

Engineering Project Management
AI Tools for Managing
Engineering Projects

By

Mark N. Ludwigson, PE, PMP

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1. Introduction

This course introduces Artificial Intelligence (AI) tools for the management of engineering projects. AI can provide several benefits to a project, including efficiency and risk reduction. AI tools are redefining many project management processes by automating routine tasks, providing advanced predictive analytics, and enhancing collaborative intelligence.

This course starts with an overview of AI, including the common forms. Generative AI (GenAI) is the most applicable form for project management tools. Recent advances in AI are reviewed. Next, specific AI-driven tools for project management are reviewed. These tools can help create documents, assist with meetings, forecast timelines, create schedules, identify potential risks proactively, and ultimately drive better project outcomes.

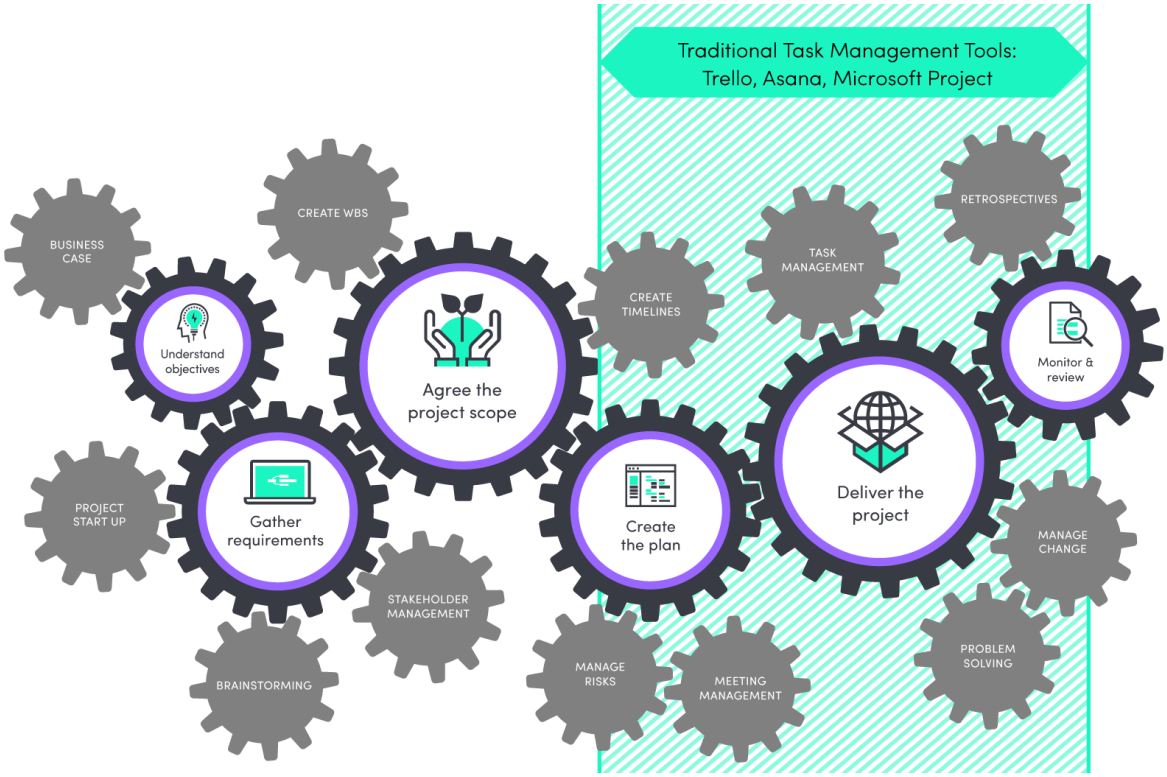


Figure 1: AI tools are available for most of these project management activities
Source: commons.wikimedia.org/wiki/File:Cogs-Baravs-6-Steps-Project-Management_.png, Ninamorrison, CC-BY-SA-4.0

2. AI Algorithms

Artificial Intelligence (AI) is computer software that creates human-like cognitive functions. All the various AI tools have in common the use of AI algorithms.

Traditional Algorithms: Traditional computer programs complete functions based on inputs and comprehensive rules (such as logic and formulas) entered by the programmer. The programmer must consider all potential scenarios and hard-code numerous rules into algorithms. The programmer is either an expert in the subject matter or works closely with an expert.

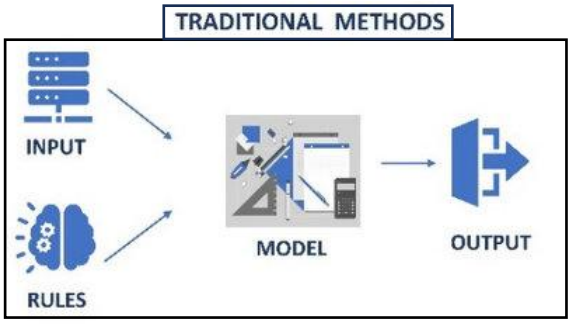


Figure 2: Traditional algorithms use mathematical equations and coded logic (rules) that are applied to a limited set of inputs to produce a model and solutions (output).
Source: https://ui.adsabs.harvard.edu/abs/2022RemS...14.3377K/abstract, CC-4.0

AI Algorithms: AI based programs don't need all the rules to be defined since AI algorithms can utilize input data to determine the rules (step 1) and then apply the rules to new situations (step 2). The programmer does not need to consider all potential scenarios nor be an expert in the subject matter. AI algorithms are particularly useful when dealing with large datasets or complex processes.

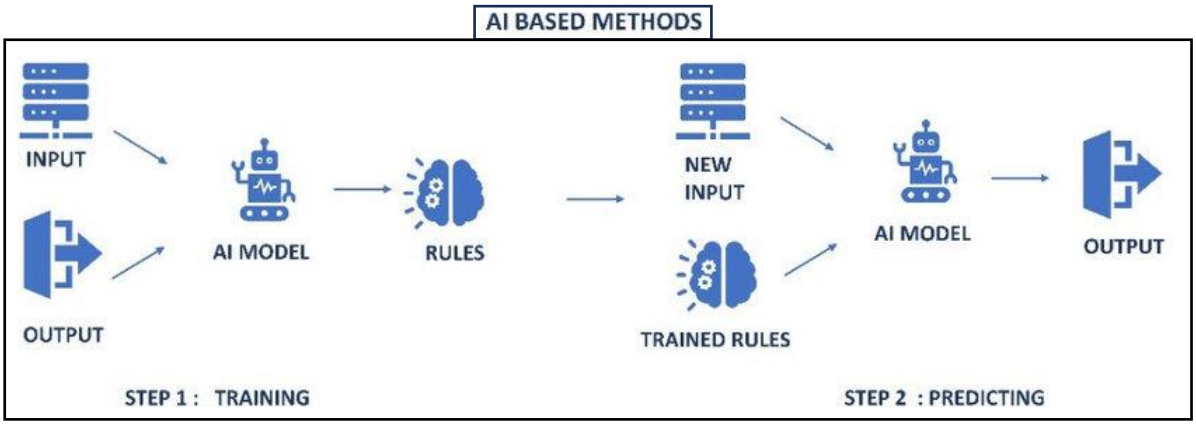


Figure 3: AI-based algorithms analyze initial datasets to find patterns and create rules (step 1). These trained rules are applied to new inputs to provide solutions (step 2).
Source: https://ui.adsabs.harvard.edu/abs/2022RemS...14.3377K/abstract, CC-4.0

3. Forms of AI

Table 1 provides an overview of common categories (or forms) of AI. New categories are likely to emerge as AI is further developed for vastly different applications. The category for most project management and engineering tools is highlighted in red.

Table 1: Categories of AI Systems

Category	Intelligence	Learning	Rules	Examples	Notes
Expert Systems	Limited or None	None or Limited	Fixed	KBES, Fuzzy Logic, Diagnostics	Built for specific tasks, AI features are optional
Machine Learning	Cognitive	Supervised, Unsupervised or Reinforced	Self-modified	Deep Blue, Voice-to-Text	Algorithms can learn from new data
Large Language Models	Cognitive	Supervised, Unsupervised or Reinforced	Self-modified	ChatGPT, Chatbots, Search Engines	Perform natural language processing (NLP) tasks, large data
Deep Learning	Cognitive	Neural Network	Self-modified	Autonomous Vehicles, Python, Facial Recognition	Advanced type of machine learning, complex decision-making abilities
Generative AI	Cognitive	Various	Self-modified	Generative Adversarial Networks, Variational Autoencoders	Most project management & engineering tools are GenAI
Strong AI	Cognitive & Emotional	Independent	Self-created	None (Theoretical)	Creative abilities, optical computing
Super AI	Cognitive, Emotional, & Social	Superior to Human Learning	Not Required	None (Theoretical)	Self-aware, beyond most human abilities, artistic creativity

Expert Systems	
Description	**Examples**
• The term “expert systems” covers a vast array of computer programs, many with simple input to output algorithms for specific technical tasks. • Expert systems are a good fit when there is a small amount of data, and the rules are well understood. • Expert systems can solve very complex problems and use advanced mathematical computations to arrive at a design solution. • There are many engineering design programs that can be considered expert systems. For example, a program that can choose the most efficient structural beam based on a unique set of inputs such as loads, dimensions, connection type, and applicable building codes. • There is an “expert” that creates the initial rules and the initial knowledge base.	• The first expert system was developed in 1965 at Stanford University, called DENDRAL, which stands for "DENDRitic ALGORITHM". The program analyzes mass spectroscopy results to determine the chemical compound being analyzed. • Many expert systems have been developed for technical, scientific and engineering tasks.

