SURFmedia & SURFmedia Core
Platform, Architecture and Features

A full featured video platform for students, teachers and educational institutions to use in everyday educational environments

Alexander Blanc
Alexander.Blanc@surfnet.nl

Frans Ward
Frans.Ward@surfnet.nl
Agenda

About SURFnet
- Organization & Services

SURFmedia
- History
- Architecture
- Services & Features

SURFmedia Core
- Introduction
- Rest & Webservices
- Main Features

Questions
Dutch National Research and Educational Network

Connects over 180 educational and research institutions over IP (1 & 10 GB/s dark fiber lightpaths)

Connects internationally with Geant2, GLIF, GLORIAD

Approximately 1 million users (scientists, teachers and students)
Services

Network infrastructure
Services

Network infrastructure

Authentication & Authorization

Security

Group Communication
*Document Sharing, VideoConferencing, maillists*

Multimedia Distribution
*On demand & Live A/V*

Help & Support
Multimedia Distribution

1998 → Audio & Video hosting service

2003 → SURFnet Video Portal

SURFnet-TV Live Netcasting

2007 → Start of design new generation video services
    Existing platform ‘end of life’
    Demand for new features
    Integration of services
Media Management and Distribution Workshop - Zurich, January 29, 2009
SURFnet, Pioneering Network for Higher Education and Research

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Integration of services
SURFmedia & SURFmedia Core

GUI: end user interface

Business logic: interface offered functionality

Services: connects business logic with components

Components: implementation of the services

Data: stored data

User Interface

Business Process

Webservices

Components

Data
SURFmedia & SURFmedia Core

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SURFmedia
SURFmediaCore
SURFmedia

Features

Federated Authentication, SURFnet guest idp

1GB free storage

Advanced Authorization (domain and user based)

Tagging, reviewing, rating

Screenshots & preview videos

WindowsMedia, MP4 (H.264) & Flash

Streaming & download (+RSS = VodCast)

Integration on-demand & live services
Interface
Interface
Federated authentication
Web 2.0

Media Management and Distribution Workshop - Zurich, January 29, 2009
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Friday, January 30, 2009
Virtual Cutter
Personal environment
Facts and Figures

+/- 8.000 accounts
+/- 42.000 assets
+/- 500.000 requested streams per month

Content suppliers

[Images of logos for ACADEMIA and TFC]
Roadmap

Regular release management  
(now working on SURFmedia 2.0)

Adding functionality

Integration Group Communication Services

Integration Rich Media functionality

Adding live streaming workflow
Why use SURFmedia?

- Federation based authentication & authorization
- Focus on Research and Education
- Advanced search and find functionality
- High quality and multi format video
- Combination and integration with other end-user services
- Optimal ease of use
- Connecting via webservices (back-end)
SURFmedia Core
Architecture and Features

A webservice oriented platform for third party content delivery

A.k.a
VP-X and VP-Core
SURFmedia Core Overview

- SMC is a **Middleware Media Platform** which allows institutions to connect to with their own applications.

- SMC facilitates access to, and usage of (shared) **storage** capacity, **metadata** databases, **transcoding**- and **streaming** servers of SURFnet.

- SMC offers functionality for **searching**, **playing**, **uploading**, **transcoding**, as well as a fine granularity **media access control** system towards its users.
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SURFmedia Core Highlights

- **Asset Metadata Scheme** is expandable and customizable. Included is DC, QDC, LOM & CZP

- Automated **Transcoding** services using Open Source FFmpeg: for common formats (Flash / WMV / H.264)

- Index publishing / harvesting with **OAI/PMH**

- **Search services**: from simple text search to complex search queries using CQL level 2

- Automated **Stills** generation

- **Open Source** Licensing Using Open Source Toolset
SURFmedia Core Status

→ Today: Release 1.4

Current developments
- Preparing for Open Source (Real Soon Now™).
  http://www.vpcore.nl/
- Pilot with SURFnet customers

Future developments:
- Integration of Live Streaming
- Support for multiple storage solutions
- Rich Media support
SURFmedia Core Status

→ Today: Release 1.4

But still work in Progress!

