

منتدى دبي العالمي
لإدارة المشاريع

DUBAI INTERNATIONAL
PROJECT MANAGEMENT FORUM

5th EDITION الدورة الخامسة

8 - 11 ديسمبر 2018 • مدينة جميرا • دبي
8 - 11 December 2018 • MADINAT JUMEIRAH • DUBAI



PARALLEL 1 - Artificial Intelligence

Personalized Project Management through
Bots and Artificial Intelligence



Allan Rocha
Founder & Partner

PMOTTO.ai
ProActive.dk

www.dipmf.ae

BUILDING NATIONS

I'M ALLAN ROCHA.

SENIOR MANAGER, AUTHOR,
SPEAKER & DATA CURIOUS

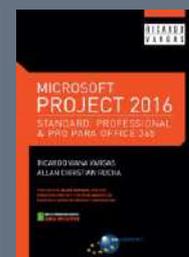
PROACTIVE 
PMOTTO
PMOTTO.ai



DIPMF

16
YEARS

DEDICATED TO DELIVER
PROJECT & PORTFOLIO
MANAGEMENT SOLUTIONS
TO ALL SIZES OF COMPANIES



3
BOOKS



9
YEARS

ALLANROCHA.COM
PROACTIVE.DK



Ricardo Vargas

Managing Partner

Project
MVP 5
years



20 
Certifications

22 years of
Experience 

5' PM
Podcast 

+4 million views
ricardo-vargas.com

15 
Books
(In 6 lang.)



EXECUTIVE DIRECTOR – BRIGHTLINE

Former Global Director of the Infrastructure and Project Management Group (United Nations)

Past Chairman PMI



Agenda

Personalized Project
Management through
Project Online, Bots and Artificial
Intelligence

1. Session takeaways
2. Modern Work Management
 - ❑ Problems, ecosystem, strategy and vision
3. Overview of a **Project Management Chat-Bot**
4. How a **PM Chat-bot** interact with users and systems
5. Leveraging Machine learning inside a **PM Chat-bot**
 1. Conversational AI tools like intelligent bots
6. The future of project work
7. Demo of a **PM Chat-bot**
8. Benefits of using a **PM Chat-bot**

Allan Rocha,
ProActive A/S | PMOTTO.ai



Session takeaways:

Learn how to drive more adoption among your users with a personalized project management chat-bot assistant

Understand how to take advantage of available cutting-edge technologies to drive business transformation

Experience the future of project work allowing users to interact with their project and portfolio management tool using natural language

Sense how artificial intelligence is changing the way we work with projects

Get inspired by several different applications of machine learning in project & portfolio management

See a demo of a REAL case about a chat-bot made exclusively for project and portfolio management.



Modern problems

Work is happening everywhere all the time—and we end up losing track



Transparent

Get the big picture: all work, from tasks to portfolios, across multiple services

Our teams choose their own tools to work the way they want



Versatile

Collaborate on projects with flexible methodologies and familiar Microsoft tools

Our accidental PMs and millennials want simple, visual tools for work



Intuitive

Start fast with simple interfaces and modern web experiences

Our business processes cross functions and systems



Integrated

Run your end-to-end business processes on a single platform

A single compliance, security, or platform issue can disrupt business



Compliant

Innovate with confidence on a highly compliant, secure, scalable platform

Modern solutions



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Get the big picture

Gain visibility across the enterprise into all work, no matter the size or complexity, from tasks to portfolios, across multiple services



Work how you want

Collaborate on work using the right methodologies and tools to match project type and preferred work style



Start fast

Get started quickly with easy-to-use tools for all types of work, modern web experiences, and familiar Office 365 apps



Model your processes across functions and systems

Integrate workflows, business processes, sales, and financials on one platform



Focus on business, not technology

Minimize business risks with a cloud platform that helps meet rigid compliance, security, performance, and scalability needs



