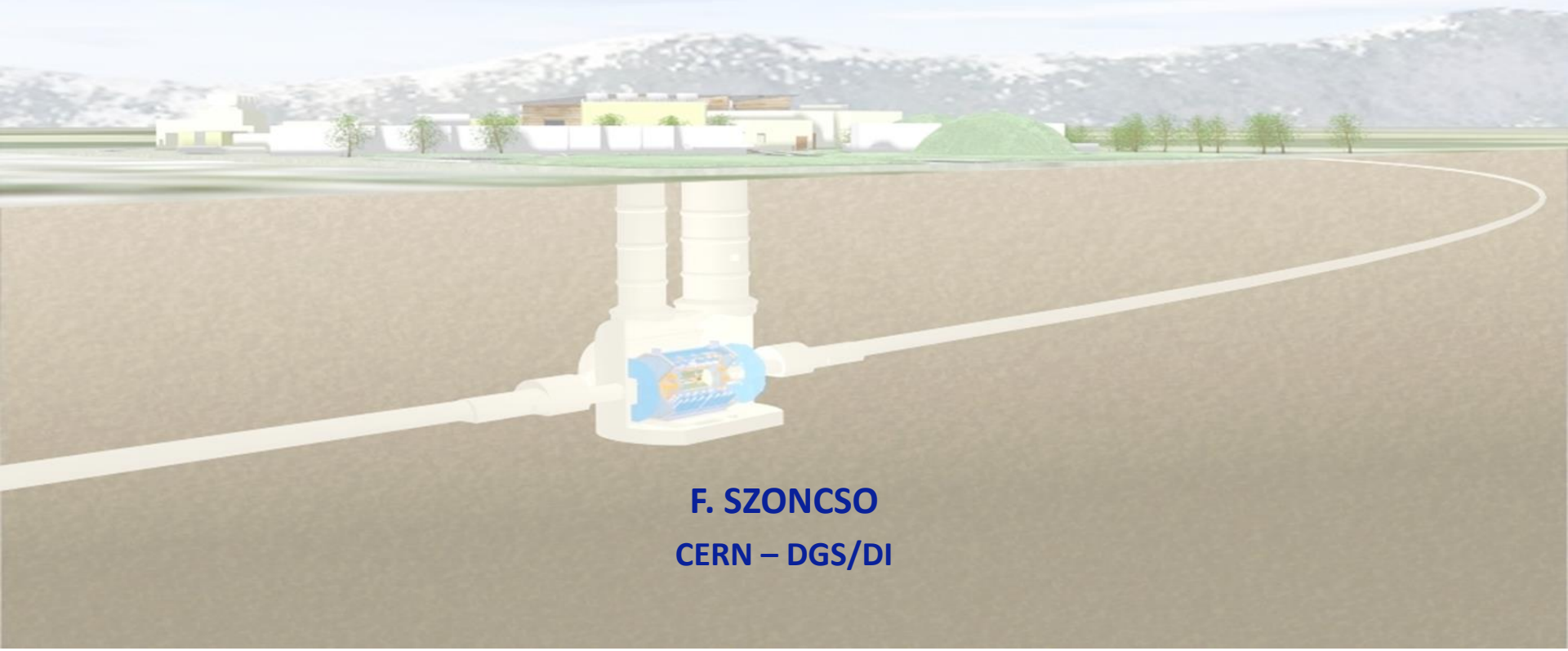
RAMSES PROGRAMME

31st March 2014



F. SZONCSO

CERN – DGS/DI

Introduction

CERN Radiation Monitoring System

- ✓ **The radiation monitoring system (RMS) is one of CERN's main tools for avoiding unjustified doses to people or pollution of the environment and to verify that legal limits are not exceeded.**
- ✓ **The Health & Safety and Environmental Protection Unit exploits this system to assess radiation risks and to control the release of radioactivity.**

CERN has the legal obligation to protect the public and the people working on site from any unjustified exposure to ionising radiation !

