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Best Practices for Tracking Six Sigma Projects

BPM Solutions for Project Management

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1.   Audience

This white paper showcases how a business process management workflow can contribute to the success of Six Sigma projects, which are part of the strategic process improvement framework in an enterprise, by automating project tracking. This paper will also provide insights for managers of other types of projects who have limited resources and are considering a low-cost solution for tracking the progress of their projects based on standardized stages, milestones, and phases. In this paper, we will also discuss how process workflow can help control the pacing and timing of project delivery, as well as provide a way to store and access critical project information.

2.   Background and Business Case

Due to emerging market demands, banking has to keep up to date and continually deliver more value. This includes such things as being able to deliver IT-enabled front-end solutions that can make banking and financial services for loans, credit cards, negotiable instruments, and so on easier, faster and more accurate for clients. The back-end operations also need IT-enabled tools to handle the incoming transaction volume, and to manage efficiency and productivity in processing actions.

Because of these demands, a bank's IT unit is often very much pre-occupied with developing strategic and mission-critical applications for clients and for the bank's operations. However, there are also other supporting units in the bank who have not-so-mission-critical requirements; for example, to provide employee services, support business units' administrative services, and develop other business initiatives. Projects such as creating processes for new employee on-boarding and off-boarding, for purchasing from requisition to delivery, for tracking corrective actions, and the like are delayed or shelved because IT puts mission-critical projects at the top of their priorities.

These kinds of projects do not disappear as time goes on, because they are genuinely needed. They can provide real benefits such as time savings for support units, reduction in overhead labor cost,

and may even also help in risk reduction. But as there is strong competition within the bank for limited IT-resources to deliver much-needed technology-enabled solutions, support units' needs are too often are not addressed and the project list for IT keeps getting longer and longer.

The projects mentioned above are generally automated process tracking which could be addressed by BPM workflow tools. They don't need the same type of complex data querying that banking financial systems require. All they basically need is automation that will enable streamlining, and tracking flows or information passed among the various handlers, reviewers and approvers of the different business units they support.

As an example, we will take the case of a requirement for tracking the progress of a bank's process improvement initiative which includes a number of Six Sigma projects. Six Sigma is part of this bank's strategic process improvement program. These projects usually run over 6 to 8 months and follow the general Six Sigma DMAIC (Define-Measure-Analyze-Improve-Control) or DMADV (Define-Measure-Analyze-Design-Verify) methodology. The bank typically runs around 50 of these projects, and there are only 3 to 5 supporting Black Belts for all of them. Each Black Belt spends around 20 hours per project per month reviewing its progress and coaching the project leaders. Thus, manually tracking each project's status and related concerns is a tremendously time-consuming task for the Black Belts.


Six Sigma Project Management Head Master Black Belt
Oversees the status of Enterprise-wide projects
Manages stakeholders and Project Champions
Master coach of Black Belters
Ensures timely delivery of project value

Black Belt PM Officer
Program Manager of enterprise-wide Six Sigma projects
Coaches project leaders on Six Sigma methodology

Champion
Ensures that the project is going in the right direction

Black Belt Green Belt
Project Leader runs project teams
Submits project online for review and approval by PM and Champion from the business unit

Figure 1. Six Sigma Program/Project Management Structure

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The general requirement in managing these projects is to track the status of the project as it goes through the required DMAIC phases, along with its associated documentation. The Six Sigma program requires an intranet web-based tracking system to facilitate tracking of project progress including approval to proceed to the succeeding phases. However, since the Six Sigma program is a non-critical initiative, IT development of this system has taken the back seat to other, more critical, banking system needs.

This is where a BPM tool becomes advantageous for project workflow tracking.

First, recall the project life cycle of a Six Sigma project.

