

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

20 
Certifications

5' PM
Podcast 

+4 million views
ricardo-vargas.com

Project
MVP 5
years



22 years of
Experience 

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.



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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



Make better decisions



Work how you want

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



Get more done



Start fast

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



Deliver quicker



Model your processes across functions and systems

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



Run your business your way



Focus on business, not technology

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



Innovate with confidence



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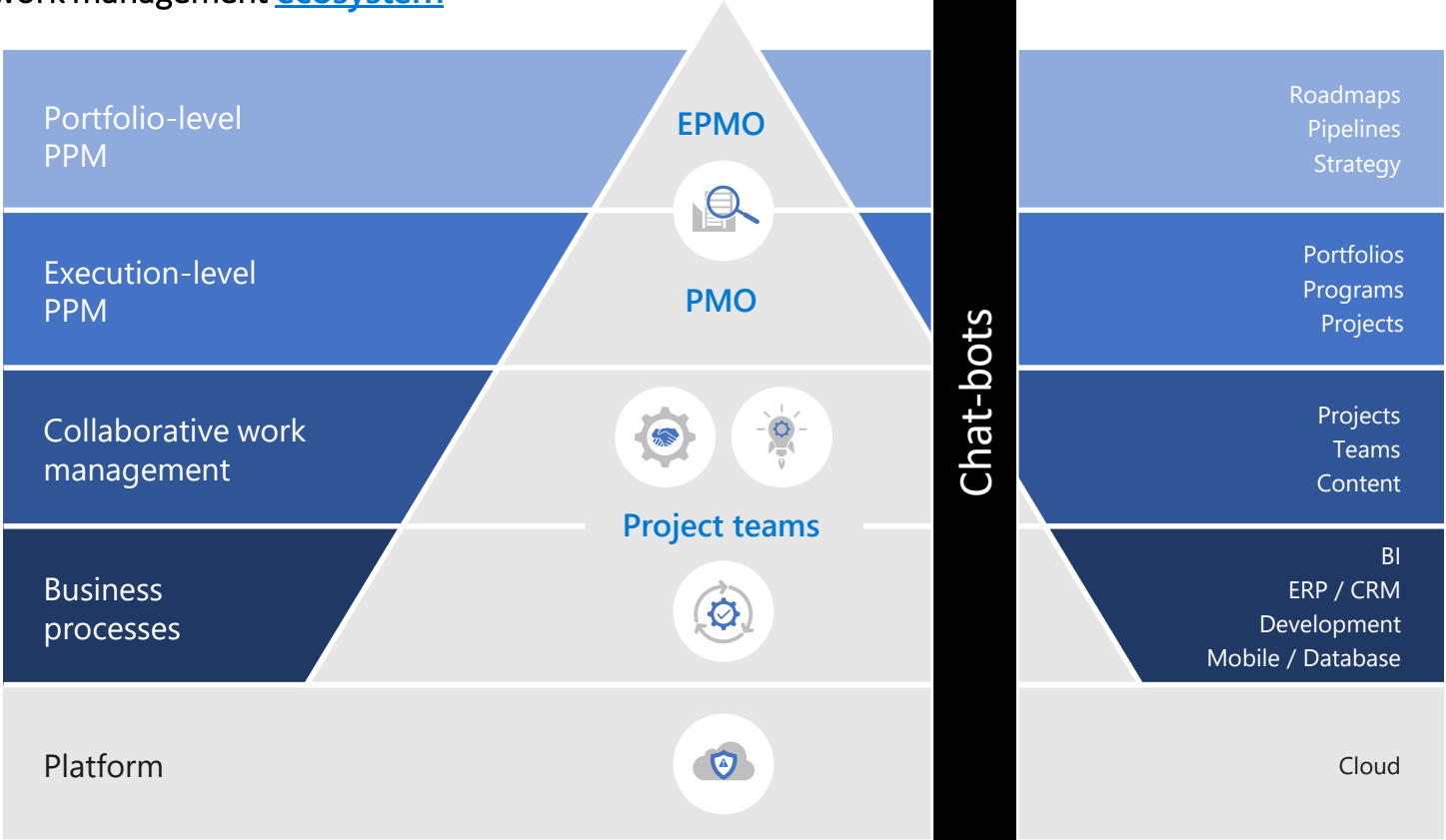


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Teams work the way they want
Executives get the results they need



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- **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.



