

Making Data-Driven Decisions with Speed

Entegris Leadership Programme — DDD Module | 1 Day

One scenario. Five tools. One complete decision — built today.

**Think of one decision you made
this week under time pressure.**

**What data did you use —
and what did you guess?**

The Opening Story

"It's 11pm. A high-purity chemical filling line starts showing temperature anomalies.

The data you have is partial. Some is noisy. Some is missing.

Your senior team is unreachable until 7am. One technician on site.

Customer shipment due in 14 hours.

Someone has to make a call. In 20 minutes."

"That scenario — that exact situation — is what we work through today.

Not a textbook case. Not a hypothetical. A real manufacturing pressure situation.

By afternoon — every person in this room will have a complete decision log, **a communication plan, and a tool set you can use the next time that moment comes."**

What we have run through so far

Great P.A.C.E. Leadership Development Programme



Our Day — Five Modules

Module 1

**Gathering
Important Facts**

Module 2

**Analyzing
Information
Simply**

Module 3

**Making Quick
Decisions**

Module 4

**Considering
Possible
Outcomes**

Module 5

**Presenting &
Communicating**

One Ground Rule

"There are no wrong answers today"

I will push you to be **specific**, to **use the data**, and to **defend your thinking**.
That is exactly what your stakeholders will do at midnight.

Opening Poll — Your Data Right Now

Go to menti.com and scan the QR

Poll 1 — Word Cloud

In ONE WORD — how do you currently make decisions under time pressure?

Poll 2 — Scale (1–5)

How confident are you RIGHT NOW in making fast, data-driven decisions?

1 = Not confident | 5 = Very confident

MODULE 1

Gathering Important Facts

The Problem We Are Solving

01 Analysis Paralysis

Grab every piece of data available.
Drown in it. Run one more report.
Wait for one more data point.
Decision window closes.

02 Confirmation Bias

Grab the first relevant data point.
Run with it. Filter out everything that
contradicts your instinct. Exposed
when things go wrong.

03 The Filter

Three questions. Ten seconds per
data point. Focus only on what is
relevant, reliable, and current. Then
decide.

The 3-Question Filter

Q1

Is this data **RELEVANT** to the decision I need to make **RIGHT NOW**?

Not eventually useful. Not interesting. Relevant to the specific decision in front of you at this moment.

Q2

Is this data **RELIABLE** enough to act on?

Reliable does not mean perfect. Does this signal meet the threshold where I trust it enough to let it influence my decision?

Q3

Is this the most **CURRENT** data available?

Stale data can be worse than no data. When was this generated? Is there anything more recent that would change my read?

If a data point fails ANY one of these — it goes to the side.

3Q Filter — Live Example from Tonight

Data Source	Q1 Relevant?	Q2 Reliable?	Q3 Current?	Verdict	Trainer Note
Last month's production efficiency report	NO	—	—	DISCARD	Fails Q1 immediately. Not relevant to tonight's anomaly.
SPC temperature chart — last 3 hours	YES	YES*	YES	KEEP	*Flag sensor drift. All three questions pass — this is a decision driver.
Maintenance report — 6 days ago	PARTIAL	YES	NO	CONTEXT ONLY	Context: last maintenance 6 days ago. Does not drive tonight's decision.

Table Exercise — Data Triage

FLIP OVER YOUR A3 SHEET NOW

1

Apply the 3-Question Filter —

Run every data point on your SPC sheet through all 3 questions. Relevant? Reliable? Current?

2

Identify your TOP 3 signals —

Which 3 data points are your most critical decision drivers tonight? Write them on your sticky note.

3

Write your reasoning —

For each signal — why is it in your top 3? Be specific enough to defend it to the room.

4

Be ready to present —

One person per table. Top 3 signals + reasoning.

MODULE 2

Analyzing Information Simply

The Core Problem

More analysis $\neq$ Better decision

When pressure is on, the brain says: *"Get more data. Run one more report. Wait a little longer."*

But every minute you delay has a cost.
The skill is not more data. The skill is **faster, focused analysis.**

Two Tools

Tool 1 The Pareto Principle (80/20)

- ▶ 80% of problems come from 20% of causes
- ▶ Find the 1-2 signals driving MOST of the risk
- ▶ Don't fix everything — fix the right things
- ▶ Applied to tonight: Which alarm cause dominates?

