Scalable Wall-Socket Multimedia Grid Computing

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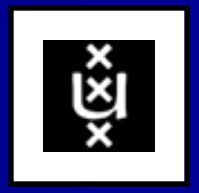


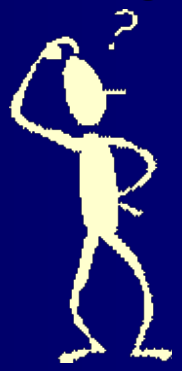
A Real Problem... *of Scale...*

- News Broadcast - September 21, 2005

- Investigation: over 80.000 CCTV recordings
- First match found only 2.5 months after attacks

High-Performance Multimedia

- Solution:
  - Very, very large scale parallel and distributed computing
- New Problem:
  - Very, very complicated software



User

Solution:

Since 1998:

"Parallel-Horus"
(C++ / MPI)

transparent to user

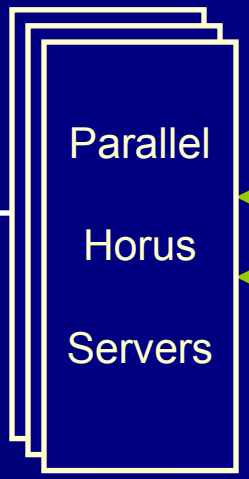
- familiar programming
- easy execution

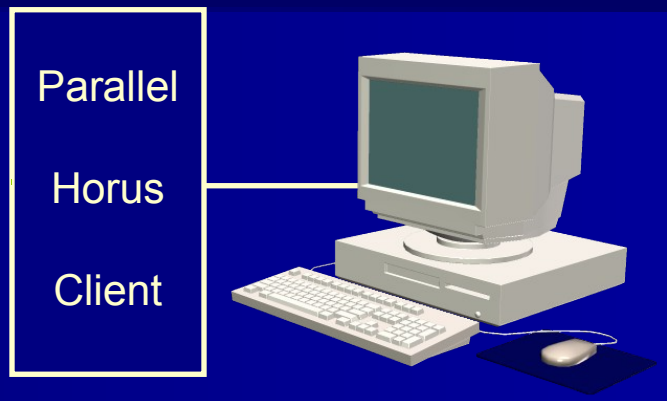
Cluster Computers

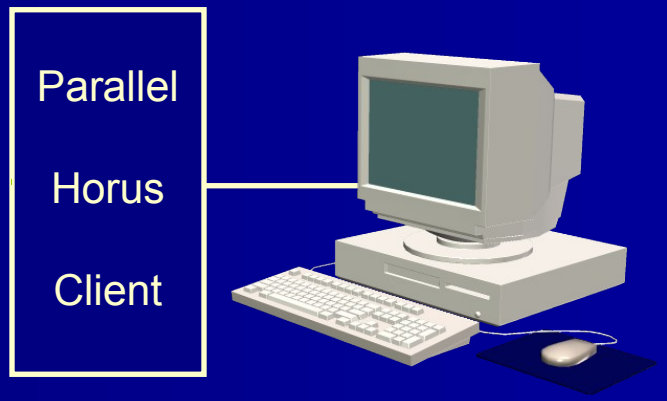
Systems

Extensions for Distributed Computing

- Wide-Area Multimedia Services:



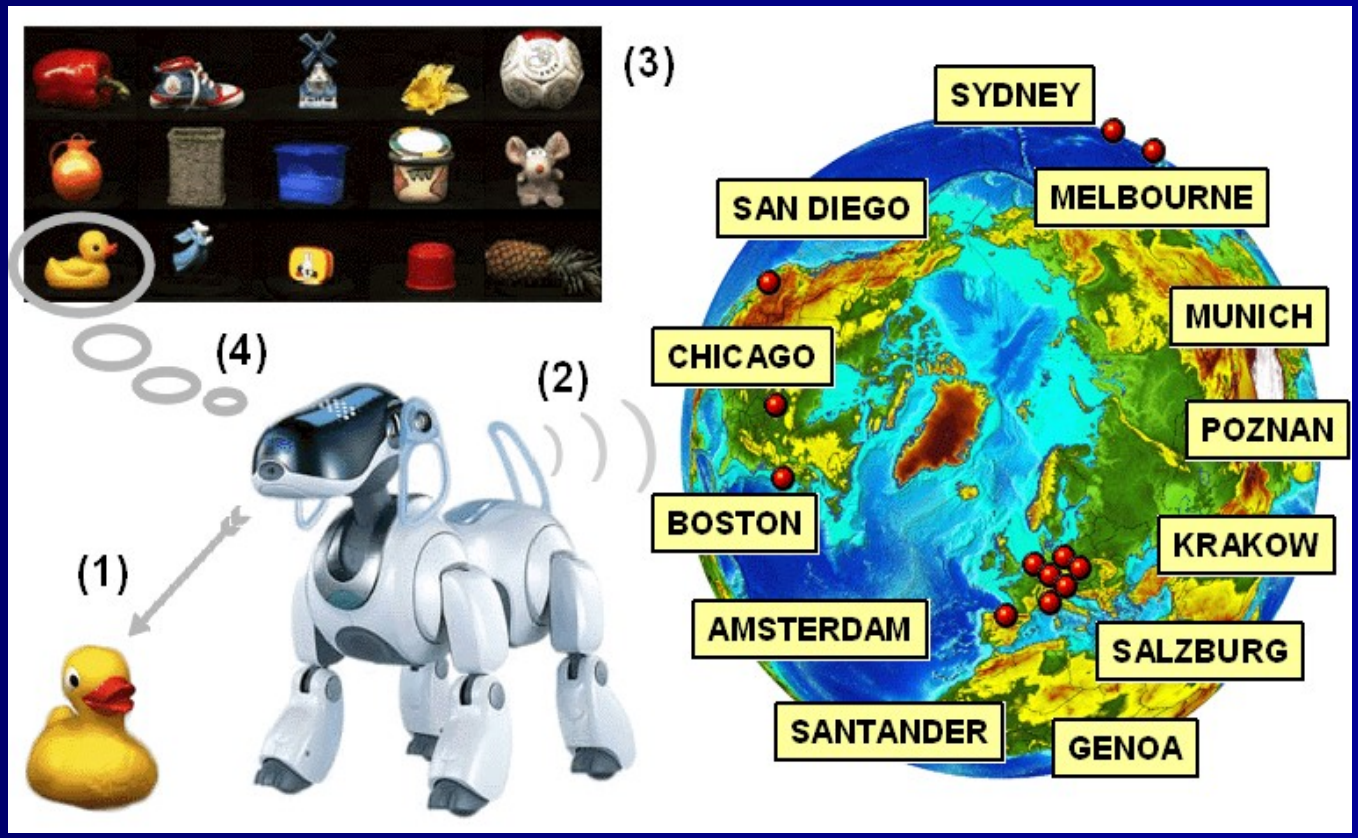




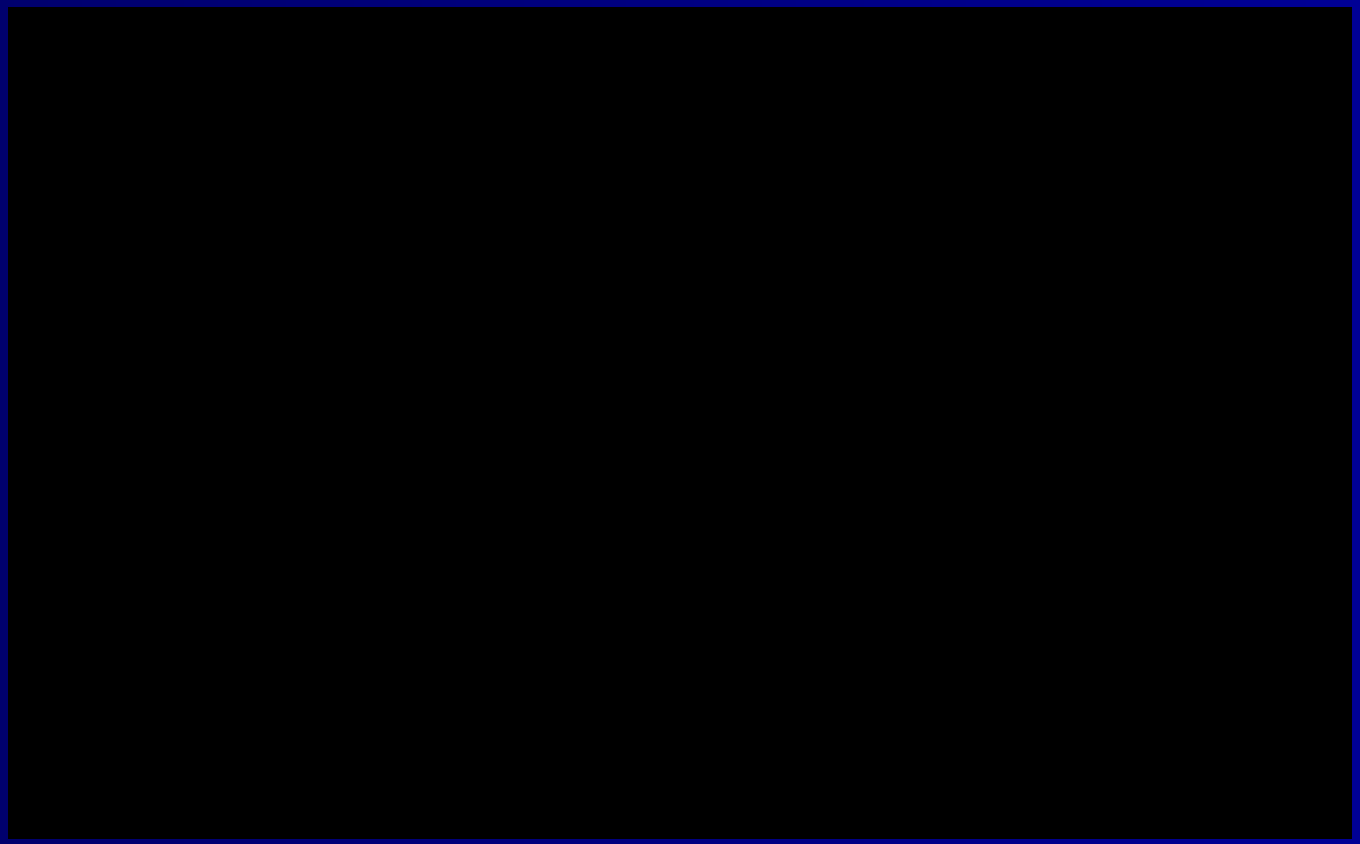
- User transparency?
- Connectivity, fault-tolerance, …?

Seinstra et al., *IEEE Multimedia,* Oct-Dec, 2007

Color-Based Object-Recognition by a Grid-connected Robot Dog



Demonstrated live: ICME'05 (Amsterdam, NL), ECCV'06 (Graz, AT), SC'07 (Reno, US)



