



# EIROforum Topical Workshop 2014

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## Management of Instrumentation Projects

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### Introduction

The EIROforum Topical Workshop of the Instrumentation Working Group took place from 19-21 May at ESO. The workshop was an opportunity for all EIROforum organisations to exchange ideas, best practices and lessons learned with regards to the management of instrumentation projects. Each session was followed by a general discussion allowing the organisations to analyse and compare the way they manage instrumentation projects. All presentations can be found on Indico: <https://indico.cern.ch/event/308079/> A summary of each session is given below.

### Participants

<b>ESRF</b>	P.Duru, E.Mitchell, J.Susini
<b>ESO</b>	F.Biancat-Marchet, M.Casali, J.Spyromilio, W.Wild
<b>CERN</b>	F.Hahn, C.Joram, R.Lindner, M.Nordberg, W.Riegler
<b>XFEL</b>	R.Wichmann
<b>ESA</b>	D.Lumb
<b>JET</b>	J.Figueiredo, A.Murari
<b>EMBL</b>	S.Fiedler, T.Schneider
<b>ILL</b>	J.Beaucour

## Agenda

### DAY 1 - Monday 19 May 2014

Time	Session	Item	Institution	Speaker	Title
<b>09:00 - 12:00</b>					
<b>Registration in Room Fornax</b>					
<b>From 12:30 – 14:00</b>					
<b>Buffet lunch for participants</b>					
<b>14:00</b>	<b>SESSION 1:</b>				
	<b>Introduction to institutes</b>	1.1.	ESO	M.Casali	Brief description of each institute – function, size, organisation  5 min each.
		1.2.	CERN	C.Joram	
		1.3.	ESA	D.Lumb	
		1.4.	ILL	J.Beaucour	
		1.5.	EMBL	T.Schneider	
		1.6.	EMBL	T.Schneider	
		1.7.	JET	A.Murari	
		1.8.	XFEL	R.Wichmann	
		1.9.	ESRF	J.Susini	
<b>15:00</b>	<b>SESSION 2:</b>	2.1.	CERN	F. Hahn	How experiments start
	<b>Managing projects (I)</b>				
<b>15:15</b>		2.2.	ESRF	J. Susini	Upgrade projects
<b>15:30 – 16:00</b>					
<b>Coffee break</b>					
<b>16:00</b>		2.3.	EMBL	S. Fiedler	Mgmt of small and medium instrumentation projects
<b>16:15</b>		2.4.	ILL	J. Beaucour	Project management for the M1 programme and working with industry
<b>16:45</b>			All		<i>General discussion</i>
<b>17:30</b>					
<b>End of Day</b>					

## DAY 2 - Tuesday 20 May 2014

Time	Session	Item	Institution	Speaker	Title
09:00	<b>SESSION 3: Managing projects (II)</b>	3.1.	JET	J.Figueiredo	Lifecycle of diagnostic enhancement projects at JET-EFDA
09:15		3.2.	CERN	R. Lindner	From idea to realisation of a HEP experiment
09:30		3.3.	ESO	W.Wild	ALMA – a real world example
09:45		3.4.	XFEL	R.Wichmann	Project management processes at the European XFEL project
10:00		3.5.	CERN	M.Nordberg	ATLAS as an example of a large scientific collaboration
10:15		3.6.	CERN	M.Nordberg	ATTRACT Initiative – detector R&D and imaging program funded by EC
<b>10:30 – 11:00</b>					
<b>Coffee break</b>					
11:00			All		<i>General Discussion</i>
<b>12:30</b>					
<b>Lunch</b>					
14:00	<b>SESSION 4: The European ELT – Introduction and Tour</b>		All		
<b>15:30 – 15:45</b>					
<b>Coffee Break</b>					
15:45	<b>SESSION 5: Resource management</b>	5.1.	ESO	F.Biancat-Marchet	Project management in a fully matrixed organisation
16:00		5.2.	ESRF	P. Duru	Resource management at the ESRF
16:15			All		<i>General Discussion</i>
17:30	<b>End of Day</b>				
19:30	<b>Conference Dinner:</b> RONDELL Restaurant Bürgerplatz 9 85748 Garching. <b>(Included with registration)</b>				

### DAY 3 - Wednesday 21 May 2014

Time	Session	Item	Institution	Speaker	Title
09:00	<b>SESSION 6:</b> Working with external partners	6.1.	ESRF	E. Mitchell	ESRF interactions with the industrial world
09:15		6.2.	ESO	M. Casali	Working with institutes
09:30		6.3.	ESA	D. Lumb	Challenges of working with Industry
09:45			All		<i>General Discussion</i>
10:30 – 10:45	<b>Coffee Break</b>				
10:45	<b>SESSION 7:</b> Balancing science and eng	7.1.	ESA	D. Lumb	Balancing Science and Engineering
11:00		7.2.	CERN	W. Riegler	Balancing science and engineering
11:15		7.3.	ESO	J. Spyromilio	Early science or perfect engineering
11:30	<b>SESSION 8:</b> Science & eng General Discussion / Conclusions		All		
13:00	<b>End of meeting. Buffet Lunch.</b>				

## Meeting Discussions - session by session.

### Session 1 Introduction to Institutes

The 5-minute presentations aimed at providing a general understanding of the different organisations for the workshop participants.