DEFINE

- Define business case and the problem to solve
- Create the project charter together with the estimated project saves
- **Project tollgate review** of the planned project

> Project Tollgate Review

> Estimated Project Saves

MEASURE

- Measure the process performance
- Deliver data collection plan and measure of process capability

ANALYZE

- Identify the root cause(s) from the many potential causes
- Deliver Fishbone diagram and statistically validated cause analysis
- Re-validate complexity of the root cause and project scope
- **Project tollgate review** on the significant root cause(s) from the trivial many potential causes

> Project Tollgate Review

IMPROVE

- Identify the best solution addressing the validated root cause(s)
- Perform and monitor results of the pilot implementation of the improved business process
- **Project tollgate review** on the root causes and the effectiveness of the implemented solutions

> Project Tollgate Review

> Pilot Saves

CONTROL

- Monitor results and ensure sustainability of the improved process
- Turn over the ownership of the improved process to the process owners
- Close the project with the Project Champion
- **Project tollgate review** on the project against business case and agreed deliverables for closure of the project

> Project Tollgate Review

> Actual Saves

Figure 2. DMAIC Process Flow for Six Sigma Project Tracking

The general, high-level steps of the DMAIC methodology are:

- Define - creation of project charter
- Measure and Analyze - identification of the causes of defects/inefficiencies and validation of root cause(s) with data
