

# A Framework for Understanding and Influencing Decision Making in Large Projects

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**Abstract:** Those of us who have been involved in large engineering projects in large corporations are often surprised by the apparent lack of rationality or consistency in the way decisions are made. I propose a framework that can help us not only make sense of, but also influence what is happening during the decision processes in large projects.

## 1. Introduction

Discussion of decision making in large projects often assumes rational actors who attempt to optimise their choices in a predictable and controllable environment. If this assumption is correct, achieving success in these projects is accomplished by means of a thorough requirements capture, creation of the best technical design, and then implementation of that design. The experience of those involved in large projects is often very different. Engineers provide expert advice as to the best technical solution, and then stand by bemused as this solution is set aside, and the company chooses a different path simply because of the presence of a strong personality or because of “political” reasons that appear to be neither consistent nor rational—at least from an engineering perspective.

One reason for this perplexity is that engineers often concentrate on the engineering part of the problem forgetting that the overall social and political environment of the engineering project is at least as important as its technical feasibility. Another reason lies in the nature of the environment itself: individuals inside and outside the organisation may have different objectives, personal agendas and requirements. The political interplay between them creates a series of complex social dynamics that do not necessarily align with an optimal technical solution.

## 2. Proposed Framework

We have developed a framework that can provide insight into the decision processes in large projects, and that can facilitate dialogue between the engineering perspective and the perspective of other players in the wider decision landscape. Two aspects of this framework are described below.

- ❑ A simple “See-Think-Choose-Act” Model of a single decision process.
- ❑ A dynamic systems view focusing on interactions between decisions.

### 2.1. The See-Think-Choose-Act Model

Figure 1 shows a simple conceptual model of the decision process. It is not prescriptive, but illustrates the phases we instinctively go through when we make decisions: we **see** a problem or opportunity; we **think** through the options for action; we **choose** a course of action, and we **act** as a consequence.

The dynamics of the decision process—such as politics, misunderstandings, confidence (or lack thereof)—mean that the decision may “navigate” back and forth between the different phases.

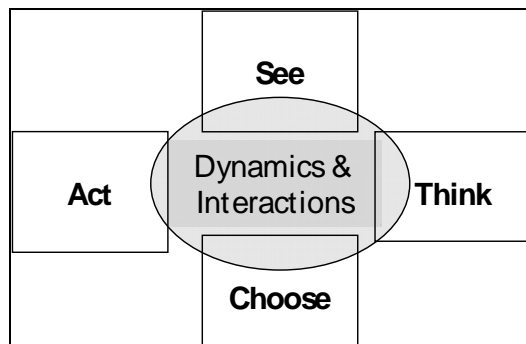


Figure 1: The Basic See-Think-Choose-Act Model

## 2.2. Interactions between Decisions

No decision is an island. Within a company, several layers of decision making occur at the same time, as illustrated in Figure 2. It is the same fundamental process, yet slightly different at each level of the organisation and in each circumstance—in a sense, we are talking about recognising a decision “fractal”.

The dynamics driving network architecture decisions on which DSLAMs to use will be based on functionality, and their capacity to work with the rest of the network.

The dynamics driving the procurement manager’s decision will be how good a price-performance deal he can get from the DSLAM vendor.

The dynamics driving the Chief Technology Officer’s decision will be far more political, such as “how will this help me manage the Microsoft relationship?”

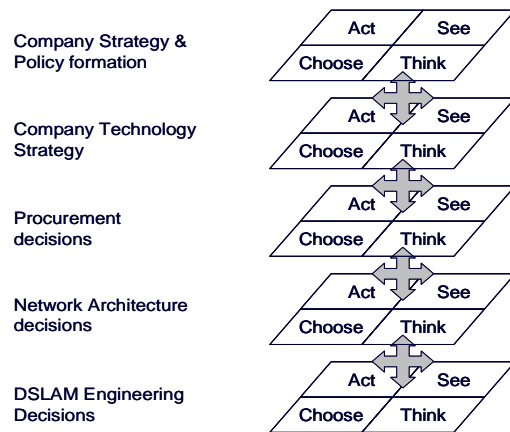


Figure 2: Layers of Decision Making in a Company

Each of the above decisions will have their own logic, in a continuum from the purely technical at the “raw” engineering level, to the almost entirely political at the level of executive management.

No company is an island. A company’s decisions interact with the decisions of its environment at many levels. Figure 3 illustrates a portion of a decision system where several decisions interact at several levels and mutually influence each other, as shown by the four-directional arrows.

We thus have a complex dynamic system of decisions in which local decisions are influenced by, but also influence global decisions over several layers and across several domains.