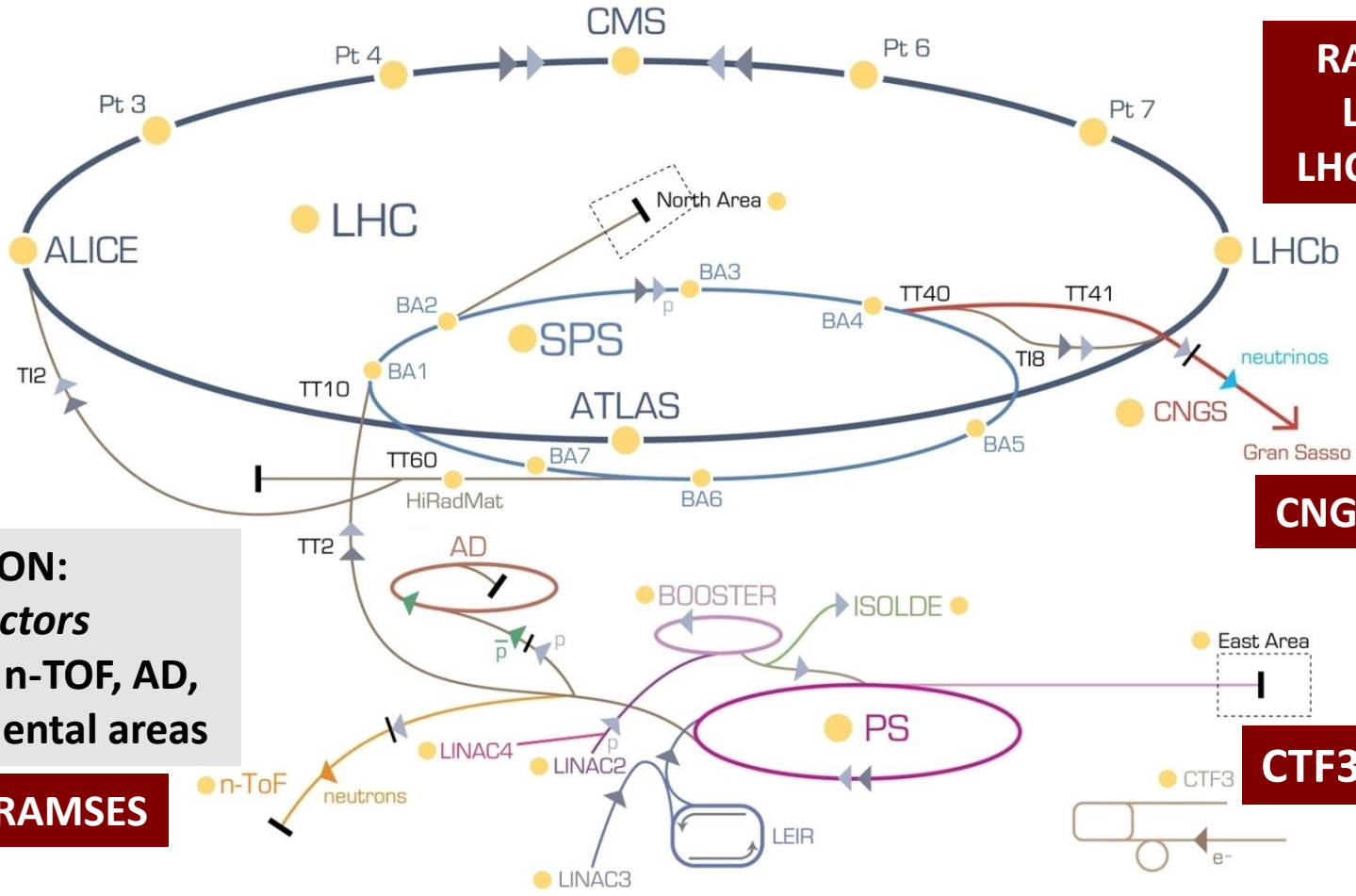
HSE has the mandate to monitor the radiological impact of CERN's accelerators and installations by active monitoring.

