

The Intelligent Metric Expert

How AI is Revolutionizing Software Measurement Practices



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<http://leda-mc.com>

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Try it for free now!



<https://quanter.ai/>

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Studio Ghibli



Futuristic



Futuristic & photorealistic

How did we get here?

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Brief history of AI

The era of LLMs begins



1956



The term Artificial Intelligence was born
At the conference organized by John McCarthy and held at Dartmouth, the term was adopted.

1957



Creation of the artificial neuron.
Frank Rosenblatt presents the perceptron, his model of an artificial neuron based on the human neuron and the foundation of neural networks.

1990



New AI
Rodney Brooks from MIT proposes advancing artificial intelligence research towards a simpler model based on interaction.

1997



Deep Blue defeats Kasparov.
World chess champion Garry Kasparov is defeated by IBM's Deep Blue computer in 6 games. The computer uses search methods to evaluate 200 million possible moves per second.

2012



AlexNet wins ImageNet
Alex Krizhevsky and Ilya Sutskever win the ImageNet competition. Their new approach greatly improves the error rate compared to the second place (15% error versus 26%).

2016



AlphaGo defeats Lee Sedol
DeepMind presents AlphaGo, an artificial intelligence program that beats Lee Sedol, world Go champion. The difficulty lies in the fact that there are more possible moves than atoms in the universe.

2017



Transformer architecture
Google launches the Transformer architecture, representing a quantum leap in natural language processing applications. It starts with translation and extends to images and other data sources.

2020



LLM
Among these, OpenAI presents a universal language model trained with more than 700 GB of text, capable of performing tasks it was not specifically trained for: GPT-3.

2022...

Generative explosion

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ChatGPT

Stablediffusion

Copilot

Sora

MidJourney

LLaMA

DALL-E

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Suno

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“Any sufficiently advanced technology is indistinguishable from magic.”

Arthur C. Clarke

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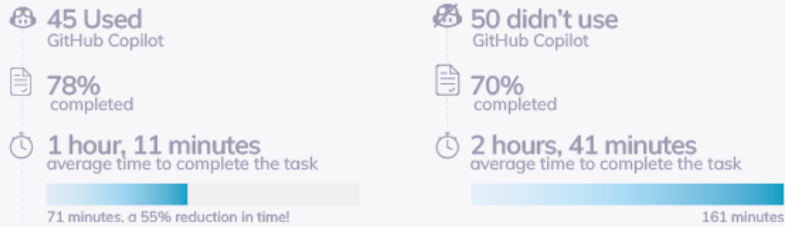
AI is changing software development world

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55% GitHub Copilot Study Sep 2022

Summary of the experiment process and results



Results

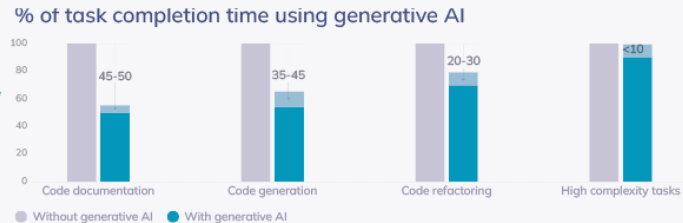
- » The use of GitHub Copilot increases developer productivity by 55%.

Context

- » The study compared developers using the GitHub Copilot AI tool with those who didn't.
- » The research involved 95 programmers, randomly assigned to both groups.
- » Participants had an average of 6 years of coding experience and spent an average of 9 hours per day coding.

Source <https://github.blog/2022-09-07-research-quantifying-github-copilots-impact-on-developer-productivity-and-happiness/>

45% McKinsey & Company Study June 2023



Results

- » The use of AI improves productivity in code writing by 35%–45%.
- » Productivity in documentation generation improves by 45%–50%.
- » Refactoring tasks are completed 20%–30% faster.

Context

- » Sample: 40 developers with varying levels of experience in software development.
- » Over several weeks, they performed common software development tasks across three areas: code generation, refactoring, and documentation.

