Program Management of the 2006 Olympic Winter Games

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Introduction

The Olympic Games are an heritage of principles and images to be valorised, transmitted and preserved: participation, enthusiasm, competition, courage, loyalty, will, and nobility of soul!

Those values will be once more exercised during 17 days of competitions (February 10 - 26, 2006) in the occasion of the XXth Olympic Winter Games that will be held in the wider region of Turin, north-western Italy.

The event will have the following main figures:

- 15 sport disciplines: biathlon, bobsleigh, Nordic combined, curling, freestyle, ice hockey, figure skating, speed skating, ski jumping, alpine skiing, cross-country skiing, short-track, skeleton, luge and snowboard;
- 7 competition sites: the town of Turin and the mountain centres of Bardonecchia, Cesana, Pinerolo, Pragelato, Sauze d'Oulx and Sestriere;
- 84 titles at stake;
- 85 National Olympic Committees;
- 2,500 athletes; 2,500 coaches and national team officials; 2,300 representatives of the IOC, National Olympic Committees and Federations; 650 judges and umpires; 10,000 media; 6,000 guests of sponsors;
- a million and a half expected spectators;
- 1,686 millions euro of budget costs.

To host people, competitions and events, a portfolio of 65 projects is under construction across the region: several mountain facilities like snowmaking systems, tracks and lifts; seven media villages; height main sport facilities like the ice stadia; three Olympic villages and several road infrastructures to assure the necessary links and transport services.

The large portfolio of various projects needs a comprehensive Program Management approach to get the most out of the event, to lead projects in scheduled time and within the budget.

The stakeholders responsible of the Olympic Games - among which is the 2006 Turin Organizing Committee (TOROC) charged with the management of the Olympic events, the International Olympic Committee (CIO), several public authorities (the Italian government, the municipality of Turin, the district, the region) - decided to establish a centralized and powerful agency PM service: a governmental program managing agency (2006 TURIN AGENCY) was given the major role of defining, planning, directing and controlling the entire portfolio of venues and facilities construction projects (Exhibit 1).

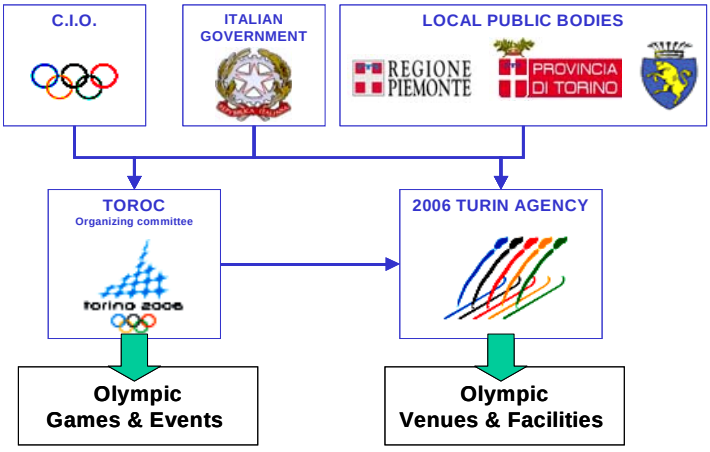

Exhibit 1: the PM Agency service face to the Olympic stakeholders

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The public PM agency has been playing a dual role: on the one hand, it is the planner and controller for both the entire program and the single projects, and, on the other hand, it is the formal and unique purchaser for all contractors and suppliers. Its function permits it to manage any financial, contractual and technical issues.

In particular, within the PM Agency organization, the scheduling and control activities are carried out by a Program & Project Control Service especially created to strengthen time and cost effectiveness.

The service is supported by a joint venture among consultants, practioners and experts in the field of project management (Sinclair Knight Merz PTY Ltd., Metropolitana Milanese S.p.A., Progetti Europa & Global S.p.A.). It acts as an owner PM agency: a Program Management Executive Office collaborates with the various project teams. Each project team has a project manager and a site manager for the construction phase. The site director can be supported by more inspectors the bigger the project. This organization has to work next to the contractors' project management organizations.

