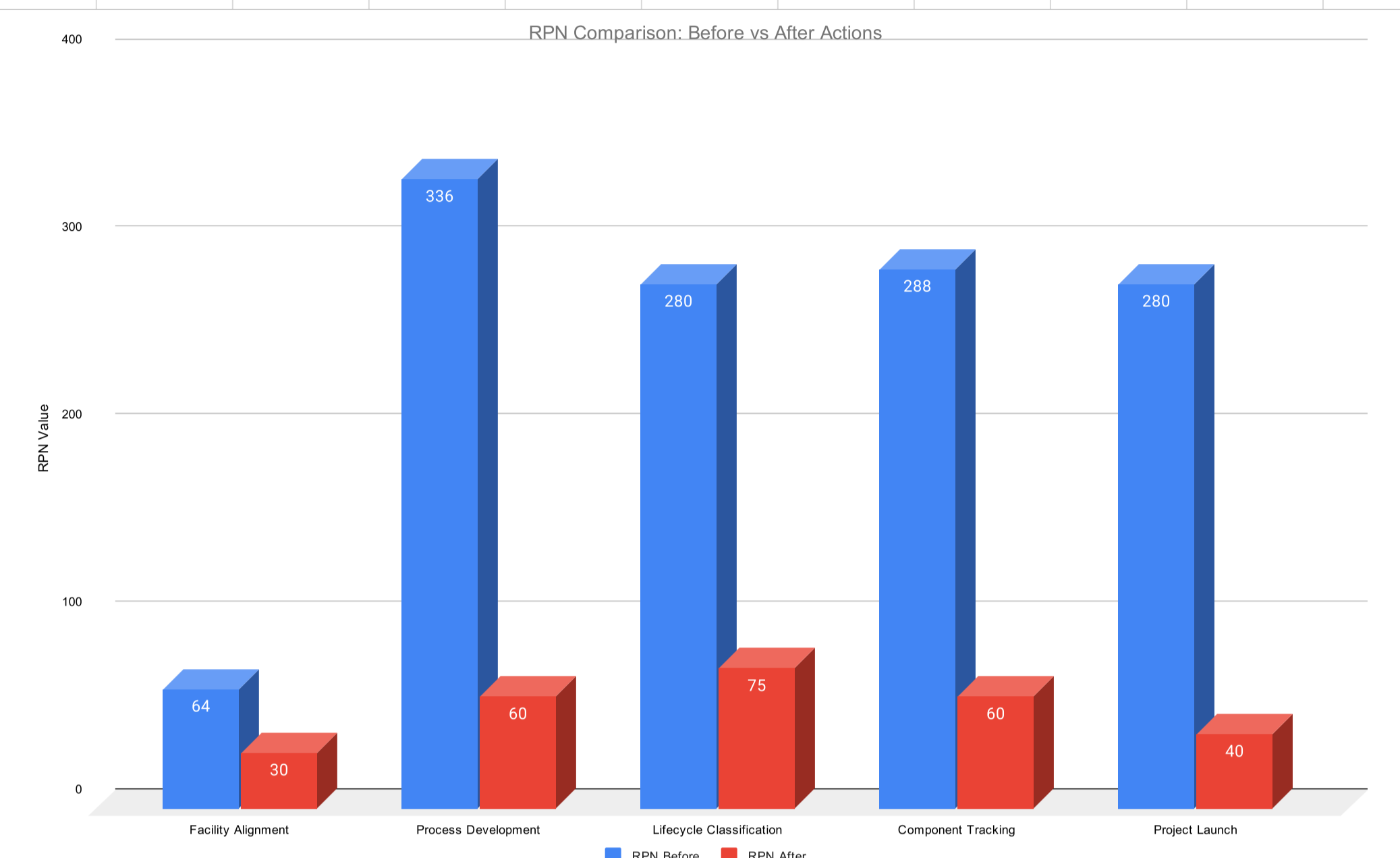


Item / Process	Potential Effects / Consequences (what is the impact)	Potential effects/consequences	Potential Causes (why can it happen?)	Current Controls (How is it currently detected / prevented?)	W (1-10) Occurrence	T (1-10) Severity	E (10-1) Detection	RPN (W*T*E)	Recommendation Actions (Corrective / Preventive)	Responsible Person	Target Completion	After Actions			
												W	T	E	RPN
Facility Alignment & Process Mapping	Inability to perform on-site physical process audit (Risk: Not going to the factory)	Misalignment between the theoretical workflow design and actual factory layout floor footprint.	Travel restrictions, lack of physical access permissions	Reviewing basic engineering CAD layouts or past linear process documentation.	2	8	4	64	In case we don't have access permissions, we can do a virtual walkthrough using the Professor's IoT factory videos. We'll extract the spatial constraints and machine layouts from the footage to sketch out a reliable workflow and plan our material paths before touching any physical equipment.	Project lead, lab Technician	3/6/2026	3	5	2	30
Process Development & Human Factors	Our process documentation and disassembly instructions lack practical, real-world shop-floor reality because we do not have the complete knowledge of a fully experienced engineer.	The automated or manual disassembly steps we design might turn out to be technically unfeasible or too rigid during runtime, leading to line bottlenecks or accidentally damaging delicate sensors and actuators.	Limited practical experience with manual controls and component limits in the factory.	Relying on standard manufacturer component specification datasheets.	6	7	8	336	Recognizing that our team does not yet have full, professional engineering experience, we will bridge this practical knowledge gap through iterative, hands-on learning. We will begin prototyping immediately with the specific lab hardware and materials available to us, continuously adapting and refining our assembly and disassembly processes as our technical understanding grows with each class session.	Industrial Engineer	3/6/2026	2	5	6	60
