

??? Wat vindt u een Grid ???



Het woord '*grid*' wordt veel gebruikt (HYPE)



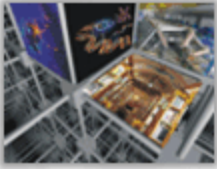
- Oracle databases ;(
- cluster computing
- cycle scavenging
- Als de kant het een 'grid' noemt, dan is het een grid
- **cross-domain resource and data sharing**



Is er een duidelijke definitie ?



- Coördineren van resources die niet onder centrale controle staan
- Gebruik van standaard, open and generieke protocollen & interfaces
- Leveren van een niet triviale hoeveelheid of collectieve diensten

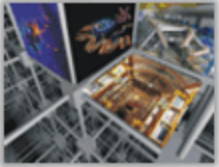


- Wanneer heeft u een Grid nodig ?
 - Meer dan één computer
 - Meer dan één gebruiker
 - Meer dan één locatie
 - Meer dan één bedrijf(sonderdeel)
 - Meer dan één onderzoeksgemeenschap

- In het algemeen: Meer dan één.

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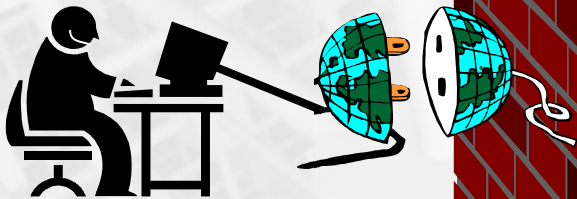
J. Templon



The Grid metaphor



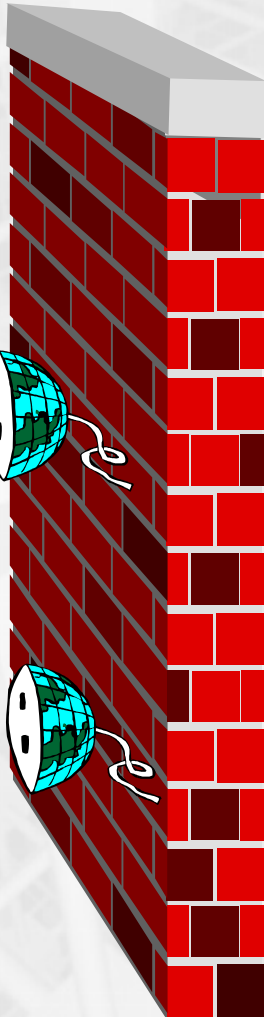
Mobile Access



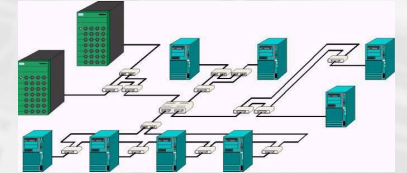
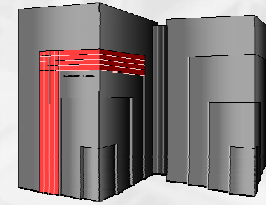
Workstation



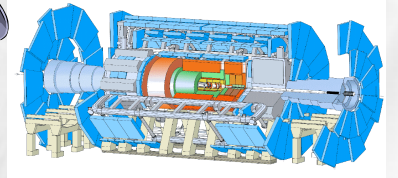
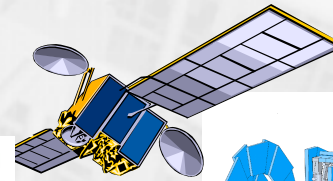
Visualising



