European videoconferencing and streaming initiatives

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SURFnet

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  - activities in videoconferencing and streaming
- European videoconferencing service
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Abstract

- Throughout Europe both national research networks and institutes for higher education are developing or running advanced videoconferencing and audio- and videostreaming services. In order for these organisations to share their experience and to promote cooperation amongst them, TERENA (the Trans-European Research and Education Networking Association) set up the taskforce TF-STREAM.
- This presentation will outline TF-STREAM past and present activities, among which piloting the use of pan-European video conferencing and media streaming, and developing and disseminating best practice guidelines. Furthermore, other ongoing initiatives both in Europe, the USA (Internet2) and elsewhere will be outlined. As an example some of SURFnet's videoconferencing and videostreaming projects will be discussed.

TF-STREAM Intro

- TERENA (European NRN society) Task Force on Realtime Multimedia Applications (with emphasis on network video)
- 1st meeting: dec 10, 1999 (Official: jan 11, 2000)
  - participants from Finland, Norway, Poland, Germany, UK, Netherlands, Belgium, Spain, Greece, TERENA
  - followed on BoF at TNNC99 (Lund)
- Convenor/tf chair: Egon Verharen (SURFnet)
- Secretariat: Valentino Cavalli (TERENA)
  - http://www.terena.nl/task-forces/tf-stream/
  - mailinglists: streaming@terena.nl
- counterpart of I2DV SC

TF-STREAM Charter

- 1 year, extended with 6 months (till july 2001) !
- Objectives
  - to provide a forum for exchanging experiences and knowledge
  - to determine the suitability of audio/video streaming and conferencing for the research community in Europe
  - to identify and promote sources of audio/video content
  - to coordinate diverse real time multimedia initiatives
  - to assist and validate high-bandwidth pilot projects.
    - E.g. EC-funded project on scalable video conf.
- Open to any individual or representative of an organisation that can offer appropriate expertise, manpower, equipment or services.

TF-STREAM Deliverables

- A: Info site with tools, presentations and projects in the participating networks
- B: Glossary of terms
- C: European Video Conferences
- D: netw.infrastruct for distributing live streaming events across Europe
- # E: Policy Document for publishing AV material in the public domain -copyright issues
- F: Web repository and index of publicly available AV material
- G: Recommendation on best practice for generation of *metadata* in audio/video content creation
- # H: Best practice guidelines for streaming experiments
- I: Clearing house of (multicast) monitoring tools
- # J: Diffserv experiment
- # K: security
- L: workshops: (e.g. HQ streaming & VC, 26 june 2001, Edinburgh)
- ? M: feasibility study of a European Video Conferencing Service

European Videoconferencing service

- Why, what, issues, who, where
- What next
- Numbering plan

Why?

- Collaboration does not know boundaries
- international video call should be as easy as local telephone call/email
- support for large multiparty conferences
  - audio, video, data

