



**Cees de Laat / University of Amsterdam**

**Frank Kresin / Waag Society**

**Walter van Dijk / SURFnet**

**for the CineGrid Amsterdam Collaboration**

# CineGrid Mission

To build an interdisciplinary community that is focused on the research, development, and demonstration of networked collaborative tools to enable the production, use and exchange of very-high-quality digital media over photonic networks.

<http://www.cinegrid.org/>



# Vision

The CineGrid Amsterdam project focuses to build "an entry-level 4k" and beyond distributed facility. This facility is based on grid and cloud components and specialized cinematic domain specific equipment connected by optical photonic networks providing the required deterministic characteristics.

To support flexible project based modus operandi, the components will be turned into open standards based virtualized resources, **LegoBlocks**, that can be dynamically combined to gather, process, (re)code, annotate, store and stream cinematic data at the required performance level eventually for real time viewing.

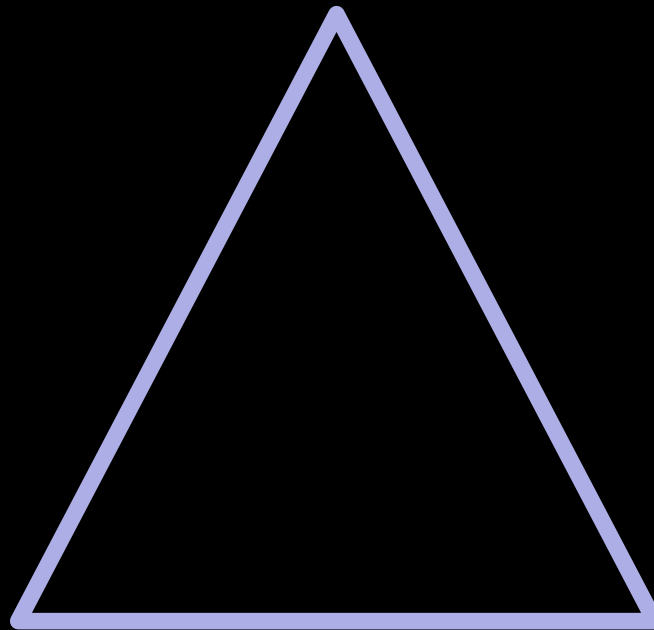
*This architecture has an immediate advantage: the SME's can concentrate on what they do best: creating content.*



# Cinegrid Amsterdam Partners

- Film and TV Academy
- SARA
- SURFnet
- University of Amsterdam
- Waag Society
- Blender
- DELL
- Holland Festival
- Media Guild
- Sandberg Institute
- TNO

**Blender**  
**Film and TV Academy**  
**Holland Festival**  
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**SARA**  
**SURFnet**  
**University of  
Amsterdam**

## **GOALS FOR CINEGRID AMSTERDAM**

- Research, development, production, and showing of high quality digital media
- Exchange of knowledge, training of media professionals
- Develop business models, formats, partnerships
- Spin-off: new services, companies, talent, economic stimulus

