



Requirements Methodology Pack

January 2008

Project Classification

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Introduction

Purpose

The Software Education methodology explicitly states that one size does NOT fit all – projects are different and trying to make a single set of rules apply to every project is setting the project team up for failure from the beginning.

This document describes the configuration choices that are available to project managers and business analysts and presents guidelines on different elements of the methodology pack, which are applicable to different types of projects, and the activities to be undertaken in the project.

Outcomes

After reading this section you should be able to:

- Understand the factors that affect how projects are classified
- Understand of 3 main development methodology models
- Understand how to classify a business or IT project based on its size, complexity and risk profile

Project Classification Elements

There are a number of factors, which combine to define the project classification:

Project Focus – Business Processes or Information Technology

The most fundamental difference is in the high level focus of the project – is this piece of work targeted at a new or changed business process which will be implemented without changing the existing information technology systems or is it about using information technology to enable and implement a change to the way we do business?

There is a third, very uncommon type of project – the “pure” information technology project; those undertaken within the information technology team to meet technology demands. These types of project are normally technology upgrades or changes such as migrating from one platform to another.

The selection between these three project types is the most fundamental choice to be made, as this will significantly impact the methodology approach to be undertaken.

Project Risks – Low, Medium or High

All projects have risks associated with them. Understanding the degree of risk and the nature of these risks is important to the selection of the methodology elements.

The methodology identifies project risks at three levels – Low, Medium and High.

To identify the level of risk associated with the project please refer to the Risk Assessment in the Business Case.

Total Investment – Size

Project size is measured in the overall investment, in the following bands:

Under \$250,000	Enhancement
\$250,000 to \$1M	Small project
\$1M to \$3M	Medium project
\$3M to \$10M	Large project
\$10M or more	Very large project

The larger the investment involved in the project the more stringent the governance and oversight activities must be.

Communication Complexity

There are three aspects to complexity:

1. The number of people who are actively involved in the project
2. Geographical/temporal distribution of the project activities
3. Cultural distribution of the project team

The more people there are on the project the more reliance there must be on written artefacts for the explicit transfer of knowledge. Likewise the larger the geographic distances over which the teams are spread the more reliance there must be on written communication. Where teams are distributed over large geographic distances they are often unable to effectively coordinate verbal conversations and must correspond in writing.

Where team members are from different cultural backgrounds they must work harder to ensure that they understand each other. See appendix 1 for a discussion of culture as it relates to team formation.

When assessing the communication complexity of a project the project a simple three-tier assessment should be used which takes into account these factors. It is acknowledged that this is a subjective assessment made by the project manager in consultation with the team.

The three rankings are:

- Low Complexity - The team is small, located within the same geographic area and largely homogeneous. Projects of this nature are well suited to low-ceremony largely verbal communications, with an expectation that the team will talk to each other frequently.
- Medium Complexity - Any two of the three factors are present that will prevent the team from communicating effectively at all times. Perhaps there are groups within the project team that are co-located but other team members are off-site, or the total team is too large to get together at one time. Project of medium communications complexity will require more formal, written communication than a low complexity project, but there will still be some reliance on verbal informal communication.
- High Complexity - Large teams, outsource/offshore development activities and distributed multi-cultural teams will require much more formal communication channels and will necessitate reliance on formal, written artefacts, with rigorous review and sign-off procedures. These projects will by definition take longer and run higher risk of misunderstood requirements. Team members are encouraged to talk to each other frequently and build relationships to reduce the risk involved in having to rely on explicit communications channels.

Development Methodology

For projects which have an information technology component there is another set of choices to be made – which lifecycle model is being used. The three models are:

1. Waterfall – sequential development based on clearly understood and fixed requirements where change is not expected. Only suited to very short lifecycle projects (Six months or less)
2. Iterative & Incremental – an approach based on learning and adapting as the project proceeds in discretely defined steps and phases, with effective change management and requirements prioritisation guidelines. Change is expected but is carefully managed to ensure project goals and objectives are met.
3. Agile – an approach based on emergent requirements, suited to collocated teams addressing specific business problems with short time windows and uncertain requirements in volatile areas of the business.

