

**EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH
CERN – TS**

CERN-TS-HDO

**TECHNICAL SUPPORT DEPARTMENT
(TS)**

Structure and Organization in 2008

V. Vuillemin

May 2008

1. MANDATE

The mandate of the Technical Support Department is to provide support for the technical infrastructure of CERN, accelerators and experiments.

In addition, it manages the maintenance of sites and buildings, cleaning, gardening and access surveillance to sites and provides general services as transport, mail and housing.

The technical support is provided, partly by using outsourced contracts, in the field of (ref. CERN/SPC/831, CERN CC/2520):

- Civil Engineering, including all phases from preliminary design to construction management and hand-over of complete structures.
- Positioning Metrology and Surveying of components for accelerator systems and experimental detectors.
- Electrical Engineering related to the power distribution network from 400 kV to low voltage, including cabling and optical fiber installation.
- Mechanical Engineering for:
 - Cooling, ventilation, air-conditioning, heating for all accelerators and experimental areas as well as for sites infrastructure.
 - Heavy handling, lifting equipment and special vehicles.
 - Components of accelerators and experiments. The support is provided by a design office using CAD tools, drawing database and providing unified methods for all CERN mechanical activity.
The mechanical workshop produces prototypes and pre-series as well as repair and support for series production offsite.
A particular expertise is provided in the field of assembly technologies, advanced surface treatment and metallurgy.
- Electronic Modules, from printed circuit board layout to prototype production.
- Software for engineering and equipment data management, controls for technical infrastructure and in particular safety systems such as access control, fire and gas protection and systems used by the fire fighting brigade.
- Site management (housing, cleaning, access control, green areas upkeep, internal mail and packages distribution).

All the above activities include the complete life-cycles of the equipment or facilities from design, construction, installation to operation, maintenance and dismantling.

Additionally, the Department assumes the tasks of:

- support for the LHC experimental areas, coordination of machine/detector interfaces and the radiation monitoring and radiation tolerance studies at the LHC;
- planning, coordination of the remaining installation work and commissioning of the LHC project-wide, as well a safety during these activities;
- Project office for the new mains projects, such as Linac IV, Inner Triplets, SPL and PS2;
- CERN Safety provider, conducting safety inspections under the request of the Departments.

1. STRUCTURE

The **Technical Support Department** lead by *V. Vuillemin* as Head of Department ad interim until 30 June 2008 and assisted by *T. Pettersson*, is organized (see annexes A to N) as below:

1.1 Head of Department's Office (HDO)

V. Vuillemin is the Head of the HDO in charge of some departmental responsibilities such as budget (B. Jossen), CLIC coordination for TS activities (C. Hauviller), and safety (J. Pedersen, DSO)

1.2 Administration, Secretariats & Safety Services Group (AS3)

I. Bejar Alonso is the Group Leader of the AS3 Group in charge of monitoring recruitment and administration management for staff members and associates, secretarial and administrative support for TS groups, and safety service provider for CERN. The group manages the manpower plan and the training needs.

1.3 Access, Safety & Engineering Tools (ASE)

T. Pettersson is the Group Leader of the ASE Group in charge of providing the Organization's systems for personnel safety and access control. The group procures and supports the Organization's engineering, equipment data management tools and mechanical CAD systems. The group also provides the TS Department with desktop computing, EDMS and Web support.

1.4 Civil Engineering Group (CE)

L.A. Lopez-Hernandez is the Group Leader of the CE Group in charge of design and construction management of new civil engineering structures, buildings and their surroundings (surface and underground), maintenance and modification of existing underground structures. The group is presently involved into the preliminary studies for future machines (ILC, CLIC, Linac IV, SPL, PS2, etc.).

1.5 Cooling & Ventilation Group (CV)

J. Inigo-Golfin is the Group Leader of the CV Group in charge of design, construction and operation of cooling, ventilation and air conditioning systems for accelerators and experimental areas; including also the fluids distribution systems for the laboratory (drinking water, compressed air, etc.), and cooling studies for detectors and electronics.

1.6 Development of Electronic Modules Group (DEM)

E. van der Bij is the Group Leader of the DEM Group in charge of layout, production and assembly of hybrids, fine pitch detectors, printed circuit boards and flexible circuits. The group subcontracts series productions to industry.