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DII

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

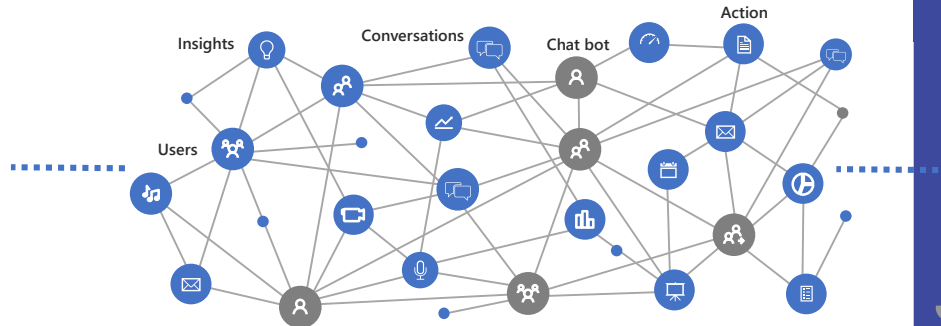


PROJECT ONLINE

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



Instant Messaging



PPM TOOL



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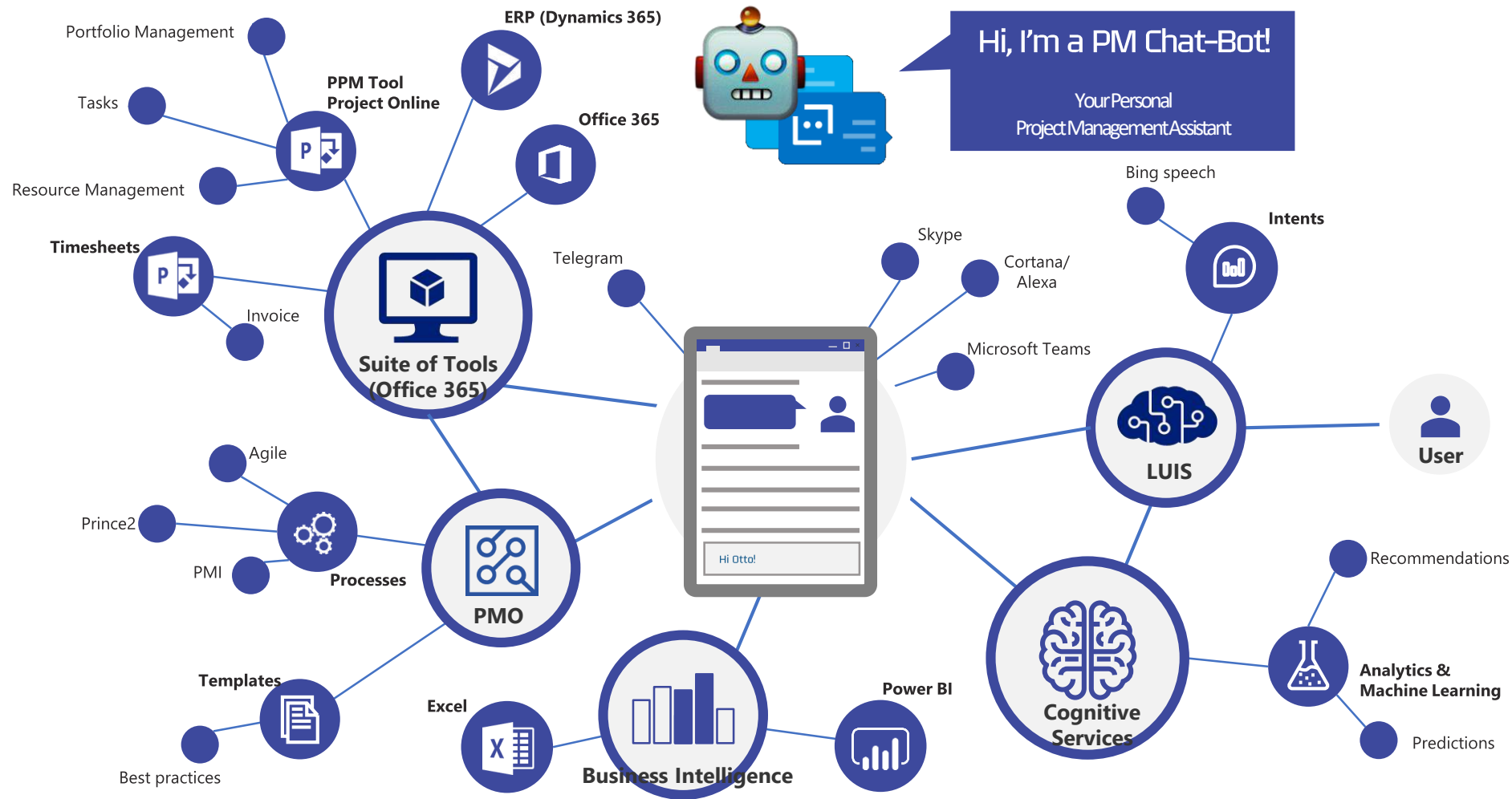
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Chat-Bots

How a PM chat-bot works





Chat-Bots

Machine Learning Algorithms
For Microsoft Project Online





Data
Collection



Processing



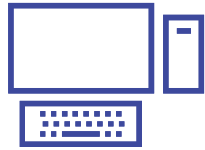
Analyzing



Training and
Learning

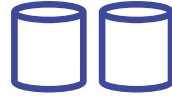


Prediction



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



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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.



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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

Humorous

What's cookin'?

What's up?

Yo.