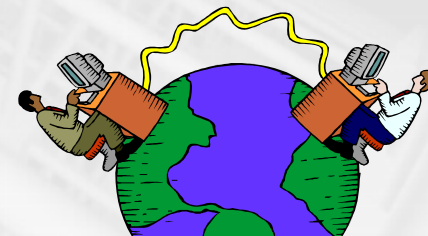
GRID MIDDLEWARE



Supercomputer, PC-Cluster



Data-storage, Sensors, Experiments



Internet, networks

BIG GRID
The Dutch e-Science Grid

22-05-2007

ICT Delta

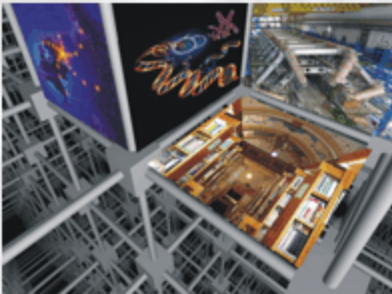
dr. M. Bouwhuis



Uitrol van een Nationale Grid Infrastructuur

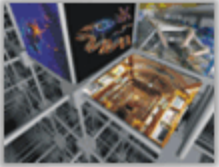
Maurice Bouwuis

SARA computing and network service

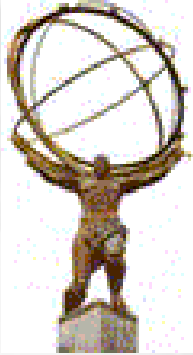


BIG GRID

The Dutch e-Science Grid

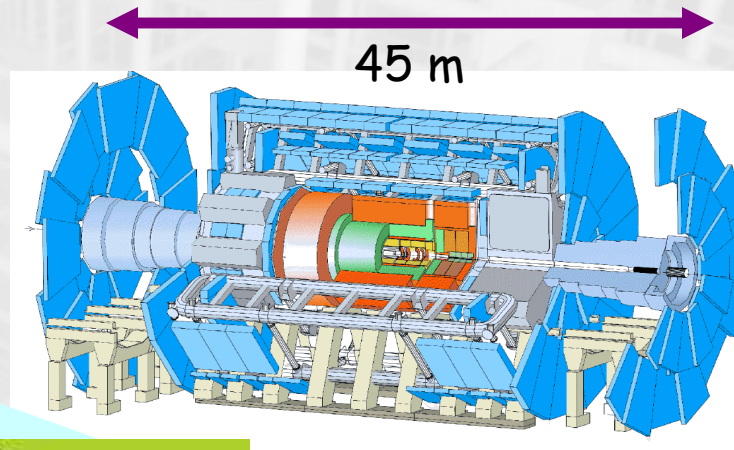


Probleem 1: Hoge Energie Fysica

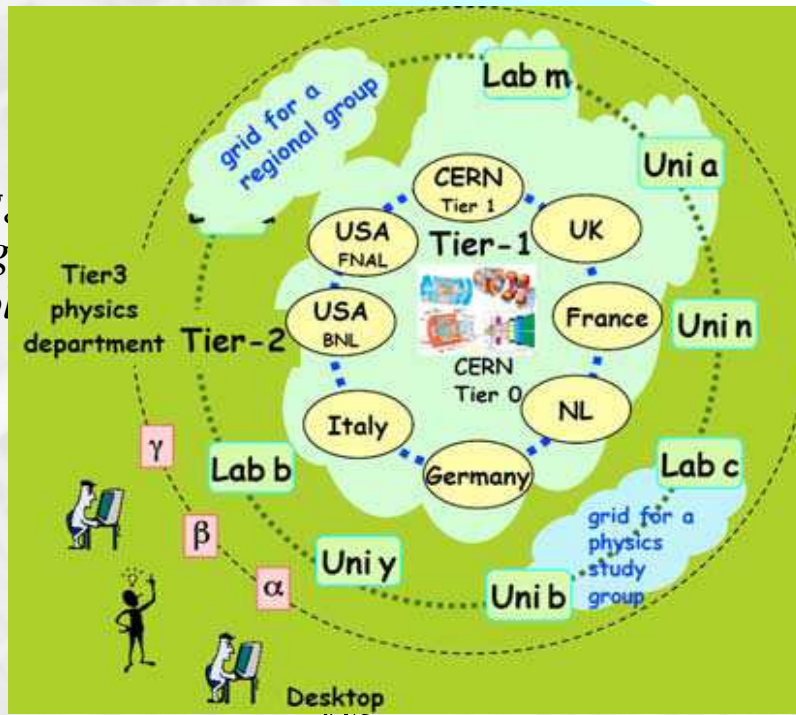


ATLAS

One of the four LHC detectors



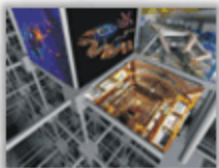
online system
multi-level trigger
filter out background
reduce data volume



BIG GRID
The Dutch e-Science Grid

TB/sec)

