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Pay-per-Use Revenue Models for Geoprocessing Services in the Cloud

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Agenda

- Motivation
- Requirements
- System Design
- Demonstration
- Conclusion



Motivation

- Evolution of GIS
 - data- and desktop-centric GIS
 - emerging technologies (SOA, web services)
 - Spatial Data Infrastructure (SDI) concept
- Geoprocessing
 - OGC Web Processing Service (WPS)
 - proprietary and complex desktop-software
 - increasing amount of data and higher requirements on adopted algorithms



Challenges

- Quality of Service (QoS)
 - INSPIRE QoS requirements
- Cloud Computing
 - general trend in mainstream-IT
 - on-demand resource provisioning
 - pay-per-use revenue models
 - no up-front infrastructure investments
- Emerging Business Models



Goal

- Design a system that
 - enables (OGC-) service providers to provide sustainable pay-per-use business models
 - define usage costs per service request, service uptime, accessed resource, executed process, amount of processed data, etc.
 - enables (OGC-) service consumers to compare cost-benefit ratio of different service offerings
- Applicable for all kind of (OGC-) services ... but focus on Geoprocessing Services



Requirements

- Payment Models
 - flatrate vs. pay-per-use
- Contract Models
 - click-through licenses vs. long term contracts
- Accounting Models
 - post-paid vs. pre-paid
- Pricing Models



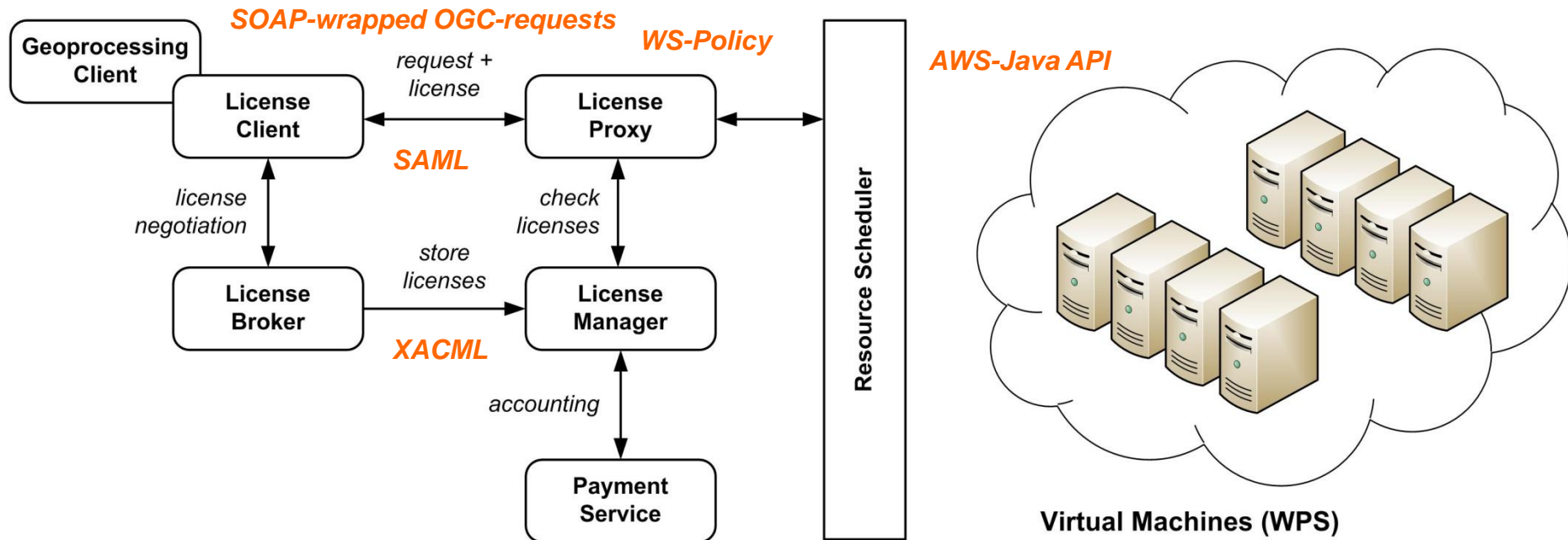
Requirements

- Publish-Find-Bind
 - additional agree phase (Publish-Find-Agree-Bind)
- OGC Technical Baseline
 - existing client and service implementations *should* remain unchanged
- Security and Trust
 - authentication, authorization, confidentiality, integrity, non-repudiation, protection and privacy