- Improve - implementation of the proposed improvements focusing on solving the root cause(s) of defects/inefficiencies
- Control - sustaining the results of the improved process

At each phase of the process, the project leader needs approval of the project storyboard documentation, through a project tollgate review, in order to move to the next phase. These tollgate reviews are conducted with:

- the Six Sigma program manager regarding the status of the project depending on the DMAIC phase
- the project Champion regarding the results of the project; and
- the project stakeholders so they can provide input on project direction and help resolve risks and issues.

Thus, in the process design, you will see there are repeating reviews-and-approvals for every phase through the tollgate reviews as the project progresses.

In this white paper, I'll explain the basics of the automated workflow and also show, using Bonita Open Solution, how a BPM process can meet the requirements for project tracking including review and approval of the Six Sigma project documentation.

3.   Features of BPM for tracking Six Sigma projects

The diagram below shows a full Six Sigma project with all the required phases. The process of Six Sigma project execution is highly repetitive once the project is kicked off, through each phase from *Define* to *Control*.

What goes on in a phase as it goes through the designed workflow will be discussed in more detail in the following sections.
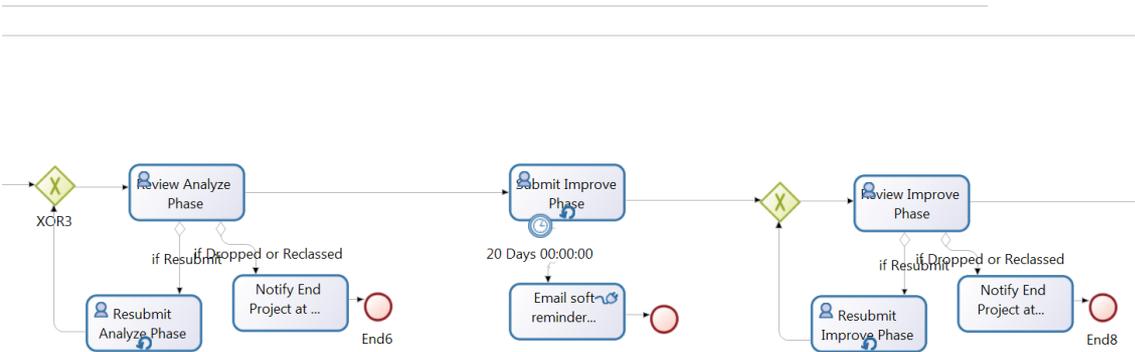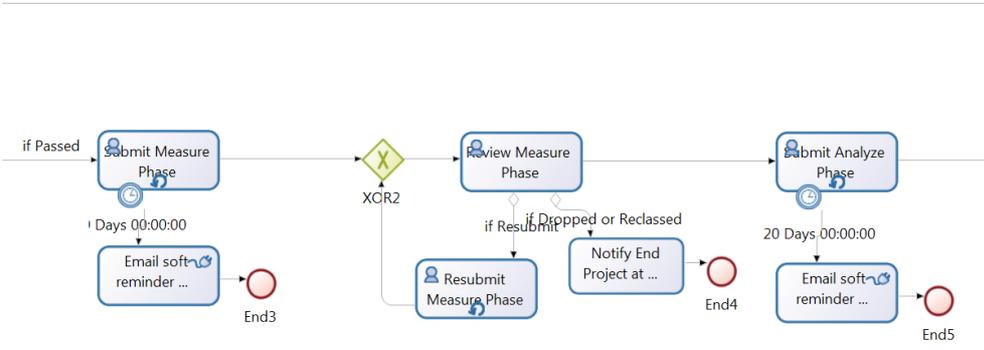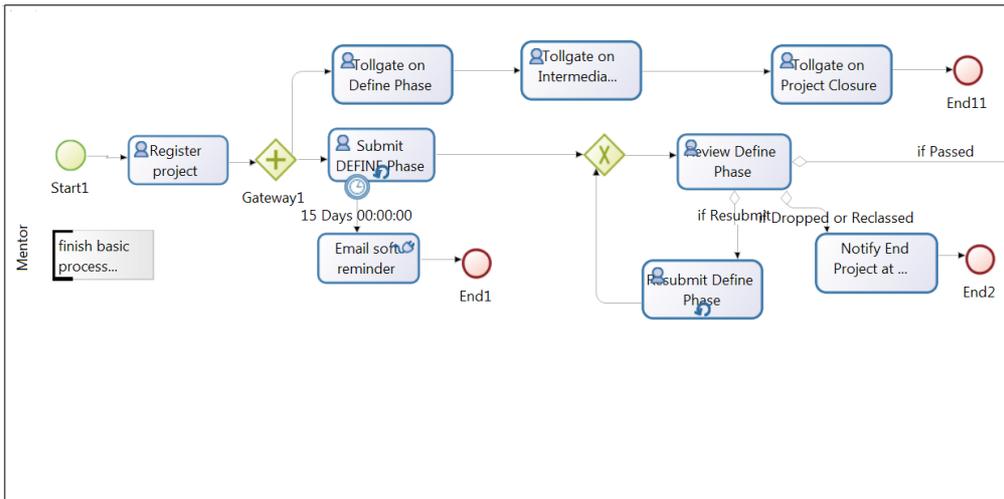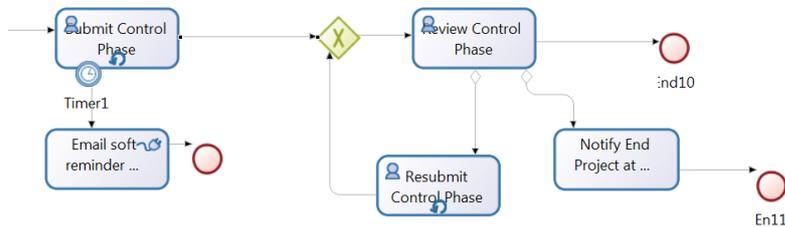
Figure 3a-d. Process flow template for a Six Sigma project

