FIT FOR PURPOSE.

February 17th, 2026

IMEC

Plan. Implement. Excel.

Jeremy Smith

Technical Specialist

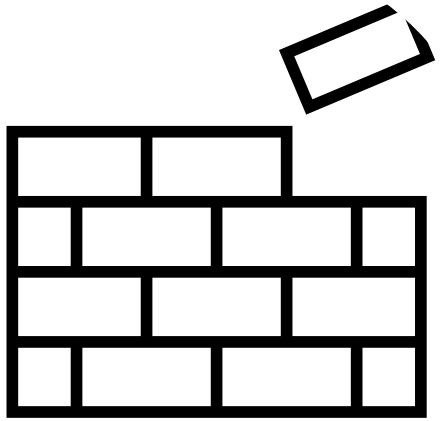
Welcome & Housekeeping

- Recording on; deck & templates will be shared
- Use Q&A for questions; quick pulse poll mid-session
- Timing: 45 minutes with Q&A at the end

Agenda

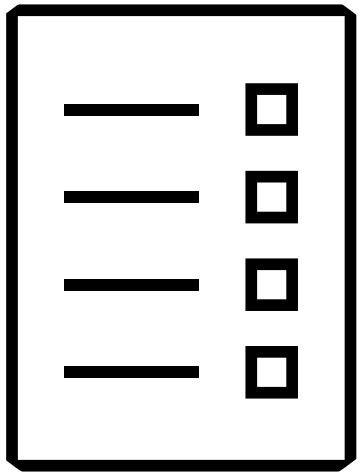
- Why start with a problem statement (manufacturing context)
- Spotting automation-worthy pain points on the shop floor
- 4-part framing template for plant teams
- How framing improves ROI, buy-in, and solution design

