BI DIGI TAL

L'intelligenza Artificiale nel Day-by-Day

Automatizzare le Attività Quotidiane per Migliorare l'Efficienza Funzionale

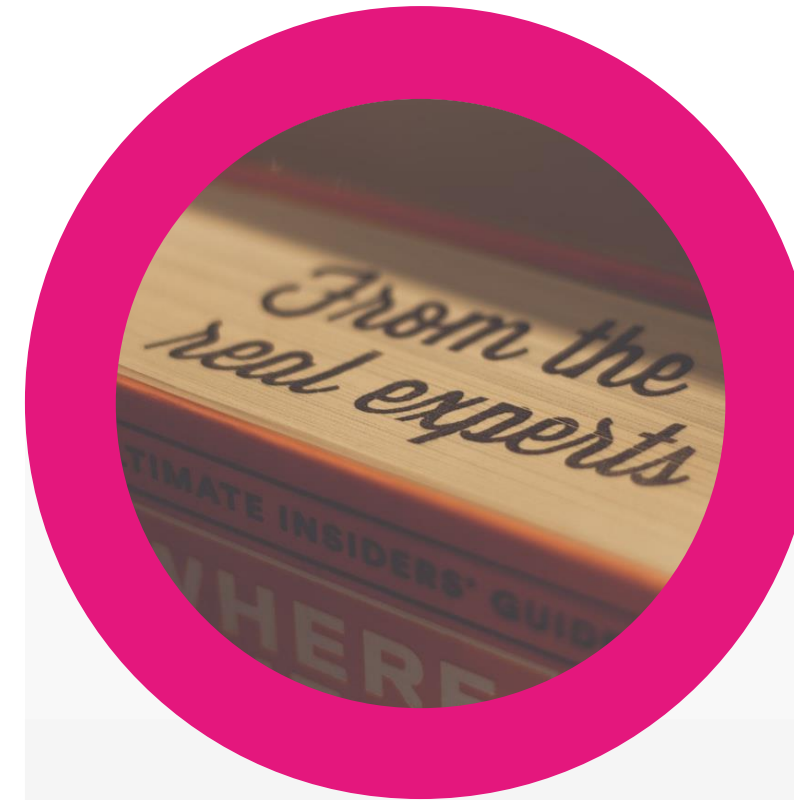# KI REPLY

INNOVATE DON'T IMITATE

> The mission of **KI** is to support clients, both methodologically and technically, in the adoption of **low-code no-code** platforms and the introduction of **AI** in the **software development cycle**.

EXPERT

We are a *boutique* of graduates in technical computer science disciplines really close to technology
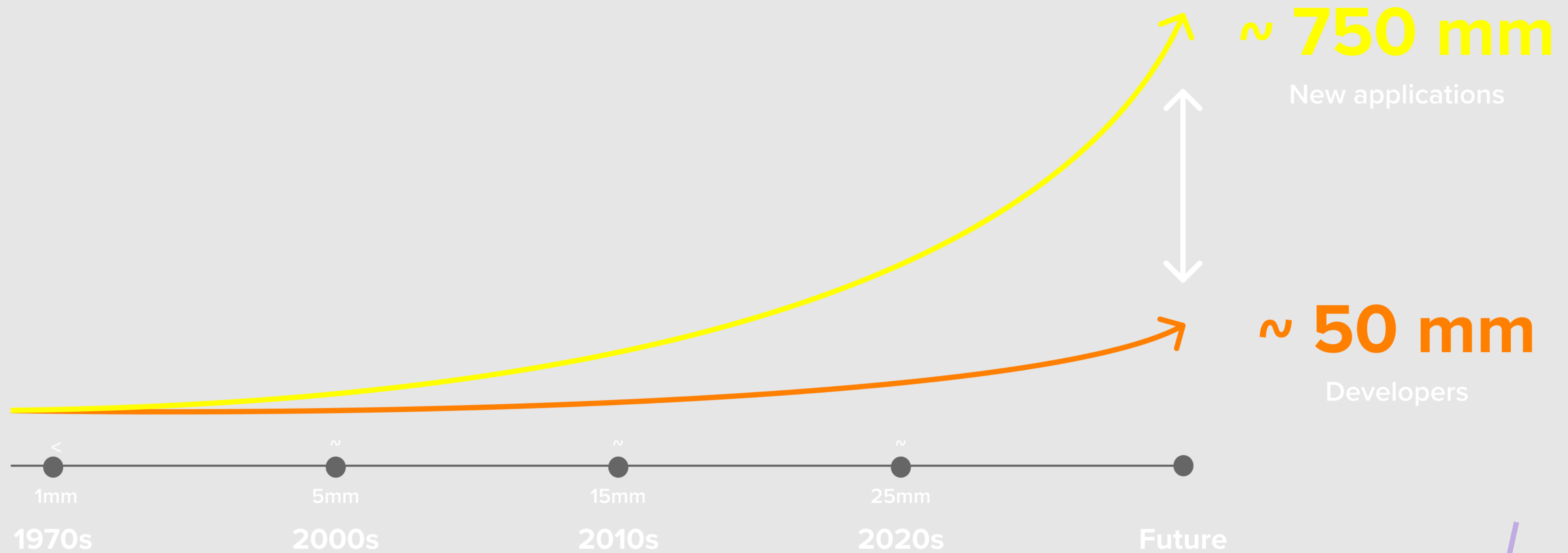
LOCAL