RMS for Personnel protection

RMS NOT for ~~equipment protection~~

RAMSES – a CERN Project that buys, installs, maintains 800 monitoring stations

RAdiation Monitoring System for the Environment and Safety



RAMSES at LHC and LHC injectors

CNGS: RAMSES

MS ARCON:
LHC injectors
ISOLDE, n-TOF, AD, Experimental areas

CTF3: RAMSES

Linac4: RAMSES

Purpose and Mission of the RAMSES Programme

- To develop, maintain, operate and continuously upgrade an integrated, site wide monitoring and detection system that will comply with international standards of quality and that fulfils all legal requirements in the field of Health, Safety and Environment that apply.
- To provide CERN with all means necessary to protect the public, the persons working on site and the environment when the accelerators are exploited to their full physics potential and during shutdowns.
- To contribute to reaching the highest possible operational efficiency of the CERN accelerator chain and fixed target program by providing, efficient, reliable and sustainable service excellence.

Objectives of the RAMSES Programme

The short terms objectives:

- To plan, monitor, control and evaluate projects related to radiation and environmental monitoring systems.
- To monitor how these projects are linked or related, the costs of each project and also risks that are involved with each project.
- To operate a low cost radiation monitoring system for workshops and laboratories that can be installed on very short notice (GRAMS)
- To have the predecessor system ("ARCON") replaced by 2017
- Create the ability to develop the new pumping systems for the next water monitoring stations (WMS) and the environmental aerosol samplers (EAS) from May 2014 (SMART-INTERFACE)
- More timely services to users and decrease dependence on external suppliers by creating and maintaining a stock of strategic parts

Long Term Objectives of the RAMSES Programme

- To ensure the rational renewal of the instrumentation for the radiation and environmental monitoring systems and to remain fully integrated in CERN infrastructures and technological main-stream.

- To contribute to future planning that is required to ensure that the right projects are selected to maximise organisational performance
  (e.g. to find and respond to synergies)

