

Robotics & Automation Engineering

Robot integration, mobile robots, inspection, and deterministic motion control.

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5TECH · SERVICE

Robotics & Automation

A commissioned robotic cell integrated into a real line — sensing, motion, safety, and controls engineered as one closed loop.

Figure FIG-001 — A commissioned robotic cell integrated into a real line: sensing, motion, safety, and controls engineered as one closed loop.

We integrate and build robotic systems for real operations — from mobile robots and pick-and-place cells to inspection rigs and multi-axis motion control. We handle the messy middle: sensors, control, safety, and integration with the rest of your line.

Overview

Most robotics projects do not fail at the robot; they fail at the integration around it — the sensing, safety, control, and the connection to the rest of your line. That messy middle is exactly where we focus. Whether you are evaluating your first cell, scaling an existing deployment, or trying to get a robot that demoed well to survive real-world variability, we engineer the parts that make automation dependable in production.

A typical engagement starts with a feasibility view: the task, the cycle time, the constraints, and an honest build-versus-integrate recommendation. From there we select hardware, plan motion and safety, and integrate with your PLCs, sensors, and vision so the system behaves as a closed loop rather than a fragile script. Where determinism matters, we use real-time fieldbuses such as EtherCAT.

We deliver a commissioned, documented system with the interlocks and guarding appropriate to the task, plus operator handover — not a proof of concept that only works on a good day. Robotics is rarely just robotics, so we bring vision, embedded, and controls expertise to the same problem instead of handing it between vendors.

A robotics engagement can start as an independent feasibility study or go straight to a working cell, depending on how much certainty you need first. We scope a narrow first milestone so you see motion on your real task early, then iterate toward production, and we are candid about cycle times, safety requirements, and whether an off-the-shelf integration beats a custom build. Safety and reliability are designed in from the start rather than bolted on, and everything is documented for your compliance process and your maintenance team. If a task is not a good fit for robotics yet, we will tell you that before you invest.

Who this is for

- Manufacturers and warehouses evaluating or scaling automation.
- Teams with a robotic arm or AMR that needs real-world integration.
- Operations that need repeatable, deterministic motion and safety.

Problems we solve

- Robots that work in a demo but fail against real-world variability.
- Integration gaps between robots, sensors, PLCs, and software.
- Safety and reliability concerns blocking deployment.
- Manual, repetitive, or unsafe tasks that are hard to staff.

What you get (deliverables)

- Robot cell or mobile-robot integration with your existing equipment.
- Motion control and, where required, deterministic fieldbus (e.g. EtherCAT).

- Sensor and vision integration for closed-loop behaviour.
- Safety review and interlocks appropriate to the task.
- Commissioning, documentation, and operator handover.