Tool 2 Trend Reading

- ▶ Direction — is it getting better or worse?
- ▶ Rate of change — is it getting worse slowly or fast?
- ▶ A number tells you WHERE you are
- ▶ A trend tells you WHERE YOU ARE HEADING

★ Most managers look at the current reading. Skilled ones look at the trend and ANTICIPATE.

Trend Reading — Tonight's Temperature Data

Raw numbers vs. The trend — which one tells you more?

10:00 PM	10:30 PM	11:00 PM	11:30 PM	12:00 AM	12:30 AM	1:00 AM
22.1°C	22.8°C	23.9°C	25.1°C	24.8°C	25.4°C	23.2°C
			⚠ BREACH		⚠ BREACH	

Direction: UPWARD **Rate of change:** 3.3°C rise in 90 minutes (10:30pm–12:00am)

This is not a single reading — this is a **trajectory**.

A jump of +1.3°C in one 30-min interval tells you something CHANGED.

Table Exercise — Trend Analysis

Open your PARTICIPANT EXERCISE FILE in Excel — Sheet 3: Trend Analysis

1

Build the line chart —

Select Time + Temperature + Flow Rate columns. Insert > Line Chart. 2 minutes.

2

Answer the 4 analysis questions —

Direction of temp? Rate of change? Direction of flow? What does the COMBINATION tell you?

3

Apply the Pareto principle —

Which 1-2 signals are driving 80% of tonight's risk? Name them explicitly.

4

Write your ONE SENTENCE summary —

Signal + Trend + Urgency. One sentence. If you cannot say it in one sentence — you do not understand it yet.

What a Good Data Summary Does

Signal + Trend + Urgency = Actionable Summary

WEAK X *"The line is showing anomalies."*

True but useless. What signal? What trend? What urgency?

STRONG
✓ *"Temperature has breached UCL twice in 90 minutes with an upward trajectory — immediate decision required."*

Names the signal. Shows the trend. Implies urgency. Stakeholder can act on this.

Quick Pulse Check

**Based on everything you have seen on the SPC sheet —
what would YOU do right now?**

Continue

The breaches are within
acceptable risk

Halt

The pattern is too
concerning

Escalate

This needs someone
senior

Need more data

Not enough to decide yet

MODULE 3

Making Quick Decisions

Three Concepts That Change How You Decide

1 Satisficing

Good enough to act.
Traceable enough to defend.

You don't need the optimal decision. You need a good enough decision made at the right time. Stop waiting for certainty that will never come.

2 Reversibility

Ask: Can I recover if I am wrong?

Reversible decisions can move faster with less data. Irreversible decisions need a higher evidence threshold. Ask this question FIRST.

3 Decision Thresholds

Set your IF/THEN lines before pressure hits.

Pre-agreed, specific, measurable conditions that automatically trigger actions. Removes deliberation IN the moment. Think clearly NOW.

Building Your Decision Thresholds

IF [specific condition] — THEN [specific action]

IF

Temperature exceeds 26°C on TWO consecutive readings

THEN

Halt immediately — no further discussion

IF

Flow rate drops below 4.0 L/min and stays there for 20+ minutes

THEN

Halt immediately and investigate

IF

Both temp AND flow breach simultaneously

THEN

Halt AND escalate — wake up the senior team

IF

Any new alarm trigger in the next 2 hours

THEN

Increase monitoring to every 10 minutes

Table Exercise — Make the Decision

USE YOUR RISK MATRIX + DECISION LOG NOW

1

Plot your risks on the Risk Matrix —

Place each identified risk in the correct cell — Likelihood vs Impact. This surfaces your decision threshold visually.

2

Set your specific GO/HALT thresholds —

Complete the IF/THEN statements at the bottom of Print 2. Be specific — not 'if it gets worse' but 'if temp exceeds 26°C on 2 consecutive readings'.

3

Make the decision — GO, HALT, or ESCALATE —

Complete the Decision Made section of your Decision Log. Tick one box. Write your rationale. Be specific enough that a stranger could defend it.

4

Assign a spokesperson —

One person presents your decision in 90 seconds. They must cover: decision + top 2 data points + halt threshold.



NEW INFORMATION

It is now 11:45 PM.

You have just received a message from the night shift supervisor.

"One of the two temperature sensors has been flagged as potentially drift — it may have been giving slightly elevated readings for the past two hours."