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Results / Evaluation

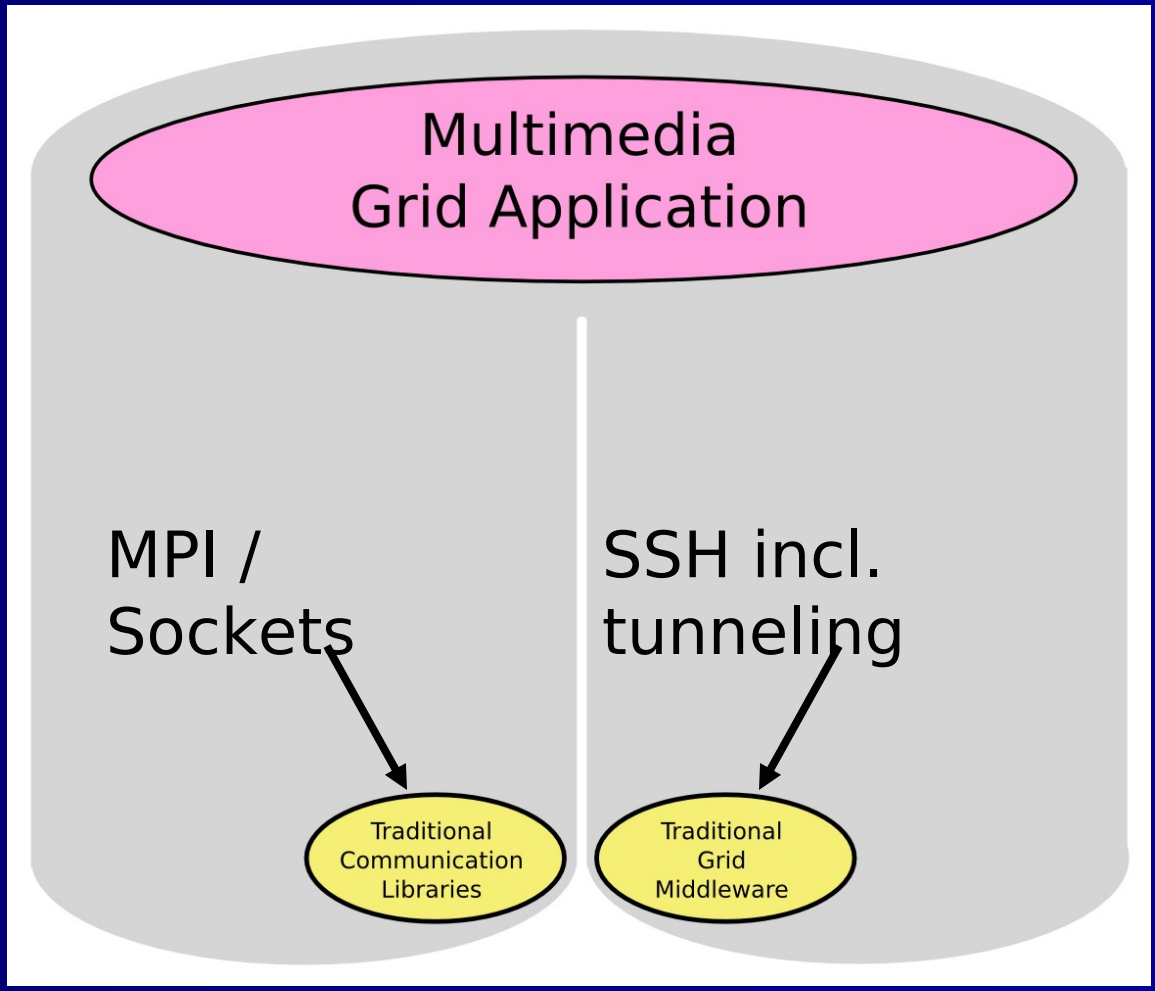
- Highly successful:
  - Most Visionary Research Award at AAAI'200
  - Link of the week:
    International Science Grid this Week (iSGTW

- However:
  - Firewall circumvention (etcetera) generally by hand
  - Multimedia server setup (per cluster) by hand
  - Wide-area communication very instable
  - Crash of one tiny component crashes all...

- So:
  - This is not Grid Computing at all ...
  - ... and no existing Grid project seemed to be of help!

