

FairDb as Components & QA Database

**Evgeny Lavrik
31CBM Collaboration Meeting 22.03.2018**

Motivation

- More and more detector groups need to keep track of their equipment/components for assembly, etc.
- Quality control data have to be provided to pick up the appropriate equipment

- FairDb have recommended itself good for STS needs
- Though:
 - Had a lot of repetitive code to be written -> prone to errors
 - Hard to get started for non-experts

- Inspired my work to make it available for everyone, make it simpler and easier to use

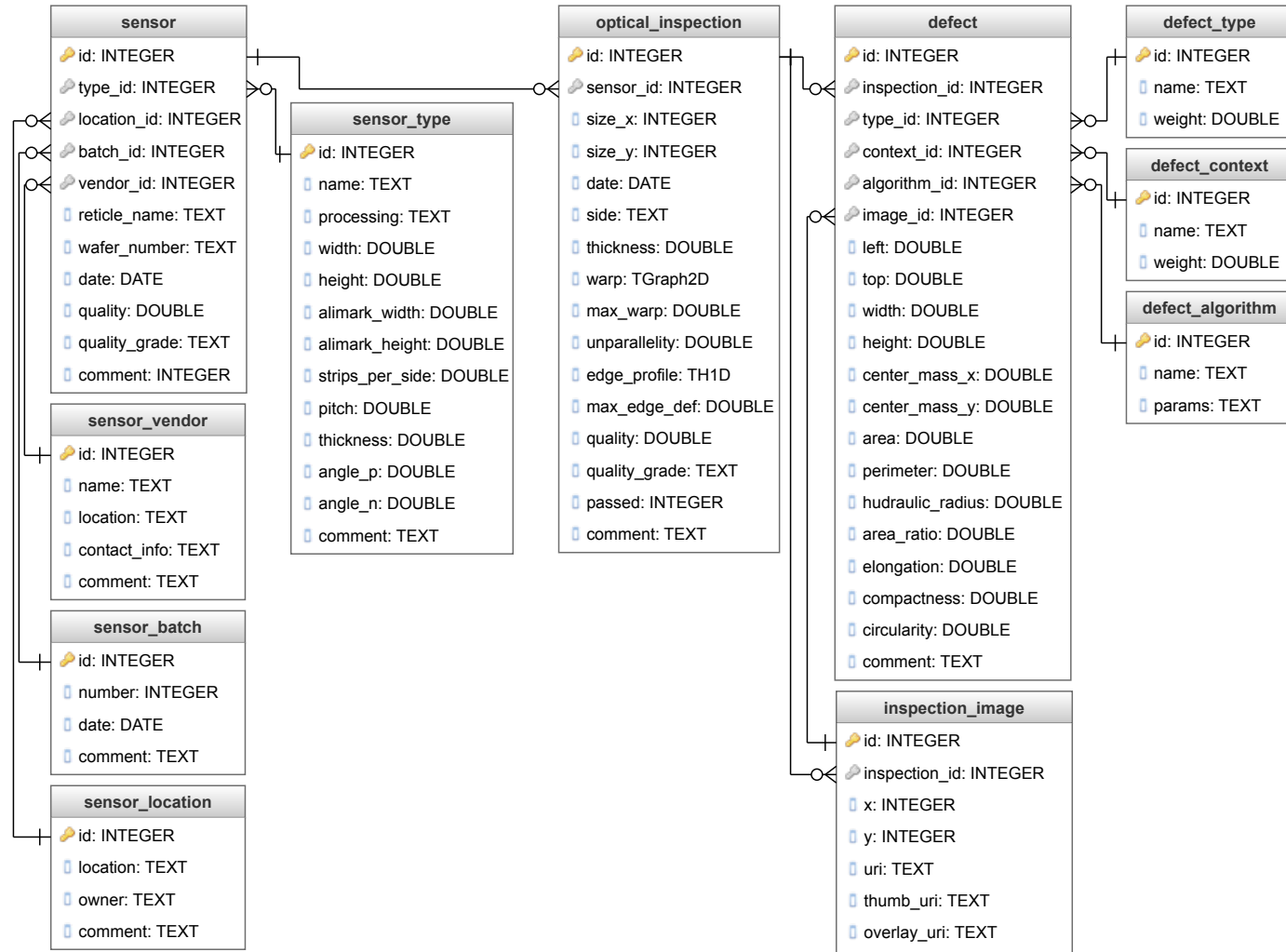
Complex data scheme description for STS

24 sensors
inspected
18,9 MB of data
exported

34000 Images
entries

50000 rows in total

Similar layout for
electrical
characterization
data



Key concepts

- Database technology agnostic
- Aggregation
- Versioning
- Inserts only
- Integration with Parameter Runtime Database
- Serialization and storage of large objects (ROOT, STL)

