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# Empowering Project Managers in Enterprises - A Design Thinking Approach to Manage Commercial Projects

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**Abstract.** Lack of insights into potential issues in enterprise projects is a major problem that leads to cost and revenue targets being missed. This not only lowers project margins but also adversely affects customer relationship and future businesses for the organization. Many oversights occur during the project execution phase, especially for large scale enterprise projects, where the project manager spends a lot of time in proactively ensuring various deadlines are met. Commercial Project Management is an Enterprise solution from SAP that provides Project Managers an overview of the potential issues along with insights into their impact on margin, statuses and several key performance indicators. This allows Project Managers to ensure smooth delivery while meeting project targets, thereby gaining time to hone skills needed increase profit for their organizations. This paper explains how SAP adopted the Design Thinking methodology to build this product that addresses their varied customer's needs from diverse industries.

**Keywords:** User Experience. Project Management. Design Thinking. Enterprise Software. Formative Usability Testing. SAP Fiori User Experience.

## 1 Introduction

Project managers are often in firefighting mode as they lack insights into upcoming issues that could impact deadlines and thereby the overall project deliverable. They run the risk missing the revenue targets and end up being answerable for the consequences to senior management and customers. Hence, their biggest need is to stay up-to-date and gain insights into potential issues so that they can be proactively handled [1]. In the Project Management Lifecycle, the project manager is involved in Project Bidding, Planning, Executing and Monitoring [2]. During the execution and monitoring phase, he sometimes misses generating a Debit Memo Request to inform the Account Manager to bill the customer according to the terms of the contract. He can also overlook pending invoices for a customer leading to aggregating debts. Payment collection could be one time or recurring. In either case, missing a deadline could have a negative impact on the Revenue. Likewise, Project Managers need to keep a track on the delivery of Purchase order items. A delay or reversal of goods or services could mean that the project

cannot start on time or there is an immediate need for alternate solutions. This can lead to unplanned increase in costs. In the existing Commercial Project Management (CPM) [3] Enterprise solution, all the information about Purchase orders, Billing, Cost and Revenue are available in different modules and the process of manually searching for each of this information is very time consuming for the project manager. There was an imminent need to help Project Managers with timely information that can help them meet targets. This would also give them enough time to focus on bringing value and business to the organization. To address this challenge, we adopted the Design Thinking Methodology (DT) [4] with our customers illustrated in Fig. 1. We conducted Co-innovation Workshops and remote sessions with customers and all stakeholders to understand user needs and define concepts. The final prototype was tested in the annual Americas' SAP Users' Group (ASUG) in a Formative Usability Testing environment. Feedback from the test results were incorporated into the product that was finally implemented and released to the customers.

## 2 Design thinking Journey

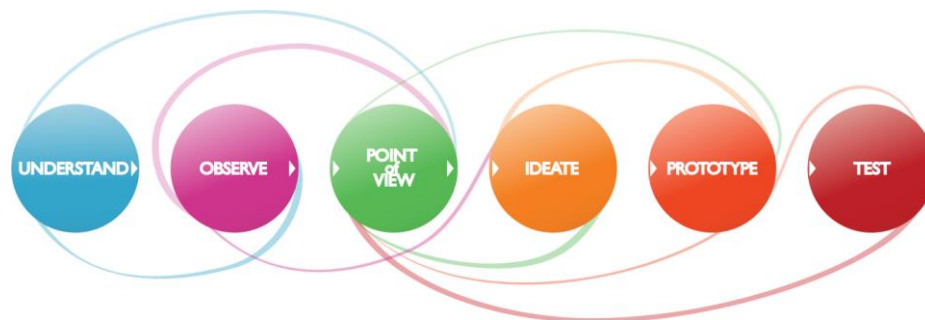


Fig. 1. Design Thinking Process; adapted from [4]

Since the past 5 years, SAP has adopted DT methodology [5, 6] to co-innovate with their customers during the product development lifecycle. DT is a flexible framework that allows people with diverse skills and professional backgrounds tackle complex problems and arrive at a set of ideas that can be prototyped and tested with customers prior to development. Human nature is to immediately try and solve a problem that presents itself. DT emphasizes to spend time in understand the problem from multiple perspectives and narrowing down to the core issues before proceeding to solve them. This not only get the whole product development team aligned on the product goals but also ensures that the correct problem gets solved. This is possible because End Users and their perspective is key to DT. The process kick starts in 2-day workshop with

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<sup>1</sup> Design Thinking Methodology is a problem-solving methodology that was originally used to solve Business problems by David Kelley, founder and chairman of the global design and innovation company IDEO.

customers and the engagement continues throughout the product lifecycle through calls until several weeks where ideas and prototypes get validated. However, there are some challenges in executing this methodology in the world of cross located enterprises.