1.7 Electrical Engineering Group (EL)

G. Fernqvist and P. Proudlock are the Group Leaders of the EL Group in charge of design, installation, operation and maintenance of the CERN power distribution network, cabling and optical fibre installations.

1.8 Facilities Management Group (FM)

M. Nonis is the Group Leader of the FM Group in charge of operation, maintenance, breakdown repairs and minor works in civil engineering, electricity, heating and air-conditioning equipment, lifts in the surface buildings and cleansing and site maintenance.

1.9 Handling Engineering (HE)

I. Rühl is the Group Leader of the HE Group, in charge of providing transport and handling services for the technical infrastructure of CERN, accelerators and experiments. The group also designs, tenders, installs, commissions and maintains standard industrial and on-purpose-built transport and handling equipment; it manages CERN's vehicle fleet (with the exception of the PH Departments vehicle fleet); provides 'orphan' infrastructure works for CERN's accelerators and experiments; develops, designs and manufactures remote operated equipment for the verification, maintenance or handling of radioactive components; it validates or refuses design memoranda of non CE-labeled hoisting equipment.

1.10 Installation and Commissioning Coordination (ICC)

R. Saban is the Group Leader of the ICC Group, in charge of the planning, the coordination of the remaining installation work and commissioning of the LHC project-wide, as well as for safety during these activities. In addition the group is responsible for the machine baseline by managing the engineering changes control and the installation non-conformities. This group is also responsible for the integration studies.

1.11 Coordination of LHC Experimental Areas Group (LEA)

E. Tsesmelis is the Group Leader of the LEA Group, which is responsible for the co-ordination of all machine-experiment interface issues including the general co-ordination and management of the four LHC experimental areas, the liaison between the LHC experiments and accelerator, the radiation monitoring and tolerance issues for equipment in the LHC machine and experimental areas and for the provision of specific technical services to the LHC experiments.

1.12 Mechanical & Materials Engineering Group (MME)

V. Vuillemin is the Group Leader of the MME Group, assisted by *R. Folch* and *T. Kurtyka*, in charge of Engineering support of CERN facilities and the manufacturing of prototypes as required for CERN projects. This encompasses various activities such as the mechanical design and manufacturing, as well as the selection, the characterization and the treatments of surfaces and materials.

1.13 Large Scale Metrology Group (SU)

J-P. Quesnel is the Group Leader of the SU Group in charge of alignment and metrology of components for accelerator systems and experimental detectors, implementation of high-resolution alignment systems, calibration of all required instruments and devices.

2. ORGANIZATION

The life of the Department is organized through three main bodies:

A. The Steering Committee with the following mandate:

- Definition of strategy for implementation of decisions from the Directorate.
- Definition of policy reflecting the mandate of the Department.
- Distribution of resources (P+M).

Members: *V. Vuillemin* (Chairman)
C. Hauviller
T. Pettersson

B. The College of Group Leaders with the following mandate:

- Diffuse information (from Groups and to Groups).
- Debate on common issues
- Organise transversal links and define responsibilities for multidisciplinary projects/activities.

Members: *The TS Head of Department* (Chairman)
The Group Leaders
The HR Personnel Officer
A Staff Association representative

C. The MARS Panel with the mandate to guarantee the respect of guidelines and equal treatment through the Department for the MARS exercise.

The MARS Panel is constituted by a chair person (T. Pettersson), 4 members (M. Bätz, D. Macina, H. Mainaud Durand, E. van der Bij) and the HR Personnel Officer (L. van den Boogaard).