Clear Chat

Ranked Score

	0.98
	0.98
	0.98
	0.98

- 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>



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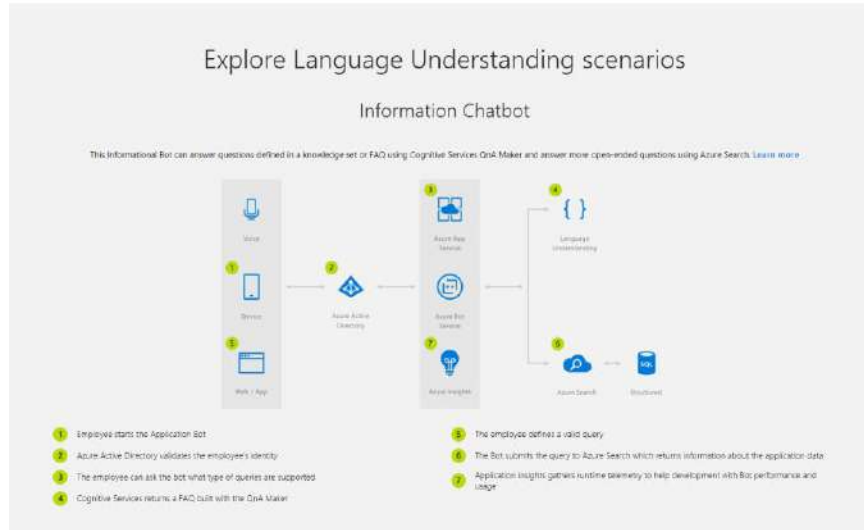


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Machine Learning – LUIS (Language Understanding Intelligent Services)

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



Language Understanding | My apps | Docs | Pricing | Support | About | Alan Roche

Intents

Intents are how LUIS determines what a user wants to do.

Create new intent | Add prebuilt domain intent | Search intents

Name	Labelled utterances
	21
	1
	1
	3
	3
	3
	18
	10
	14
	3
	2
	3
	15

Machine Learning Algorithms – Work Prediction

Microsoft Azure Machine Learning Studio

PMOTTO: PMOTTO TaskWorkPrediction Finished running ✓

Training experiment Predictive experiment

Search experiment items

- Saved Datasets
- Trained Models
- Transforms
- Data Format Conversions
- Data Input and Output
- Data Transformation
- Feature Selection
- Machine Learning
- OpenCV Library Modules
- Python Language Modules
- R Language Modules
- Statistical Functions
- Text Analytics
- Time Series
- Web Service
- Deprecated

Mini Map

Linear Regression

Train Model

Score Model

Scale Model

Split Data

Select Columns in Dataset

Clean Missing Data

Apply SQL Transformations

Extract Key Attributes from Text

Cross-Making Data

Build Metadata

Load Metadata

Properties Project

Experiment Properties

START TIME 4/7/201...

END TIME 4/7/201...

STATUS CODE Finished

STATUS DETAILS None

Prior Run

Summary

Enter a few sentences describing your experiment (up to 140 characters).

Description

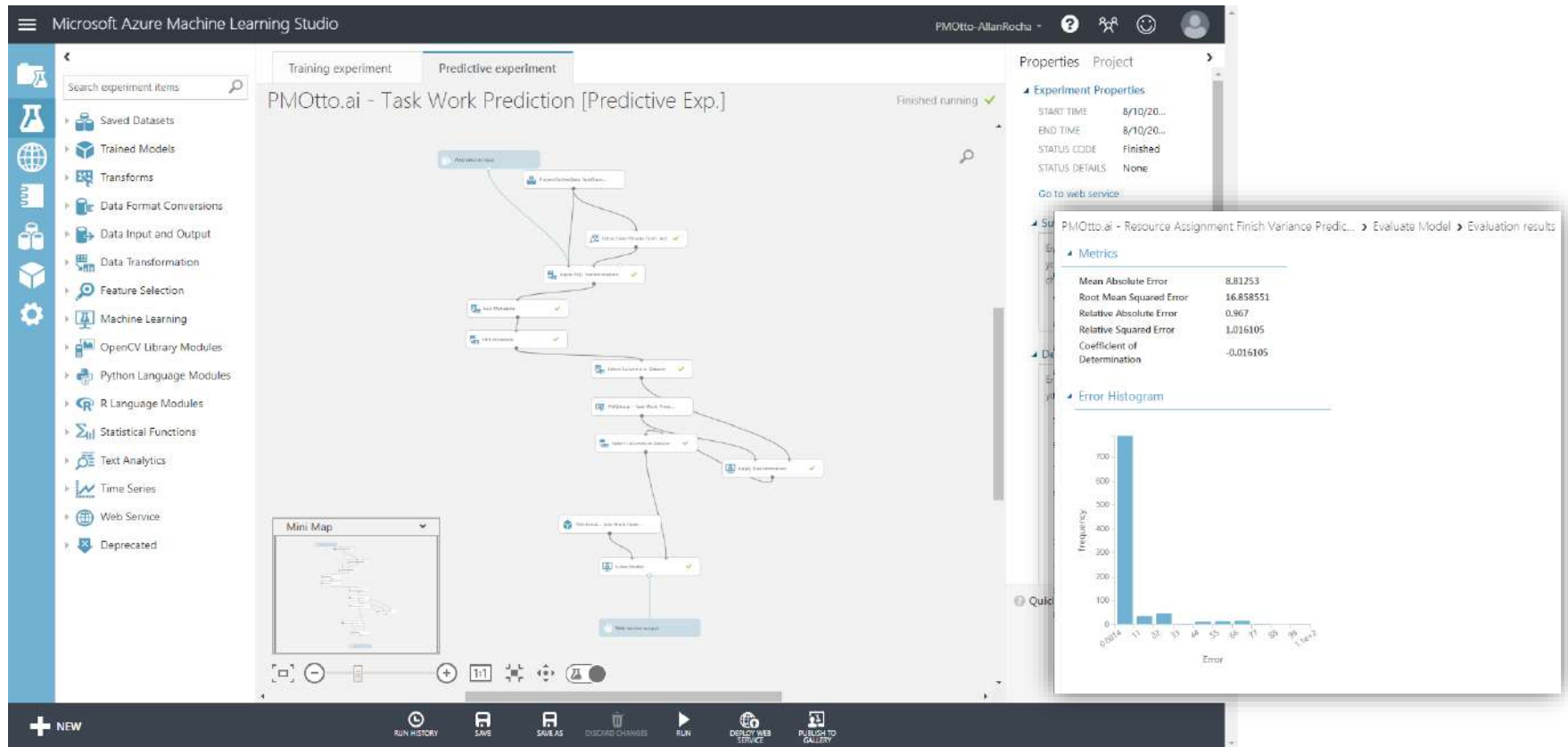
Enter the detailed description for your experiment.