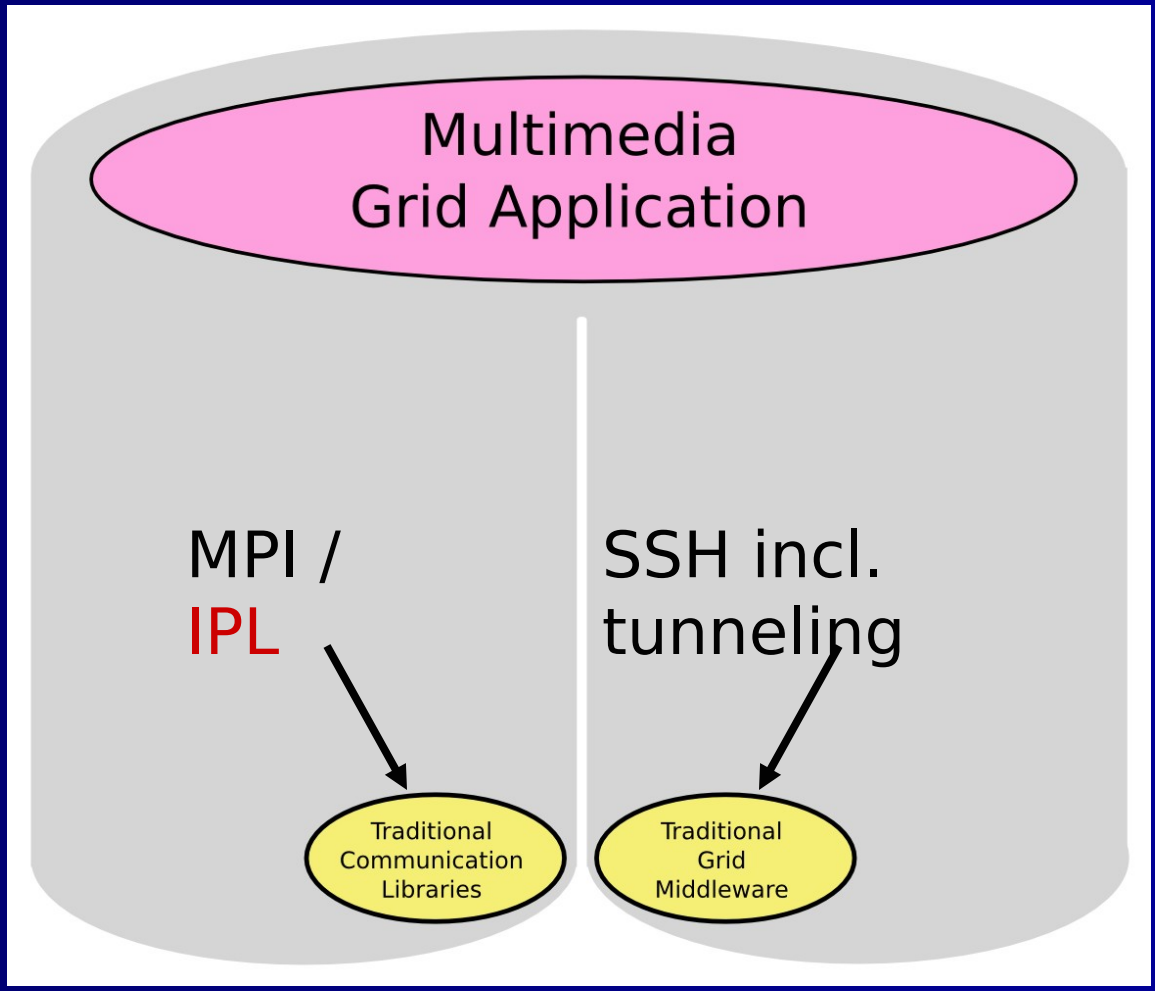
In Ibis Terminology:

2005:



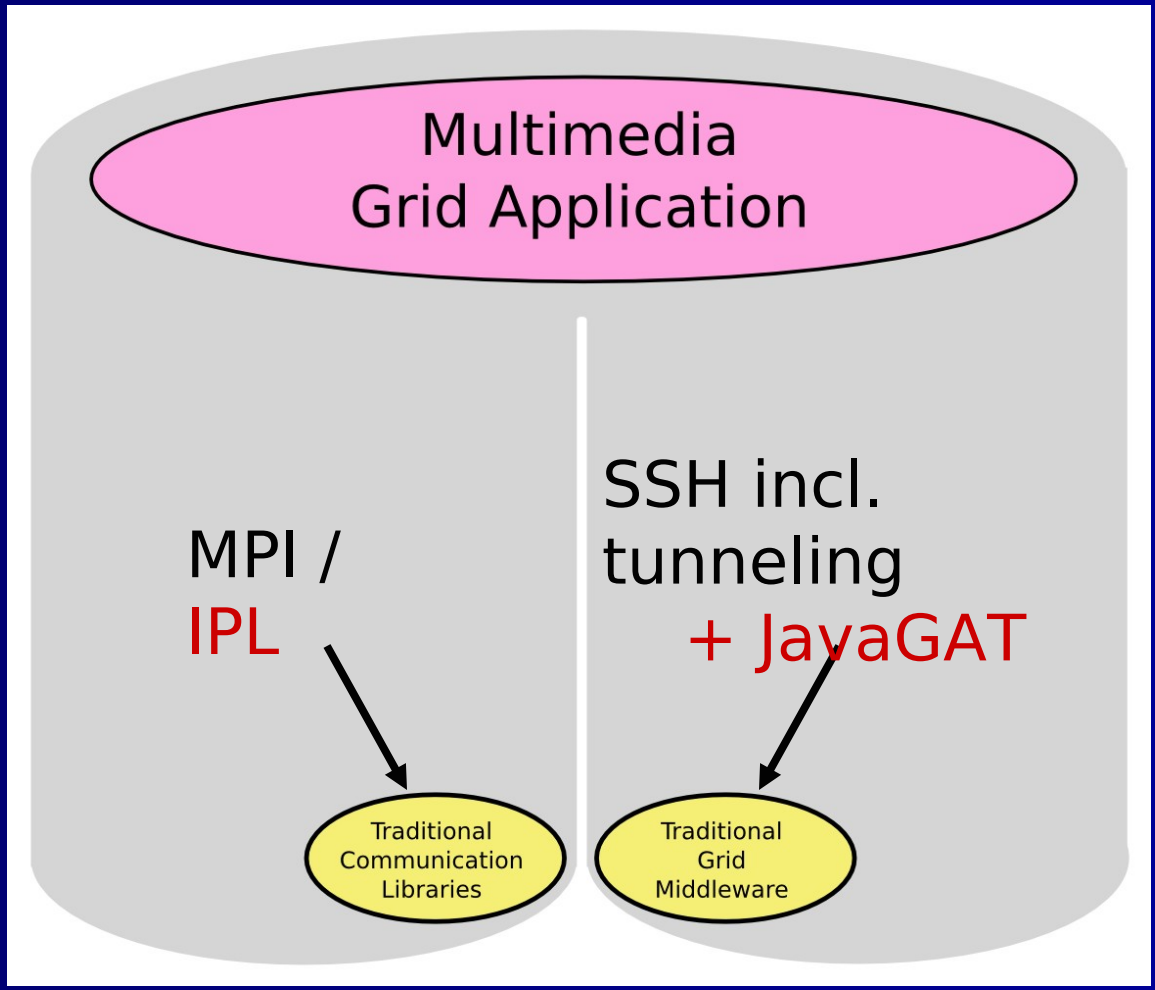
In Ibis Terminology:

2006:



In Ibis Terminology:

2007:



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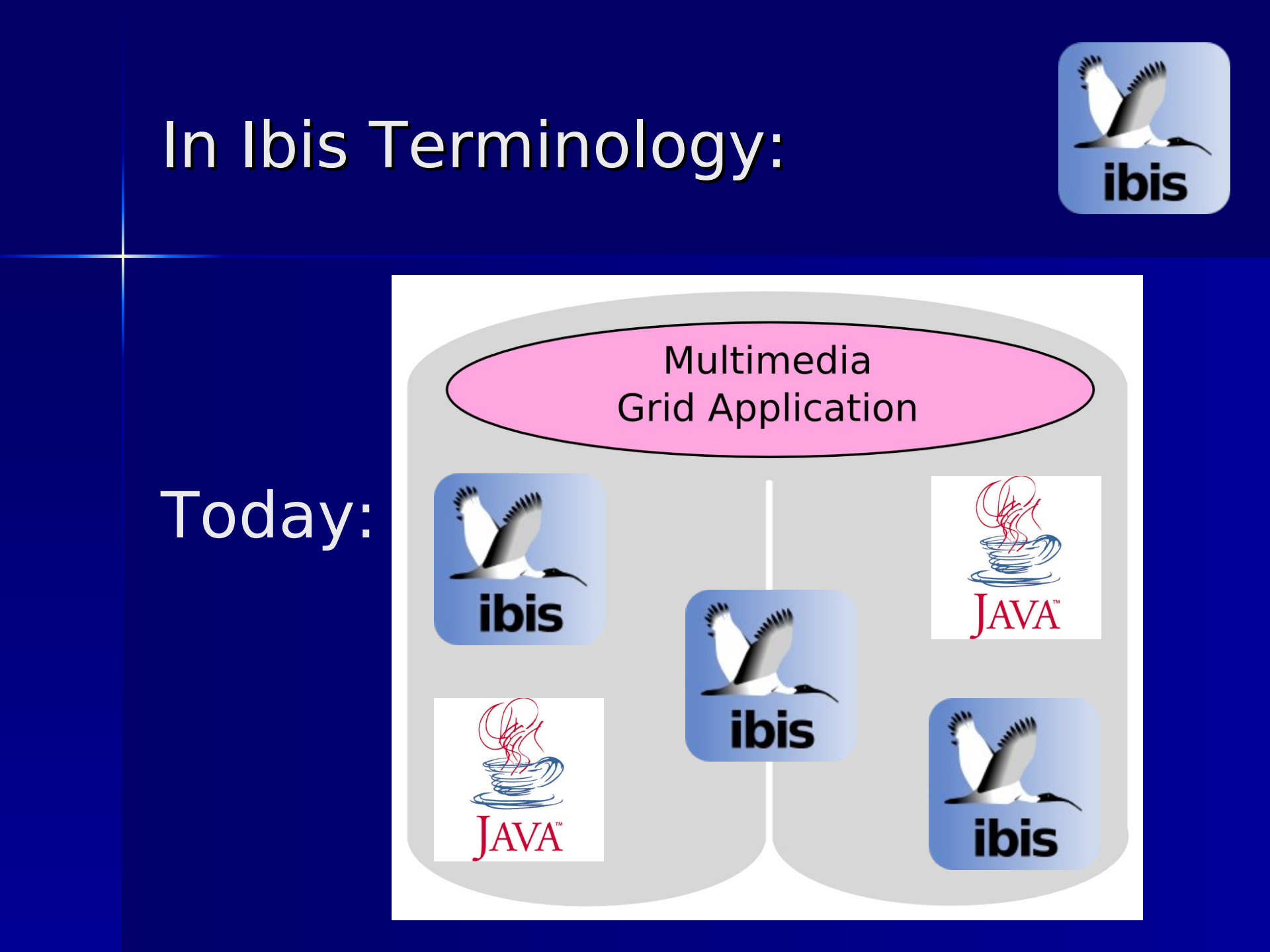

Today:

SCALE'2008 @ CCGrid'2008

- SCALE'2008 challenge:
  - 'competition' in scalable high-performance computing
- Our Object Recognition / Robot Dog de
  - Entirely implemented in Java + Ibis
  - Implement / compile / deploy on local lapto
  - Grid-related idiosyncrasies solved transpar
  - "Grid computing from a memory stick"

- SCALE'2008 session:
  - Wednesday, May 21 (16:30 – 18:30, Thesis Room)