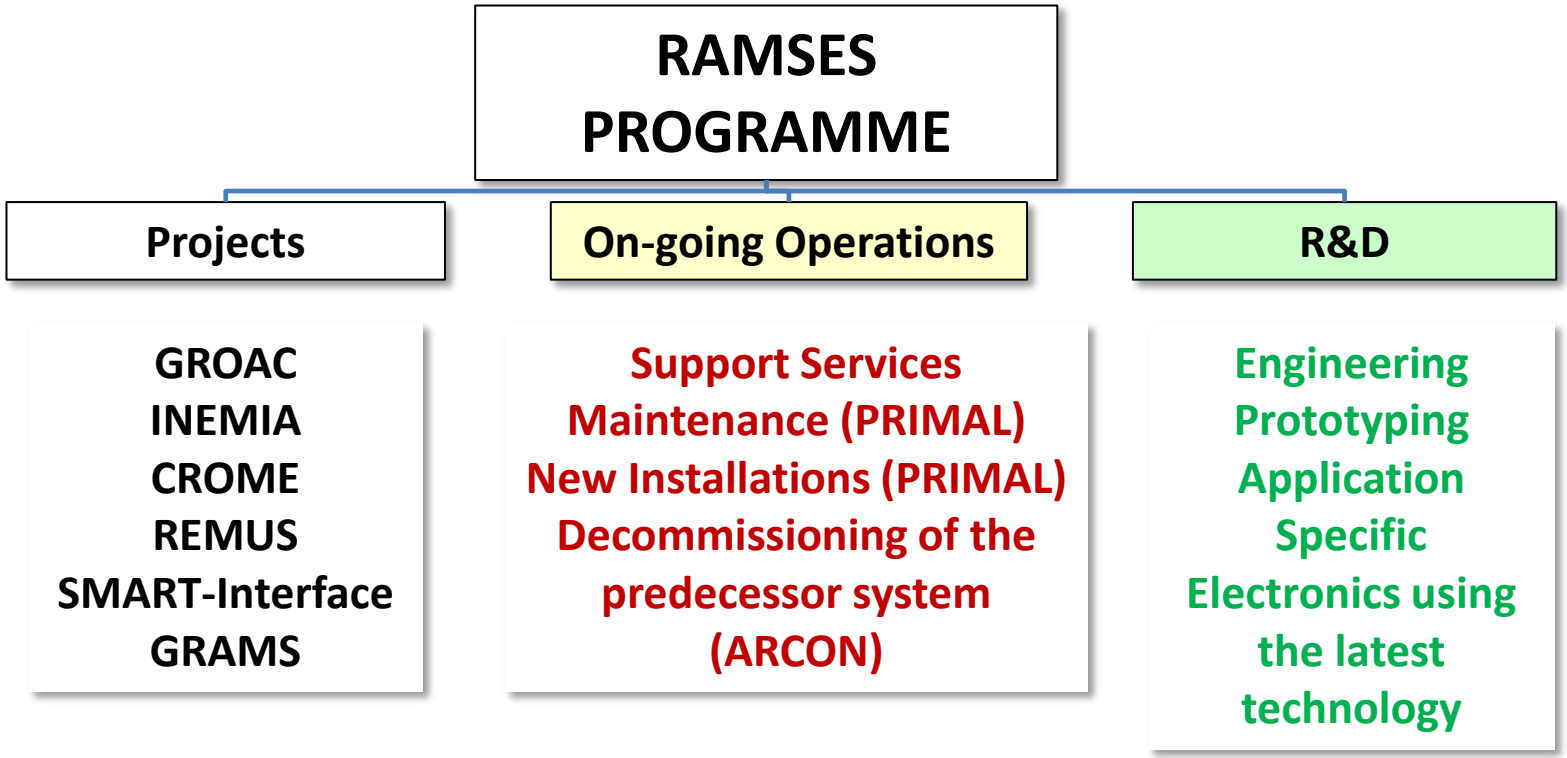
Opportunities

The success of the RAMSES Programme relies on the ability to find relevant companies within the CERN member states with the appropriate knowledge and skills to help us at various levels and stages of our projects to achieve our mission.

Some needs for industrial partnership are yet to be identified and will then be specified in the course of the programme execution. Domains to be covered are mainly related to industrialisation and/or production of monitoring equipment.

It should not be forgotten that equipment maintenance and operation needs companies that see their success in industrial maintenance under tight quality control, a feature that shadows all activities dealing with public health and occupational Safety.

RAMSES Programme Scope



RAMSES Programme R&D

Reverse engineering

- RAMSES monitoring stations (wall and rack types)
- RAMSES UPS (under study)

Prototyping

- Thermally compensated digitizer
- Microelectronics design (replacement of IVC102)

Technology watch

- Monitors market survey
- Strategic components
- New instrumentation and technologies

Further Reading:

The RAMSES Programme

A glossary of the major items

GROAC

Project to prolong the availability of the ARCON VME chassis until the end of the complete replacement of the ARCON system with new environmental and radiation protection equipment by 2017. This implies the replacement of hardware and the development of software.

VME Frontend
- PE… VM40
- P…P VLAN
- …Microware OS9 v3.…
- …CERN software (no… standard BE/CO)

BE/CO standards for control electronics and control software

INEMIA

The INEMIA project aims at consolidating, replacing and extending the network of monitors used to assess the impact of the Organisation activities on the Environment and on the population living around the CERN.

