

GeoDRM: Keeping Free and Remaining Open

Joshua Lieberman, Traverse Technologies / OGC
& Cristian Opincaru, University of the German Armed Forces

FOSS4G

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OGC



der Bundeswehr
Universität  **München**

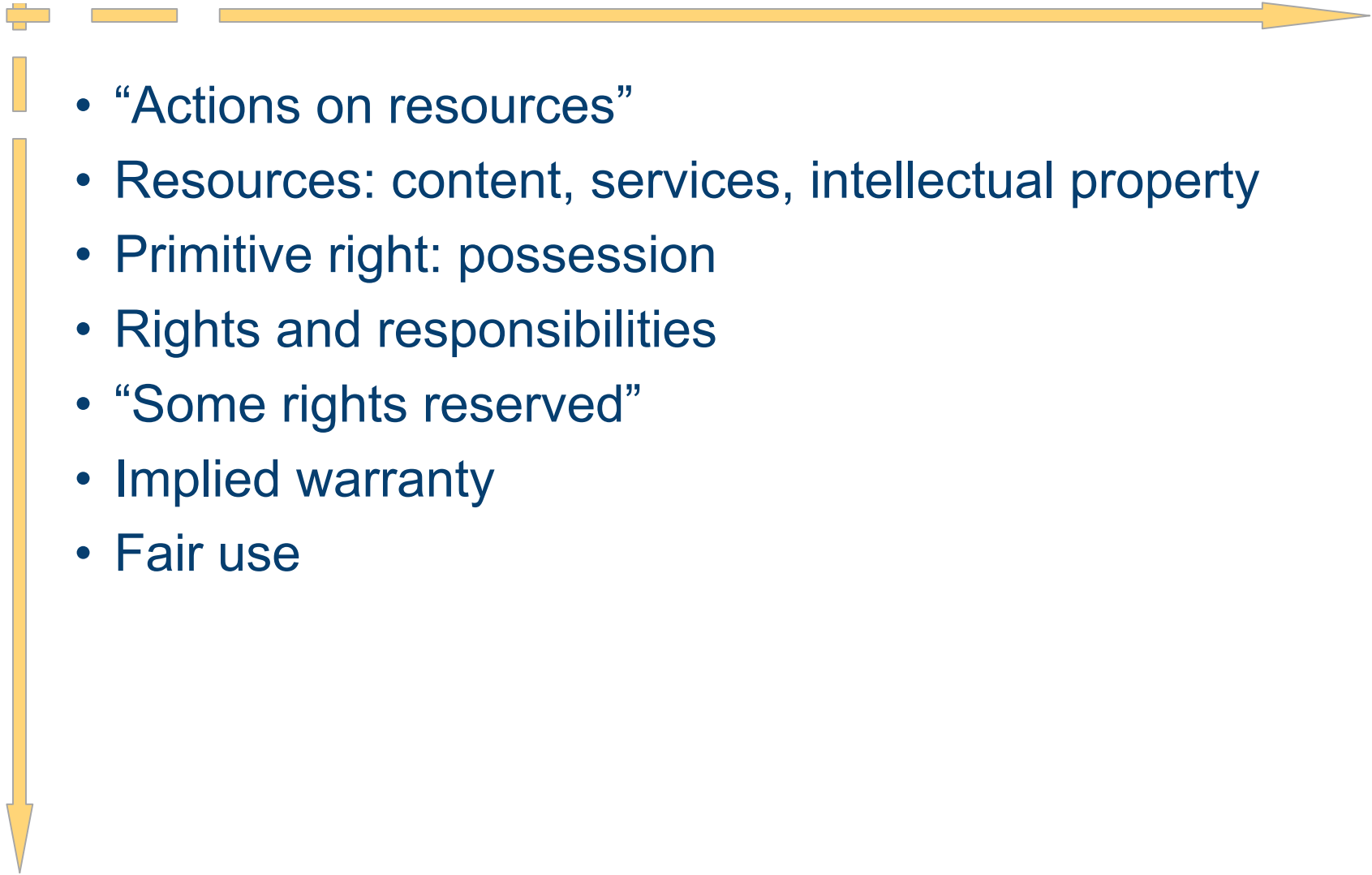


Topics

- 
- 
- Rights - what are they; how do we get them?
 - Licenses and other funny business
 - Managing rights: when is the paperwork done?
 - Where is the Geo?
 - Use cases and business cases
 - Architectures for GeoDRM enablement
 - Security and GeoDRM: “may I” and “can I”
 - Information and service standards
 - GeoDRM software and demonstration

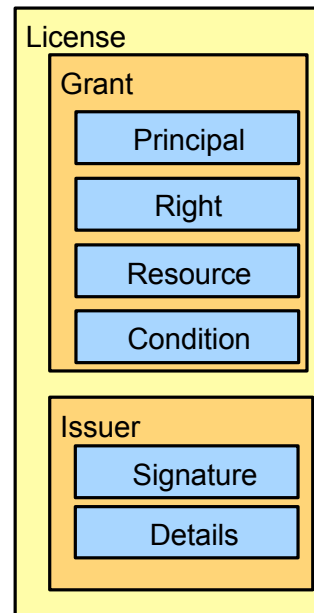


By what rights

- 
- A large orange arrow points horizontally from the left towards the right, starting from the Traverse logo. A vertical orange arrow points downwards from the horizontal arrow's start point, extending past the bottom of the list.
- “Actions on resources”
 - Resources: content, services, intellectual property
 - Primitive right: possession
 - Rights and responsibilities
 - “Some rights reserved”
 - Implied warranty
 - Fair use

Licenses and contracts

- License model
- Contracts may be based on licenses
- “Map of value not the value itself”
- “Offer” -> “Acceptance” -> “Exchange of value”

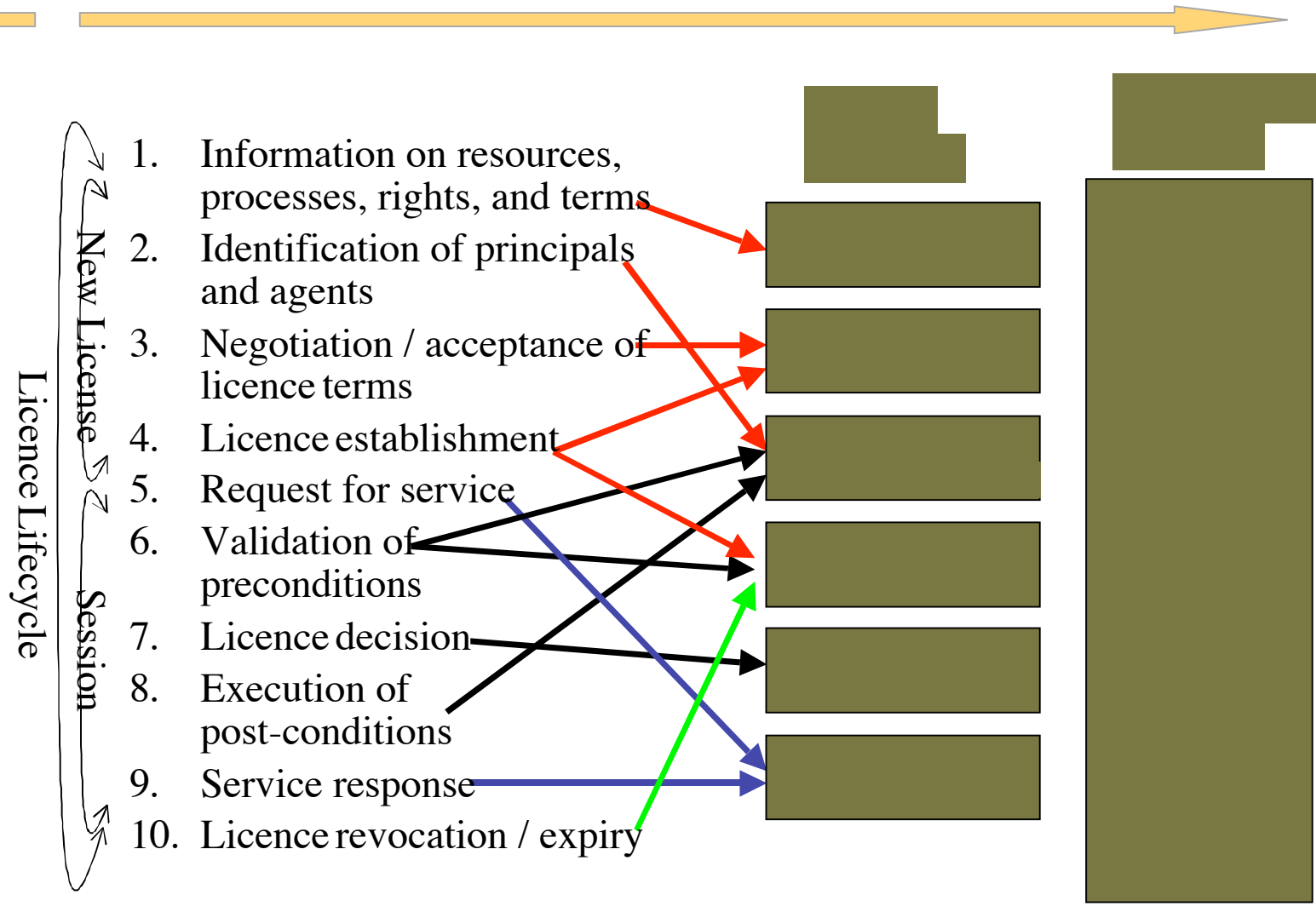




Take it up with Management

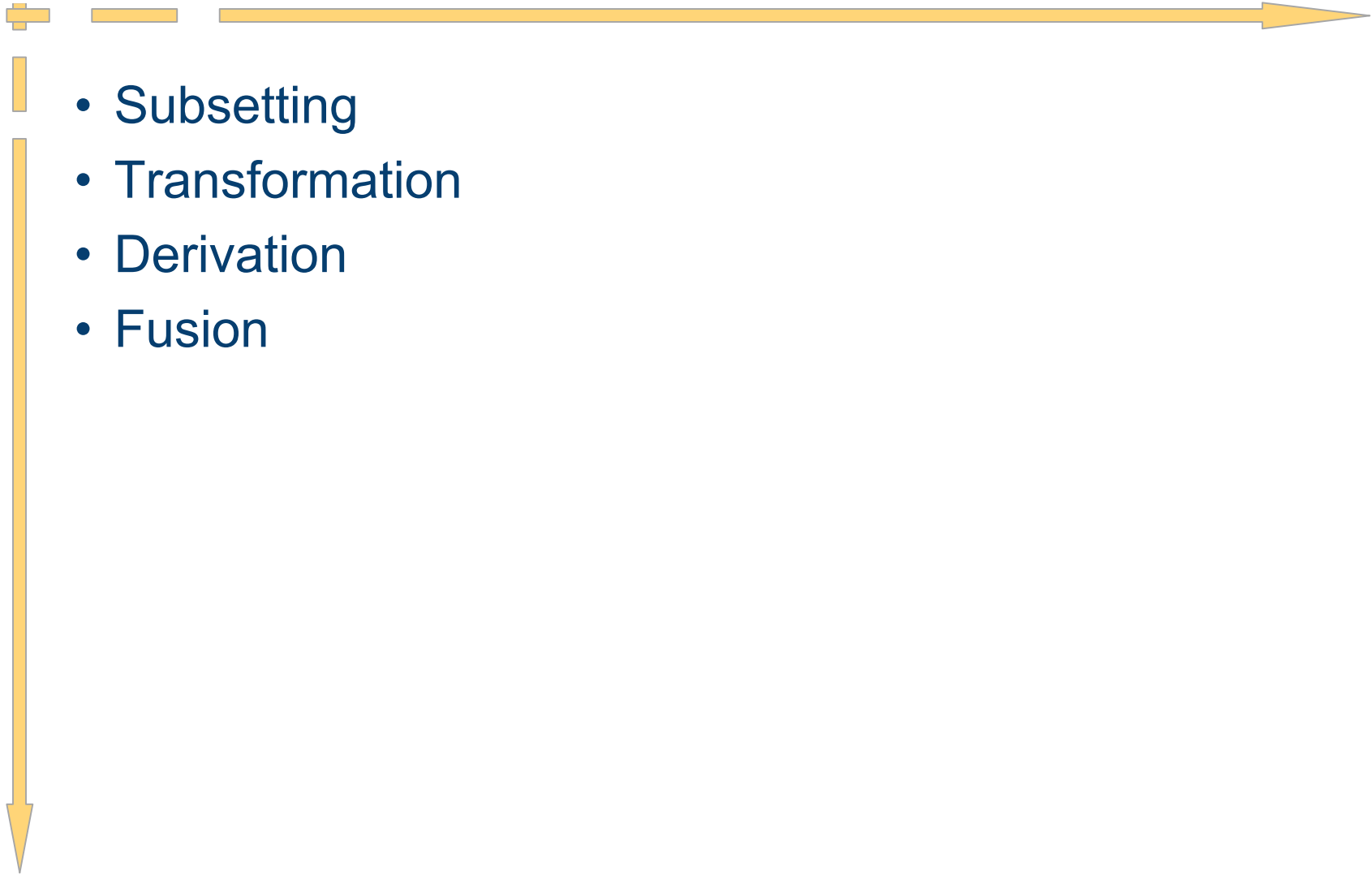
- 
- License lifecycle
 - Information
 - Negotiation
 - Documentation
 - Enforcement
 - Reconciliation
 - Remediation