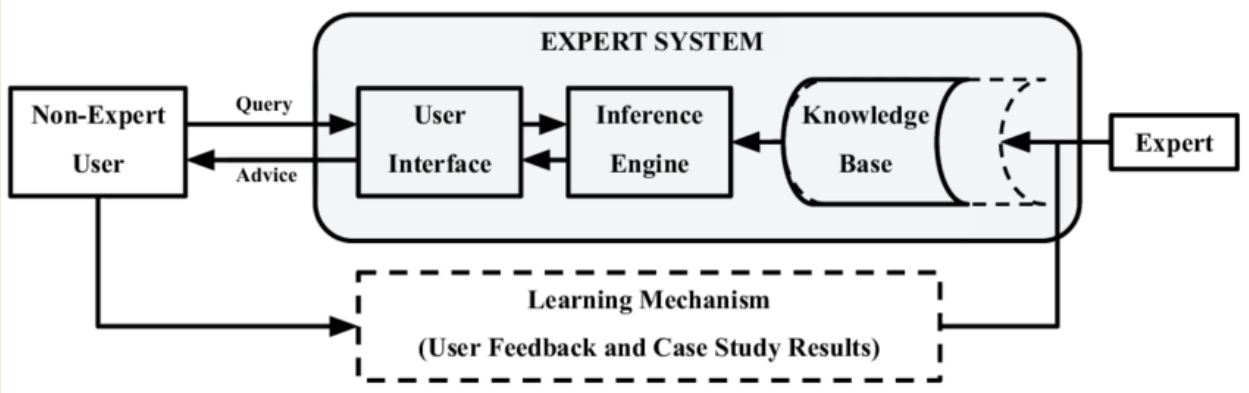


Figure 4: Typical Architecture of an Expert System

Source: https://doi.org/10.1016/j.proeng.2016.04.127, CC BY-NC-ND 4.0

Machine Learning	
Description	**Examples**
• In machine learning (ML), AI algorithms help computers learn from new data and past performance and then modify the functions to increase performance.	• Image Recognition

ML has three methods for “learning”:

1. Supervised Learning:
   - Inputs with labels build knowledge about a given task, similar to how humans use “past experience”. Desired outputs are given for each example input.
   - The program creates a set of rules so that important input features are recognized and consistently produce desired outputs.
   - Many examples are required to achieve accuracy; significantly more than a person would require when learning a new subject.
   - The learning process employs statistical methods and confidence levels.
   - Manual adjustments of the program are usually not required.
2. Unsupervised Learning:
   - Input data does not need to have labels defined by a user.
   - An algorithm groups the data and features according to unknown properties.
   - Unsupervised programs can either cluster the input data, find an anomaly in it, or reduce the number of dimensions in which to express the dataset.
   - Data points are grouped or clustered based on shared features without knowing what labels or categories are present.
   - Pattern recognition, anomaly detection, and failure detection programs use unsupervised learning to recognize important features and classify data as either part of the set or an anomaly.
3. Reinforcement Learning
   - The program is provided with an input and a reward function that gives an indication of how well the program is doing.
   - The algorithm learns how to maximize the reward.
   - The program is periodically reviewed and modified based on results achieved.
   - Reinforcement learning is used in situations where it is difficult to input a set of perfectly correct labels that will cover potential new data.

Deep Learning	
Description	**Examples**
• Deep Learning (DL) is an advanced type of ML based on artificial neural networks (as explained in the previous section) to process and classify data. • Capable of complex decision-making. • The leading programming language is Python, which is open source.	• Autonomous vehicles use deep learning algorithms to make real-time decisions based on the environment around the vehicle, as depicted in the figure.

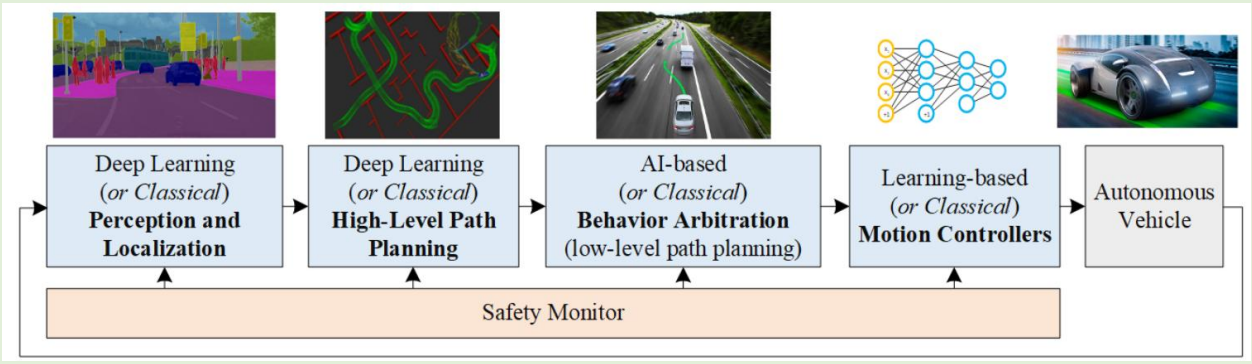




Figure 5: Top: Architecture for self-driving cars with deep learning.
Bottom left: Scene detection with 2D images from bumper.
Bottom right: Scene detection with 3D data from LiDAR on the roof.
Source: https://arxiv.org/pdf/1910.07738, Grigorescu et. al.

Generative AI	
Description	**Examples**
• Generative AI is also called Deep Generative AI or Gen AI. • Gen AI models learn patterns from initial training and apply them to new situations in order to create complex digital deliverables. • Gen AI allows engineers to focus more on project planning, creative problem-solving, and higher-level decision-making. • See figure for how Gen AI is often considered a subset of deep learning.	• Project requirements can be input into a Gen AI program to create a proposal, project plan, schedule, risk register, etc. • Gen AI uses deep learning programming to produce deliverables, such as documents, images, videos, 3D models, conversations, specifications, and unique user specified outputs.

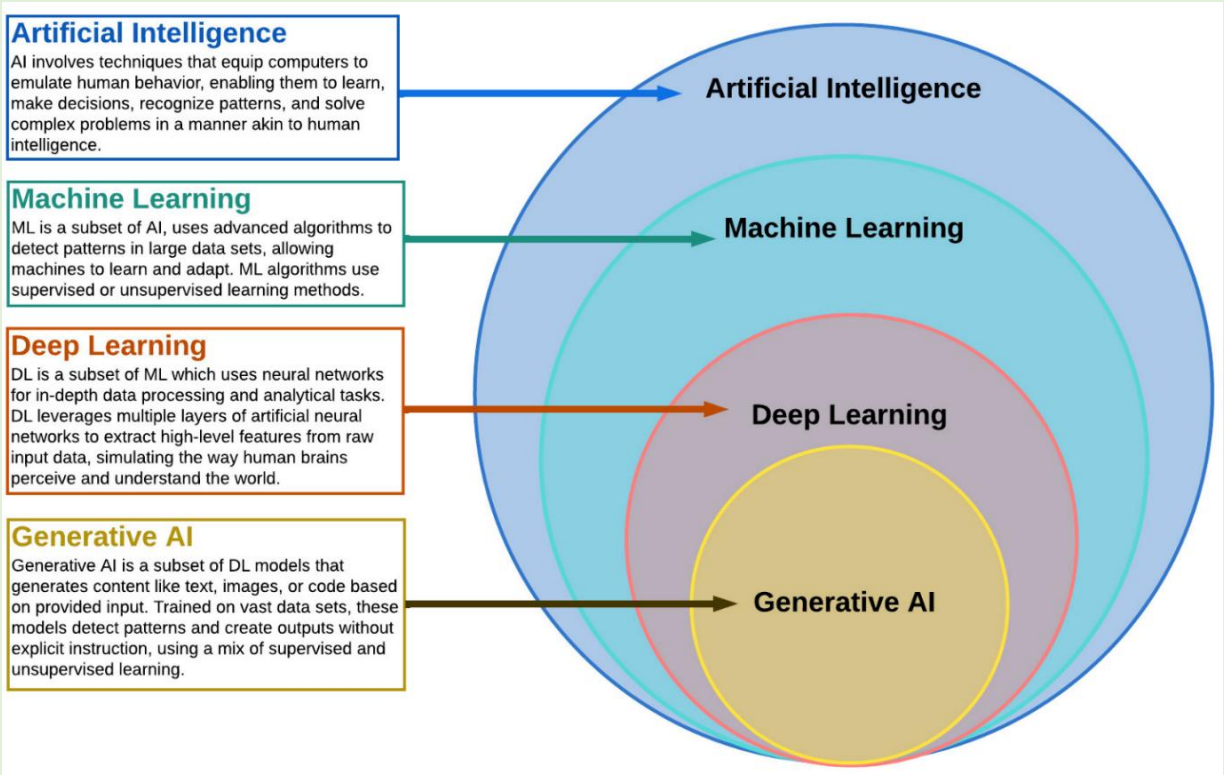


Figure 6: Venn diagram with Generative AI.

commons.wikimedia.org/wiki/File:Unraveling_AI_Complexity_-_A_Comparative_View_of_AI, PopovaZhuhadar, CC-BY-SA-4.0

4. Recent Advances

The following are recent AI advances related to engineering project work. Although some of these advances are not directly related to engineering project management, it is still helpful to be aware of these popular advances in technology.

