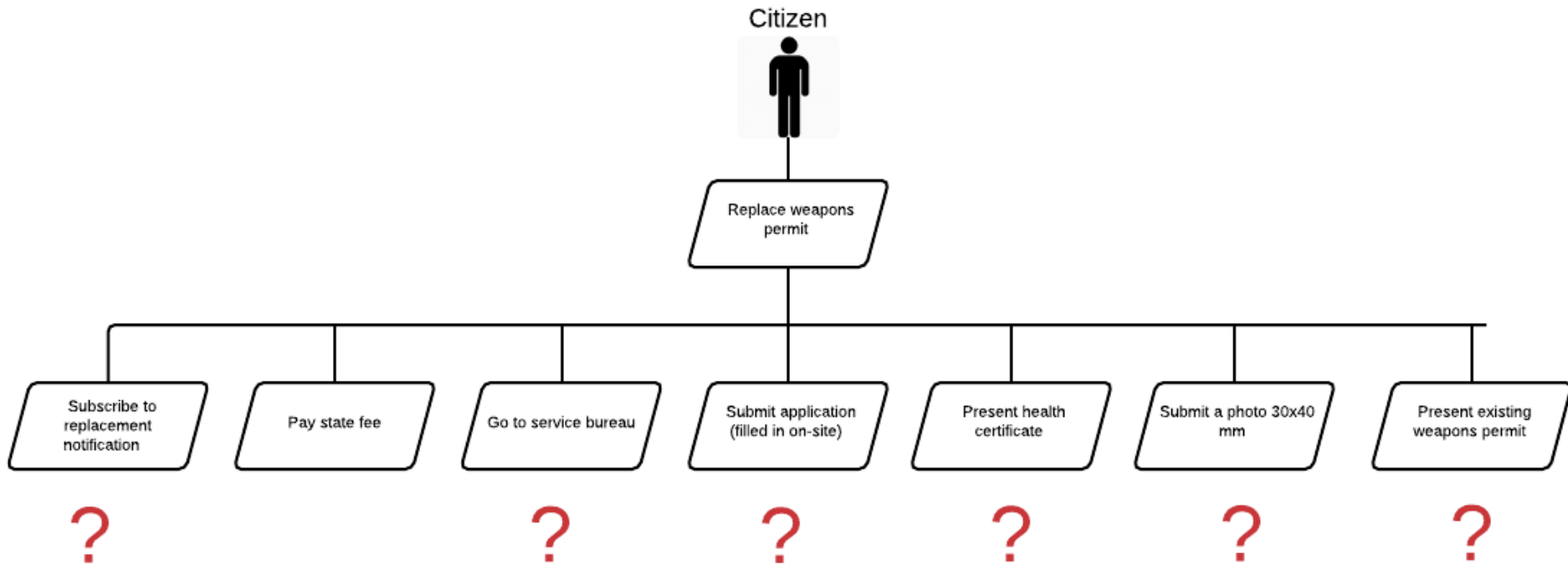
Is it possible to make all services proactive?