Make better decisions



Get more done



Deliver quicker



Run your business your way



Innovate with confidence



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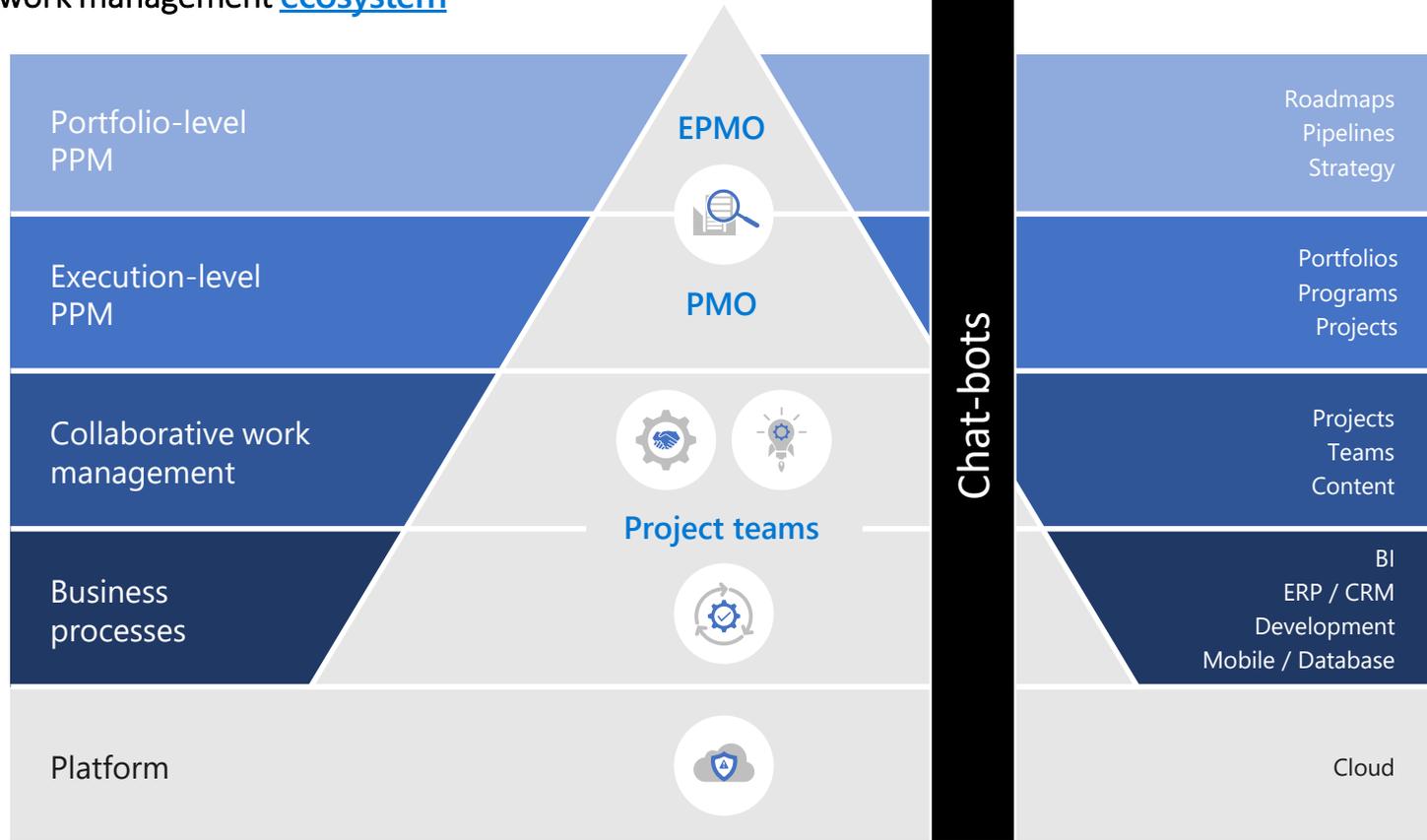


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Modern work management ecosystem

Microsoft



Teams work the way they want
Executives get the results they need



AI for Project and Portfolio Management

- **Personal Project Management Assistants**

Cognitive Services, Chat-Bots and Machine Learning



Innovative

I'm an idea that will completely change the way you manage your projects



Experienced

I'm a combination of different profiles with more several years of experience and a common goal: *"make your work easier!"*



Multi-platform

I'm fully functional on your favorite project and portfolio management tool or communication channel



Adaptive

I'm smart enough to connect and understand your processes and guidelines.



Chat-bot

Like chatting with a friend, but one who makes you smarter, more productive and knows everything about your processes.



Machine Learning

I can learn with you and others to help make the right decisions on the right time.