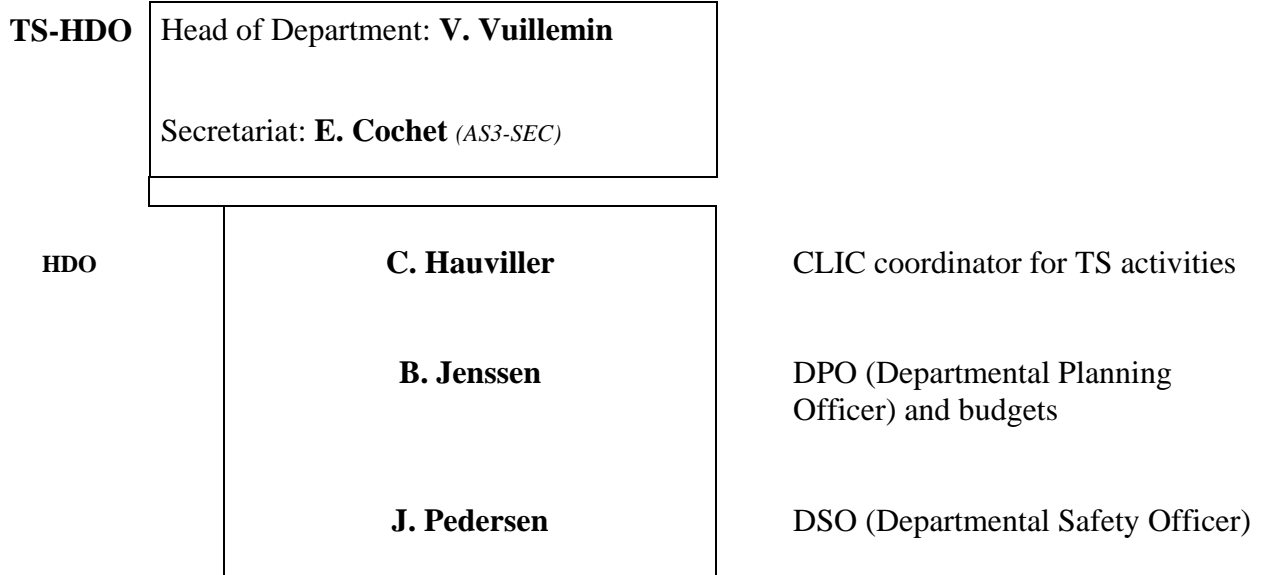
D. The DCRB Panel with the mandate to verify that the FT positions offered by the department are compatible with the priorities and the long term program of the Department and to evaluate the possible and interested candidates in the Department to move from LD to FT. The DCRB Panel is constituted by a chair person (R. Folch), 3 members (I. Bejar Alonso, C. Delamare, S. Oligier) and the HR Personnel Officer.

The Steering Committee and the College of Group Leaders meet on the basis of an alternate bi-weekly frequency every Monday morning.

Annex A: **Technical Support Department (TS) organization chart**

TS (1)	TECHNICAL SUPPORT HEAD OF DEPARTMENT : V. VUILLEMIN DEPUTY : T. PETERSSON
TS-HDO (3)	HEAD OF DEPARTMENT'S OFFICE V. Vuillemin
TS-AS3 (23)	ADMINISTRATION, SECRETARIATS & SAFETY SERVICES I. Bejar Alonso
TS-ASE (42)	ACCESS, SAFETY & ENGINEERING TOOLS T. Pettersson
TS-CE (11)	CIVIL ENGINEERING N. Lopez
TS-CV (42)	COOLING & VENTILATION J. Inigo-Golfin
TS-DEM (13)	DEVELOPMENT OF ELECTRONIC MODULES E. van der Bij
TS-EL (46)	ELECTRICAL ENGINEERING G. Fernqvist & P. Proudlock
TS-FM (26)	FACILITIES MANAGEMENT M. Nonis
TS-HE (29)	HANDLING ENGINEERING I. Rühl
TS-ICC (24)	INSTALLATION AND COMMISSIONING COORDINATION R. Saban
TS-LEA (25)	COORDINATION OF LHC EXPERIMENTAL AREAS E. Tsesmelis
TS-MME (105)	MECHANICAL & MATERIALS ENGINEERING V. Vuillemin
TS-SU (22)	LARGE SCALE METROLOGY J-P. Quesnel