Predictive Maintenance	
Description	**Examples**
• Predictive maintenance (PdM) uses AI algorithms to predict failure or detect the first signs of failure of physical parts such as machines or electrical parts. • Early detection allows maintenance or replacement prior to a costly failure. • Predictive maintenance uses data analysis to continuously monitor operating conditions and working environments to detect early clues for degradation of equipment.	• Accruent • IBM Maximo® Predict, • InfluxData, Fiix • Limble CMMS, • LLumin, MaintainX, • MATLAB, UpKeep, • Reftab, Samsara, • Siemens MindSphere

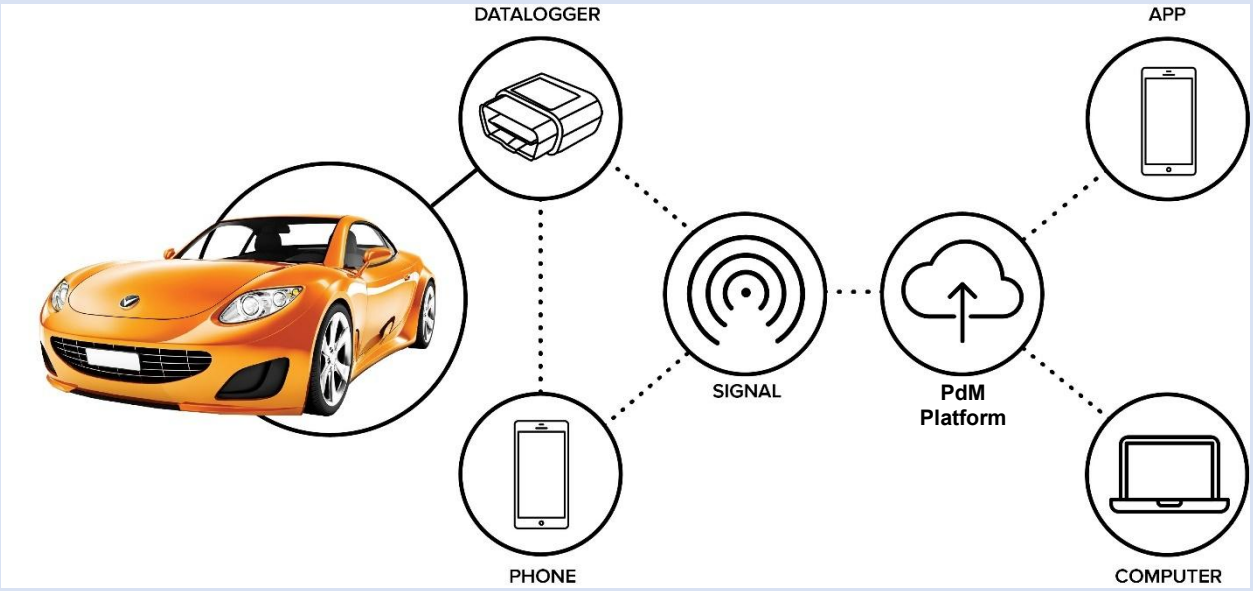


Figure 7: Communication paths for automobile preventative maintenance (PdM).
Source: commons.wikimedia.org/wiki/File:DataLogger_Platform-_How_it_Works.jpg, Danlaw Inc

Digital Twins	
Description	**Examples**
• A digital twin is a model of a physical system with a boost of AI and real operations data to help simulate dynamic real-world scenarios. • Uses both deep learning and generative AI. • Digital twins are built using the current asset condition and relevant historical data about the asset. • Digital twins can be used to optimize the current condition, optimize operations and maintenance, and predict future behaviors. • The models can reflect ongoing operations by direct streaming of data into the AI algorithms.	• Example applications include machinery, engines, pumps, production equipment, assembly lines, packaging systems, power plants, or an entire fleet of vehicles. • Bentley's iTwin

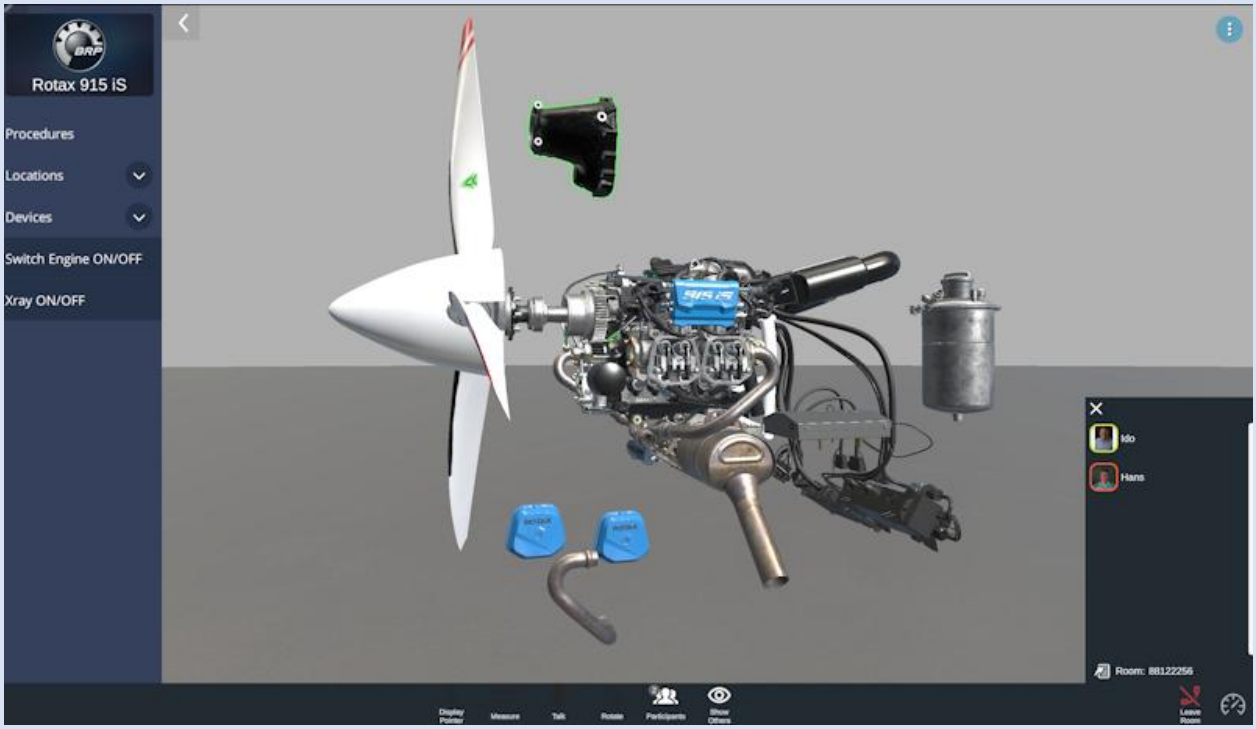


Figure 8: Example digital twin model of a propeller engine.
Source: commons.wikimedia.org/wiki/File:Training_with_digital_twin.jpg, Iditsulkin, CC-BY-SA-4.0

Data Mining	
Description	**Examples**
• Application of ML algorithms to find patterns and relationships in very large data sets. • Common techniques include data classification, association analysis, and regression analysis. • The most widely used data mining method is called CRISP-DM (Cross-Industry Standard Process for Data Mining). • For design, often there is a lack of existing data since: 1) design firms do not openly share project data, 2) human design decisions are not fully documented, and 3) not digitally organized.	• Programing tools include SQL, Python, Hadoop, and Apache Spark. • Data analysis software: GCP Dataflow, GCP Vertex AI, Azure Data Factory, Azure ML Studio, AWS Glue, and AWS Sagemaker. • Existing project databases can be mined for lessons learned.

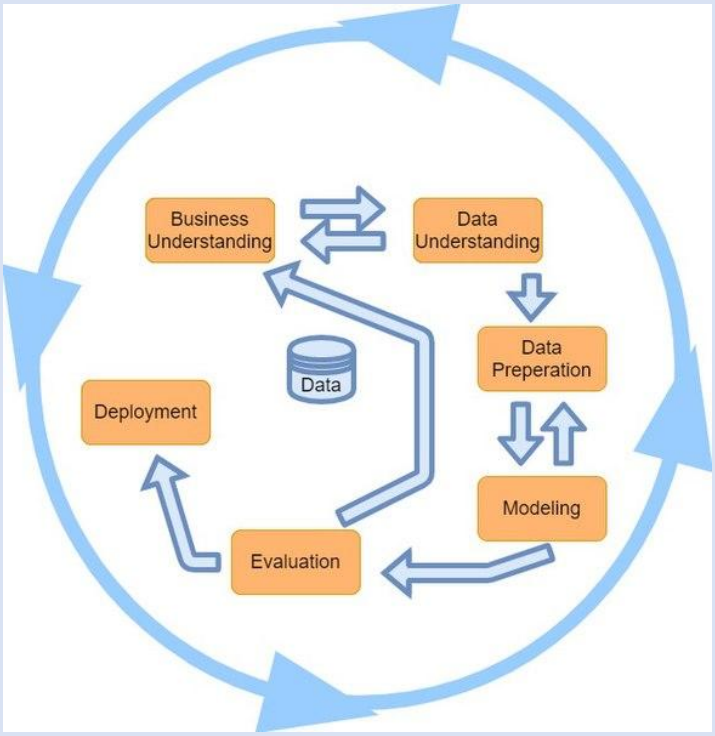


Figure 9: Depiction of CRISP-DM approach. AI is used in the modeling step to extract useful information and make conclusions.