Chat-Bots

Connecting the dots



WHY? Breaking the wall between users and tools

USERS

Will ask questions in natural language to a chat bot



Chat-Bot

Listen, understand and translate your questions into actions in the tool

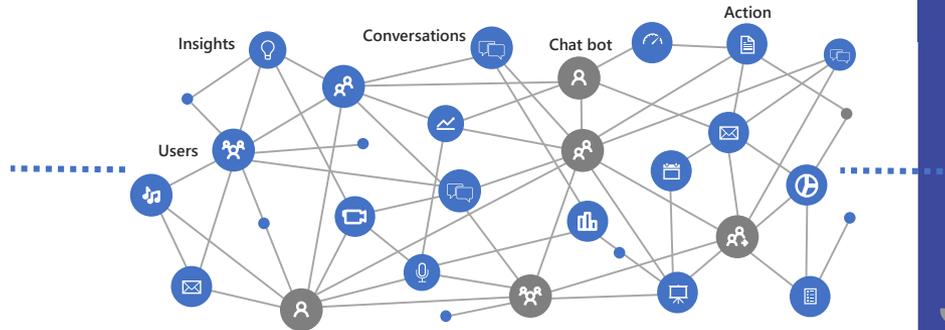


PROJECT ONLINE

Will store your data and your processes based on your organization needs



Instant Messaging



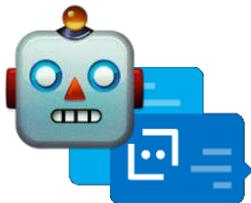
PPM TOOL



Chat-Bots

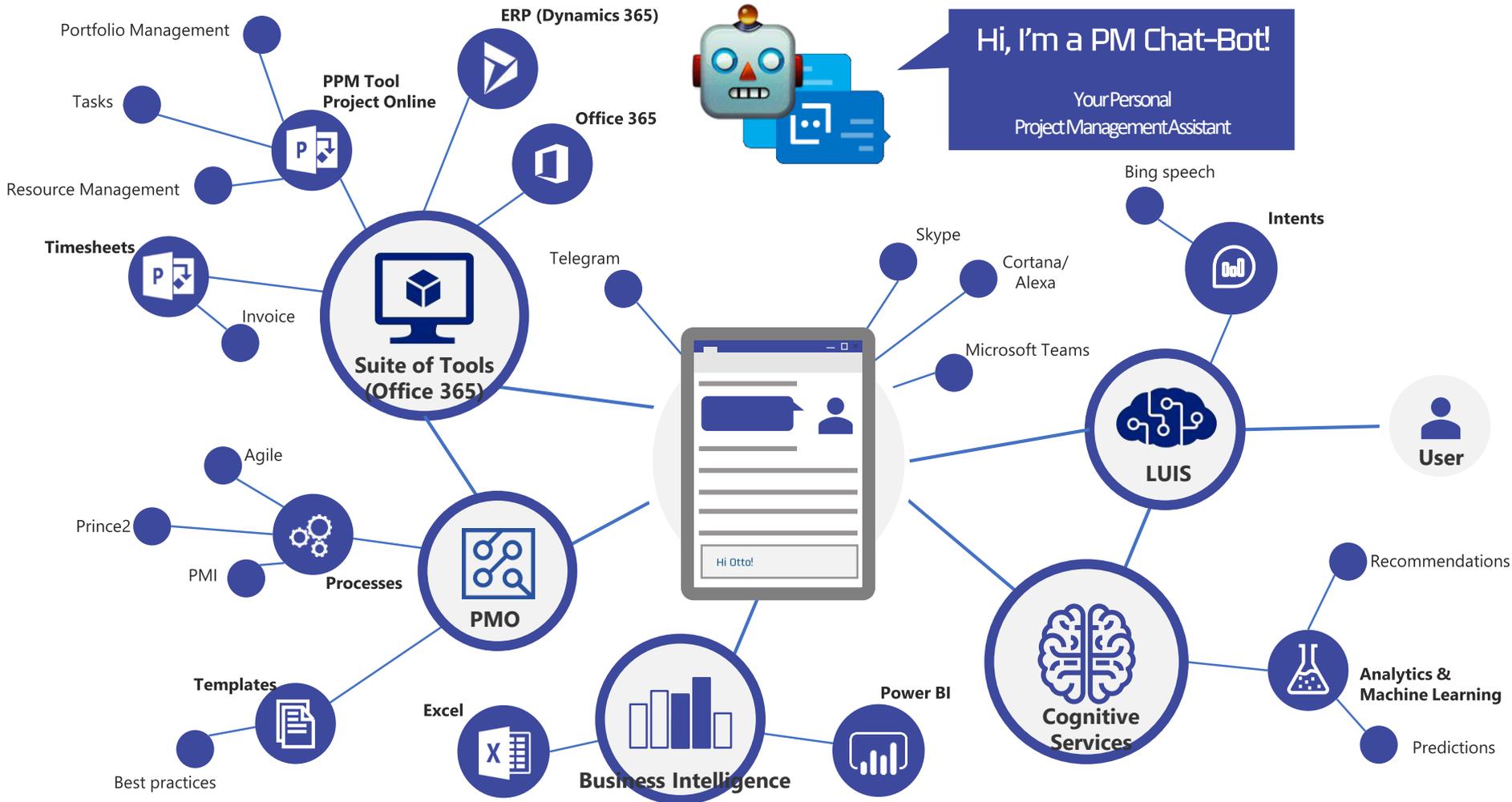
How a PM chat-bot works





Hi, I'm a PM Chat-Bot!

Your Personal Project Management Assistant



Chat-Bots

Machine Learning Algorithms
For Microsoft Project Online





Data
Collection



Processing



Analyzing

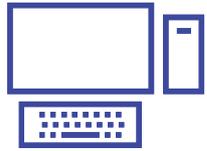


Training and
Learning



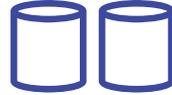
Prediction

Machine Learning



Performance

Predicting project global performance based on progress and status KPIs



Budget

Predicting budget forecast and variance according to current stage of the project



Risks*

Recommend risks based on previous projects and external factors, like weather or stock market



Estimates

Recommending accurate estimates to tasks based on key phrases



Precise predictions, better recommendations and fraud detection

Identify anomalies on your portfolio of projects and resource pool

Right time, your time:
Proactive and reactive

Supporting the Project Managers and PMO



Chat-bots

Conversational AI tools



Project Personality Chat

Intent Type	Sample queries
Greeting	<ul style="list-style-type: none"> • Hi • Good morning • What's up • How are you feeling • Goodbye
Feedback (Compliments, Criticism)	<ul style="list-style-type: none"> • That's a good one • Ha ha you're funny • You are smart • You're not helpful
User sentiments (Positive, Neutral)	<ul style="list-style-type: none"> • I'm hungry • I want to go to sleep • I really like talking • I love rain!
Bot Opinions	<ul style="list-style-type: none"> • Who are you? • Do you like music? • What is your favorite food? • Can you fly? • What do you think about me?
Conversation request	<ul style="list-style-type: none"> • Talk to me • Let's chat about something • say something funny • I'm bored
Conversation continuation	<ul style="list-style-type: none"> • Thanks • Ok cool • Why not? • You're welcome

- ▶ **Enhance chat conversations:** Personality Chat makes intelligent agents such as chatbots more conversational by **adding small talk** in a consistent tone and minimizing fallback responses such as
 - ▶ “I don't understand.”
- ▶ Personality Chat uses a chat intent classifier to **identify appropriate small talk** queries and **deep learning models** to generate contextual responses in a consistent tone.



SAMPLE

Chat Demo

HI

You: 10:54:12 AM

Hello. What can I do for you?

Personality Chat: Professional : 10:54:14 AM

HI

You: 10:54:23 AM

Hey. What's up?

Personality Chat: Friendly : 10:54:24 AM

HI

You: 10:54:29 AM

Sup.

