Dynamics 365 - Project Service Automation
Hands On Guide

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Microsoft
9/14/2017
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Introduction
Project Service Automation capabilities in Microsoft Dynamics 365 (online) provide an end-to-end solution that helps sales and delivery teams engage customers and deliver billable projects on time and within budget. Microsoft Dynamics 365 for Project Service Automation helps you:

- Estimate, quote, and contract work
- Plan and assign resources
- Enable team collaboration
- Capture time, expense, and progress data for real-time insights and accurate invoicing

Project-based contracts
Project-based contracts relate quotes and orders to project plans, financial estimates, labor pricing, and billing arrangements, like time and materials or fixed price. The contract highlights key metrics, including profitability and feasibility.

Project planning
Visual project planning and estimation includes predecessors, automatic task scheduling, and views of sales and cost information for time and expenses. You can use the resulting plan in quotes and project contracts.

Resource management
Resource information includes the skills and proficiencies of your workforce. You can view and filter resources based on skills and availability, so you can assign the right people to the right projects. You can also track resource utilization and forecasting metrics.

Time, expenses, and collaboration
Team members can use the web or mobile apps to record time and expenses for multiple projects. Managers can easily approve new entries while understanding the financial implications of the newly-approved items. All team members can collaborate with an Office 365 workspace created for their project.

Project billing
Project invoices reflect the terms of the contract and the approved work and expenses. The financial impact of project work, including costs, unbilled revenue, and invoices, are recorded for use in analytics and integration into financial systems.
Prerequisites

1. Create a trial for Dynamics 365 – Project Service Automation using the following link
   https://trials.dynamics.com/Dynamics365/Signup/

   Just click on “Are you signing up on behalf of a customer or using this trial for
development purposes? Sign up here”. You should be able to use your non domain id to
create a trial instance.
Creating Project Service Opportunity

Navigate to the Project service tab → Sales → Opportunities

This shows the list of open opportunities. Click on “New” button on the command bar.
Add the fields as in the screenshot below and save

Now scroll down to the Opportunity lines. We will add couple of project based lines here. Click on the + sign to the right of the the project-based lines
We will also add one more line for expenses as fixed billing method.

We can also add products to the same opportunity using the product based lines.

Let’s navigate to the product catalog by clicking on Settings → Product Catalog → Families & Products
You should be able to see the pre-existing products, families and bundles. Navigate to or Search for “Subscription Software” and open it up.
Please note that subscription software has been set up with some properties

Close it to get back to the view and with Subscription Software selected, click on add a new product. We will be adding Dynamics AX licenses to this product family.
Scroll down and add a price list

And select the price list as default price list on the product.

Click on “Publish” to make product active.
This product needs to be added to the pricelist used by the opportunity if it has to show up in the opportunity. Navigate to Project service → Price lists and find & open the “US Bill Rates 2016” Price list. Scroll down to the Pricelist Items and add the Dynamics AX licenses.
Now navigate back to the opportunity and add the product created to the opportunity, navigate to the product based lines and add the Dynamics AX Licenses with quantity of 50.
### Dynamics AX Implementation

#### Product-based Lines

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Properties</th>
<th>Quantity</th>
<th>Unit</th>
<th>Sales Price</th>
<th>Sales Amount</th>
<th>Customer Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamics AX License</td>
<td>E0A</td>
<td>6.0000</td>
<td>Standard User</td>
<td>$100.00</td>
<td>$2,160.00</td>
<td></td>
</tr>
</tbody>
</table>

Total Amount: $14,250.00

#### Quotes

Open
Quote Creation

In the opportunity, scroll down to the “Quotes” section and click on + to create new quote.

Go to the quote lines

Open “consulting and implementation” and mark the include expense as No. This will make sure that expenses are not charged on this project.

Open the “Expenses” and mark the include time and include fee as No. This will make sure that only expenses are charged on this project.