The 2006 Turin Agency runs several processes acting as:

- the **strategic planner** of the portfolio of venues and facilities,
- the **bidding and contracting officer**,
- the **program executor**, as it is the program&project manager including scheduling and controlling activities.

The paper aims to present those main processes, according to a survey carried out by the Politecnico di Torino.

However, before doing so, it is first necessary to define the mentioned processes when they are applied to a public large program, like the one shown in this work.

In this case, program planning and management activities must be developed in a "public environment" - usually characterized by shared decision making, uncertainty, continuous revisional processes -, and within the framework of national laws and communitarian directions.

Thus, the program and project management methods and techniques have to reconciliate with usual practices carried out by various players and with local instances. A complex system of roles and rules get more exciting the challenge of Program Management!

Main issues about Program Management

A Guide to the Project Management Body of Knowledge (PMBOK® Guide) glossary defines a *Program* as a group of related projects managed in a coordinated way (PMI, 2004, p. 368). In the usual corporate language, a Program is a long-term initiative that incloses two or more projects. More properly, in large organizations, a system of projects can be grouped according to different levels: the corporate project portfolio usually incloses several programs or multiple projects.

In practice, the 2006 Olympic Program is a large portfolio of 58 projects, in which there are 4 different programs composed of similar projects (i.e. mountain facilities, stadia, villages, infrastructures). However, all the projects are developed as a whole for several reasons:

- The Italian law about public works singles out a sort of project manager (called "Responsible of the proceeding"); this actor is permitted to manage a sole complex project at a time, so that it is not possible to assign a multiple project to a single project manager; the problem is solved by the settlement of a unique PM agency for the whole portfolio, while the creation of one agency for each program would have been unprofitable and would have determinated a lack of coordination.
- The 2006 PM Agency has been given the role of managing and reporting about the entire project portfolio.
- A special Olympic law has displayed a unique framework of financing resources and procedures.
- The variety and specificality of the single projects do not permit to perfectly match a partition with the general portfolio.

Therefore, in this paper, the term *Program* is generally utilized, as the PMI suggests, to define a system of more than one project carried out in a coordinated way and, by consequence, to represent the overall system of the Olympic multiple facility projects.

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Despite a single project, the main aims of a multiple-project or program management are the following (Archibald 2003):

- The successful completion of all projects to assure the strategic goals of the organization (in the proposed case study, the organization is represented by the Olympic event, the spectators, the sportsmen, the local community of citizens, etc.);
- the procurement and correct allocation of human resources, materials and capitals for the entire system of projects;
- the design and processing of a proper organizational framework and the development of a unique management system.

Generally, the program management process is developed according to the following main steps (Springer, 2001).

- The **program master planning** gives the strategic directions of the program, categorises and selects those projects that fulfil the strategic outlook, defines the objectives and the general scope of the project portfolio. It may be compared to the planning phase of project management. In this step the program management team provides guidelines for the execution of the single projects: WBS, schedule, quality, and communication standards.
- The **program master schedule** settles the timing constraints for each project. It is usually provided as a large Gantt chart showing the start and the finish date of each project and including the main general milestone of the program.
- The **program budget** collects all information about the costs of projects. By matching the schedule and the budget, it is possible to obtain the expected program cashflow and, therefore, to define the financing resources.
- Once the program has been planned and scheduled, it can be executed. So, the program management team is given the role to support the **project management** for each initiative and in each knowledge area: integration, scope, time, cost, quality, human resources, communications and procurement management.
- During the single projects execution it is necessary to manage the **program control** process: the overall program performance is the result of single project performances of time, costs and quality. The communication and reporting activities about the entire program are easier if the information from the single projects is centralized and available in real-time.

Let us show how those steps have been put into practice.