All our **talents** are in **Italy**, between Bologna, Milan, and Turin. Close to customers
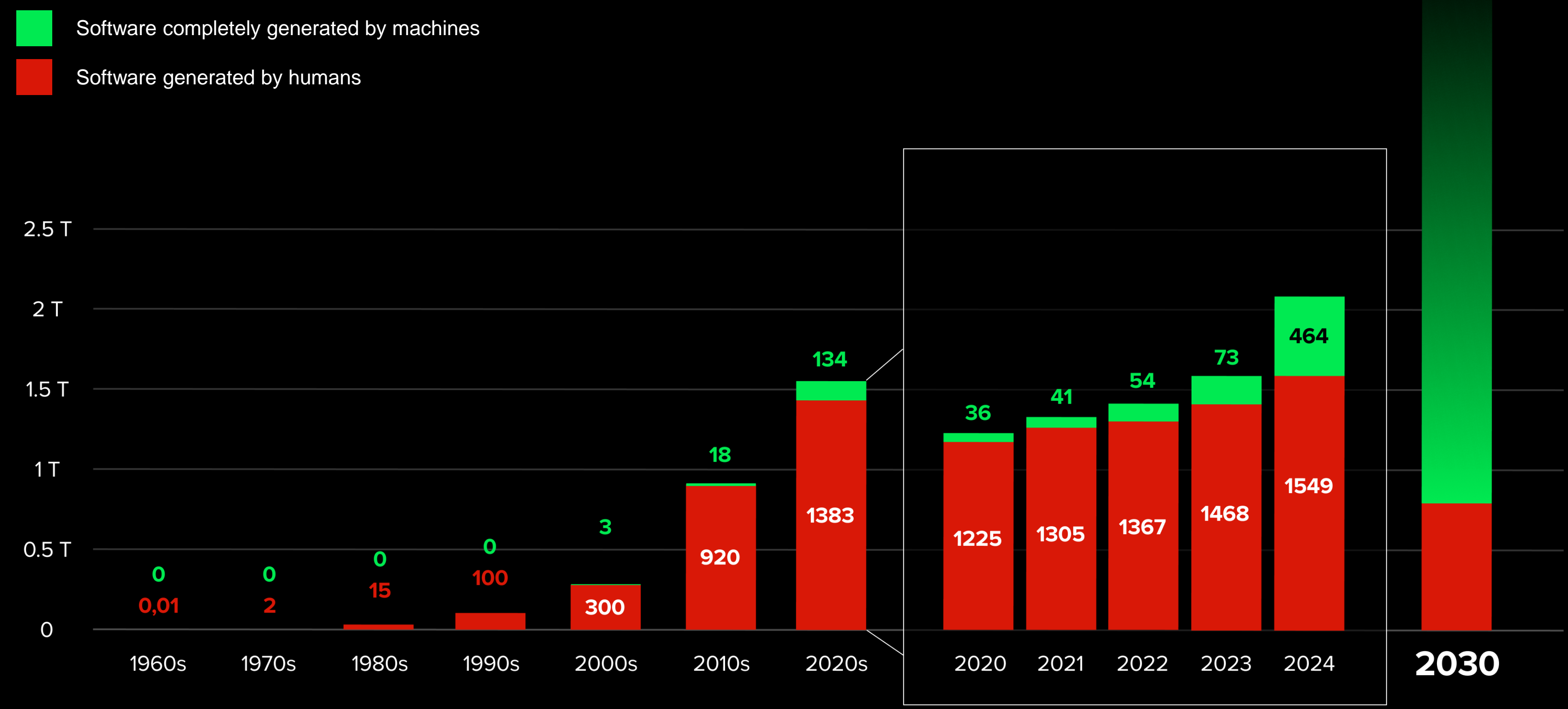
INNOVATIVE

We create **digitalization strategies** using new approaches based on **LCNC** powered by **AI**

BUSINESS CHALLENGE: APPS OUTPACING DEVELOPERS

~ **750 mm**

New applications

~ **50 mm**

Developers

	<	~	~	~	
	1mm	5mm	15mm	25mm	
	1970s	**2000s**	**2010s**	**2020s**	**Future**

4

EVOLUTION OF LINES OF CODE

Software completely generated by machines

Software generated by humans

	1960s	1970s	1980s	1990s	2000s	2010s	2020s	2020	2021	2022	2023	2024	2030
Machines	0	0	0	0	3	18	134	36	41	54	73	464	
Humans	0,01	2	15	100	300	920	1383	1225	1305	1367	1468	1549	

# IMPACT OF GENERATIVE AI IN SDLC

Testing

Writing, generation and execution of test cases; Creation of data sets

Coding

Generation of new code, Refactoring (improving consistency, robustness), Translation, Documentation (explanation, comments)