Open the Consulting and Implementation Quote line and create quote line details as shown below.
Open the Expenses quote line and create quote line details as shown below.
Scroll to the profitability analysis section on the quote and refresh the fields Total Chargeable cost and Total Non Chargeable cost. Also if the charts are not displaying, click on “Click here to load the charts” link.
Now scroll to the "Comparison to Customer Expectations Section"
Now let’s convert the quote to a contract or an order by marking it as Won. A project contract is created and all the fields from quote are copied to the order. This action also makes the quote as read only.

A project can be attached to either quote line or the order lines based on the practice of the organization. Here I will be creating and attaching the project to the order lines shortly.
Now scroll down to the “Contract Lines” and click on the “Consulting & Implementation” in project based lines. See that the project field is blank. Click on it and create a new project. Enter the relevant details by selecting Project template as “Agile Template”.

Comparison to Customer Expectations

Key Metrics

Estimated Completion: 9/30/2017
Requested Completion: 10/31/2017
Endeavor To Finish Early

Customer Budget: $129,000.00
Quoted Value: $112,000.00
Within Customer Budget

Comparison To Customer Budgets - By Quote Line

Comparison To Customer Budgets - Overall Quote
Note that the Business process bar readily tells you which stage of the project you are at.

Now click on the Workbreak down structure in navigation. Give it a few seconds to load.
Here you can make changes to the project plan for example increase the design effort hrs to 40 and the develop hrs to 400.

From the navigation bar, click on the project estimates to look at the estimates in Time phase by cost, effort and sales manner or just in grid.

Go back to the project and click on OPEN IN MS PROJECT. If you have installed the PSA addin for MS project then this should open the MS PROJECT. If not, you can install it from the following link.


~~ TO BE ADDED LATER ~~
Office 365 Groups

Office Groups Setup

1. Install the “Office 365 Groups” solution from the O365 CRM Online Administration Center solutions management page

2. Once the solution installation is complete, in CRMOL, navigate to Settings > Office 365 Groups
   a. In the “Office 365 Groups Integration Settings” page, click on ‘Add entity’ button to add a new row
   b. Use the dropdown to choose Opportunity (opportunity entity)
   c. Then Add another entry for the Project (msdyn_project) entity
   d. Click on ‘Publish all’ to publish this customization

3. Once the customizations have been published, navigate to an opportunity record and project record to confirm that the “Office 365 Groups” option shows up in the top navigation menu items

Open the project that you want to collaborate on. Click on the navigation bar and click on Office 365 groups.
Here Dynamics 365 users can collaborate with Non-Dynamics 365 users. Non Dynamics 365 users can add or consume content from office 365.
The new AX Implementation Project

Welcome to the AX Implementation Project group!

Use the group to share ideas, files, and important dates.

Start a conversation
Read group conversations or start your own.

Add to the team site
Start sharing and collaborating on content in SharePoint.

Share files
View, edit, and share all group files, including email attachments.

Connect your apps
Connect apps like Twitter and Teams to stay current with information and updates your team cares about.

Get the Group app on your phone and stay connected.
Resource Management

Resource Management Dashboard

Go to Project service ➔ Schedule board. This tool gives you ability to see resources.
Open the AX Implementation Project and go to WBS.
Click on “Generate Project Team”. This will generate team with generic resources.
Now click on “Hard Book”. This opens Book Resources Dashboard.

Here we can see who is free, compare resources, sort & filter and book the resource.

Book all the resources based on the relevant filter criteria.
I have booked them as follows.
Now I want to see if Functional consultant Dianna’s booking is correct or not. I can then click on the “Maintain Booking” and make some adjustments.
You can also substitute a resource. Click on “Faith”, you will see a button for substituting a resource. We don’t execute it right now but good to know about the functionality.
An applicant can use “Project Finder mobile app” to apply for the Job based on skill, connections, earliest start etc. The application is then routed to the project manager for approval. Once the project manager approves it the applicant becomes the part of the team. The project finder mobile app is available for android, iOS and windows.
Here's work that fits your skills.

