

SYSTEM DEVELOPMENT METHODOLOGIES

Plan-Driven vs. Agile

by *Craig D. Wilson, PMP*

As a consultant, I am frequently asked which is the best approach for developing computer applications, plan-driven or agile. As with most complex questions, the correct answer depends upon multiple factors and is situational. In short, "it depends." Before considering which situation is best served by which methodology, it is probably worthwhile to define these two types of development approaches.

A plan-driven methodology is generally considered to be one in which the approach is formal, with documented and approved artifacts and is driven by a published project plan, against which progress is tracked. These projects tend to have high ceremony, including project team meetings, published status reports, project reviews with management, etc. Examples of plan-driven methodologies include the Rational Unified Processes, SDM 70, and most of the legacy methodologies from decades past.

Agile methodologies are generally considered to be those utilizing a less formal approach and are more adaptive in nature. They are people-oriented instead of artifact-oriented. The focus is on creating software code rather than the intermediate artifacts dictated by the more formal methodologies. There is little project ceremony in the way of formal meetings and documentation. This does not mean that agile methodologies are without rigor and discipline. In fact, agile methodologies require a great deal of process maturity to work well. Examples of agile methodologies include Extreme Programming, Scrum, and Lean Software Development.

There are a variety of factors which should be considered when selecting an approach. Here are a few which may be considered.

Complexity of the Problem Domain

A situation in which the problem to be addressed is complex and requires the combined input of a large number of people tends to lend itself to a plan-driven approach. A situation in which the problem domain can be explained by a few people tends to lend itself to an agile approach.

Complexity of the Solution

A situation in which the solution will be architecturally complex, such as a high-use transaction processing system requiring rapid responses (think airline reservation systems), would likely be better addressed using a plan-driven approach. A situation in which the solution is less complex, for example a data entry system used by a handful of people, would probably be better served with an agile approach.

Knowledge of the Solution

A situation in which the solution is not well understood and which may require a trial-and-error approach, might utilize an agile process. An example would be a research and development project utilizing a new or unfamiliar technology.

Process Maturity of the Project Team

A team which is low in process maturity will likely be best served with a formal, plan-driven approach. A team which is made up of individuals with high process maturity, and especially individuals who have worked together as a team in the past, may find an agile approach very effective.

Size of Project Team

A small team, considered to be less than a dozen people, may find that an agile approach provides them with the minimal formal communication required. A larger team may require the formal and structured communications offered in a plan-driven approach.

Regulatory Requirements

New regulatory requirements, such as those dictated by Sarbanes-Oxley, often require the high degree of formal controls and documentation provided in a plan-driven methodology.

Organizational Culture

As you can imagine, the process with which the organization culture best fits will probably cause the least resistance in acceptance.

Each situation has a variety of factors which will influence the decision of which type of system development methodology. Taking the time to review and consider these factors will help you select the appropriate approach for your project.

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