Making the Choices

These factors and the interrelationships between them are far too complicated to provide a flowchart or other simple tool for selecting the profile of your project. Instead please examine the following list of typical projects and identify the one which is most like your project.

Selection of the project type will enable you to identify the mandatory processes and artefacts in the Processes and Procedures for Project Managers or Processes and Procedures for Business Analysis.

The most fundamental project classification is between Business Focused and IT Focused projects. This should be the first choice you make.

Business Focused Projects

These projects do not require any changes to Information Technology systems, they will utilise existing technology. Changes will be in business processes and expansion of existing business activities.

Project Type	Risk	Size	Complexity	Description
B-A	High	Very Large	High	The largest and most challenging of projects. These will require strict governance and detailed oversight. Adherence to the methodology guidelines will be mandatory. All communication must be reduced to writing and strict review/sign-off of any decisions will be required. The governance overhead will slow the project down but will enable early discovery of problems.
B-B	High or Medium	Large	High or Medium	These projects are challenging, there will be a need for detailed audit trail and tracking of project activities, key decisions must be recorded in writing but much of the inter-team communication can be verbal, followed up with written acknowledgement of the decisions which have been made.
B-C	Medium or Low	Small or Medium	Medium or Low	A middle ground between small, nimble projects and complex larger ones.
B-D	Low	Small	Low	These are the smallest of projects, normally undertaken by a small team who are able to work together effectively on a day to day basis. Most of the communication will be verbal with only major decisions reduced to writing. Governance and oversight will be involved in the beginning and at the end of the project, without much need for interim reporting.

Information Technology Focused Projects

These projects utilise Information Technology systems to implement business process improvement or re-engineering. The outcome of the projects will be improved business activities enabled through the use of Information Technology.

Project Type	Risk	Size	Complexity	Development Methodology	Description
IT-A	High	Very Large or Large	High	Iterative	<p>These projects are the ones which statistically have the highest likelihood of failing or being challenged (under featured, over budget, over time).</p> <p>Do not try to lock down all the requirements up front – the reality is that on any long duration project requirements will change. More crucial is a mechanism to prioritise requirements and track changes as they are raised.</p> <p>A continuous focus on business value and alignment with project objectives and goals is more important than resisting change.</p> <p>These projects will move slowly, and requirements must be well documented and signed off before handing off to the development team.</p> <p>Governance and oversight must focus on the project's continuous alignment with the business needs.</p>
IT-B	Medium or Low	Medium or Small	High or Medium	Waterfall	<p>If the timeframe is short (six months or less) and requirements can be known up front then a Waterfall methodology may be applicable. This is only valid if the requirements can be defined in detail and they WILL NOT CHANGE over the project lifetime. If there is any likelihood of requirements churn then an Iterative lifecycle is recommended.</p> <p>On these projects formal signoff of all artefacts is crucial before the project moves from one stage to the next.</p>

IT-C	Medium or Low	Medium or Small	Medium or Low	Iterative or Agile	<p>These projects need to cater for the fact that business needs change frequently. If the team is collocated and customer involvement is high, then short cycle Agile techniques can be used to deliver the product.</p> <p>Where complexity increases or customer involvement is limited then the more formal iterative approach with formal sign off and explicit change management will be more applicable.</p>
IT-D	Medium or Low	Small	Low	Agile	<p>Agile projects are best suited to small, collocated teams who have a clear understanding of the business objectives. The requirements will emerge as the system is built, with rapid feedback and high end-user involvement.</p>
IT-E	Low	Enhancement	Low	Waterfall or Agile	<p>With small enhancement projects gather the requirements, confirm them with the requestor and deliver the resultant change in a very short timeframe.</p> <p>If the requirements are unclear a prototyping Agile approach can be used to build a little, get feedback and then build some more.</p>

Appendix I – Cultural Differences

We need to be aware of cultural aspects when dealing with teams – inevitably today our teams will be made up of people from many different backgrounds and cultures, and our projects will quite likely cross geographic and cultural divides.