Personality Chat: Humorous : 10:54:30 AM

Type your message...

Personality

Humorous Professional Friendly

Ranked Score

Humorous	0.98
What's cookin'?	0.98
What's up?	0.98
Yo.	0.98

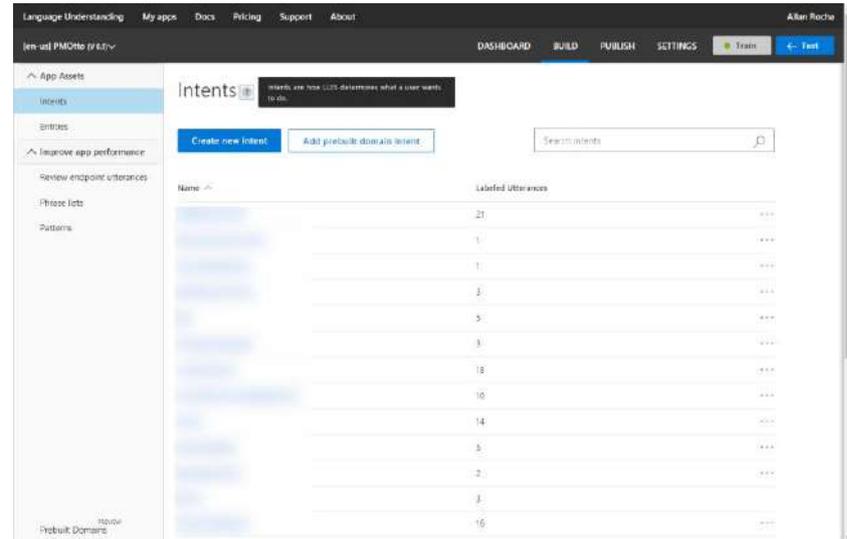
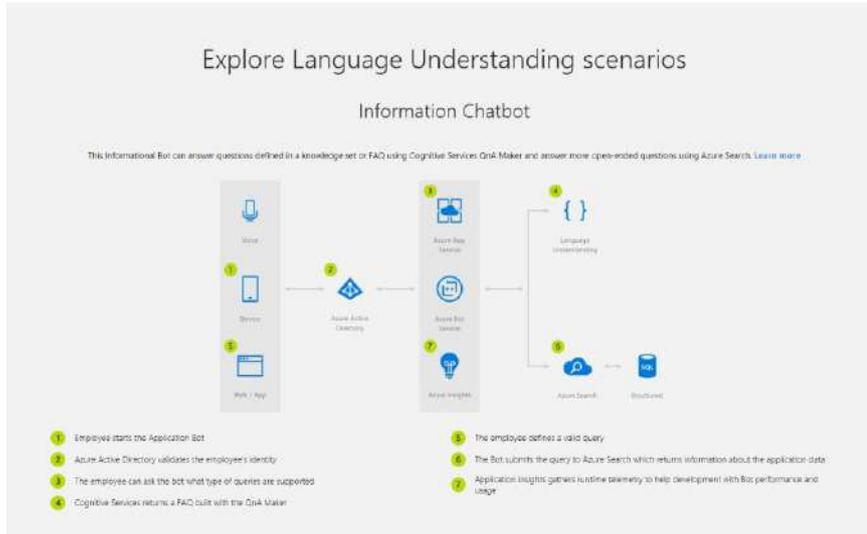
Clear Chat

- Disclaimer:
- By using this demo, you agree that Microsoft may store and use what you type to improve Microsoft services. To help protect your privacy, we take steps to de-identify your data and keep it secure. We won't publish your data or let other people use it.
- <https://labs.cognitive.microsoft.com/en-us/project-personality-chat>



Machine Learning – LUIS (Language Understanding Intelligent Services)

- A machine learning-based service to build natural language into apps, bots, and IoT devices.
- Quickly create enterprise-ready, custom models that continuously improve.



Machine Learning Algorithms – Work Prediction

The screenshot displays the Microsoft Azure Machine Learning Studio interface. The main workspace shows a training experiment named "TaskWorkPrediction" with a status of "Finished running". The workflow consists of the following steps:

- Input dataset: PMOTTO_815_TaskWorkPre...
- Clean Missing Data
- Select Columns to Dataset
- Apply SQL Transformation
- Split Data
- Train Model
- Score Model
- Evaluate Model

Additional steps shown in the workflow include "Select Columns to Dataset", "Clean Missing Data", "Select Columns to Dataset", and "Split Data". A "Mini Map" is visible in the bottom left corner of the workspace. The right-hand panel shows the "Properties" section with the following details:

- Experiment Properties**
 - START TIME: 4/7/201...
 - END TIME: 4/7/201...
 - STATUS CODE: Finished
 - STATUS DETAILS: None
 - Prior Run: None
- Summary**
 - Enter a few sentences describing your experiment (up to 140 characters).
- Description**
 - Enter the detailed description for your experiment.

The bottom navigation bar includes icons for "NEW", "RETRY", "SAVE", "UNDO", "DELETE", "STOP", "START", and "RELOAD".



Machine Learning Algorithms – Work Prediction

The screenshot displays the Microsoft Azure Machine Learning Studio interface. The main workspace shows a predictive experiment titled "PMOto.ai - Task Work Prediction [Predictive Exp.]". The workflow includes several steps: "Project Data", "Feature Selection", "Train Model", "Evaluate Model", and "Deploy Model". The experiment status is "Finished running".

