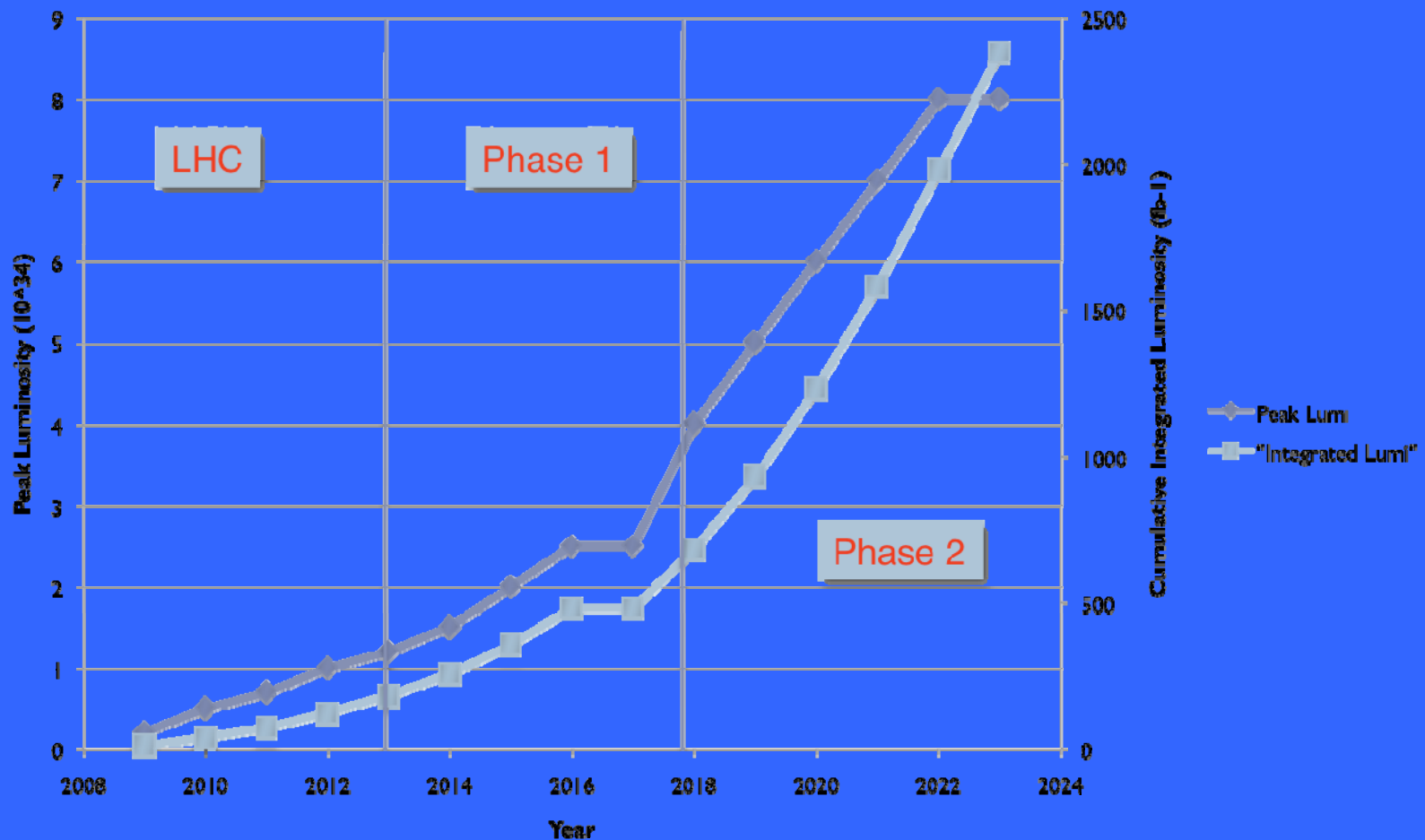


SLHC – PP (WP3 and WP4)

Co-ordination of the experimental upgrades (ATLAS/CMS)

- The main significance of these two work-packages
 - Outlines a timescale for the equivalents of Lol, TDR and Initial MoU for the ATLAS and CMS upgrades (becoming real projects)
 - Change the perspective of having a LHC detector lifetime of 10 years, to a long term project running well beyond 202(n) and having to deal with a substantial higher luminosity than foreseen
 - Brings some extra resources into the coordination of this work
- Be aware that extending the lifetime of the experiments alone will require substantial upgrades – Inner Detectors in particular

A scenario (we need the scenario)



What are the key timescales/issues?