Stray radiation Monitoring Stations

Water Monitoring Stations

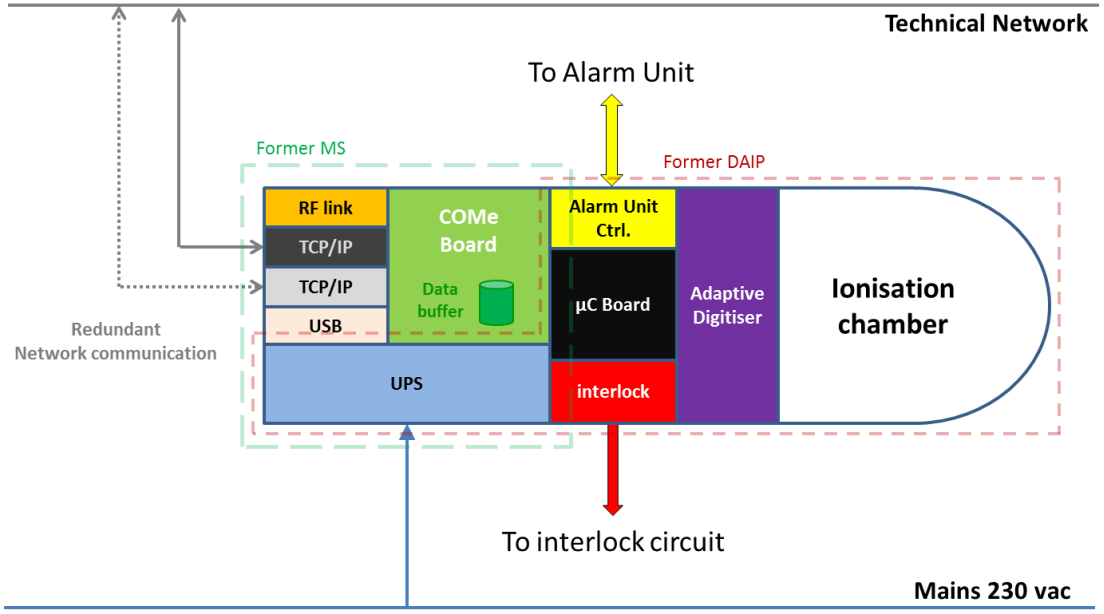
Ventilation Monitoring Stations

and a lot more…

CROME

The CROME project aims at developing in-house high performance, cost effective, low maintenance radiation monitors for the replacement of the old ARCON monitoring system and the consolidation of RAMSES.

The project encompasses the design, the conception, and the series production of a new generation of read-out electronics for radiation protection monitors.



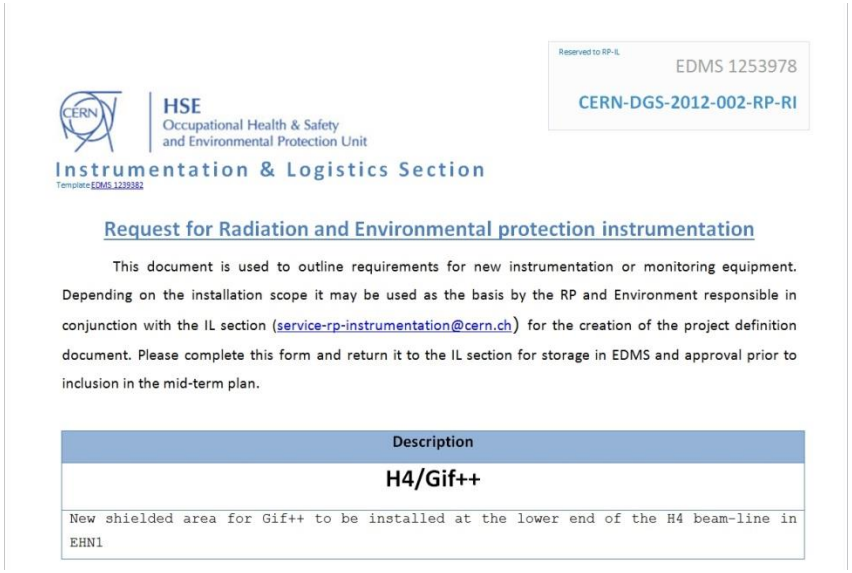
PRIMAL

The PRIMAL aims at providing the technical and logistical support for the procurement, installation, commissioning and the maintenance of environmental and radiation monitoring systems according to approved requests for instrumentation.

