



## Waterfall → Agile (Scrum) → EPPORA

As the new wave of technology experts describe the benefits of Agile and Scrum methodology over the conventional Waterfall methodology, what is their message? If you are bottom line oriented, you would think they are trying to communicate that the development of the end product:

1. Takes place faster
2. Costs less
3. Satisfies the end-users more often

So what is the reason the “Agile” method allows projects to be delivered faster, cost less and be more responsive to end-users? Is it dividing the project into discrete components, prioritizing the components with the end-user’s input, continuously delivering demonstrable components that the end-user can actually approve, keeping the development team focused or some combination thereof? In the “good old waterfall’ days, we would always hear that a project without a plan was planning for failure. “Agile” skeptics usually say how do you know where you are going if you do not plan what you expect to achieve? So why do the “Agile” evangelists claim their method is far superior? Is it because:

- Small teams build synergy amongst its members and they become more productive?
- Implementing small project components provides concrete goals that are achievable?
- Building viable components helps the end-user better understand what is really needed?
- Successful deliveries invigorate the team, management and the end-users (customers)?
- Small teams with all individuals wearing multiple hats helps to eliminate project team members waiting on dependent tasks to complete, thus eliminating wasted staff time?
- Multiple viable components obtain early end-user and management buy-in?

For the most part, all of the above claims are true. As the Agile revolution continues to spread at a rapid pace, what is it that the Waterfall die-hard advocates complain about? Does it include?

- The old pundit that “Failing to Plan” is “Planning for Failure?”
- If there is insufficient time spent defining the requirements and creating a detailed design, the key component interfaces downstream will have a higher probability of causing major issues?
- Having everybody on an Agile (Scrum) team do a little of everything doesn’t optimize the use of the individual team member’s unique talents?
- Major projects with multiple implementation teams cause serious interface problems?

What if we could achieve the benefits of what Agile evangelists claim while solving the Waterfall skeptics’ complaints? EPS is just releasing its new product, EPPORA (Enterprise Project Portfolio Optimized Resource Allocation) which accomplishes just that. EPS started specifying EPPORA in 2002. After spending nearly three years researching current project management products, talking with key project personnel and C-Level executives, we understood what was needed to take project management software tools to the next level in improving project success rates. From 2005-2007 we created a Requirements Specification and a User’s Guide detailing EPPORA’s functionality. In 2007 EPS started EPPORA’s implementation. EPPORA is a web-based application that works with any popular Internet browser including Internet Explorer, Mozilla and Chrome. The product’s initial release was 15 October 2011. The major differentiator between EPPORA and its competitors is that instead of supporting one project at a time, EPPORA broadens the scope and supports an organization’s entire project portfolio.

So now let's consider why EPPORA is the next quantum leap in making the success rates of projects significantly higher than projects employing the existing requirements tools (e.g., Requisite Pro, DOORS, etc.), scheduling tools (Microsoft Project, Primavera, Niku Workbench, etc.), database (Oracle, DB2, Microsoft SQL, etc.) and CRM tools (SAP, Oracle, etc.) with either a Waterfall or Agile (Scrum) methodology. When EPS was originally defining the functionality of EPPORA, it delved into what were the major project portfolio failure causes. It should be noted that we are about improving an organization's project portfolio success rate, not just a single project.

## **Project Selection**

The initial item we addressed is how organizations select which projects they shall implement. EPS senior staff members performing as consultants have participated in four major organizations project selection process. In general, they all performed the following common functions:

1. Appointed a "Sponsor" for each potential project.
2. The Sponsor with the help of his/her staff created a business case describing the projected cost of the project and its anticipated ROI.
3. The organization created an executive committee of senior C-Level executives to determine which projects shall be selected. The committee members were given a few days to review the "Business Cases" for each of the potential projects. The committee would establish the rules for project selection.
4. The committee met for 10-20 working days to determine which projects shall be implemented.
5. The Sponsor would usually make a presentation in front of the committee describing why his/her project should be implemented.
6. The committee would deliberate and choose which projects to fund.
7. This would occur once or twice a year, although we have heard some companies that do it quarterly.

