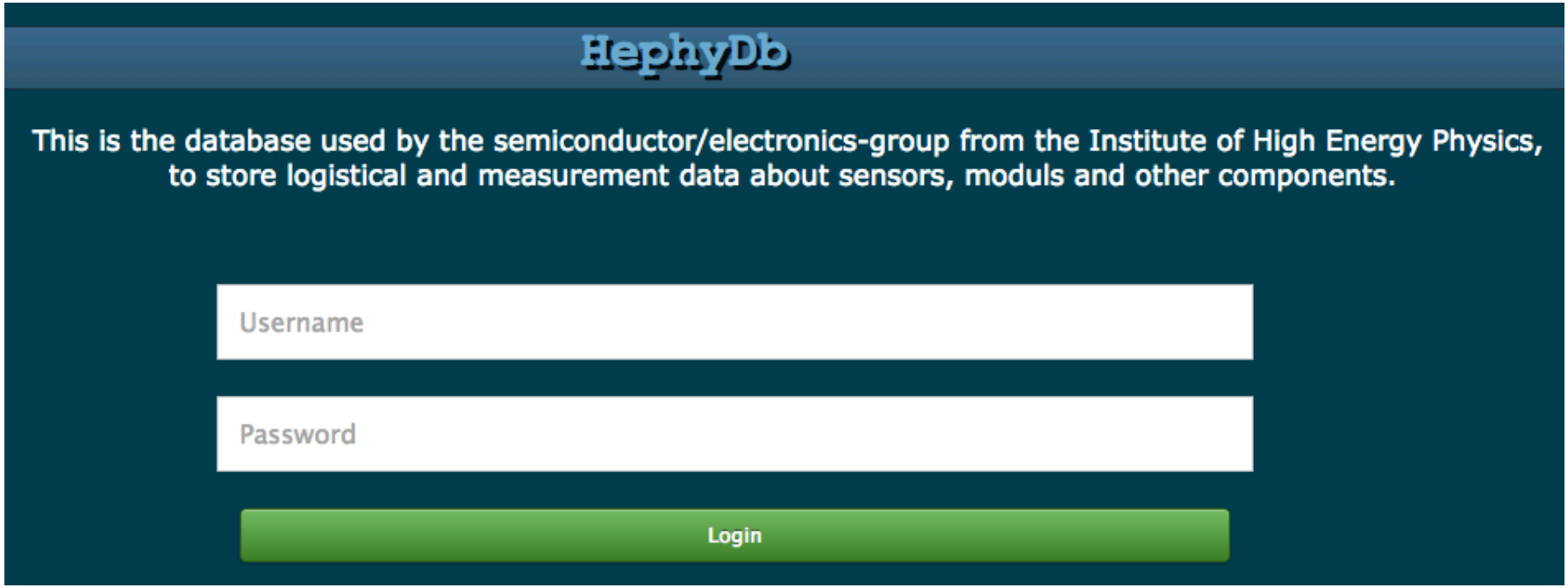
VXD Construction DB: Status and plans



6th VXD Workshop

Benedikt Würkner on behalf of the SVD group

1 Oct 2014

Overview of Database System

- Web based database (using PHP and MySQL)
- Uses CakePHP Framework
- Hosted on server at HEPHY
- Development started by Bernhard Leitl
- Current developers
  - Federico Pilo – Checklists → next talk
  - Benedikt Würkner – Measurements and usability features

Intended use

- Logistics
  - Tracking of items and actions performed with/on them e.g. bonded, assembled, destroyed
  - All items required for the VXD down to the APVs and their Wafers stored in database
- Measurements
  - Different kinds of measurements can be associated with items
- Workflow
  - Registration
  - Assembly
  - Checklist
  - Grading (Quality and Tags)

Nomenclature

- **Item**= unique object,
  - e.g. Sensor “3048-2_Wedge” or Ladder “L5.002”
- **Item type** = main category (e.g. sensor, hybrid)
  - Available Tags depend on the combination of item type and project
- **Item subtype** = detailed object
  - E.g. HPK “Large rectangular sensor”
- **Item subtype version** (number starting with 1)
  - E.g. 1=prototype, 2=production version

- **Project:** Belle II SVD, Belle II PXD
- **Locations:** Institutes (e.g. HEPHY, KEK)
- **Deliverers:** e.g. UPS, DHL, Post
- **Manufactures:** e.g. HPK, Micron, but also HEPHY or Pisa (for Modules, Ladders, …)

Logistics

- Tracking of item information
  - Type, Subtype and Subtype version
  - Previous and current location
  - Performed actions
  - Attached components (if applicable)
  - Assigned project
  - Assigned tags and tag changes
  - State of the item (some development in progress)
  - Manual comments
- All available items should be in the database
- Transfer of items from one location to another
  - Including tracking information
- Items without individual codes (e.g. APVs) also displayed including the availability (Stock items)