Annex B: **Head of Department's Office (HDO) organization chart**



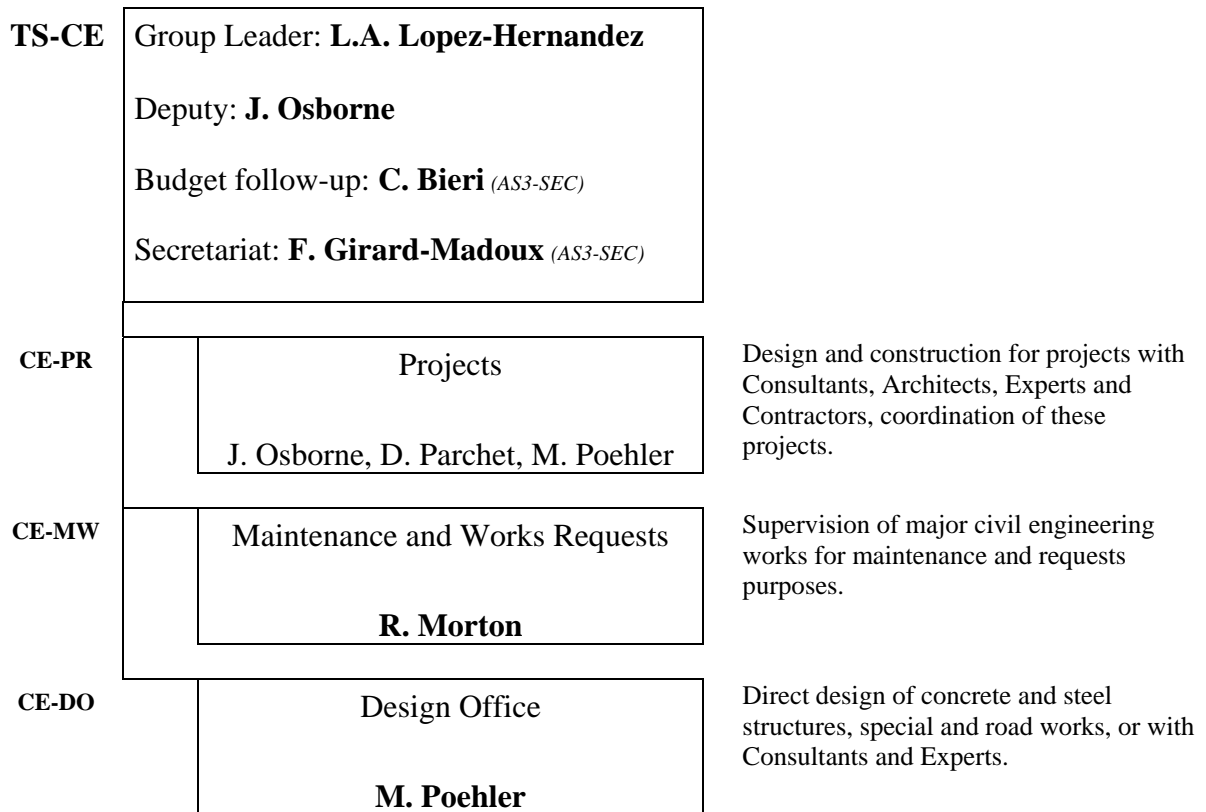
Annex C: **Administration, Secretariats & Safety Services (AS3) organization chart**

TS-AS3	Group Leader: I. Bejar Alonso Secretariat: E. Cochet (<i>AS3-SEC</i>) Safety Coordinator : J. Etheridge (<i>detached to ICC group up to end of June 2008</i>)	
AS3-ADM	Administration F. Ziesler	Human resources management and administrative procedures for CERN and associated staff.
AS3-SEC	Secretariats E. Cochet	Administrative and secretarial support to the groups.
AS3-SIS	Safety Inspection Services C-M. Bernard	Management of equipment safety inspections visits on the following domains: mechanical equipment, electrical installations, pressure vessel and lines and safety valves. Management of general safety visits on CERN infrastructure. Special waste conditioning and elimination.

