

Cees de Laat 

CineGrid Amsterdam

Many slides from partners & CineGrid.org



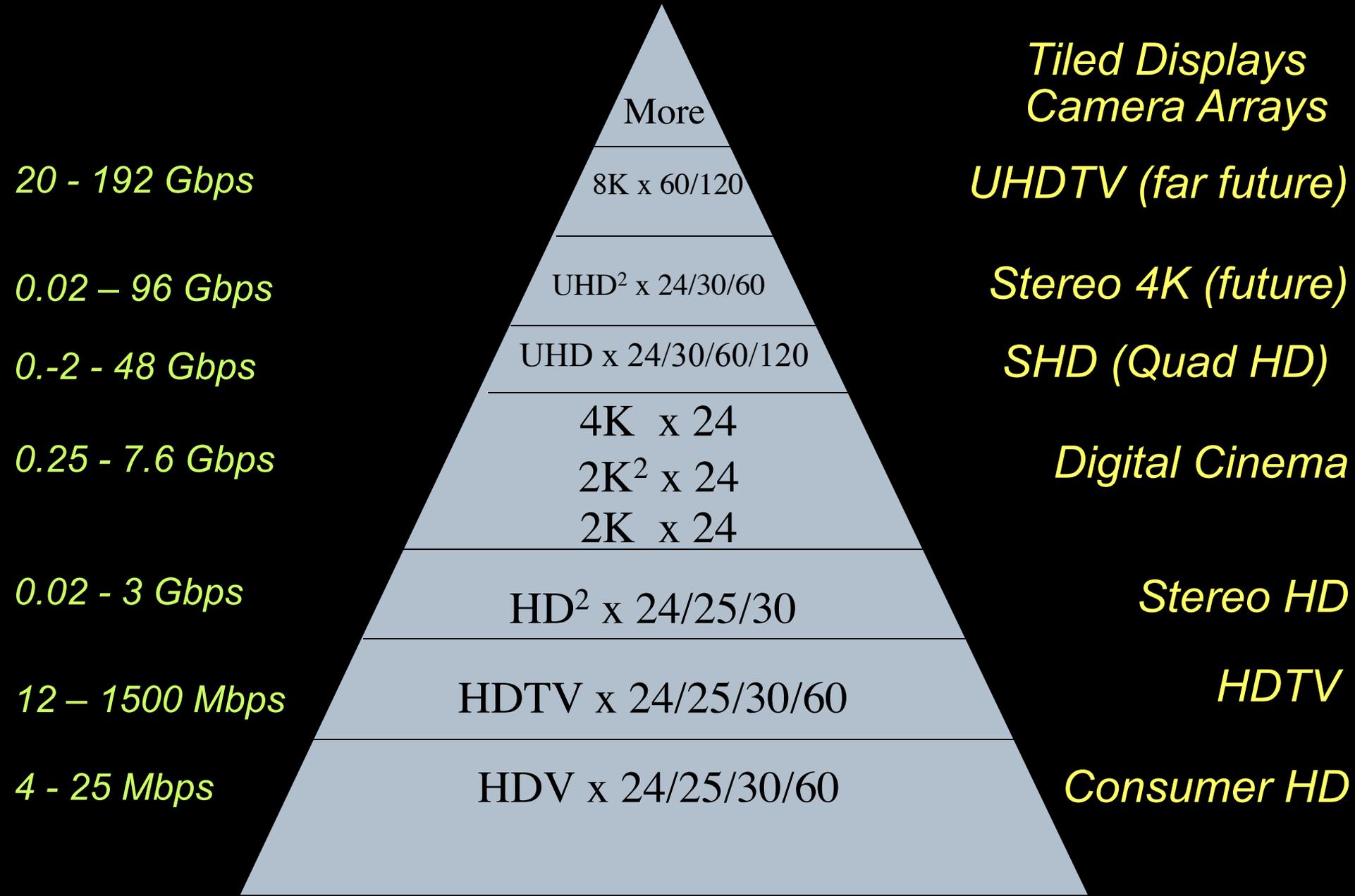
CineGrid Mission

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/>



CineGrid: A Scalable Approach



CINEGRID AMSTERDAM GOALS

Assemble technology, science, art and education to create new concepts, pilots & business models that result in:

- New forms of storytelling
- New domains for scientific exploration
- Transformation of workflows in creative media production
- Better education
- Enhanced economic growth



PARTNERS

CONSORTIUM PARTNERS

SURFnet, UvA, SARA, Dutch Film- and Television Academy, DELL, TNO, Holland Festival, Blender Institute, Sandberg Institute, MediaGuild, Waag Society