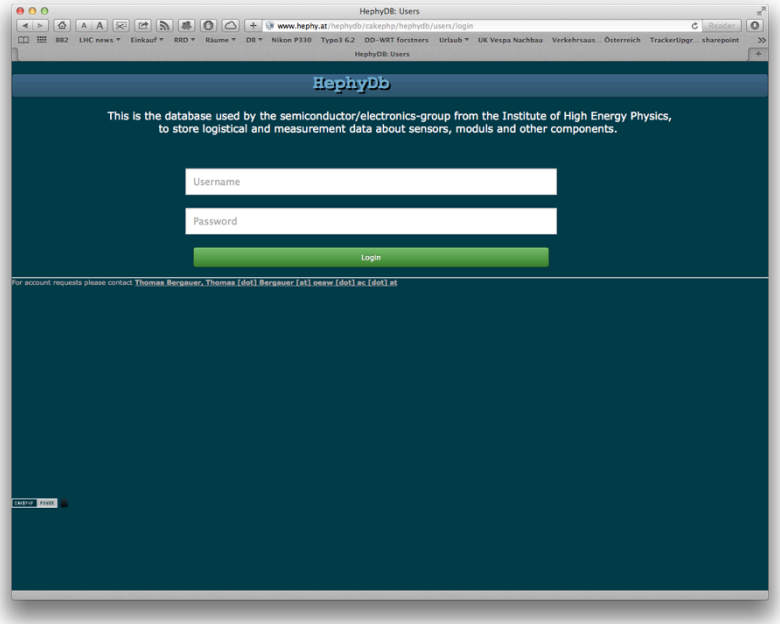
Measurements

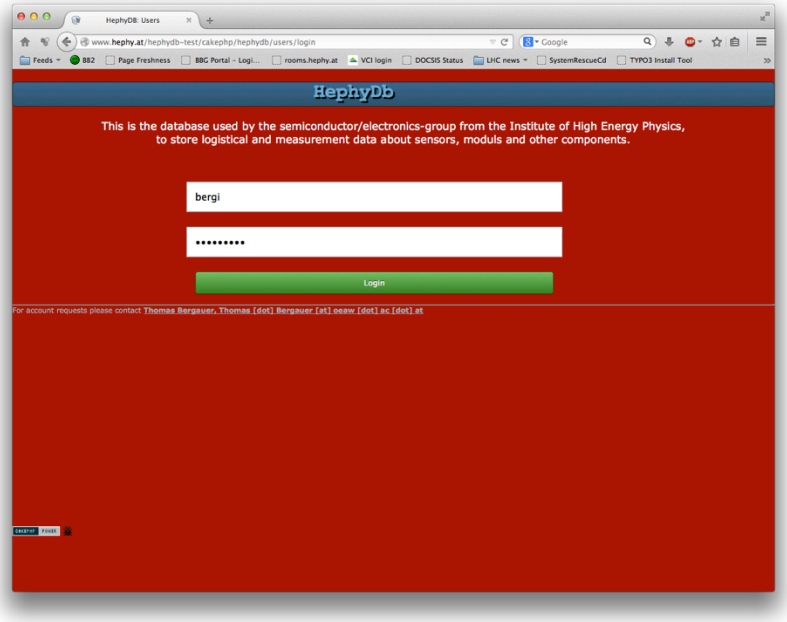
- Different file formats and measurement types can be stored
  - CVI and Strip files created at HEPHY
  - CSV files created with APVDAQ Version V0.93 (7th July 2014) and later
  - It and IV files created in the climate chamber at HEPHY
- Measurements are uploaded and stored in a generic format
- Processing of the data can take some time
- Measurements are associated with items
  - Automatic recognition of item code if set correctly
  - Manual association possible
  - Multiple uploads at once possible
- Data can be plotted directly in browser
- Export function will be added soon

Workflow

- Register
  - Creating an item in the database with a unique Code
  - If item consists of multiple components these are automatically registered at registration
- Assemble
  - Putting multiple items together to form a composite item
  - The items must already exist in the database
  - Creates a new unique item with the components attached
  - Only intended items are shown during assembly reducing the possibility of user error
- Checklists
  - Assembly instructions are created in the database requiring the user to perform them in the correct order and implementing quality control
- Extensive tutorial by M. Valentan
  - https://belle2.cc.kek.jp/~twiki/bin/viewauth/Detector/PXD/VxdDatabaseTutorial

Two versions and their differences





Production version

- Contains real data!

Test DB: red background

- Used for tests of new releases and features before propagated to production version

Production version

- Contains real data
- Features without major bugs
- Is already in use
- Should be used by everyone
- www.hephy.at/hephydb

Experimental version

- Contains test data
- All features that are deemed ready for testing available
- Major bugs possible including data loss
- www.hephy.at/hephydb-test

Currently available functionality

- Creation of Item Type, Subtype and Version
- Creation of Manufacturers and Locations
- Registration of an item of any defined ItemSubtypeVersion
- Assembling of composite Items
- Adding measurements to Items and viewing them
- Assigning Tags to Items either separate or to multiple at once
- Assigning a quality label to Items (A-perfect, B-small issues, C-mechanical sample/broken)
- Transferring items from one location to an other e.g. from Vienna to Pisa

Planned functionality

- Checklists → Next talk centers around this feature
  - E.g. Process flow for ladder assembly
- Usability improvements including
  - Better/Nicer design
  - Breadcrumbs for a more logical “back” functionality
  - More plot options for Measurement data
  - More flexible measurement grouping and selection
  - Rework of the search selector

Feature requests

- Can be submitted by
  - The built-in Bitbucket functionality (small button in lower left corner, no account required)
- Discussion/Questions

Thank You!