Geo-Digital Rights Lifecycle

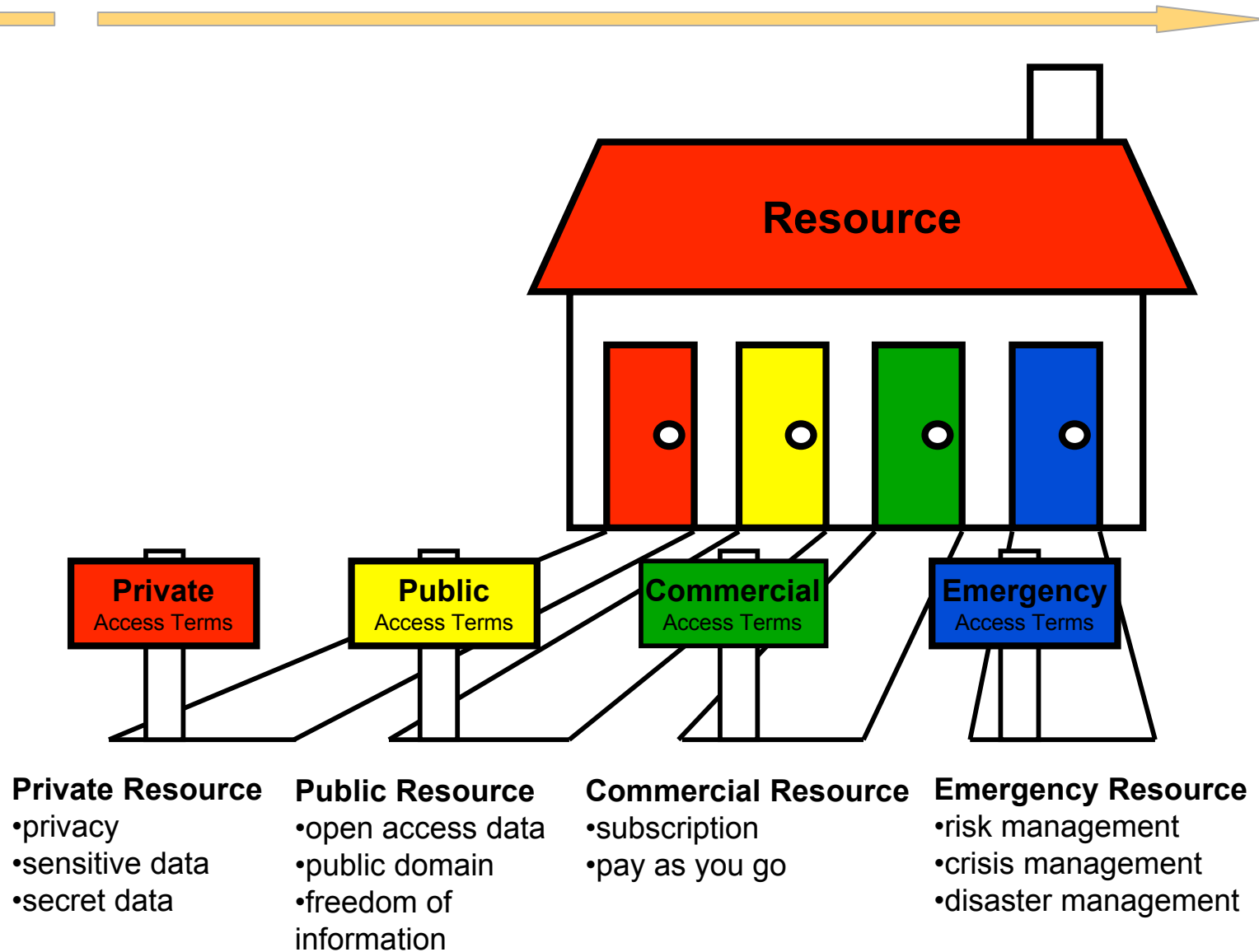




Where is the Geo?

- 
- A diagram consisting of a horizontal orange arrow pointing right, a vertical orange arrow pointing down, and a small orange crosshair at their intersection. The list of operations is positioned to the right of the vertical arrow.
- Subsetting
 - Transformation
 - Derivation
 - Fusion

Example Rights Managed User Scenarios





OWS-4 GeoDRM Use Cases

A decorative graphic consisting of a horizontal orange arrow pointing right and a vertical orange arrow pointing down, both originating from a small crosshair-like symbol at the top left.

Case 1: Click through license triggered by Context document


Case 2: Cascaded layers under distributor license and user licences

Case 3: End user license (authenticated)

Case 4: Feature update license with effects



Architectures for GeoDRM enablement

- 
- 
- Centralized
 - Distributed
 - Service-oriented
 - Federated
 - Draconian

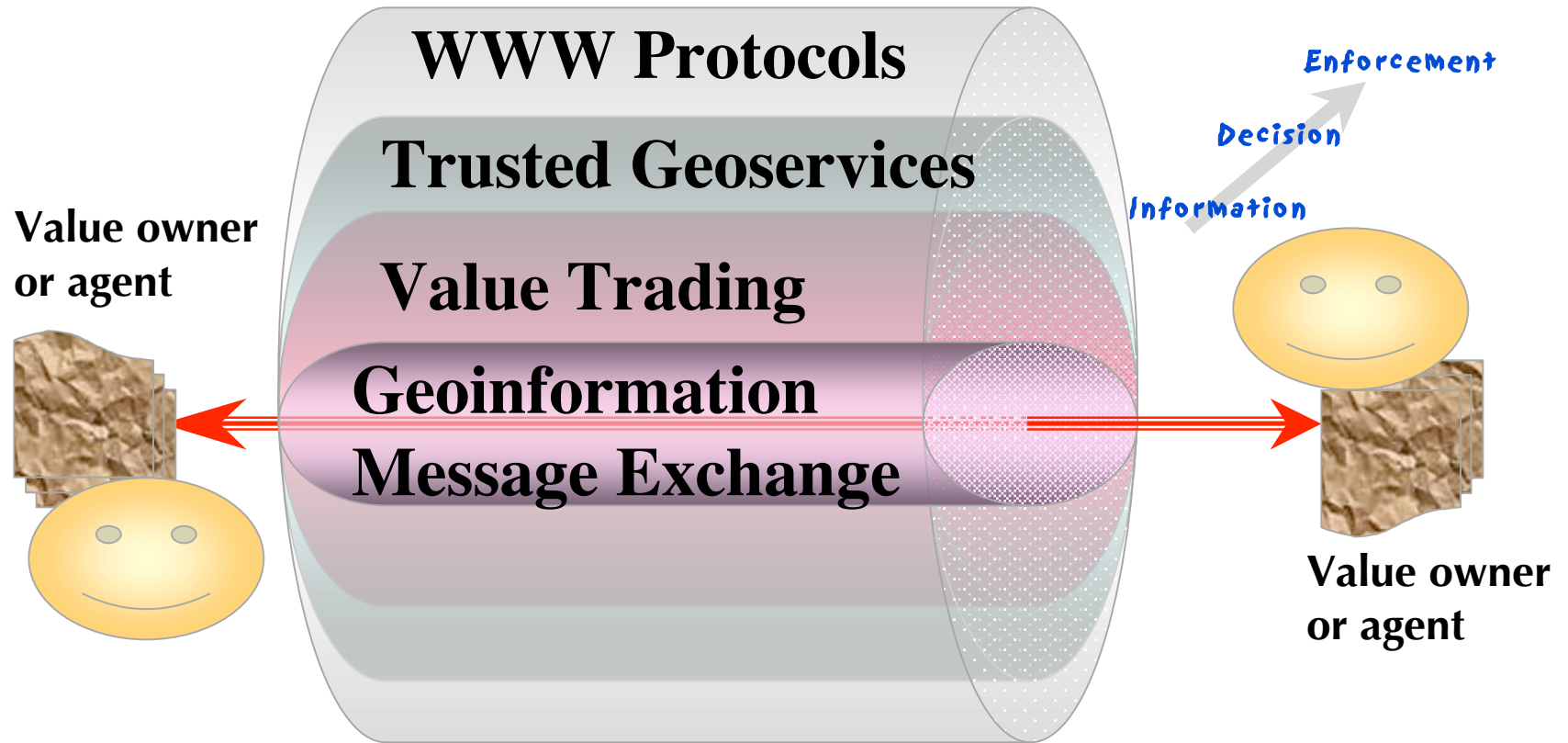


Open Geospatial Consortium: GeoDRM Reference Model

- Open Geospatial Consortium
 - Non-profit, international, voluntary consensus standards organization
 - Leading the development of standards for geospatial and location based services
 - <http://www.opengeospatial.org>
- GeoDRM Reference Model
 - Patterned on the ISO RM-ODP
 - Conceptual model for digital rights management of geospatial resources
 - Metadata model for expressing rights
 - Requirements for DRM systems in order to enforce the rights
 - Relation to the broader DRM context

GeoDRM Fundamental Concept

- *GeoDRM recognizes that the exchange of geoinformation and services also involves trading of value and responsibility*

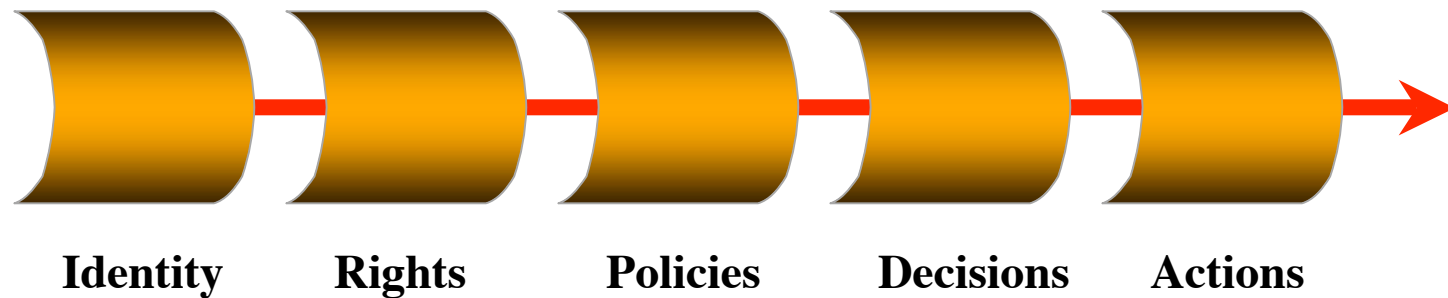


GeoDRM seeks to implement interoperable trading of value as a standard protocol in service-oriented architectures and other digital technology platforms



Security and GeoDRM

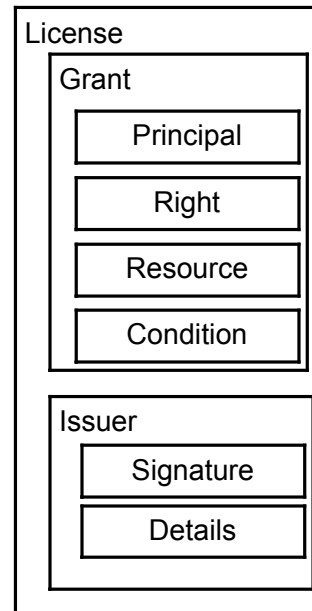
- “May I” -> “Can I”
- Trust and assurance
- Authentication and authorization
- Validation and enforcement