COLLABORATORS

Poznan Supercomputing Center, Amsterdam Innovatie Motor, UCSD, University of Illinois, NHK, KTH, KEIO University, Pathé Benelux, Filmmuseum, Salto, Nationale Computer Faciliteiten, IDFA, BeamSystems, ISOC, IDFA, DutchView, PICNIC, GridForum and many more

CINEGRID AMSTERDAM

Research-, development- and outreach facility
for production, transport and projection of
digital cinema:

- Digital projection and sound in very high quality
- Editing and capture facilities
- Rendering & disk space
- Extremely high quality networks

In the center of Amsterdam

International context

- Focus on spin-offs & lasting value



RESOURCES

CineGrid Studio for 4K postproduction

- 100 TB of Highly Connected Storage Space - Ams-CGX
- High Performance Render Cluster
- 3 * 4K Screens and
- 1 – 100 Gb/s light path connections

Expertise in

- Production
- Encoding
- Transmission
- Screening



“Learning by Doing”

Early CineGrid Projects in Amsterdam



Red End 2009



7 Bridges @ Amsterdam 2007



CineGrid @ Holland Festival 2007



First 4k Camera on canal 2007





Handelingen Maarten de Heer

- CineGrid 2011 & 2012
- One minutes
- Mediapark Jaarcongres '08 '09 '10
- Holland Animation Film Festival
- Holland Festival '07 & '10
- Content, content content..
- Educational contest
- 4K How to Cookbook
- PICNIC '08 & '09
- SURFnet GigaPort
- Workshops 4K
- ICT Delta '09
- BeamLab



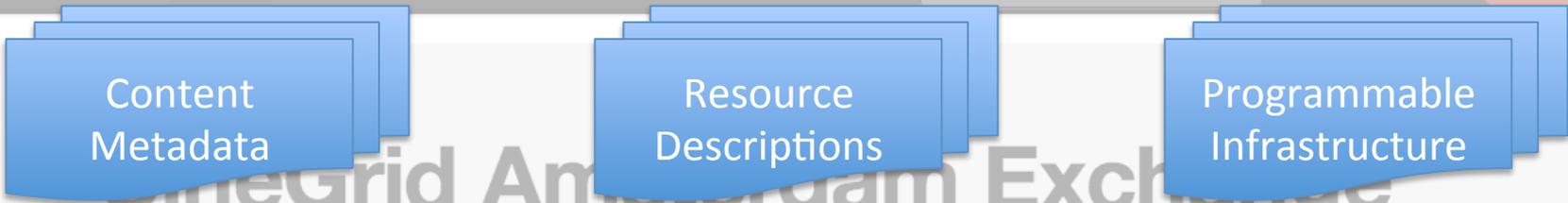


Hey, sit still.



We're almost done. Sshh...





Browse content



Portal
The purpose of this portal is to make the public familiar with super-high-quality video and to make the content more accessible for other CineGrid members.

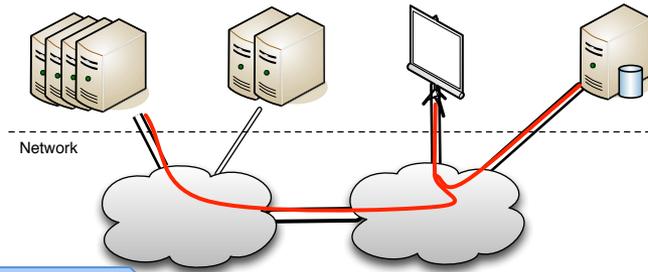
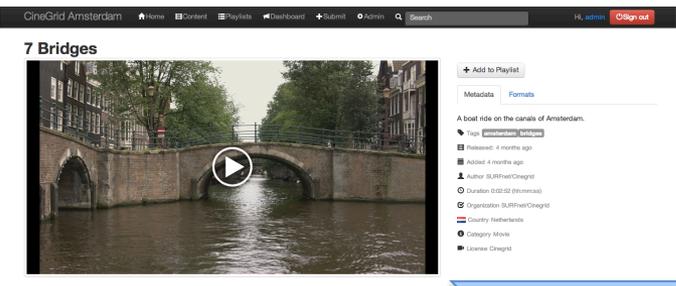
CineGrid
Find out more about Cinegrid Amsterdam.

Research
Find out more about the Cinegrid Description Language

Infrastructure
The Amsterdam node now has over 64 Terabytes of storage dedicated for CineGrid.