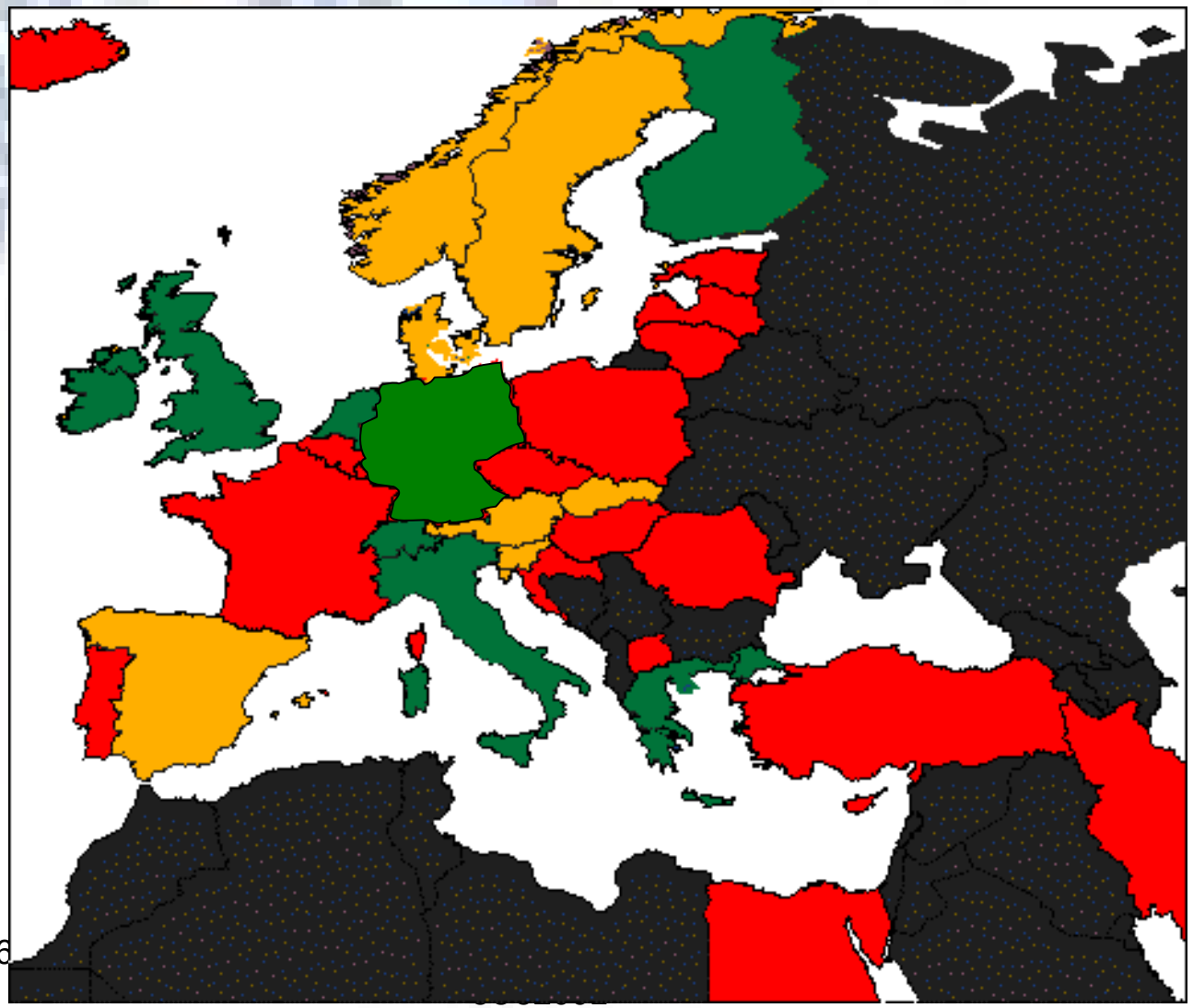
What?

- Support for large-scale, distributed collaboration for research and education community
- H.323 & mbone int.l infrastructure
- Shared resources
  - MCUs, gatekeepers, reflectors
- gateways to other technologies
  - MPEG-x over IP, H.320 (ISDN), ATM, Access Grid, DV, HDTV, ...

Issues?

- numberplan
- directory services
- (semi)automatic scheduling
- training & support
- joined R & D
  - middleware, network issues (QoS)
- VoIP?

Who?



Where?

- TBD
- Dante ??
- Centrally at one TERENA member ??
  - by Call for Tender
- Distributed amongst partners ??

Next?

- Project or workgroup formation
  - spin off of TF-STREAM
- plan development
  - subsidies/sponsors
  - timescale
  - requirements for participation
  - operations & mgt