▶ Phase 1

- ▶ How well do detector components handle the increasing luminosity?
 - ▶ Both instantaneous and integrated effects
- ▶ What detector elements will need replacement/modification to cope - if any ?
 - ▶ Detectors will record 500 fb^{-1} (or possibly more), can they withstand this?

▶ Phase 2

- ▶ What detector elements will need replacement?
 - ▶ ID and forward regions main victims
- ▶ Is there a requirement for a long shutdown? Likely yes
 - ▶ How long – 18 Months? (1 Full calendar year without beam +)
 - ▶ When – sometime after the middle of the next decade
 - Building new tracking detectors will take many years
 - ▶ ATLAS/CMS must agree the date

SLHC-PP Work Packages

Work Package No	Work Package Title	Type of Activity	Leading beneficiary No	Person-months	Start month	End month
WP1	SLHC-PP project management	MGT	1	42	M1	M36
WP2	Coordination for the SLHC accelerator implementation	COORD	1	48	M1	M36
WP3	Coordination for the S-ATLAS experiment implementation	COORD	1	102	M1	M36
WP4	Coordination for the CMS2 experiment implementation	COORD	1	90	M1	M36
WP5	Radiation protection and safety issues for accelerator and experiments	SUPP	1	116	M1	M36
WP6	Development of Nb-Ti quadrupole magnet prototype	RTD	1	187	M1	M36
WP7	Development of critical components for the injectors	RTD	1	181	M1	M36
WP8	Tracking detector power distribution	RTD	14	183	M1	M36
TOTAL				949		

Detector work

WP3: Coordination for the S-ATLAS experiment implementation

Task 3.1
(CERN, FOM-
NIKHEF, STFC,
UNIGE)
Coordination and
project structures

Task 3.2
(CERN, FOM-
NIKHEF, STFC,
UNIGE)
Project Office

WP4: Coordination for the CMS2 experiment implementation

Task 4.1
(CERN, Imperial)
Coordination and
organisation of
CMS2

Task 4.2
(CERN, DESY,
ETH-Zurich)
CMS2 Technical
Coordination Unit

- Objectives for these WPs:
 - Establish the formal structures needed for the ATLAS/CMS upgrade construction project, and through Technical Documentation, Cost and Schedule planning, establish an initial MoU for the Upgrade Construction.
 - Establish a Project Office to address the critical technical integration and coordination issues of the new detectors, and the technical and managerial tools needed for the project planning and follow up.
 - In addition will WP5 contain an experimental component (40%) and WP8 address a real R&D concern for SLHC detectors (powering)

S.Stapnes

Steps to be coordinated

In our language:

- EoI, LoI, TDRs, CORE cost books, MoUs, reviews for experiments and machine – require moving from R&D to real detector upgrade/improvement projects by 2011
- LHCC should be main detector upgrade review body (in fact this is the key to the success of WP3 and WP4) – these steps need to be required/coordinated by LHCC on timescales compatible with the SLHC – PP
- Obviously – all this can only happen within a common agreed scenario for the upgrade (schedules and scopes)

SLHC-PP Milestones/Deliverables

SLHC Preparatory Phase WORK PACKAGE DESCRIPTIONS (with Deliverables and Milestones)		1st YEAR				2nd YEAR				3rd YEAR			
		Q1 3	Q2 6	Q3 9	Q4 12	Q5 15	Q6 18	Q7 21	Q8 24	Q9 27	Q10 30	Q11 33	Q12 36
WP1. SLHC-PP project management													
Task 1.1	Steering of the consortium and follow-up of the project	M			M	D			M	D			M
Task 1.2	Dissemination of information	D											
WP2. Coordination for the SHLC accelerator implementation													
Task 2.1	Project Management preparation						M		M			D	D
Task 2.2	Networking and communication				D								
WP3. Coordination for the S-ATLAS experiment implementation													
Task 3.1	Coordination and project structures		D						M				D
Task 3.2	Project Office			M					D			D	D
WP4. Coordination for the CMS2 experiment implementation													
Task 4.1	Coordination and organisation of CMS2				D		M						D
Task 4.2	CMS2 Technical Coordination Unit				D		D						D
WP5. Radiation protection and safety issues for accelerator and experiments													
Task 5.1	Experiment Radiation & Activation				M				D				
Task 5.2	Accelerator Radiation & Activation				M				D				
Task 5.3	Impact Study												D
WP6. Development of Nb-Ti quadrupole magnet prototype													
Task 6.1	Design of advanced Nb-Ti superconducting quadrupole				M	D		M	M				D
Task 6.2	Construction and testing of short models			M				D	M	D		M	
Task 6.3	Construction and testing of a full-scale prototype									D	M		D
WP7. Development of critical components for the injectors													
Task 7.1	Development towards an H- source for the SPL				D	M		D				D	D
Task 7.2	Field stabilisation in pulsed superconducting low beta (v/c) accelerating structures				D			D				D	D
WP8. Tracking detector power distribution													
Task 8.1	DC-DC conversion				D							D	D
Task 8.2	Serial powering				D				D				D