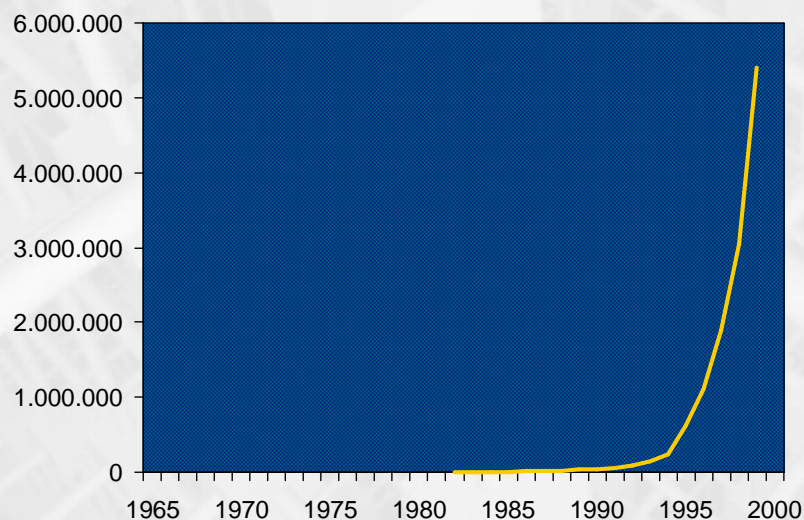
- In NL:
- ~3000 CPU
 - 3.000.000 GB disk
 - 3.000.000 GB tape per jaar



Levens en medische wetenschappen

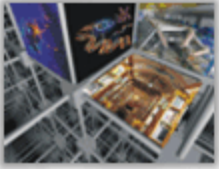


- Autometisering en verhoging van resolutie → meer data EN complexere data
- Vele bronnen
- Hypothesis driven → data driven



Over 5 million
sequence entries
in GenBank

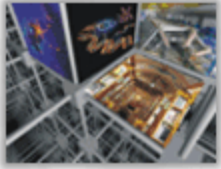
Over 3 billion
bases from
41,000 species



En de rest

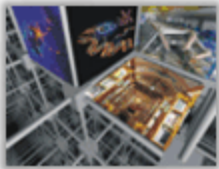


- Astronomie (LOFAR et al)
- Klimaat onderzoek
- Aardobservaties
- Alpha en Gamma wetenschappen
 - Opslag en Lange termijn archivering
 - Analyse van digetale bestanden
- Ecology
- Food and health
- Medical instrumentation design
- Archaeology
-



