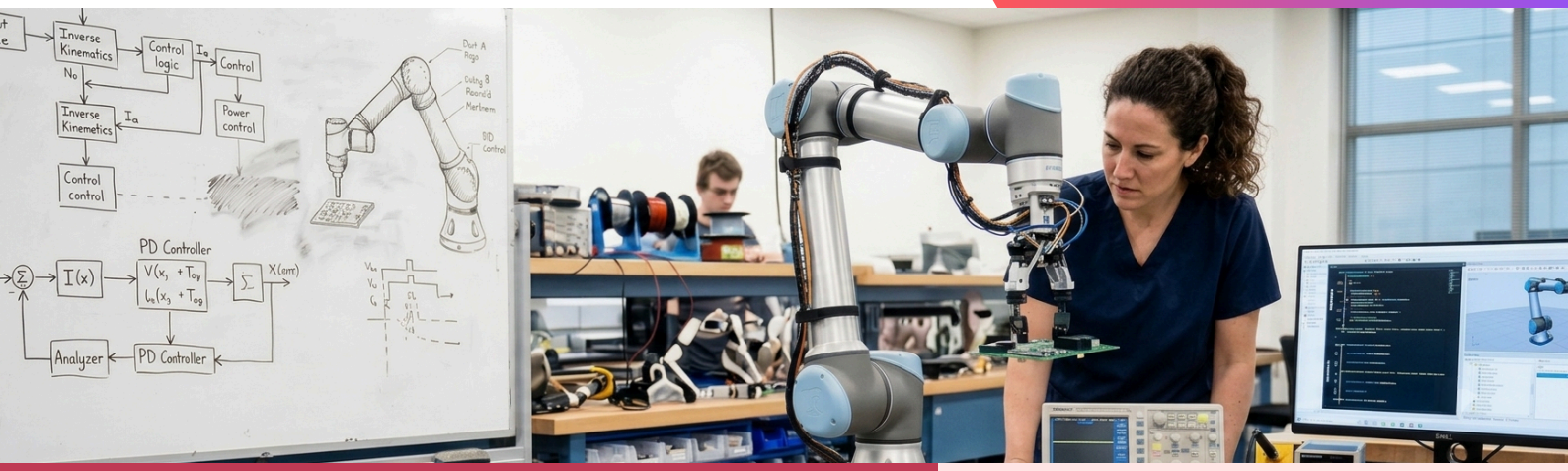
FROM WHITEBOARD TO A WORKING ROBOT

Genuine Robotics

AGENTIC AI THAT CONNECTS EVERY DISCIPLINE OF ROBOTICS ENGINEERING

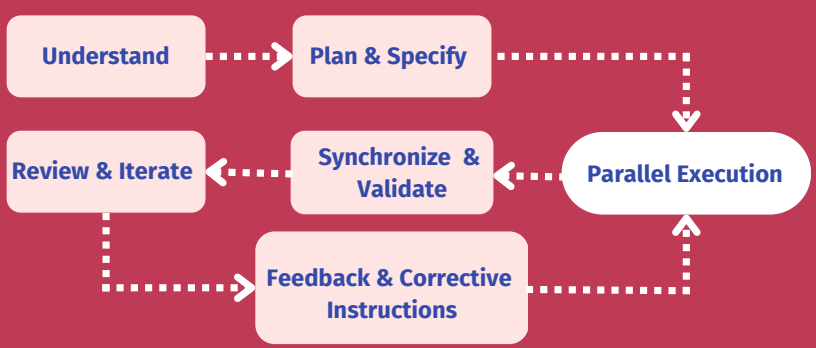


Our **Agentic AI approach** helps coordinate the **entire engineering process**

A robot is not built in isolation. It is the result of multiple engineering disciplines working together — mechanical structures, electronics, components, power systems, control engineering, software, and IoT.

A change in one discipline can affect every other discipline. Selecting a different motor changes the power requirements. Increasing the payload affects joint torque and mechanical strength. Changing the controller can impact circuit design, communication interfaces, firmware, and component availability.

Traditional AI assistants can explain these concepts and generate individual outputs. But coordinating the dependencies, constraints, and engineering decisions across an entire robotics project requires something more.



MULTI-AGENT WITH EVERY ENGINEERING DISCIPLINE CONNECTED.

