

DECODE Form *This form is used to understand an existing product and its capabilities before making design decisions.*

STEP 1A - Project Header

Field / Domain (Select one)
Context in which this project lives (e.g. Manufacturing, Product, Quality).

- Manufacturing
- Product Development
- Industrialization
- Quality
- Supply Chain
- Service / Field
- Other (free text if selected) _____

Project Name
Neutral, capability-oriented name. Avoid "problem", "issue", or solution language.

Product Name / Description
Exact product, variant, or family this applies to. Be specific.

Purpose / Intent
Why this project exists. Frame learning and improvement — not fixing or blame.

Start Date
When this work formally began.

Review / Version
Living document indicator (version + last review).

Owner
Single person accountable for coherence and integrity of the canvas.

Sponsor (optional)
Management anchor (if applicable).

Project ID
Unique identifier for this DECODE project.

STEP 1B - Capability Focus

Capability of Interest (Select one)
What type of capability this is (process, product, equipment, material, interface).

- Process capability
- Product capability
- Equipment capability
- Material capability
- Interface capability
- System-level / Mixed

Observation Context (Select all that apply)
Where and under what conditions the capability is observed.

- Normal operation
- Ramp-up / transition
- After change (process, design, supplier)
- Stress / edge condition
- Field / customer use
- Laboratory / test environment
- Description (free text if selected) _____

Improvement Boundary
Explicitly define what is in scope and what is out of scope. Define boundaries to protect focus, not to assign responsibility.

In scope: _____

Out of scope: _____

Reference Capability (Select one primary reference)
Select the primary reference used to judge "good". Other references may exist but should not be mixed here.

- Specification: _____
- Validated / qualified state: _____
- Historical stable period: _____
- Customer expectation: _____
- Benchmark: _____
- Specific document, period, or reference.: _____

Targeted Outcome
Directional statement of what we want to achieve at the end. Outcome-level only.

Soft Ambition (Optional)
Non-binding sense of scale. Cannot define success or failure. May be removed if it biases analysis.

STEP 1 Gate *If any box is unchecked, remain in Step 1*

Project identity is clear Product and scope are unambiguous Focus is capability-oriented No causes or solutions are stated

STEP 2 - System Decomposition *This step defines the structure of the system so evidence can be placed and interpreted correctly.* *No data, trends, or measurements in this step*

2.1 System Scope Confirmation

System Under Study
The system being decomposed. Must match the scope defined in Section 1.

System Level (Select one)
Select the level at which decomposition is performed. Avoid mixing levels.

- Component
- Subsystem
- Process step
- Process chain
- Product
- System-of-systems

2.2 System Elements
These categories guide completeness. Not all must be present.

- Material
- Energy
- Information
- Equipment / Hardware
- Software / Control
- Human
- Environment

Identified Elements (One per line)
List the main elements that make up the system at the chosen level. Use nouns. No behavior, no performance, no judgment.

2.3 System Interfaces

Interface Types (Select all that apply)
Categories of interaction between system elements. Use to ensure completeness - not to analyze behavior or causes.

- Material–Material
- Material–Equipment
- Equipment–Equipment
- Human–Equipment
- Information–Control
- Energy–System
- Environment–System

Key Interfaces to Observe
Interfaces where interaction occurs and evidence may later be observed. Do not explain behavior.

STEP 2 Gate *If unclear, refine Step 2 before adding evidence.*

System level is clear and consistent Elements are listed without behavior or judgment Interfaces are identified, not explained

STEP 3 - Evidence *Given the evidence we have, what causal mechanisms could explain what we observe?* *No analysis, interpretation, or conclusions in this step*

3.1 Evidence Source & Type		3.2 Evidence Description			3.3 Observation Context			3.4 Relation to Targeted Outcome (Non-evaluative)												
Evidence ID	Evidence Source <i>Origin of the evidence.</i>	Evidence Type (Select one) <i>Describe the nature of the evidence, not its quality.</i>			Evidence Type <i>Describe exactly what is observed. No explanations, no assumptions, no conclusions.</i>			Observed At (Select all that apply) <i>Link evidence to elements or interfaces defined in STEP 2.</i>			Conditions of Observation <i>Operating conditions, environment, timing, or state during observation.</i>		Frequency / Pattern (Select one) <i>Describe occurrence pattern only. No interpretation.</i>		Relation to Targeted Outcome (Select one) <i>This classification indicates relevance only. It must not be used to judge evidence as good or bad.</i>					
	Measurement data, Test results, Production records, Logs / system data, Visual observation, Physical samples, Customer / field observation, Experiment / trial	Quantitative	Qualitative	Mixed	Use factual language / Avoid "because", "due to", "caused by" Record what happened, not why			Specific element	Specific interface	Whole system			Single occurrence	Repeated	Intermittent	Trend over time	Direct	Indirect	Contextual	No apparent relation
E-01		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E-02		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E-03		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E-04		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E-05		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E-06		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E-07		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E-08		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E-09		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E-10		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