- Access to End users is not always easy especially in Large enterprises. Many times, in the world of on premise applications, the IT team of customers is the direct point of contact and it takes some effort convince them to include the end users into the discussion by letting them take some time off from their regular tasks.
- The DT tools and techniques need a certain amount of time to be carried out. Customer's time is precious and often there is a need to improvise on the techniques and come up with a proposal that works given the time and audience.
- Existing customer may also see this an opportunity to engage with us to address their current concerns, sometimes technical. While this is important, the focus should not be lost. There is a constant effort to channel the discussions in the right direction while ensuring customer concerns are also addressed.

Some learnings from conducting Design Thinking workshops, that could be applied to other products adopting this methodology is the importance to be flexible with the process and improvise. It is also important to manage customer expectations without losing focus. Sometimes, customer may need to see early design concepts as a proof of our commitment and knowledge in the domain. Though starting with solutions is against the design thinking philosophy, it helps in triggering discussions and getting customers to open up with their requirements. As time is always a constraint, planning ahead for research based on user profiles helps arranging meetings, calls efficiently.

### **3 Understand and Research**

We conducted two Co-innovation DT workshops with our customers in the Services industry who were amongst the top 5 firms in Data Warehousing and Auditing in the United States of America (USA). Prior to the workshop at customer's location, we had a few calls with them to understand their problems and expectations. This helped us identify the need for a DT workshop to get to the core problem. Based on this, we prepared high level designs. Though it is not theoretically recommended to enter a DT workshop with a solution, in enterprises this approach often helps in motivating our customers to spend their time giving us valuable insights. The high-level designs also helped to kick start the discussions and paved way for an in-depth discussion of the product ecosystem, persona 2 [7], challenges and goals.

Each DT workshop had around 20 participants from the customer's end with diverse expertise like Project Managers, Business users and the IT experts. From SAP, we were a team of 7 comprising of roles like Solution Owner, Product Owner, User Experience Designer, Technical Architect, Lead Developer and SAP Consultants. The diverse set

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<sup>2</sup> Persona is a fictional character derived from user interviews to determine the user type for a product which helps understanding user goals, environment, needs, pain points to achieve certain tasks. This helps in guiding the solution to meet the user expectations.

of experts helped us look at the product holistically from all perspectives like business needs, end user needs and high level technical challenges. While the plan was to have one to one end user interviews, we altered it to focus group [8] discussions to make the best use of everyone's time and knowledge. This helped us empathize with the key user of our product – the Project Manager who handled multiple projects, travelled often to meet their customers, had to balance budget, time and quality of the project. Research also helped us understand the severity of the issue. To help their project managers meet their goals, one of our customers had invested time and money in hiring a team of support staff who assisted project managers in data entry. They also built an in-house complex excel based solution that fetched information from various modules of SAP's software and showcased them in a unified screen. However, this not only added to the company's costs but also left room for delay and errors.

## **4 Synthesis**

After both the workshops, the SAP team had a lot of research data from customers who managed their projects very differently and had stark contrasts in terms of the number of projects handled by a manager and the typical duration of each project. A main take-away was how 'one size fits all' approach would not work for all our customers. While at a high level our customers had similar needs, the product also needed to be flexible enough to allow a lot of customization that would cater to the business of SAP's diverse customer portfolio. Currently, the project managers found the software very demanding in terms of usability and the time taken to access information. They had to proactively look for information and status updates thereby not having access to real time data upfront. Many times, they would perform the same action on a group of projects like updating status or changing the key contact person. Currently the product required them to manually update these for one project at a time. This was again causing a lot of frustration for project managers.

## **5 Ideation**

After spending an extensive effort in creating design concepts, the designs underwent a series of design checks on SAP standard FIORI design guidelines [9]. During our brainstorming sessions to come up with ideas, it also became clear that we were looking at a suite of applications that can be accessed from a Fiori launch pad. These apps needed to be linked with each other as well. We proposed a unified dashboard view containing the list of all projects a manager is responsible for along with certain KPIs for each that would give insights into potential issues. We included customization capabilities. Personalization of filters was provided, ex: Projects belonging to a certain customer from a certain geography. There was also a solution provided to take bulk actions on a group of projects. From the Dashboard view, based on the insights the manager received he could investigate in detail by navigating into a dedicated Project View that provided a 360-degree perspective of the project and its performance. The dashboard informed the project manager about the debt and receivables, open purchase

orders and requisitions that can potentially impact project margins. We came up with a set of four applications - Multi Project Overview, Single Project Overview, Billing and Receivables, Procurement Overview as shown in Fig. 2. a,b,c,d.