Geo-License

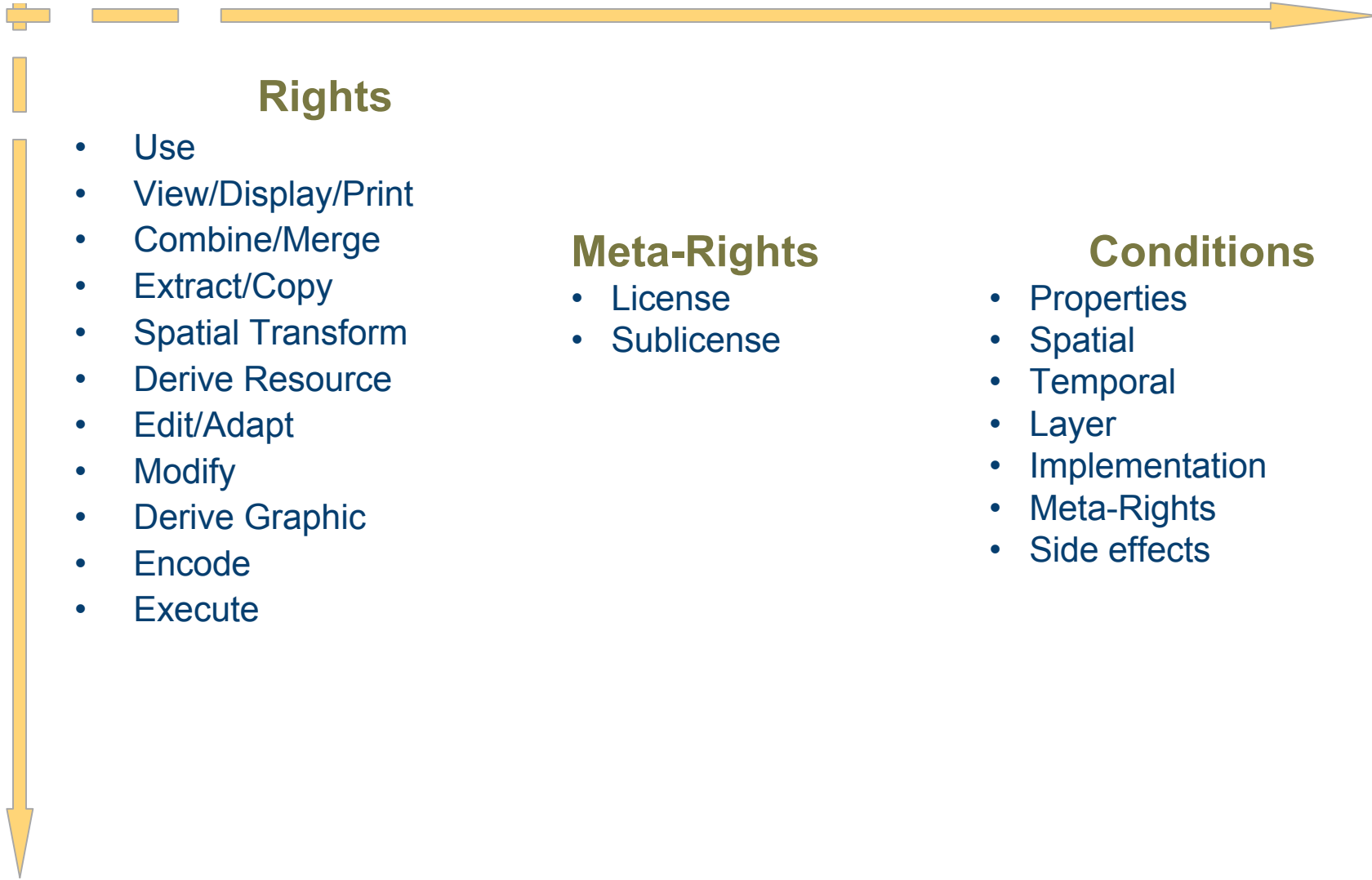
- Extents
 - Rights
 - Space
 - Time
- Expression
 - Legal
 - Human readable
 - Formal

- Delegation
 - Smaller extents
- Chaining
 - Owner
 - Licensing agent
 - Licensee
 - ...
 - End-User



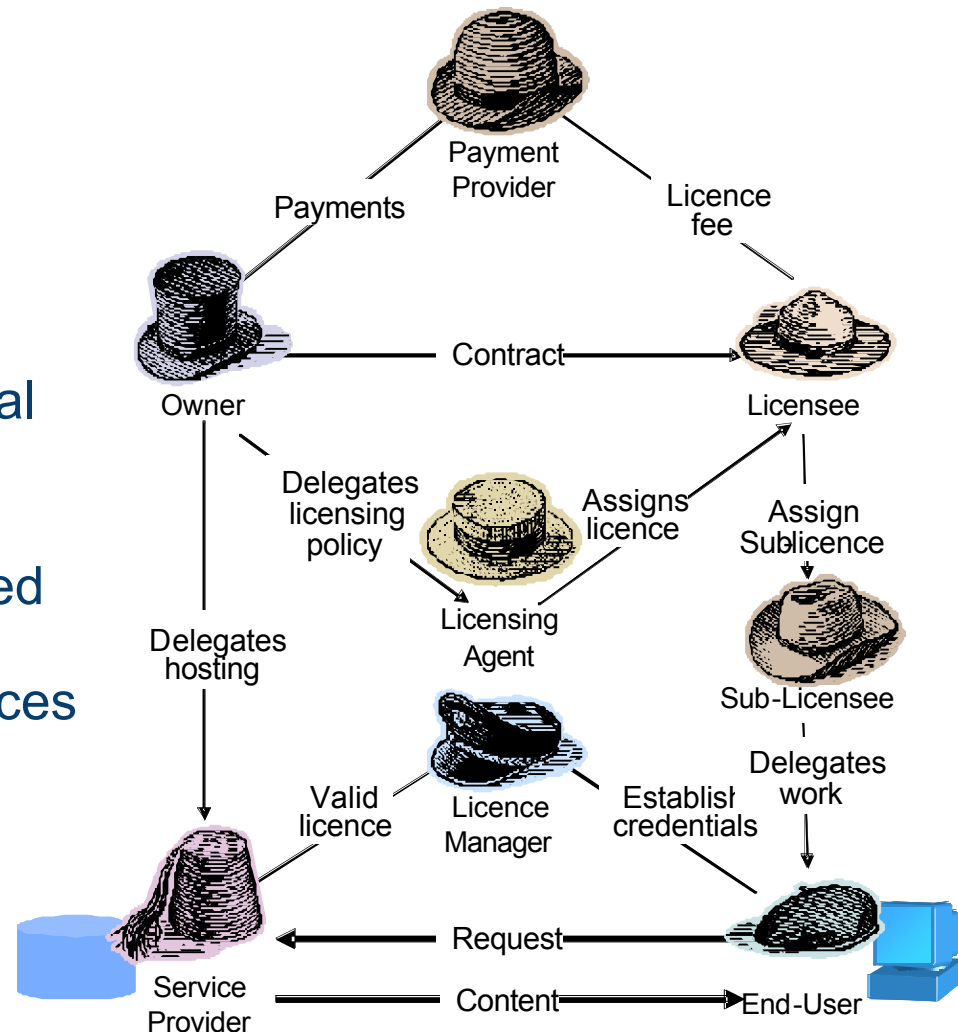


Information Viewpoint

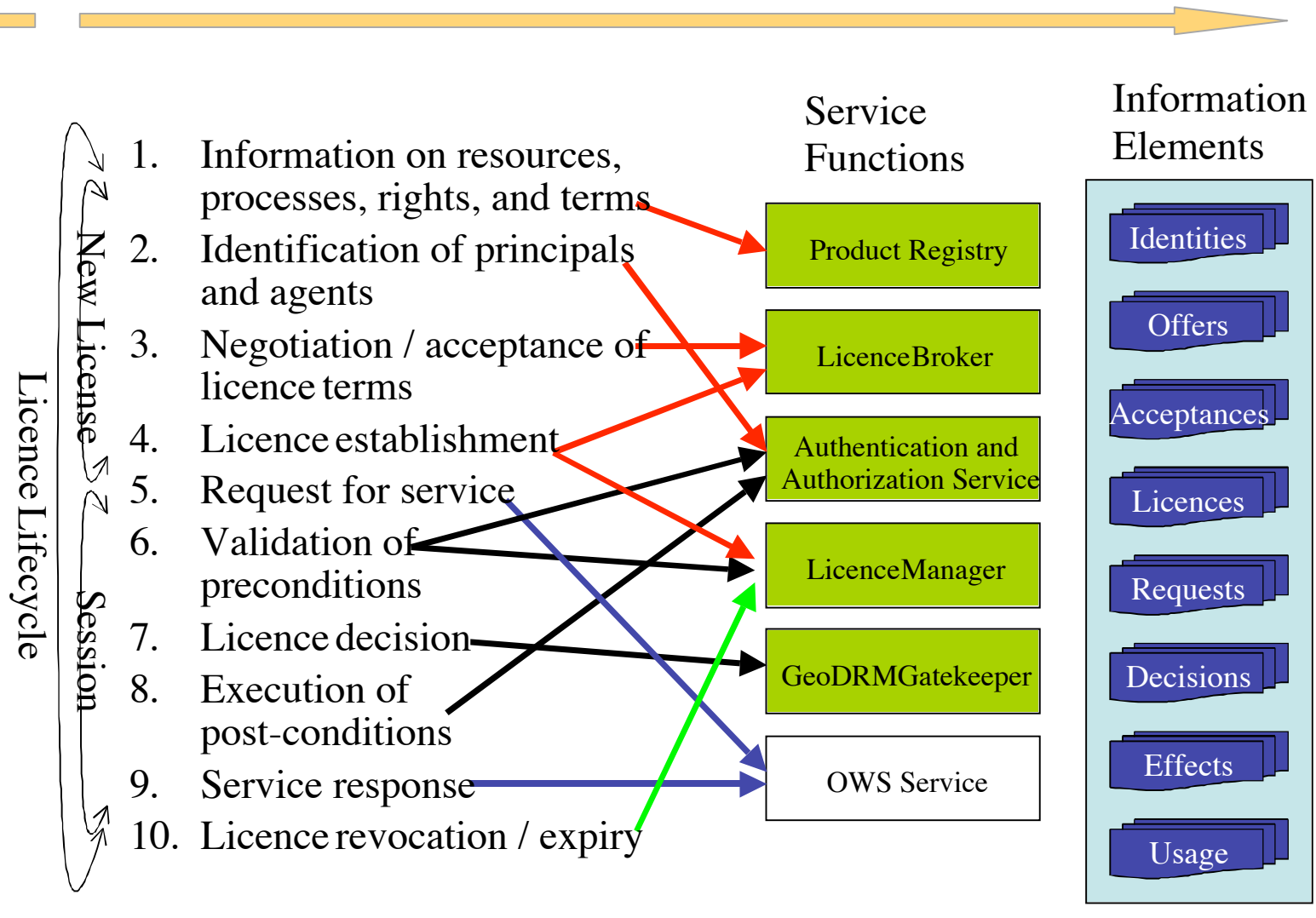


Computational Viewpoint

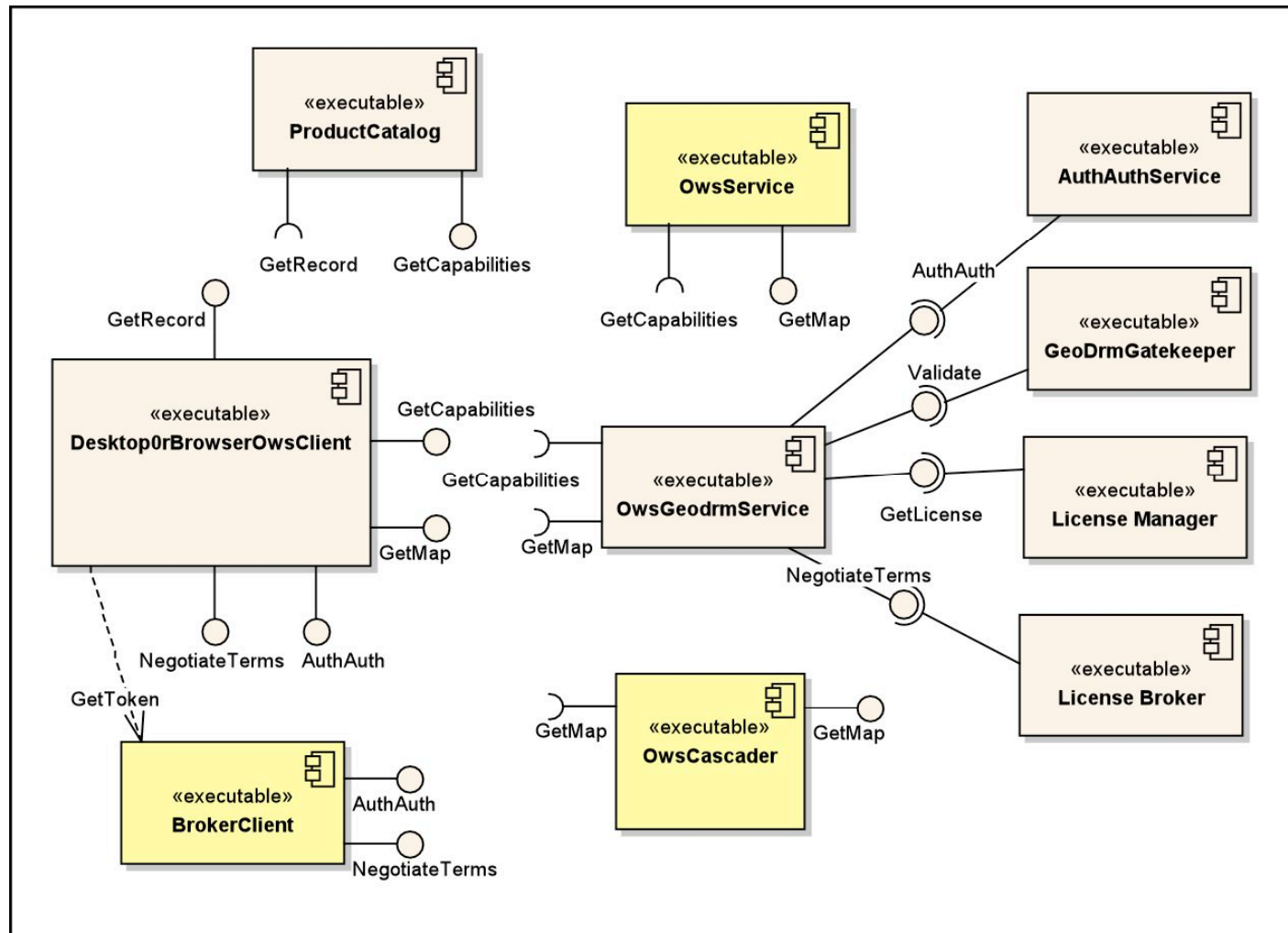
- Roles within a DRM System
- One entity could have several roles
- One or more roles are then associated within a distributed computing architecture with one or more services interfaces and processing components



