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I.S. Project Definition: From Seed To Tree

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Abstract

Project definition continues to be very problematic in Information Systems. Attempts to 'nail down' the definition of projects reflect what Mitroff and Linstone[1993] call an overly 'technical' or objective perspective. Rather a more social constructionist method is required. The authors arranged a small 'town and gown' colloquium to explore the problems and possible solutions to project definition. Drawing on this, and many years of their own project definition experience, the paper argues that project definition has to be explicitly treated as something that will constantly grow with client and designer interaction. Some pragmatic methods that align with this view are suggested.

Keywords

Project definition, concerns.



Figure 1: A Gum Tree: A Metaphor For A Near-Complete Project Definition Statement

THE BACKGROUND

Checkland [2000] uses the phrase 'root definition' when talking about the ongoing, socially constructed process of developing and clarifying project definition. It is tempting to use his phrase 'root definition' as a metaphor to imagine project definition as something that grows and changes over time from the root stock: the germ of an idea. The resulting tree (see picture of gum tree) being the final project definition, not the entire project (the menu not the meal), the tree's situation being the result of where and how the root stock was planted, its robustness being the result of the tree species and its interaction with the environment around it. The tree, like a project definition, can be pruned, trained, dug up or cut down at any stage and another tree planted.

This paper will provide an update and re-application of the multiple perspectives methodology [Mitroff and Linstone, 1993], the dialectic argumentation approach [eg. Mason, 1969], and selected project definition tools from the soft systems methodology [Checkland, 1981]. It will draw on a 'town and gown' panel session which asked three practitioners and three academics to present their experiences and reflections on the topic of project definition. Some pragmatic methods that align with day to day problem solving methods are presented.

Using one of those methods on this paper, the 'object' of this study is 'project definition'. Project definition is defined as the process between appreciating that a new system is required and having a reasonably structured scoping contract. The authors are concerned that many managers do not view this definition process as an ongoing social construction, as something that will grow and change with the social interaction between the client and designers on an ongoing basis. Any methods that are going to assist with project definition need to have a dynamic, evolving nature. The evidence that will be presented is in the form of the synthesis of oral histories, stories, and commentaries from the IS literature, the small colloquium and the authors' own experience. The argument is that project definition needs to be treated as an ongoing social argumentation process. The implication of this is that simpler, more generic definition tools can be developed but, importantly, ones that do not even attempt to 'nail down' the definition at the outset.

The root of the multiple perspectives approach is usually attributed to Churchman's Inquiry Systems [1971]. Linstone [1984] and Avison and Wood Harper [1990] have developed the multiple perspectives aspects, while Mason has complemented this with the dialectic argument aspects. Meanwhile, Checkland has developed the soft systems methodologies along the same philosophical lines. These appear to be based on American Pragmatism, of action informing thought, and a resistance to the objectification of knowledge. This means encouraging diverse views and explicitly using reasoned argument to explore and extend those views. Context becomes central and dynamic not irrelevant. Their advice will be used to provide an historical root to the topic of project definition. These people have been concerned about definition for many decades, hopefully during that time Information Systems (IS) managers have learnt not to treat systems design as merely an engineering feat but rather as an ongoing interactive process that will work only if there is a full and honest argumentation between the client and the designers.

The most common mechanism used to seek out, develop and, if thought appropriate, challenge the different perceptions, is the dialectic or (reasoned) argumentative process (debate, not quarrel). People with the different perspectives are asked to explain their claims using a system of probing (but supportive) questions. Well-structured and well-managed debates do this. This approach to project definition is advocated here. It is an application of the "learning through reasoned argument" perspective, which Mitroff and Linstone call the dialectic. Most readers are familiar with it because of their exposure to courtroom drama. It uses what Crosswhite [1996] and Walton [1998] call persuasive dialogue reasoning, that is, it assumes you are trying to convince cynical, yet competent, opponents of your claim or, in the case of a project definition, of your scope and requirements. The philosophical basis comes from Plato and Aristotle's dialectic reasoning, Hegel's (attributed) thesis, antithesis, synthesis and Habermas' communicative action. Consensus and valid new knowledge is sought through reasoned discussion, using the "guarantor" of fair competition between the client and the designers.

