Migrating the Belle II Collaborative Services and Tools

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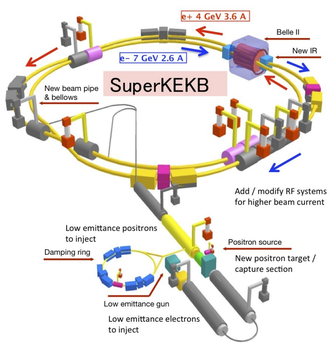
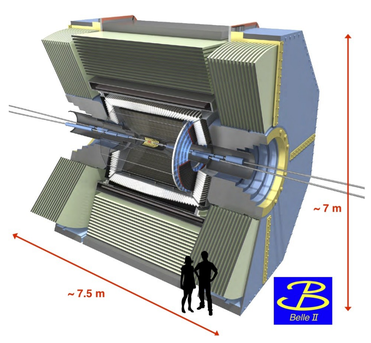
Introduction

Collaborative services and tools are **essential** for any (HEP) experiment involving a large number of international partner. They help to **integrate** global virtual communities by allowing all members to share and exchange relevant information by way of web-based services.
Examples are public and internal web pages, wikis, mailing list services, issue tracking systems, services for meeting organization and document and authorship management as well as build services and code repositories.

Motivation

In order to achieve **stable** and **reliable** services, the Belle II collaboration decided to **migrate** the current set of services into the existing IT infrastructure at DESY.
The DESY IT infrastructure is built to be reliable and highly available and has been providing **sustainable state-of-the art** services for many scientific groups such as CFEL and European XFEL as well as for HEP. It includes fail-over mechanisms, back-up and archiving options for all services.
Security is a major issue at DESY which is thoroughly deployed for all services.





Belle II at SuperKEKB

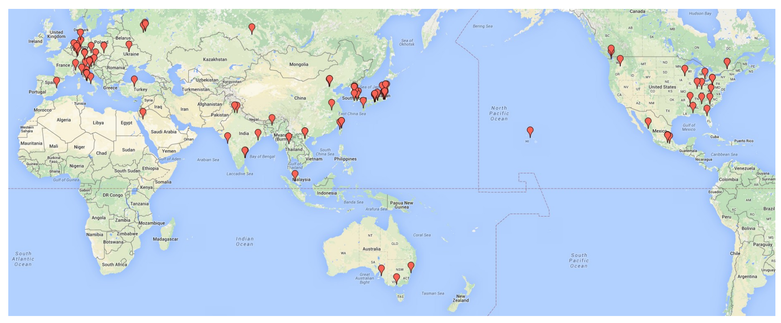
From 1998 to 2010, KEK, the Japanese High-Energy Accelerator Research Organization, operated KEKB, a 3 km circumference asymmetric electron-positron collider thereby reaching the world record in instantaneous luminosity of 2.1×10^{34} cm^{-2}/s. The beam energies were chosen so that in the collisions large numbers of B-anti-B meson pairs were produced, and hence the facility is also known as a B factory.
The SuperKEKB accelerator, a major upgrade of KEKB, is designed to achieve a peak luminosity a factor of forty times higher. The Belle II experiment is designed to record data at SuperKEKB, with a performance similar or better than Belle or BaBar, the B factory detectors, in a much more severe beam background environment.

The B-factory experiments observed the first large signals for CP violation (matter-antimatter asymmetries) in the B meson sector in 2001. These results demonstrated Kobayashi and Maskawa's hypothesis for the origin of the CP violation is correct and provided the experimental foundation for their 2008 Nobel Prize in Physics. Belle II, the first super B-Factory experiment, is designed to find NP (New Physics) beyond the Standard Model of particle physics.

