VL-e Proof of Concept

and the VL-e Integration Team

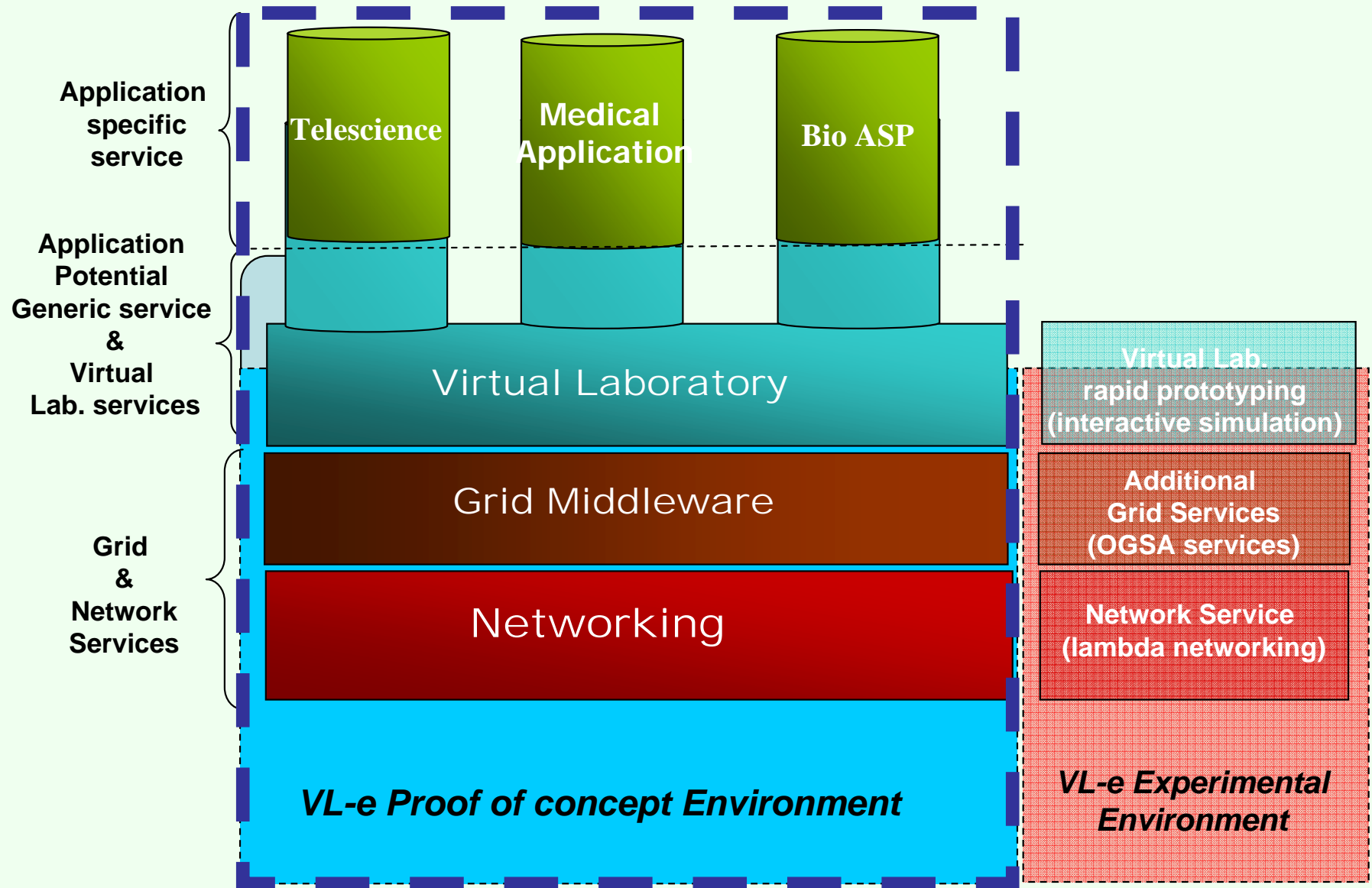David Groep
Maurice Bouwhuis

VL-e SP Plenary Meeting, November 1st, 2005

Once more: the VL-e structure

Application specific service

Telescience

Medical Application

Bio ASP

Application Potential Generic service & Virtual Lab. services

Virtual Laboratory

Grid & Network Services

Grid Middleware

Networking

VL-e Proof of concept Environment

Virtual Lab. rapid prototyping (interactive simulation)