Analysis & Design

Requirements analysis, user story generation, flow chart generation, data model creation, UX design assistant, etc...
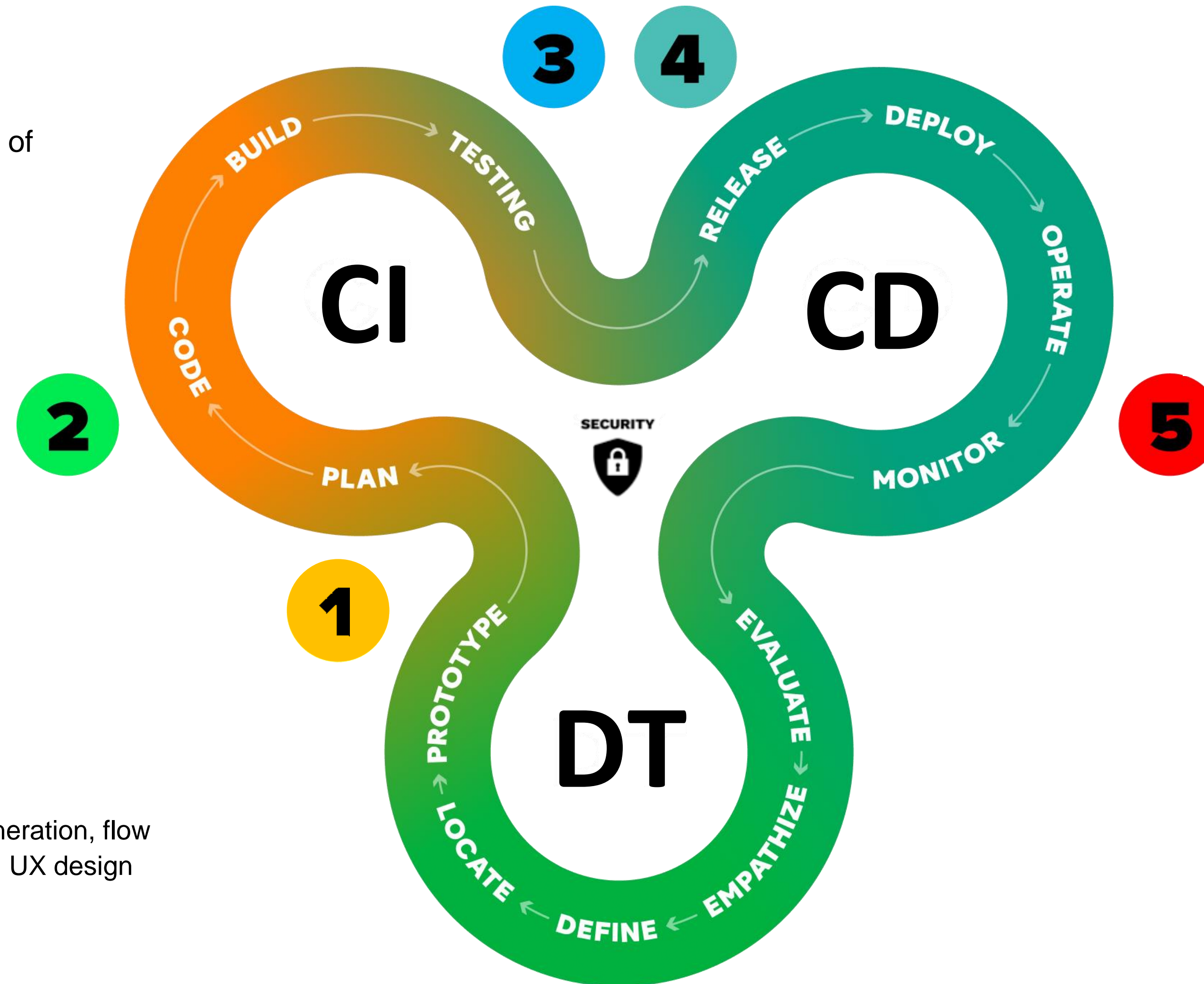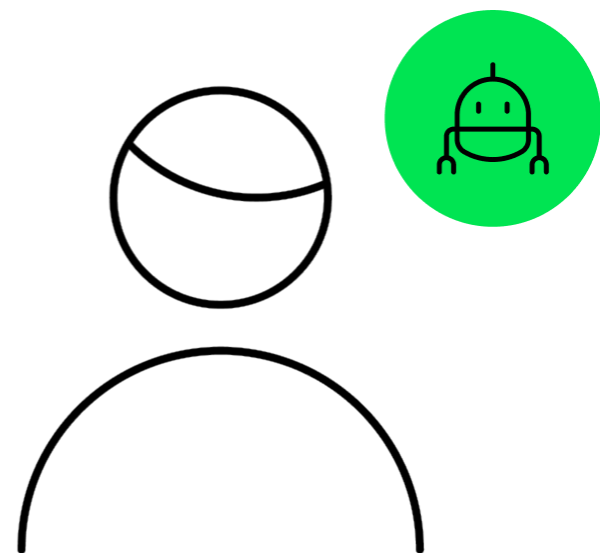
Release & Deployment

CI/CD pipeline generation, script automation assistant

Operate & Monitoring

Performance monitoring and quality control, automatic routing tickets and search for solution models