Registering a vehicle
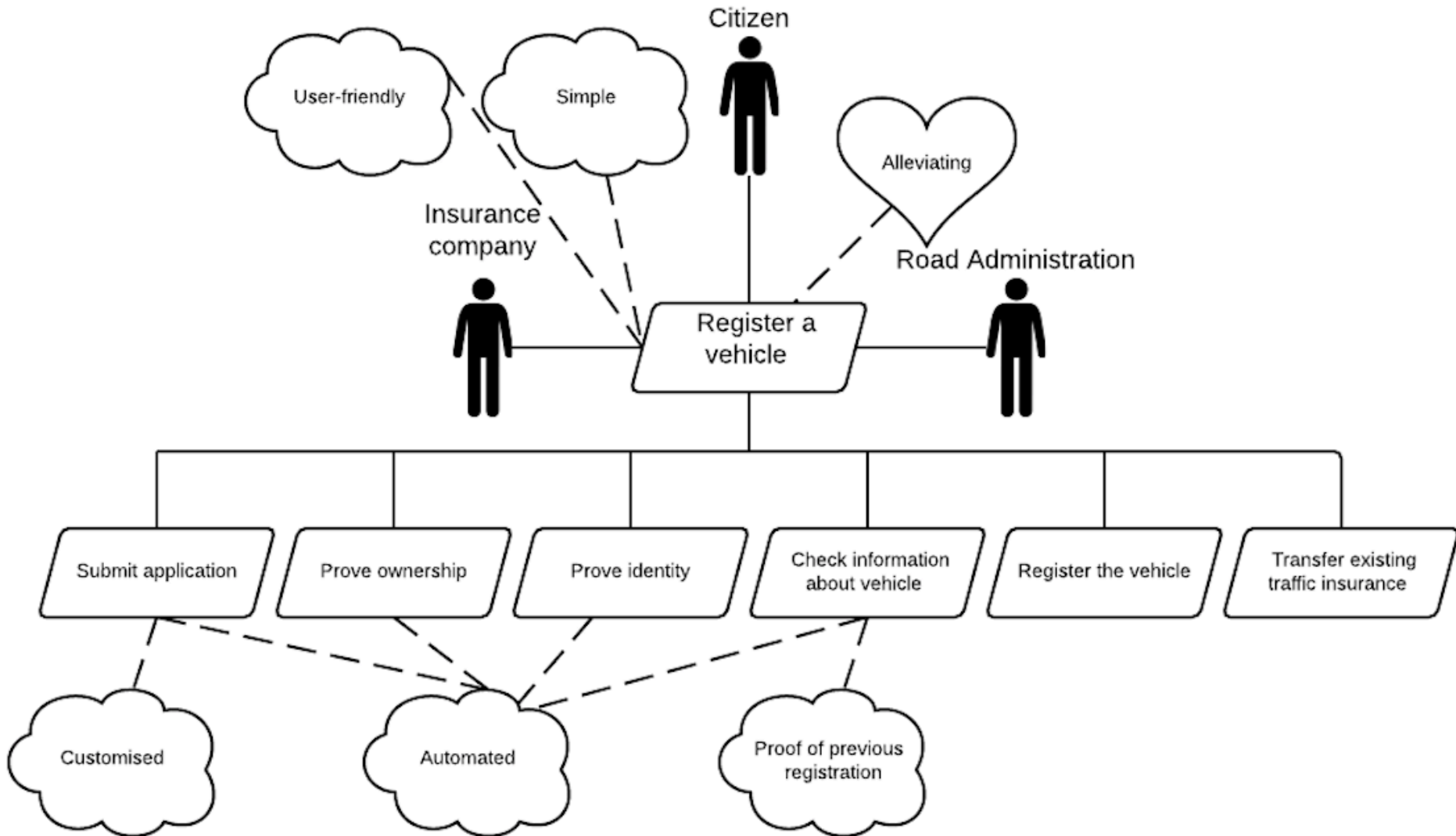
Public service for registering a vehicle

Room for improvement?

Proactiveness introduced

Where do you see potential for designing proactive public services ?