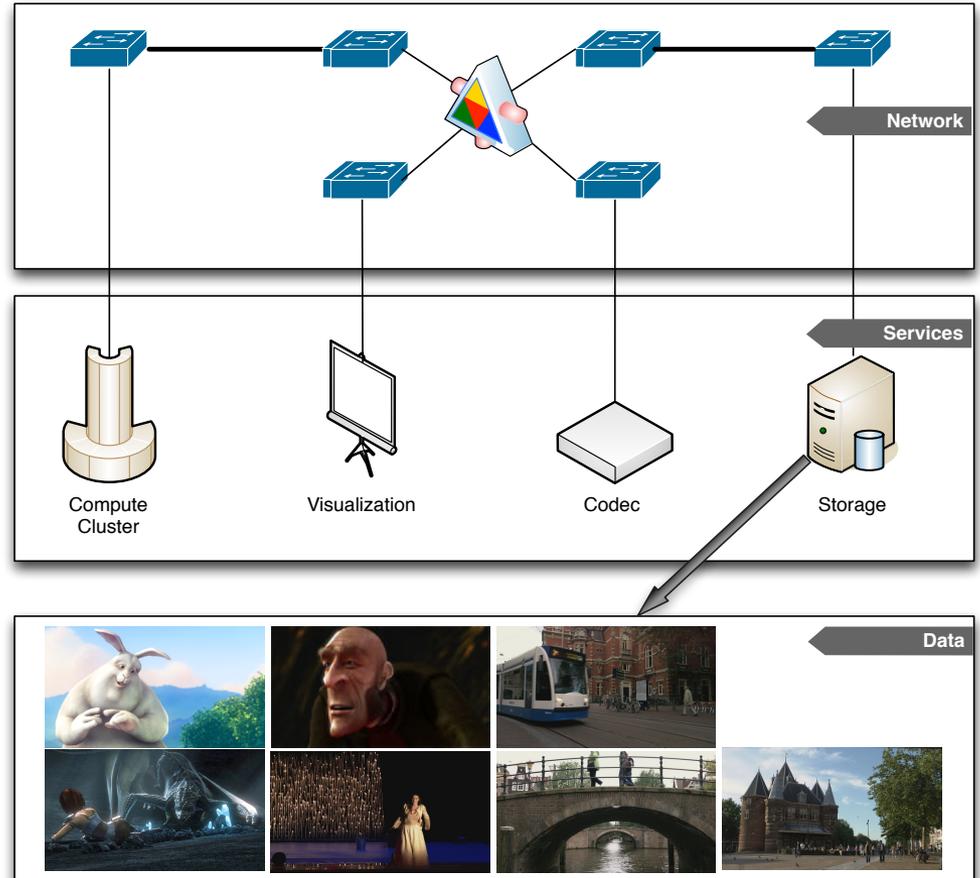
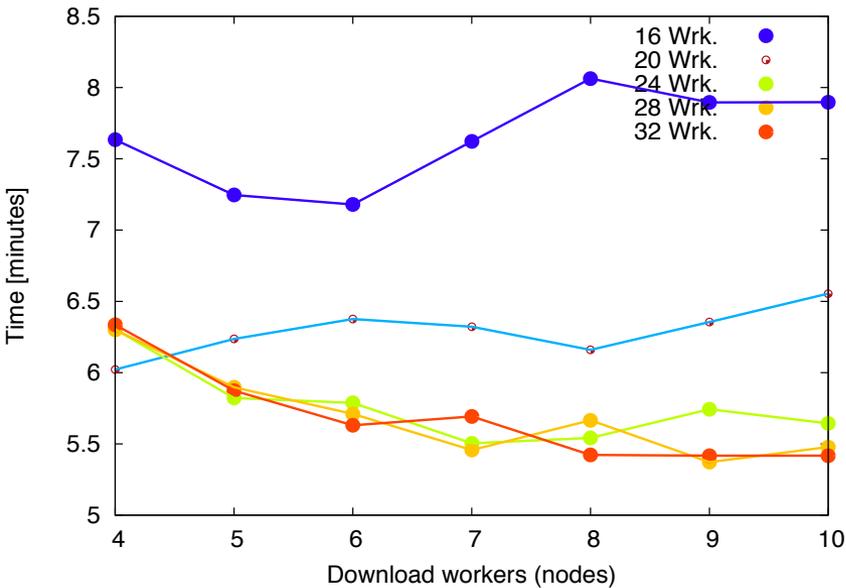
CineGrid Portal