PRIMAL will firstly ensure the consolidation of RAMSES and its extension to new experiment installations such as COMPASS and ELENA, as well as for facilities such as EAST HALL.

And secondly PRIMAL will ensure the replacement of the ARCON monitors used for the radiation protection by the new generation of RP monitors delivered by the CROME project.

First results: Requests for Instrumentation (RFI) form released and the definition of the formal RFI use procedure being prepared.
RFI already initiated for Linac4, HIE-ISOLDE, ELENA, EAST Zone, AD, nTOF, Compass2, PS VMS, GIF++, PS HFM and more…



Reserved to RP-IL
EDMS 1253978
CERN-DGS-2012-002-RP-RI

HSE
Occupational Health & Safety
and Environmental Protection Unit

Instrumentation & Logistics Section

Template EDMS 1239382

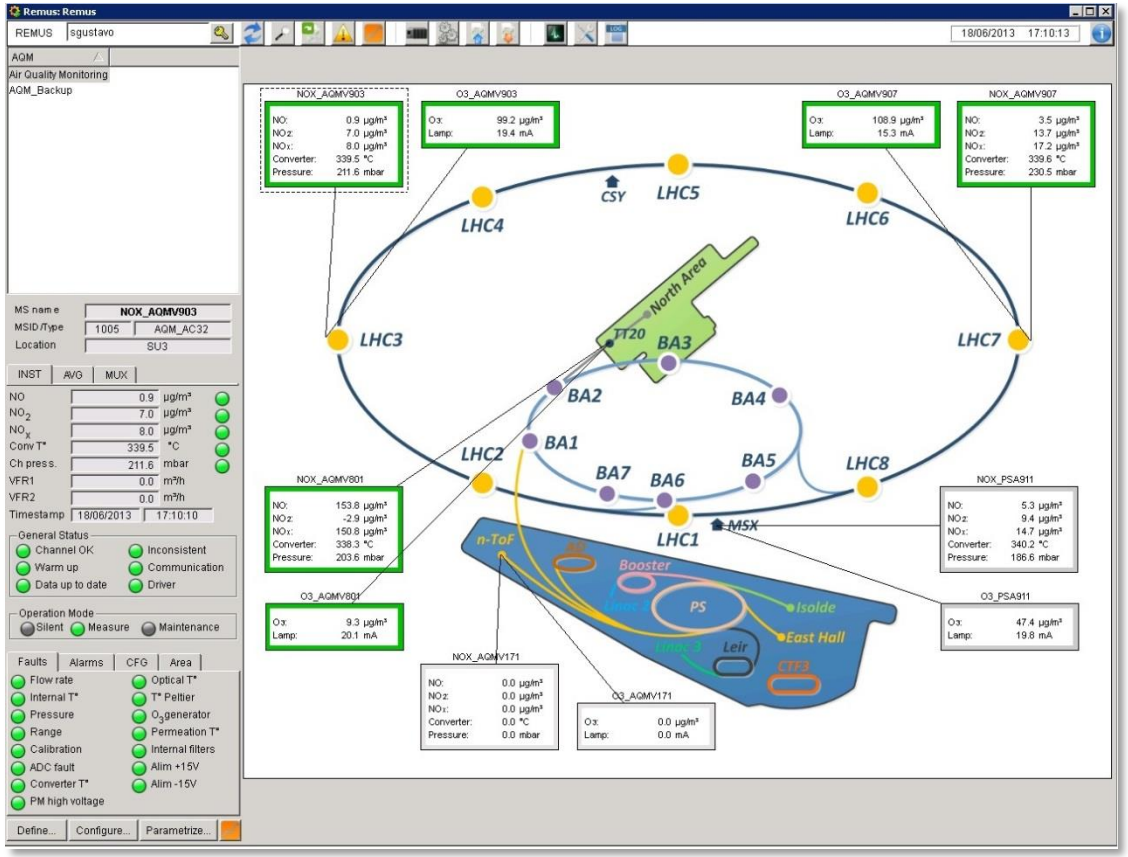
Request for Radiation and Environmental protection instrumentation

This document is used to outline requirements for new instrumentation or monitoring equipment. Depending on the installation scope it may be used as the basis by the RP and Environment responsible in conjunction with the IL section (service-rp-instrumentation@cern.ch) for the creation of the project definition document. Please complete this form and return it to the IL section for storage in EDMS and approval prior to inclusion in the mid-term plan.

