



Using ROOT

in an Online and Interactive Environment

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on behalf of the

LHCb Online Monitoring Group

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Outline

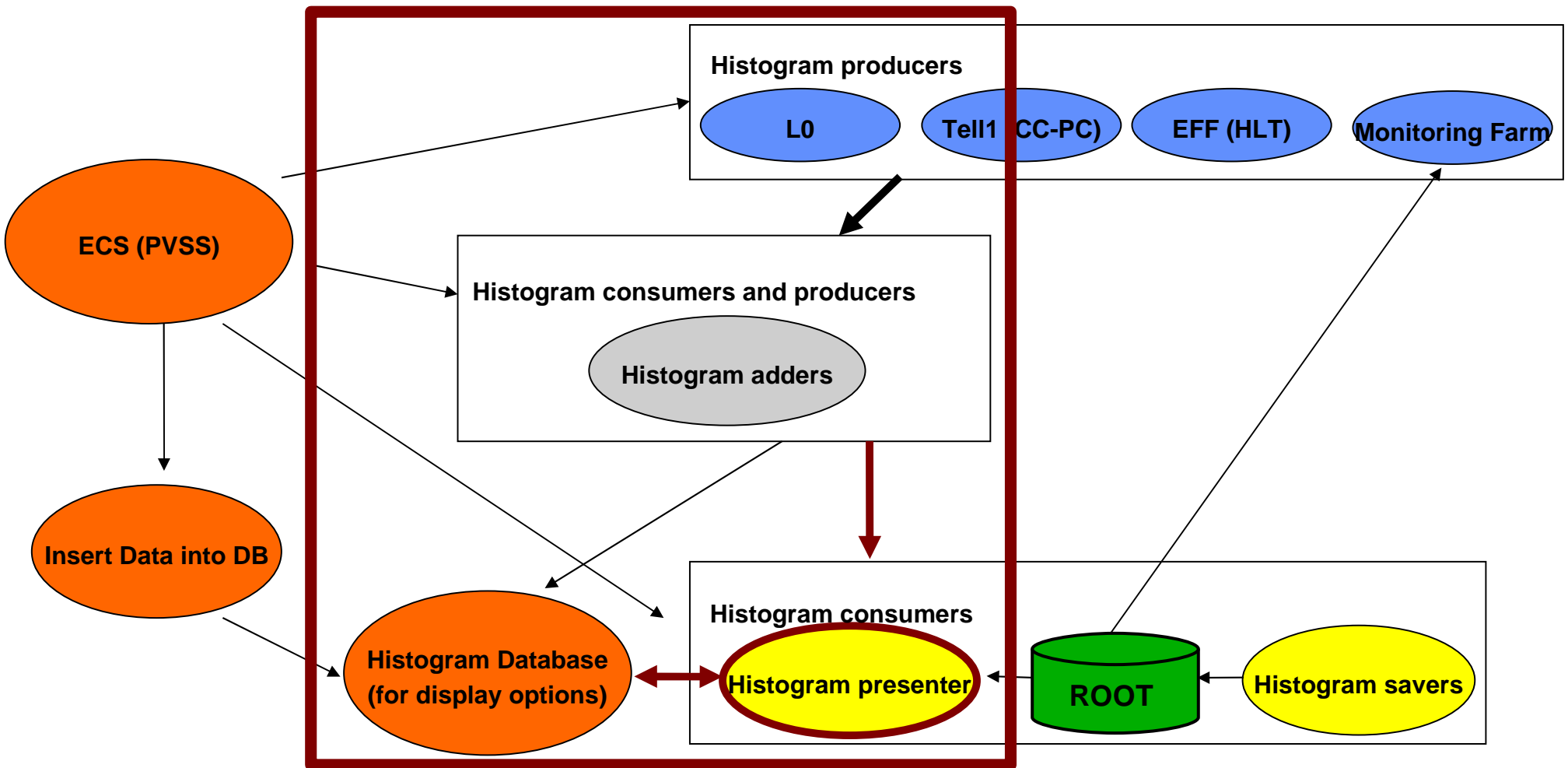
Projects goals, requirements and typical use-cases

Current implementation

Difficulties observed

Goals, requirements

Architecture, current focus



Required functionality

Add histograms to Page

Can be single operation, or multiple items chosen from a tree interactively.

Display the histograms with changing data

Manipulate histograms and their properties interactively

Tile, Zoom, Fit, Draw Clone, offset, superimpose for reference etc.

