

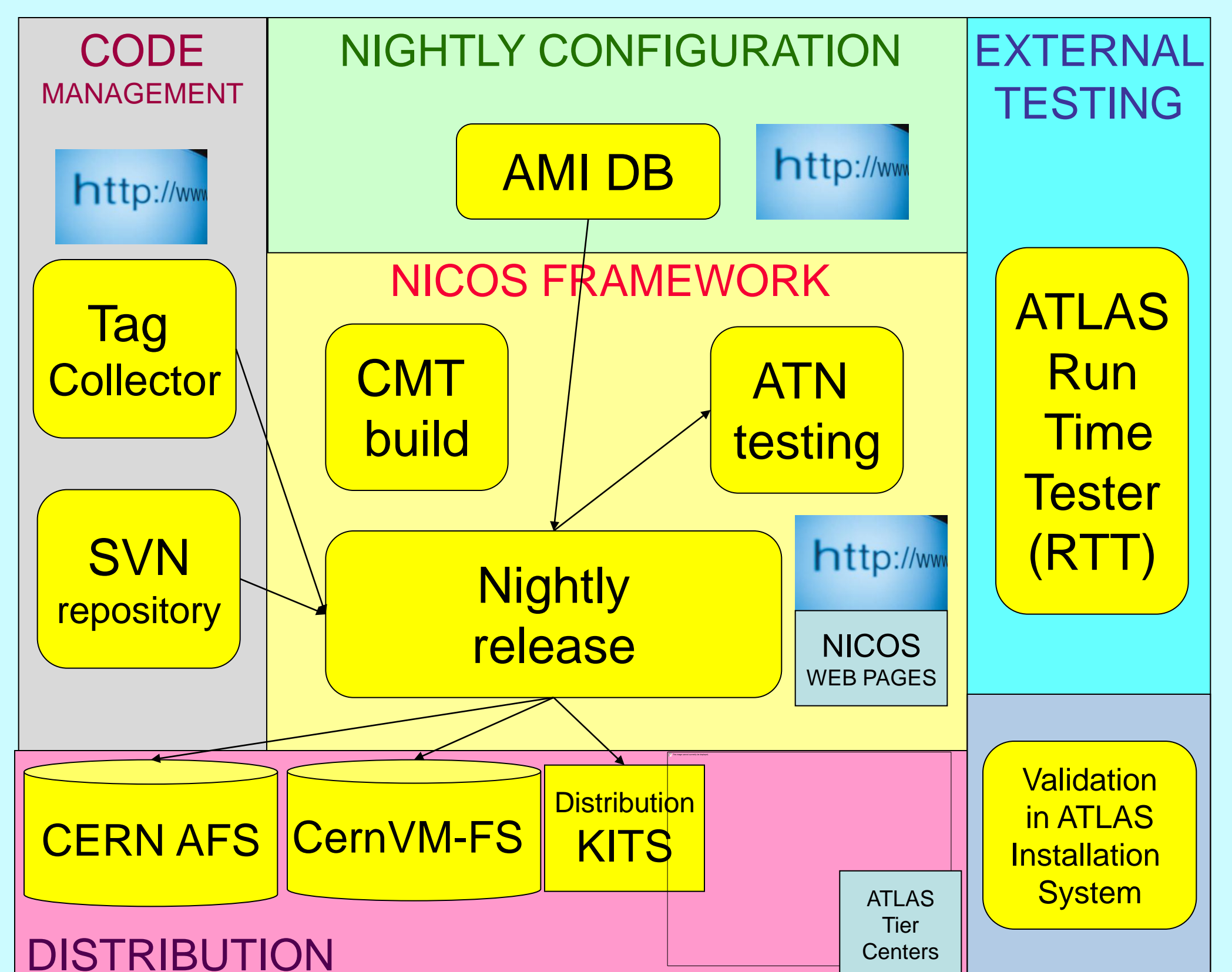
Abstract

For over 10 years of development the ATLAS Nightly Build System has evolved into a factory for automatic release production and grid distribution. The numerous branches of ATLAS releases provide vast opportunities for testing new packages, verification of patches to existing software, and migration to new platforms and compilers for ATLAS code that currently contains ~2200 packages with 4 million C++ and 1.4 million python scripting lines written by ~1000 developers. The nightly releases lead up to stable releases used for data processing and analysis worldwide. The ATLAS Nightly System is managed by the NICOS control tool [1] on the ATLAS Build Farm. The ATN testing framework [2] runs unit and integration tests for the nightly releases.

ATLAS nightlies in numbers

- Number of branches: 50
- Total number of platforms in all branches: 70
- Led up to 379 stable releases in 2011
- Nightlies computing farm:
 - 50 8-processor nodes, 16-24 GB RAM
 - build parallelism (distcc, CMT [3])
- Time to rebuild nightly release: 10 hours
- Number of ATN tests: ~ 450
- Additional time to complete ATN tests: 5 hours

Nightly Framework



ATLAS collaborative tools connections:

- CMT [3] code management and build tool
- Tag Collector [4] web based tool for managing the tags of packages in release
- ATLAS SVN code repository
- ATLAS metadata DB (AMI) [5] for storage of NICOS configurations for different nightly branches
- Download availability with ATLAS distribution kits tools [6]
- Worldwide access on CERN AFS or CernVM-FS [7] distributed file systems
- ATN [2] and RTT [8] testing frameworks
- ATLAS Installation System [9]

