The First 16 Years of the Distributed ASCI Supercomputer

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Advanced School for Computing and Imaging
**DAS**

- Shared distributed infrastructure for experimental computer science research
  - Small, interactive, controlled, distributed computer science experiments
  - Hard to do on production systems
DAS history

- Pre-DAS: Cluster computing
- DAS-1: Wide-area computing (1997)
- DAS-4: Clouds, diversity & green IT (2011)
Pre-history

- Andy Tanenbaum already built cluster in 1984
  - Pronet token ring network, 8086 CPUs
  - Amoeba processor pool
  - (no pictures available)
DAS-1 (1997-2002)
A homogeneous wide-area system

200 MHz Pentium Pro
128 MB memory
200 nodes
Myrinet interconnect
Built by Parsytec

[ACM SIGOPS 2000] (paper with 50 authors)
DAS-4 (2011)
Testbed for clouds, diversity & Green IT

Dual quad-core Xeon
24-48 GB memory
Infiniband
Various accelerators (GPUs)
Bright Cluster Manager
Built by ClusterVision

ASTRON
10 Gb/s lambdas

VU

UvA / MultimediaN

TU Delft

Leiden
DAS research

- Many large research projects used DAS:
  - VL-e, MultimediaN, Gigaport, LOFAR, COMMIT
  - Many EU projects
- Numerous NWO/STW projects
- About 100 Ph.D. theses used DAS
- Collaboration SURFnet on DAS-3 & DAS-4
  - SURFnet provides dedicated 10 Gb/s light paths
DAS enables award-winning research

- IEEE SCALE challenge 2008 & 2010
- Several TRECVID challenges
- 2 NWO VENI’s, 1 VIDI
- EYR3 Sustainability Prize
- Netherlands Prize for ICT Research 2012
**Organization**

**DAS Steering Group:**
- Henri Bal
- Dick Epema
- Cees de Laat
- Cees Snoek
- Frank Seinstra
- John Romein
- Harry Wijshoff

**System management:**
- Kees Verstoep et al.

**Support/operation:**
- ClusterVision
- Bright Computing
- TUD/GIS
- Stratix
- ASCI office

**DAS grandfathers:**
- Andy Tanenbaum
- Bob Hertzberger
- Henk Sips

**Funding:**
- NWO
- SURFNET
- vl-e
- Multimedia
Speakers

- Renato Figueiredo (University of Florida)
- Erik Huizer (SURFnet)
- Alexandru Iosup (TU Delft)
- Cees Snoek (University of Amsterdam)
- John Romein (ASTRON)
- Clemens Grelck (University of Amsterdam)
- Ana Varbanescu (TU Delft)
- Frank Seinstra (Netherlands eScience Center)
- Jacopo Urbani (VU)
- Wojtek Kowalczyk (Leiden University)