Operating the Belle II Collaborative Services and Tools

Andreas Gellrich and Thomas Kuhr
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https://indico.cern.ch/event/773049/contributions/3474857/

Belle II

Successor of Belle (1998 -2010)

- KEK, Japanese High-Energy High-Energy Accelerator

- B-$\overline{B}$ meson pair B factory

- KEKB, a 3.3 km circumference asymmetric e^+-e^- collider

- World record of instantaneous luminosity 2.1×10^{34} cm^{-2} / s

- SuperKEKB is major upgrade forty times luminosity

- Belle II experiment to record 100 times more data than Belle

- International collaboration

- ~1000 users ~100 institutes ~23 countries ~4 continents ~19 timezone

- Revised collaborative services and tools 2016
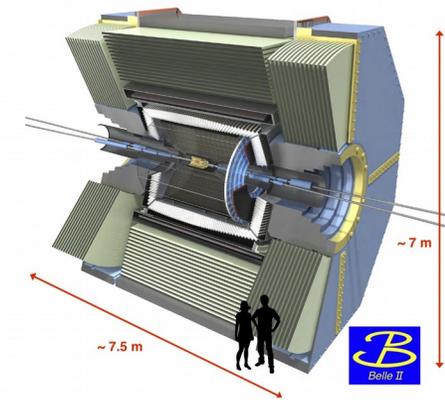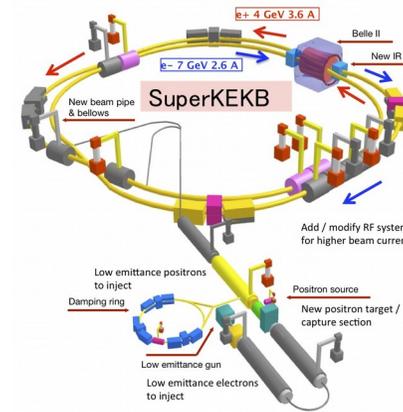
Introduction

Motivation

Why are collaborative services and tools needed?

- Communication is essential for any (virtual) collaboration

- Sharing and exchanging information

- Integration of a global virtual communities

- Administration and organization
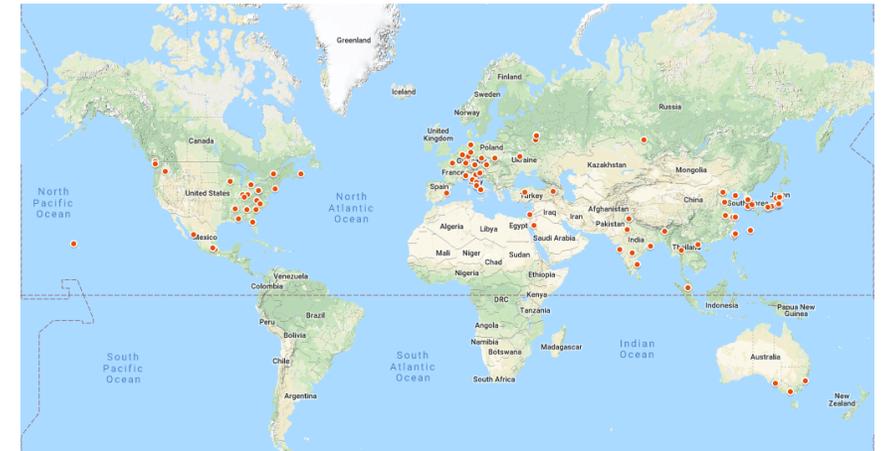
Introduction cont'd

Services

What kind of services and tools are needed?