Unified orchestration of distributed CineGrid resources



HyperFlow

Encoding times improve as the end nodes are connected via dynamic lightpaths



C. Dumitru, Z. Zhao, P. Grosso and C. de Laat
HybridFlow: Towards Intelligent Video Delivery and Processing Over Hybrid Infrastructures
 (In CTS 2013)

Processing CineGrid with Clouds

A queuing model approach

Process large amount of independent data

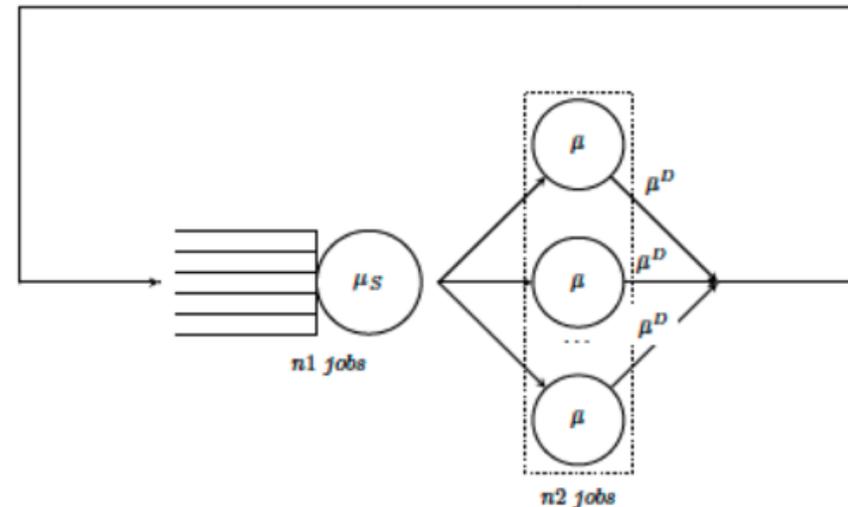
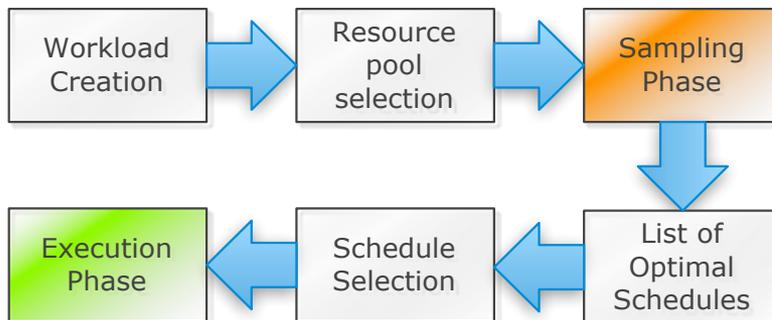
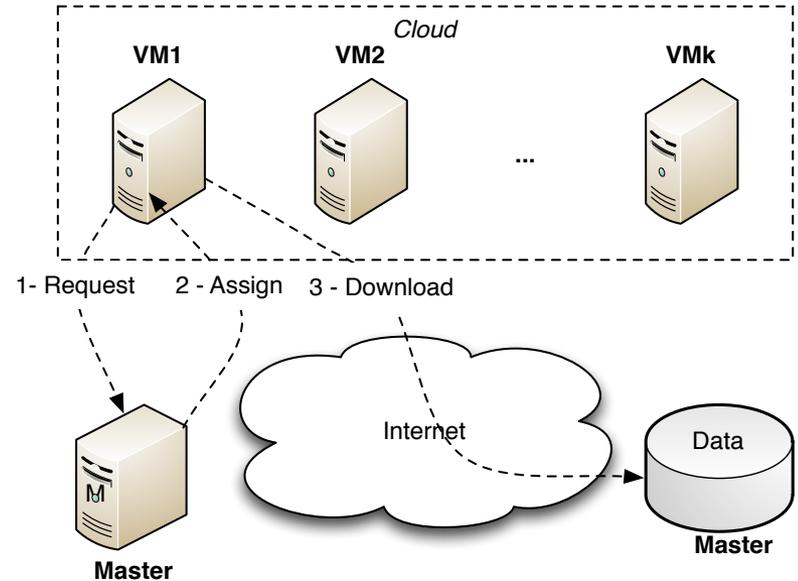
- Bags-of-Tasks + Data = Bags-of-Data
- Example : Image processing
- Independent files
- Large sizes (10-100s of MBs)