The Program Management of the XXth Olympic Winter Games

The PM Agency is the body charged of the Olympic facilities program management. In particular, the PM agency has to provide and assure:

- The correct integration and communication processes among the actors, according to both effectiveness and law procedures;
- the guide lines containing rules and techniques that the different operators (designers, contractors, suppliers, consultants, etc.) must apply;
- the maintenance of a web-based integrated information system for data, document and communication management;
- the supporting control process for project managers applied to each single project;
- the real-time situation of the program for preventive diagnosis and corrective actions.

The final purpose is to avoid time and cost risks and to reduce claims and litigation procedures towards contractors and suppliers.

The activities carried out by the PM Agency include planning, scheduling, control and report management, as described below.

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Program Planning and Scheduling Management

The planning activities are part of a recurring process developed from strategy to operation: the program master plan collects the pattern of needs about facility and infrastructure, translates them into a general Program Breakdown Structure (Pr.B.S.), which contains, at the lowest levels, the specific WBS coming from the single project plans.

The project WBS is developed according to the main levels of items defined by the Standard WBS Template, provided by the agency, and further decomposed by the single contractors till the last level of work packages (Exhibit 2).

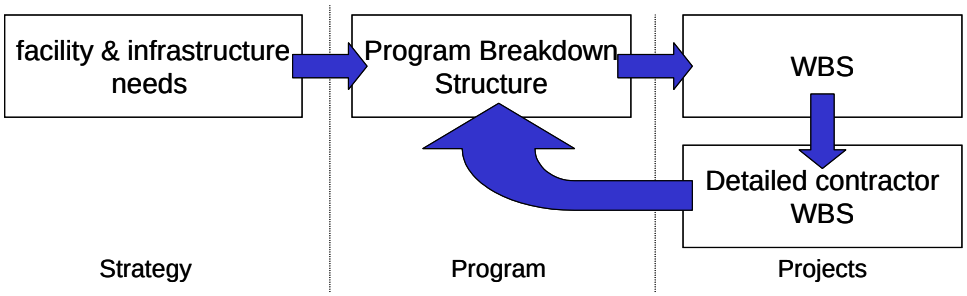

Exhibit 2: the planning process

The WBS Template is referred to as a Contractual WBS (PMI, 2004), which is used to define the level of reporting that the contractor will provide to the PM Agency, as part of the global Pr.B.S.

Exhibit 3 shows the decomposition scheme for the complete scope of Olympic venues and facilities and provides an example.

The proper Pr.B.S. is decomposed from level 0 - the program - till the level that identifies the single projects: at a glance, level 3 is sufficient to provide an executive summary reporting about the program costing and timing.

Anyway, to obtain such a top level information, it is necessary to decompose the single project scope, first, into items and sub-items according to a standard WBS template, common to all projects, and, finally, into work packages and activities freely decomposed by the contractors according to the specifications of the single required construction works. The contractor decomposition of the items must be enclosed in the tender documents and it will be considered as a detailed Contractual WBS.

	level		
Pr.B.S.	0	**Program**	***Olympic Program***
	1	Type of facility	*Stadia*
	2	Geographical Site	*Turin*
	3	Project name	*Ice Palace Tazzoli*
WBS Template	4	Design phase	*Design phase*
		Bidding phase	*Bidding phase*
		Construction & Commissioning	*Construction & Commissioning*
	5	Contract	*Civil works contract*
	6	System / Building	*Main building*
	7	Physical Sector / Floor	*First Floor*
	8	Item	*Structures*
	9	Sub-Item	*Vertical structures*
detail	10	Contractor's Work Package	*Concrete Columns*
	11	Contractor's Activity	*Reinforcing steel*

Exhibit 3: pattern of the global Program Breakdown Structure

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The global Pr.B.S. permits the PM Agency to have a unique framework to plan and control the scope of projects - and their parts (level 3-9)- and, as a summary result, of the total of the program (level 0-2). Moreover, the work package and activity definition, further decomposed at level 10 and 11 by the contractor during the bidding process, is used to completely define the contractual Bill of Material (B.O.M.) and Budget.