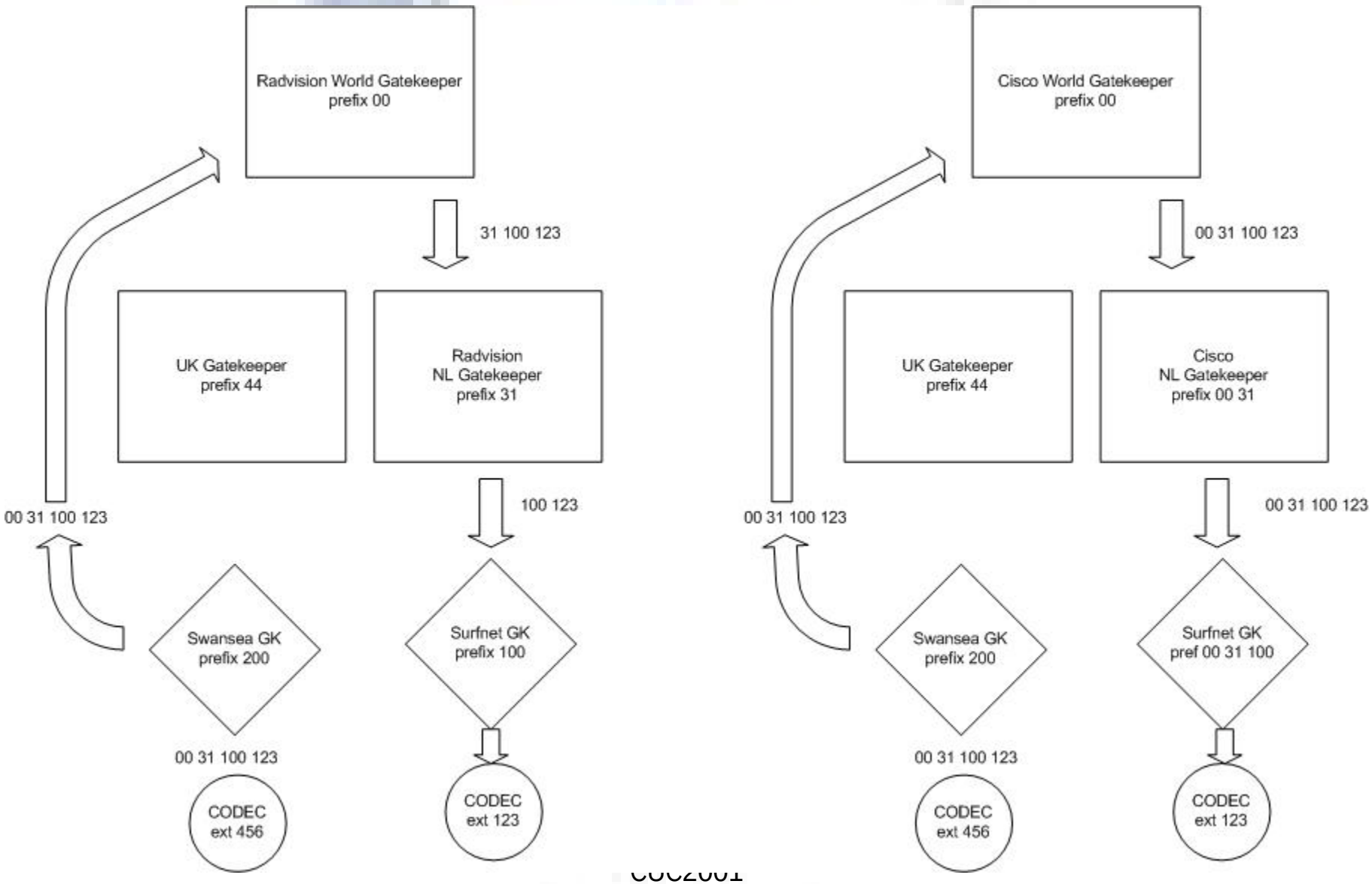
Numbering plan

- Principles:
  - International
  - Implementable now (present gatekeeper technology)
  - Compatible with existing network (ViDeNet)
- Proposal (by UKERNA, HEAnet, SURFnet)
  - http://www.surfnet.nl/innovatie/surfworks/conferencing/numberplan/
  - ViDeNet support
- Numeric

  [<exit zone>]<world gk prefix><cc prefix><orgprefix><client no>[<suffix>]
  00 ITU cc 0+no. ???
- Alphanumeric

  <userID>@<fully qualified domain name>

Numbering plan implementation



New and only ?

- No
- e.g. Internet2: The Commons; ViDeNet
- ‘borrow’ from their plans
  - European adaptation
  - dependent on outcome of what & where discussion
- Others: Canarie, AARnet, APAN

ViDeNet Overview

- ViDeNet
  is an international virtual network, providing video teleconferencing, telephone and collaboration services over the Internet, Internet2 and related advanced networks.

- ViDeNet offers
  - Research environment
  - Connected community (listserv, conferences, etc.)
  - Dialing directory, web-based registration
  - Dial Plan
  - Zone resources
  - Network analysis (Scout)

Configuring Your Client

- Gatekeeper Address: Enter the Gatekeeper IP address (this can be found under the specific information for your zone on the ViDeNet Zone List) for your zone, found on the “ViDeNet Zone List” page.
- Workstation Alias: Enter the 'Alias' information from the ViDeNet Dialing Directory.
- Workstation Extension: Enter the 'Extension' information from the ViDeNet Dialing Directory.

Best Practices - VC Etiquette

- Video conferencing does require the development of some basic techniques.
- These techniques are often required to overcome technical limitations.

Planning a Meeting

- **Have an agenda ready ahead of time.** H.323 conferences work best when participants have specific objectives to reach, such as agreeing on details of a shared document.
- **Appoint a chair person to run the meeting.** Pauses in H.323 conferences can seem more pronounced than in face-to-face meetings. A chair person helps everyone stick with the agenda.
- **Appoint a scribe when sharing documents.** Though simultaneous cursor control can sometimes be a useful feature, using it too often can be as confusing as having several people writing on the blackboard at the same time during a face to face meeting.
- **Distribute shared documents to each site when finished editing.** Be sure that all participants receive completed documents.

