

Software Integration, Deployment & Evaluation

WP6: Integration Testbed



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Outline

❖ Status & Achievements

- Integration
- Deployment
- Evaluation & Feedback

} Objectives

❖ Recommendations

❖ Exploitation of Results

❖ Questions

Software Development Tools



❖ Source Code Management (CVS)

- 184 developers
- 135 EDG Modules
- 108 MB of source

❖ Autobuild

❖ Package Repository

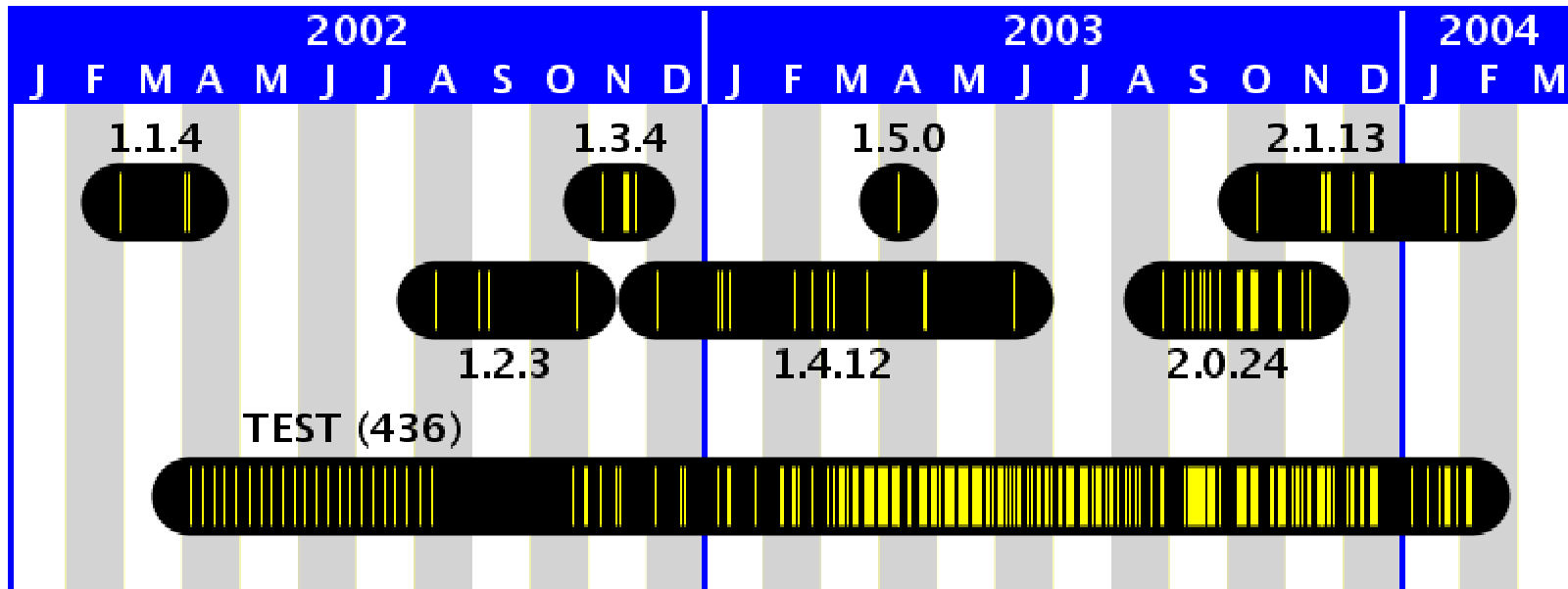
❖ Testing Framework

❖ Bugzilla

- >2500 bugs
- 87% resolved

	Pkg. Rep.		EDG 2.1.13	
	Pkgs.	GB	Pkgs.	MB
EDG	43326	13.6	412	197
VDT	8915	2.1	12	44
Linux	4217	4.8	551	449
Extern.	874	1.0	104	204
Apps.	255	4.6	111	1498
Total	57587	26.1	1190	2392

EDG Release Management



❖ Integration Team

- People from all work packages
- Central to success of project

❖ System Administrators

- Efficient installation
- Exemplary operation

Application Testbed

Site	Country	CPUs	Storage (GB)
ASCC	Taiwan	21	8
Birmingham	UK	4	34
Cambridge	UK	5	16
CC-IN2P3	FR	3	348
CNAF	IT	4	15
CPPM	FR	2	16
ESRIN	IT	28	0
FZK	D	4	1034
Imperial Coll.	UK	2	16
IFAE	ES	4	88
IPSL	FR	3	417
NIKHEF	NL	32	1752
Oxford	UK	2	35
Padova	IT	4	71
Queen Mary Coll.	UK	2	48
RAL	UK	6	57
RAL-PP	UK	10	28
SARA	NL	0	10000
Sheffield	UK	16	217
SRCE	HR	2	16
UCL	UK	2	5
Wuppertal	D	5	34
Total	8	161	14255

