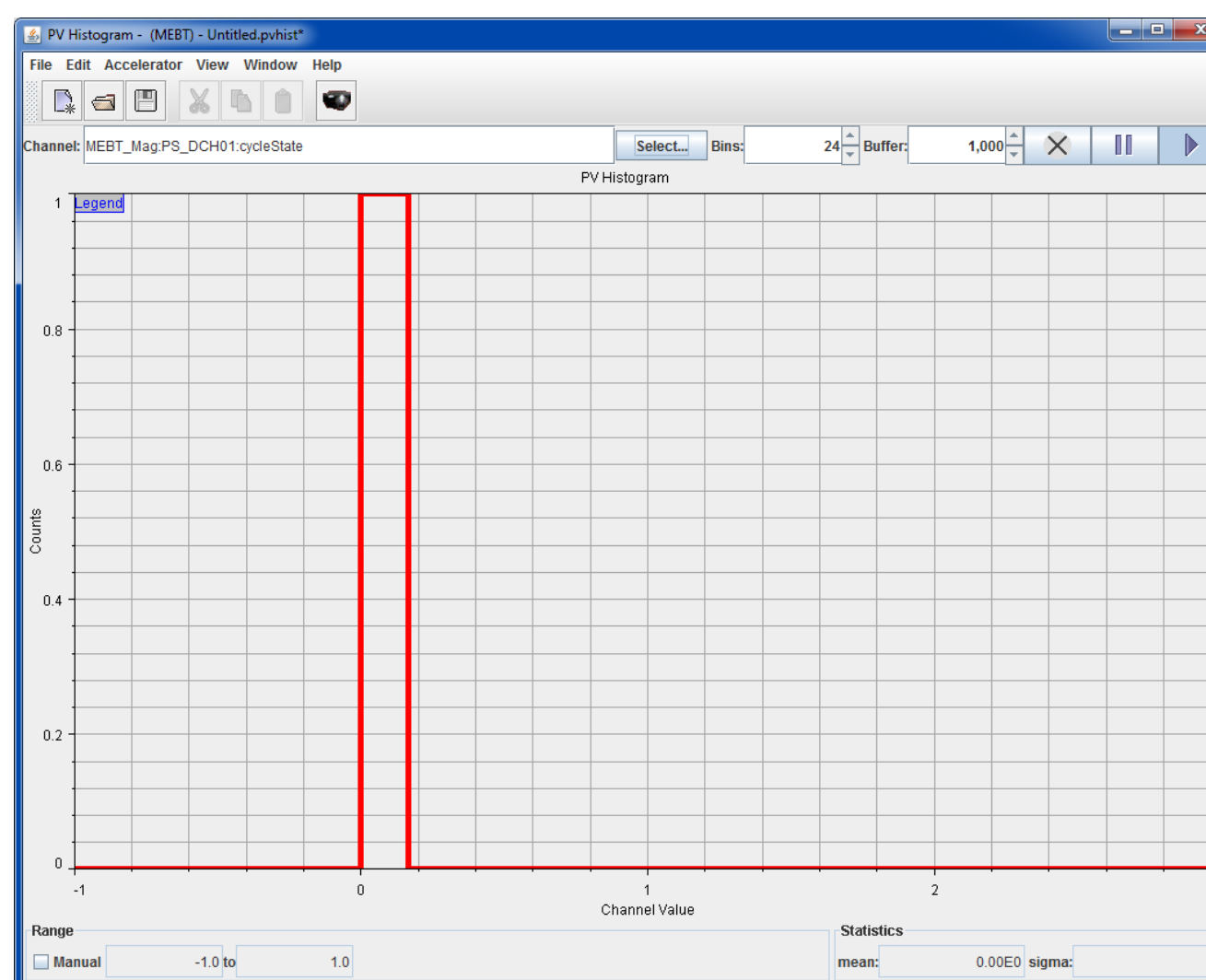


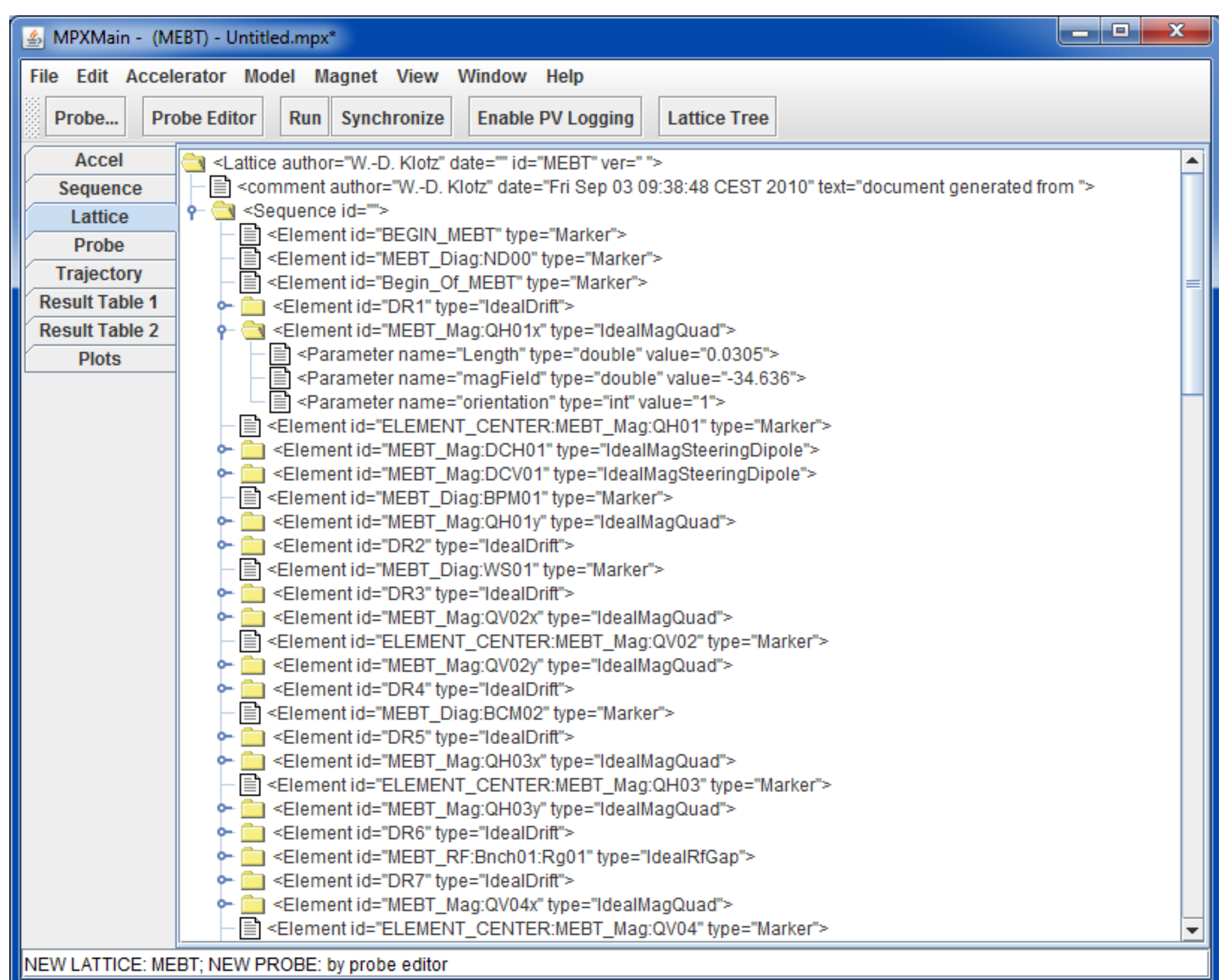
Jaka Bobnar, Cosylab d.d., Ljubljana, Slovenia
Todd Satogata, Steve Peggs, Charles Garrett Trahern, ESS-S, Lund, Sweden
Thomas Pelaia II, Christopher K. Allen, ORNL, Oak Ridge, TN, USA

Overview

- ✓ Open Source Java based Accelerator physics application framework
- ✓ Provides a rich set of applications (Orbit Correction, Wire Scanner Analysis, Scanning Application etc.)
- ✓ Designed to be independent from the machine
- ✓ Customizable through configuration files
- ✓ Provides support for control of EPICS devices