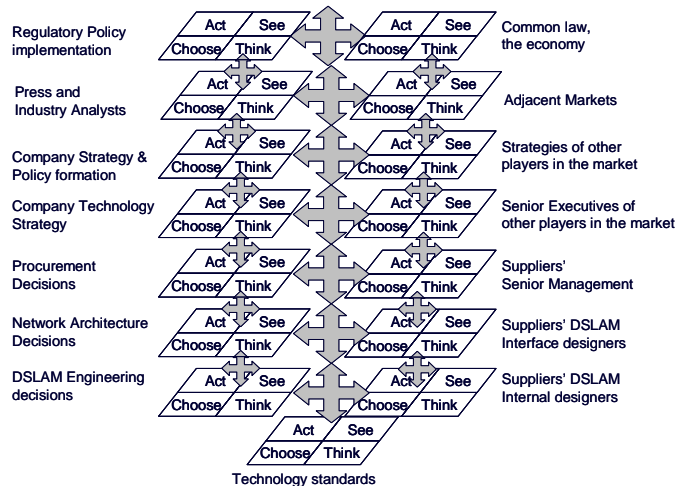


Figure 3: A part of the Wider Decision Environment

## 3. Data Gathering

### 3.1. Dynamics within the model

Figure 4 illustrates data gathered on decisions made in one of BT’s international strategic programmes in 2004. Note that these are flows as perceived by the Programme Manager, who did not have visibility of all decisions at all stages of the decision cycle.

Of interest here is the large number of times (17 instances observed) that a decision gets to the point of choice, only to go back either to the “See” stage or the “Think” stage. Of note also are the 4 instances when, after a decision has been “made”, the process cycles back either to make another choice, or to think about the choice again. Finally, it can be noted that the major part of management activity was observed to have taken place in the “Think” and “Choose” stages, as illustrated by the number of transitions between sub-stages (19 in each case).

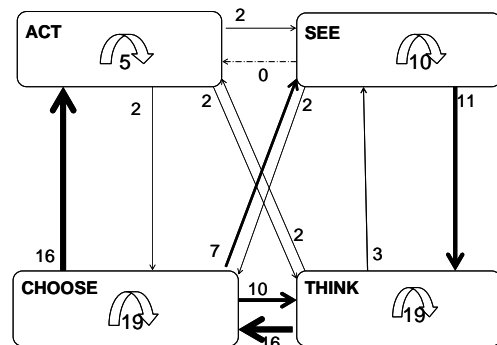


Figure 4: Data gathered on decisions in a major programme

Recent research has shown that the critical parts of the decision process—and where management attention is most needed—are in the “See” and “Act” stages.

Not only does the initial framing of the decision determine the nature of the problem that is defined as needing to be solved by the rest of the decision process [1], [2], but also research in the last decade suggests that the choice is made intuitively *before* the “Think” stage (e.g. Damasio’s Somatic Marker Hypothesis [3]). For Klein [4] and Weick [5], the “Think” and “Choose” phases of decision are little more than a process of creating the “story” that will justify to third parties a decision that has already been made intuitively in the “See” phase

Ertel [6] among others has described the way managers focus on getting to an agreed negotiated settlement (or decision) which then fails when implemented because the necessary conditions for successful implementation have not been taken into account. In their discussion of strategic decision processes in high-velocity environments, Bourgeois and Eisenhardt [7] place particular emphasis on putting in place the necessary structure and empowerment of local management to ensure effective execution of decision.

The crucial point this brings out is that managers may be focusing on the wrong part of the decision process. Writing Business Cases and getting management teams to make official decisions are necessary, but this is not the part of the decision-making process that is fundamental to determining what choice is made. Nor does the fact that we have “got the Business Case approved by the board” mean that our goals will be achieved.

If we wish to improve decision making, we should focus on the neglected area of “Seeing” (or framing) the decision, and building in the necessary parameters to ensure we “Act” effectively as a result of our choices.

### 3.2. Dynamics between Layers of the Model

The aim of the programme mentioned above was to redefine the strategy in a part of BT to maintain or increase revenues while reducing costs. The phenomenon observed was of cascading the decision process, particularly on costs savings, down the levels of the organisation.

At the beginning of the process, the only decision made appears to have been to delegate the task of thinking how the top-level objectives could be achieved to lower levels of the organisation.

It is when things got down to programme level that discussions began in earnest between the Programme Board and the Networks Organisation about the specifics of the amount of savings that could be achieved in what timescales. Significant time was spent in trying to understand exactly what the cost targets for the networks organisation should be.

Only after that were specific actions agreed to drive through those cost savings.