Geo-Digital Rights Lifecycle

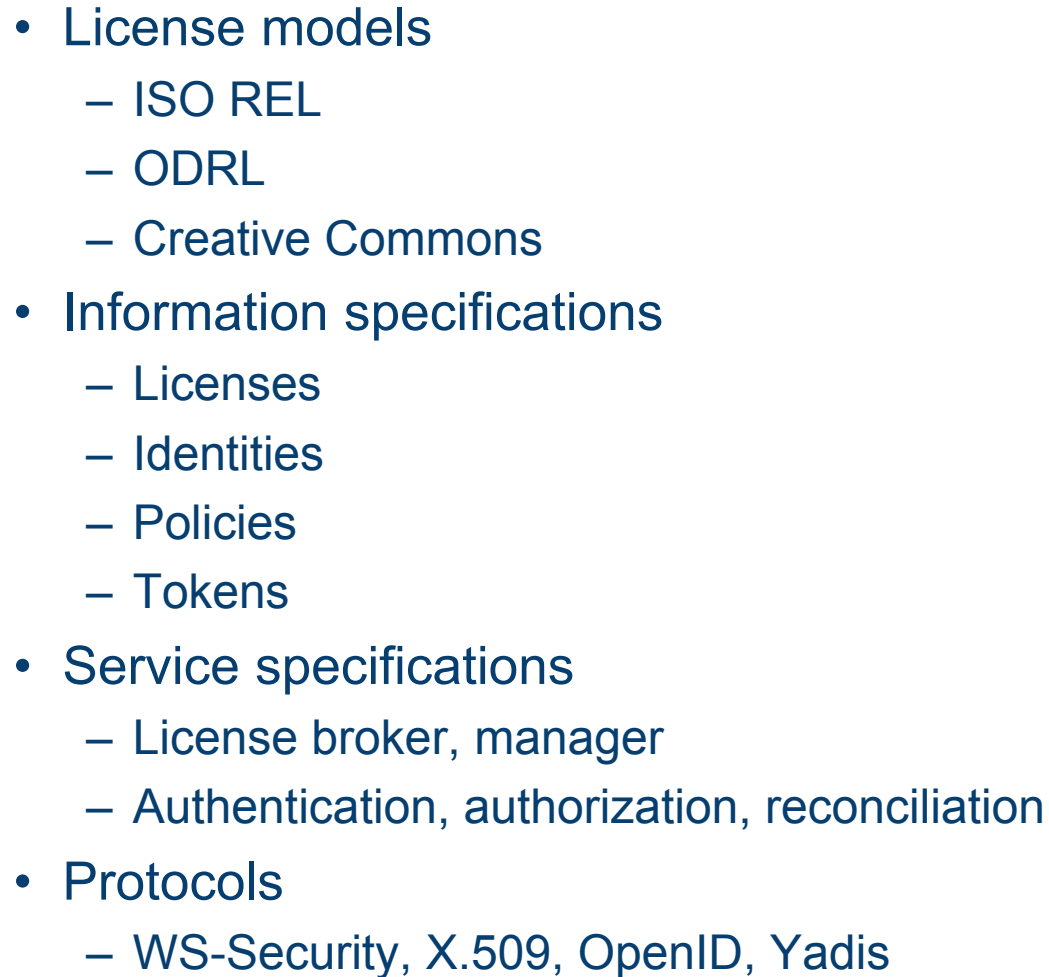


OWS-4 GeoDRM components





Information / Service Standards for GeoDRM

- 
- License models
 - ISO REL
 - ODRL
 - Creative Commons
 - Information specifications
 - Licenses
 - Identities
 - Policies
 - Tokens
 - Service specifications
 - License broker, manager
 - Authentication, authorization, reconciliation
 - Protocols
 - WS-Security, X.509, OpenID, Yadis

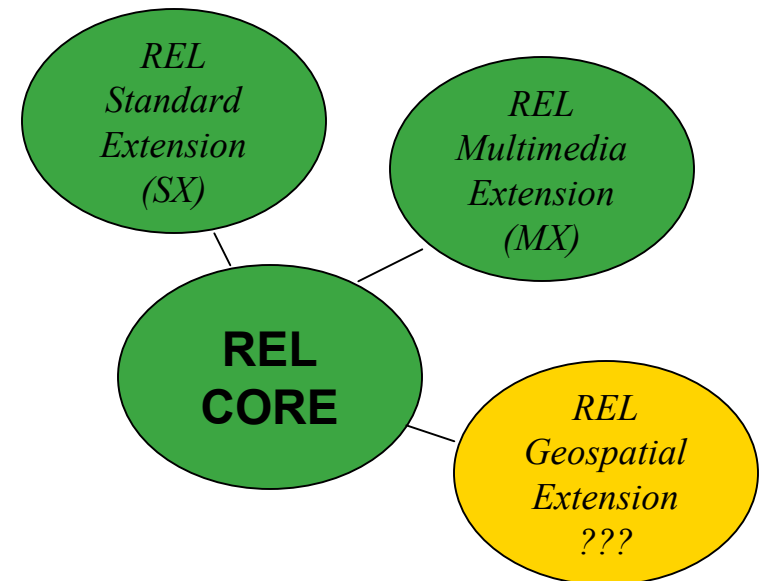
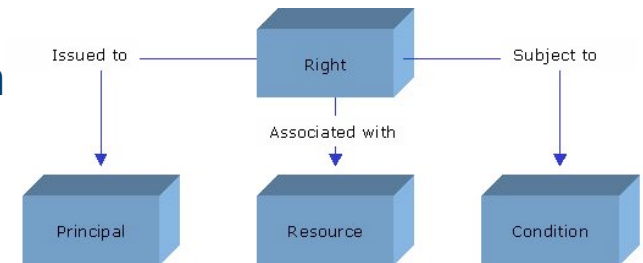
Policy languages: ISO REL

- Facts

- Part of the MPEG-21 initiative
- ISO/IEC 21000-5:2004: Rights Expression
- Based on XrML

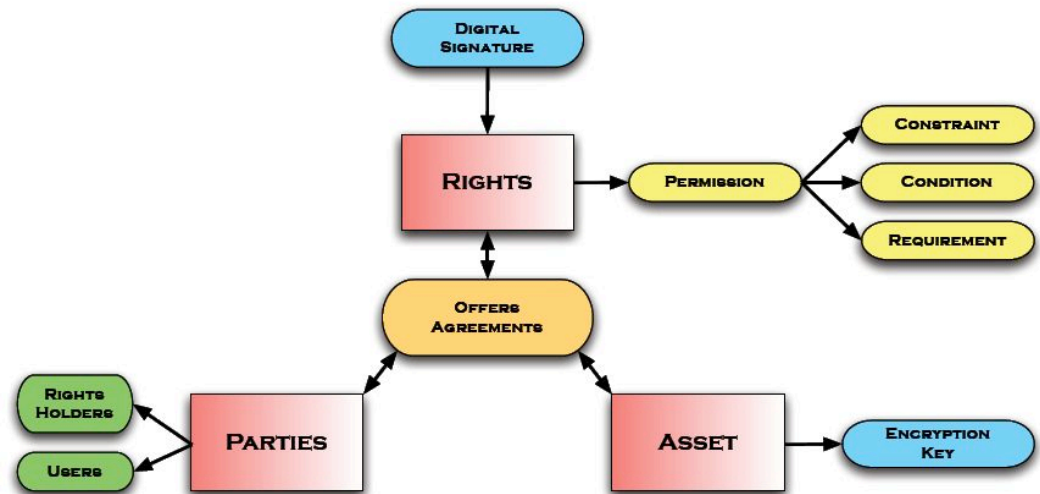
- Issues

- Not exactly an open standard
- Needs to be extended
- OASIS WS-Security Profile



Policy Languages: ODRL

- Facts
 - Open Digital Rights Language
 - Specifications are freely available
 - Profiles
 - Open Mobile Alliance
 - Creative Commons
- Issues
 - DRM “Patent War”
 - Needs to be extended

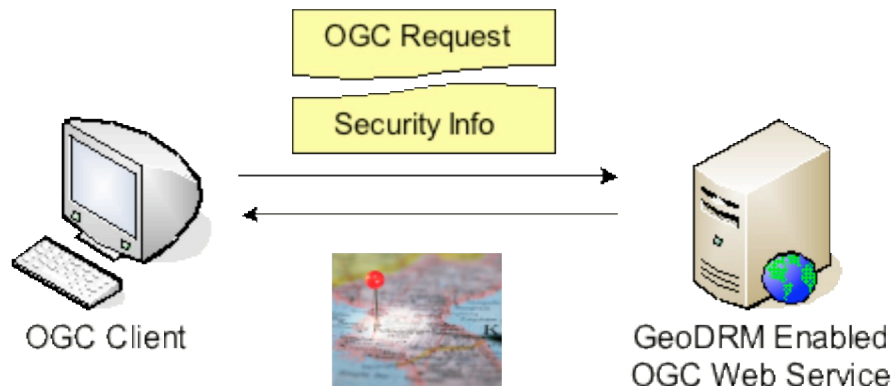
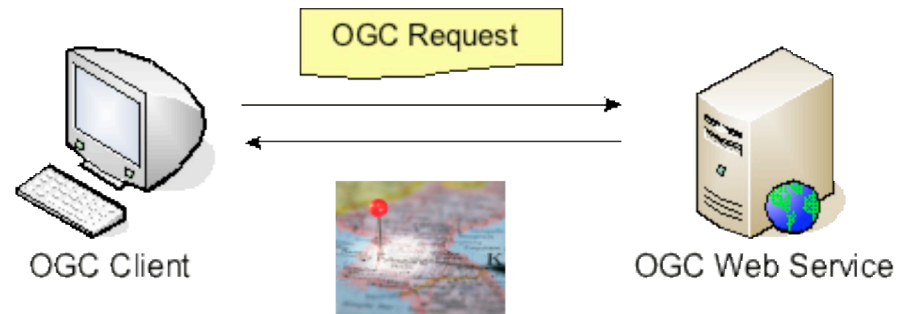