Key Takeaways



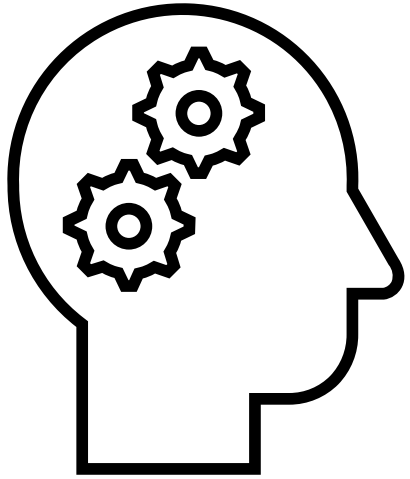
Crafting Problem Statements

- Specific
- Measurable
- Impactful



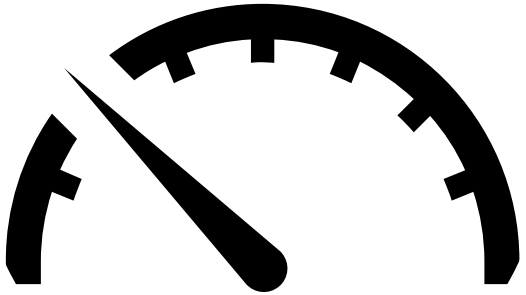
Quick Triaging of Solutions

- Value vs. Effort Assessment
- KPI Focused



Determine Best Overall Approach

- Apply standard calculation methodology and/or templates



Implement and Measure Results

- Ensure problem statement is solved
- Prove ROI

Problem-First Automation Wins

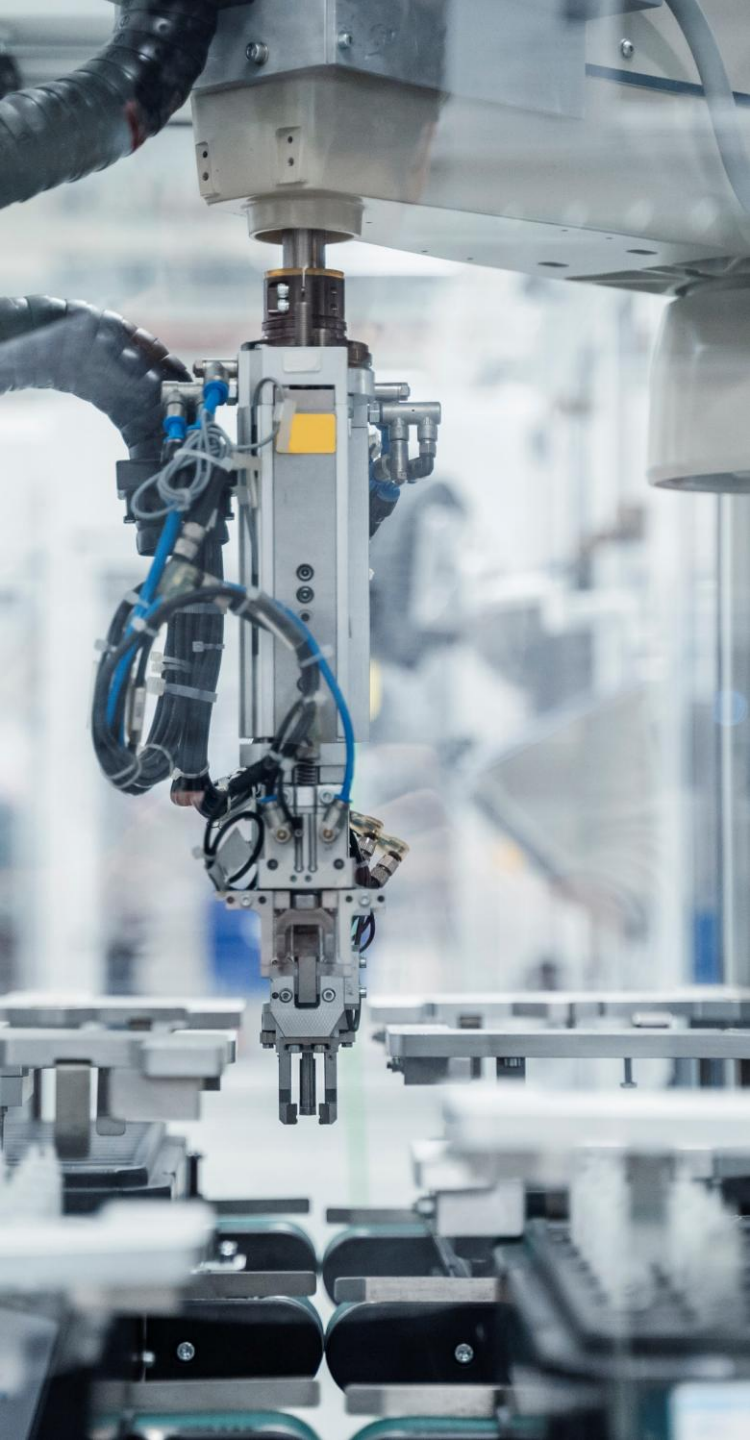
- Avoids solution-first bias and scope creep
- Aligns operations, maintenance, safety on value & constraints
- Enables measurable outcomes and governance
- Reduces rework; accelerates delivery

Pitfalls When Skipping Clear Problem Statements

- Orphan automations with unclear ownership
- Local optimizations that hurt end-to-end flow
- Unverifiable ROI from vague outcomes
- Late constraints forcing costly redesigns