Quick Help

Waiting for login.microsoftonline.com...



Machine Learning Algorithms – Work Prediction



Machine Learning Algorithms – Anomaly detection

Microsoft Azure Machine Learning Studio

MachineLearn001

Anomaly Detection

In draft

Properties Project

Experiment Properties

START TIME
END TIME
STATUS CODE InDraft
STATUS DETAILS None

Prior Run

Summary

Classifier that predicts activity class based on wearable sensor data.
Source: [http://groupware.les.inf.puc-rio.br/](http://groupware.les.inf.puc-rio.br/br/)

Description

Enter the detailed description for your experiment.

Quick Help

Mini Map

NEW RUN HISTORY SAVE SAVE AS DISCARD CHANGES RUN SET UP WEB SERVICE PUBLISH TO GALLERY



Machine Learning Algorithms – Finish Variance Prediction

Microsoft Azure Machine Learning Studio

PMOtto-AllanRocha

Training experiment Predictive experiment

PMOtto.ai - Resource Assignment Finish Variance Prediction

In draft

Search experiment items

- Saved Datasets
- Trained Models
- Transforms
- Data Format Conversions
- Data Input and Output
- Data Transformation
- Feature Selection
- Machine Learning
- OpenCV Library Modules
- Python Language Modules
- R Language Modules
- Statistical Functions
- Text Analytics
- Time Series
- Web Service
- Deprecated

Mini Map

Flowchart steps:

- Edit Metadata
- ProjectOnlineData-Resource
- Select Columns in Dataset
- Clean Missing Data
- Select Columns in Dataset
- Split Data
- Linear Regression
- Train Model
- Score Model
- Evaluate Model

Properties Project

Experiment Properties

START TIME -

END TIME -

STATUS CODE InDraft

STATUS DETAILS None

Prior Run

Summary

Enter a few sentences describing your experiment (up to 140 characters).

Description

Enter the detailed description for your experiment.

Quick Help

NEW RUN HISTORY SAVE SAVE AS DISCARD CHANGES RUN SET UP WEB SERVICE 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 "PMOtto.ai - KPI Global Performance - Neural network regression". The workflow consists of the following steps:

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

The "Split Data" step is currently selected, and its properties are shown on the right:

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

The bottom of the interface features a toolbar with icons for NEW, RUN HISTORY, SAVE, SAVE AS, DISCARD CHANGES, RUN, SET UP WEB SERVICE, and PUBLISH TO GALLERY.



Chat-Bots

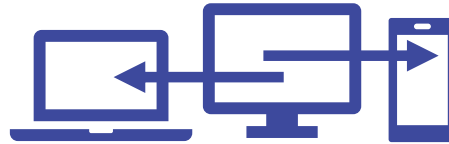
The future of project work



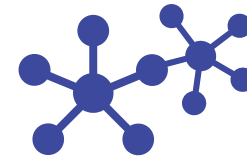
Future of Project Work - Execute tasks with natural interaction