- » Each developer participated in both the test and control groups, performing different halves of the task set in each condition.

Source <https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/unleashing-developer-productivity-with-generative-ai>

70%

Ness-Zinnov Study February 2024

Results

- » 70% reduction in average task completion time.
- » 48% reduction in task completion time for senior engineers.
- » 70% improvement in engagement by simplifying tasks and fostering a more collaborative and dynamic work environment.

Context

- » Sample of over 100 software engineers across different platforms

Source <https://iotbusinessnews.com/2024/02/15/06523-generative-ai-improves-software-engineering-productivity-by-70-says-ness-zinnov-study/>



Could AI help metric experts?

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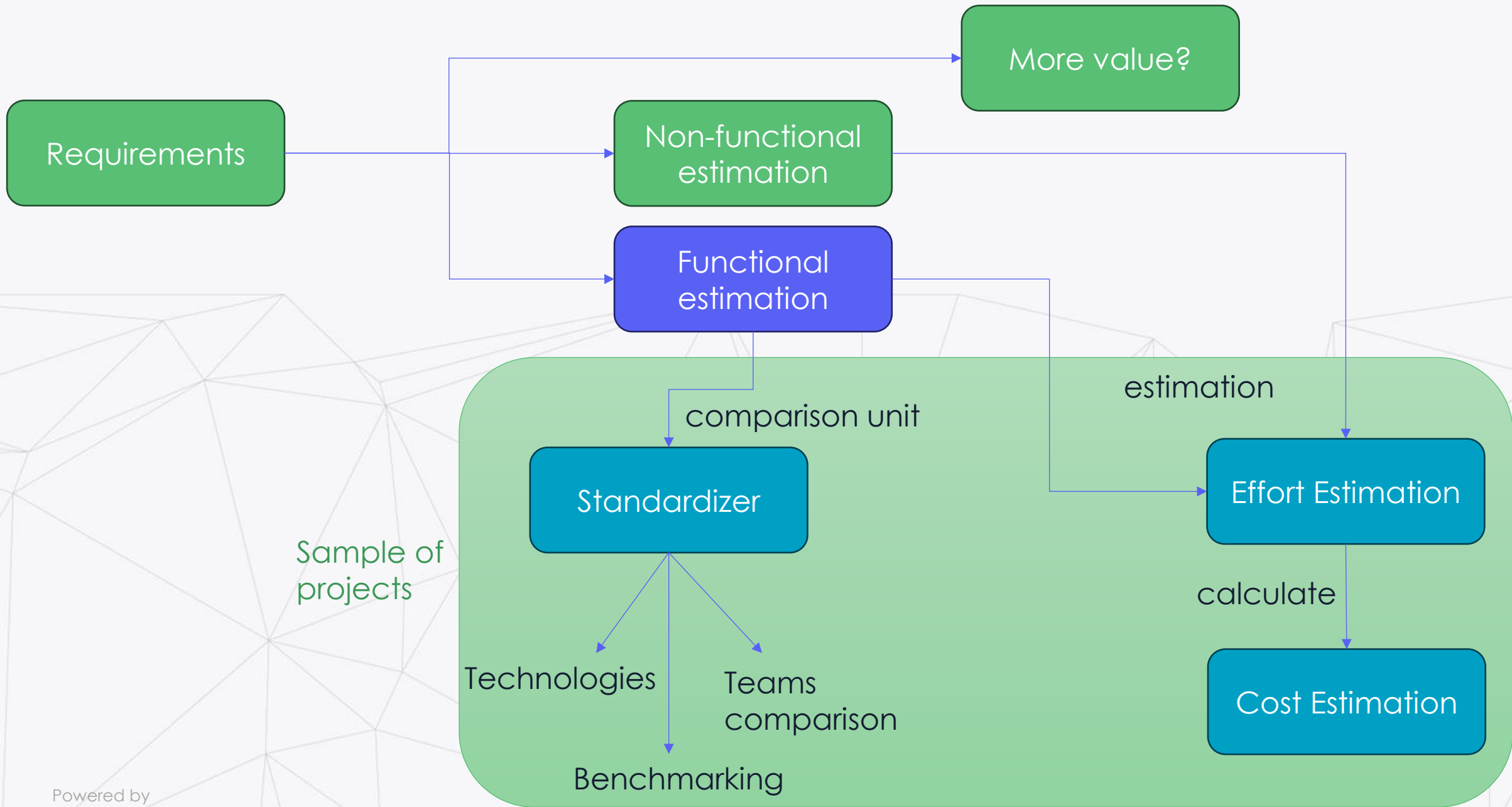