Additional Grid Services (OGSA services)

Network Service (lambda networking)

VL-e Experimental Environment

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Proof-of-Concept Mission

The VL-e Proof-of-Concept (PoC)

- is a shared, common environment,
- where different tools and services are
- both used and provided by the VL-e community

Two key branches
- PoC Software Distribution
- PoC Infrastructure Service and Service Hosting

PoC Architecture High-Level overview

- Many different tools and services
- From many different providers
- Tied together in a common framework
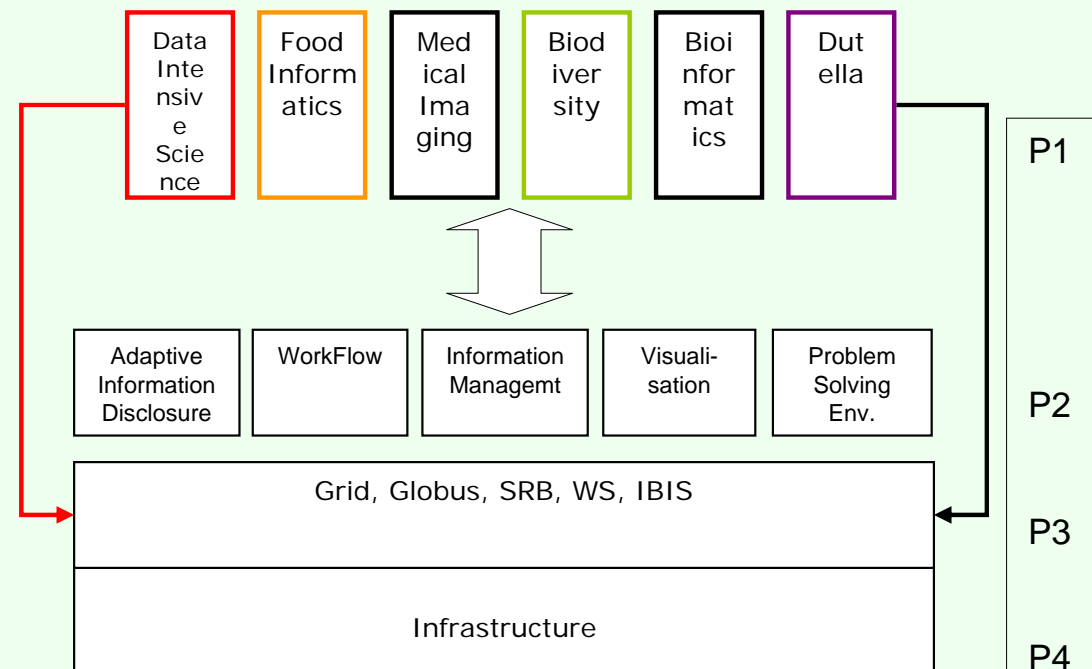
Service-Oriented Architecture (SOA)

- Re-useable software components
- Integrated at the work-flow layer

technical implementation details still remain ...

Managing the PoC: VLeIT

- **VL-e Integration Team**
  - collects and prioritizes
  - organizes the development effort
  - decides on tools that are part of the PoC

VLeIT members

Scientific Director (chair)	Bob Hertzberger
Applications liaison	Robert Belleman
Adapt. Inform. Disclosure	Machiel Jansen
Workflow	Zhiming Zhao, Paul van Hooft, Adam Belloum
Information Management	Nader Mirzadeh, Hakan Yakali, Paul van Hooft
Visualization	Robert van Liere
Problem Solving Environments	Breanndán Ó Nualláin
HPCN P3 representative	Kees Verstoep
P4 representative	David Groep
PoC infrastructure	Maurice Bouwhuis

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VLeIT operational model

- Collection of usage scenarios
- Identification of generic elements & commonality
- Matching tools with applications

- Prioritizing development effort
- Managing pool of scientific programmers

- Advise the user scenario working groups
  (process currently being implemented)

Usage Scenarios Working Groups

- Currently being started,
  some already operational
- For example:
  - BioInformatics (with AdamB, PaulvH)
  - Food (with MachielJ)
  - Dutella (with PaulvH)
  - IBED (with PaulvH)
  - ...
  - ...