# KINDS OF CONTENT

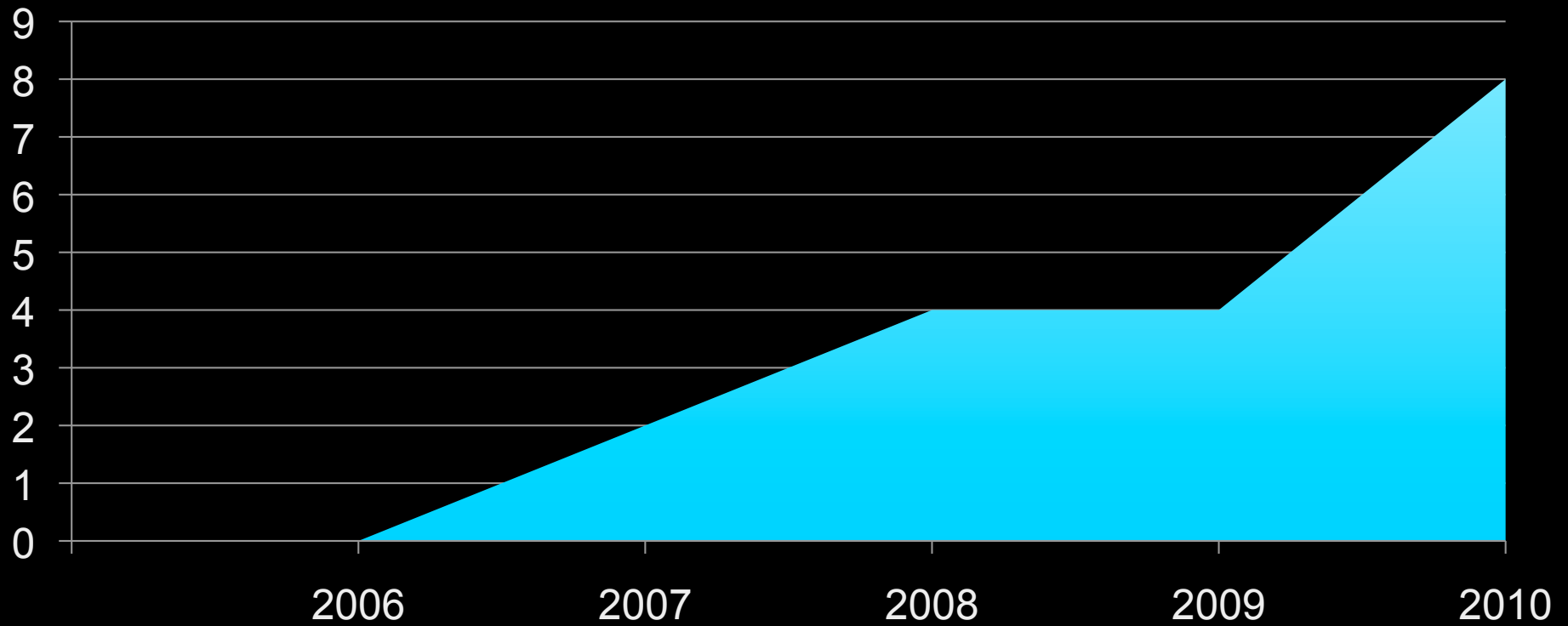
- Feature Films (live action / animation)
- Educational Usage
- Scientific Visualization
- Extremely HQ Videoconferencing
- Reproduction of Performances
- Gaming
- Television





# TIMELINE

## Number of Activities



IDEATE	WRITE	FINANCE	FINANCE	PREPARE
2006	2007	2008	2009	2010

## SO FAR

Holland Festival'07

BeamLab

PICNIC'08

Mediapark Jaarcongres'08

SURFnet GigaPort

ICT Delta'09

Holland Animation Film Festival

Workshop 4K

Films, like Red End



BEANLAB

**Era La Notte  
Holland Festival 2007**





**Jaap Drupsteen**



**Handelingen  
Maarten de Heer**



**Red End**  
**Robin Noorda & Bethany de Forest**



**STEREO 4K Recording  
Viktoria Mullova  
Holland Festival 2010**





# WORKPACKAGES

## 1. Center of Excellence

- UvA, SURFnet, SARA, Waag Society

## 2. Research

- UvA, SURFnet, SARA

## 3. Content

- Blender, Holland Festival, Waag Society

## 4. Education & Outreach

- Dutch Film- and TV Academy, Sandberg Institute, SURFnet

## 5. Business Cases

- TNO, Media Guild

## 6. Dissemination

- All partners

# Workpackages





Needs sensitivity for:

- user requirements (must have, nice to have)
- specific professional languages and cultures
- complementary experiences and competencies
- various quality perceptions
- different funding needs
- timing aspects (deadlines...)
- tolerance for technical imperfections
- hierarchies & stardom

**HANDS-ON  
COLLABORATION**



BUSINESS PRODUCTIE RESEARCH VERTONING

PRODUCTIE / CINEGRID / 07/12/2010

# Sintel in 4K en 3D?



Sinds oktober 2010 is Blender bezig om de laatste animatiefilm Sintel om te zetten naar 4K. Er zijn al wat voorbeelden van beelden in de 4K-resolutie te downloaden bij Blender. Wanneer de 4K productie zijn première zal beleven is nog niet helemaal duidelijk. Ton Roosendaal oppert op de blog zelfs mogelijkheid er 4K in 3D [...]