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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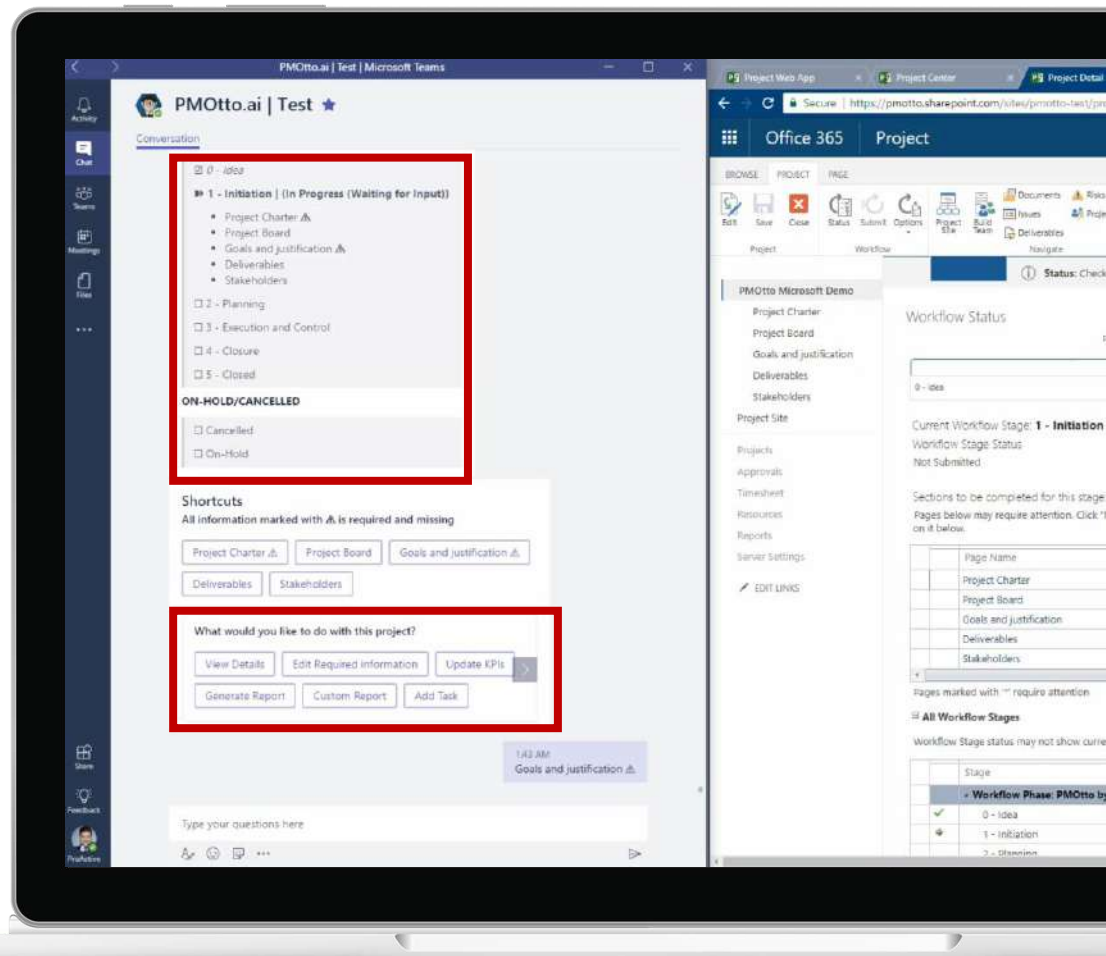
How it look-like

PMOTTO.ai



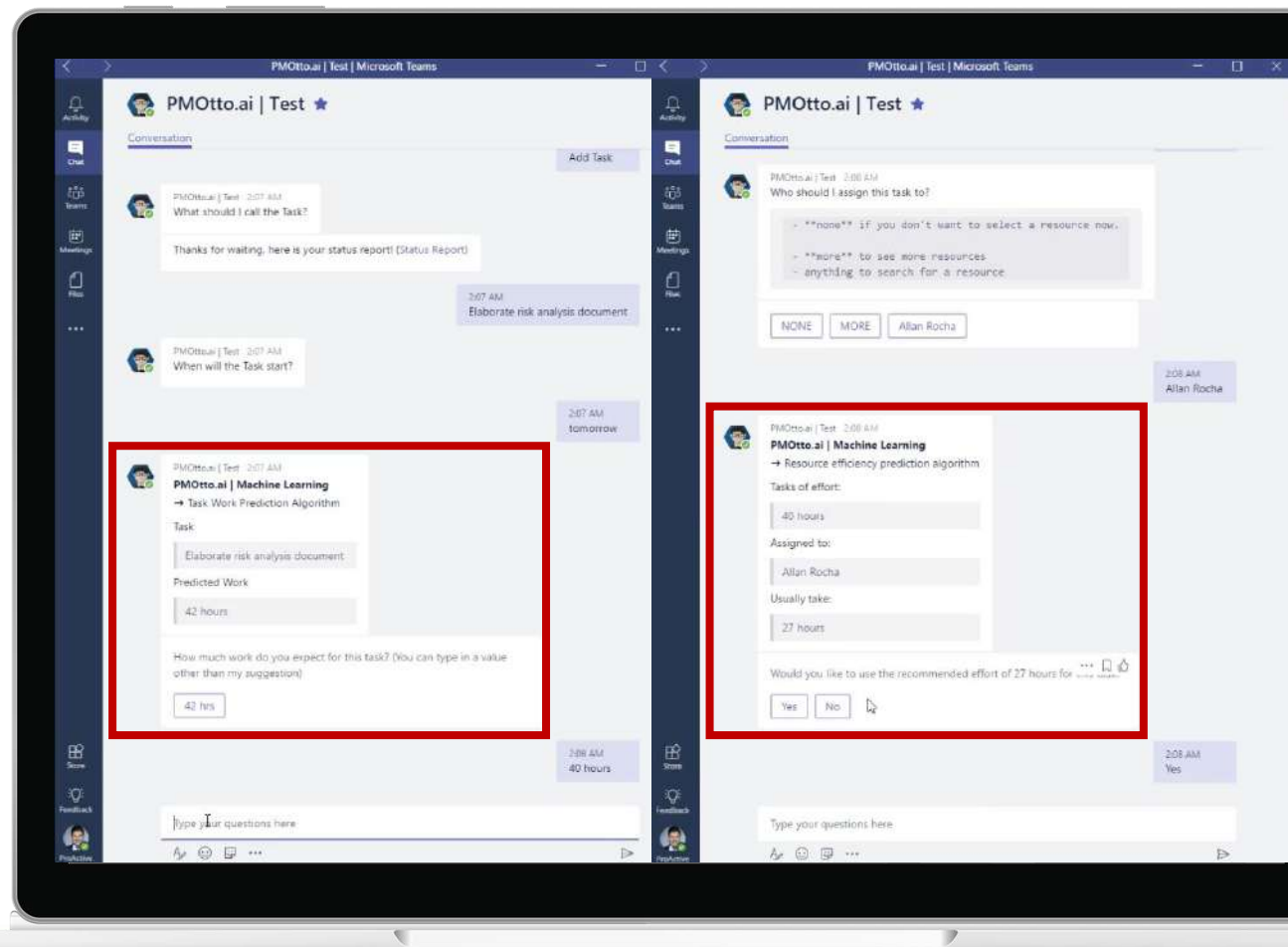
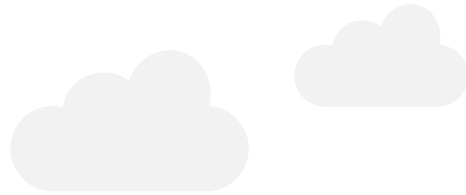
100% of methodology adoption