Functional
estimation

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Could AI help us with these points?

Requirements

Well-written requirements

Functional estimation

Estimation draft

Non-functional estimation

Estimation draft

Increase Volume of projects

Achieve more projects

More value: Test cases

Add more value: generation of test cases



We need
Superpowers!



We need to be an
Intelligent Metric Expert

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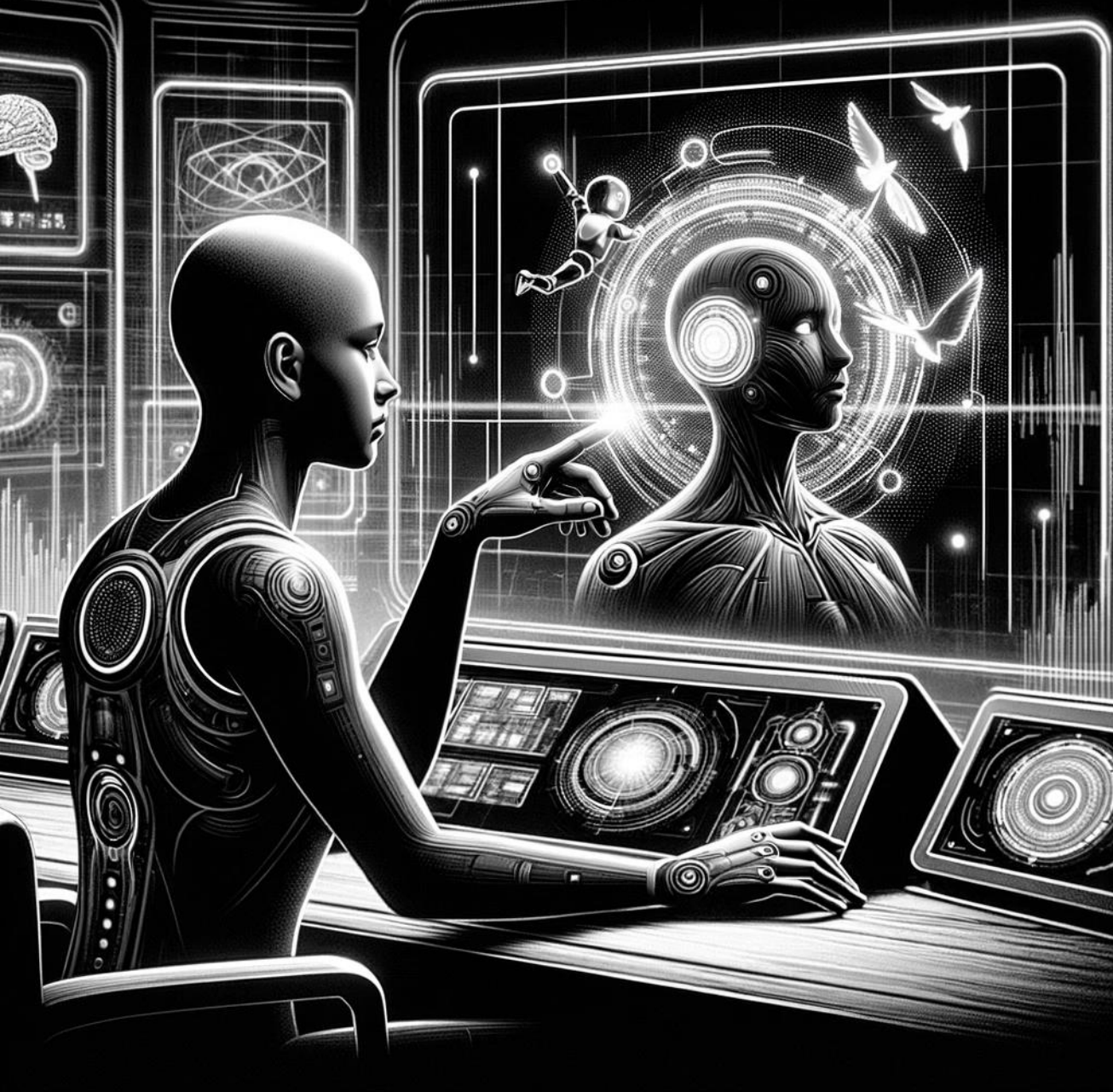
Top Strategic Technology Trends 2024

