

Personal Information, Context & Privacy In Context-Aware Services

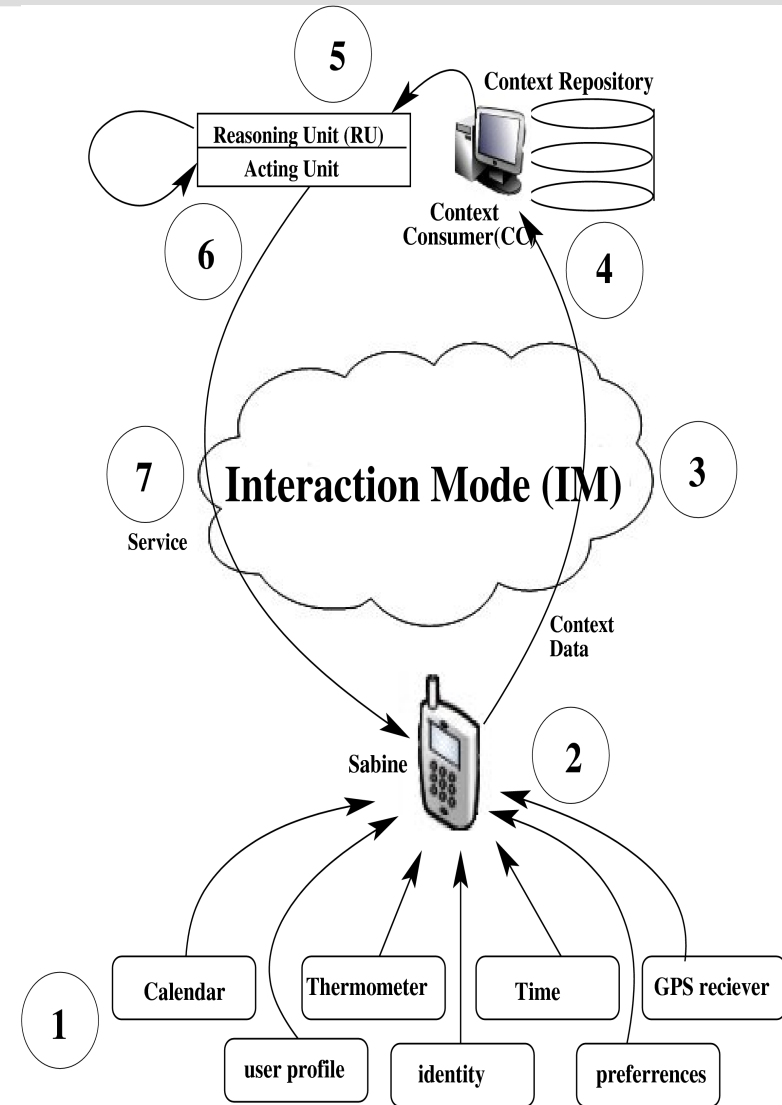
Were Oyomno

Lappeenranta University Of Technology

were.oyomno@lut.fi

Introduction

- Terms
 - Personal information (PI)
 - Privacy
 - Context Awareness
- Trends
 - Service proliferation
 - Society, business & technology
 - Costly & intractable



Use-cases

- Enriching entities situation
 - Roles, activities, proximity/location/position
- Facilitation Vs. enhancement
 - RouteCall - RestaurantLocator
- Optimal
 - Collect, aggregate, process & analyse
- Interaction spheres
 - Individual/community, Govern & private sector

Privacy concerns

- Westin's defnt
- PI trading - re-purposes
- Spheres integration
- Privacy expectations
- Lacking PET/PPT in context-aware

Threats

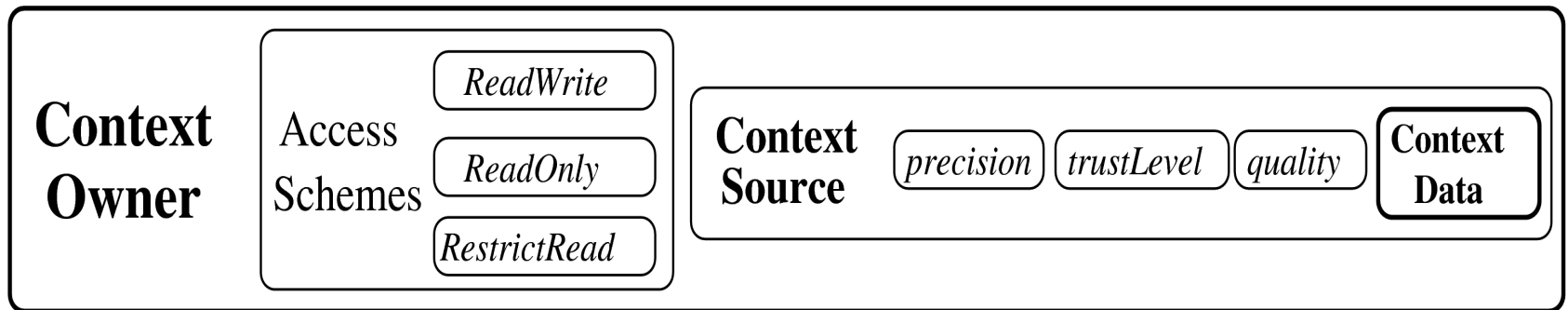
- Multiple situations /sensors – service history / tracking
- Interpretation & representation leaks
- Transmission leaks – eavesdrop
- Integrity & reputation attacks
- ID thefts, impersonation, harvesting, cloning
 - Unknown future scenarios