Description
H4/Gif++
New shielded area for Gif++ to be installed at the lower end of the H4 beam-line in EHN1

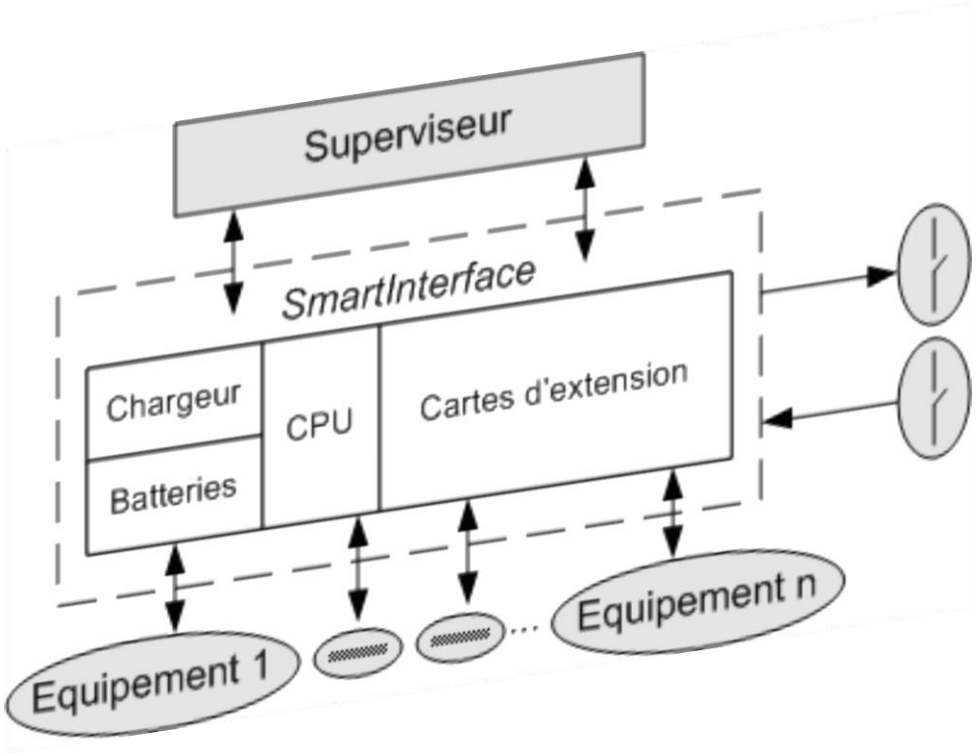
REMUS

The REMUS project aims at developing a universal software for supervision, control and data acquisition for the entire suite of monitoring stations that are available for the RAMSES programme. These monitoring stations cover all radiological and environmental parameters that can potentially be affected by the operation of the facilities of the Organization.



SMART Interface

The SMART-INTERFACE project aims at providing a scalable interface to standardise the supervision of a variety of equipment from different manufacturers to facilitate their reliable and secure link to the environmental and radiation monitoring system.



GRAMS

The GRAMS project, Gamma Radiation Area Monitoring System, aims at providing CERN with an alternative set of gamma monitors, control and alarm units for laboratories and experimental areas where the full performance of RAMSES type monitors is not required.

