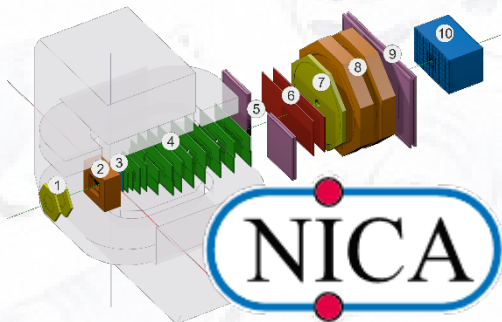# Configuration Information System for BM@N online processing and data monitoring

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8th Collaboration Meeting of the BM@N, 02-09 October 2021

NICA

Joint Institute for Nuclear Research

Outline

- **Goals of the system**
- **ATLAS online configuration as possible solution**
- **Why use the Dynamic Deployment System (FAIR)**
- **General Architecture of the BM@N Configuration System**
- **Configuration Manager**
- **DB Object model (permanent part)**
- **DB Object model (dynamic part)**
- **WEB interface view/edit mode**
- **WEB interface monitoring view**
- **Test environment**
- **Status, next steps**

Goals of system

- **store and provide configuration data for online processing :**
  - **set of various detectors configuration parameters (working voltage etc.)**
  - **sequences of software tasks with their dependencies**
    - **online raw data digitization**
    - **online histogramming**
    - **fast event reconstruction**
    - **event monitor**
  - **setup and tasks dependencies**
- **should to be able to start, stop and monitor tasks during experiment sessions**
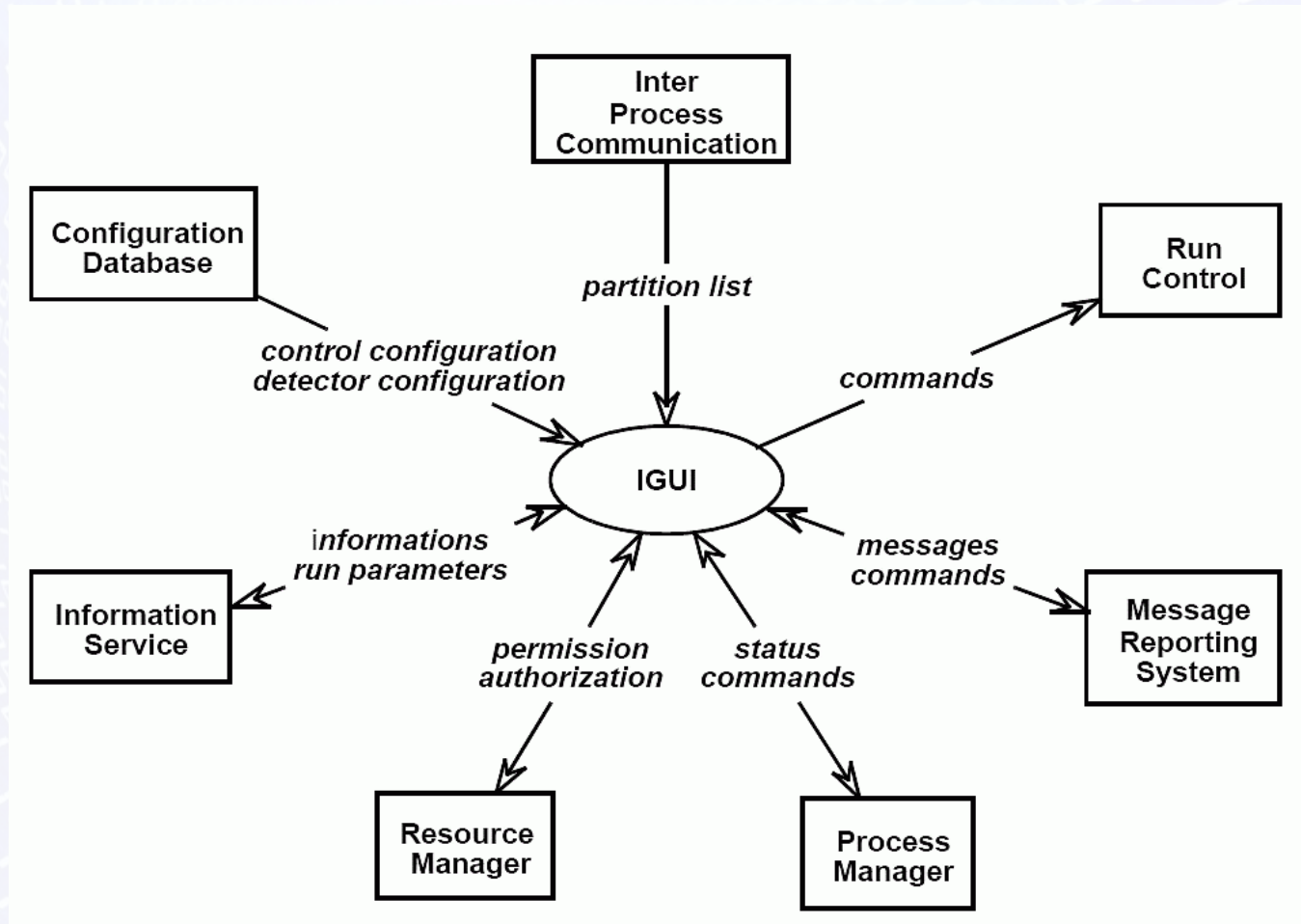
ATLAS online configuration as possible solution