System Design

- Policy-Based Management Architecture
- OGC GeoDRM RM / OGC-Testbeds



Demonstration

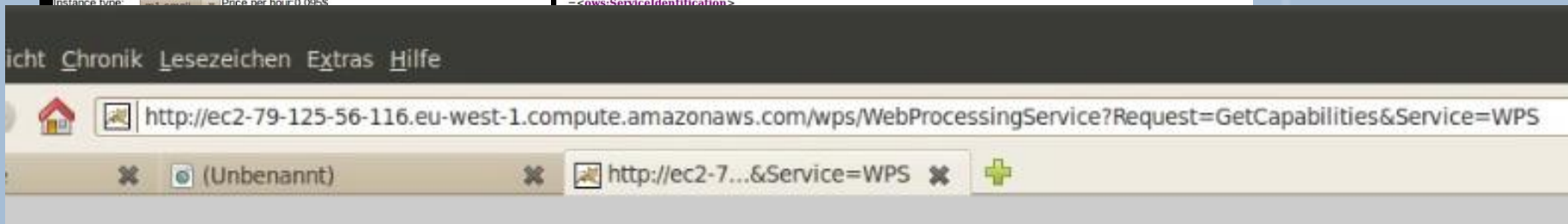
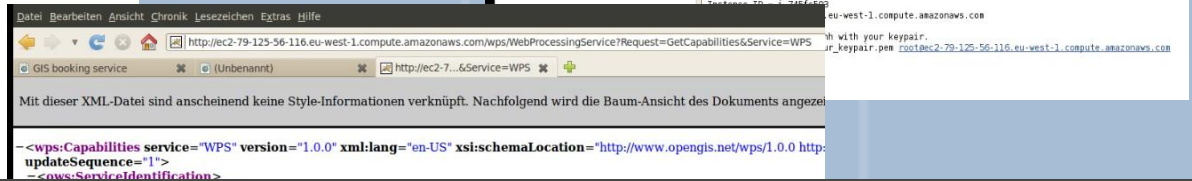
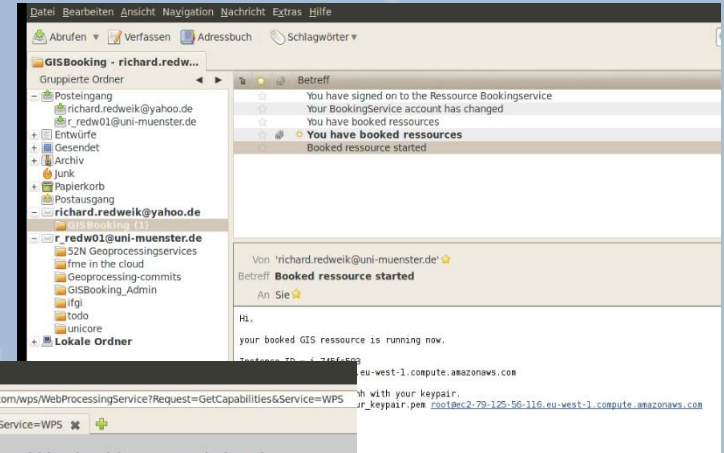
- Scenario 1: Pay-per-“*Process-Execution*”

The screenshot displays two overlapping browser windows from Mozilla Firefox. The top window, titled "Configuration of chosen licenseModel", shows a page with a blue header and a main content area that is mostly obscured by a semi-transparent blue box. The bottom window, titled "Payment", shows a page with a blue header and a main content area with a white background. The text in the "Payment" window reads: "Payment", "LicenseModel for usage of one specific process offered by the WPS-> slope", "The price is 3.99 €", and "Please choose the payment type". Below this text are two buttons labeled "VISA" and "PayPal". A red 'x' icon is visible in the bottom left corner of the "Payment" window's content area.



Demonstration

• Scenario 2: Service Hosting



Endprice: 4.29\$
Your booked resources:

ID	GIS Function	Instance Type	Startdate	Enddate	Delete Booking
1278676655174	52nWPS	m1.small	9.7.2010 14:00:00	9.7.2010 16:00:00	<input type="checkbox"/>
1278676671333	52nWPS	m1.small	9.7.2010 14:00:00	10.7.2010 16:00:00	<input type="checkbox"/>

```
<ows:ProviderName>52nWPS</ows:ProviderName>
<ows:ProviderSite xlink:href="http://www.52north.org/">
<ows:ServiceContact>
  <ows:IndividualName>Your name</ows:IndividualName>
  <ows:PositionName>Your position</ows:PositionName>
  <ows:ContactInfo>
    <ows:Phone>
      <ows:Voice/>
      <ows:Facsimile/>
    </ows:Phone>
  </ows:ContactInfo>
  <ows:Address>
    <ows:DeliveryPoint/>
    <ows:City/>
    <ows:AdministrativeArea/>
    <ows:PostalCode/>
    <ows:Country/>
    <ows:ElectronicMailAddress/>
  </ows:Address>
</ows:ServiceContact>
</ows:Capabilities>
```



Conclusion

- Design a system that
 - enables service providers to provide sustainable pay-per-use business models
 - Enables service consumers to compare cost-benefit ratio of different service offerings
- Impact on SDIs
 - technological shift vs. paradigm change
 - new business opportunities
 - for small companies (no up-front investments)
 - *real* Software as a Service (SaaS)
- Cloud Computing as enabling technologie!



Conclusion

- Open Issues
 - Cloud Computing
 - interoperability
 - reliability
 - security
 - Business Models
 - software licenses





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Thank you for your time!

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