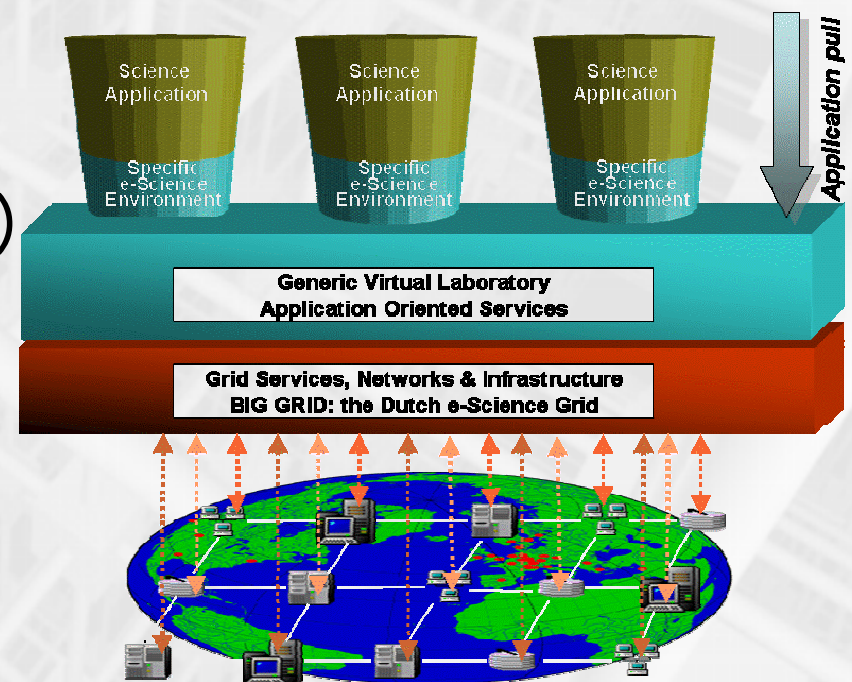
BIG GRID the e-science grid

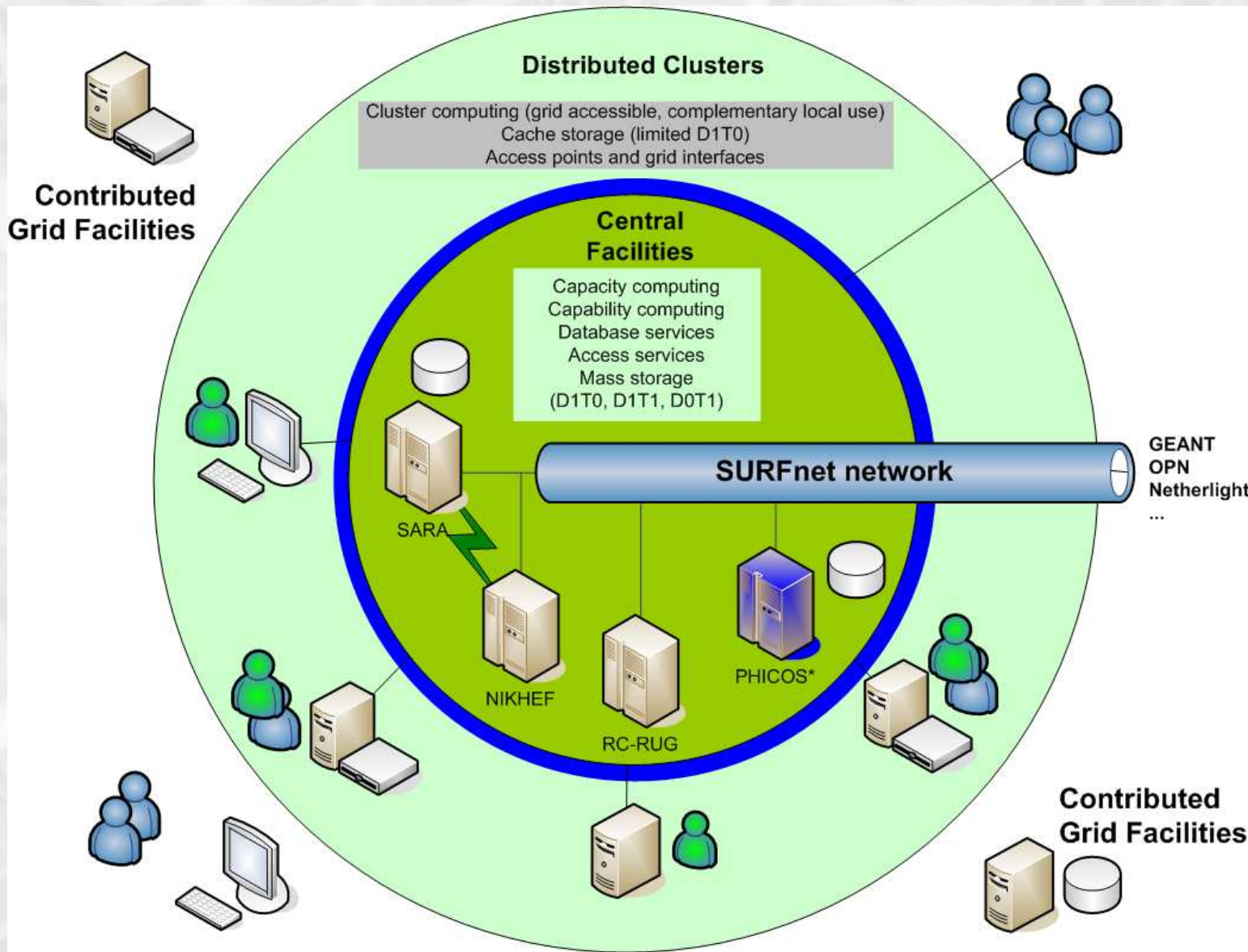
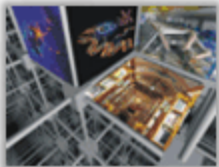
- Versterking Nationale Grid Infra voor wetenschappen (NL-GRID by NCF)
- Subsidie van 28 M€ voor uitrol van hardware en peopleware (kennis) 2007-2010.
- Kernpartners
 - NCF (funding agency)
 - NBIC (bio informatica Nederland)
 - NIKHEF (Hoge Energie Fysica)
- Centrale en gedistribueerde faciliteiten
 - Life Science Grid voor levenswetenschappen

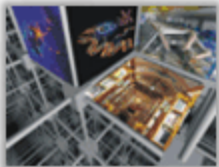


Combinatie van 'push' en 'pull'

- Applicatieondersteuning:
 - expertise: Application Domain Analysts
 - help desk en operations centre
- Uniforme software suite → kruisbestuiving
 - Standaarden:
 - Open Grid Forum
 - EGEE: 'production' grid (40 disciplines)
 - BSIK VL-E project