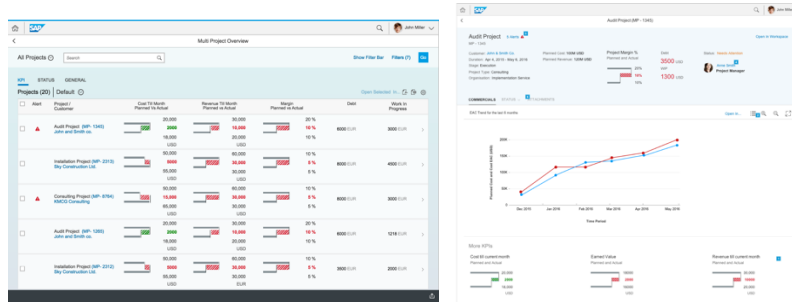


Fig. 2. a) Multi-project Overview; b) Single Project Overview.

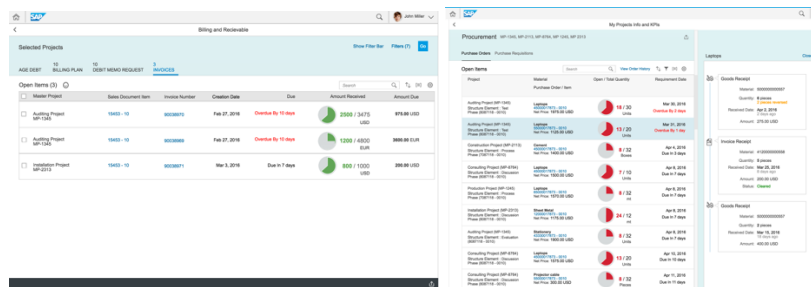


Fig. 2. c) Billing and Receivables; d) Procurement Overview.

## 6 Usability Evaluation

A usability study was conducted at ASUG on May 2016 at Orlando, Florida, USA. It involved users being asked to perform tasks to evaluate the product's ease of use, discoverability of the features and user's perception on the overall experience of the product.

### 6.1 Set up and Procedure

Each usability test was conducted by a moderator and a note taker for 90 minutes. The test began with an introduction that explained to the participants the nature of the test and the method of thinking aloud [10]. The users were given clickable prototypes on a laptop for the test. Each session was recorded using Camtasia 2 software on an Apple MacBook Pro laptop. Real-time screen recording and video/audio recording helped in capturing user's feedback and emotions. The test started with few background questions to deep dive into user's persona and his daily work environment. The users were then asked to complete various tasks. Moderators noted the level of assists that users

needed to perform the task. User also rated each task on a scale of 0(Easy) – 5(Difficult). Post-test each user was asked to fill a post-test survey where the user had to rate the task on a scale of 0-7 on various measuring parameters like the ease of use, usefulness, consistency, terminology, recommending to others.

## 6.2 Participants

The usability test was conducted with a sample size of 11 users. Recruitment of users was done as part of the event. 11 out of 12 registered users attended the test. 5 of them were project managers, 4 were project directors, and 2 were independent project management consultants. The set of users who signed up for the testing were diverse in terms of demographics and experience in the domain. On a CPM know how basis 3 had CPM experience as they were CPM's co- innovation customers. Most of them had 10+ years expertise in the industry. 3 of them wanted early peek of the product to be able to sell it to the client.

## 6.3 Tasks Undertaken, Results and Recommendation

**Finding the project with highest Cost Deviation using charts.** Task intent was the user should consider the “Cost till current month “column in the table of multi project overview app as shown in Fig. 2. a and find out maximum delta in a project from the list. Test result showed 10 out of 11 users could complete this task with an average of 2 assists. Average task rating was 4.3 out of 5.

*Recommendation.* Retain the use of charts with semantic colors as the graphical charts with semantic coloring helped users to identify good or bad situations in a project. Severity of this issue was recorded as low.

**Adding additional columns to the table and save a variant of the table.** Task intent was the user should trigger the settings button to open the view settings dialog as shown in Fig. 3. where he can add more columns to the table. He can save the displayed table as a variant from the table toolbar. Test result showed all 11 users could complete this task with an average of 4 assists. Average task rating was 2.6 out of 5.

*Recommendation.* Addition of save button on view settings dialog. The users could identify the settings icon but were struggling to find a save button on the dialog to save a variant for the table. Since there was no save button dialog the task could be completed only with assists. Severity of this issue was recorded as high.