01. Understand the Goal:
Define project objectives and functional requirements.

02. Plan the System:
Assess payload, terrain, runtime, budget, constraints and bottlenecks.

03. Generate Specifications:
Establish BOM, electronics, mechanical, power, and software requirements.

04. Resolve Dependencies:
Analyze component changes and their system-wide impact.

05. Assign Specialized Agents:
Allocate parallel tasks to the component-selection, electronics, mechanical-design, engineering-analysis, and IoT agents.

06. Validate and Iterate:
Review outputs, resolve gaps, and refine with customer feedback.

NOVEMBER 2026

By Genuine Robotics Team

WORKING EXAMPLE

CHANGE IN REQUIREMENT: ROBOTIC ARM PAYLOAD INCREASED FROM 1 KG TO 2 KG

Goal: Increase payload capacity from 1 kg to 2 kg while maintaining the specified 600 mm reach, without compromising structural integrity, performance, or safety.

HOW AGENTIC AI COORDINATES THE CHANGE

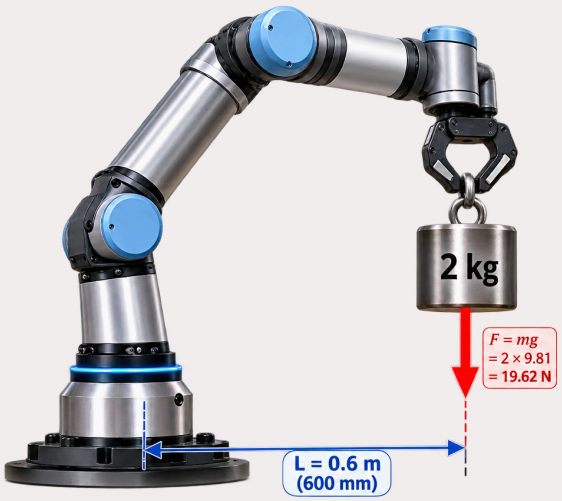
The Agentic AI Planner identifies the affected engineering dependencies and assigns tasks to specialized agents.

01. ENGINEERING AGENT — Recalculate

Recalculates joint torque across the working envelope, including link mass, payload, acceleration, and required operating margin. Identifies the actuator sizing failure.

$\tau = m \times g \times r$

For 2 kg: $\tau = 2 \times 9.81 \times 0.6 = 11.77$ Nm (static payload)



02. BOM AGENT — Reselect

Evaluate higher-torque motors, gearboxes, bearings, and gripper components. Check compatibility, availability, lead time, and revised cost.

03. STRUCTURE BUILDER AGENT — Revalidate

Review link dimensions, joint mounts, bearings, shafts, and fasteners. Assess stress, deflection, and structural stability under the revised load.

04. CIRCUIT BUILDER AGENT — Reassess

Recalculate motor peak and continuous current requirements. Validate motor drivers, power supply, wiring, battery capacity, and thermal limits.

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HOW AGENTIC AI COORDINATES THE CHANGE

05. IoT AGENT — Update

Review motor-current and temperature monitoring, overload thresholds, fault detection, and telemetry requirements.

Connected Engineering Iteration using Agentic AI

Using MCP-connected tools, agents exchange updated specifications and engineering data. Changes are propagated to affected dependencies, and the relevant calculations and validation checks are repeated.

For example, selecting a higher-torque motor may require a different motor driver, increased power capacity, revised battery sizing, and modified mechanical mounting.

The system generates an updated set of engineering outputs, identifies unresolved constraints, and presents the revised design, BOM, and cost impact for customer approval.