The project manager needs to understand how culture can impact on individual performance, and how social interactions and norms influence the way work gets done.

“Culture is more often a source of conflict than of synergy. Cultural differences are a nuisance at best and often a disaster.”

Prof. Geert Hofstede, Emeritus Professor, Maastricht University.

Prof. Geert Hofstede conducted perhaps the most comprehensive study of how values in the workplace are influenced by culture.

Geert Hofstede analyzed a large data base of employee values scores collected by IBM between 1967 and 1973 covering more than 70 countries, from which he first used the 40 largest only and afterwards extended the analysis to 50 countries and 3 regions. In the editions of GH's work since 2001, scores are listed for 74 countries and regions, partly based on replications and extensions of the IBM study on different international populations.



Useful web site

<http://www.geert-hofstede.com/>

Hofstede analysed culture in five “dimensions”, which are described in the following extract from the web site:

Power Distance Index (PDI) that is the extent to which the less powerful members of organizations and institutions (like the family) accept and expect that power is distributed unequally. This represents inequality (more versus less), but defined from below, not from above. It suggests that a society's level of inequality is endorsed by the followers as much as by the leaders. Power and inequality, of course, are extremely fundamental facts of any society and anybody with some international experience will be aware that 'all societies are unequal, but some are more unequal than others'.

Individualism (IDV) on the one side versus its opposite, collectivism, that is the degree to which individuals are integrated into groups. On the individualist side we find societies in which the ties between individuals are loose: everyone is expected to look after him/herself and his/her immediate family. On the collectivist side, we find societies in which people from birth onwards are integrated into strong, cohesive in-groups, often extended families (with uncles, aunts and grandparents) which continue protecting them in exchange for unquestioning loyalty. The word 'collectivism' in this sense has no political meaning: it refers to the group, not to the state. Again, the issue addressed by this dimension is an extremely fundamental one, regarding all societies in the world.

Masculinity (MAS) versus its opposite, femininity, refers to the distribution of roles between the genders which is another fundamental issue for any society to which a range of solutions are found. The IBM studies revealed that (a) women's values differ less among societies than men's values; (b) men's values from one country to another contain a dimension from very assertive and competitive and maximally different from women's values on the one side, to modest and caring and similar to women's values on the other. The assertive pole has been called 'masculine' and the modest, caring pole 'feminine'. The women in feminine countries have the same modest, caring values as the men; in the masculine countries they are somewhat assertive and competitive, but not as much as the men, so that these countries show a gap between men's values and women's values.

Uncertainty Avoidance Index (UAI) deals with a society's tolerance for uncertainty and ambiguity; it ultimately refers to man's search for Truth. It indicates to what extent a culture programs its members to feel either uncomfortable or comfortable in unstructured situations. Unstructured situations are novel, unknown, surprising, different from usual. Uncertainty avoiding cultures try to minimize the possibility of such situations by strict laws and rules, safety and security measures, and on the philosophical and religious level by a belief in absolute Truth; 'there can only be one Truth and we have it'. People in uncertainty avoiding countries are also more emotional, and motivated by inner nervous energy. The opposite type, uncertainty accepting cultures, are more tolerant of opinions different from what they are used to; they try to have as few rules as possible, and on the philosophical and religious level they are relativist and allow many currents to flow side by side. People within these cultures are more phlegmatic and contemplative, and not expected by their environment to express emotions.

Long-Term Orientation (LTO) versus short-term orientation: this fifth dimension was found in a study among students in 23 countries around the world, using a questionnaire designed by Chinese scholars. It can be said to deal with Virtue regardless of Truth. Values associated with Long Term Orientation are thrift and perseverance; values associated with Short Term Orientation are respect for tradition, fulfilling social obligations, and protecting one's 'face'. Both the positively and the negatively rated values of this dimension are found in the teachings of Confucius, the most influential Chinese philosopher who lived around 500 B.C.; however, the dimension also applies to countries without a Confucian heritage.