- **Project Finder Mobile Roles**
  - **Architect**
  - Date: 9/22/2017 to 10/18/2017 (26 days)

- **Project Finder Mobile Roles**
  - **Developer**
  - Date: 9/29/2017 to 10/19/2017 (20 days)

- **Project Finder Mobile Roles**
  - **Developer**
  - Date: 10/19/2017 to 11/8/2017 (20 days)

Connected to [https://budtime.crm.dynamics.com](https://budtime.crm.dynamics.com)
Project Finder
Mobile Roles
Developer
10/19/2017 to 11/8/2017 (20 days)

Project Finder
Mobile Roles
Functional consultant
9/12/2017 to 10/30/2017 (1.6 months)

by skills
by my connections
by earliest start
by duration
Resource Utilization
Click on Project service → Resource Utilization to see the utilization of the resources
Time and Expense Approval

Here you can record and modify Time Entry.

Time Entry

Click on Project Service ➔ My Work ➔ Time Entries then click on the + sign below the day you want to enter the time for.
Once you click on save here is how it look. The colors are chosen by system so your colors may look different. You can also change the calendar view.

Now you can hit submit to submit the Time entry for approval.
Project manager can now look at the entries and approve the entry.

Click on Project Service → Project Approvals. Here you should be able to see previously submitted entry. Open it up and now click on approve.
<table>
<thead>
<tr>
<th>Project</th>
<th>Project Task</th>
<th>Date</th>
<th>Time Entry</th>
<th>Submit By</th>
<th>Resource</th>
<th>Resource Role</th>
<th>Billing Type</th>
<th>Submit Task</th>
<th>Task Time</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate</td>
<td>Project Task</td>
<td>12/31/20</td>
<td>12:00 PM</td>
<td>Project A</td>
<td>Project B</td>
<td>Project Manager</td>
<td>Corporate</td>
<td>2.00</td>
<td>2.00</td>
<td></td>
</tr>
</tbody>
</table>
Expense Entry
Click on Project Service → My Work → Project Approvals then click on the + sign below the day you want to enter the time for.

On the screen fill in all the details. You can also add the receipt here by clicking “Add Receipt”.

Project Approval Information
Sourbh Surana - Time Entry

General
- Billing Type: Chargeable
- Time Entry: 2.00
- External Comments: Project manager was not available
- Submitted by: Sourbh Surana

Details
- Date: 9/11/2017
- Description: Project manager was not available
- Task: All Implementation Project
- Type: Work
Here is how the expense entry will look like when you save. The colors are chosen by system so your colors may look different.
Now click on submit
All these time and expense entries can be submitted via tablet or mobile also.

Now a project manager can approve the expenses. Click on Project Service ➔ Project Approvals. Now change the view to Expense Entries for Approvals.
## Expense Entries for Approval

<table>
<thead>
<tr>
<th>Entry Number</th>
<th>Submitted By</th>
<th>Resource</th>
<th>Expense Entry</th>
<th>Billing Type</th>
<th>Sales Price</th>
<th>Has Receipt</th>
<th>External Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>John Doe</td>
<td>Sales</td>
<td>Travel</td>
<td>International</td>
<td>$500</td>
<td>Yes</td>
<td>Not to call anyone</td>
</tr>
</tbody>
</table>

1 - 1 of 13 records
Project manager can now click on the Approve to approve the expense.
Project Tracking

Open the desired project and from the navigation bar click on the “Project Tracking” view.

Here you can toggle between effort tracking and the cost tracking to see the progress of the project by effort and cost.
The overall project status can be got from the Project record → Status Tab.
AX Implementation Project

Status

Overall Project Status: Yellow
Comments: There are some risks that need to be resolved.

Schedule Performance: On Time
Cost Performance: On Budget

Cost Consumption %

Project Task Role view

Schedule Performance By Role

Cost Performance By Role
Project Billing

Navigate to Project Service → Project Contracts and open the Dynamics AX implementation contract.

Here you can review the contract lines on which project based lines are used for kind of transactions and also have billing methods for the contract line. You can also review the contract performance here.
Lets open the first contract line “Consulting and Implementation”. Here you can see the details of the project contract lines.