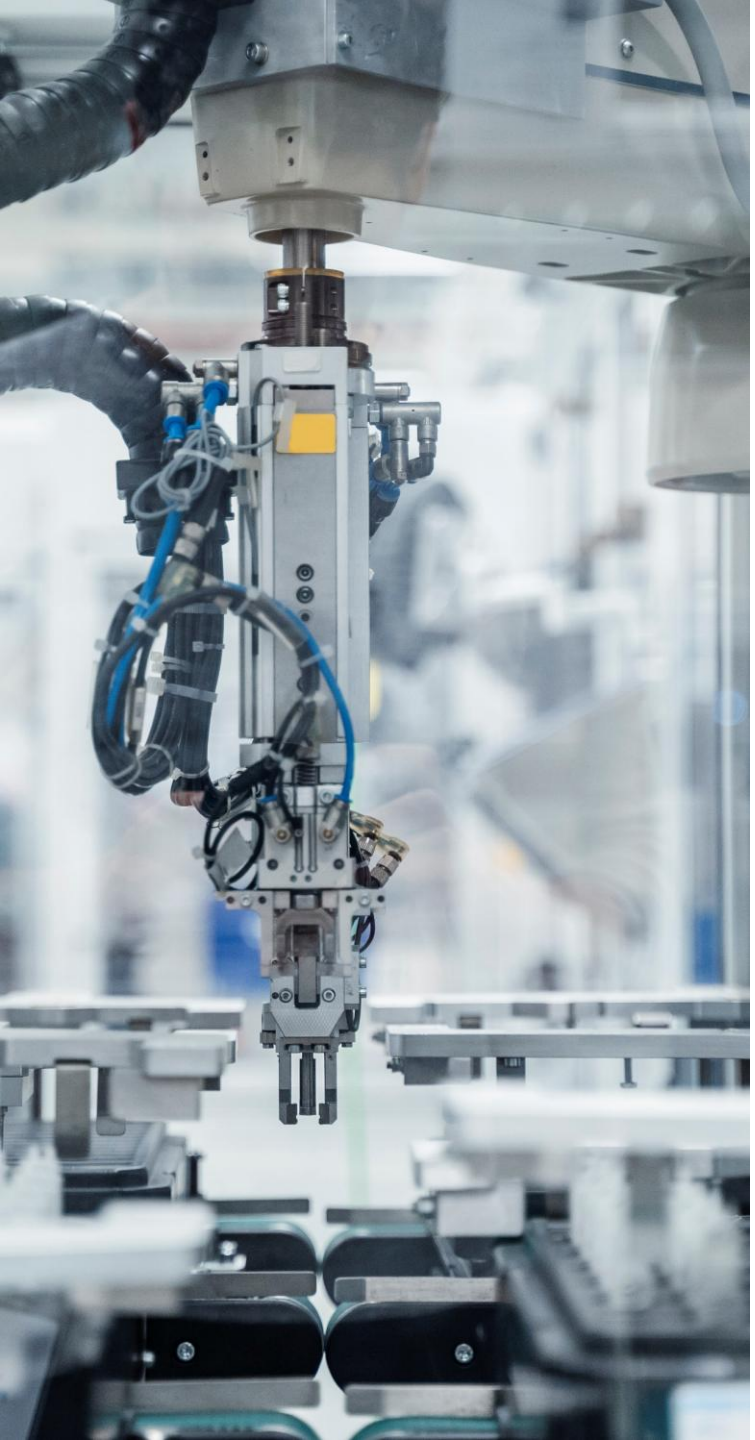
“SMART” Problem Statements

- Specific: Name the line/cell, process step, product family, and shift; state the pain clearly (e.g., “pour-temperature variance on Casting Line A causes mispours in cores 12–18”).
- Measurable: Include baseline and target using plant metrics (e.g., FPY, scrap %, OEE, changeover time, energy/ton), plus how you’ll measure (data source, time window).
- Achievable: Check constraints (LOTO/safety, PLC/HMI limits, maintenance windows, material variability) and resource availability (SME time, budget) to keep targets realistic.
- Relevant: Tie the outcome to business impact (scrap avoided, throughput, safety risk reduction, compliance) and to the value stream (no local optimizations that hurt flow).
- Time-bound: Set a deadline and review cadence (e.g., “reach target within 60 days; weekly KPI checks; 4-week sustain proof”).



