

# CineGrid @ GLIF 2007

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September 2007

Prague, CZ



[www.cinegrid.org](http://www.cinegrid.org)

# What is CineGrid?

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- ❑ CineGrid is a non-profit international membership organization established in 2007 based on collaborative efforts of leaders in the fields of advanced networking and digital media technology from Japan, America, Canada and Netherlands
- ❑ CineGrid's mission is to build an interdisciplinary community 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 high-speed photonic networks



# 4K Digital Cinema is a CineGrid “Grand Challenge”

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- Digital cinema delivers
  - Very high quality motion pictures
  - Excellent listening experience
  - New security tools to protect intellectual property rights
  - Faster distribution of content
  - New genres for new audiences
- Digital cinema creation requires
  - 2K and 4K digital projectors and displays
  - 2K and 4K digital cameras and production workflow
  - Secure, fast access to digital media assets for production and post-production
  - Data storage capacity and computer processing power
  - High bandwidth for communication

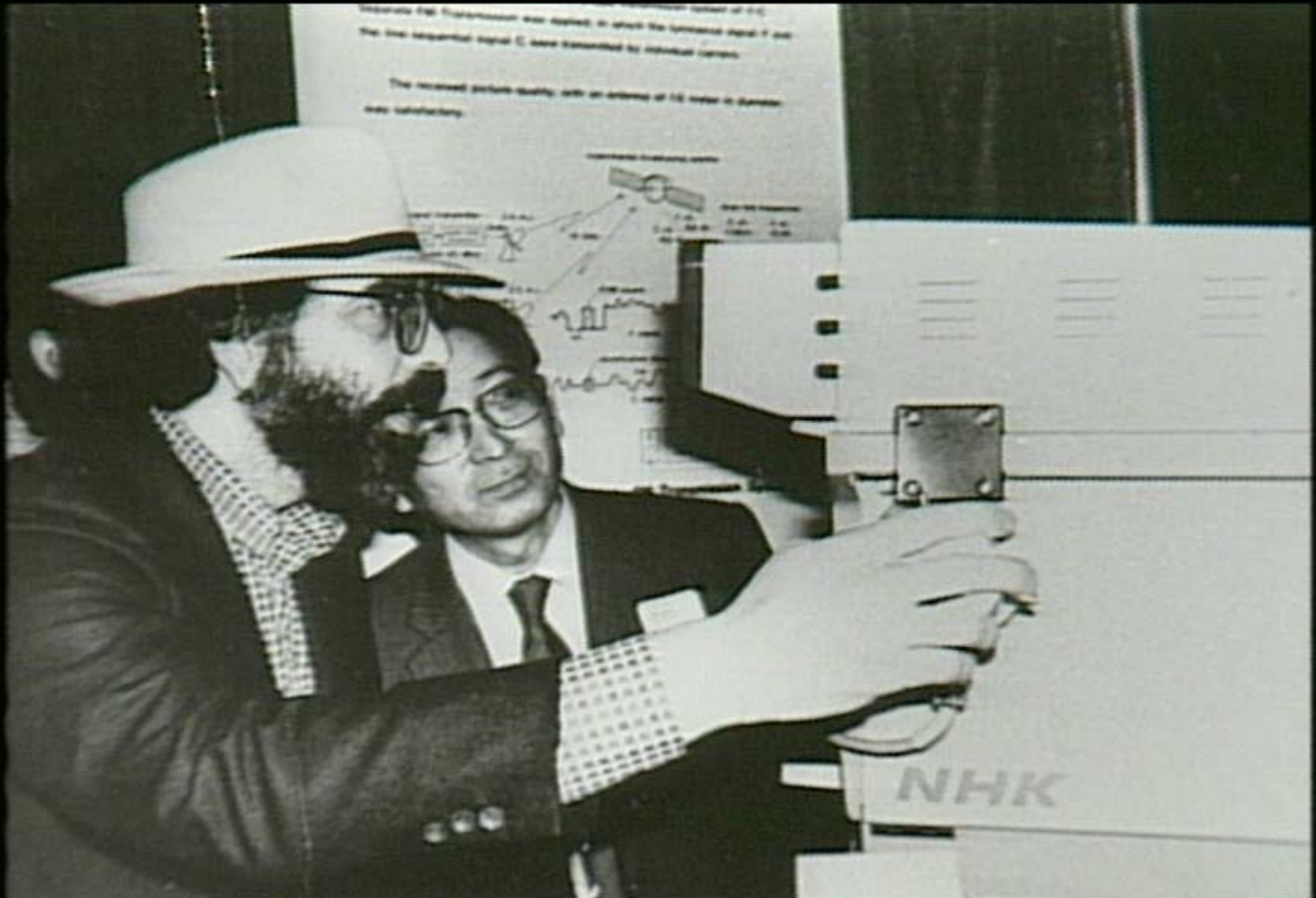


# ***SMPTE 1981***

Francis Ford Coppola with Dr. Takashi Fujio

## **“First Look” at Electronic Cinema**

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# 2001

NTT Network Innovations Laboratory

## “First Look” at 4K Digital Cinema

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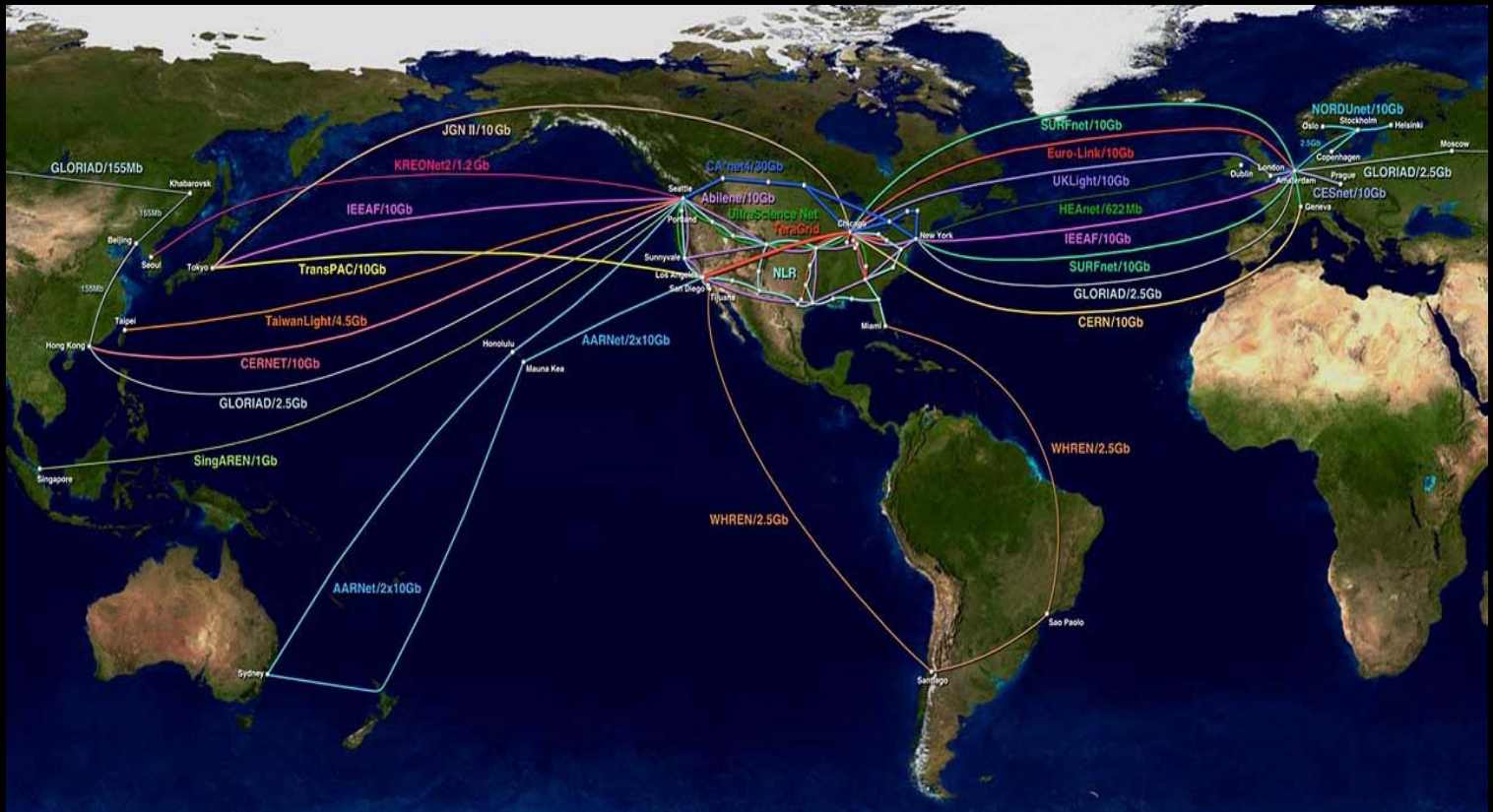