Growth Stages of the Nightly System

2001-2005: Establishment of the System

- Bug fix & development branches only
- Few tens of ATN tests
- ~800 leaf packages
- No parallelism in builds and tests

2006-2009: Accelerating Growth

- 30 nightly branches
- 300 ATN tests, high success rate
- ~2000 leaf packages
- Build parallelism
- Sophisticated software validation

Since 2010: Refinement of the System

- Stable number of packages and tests
- High parallelism in builds and tests
- 98% reliability

Wide assortment of nightlies branches of different scopes and purposes

Integration branches:
current code status

Experimental branches:
testing new operating systems and compilers

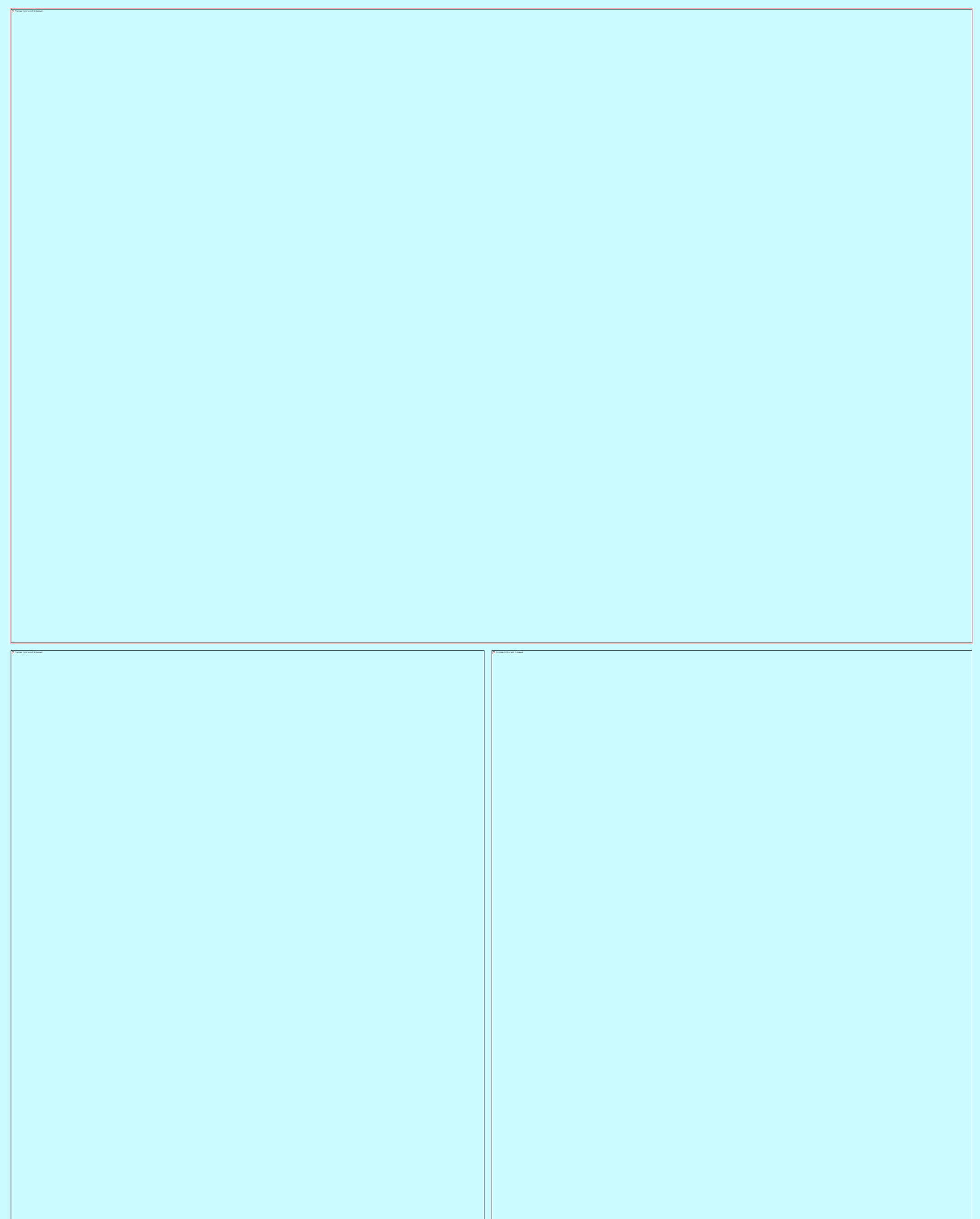
Migration branches:
isolated development environment

Patch branches:
overrides to stable releases

Personal branches:
for bleeding edge development

Analysis branches:
code collections for physicists (for use with stable releases)

Nightly System Growth Graphs



References

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- [5] Albrand S et al 2010 J. Phys.: Conf. Ser. **219** 042030
- [6] Rybkine G 2012 ATLAS software packaging, to be published in CHEP 2012 Proceedings
- [7] Blomer J et al 2011 J. Phys.: Conf. Ser. **331** 042003; De Salvo A et al 2012 Software installation and condition data distribution via CernVM FileSystem in ATLAS, to be published in CHEP 2012 Proceedings
- [8] Simmons B et al 2010 J. Phys.: Conf. Ser. **219** 042023
- [9] De Salvo A et al 2008 J. Phys.: Conf. Ser. **119** 052013