ATLAS IGUI Expert Control Panel
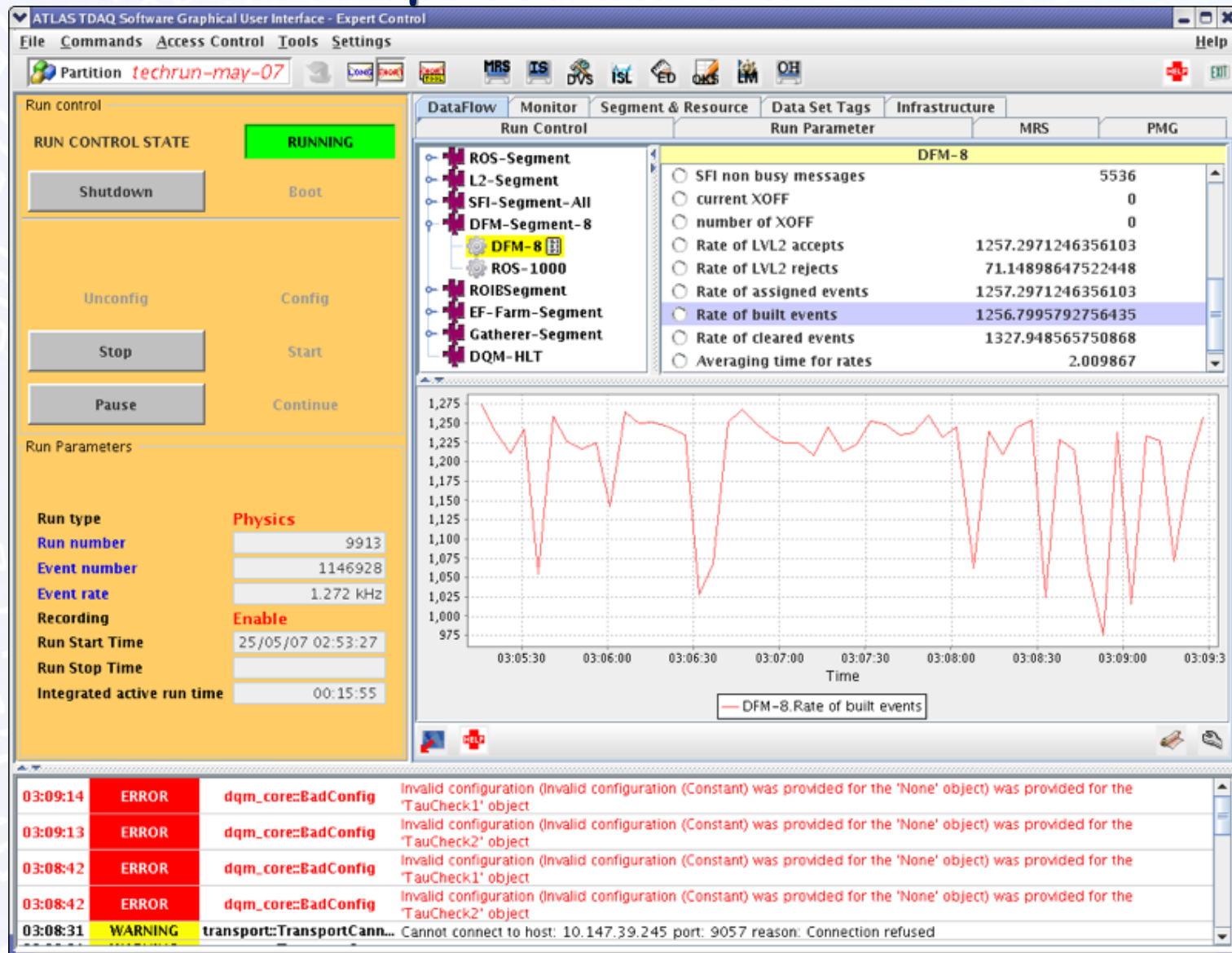
ATLAS online configuration as possible solution (2)