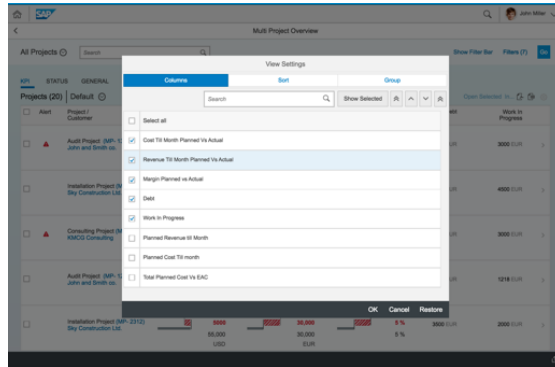


Fig. 3. View settings dialog

**Mass editing and editing content in a table.** Task intent was the user should navigate to third tab called ‘General’ and mass edit the contact person. After that he should add a comment for a status under status tab as shown in Fig. 4.a. Test result showed all 11 users could complete this task with an average of 3.5 assists. Average task rating was 3 out of 5.

*Recommendation.* Design evaluation required to make mass editing more intuitive. The users felt there were too many steps to do a mass update for a contact person. Severity of this issue was recorded as medium.

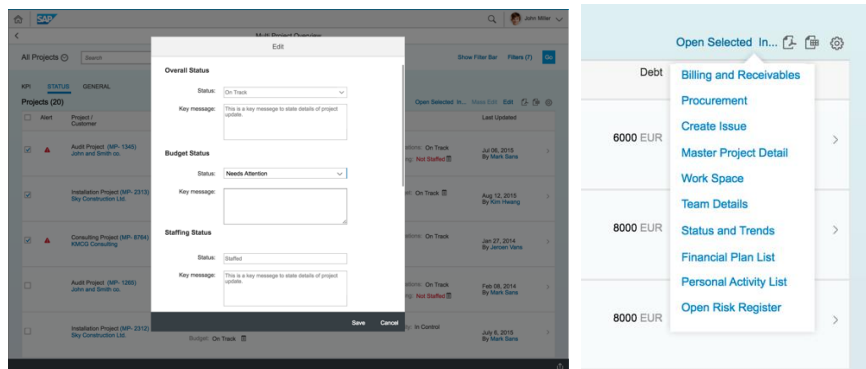


Fig. 4.a) Mass updating of project statuses and sub-statuses; b) For selected projects view data.

**Navigating to other application by selecting few projects from the list.** Task intent was the user should select few projects and click on “Open Selected In” button as shown in Fig. 4.b. to view list of other applications where he can further drill down. Test result showed 10 out of 11 users could complete this task with an average of 4 assists. Average task rating was 3 out of 5.



*Recommendation.* Usage of terminology for the button “Open In” needs to be changed. The terminology used for button “Open In” was found misleading for users resulting in increased level of assistance during the task. Severity of the issue was recorded as high.

**Navigating to Procurement application from Multi Project Overview application and view Purchase order details.** Task intent was the user should select few projects and click on ‘Open Selected In’ button as shown in Fig. 4.b to view list of other applications where he can further drill down to Procurement application. Then user should click on one purchase order from the list to view details. Test Result showed 3 out of 11 users could complete this task with an average of 2 assists. Average task rating was 3.3 out of 5.

*Recommendation.* Usage of terminology for the button “Open In” needs to be changed. After knowing the technique of navigating to other apps from task 4, users could relate to this task and hence required lower level of assistance. Severity of this issue was recorded as high.

**Navigating to detail page of a project from the list of projects.** Task intent was the user clicks on the chevron icon placed at each row of the list of projects as shown in Fig. 2.a to navigate detail page for each project. Test Results showed all 11 users could complete this task with an average of 1 assist. Average task rating was 4 out of 5.

*Recommendation.* No further recommendations as this task was very easily performed by each user. Severity of this issue was recorded as low.

#### **6.4 Overall Results**

The result from the usability tests indicates that the participants were impressed with the possibilities the application offers the aggregated unified view of all key Performance indicators (KPIs) in a single screen and ability to navigate to multiple transactional applications. The users felt the applications were easy to use once they were made aware about the functionalities for the first-time use. The users could not follow many terminologies used in the application. The chart plotted below Fig. 5. shows the post-test survey result based on various parameters.

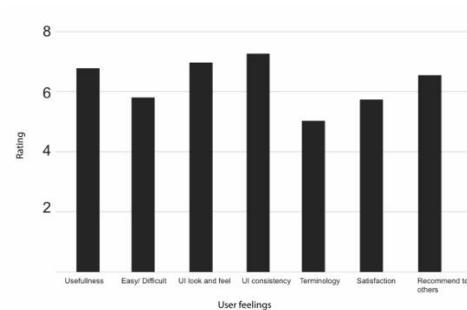


Fig. 5. Post usability test result of the applications as rated by users.

## 7 Conclusion

We designed, developed and released a Suite of SAP Fiori Enterprise Design applications to our customers by adopting the Design Thinking Methodology. Customers have started using these applications in their day to day life. Their project managers are benefitting from the real time KPI driven data that is pushed upfront to them and it helps them to take timely decisions. Usability tests revealed that customers are likely to recommend it to other companies as well.

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