# AI-Based Ballpark Quotation Tool
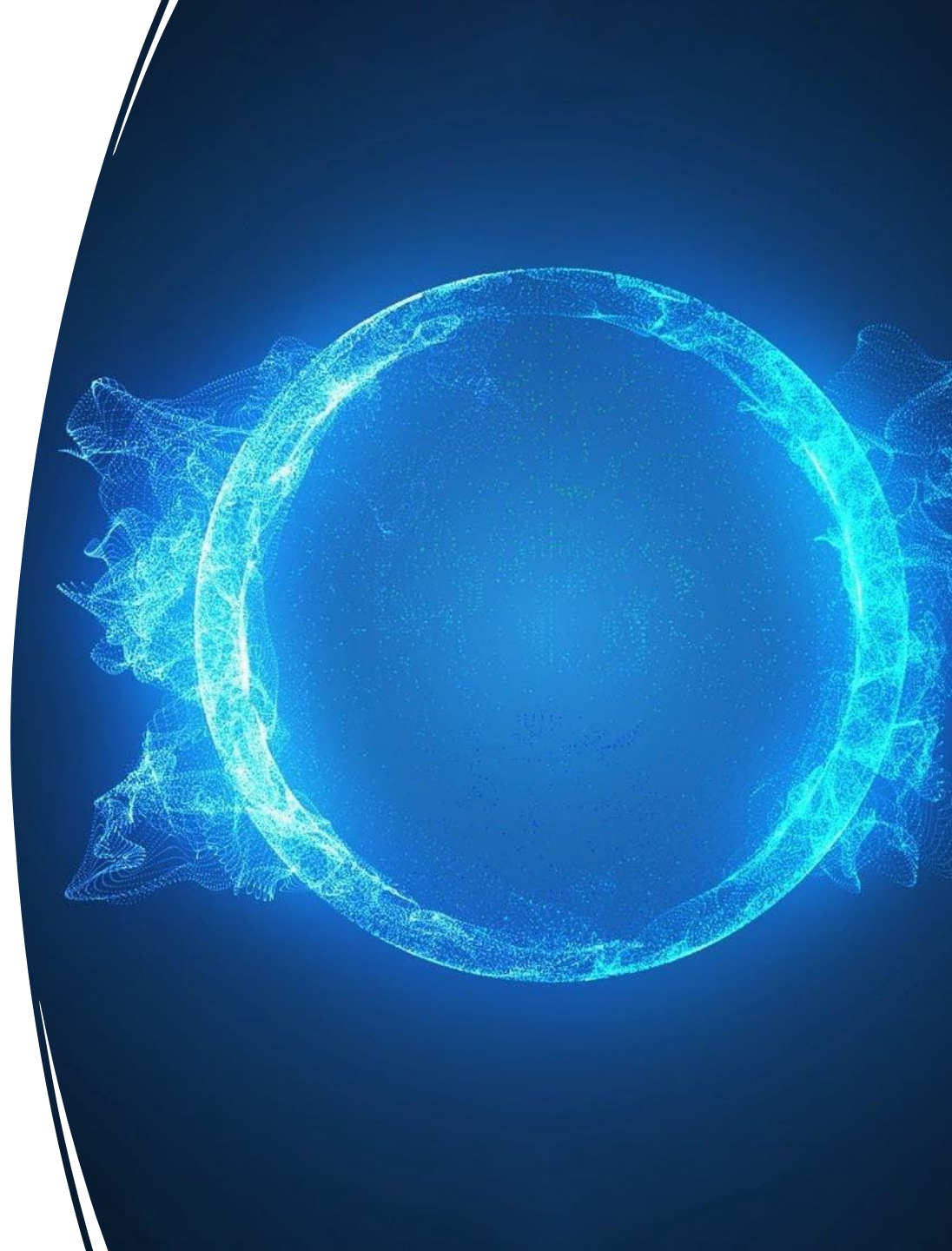
## Checkpoint 1: Design & Management Plan

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# IVECO Group

**IVECO Group** is a global leader in commercial vehicles and industrial equipment.

Among its business units is **FPT Industrial** – Powertrain Technologies, responsible for developing engines and powertrain systems for on-road and off-road applications.