Appendix 2 – Cutter Journal Article by Suzanne Robertson

The following article by Suzanne Robertson was published in the Cutter Edge – a newsletter from the Cutter Group.



Useful Web Site:

To subscribe to the Cutter Edge see www.cutter.com

Potential for Agility

An agile requirements strategy is one where there is *no wasted effort*. All the effort you spend on requirements (meeting, interviewing, modeling, reviewing, prototyping, documenting, testing -- everything) brings you closer to being able to meet your project's goals. But not all projects have the same potential for agility. Large numbers of stakeholders, scattered development teams, varying levels of experience, and other factors that make it difficult to get answers and make decisions all influence your potential for agility. To help make your requirements strategy as agile as it can possibly be it is useful to consider the agility potential for your project.

Rabbit Projects

Rabbit projects, like their namesake, are small and fast. If your project has the characteristics of a rabbit, then you have the highest potential for agility. Rabbit projects typically occur where close stakeholder participation is possible. The developers and the domain experts are either physically located in the same place or have developed a way of working where distance does not impede the ability to share ideas and make decisions. Rabbit projects are iterative. They gather requirements in small units (typically one business use case at a time) and then implement the solution piece by piece, using the implementation to get feedback from the stakeholders. Rabbit projects are not focused on a process that delivers a requirements specification; instead, they have a process that discovers and communicates requirements one logical chunk at a time. Rabbit projects benefit from having a sketch of a requirements knowledge model on their whiteboard so that stakeholders have some consistent way of talking to each other. However, these projects will not produce formal deliverables for each one of the classes of knowledge. If these teams sketch a work context and come up with a list of business events, then they might choose to do business use case scenarios for the most complex ones and keep a list of naming conventions so that everyone can see them.

Rabbit projects benefit from paying attention to all the classes of requirements knowledge, but the amount of time and effort that the teams spend in representing the knowledge is minimized because they share their understanding by talking to each other.

Horse Projects

Horse projects have less potential for agility. They are larger than rabbit projects and hence more constrained by the size of the project and the organization. There is more need to have a formal process for representing classes of knowledge. Horse projects are the most common corporate projects. There is a need to formalize the documentation for some of the classes of requirements knowledge because it is likely that requirements must be handed from one department to another. Another factor is that these projects usually involve more than a few stakeholders, often in a number of locations.

Horse projects are working from the same knowledge model as rabbit projects, but they need a more formal process for how each of the classes of knowledge is discovered, who is responsible for it, and how it must be represented both in terms of notation and documents. This extra bureaucracy is necessary in order to exploit the potential for agility by making communication of understanding easier. But there is a trap here and that is that horse projects often start to work by rote and stop questioning whether a particular activity or deliverable is necessary in all cases. To keep a horse galloping, you need to keep questioning whether everything in the saddlebags is still necessary.

Elephant Projects

Elephant projects have the least potential for agility. These projects have a long duration and hence like elephants need a long memory. Sometimes they are so long that none of the people involved at the start of the project are still there at the end. They involve many stakeholders in many locations at many levels of authority and interest. Their technical infrastructure is diverse, and there are many developers involved. These projects often outsource part of their development, often to another country. Owing to this huge diversity, the elephant project has a need for a very formal and consistent representation of the requirements knowledge -- one that is not open to interpretation. That representation is normally in the form of a requirements specification document.

When elephant projects decide how to represent their requirements knowledge, the notation and format for how each class and relationship will be represented is often mandated by organizational or industry standards.

The truth is that even in the most extreme of elephant projects there is still potential for agility. You can exploit this potential if you have a consistent way of partitioning the elephant and keeping track of the connections between the pieces. Within the large project, you can discover a number of linked smaller projects, and some of these pieces -- especially the ones with colocated stakeholders -- can be more agile than others.

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