# 2004 OptIPuter Vision for the Next Decade Gigapixels @ Terabits/sec

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# 2005 Global Lambda Integrated Facility (GLIF)



Visualization courtesy of Bob Patterson, NCSA



# users

**A. Lightweight users, browsing, mailing, home use**

Need full Internet routing, one to many

**B. Business applications, multicast, streaming, VPN's, mostly LAN**

Need VPN services and full Internet routing, several to several + uplink

**C. Scientific applications, distributed data processing, all sorts of grids**

Need very fat pipes, limited multiple Virtual Organizations, few to few, p2p

$\Sigma C \gg 100 \text{ Gb/s}$

$\Sigma B \approx 30 \text{ Gb/s}$

$\Sigma A \approx 20 \text{ Gb/s}$

A

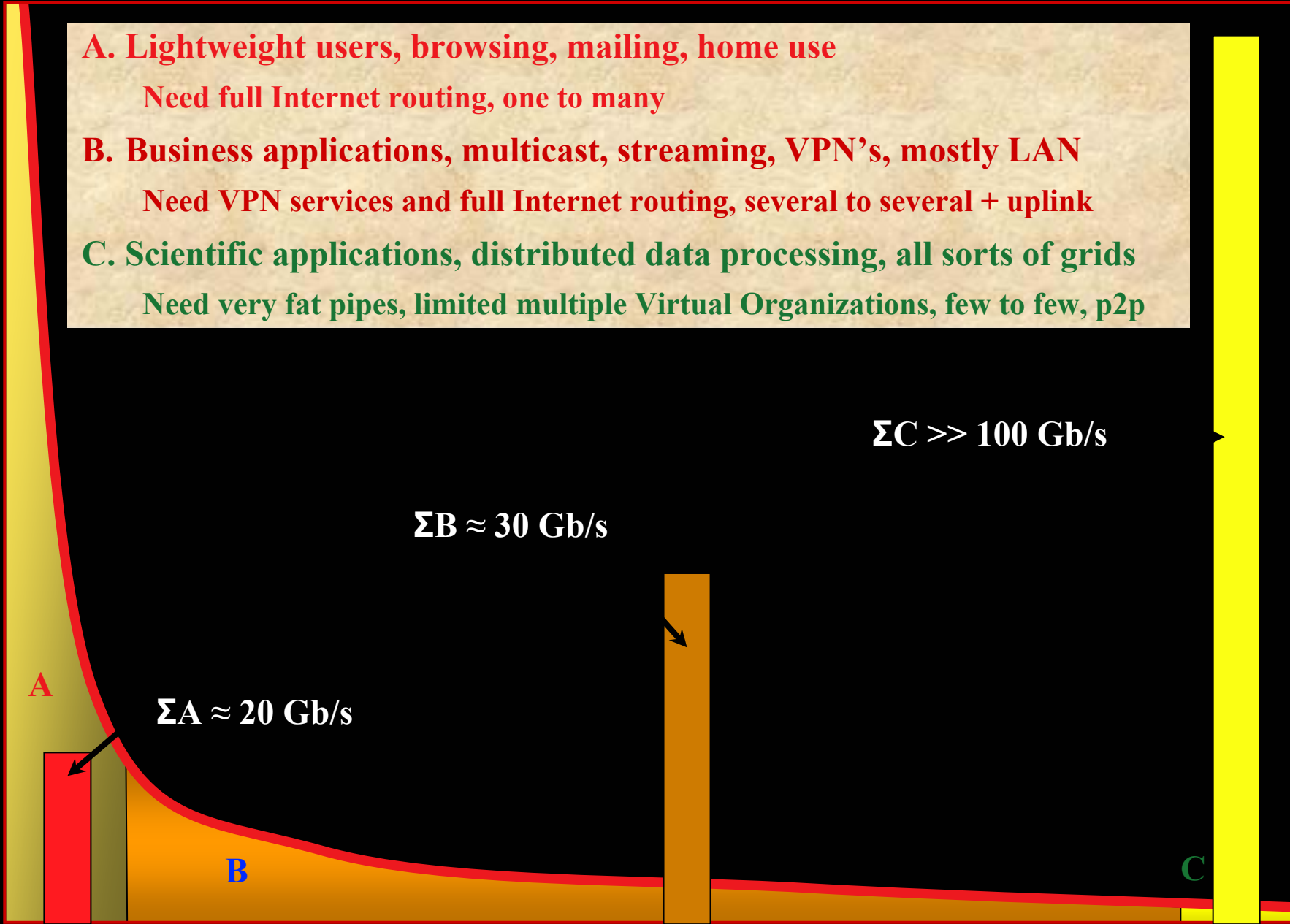
B

C

ADSL

10-100Mbps

1 - 10 Gbps





# CineGrid: A Scalable Approach

1 - 24 Gbps

8K x 60

*8K (far future)*

500 Mbps - 15.2 Gbps

4K<sup>2</sup> x 24/30

*Stereo 4K (future)*

250 Mbps - 7.6 Gbps

4K x 24

2K<sup>2</sup> x 24

2K x 24

*Digital Cinema*

200 Mbps - 3 Gbps

HD<sup>2</sup> x 30

*Stereo HD*

100 Mbps - 1.5 Gbps

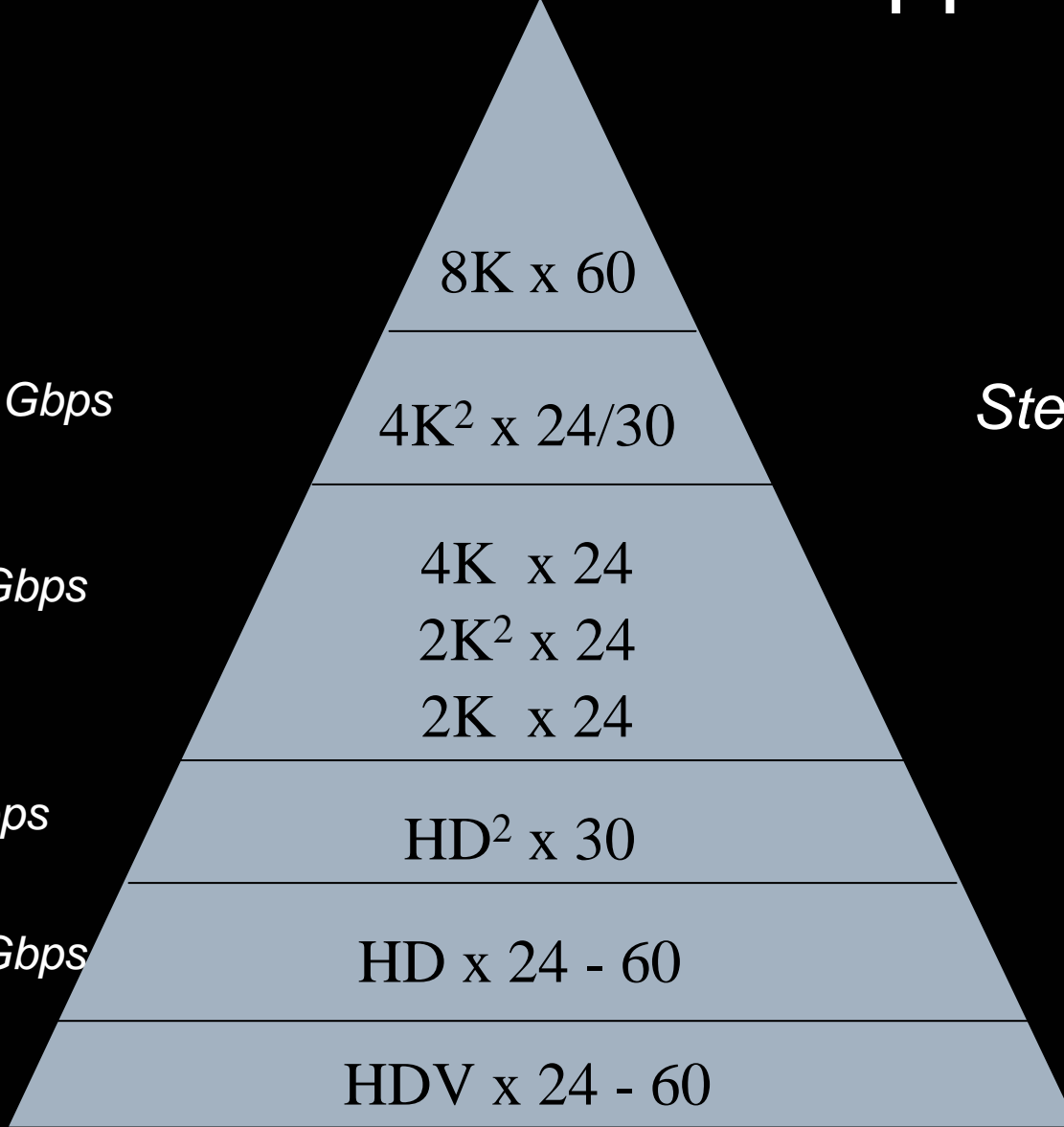
HD x 24 - 60

*HDTV*

25 Mbps

HDV x 24 - 60

*Consumer HD*



# CineGrid: A Layered Approach

**Visualization, Sonification, & Interactivity**



**Tools, Applications, Algorithms, Middleware & Workflow**



**Computing, Networking, Storage & Security**

# CineGrid Projects: “Learning by Doing”

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CineGrid @ iGrid 2005