Save and restore a given Page layout

Current implementation

Fully based on ROOT (TApplication) compiled as a stand-alone executable on both Windows and Linux with Oracle and DIM dependencies

Use of ROOT functions:

signals and slots

TTimer

Current view

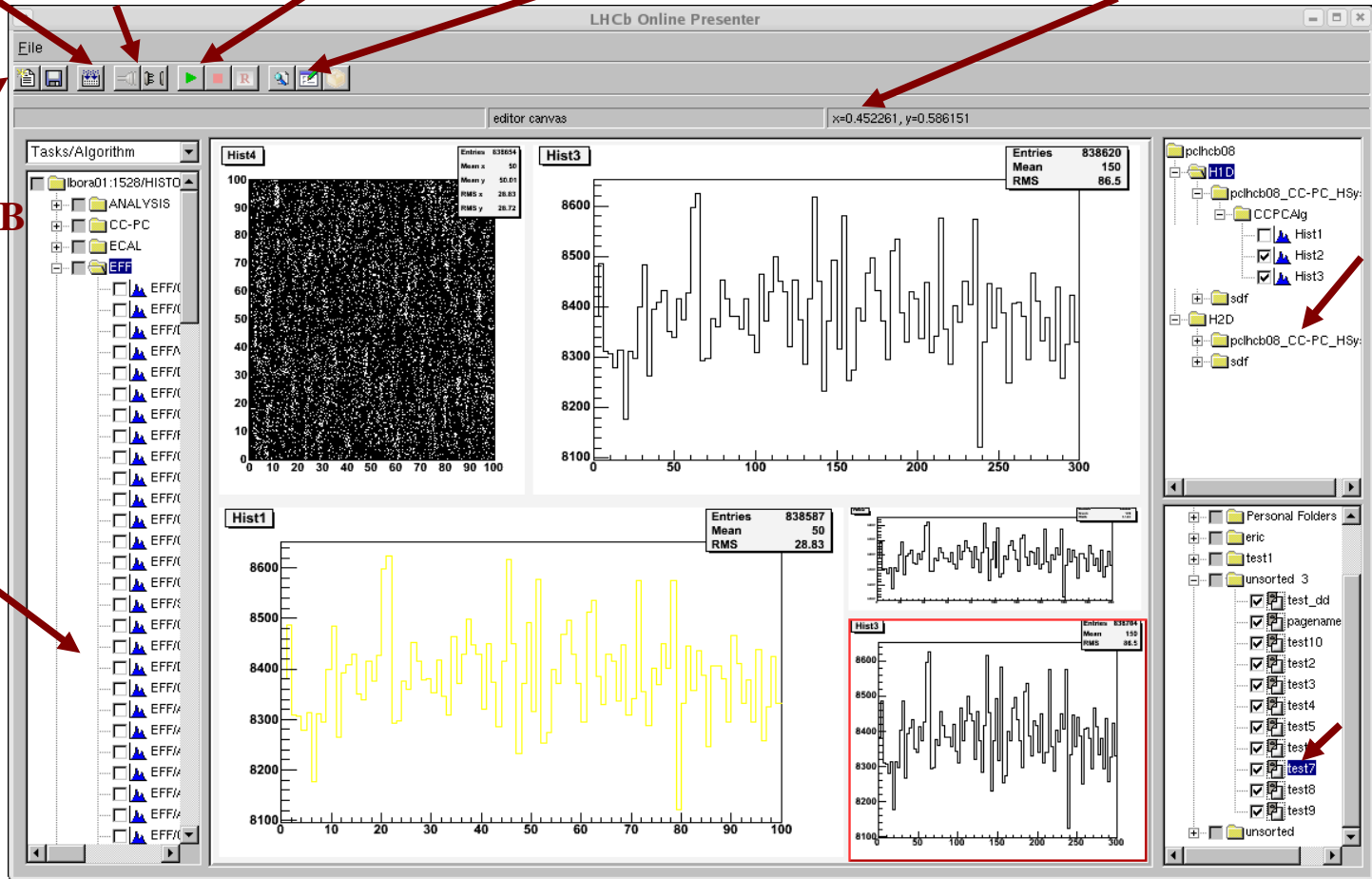
Auto Database Start/Stop refreshing, Histogram Zoom, Hover cursor on
 Layout Login/Logout Reset Properties, Fit histogram: bininfo etc.

New/Clear
 Page and Save to DB

List of Histograms
 in Database

Live DIM
 service
 browser

Pages in
 Database



Mechanisms for interactivity

Refreshing of display:

DIM invoked callbacks filling ROOT histograms and setting Modified flag for associated hosting Pad

TTimer OR TThreads with Sleeps to trigger Update of the main Canvas (same behaviour using both implementations)

User Interface:

All widgets connected to slots

All ROOT functionality fully exposed: e.g. FitPanel, DrawPanel, context menus etc. which can act on histograms

Difficulties observed

Very random crashes at very random times and places

Generally more frequent under heavy load / usage

Trees: disabling visually, (visual feedback upon) multiple selection