Intelligent Applications

- 1 AI Trust, Risk and Security Management
- 2 Continuous Threat Exposure Management
- 3 Sustainable Technology
- 4 Platform Engineering
- 5 AI-Augmented Development
- 6 Industry Cloud Platforms
- 7 Intelligent Applications
- 8 Democratized Generative AI
- 9 Augmented Connected Workforce
- 10 Machine Customers

Source: Gartner
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Gartner



Human in the loop (HILP)

AI won't replace people—but
people who use AI will replace
people who don't.

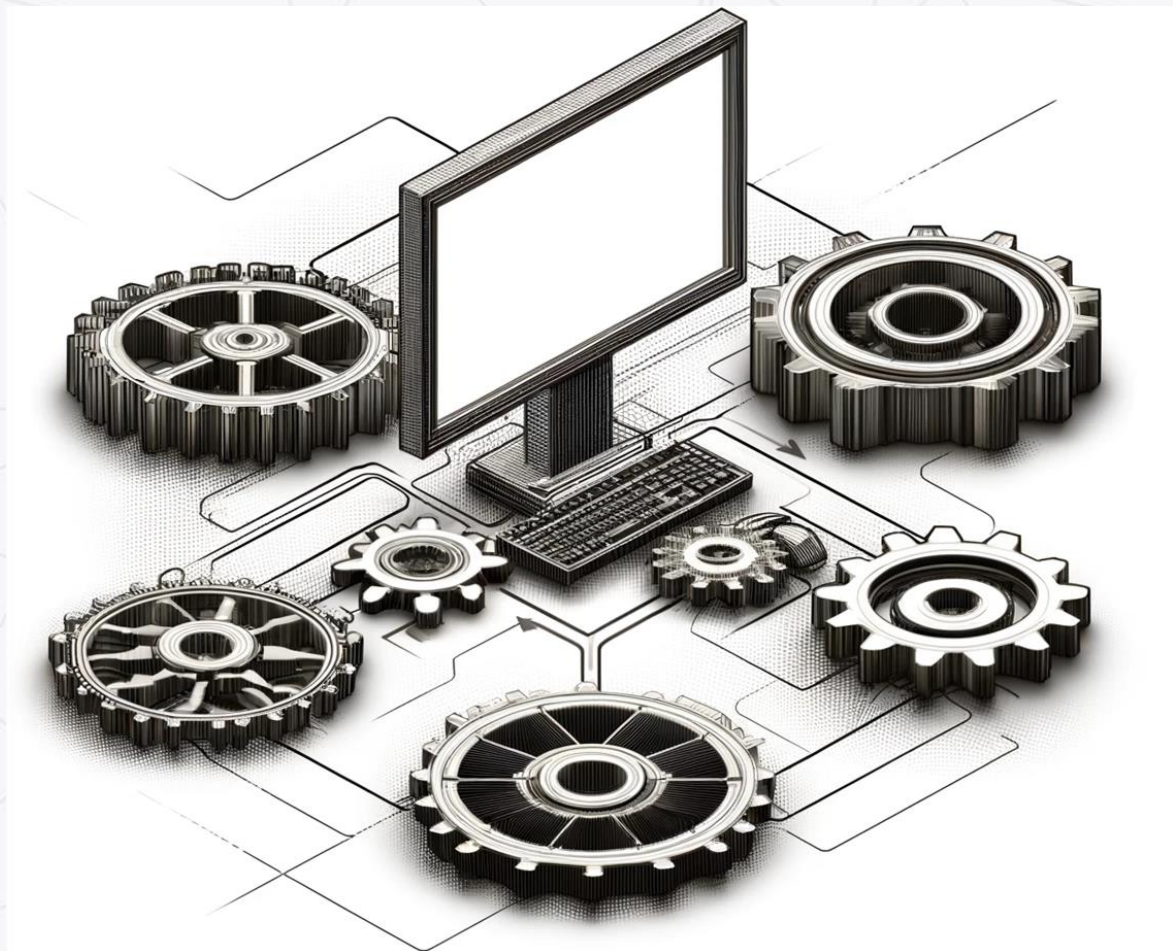
IBM Report “Augmented work for an automated, AI-driven world

