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Agile Suitability Filters

A Discussion of Suitability Models, Merits and Shortcomings
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INTRODUCTION

Agile Suitability Filters are tools to help assess if an agile approach could fit your organization and project. As with any subjective diagnostic tool, these methods are not hard-and-fast predictors of suitability or project success. A smart, motivated team can make a less-than-ideal approach work, just as a lazy or misaligned team can fail with the very best approach.

The suitability filters described here should be used as conversation starters. Use them to have more objective discussions about the use of agile methods and where risks may be present. Discussing alignment and potential challenge areas with stakeholders before starting a project allows the team to plan extra training and develop countermeasures for potential risks.
Why Agile Suitability Filters

Given the benefits of agile approaches described in this guide and a plethora of other agile books, you may wonder why use agile suitability filters? Surely agile methods are just better? Well, not always. Changing approaches comes with its own risk of failure. Maybe the new approaches will be rejected by some stakeholders. Maybe the project is too small to warrant the learning curve of changing approach. Maybe the project is already well defined, understood and safe to execute in a linear, plan-driven way.

While agile approaches are great for novel, complex projects with evolving requirements, they are not a universal panacea. While most projects would benefit from the improved collaboration and communications encouraged on agile projects, just adding those components does not make the project agile, nor is the goal simply to convert all projects to agile.

The desired outcome is a successful project with satisfied stakeholders, no matter the methodology. It is better to have a successful plan-driven project than a failed agile one.

Let's discuss some popular suitability models and analyze their merits and shortcomings.
1. Gartner Bi-Modal IT

Gartner offers a dual track model for organizations who are considering adopting agile but are not sure if it is the right approach for the entire portfolio. Gartner explains, “Bimodal is the practice of managing two separate but coherent styles of work: one focused on predictability; the other on exploration. Mode 1 is optimized for areas that are more predictable and well-understood. It focuses on exploiting what is known, while renovating the legacy environment into a state that is fit for a digital world. Mode 2 is exploratory, experimenting to solve new problems and optimized for areas of uncertainty.”

To determine the best approach (Mode 1 – plan-driven, or Mode 2 – agile), three attributes are evaluated – the perceived degree of governance, likelihood of change and type of solution. For high governance projects with low rates of change developing systems of record, the Gartner model suggests plan-driven Mode 1. On the other hand, projects with less governance and more changes developing innovative products would benefit from an agile Mode 2 approach.

While Bimodal IT provides a simple A vs. B model, it neglects the fact that projects exist on a spectrum. The vast majority of projects reside somewhere in the middle and would benefit from a smart mix of techniques – a hybrid approach.

If your project is simple, visual and managed by a small team, then an agile approach is likely a great fit. However, complex systems undertaken by large teams also benefit from an iterative approach to the early exploration of risks, confirming true requirements and surfacing gaps in understanding. These benefits would not be realized in a single-pass, plan-driven approach. Thus, large, intricate projects need agile techniques more than others.
2. DSDM Suitability Filter

In 1994, the DSDM Consortium created a simple Suitability Filter Questionnaire with a list of Yes/No questions. The basic idea is to check conformance to project characteristics that favor agile development such as:

1. **Acceptance of the agile philosophy before starting work** – Short cycles, user involvement, iterative development, etc.

2. **The decision-making powers of the users and developers in the development team** – Acceptance and support of empowered teams who are allowed to make their own local decisions.

3. **The commitment of senior user management to provide significant end-user involvement** – Availability of user resources to participate in the project.

4. **Incremental delivery** – Agreement that this is possible and desirable. We must agree how to review interim steps and who will be responsible for them.

5. **Easy access by developers to end-users** – A measure of the ease of the development team to access end-users to get feedback.

6. **The stability of the team** – Keeping a stable core base to support verbal knowledge sharing rather than requiring documentation.

7. **The development team’s skills** – Does the development team have all the necessary skills to develop the product or service?

8. **The size of the development team** – Small teams to leverage face-to-face communications and minimize communication and documentation costs.

9. **A supportive commercial relationship** – Trust and collaboration over contract negotiation.

10. **The development technology** – Supports incremental delivery, rapid prototyping and refactoring.

These attributes help indicate the usability of an agile approach. Negative answers do not rule agile out, but they do highlight potential risk areas to manage. For instance, a “No” answer on “user availability” may mean we have a risk in that area, so we need to resolve this in the project start-up phase. “No” answers to the majority of questions, however, should be a red flag. With so many challenge areas, will this be a success?

You can download a copy of the DSDM Suitability Questionnaire below. Answering the questions can provide valuable insights for any type of agile methodology.

[Download project_suitability_questionnaire.doc](download/project_suitability_questionnaire.doc)
3. Alistair Cockburn’s Criticality and Team Size Factors

Alistair Cockburn’s Crystal family of methods are based on project fit and suitability. Using the characteristics of System Criticality and Number of People (Team Size), Cockburn divided his methods as shown below.

