

The Formal System Model

Understanding And Preventing Information Systems Project Failures

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Abstract

The Formal System Model (FSM) and its associated techniques have been deployed over a long period to better understand systemic failures. This paper reports on a major program of work to develop a project-specific version of the FSM and presents a hitherto unpublished review of one organization's past, current and planned activities. Finally, the paper draws conclusions from the work reported.

Background

The use of systems thinking to understand failures has been a well-established practice for many years and with this has come the development of systems techniques and methods specifically for that purpose. One of the best known of these is the Formal System Model (FSM). It is a model of a robust system that is capable of purposeful activity without failure which can be compared with a representation of a situation where failure has occurred or is perceived to be a threat. The FSM was adapted from Checkland [1], who in turn drew on the ideas of Churchman [2], particularly his concept of a teleological system (pp. 42-78), and Jenkins [3], and was first published in 1984 (See Watson[4]).

Many of the early applications of the FSM to examine failure situations had a technological element such as a building or a nuclear power generator or an oil rig, but more recently a recurring theme has been the examination of projects, particularly those that involve information systems. After introducing the standard version of the FSM the paper focuses upon this type of application.

The Formal System Model

The basic elements of the FSM are: a system (referred to as the Formal System); the wider system in which it is located; and an environment. The wider system represents the next hierarchical level upwards from the system and affects the system in a number of ways. It defines its purpose and sets objectives for it, influences the decision makers within the system, monitors the performance of the system as a whole and provides the resources that the system needs in order to function. The environment disturbs the system in positive and negative ways, both directly and indirectly through the effects it has on the wider

system. Similarly, the system attempts to influence the environment directly and via its wider system. These relationships are summarised in Figure 1.

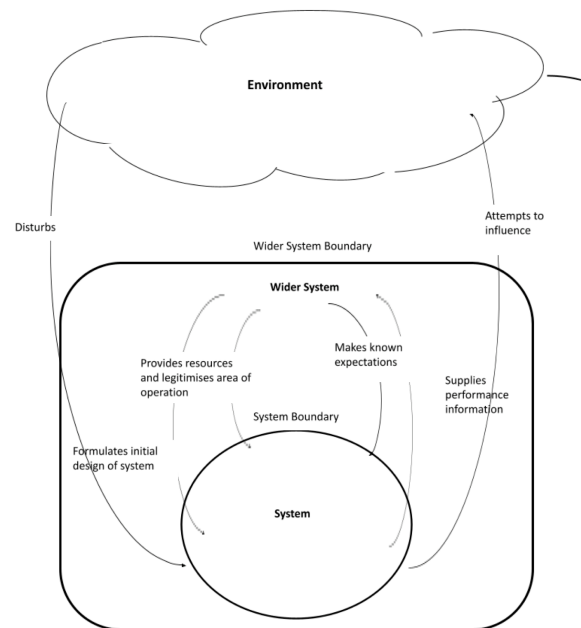


Figure 1 Relationships between the system, the wider system and the environment (after Fortune and Peters [5])

Looking in more detail, the Formal System comprises a decision-making subsystem, a performance-monitoring subsystem and a set of subsystems and elements that bring about the conversion of inputs into outputs. The decision-making subsystem manages the system. It is responsible for decisions about how the purposes of the system are to be achieved, such as which transformations are to be carried out and by what means, and for providing the necessary resources. It makes known its expectations to the subsystems and components that carry out the system's transformations and to the performance monitoring subsystem. It is the decision-making subsystem that allows a system to exhibit choice, and thus behave as a purposeful system. The role of the performance monitoring subsystem is to observe the transformation processes and the results they are achieving and report deviations from the expectations to the decision-making subsystem so that it can initiate corrective action where necessary. These three subsystems and the relationships between them are shown in Figure 2. An equivalent relationship to that between a wider system and a system within it can be said to exist between the Formal System and its subsystems. The Formal System is couched in terms of 'what' is to be achieved by certain functions; it does not at this stage consider 'how'. A Formal System does, by definition, have requirements of its subsystems, but such relationships need not preclude each subsystem having a certain amount of autonomy in deciding how it performs and how expectations are met.

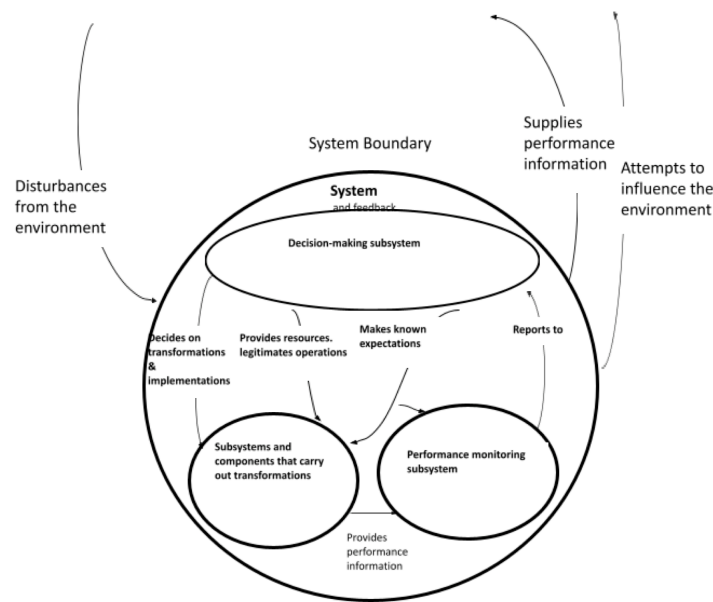


Figure 2 Relationships between the subsystems (after Fortune and Peters[5])

A complete representation of the FSM is shown in Figure 3. Its features can be summarised thus:

- a decision-making subsystem;
- a performance-monitoring subsystem;
- a set of subsystems and elements which carry out the tasks of the system and thus bring about the conversion of inputs into outputs;
- a degree of connectivity between the components;
- an environment with which the system interacts;
- boundaries separating the system from its wider system and the wider system from the environment;
- resources;
- a continuous purpose or mission that gives rise to the expectations; and
- some guarantee of continuity.