Probably sounds reasonable as it should, because this is exactly what most companies do with a few minor caveats. The reason organizations do it so infrequently is it is a very expensive to have their key people spend 2-4 weeks making a decision as to which projects to implement. The problems we saw were:

1. **Number of Criteria:** The two criteria used for selection (cost and ROI) are very important criteria, but not the only criteria that should be considered. For example, technical risk, financial risk, cash flow, compliance with government regulations, synergy with existing products, etc. should also be considered.
2. **Politics:** Too often we saw Sponsors that were friends of key "Executive Project Selection Committee" members had their projects selected as opposed to more worthy projects from other Sponsors. Once while questioning a CEO as to why we were selecting a specific project instead of another which offered a far better return for the organization, we were told he was a "golf" buddy.
3. **Experts:** Specifying the expected return on investment and projected cost of the project were not always done by the organization's foremost experts. The validity of the numbers often left much to consider.
4. **Timeliness:** The world is always changing, what is a good selection today may not be a good selection tomorrow.

## Requirements

The number one reason projects fail is requirements. The four major reasons within “Requirements” causing project failures are:

1. **Gathering:** There are numerous excellent tools that support the gathering and collaboration of specifying requirements. Many of the more sophisticated organizations conducting projects are making use of these tools to assure their project requirements definition receive the appropriate attention and collaboration needed.
2. **Ambiguities:** Too often specific requirements are interpreted differently by different project stakeholders (be it the end user, the developer, the Business Analyst, the Sponsor, the Test Engineer, etc.). It is critical that every requirement have no ambiguities and is understood the same by all stakeholders involved in the project.
3. **Changes:** Requirements in any project of reasonable complexity suffer from too many changes. How an organization controls these changes and understands the impact of changes often are key factors in the project’s future success.
4. **Testable:** The defining mechanisms of what a project is are its requirements. In order to assure that each requirement is thoroughly tested, the method used to specify requirements are critical. Too often organizations do not take this into consideration when they select a method for specifying their requirements.

## Schedule

There are numerous excellent scheduling tools (Microsoft Project, Primavera, Niku Workbench, etc.) which many organizations use. The problem lies in that most Project Managers, even those certified by the Project Management Institute as PMPs (Project Management Professionals) do not understand the value of these tools and how to appropriately use them. Although not as critical as requirements as a culprit of project failure, poor schedules are a close second. The major reasons “Schedules” cause project failure include:

1. **Durations:** It is extremely difficult to estimate tasks that require more than a week (40 hours) in duration. If a task takes longer than a week, than it should be divided into sub-tasks such that none of the sub-tasks take longer than a week. If some of those tasks do take longer than a week, than they should be further divided into sub-tasks ad infinitum.
2. **Missing Action:** Every schedule task should include an action (verb) so the individual responsible for accomplishing the task knows exactly what needs to be accomplished. For example, if one were just to see a task specified as “User Guide” then one would not know if they were to create a user’s guide, review a user’s guide or approve a user’s guide.
3. **Missing Resource:** Every low-level task (tasks without any sub-tasks) needs to have a resource assigned. Without a resource there is no one that can be held responsible for the task’s accomplishment.
4. **Fixed Dates/Dependencies/Critical Path:** The major feature of scheduling tools is the support of dependencies. With dependencies when one task becomes later or earlier than it was supposed to occur, the rest of the schedule can self adjust to the change. With “Fixed Dates” there is no adjustment. Just because someone demands that a deliverable be accomplished by a specific date, the Project Manager if he/she knows what they are doing will use dependencies to determine if the date can be met. If it cannot be met, they will adjust the use of resources or make other changes to help assure that the desired schedule is adhered to and thus satisfying the desired dates.

If dependencies are used appropriately, then nearly all worthwhile scheduling tools will delineate which tasks are on the critical path. Critical path tasks are those tasks which directly influence when the project will be completed. This is a key for Project Managers, for it is the critical path tasks that should take the majority of their time as they manage their project.