Annex D: **Access, Safety & Engineering tools (ASE) organization chart**

TS-ASE	<p>Group Leader: T. Pettersson</p> <p>Deputies: C. Delamare P. Ninin</p> <p>Secretariat: C. Bieri (<i>AS3-SEC</i>)</p>	
ASE-ACS	<p>Access Control Systems</p> <p>R. Nunes</p>	<p>Implement, operate and maintain the Organization's access control systems for site and controlled areas (SUSI and ZORA) respectively using the group's development and support resources. Provide technical development support to the FSS and ISS sections</p>
ASE-CSE	<p>Computing for Safety & Engineering</p> <p>C. Delamare</p>	<p>Procure and support the Organization's engineering and equipment data management systems. Procure and support the Organization's computer aided mechanical engineering tools. Provide programming support and computing expertise for the various safety and access control systems maintained by the group.</p>
ASE-EPS	<p>Engineering Process Support</p> <p>D. Widegren</p>	<p>Provide methodology and user support for the Organization's engineering data management services, computer aided mechanical engineering tools. Provide in collaboration with the CSE section when required, user support for the safety and access systems maintained by the group. Provide departmental desktop computing and reprography support. Provide group documentation quality assurance support.</p>
ASE-FSS	<p>Functional Safety Studies</p> <p>P. Ninin</p>	<p>Develop and procure safety and access systems for the Organization as required in collaboration with the ACS and ISS sections. Define and maintain an appropriate process for all stages of procurement and operation of safety systems and access control systems. Develop and maintain all relevant documentation for the safety and access control systems under the group's responsibilities.</p>
ASE-ISS	<p>Integrated Safety Systems</p> <p>S. Grau</p>	<p>Implement, operate and maintain the Organizations' safety systems as required using the group's development and support resources. CSAM is operated in collaboration with the ACS, CSE and EPS sections as required.</p>

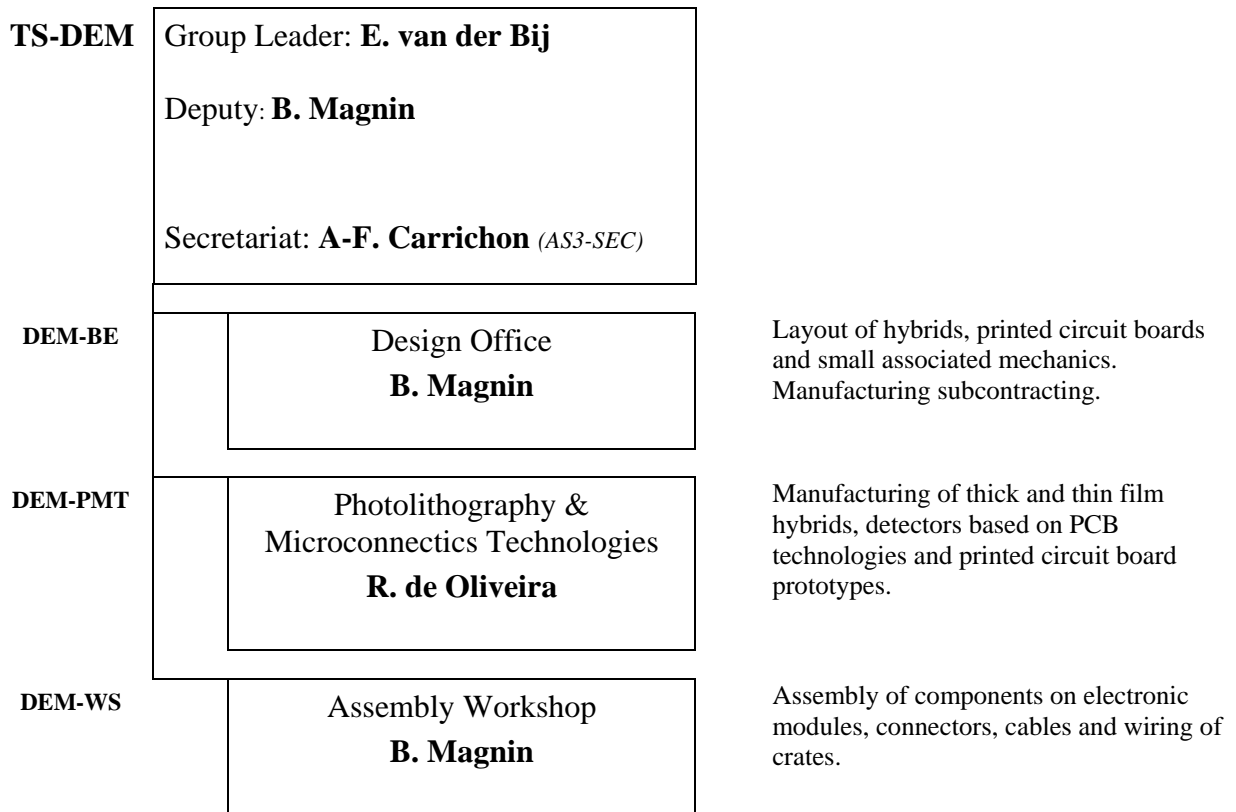
Annex E: **Civil Engineering (CE) organization chart**