During the product development cycle, customers submit **Product Requests (PRs)** to propose new features or modifications. Each PR requires a quick, preliminary R&D effort estimation to assess feasibility and business value.

The **Ballpark Quotation Tool** aims to accelerate this process by delivering fast, standardized, and AI-driven R&D effort estimations based on historical PR–Offer data.

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# Problem Statement

**Manual Intensity:** Analyzing PR Excel files is slow and requires deep expert knowledge.

**Fragmented Data:** There is no centralized database linking historical PRs with their final R&D Offers.

**HIGH DEPENDENCY:** The process relies heavily on individual expert knowledge, creating a risk of knowledge loss

**Inconsistency:** Different Customer Managers provide different quotes for similar requests

# The Solution: AI-Based Ballpark Quotation Tool

Development of an automated, data-driven system to provide fast and reliable R&D effort estimations, reducing manual workload for Customer Managers.
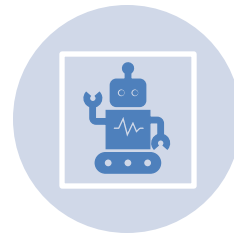
Automatically extracts technical specifications from PR Excel files

Utilizes a structured database of past PR-Offer pairs to inform estimations

Predicts R&D effort broken down by function for high accuracy

Interface for managers to review, refine, and validate AI output before final submission.

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# Value Proposition

- **For the Customer Manager:**
  - **Speed:** Instant preliminary estimations replace days of manual analysis.
  - **Accuracy:** Data-driven predictions improve consistency across all quotations.
  - **Efficiency:** Drastic reduction in manual workload, allowing focus on high-value tasks

- **For the Business:**
  - **Agility:** Faster "Go/No-Go" decisions accelerate the sales cycle.
  - **Standardization:** A unified process across all functions and departments

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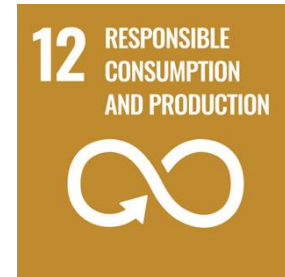
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# Sustainable Development Goal

•**SDG 9: Industry, Innovation and Infrastructure**

> •*Enhancing industrial capability through digitalization and AI-driven automation.*

•**SDG 12: Responsible Consumption and Production**

> •*Reducing "Engineering Waste" by minimizing duplicated efforts and optimizing resource planning*





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# Project Objectives & Roadmap

**Data Foundation**

**Modeling Strategy**

**Decision Support**

Consolidating historical PRs & Offers.