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



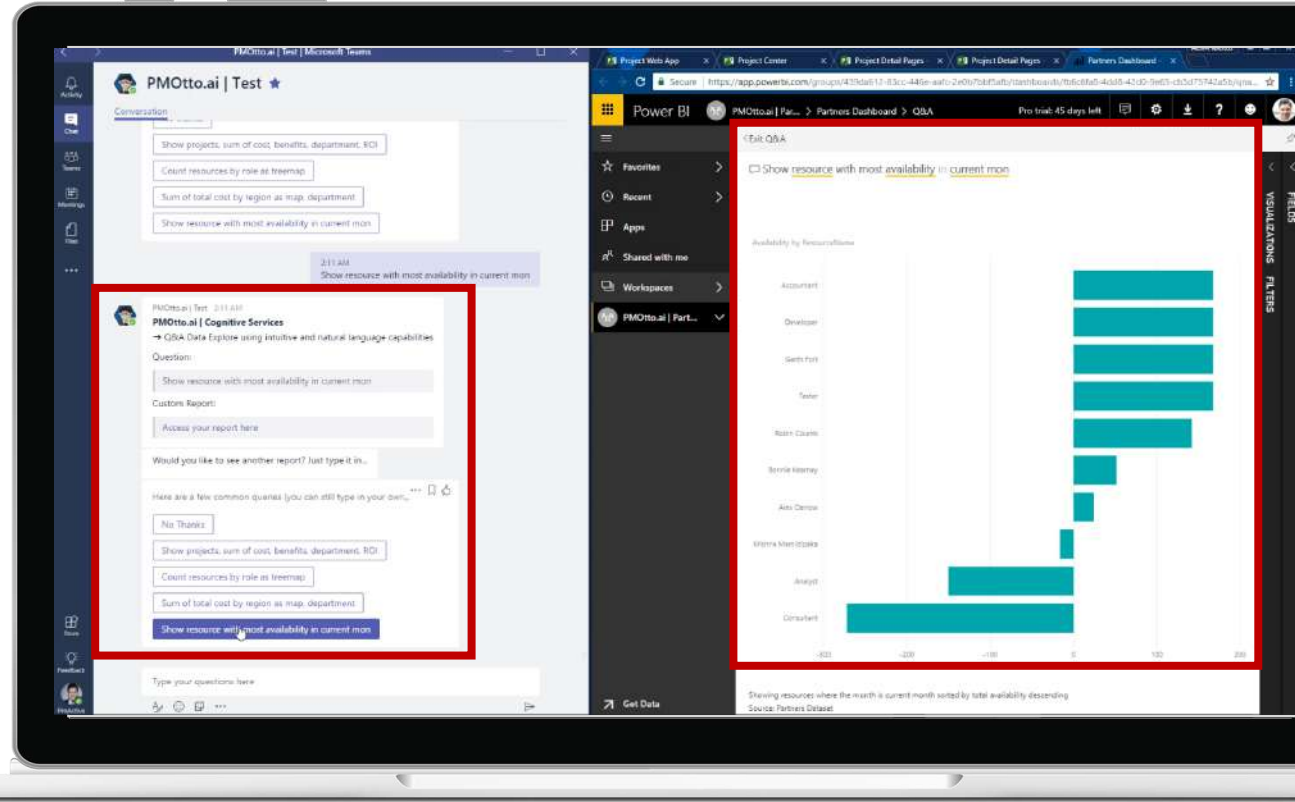
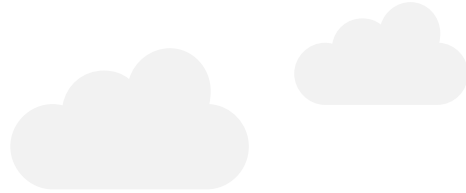
Create tasks and assign to resources