Annex F: **Cooling & Ventilation (CV) organization chart**

TS-CV	Group Leader: J. Inigo-Golfin Deputy Project: B. Pirollet Deputy Operation: M. Bätz Secretariat: D. Rivoiron (<i>AS3-SEC</i>)	
CV-DC	Detector Cooling M. Battistin	Design, manufacture, installation, testing and commissioning of the specific cooling units requested & agreed with the Experiments.
CV-DE	Design Office C. Martel	Production of all the tendering drawings for the CV plants (LHC and non-LHC).
CV-EA	LHC Experimental Areas P. Pirollet	Design, construction work and commissioning in LHC Experimental Areas.
CV-MA	Maintenance G. Peon	Drafting of the maintenance plan, definition of the maintenance contract strategy and preparation of tendering documents for the forthcoming renewal of the maintenance and operation contract.
CV-OC	Operation Controls M. Bätz	Rationalization and TIM (Technical Infrastructure Monitoring) implementation for the CV plants in Operation.
CV-OP	Operation S. Deval	Operation and maintenance of the CV plants from their joint acceptance and commissioning.
CV-TC	Works & Consolidation Y. Body	Studies, tendering, installation and commissioning of new or modified installations (all CV disciplines)

Annex G: **Development of Electronic Modules (DEM) organization chart**



Annex H: **Electrical Engineering (EL)** organization chart

TS-EL	<p>Group Leaders: G. Fernqvist P. Proudlock</p> <p>Deputies: C. Gascon (Networks) C. Genier (Contracts - Budget)</p> <p>Secretariat: M. Claret (<i>AS3-SEC</i>)</p>	
EL-BT	<p>Low Voltage</p> <p>J. Pierlot</p>	<p>Design, installation, test and commissioning of extensions within the low voltage network. Maintenance of the low voltage network equipment.</p>
EL-CD	<p>Computing - Documentation</p> <p>S. Olinger</p>	<p>Documentation. Informatics : Maintenance, development and documentation of the GESMAR system (call for tenders, contracts, objects, cablotheque, control).</p>
EL-CF	<p>Cables & Optical Fibres</p> <p>L.K. De Jonge</p>	<p>Supply, installation, test, commissioning and documentation of control cabling, power cabling and optical fibres for CERN's accelerators, infrastructure, and experiments. Responsibility and maintenance for the accelerators optical networks.</p>
EL-CO	<p>Controls</p> <p>S. Infante</p>	<p>Monitoring and control of the CERN electrical networks.</p>
EL-HT	<p>High Voltage</p> <p>C. Jach</p>	<p>Design, installation, test and commissioning of extensions within the high voltage power network.</p>
EL-OP	<p>Operation</p> <p>G. Cumer</p>	<p>Operation of the CERN electrical networks. Maintenance of the high voltage network equipment.</p>

