DELIVER SOLUTION

All the work done so far is about understanding the current state, finding possible solutions and finally selecting the best-suited solution. The next step is to develop the solution. The most common way is to set up a project responsible for developing and delivering the solution. Oftentimes information systems are involved and an IT project is initiated. Such projects normally define the requirements in detail, create system specifications, develop (coding) the solution, test the functionality and implement the solution. In short, a project takes the blueprint of the selected solution, develops and delivers it to the stakeholders.

For such projects, a project manager is appointed who has the overall responsibility to deliver the solution. The role of a business analyst changes during the delivery phase of the process. In this chapter, we cover the main approaches of software development life cycle and the role of the business analyst.

Predictive versus Adaptive Approaches

Most initiatives will involve some form of development of information systems. It might be minor but sometimes, initiatives require quite extensive adaptations or developments in information systems. As the solution needs to be developed in a project, the project method or overall approach should be considered early on by the analyst. The project approach will affect what deliverables are required and how some of the work is to be done. The overall approach will either directed towards predictive or adaptive approach.

Predictive Approach

Predictive approaches seek to define the projects as much as possible prior to working on development and implementation. One of the oldest methods to develop systems and manage projects is the "waterfall" method. The method is no longer applied in its strict from as initially described when it was created. However, methods based on the waterfall methodology are widely used today. The original waterfall method follows a sequential process where the each step of the whole project is taken once the previous step has been completed. For instance, the construction or development of the system will not start until all the detailed requirements have been elicited and approved. The steps are non-overlapping, it is not flexible as once a step is completed, it is not possible to go back. As such, the whole project plan has to set at the outset and kept until the end.
The classical waterfall method is not applied today due to its rigidity. To address this, different versions have been introduced. Such versions include an “iterative” development and the “V-model”. The iterative development method divides the project into smaller chunks and manages each chunk according to the waterfall method. The V-model follows, in essence, follow the same principles as the waterfall method but allows for deviation from the strict sequential order of the steps. For instance, the testing procedures are developed before the coding is done whereas, in the waterfall method, testing is not considered before the code development is concluded.

These methods allow for integrations between the steps such as re-visiting design during implementation. These methods are good alternatives in situations where the requirements can or must be defined prior to implementation. For instance, an organization might have an information system that is their main platform with many interfaces. The complexity of the system forces them to have all the requirements defined prior to any development being done. Furthermore, the testing must be performed full scale to ensure that all interfaces are intact. In such cases where the consequences of bugs and errors are costly, a predictive method is perhaps preferable.

Predictive methods are useful when the scope of the project is clear in advance and can be easily measured, when the nature of the project is such that different resources can work fairly independent of each other on different parts (for instance when testers can prepare test cases), and when an information system solution architecture is important and needs to be given special attention. However, such methods have disadvantages. It is sometimes difficult to effectively elicit all requirements at the start. The customers might not be able to give such detailed requirements or not know exactly what they need without having seen anything. Furthermore, customers might change their minds, which is costly to accommodate once the coding has started. Finally, customers will not be able to see the solution in advance but only when the whole solution is developed.
Therefore, customers might receive what they ordered (based on the requirements they gave) but still be dissatisfied.

**Agile Approaches**

The waterfall method is borne of an era where stability and predictability were common in the business environment. However, with the rapid changes in many aspects of the corporate environment, waterfall-based methods proved too complicated and risky. Adaptive or agile methods such as scrum and extreme programming came about as a solution to the problems with waterfall based methods. Agile methods adopt an incremental approach rather than the sequential step-by-step procedural approach.

Adaptive or agile methods focus on delivering solutions (value) in iterations for approval or acceptance. As such customers see parts of the solution in iterations and can give their approval or request changes. The core idea is that rather than waiting until the whole solution is done, break it up into sections that are delivered, examined and approved by the customers.

![Diagram of Agile Approaches](https://via.placeholder.com/150)

**Figure 2 Example of Agile Approaches**

This allows the customers to early and frequently see the solution and make changes if necessary. This results in customers having a strong ownership of both the solution development and the priority of what parts are more important. With such methods, a basic product can quickly be produced and implemented and further enhancements and improvements follow later.