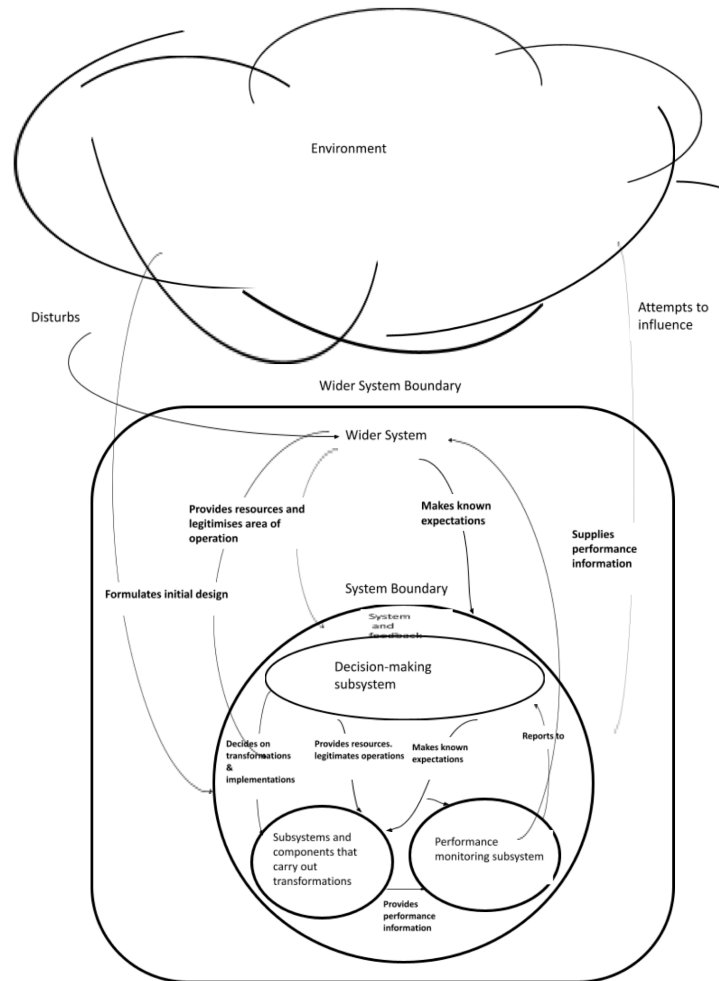


Figure 3 The complete Formal System Model (after Fortune and Peters [5])

Because of the hierarchical nature of the FSM, each of its subsystems can also be perceived as a Formal System with its own decision-making, performance-monitoring and transformation functions, and each one of those could in turn also be regarded as a Formal System, and so on. It is also possible to move up the hierarchy so the system which has just been considered becomes a subsystem of a higher-level system.

Investigating The Situation And Conducting The Comparison

Before conceptualisation as a system can begin, data /information about the failure or potential failure situation needs to be collected. The main sources for this are interviews, observation and documentary evidence, which may include reports of previous investigations. Tools associated with the application of systems thinking are used in the initial analysis of this data/information. The four that have been found to be useful across a wide range of applications are:

1. Spray diagrams;
2. Rich pictures;
3. Relationship diagrams; and

4. Multiple-cause diagrams.

Given that actual or potential failure(s) will be regarded as the outputs of system(s), the next step is to identify systems that can be used as the basis for the main analysis. As a result of taking on board different viewpoints, it is very likely that a range of candidate systems will be considered, and it will soon become clear that some of them are nested in the sense of being subsystems or sub-subsystems of other candidate systems. One system has to be selected as the basis for the first pass through the main analysis. This choice of system will depend largely upon the purpose of the investigation, but it also needs to consider scope. If the scope is too broad the work becomes impractical; and if it is too narrow the systemic nature of any causation is likely to be lost. In practice, this means the system selected is likely to be an amalgam of some of the candidate systems.

The next stage is to start to conceptualise the system and build up an understanding of it so that it can be represented in the FSM format. As a minimum it is necessary to identify the:

- components of the system;
- components of the environment;
- wider system;
- structural relationships between the components of the system and the components of the environment;
- inputs and outputs; and
- variables and the relationships between them that determine the behaviour of the system.

The tools that have proved to have universal application are: systems maps; influence diagrams; and input-output diagrams. All of this analysis contributes to the construction of a representation of the system in the FSM format using the template shown in Figure 3. A comparison is then made between this representation and the Model itself. Insights gained from this comparison will lie within subsystems, in the links between subsystems, or be associated with one or more of the following interfaces between boundaries:

- the environment and the wider system;
- the environment and the system;
- the wider system and the system; and
- between subsystems.