Centraal en gedistribueerd



O(5000) CPU



O(10) PB disk opslag



O(20) PB tape opslag



O(10) Life Science Grid clusters



Central Facilities (operational)



Life Science Grid (operational)

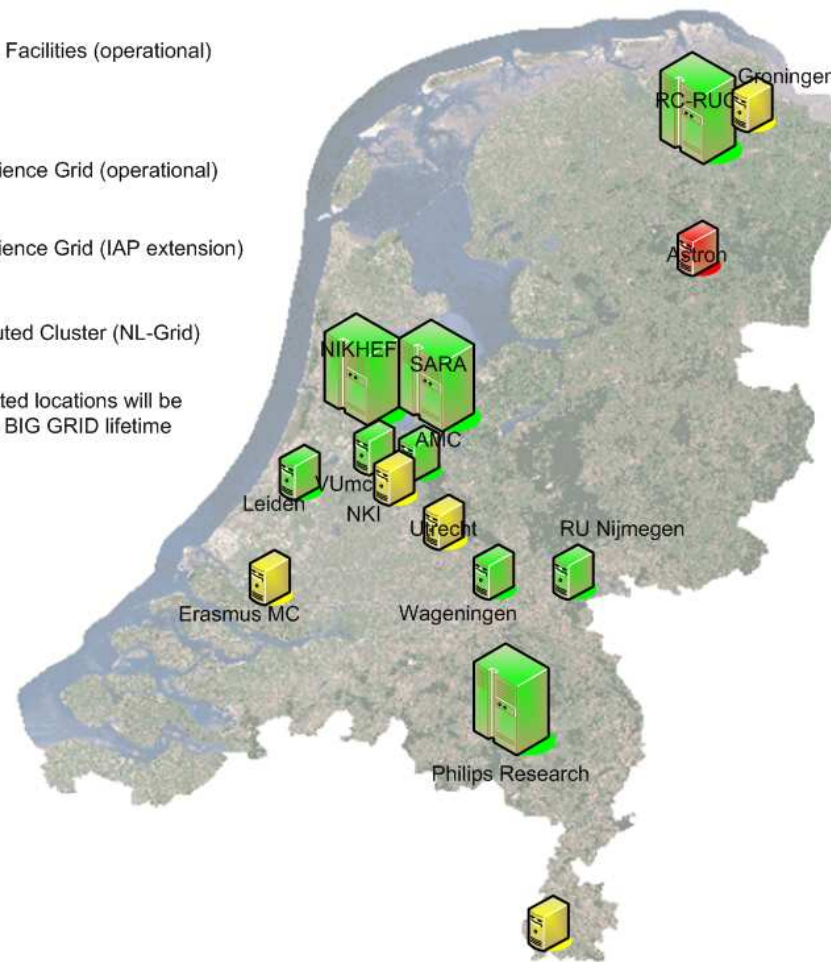


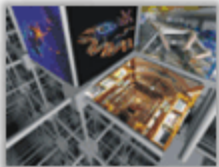
Life Science Grid (IAP extension)



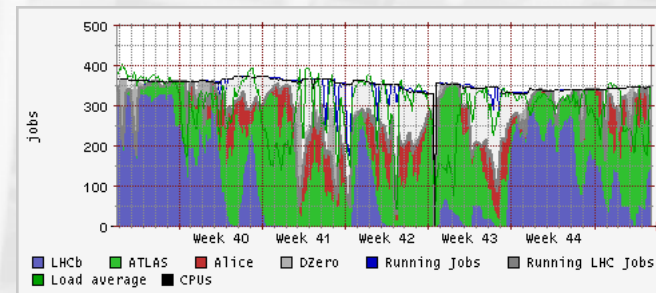
Distributed Cluster (NL-Grid)

Additional distributed locations will be specified over the BIG GRID lifetime

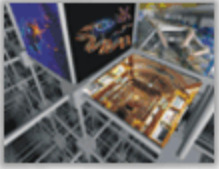




Om te onthouden



- Grid nu al beschikbaar, in productie en wordt gebruikt
- BIG GRID levert de hardware en peopleware
- Veel opslag en rekenkracht



Dank voor
uw aandacht

"Computers are incredibly fast,
accurate, and stupid;
humans are incredibly slow,
inaccurate, and brilliant;
together they are
powerful beyond imagination."

Albert Einstein

- Kijk ook op de Expo
 - Virtual Laboratory for e-Science
 - Nationale Computer Faciliteiten
 - SARA
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