Belle II Collaboration

Belle II is an international collaboration consisting of

- 681 users
- 100 institutes
- 23 countries
- 4 continents (Asia, Europe, North America, Australia)
- 19 timezone (Tokyo UTC+9h → Hawaii UTC-10h)



User Registration

- Advanced security due to personal accounts
- Authorized access only (no common account)
- All Belle II members request credentials (account / password)
- One account for all services (Single-Sign-On (SSO))

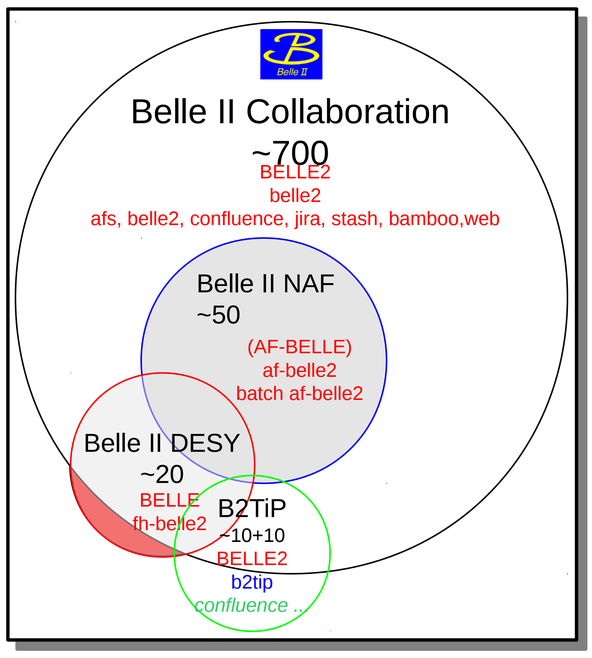
- Grid certificate based ***authentication***
- Form based (paper) registration
- Belle II membership based ***authorization*** *(VOMS)*
- Solutions for students or co-workers outside Belle II

- First.Last@belle2.org

- Multiple groups (primary / secondary)

- Identity and Access Management (IAM) is planned

- Status: ~450 registered Belle II members (of 681)



Procedure and Experiences

- **The migration is a technical and social challenge!**
- KEK CC shutdown in August 2016 set the time line
- Main goal: Don't lose any information!

- Integrate services and tools into an existing IT infrastructure
- Technology changes are necessary
- 1-to-1 copy of contents is usually not possible
- Migration tools are not always available
- Quite some manual work required

- ~10 Expert teams taking care of the various services
- Cooperation of collaboration members needed

- Wiki by far most complicated
- Migration from *SVN* to *GIT* most controversial within Belle II
- Maintaining infrastructure vs. maintaining contents

- For the migration: ~10 FTEy / 6 month
- Further maintenance: 1 FTE (in the first 2 years)

Website

www.belle2.org

- Public / internal pages
- Single-Sign-On (SSO)

- Modern responsive design
- CMS based
- *ZMS3* (Python, jquery, boostrap)

- Maintainable from outside

Wiki

- *ATLASSIAN* tool
- Single-Sign-On (SSO)
- State-of-the art wiki
- Connection to *jira* & *stash*
- Powerful GUI
- Many plug-ins available
- Thorough documentation

- Migration from *Twiki*
- By far the most work
- ~4000 pages migrated
- No automatic migration
- Some effort to compare content
- 5 FTEmonth manual work

- Workflows need adoption

- Archived *twiki* available

Issue Tracking

- *ATLASSIAN* tool
- Single-Sign-On (SSO)
- Connected to *confluence*

- Migration from *redmine*
- *ATLASSIAN* plug-ins

Mailing Lists

- *sympa*
- list@belle2.org
- Separate accounts

- Migration from *sympa*
- Cleanup and reordering

Code Repository Build Services

- *ATLASSIAN* tools
- Single-Sign-On (SSO)
- Connected to *confluence*

- Migration from *SVN to GIT*
- Hooks plug-in

- Virtual machines in *Xen*
- Buildbot on VMs
- Build slaves for OS'

Agenda Service

- *Indico*
- Commonly used
- Separate accounts

- Copy from KEK *indico*
- Selected categories only

- Not yet done!

Document Service

- *Invenio*

- Single-Sign-On (SSO)
- Migration from *Invenio*
- Copy from KEK *Invenio*
- Straight forward

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