Idea: rent resources

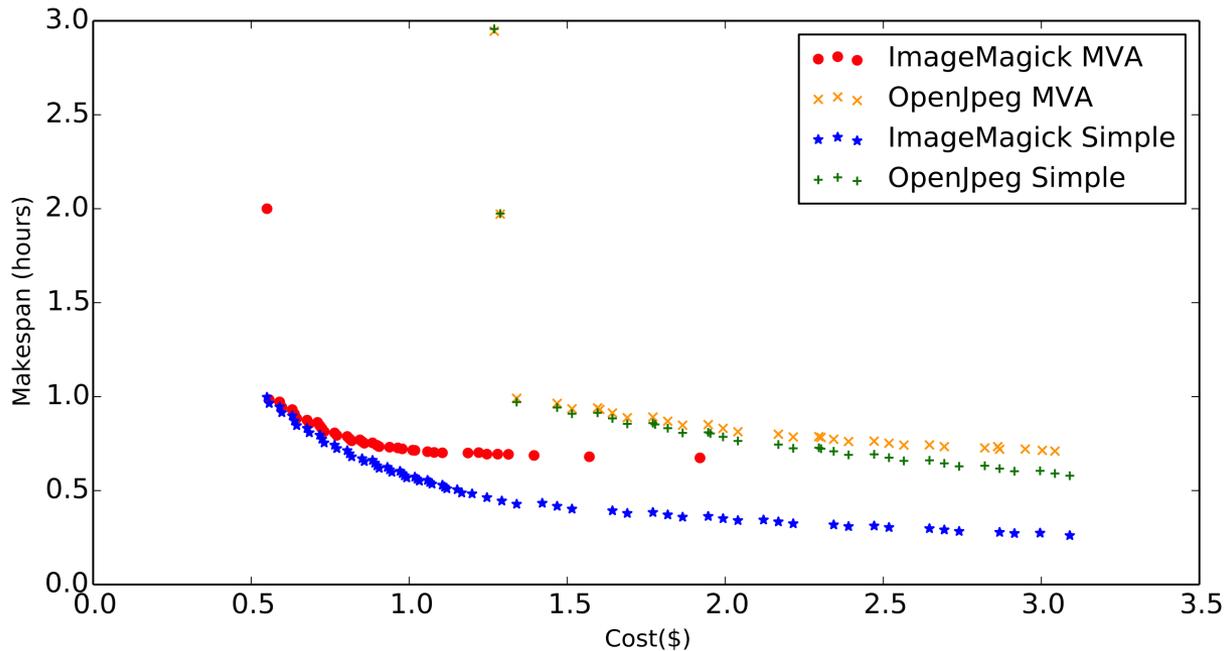
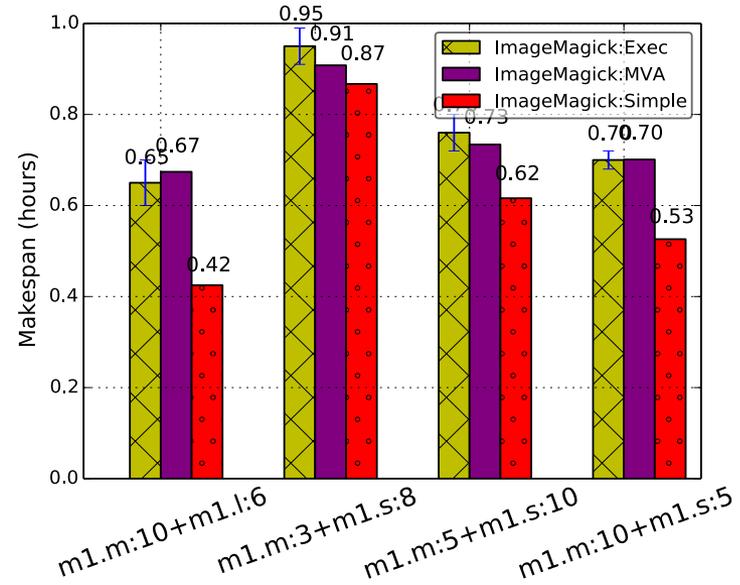
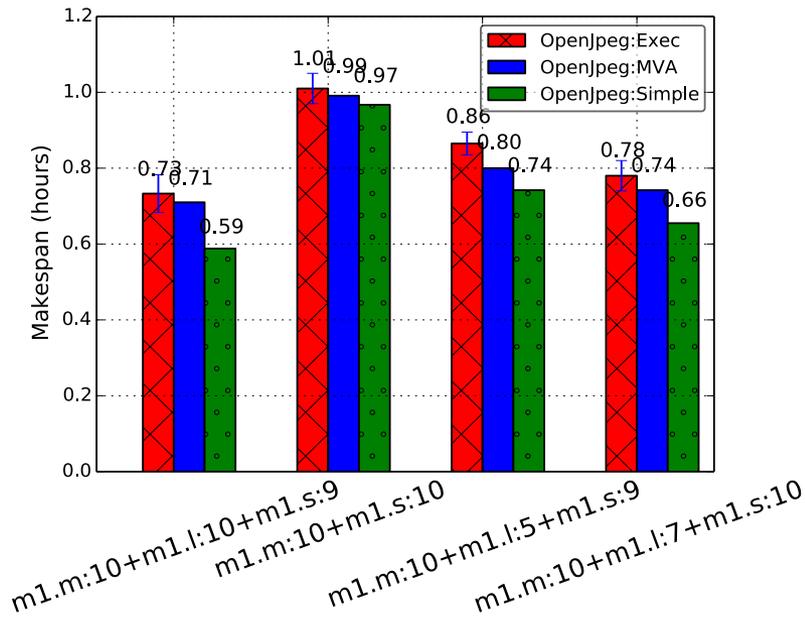
- scaling up (more resources)
- scaling out (more powerful resources)
- Which option ?
- How many ?