- Management and administration of users

- Website www.belle2.org

- wiki, issue tracker, agenda service

- Logbooks, shift tools

- Chat service, questions, searches

- Monitoring

- Software building and validation
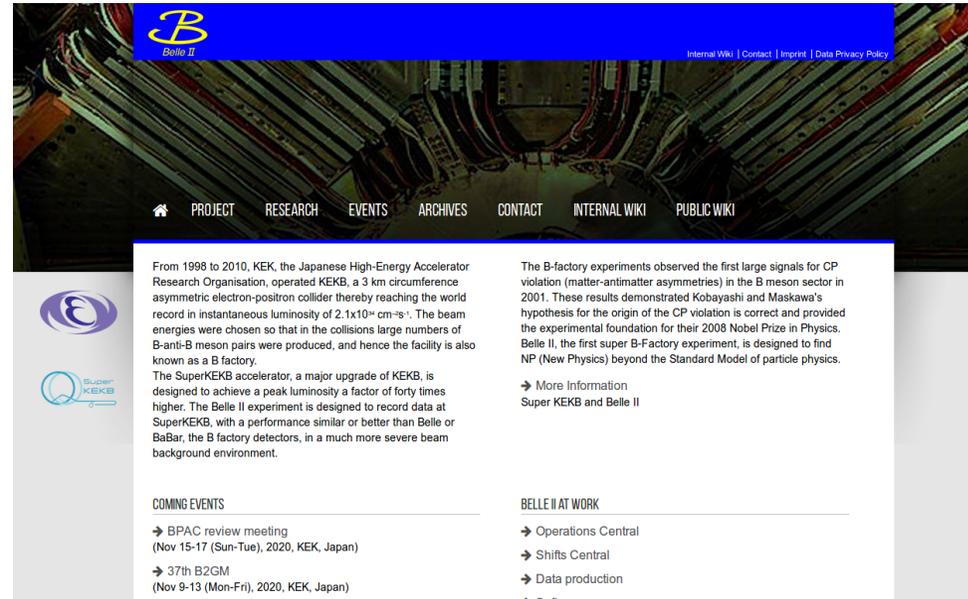
Requirements

Legacy

- Existing data and information must be migrated

Security

- Data and services must be protected; authentication and authorization for all users

Reliability, Stability, Availability

- Experiment must be operational at any time and integrity of data and information is crucial

Flexibility

- New requirements demand new features or new services and tools

Sustainability

- The collaboration will exist for >10 years

Services

Design

- Access with personal credentials (account/password) only

    - Centrally managed users

    - Membership management system

- As little as possible self-developed and self-maintained products

- Services embedded into a existing IT infrastructure

- Usage of state-of-the art technologies

- Individual (web) services may run on virtual hosts

    - Centrally controlled updates and maintenance

    - Secured web services with certificates

    - Demilitarized zone (DMZ) in the network

Services cont'd

DESY IT infrastructure

- User registry

- Web (*ZMS2*)

- Wiki (*Confluence*), GIT (*Stash*), Issue tracker (*JIRA*) ATLASSIAN tool suit

- Mailing list servcie (*Sympa*)

- Agenda (*Indico*)

Belle II services in VMs

- Documents (*Invenio*)

- Chat (*RocketChat*)

- Questions (*AskBot*)

- Monitoring (*Apache2* w/ *ldap*)

Services cont'd

Membership Management System (B2MMS)

The B2MMS plays a central role

- Keep track of all users who are connected to Belle II

- Acts as an interface to the DESY registry for credentials (account/password) to log in

- Source all Belle II member related issues

  - Mailing lists

  - Author lists

  - Voting

  - Shift lists

  - M&O costs

- Delegation of the management of users to the institution representatives (IR)

- Based on the DESY Identity and Access Management (IAM) (*Apex*)

- Developed at DESY in 2017; in production since January 2018

Experiences
Migration

[Migrating the Belle II collaborative services and Tools, CHEP2016, N Braun et al 2017 J. Phys.: Conf. Ser. 898 102014]

- No start from scratch!

- Work of collaboration went on while migrating

- Information was already collected in a twiki, an issue tracker (*redmine*), agenda (*indico*)
  - Twiki contents (~4000 pages and attachments)

- Member lists existed already
  - All users needed DESY credentials (account/password)

- Lack of a clear concept for communication → wikis vs. chats vs. email lists

- New ideas for services emerging during migration → *But this is much better than …!*

- Concepts are sometimes driven by implementation → *How can we use this nice new tool?*

- New ideas require new installations → *May we have another virtual machine for …?*

Experiences cont'd
User support

- Recent security standards require user login

- All users in the Belle II context needed DESY credentials (account/password)

- A workflow incl. The membership management system was set up

- Prime user issues:

  - Not reading documentation (to the end)

  - Personal email contacts rather than support mailing lists

  - Forgotten passwords

  - Ignored requests to change password (every 180 days by DESY policy)

  - Unmaintained and out-dated information in the wiki

Conclusions

- The opportunity to revise and rethink the Belle II collaborative services and tools was taken

- Integration into a production-grade IT infrastructure at DESY

  - Adoption of recent security standards

  - Implementation of state-of-the-art technologies

  - Utilization of the ATLASSIAN tool suit

- Development and Introduction of well-tailored membership management system

- Confirmed habits had to be given up (*Always log in!*) (*You need an account first!*)

- User support is known to be a non-scaling crucial issue