The detailed cost estimating process, based on a unit price system, is shown in the following example (Exhibit 4).

WBS code	Item	S/Item	WP	Activity	unit	quantity	Unit price	subtotal	weight
gv03-l001-ab	Stadia \ Turin \ Ice Palasport Tazzoli \ Construction \ Civil works contract \ Main building \ First Floor \ STRUCTURES								
		VERTICAL STRUCTURES							
			Concrete Columns						
				Formwork	mq	400	€ 28.00	€ 11,200.00	40.3%
				Steel cage	kg	14,000	€ 0.93	€ 13,020.00	46.9%
				Concrete pouring	mc	230	€ 15.40	€ 3,542.00	12.8%
								€27,762.00	100.0%

Exhibit 4: the cost estimating process (data from Ice Palasport Tazzoli project)

In particular, all activities are selected from an Italian law compliant database ("list of public prices"), provided by a certified public local authority, which defines and assign a code to the sets of standard activities may occur in a public construction process. The unit prices are based on a time and material analysis and they enclose the contractual discount proposed by the contractor in the tender.

Unit price = [(work hours · hour cost of human resources) + cost of material)] · (1 - contractual discount)

Once is the program scope defined, scheduling follows a similar process according to three levels.

- The program master plan provides the basic deadline (as a **Milestone Chart**).
- Within the main milestones, the Program Master Schedule (PMS) defines the general timeline for each project (as a **Bar Chart**). The PMS is a summary view at the top levels of the entire schedule (Exhibit 5).

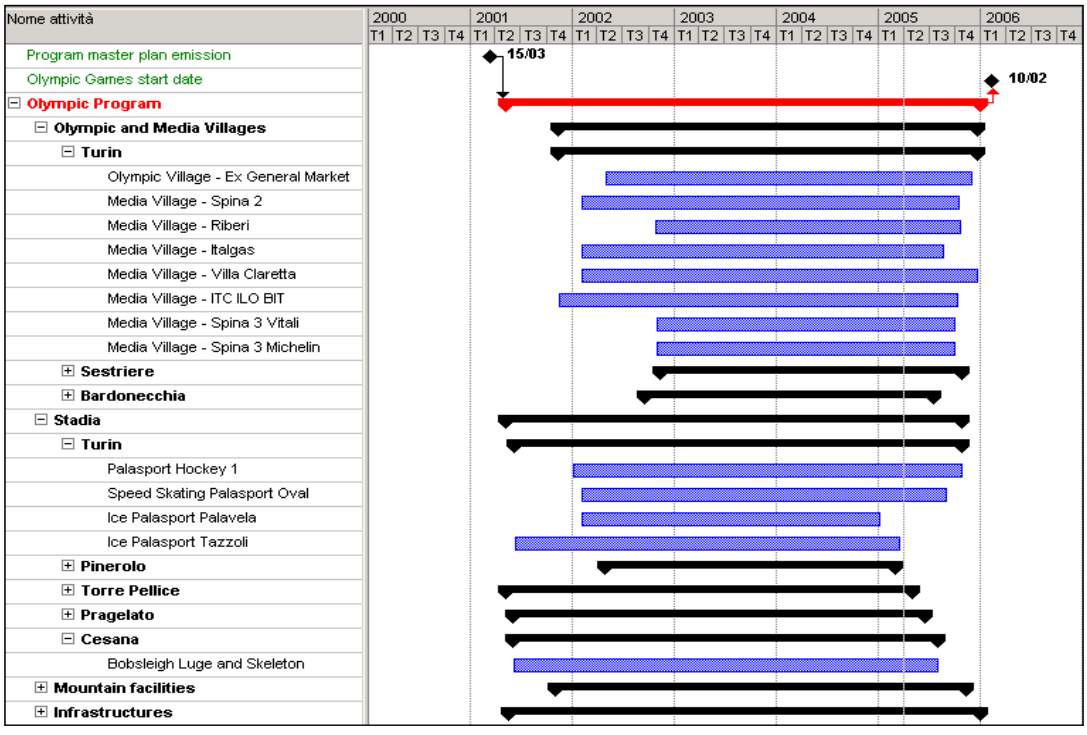

Exhibit 5: the Program Master Schedule of the Olympic facilities (revision March, 2005)