Tasks 3.1+4.1 Overall organization

Deliverables task 3.1	Description	Nature	Delivery date
3.1.1	Project management structure and review office for R&D phase in place	O, R	M06
3.1.2	Establish the initial Memorandum of Understanding for the upgrade	R	M36
3.1.3	Develop detailed cost books for the upgrade including the installation phase	R	M36
Milestones	Description	Nature	Expected date
3.1	Schedule for the R&D phase	R	M09

Deliverables task 4.1	Description	Nature	Delivery date
4.1.1	Project Structures for construction of systems and sub-systems	O, R	M12
4.1.2	Cost book and MoU for the upgrade and installation phase	R	M36
Milestone	Description	Nature	Expected date
4.1	Upgrade Project Scope defined	R	M18

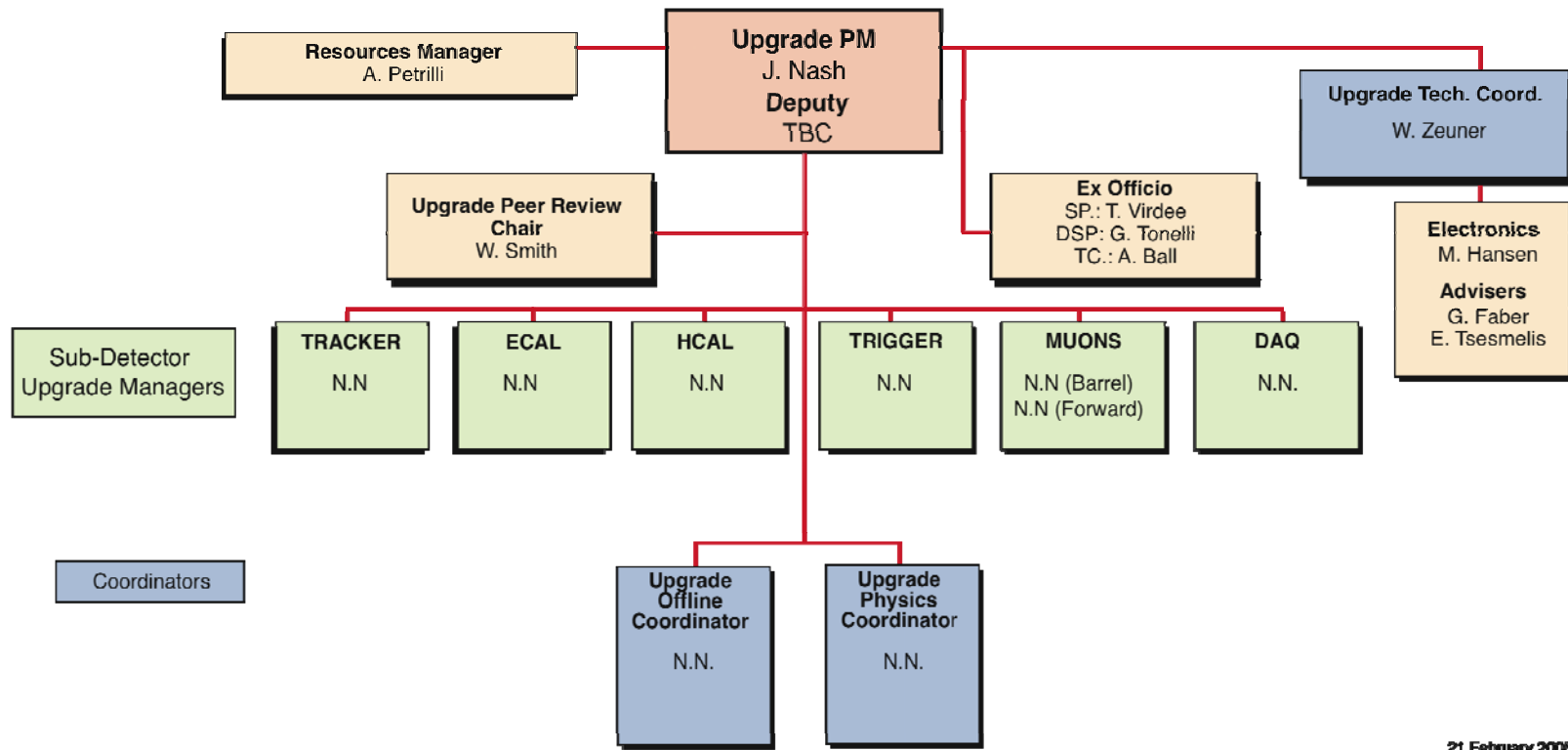
WP 3.2 + 4.2 Project Offices

Deliverables task 3.2	Description	Nature	Delivery date