BizDevSecOps Reply Approach - This approach is an evolution of traditional / high coding development, it is flexible enough to let you cover all the phases in the SDLC and can be used both in *greenfield* and in *brownfield* context
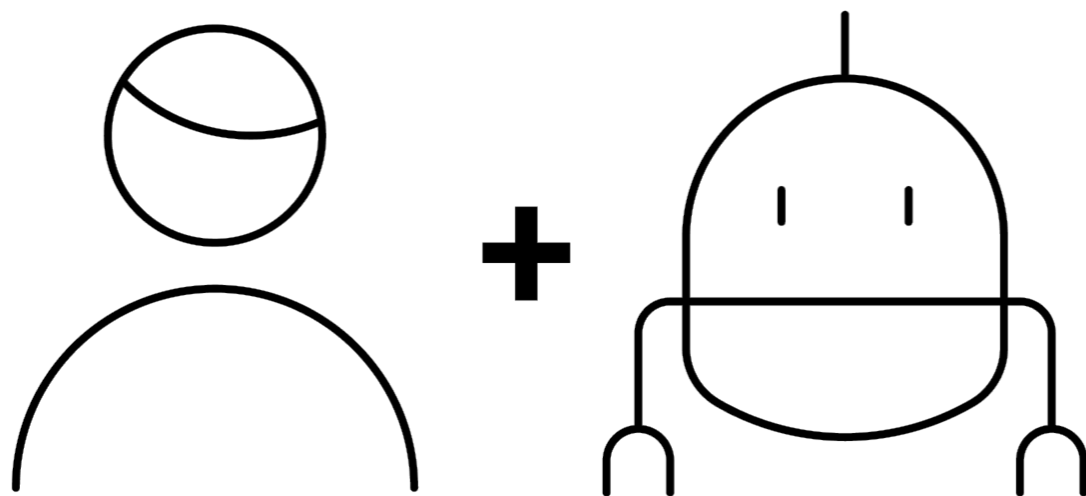
MAKING SOFTWARE WITH AI
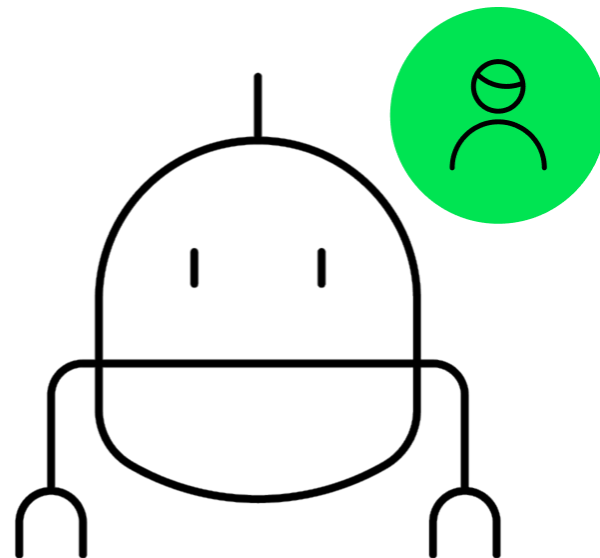
REPLY'S 3 LEVEL FRAMEWORK

LEVEL 1

Existing Copilots are incorporated in the development process

LEVEL 2

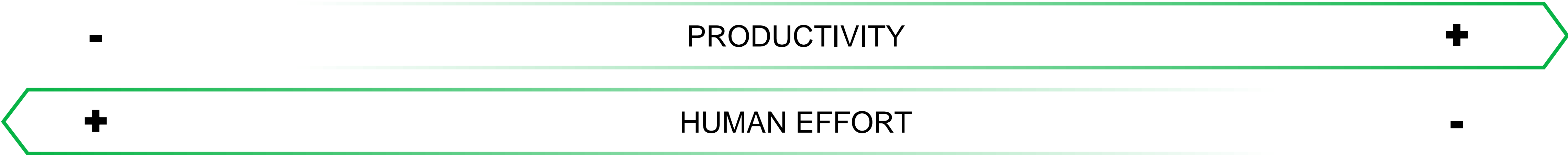Humans are accompanying by agents as "Peer"

LEVEL 3

Autonomous agents with human supervision

PRODUCTIVITY   -   +

HUMAN EFFORT   +   -

REPLY LEVEL 2 AGENTS CATALOG, JUNE 2024

Analysis & Design

AgileBuddy
Enhanced efficiency in creating consistent, detailed, contextually coherent user stories.

Analyst Buddy
Enhanced efficiency and accuracy in generating comprehensive functional documents.

ArchiMage
Takes care of keeping up to date the project KB and making it accessible to the team through a natural lang interface

Agile Buddy estimator and team selector
Enhanced project estimation and team selection for optimal efficiency

Coding
Green Field

Archie
AI assisted coding framework for FSI
+
Gensight
HD3 ticket troubleshooting

MosAIc
Front-End coding assistant

Code Buddy
AI assistant simplifying knowledge sharing and onboarding by generating code and documentation contextualized on specific project

DevGenOps
A centralized approach to enhance code quality and robustness

Coding
Replatforming

Reverse Engineering Buddy
Automatically generates technical documentation from legacy code for modernization project

MAGIA
ESB artifacts translator, capable of creating Apache Camel projects starting from SAG or IBM integration flows code

Rosettz
Gen AI DataStage migration translator. Tool that leverages GenAI to convert formulas from a programming language to another.

VB-AI Magician
Reverse engineers VBA scripts to generate comprehensive functional documentation.

Testing

Testbook
Starting from the requirements, create a full test design defining positive, negative and corner use cases

Gherkin Files & Code Scripting
Starting from a test book, implement a test automation suite as assisted coding as well as BDD paradigm

Self-Healing
Adjustment of test automation scripts for maintenance purpose due to project changes

Application Explorer
Navigate and define a map as nodes of the entire application with included elements and related links

Release & Deployment

Pipeline Generator
CI/CD pipeline generation and maintenance

IDIA
A GenAI solution aimed at accelerating the resolution of CI/CD pipeline errors

ChainDef
Determine the appropriate installation sequence in order to avoid potential integration problems

GenRelNote
Generate release notes from changes in User Stories and CodeBases

Operate & Monitoring

WarRoom Assistant
Real-time data, insights, crisis decision support

Smart Enhancer
Optimizes code performance using infrastructure and observability insights

Gensight
HD3 management agent who analyzes and suggest incident resolution

Cassiopea
Provides clustering and E2E events management in production (and non-production) environments

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Security agents for each phase of the SDLC