CineGrid @ AES 2006



CineGrid @ Holland Festival 2007



CineGrid @ Holland Festival 2007



# CineGrid Exchange

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- 4K, 2K, HD , stereoscopic still and motion pictures and audio recordings will be securely archived in the CineGrid Exchange, an experimental distributed archive for digital media with both preservation and distribution functions serving CineGrid members worldwide via research networks.
  
- CineGrid Exchange will maintain three full digital replicas of CineGrid picture and sound data assets at:
  - Keio University Research Institute for Digital Media and Content in Tokyo
  - Amsterdam LightHouse, a joint laboratory of SARA and the University of Amsterdam
  - Calit2 at the University of California San Diego



# CineGrid Founding Members

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- ❑ Cisco Systems
- ❑ Keio University DMC
- ❑ Lucasfilm Ltd.
- ❑ NTT Network Innovation Laboratories
- ❑ Pacific Interface Inc.
- ❑ Ryerson University/Rogers Communications Centre
- ❑ San Francisco State University/INGI
- ❑ Sony Electronics America
- ❑ University of Amsterdam
- ❑ University of California San Diego/Calit2/CRCA
- ❑ University of Illinois Chicago/EVL
- ❑ University of Illinois at Urbana-Champaign/NCSA
- ❑ University of Southern California/ School of Cinematic Arts
- ❑ University of Washington/Research Channel