THE SMALL COLLOQUIUM

Given the importance of project definition to both IS managers and IS academics, it was decided to run a small colloquium of 6 speakers. Three were IS managers, three academics. The audience consisted of about 45 IS managers and IS academics, and the colloquium was located in a hotel meeting room in the CBD. There was very little briefing or careful selection of the presenters apart from their being experienced in project definition. The intent was to get a mix of backgrounds and opinions rather than select people with certain views. Also the presenters were merely asked to speak about whatever they thought needed to be said about project definition. From the small amount of pre-meeting conversation, it became clear that a colloquium theme of "project definition was problematic" was already emerging. A summary of the presentations, including clarifications from audience questioning is drafted below. Their advice was used to refine some project definition methods that have been developed by the authors.

Mauro Maurovic

The main issue emphasised by Mauro Maurovic, an IS manager with the Government, was that project managers often come to a new project after the business case has been accepted. This has the potential to mean the project definition is presented and sometimes accepted as 'settled' and not open to adaptation as the design team becomes better informed about the client's needs and the ever changing opportunities. Mauro called for a different approach. He suggested that, if possible, the project manager (consultant) should be appointed prior to submission of the business case. Moreover, this should still be seen as only a preliminary attempt at project definition. If the project manager cannot be involved in the drafting of the business case, the business case should be written to allow for some more project definition work before the project continues.

Mauro went on to point out that the business case is a crucial part of project definition phase and needs to be more accurately prepared and more critically evaluated. It helps ensure that the project is well located within the overall purpose of the organisation. This may help counter the growing concerns that, in many organisations, IT

is getting out of alignment with corporate strategy. The case can also be a very important source of information to a newly appointed project manager who is unfamiliar with the project organisation. A good analysis of stakeholder concerns, that includes non IT people with a clear sense of the organisations core purpose, should also help to ensure the new project does act to assist rather than confuse the host organisation.

Mike Allen

Mike Allen, the Project Director for Strategic Asset Management Information Systems Building Management with the South Australian Government, spoke next. Responding to Mauro, he started by saying he thought the business case should be seen as a 'terminal' project that was simply a means to fund the project. It should not be automatically considered a useful source for the client's 'real' project definition.

Mike thought that, often, it was unwise to focus on the business *outcomes*. He preferred to focus on the *consequences*. This meant focusing on the relevant people.

You're working with people - they confuse what they want, with what they need and they may not be aware of the opportunities available to them.

Individually, they may know what they want and need but not as a group.

He went on to argue that, with project definition, the best that can be hoped for is to "minimise the mistakes." It was impossible to get it 100% right: projects resist and defy definition, they want flexibility. He emphasised that project management and project definition are about change management. Project definition is about documenting an agreement over a change process and describing how that change is going to be delivered. Good documentation is necessary, not because it locks stakeholders to some prior position, but, since it is about a change process, it can be used to build trust and confidence.

Phyllis Livingstone

Phyllis Livingstone, from Aspect Computing, has over 20 years as a senior consultant in Project Management. As an 'external' consultant, she finds herself under a lot of pressure to 'button down' the definition (requirements) as much as possible because she needs to put a price on the project upfront. Without this, things can get embarrassing: there is often a financial penalty if the scope isn't accurate. However, she acknowledges this need is in tension with the need to work with the client to evolve a pleasing, interactively determined, end result. She argues that, in order to get the balance right between 'buttoning it down up-front' and being adaptable as the client grows, you need to understand the business, the maturity and culture of the client, and their real needs.

She emphasised the importance of communication, the need to establish a rapport with the client, to listen actively to what their problems are, to understand where they're coming from. They are starting from their current knowledge base and may not understand what opportunities there are. Her motto is: listen, listen, listen, question, question. Project definition is about change management, and so it is imperative to set a process of being able to interact with the clients right from the start. She finds it essential to document all agreements to ensure the design team has some power to respond to the client's changing demands. She felt the only solution was to have scheduled regular meetings, progress reports and steering committees meetings with the client.

Phyllis also believed it very important that the consulting team always have post mortems with team members as soon as possible after the client meeting. Group reflection on a meeting can be very different from individual impressions. She thought it very important the consulting team analyse everything that happens and learn from this.

Nimal Jayaratna

Nimal Jayaratna is the Professor of Information Systems at Curtin University. He presented a more 'meta-level' analysis of the project definition process. First, he pointed out that it was often difficult to define projects clearly due to changes in the environment, financial conditions, political issues, market, legislation and technology.

Within all this change, project managers typically have no direct power to affect change, yet they are held accountable for transforming the system from its current state to desired state. Rightly, the clients have all the direct control, so the project manager has to work through the client to make any changes he or she thinks necessary to the project definition. This can be done only by a process of persuasion, which is why good communication was so vital.