A modular and scalable system
A cost efficient system

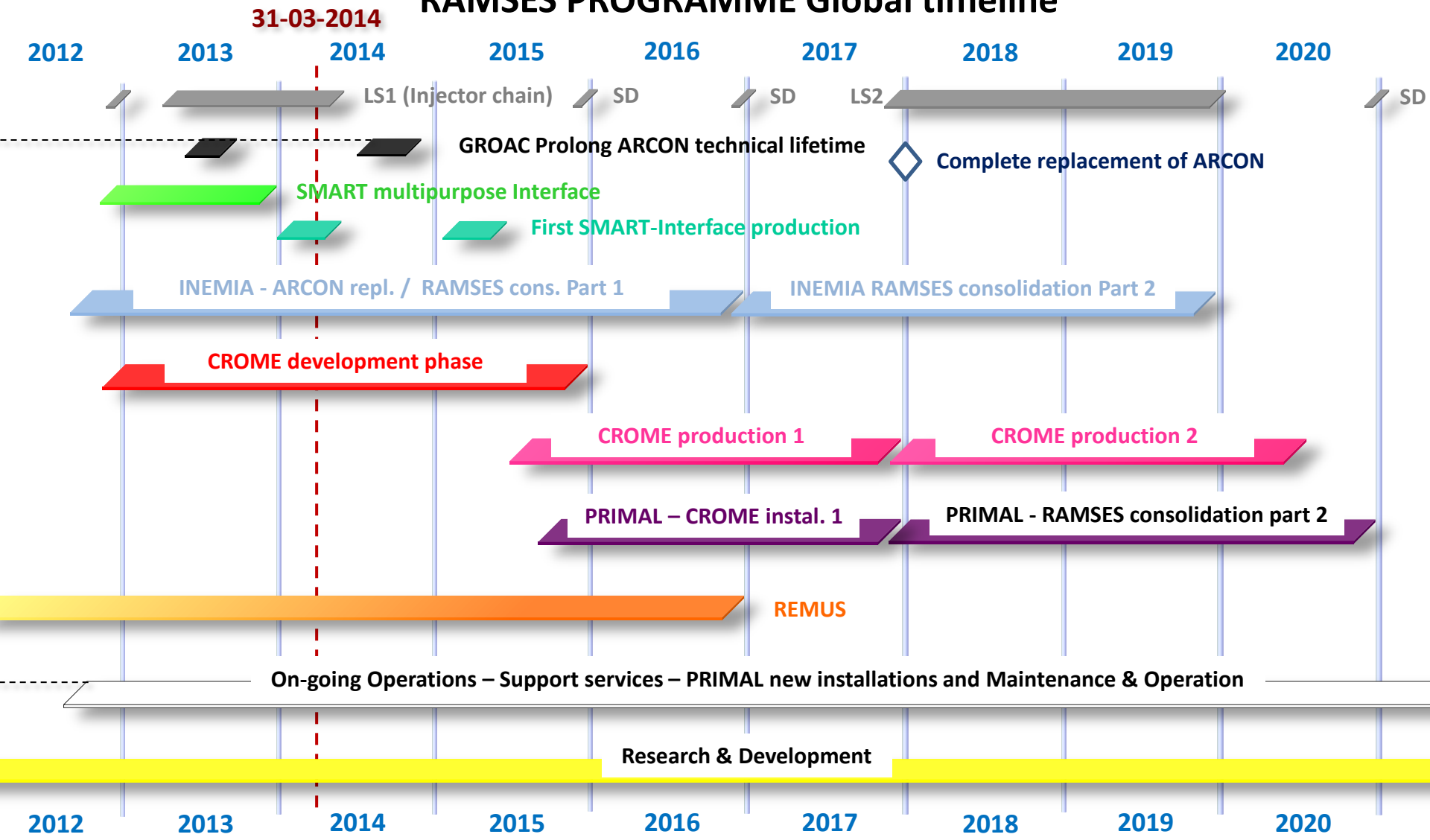
Pilot project:

Refurbishment of the building 867
- 36 detectors
- 26 alarm display units
- 20 central units
- 1 supervisory system*

*Dedicated supervision until full integration in RAMSES

RAMSES Programme Project Schedule

RAMSES PROGRAMME Global timeline



Many thanks for your attention