STEP 3 Gate *If explanations appear, stop and move them to STEP 4*

Evidence is observable and traceable Evidence is linked to elements or interfaces No causes or explanations are stated Conflicting evidence is not removed

STEP 4 - Cause Logic *Given the evidence we have, what causal mechanisms could explain what we observe?* *Use conditional language (may, could, is consistent with)*

4.1 Evidence-to-Logic Linking		4.2 Hypothesized Causal Mechanisms		4.3 Assumptions & Uncertainties		4.4 Competing Explanations								
Cause Logic ID	Evidence Referenced <i>Every causal statement must reference evidence. Multiple Evidence IDs may support one explanation. Examples: E-02, E-05, E-07</i>	Causal Explanation <i>Explain how, not who; Describe mechanisms, not failures. Avoid solution language, Avoid certainty</i>		Mechanism Type (Select all that apply) <i>Classifies the nature of the mechanism, not its importance.</i>		Key Assumptions <i>Assumptions made to construct this causal explanation.</i>		Known Uncertainties <i>What is not known or not yet validated.</i>		Alternative Causal Explanations <i>Plausible alternative explanations consistent with the evidence.</i>		Evidence Coverage for This Explanation (Select one) <i>This reflects evidence coverage only — not confidence or correctness.</i>		
				Physical, Chemical, Mechanical, Electrical, Thermal, Software / Control, Human / Organizational, Environmental						Strongly supported	Partially supported	Weakly supported	Insufficient evidence	
CL-1											<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CL-2											<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CL-3											<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CL-4											<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CL-5											<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

STEP 4 Gate *If actions appear, stop and move them to STEP 5*

Each causal explanation references evidence Assumptions are stated Uncertainties are acknowledged At least one alternative explanation considered

STEP 5 - Decision & Closure *Given what we understand, what do we decide to do - and why?* *This section captures the decision and preserves the reasoning, assumptions, and revisit conditions. It is not an execution plan.*

5.1 Decision Statement		5.2 Decision Rationale (Evidence-Based)		5.3 Actions & Experiments		5.4 Monitoring & Revisit Conditions	
Decision <i>Decisions may include not acting. Phrase as a choice, not a guarantee</i>	Evidence Referenced (List Evidence IDs) <i>Evidence used to support this decision. Examples: E-01, E-06, E-09</i>	Logic Referenced (List Cause Logic entries) <i>Which causal explanations informed this decision. Examples: CL-1</i>	Key Trade-offs Considered <i>What is gained, what is risked, what is deferred.</i>	Action / Experiment <i>Concrete action, test, or experiment derived from the decision. Prefer experiments over irreversible changes when uncertainty is high.</i>	Action Type (Select one) <i>Classifies the nature of the action chosen. Select the option that best reflects the intent, not the perceived importance or urgency.</i>	Expected Learning / Validation <i>What this action is expected to clarify or validate. This is not a success metric/ It is a learning intent</i>	What Will Be Monitored <i>Signals, observations, or evidence to watch.</i>
					<input type="checkbox"/> Experiment / trial <input type="checkbox"/> Design change <input type="checkbox"/> Process change <input type="checkbox"/> Monitoring only <input type="checkbox"/> No action (intentional)		Revisit Trigger <i>Condition under which this decision should be revisited.</i>
							Decision Review Date <i>When this decision will be reviewed, regardless of outcome.</i>