- Create tasks directly into your project plan
- Assign tasks to resources from the resource pool
- Get recommendations from Machine Learning Algorithms
- Task Work Prediction Algorithm
- Resource Efficiency Prediction Algorithm



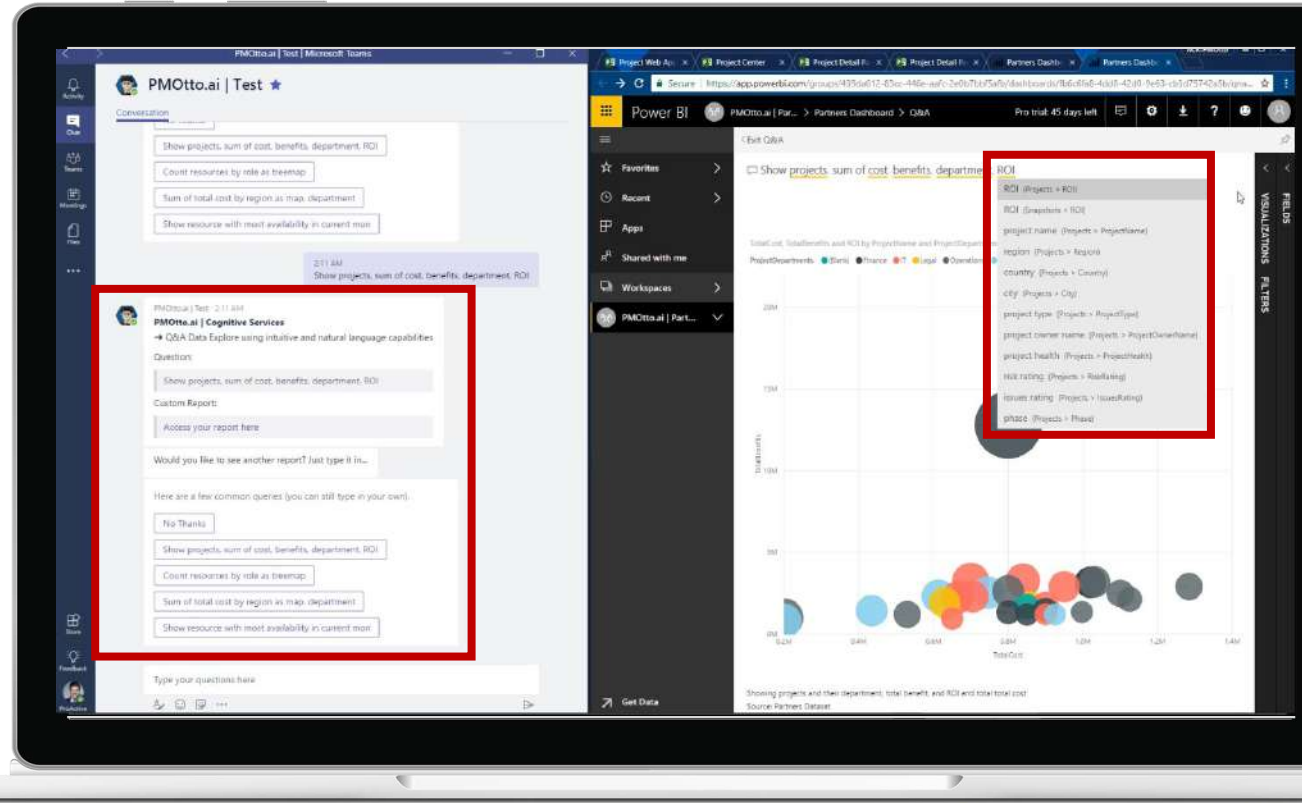
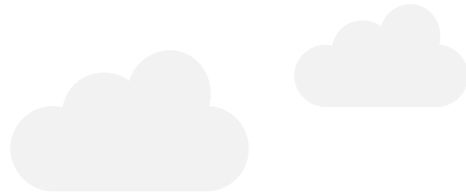
Business Intelligence Integration

- 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

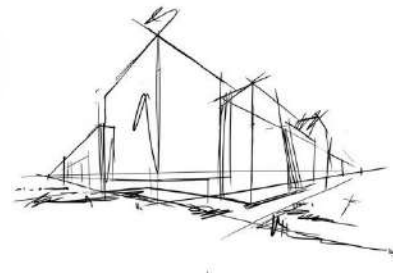
The challenges and learnings of being a pioneer