Setting Up

- **Reduce environmental noise.** Fans, distracting conversations, noise from open windows, etc., can make it hard for you to hear and for others to hear you.
- **Adjust the lighting.** The wall behind you should be darker than your face. If it’s lighter, you'll be "back-lit" and your face will be in shadow.
- **Set the color levels in your camera settings.** Sometimes the default settings can produce a washed out, flat image. You can change this by using the software that comes with your client to make adjustments to the brightness, hue, etc.

During the Conference

- When using a speakerphone, sit close to it and remind other participants to do so as well. This will help everyone hear each other better.
- Position the video window of the other party near your camera. This simulates eye-contact, which helps participants feel engaged with each other.
- When using a handset or headset, avoid breathing to close to the microphone, brushing your face, etc.
- If you need to sneeze or speak to someone not in the conference, mute your microphone.

- See “How to behave” by Bob Dixon http://www.mega-net.net/megaconference/etiquette.htm

Troubleshooting

- Always be sure that your client is actually registering with the correct gatekeeper. Failure to do this will make most types of dialing impossible.
- Restarting client software or the machine itself may be necessary.

The Internet2 Commons

- A large-scale, Distributed Collaborative Environment for the Research and Education Community
- Started by Internet2
- but: international service
  - international aspects: TF-STREAM chair
- based on
  - ViDeNet (H.323)
  - VRVS (scheduling)
  - mbone tools (multicast)
  - Access grid nodes (multicast/MPEG)

Umbrella Over Potentially Many Services

Video conferencing

Instant messaging

Applications and data sharing

Peer-to-peer

Whatever the future brings …

Voice over IP

Collaboratories

The Commons

- Vision:
  - enabling one-to-one, one-to-group, group-to-group collaboration
  - supporting personal communications, meetings, conferences, and teaching and learning
  - for Internet2 members and their international counterparts

- Phase I
  - A “best effort” service
  - Site coordinator point-of-contact
  - Use email for support
  - Distributed pools of equipment (e.g., MCUs)
  - Training, workshops, tutorials, docs, ...
- Phase II
  - Operational production services
  - Measurement infrastructure
  - A financially sustainable service

The Internet2 Commons

- An Internet2 Project, much like Abilene
- Initially, a H.323 service built on ViDeNet architecture
- Research & development efforts (such as gateway development) to support other videoconferencing and collaborative technologies
- Provision of MCUs by OSU, OARnet, and 2nd level support by CIC- OARnet
- VRVS gateway services

- Special attention paid to
  - Outreach & communications
  - Workshop/training

The Internet2 Commons

- Requirements for Participation
  - Member organization to fill out Web-based form
  - If organization has gatekeeper, fill out ViDeNet form
  - Follow relevant standards
  - Provide any performance-critical network upgrades
  - Designate a site coordinator
- Site Coordinator Duties
  - Be the point of contact to work with campus users
  - Provide training to local users using Internet2 Commons provided materials
  - Participate in Coordinators LISTSERV to provide mutual assistance and problem solving with other member coordinators
  - Provide local directory of users
  - Arrange for local users to use shared resources
  - Certify local users as to equipment acceptability for use of shared resources

The Internet2 Commons

- Potential Areas for Research and Development
  - Networking
    - QoS for videoconferencing applications
    - Network analysis and simulation tools
    - High-reliability architectures
    - Multicast address space management
  - Video Teleconferencing
    - Gateway development
    - SIP
    - Integration of alternative media streams (e.g. MPEG4 & HDTV)
    - Data collaboration tools
    - Automated scheduling
  - Directory Services
    - Globally-scaleable dial plan evolution
    - Inter-gatekeeper communication
    - Security and authentication
    - Creation of video teleconferencing schema extensions to Eduperson

A Problem to Solve

- As a community we use several, mostly incompatible, video conferencing technologies
  - H.323
  - Access Grid
  - VRVS (Virtual Room Videoconferencing System)
  - MPEG1 & 2
  - DV over Firewire
  - HDTV

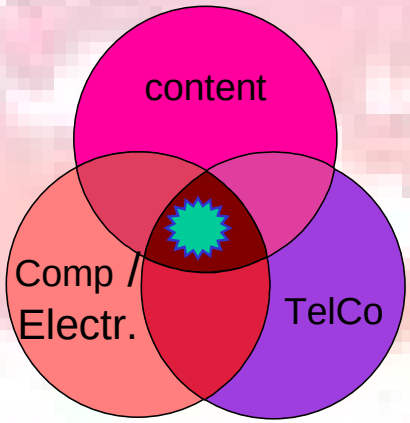
SURFnet Streaming Services and Projects

- Snelnet
- SNOB
- NAA
- AV Hosting service
- VIP
- SURFnet Video Portal
- Encoding at the web