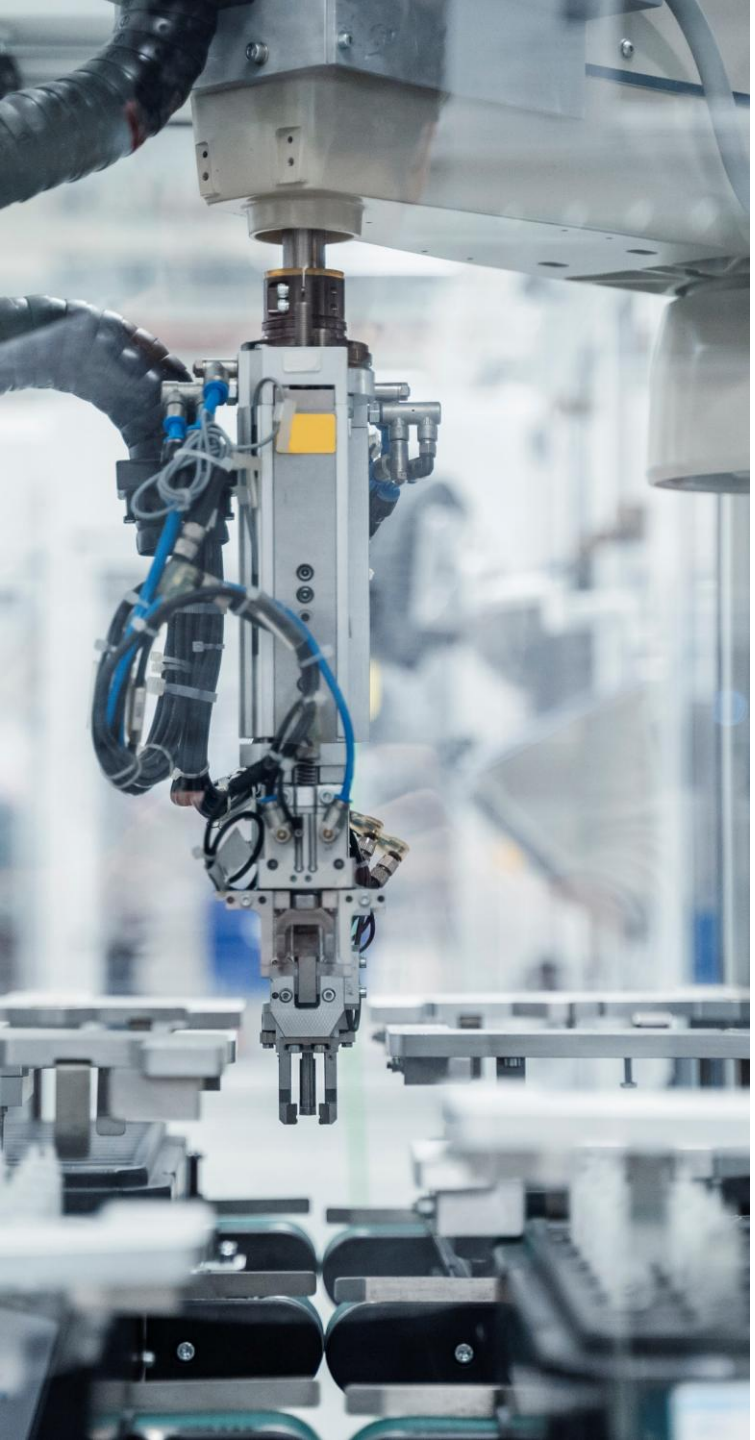
Spotting automation-worthy pain points on the shop floor

- High-volume, rule-based work with recurring defects or waiting
- Queues & handoffs that throttle
- Manual data capture or double entry
- Unplanned downtime patterns
- Compliance/traceability gaps



Quick triaging of solutions

- Value signals
- Effort drivers
- Score 1–5 (Value × Effort) and prioritize high-value/low-effort
- Constraint check
- Right-sized intervention



Poll Question

- Where is your plant today with automation problem framing and assessing?
- 1. Not started (ad hoc ideas, no baselines)
- 2. Emerging (some baselines, inconsistent framing)
- 3. Defined (template in use, sporadic)
- 4. Mature (governed process across lines)
- 5. Optimized (continuous improvement tied to KPIs) 1–5 (Value × Effort) and prioritize high-value/low-effort

Determine Best Overall Approach

From short-list of potentials from triage step determine/collect details:

- Current State: line/cell, product mix, takt/cycle, shifts
- Impact (baseline): OEE, scrap/rework, downtime, safety risk, energy/ton
- Desired Outcome: target KPIs & acceptance criteria
- Constraints: safety/LOTO, PLC/HMI, MES/ERP, change windows

Apply Standard Calculations

- Standard calculation approach keeps team aligned
- Provides a clear picture of problem and solution

Manufacturing Automation Problem Statement — Worksheet

Use this one-pager to frame each automation opportunity. Focus on outcomes; avoid naming tools upfront.