+25

Case Study

How to use the approach
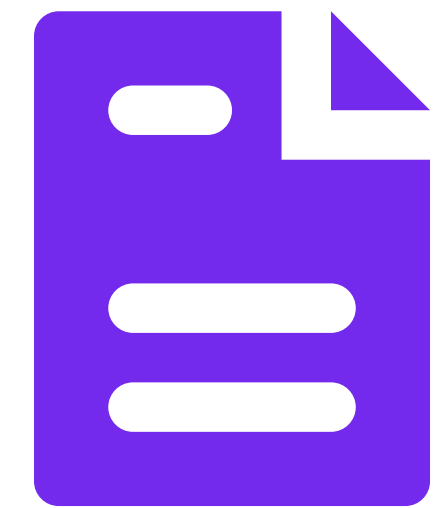
Image generated by Dall-E
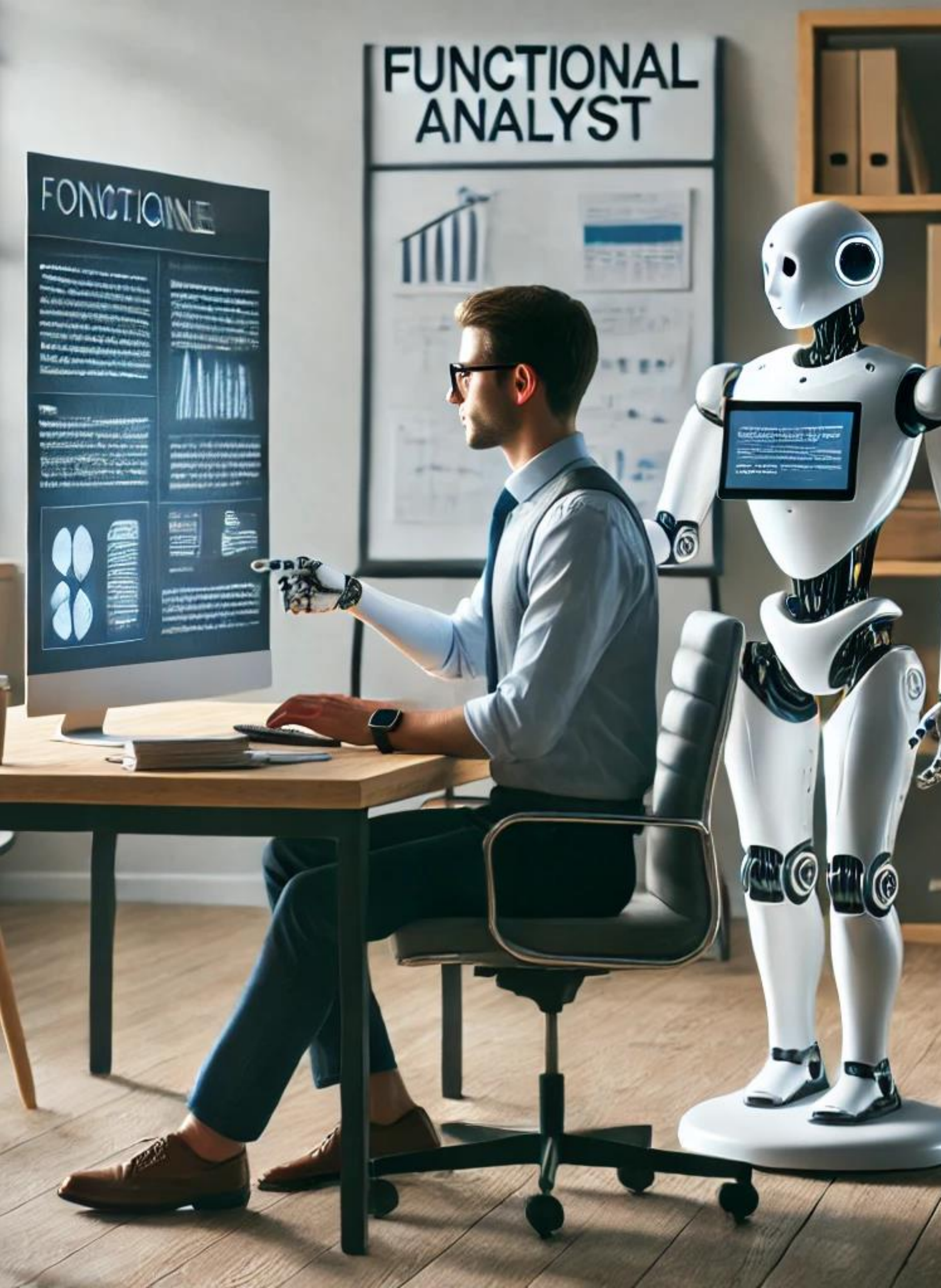
BUSINESS ANALYST

Works with
stakeholders to define
project requirements
through **meetings**

Create Functional
Documentation

BUSINESS ANALYST

- Business analysts spend **a lot of time** attending informational meetings to gain **insight** into the project they are working on

- The **resources** to be invested to allow the business analyst go beyond his figure as developers, seniors and project managers are needed

- After the meetings, additional time is needed to write **the summary** of the meeting to persist the information discussed

Image generated by Dall-E

BUSINESS ANALYST

Another of the business analyst's time-consuming tasks is that of **writing documents**.

