

 SURF NET SURFnet Best Practices

Best Practice

CineGrid project winner of EYR2

State-of-the-art video quality via SURFnet lightpaths

SURFnet and its e-Science partners organise the annual Enlighten Your Research competition. Held for the second time in 2009, this international lightpath competition produced a series of interesting proposals, representing a whole range of scientific disciplines. From these, the jury selected three winners, including the CineGrid research project.

Super-sharp video images

As head of technology at the Waag Society, Tom Demeyer is closely involved in the CineGrid project. CineGrid makes it possible to produce and distribute super-resolution digital films – known as 4K – with extremely high audio quality. Using dynamic lightpaths enables Mr Demeyer to link up the whole cinema chain: producer, cinema, and data storage facilities. Lightpaths are also used by the relevant organisations in their research on the development, transport, production, and storage of this extremely high-quality audiovisual material.

Essential contribution

With the Enlighten Your Research competition, SURFnet challenges researchers to speed up their research by utilising lightpaths and additional infrastructure. This enables them to become familiar with this technology and can give a boost to their research. The researchers taking part in this project submitted a pioneering proposal that makes innovative use of dynamic lightpaths, which make an essential contribution to the project.

CineGrid: super-sharp video images

CineGrid makes it possible to produce, distribute, and display video and audio with unprecedented quality. Tom Demeyer is enthusiastic about the prospects opened up by this technology: "This 4K technology makes images at least four times sharper than HDTV, and the sound is non-compressed and absolutely clear. It turns watching films, playing games, and videoconferencing into a really intense experience."

"CineGrid brings together technology, science, art, and education in a unique manner. SURFnet's dynamic lightpaths create the necessary physical connection."

Tom Demeyer (Waag Society, Amsterdam)

In its infancy

Tom Demeyer explains that 4K video is not yet available for the general public. "The technology is still in its infancy," he says. "4K is still only being used commercially on a limited scale. The Waag Society in Amsterdam has had the equipment needed to produce and display 4K video since June this year. We are one of the few organisations where you can experience 4K images in all their glory. Dynamic lightpaths enable us to link together the whole chain on demand: the makers at the Film Academy, Pakhuis de Zwijger - the "Platform for Creation and Innovation" - where the result is shown, short-term and long-term storage at the University of Amsterdam, and connections to other countries via the SARA computer centre."

Real data

Together with SURFnet, the SARA university computer centre, and the University of Amsterdam, the Waag Society is also carrying out specialised research. Together, the organisations involved cover the whole chain, from the creative process itself through to distribution, screening, and long-term storage. The aim of the research is to lower the threshold to using extremely high resolution video. "It's also very interesting for university researchers," says Tom Demeyer. "They can get down to work with real data rather than just utilising static tests with fake data. One condition for the research is that the data should be quickly available at various different physical locations. SURFnet's dynamic lightpaths are extremely suitable for that purpose."

Global network

CineGrid is collaborating on interactive film productions on a global scale. "CineGrid Amsterdam is linked up to a global network for the development of high-quality digital content. At the moment, film files are still stored on hard disks and then flown to another continent for processing. Here too, lightpaths running via the international GLIFO network are a solution."

Some facts about SURFnet lightpaths

- A lightpath is a direct data connection via optical fibre, with a guaranteed bandwidth and only a slight delay.
- Lightpaths provide a safe and superfast connection for data traffic because they are entirely separate from the Internet.
- This setup means that users are not hampered by other data traffic, and do not themselves hamper others, for example by utilising the whole of the available bandwidth.
- A fixed lightpath is a permanent connection.
- A dynamic lightpath is a flexible connection set up by the user himself or by a research application. This is a particularly valuable solution in situations when such a data connection is not required all the time, or when a number of different destinations need to be connected one after the other.

What are the benefits?

- A lightpath can be connected to an organisation's own network;
- It can be created in a relatively short time (just a few weeks);
- High capacity is guaranteed;
- It provides a stable connection with high availability;
- It involves only a slight network delay (latency);
- It is a secure solution.

All about lightpaths:

- **SURFnet lightpaths:**
 - > <http://www.surfnet.nl/surflichtpaden>
- **Enlighten your research:**
 - > http://www.surfnet.nl/Documents/SURF03_2009_EYR.pdf
 - > <http://www.surfnet.nl/eyr>
- **CineGrid:**
 - > <http://CineGrid.nl/> (CineGrid Amsterdam)
 - > <http://www.CineGrid.org/> (CineGrid worldwide)
 - > <http://www.surfnet.nl/nl/Samenwerkingsomgeving/Cinegrid> (CineGrid on SURFnet.nl)
- **Waag Society:**
 - > <http://www.waag.org/>

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