

Revitalise COST ENGINEERING with systems thinking

By Nick Duursema*

The rapidly changing world requires that we must change and adapt to retain our competitive edge.

If we do not change, we will find ourselves beautifully equipped for a world that no longer exists.

In a world of constant change, no organisation structure, work method or competency would be current forever. These are constantly revolving and adapting as we steer through our working and living environment. The only things that are likely to remain the same are our values and principles.

How can you revitalise your cost engineering department in a changing environment? The ideas that follow offer no blueprint that is the be-all and end-all of the process. It is only intended to stimulate and re-emphasise the need for constant change and to give an example of an approach that worked.

CHANGE PROPOSAL FRAMEWORK PLAN

The framework plan is intended to supply an overall approach to the different focus areas identified at first for the analysis phase. The change initiative will be split into phases of *analyse*, *design* and *implementation*. The project will then be evaluated and the assessments should indicate changes required. A typical framework plan is depicted in Figure 1.

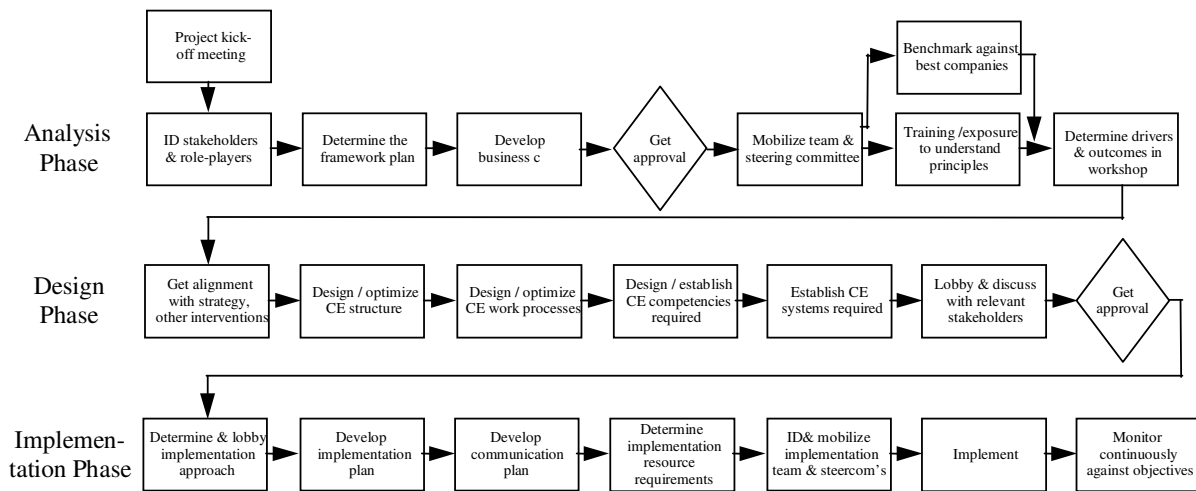


Figure 1

• Analysis Phase

This is the phase where the approach context and scope of the project are being defined. This would be the phase where you could make drastic changes to the plan without a major effect. To set up the phase, the appropriate stakeholders and role-player should be identified. This would require all the stakeholders and role-players to be responsible (R), accountable (A), to be consulted (C) and informed (I).

This is also the phase where the validity of your business case and the alignment of the intervention with the strategy of the company, is validated. Once the business

case is approved, the formal structures in which the intervention should operate would be set up and the analysis could start.

The communication strategy to be used is part of the business case and will be crucial, especially for big interventions with widespread impact. Different approaches, communication methods, media and levels of intensity will be used for different stakeholders. Communication is the most important aspect of the entire intervention process and much effort is required to get the right message to the right people.

An evaluation of the required and acquired competencies of the team must be done. The gap will identify the training needs of the team members. The same will also apply to crucial decision-makers. If they need to make decisions about issues they do not understand, the intervention is at risk. Test the management sponsor and team for commitment. If there is no commitment, revisit the business case and re-confirm requirements to all parties concerned.

Depending on the level of impact and the seniority of the people involved, the structure of the analysis could change. For crucial senior stakeholders you would have personal interviews. Workshops are another alternative. They give the people involved in the day-to-day activities an opportunity to make a contribution.