On the right, the "Properties" pane shows the following experiment details:

- Experiment Properties**
- START TIME: 8/10/20...
- END TIME: 8/10/20...
- STATUS CODE: Finished
- STATUS DETAILS: None

Below the properties, the "Metrics" section displays the following evaluation results:

Metric	Value
Mean Absolute Error	8.81253
Root Mean Squared Error	16.858551
Relative Absolute Error	0.967
Relative Squared Error	1.016105
Coefficient of Determination	-0.016105

The "Error Histogram" section shows a bar chart of the error distribution. The x-axis is labeled "Error" and ranges from -10 to 10. The y-axis is labeled "Frequency" and ranges from 0 to 700. The distribution is highly skewed to the right, with a peak frequency of approximately 700 at an error value of 0.



Machine Learning Algorithms – Anomaly detection

The screenshot displays the Microsoft Azure Machine Learning Studio interface. The main workspace is titled "Anomaly Detection" and shows a complex workflow diagram. The workflow starts with a "Dataset" node, followed by "Data Cleaning" and "Data Split" nodes. It then branches into several parallel paths involving "Feature Selection", "Model Training", and "Model Evaluation" steps. A "Mini Map" is visible in the bottom left corner of the workspace. The right-hand side of the interface shows the "Properties" pane for the selected experiment, which is currently in "Draft" status. The "Experiment Properties" section includes fields for "START TIME", "END TIME", "STATUS CODE" (InDraft), and "STATUS DETAILS" (None). Below this is a "Summary" section with a text box containing the text: "Classifier that predicts activity class based on wearable sensor data. Source: <http://groupware.les.inf.puc-rio.br/hr>". The "Description" section is currently empty. At the bottom of the interface, there is a toolbar with icons for "NEW", "RUN HISTORY", "SAVE", "SAVE AS", "DISCARD CHANGES", "RUN", "SET UP WEB SERVICE", and "PUBLISH TO GALLERY".



Machine Learning Algorithms – Finish Variance Prediction

The screenshot displays the Microsoft Azure Machine Learning Studio interface. The main workspace shows a workflow titled "PMOttO.ai - Resource Assignment Finish Variance Prediction" in a "Draft" state. The workflow consists of the following steps:

- ProjectOnlineData-Resource
- Three parallel "Edit Metadata" steps, each with a green checkmark.
- Select Columns in Dataset (green checkmark)
- Clean Missing Data (green checkmark)
- Select Column in Dataset (green checkmark)
- Split Data (green checkmark)
- Linear Regression (green checkmark)
- Train Model (green checkmark)
- Score Model (green checkmark)
- Evaluate Model (green checkmark)

A "Mini Map" in the bottom-left corner provides a visual overview of the entire workflow. The right-hand panel shows the "Properties" section for the experiment, including "Experiment Properties" (Start Time, End Time, Status Code: InDraft, Status Details: None) and a "Summary" section with a text input field. Below the summary is a "Description" section with another text input field. A "Quick Help" link is visible at the bottom of the right panel.

The bottom toolbar contains icons for: NEW, RUN HISTORY, SAVE, SAVE AS, DISCARD CHANGES, RUN, SET UP USER SERVICE, and PUBLISH TO GALLERY.



Machine Learning Algorithms – Neural network Regression

The screenshot displays the Microsoft Azure Machine Learning Studio interface. The main workspace shows a workflow titled "PMOttto.ai - KPI Global Performance - Neural network regression". The workflow consists of the following steps:

- KPI Global Performance - RL...
- Select Columns in Dataset
- Clean Missing Data
- Select Columns in Dataset
- Split Data (labeled 1 and 2)
- Train Model
- Score Model
- Evaluate Model

The "Split Data" step is currently selected, and its properties are visible on the right-hand side:

- Splitting mode: Split Rows
- Fraction of rows in the first set: 0.5
- Randomized split:
- Random seed: 0
- Stratified split: False

The interface also includes a left-hand navigation pane with categories like "Saved Datasets", "Trained Models", "Transforms", etc., and a bottom toolbar with icons for "NEW", "RUN HISTORY", "SAVE", "SAVE AS", "DISCARD CHANGES", "RUN", "SET UP WEB SERVICE", and "PUBLISH TO GATEWAY".



Chat-Bots

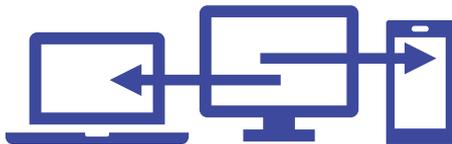
The future of project work



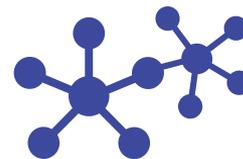
Future of Project Work - Execute tasks with natural interaction