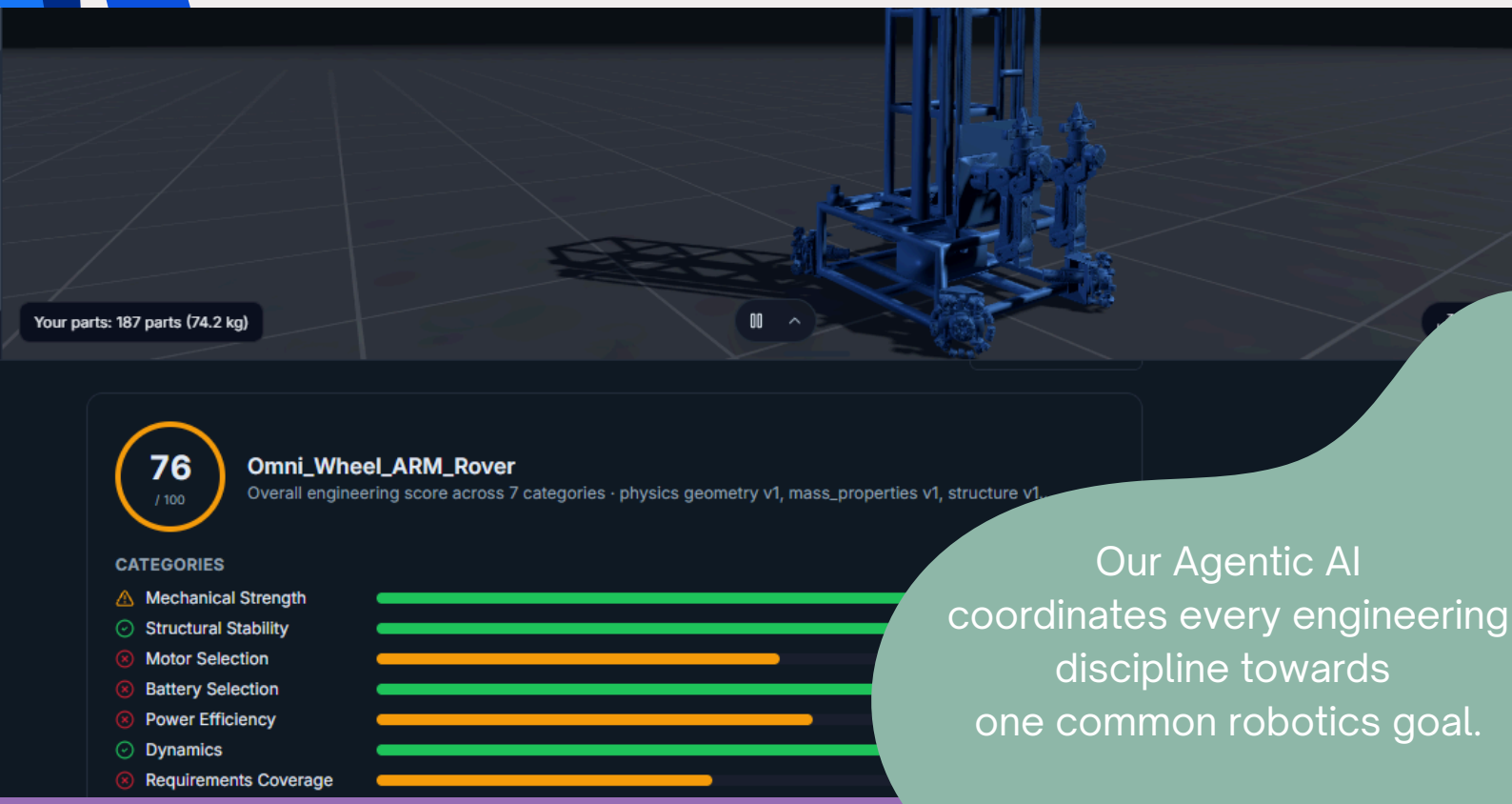
Maker–Checker Operation:

Generated changes are independently checked against engineering specifications. Customer feedback is converted into corrective instructions for the responsible agents, followed by another validation iteration.

GENUINE ROBOTICS

WE ACCELERATE YOUR ROBOTIC JOURNEY FROM IDEA TO EXECUTION WITH PRECISION AND CLARITY.

Genuine Robotics is an AI-powered platform for building robotic systems from first principles. We help companies, institutions and individual engineers design, simulate and validate robots — from circuits and CAD to ROS simulation and live telemetry — all in one place. The result: fewer failed prototypes, faster builds, and stronger engineering skills across your team.



Our Agentic AI coordinates every engineering discipline towards one common robotics goal.

A Message from the CTO

After 10 years in robotics, I learned that the hardest part isn't electronics, CAD or code on their own. It's keeping all three in sync. One small change could ripple through all of them, and handling it took rare, multidisciplinary skill and expensive software. At Genuine Robotics, we've spent the past few years building tools that bring electronics, mechanics and kinematics into one place, with AI helping carry that experience to every builder.

Naveenkumar
Chief Technology Officer
Genuine Robotics

Visit: https://genuinerobotics.com

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