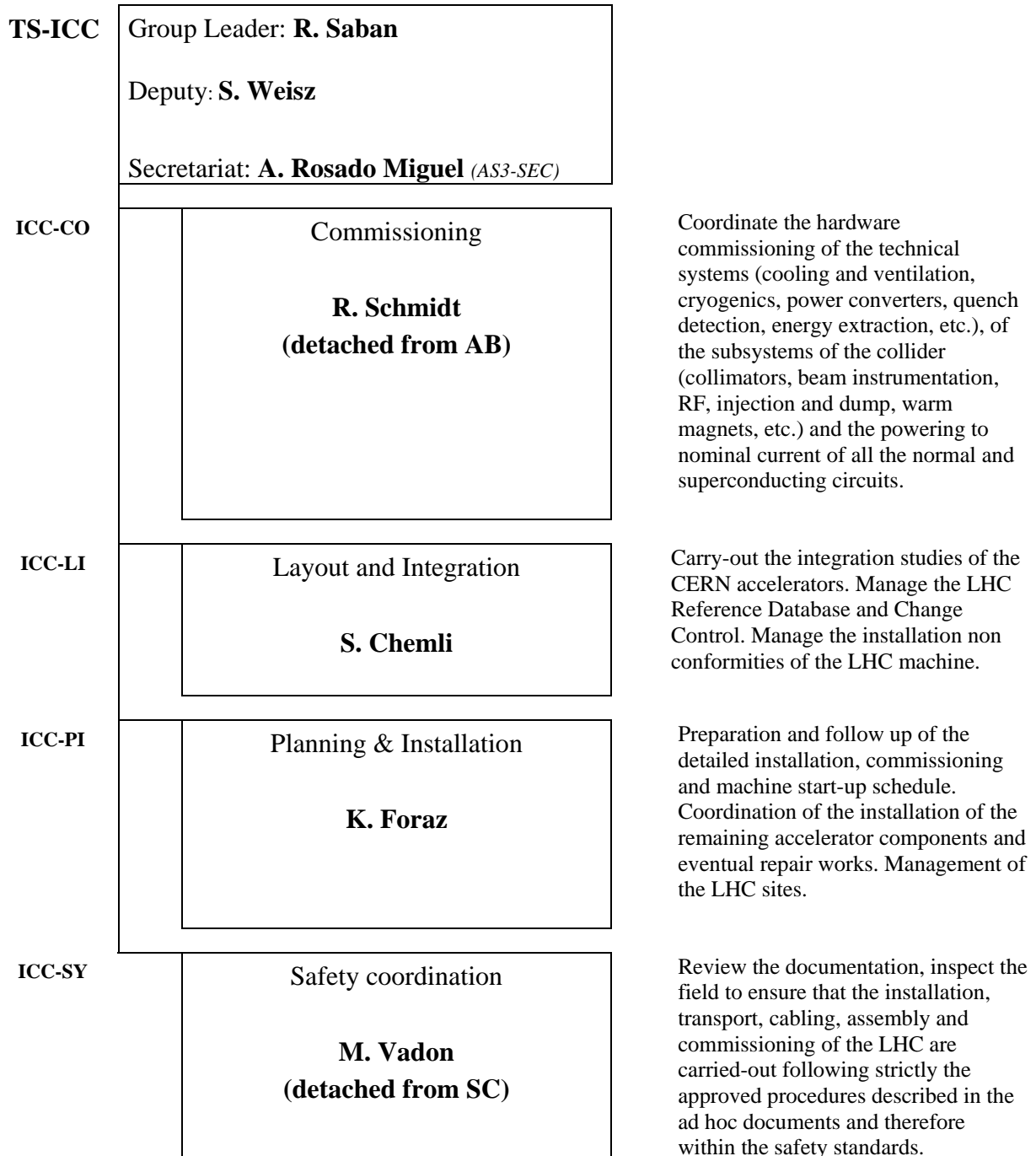
Annex I: **Facilities Management (FM) organization chart**

TS-FM	<p>Group Leader: M. Nonis</p> <p>Deputy: C. Colloca</p> <p>Accounting: C. Girard, P. Barrière (as from 1st July 2008)</p> <p>Helpdesk & Secretariat: S. Pernodet & A. Raczynska-Tartivel</p>	
FM-SMW	<p>Site Maintenance and Works</p> <p>P. Pepinster</p>	Operation and maintenance of the sites and "tertiary sector", minor works in surface buildings and other infrastructures of the "tertiary sector".
FM-ISP	<p>Patrimony and Site Information</p> <p>B. Guyot</p>	Survey and mapping of sites, patrimony management, drawings provision.
FM-SSE	<p>Site Services</p> <p>M. Nonis</p>	Security and access control to CERN sites, housing service, locks service, cleaning services, green areas upkeep, waste collection and transport, internal mail and small parcels distribution, transport of persons, registration and CERN cards provision, technical support and maintenance on areas external to CERN sites, restaurant service.