The main problems in this regard can be summarized in:

- **Lack of information**: The analyst must ask for additional information from the project members
- **Template**: The analyst must follow a template for writing documents
- **Evolution**: The analyst must update and adapt documents in line with the project's evolution
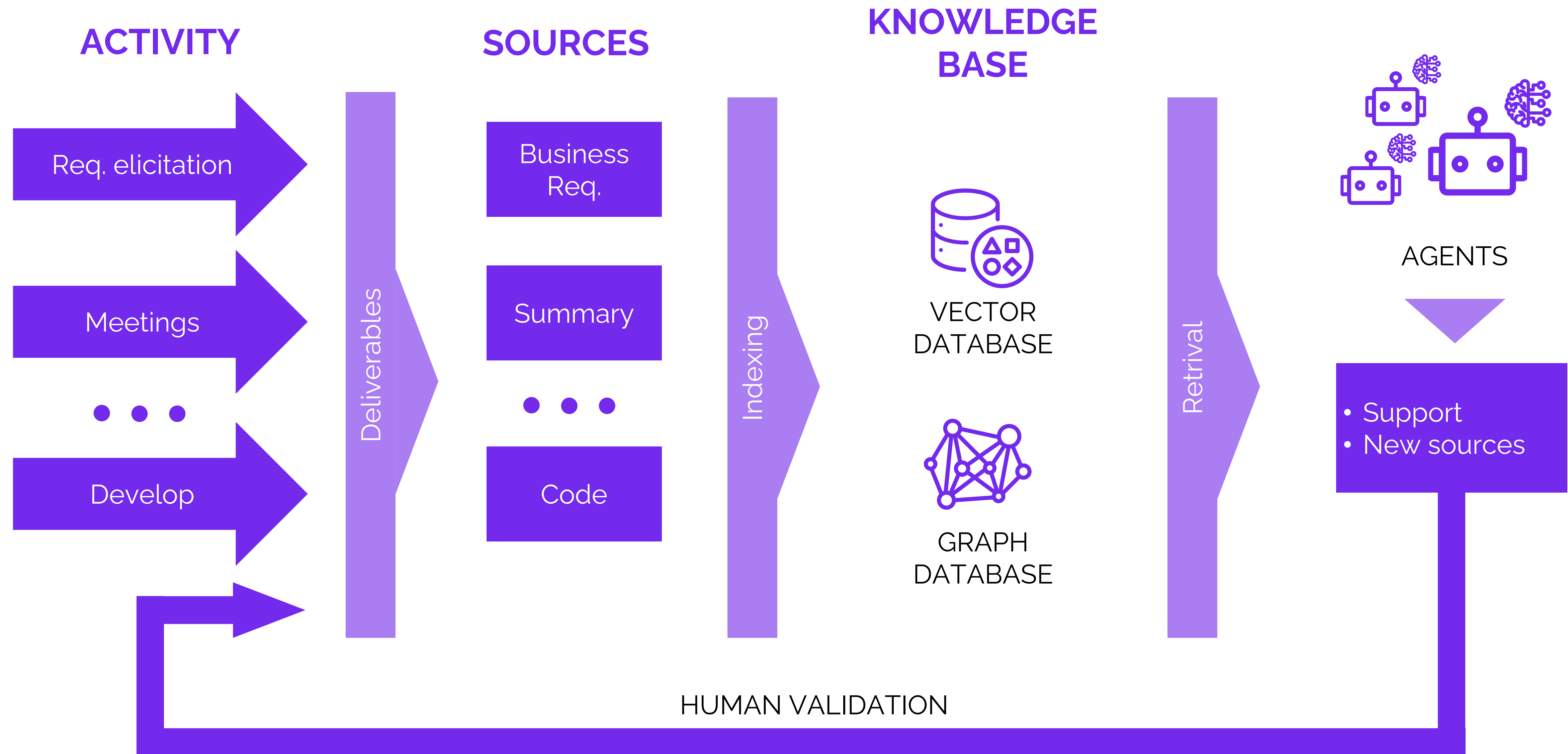
12

HOW CAN WE DO IT BETTER ?

END-TO-END PROJECT KNOWLEDGE
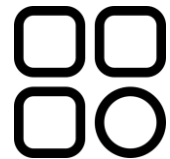
ACTIVITY

SOURCES

KNOWLEDGE BASE

Req. elicitation

Meetings

• • •

Develop

Deliverables

Business Req.

Summary

• • •

Code

Indexing

VECTOR DATABASE

GRAPH DATABASE

Retrival

AGENTS

• Support
• New sources

HUMAN VALIDATION

HIGH LEVEL ARCHITECTURE

Business Workstation

- Local content
- Document navigation
- Business Chat
- ...
- Frontend Web App
- Plugin (e.g. Word, Confluence, etc..)

AI Assisted Functional Services

AI Foundation Framework
- API Interface
- Multi-Agent Framework
- Concierge
- Bulk compiler
- Diagram generator
- ...
- Config
- Project docs
- Company docs

Foundation LLMs
- GPT-4o
- GPT-4o-mini
- GPT-4 Turbo
- ...

■ Ready
■ Work in progress

MAIN CAPABILITIES

Interfaccia Conversazionale: **chat via web o integrata dentro Word** che permette di **interagire con l'assistente** in **linguaggio naturale**

Contestualizzazione: l'integrazione con la **knowledge-base** di ambito permette forte **contestualizzazione tecnologica** e **funzionale**

Ecosistema Plug & Play: ecosistema **flessibile** che permette l'integrazione di **agenti «personalizzati»** per **esigenze specifiche**
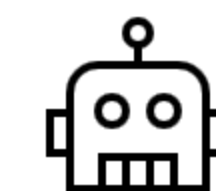
AI TOOLS & TECHNIQUES
- **Fine tuning**
- **RAG**
- **Multi Agent**
- **Functions**
- **GPT-4 API**

WHAT'S NEXT ?