Project failings, project management and the FSM

Over time, a great deal of research has shown that many projects experience at least partial failure and sometimes end in catastrophic failure. For example The Standish Group, which has conducted surveys of IT project success and failure rates every 2 years since 1994, recently found [6] that only 16.2% of projects were deemed successful by being completed on time and budget with all the promised functionality, 52.7%, were over cost, over time, and/or lacking promised functionality and 31.1% were abandoned or cancelled. A comprehensive study [7] identified widely reported project failings and

mapped them onto the features of the FSM. Table 1 shows the results of this mapping exercise and supports the use of the FSM to investigate and predict project failures.

Reported failings	Feature of FSM
<i>Failure to:</i> Manage uncertainty; learn from past experience; recognise political influence; take account of the effect of inflation; consider national interests.	Environment disturbs
<i>Failure to:</i> Consider effect/views of end users.	Wider system boundary
<i>Failure to:</i> Consider context; consider values, beliefs, culture which 'surrounds' project; appreciate motives of organisation in which project is placed; consider effect of resistance to change; consider effect of established communication paths; consider effect of company structure, policy, culture and incentives.	Wider system - (places project system in context)
<i>Failure to:</i> Identify requirements/develop unambiguous objectives; produce business plan; produce realistic schedule; establish tracking systems; formulate clear measures of performance; develop communication plan.	Formulates initial design of
<i>Failure to:</i> Supply satisfactory resources; provide adequate/sophisticated technology; provide reliable technology; provide adequate budget; employ/use properly qualified/experienced staff.	Provides resources and legitimates area of operation
<i>Failure to:</i> Adapt new systems to old ways of working; understand underlying technology.	Legitimates area of operation
<i>Failure to:</i> Control project; gain commitment of those involved; make clear that consensus is impossible to achieve; ensure human issues considered before technical issues; communicate benefits of project to staff.	Makes known expectations
<i>Failure to:</i> Provide effective channels of communication; acknowledge projects do not follow linear route to completion; acknowledge project characterised by complexity.	Arrows linking systems/ subsystems and feeding back to wider system/environment (communication channels)
<i>Failure to:</i> Consider project from different viewpoints - at least from organisation, project team, and end users; trust opinions provided by wider system.	System boundary
<i>Failure to:</i> Assign teams; decide on training needs.	Decision-making subsystem
<i>Failure to:</i> Direct teams.	Decides on transformations
<i>Failure to:</i> Provide adequate training; define underlying technology.	Provides resources and legitimates operations
<i>Failure to:</i> Control resistance to change.	Makes known expectations
<i>Failure to:</i> Implement business plan.	Transformation subsystems

<i>Failure to:</i> Provide communication channels.	Provide performance information
<i>Failure to:</i> Measure/monitor progress; identify misleading information; identify groupthink; monitor state of components.	Performance monitoring subsystem
<i>Failure to:</i> Inform on state of components; report misleading information; report on progress.	Reports to
<i>Failure to:</i> Report on progress; inform organisation that project should be abandoned if problems insurmountable without fear of admitting defeat.	Supplies performance information (from system to wider system)
<i>Failure to:</i> Influence end users; persuade end users to accept change.	Attempts to influence environment

Table 1: Failings identified mapped onto the features of the FSM.

Critical Success Factors

Within the extensive literature on projects and their management, the concept of Critical Success Factors (CSFs) has gained considerable currency. As the name suggests, CSFs are project specific or more general features that are crucial to a project's success. An extensive study of the project management literature [8] identified 27 CSFs across 63 publications. Table 2 shows how 23 CSFs map onto the features of the FSM. Of the remaining four (user/client involvement; differing viewpoints (appreciating); project sponsor/champion; and effective change management), also shown in Table 2, all except Project Champion are catered for within the FSM.

Critical success factors from the literature		Feature of FSM
1	Clear realistic objectives	Goals and Objectives
2	Strong business case/sound basis for project	
3	Effective monitoring/control	Performance Monitoring
4	Planned close down/review/acceptance of possible failure	

5	Support from senior management	Decision-maker (s)
6	Competent project manager	
7	Strong/detailed plan kept up to date	
8	Realistic schedule	
9	Good leadership	
10	Correct choice/past experience of project management methodologies/tools	
11	Skilled/suitably qualified/sufficient staff/team	Transformations
12	Good communication/feedback	Communication
13	Political stability	Environment
14	Environmental influences	
15	Past experience (learning from)	
16	Organisational adaptation/culture/structure	
17	Project size/level of complexity/number of people involved/duration	Boundaries
18	Adequate budget	Resources
19	Sufficient/well allocated resources	
20	Training provision	
21	Proven/familiar technology	
22	Good performance by suppliers/contractors/consultants	
23	Risks addressed/assessed/managed	Continuity
24	User/client involvement	
25	Differing viewpoints (appreciating)	
26	Project sponsor/champion	
27	Effective change management	

Table 2: Critical Success Factors mapped onto the features of the FSM.

Consideration of CSFs in the format of the FSM also overcomes the two major criticisms of CSFs:

1. There is no mechanism for taking account of the interrelationships between factors [9].
2. Users of CSFs tend to view implementation as a static process instead of a dynamic phenomenon [10].