### Session 2 Managing projects (1)

This session covered 4 presentations from CERN, ESRF, EMBL and ILL and focused on the procedures to start new experiments at CERN, the ESRF Upgrade Programme, the EMBL instrumentation projects and the ILL project management system implemented in 2007 for the realisation of the Millennium Programme (an investment programme for the upgrade of the ILL infrastructure and instruments).

### Session 3 Managing projects (2)

The 2<sup>nd</sup> session on *Managing projects* covered 6 talks on:

- the lifecycle of diagnostic enhancement projects at JET-EFDA (JET)
- the different steps towards the realisation of a HEP (High Energy Physics) experiment, LHCb, built on close cooperation between institutes, industry and an almost flat hierarchy (CERN)
- the example of ATLAS as a large scientific collaboration, providing an overview on how large scientific projects are governed, funded and what type of instruments (MoUs) are needed to execute them (CERN)
- the ATTRACT initiative – funded by the EC and how it integrates SMEs as co-developers, aiming at shortening the innovation cycle from research to societal use (CERN)
- the ALMA management scheme with the achievements and difficulties encountered during the 10+ years of construction (ESO)
- the XFEL projects handbook, containing the rules and responsibilities within a project and an outline of the main project management processes (scheduling, resource planning, project internal reporting and follow-up) supported by a central project management system (XFEL)

### Session 4. Introduction and Tour of the ELT project

ESO has started construction of the European ELT, which will become the largest optical/IR telescope in the world. The project has major technical and industrial challenges. A tour was given starting with an introduction to the project, followed by a trip to the current storage hall to see the sub-systems prototyped so far.

### Session 5. Resource Management

The *Resource Management* session focused on project management in a fully matrixed organisation like ESO and the ESRF methodology.

The matrix structure at ESO is strongly project-oriented and relies on the philosophy to separate staff management from project management.

A few years ago, ESRF implemented a project management methodology to monitor resources and set priorities between new projects and recurrent facility operation.

### Session 6. Working with External Partners

The talks focused on external partners such as industry (ESRF and ESA) and institutes (ESO).

ESRF, as a User Facility, has two kinds of interactions with industry: as a user and as a KTT (Knowledge and Technology Transfer) partner.

ESO has in place agreements to work with institutes (similar to the CERN MoUs) – ESO becomes the owner of an instrument, but cannot sell it.

Development of products from launchers to spacecraft and sub-systems is usually done by industry according to well-defined contractual arrangements. (ESA)

For the ILL Millenium Programme, the organisation is also reconsidering the way to interact with industry.

### Session 7. Balancing Science and Engineering

The main programmes for technology development at ESA were described, highlighting where science and engineering meet.

“Without engineers, science is just philosophy”. At CERN, physicists work closely with mechanics and electronics engineers.

### Session 8. Conclusions

During the sessions, some questions arose, allowing the participants to share best practices:

*How are projects managed in different organisations?*

**CERN: Idea Letter of Intent Collaboration MoU.** At CERN, projects function on the basis of collaboration between the organisation and collaborating institutes, industry, funding agencies etc. Everything is the responsibility of the collaboration, everything is common property (*vs. JET where they take ownership*). The voluntary agreement at all levels (the MoU) is what makes a project successful. Tough decisions are made through consultation processes and are consensus driven.

**ESO: staff management is split from project management,** a project-oriented matrixed structure is in place.

**XFEL: project structure based on work packages,** each represented by a member of the Project Board. All the roles and responsibilities are documented in the XFEL project handbook and supplementing documents. The top management is part of the project.

**ESRF: a project management tool was developed,** allowing the organisation to monitor all requests for new projects, as well as ongoing ones.

**ESA:** **industry involvement** is a main component of projects developed at ESA.

**ILL:** a **Project Management Committee** was set up, acting on behalf of the ILL directorate, and a **guidelines** document was written. An explicit **ILL project lifecycle** is in place, to monitor the different phases of a project (milestones and deliverables).

**JET:** project proposals are made by Research Units. The Project Leader and participating Research Units, in agreement with the Operator, produce a **Project Management Plan (PMP)**. This document defined the scope of the project, the responsibilities of the Operator and the resources required.

*Who is doing the project management? Professional project managers, scientists?*

**ESO:** there were some discussions whether an external project manager should be hired, the decision was to train scientists, technicians, engineers in project management.

**JET:** has the same approach as ESO and the projects are led by physicists.

*When is a project finished?*

**CERN:** a project cannot be stopped that easily since it is a collaboration of different institutes once the MoU is signed, deliverables are expected. From experience, there are a couple of ways to end a project: when a new request comes up, when the scientific committees' report is not positive (the scientific committees receive the results and then report to funding agencies).

**EMBL:** since EMBL is dealing with companies, they can easily end a project when the specifications that they requested are not met.

Each EIROforum organisation has its own way of doing project management, adapted to the organisation's structure and needs. The different project management processes could be useful to organisations to adjust their own procedures and learn from the experience of others.

*The participants in the Management of Instrumentation Projects workshop, welcomed the topic and proposed to organise future workshops on similar processes, problems, failures and achievements among EIROforum organisations.*