DECODE Form			
D.E.C.O.D.E Method Principles	DECODE is a structured decision method for situations where impact, uncertainty, and irreversibility require disciplined reasoning. The method consists of six defined steps. Each step answers a specific question and produces a required output before progression. Together, the steps build understanding before commitment. Clarify why change is being considered and which capability or value dimension is in focus. This step establishes relevance without framing a problem, proposing solutions, or negotiating targets. The objective is alignment on purpose and scope.		How to Use the A3 (Rules and Flow) Purpose of the A3 (what it is): A single-page constraint that keeps D.E.C.O.D.E thinking separated, explicit, and reviewable. The A3 is a decision-quality canvas. It is not a project plan or an execution tracker. Core sep: Step 1 defines intent and relevance (why), not problems or solutions Step 2 explores the system as it exists (what is there), not interpretation or meaning Step 3 clarifies embedded decisions (why it is this way), not judgment or blame Step 4 outlines change boundaries (where change is allowed), not preferred actions Step 5 records decision and closure (what is chosen and why), not execution planning What “good” looks like (behavioral outcomes): Teams can disagree analytically without personal conflict because facts, understanding, and commitment are separated The A3 can be read later and the decision still makes sense without relying on memory “Do nothing” or “delay” is documented as a disciplined decision, not a failure Gates (why they exist): Each Step Gate is a quality check that prevents premature commitment. If a gate fails, the correct response is not to fill faster, but to return to the step and strengthen understanding.
D Define the improvement intent	Describe the product or system exactly as it exists today, including elements, interfaces, and operational context. This step is descriptive only. Observable facts are recorded without interpretation, explanation, or judgment.		
E Explore the system as it exists	Reconstruct why the system is the way it is by identifying decisions already embedded in the current state. These may include intentional design choices, constraint driven decisions, inherited or legacy decisions, and emergent outcomes. The objective is understanding, not evaluation.		
C Clarify embedded decisions	Define where change is allowed and where it is not. Boundaries originate from reality rather than preference and may arise from physical laws, material behavior, safety and regulatory requirements, manufacturing capability, lifecycle effects, or usage context. This step makes risk visible before commitment.		
O Outline change boundaries	Select the appropriate path forward based on current understanding. Three legitimate outcomes are recognized: improve within existing boundaries, redesign with explicit scope and intent, or preserve the current design without change. The decision is based on justification, not momentum.		
D Decide the improvement path	Capture and protect the understanding developed through the previous steps. This includes intent, boundaries, assumptions, reasoning, and decision rationale. Closure preserves learning and accountability. Execution begins only after this point.		
E Establish closure			
DECODE is a decision quality framework designed to support technical and organizational decisions where uncertainty, system complexity, and risk of irreversibility are significant. The method enforces disciplined separation between intent definition, system exploration, reconstruction of embedded decisions, boundary setting, and commitment. By building understanding before action, DECODE prevents premature conclusions, bias driven decisions, and momentum based change. It enables leaders and engineering teams to determine whether to act, how far to act, or when deliberately not to act. The outcome is a justified, reviewable decision with explicit assumptions, visible boundaries, and preserved learning, independent of whether the final choice results in change, delay, or stabilization.			STEP 4 - Cause Logic From Evidence to Plausible Mechanisms STEP 4 develops causal explanations that could explain the evidence recorded in STEP 3. All reasoning is conditional. No actions or solutions are allowed. This step answers: Given the evidence we have, what causal mechanisms could explain what we observe? Rule of STEP 4 (Non-negotiable) Use conditional language only: may, could, is consistent with; Every causal statement must reference evidence from STEP 3 If actions or solutions appear, stop and move them to STEP 5 Evidence-to-Logic Linking Cause Logic ID Unique identifier for each causal explanation (CL-1, CL-2, ...). Why: enables traceability and comparison. Evidence Referenced List all Evidence IDs that support this explanation (e.g. E-02, E-05, E-07). Multiple evidence items may support one explanation. Why: prevents free-floating opinions and unsupported narratives. Hypothesized Causal Mechanisms Causal Explanation Explain how the observed effects could occur. Rules: describe mechanisms, not failures Example form: avoid certainty and solution language “This pattern may be consistent with thermal softening of the bond under sustained load.” avoid assigning blame or responsibility Why this field exists: DECODE distinguishes mechanism reasoning from problem statements and solution proposals. Mechanism Type (select all that apply) Physical; Chemical; Mechanical; Electrical; Thermal; Software or Control; Human or Organizational; Environmental. Why this field exists This classifies the nature of the mechanism, not its importance. It ensures cross-domain causality is considered and prevents narrow explanations.
STEP 1A and STEP 1B	<u>Identity, Intent, and Capability Focus</u>	This segment defines why a decision exists, what capability is under consideration, and the initial decision boundaries. No problems are defined. No solutions are proposed.	
STEP 1A - Project Header	(Identity and accountability)		