He went on to point out that any problem solver needs some sort of mental assistance, ie a methodology, concept, filter, model etc to help him or her think about a problem and also to think about their own thinking. Also, the project manager needs another methodology to design a two-way communication with the client and

with their environment. This methodology should include on-going reflection on how things are going, how the project manager is doing, what messes they are in and how they can recover. Developing these meta-level methodologies is an important part of the experienced manager's work.

Nimal provided a 'rich picture' of the three 'worlds' (or mental levels) involved in project definition. First, there was the 'action' world of the client and the project. This is the pragmatic, the 'getting the job done', level which is primary. Project reports are how this 'action world' gets recorded. Next, there is the 'world' that is only in the head of the project manager (consultant) who needs to reflect on how he or she is, and should be, interacting with the action world. This is the 'thinking' world where the consultant, as an individual, is interacting with the project as a group. This can be made explicit by writing up a 'concerns diary' and/or a 'lessons learnt' report for each project. This would mainly be for the project manager's personal use. The third 'world' is the 'justification' world. Typically, this is a reflection, over several projects, of the methodologies that have been used to interact with others and to think about problems. How were ideas generated? What conceptual thinking tools were used? What communications methodologies were used? Where they appropriate? This aligns more with an academic thesis but consultants would benefit by trying to think about conceptual methodologies. It is not an easy task and needs practice.

Sue Howell

Sue Howell is now an academic who works at Cranfield Business School (UK) and is co author of a book on 'Soft Systems' with Peter Checkland. She was a IS manager for 15 years in Australia before becoming an academic. Sue thought that project definition had to be thought of in terms of 'learning by doing.' The manager needs to think of an idea and then explore acting upon it. Learning comes from reflecting on the 'error' between what was thought would result and what actually happened. The project definition exercise involves numerous small thought and act experiments, even if acting only consists of discussing it with others. While the whole project definition exercise was one such 'think - act' loop, it does usually occur over some months so there are plenty of 'sub-projects' that can also be thought of as being opportunities for 'think- learn' loops. Clearly, rash action was not being recommended, but the advantage of thinking of definition like this was that it underlines the need to talk with others and emphasises that definition is an evolving process. Deeper learning occurs when these numerous 'thought - action' loops have been attempted and then reflected upon.

John Venable

John Venable is an IS academic who has worked in Canada, North Europe and Western Australia. He emphasised the need to explicitly collect the different perspectives on the *purpose* of a project. Different interpretations of the current situation and the desired situation will inform the project team. Therefore active listening is very important, not just one on one, but by engaging the client in a dialogue about the situation, facilitating discussion between users or stakeholders, using electronic meetings, rich pictures, and cognitive maps etc. The aim is to come out with a 'root definition,' as termed by Checkland. This is a plain English short statement about the project purpose [analogous to a theme, thesis, argument, proposition].

Summary of Presentations

A summation of this symposium is that project definition needs to be thought of as an ongoing social construction. Not something that is 'nailed down' at the start. If this is done, the project manager cannot be blamed for not delivering but often the client feels they may have missed out on an imaginative solution. There is need for a very thorough stakeholder analysis including their perceptions and a recursive working of their needs with the consultant's identification of the possible opportunities. Also, as it is a complex learning situation, with the technology constantly changing, there is need to explicitly establish some 'meta-level' learning, and some way of learning by doing, that will not damage the credibility of the project managers.

Nimal and Sue mentioned that project managers may wish to reflect on which framework or conceptual model they were using to drive their actions when working on the project definition. One example may be that they assumed that the task was to 'nail down the definition.' Another could be that their task was to facilitate the clients in designing their own system. While this advice may seem very reasonable, not only is this likely to be very complex task, it is not clear that a person can do this sort of self analysis without some group interaction or formal process. Moreover, writers like Davidson [1984] question how we can make these 'conceptual schemes' more explicit or distinguish one from another. This has been discussed further by the first author [Metcalf, 2001]. Suffice to say here that it may be easier to simply ask the project manager to reflect on both their own concerns and those he or she perceives are the current concerns of the stakeholders at regular intervals over the life of the project. It has been found that, by thinking in terms of concerns, some useful insight can be gained on basic assumptions.

A POSSIBLE METHOD

Following on from the above discussion a process has been developed that may help make explicit some of the issues raised. A formal methodology would be a mistake but some simple guidelines may be useful. The project definition process is assumed to start with an idea, an inspiration, that a new system is required. The process below was intended to clarify those “first thoughts” using a group of as many stakeholders as possible. It is a process that will need to be done many times during the drafting of a scoping contract and during the life of the project. While the questions below may be answered at the first meeting, it is useful to re-ask them as the project proceeds, they serve to keep stakeholders’ perceptions aligned. The primary task is to get from, or communicate to, stakeholders a clear understanding of people’s concerns. In some cases, it is to make stakeholders concerned and in others to alleviate or appreciate those concerns. There can be endless meetings so some process is required to ensure these lead to an improved definition of the project, ie address their concerns. There is no guarantee that talking leads to a convergent rather than divergent process. After some meetings there may be more confusion than before the meeting.