NEXT CHALLENGES

COMPLETENESS

- **Increased** likelihood of **errors**: Incomplete information leads to a higher probability of incorrect responses.
- **Risk of fabrication**: Partial data may cause the system to generate completely fabricated answers.

Conversation

Challenge Agent

KB

NEXT CHALLENGES

COMPLETENESS

CONTRADICTION

- **Incosistent** input increase system complexity, making it harder to archive reliable outputs
- Contradictory data can lead to **error propagation throughput** the system, compounding low accuracy
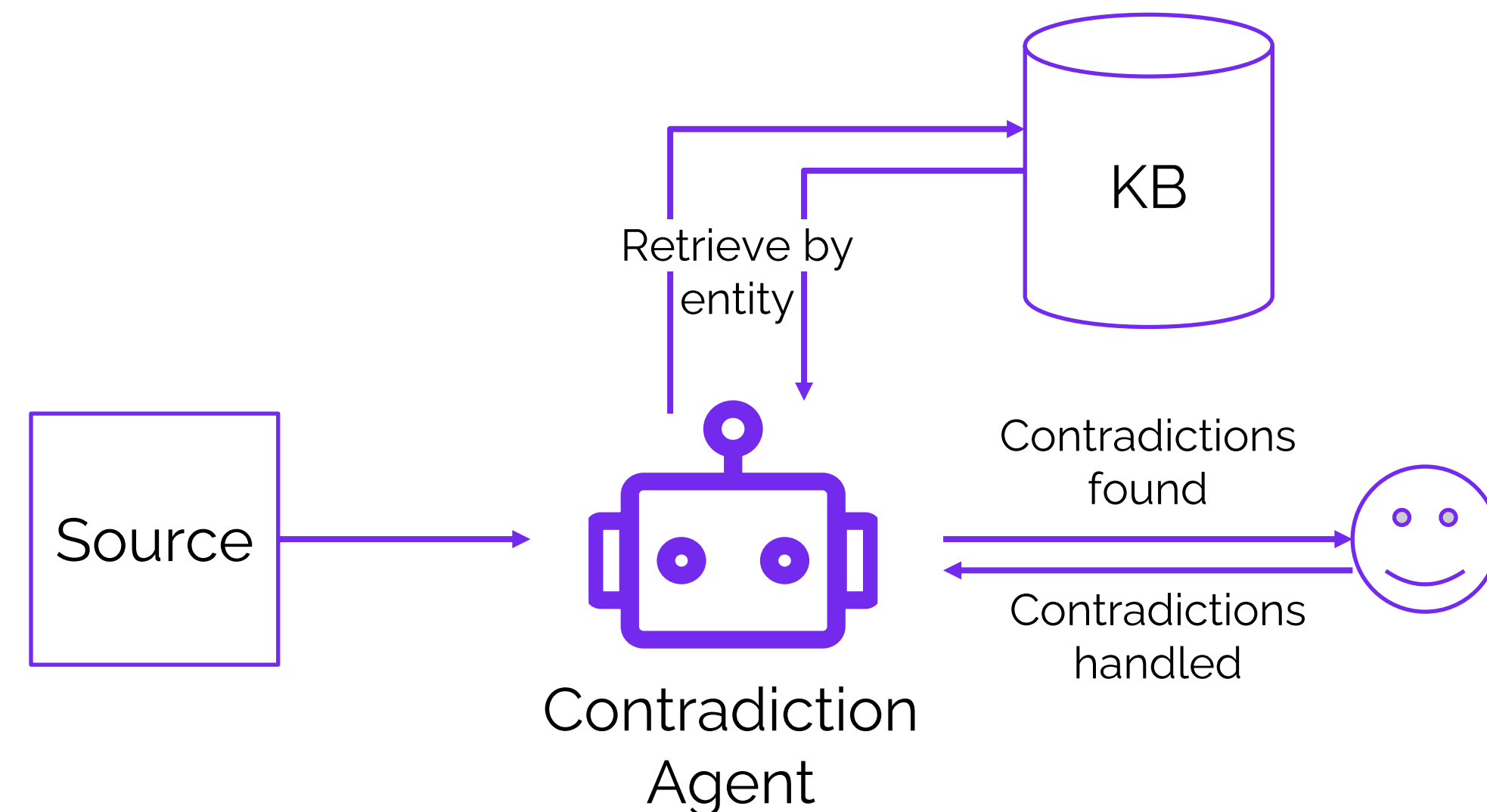
CONTRADICTION AGENT

*Nuova user story: come utente, voglio poter **confermare un ordine senza avere la possibilità di rivedere tutti gli articoli** aggiunti, in modo da accelerare il processo di acquisto.*

Philosophical Contradiction

Contradictory text:

Logisphere, sito web per gestione del magazzino e degli ordini. **Intuitivo e facile da usare**, **anche per chi non è pratico**. Design pulito e moderno, colori chiari e rilassanti, come il blu e il grigio. Grandi pulsanti e testi leggibili per facilitare la navigazione. Dashboard...