Source: <https://www.ibm.com/downloads/cas/NGAWMXAK>

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Development of Intelligent Applications

Choice of LLM + Fine-tuning LLM + Application integration

Challenges of Generative AI in Intelligent Applications

Choice of LLM

Training dataset

Data security

Prompt hacking

Deterministic

Language

Hallucinations

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Challenges of Generative AI in Intelligent Applications

Quanter AI Smart AI Estimation

Choice of LLM:
OpenAI ChatGPT

Training dataset:
Create a set of
examples for the
fine-tuning of the LLM

Data security:
ChatGPT Enterprise
(Do not share data
with anyone outside
the company)

Prompt hacking:
Audit, measures
against prompt
hacking

Deterministic:
We verify the answer,
but it is creative by
nature

Language:
English, Italian,
Spanish, Portuguese,
French, ...

Hallucinations:
Model developed to
produce less than 1%
of hallucinations

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The Superpowers!

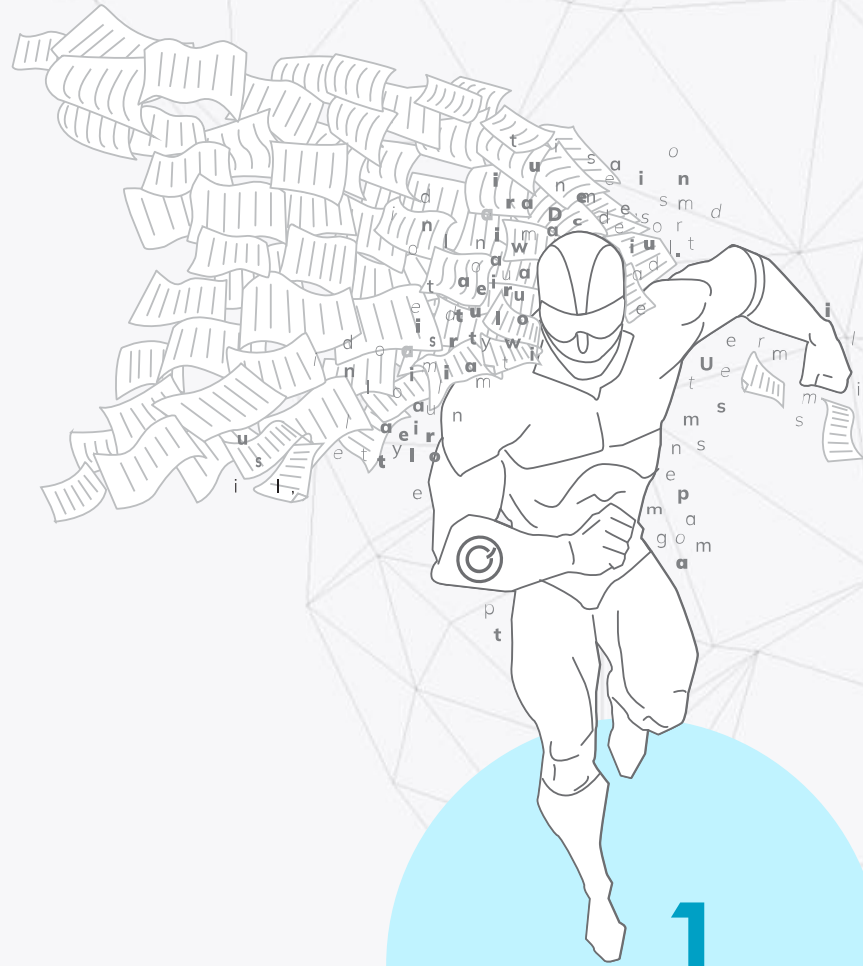
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Supervision...