## Context diagram of ATLAS Integrated Graphical User Interface (IGUI)

Why use the Dynamic Deployment System (FAIR)

- **DDS: tool-set that automates and significantly simplifies a deployment of user defined processes (tasks) and their dependencies**

- **DDS: deploys agents to execute user tasks**

- **DDS agent:**
  - **supports multiple tasks slots**
  - **is able to run and watchdog multiple tasks simultaneously**
  - **can provide messages between tasks**

- **very simple general server and users requirements**
  - **server requirements**
    - **a C++11 compiler**
    - **BOOST 1.67 or higher (built by a C++11 compiler, with C++11 enabled)**
    - **shell: BASH (or a compatible one)**
    - **Incoming connection on dds-commander port (configurable)**
  - **user requirements**
    - **Outgoing connection on dds-commander's port (configurable)**
    - **shell: BASH (or a compatible one)**

BM@N, 8th Collab Meeting, 06 Oct, 2021

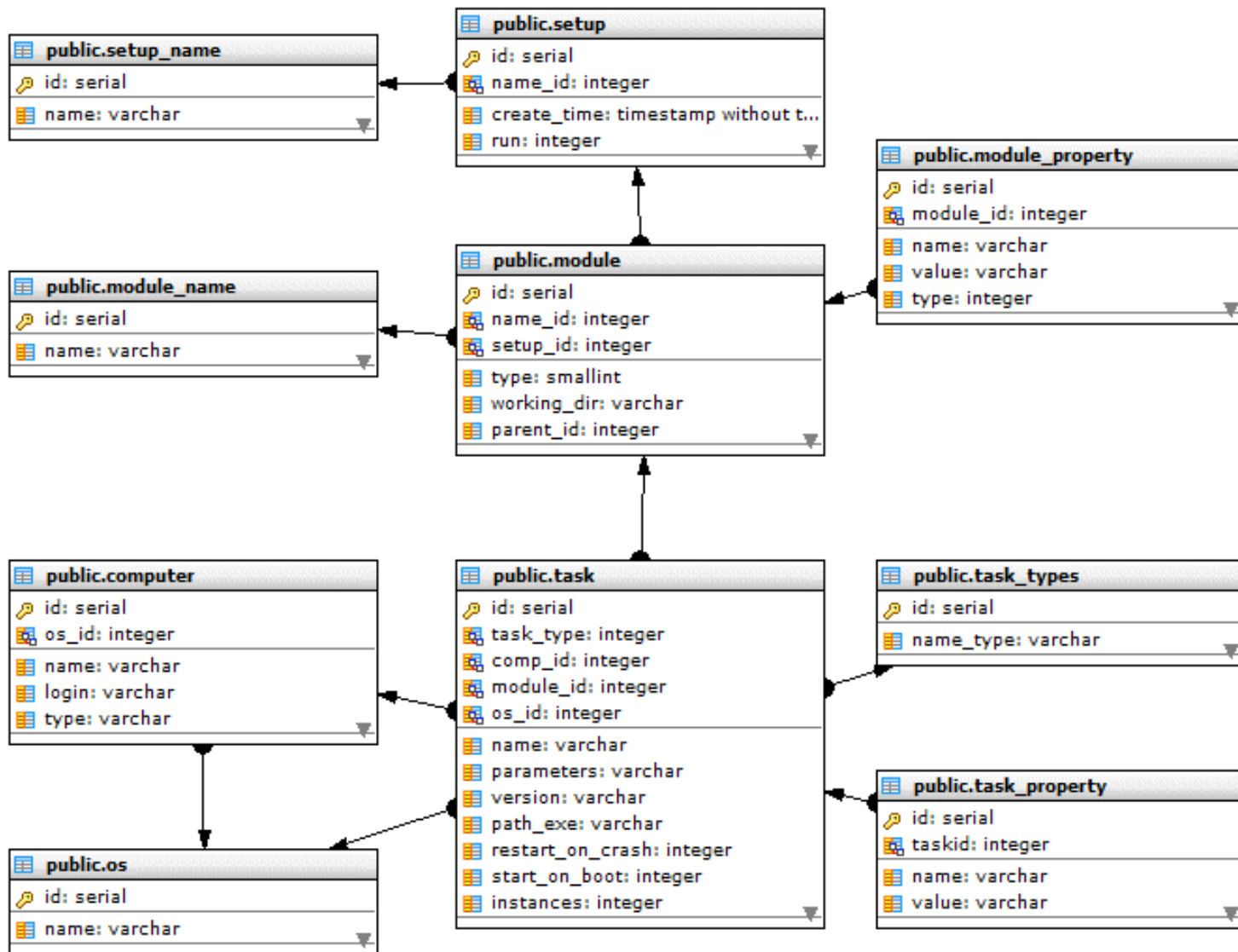# General Architecture of the BM@N Configuration System
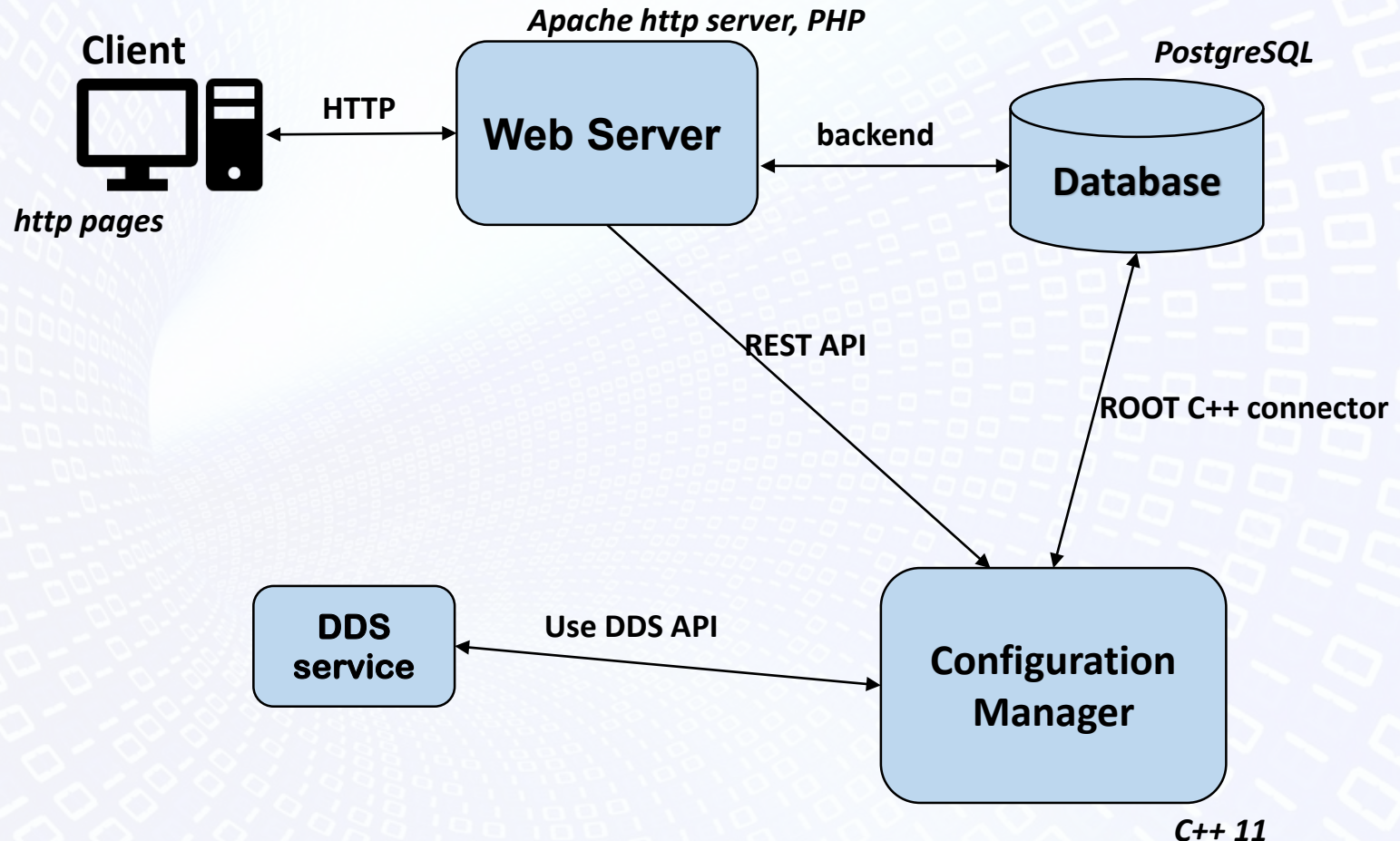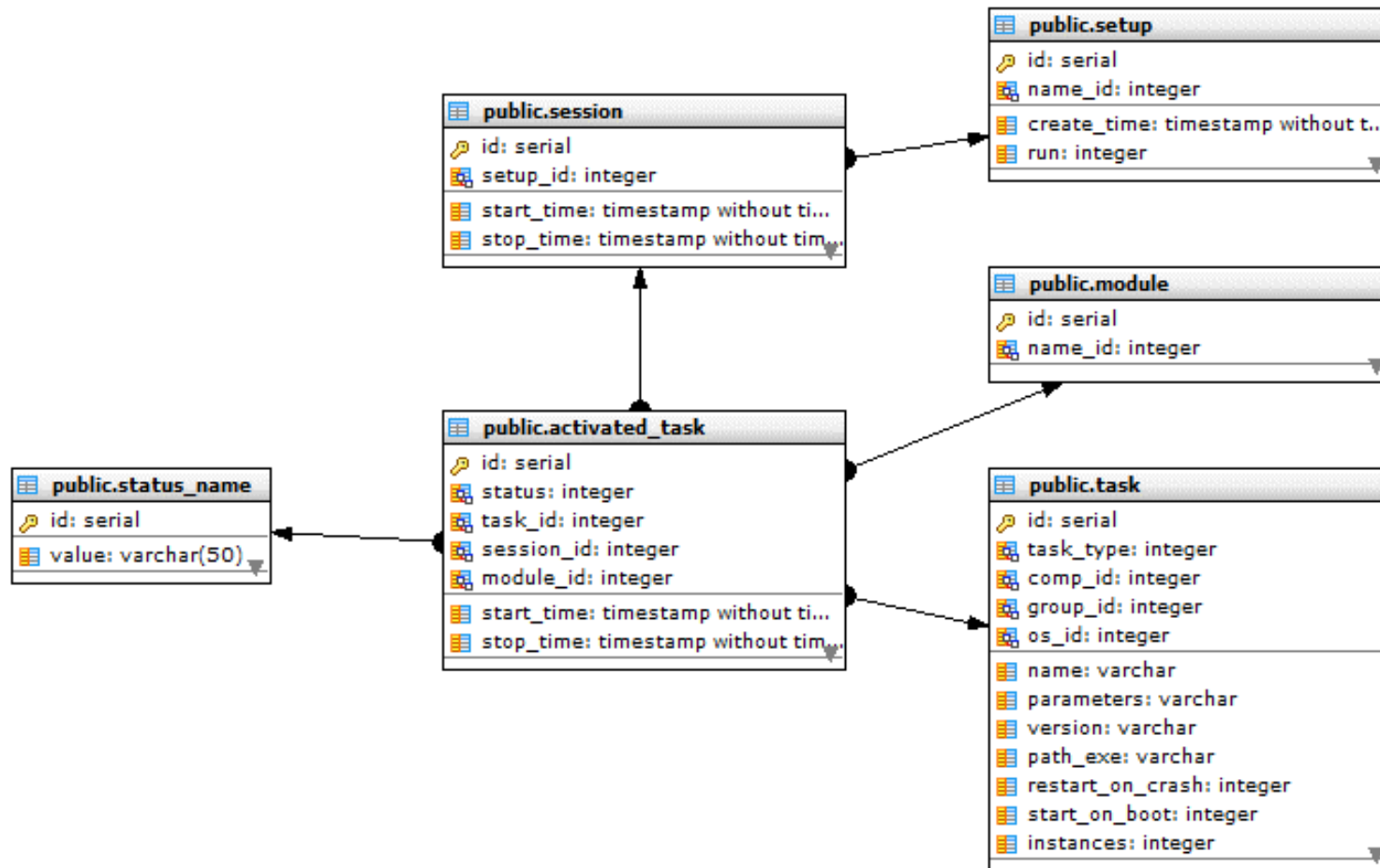
Configuration Manager