Building the PoC: Scaling and Validation

- Build
  - Software Layers
  - Certification & Deployment Process
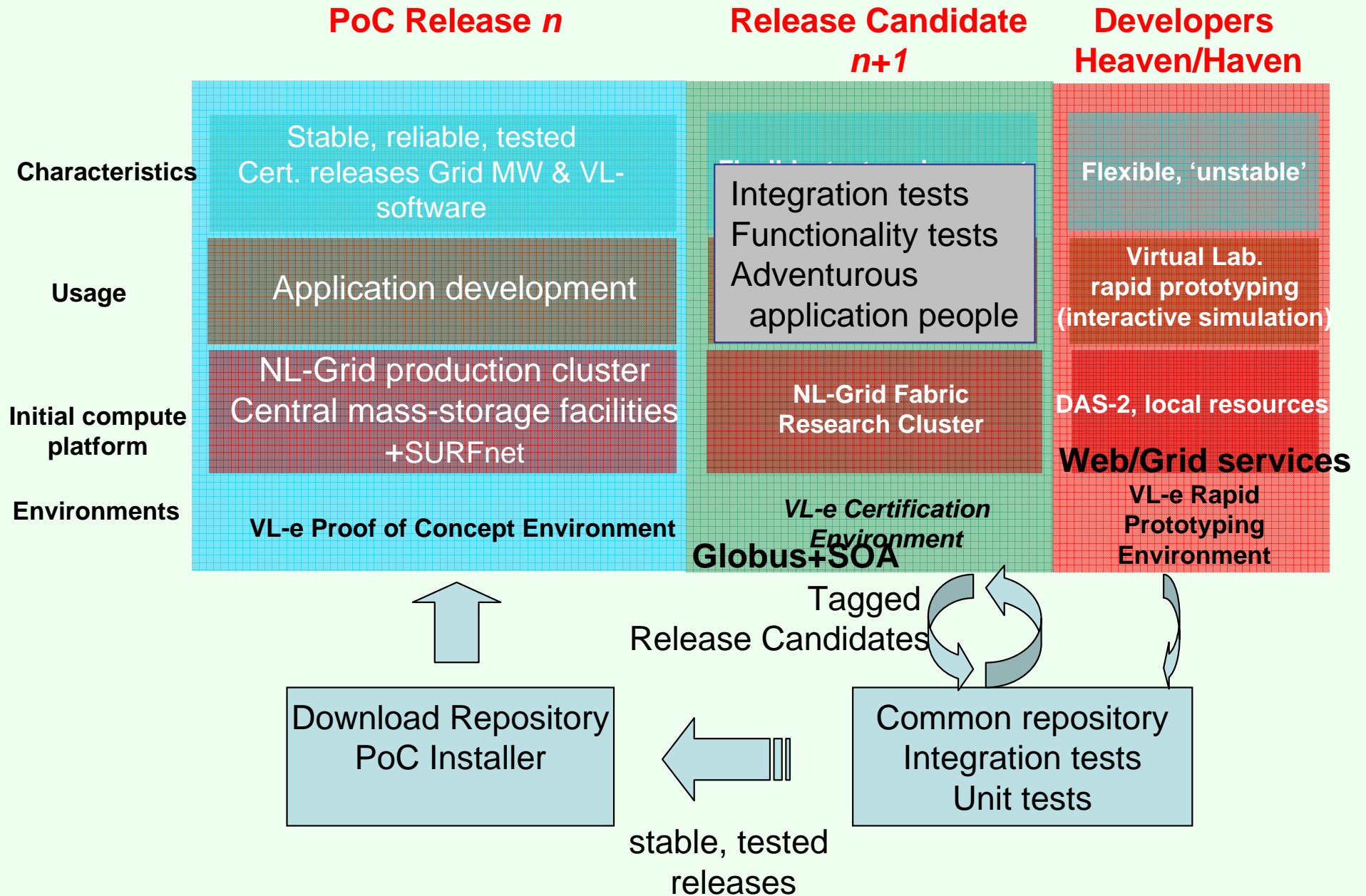 - What might be there?
- Support