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Architecture

- Service Oriented Architecture (SOA)
- REST on the outside, REST on the inside
- Scalability, Redundancy, High Availability
- Drupal based SMC Management Applications:
  ✓ SMC Administration Tool
  ✓ Provider Application
  ✓ White Label EGA
REST
Representational State Transfer

- All interactions (messages) with the SURFmedia Core platform are done with REST-calls.

- REST strictly refers to a collection of network architecture principles which outline how resources are defined and addressed.

- REST is a Client-server, **Stateless**, **Cacheable** and **Layered** protocol.

- Reduction of complexity, improvement of performance and scalability.

SOAP was yesterday. Today is REST
REST
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[GET] ../asset?limit=10

<response>
  <header>
    <item_count>10</item_count>
    <item_count_total>31930</item_count_total>
    <item_offset/>
    <request_process_time>1.6566</request_process_time>
    <request_query_count>15</request_query_count>
    <request_result>success</request_result>
    <request_result_description/>
    <request_result_id>601</request_result_id>
    <request_uri>[GET] /asset?limit=10</request_uri>
    <vpx_version>1.0.1-6</vpx_version>
  </header>
  <items>
    <item id="1">
      <asset_id>1</asset_id>
      <app_id>1</app_id>
      <provider_id/>
      <owner_id>av-user-zfontys</owner_id>
      <group_id>fontys</group_id>
      <videotimestamp>2004-09-10 19:59:26</videotimestamp>
      ........
  </items>

Webservices

Webservices, over 100, divided in services for:

- Play Video (PlayProxy HTML wrapper)
- Authentication (DBUS for EUA)
- Authorization (Domain, REALM, Group or mixed)
- Upload (PUT, POST, FTP)
- Transcoding
- Media Management
- Search: Contextual Query Language (CQL) Level 2
- OAI/PMH: DC, QDC, LOM, CZP
- Logging and Statistics
SURFmedia Core

Features

- Flexible Metadata Element Sets
- Search Services
- Access Management
- Streaming, Transcoding & Stills
- Upload Services
Flexible Metadata Element Sets

Metadata Element Sets Provided:
• Standard Dublin Core (DC)
• Qualified Dublin Core (QDC)
• Learning Object Metadata (LOM)
• ‘Content Zoek Profiel’ (CZP)

Plus support for own (custom) Metadata Element Sets

CRUD REST-calls on all objects possible. i.e.:
• POST /asset/create?user=John
• GET /asset/id
• POST /asset/id/update?title=”New Title”
• POST /collection/delete?user=Asset
Search Services

Simple Search:
- GET /asset?owner=John
- GET /asset?collection=7

Advanced Search using CQL level 2:
- “(dc.title = foo OR qdc.title_alternative = bar)”
- “NOT (dc.title = foo AND dc.title = bar)”
- “^cat ^dog tree^”

http://www.loc.gov/standards/sru/specs/cql.html
Access Management

Default: Mediafile is accessible for everyone.
Option to set access restrictions for playing media on the following properties:

- **Domain**, i.e only accessible from surfnet.nl
- **Domain Groups**, i.e.: Academia group (all universities)
- **Realm**, i.e. Federated Authentication using SURFfederation infrastructure.
- **Realm Groups**, i.e.: '@teleblick' realm
- **User**: only give rights to user=john
- **User Groups**, i.e.: only give rights to users of group "class-24".

Combinations of the above are possible!
De end-user portal designer decides how and what to use.
Streaming, Transcoding & Stills

- Streaming servers: Flash, MPEG4 (H.264), WMV
- All transcoding handled by FFmpeg, expanded with VC-1 toolset (WMV-9)
- Transcoding settings stored in Profiles
- Auto Hinting for MPEG4
- Automatic Stills Extraction
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Upload Services

- POST upload using End User Application (limited to 2 GB)
- POST upload directly to SURFmedia Core Platform using ticket system (limited to 2 GB)
- HTTP PUT upload using End User Application (i.e. Java Upload Applet)
- FTP batch upload ("no" limits) including metadata in XML file
- Quota per End User Application
- Support for Master / Slave content sharing (Provider Application)
Questions?