AI-enhanced requirements



AI Requirement Enhancement

ENHANCE YOUR REQUIREMENT

ASSESSMENT 4

Analysis

1. Key requirement identified: "I want to manage invoices."
2. Evaluation against SMART criteria:
3. Specific: No. The statement does not detail what "manage" entails (create, edit, consult, delete, etc.).
4. Measurable: No. No measurable scope is indicated (number of invoices, type of reports, etc.).
5. Achievable: Yes, generally it is possible to develop an invoice management system, but details are lacking to confirm its complete feasibility...

Questions

1. What types of invoices will be handled (sales, purchases, services, etc.)?
2. Is integration with any accounting or third-party system required?
3. Is there a limit on monthly invoicing or expected transaction volume?
4. What report formats are mandatory or desirable, besides PDF and XLS?
5. What security and data encryption criteria must be met?

Justification

1. Detailing the operations (create, edit, delete, consult) makes the requirement more specific and verifiable, in line with IEEE 830 principles, which recommend clearly describing each function.
2. Adding performance metrics and availability meets the "measurable" part of SMART and aligns with ISO/IEC 25010, which emphasizes the importance of efficiency and reliability.
3. Separating requirements into functional and non-functional helps structure documentation following standards like IEEE 830 and facilitates traceability.
4. Defining a timeline and temporal goals introduces the "t..."

RECOMMENDED ENHANCEMENT 5

[General Objective]

"The invoicing system must allow complete management of invoices, including their creation, consultation, editing, deletion, and report generation, to ensure reliable and efficient financial control."

[Functional Requirements]

1. Invoice Creation

- 1.1 The system must allow the capture of basic invoice data (invoice number, date, client/supplier, amount, product or service details) in a form with mandatory validations.
- 1.2 The system must store each invoice in a database, associating tax information and metadata for later consultation and reporting.

2. Invoice Consultation and Listing

- 2.1 The system must display a list of invoices filterable by parameters such as date, client, amount, payment status, among others.
- 2.2 The system must offer the possibility to sort results by at least three criteria (issue date, invoice number, total amount).

3. Editing and Deleting Invoices

- 3.1 The system must allow editing an existing invoice only by users with designated permission and before the document is declared final for tax purposes.
- 3.2 The system must allow the cancellation or deletion of invoices following an approval flow that records the action and its justification in a change history.

4. Reports and Integration

- 4.1 The system must generate monthly and quarterly reports in PDF and XLS format, including the total number of processed invoices, their total amount, and a summary by product or service categories.
- 4.2 The system must be able to export or integrate these reports into other accounting platforms, if required.