Project and Processes



Planning, Tracking and Collaboration



Reporting and Analyzing

LOCAL PERSONALIZED RECOMMENDATIONS



Create new ideas or projects



Submit for approval or next stage



Approve or reject projects or ideas



Update project information



Check project requirements



Save snapshots of your projects data



Keeping project KPIs updated



Request resources based on roles



Manage risks, issues and deliverables



Formalize change requests*



Create tasks and assign to resources



Update your timesheet and tasks



Generate documents based on templates



Quick insights based on dynamic reports



Share project status reports



Receive relevant project recommendations



Review project information



Get instant help and support



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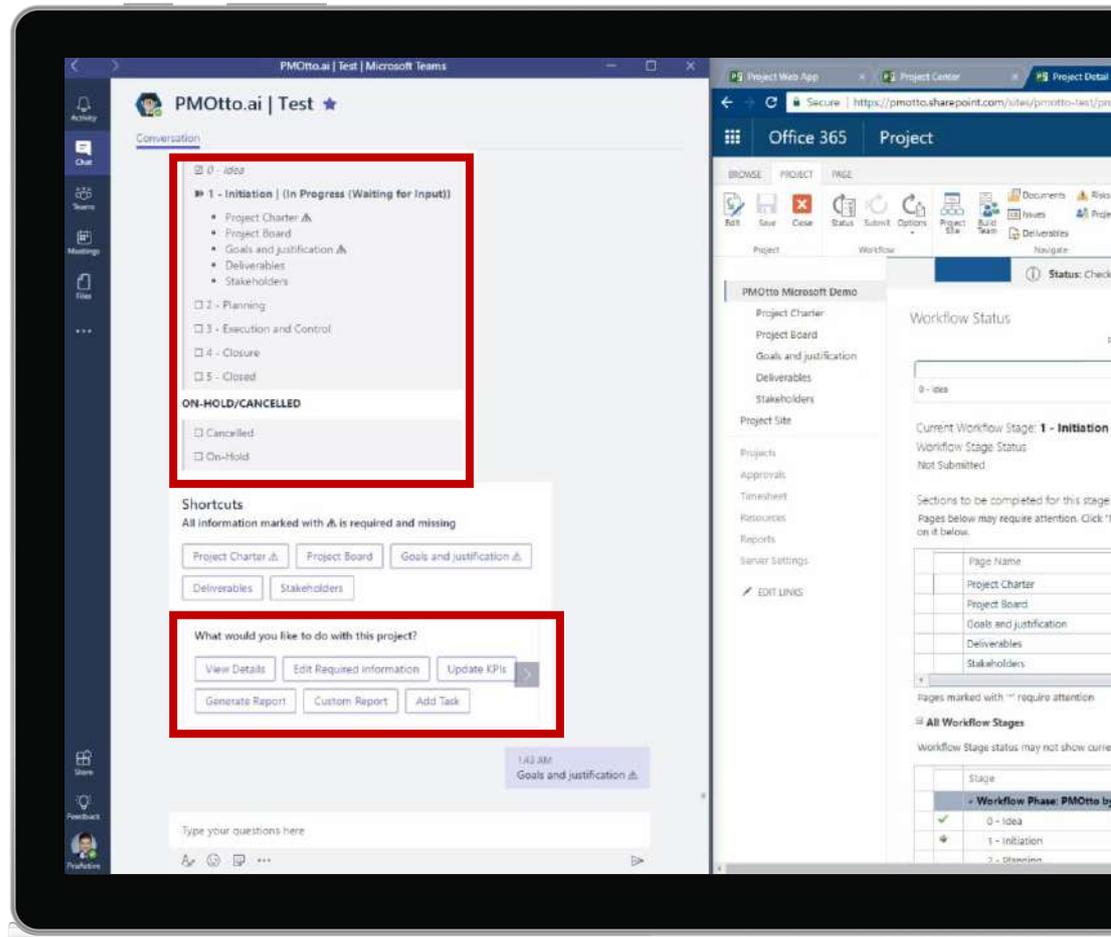
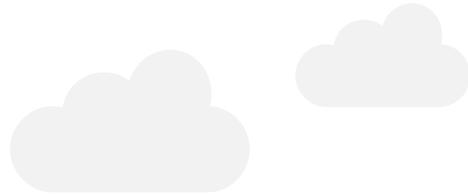
How it look-like

PMOTTO.ai



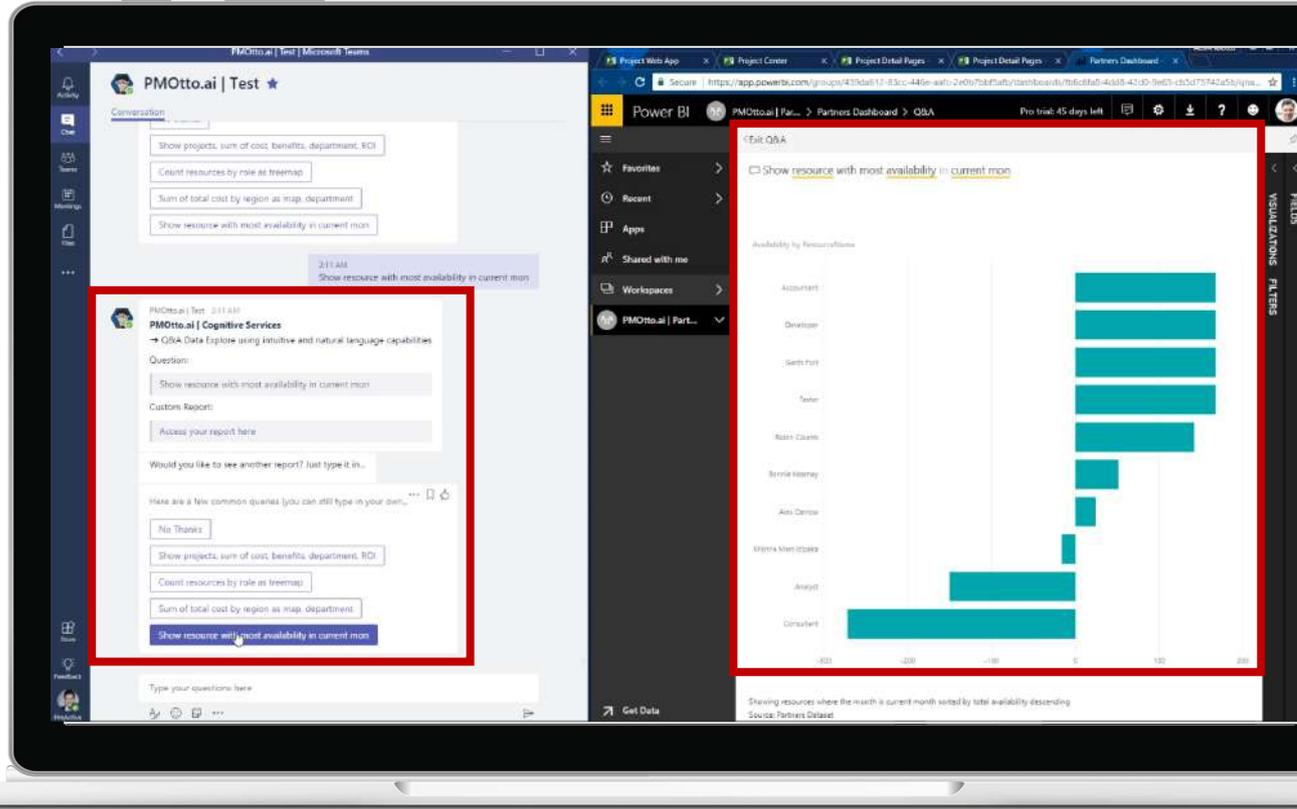
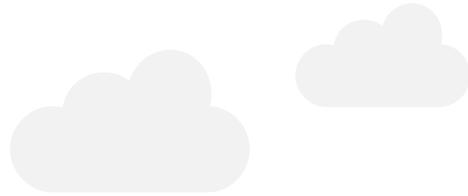
100% of methodology adoption