As a result of the above, the first author developed a concerns definition method (technique, tool, process) which is outlined below and has now been tested on numerous projects and been found to be useful. An example will be outlined here. It is intended to be a simple, fairly generic method that can be used in a wide range of projects for the purpose of concern definition. What is new about this method is the combination of ‘routines’ that build to provide much clearer definition of the stakeholder’s concerns. The method disaggregates the object from the concerns about that object (see the concerns/object diagram). It uses the a-priori argument approach to give inquiry a focus yet allow the definition to evolve as those involved learn. It includes a meta level learning, and reduces the chance of issues being forgotten, by recording concerns of stakeholders in a diary. It is not an overly formalised method, more a guideline and the application of a series of questions.

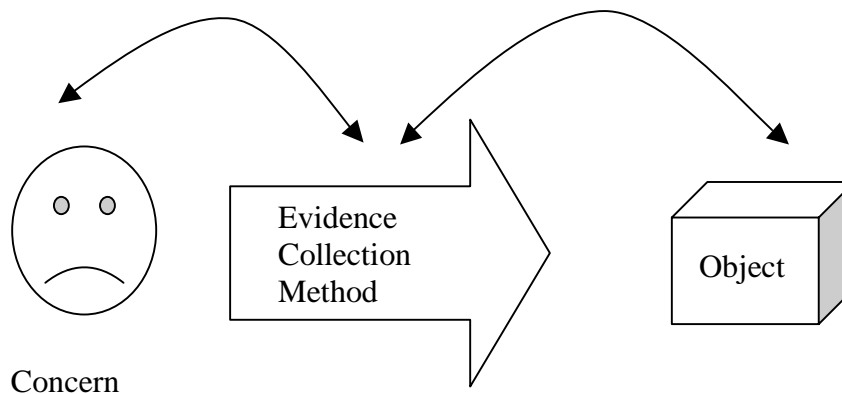


Figure 2: The Concern/Object Diagram

The Concern/Object Diagram (Figure 2) has been developed from Checkland’s (1981) work, part of his soft systems toolbag, as “an organised use of rational thought”. This has been reworked a little here to allow for the authors’ own work on “concern solving” and Davidson’s (1994) concerns about the validity of conceptual frameworks. The three parts of the diagram are the Object under consideration, the client’s Concerns, and the Evidence Collection Method. The back arrows indicate that, as the project is undertaken, the Object and Concerns may change.

An example will be used to illustrate the method. This is taken from a project undertaken by 4 IS Masters students on industry placement. The project was provided by an industry partner who sought a report on real IS issue within their organisation. In this case, a State Government department was starting to think about how best to set up and keep a ‘Whole of Government’ IT asset register. The outsourced IT company’s contract was coming up for renewal and the Government department wanted to be sure the next contract was negotiated with a full appreciation of the IT assets involved. The definition method outlined below was not used as the authors were not involved in the project early enough. After the students provided their report, there was some discussion about whether they had delivered what the Government Department required. This is the classic project definition problem. While the students worked hard, the client was left uncertain about the usefulness of the report. The students believed they delivered what was requested. On both sides there were comments of the problems of a lack of meetings. The project is used here simply to illustrate the method. It is not intended to

'get the definition right' with hindsight. As has been said above, the correct definition is not an object to be discovered but rather something worked out between the consultant and the client.

OBJECT

The purpose of the diagram (see Figure 2) is to clarify the purpose of the project and hence enable the process of concern definition. Typically the diagram can be used to say, "What exactly is the "Object" under consideration?"" So, using the asset register example, let's say the client's answer is "a Whole of Government" IT asset register.

CONCERNS

Next, the question is "What is it that "Concerns" you about this?"" A possible answer would be, "how best to collect the required information both initially and over time". The "Evidence Collection Method" is best raised after the conclusion format for the report has been determined.

THE A-PRIORI CONCLUSION

Having identified the 'Object' and the 'Concern', the next stage is to use these to state the format of the conclusions of any (if imaginary) project report. This aids with the concern definition by helping to identify the outcome sought. This approach also acknowledges that ultimately any concern definition will need to be presented in a way that persuades others that it is the correct way forward. Essentially, this is what the conclusion (and/or recommendations) of a project report do.