5. Performance

TEXT OF THE REQUIREMENT TO ESTIMATE 1

I want to manage invoices

2

3

ENHANCE AGAIN USE REQUIREMENT 6

1. Enhance your requirements written in natural language (English, Italian, Spanish, ...)
2. Copy or write your requirement.
3. Improve it with our AI.
4. Review the Assessment.
5. Copy the improved requirement and change it.
6. Use the improved version.

Smart AI Estimation...



AI-enhanced
estimation

Smart AI Estimation



1 Copy your requirements or upload a pdf file

TEXT OF THE REQUIREMENT TO BE ESTIMATED

The user requires a list of stock orders to be placed. The user will be able to enter several criteria to include in the list. There is a user requirement that allows you to save these selection criteria.



2 Let Quanter AI estimate



3 Expert validate the result and go

<input type="checkbox"/>	Name	Action	Typology	Complexity	IFPUG FP	NESMA FP
<input checked="" type="checkbox"/>	Generate List of Stock Orders	NEW	EO	A	5	5
<input checked="" type="checkbox"/>	Save Stock Order List Selection Criteria	NEW	EI	A	4	4

3.200€

80 hrs.

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Speed Study Intelligent Estimation

→ Profile

- ✓ Two groups of junior and senior metrics consultants.
 - *Junior: less than a year and a half of experience.*
 - *Senior: more than four years of experience.*

✓ Test

- ✓ Half an hour to measure functional requirements with similar but different characteristics.
 - First, Quarter without intelligent estimation
 - Second, Quarter with Intelligent Estimation

✓ Results

- ✓ As with other generative AI technologies, juniors improve significantly with its use, both in terms of speed and quality.
- ✓ Seniors have also improved a lot.

8x
Junior

3x
Senior



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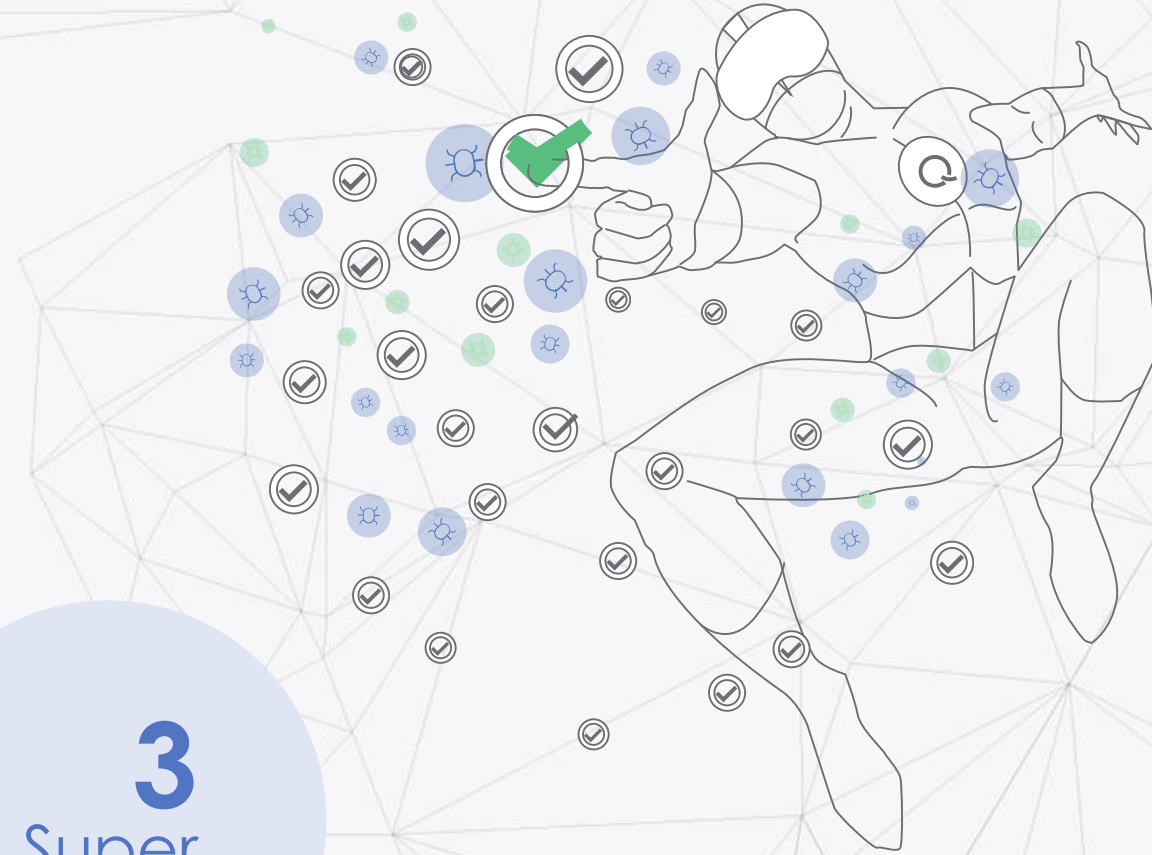
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AI Test cases generation