- Understand your processes and translate them into natural language
- Help the users by using “smart talks”



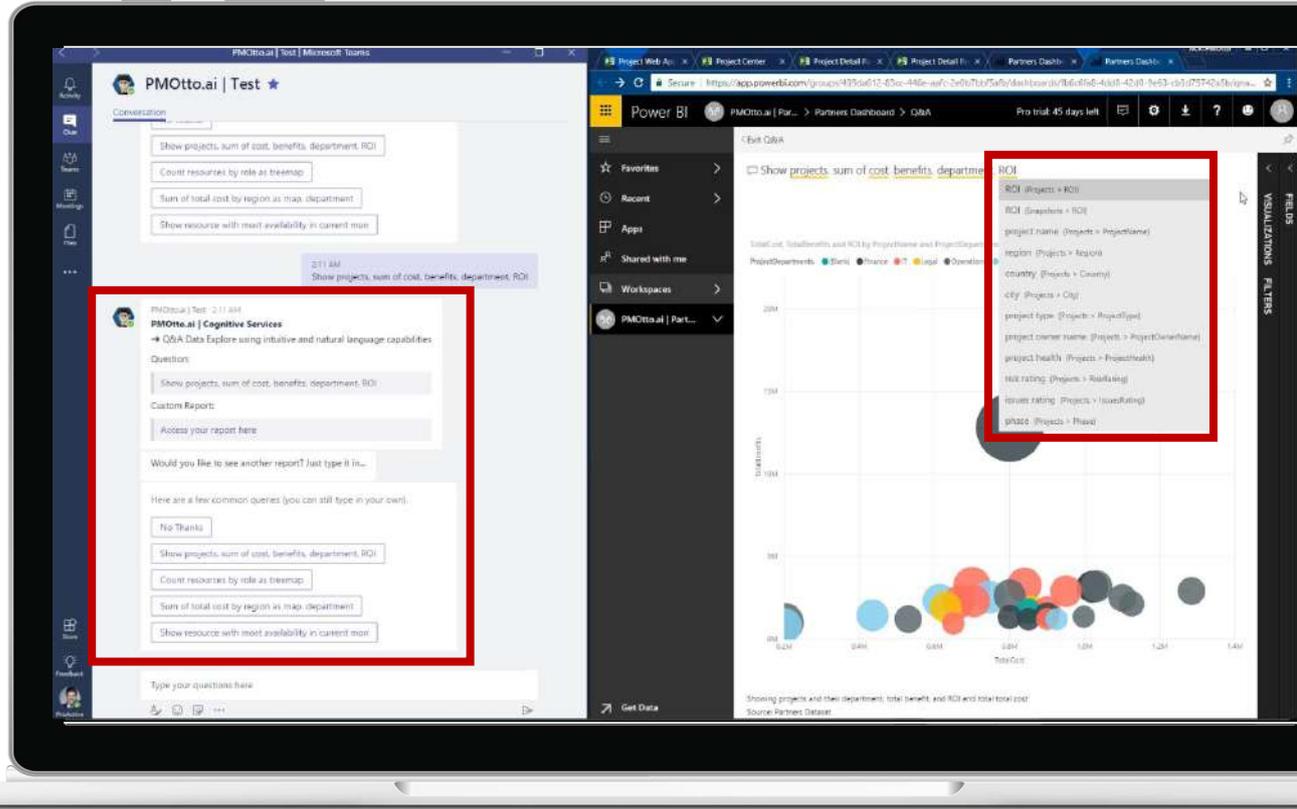
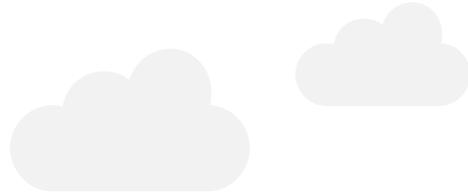
Business Intelligence Integration