❖ Physical Size of Testbed

- 21 sites in 8 countries
- 14.3 Terabytes
- 161 CPUs

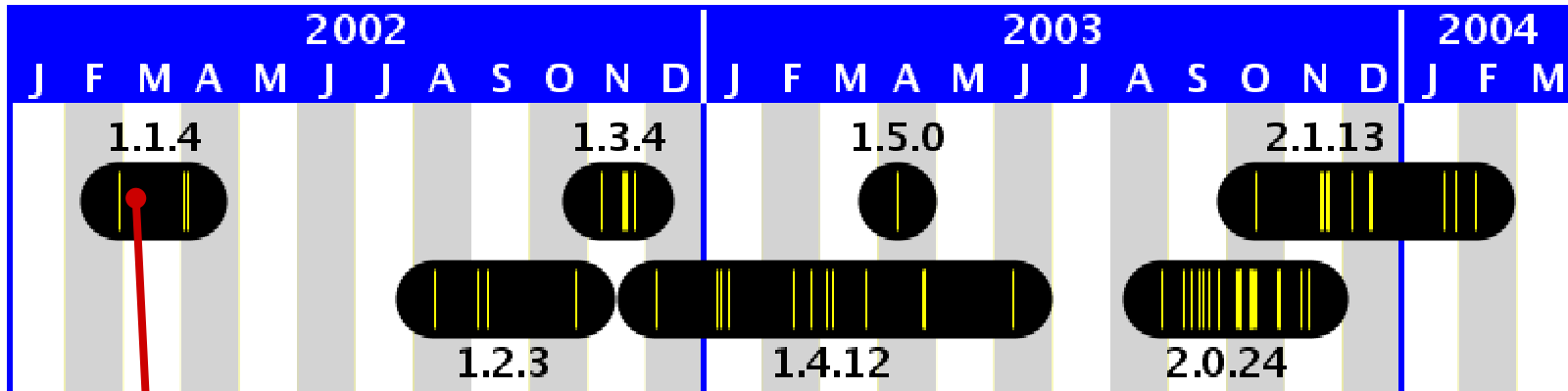
❖ Users

- 12 Virtual Organizations (VO)
- 100 regular users
- 500 registered users

❖ Other projects

- CrossGrid, DataTag, LCG
- National Projects

Release Milestones

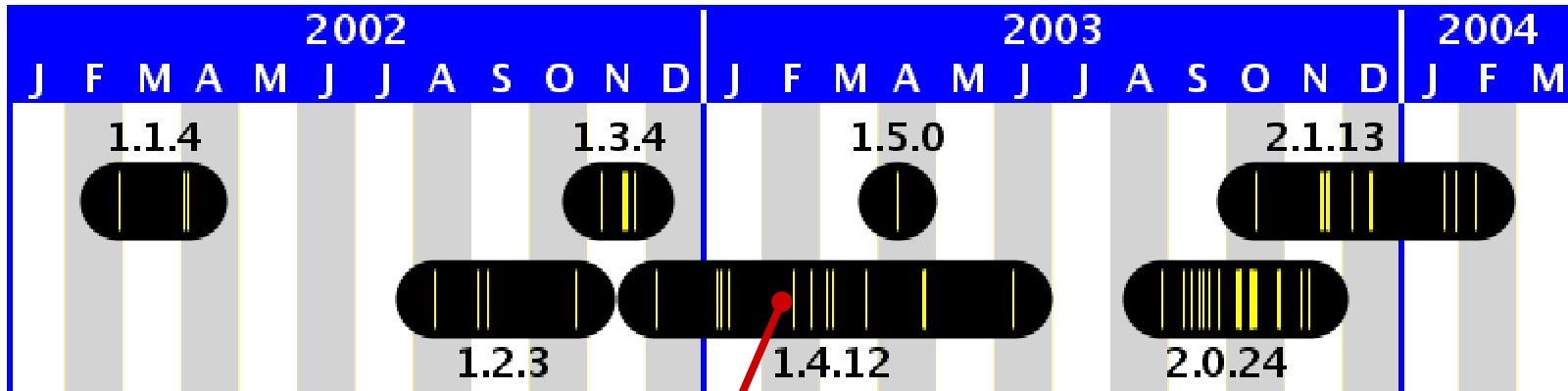


EU Review (1.1.2)

❖ Features

- Prototype
- Data-driven scheduling
- Data mgt. services.