Field / Domain	Manufacturing; Product Development; Industrialization; Quality; Supply Chain; Service or Field; Other.	Why: determines applicable constraints and decision context.	
Project Name	Neutral, capability-oriented name. Avoid defect or failure language.	Why: names create solution bias.	
Start Date / Project ID	Traceability identifier.	Why: decisions must be reviewable later.	
Review / Version	Current canvas version.	Why: prevents silent drift.	
Product / System	Exact product, variant, or process instance.	Why: avoids scope ambiguity.	
Owner	Single accountable owner.	Why: protects reasoning integrity.	
Purpose / Intent (1–2 sentences)	Why this decision exists now.	Rules: no causes; no targets; no solutions.	Why: intent stabilizes all downstream reasoning.
Sponsor (optional)	Decision authority if required.	Why: ensures closure is possible.	
STEP 1B - Capability Focus	(What capability, where observed, and the initial boundary)		
Capability of Interest	Process; Product; Equipment; Material; Interface; System-level; Mixed.	Why: prevents mixed decision logics.	
Observation Context	Normal operation; ramp-up; after change; stress or edge; field or customer; lab or test.	Why: capability is context dependent.	
Improvement Boundary (in / out of scope)	What is included and explicitly excluded.	Why: protects focus and prevents scope creep.	
Reference Capability (choose one)	Specification; validated state; historical stable period; customer expectation; benchmark.	Rule: one anchor only.	
	Why: multiple references create moving targets.		
Targeted Outcome (directional only)	Desired direction of change, no metrics or causes.	Why: early targets bias observation.	
Soft Ambition (optional)	Non-binding sense of scale. Remove if it distorts reasoning.	Why: ambition can orient or mislead.	
STEP 2 Explore the System as It Exists	This segment establishes a shared, neutral description of the current system. No interpretation, judgment, or change intent is allowed.		
Rule of Step 2 (non-negotiable)	Descriptive only.	No explanation; no evaluation; no causes.	
System Scope			
System Under Study	Concrete nouns defining the exact system under analysis. Must match Step 1 boundary.	Why: prevents scope drift.	
System Level (choose one)	Component; Subsystem; Process step; Process chain; Product; System of systems.	Rule: one level only.	Why: mixed levels create false causality.
System Structure			
System Elements	Material; Component; Equipment or Hardware; Software or Control; Human; Environment; Energy; Information.	Select all that exist.	Why: completeness check.
Identified Elements	List key elements, one per line. Nouns only.	Why: neutral description must be uncontested.	
Interfaces			
Interface Types	Material–Material; Material–Equipment; Equipment–Equipment; Human–Equipment; Information–Control; Energy–System; Environment–System.		
	Why: interfaces concentrate interaction and risk.		
Key Interfaces	List interfaces relevant to the capability focus. No behavior description.	Why: stable reference points for later steps.	
Context			
Observation Context	Normal operation; ramp-up; after change; stress or edge; field or customer; lab or test.	Why: behavior is context dependent.	
Operating Conditions	Load, speed, temperature, duty cycle, exposure.	Why: distinguishes normal from exceptional.	
Environmental Factors	Humidity, contamination, vibration, ambient conditions.	Why: environment often explains variation.	
Observations			
Observable Facts	What is seen or measured; where and when. No “because” language.	Why: anchors understanding in reality.	
Observation Source	Production data; field returns; inspection; test; direct observation.	Why: credibility depends on source.	
Observation Pattern	Single; repeated; intermittent; persistent.	Why: pattern is descriptive, not explanatory.	
STEP 2 Gate	(Must be satisfied before Step 3 begins)		
System scope and level are stable	System level is clear and consistent	Elements are listed without behavior or judgment	Interfaces are identified, not explained
	If this gate fails, Step 3 must not begin.		
If the system cannot be described neutrally, it cannot be improved deliberately.			
STEP 3 and STEP 4	Evidence (Observation Without Interpretation)	STEP 3 records observable evidence only.	No analysis, no interpretation, no conclusions are allowed.
	This step answers: What is observed, where is it observed, and under what conditions?		
Rule of STEP 3 (Non-negotiable)	Describe what is observed, not why	Avoid “because”, “due to”, “caused by”	If explanation appears, stop and move it to STEP 4
Evidence Source and Type			
Evidence ID	Unique identifier for traceability.		
Evidence Source	Origin of the evidence, such as measurement data, test results, production records, logs or system data, visual observation, physical samples, customer or field observation, experiment or trial.		
	Why: credibility and context depend on source.		
Evidence Type (select one)	Quantitative; Qualitative; Mixed.	Why: describes the nature of the evidence, not its quality.	
Evidence Description	Describe exactly what is observed.	Rules: record what happened, not why	Why: prevents confirmation bias and premature causality.
Observation Context			
Observed At (select all that apply)	Element; Interface; System.	Link evidence to elements or interfaces defined in STEP 2.	Why: evidence must have a structural address.
Conditions of Observation	Operating conditions, environment, timing, or state during observation.	Why: behavior without conditions is not comparable.	
Frequency and Relation to Targeted Outcome (Non-evaluative)			
Frequency or Pattern (select one)	Single occurrence; Repeated; Intermittent; Over time.	Why: pattern is descriptive, not explanatory.	
Relation to Targeted Outcome (select one)	No relation; Direct; Indirect; Contextual.	Rule: this indicates relevance only. It must not be used to judge evidence as good or bad.	
STEP 3 Gate	(Must be satisfied before STEP 4 begins)	Evidence is observable and traceable	Evidence is linked to system elements or interfaces
	Conflicting evidence is retained, not removed		No causes or explanations are stated
DECODE — Pause before action. Understanding precedes change.			
			Method documentation and updates: https://decode-method.com