**GeoDRM Software and
“Demonstration”**

Problem Statement

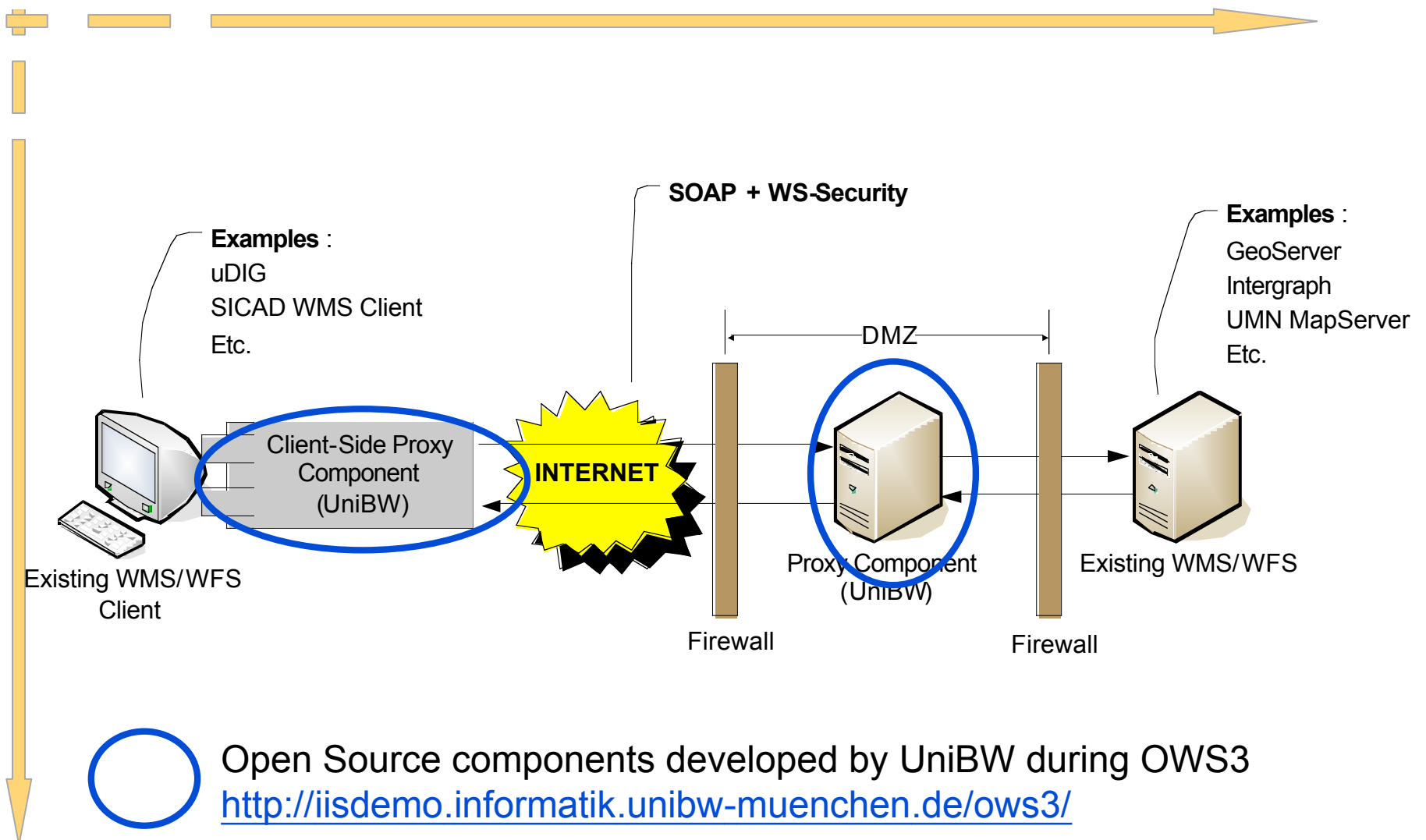
Current Situation:



What we needed ...

Ability to send additional security information together with an OGC request: identity information, licenses, etc.

OWS3 Implementation

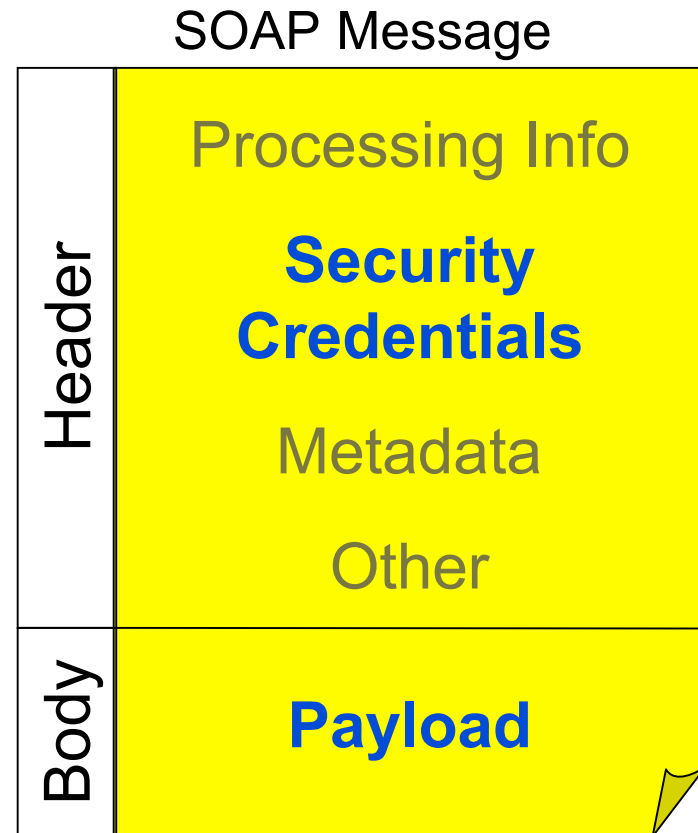




Protocol Extensions

- SOAP Profile
- WS-Security (OASIS)
 - Username Token (OWS3)
 - X509 Certificates (OWS4)

- No fancy stuff





Server Side Proxy

- Reasons

- Could not find an open source SOAP Implementation
- Can be integrated with any OGC Server

- What it does

- Cascading WMS / WFS
- Implements the SOAP Profiles for WMS / WFS
- Evaluates the security information and allows / denies access to the WMS / WFS



Server Side Proxy

- Implementation
 - 100% Java
 - Apache Tomcat
 - AXIS (SOAP Engine)
 - WSS4J (WS-Security Implementation)
- Availability
 - Open Source
 - BSD like license
 - <http://iisdemo.informatik.unibw-muenchen.de/ows3/>



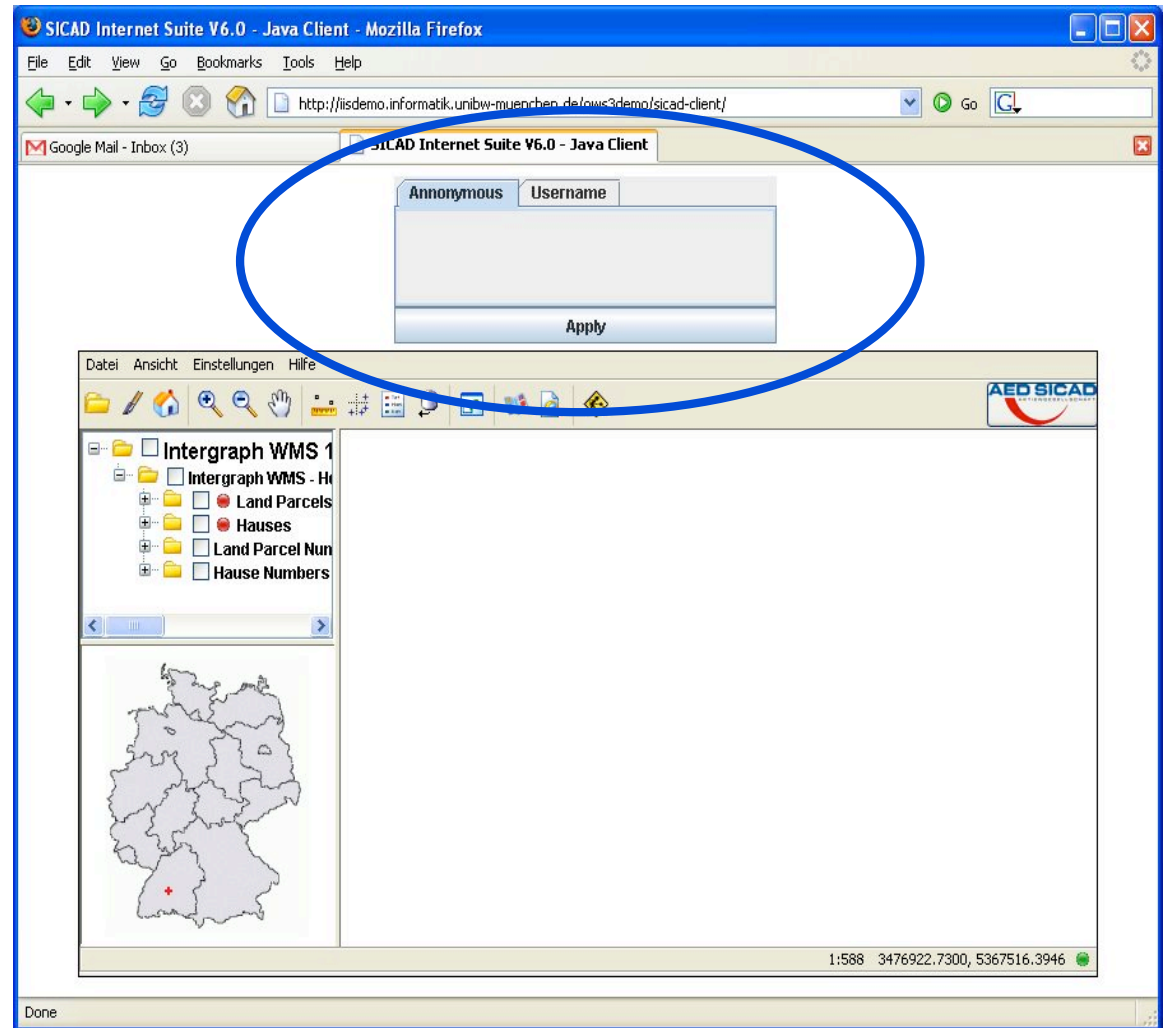
Client Side Proxy

- Reasons
 - Could not find an open source SOAP implementation
 - Can be integrated with any OGC WMS client (works best with web clients)
- What it does
 - Cascading WMS service, running on localhost
 - Implements SOAP profile for WMS
 - Implements the extensions developed during OWS3
 - Adds security information in SOAP header

Client Side Proxy

Implementation

- 100% Java
- Java Applet
- AXIS Client (SOAP Engine)
- WSS4J (WS-Security Implementation)





What's happening next ... OWS4

- OWS4: OGC Web Services Phase 4
 - www.opengeospatial.org
- Extensions
 - Server-Side Proxy
 - Understand X509 Certificates
 - (Perhaps) understand SAML Assertions
 - Understand License Tokens
 - These will be defined during the initiative
 - Point to start: XACML / SAML
 - Be able to enforce access based on these tokens



Conclusions / Questions

- These proxies can be integrated in open source clients / servers
- Availability
 - BSD-like license
 - <http://iisdemo.informatik.unibw-muenchen.de/ows3/>
- How should this work continue?
- How can this work fit in other open source software?
- Any idea? Talk to me!



Thank you!