- **listens and performs commands (REST API in use)**
  - **Start all setup tasks**
  - **Stop task**
  - **Restart task**
- **reads from DB data concerning tasks to be started for setup**
- **prepares tasks for start using DDS system (convert data into DDS topology form)**
- **starts all tasks of topology using DDS**
- **gets from DDS server info about all started tasks**
- **stores in the DB the info about all started tasks**

DB Object model(permanent part)

DB Object model(dynamic part)

Web-interface. Monitoring view (1)

Web-interface. Monitoring view (2)

Web-interface. Edit Mode

Test environment

Configuration manager uses test_topology.xml and starts:

1 root_digi_imit

Sends message

2 onlineHisto_imit

Sends message and get reply

fastEventReco_imit 3

Sends message

4 eventDisplay _imit
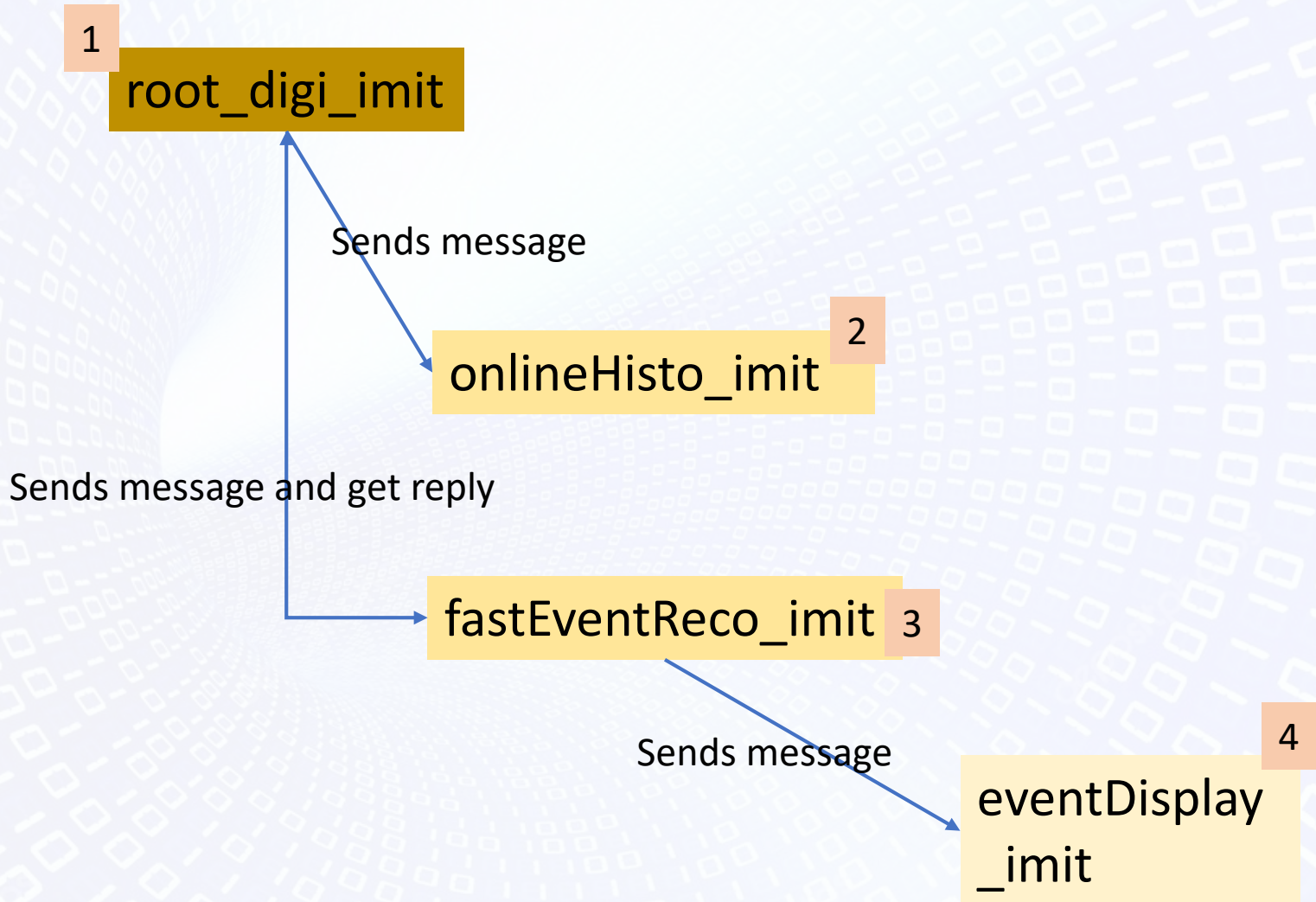
Status

- **Design is developed**
- **Data base is implemented in PostgreSQL**
- **WEB interface implementation in progress**
- **Configuration Manager under construction**
- **DDS system is alive and DDS API is in use in Configuration Manager**
- **Test environment produced**

Next steps

- **Finish WEB Interface and Configuration manager**
- **Fill DB by real data**