However, there are disadvantages as well. When the customer is involved, there might be delays due to the customer not being able to provide the feedback and approvals in time. In agile methods, the team will work best if they are fully dedicated to the project and situated physically in the same location. If these conditions are difficult to fulfil, it can affect the time and quality of the project. Finally, as parts of the solution are
delivered, it is very difficult to build a solution that is architecturally stable when it concerns large-scale projects or solutions requiring higher levels of integration with other information systems.

**Spiral Model**

Spiral Model is a widely-known method for software development that has elements of both the waterfall and agile methods. In essence, the spiral model has four phases, planning, risk analysis, engineering, and evaluation. A software project moves repeatedly through these four phases in spirals. In the first spiral the basic requirements are set, risks analyzed, code developed and finally the results evaluated. If the results are satisfactory, the next spiral builds upon the first spiral. If the results are not as expected, the problems are addressed. As such the progression of the product is done in steps (spirals) where the outputs are evaluated by the customer and verified before the continuing to the next spiral.

The spiral model has the advantage of taking risk analysis very seriously. Furthermore, it has documentation and predefined steps but at the same time software is produced early on for the customer to evaluate. The spiral model can be used for large projects but it can be very costly to use.

Figure 3 The Spiral Development Method
Selecting an Approach

If there are no organizational policies to use predictive or adaptive methods or if both are acceptable, the following aspects can be considered when determining which approach to use. While the below aid to choosing, a method might be helpful, one should bear in mind that agile methods are maturing fast and can be applied on larger projects.

Table 1 Selecting an Approach

<table>
<thead>
<tr>
<th>Predictive Approach</th>
<th>Factor</th>
<th>Agile (Adaptive) Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>A larger and more complex project</td>
<td>Project size and complexity</td>
<td>A smaller and less complex project</td>
</tr>
<tr>
<td>Customers have difficulties being extensively involved during the project duration</td>
<td>Customer availability</td>
<td>Customers are willing and available to frequently be involved during project duration</td>
</tr>
<tr>
<td>Unknown or several complex integrations required</td>
<td>Integration level</td>
<td>None or few simple integrations required</td>
</tr>
<tr>
<td>Budget/time schedule is fixed and difficult to change/adapt</td>
<td>Flexibility and tolerance for changes</td>
<td>There is flexibility (budget/time)</td>
</tr>
<tr>
<td>Solution requires full feature set to be delivered</td>
<td>Time to Market</td>
<td>Solution can be initially launched with limited feature</td>
</tr>
</tbody>
</table>

The Role of a Business Analyst in Delivery of a Solution

The role of a business analyst will differ depending on if the project is conducted by following a traditional or an agile approach. In traditional methods, there is some analysis done before the start of the project. The same might apply to agile methods as well. In these preparatory parts, there is not much difference. However, when the project starts, the differences are more visible. Let us summarize the roles of a business analyst in this phase when working in predictive and in agile approaches.

Traditional Approaches

The role of the analyst changes during the delivery of the solution. As mentioned before, at this stage, a project organization is created to coordinate the development and delivery of the solution. Typically, a project manager takes over. However, it is
important to note that the project manager works with managing the project. The project manager will apply knowledge, skills, tools and techniques to ensure activities are taking place that will deliver a solution that meets the requirements. As such the project manager is concerned with achieving the project goals. Therefore, the project manager defines the project, break it down into a manageable set of tasks, obtain the resources needed, manages the team that performs the work, monitors the progress, manages the risks and keeps the project on track.

The business analyst use techniques to perform tasks that enable meeting the goals and needs of the organization. The business analyst is mainly focused on the end result of the project and that it will meet the needs of key stakeholders. While the project manager is concerned with managing the project, the business analyst is concerned with securing that the project delivers what the key stakeholders need. As such, these roles are not in conflict but complementary to each other. However, a business analyst can also be full-time project member by for instance, being assigned the task of eliciting requirements or be involved in the testing of the solution. The role of the business analyst in a project is also dependent on the level of seniority of the analyst. In essence, a project will include a number of business analysis activities which business analyst could be working with.

**Prepare for Receiving the Solution**

The business analyst main responsibility is to make the whole solution work and therefore does not end with the initiation of a project. The project might deliver results that bring the organization very close to their goals but there might be additional requirements needed. For instance, the receiving organization might need to prepare for the new solution. Such preparations might be outside of the project scope. The analyst will work with the managers to secure that the receiving units are prepared to make use of the new solution. The delivery of the solution could mean changes in the organizational structure or in the staffing. Such changes need to be prepared.