Requirements:

- Within time
- Within budget
- Simple, if possible



Processing in the Cloud: Mean Value Analysis, Pareto fronts



Cosmin Dumitru, Ana-Maria Oprescu, Miroslav Zivkovic, Rob van der Mei, Paola Grosso, Cees de Laat, "A Queueing Theory Approach to Pareto Optimal Bags-of-Tasks Scheduling on Clouds", August 27 2014, Euro-Par 2014, Porto, Portugal



Directing Remote Live Shoot of Virtual Set Acting with Live Compositing in the Cloud

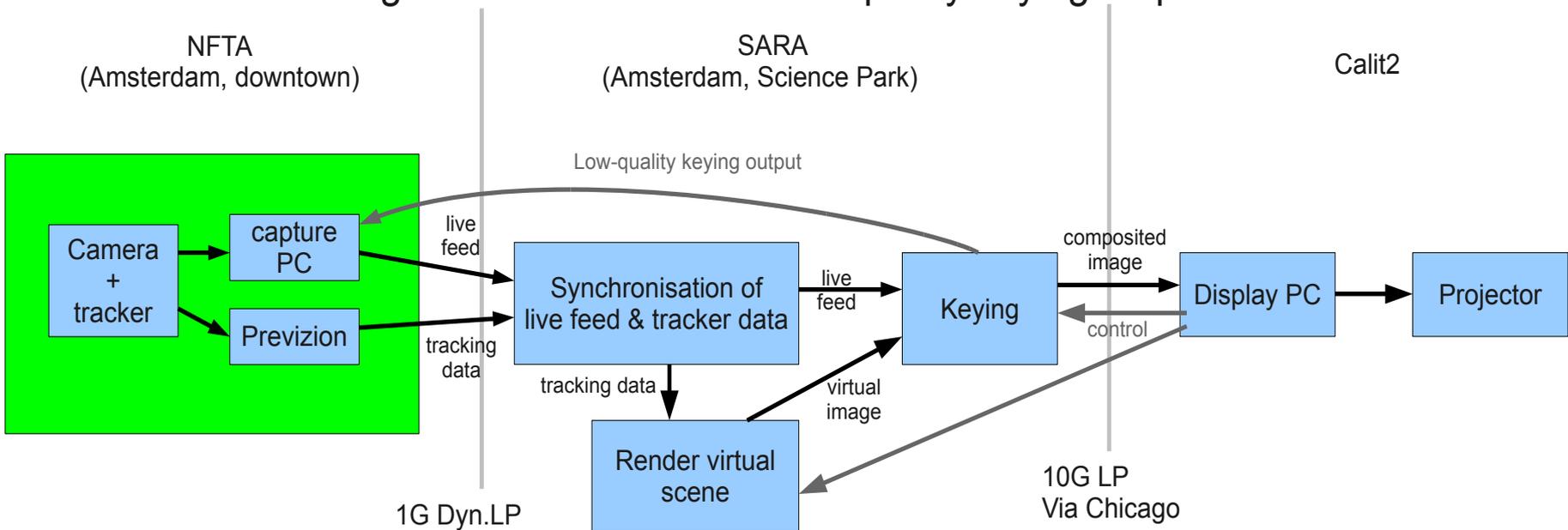


Live action camera, actors, green screen at NFTA (Amsterdam #1)
Virtual set compositing at SARA (Amsterdam #2)
Remote viewing and direction at UCSD/Calit2 Vroom (San Diego)