Wrap-up

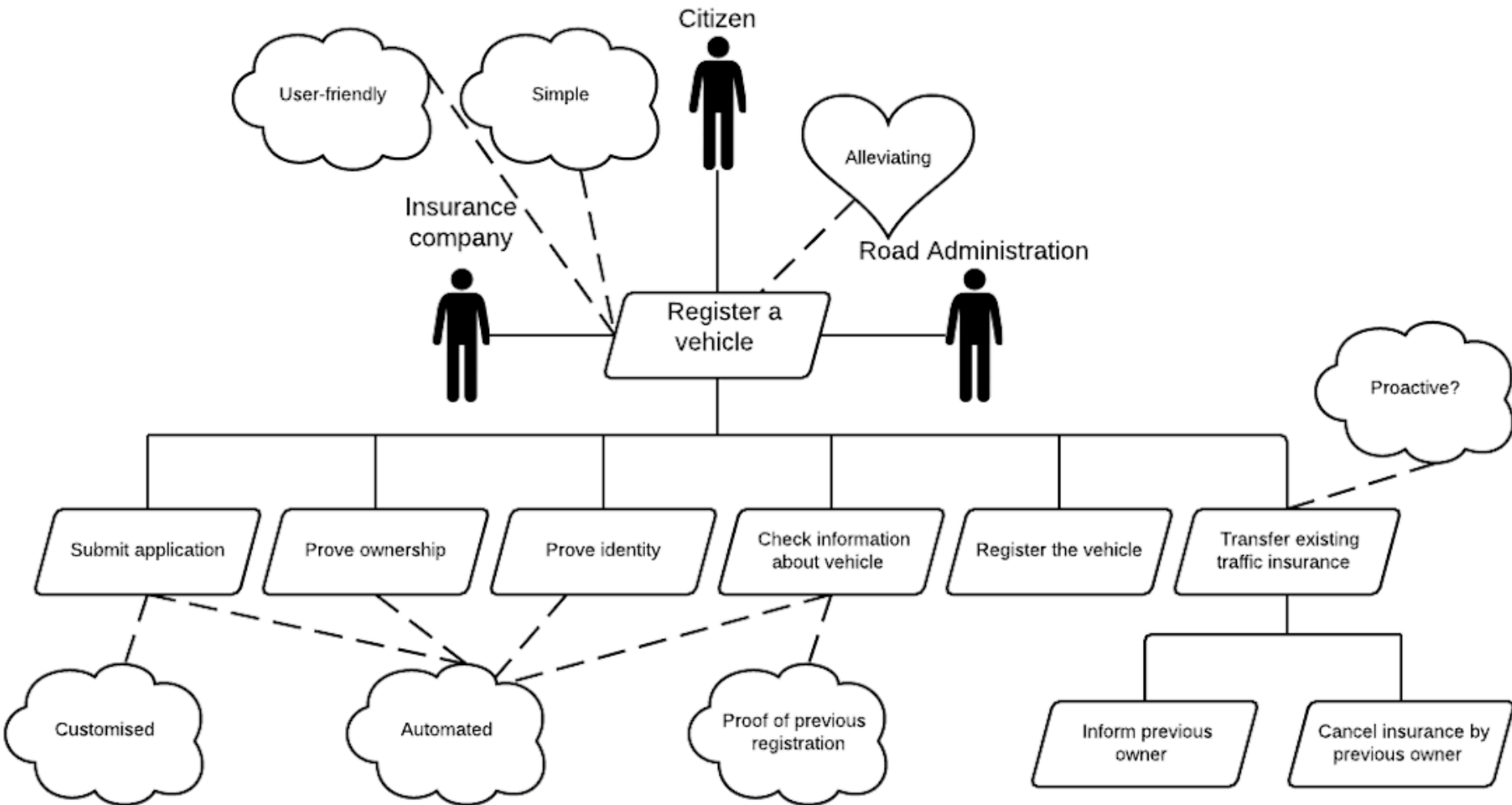- Designing public services should be tackled from both social and technical perspectives

- The pursuit for proactiveness should be introduced at different levels of government

- There is always room for improvement in public services, even in Estonia ☺

Some ideas on e-Democracy by Profs Michael N. Huhns and Kuldar Taveter

- Representative democracies suffer from a problem of granularity: a citizen has one vote to choose a candidate who represents the citizen for N issues
- This leads to "single-issue" voting
- Increasing the frequency of elections or the number of representatives has until now been too unwieldy and not cost-effective
- E-democracy could provide a finer granularity and better reactivity

Research and Consulting by TUT in e-Governance