3.2.1	Document the technical scope of the upgrade including an initial cost-estimate	R	M24
3.2.2	Schedule for the upgraded detector parts and for the S-ATLAS installation	R	M32
3.2.3	Technical documentation, drawing and CAD information for the existing experiment and the	R	M36
Milestones	Description	Nature	Expected date
3.2	Upgrade project structures adapted to the implementation phase	O, R	M24

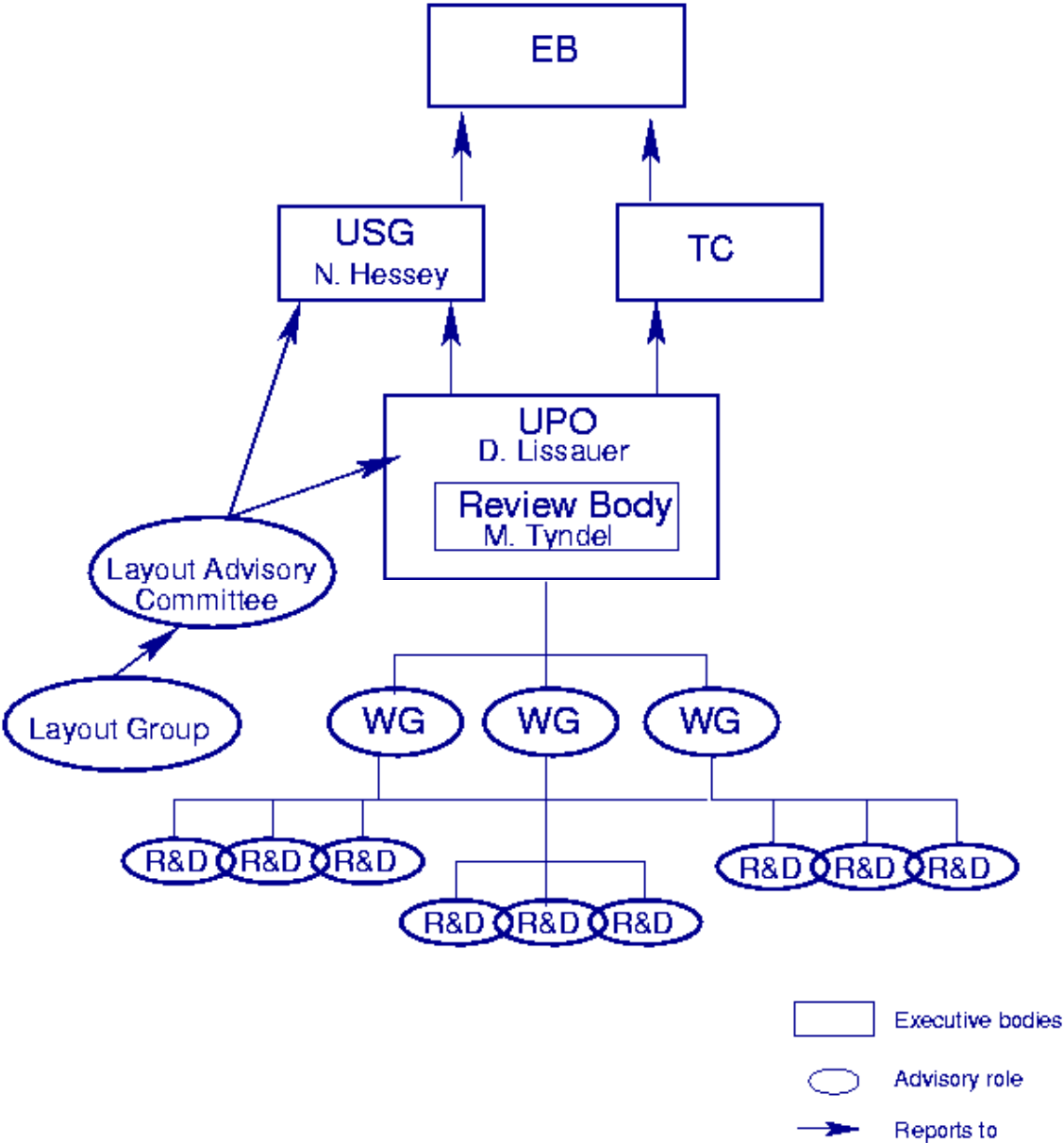
Deliverables task 4.2	Description	Nature	Delivery date
4.2.1	Personnel and working practices of the Technical Coordination unit in place	O, R	M12
4.2.2	Key structural requirements (information repository, tools, coordination framework, safety and quality systems, integration office) and scheduling and reporting mechanisms in place	O, R	M18
4.2.3	Pilot design and schedule for the upgrade project published.	R	M36