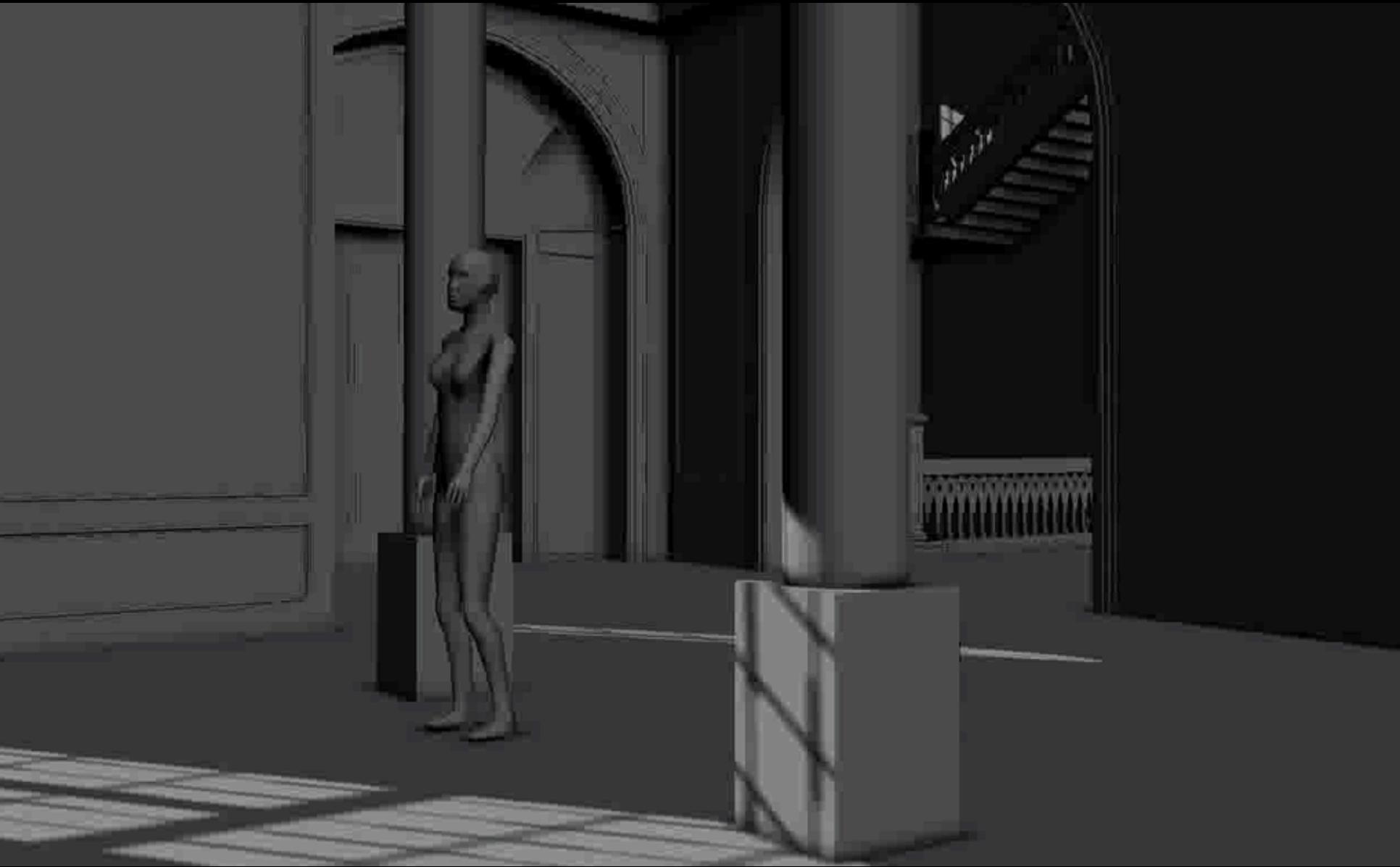
Real Time Rendering Workflow

Demo setup

- Three locations
 - 1) NFTA: greenscreen studio, Previzion, camera(+man), actress (+ dress)
 - 2) SARA: render node for keying, virtual scene rendering
 - 3) Calit2: keying controls, projection of final output, director
- Two lightpaths in between
- Video-conferencing for communication + low quality keying output back to NFTA