Every project is different. Some projects might have such factors as part of their project scope. It is perhaps more common to leave such issues to the managers of the receiving business units. Regardless of what is defined in the project scope, the solution will only be efficient if everything around it works as intended. The analyst plays an important role in securing that all aspects are in place. As the analyst has been deeply involved in defining the current and the future state, few have as wide and comprehensive view of what is required for the solution to be effective. As such, the analyst has an important contribution to make in collaboration with the managers of the receiving business units.

**Managing Changes in Solution**

The requirements of a solution will be examined closer and captured in more detail. It is only natural that issues surface that had not been considered before and decisions have
to be taken. It will be necessary to determine if the requirements need to be changed, be modified or even perhaps excluded from the solution. Projects might be too focused on project objectives such as delivering within the estimated time or cost that there is a risk of losing sight of the purpose of the solution. The business analyst has an important role to secure that all changes are aligned with the raison d’être of the project. Such changes might also require input from key stakeholders with whom the analyst is in contact.

**Agile Business Analyst**

So far, we have discussed the analysis process as if it was a procedural process. Although we have frequently noted that the analysis work deviates often from such a straight process, we use this structure to facilitate learning about the foundations of business analysis. It should also be noted that business analysis was born and grew in an environment of predictive approaches. However, as the agile methods have matured, increasingly a number of organizations are implementing agile methods, even for larger projects. As the whole foundation of agile methods is different from predictive approaches, the question of how an analyst fits in an agile method is merited.

In essence, a business analyst is only a title. The actual business analysis work is essential. While many organizations have dedicated teams of business analysts and this role as a job title, what defines them is the work they do. Business analysis is a wide profession and all business analyst do not do all business analysis work. Quite a few specialize and focus on certain aspects of the work.

Agile methods do not have a business analysis role or title. In essence, while there is no official title or role for the business analyst in agile teams, the work being done is still needed. The main difference is in the time and order perspective. Agile methods focus on collaboration and ongoing engagement whereas traditional methods have phases, stages, or hand-offs. Therefore, in traditional methods, the business analyst has a dedicated phase they work intensively with for instance requirement specification. However, in agile teams, the current state analysis, the needs, requirements specification, the evaluation can take place at shorter intervals, with no clear demarcations between the different tasks. In short, the same work is being conducted but with a different and faster rhythm in a less structured way.

Agile methods also focus on reducing waste and to be done with over documenting and analyzing issues. The business analyst might wish to document the requirements in a procedural manner but will notice that agile does not follow the same idea. Again, the elicitation of requirements is very vital and existent in agile methods but not in the same way and manner as with traditional methods. The business analyst simply has to adapt and work with the requirements the way the agile teams is accustomed to (for instance using “user stories”). At times, the agile team might oversee certain aspects of requirement elicitation. For instance, user stories do not capture non-functional requirements. In such cases, the business analyst can contribute with eliciting such important requirements.
In some of the agile methods such as Scrum, the role of a product owner exists. The product owner is the person who actively is involved in prioritizing the log of what is to be developed and is primarily responsible for understanding the customer’s requirements. The business analyst is an expert in how the operations work, he or she can assume the role of a product owner in a scrum method. Although it is not as straightforward to just jump from being a business analyst to a product owner, the transition is quite possible. In larger projects, the business analyst can assume a role of supporting the product owner by for instance being mainly responsible for the backlog.

A business analyst uses, in almost all of their work, collaboration, communication, and facilitation. As agile teams progress in their work through collaboration, the business analyst is in a unique position to bring great value by facilitating teamwork and collaboration. In particular, a business analyst can become very valuable team member by using their strong communication skills in, for instance, making the team comfortable with the stakeholders such as the customer. Ensuring that the communication is flowing smoothly in both directions is an important value.

In summary, although the role of a business analyst is not included in agile methods, the skillset of a business analyst is highly valuable in agile teams. The main difference is in how these are delivered but that concerns the outer form and format, not the inner core of analysis work. This might mean that the analyst might not be solemnly responsible for a certain aspect such as eliciting requirements but rather, see the results being produced as a result of a team effort where the boundaries of each person’s roles are blurry. At the end of the day, the agile team including the developers, need to understand the business domain. The business analyst can play an important role by bringing his or her analytical skills to the team.

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