ICS monitoring

SMART SPECTRUM MONITORING SOLUTION BASED ON SERVICE-ORIENTED PLATFORM

Monitoring of emissions, spectrum usage assessment, control of licensed emissions, multi sensors.

▶ **ONE SINGLE SYSTEM GATERING-FLEXIBILITY AND SCALABILITY**

▶ **MULTITASK MEASUREMENTS – BIG DATA PROCESSING**

▶ **AUTOMATIC POST-PROCESSING REAL TIME OPERATION**

ICS monitoring is a specific spectrum product from the ATDI spectrum management system range: performs tasks in accordance with Radio Regulations, checks the conformity of the conditions of frequency allocations/frequency usage and channel occupancy. ICS monitoring analyses cases of interferences, detects unauthorized broadcasts emissions and offers the flexibility of the SDRN Control structure.

MAIN FEATURES:

- Full and real time integration with licensed equipment database
- Automated storage of electromagnetic situation measurements and data analysis
- Establishment of spectrum reference situation based both on measurement results and propagation
- Modelling
- Real time spectrum analysis without interruption of measurements already launched
- Background mode measurements do not require human intervention
- Integrated GIS (map layers and terrain data)
- Spectrum Occupancy measurements
- Detection of unauthorised emissions
- Licensed transmitters data collection and storage
- Comparison of spectrum emissions with spectrum masks of authorized transmitters
- Comparison of spectrum emissions with reference spectrum masks
- Bandwith measurements
- Frequency band scanning
- Localization of unauthorised emissions
- Hybrid localization (TDOA / AOA / POA / RSSI)
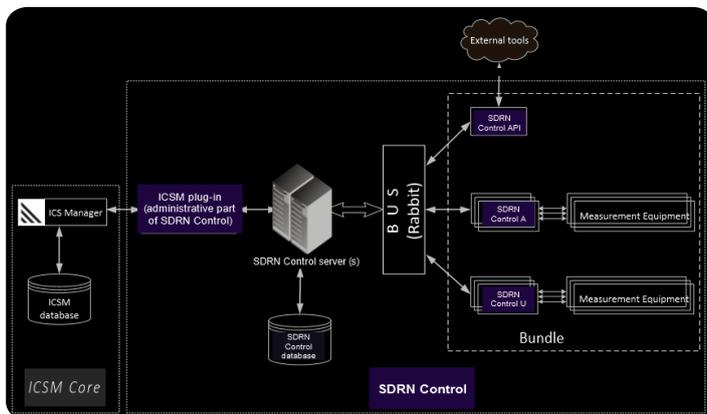- HOMING (Machine learning algorithm – HTZ required)

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SDRN Control & Modular Design

TWO POSSIBLE ARCHITECTURE MODES:

▶ ## SDRN CLUSTERED MODE ARCHITECTURE
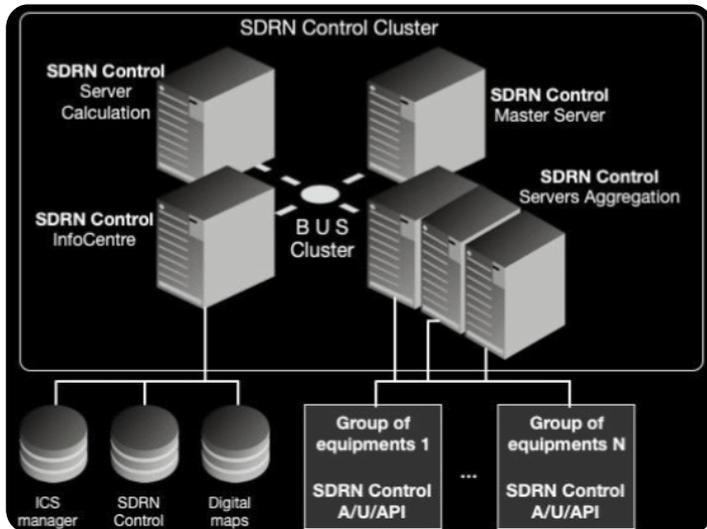
▶ ## SDRN SINGLE MODE ARCHITECTURE
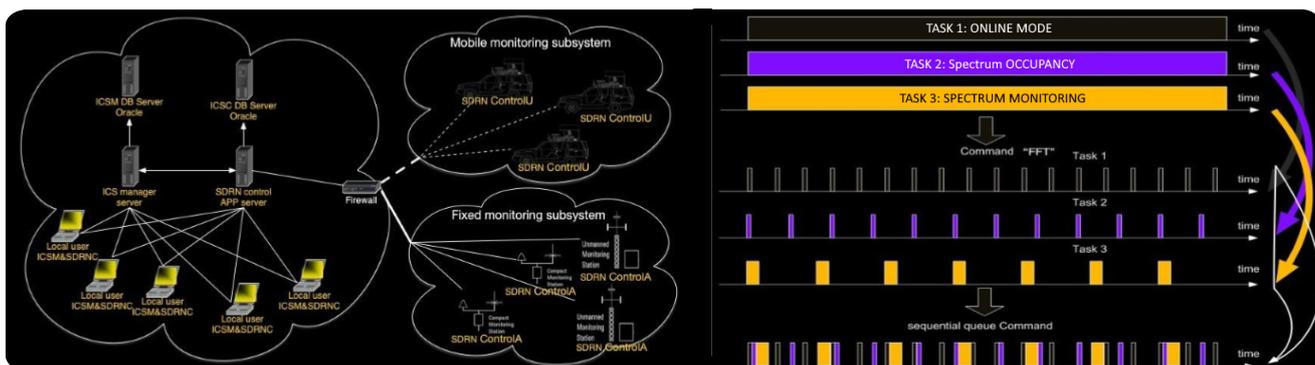