On the X axis, we have Team Size starting with very small teams of 1-4 people on the left and progressing to large projects of 500+ people on the right. On the Y axis, we have Criticality, which shows the potential result of failures to the system. If a word processor crashes, then we lose time. If a billing system goes down, the Discretionary or even Essential Money could be lost.

Cockburn labels certain methodologies based on team size. For instance, Crystal Clear is an agile methodology designed for small teams tackling projects up to a Criticality of Discretionary Funds. Crystal Red, on the other hand, has more detail, rigour and controls and targets teams of 50-100 people working with systems up to Essential Money in Criticality.

Team Size and Criticality are good factors for assessing a project’s agile suitability. While an agile method can work well on large teams and even life-critical systems, it takes much more skill and effort to implement. Agile is much easier to use on small, non-life-critical applications.
4. Boehm and Turner – Radar Chart


Boehm and Turner’s radar chart assesses a project using five attributes. The scores of the assessment are plotted on a radar (spider) diagram. Scores towards the center indicate a good fit for an agile approach, while scores towards the outer edge indicate a better fit for a more traditional approach. The criteria are:

**Personnel** - This measures team experience, borrowing from Alistair Cockburn’s scale – Level 1 beginner through Level 3 expert. Agile projects are more likely to go smoothly with a low proportion of beginner developers and a high proportion of intermediate and expert-level practitioners. This is reflected by the mixed-axis score toward the agile center of the graph where there is a low percentage of beginners (Level 1) and a high percentage of experienced developers (Levels 2 and 3). If your team has a higher percentage of beginners, then a more traditional approach (coding to specifications) may be more successful.

**Dynamism** - This is a fancy term to describe the likelihood of change. How dynamic (changing) is the project? What percentage of the requirements are likely to change during the project? If fifty percent of the requirements are likely to change, then we plot toward the center of the graph in the agile zone. If only one percent of the requirements are likely to change, then we are near the outside in the traditional zone. This is not to say you cannot use an agile approach, but for this characteristic, at least, planning the work and working that plan could have more success.
4. Boehm and Turner – Radar Chart (Continued)

**Culture (Thriving on chaos vs. order)** - What is the temperament of the organization? Is it one that can accommodate or even feed off change, or is it one that relies on the familiarity of order and tradition? For instance, getting buy-in for agile in a very ordered environment can be challenging. Ideas such as emergent requirements, empowered teams and servant leadership appear counter to the culture and values of a rigid organization. It can still be done by appealing to their wish to reduce project uncertainty, but the process of introducing agile approaches needs more careful consideration and execution.

The next two characteristics, “Team Size” and “Criticality,” are from Alistair Cockburn’s Crystal family of methodologies.

**Team Size** - Agile methods are easier to introduce, execute and manage with small teams. This is not to say large agile teams cannot work, but it is much harder to accomplish. Teams of less than ten are a great fit for agile approaches as they can communicate face-to-face, support unwritten knowledge by conversations and facilitate simple, visible tracking systems. As team sizes grow, supporting these agile principles requires additional techniques. It can be done, but it takes more work and skill. In contrast, the hierarchical structures of traditional projects were made to scale upward with the natural proliferation of committees, documentation and matrices.

**Criticality (System failure results in loss of...)** - This is a more contentious attribute, as it refers to the consequence of a system failure. Boehm and Turner take Cockburn’s model and assert that agile is more suitable for trivial applications where failure of the system results in a loss of convenience, such as losing personal time if a video game crashes or losing work time if a word processor fails. However, agile would be less applicable for mission-critical or life-critical applications in this model. Modern agile testing frameworks can provide similar functions, but many agile approaches do not mandate this level of rigor. This is not to say it cannot be added, however.

It is common to use an iterative, agile approach to test functionality early and often in a life-critical project. Start with agile and add the additional layers of verification required by the project’s criticality.
4. Boehm and Turner – Radar Chart (Continued)

Case Study

The following are two examples, which illustrate how the radar chart scores very different projects.

The project illustrated above was to develop an online drug store to sell cheaper Canadian prescription drugs primarily to customers in the United States. The sale of these drugs is a contentious subject in Canada and the US, and as a result, swift regulation changes and fierce competition characterize the industry. The project faced extremely volatile requirements with major changes week after week. It used very short (two-day) iterations and weekly releases to address the high rates of change.

The project had an experienced team of Level 2 and 3 developers that worked on very dynamic requirements in an almost chaotic culture. The team size was small (five people), but the system criticality was fairly high with essential funds for the pharmacy at stake. The approach was extremely agile and very successful.

The diagram below will compare the online drug store project with a large project to develop a military messaging system that had already been running for five years when the assessment was made.
The military messaging project team had a mixture of skill levels. Requirements were locked down because changes impacted so many subcontractor organizations, and the culture was based on specification and control. The project was large with over three hundred people from one vendor alone, and the criticality was high as potentially life-critical information was being passed. Parts of the project could have been carved off and run as agile projects, but at the heart of the initiative was a single, large project better suited for the Waterfall method.