Extracting data from raw Excel files

Effort forecasting per function

Data-driven estimation model
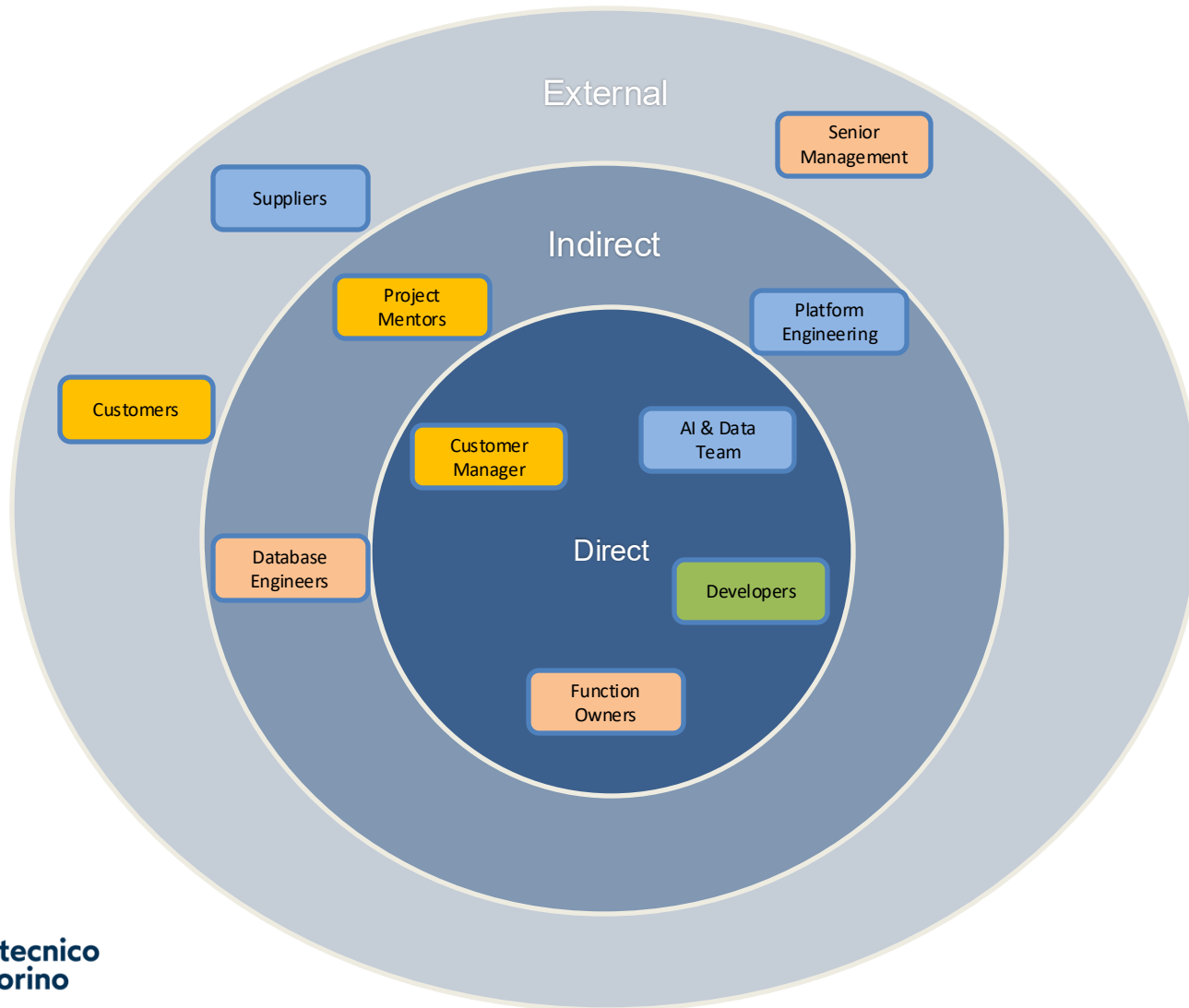
Suggesting historical projects as benchmarks.

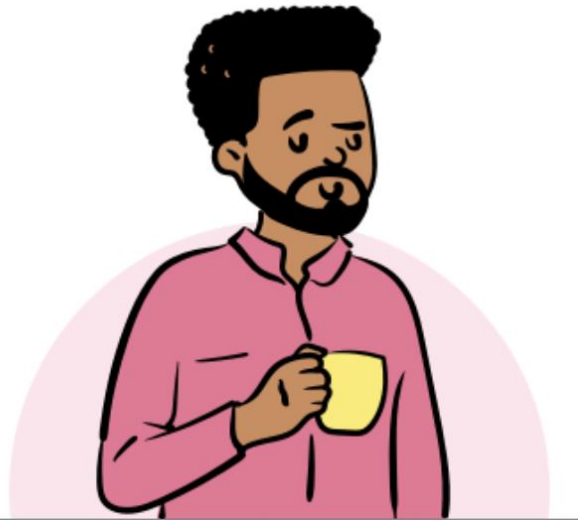Interface for manager validation & model refinement

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# Stakeholders Map

# User Persona

John
Customer Manager

**Demographics**

41 years old, works at FPT Industrial

**Behavior & Habits**

Constantly receives complex **Product Requests (PRs)** in Excel format containing unstructured technical data

**Pain Points & Frustrations**

1) Struggling to find historical "PR-Offer" pairs scattered across local files
2) The manual analysis of Excel files is too slow for urgent commercial opportunities

**GOALS & Needs**

Reduce quotation time from days to minutes. Ensure consistent pricing across markets. Minimize manual Excel data entry.