Share / Save

lees meer ->

## CINEGRID AGENDA

### CINEGRID ON TWITTER

RT @waaq: Van de blog: CineGrid 2010: the content is the message - <http://bit.ly/gTCQjy> #cinegrid #4k

#cinegrid workshop day 2 - lots of #3D, medical applications (remote surgery - <http://bit.ly/g7QQRo>), sensor networks (ocean observation)

Stunning pres. by Dona Cox: constructing Visaphors, embodied immersive experiences. Also at Tedx - [http://youtu.be/YXIA\\_jV4...](http://youtu.be/YXIA_jV4...) #cinegrid

Behind the scenes of Hubble 3D IMAX movie: text: <http://bit.ly/h5U5Qa> & video: <http://youtu.be/q118b3j>-... #cinegrid Makes you feel small..

Donna Cox: We could have been remotely collaborating for a while.

Tags

3D animatie festival Blender calit2 CERN Cookbook data GLIF holland network international mediapark jaarcongres onderwijs open source san diego SARA stereo SuperComputing surfnat transfer workshop Recently Active Member Avatars



# Outreach to higher education

- Prerequisite: fiber to institutions and international connections (bandwidth = oxygen)
- Workshops (starter's kit)
- Educational challenge
- Best practices & 4K Cookbook



## Prerequisite: fiber

11.000+ km dark fiber,  
into the institutions

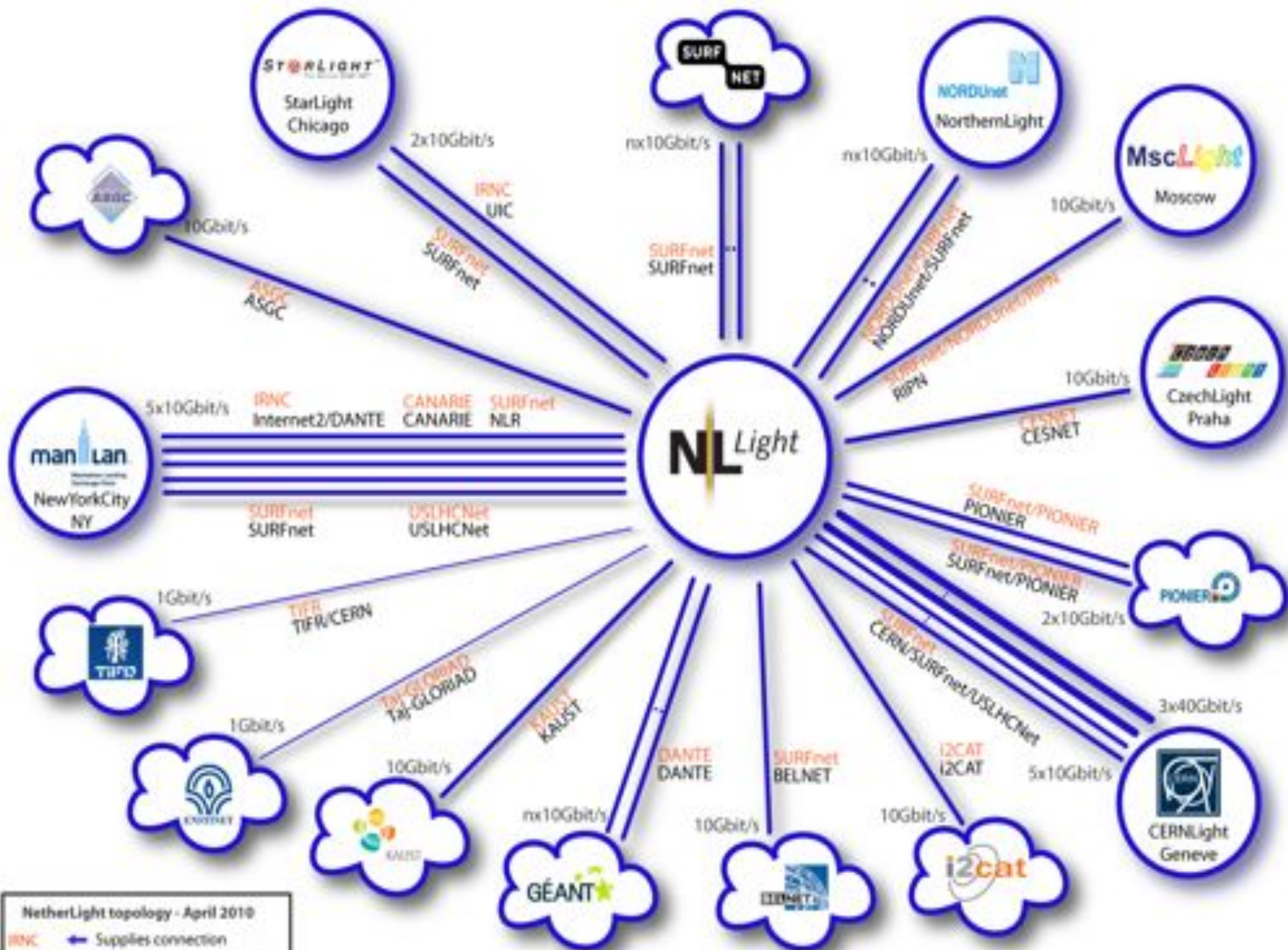
## Photonics & NGE

### Network services:

- IPv4 and IPv6
- Fixed & dynamic lightpaths:  
deterministic characteristics  
(latency, jitter)

# NetherLight, hub to the rest of the World





NetherLight topology - April 2010  
 IRiNC → Supplies connection  
 SURFnet → Controls usage of connection



# Production set ('starter's kit')



# EDUCATIONAL CHALLENGE

- 2010 4K Contest by SURFnet and Waag Society
- Goals: first educational applications of 4K content
- 5 winners
- Prize:
  - access to 4K production set
  - technical & artistic assistance
  - 5K in cash for out-of-pocket cost
- Target group: Higher Education Audiovisual Centers