These two case studies illustrate some of the variance found on projects. Central clustering on the radar chart indicates a good fit for agile approaches, while peripheral scores indicate plan-driven approaches may be better. Some projects mostly concentrate in the middle of the graph but spike out on one or two axes, indicating the need for a hybrid approach.
5. Dave Cohen’s Agile Factors

Cohen, Lindvall and Costa wrote a good introduction to agile, *Advances in Computers*, in 2004 where they identified the following factors as precursors to agile acceptance:

1. **The culture of the organization must be supportive of negotiation**
2. **People must be trusted**
3. **Fewer, but more competent people**
4. **Organizations must live with the decisions that developers make**
5. **Organizations must have an environment that facilitates rapid communication between team members**

Number four may seem odd as the business typically directs development. However, Cohen, Lindvall and Costa argue an organization needs competent developers who can be trusted to make empowered decisions about design over business functionality.

Analyzing organizational factors reveals much of the influence or resistance in an organization.

Looking at a project in isolation, one might believe it is a great candidate for agile, but it is important to analyze all aspects of the project and the organization or risk missing a significant piece of the puzzle.”
6. The Organizational Suitability Filter

The DSDM Consortium published an Organizational Suitability Filter questionnaire as a white paper to accompany the Project Suitability Filter. It provides useful insights into how well suited an organization is toward adopting agile working practices.

The questionnaire comprises of 46 questions divided across the following categories:

1. **Users** – Do we have the right users? Do they know what they are talking about? Can they make decisions?
2. **User Management** – Do they understand iterative development? Will they make their people available? Will they trust and empower them to make decisions on behalf of the group?
3. **Organization** – What is the relationship with IT like? Can they accept agile contracts?
4. **Culture** – Is there an open culture? Are people prepared to try new approaches? Will an incremental delivery be accepted?
5. **IT Staff** – Do they know enough about agile? Can they speak effectively to the users? How is their relationship with the user community?
6. **IT Management** – Do they understand agile methods? Are they willing to change project management standards?
7. **Management Organization** – Are they procedure driven? Will stakeholders be available to participate? Does the business have the appetite for incremental delivery?
8. **Techniques** – Is there a history of Big Design Up Front (BDUF)? Are the build and test tools available to support the technical environment?

The Organizational Suitability Filter provides insight into the likely risk areas of adopting agile and takes about 45 minutes to complete. You can download a copy here:

Download organizational_suitability_questionnaire.doc

Once you have completed the questionnaire, you can use the following assessment spreadsheet to help interpret the results.

Download of assessment_scoring_example.xls
6. The Organizational Suitability Filter (Continued)

The radar diagram above shows sample results from the Organizational Suitability Filter Questionnaire. The graph plots risk, so a high score represents a high risk in that area. In our sample “User Management” and “Culture” are the high-risk areas.

Like the Project Suitability Filter, negative scores or high risks do not automatically mean that you cannot use an agile approach. Instead it identifies risk areas to study and reduce proactively. Forewarned is forearmed.

Non-Project Factors

These organizational factors are a critical consideration. Even if the project is a great fit for agile in theory, if management or other stakeholders are against that approach, its application carries significant risk. If the project leader does not believe agile methods will work, they may prove themselves correct and fail using an agile approach. If the heart is not in it, project obstacles can appear as vindication of process weakness, not small setbacks to overcome.

This “Methodology Bias” is the most significant factor evaluated. “Bias” is a very important distinction here as we all have an unconscious bias that influences our decisions. This paper, for instance, shows a strong pro-agile Methodology Bias. Agile principles, from this perspective, can and will be used often on package selection projects and projects with little change of variation (such as “roll out this update to 500 users”). This is an approach that favors collaboration and consensus building followed by a gradual evolution with many checkpoints.

Visualize Methodology Bias as the hammer that pounds the project to fit the approach of choice.
6. The Organizational Suitability Filter (Continued)

If a team has a strong desire to succeed with any specific approach, they will likely find inventive ways to make their method work. Use tools such as Boehm and Turners radar chart to determine the ideal characteristics for an agile-shaped project, but never forget the size and persistence of the Methodology Bias hammer mashing even the most unlikely looking projects into the mold of your approach.

All these different suitability filters, which should I use?

Well, it would not be very adaptive or agile to mandate a single approach or strict progression between models. Instead, get familiar with a variety of approaches and select what would work best in your environment.

Be aware that “theoretical” fit and “practical” fit are often quite different. Acknowledge the presence of the Methodology Bias hammer, and learn how it influences choice and success. Finally, remember these are just tools, and they are not a replacement for thought and dialogue with the project stakeholders. Rather than using them in isolation, use them to start conversations about agile suitability and build consensus around the method of choice.
**About RMC Learning Solutions™**

RMC Learning Solutions develops and trains project managers, business analysts, and Agile practitioners by helping them learn the skills necessary to succeed in their careers. We deliver a wide range of training in multiple learning formats across the globe. Founded in 1991 by Rita Mulcahy, the company continues to develop and provide innovative, real-world tools and instruction, delivered by professionals with extensive experience and a working knowledge of industry best practices.

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