Keith Bollington
Director, Digital Transformation

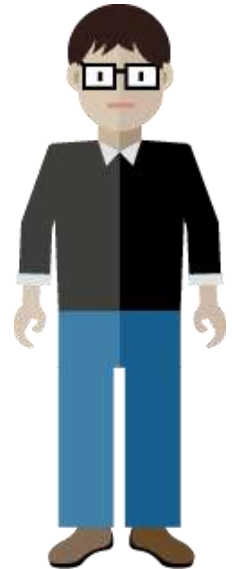


Angela Daniel
Global PMO Lead

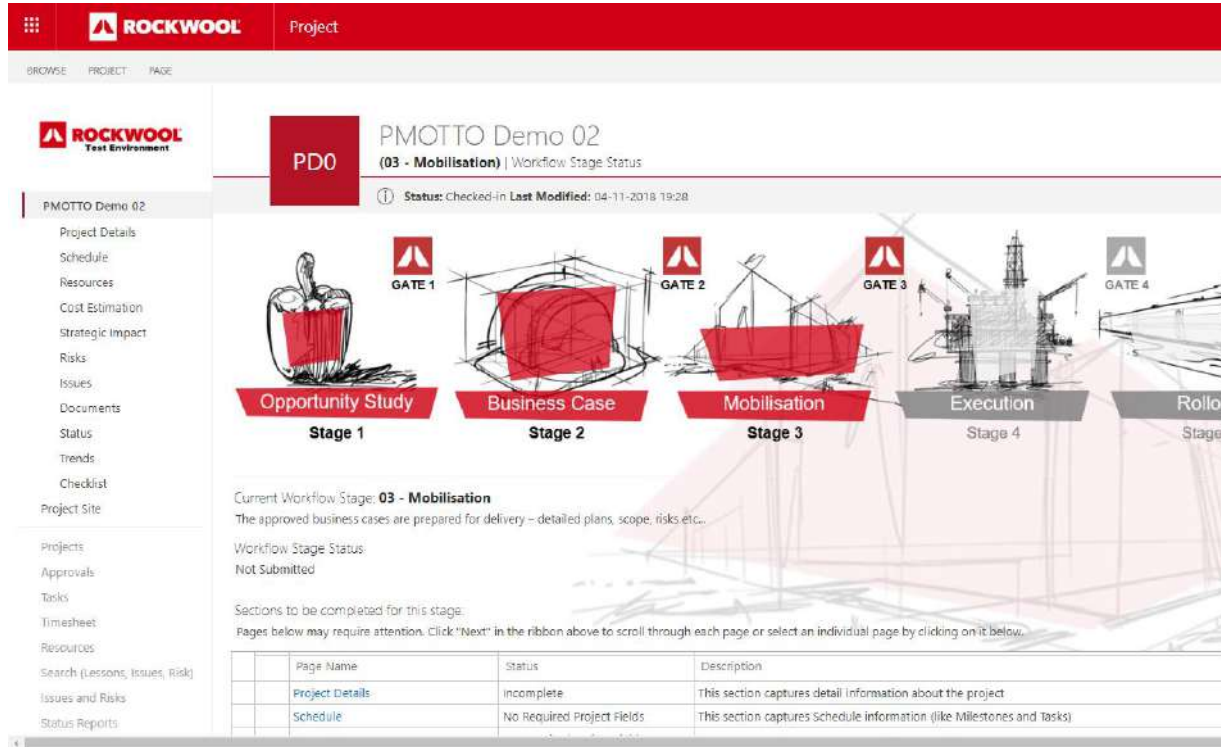


Your Personal Project Management Assistant

- 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**

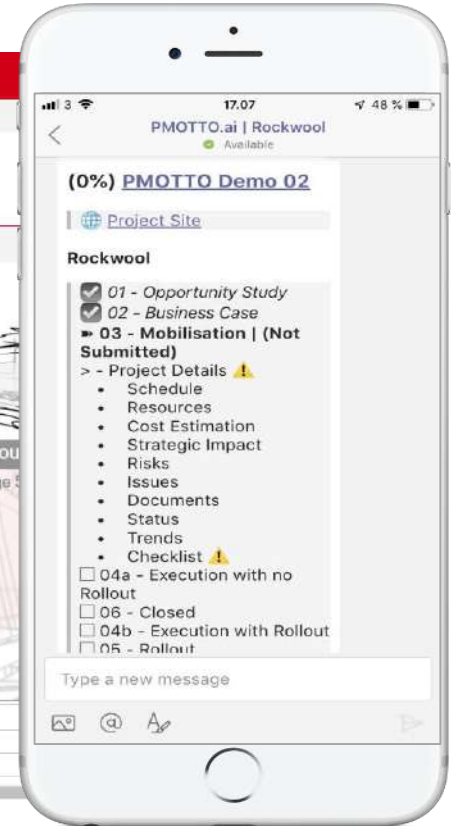
Stage 1 **Stage 2** **Stage 3** **Stage 4** **Stage 5**

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)



How its helping our users



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