Let's look at the Six Sigma process example. After a project has been confirmed, the Six Sigma Project Management Office (or Six Sigma Program Manager) registers it in the project tracking system and this triggers the rest of the process.
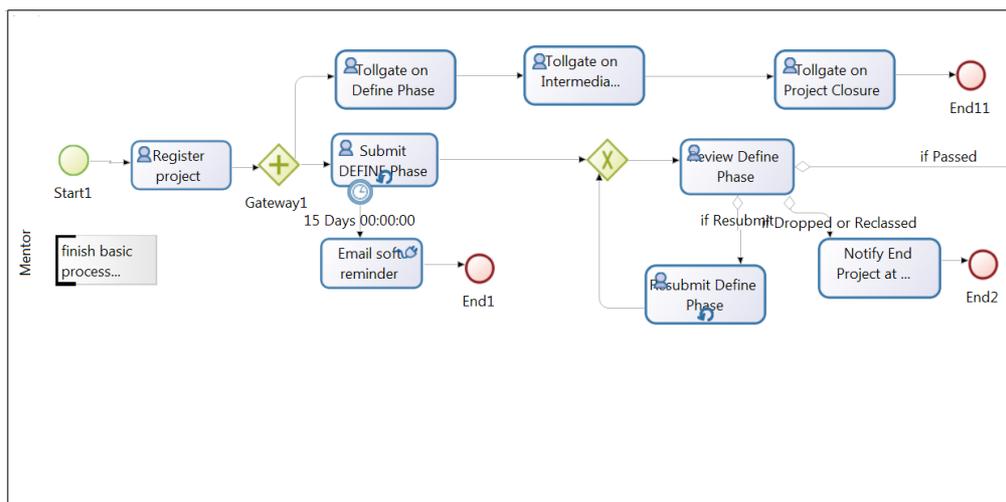
Figure 4. *Define* **phase of a Six Sigma project**

Thus the process starts with registration, and then the project is defined according to the Six Sigma criteria. During this *Define* phase, the project leader (who is either a Black Belt or a Green Belt) is required to submit documentation which is needed for the approval/completion of this phase so it can move to the *Measure* phase.