Source: wikimedia.org/wiki/File:CRISP_DM_Data_mining_management_process.jpg, A. Schröder, CC-BY-SA-4

Virtual Assistants	
Description	**Examples**
• Virtual assistant (VA) is a large language model (LLM) that interacts in a human-like manner. • Can perform a range of tasks or services based on user input such as commands or questions. • Typically utilizes online chat (chatbot) capabilities to simulate human conversation. This is also called a visual dialog model. • Some virtual assistants can interpret human speech and respond via synthesized voice. • Can assist project managers in finding information and making informed decisions. • Many organizations have an internal virtual assistance for employees to help them with work related issues, including finding previous projects, company templates, and company procedures.	• Apple's Siri • Apple Intelligence • Amazon Alexa • Asana AI Assistant • Google Assistant • Jira Virtual Agent • Joule Copilot from SAP • Microsoft Copilot • MS Teams PM Assistant • Mycroft (open source) • Samsung's Bixby • Slackbot

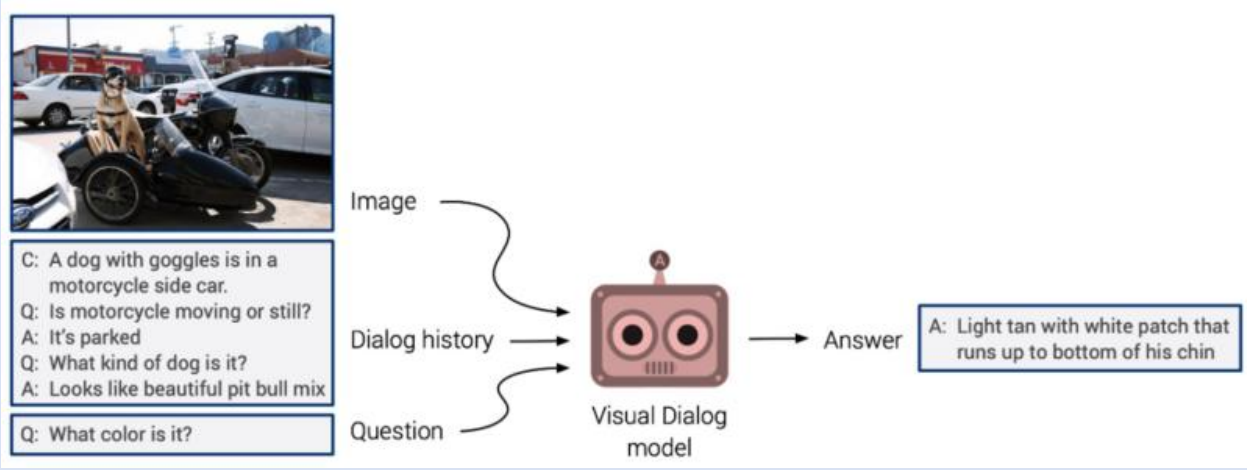


Figure 10: Example of a chatbot answering questions about a unique picture.
Source: commons.wikimedia.org/wiki/File:Visual-Dialog.png, Abhishek Das, CC-BY-SA-4

Smart Infrastructure	
Description	**Examples**
• IoT (Internet of Things) devices linked to a central system with AI for real-time monitoring and control. • Instrumentation and controls systems can become “smarter” with the addition of deep learning and Gen AI. • AI can review trends, monitor current conditions and make adjustments to achieve energy efficiency or other goals. • Some systems sold with label “smart” do not actually have AI programming.	• Utilities infrastructure (water meters, electric meters, monitoring, etc.) • HVAC controls • Security systems • Surveillance systems • Smart home system

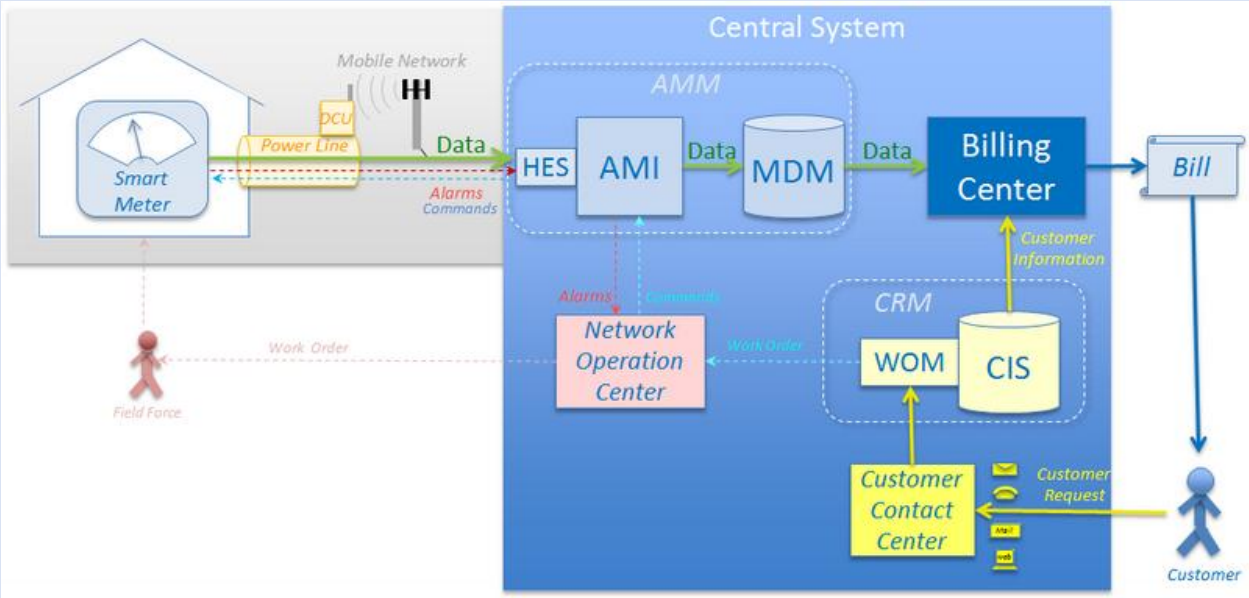


Figure 11: Smart meter system for billing customers.
AMM = Advanced Meter Management (software and hardware bundle)
HES = Head End System (sends and receives smart meters signals)
AMI = Advanced Metering Infrastructure (controls the smart meters, AI potential)
MDM = Meter Data Management (data storage & calculations, AI potential)
Source: commons.wikimedia.org/wiki/File:Smart_Meter_Infrastructure.png, Skyhead, CC-BY-SA-4

Hardware-based AI	
Description	**Examples**
• Hardware-based AI is specifically designed to operate physical components. • Collaborative robots, called cobots, are becoming common in the workplace, working alongside humans in various applications, especially where physical items are being manufactured. • Robots excel in tasks that require high levels of precision, speed, and consistency. • Robotic systems are also equipped with advanced sensors and AI algorithms, enabling them to adapt to their human counterparts' actions and learn from their experiences. • AI programming allows robots to learn and thus become more reliable and efficient with time.	• Autonomous vehicles • Drones • Robots (Cobots, Delta, Educational, Humanoid, Industrial, etc.)

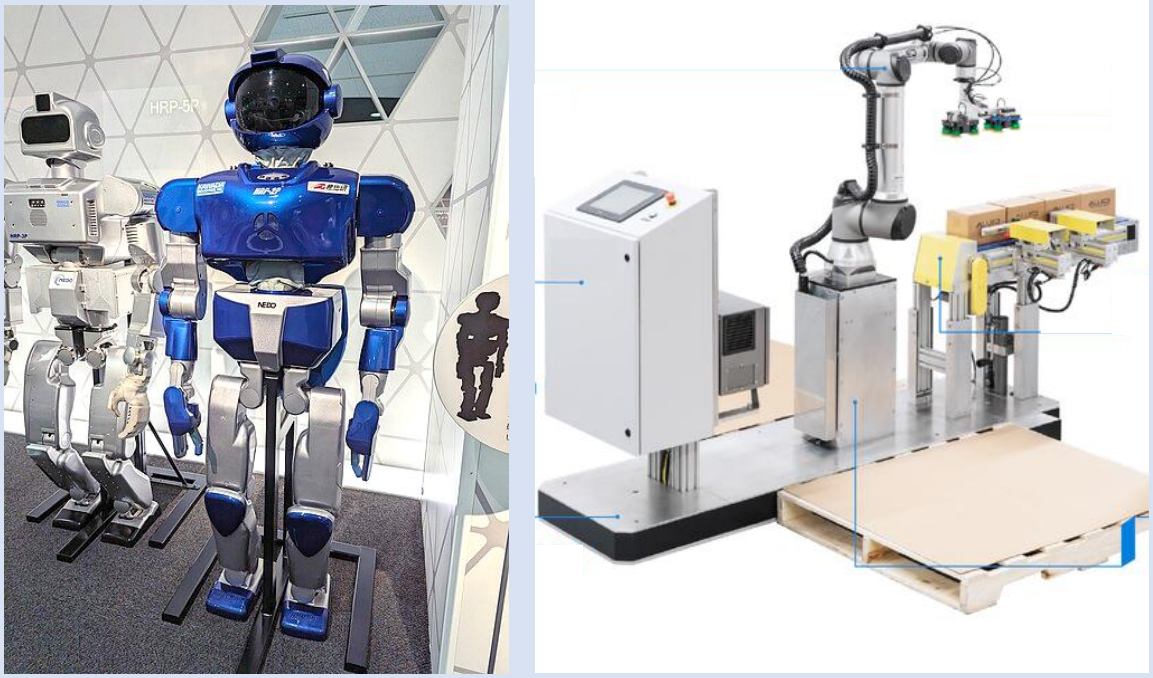


Figure 12: left) humanoid robots; right) industrial packaging cobot.
commons.wikimedia.org/wiki/File:Collaborative-Palletizer-AAA20-RAAS-Universal_Robot-2.png, CollaborativePalletizer, CC-BY-SA-4