The FSM overcomes the first of these because it is as concerned with the relationships between its components as it is with the components themselves, thus providing a way of making links between factors. The second is addressed because the FSM is a dynamic model of a system that responds to decisions and feedback and interacts with its wider system and with its environment.

This review [8] has been cited extensively (see, for example, [11–15]) and many subsequent papers such as Toor and Ogunlana [16], Mohd and Shamsul [17] and Pollack and Algeo [18] advance similar findings and/or use it as a basis for further research.

A project-specific version of the FSM

From a Project Manager's point of view, the main problem with the original FSM is the language it uses as its building blocks. In order to overcome this, a revised version of the FSM was developed. First the failure modes listed in Table 1 were added in the form of "prompts". Next comments and suggestions made by 236 respondents to a survey designed to capture the 'real world' experiences of people active in project management [19] were incorporated (for example considering clients changing requirements). Finally, the four CSFs (User involvement; Viewpoints; Project Champions; and Change Agents) that could not be readily mapped directly onto the non-specific FSM were incorporated. The full version of this project-specific version of the FSM is shown in Figure 4. (Other customised versions are available such as a privacy-specific FSM [20].)

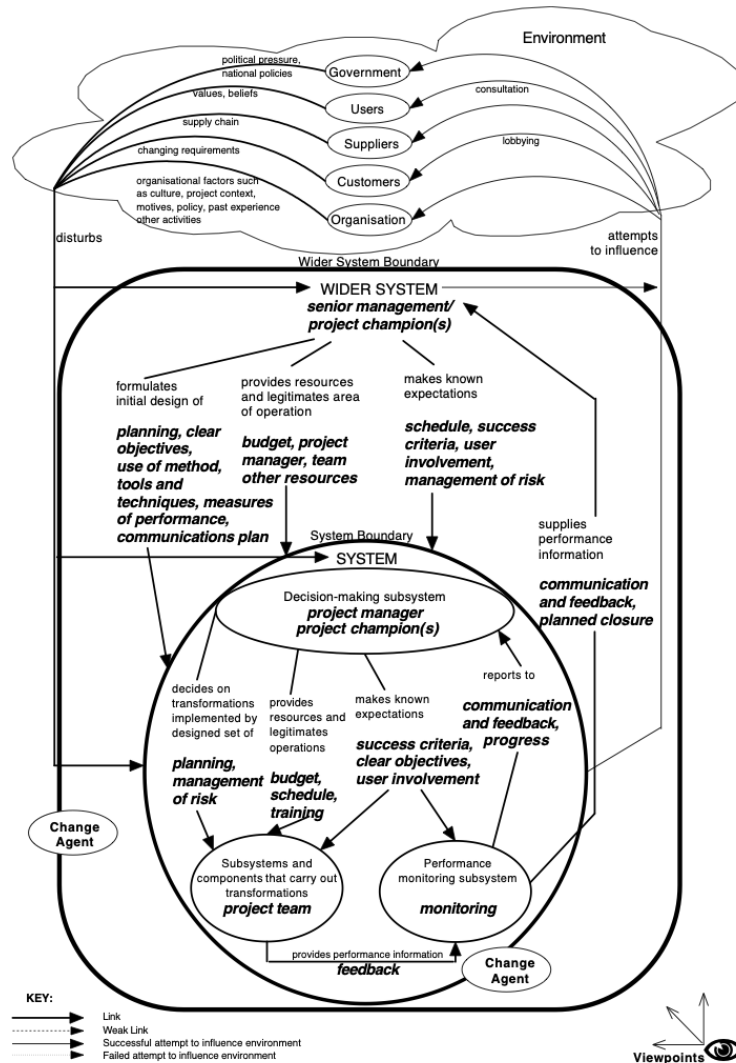


Figure 4 The project-specific version of the FSM (after White and Fortune [7])

Data collected during longitudinal studies of three ‘live’ projects (two information system projects and one construction project) were used to validate the contribution the project-specific FSM could make. It was able to highlight the marked differences in the way that all three projects were managed (Detailed accounts of these projects can be found in Fortune and White [8], White and Fortune [7] and White and Fortune [21].) The project-specific FSM was also found to be capable of differentiating between successful and unsuccessful projects: the two information projects were very similar in terms of size and scope, but one, that enjoyed a realistic schedule and sufficient and well allocated resources, was successful and the other, that suffered from poor communication and poor training provision, was deemed a failure and the construction project was regarded as a mixture of success and failure because not enough attention was given to environmental influences as a whole. An example of this is one voice dominating discussions on vessel collision protection that resulted in an unwanted addition to the construction in the form of 16 highly visible fixed warning markers linked by booms that were built at a cost of £1.3 million that were subsequently removed.

A Recent Investigation

The Brief

An English local government authority (subsequently referred to as *The Council*) was embarking on a major project to deliver new back office systems that would automate, manage, organise and synchronise *The Council's* business processes. Updating back-office systems is a familiar challenge facing private and public sector organizations as they seek to operate more efficiently, effectively and economically, but in this case the stakes were particularly high. *The Council* had already been involved in several unsuccessful attempts to put equivalent systems in place, so success this time was essential. In this context, the senior officers commissioned an investigation using the project-specific FSM to develop understanding that would enable them to take proactive measures to ensure past mistakes were not repeated. This section will look at this investigation.