Movie Making on the GLIF

COMPOSITING IN THE CLOUD

Netherlands Film Academy
and SURFSARA present
a virtual Cinegrid demo

SAN DIEGO &
AMSTERDAM

12 - 12 - 2012

an impression by
ROBIN NOORDA

One Minutes: Enchanting Detail Contest

de **betoverende**
oproep voor
one minutes in **4K**
Wedstrijd **detail**ende



One Minutes: stunning quality



Direction

- Distributed Comp -> Grid -> Cloud -> Big Data
- Lego Block approach
- Application as a Service
- Elastic Cloud
- Determinism & Real Time?
- CineGrid ToolBox
- Storage
- Deep Storage
- Very Deep Storage



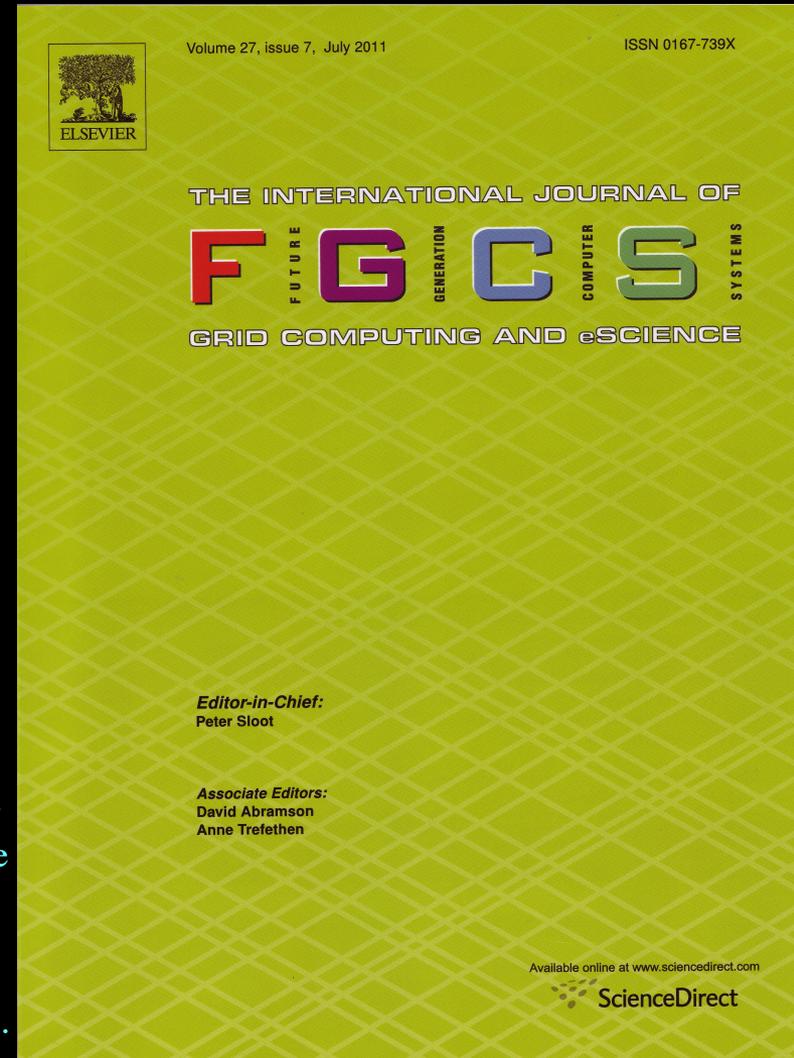
Scientific Publications: FGCS Special Issue on CineGrid!

Volume 27, Issue 7, June 2011

Guest Editors: Naohisa Ohta & Paul Hearty & Cees de Laat

Editorial: CineGrid: Super high definition media over optical networks.

1. Real-time long-distance transfer of uncompressed 4K video for remote collaboration.
2. Media Network (HPDMnet): An advanced international research initiative and global experimental testbed.
3. Producing and streaming high resolution digital movies of microscopic subjects.
4. Enabling multi-user interaction in large high-resolution distributed environments.
5. Tri-continental premiere of 4K feature movie via network streaming at FILE 2009.
6. A collaborative computing model for audio post-production.
7. Design and implementation of live image file feeding to dome theaters.
8. Beyond 4K: 8K 60p live video streaming to multiple sites.
9. Using ontologies for resource description in the CineGrid Exchange.
10. CineGrid Exchange: A workflow-based peta-scale distributed storage platform on a high-speed network.
11. CSTEP: A parallel data transfer protocol using cross-stream coding.
12. Multi-point 4K/2K layered video streaming for remote collaboration.



CineGrid-Amsterdam is supported by

City of Amsterdam, Pieken in de Delta

EFRO / Kansen voor West, Province of Noord-Holland



**Gemeente
Amsterdam**



www.cinegrid.nl