5. **Timely Updates:** Probably the biggest mistake we have seen relative to schedule is that they are not updated in a timely manner. In general, schedule should be updated by the Project Manager every day. Schedule slippages are constantly occurring and unless the schedule is updated daily, the value of the scheduling tool dissipates. Since the "Critical Path" is constantly changing as tasks are completed or the estimates adjusted, it is critical that the schedule be updated frequently.

## **Costs**

There are almost always three big questions with every project, which are: (1) when is it going to be done? (2) What is it going to do? (3) What is it going to cost? Projecting costs have been like throwing darts at a board that is randomly moving in all directions, except being blind folded. We have all heard of the projects that were supposed to cost X yet the final cost were some huge factor of X. Whether it is an IT project, a construction project or a green project, cost has always been extremely difficult to estimate. What is needed is a new method for estimating costs that organization's can depend on and which the individual requirement costs can readily be determined.

The reasons costs help contribute to project portfolio failures is their very inaccuracy causes organizations to make bad decisions because of faulty information. Often if we knew what a project would actually costs, we would never do the project, or in the reverse if we knew that we could implement a project for significantly less than what was estimated, it would make sense to move forward and implement the project.

## **Workflow**

In a project it is critical that everyone knows what is expected of them. This should occur daily, since what was expected last week as the environment changes may be significantly different than what was expected today. In today's world it is usually beholden upon the Project Manager to keep his project team employed with tasks. This is often a daunting task with typically many hours of project team members left on the table (so to speak) waiting for their assignments.

## **Productivity**

Every organization is interested in both measuring the productivity of their project team members and seeing continuous improvement in their performance. The problem is in many organizations project team members often feel their remuneration is not directly correlated to their productivity, rather in how well they play the game and understand the politics of their organization. Currently there is no scientific method to evaluate project team member's productivity. Rather, bosses have an intuitive feeling for how productive each of their staff members are performing, which is often distorted by the individuals own ability to publicize how well they are performing.

## **Resource Allocation**

Optimizing the allocation of an organization's labor resources across all their projects is a major dilemma for nearly every major organization worldwide. How do we use our labor force across all of our projects to maximize our project portfolio ROI is a question that numerous high level executives ponder daily. As consultants working with major projects for organizations we often saw staff members not performing tasks directly related to their assignments. This wasn't a few minutes each day, but rather 30-50% of the time they spent at work. Sometimes there were somewhat legitimate excuses; like my next task is dependent upon employee X and I cannot start until he/she is done. Other times it was because the individual did not see a direct correlation between his/her productivity and their remuneration, so why work hard. Another problem with current allocation schemes is the difficulty (red tape) in obtaining new resources after the project is launched.

How does EPPORA solve all these critical problems? Well let's just look at EPPORA's major features, which include:

**Problem**

**EPPORA Solution**

Project Selection

Instead of ranking projects by using two criteria (cost and ROI) EPPORA supports the use of 23 built in criteria and allows the addition of organization specific criteria to be used during project selection. Each criterion contains an importance factor and organization experts are tasked to evaluate projects for the criterion for which they have responsibility. Providing a more scientific evaluation, the ranking of projects is continuous throughout the year.

Requirements Specification/  
Maintenance/Analysis

EPPORA provides a new method for specifying requirements that helps assure there are no ambiguities. It is hierarchical and is conducive to creating requirements that are understood the same by all stakeholders. In addition, every specified requirement is analyzed to assure it does not contain ambiguous information which causes multiple interpretations. EPPORA also helps assure each requirement is testable. Only the designated Business Analyst and/or a Project Portfolio Manager for the project can specify and/or update the requirements.

Project Schedule  
Specification/  
Maintenance/Analysis

EPPORA like Microsoft Project, Primavera, Niku Workbench, etc. provides a scheduling tool. The two major differences in EPPORA are that (1) EPPORA analyzes the schedule to help assure that whoever created/updated the schedule is following industry standard practices, and (2) instead of assigning actual individuals, the project schedule creator assigns labor categories to each low-level task. Only the designated Project Manager and/or a Project Portfolio Manager for the project can specify and/or update the project schedule.