Understanding The Past

The first step was to undertake desk-based research and conduct interviews with stakeholders to capture the problems that had befallen earlier projects to replace and update IT systems and identify issues that might hinder the next attempt. Figure 5 summarises the information gathered.

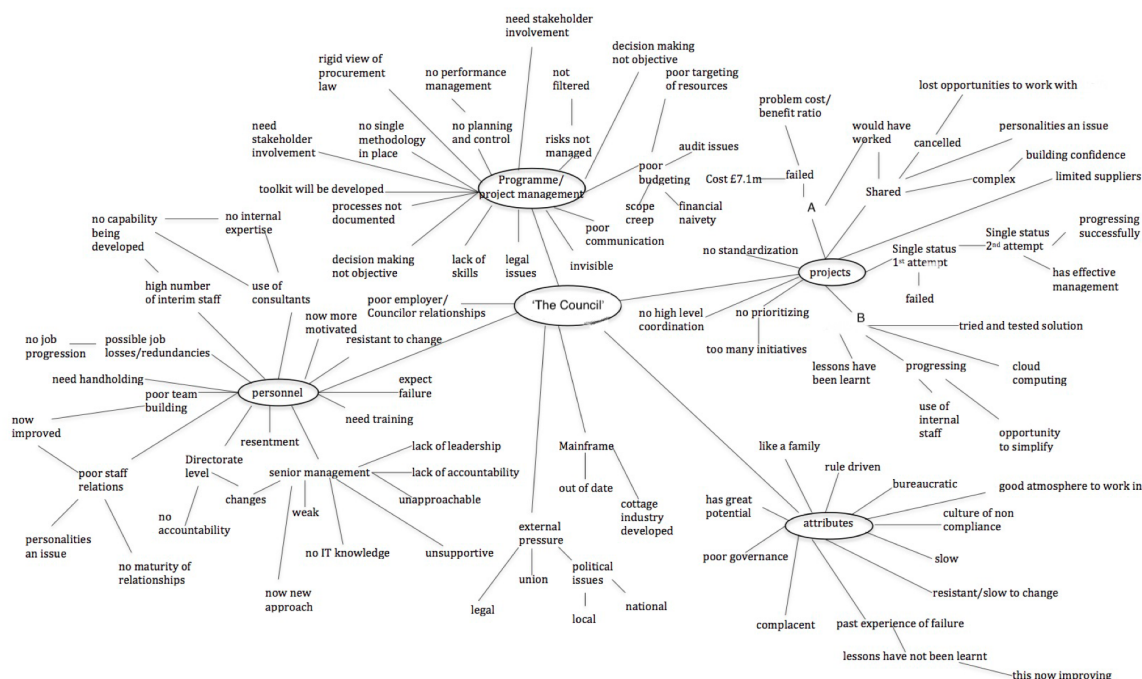


Figure 5 Spray diagram showing key information gathered about the situation (A and B refer to previous unsuccessful attempts to replace back-office systems)

Next the very important questions of what should be regarded as the system and what should constitute the 'environment of the system' and the 'wider system' were considered. In this context the environment

clearly included the UK Government and its policies, other local authorities, residents and service users as well as IT suppliers, and the legal and audit systems. ‘A system to plan and manage the provision of local authority services’ was selected as the wider system.