1) Current State (where/when/who)

Line/Cell & Product Mix	e.g., Casting Line A — gray iron, 2 part numbers, 3 shifts
Process Step(s)	e.g., ladle pour → mold queue → shakeout
Cycle/Takt & Volumes	e.g., 55s cycle; 1,200 pcs/shift
Systems Involved	PLC/HMI, sensors, MES, ERP, QMS

2) Impact (baseline metrics)

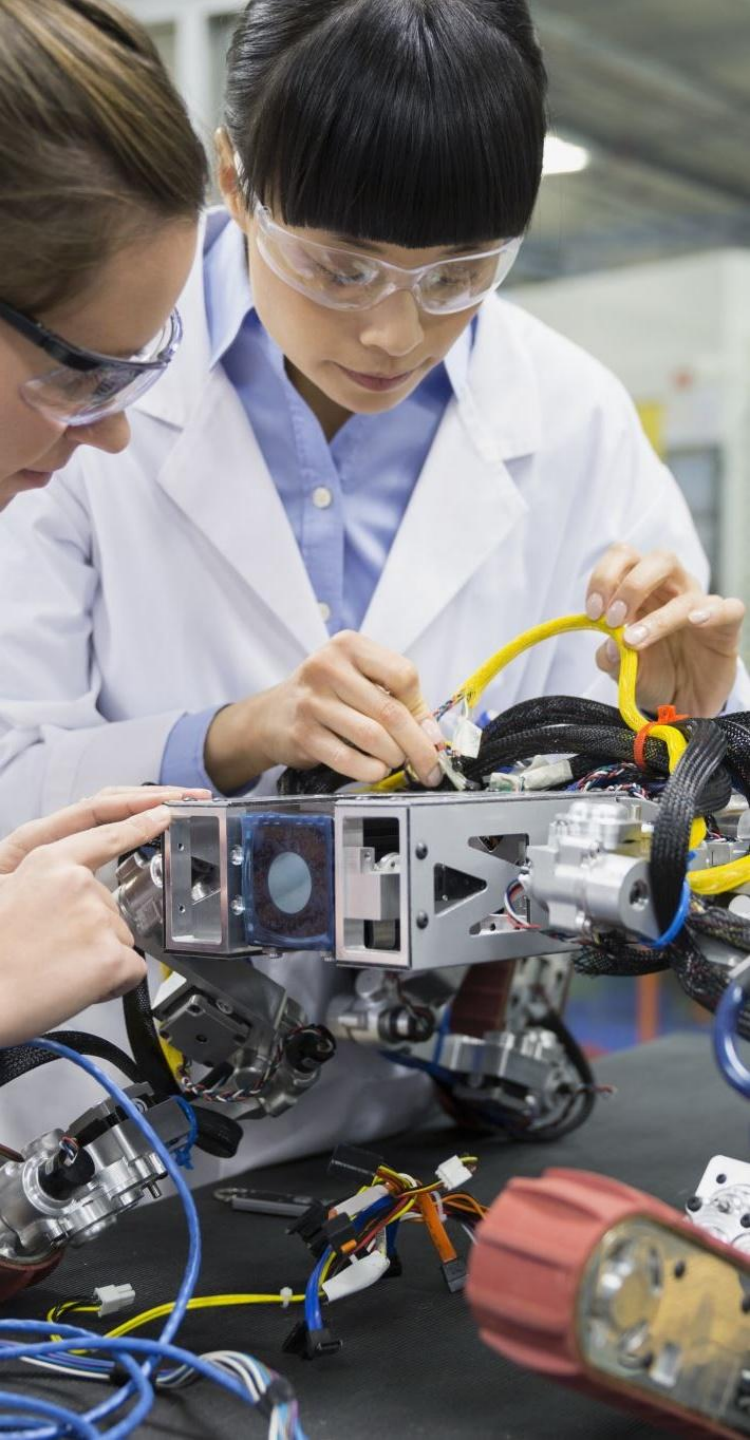
OEE / Availability / Performance / Quality	e.g., 68% OEE; perf losses at pour; FPY 87%
Scrap & Rework	e.g., 6.5% pour-related scrap; 2.1% rework
Downtime / Changeover	e.g., 45 min changeover; 2.3 hrs/week unplanned
Safety & Compliance	e.g., heat exposure; LOTO steps; audit findings
Energy / Unit	e.g., 1.9 MMBtu/ton or kWh/part