Project Cost Estimation

If you think about what defines a project, it is obvious it is the requirements. When you then say what does it take to accomplish the requirements, it should be the schedule tasks? Thus, EPPORA supports the mapping of each low-level requirement to one or more low-level schedule tasks. When a mapping is made, a percentage is specified as to what part of this low-level project task is related to implementing this low-level requirement.

Workflow

Whenever a user logs into EPPORA he/she is provided the entire assigned project tasks for the current allocation period. The list of tasks is updated daily. The default allocation period is for the next twenty-one days but can be changed to anywhere from fourteen to seventy days. The list of project tasks is in chronological order relative to the task start date.

Testing

EPPORA supports the mapping of each low-level requirement to a set of test cases verifying the functionality, diagnostic and performance of low-level requirements.

Warning Messages

EPPORA has over thirty triggers (events) that cause it to send a message to the designated and/or appropriate project personnel. Examples include a late deliverable or late milestone or a projected late deliverable or projected late milestone.

## **Problem**

Scientific Labor Productivity Determination

## **EPPORA Solution**

Instead of a Project Manager assigning an individual to a project task, the Project Manager assigns the needed labor category to the task. Each user can support any number of labor categories in EPPORA, but must support at least one labor category. When EPPORA performs its allocation algorithm and assigns a project team member to a low-level task that is estimated to take 20 hours and the project team member does it in 10 hours, his/her productivity for that task is 2.0. If the project team member accomplishes the task in 40 hours, the productivity for that task would be 0.5. As a project team member completes multiple tasks for a labor category, one obtains a reasonable approximation of their productivity for the supported labor category.

Optimized Resource Allocation

Instead of a Project Manager assigning the given staff members to his/her project, The Project Manager assigns labor categories to the low-level tasks. EPPORA assigns the actual labor resources by allocating the most productive resource for the required labor category to the most important task. Allocation occurs at the end of business day in EPPORA. EPPORA creates an ordered list (by importance) of all project tasks that shall occur in the designated allocation period (default once again is 21 days) for all projects in its portfolio. EPPORA then assigns the most productive resource available to the most important task for the task's required labor categories. There are multiple exceptions, including partially completed tasks receive the same actual labor resource, Project Portfolio Managers can assign specific individuals to specific project tasks, actual project experience can change assignments, critical path tasks can be more important than non-critical path tasks, etc.

**So what is it about the EPPORA methodology that is superior to the Waterfall or Agile methodologies?** EPS believes it is the following:

1. The EPPORA methodology includes a far superior method for determining the projects an organization should be funding (implementing). The reason EPPORA is better is that:
  - a. It includes over 20 additional criteria for selecting the projects.
  - b. It allows organizations to add their own criteria.
  - c. It supports the organization's experts to evaluate each project relative to each criterion.
  - d. It allows an organization to determine the importance of each criterion.
  - e. It provides for continuous evaluation throughout the year as opposed to once or twice a year.
  - f. It eliminates political favor and prejudice.
2. EPPORA continuously calculates the productivity of each staff member as they complete project tasks. This computation is used in resource allocation (see number 3 below) and also allows management to determine financial rewards (salary and bonuses) based on productivity instead of hear-say and intuition. It will also tend to make the individuals work harder in knowing that their remuneration is based on their productivity not on their being a friend of management.
3. EPPORA's automatic allocation of actual staff members to project tasks every day assures that an organization's most important tasks are being accomplished by their most productive staff members. If increased project ROI is critical to an organization, than this feature is a must for every organization conducting multiple projects concurrently?
4. EPPORA's continuous analysis of the requirements helps assure that every requirement within an organization's project portfolio is unambiguous. This means all individuals (stakeholders) involved in the project have the same understanding of what the requirement specifies. In addition, by providing virtually instantaneous cost for any requirement, project management can make more prudent business decisions about the inclusion of new functionality.