AI Code Generation	
Description	**Examples**
• AI Code Generation (also called AI Coding Assistance, Automated Code Generation, or ACG) is the use of an AI program to create code based on a user's conversational prompts. • ACG generates code, writes functions, and aids in code completion. • ACG uses publicly available source code to generate new code. • ACG can create AI-based design tools for specific project management applications.	• Amazon Q Developer (w/ CodeWhisperer) • Gemini Code Assist • GitHub Copilot • OpenAI ChatGPT • OpenAI Codex • Variety of programming language options • Cloud based or local

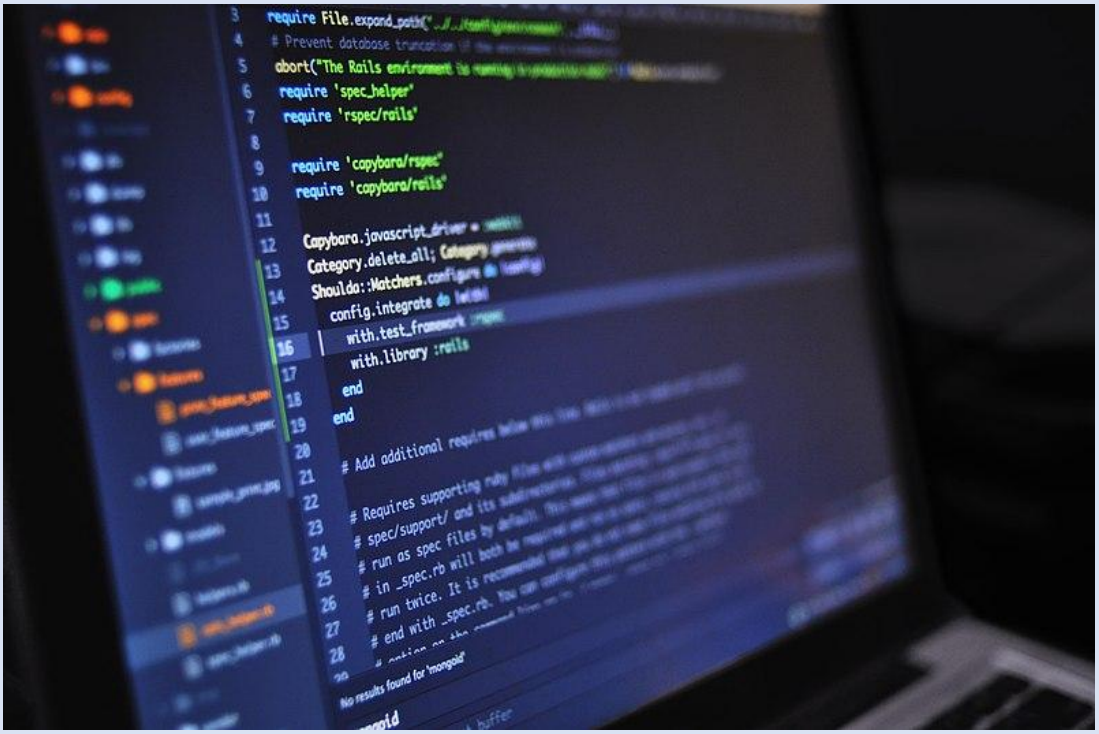


Figure 13: Code like this can be written by AI for engineering applications.

Source: www.pexels.com/photo/close-up-photo-of-programming-of-codes-546819, public domain

Explainable AI (XAI)	
Description	**Examples**
• Explainable Artificial Intelligence (XAI) is a transparent AI program that can clearly explain design decisions, actions taken, and model results to human users. • XAI enables human users to understand, trust, and effectively manage the AI program, the automated design process, and the model results. • Utilizes modified machine learning techniques that produce more explainable models with graphical interfaces and savable outputs in formats like pdf. • XAI opens up the “black box” of AI, allowing users to understand, verify, and challenge decisions made.	• Financial Services: Paypal, ZestFinance, BlackRock • Healthcare: IBM Watson, Google DeepMind, PathAI • Legal: SpeedLegal, Goldman Sachs • DARPA XAI program • Not to be confused with the company xAI

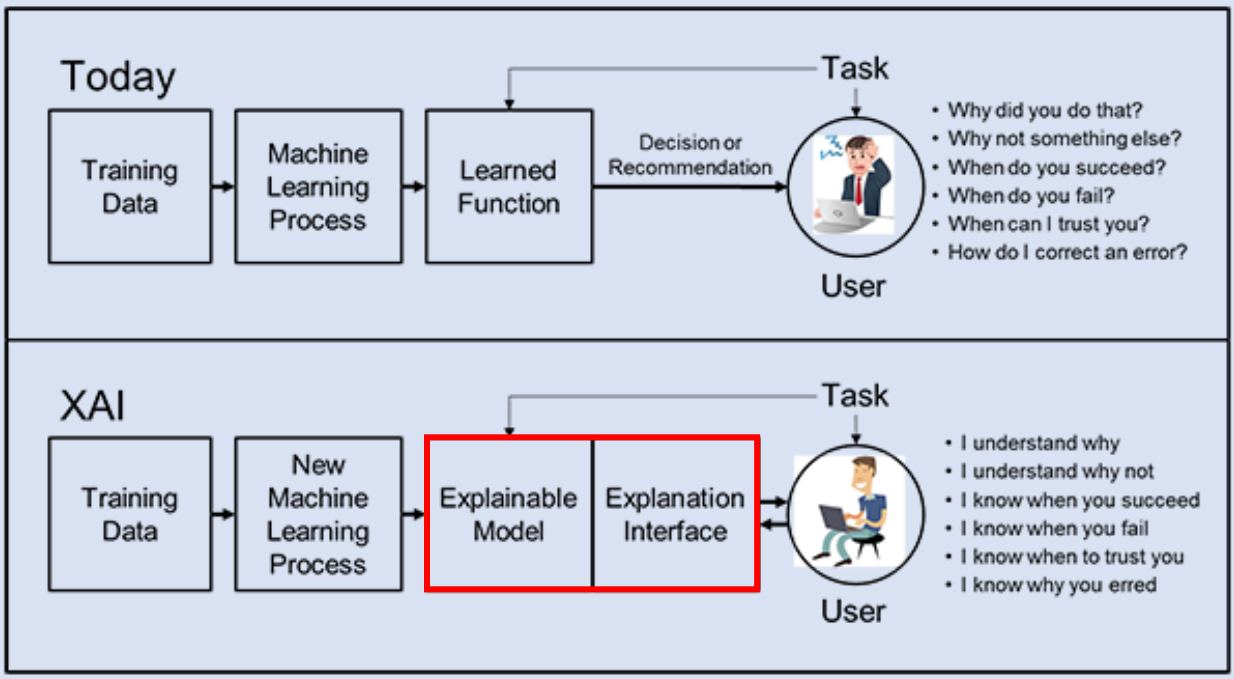


Figure 14: Normal AI (top) versus XAI (bottom) with key differences in **red**.
Source: www.darpa.mil/program/explainable-artificial-intelligence, public domain

5. AI Tools for Project Management

There are a growing number of AI-based tools for project management for an engineering design project. Tools most likely to be useful are covered on the following pages.

AI tools covered are:

- Virtual PM (Project Manager) Assistant
- Document Preparation
- Predictive Analytics
- Risk Assessment
- Scheduling
- Meeting Tools
- Automated Task Management
- Project Audits
- ERP with AI

Note that Microsoft Copilot has a enterprise (paid) version with far more project management capabilities than the free version.