 Lets open the next contract line “Expenses” and create a few milestones. After the record opens, you can click “Generate periodic milestones” for system to generate the milestones or the milestones can be manually created.
To see the Actuals, click on navigation bar and click “Actuals”. Here you should be able to see everything that was approved for the project.
Now for the billing.

In order to bill a milestone we need to manually make the milestone ready for billing prior to generating an invoice. We can view all the project milestones by going to Project Service → Project contract milestones. Open the contract milestones and change the status to ready of invoicing.
Now we can go to the contract and click on button, create invoice.
This creates an invoice which can then be reviewed and sent. You can look at each of the invoice lines and change the quantity or add a new time, expense or fee based on the rules specified in the contract line.
Reporting and Analysis

Traditional Structured Reports

SQL Server Reporting Services Reports
Since PSA is a solution built on top of dynamics CRM it uses SSRS reports to do structured reporting. There are some sample reports and excel templates available which can be downloaded and installed on top of the solution.

Here is the link to the sample reports

Once installed you can navigate to reports by going to Project service → Tools → Reports.

There are 16 reports here. Let's run Approved time entries for this week. You see that we have the time entry that we approved earlier.
CRM Report Wizard

CRM report wizard is part of core CRM. You can use the report to create simple SSRS reports.

In the above screen click “New”. You can create a new report from here.
Custom SSRS Report Development

If the above reports are not sufficient and there is a report which is unique to the customers business then a custom SSRS report can be developed. We will not go into details of this but here are few things you need for the custom report development

- Visual Studio 2012
- Business Intelligence Development Studio (BIDS) extension
- CRM Report Authoring Extension.

More information on developing the reports can be found here


Project Service Data Model

Following information is collated from the neil parkhurst’s blog at https://neilparkhurst.com/2017/02/16/psa-data-model/

Note: It is worth being aware that Project Service and Field Service share many entities, therefore some of the msdyn_ attributes may relate to Field Service. As this post has a focus on Project Service I will try to focus on the key entities / attributes you may need to be aware of for PSA.
I won’t be documenting every field / entity in this post! But I hope to give enough of a flavor for the PSA data model to be able to navigate the detail yourself.

**Opportunities**

As is standard with opportunities each opportunity has multiple opportunity lines. Project Service adds some additional attributes to these entities.

The additional attributes on opportunity and opportunity lines include ....

<table>
<thead>
<tr>
<th>Entity</th>
<th>Schema Name</th>
<th>Display Name</th>
<th>Type</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opportunity</td>
<td>msdyn_ContractOrganization</td>
<td>Contracting Unit</td>
<td>Lookup (Organizational Unit)</td>
<td>The organizational unit in charge of the opportunity</td>
</tr>
<tr>
<td>Opportunity</td>
<td>msdyn_OrderType</td>
<td>Order Type</td>
<td>Option Set</td>
<td>Options include “Work based”, “Item Based” and “Service-Maintenance Based”. Opportunities that have an</td>
</tr>
</tbody>
</table>
order type of “Work Based” will be Project based opportunities.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Schema Name</th>
<th>Display Name</th>
<th>Type</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opportunity Line</td>
<td>msdyn_BillingMethod</td>
<td>Billing Method</td>
<td>Option Set (Global)</td>
<td>Billing method for the project opportunity line. Options include Time and Material and Fixed Price</td>
</tr>
<tr>
<td>Opportunity Line</td>
<td>msdyn_BudgetAmount</td>
<td>Budget Amount</td>
<td>Currency</td>
<td>The customers budget for the opportunity line.</td>
</tr>
<tr>
<td>Opportunity Line</td>
<td>msdyn_linetype</td>
<td>Line Type</td>
<td>Option Set (Global)</td>
<td>The field to distinguish the order lines to be of project service or field service. Options include “Project Service Line” or “Field Service Line”</td>
</tr>
</tbody>
</table>

**Quotes**

As we associated quotes with opportunities not only do we get quote and quote line detail enhancements but also a number of new entities specific to Project Service come into play.