Framework

- Aim
 - Disclose right context & PI, to the right, at the right
- Key components
 - Model of the context data
 - Profile the privacy policies

Model context data

- Model context data
 - Source, owner, access schemes – quality



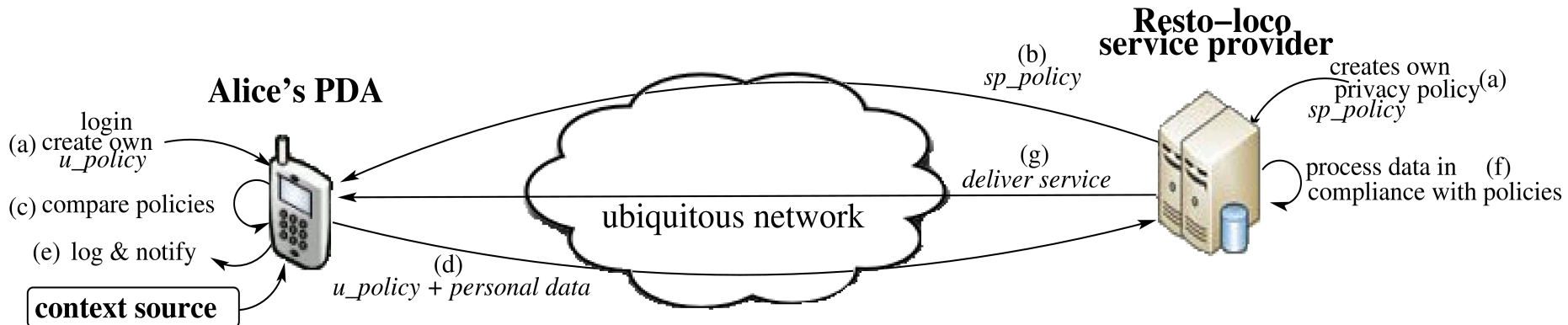
Privacy profiles

- XML notation
- Service declares
 - Identity attributes
 - PI / preference attributes
 - Processing / handling

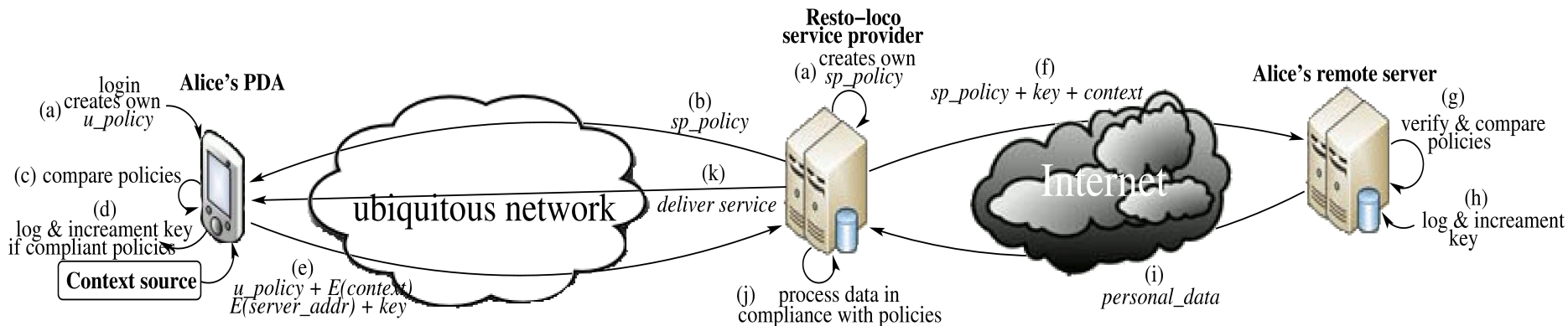
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  <policy:policy_head="introduction">
    <policy:policy_use="information"/>
    <policy:policy_owner="resto-loco"/>
    <policy:policy_validity="indefinite"/>
  </policy:policy_head>
  <policy:policy_part="rule 1">
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      <policy:value="name"/>
      <policy:value="address"/>
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    <policy:value="info_purpose">
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    </policy:info_purpose>
    <policy:info_retention="string">
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    </policy:info_retention>
    <policy:info_benefit="string">
      <policy:value="preferred meal"/>
    </policy:info_benefit>
    <policy:disclose_sphere="string">
      <policy:value="community"/>
    </policy:disclose_sphere>
  </policy:policy_part>
</policy:detail>
```


Implementation

- Local – resident on mobile terminal



- Remote deployment – personal server



Implementation ...

- Mobile terminals
 - Devices - Nokia N810, N95
 - Language – Python (pyMaemo, pyS60)
 - Interaction – Bluetooth, WLAN

Discussions

- Context & PI chain of custody
- Vested interest
 - Who's, from whom, benefits, for how long
- Non-compliance
 - Recourse / Recovery
- Privacy guarantee

Discussions ...

- Balance one's privacy Vs. societal good
 - Pandemics, terrorists
- Users attitudes Vs. actual behaviours
 - Demand for PET, immediate benefits
- Constrained devices
- Privacy aware UI
 - Privacy sliders?

Conclusion

- Situations affecting PI demanded
 - Tailored, seamless services
- Eminent privacy leaks
 - Technology, society, business models evolve
- Long term designs
 - Over single entity/instance responsibility
- Seamlessness
 - without excessive erosion
- Realistic scenarios