Virtual PM Assistant	
Description	**Software**
• Virtual assistant (VA) for project management purposes with specialized knowledge, previous project data, and access rights to company networks to form a knowledge base • Can perform a range of tasks or services based on user input such as commands or questions. • Typically simulates human conversation. • Assist project managers in finding information, making informed decisions, writing text, prioritizing tasks, identifying risks, analyzing and presenting data, managing meetings, identify procedures to follow, write emails, and more.	• Apple's Siri • Apple Intelligence • Amazon Alexa • Asana AI Assistant • Google Gemini • Jira Virtual Agent • Joule Copilot from SAP • Microsoft Copilot • Mycroft (open source) • Samsung's Bixby • Slackbot

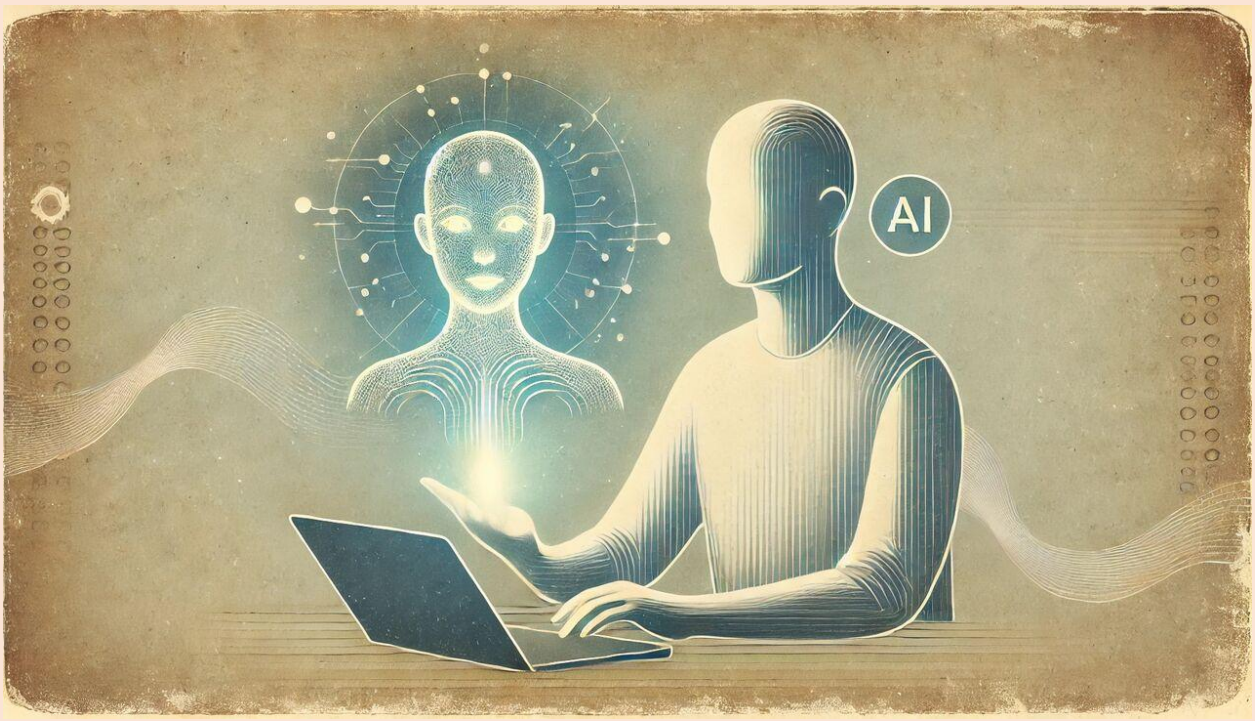


Figure 15: Depiction of a virtual assistant within a computer.
Source: https://dri.es/i-gave-an-ai-agent-edit-access-to-my-website

Document Preparation

Description

- AI can automatically setup a project folder with initiation documents such as budget tracking sheet, schedule, meeting agendas, task lists, etc.
- AI can utilize existing documents to extract key information, analyze it, compare it to past projects, and create project specific documents.

Example Programs

- Asana
- ClickUp
- Jira
- Microsoft Copilot
- Notion
- Wrike

Example Documents

- Proposals
- Assumptions and exclusions
- Go/No-Go forms
- Subcontractor agreements
- Project management plans
- Baseline budgets
- Baseline schedules
- Risk registers with common risks
- Project presentations
- Meeting agendas
- Design review checklists
- Status updates
- Invoices
- Reports
- Technical Specifications
- Lessons learned logs

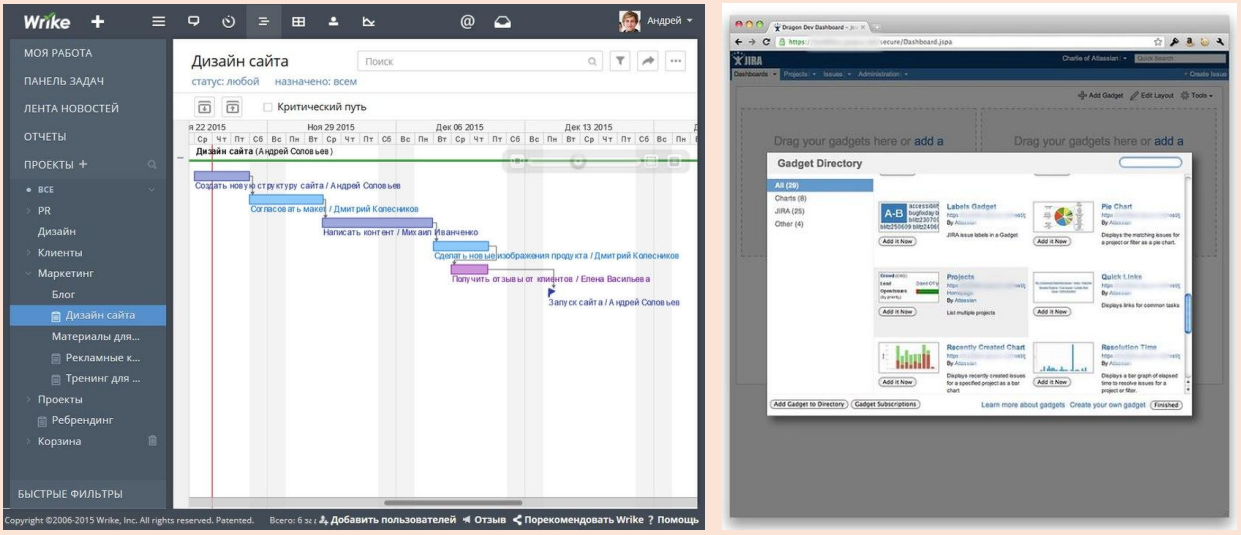


Figure 16: Wrike (left) and Jira (right) for project management document creation.

Sources: commons.wikimedia.org/w/index.php?title=User:Roberto~ruwiki&action=edit&redlink=1, Roberto~ruwiki, CC-BY-SA-4
commons.wikimedia.org/wiki/File:Dragon_Dev_Dashboard_-_JIRA.jpg, Clay Loveless, CC-BY-SA-4

Predictive Analytics	
Description	**Software**

• Use of current project data, similar previous project data, other historical data, statistical algorithms, and machine learning to forecast future project outcomes, schedule, budget, risks, and resource needs (usually for multiple projects).
• Key benefits:
  ○ Project planning
  ○ Risk management
  ○ Cost and schedule control
  ○ Status reports
  ○ Labor forecasting
	• Asana
	• Celoxis
	• ClickUp
	• Forecast
	• LiquidPlanner
	• TrueProject
	• Wrike

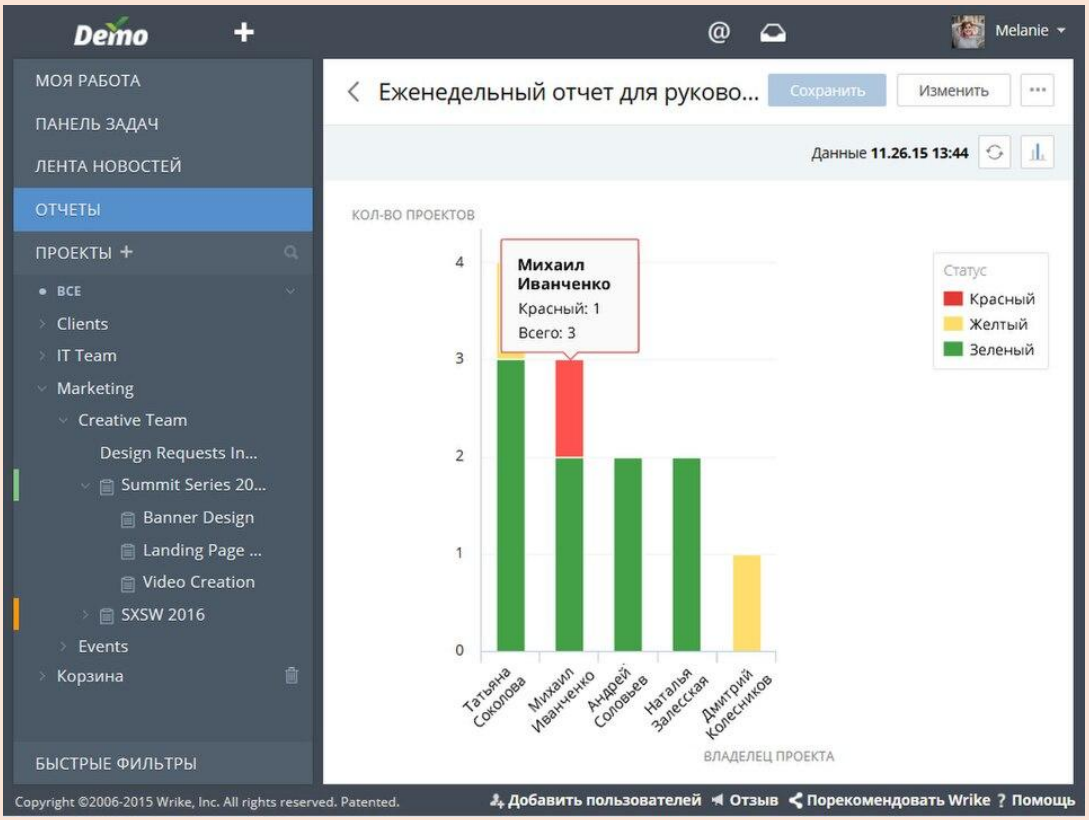


Figure 17: Example of project data charted in Wrike.