# WINNERS

- Larger than Live: Research into the impact of **high image quality** on viewers
- Enhancing the **safety** of bike lanes, using 4K video of people navigating an unknown terrain
- Teaching how to use **Geographic Information System (GIS)** data, using the high resolution of the 4K screen
- Classroom based training with **4K-microscopy** imagery, using the 4K screen to make both details and larger context of **biological** preparations visible
- Research into resolution, perception and information overload, by **filming a complicated scene** that puts high demands on the viewer



**LARGER THAN LIVE**  
**Free University of Amsterdam**

## FIRST FINDINGS (LARGER THAN LIVE)

- The filmed 4K material was just about 25 minutes. However, this results in 1,5 TB of video material. As a result, **render and copy times soar** and can amount to nights and days;
- 4K cameras have a **low dept-of-field**. This can be used for artistic purposes but can be a nuisance in low light conditions;
- It is **not possible to see the full resolution** of the recording **on the set**. Currently the 4K result can be viewed after post-production only.

# Cookbook 4K Video



<http://www2.surfnet.nl/publicaties/cookbook4k.pdf>

# FURTHER DIRECTIONS

- Medical applications, eg. by extending 4K cameras with a catheter;
- Social research, eg. analyzing classroom situations or studying the use of space and behavior;
- Capturing performance art, like theater and dance from the perspective of the viewer;
- Scientific visualization where lots of data have to be judged in parallel, eg. in climate studies, biology, chemistry, physics and astronomy;
- Videoconferencing and collaboration, especially in many-to-many settings.

# Q&A

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## Sponsors



 **Waag Society**



UNIVERSITEIT VAN AMSTERDAM



**Nederlandse Film en Televisie Academie**  
Amsterdamse Hogeschool voor de Kunsten





**CineGrid 2010**