Release Milestones



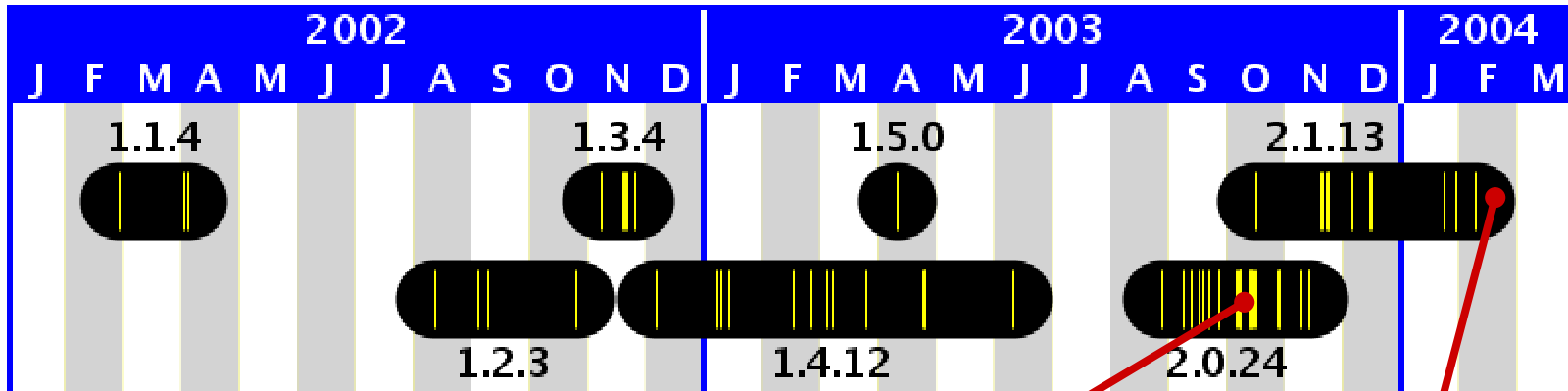
EU Review (1.4.3)

❖ Features

- Good stability, reliability.
- "Hybrid" information sys.
- Push for automatic config.

- On application testbed until 2.0.0 released.

Release Milestones



Evaluations (2.0.12)

EU Review (2.1.13)

❖ Features (2.0.12)

- R-GMA replaces MDS
- Refactored workload mgt.
- Interactive, MPI, chkpt. jobs.
- Replica Location Service
- Webservice SE

❖ Features (2.1.13)

- Reasonable stability, reliability.
- VOMS incorporated (WP1,4)
- Bug fixes for all services.

Security Infrastructure



❖ Certificate Authorities

- 21 CAs span:
 - Europe
 - North America
 - Asia
- Independent administration
- Backbone of present & future global grid projects

❖ VO Membership Service

- Expect VO to take over operation servers
- Include certificate requests into standard registration procedures

ArmeSFo	Armenia	HellasGrid	Greece
ASGCCA	Taiwan	INFN	Italy
CERN	Switzerland	LIP	Portugal
CESNET	Czech Rep.	NIKHEF	Netherlands
CNRS	France	NorduGrid	Nordic Countries
CyGrid	Cyprus	PolishGrid	Poland
ESNet	USA	Russia	Russia
FNAL	USA	SlovakGrid	Slovakia
GermanGrid	Germany	Spain	Spain
GridCanada	Canada	UKeScience	UK
Grid-Ireland	Ireland		

Support

❖ User Support

- Users' Guide
- ITeam mailing list
- Bugzilla
- User tutorials
- Service ticketing system exists

❖ System Administrator Support

- Installation Guide
- ITeam/System Administrator mailing lists
- Bugzilla
- System administrator tutorials

Evaluation

❖ Formal Evaluation (D6.8)

- Release procedures
- Operations
- EDG Middleware

❖ Reality: Everyone Tests

- Developers
 - Integrators
 - Testers
 - “Loose cannons”
 - End-users
- } Private MW TBs
- } Development TB
- } Application TB

❖ Testing Suite

- EDG development; shared with LCG.
- Large (72) and growing body of tests

Lessons

❖ Overall: Integration & Testing Effort Underestimated

❖ Software Development

- Service-oriented design
- Code, packaging & configuration standards
- Unified test framework

❖ Operations

- Auto-installation/config. tools mandatory
- Minimize & decentralize infrastructure
- Grid-enabled diagnostic tools

❖ Fragmentation of Resources

- Don't have "webs" should *not* have "grids".

Exploitation of Results

❖ Software

- Code & Support → partners, future projects
- Infrastructure → limited, continued support
- Package Rep./Web → frozen; available “forever”

❖ Resources

- App. TB → dev./demon. testbed for EGEE
- CA Infrastructure → continues (coord. under EGEE)
- VO Infrastructure → VOs must take over

❖ Experienced People

- Developers, integrators, etc.
- System administrators