In this process, a *timer boundary event* has been added to the "Submit Define Phase" stage and is represented graphically by a clock icon in the process diagram. This design in Bonita Open Solution is executable; when this process is run, an automatic email reminder notification is created after a certain number of calendar days have passed without action. This notification is sent to the project leader as a reminder to submit the updated storyboard. In this specific design, only one email is

sent, but the process might be designed in such a way that it sends out the email reminder at regular intervals until the required project report is finally submitted for review and approval to move on to the next phase.[1] The Bonita email connector service is helpful here because it reduces time spent on following up and reminding the project leaders to update their Six Sigma project status.

Project phase review and approval requires specific Six Sigma project documentation. That documentation can be uploaded at the "Submit *Define* Phase" stage (see Sections 3.1 and 3.2, *User interface per phase: Web forms* and *User Experience*, below). The workflow can be configured to save the relevant process information and data into an external database (in this case, MySQL).

After the *Define* phase of the project is completed and submitted for approval, it goes through the process of desktop review by the project Black Belt Master or Champion before it is approved to proceed to the next phase.

Tollgate reviews are also conducted separately or in parallel to formally approve the project's movement toward project closure.

There is a loop shown on the "Submit *Define* Phase" and "Resubmit *Define* Phase" stage (shown by a circular arrow in the diagram in Figure 3) in each phase, because the project cannot proceed until it is endorsed by the reviewing project coach.

This same sequence is repeated in the subsequent project phases, from *Measure* to *Control*. Therefore the portion of the process shown in Figure 3 is essentially repeated until the project end.

3.1.   User interface per phase: web forms

BPM workflow implemented with Bonita Open Solution provides a way for user interaction through web applications and a task-list interface.

Below is a view of the web form design used for project registration. It allows for the entry of relevant project information into fields defined to manage it as standardized project execution process data.

This web form contains mandatory fields for the project title, names and email addresses of the stakeholders, a means to upload a file as an attachment, and a "remarks" field.

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[1] This has not yet been developed but would be a useful extension.

Figure 5. Web form to register a Six Sigma Project

When the project leader is ready to submit the Define Phase, they are required to supply a significant amount of critical information about the Six Sigma project.
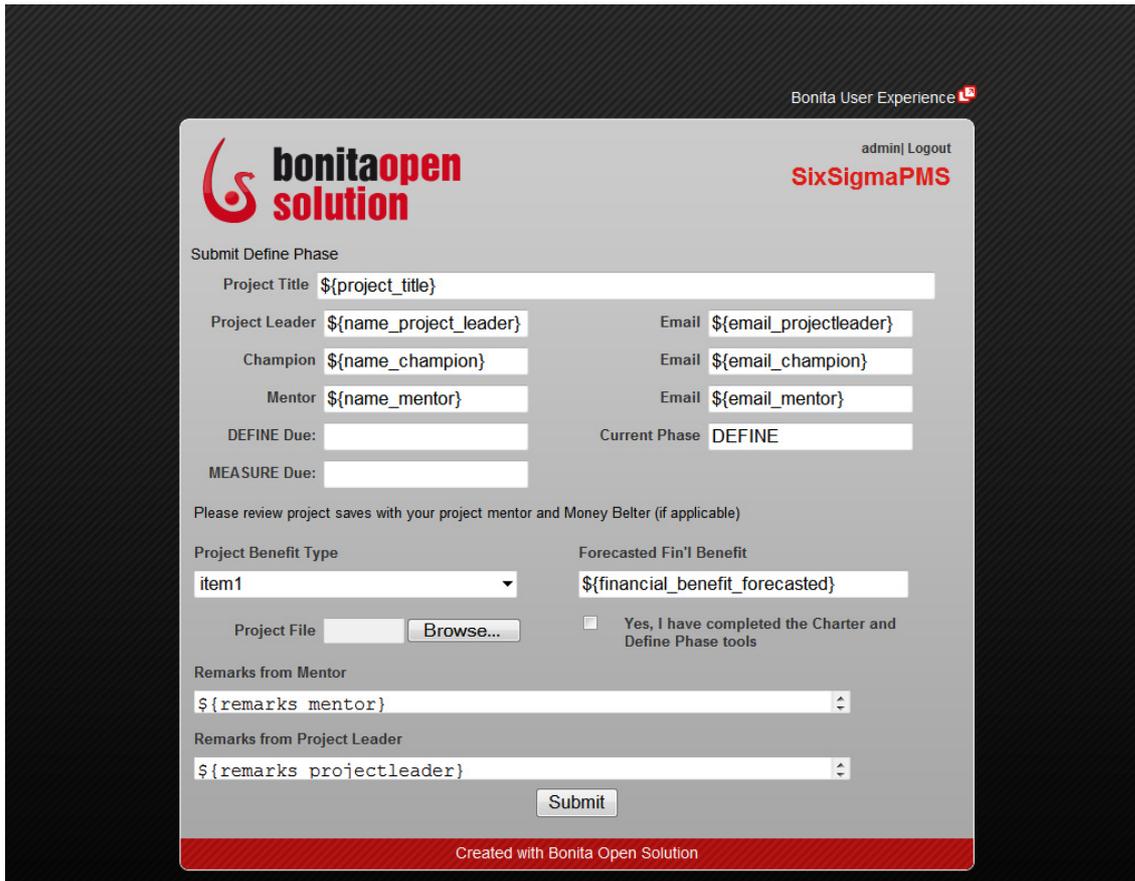
Figure 6. Web form to collect data and documentation for DEFINE phase approval