CMS upgrade project structure

CMS Upgrade Project



ATLAS Upgrade Organisation





ATLAS Upgrade Project Office Organization and Operation.

ATLAS Project Document No:

ATC-GE-MG-0064

Institute Document No. CERN

690177

Created: 29/Nov/05

Page: 1-7

Modified:

Rev. No.: 1

ATLAS Upgrade Project Office Organization and Operation.

Summary

This is a proposal for the organization of the ATLAS Upgrade Project Office. The document also contains a brief overview of the composition of the ATLAS Upgrade Steering Group and the relationship between the Upgrade Steering Group and the Project Office. The aim is to build an effective organization that will be capable from the start to coordinate and integrate the R&D and design efforts of the ATLAS upgrade project. At a later stage the Project Office will follow and coordinate the construction and installation of the upgrade. This document will focus mostly on the operational mode at the R&D and design stages.

Prepared by:
David Lissauer
Marzio Nessi
Steinar Stapnes

Checked by:
Peter Jenni

Approved by:

PO Organogram

Atlas TC
M. Nessi

Project Office
D. Lissauer
Dep. N. Hessey

Review Office
M. Tyndel

Working Groups

Thermal Management
G. Viehhauser

Electronics
P. Farthouat

Module Integration
P. Allport

DCS
D. Ferrere

Layout
N. Hessey

B-layer replacement
G. Darbo

Engineering & Integration
A. Catinaccio

Silicon Sensors
Nobu Unno

Radiation
V. Hedberg
(Acting)

Links

Machine
P. Grafstrom

Muon System
S. Palestini

LAr System
F. Lanni

TDAQ
S. Tapprogge

Milestones next 12 months

- First of all:
 - WP3 and WP4 will be fully integrated with much larger efforts in ATLAS, CMS for the upgrades (with reference to Jordan Nash's talk this morning)
- Within 12 month (deliverables and milestones):
 - Setting up a review office and having an R&D schedule (ATLAS) and Project Structure (CMS) under control – Project Office in CMS (M12) probably the early deliverable that need most focus
- Also happening:
 - ATLAS will need to develop projects structures to address better the deliverables later on in the project – getting underway

External key issues

- One major issue is to have LHCC fully involved – soon
- We need a compatible schedule and luminosity profile for phase I and phase II – including agreed shutdowns
- We need understand the machine/experiment interface – relevant for detector changes, radiation/activation levels and performance
- We need some early estimates of LHC radiation conditions
- We need LHC physics results

Summary

- Kick off meetings held – work will be integrated with existing organizations in the experiment - but will also help to shape these
- Next years milestones ok (i.e well within reach)
- This project – with the help of LHCC – can help significantly to determine some of the external parameters (lum, schedule) that will define the detector upgrade programs - and that are needed for the remaining deliverables (scope, schedule, costs, IMoU)
- LHC data and experience also needed

What integrated luminosity?