*by D. Bertini and contributors

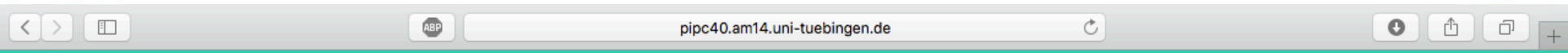
Recent developments

- Relational data model
- Secure data exchange by the means of SSL
- Configurable role-based user permission management
- Centralized schema storage
- FairDb was decoupled from FairROOT and is now compiled standalone
- Automated deployment to local machines and Ixi cluster

- A tool set was developed to provide a deterministic generation of:
 - ROOT interface classes which are schema aware
 - Data priming and importing macros
 - Rich-functional graphical client workspace to browse and edit data

all based on the visual data description

Data definition interface



FairDb

Class Generator - Class View

Expert mode



Back to Project View

Class Name	Class Title	Class Context	Detector Type	Data Type	Class Version
StsSensorElectricalInspector	Sts Sensor Electrical Inspecti	StsSensorDefaultContext	kSts	kData	1

Imported ROOT classes

↓	TBits	+ -
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Relations

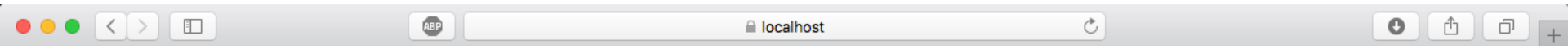
↓	Has One	Sensor	StsSensor	+ -
↓	Has One	MeasurementType	StsSensorMeasurementTyp	+ -
↓	Has Many	Defects	StsSensorElectricalDefect	Inspection + -

Class Properties

↓	Date	TimeStamp	<input type="checkbox"/> Searchable	+ -
↓	SensorSide	String	<input type="checkbox"/> Searchable	+ -
↓	Quality	Double	<input type="checkbox"/> Searchable	+ -
↓	QualityGrade	String	<input checked="" type="checkbox"/> Searchable	+ -
↓	Operator	String	<input checked="" type="checkbox"/> Searchable	+ -
↓	Location	String	<input checked="" type="checkbox"/> Searchable	+ -
↓	Temperature	Double	<input type="checkbox"/> Searchable	+ -
↓	Humidity	Double	<input type="checkbox"/> Searchable	+ -
↓	V_op	Double	<input type="checkbox"/> Searchable	+ -
↓	.fd	Double	<input type="checkbox"/> Searchable	+ -

Menü anzeigen

Graphical representation of the user data



FairDb

Sts Sensor Optical Inspection - Get By Id



Menu ▾

Id

SensorId

Operator

Location

Date

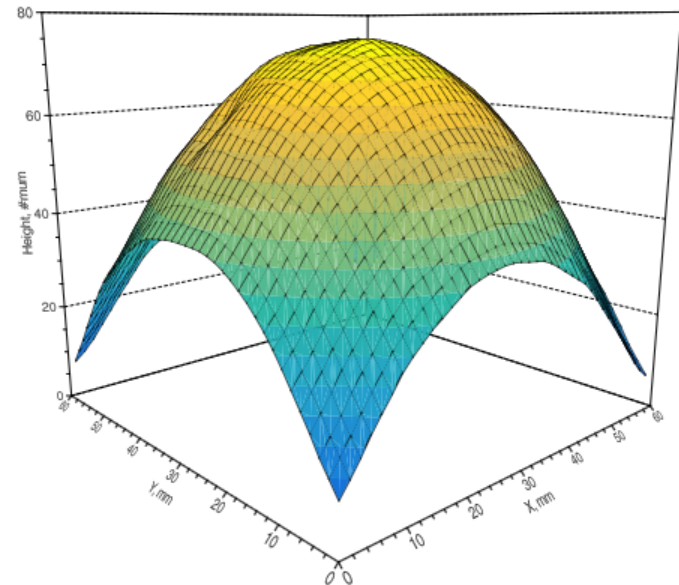
SizeX

SizeY

SensorSide

MaxWarp

CBM06C6-353090-11



Menü anzeigen

Recent developments

- Data definition workflow based on templates
 - Data description
 - ROOT class generation
 - User data seeding (priming)
 - Data visualization
 - Deployment scripts
- Secure data exchange by SSL
- Configurable role-based user permission management
- Relational data model
- Centralized schema storage
- FairDb is decoupled from FairROOT and compiled standalone
- Deployment to local machines and Ixi cluster

Other uses

Universal enough to asses at least following tasks:

WP "SIM": parameter database, geometry model storage

WP "DCS": configuration and conditions database

WP "DAF": database interfaces storage

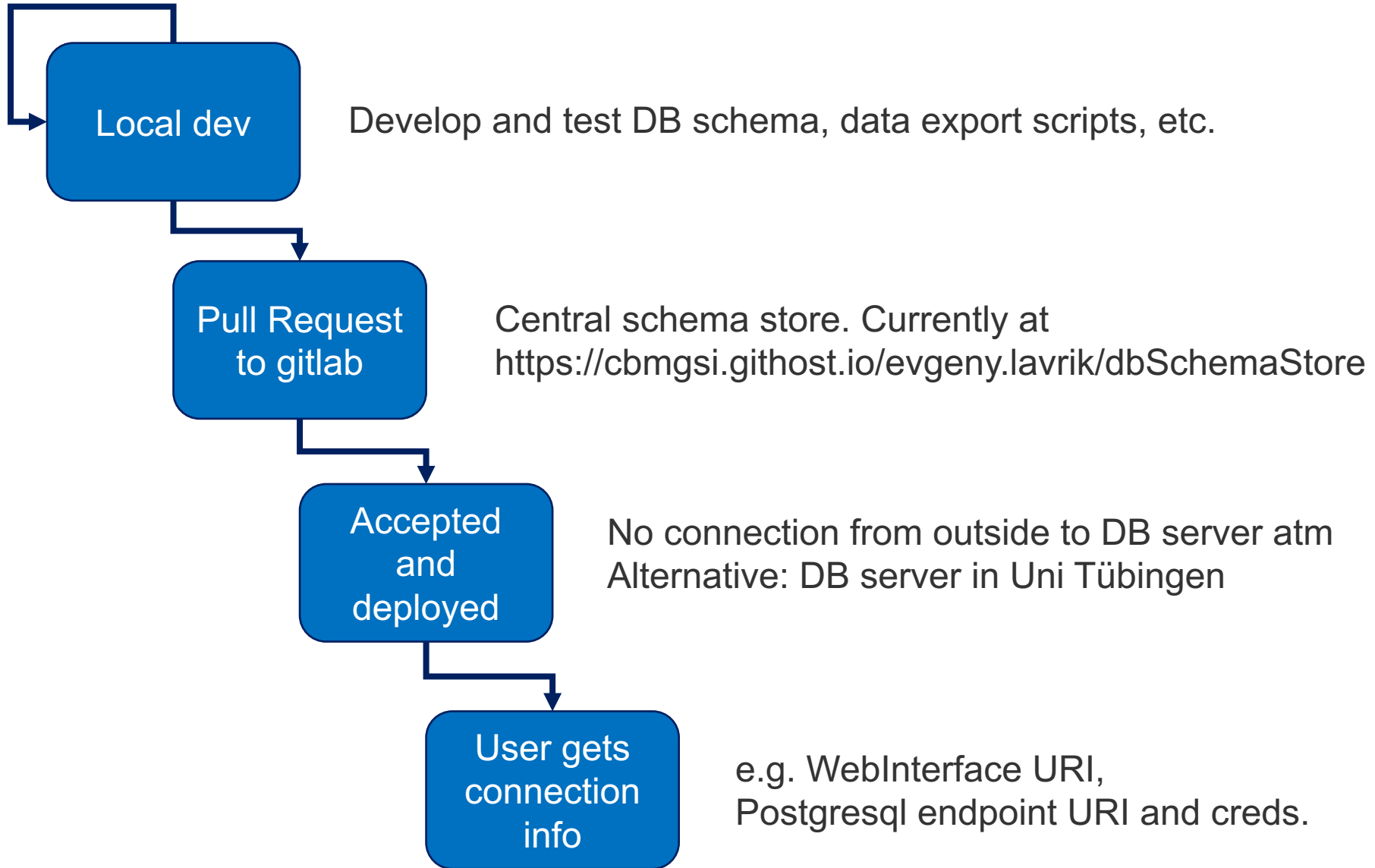
WP "ALG": calibration and alignment storage

**Needs profiling
and optimization for
time-critical applications**

Database Support

- Good experience and feedback collected so far from the people involved
- User training at collaboration meeting Thu 22.03 16:00-18:00
- User support:
 - Mailing list CBM-COMPONENTDB@gsi.de
 - Regular meetings for Q&A (weekly, every second week, etc.) if needed
 - IT support (DB and FairDb deployment and maintenance)
- Further development based on user needs

Database deployment workflow



Database Hands-on Training Today

- After this session and coffee break 16:30 – 18:30
- Group transfer at 16:25
- Topics discussed:
 - Schema definition and data description
 - Data priming and export
 - Local installation and testing
 - Data visualization



Complex data scheme description