Lifecycle Classification (3Rs Phase)	Incorrect allocation of returned parts to the scrap stream instead of the 3Rs (Risk: Not knowing scrap vs. 3R %)	"Financial losses" and high waste: components that could be reused/refurbished are discarded prematurely, violating the Circular Economy intent.	Lack of defined technical certification criteria to distinguish valid functional lifecycles.	Basic sorting rules without clear functional limit baselines.	5	8	7	280	Define Functional Lifecycle Criteria: Establish explicit technical thresholds to classify factory parts into Reuse, Refurbish, or Recycle streams; compile data into an official Classification of Factory Parts Matrix.	Industrial analysis, Resreach analysis	6/6/2026	5	5	3	75
Component Identification & Tracking	Component tracking history/ID loss during automated disassembly (Risk: Not knowing specific IDs/lifespan)	Total loss of component traceability; system cannot pull production dates or remaining lifespans to guarantee assembly reliability.	Inadequate data integration architecture between recovery hardware and backend production history databases.	Relying on manual sticker barcodes which may smudge or get stripped during standard factory runtime.	6	8	6	288	We will search for industrial case studies and technical papers on the internet that focus on tracking parts via laser-etched matrix codes or RFID tags. By analyzing these existing implementation documents, we can piece together how a reliable tracking system operates and use that data to map out a theoretical tracking model for our components.	Industrial engineer, Research analysis	5/6/2026	4	5	3	60
Project Launch & Scope Management	Delayed execution of deliverables due to timeline constraints (Risk: Complexity vs. Short time period)	Critical workflow components remain unvalidated; failure to present a functioning Technical Demonstrator on time.	Over-complicating technical sub-systems beyond the delivery timeline.	Traditional linear phase-gate scheduling models.	8	7	5	280	We need to set up an Agile-style team structure where we assign clear individual roles and specific technical objectives. To prevent getting overwhelmed by the timeline, we'll run bi-weekly progress reviews to check our milestones, clear bottlenecks, and make sure our subsystems integrate smoothly on time.	Project lead, lab Technician, Sum master	20/6/2026	4	2	5	40



Item / Process	RPN Before	RPN After	% Improvement
Facility Alignment	64	30	53.1
Process Development	336	60	82.1
Lifecycle Classification	280	75	73.2
Component Tracking	288	60	79.2
Project Launch	280	40	85.7