Joshua jlieberman@traversetechnologies.com
<http://www.traversetechnologies.com>

Cristian Cristian.Opincaru@unibw.de
<http://www.unibw.de/Cristian.Opincaru>



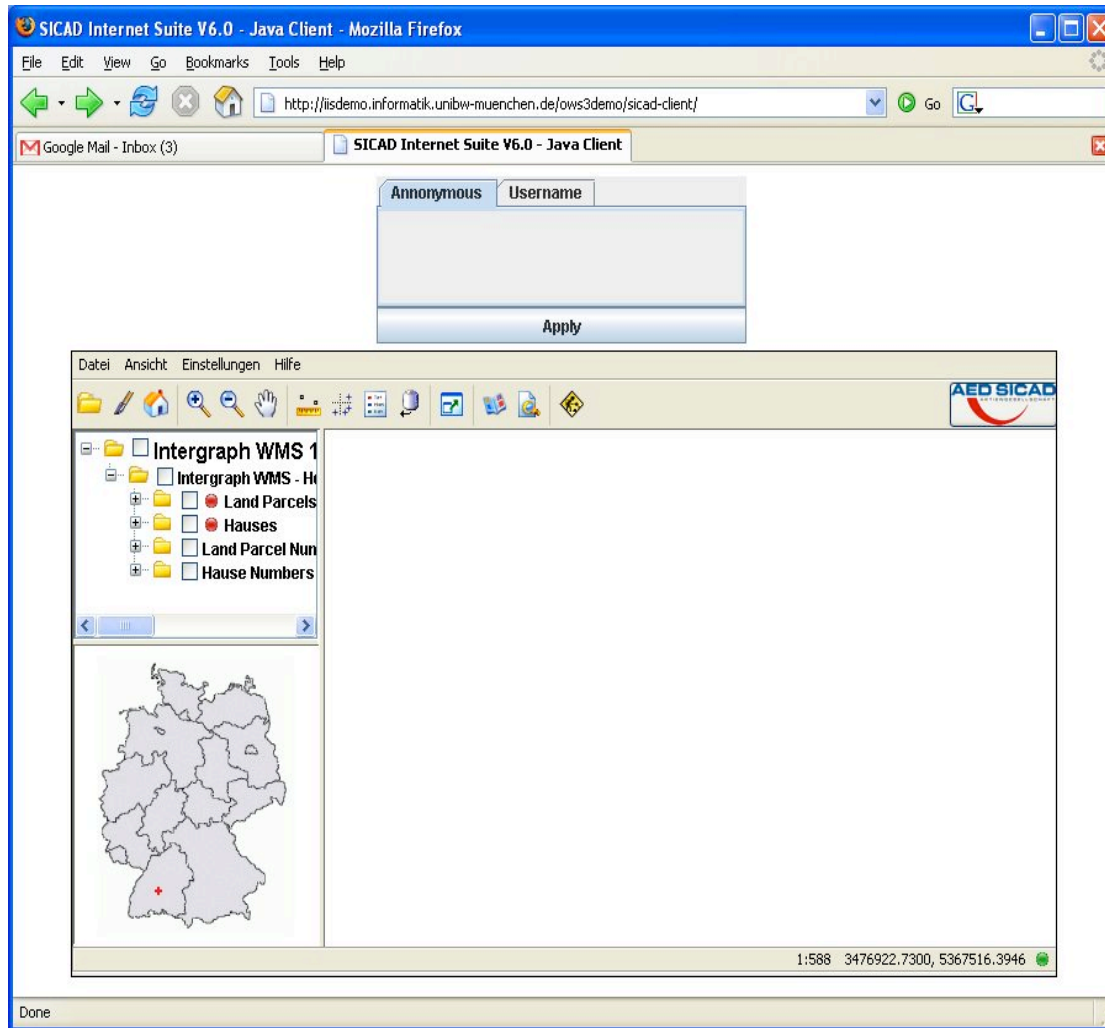
Demonstration

If we have the time / If we feel the need

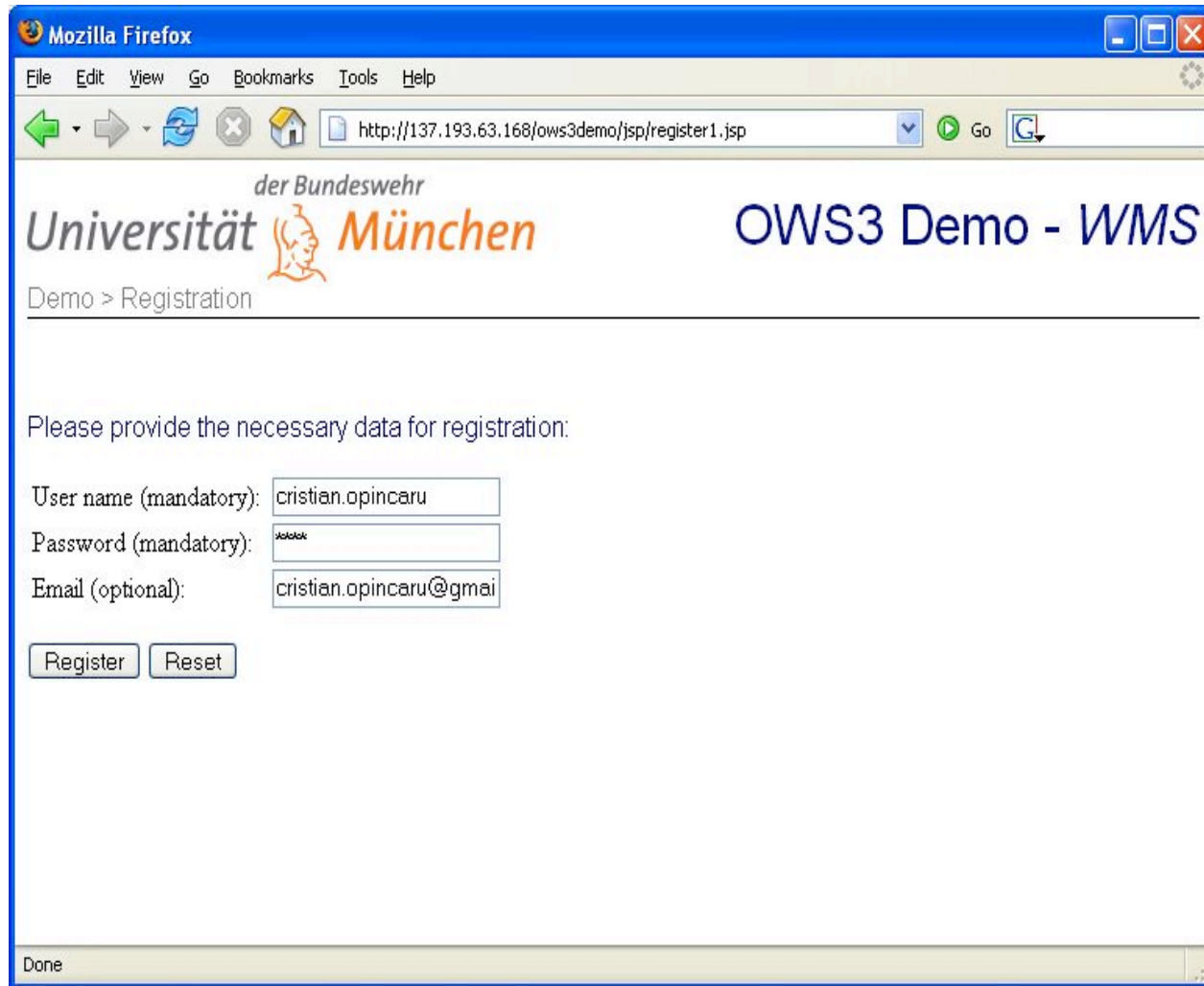
Offline demonstration



The Client



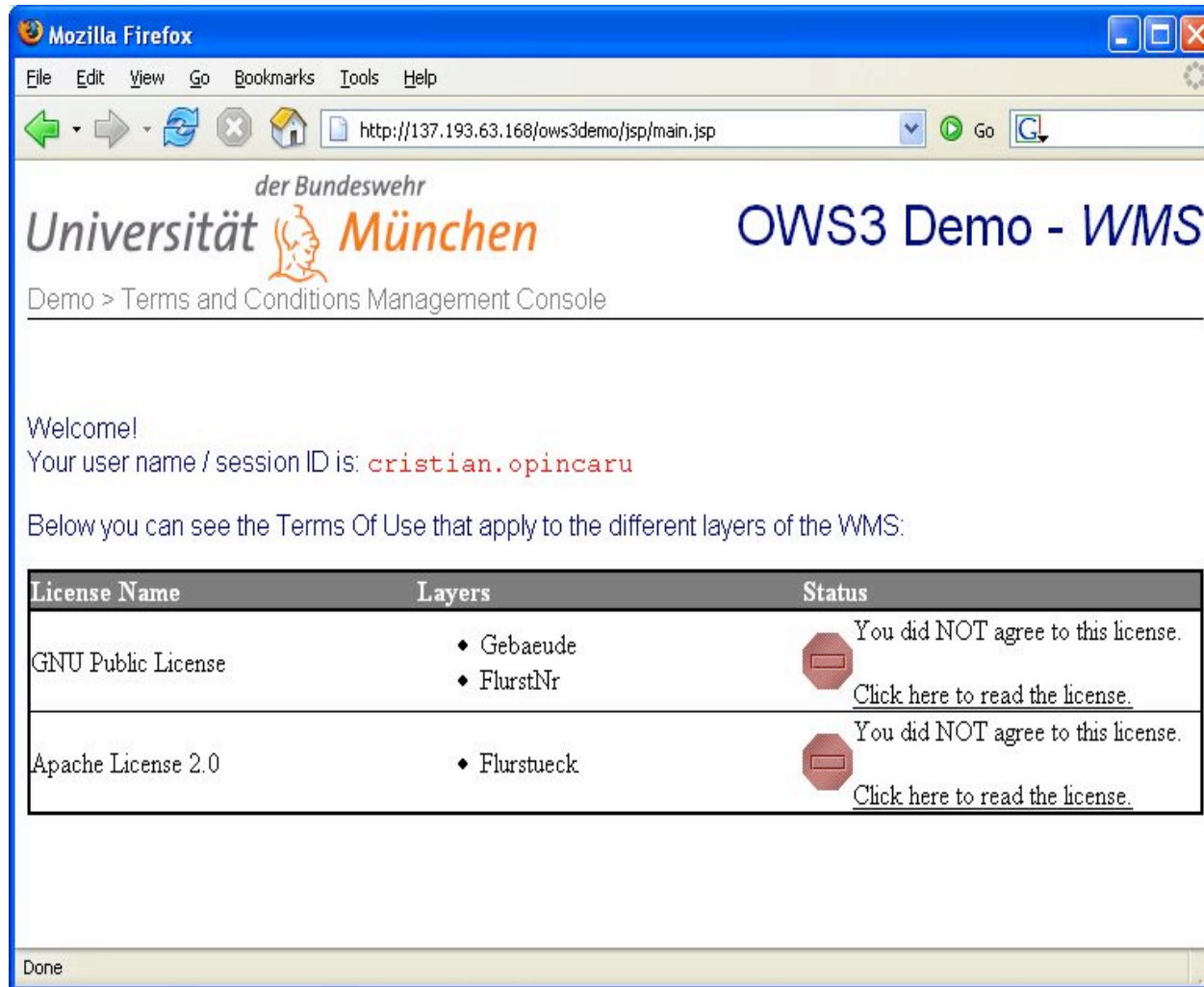
Named User: Registration



The screenshot shows a Mozilla Firefox browser window with the following content:

- Address bar: `http://137.193.63.168/ows3demo/jsp/register1.jsp`
- Page Header: **Universität der Bundeswehr München** and **OWS3 Demo - WMS**
- Breadcrumb: [Demo](#) > [Registration](#)
- Text: "Please provide the necessary data for registration:"
- Form fields:
 - User name (mandatory):
 - Password (mandatory):
 - Email (optional):
- Buttons:
- Status bar: Done

Named User: License Management





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OWS3 Demo - WMS

Demo > Terms and Conditions Management Console

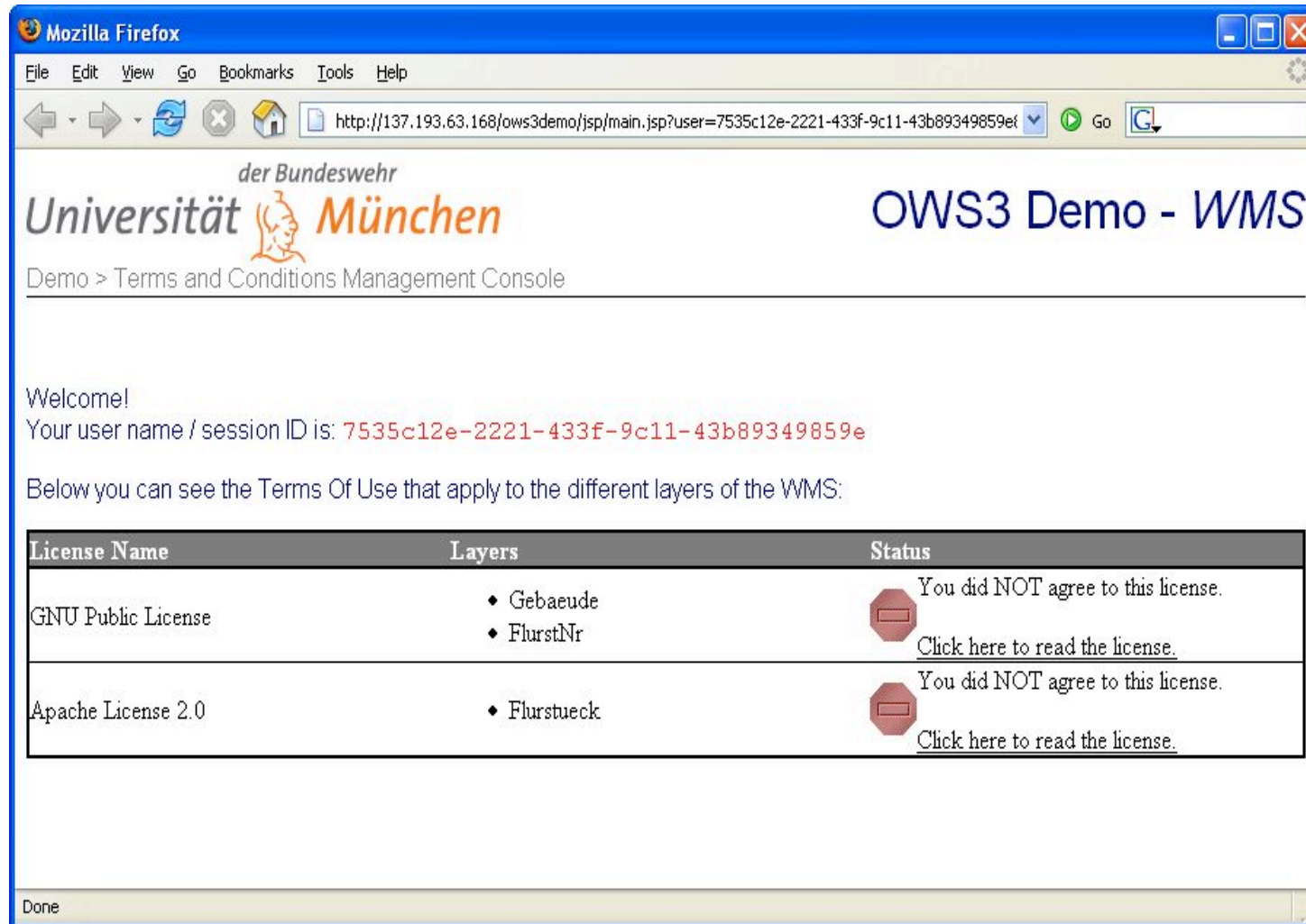
Welcome!
 Your user name / session ID is: **cristian.opincaru**

Below you can see the Terms Of Use that apply to the different layers of the WMS:

License Name	Layers	Status
GNU Public License	<ul style="list-style-type: none"> Gebaeude FlurstNr 	 You did NOT agree to this license. Click here to read the license.
Apache License 2.0	<ul style="list-style-type: none"> Flurstueck 	 You did NOT agree to this license. Click here to read the license.