AI-generated
test cases

3
Super
testing



Test case generation with AI

REQUIREMENT IN NATURAL LANGUAGE

In this task, we will address the necessary development to prevent offering the Seating Upselling functionality for seats issued under multi-coupon EMDs.

ACCEPTANCE CRITERIA

AC.001 – GIVEN a customer who retrieves their reservation in MMB/CKI with seats previously paid for and issued via the Digital channel
WHEN they access the seat product from the Ancillaries catalog
THEN the Seating Upselling functionality must be correctly offered to the customer.

AC.002 – GIVEN a customer who retrieves their reservation in MMB/CKI with seats previously paid for and issued via GDS/Call Center (multi-coupon)
WHEN they access the seat product from the Ancillaries catalog
THEN the Seating Upselling functionality must not be offered to the customer.

AC.003 – GIVEN a customer who retrieves their reservation in MMB/CKI with seats previously paid for and issued via both GDS/Call Center (multi-coupon) and Digital channel (single coupon)
WHEN they access the seat product from the Ancillaries catalog



From your requirements



To the list of test cases

#	Title	Objective	Preconditions	Steps	Expected Result	Acceptance Criteria	Classification
CP001	Verify Seating Upselling functionality for seats issued via Digital channel	Ensure that the Seating Upselling functionality is available	Customer has a reservation in MMB/CKI with paid seats via Digital channel	1. Log into MMB/CKI. 2. Access the Ancillaries catalogue. 3. Check the Seating Upselling offer.	Seating Upselling functionality must be available.	AC.001	Fundamental
CP002	Verify absence of Seating Upselling for seats issued via GDS/Call Center (multi-coupon)	Ensure that the Seating Upselling functionality is not available	Customer has a reservation in MMB/CKI with paid seats via GDS/Call Center (multi-coupon)	1. Log into MMB/CKI. 2. Access the Ancillaries catalogue. 3. Check the Seating Upselling offer.	Seating Upselling functionality must not be available.	AC.002	Fundamental
CP003	Verify Seating Upselling functionality for seats issued via GDS/Call Center (single coupon)	Ensure that the Seating Upselling functionality is only available for single coupon seats	Customer has a reservation in MMB/CKI with paid seats via GDS/Call Center (multi-coupon) and Digital (single coupon)	1. Log into MMB/CKI. 2. Access the Ancillaries catalogue. 3. Check the Seating Upselling offer.	Seating Upselling functionality must be available only for single coupon seats.	AC.003	Fundamental
CP004	Verify system behavior when accessing seats from different channels	Ensure the system handles seat reservations from different channels	Customer has seat reservations from different channels	1. Log into MMB/CKI. 2. Access the Ancillaries catalogue. 3. Check the	The system must offer or not offer the functionality according	AC.001, AC.002.	Crucial



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Thank you!

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