Annex J: **Handling Engineering (HE)** organization chart

TS-HE	<p>Group Leader: I. Rühl</p> <p>Deputy: S. Prodon Project Engineer : C. Bertone</p> <p>Secretariat: C. Alliod (50%) (AS3-SEC)</p>	
HE-HT	<p>Handling Technologies</p> <p>K. Kershaw</p>	Design studies, equipment development, specification and procurement to provide optimized means and procedures for tele-manipulators, remote handling equipment and on-purpose built transport and handling equipment.
HE-HM	<p>Handling Maintenance</p> <p>O. Böttcher</p>	Supplies, installs, commissions, documents and maintains industrial and on purpose built transport and handling equipment.
HE-HH	<p>Heavy Handling</p> <p>S. Prodon</p>	Prepares, organises and executes transport and handling operations for accelerators, experiments and CERN users in general. Management of CERN's vehicle fleet.
HE-AW	<p>Assistance Work</p> <p>A. Foreste</p>	Carries out mechanical and electro-mechanical assistance works for accelerators and experiments.

Annex K: **Installation and Commissioning Coordination (ICC) organization chart**



Annex L: **Coordination of LHC Experimental Areas (LEA) organization chart**

TS-LEA	Group Leader: E. Tsesmelis Deputy: M. Wilhelmsson Secretariat: C. Paris (<i>AS3-SEC</i>)	
LEA-EAM	Experimental Area Management E. Tsesmelis	Coordination and management of LHC experimental areas. Area and experiment infrastructure. Coordination of TS Department support for experiments. Radiation shielding in experimental areas.
LEA-INT	Machine Physics Interface D. Macina	Machine – experiment interface. Liaison with forward physics experiments and detectors. Simulations of machine-induced backgrounds in experimental areas.
LEA-DES	Detector Services M. Wilhelmsson	Detector gases in experimental areas. Detector cabling and connectors. Support for mechanical production.
LEA-RAD	Radiation Tolerance & Monitoring T. Wijnands	Radiation monitoring in LHC tunnel, experimental areas and detectors. Verification of radiation tolerance of technical equipment in LHC tunnel and underground areas.

Annex M: **Mechanical & Materials Engineering (MME) organization chart**

TS-MME	<p>Group Leader: V. Vuillemin</p> <p>Deputy R. Folch</p> <p>Secretariat: P. Henry (<i>AS3-SEC</i>)</p> <p>Design contracts and projects: P. Bourquin</p> <p>Design invoicing: C. Perquin</p>	
MME-CCS	<p>Coatings, Chemistry and Surfaces</p> <p>M. Chigiato</p>	<p>Vacuum treatment and characterization of materials, surface analysis and cleaning, thin-films and galvanic coatings, chemistry, polymers and resins. LHC long straight sections commissioning.</p>
MME-DCA	<p>Design Accelerators and collimators</p> <p>A. Bertarelli</p>	<p>Design engineering mainly in charge of the LHC collimators and other accelerators.</p>
MME-DCC	<p>Design Colliders</p> <p>O. Capatina</p>	<p>Design engineering mainly in charge of the LHC technologies and CLIC studies.</p>
MME-MS	<p>Mechanics and Subcontracting</p> <p>M. Polini</p>	<p>Mechanical workshops and manufacturing subcontracting.</p>
MME-AS	<p>Assembly Techniques</p> <p>R. Folch</p>	<p>Sheet metal manufacturing, arc welding, electron beam and laser welding, vacuum brazing.</p>
MME-MM	<p>Metallurgy and Metrology</p> <p>S. Sgobba</p>	<p>Metallurgy, dimensional controls, quality assurance.</p>

Annex N: **Large Scale Metrology (SU) organization chart**

TS-SU	Group Leader: J-P. Quesnel Deputy: D. Missiaen Deputy for experiments : C. Lasseur Secretariat: C. Alliod (AS3-SEC) (50%)	
SU-ACG	Accelerators-Computing-Geodesy M. Jones	Metrology for PS, SPS, computing, geodesy.
SU-ACL	Accelerators-CNGS-LHC D. Missiaen	Metrology for accelerators LHC, CNGS, SPS secondary beams.
SU-EM	Experiment Metrology C. Lasseur	Metrology for ATLAS, LHCb, CMS, TOTEM, ALICE, Compass, CAST, PS experimental areas, SPS experimental areas.
SU-MTI	Micro Technology & Instrumentation H. Mainaud Durand	Metrology for LHC low-beta sections, μm -metrology, instrumentation.