How we work

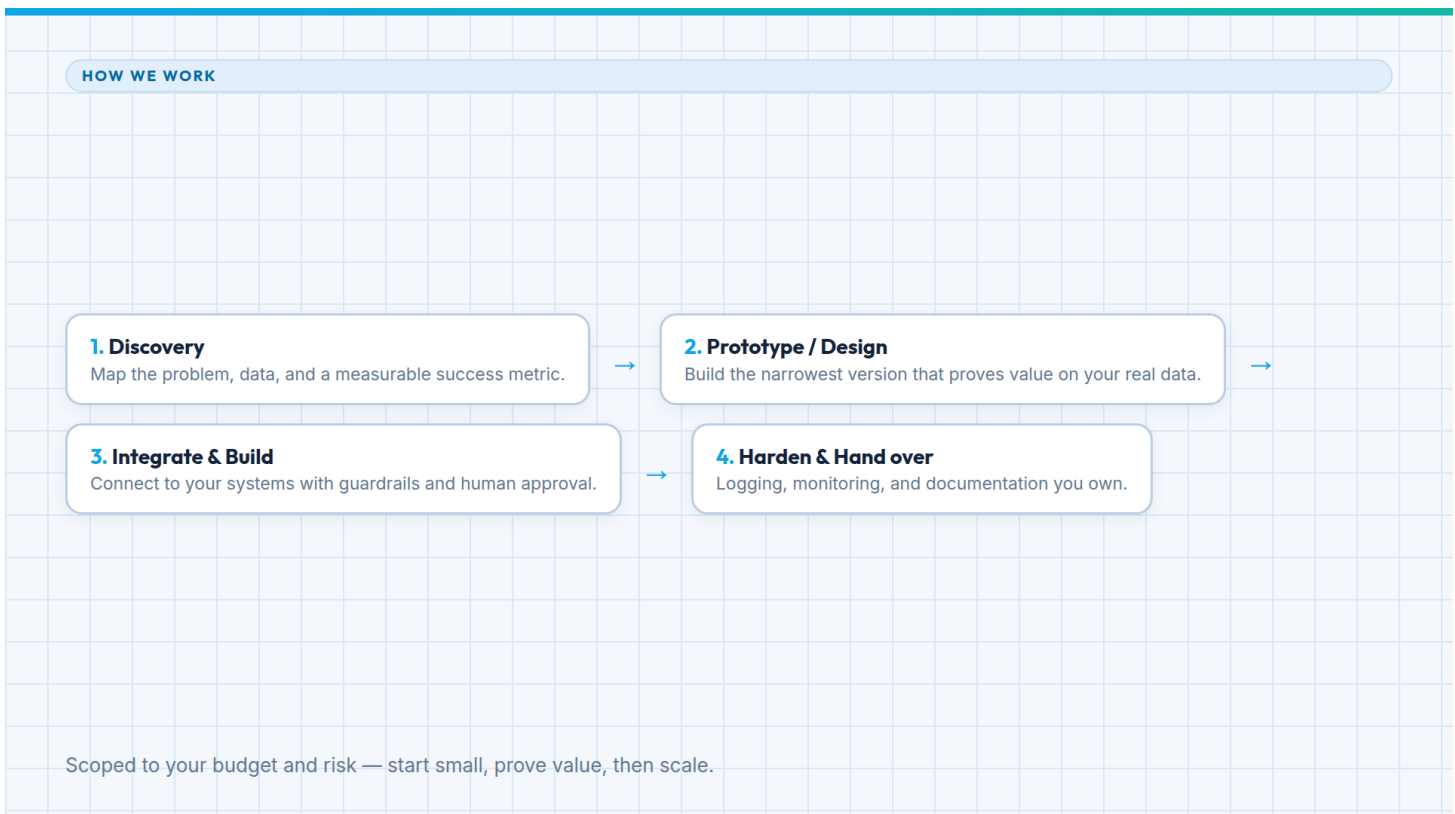


Figure FIG-002 — The robotics engagement in four steps: feasibility, design, build & integrate, and commission — scoped so you see motion on your real task early.

We scope a narrow first milestone so you see motion on your real task early, then iterate toward production. The engagement runs in four steps:

- 1. Feasibility** — Assess the task, cycle time, and constraints; recommend build vs integrate.
- 2. Design** — Select hardware, plan motion, safety, and integration points.
- 3. Build & integrate** — Assemble, program, and connect to sensors, vision, and control systems.
- 4. Commission** — Tune, validate against real conditions, and hand over with documentation.

Safety is not a separate phase: we design task-appropriate guarding, interlocks, and exclusion zones as part of the engagement and document them for your review and compliance process.

Example use cases

- Warehouse robotics and mobile robot (AMR/AGV) integration.
- Robotic inspection and defect-detection stations.
- Visual servoing — camera-guided robotic motion.
- Pick-and-place and material-handling cells.
- Retrofitting an existing robot into a production line.

Industries we serve

- Manufacturing
- Warehousing & logistics
- Inspection & QA
- Research labs

Frequently asked questions

How long does a robotics prototype take? A focused proof-of-concept is typically weeks, not months. We scope a narrow first milestone so you see motion on your real task early, then iterate toward production.

Can 5Tech integrate with existing hardware? Yes. A large part of robotics work is integration — we connect robots, sensors, PLCs, and software you already own rather than forcing a rip-and-replace.

Do you handle safety? We design task-appropriate safety (guarding, interlocks, exclusion zones) as part of the engagement and document it for your review and compliance process.

Related services & industries

Related services

- [Machine Vision & Computer Vision](#) — vision to guide, inspect, and trigger.
- [Embedded Systems & IoT](#) — the sensing and connectivity layer around the cell.
- [Hardware & Software Prototyping](#) — prove a cell concept before a full build.

Related industries

- Warehouse Robotics (</industries/warehouse-robotics>)
- Manufacturing Automation (</industries/manufacturing-automation>)
- Research & Prototyping (</industries/research-prototyping>)

Figures

ID	TITLE	STATUS	FUTURE FILENAME	PURPOSE
FIG-001	Robotics & Automation — Hero	Placeholder	images/hero_service.png	Service-page cover / hero
FIG-002	Engagement Process	Placeholder	diagrams/process.png	The four-step engagement process