Done

Anonymous User: License Management





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OWS3 Demo - WMS

Demo > Terms and Conditions Management Console

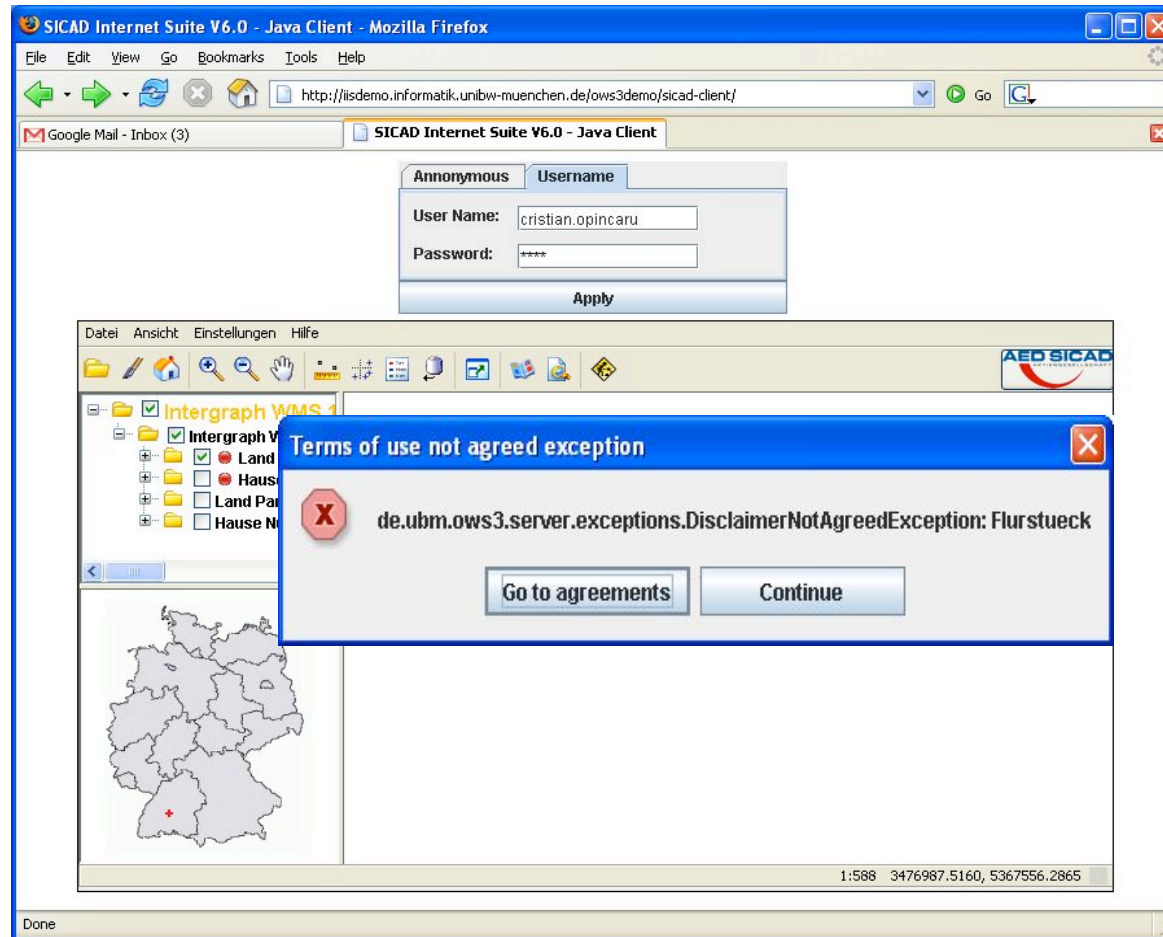
Welcome!
 Your user name / session ID is: 7535c12e-2221-433f-9c11-43b89349859e

Below you can see the Terms Of Use that apply to the different layers of the WMS:

License Name	Layers	Status
GNU Public License	<ul style="list-style-type: none"> Gebaeude FlurstNr 	 You did NOT agree to this license. Click here to read the license.
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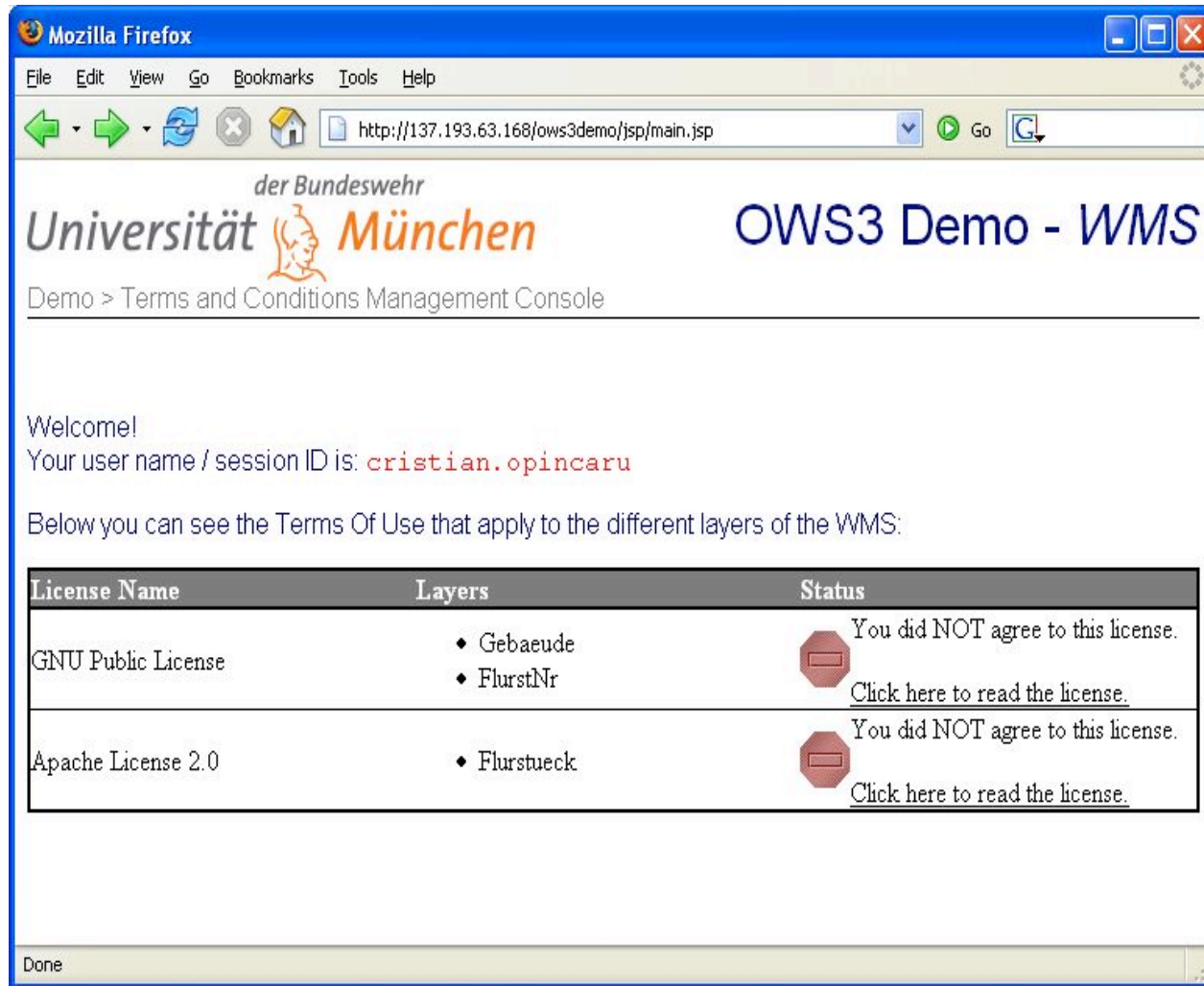
Done

GetMap Request (1)



Cristian OPINCARU, University of the German Armed Forces, Munich



License Agreement(1)



The screenshot shows a Mozilla Firefox browser window with the address bar containing `http://137.193.63.168/ows3demo/jsp/main.jsp`. The page header includes the logo for "der Bundeswehr Universität München" and the title "OWS3 Demo - WMS". Below the header, the text reads "Demo > Terms and Conditions Management Console".

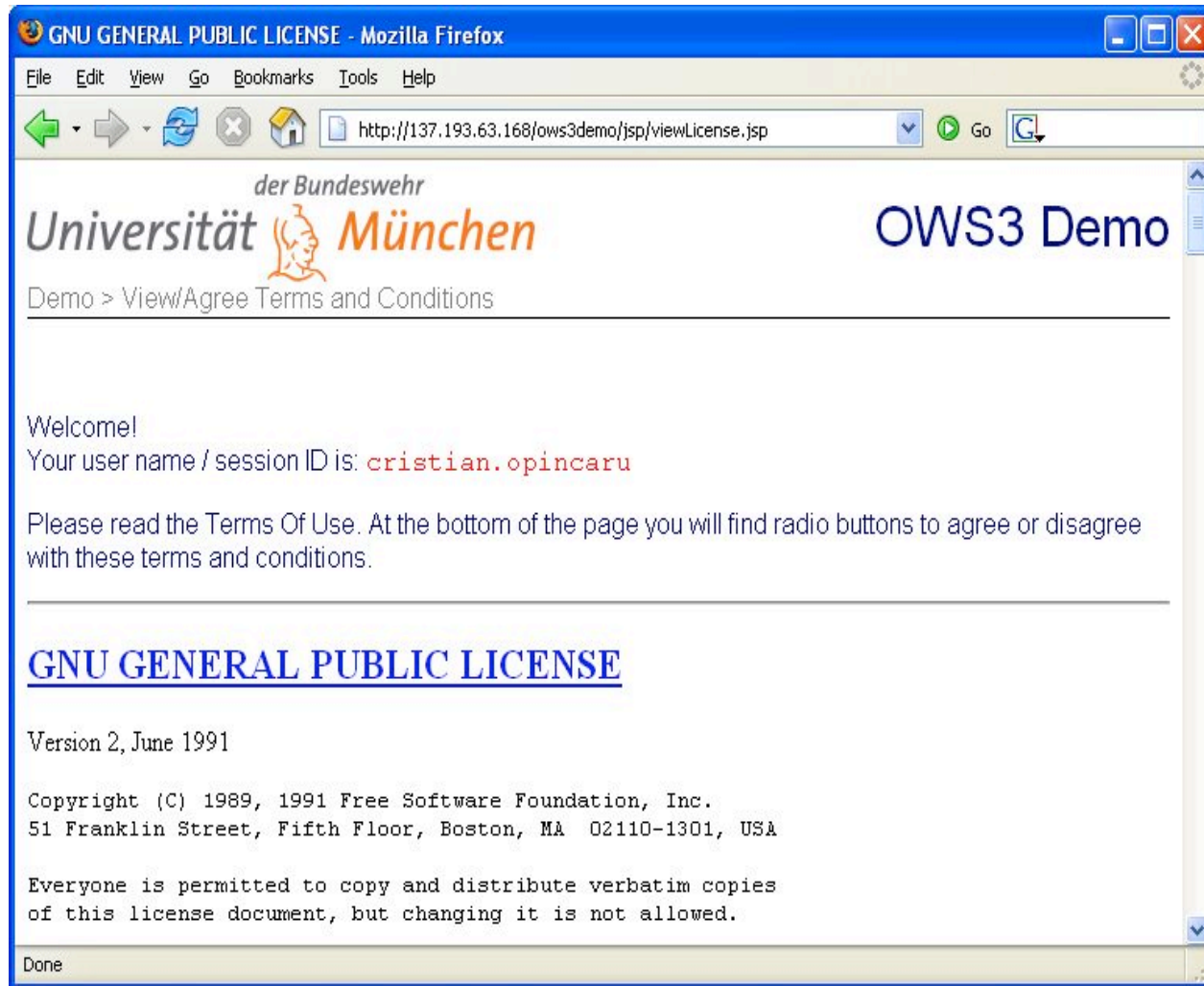
Welcome!
Your user name / session ID is: `cristian.opincaru`