Source: commons.wikimedia.org/w/index.php?title=User:Roberto~ruwiki&action=edit&redlink=1, Roberto~ruwiki, CC-BY-SA-4

Risk Assessment	
Description	**Software**

• AI analyzes vast amounts of historical and real-time project data
• Uses machine learning and predictive analytics to perform the following risk management tasks:
  ○ Identify potential threats
  ○ Assess likelihood and impact
  ○ Score and rank risks
  ○ Risk combination simulations
  ○ Recommend mitigation strategies
  ○ Monitoring of risks
  ○ Monitoring key performance indicators (KPIs)
	• Asana
	• Celoxis
	• ClickUp
	• Forecast
	• Microsoft Copilot
	• Wrike

Example Risk Register								
ID	Risk Description	Category	Probability	Impact	Risk Score / Priority	Response Strategy	Owner / Assignee	Status / Notes
R1	Delay in material delivery due to supplier issues	Operational	High (0.8)	High (0.7)	**High (0.56)**	Mitigate – engage backup supplier	Procurement Manager	Monitoring – supplier confirmed secondary source
R2	Software integration failure between control and monitoring systems	Technical	Medium (0.5)	High (0.8)	Medium (0.40)	Mitigate – early integration test	IT Lead	In progress
R3	Unexpected weather delays during foundation installation	Environmental	Low (0.3)	High (0.9)	Medium (0.27)	Accept – include 5-day weather buffer	PM	Active
R4	Change in regulatory approval timeline	Legal	Medium (0.6)	High (0.8)	**High (0.48)**	Transfer – use legal consultant	PM	Open
R5	Loss of key technical staff	Human	Medium (0.5)	Medium (0.5)	Low (0.25)	Mitigate – cross-train engineers	PM	Resolved

Figure 18: Example risk register with scoring and response strategies. AI tools can help create and maintain a risk register.

Source: Author

Scheduling	
Description	**Software**

• AI tools use machine learning, previous project data, and predictive analytics to perform the following scheduling tasks:
  ○ Create a baseline schedule based on tasks and milestones in a proposal or business plan
  ○ Identify/assign resources
  ○ Modify schedule based on project progress
  ○ Create schedule status report
  ○ Plot earned value s-curves and other graphics
	• Alice
	• Asana
	• ClickUp
	• Clockwise
	• Forecast
	• Lindy
	• MS Planner w/ Copilot
	• Motion
	• Reclaim
	• SkedPal
	• Wrike



Figure 19: Example project schedules.

Source: commons.wikimedia.org/wiki/File:Gantt_Chart_Template_for_Film_Production.png, HarryTruinkers, CC-BY-SA-4

Meeting Tools	
Description	**Software**

• AI driven meeting administrative tasks, include:
  ○ Agenda
  ○ Written transcription with speaker names
  ○ Live translation
  ○ Meeting notes and summary
  ○ Action item list
• Meeting analytics such as talk time, topic time, sentiment analysis, and issue progress tracking
• Ability to create project timeline of events based on meeting recordings
• Capable of finding requested information by searching all previous meeting recordings
	• Avoma
	• Fathom
	• Fellow
	• Fireflies.ai
	• MS Teams w/ Copilot
	• Otter.ai
	• tl;dv

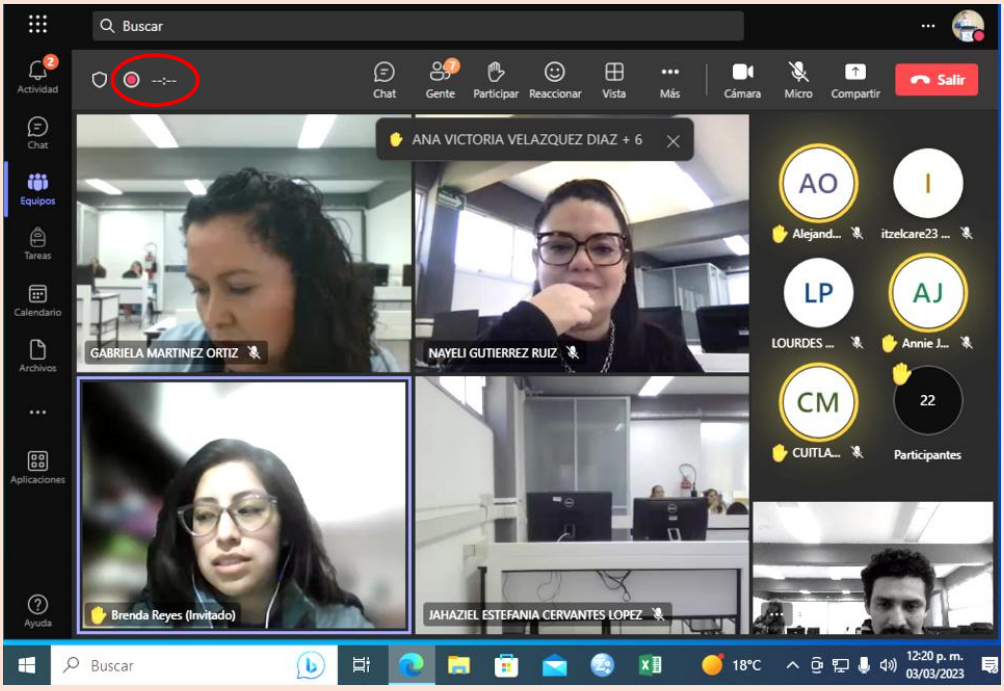


Figure 20: MS Teams call with the red dot signifies that it is being recorded (along with an initial notification). A transcription is available in the chat history after the meeting ends, alongside the recording.

Source: commons.wikimedia.org/wiki/User:Luisalvaz, Luis Alvaz, CC-BY-SA-4

Automated Task Management	
Description	**Software**
• AI software to streamline, simplify, and automate repetitive or data-driven aspects of task execution and tracking • Minimize manual administrative work, increase efficiency, and ensure consistency • Tasks created and assigned based on predefined workflows, project milestones, deliverables, and specific triggers. • Provide notifications and reminders to staff • Can include approval workflows so the project manager or other leaders can review and confirm changes. • Intelligent prioritization based on critical path • For example, a draft invoice is auto-created and sent to the manager for review. Upon approved, the invoice can be auto-sent to the client. AI will learn from the previous markups, so the next invoice doesn't have the same mistakes.	• Asana • ClickUp • Jira Atlassian • Monday.com • Trello Butler • Wrike

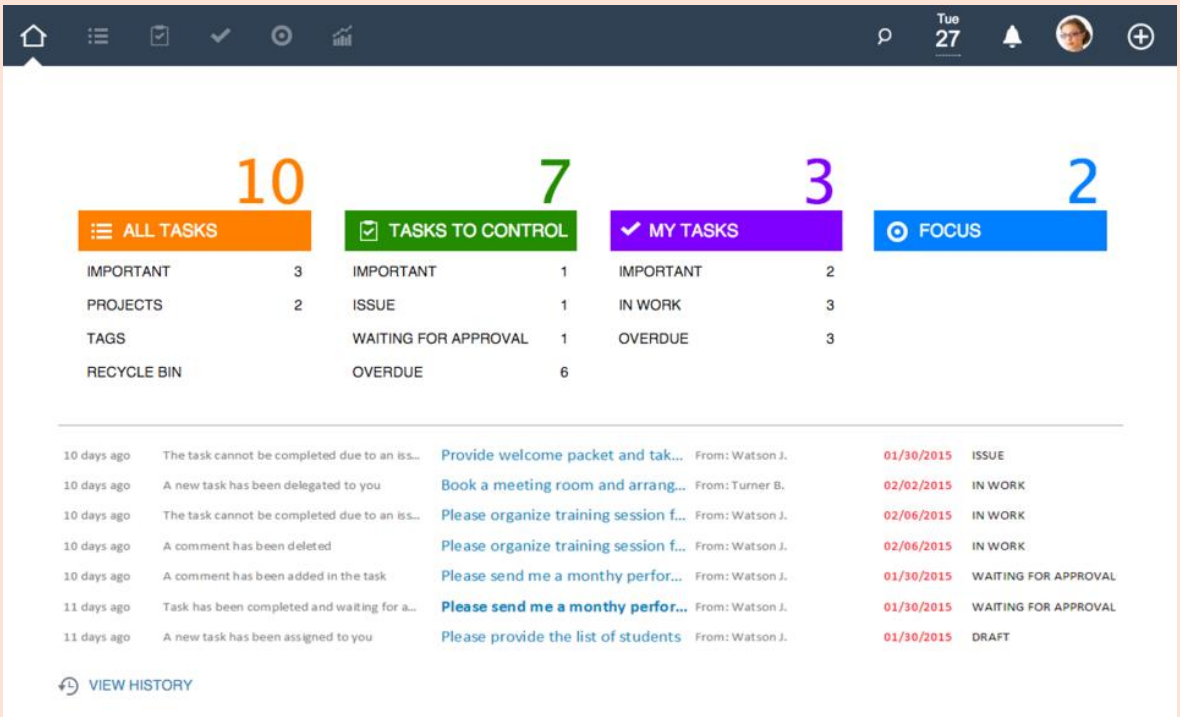


Figure 21: Example task management dashboard. Tasks can be assigned to AI or PM.
Source: commons.wikimedia.org/wiki/File:Dashboard_en.png, Andreybae, CC-BY-SA-4