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- Within the start and finish dates defined by the program, each Project Manager has to develop the project detailed schedule (as a **Network Diagram**) considering the design, bid, construction and commissioning phases. In particular, the detailed construction schedules (tasks at levels 10-11 of the WBS) are defined by the contractors, then revised and approved by the PM Agency and the Project Manager. It must contain all information about resource usage, constraints and duration for each activity at the 11th level of the WBS, and it defines the *baseline*.

The results of project scheduling generate a monthly recurring revisioning of the Program Master Schedule.

Performance Reporting and Program Control

The Program Control has inputs from the measurement processes carried out for each project: it is based on earned value analyses and on estimates to completion for both project time and costs (Fleming & Koppelman, 2000). At the program level, the measurement results are necessary, on the one hand, for executive reporting to the Olympic stakeholders, and, on the other hand, to take any general corrective action able to bring the expected time and budget in line with the program plan.

Before showing in detail the PM Agency - purchaser - approach to cost and time measurement, it is necessary to know that contractors are assigned a *fixed price construction contract* (Murdoch 2000) after the design and bid phases developed by the Agency. As shown above, the contractual price is obtained from a cost estimating process based on fixed unit prices for each lowest WBS activity. Claims are admitted, after a complex law-compliant approval process, only for variations in quantities or for scope changes which were not present into the original contract. In this latter case, the PM Agency and the contractor have to sign a change contract. Moreover, the contractor is payed according to contractual *targets*, referred to as a set of work packages. When the preset work packages for a given target are completed, the PM Agency reimburses to the contractor the corresponding percentage of the total fixed price. For example, the Ice Palasport Tazzoli construction contract obligates the Agency to pay 6% of the fixed price as the contractor completes the first target. A work package (WP) is finished at the 100% of progress, if it passes the necessary functional tests during the periodical inspections made by the agency site manager. Briefly, in the PM Agency contractual perspective, the project work packages (level 10 of the WBS) represent the main WBS level for any cost measurement of completed tasks, while the further activity level is used for actual progress and cost measurement, as it contains all information about the work performed.

Therefore, for each project, site managers must send two monthly progress report to the Program Office:

- a project **Payment Performance Report** of completed WPs, necessary to run invoice and payment process for any attained target; furthermore, this report permits to review and control the Program Cashflow;