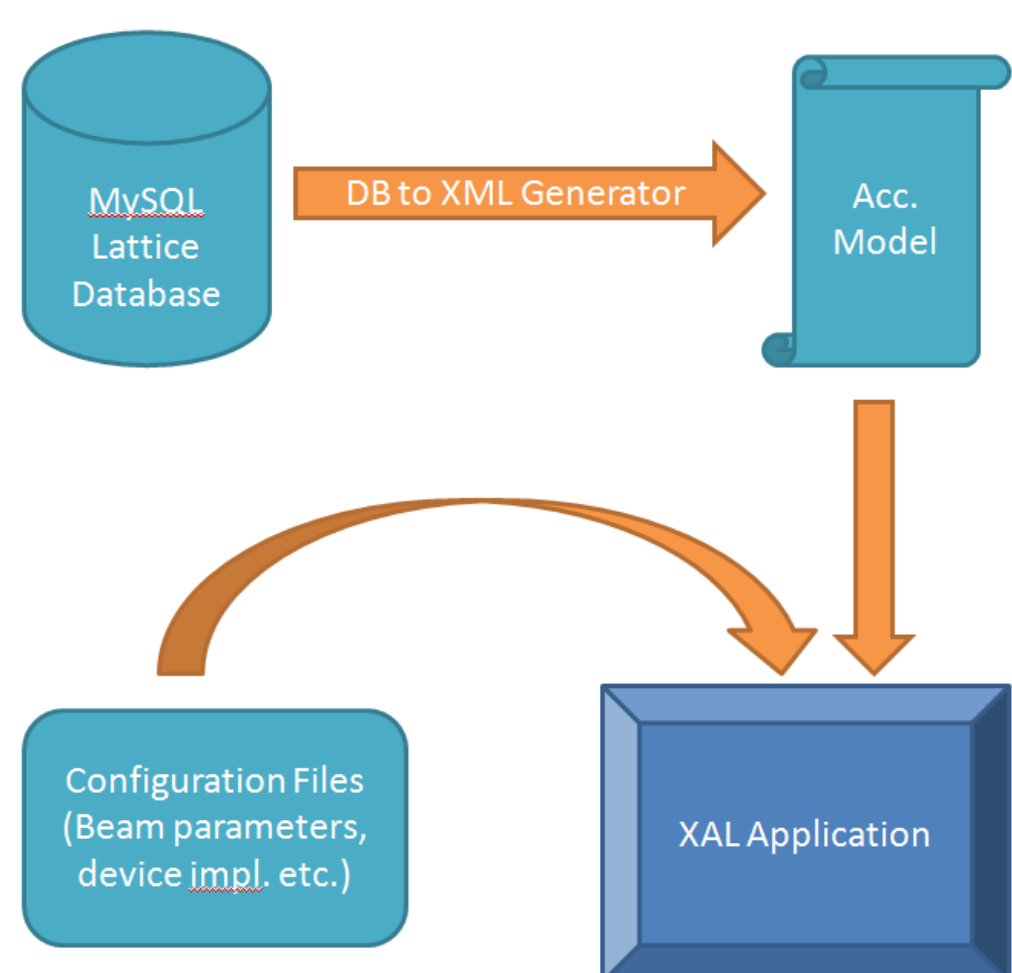
Accelerator and Online Model



- ✓ Accelerator Model is the backbone of XAL framework
 - ✓ Provides complete accelerator description in XML
 - list of all devices and their attributes and properties
 - devices can be grouped into logical components/sequences
 - the list of channel names for each device attribute
 - ✓ XAL Applications read the model and provide access to the control system through the information in the model
 - ✓ Model is generated automatically from the central database to ensure data are up to date
 - structure of the database is not prescribed
 - users can adapt the XML generator to their existing databases
- ✓ Online Model allows physics simulations
 - ✓ Generated in run-time from the Accelerator Model
 - ✓ Implements envelope tracker for on-the-fly beam simulations and calculation of beam parameters (i.e. twiss parameters simulation).
 - ✓ Independent of XAL - can be used anywhere as long as the lattice and probe information are supplied

XAL at European Spallation Source

- ✓ ESS will make use of well developed and tested framework
- ✓ XAL has been adapted to ESS linac model
 - ✓ XML generator queries the MySQL database and generates the accelerator model
 - ✓ Missing lattice data are made up to allow usage of XAL at the earliest development stages
- ✓ Virtual Accelerator application is used to simulate EPICS channels using CAS
 - ✓ The simulated channels follow physics rules applied by the online model.
 - ✓ It allows testing certain features without the need to connect to the real system.



Application Framework

- ✓ XAL is a framework for Rapid Application Development
- ✓ Provides a common look and feel and features
- ✓ Comes with a GUI builder called Bricks to easily create new applications