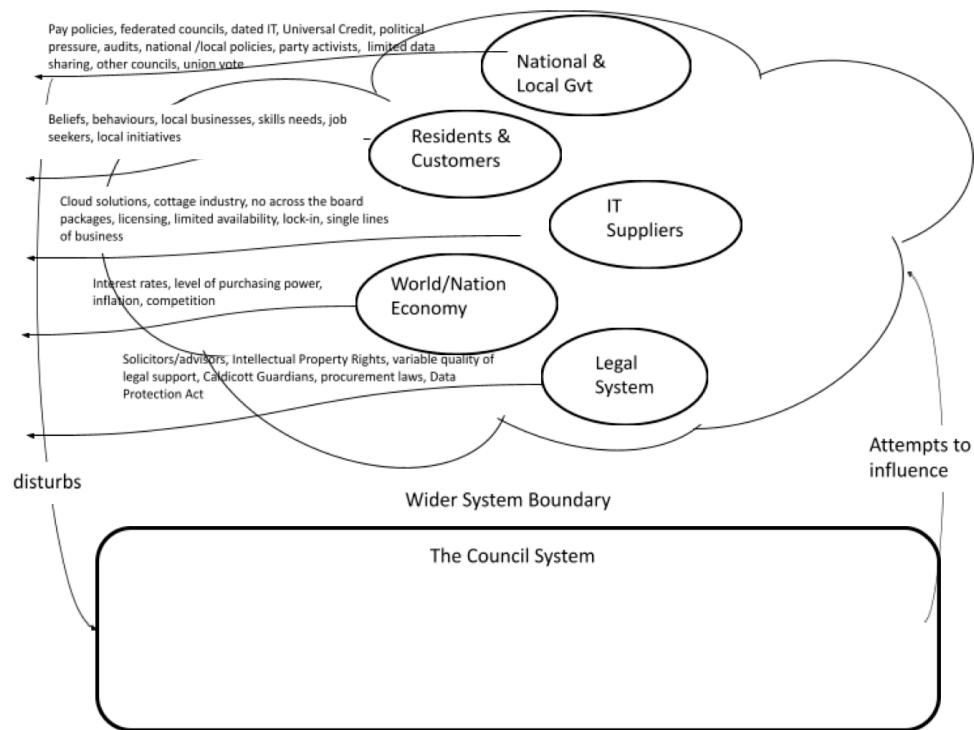


Figure 6 Disturbances from the environment

There are multiple ways in which components of the environment have the potential to disturb the system, but in most cases there are only a small number of avenues through which the system (and wider system) can influence the environment. For example, in this case the capabilities, ownership, and track records of individual IT suppliers had a strong influence over the ways in which a council planned and executed its changes, but *The Council* could only select from what was available at the time. Figure 6 provides a simplified version of the ways in which factors in the environment disturb the wider system. In essence, this is *The Council* in its executive mode. The system plans and manages a specific project such as the replacement of IT systems. That system in turn has subsystems that resource and carry out its many activities and report on progress. So, for example, the elected council in this context was considered to be part of the Environment, whereas the Project Programme Board formed part of the system that planned and managed the project. By contrast a Council Governance and Management System might have included the elected councillors, the executive and senior managers at its core. Thus, the application of the FSM helps to clarify thinking about the focus and context of a specific investigation.

In effect, Figure 7 captures, in the form of the FSM, the many issues that arose from these previous projects. It is important to note that the views captured here were expressed during interviews with 23 key members of staff and consultants *The Council* had engaged. They were not independently validated but at the very least they reflected the thinking of some key stakeholders about the past, and, in some cases,

about the future too. Of particular note is a substantial gap between the broad intentions of the Council and the mechanisms for achieving them. For example, a lack of prioritisation, the perceived absence of standardised project planning and management processes, the absence of communication plans, the shortage of internal competencies and the need to rely on external consultants. Table 3 provides further detail.

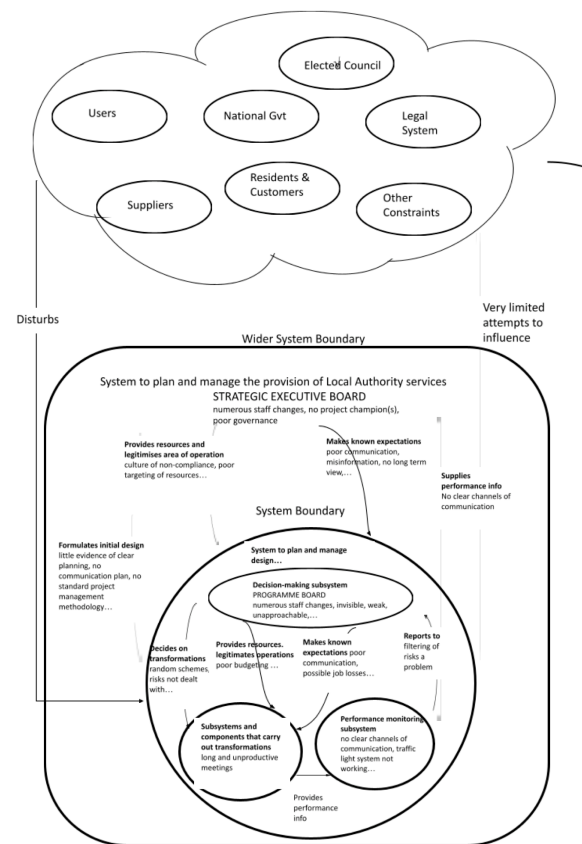


Figure 7 Information about previous projects mapped onto the FSM

Major component	Aspect of FSM	Research data from previous projects
Wider System	System to plan and manage Council services - Strategic Executive Board	numerous staff changes, no project champion(s), poor governance
	Formulates initial design	little evidence of clear planning, no communication plan, no standard project management methodology in place/ no standardisation between projects, no high level coordination, financial naivety, scattergun approach

	Provides resources and legitimates area of operation	culture of non-compliance, poor targeting of resources, too many competing initiatives, high numbers of interim staff, staff with poor leadership skills, problems with induction, missing competencies, poor team building, poor staff relationships/ resentment, no stakeholder involvement, use of consultants, audit issues, budgeting issues
	Makes known expectations	poor communication, misinformation, no long term view, expectations changing, expectation of failure, lack of accountability, no clear priorities/co-ordination between projects, no collaboration across Council
System	Purpose	to plan and manage the design, acquisition, installation, effective operation, maintenance and future development of new back office system
	Decision-making subsystem	numerous staff changes, invisible, weak, unapproachable, unsupportive, poor IT knowledge, poor governance, decision making not objective
	Decides on transformations	random schemes, risks not dealt with, no clear planning and control
	Provides resources	poor budgeting, processes not documented, no internal expertise, need for enhanced training, handholding of managers, personalities an issue
	Makes known expectations	poor communication, possible job losses, no job progression, opportunity to simplify, opportunity for savings
	Subsystems that carry out transformations	long unproductive meetings
	Performance monitoring subsystem	no clear channels of communication, traffic light system not working, only some lessons learnt, audits unreliable

Table 3: Further detail for the mapping shown in Figure 7.

Table 4 compares the key aspects of the FSM with the perceptions expressed in Figure 7 and Table 3. Of particular interest to the senior executives at the Council were the impact of the chequered history of previous projects and past experience of project failure leading to both lack of confidence and complacency about the importance of any particular project. It also highlighted some of the key risks that *The Council* was thought to have taken in the past and therefore the aspects of the future project that required particular attention.