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The shared PoC infra and software

- **physical** infrastructure (such as computers, storage, …),
- central **services** (database hosting, repository services, …),

- the **PoC software suite**. For convenience, the following elements of this suite can be distinguished:

  - *Grid foundation middleware*; the basic software that is based on interfaces and concepts that are globally adopted and standardized. This includes elements such as the security model, resource allocation interface, …

  - *Generic Virtual Laboratory software* *('P2')*; the software developed within the project for the PoC.

  - **Services** *imported from outside*; given that not all services are necessarily developed within VL-e, some will be imported.

  - Associated *installation and deployment tools*; the PoC suite is installed on the central facilities and (where applicable) also available for distributed installation.
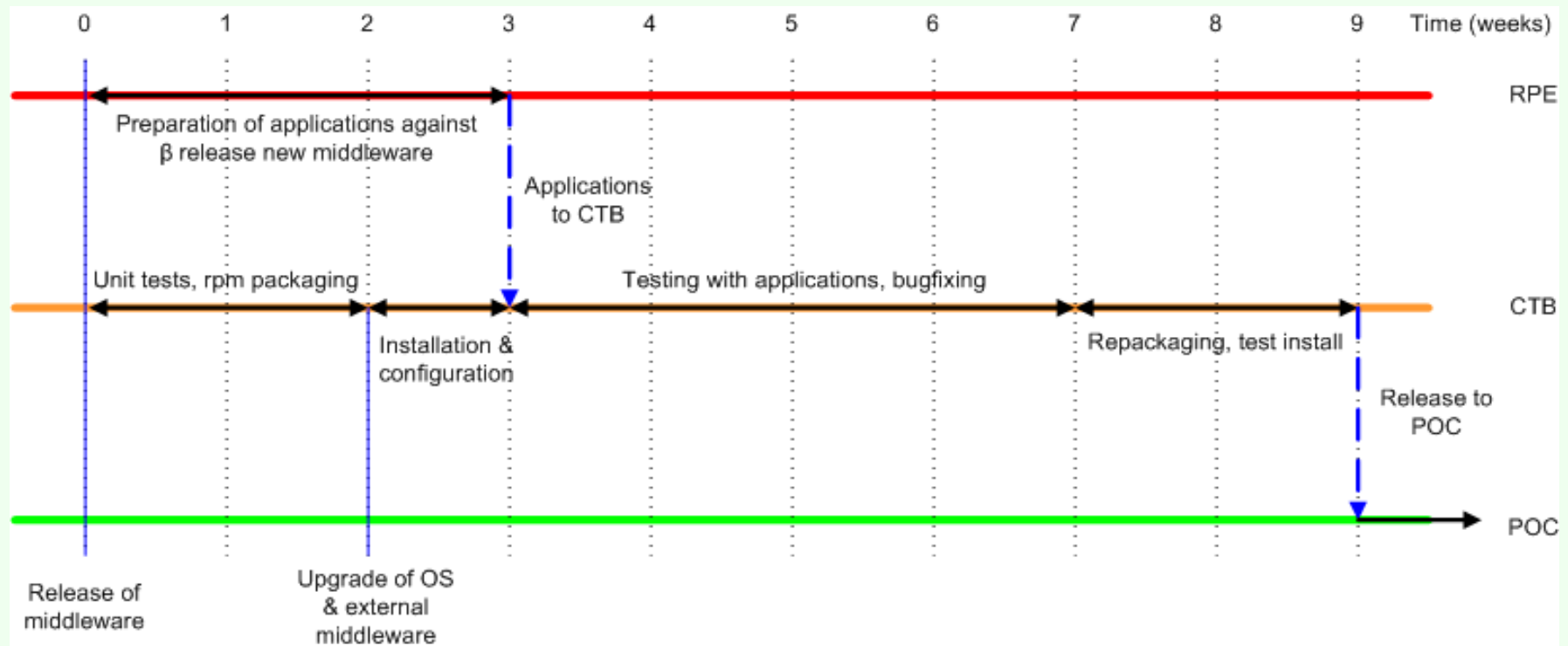
Foundation Software Release Methodology