Project Audits	
Description	**Software**
• Continuous monitoring of project information to identify issues and risks in real-time • Confirm compliance with company procedures and documentation requirements. • For example, AI can run an audit on all active project folders to check for required documents (contract, project plan, risk register, baseline schedule, baseline budget, quality plan, quality review checklists, meeting notes, etc.). • Audit results can be displayed graphically. • Project documents and events can be automatically monitored and the manager alerted	• AuditBoard • Fathom • Hyperproof • LogicGate • MindBridge Ai Auditor • OneTrust • SAP Audit Management

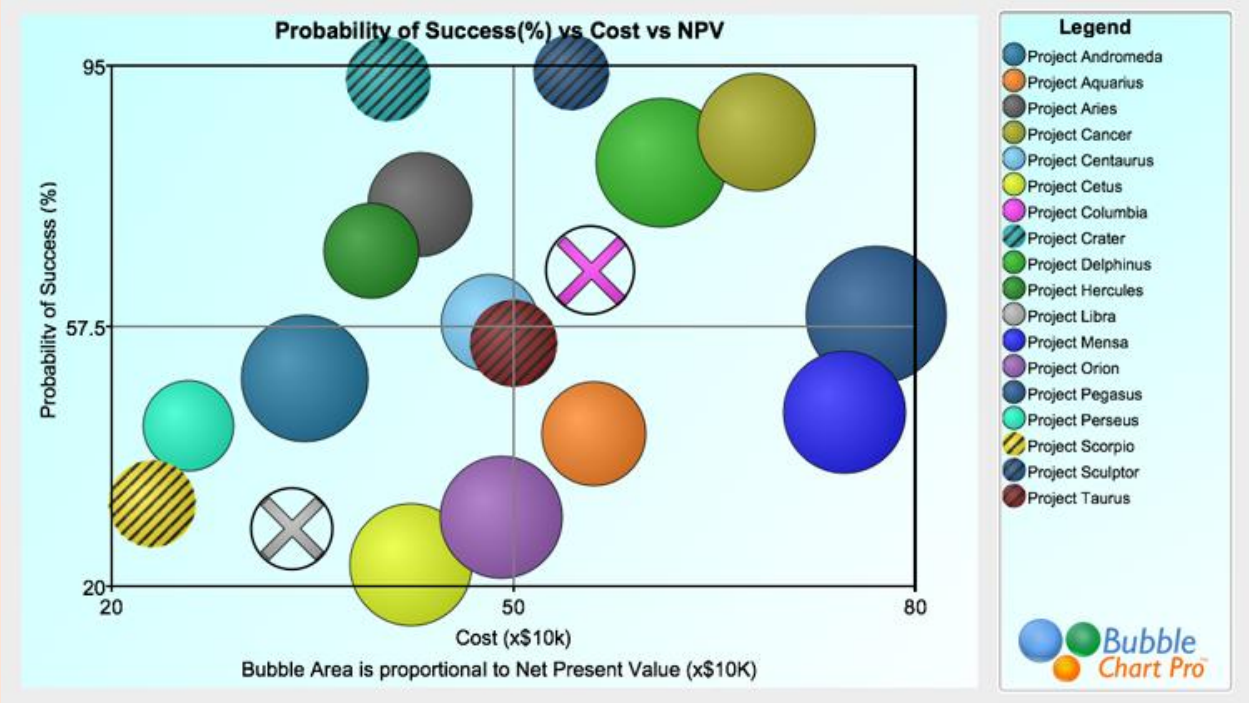


Figure 22: Portfolio status with bubbles for each project.
Audits can determine the current values and produce such graphically displays.
Source: commons.wikimedia.org/wiki/File:Project_Portfolio_Bubble_Chart.png, George Huhn, CC-BY-SA-3.0

ERP with AI	
Description	**Software**
• AI is now a core component of modern Enterprise Resource Planning (ERP) software for managing opportunities, projects, programs, vendors, agreements, orders, resource planning, employee information, and more. • Intelligent platforms provide automated tasks, advanced analytics, forecasting, improved decision-making, and virtual assistant interface. • ERP software is growing to encompass more comprehensive project management needs.	• Acumatica Cloud ERP • Deltek Vantagepoint • Epicor Kinetic • Infor CloudSuite • Microsoft Dynamics 365 with Copilot • Oracle Fusion Cloud ERP NetSuite • SAP S/4HANA

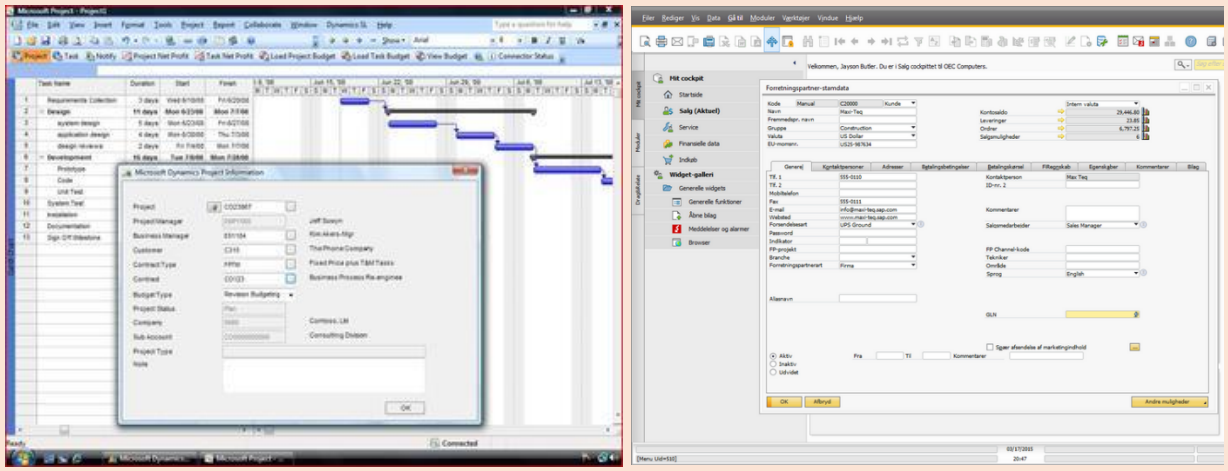


Figure 22: Example ERP screens for inputting project data.
Left) Dynamics with Project/Planner Connector; Right) SAP

Source: commons.wikimedia.org/wiki/File:Conector_de_Microsoft_Dynamics_SL.jpg, MarioCneo-9872, CC-BY-SA-4.0
commons.wikimedia.org/wiki/File:SAP_Business_One_Klient.png, Rwj dk, CC-BY-SA-3.0

6. Course Summary

There are a growing number of AI-based tools for project management, many of which can be helpful for engineering projects. AI can provide several benefits to a project, including efficiency and risk reduction. AI software utilizes AI algorithms which can learn by looking at past data, create new logic/rules, to apply these to new situations. AI tools for project management and engineering are mostly based on GenAI.

The following AI tools were covered in this course:

- Virtual PM Assistant
- Document Preparation
- Predictive Analytics
- Risk Assessment
- Scheduling
- Meeting Tools
- Automated Task Management
- Project Audits
- ERP with AI

AI-based software for project management tasks includes:

- Asana
- Celoxis
- ClickUp
- Forecast
- Jira
- LiquidPlanner
- Microsoft Copilot
- Motion
- Notion
- Trello
- TrueProject
- Wrike
- Zapier

Enterprise Resource Planning (ERP) software is growing to include more project management capabilities and AI tools.

AI Tools for Managing Engineering Projects - Quiz

Updated: 12/29/2025

1. **Which is an example of an AI algorithm?**
    a. Training & Input -> Model -> Output
    b. Input & Rules -> Model -> Output
    c. Rules -> Model -> Training -> Output
    d. Coding -> Rules -> Model -> Output

2. **Which is considered a subset of deep learning?**
    a. Expert Systems
    b. XAI
    c. Machine Learning
    d. Gen AI

3. **Which is a model of a physical system with real operations data?**
    a. Static model
    b. Digital twin
    c. Discrete model
    d. Doppelganger

4. **What is the purpose of XAI?**
    a. Accuracy
    b. Efficiency
    c. Transparency
    d. Scheduling

5. **How can a Virtual PM Assistant help on a project?**
    a. Monte Carlo analysis
    b. Create a 3D model
    c. Find information
    d. Contact vendors

6. **AI can setup a project folder with initiation documents.**
    a. True
    b. False

7. **How can Predictive Analytics help on a project?**
    a. Lessons learned log
    b. Forecast project outcomes
    c. Written scope of work
    d. WBS

8. **Which AI software has tools for a variety of project management tasks?**
    a. Juke
    b. LuckyPM
    c. Yuletido
    d. Microsoft Copilot

9. **AI can NOT perform risk combination simulations.**
    a. True
    b. False

10. **Which is NOT a common AI driven task for meetings?**
    a. Diversity scoring
    b. Live translation
    c. Transcription
    d. Meeting summary