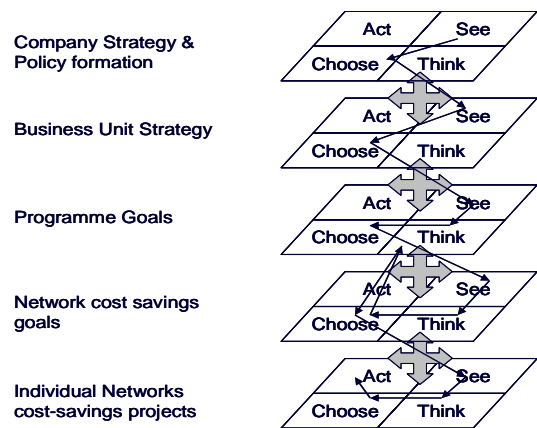


Figure 5. Interactions between layers

Based on Company Strategy, the Networks organisation had also initiated a series of cost savings programmes, some of which overlapped with the goals of the Business Unit Programme.

It was at the sub-programme level that these two agendas came together in serious thought about what needed to be done.

This situation generated frustration in the networks organisation, who said “we are already cutting costs”. It also generated frustration in the Programme, since the networks organisation pushed back forcefully on some of the top-down targets it wished to impose on the networks organisation.

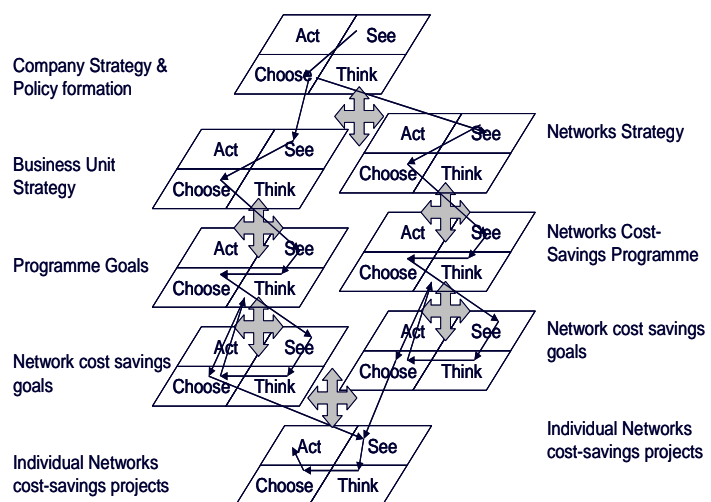


Figure 6. Interactions between layers and organisations

After significant time spent in dialogue as to what each party meant by cost savings, an external consultant recognised as an expert in the area was able to generate agreement as to what were the “reasonable” expected savings.

The data above shows how the dynamics of several different decision processes interacted with each other to produce a result that was not to the full satisfaction of any one party, but was mediated via interaction between decision processes. In this particular instance, the dynamics reinforced the action of cost savings in networks, though the final targets set were less ambitious than had been foreseen in the Programme. As practicing managers know all too well, a less than ideal target may be required if it is to be agreed and accepted by several parties.

Much research based on systems theory has been done on the interactions between individuals and between groups in organisations. Systems Dynamics is one discipline that has evolved to model these interactions [8]. Another fruitful discipline has been that of agent-based modelling, based on principles of Complexity Theory [9] Stacey [10] using the principles of Complexity Theory, suggests a perspective of self-organising interaction as a way of studying social systems, with its main focus not on the individuals or the groups, but on the process of interaction itself as a source of insight about what is going on.

A fruitful avenue for future research is to apply the principles developed in the three areas of research above to the dynamics of the decisions as described in the data above.

## 4. Conclusions

The discussion above suggests the following conclusions.

1. Management practice as shown in the data gathered (and, up until recently, decision research) has focused on the generation of options and the moment of choice. More recent research suggests that bringing focus on the “See” and “Act” phases of a decision could significantly enhance both the understanding and effectiveness of decisions.
2. By considering the decision process in major projects as a system of interlocking decisions, we can gain a better understanding of the dynamics of “what is going on”, and thereby gain insight into how to influence the wider project using principles based on Systems Dynamics and Complexity Theory.
3. Combining conclusions 1 and 2 suggest that we can influence the dynamics of the wider project to maximum effect by focusing on the moments at these interconnections where crucial decisions are framed—at the beginning of the different decision processes at different levels and in different parts of the company.
4. Finally, realising that the decision in which we are involved is only one in a system of interlocking decisions, enables us to focus on the crucial period after the moment of choice, when the decision lives or dies by virtue of its successful implementation or otherwise in the wider environment.

## 5. References

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