# CineGrid Members

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- California Academy of Sciences
- Dark Strand
- JVC America
- Louisiana State University/Center for Com. and Tech.
- Nortel Networks
- RENCI (North Carolina)
- Sharp Labs USA
- Sharp Corporation
- Tohoku University/Kawamata Laboratory
- Waag Society



# CineGrid Network / Exchange Members

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- CENIC
- CESNET
- CzechLight
- Japan Gigabit Network 2
- National LambdaRail
- NetherLight
- PacificWave
- Pacific North West GigaPOP
- StarLight
- SURFnet
- WIDE



# 2006 CineGrid International Workshop

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- ❑ Hosted at UCSD/Calit2
- ❑ Over 130 participants
  - Universities
  - Research Laboratories
  - Movie Studios
  - Post-production Facilities
  - Research Networks
  - Libraries and Archives
  - Arts Organizations
  - Equipment Vendors





# 2007 CineGrid International Workshop

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- Sunday through Wednesday, December 3 - 5, 2007
- Please mark your calendars
- Calit2/UCSD in La Jolla, CA
- Schedule
  - SUN 12/2 ---- Welcome Reception (evening/optional)
  - MON 12/3 --- CineGrid Workshop
  - TUE 12/4 --- CineGrid Workshop
  - WED 12/5 --- CineGrid Workshop
- A draft agenda will be available soon and details will follow
- [www.cinegrid.org](http://www.cinegrid.org)



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SPECIAL THANKS  
TO EVERYONE AT CESNET !!!