After drawing the concerns solving diagram, the identification of the form of the report's conclusion process normally begins by simply asking, "What format do you anticipate the conclusion would take?" Using the example, the client may have already formed the opinion that a report will conclude something of the form that, "the best process for collecting the required information is X". The advantage of identifying an a-priori conclusion format is to bring together the object and concerns in a purposeful manner. If the client is not clear about the "direction" of the conclusion, then it can be written in a neutral form. In this case, the format would be, "That the best process is (is not) X". As evidence is collected and the progress discussed with the client, the 'direction' may become clearer. Indeed, the whole format of the conclusion may change but it is important to start off with the upfront impression of which way the study should be undertaken as being provisionally agreed.

To repeat, the most important point about the a priori conclusion is that it is simply an opening (a priori) position, and the inquiry process is expected to alter the (posterior) argument (conclusion) and anything from minor editing, to a major redirection can be expected. However, it has still been found useful to act as if there is a clear conclusion at the start, provided it is understood that, as the problem is considered further, this conclusion is expected to change. Furthermore, this 'up-front' purpose setting makes it much easier to appreciate that the concerns are usually aimed at some audience. The form of the conclusion helps identify that audience explicitly.

EVIDENCE

Once the form of the a priori conclusion is established, it becomes easier to determine what evidence needs to be sought to prove the conclusion. This acts to reinforce how much money and effort the stakeholders want invested in solving their concerns. The question, "What evidence needs to be collected to make the conclusion convincing?" needs to be asked. This question also clarifies which inquiry methods would be considered appropriate. Using the example, the answer to this question may be to seek a combination of experienced managers' opinions, comparative examples from other organisations and a literature search for alternatives. This may be improved by pro-actively seeking diverse views. So, if one experienced manager is interviewed and he/she responds by saying method Z is best, then they should be tactfully asked to name someone else who would have a totally different opinion. The back arrows on the Concerns/Object diagram indicate that the actual collection of evidence will often alter the concerns, the a-priori conclusion and the object that is considered worthy of concern. Again, as it is the consultants who gather the evidence, there is a risk that they will refocus their opinions of what the object being studied should be and what the concerns should be, so great care has to be taken to keep the client involved in any change of direct thoughts. This is why regular meeting are important.

CONCERNS DIARY

Importantly, it is necessary to build into any project definition method a way of dealing with changes as all the stakeholders learn and interact. The "what now do you see as the thing we should be focused upon (object)?" and "what is it now that concerns you?" questions will need to be constantly re-asked. Therefore, some form of tracking of concerns has been found useful both for meta-learning about project definition over time but also to

help stakeholders reflect on progress during a project definition exercise and to help ensure some important and unresolved concerns don't get forgotten.

The keeping of diaries now has a long tradition, especially in the biological sciences. Electronic forms are being used to coordinate manufacturing processes and IS managers are reporting that they find them useful for reflection. However, most inexperienced designers are unclear about what to include in a diary. While the answer to this must be whatever the designer feels is relevant, this is still not very specific. It was found useful to again start using the 'concerns' concept. A diary of the consultant's concerns, recorded at, say, weekly or fortnightly intervals, can be useful. It will then be a useful, whole-of-project record of the changing concerns of participants that can be used to take a more 'meta-level' post mortem of a project.

As well as recording the concerns, it has been found useful to add a few notes about what the diary keeper intended to do about the concerns in the near future. The diary can be extended to include the 'anticipated' concerns of the other stakeholders and what they are likely to do about their concerns. This not only encourages the participant to think of the problem from the other stakeholders perspective, but it can also identify how good the communication is between the stakeholders. If these diaries, which should be secret unless otherwise agreed, are recorded through some central electronic standardise form, some post project analysis may be possible while preserving confidentiality.

CONCLUSION

This paper has argued that project definition is an ongoing social construction between the consultant and the client. While every effort needs to be made at the outset to agree a starting position, it is important not to assume that the definition exercise can be 'nailed down' at this stage. It is believed preferable, for overall client satisfaction, if definition is explicitly understood to be an ongoing, reasoned debate between the stakeholders as new evidence is uncovered. Further, by focusing on clients' 'concerns', there is less risk of the consultants marginalising the client as they become more immersed in the project details. No matter how well intentioned the parties involved, there will always be room for learning how to do things better on the next project. Therefore, it is advised that project managers develop explicit methods to reflect on the lessons learnt from each project.

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