	Formal System Model	Problematic features identified
Environment - Wider System interaction	Environment disturbs	<i>The Council's history and culture:</i> past experience of failure, rule driven, both complacent and lacking confidence, federation rather than unified, unforgiving <i>Suppliers:</i> chequered history, cottage industries, single lines of business, attempts to lock-in <i>National political environment:</i> Changing policies, funding constraints
	Influencing environment	<i>Limited success</i> historically, significance of local political changes not acted upon Multiple roles e.g. officers, Local Authority members, Trade Union members, The Council staff, local citizens
Wider System	Wider system - (places project system in context)	<i>The Council's history and culture:</i> impact of past experience of failure, clarity over strategy, resistance to change, weak internal communication
	Formulates initial design of	<i>Objectives</i> ambiguous e.g. re-engineering organization or updating software
	Provides resources and legitimates area of operation	<i>Internal staff</i> expertise lacking hence interims and consultants, weak induction and training
	Legitimates area of operation	Multiplicity of 'projects' undermines important ones
	Makes known expectations	<i>Chequered history</i> of gaining commitment of stakeholders, common approach to project management lacking
	Arrows linking systems/ subsystems and feeding back to wider system/environment (communication channels)	<i>Communications:</i> Channels ineffective and unclear
System		
	Decision-making subsystem	Ambiguity about overall purposes undermines effectiveness
	Decides on transformations	Varies with project but lack of clarity about purposes linked sometimes to ineffective clarity about project activities

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	Influencing environment	<i>Limited success</i> historically, significance of local political changes not acted upon Multiple roles e.g. officers, Local Authority members, Trade Union members, The Council staff, local citizens
	Provides resources and legitimates operations	<i>Out-of-date technologies</i> , poorly documented existing operations, reliance on external expertise
	Makes known expectations	Weak communication
	Transformation subsystems	Mainly N/A as most previous projects never reached this stage
	Provide performance information	Plenty of reporting, but appropriateness of information and clarity about how it was to be used were questionable
	Performance monitoring subsystem	The Council's own 'Traffic light' project monitoring system was viewed as discredited
	Reports to	
	Supplies performance information (from system to wider system)	Multiple feedback mechanisms but significance /importance not always clear to teams
	Attempts to influence environment	(Over?) reliance on managers to communicate from and to project teams problematic

Table 4: Comparison between the FSM and the perceptions expressed in relation to previous projects as represented in Figure 7 and Table 3.

Perhaps the most significant aspect of this comparison was the nature of previous difficulties. In other organizations it has not been uncommon to find one or two recurring themes such as lack of provision of timely and appropriate levels of resource or poor feedback resulting in difficulties not being detected soon enough or initial designs not being revisited when important environmental changes have occurred. However, in this case there were perceived weaknesses across almost all aspects of the project design and delivery which meant that managers would need to take a markedly different approach in the future.

There had already been changes at Chief Executive level, other senior staff were replaced and new expertise was recruited including experienced IT project management.

From Hindsight To Foresight

After looking at previous unsuccessful attempts to replace the back-office systems, comparison with the FSM was used to test the efficacy of *The Council's* next attempt (here called *IT renewal*). By this time *IT renewal* was well advanced and a favoured supplier had been identified. Figure 8 looks at the specifics of that project. It reflects the structures that had been implemented or were planned such as *The Council's* and supplier's staff working together in a decision-making subsystem within a system to develop and implement the supplier's solution. Unlike the earlier representation, it has a very specific wider system in the form of the project's Programme Board.

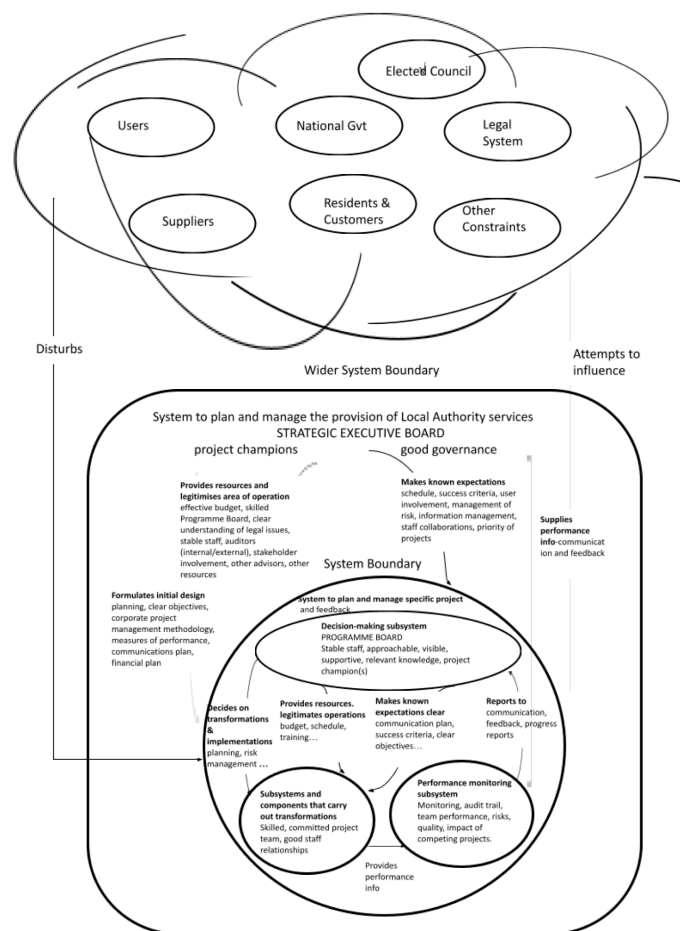


Figure 8 An idealised model of the *IT Renewal* project

The new plans, when viewed in systems terms, bore a very close resemblance to the idealised model. A 'system capable of purposeful action without failure' was apparently built into the project and it was proposed that comparison with the FSM was used regularly by the project team and other stakeholders to maintain an oversight of developments. From a management perspective the finding that *IT Renewal*