Below you can see the Terms Of Use that apply to the different layers of the WMS:

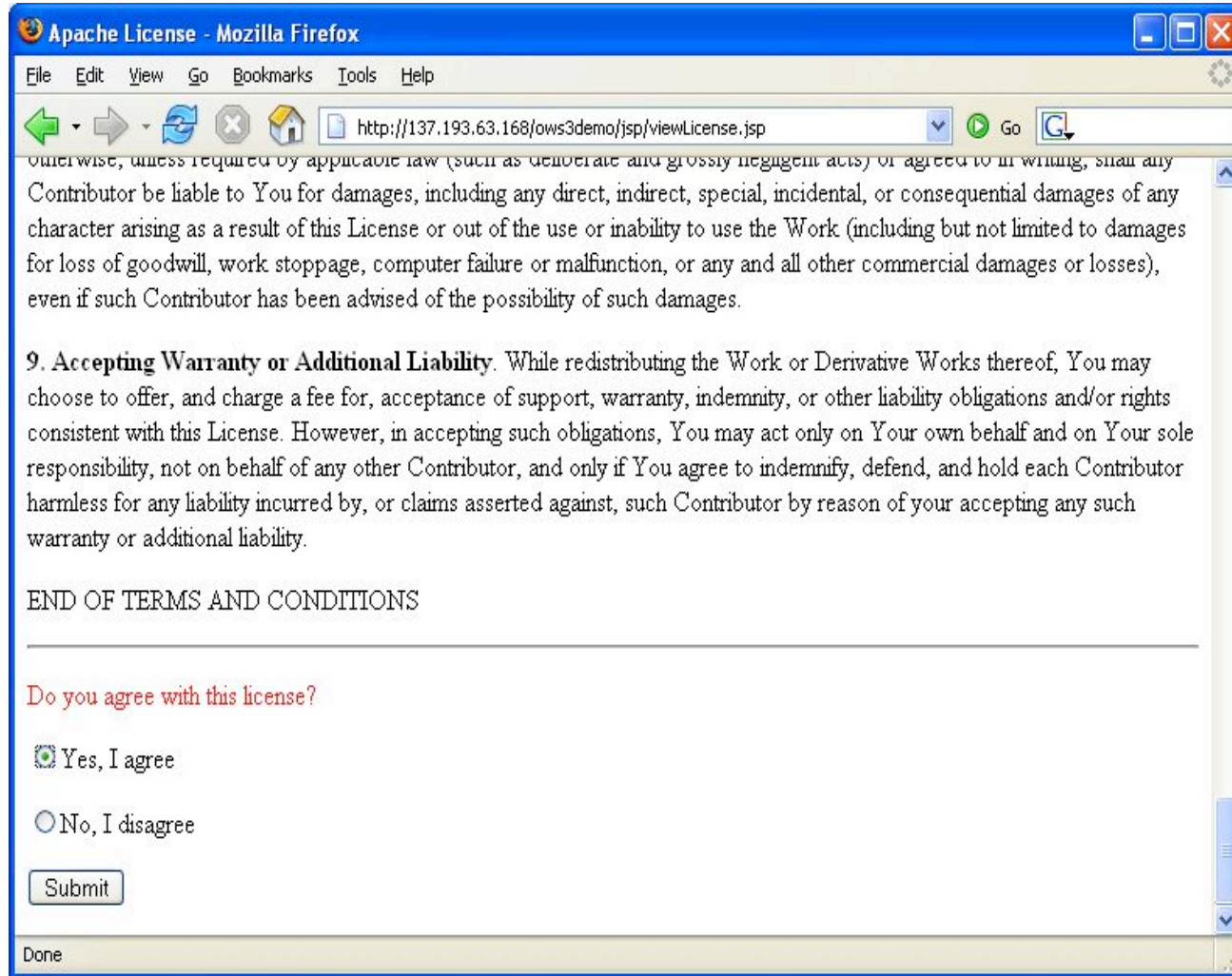
License Name	Layers	Status
GNU Public License	<ul style="list-style-type: none">• Gebaeude• FlurstNr	 You did NOT agree to this license. Click here to read the license.
Apache License 2.0	<ul style="list-style-type: none">• Flurstueck	 You did NOT agree to this license. Click here to read the license.

Done

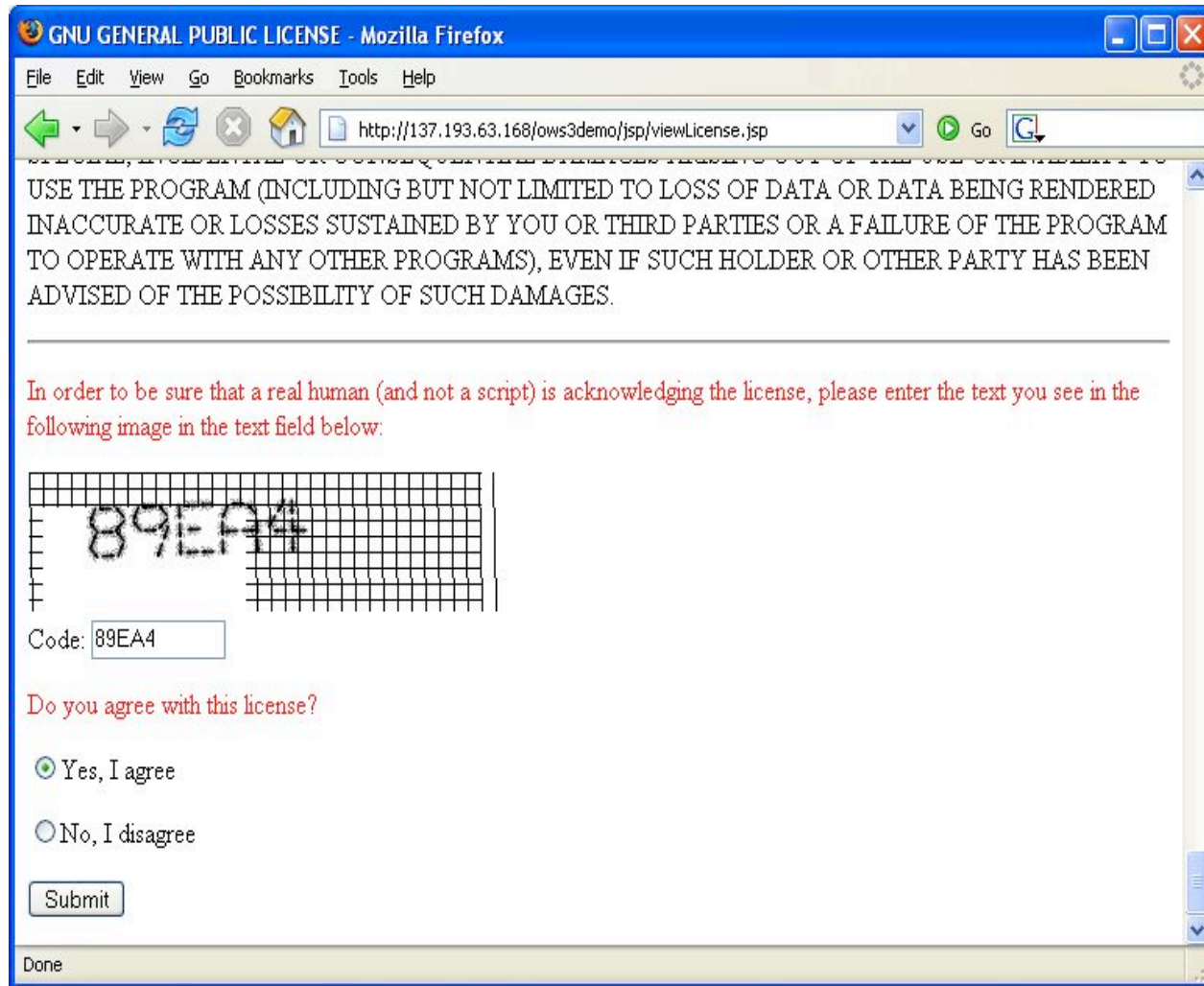
License Agreement(2)



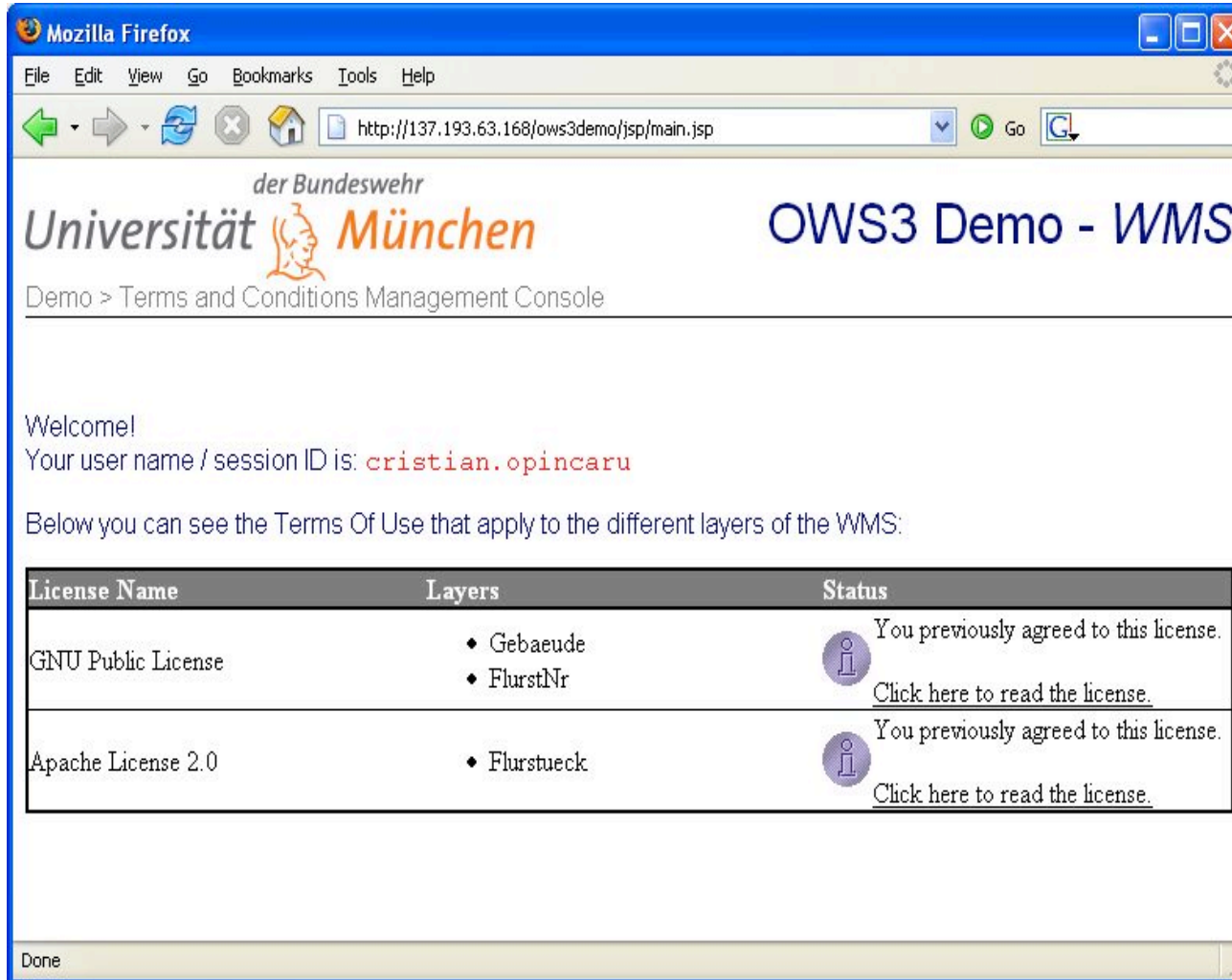
License Agreement(3)

A screenshot of a Mozilla Firefox browser window. The title bar reads "Apache License - Mozilla Firefox". The address bar shows the URL "http://137.193.63.168/ows3demo/jsp/viewLicense.jsp". The main content area displays the Apache License text, including a paragraph about liability and section 9, "Accepting Warranty or Additional Liability". Below the text, it says "END OF TERMS AND CONDITIONS" followed by a horizontal line. Underneath the line, there is a question "Do you agree with this license?" in red text. There are two radio button options: "Yes, I agree" (which is selected) and "No, I disagree". A "Submit" button is located below the radio buttons. The status bar at the bottom of the browser window shows "Done".

License Agreement(4)



License Agreement(5)





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OWS3 Demo - WMS

Demo > Terms and Conditions Management Console

Welcome!
 Your user name / session ID is: **cristian.opincaru**

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Apache License 2.0	<ul style="list-style-type: none"> Flurstueck 	 You previously agreed to this license. Click here to read the license.

Done



Thanks

