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Why Custom Indicators and Visual Dashboards Are So Important for the Success of Large Complex Projects

In a Large and Complex Project it is essential to make sense of the large amount of information that flows back to the Project Manager. Devising proper indicators and developing Visual Management Tools (to the extreme of setting up a Project War-Room) is an essential skill of the Project Control Manager. In this White Paper we describe the different steps that need to be taken in that respect.

At the end of the day, all the work done by the Project Control Manager aims at allowing the Project Manager and its management team take the right decisions at the right moment.

The challenge is quite similar to building the relevant indicators in an airplane cockpit. Modern cockpit displays need to filter what will be displayed while there are thousands of sensors on an airplane. They attempt to show the most important and relevant information at all times in a usable manner to allow the pilot to take the right decision. This filtering ability results from extensive studies that define prioritization rules for information. Displays allow digging deeper in aircraft systems to understand the cause of an alarm. A key issue to avoid overwhelming the pilot in case of massive multiple failure so that at all times the most important and relevant information is always shown – so as to allow the pilot to take the right decision.

Developing the adequate set of Key Indicators is an essential skill for the Project Control Manager.

In a Project, the role of the Project Control Manager is quite similar to a cockpit's engineer. The challenge of dealing with very large number of information sensors is also a reality for large Projects. Beyond the 'usual' Project indicators, the Project Control Manager must make sense of all the incoming information. What needs to be displayed will change with the Project phase and condition. During the Project course the Project Control Manager must also be ready to develop specific temporary indicators to help the Project Manager take the right decisions.

Devising Indicators

In addition to the usual Project performance indicators, custom indicators should be developed. At any given time, these custom indicators must be in limited number and aligned with the priorities of the Project Manager. They thus need to be carefully chosen and possibly renewed regularly. Some will be used for a large part of the Project duration, while some might be devised and used only for a few weeks during a critical phase.

The following suggestions are examples only, as it is necessary to seek always the most relevant indicator for the topic and the objective that is sought. Those custom indicators will also be highly dependent on the actual Project activities. It is natural that some indicators will have to be created or turned off depending on the Project progress.

Examples of long duration custom indicators:

- Key contractual deliverables status versus plan [first 6 months of the Project],
- Management of Change statistics (number of changes submitted, approved, cycle-time etc.) [entire Project]
- Airfreight costs for remote worksites (as an early indicator of delays in deliveries requiring to switch the expedition mode) [second half of Procurement phase],
- Project Management Team full running monthly cost vs expected [second half of Project],
- Etc.

Examples of short duration custom indicators:

- Float monitoring for specific milestones or Convergence Plan gates [refer to our Schedule Handbook]
- Identification of bottlenecks for document review with indicators on review by lead/ manager [engineering],
- Run down curves, punch list extent and close-out rate [end of Fabrication, end of Construction and commissioning],
- Etc.

Project Data-Mining

Since modern Projects produce more and more data, and since this data is increasingly available in an electronic format in various databases, it is possible to extend the concepts of 'Big Data' mining to single Large Projects.

The traditional indicators referred to in the previous section were mainly produced from a single data source or system. A number of data-mining tools now allow to easily cross-reference data from a variety of data sources to produce indicators that are useful and make sense to the Project.

The extent of data-mining and the way it can be implemented is heavily dependent on the IT systems and data structure of the Project. It will be much more effective when all data is available in the form of databases, hence this is another incentive to move away from Excel-based systems.

The increasing usage of mobile handsets to capture data, and of cloud-based applications to store it, is a strong enabler because remote site data is increasingly captured in digital form (instead of paper) and instantly available for analysis. We can thus expect to see a significant

development in this area in the next years, and further developments in real-time dashboards for time sensitive parts of the Project.

Producing and Using Visual Dashboards

In addition to raw Key Performance Indicators, experience shows that communicating with the Project team through visual indicators is a great way to foster continuous alignment. This has been recognized also by the early practitioners of Total Quality Management such as Toyota, to enhance teamwork: Kanban boards or Heijunka boxes are in fact visual dashboards on the workplace, to which the workers are to refer regularly.

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Where in the past this required physical paper-based dashboards, with the production and printing constraints associated, those dashboards can be today easily produced and updated on large screens. This gives the potential capability to update the situation in a continuous manner (although there is still the need to check the quality of what is displayed), and also show more data and messages (although it always remains important to prioritize the right information).

Visual dashboards need to be well designed so as to convey meaningful information, including how it fits within the wider context of the Project. Usage of trend curves or similar indicators that show how a particular indicator evolves over time will always give much more value to the information.

As a general recommendation, we suggest to try to minimize the number of visual dashboards and make sure their meaning is easily understood by Project Team members (if necessary, by including legends and explanations).

Recommended visual dashboards include:

- The Project Objectives and Project Charter,
- The updated Convergence Plan (refer to Scheduling Handbook),
- Progress S-curves by function or sub-function where relevant,
- Maps of the facility showing updated progress by zones,
- Count-down prior to key milestones (e.g. worksite mobilization, start of commissioning) with associated remaining activities,
- Run-down curves towards the end of Construction and during Commissioning.

War-Rooms

A relatively new trend in the Project industry is to systematically implement 'war-rooms' where lots of indicators are displayed graphically on the walls. This room normally serves also as the main meeting room for the Project Management Team.

This is not a new concept – again, the Toyota Way promotes the concept of 'Obeya', the "great room" of Lean Management where the management gathers to undertake a higher level of effectiveness in communication and decision-making.

Leveraging on new technology, modern war-rooms not only have static displays of visual dashboards. They should also provide data-mining tools and interface to allow for further data analysis.

Conclusion

Developing the adequate set of Key Indicators is an essential skill for the Project Control Manager. He needs to demonstrate a pro-active attitude to define standard indicators for the Project duration as well as custom indicators to respond to temporary concerns and focus areas. These indicators brought together must give a sufficient variety of perspectives on the Project to enable a full grasp of its multi-dimensional shape.

It needs furthermore to be leveraged with visual management tools, whereby meaningful information is made available to the entire Project Team in a visual manner.

The concept of war-rooms is developing rapidly in the Large Project community as a way to concentrate and take advantage of the capabilities of visual management and data mining.

Find all these principles of Project Control Management exposed in a comprehensive manner in our new Handbook,
Practical Project Control Manager Handbook
(now published, available in Paperback and Kindle versions!)

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