PoC Release *n*

Release Candidate *n+1*

Developers Heaven/Haven

Characteristics

Stable, reliable, tested
Cert. releases Grid MW & VL-software

Integration tests
Functionality tests
Adventurous
application people

Flexible, 'unstable'

Usage

Application development

Virtual Lab.
rapid prototyping
(interactive simulation)

Initial compute platform

NL-Grid production cluster
Central mass-storage facilities
+SURFnet

NL-Grid Fabric
Research Cluster

DAS-2, local resources

Web/Grid services

Environments

VL-e Proof of Concept Environment

VL-e Certification Environment

VL-e Rapid
Prototyping
Environment

Globus+SOA

Tagged
Release Candidates

Download Repository
PoC Installer

Common repository
Integration tests
Unit tests

stable, tested
releases

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Release management and stability

- Foundation middleware: 'timeboxed' releases

- Next release January 2006

Release management and flexibility

- Application can build
  on top of stable foundations in the PoC

- Installation of application software on both
  central and distributed infrastructure
- Rapid upgrades at the user's discretion

- Installation support for application-level
  'software managers' on the central systems

Proposed base tools for distribution R1

VLeIT document forthcoming, pending approval …

	Component	Contact	Expertise Level
OS	• Red Hat Entreprise Edition R3	SARA/NIKHEF	Full
	• PoC installer	NIKHEF	Full
Middleware	• Globus Toolkit version 2.x as supported by Virtual Data Toolkit project	SARA/NIKHEF	Full
	• Grid services from LCG, EGEE	SARA/NIKHEF	Full
	• Globus Toolkit 4.0 (WSRF)	SARA/NIKHEF	Intermediate
	• Storage Resource Broker (version 3.3.1)	SARA/NIKHEF	Intermediate

Integrative	• Report on SWMF is coming, but the systems
	  o Ptolomy based kepler
	  o WS based taverna
	  o Triana
		Zhiming	New

	• OGSA-DAI as installed with GT4	Nader	New
	• IBIS (version 1.2)	Ceriel	Full

Proposed base tools for distribution R1

VLeIT document forthcoming, pending approval …

Tools & Libraries	• ParaView (version 2.2.1)
	   o VTK (version)
	   o MESA (needed?)
		RobertB	New

	• ITK (version 1.4)	RobertB	New
	• FSL (version 3.2)	RobertB	New
	• MRICRO (version)	RobertB	New
	• java SDK 1.4.2.x deployment/install	NIKHEF	Intermediate
	• octave (version x.x.x)	Breandán	Full (no gui)
	• lamMPI (version x.x.x)	SARA	Full
	• LUCENE (version 1.4.3)	Machiel	Full
	• Ant (version 1.6.2)	Piter	Intermediate
	• R	Frans	Full
	• Grid Weka (version 3.4.2)	Machiel	Intermediate
	• Nimrod client software	Breandán	Intermediate
	• GAT	André	Full
	• Sesame (client)	Machiel	Full

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Specific Installations on the PoC

- Some specialized software installed on designated central facilities ('Matrix'):

  - VLAM
  - SRB server
  - NIMROD Portal

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Support and training

- Next PoC release:
  January 2006

  (code cooled: Oct 1ˢᵗ 2005)

- GANG "Admin Nerd Group" in mid-January
- Application-development oriented event mid-February

- User help-desk for the PoC
  (020) 592 8008, grid.support@sara.nl