The quote line contains a link to the project entity and a number of additional entities are also associated that support the detailed estimation capabilities of project service.
**Quote line detail** – the “supporting” detail for the quote line. Including fields like transaction class, resourcing unit, role, start date, end date and so on. The total sales price will be rolled up into the quote line to give the quoted amount.

**Quote line analytics breakdown** – holds additional line detail for reporting purposes. Calculated information such as gross margin is held in the analytics table.)
**Quote line invoice schedule** – holds the intended invoice schedule for customer billing and will get carried forward to the project contract when the quote is won. This is generated off the billing frequency from the quote line.

**Quote line milestone** – milestones show the timing of fixed price billing items.

**Quote line resource** – holds the values for quote line to say if this resource / transaction category is included or excluded in the quote.

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**Project Contract**

The concept behind the project contract in Project service is actually quite similar to quotation. The contract is actually the order entity and the contract line is the order line entity. But both of these will have additional fields specific to Project Service. The additional project contract entities are all named “project contract line ...”.

- Project Contract Line Detail
- Project Contract Line Invoice Schedule
- Project Contract Line Milestone
- Project Contract Line Resource Category
- Project Contract Line Transaction Category
- Project Contract Line Transaction Classification
- Project Contract Project Price List
**Project**

Project is a new entity specific to PSA and is the container for all of your project tasks and resourcing detail. Each project has a project team and also a number of tasks. (Both of these entities will be related to the concept of a bookable resource.) The estimate and estimates line entities contain the cost and sales estimates.
**Bookable Resource**

Each bookable resource then has multiple bookings. In Field Service the “Bookable Resource Booking” would relate to a work order and in PSA it will relate to a project task. (As we saw the in previous diagram.)

Bookable resources are shared between Field Service and Project Service. Each bookable resource can have a number of characteristics (skills) and each of the skills has a proficiency rating.

A bookable resource can be a user, contact, account (etc). Although in Project Service only resources that are users can currently record details on timesheets and submit expenses. So generally speaking, when I talk about a bookable resource we are ultimately considering a system user.

Categories are roles. So, each bookable resource can have many roles via the “Bookable Resource Category Assn” entity. (Although one is marked as their default role.) For example, my “main” role is Functional Consultant. But when required I can also play the role of Business Analyst, Project Manager or reluctantly Tester. It will therefore be common for one resource to have multiple roles but you can only one role per project. (I have many hats that I often swap but I never wear two at once!)
**Actuals**

The actuals entity will store details of actual business transactions on your project. Including information on sales values, costs and quantities. When you create financial reports or maybe source data for integration with other systems, the actual entity and its associated entities will be a common source for this data.

Transaction Origin, this holds the origin of the actual transaction entity and its associated entity. Including the transaction type.

Transaction Connections shows how the connections relate. For example, an unbilled say to a estimate line.

The actual entity also has relationships with the other entities in CRM such as the project, project contact, customer and bookable resource.

Actuals get created when there is a financial impact on your project. Meaning draft or submitted expenses would not show. Actuals would be created once the expense (or time) entries are approved.
Practice Management Dashboard

Practice manager can look at higher level metrics to manage the business. They can be drilled down to get more precise information. Navigate to Project Service → Dashboards and select “Practice Management Dashboard”.
Excel Templates

Another method of reporting other than SSRS reports. The sample report pack introduced earlier comes with 5 sample excel templates. After this solution is installed, Go to Settings → Templates → Document templates. From the view chevron, you can click on Excel Templates. Uploading the excel templates is discussed in the Readme file of the Sample Repots download. Here is how it looks like.
To run the Templates we go the associated entity type and run the excel template. For example, if we want to run the ProjectQuotes excel template, we would go to ProjectService → Quotes and run it from there.
Power BI

Power BI templates for PSA will be introduced later this year.

Templates will ship with its own dashboard and scripts.

Will need to bring own

- SQL Server of SQL Azure DB
- Power BI pro license
- Scribe license to extract the Dynamics CRM Data to Azure SQL db.
Appendix A. Reference Materials

1. If you have a DLP account, you can go thru the demo of the PSA using following link.  
   https://mbspartner.microsoft.com/CRM/Topic/56