activities seemed to be well planned and the project was on track provided some reassurance. However, the FSM comparison did highlight future risks such as:

- The potential impact of changed requirements arising directly or indirectly from national policy. For example, increased and wider demands for services, national benefit reform, reduced funding, changing relationships with third sector providers and localism.
- Loss of key staff/expertise within *The Council*. Whereas the lack of success of previous attempts could be attributed in part to certain ‘personalities’ and to a lack of cross organizational leadership, *IT Renewal* was dependent on the decisions and actions of a few individuals, some of whom were consultants or interim managers. In addition, the avoidance of over-dependence on suppliers would continue to require high levels of internal expertise and knowledge.
- A lack of sustained focus on the purposes of *IT Renewal*. The many internal stakeholders had different requirements and hopes for *IT Renewal* but maintaining agreement and focus would continue to be difficult, especially as personnel changed.

Learning appropriate lessons and their implications for policy and management

This recent investigation using the FSM to review an organization’s past, current and planned activities demonstrates various features of the application of the FSM. The example is particularly rich because a range of previously unsuccessful projects were reviewed and there was considerable disagreement about what had happened and the lessons to be learned.

It is common and understandable that organizations when faced with difficult problems want to deal with them quickly and move on. Nevertheless, for mistakes not to be repeated, it is desirable that the right lessons are learned. In the case of the Local Authority above there was little common ground about what had caused the failings. Without that shared understanding organizational learning is at best problematic and potentially dangerous.

There is evidence from elsewhere [22] that as systems development and implementation activity is subdivided into teams those working on a sizable project lose sight of its overall purposes and structures. A lack of agreement about what happened and why it happened can easily result in a wide variety of potentially conflicting explanations circulating. For example, in the study above staff had differing views about the likelihood of success of previous attempts to replace *The Council*’s back-office systems. Although those attempts were abandoned at different stages and the costs associated with them varied considerably, all previous attempts to replace the systems were not delivered. It might therefore be assumed that a large majority of the staff who had participated in those attempts would share similar views about the fate of those attempts even if they attributed the lack of success to different causes. This was definitely not the case. For example, where the most recent attempt, abandoned during the procurement stage, was concerned, views ranged from ‘The team was not delivering and so there was no choice but to pull the plug’ to ‘It could have been sorted out; it was on track and would have been

successful if it had been allowed to continue.’ Similarly, an earlier attempt working with a named supplier yielded extremely contrasting comments such as ‘It would have delivered – it had already been successful elsewhere’ and ‘It would have been a disaster’. In the same vein a halted shared procurement with a neighbouring council was thought by some to have been the right decision because it would not have been delivered whereas others felt they should have pressed ahead as the ‘plug was pulled too soon.’

Conclusion

It has generally been found that real-world applications of FSM in a context of failures have implicitly or explicitly helped provide insights that can shape future thinking and action. The beneficial application of the FSM and the project specific version of it can be broadly considered in four categories. The first and most common is understanding individual or groups of previous activities within an organization in order to inform future management action. The quotes above emphasise the dangers of not investigating and codifying previous experience of projects that fail or are ‘near misses’. Without such investigations it is very unlikely there will be a shared understanding across an organization of the lessons to be learnt and therefore the traps to be avoided. Beyond management action, the FSM has been deployed to inform organizational and public policy. For example, the UK Government commissioned a study to look at attempts to implement electronic patient record systems in eight other jurisdictions as part of a major programme of work to consider designing and implementing such a system in the UK. In essence the result of that work [23] was a policy decision to halt development at that time. It is worth noting, however, that when much later attempts were made to introduce such a patient record system in the UK, they met exactly the types of difficulties that this work had predicted. The third use of the FSM is providing a holistic framework within which existing project management methods can be organised in order to increase the likelihood of success and the final use is enabling the periodic audit of ongoing projects especially those that are large scale and/or conducted over long periods of time.

The application of systems thinking has made valuable contributions to understanding failures in order to facilitate learning and preventing potential failures. The Formal System Model captures complexity but at the same time is relatively straightforward to understand. This allows it to work extremely well as 'a tool for thought' (in the Waddington [24] sense) and also provide a meaningful way of interacting with the actors in a situation in order to examine the past and debate what structures and processes need to be in place in the future in order to maximise the likelihood of success. One thing is certain; the need to learn from failures and to take action to prevent future failures is at least as great as it has ever been. The Standish Group findings that only 16.2% of IT projects were fully successful [6] could readily be replicated in other aspects of organizational life. For the future, the more that the FSM is utilised in different cultures and jurisdictions the greater will be the benefits for systems practitioners, managers and policy makers.

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