Workshops must be designed according to the different needs of the company. The first section of the workshop could be used for and providing the underlying principles for the rest of the workshop. The real drivers of issues will be identified with a Soft Systems Modelling (SSM) exercise to highlight and give all the participants a shared mindmap of the real problem definition. The workshop will most likely last one full day plus an extra morning/day, depending on the size of the workshop. Objectives identified and decisions reached can be revisited during intervals.

Once the analysis has been done, the work needs to be typed up and distributed to the participants for comment. This would be the working documents for the next phase.

- **Design phase**

In the design phase, it is important to first check the root definition and business case against the strategy of the company for alignment. Test the intervention against other interventions for overlapping and integration possibilities. Make provision for the possible cancellation of other interventions that would mean extra scope on this intervention.

Once checking and alignment have been completed, the design of transformation from the present to the desired state can proceed. The biggest problem normally is that people have difficulty to proceed from the present to the desired state. They are caught up in their current work scenarios where they are fighting fires and do not have time to think about what they would like to have. Use *ishikawa* (cause and effect) diagrams to understand and identify the drivers better.

In most cases, the structure of the department, meetings or the responsibilities need to be adjusted. This will require new designed or optimised agendas.

To prevent distractions from other commitments, it is advisable to hold the workshop away from the workplace without interference from cellular phones.

- **Implementation phase**

Once the future state has been designed, it is necessary to construct the implementation framework plan to effect transformation from the current to the future required state. The option is to go for a big bang approach or, alternatively, a pilot at first and then a big bang. Various options should be available to cater for specific needs. Functional or departmentalised options could also be evaluated. The approach would depend on how ready the organisation is for the type of change and how high the risk is that is associated with the option.

The implementation plan would also entail a communication plan update for the implementation period. The target audiences would differ from the previous phases. Identify the key characters in the stakeholder groups and try to assess their sentiments, commitment and important issues. Group them and design the implementation programme around them. Some stakeholders will be keen to start with implementation, while others might first need to rationalise.

During the actual design, the definition of the root definition will focus all participants (Do X by Y to achieve Z). Use SSM again to develop an implementation schedule. The end aim should be to incorporate all processes as part of the business activities.

Determine the resource requirements to implement the intervention. This is often the most underestimated step of all. Identify applicable resources and establish the mindset of the people involved. Implement an alignment session to get all persons on the same wavelength. At this stage, they should already be part of the same team. When allocating the resources, refer back to the grouping previously made to ensure that you match the consultant and the trainers with the groups that are implementing.

The responsibility must always lie with the group that is changing. It should never be the responsibility of the consultant or person implementing. The role of each consultant should be clearly explained to her/him.

Progress meetings should take place on a regular basis, to discuss progress, current issues, threats, opportunities identified and next steps. The responsibility to give feedback remains that of the different groups and not of the project manager.

Project steering committees need to be formalised to ensure that the project is on the right track and to verify the commitment of the groups attending. The steering committee should also propose changes to the strategy and report on impacts from other interventions or group initiatives.

COST ENGINEERING DEPARTMENT STRATEGY

The strategy of this department is important, as it formulates the direction in which the department will move. As an outcome from the overall company strategy and vision, one needs to determine a cost engineering strategy for the department. Depending on how the company is structured it could be a service or a line function.

There would be a definite influence on and between the strategy of the department and the cost re-vitalisation intervention of the department. The intervention would be a result of the gap identified in the department or requirements not fulfilled.

There should be alignment between the company, cost engineering department strategy and all the interventions. If there is not a clear alignment, the department will be on a collision course, causing much friction in the department. People will start to feel that their efforts are wasted. Ensure that obstacles from other departments are also identified to get as much synergy as possible.

VIALE SYSTEMS MODEL FOR COST ENGINEERING

The model used to design the structure of the cost engineering department is based on the Viable Systems Model for Systems Thinking (VSM). The model consists of a

- Policy function
- Intelligence function or meeting
- Control function or meeting
- Operational functions
- Audit function or meeting
- Environments in which each operates

The concept works from the premise that the world is a changing environment. This has often been illustrated since the beginning of the century. However, the problem that we face, is that the environment is now changing more rapidly than before. We therefore have to devise and design systems that monitor and change as rapidly as the world does, as illustrated in Figure 2.