3) Desired Outcome (targets & acceptance)

Target KPIs	e.g., FPY ≥ 95%, pour-related scrap ≤ 2%, OEE ≥ 78%
Acceptance Criteria	What proves success? e.g., 4 weeks meeting targets
Scope of Pilot	Line/shift, lot size, product families

4) Constraints & Considerations

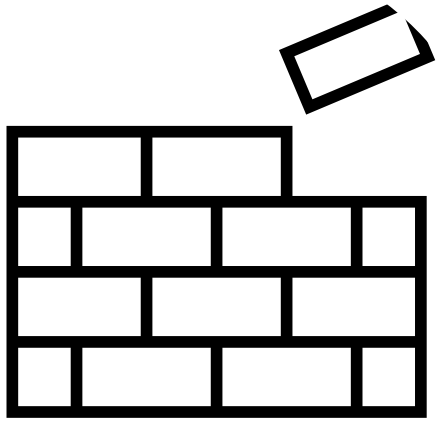
Safety / LOTO / Interlocks	Any required guards, interlocks, PHA/Job Safety Analysis
Technical	Sensor placement, PLC memory, network, data retention



Implement and Ensure ROI

- Once applications are decided, determine if implementation can be done internally or if use of an integrator will be needed.
  - The well-crafted problem statement and expected benefits from the template will transfer directly to an RFQ if external assistance is needed.
- Establish a standard implementation review cadence to ensure that KPI's in problem statement are fully achieved.

Key Takeaways



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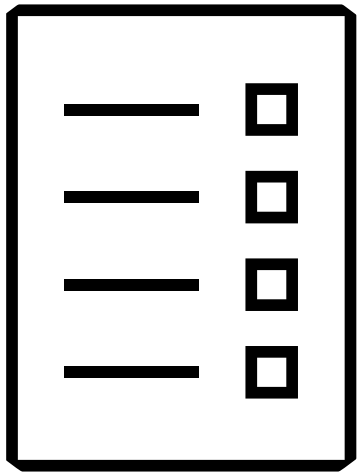

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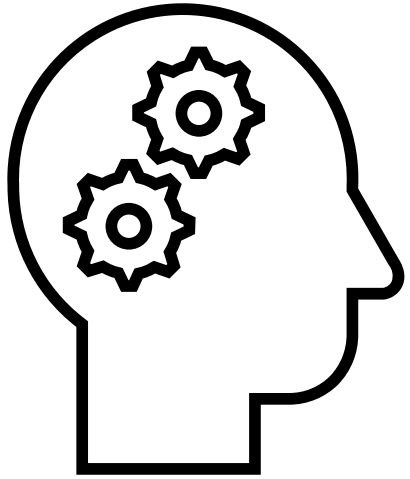

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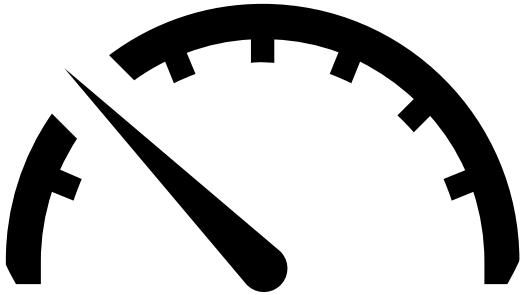

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Thank You!

Share your feedback

IMEC.org

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