Analysis:

L'analisi dei due testi mostra una contraddizione. Nel primo testo si descrive Logisphere come un sito web intuitivo e facile da usare, con design pulito e moderno. Tuttavia, nel secondo testo si esprime un **desiderio che va contro l'intuitività e facilità d'uso** descritte negli attuali requisiti: la possibilità di confermare un ordine senza rivedere tutti gli articoli aggiunti. **Questa nuova funzionalità potrebbe causare errori e frustrazione per gli utenti, contraddicendo così la caratteristica di essere facile da usare.**

Logical Contradiction

Contradictory text:

... devo poter cercare e selezionare gli articoli dal magazzino, filtrandoli per il nome o il codice dell' articolo, ecc. Una volta trovato l'articolo, lo seleziono e inserisco la quantità desiderata. **Prima di confermare l'ordine, voglio avere la possibilità di rivedere tutti gli articoli** aggiunti, con le relative quantità e prezzi. Devo poter modificare la quantità o ...

Analysis:

Il primo testo specifica che prima di confermare l'ordine, l'utente vorrebbe avere la possibilità di rivedere tutti gli articoli aggiunti, con relative quantità e prezzi. Il secondo testo, invece, afferma che dovrebbe essere possibile confermare un ordine senza rivedere tutti gli articoli aggiunti. **Queste affermazioni sono direttamente contraddittorie perché una implica la revisione degli articoli prima della conferma, mentre l'altra esclude questa possibilità.**

NEXT CHALLENGES

COMPLETENESS

CONTRADICTION

IMPACT ANALYSIS

- **Critical in evolving processes:** Impact analysis is essential due to the continuous evolution of processes.
- **Supports informed decisions:** Anticipating impacts allows for more informed decision making.
- **Prevents project disruptions:** If a change request alters core project decisions, it can be excluded early on.

KB

Specialized
Retrieve

New
Req

Impact
Agent

Impact Analysis
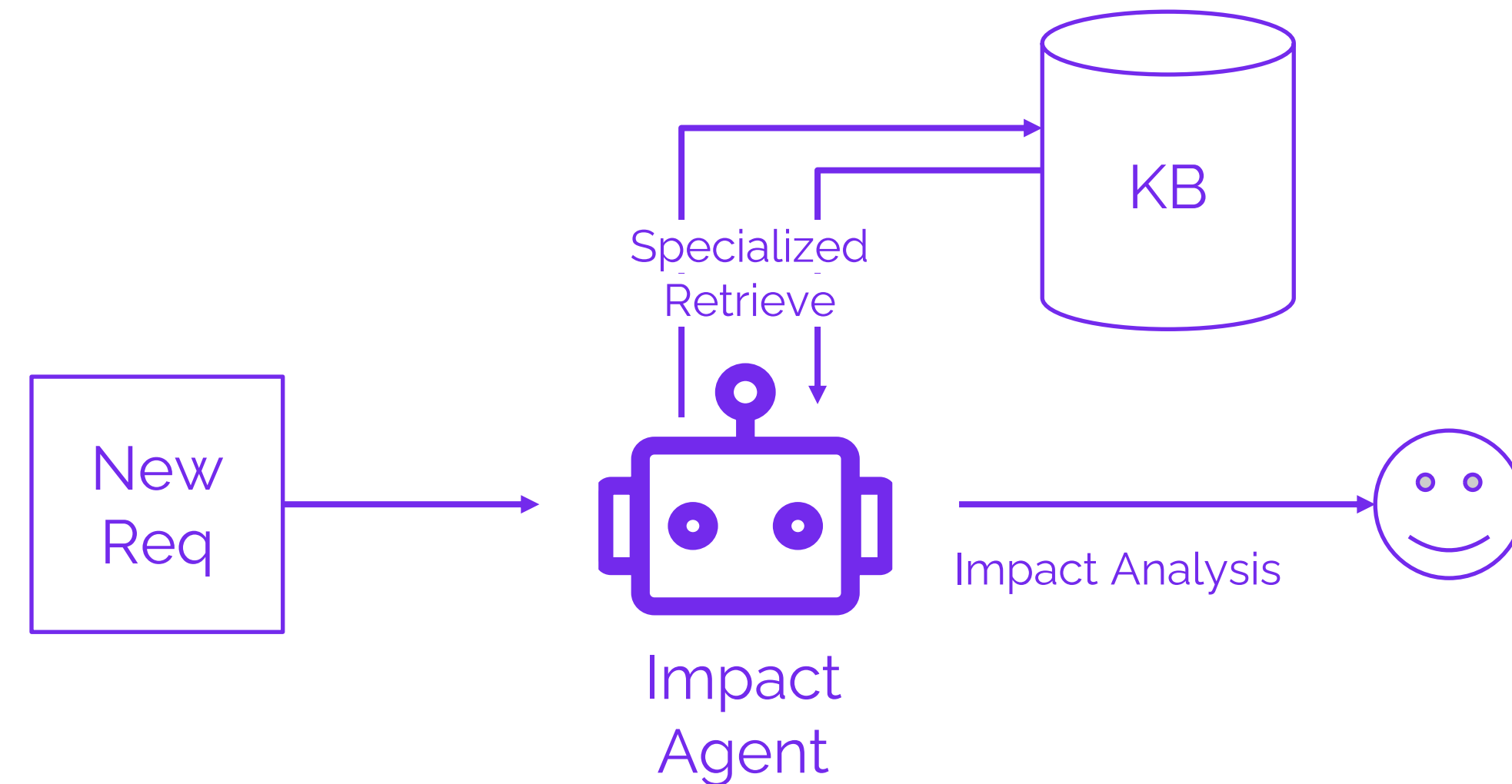
Thank you

Sellalab / BTREES

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