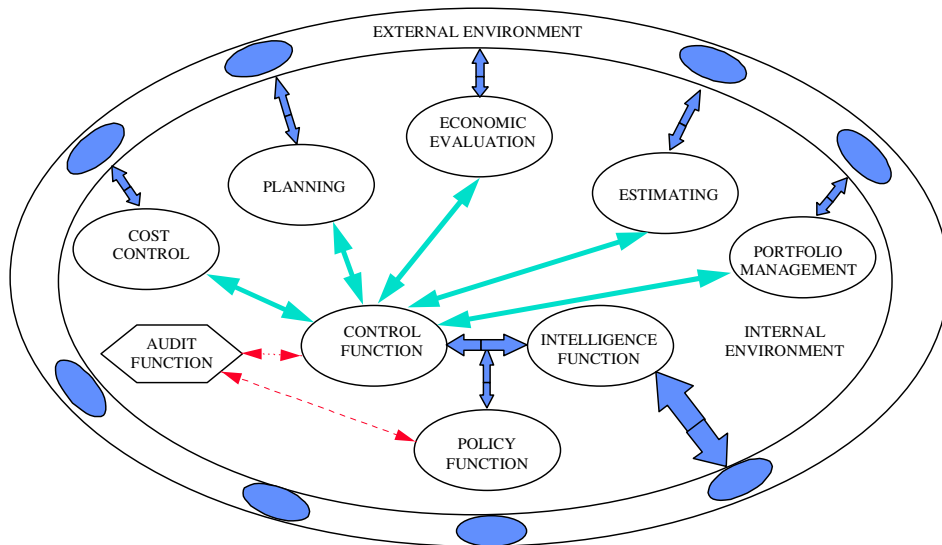


Figure 2

Policy function

The policy function will take the strategy and make it policy for the group for which it is responsible. Any strategy re-routes required will be started by the policy function. This function also serves to balance and ensure the correct focus between intelligence and control functions. It will also serve to arbitrate any differences of opinion between the intelligence and the control function

Intelligence function

The intelligence function is focused towards the outside environment, constantly monitoring the world for new ideas, new methods and better methods and principles to be used. The entire drive is to change as soon as possible for the newest and the best.

Control function

The control function is focused inward and monitors internal processes to ensure that activities are running smoothly. The drive is to keep the environment stable amid change. The intelligence function also serves to convince the control function that there is a need for change. Once new initiatives are agreed upon, the control function would implement the required changes.

Activities

This refers to day-to-day activities or groupings of activities such as cost control, estimating, economic evaluations and portfolio management. For each of the groups, there are information inflows, outflow and measures of performance. The groups will interact with the control function to align and optimise the activities.

Audit function

The purpose of this function is to minimise risk. It will monitor and give responsible persons the opportunity to earn trust. Financial audits will be undertaken as a requirement, which will link very well with risk analyses to determine the risk portfolio of the different sections and the applicable control measures to be put in place to minimise the risk.

Environments

Every single activity and action that we perform is part of an environment that, in turn, forms part of a bigger environment. We do not work in isolation and have to interact with different environments internally as well as externally.

Not all the above functions are full-time activities. Setting up different meetings, such as an intelligence meeting, to address the issues at stake can usually perform them.

SUSTAINABILITY

The problem with all change initiatives is that it requires sustained effort. It is like a piece of rubber. You can stretch it up to a point, but once released, it will change back to the old methods and procedures.

Sustained change is only possible if the process is engraved in the memories and becomes part of the day-to-day operations of all the people involved. Since cost engineers are often the keepers of the keys, there is a constant eroding process aimed at the principles of the discipline. We therefore need to continually focus on the application of minimum standards.

The responsibility of the control function in the department is to ensure that agreed standards are constantly enforced and that all parties keep to their end of the bargain. Without the applicable measures of performance (MOPS) linked to the responsible persons, this will not receive the attention it deserves.

CONCLUSION

It makes business sense to assess the changes required for the different areas. The benefits to be reaped far outweigh the costs to be incurred. The price for ignorance could be too high and the efforts change too late. The reality is that once you find out there is something wrong is already too late.

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* Nick Duursema is with the Corporate Development Division of Emirates Airlines.
Contact him at tel 09971 4 203 2860, Fax 09971 4 2951206,
E-mail: Nick.Duursema@Emirates.com

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