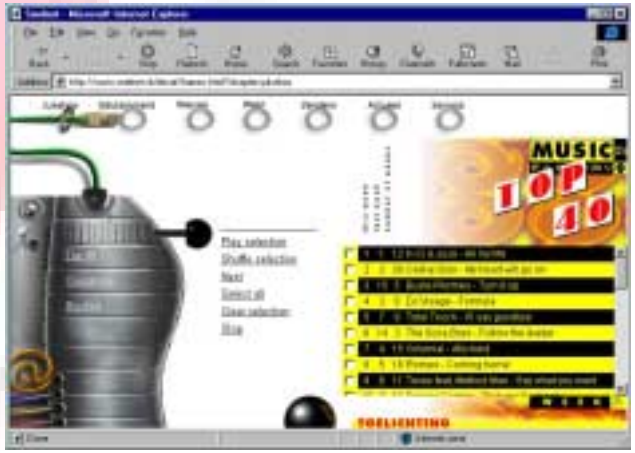
Snelnet

- ADSL pilot, 1000 participants in Amsterdam
- KPN
  - ADSL
- NOB-Interactive
  - video services
- SURFnet
  - video distribution & Internet

- MPEG 1
- live & on demand
- research: multicast



Example of services:
Delay TV
NOS-Journaal, Ned.1,2,3
Music clips (TMF)
Education & information
    Teleac, PR City of A'dam
Televisie distributie (multicast)
    Aminal Planet
Film trailers
Archive applications
    Polygoon, NAA
Events
    Uitmarkt, WK



Streaming services

- SNOB (SURFnet - NOB)
  - presenting Snelnet content to SURFnet customers (univ's & research institutes)
- A/V Hosting service
  - Streaming server for end-users
  - hosting service
  - WM, Real G2 servers
  - mainly for ISDN to LAN (300 kbs) speed
  - but supports MPEG1
  - live streaming

- NAA in Academia

  video material from Dutch Audiovisual Archive to media academies & journalism schools

Streaming projects

- SURFnet Video Portal
  - portal
    - extensive search based on metadata
  - extension of SNOB, NAA, A/V hosting (audio (MP3))
  - high end MPEG1 and MPEG2 streaming platform and asset mgt system
  - on demand
- SURFnet-TV
  - live and scheduled
  - experimenting with different systems
  - working with content providers
  - link to ResearchChannel

Streaming projects

- Video-over-IP project (1999-2001)
  - distributed content generation, management and distribution platform for high quality video
  - IBM, NOB-I, Telematics Institute, TNO, SURFnet
  - MPEG2 (MPEG4, MPEG7)
  - pilots in education and corporate intranet
  - metadata generation tools, playlists
  - >2000 man days

- Encode from the web
  - both to and from low end (popular) Internet streaming formats (WM, QT, Real) (AVI, DV) and high end (MPEG*)

Metadata

- Zvonimir Zelenika
  - own metadata model
  - XML as description language
  - about assets only (?)
- SURFnet's activities
  - VIP
    - metadata Framework deliverable
      - standards (MPEG-7, qualified Dublin Core), models for scenarios, generic model
    - Metadata in VIP deliverable
      - same as 1, targeted at educational case, mapping
      - http://www.surfnet.nl/innovatie/surfworks/metadata/MMMetadataInventarisatie.doc
  - SURFnet Video Portal
      - framework, mapping, program
      - http://www.surfnet.nl/innovatie/surfworks/metadata/SVP/

More information

- Contact
  - Egon Verharen <egon.verharen@surfnet.nl>
    (former) TF-STREAM chair
  - Valentino Cavalli <cavalli@terena.nl>
    TF-STREAM secretary

  - TF-STREAM website
    http://www.terena.nl/task-forces/tf-stream/
  - mailinglist
    <streaming@terena.nl>

URLs

- Numberplan
  http://www.surfnet.nl/innovatie/surfworks/conferencing/numberplan/
- Megaconference III
  http://www.mega-net.net/megaconference/
- ViDeNet
  http://www.vide.net/vc/videnet/
- I2 Commons
  http://www.internet2.edu/html/stage/commons.html
- VRVS
  http://www.vrvs.org/
- Access grid nodes
  http://www-fp.mcs.anl.gov/fl/accessgrid/
- SURFnet streaming services
  http://stream.surfnet.nl/ (in Dutch)
  http://snob.surfnet.nl/ (protected)
- SURFnet innovation projects
  http://www.surfnet.nl/en/innovation/surfworks/
  http://www.surfnet.nl/en/innovation/surfworks/showcase/
  http://www.surfnet-tv.nl/