Physical Architecture

SERVER MODULES:

- **SDRN Controls (SDRN CS)**
  - application server
  - centralized data processing
  - support for work of measurements management services
  - analysis of monitoring results

- **SDRN Control server aggregation (SDRN CSA)**
  - software module for load balancing point into cluster

- **SDRN Control server infocenter (SDRN CSI)**
  - software module for high performance data access between different sources within cluster

- **SDRN Control server calculation (SDRN CSC)**
  - software module for high performance massive computing by propagation models
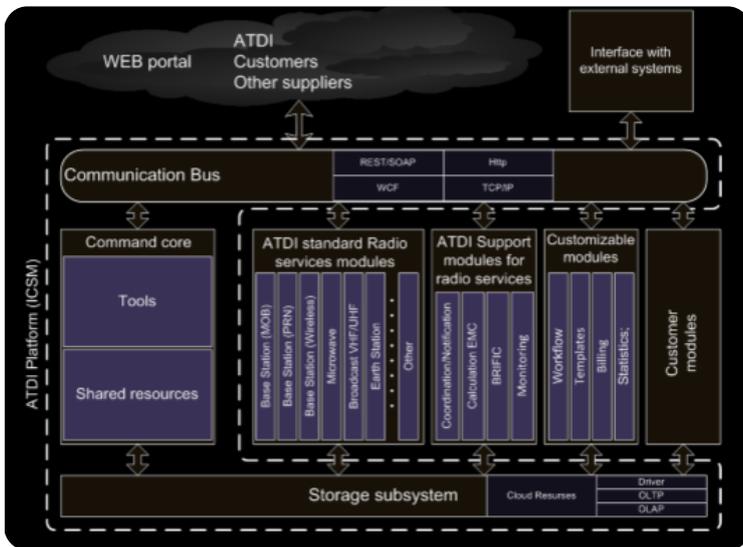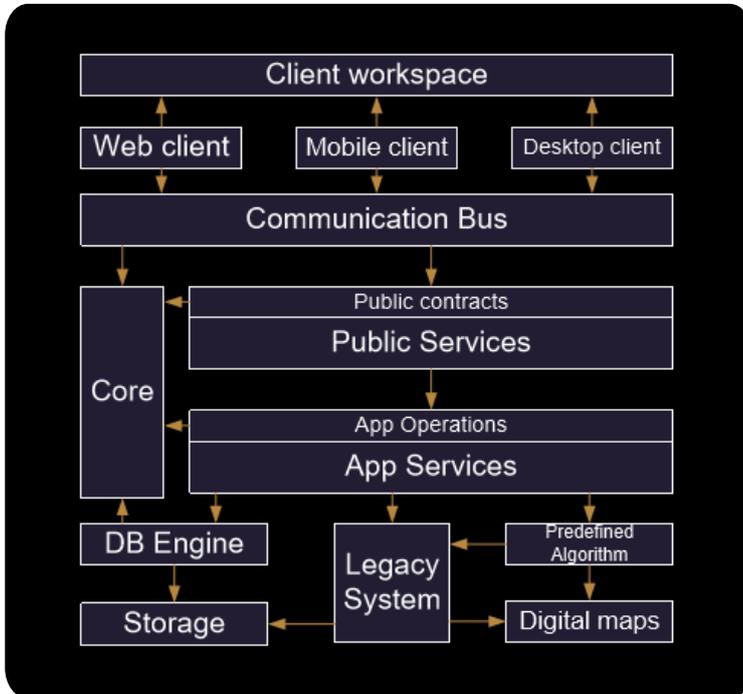
END POINT MODULES:

- **SDRN ControlU (SDRN CU)**
  - software module for management of spectrum monitoring hardware

TYPICAL LOGICAL STRUCTURE FOR SERVER-BASED SOLUTIONS WITH THE FOLLOWING KEY LAYERS:

- PUBLIC SERVICES - A SELECTION OF COMPONENTS FOR THE WCF / REST SERVICES

- APP OPERATIONS - A SET OF COMPONENTS FOR IMPLEMENTING INTERFACES FOR USER-DEFINED FUNCTIONS

- CORE - AN APPLICATION SERVICE FOR MANAGING COMPONENTS HOSTING AND PUBLISHING DI

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SOA Architecture

▶ TYPICAL LOGICAL STRUCTURE FOR SERVER-BASED SOLUTIONS

KEY LAYERS:

- **PUBLIC SERVICES**
  - SA selection of components for the WCF/REST services

- **APP OPERATIONS**
  - SA set of components for implementing for user-defined functions

- **CORE**
  - an application service for managing components hosting and publishing DI (*Dependency Injection*) Containers

- **COMMAND CORE**
  - contains instrumental service to manage application servers

- **SERVICE MODULES**
  - components of subject-matter logic which can be distributed

- **THE COMMUNICATION BUS**
  - an intermediate layer providing connectivity between all service modules and the client

ICS monitoring controls spectrum analyzers, measuring receivers, modulation analyzers, cellular communication network analyzers, remote and devices.

DISCOVER MORE ON OUR PRODUCT AND SERVICES

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ICS monitoring