For example, the timelines for each subsequent phase are the critical basis of project status reporting. The timeliness of a Six Sigma project is measured against the deadlines which are agreed to by the project Champion and stakeholders. Ensuring that the projects are updated and completed on time is critical as their value also depends on timely delivery. There are also fields for entering the information related to the estimated project saves in terms of amount and the type.

All this information about multiple projects, when tracked manually in a spreadsheet, simply takes too much of the Program Manager and supporting Black Belt's time. Thus, automating them with a BPM process helps greatly in simplifying the project management process.

3.2.   User interface per phase: User Experience inbox

Bonita Open Solution provides real-time project status information in the User Experience environment. Instead of a spreadsheet to track Six Sigma projects, there is a web-based project interface that follows the DMAIC project process flow.

Since the project leader, the supporting Black Belts and the Six Sigma Program Manager can now directly access the data and uploaded documentation through the User Experience inbox, there is

less time spent on follow-up and back-and-forth emailing of the file attachments, especially for review and approval.

Important comments based on the project review can be entered in the porcess comment feed so that the project leader can do the necessary updates or corrections in the submitted project storyboard documentation.
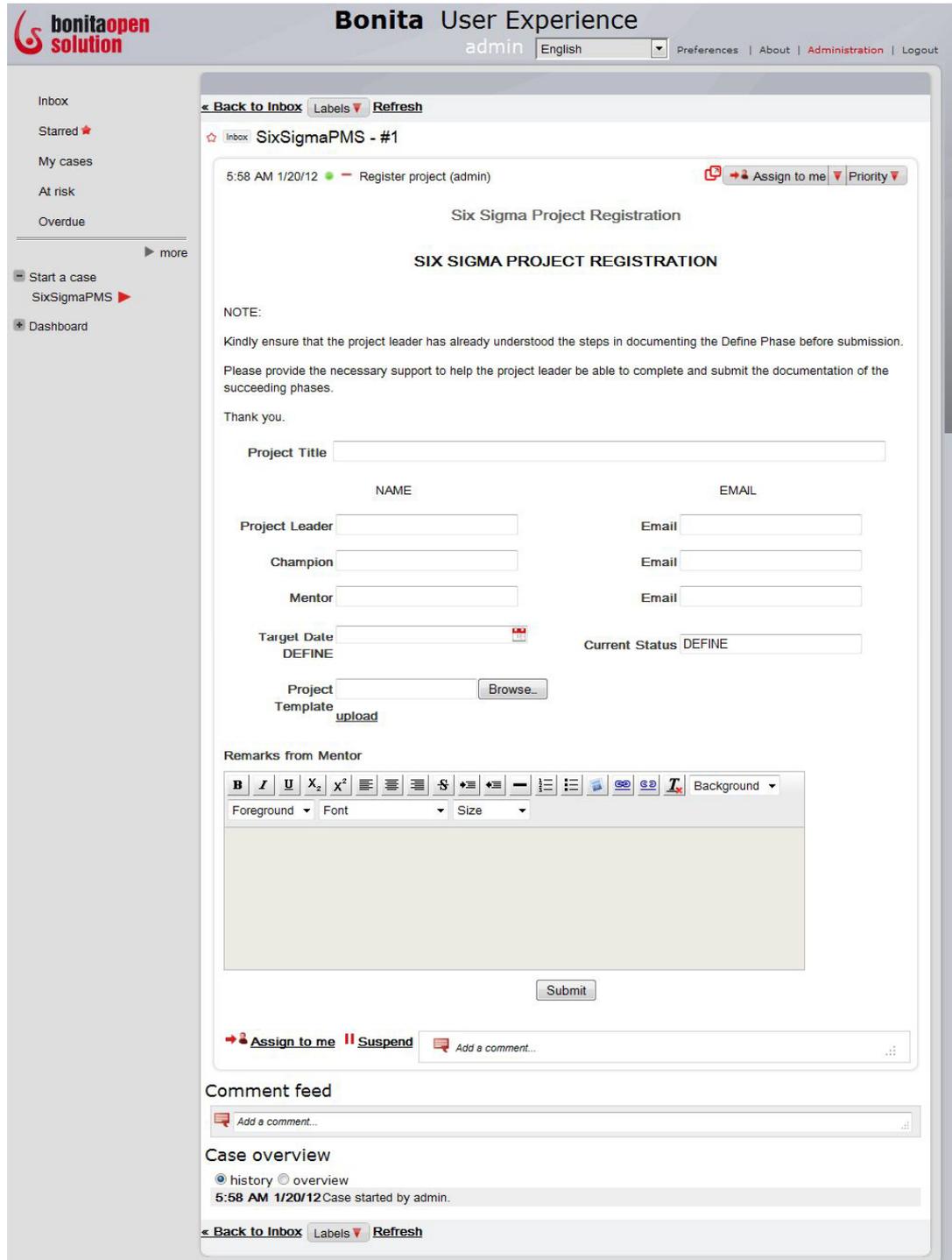
Figure 7. User Experience inbox allows project stakeholders to access data directly and add information

3.3.   Other extensions to complete project tracking

In addition to what has been specifically discussed in this process design, a complete project tracking should also have:

- **Automated generation of dashboard reports**, via the Jasper Report server, that uses the data stored in the external database. This would require running a separate Jasper Report server in parallel with the workflow. The Jasper report server can automatically create the customized dashboard reports based on a created report within iReport. This is useful for the BOS community version which does not have customizable KPI reports.
- **Automatic email reminders** sent out based on the dynamic target submission dates per phase supplied by the project leader. (This extension is possible with Bonita Open Solution; it requires some custom development that I have not done yet.)
- **A document repository** or document management system to store all the attached project files submitted through the workflow process, for example, with the use of Alfresco. This is possible using the Alfresco connector built into Bonita Open Solution. The Alfresco connectors allow saving and retrieval of the e-files to and from the Alfresco document server which can also run in parallel with the BOS workflow server.

4.   Summary

BPM directly addresses the need for a project tracking system that can be implemented without intensive IT support. In this case study, we looked specifically at how a process implemented with Bonita Open Solution is used to track Six Sigma projects, but this example can be useful to other projects which use a standard milestone planning and execution framework.

- Project tracking can be automated, where project management methodology has standardized milestones and progressive phases as is the case for the process flow of Six Sigma DMAIC.
- With its easy-to-create web forms, form objects, data mapping, and status dashboards, we were able to use Bonita Open Solution to achieve an effective solution which uses Zero-Coding and can truly be considered as Rapid Application Development (RAD).
- IT needs less effort and time to create an effective project tracking system as it does not required programming everything from the ground up.
- Implementation of project tracking can be done incrementally, starting with workflow and forms and then adding extensions such as reports and dashboards, dynamic reminders, document management, and so on. Not only is this incremental approach less risky for the enterprise, it also results in a solution which is very cost-effective when compared to the alternative of acquiring an off-the-shelf project tracking solution.

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