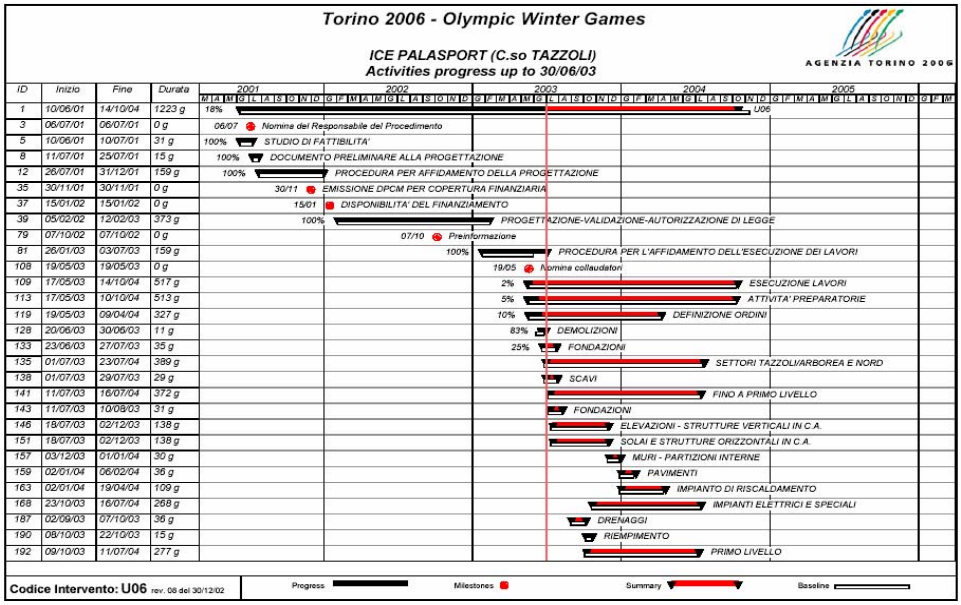

Exhibit 6: sample of bar chart included in an Operational Performance Report

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- a project **Operational Performance Report** (Exhibits 6 and 7), including a bar chart with progress updates and floats, a table for earned value analysis and S-curves about progress of WP, BCWS, ACWP, BCWP (Project Management Institute 2004).

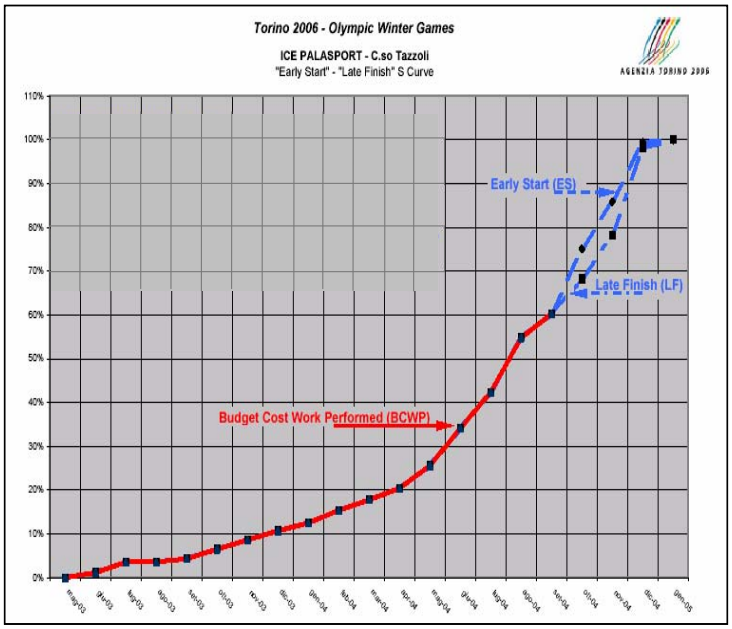

Exhibit 7: sample of a BCWP S-curve included in an Operational Performance Report

The operational performance report permits one to manage the program master schedule and budget, and to estimate time and cost to completion for the entire program, in order to take any corrective actions that may be required.

Finally, the several operational performance reports are collected and summarized at the first WBS level by the Program Office, to obtain time and cost performance information about the general Program.

The described communication process needs a severe application of information procedures, standards and software preset by the Agency during the strategic planning phase, inbound the Program & Project Management guidelines.

Conclusions

At the end of March 2005, while only 10 months to the Olympic event, most of the projects have been completed in line with the program schedule and within a 7% over cost, mostly due to changes requested by the stakeholders and to unexpected events.

The respect of program goals was the result of the following main aspects:

- The central role given to a Program Management Agency supported by methods, tools and experienced professionals; the 2006 Turin Agency is one of the first innovative example of a program office set to manage a complex portfolio of public works;
- the time spent during the planning and scheduling phases to provide any standard to all participants;
- the effective contract management, based on an innovative target-oriented payment framework and some severe bond requirements for the contractors.

Finally, the case study shows that Program Management helps to direct a pattern of different complex projects and actors even in public sectors and programs. The success keys depends on the ability of the Program Office to lead the complexity and variety of actors (public authorities, enterprises, designers, etc.) and projects to the same operational standards (WBS, schedule, cost control), and to get these Program Management techniques compliant to the framework of the local contracting laws and practices.

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