**Data Can Produce/Use**

Can use: Historical Offers, Technical Product Specifications

Can produce: Validated Ballpark Estimations, Feasibility Reports

**Expected Outputs**

An AI-driven dashboard that parses PR files and generates a **preliminary cost breakdown by function** (Design, Testing, Calibration), highlighting **similar historical cases** for validation

# User Journey

Receives PR and realizes that manual estimation is time-consuming.

**Awareness**

Uploads PR to the Ballpark Tool and receives an AI-generated estimate

**Decision**

Continues using the tool for consistent and efficient estimations

**Loyalty & Advocacy**

**Consideration**

Searches past cases, but struggles with inconsistent or missing data

**Delivery & Use**

Engages with Function Owners to validate/refine the estimate before sending it to the customer

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# User Requirement

## Functional Requirements:

❖ Data Ingestion & Preparation
  ❖ Upload PR Excel files
  ❖ Extract key PR data (NLP)
  ❖ Structured PR–Offer database
❖ Core R&D Cost Prediction
  ❖ Function-level R&D cost prediction
  ❖ Retrieve similar historical PRs
  ❖ Decision support indicators (past matches)
❖ Review & Output
  ❖ Human review and refinement
  ❖ Export final estimation (Excel/PDF)

## Non-functional:

❖ Performance & Accuracy
  ❖ Fast predictions
  ❖ Consistent and accurate
❖ Usability & Transparency
  ❖ Easy to use
  ❖ Explainable outputs
❖ System Integrity
  ❖ Secure internal access
  ❖ Maintainable & scalable

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# Functional Diagram

- Input: PR Excel + Database
- Process: NLP → Features → Model → Review
- Output: R&D estimation + similar cases

input

processing

Output & Review

PR Parsing & NLP Extraction

Product Request (PR) Excel – User Upload

Historical PR–Offer Database

PR–Offer DB & Feature Engineering

Function-Level Effort Prediction

Similar Case Retrieval

Human Review (Customer Manager + Function Owners)

Final Output: Validated R&D Estimation & Feasibility Report

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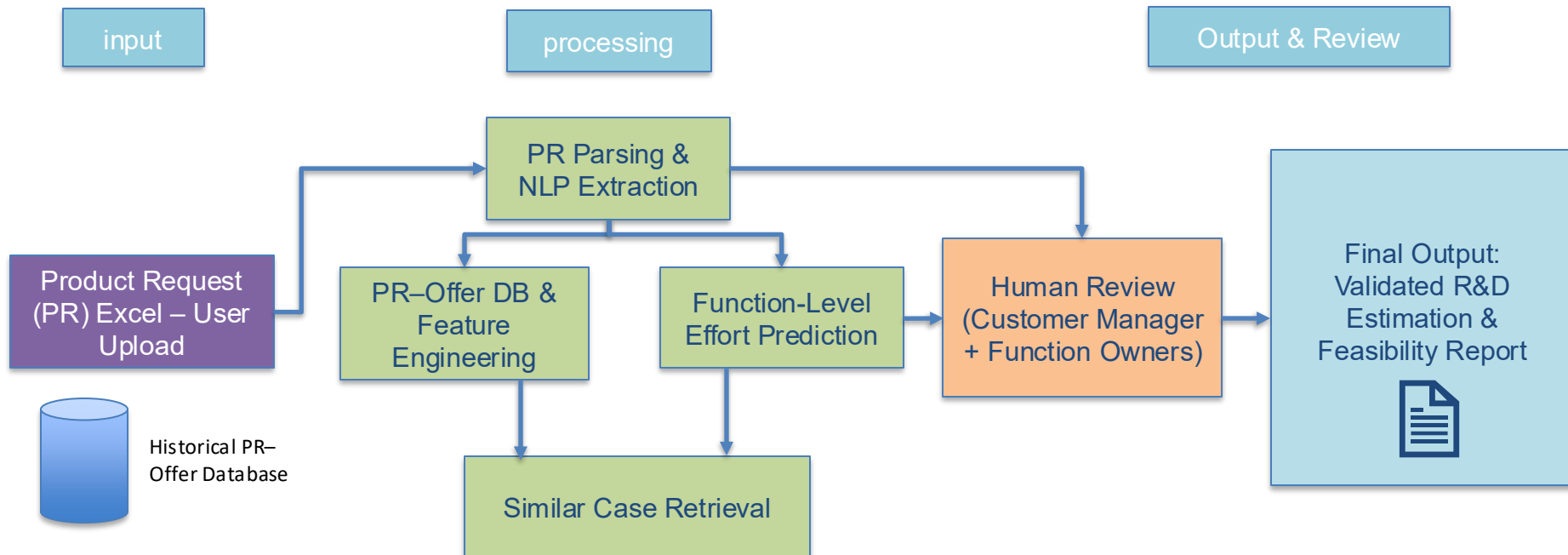
# Manage - Work breakdown structure