- Ask any question about your project and portfolio data
- Transform your business questions into live charts
- Get recommendations of the most used questions
- Q&A Data Explore using intuitive and natural language capabilities



Business Intelligence Integration

- Ask any question about your project and portfolio data
- Transform your business questions into live charts
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- Q&A Data Explore using intuitive and natural language capabilities



The pioneers

Rockwool International





Bots & Artificial Intelligence

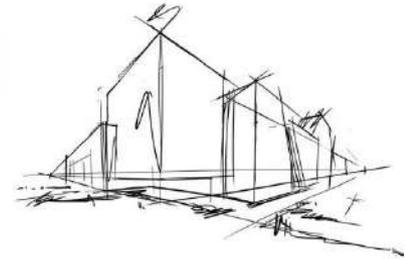
The challenges and learnings of being a pioneer



Keith Bollington
Director, Digital Transformation

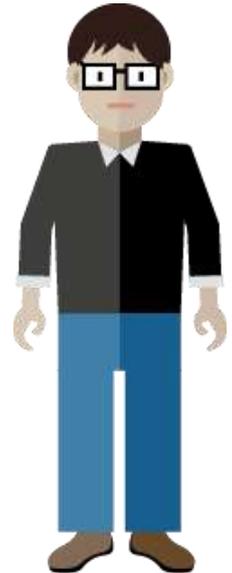


Angela Daniel
Global PMO Lead



Your Personal Project Management Assistant

- New way to interact with your projects
- Powered by machine learning
- Works with any device
- Helps new users learn your process



How PMOTTO.ai fits to Rockwool

ROCKWOOL Project

BROWSE PROJECT PAGE

ROCKWOOL Test Environment

PMOTTO Demo 02

Project Details
Schedule
Resources
Cost Estimation
Strategic Impact
Risks
Issues
Documents
Status
Trends
Checklist
Project Site

Projects
Approvals
Tasks
Timesheet
Resources
Search (Lessons, Issues, Risk)
Issues and Risks
Status Reports

PMOTTO Demo 02
(03 - Mobilisation) | Workflow Stage Status

Status: Checked-In Last Modified: 04-11-2018 19:28

GATE 1 **GATE 2** **GATE 3** **GATE 4**

Opportunity Study **Business Case** **Mobilisation** **Execution** **Rollout**

Stage 1 **Stage 2** **Stage 3** **Stage 4** **Stage 5**

Current Workflow Stage: **03 - Mobilisation**
The approved business cases are prepared for delivery – detailed plans, scope, risks etc...

Workflow Stage Status:
Not Submitted

Sections to be completed for this stage:
Pages below may require attention. Click 'Next' in the ribbon above to scroll through each page or select an individual page by clicking on it below.

	Page Name	Status	Description
	Project Details	Incomplete	This section captures detail information about the project
	Schedule	No Required Project Fields	This section captures Schedule information (like Milestones and Tasks)

PMOTTO.ai | Rockwool
Available

(0%) PMOTTO Demo 02

[Project Site](#)

Rockwool

- 01 - Opportunity Study
- 02 - Business Case
- 03 - Mobilisation | (Not Submitted)**
 - > - Project Details ⚠
 - Schedule
 - Resources
 - Cost Estimation
 - Strategic Impact
 - Risks
 - Issues
 - Documents
 - Status
 - Trends
 - Checklist ⚠
- 04a - Execution with no Rollout
- 06 - Closed
- 04b - Execution with Rollout
- 05 - Rollout

Type a new message

How its helping our users



Word Online

Tiago Castanheira Paes (GRIT-EXT)

PMOTTO Demo 03 > Shared Documents

Highlight-Report-20181121-0832

Accessibility Mode

Edit Document

Print

Share

Highlight Report

PMOTTO Demo 03

PROJECT MANAGER: Angela Daniel

ROCKWOOL

ROCKWOOL

PAGE 1 OF 17

GIVE FEEDBACK TO MICROSOFT 100%



Who is innovating in the market



“We are testing Otto at the moment, and will look to roll it out to all users next year as a supporter for initiatives like the time registration, project management adoption and predictive analytics. We are always trying to innovate to do better and PMOTTO.ai supports this vision.”

Keith Bollington, Director, Digital Transformation .

“Leading a Global PMO has several responsibilities and one of them is to empower our users. We want PMOTTO to be the users’ personal project management assistant who supports them with usual or critical tasks.”

Angela Daniel, Global PMO Lead



The benefits

What are the benefits of using AI



Benefits of AI for Project and Portfolio Management

Help organizations drive more and better adoption to PPM tools

Reduce resistance from the users by allowing them to use natural language to interact with the system

Improve users productivity by automating the execution of common or frequent tasks

Improve project data quality by ensuring 100% of project governance

Improve project collaboration by providing access anywhere on any device

Reduce investments on training by allowing users to interact with the system independently of interface

Save users time by allowing them to work on something else while the task is being processed in the background

Improve users safety by providing a verified knowledge base of the system via secure Help websites

Increase tool usage by unifying several systems in one place

Improve data trust and project accuracy by providing assertive recommendations using machine learning

Reduce project failure by helping organizations to identify and predict issues within its projects



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Thank you!

• **Allan Rocha**, ProActive A/S | PMOTTO.ai

Sites: www.allanrocha.com | www.proactive.dk

Blog: www.ppm4all.com



BUILDING NATIONS