- **WP1 — Design and Management**
  - *Duration: 1 Nov 2025 → 19 Nov 2025*
  - *T1.1 Define Value Proposition*
  - *T1.2 Set Objectives*
  - *T1.3 Identify Stakeholders*
  - *T1.4 Functional Diagram*
  - *T1.5 Design and Management Plan*
  - *T1.6 Prepare Checkpoint 1 presentation*

- **WP2 —  Data Collection and Preparation**
  - **Duration**: 20 Nov 2025 → 30 Nov 2025
  - **Tasks:**
  - *T2.1 Collect historical PR–Offer Excel files*
  - *T2.2 Clean and structure data*
  - *T2.3 Design PR–Offer database*
  - *T2.4 Explore PR text and fields*

- **WP3 — Model Development**
  - **Duration:** 1 Dec 2025 → 10 Dec 2025
  - **Tasks:**
  - *T3.1 NLP for PR extraction*
  - *T3.2 Feature engineering*
  - *T3.3 Regression model for function-level effort prediction*
  - *T3.4 Similar-case retrieval module*
  - *T3.5 Evaluation & refinement*
  - *T3.6 Prepare Checkpoint 2 presentation*

- **WP4 — Deployment and Delivery**
  - **Duration:** 11 Dec 2025 → 7 Jan 2026
  - **Tasks:**
  - *T4.1 Meeting with IVECO for feedback*
  - *T4.2 Project Deployment*
  - *T4.3 Prepare Checkpoint 3 presentation*
  - *T4.4 Final technical report*

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# Manage - Gantt



| | NOV | | | | DEC | | | | JAN | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | W1 | W2 | W3 | W4 | W1 | W2 | W3 | W4 | W1 | W2 | W3 |
| **Project Management** | | | | | | | | | | | |
| Project Definition | 🟩 | 🟩 | 🟩 | | | | | | | | |
| Design Plan | | 🟩 | 🟩 | | | | | | | | |
| Management Plan | | | 🟩 | | | | | | | | |
| **Data Preparation** | | | | | | | | | | | |
| Data Collection | | 🟩 | 🟩 | ⬜ | | | | | | | |
| Data Cleaning | | | | ⬜ | ⬜ | | | | | | |
| **Model Development** | | | | | | | | | | | |
| Model Selection and Training | | | | | | ⬜ | ⬜ | ⬜ | ⬜ | | |
| Model Evaluation | | | | | | | ⬜ | ⬜ | ⬜ | | |
| **Communication** | | | | | | | | | | | |
| Meetings with Iveco | | 🟩 | 🟩 | ⬜ | ⬜ | ⬜ | ⬜ | ⬜ | ⬜ | | |
| Checkpoint preparation | | | 🟩 | | | ⬜ | | | ⬜ | | |
| Final Presentation | | | | | | | | ⬜ | ⬜ | | |

🟩 : Completed

CP1 (19/11/2025)

CP2 (10/12/2025)

CP3 (07/01/2026)

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THANK YOU

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WE GO BEYOND