Does this change your decision? You have 10 minutes remaining. Adjust if needed.

Table Presentations — 90 Seconds Each

Your plant manager is on the phone. It is 1am. Go.

1

Your decision —

One word first: GO, HALT, or ESCALATE. Then one sentence of rationale.

2

Your top 2 data points —

Which specific signals drove your decision? Name them explicitly with numbers.

3

Your halt threshold —

Specific IF/THEN statement. What triggers an immediate stop if you continue?

Rule: 60 seconds HARD LIMIT. I will cut you off. Your plant manager will too.

Module 3 — Three Things to Take Away



Satisficing

"Good enough to act, traceable enough to defend."

Stop waiting for certainty that will never come.

The window for a good decision has a closing time.



Reversibility

"Can I recover if I am wrong?"

Reversible decisions can move faster.

Irreversible decisions need a higher evidence bar.

3

Thresholds

"Set your IF/THEN lines before the pressure hits."

Not during. Before.

Decide when you are calm.

Execute when you are not.

MODULE 4

Considering Possible Outcomes

The Danger After the Decision

Confirmation Bias — the enemy of good decisions

Once you have decided, your brain does something counterproductive.

It starts **filtering out** information that **contradicts your call** and **amplifying** information that **confirms it**.

The **antidote**: assume your decision is wrong. Then prove it isn't.

This is why we do the pre-mortem.

The Pre-Mortem

Post-Mortem

Conducted AFTER something goes wrong.

You look BACK and ask:
'What happened and why?'

Useful — but too late to prevent the outcome.

Pre-Mortem

Conducted BEFORE the decision executes.

You project FORWARD and ask:
'If this fails — what caused it?'

Surfaces risks you are unconsciously
suppressing.

Used by: Military teams • Surgical teams • Aviation crews • High-stakes manufacturing

Pre-Mortem Exercise — 3 Steps

"It is 72 hours later. Your decision led to a bad outcome. What happened?"

Step 1

 5 min

The Failure

Write down EVERY possible thing that could have gone wrong. No filter. No self-censoring. Every risk, assumption, and gap — on paper.

Step 2

 5 min

The Causes

Circle your TOP 3 most likely causes. For each — what was the warning sign you already had but may have underweighted?

Step 3

 5 min

The Contingencies

For each top cause — write ONE specific action that would have prevented or mitigated it. Add to your 72-hour roadmap on the Decision Log.

MODULE 5

Presenting & Communicating Clearly

Two Managers — Same Decision

Same data. Same decision. Which call would you rather receive at 1am?

Manager A ✗

"The line is showing some anomalies but we think it's okay to continue. We're keeping an eye on it."

Vague. No data cited. No threshold. No next update. Plant manager now has anxiety — and no way to assess the risk.

Manager B ✓

"Temperature breached UCL twice in 90 minutes. Flow rate dropped once to 4.0. We're continuing with 3 controls in place. Halt threshold: 26°C on two consecutive readings. Next update at 3am."

Specific. Data-cited. Threshold set. Next update committed. Plant manager has confidence — and can sleep.

★ Manager B did not have better data. They communicated it better. That is what builds trust over time.

The SBAR Framework

Situation — Background — Assessment — Recommendation

S

SITUATION

What is happening RIGHT NOW.
One or two sentences. Current state only.
No history, no analysis, no recommendation yet.

"At 11pm the filling line began showing temperature and flow anomalies. As of 1am we have two UCL breaches."

B

BACKGROUND

Context the listener NEEDS — nothing more.
Product type, normal parameters, maintenance history, staffing.

"This line runs high-purity fills. Normal temp range 22–24°C. Last maintenance 6 days ago. 1 technician on site."

A

ASSESSMENT

Your professional judgment.
What the data shows. What the trend suggests.
Risks on both sides. Acknowledge uncertainty.

"Temp trending upward rapidly. Flow dropped once but recovered. Combined pattern suggests equipment issue. Risk if we continue: contamination. Risk if we halt: 14-hr delay."

R

RECOMMENDATION

What you NEED from the listener.
Approval, awareness, resource, or a decision at their level.
Always end with a next update time.

"We recommend continue with 3 controls. Halt threshold set at 26°C/2 readings. Need your awareness. Update at 3am or immediately if threshold triggered."

The 3 Communication Traps

Trap 1 Data Dumping

Sharing every piece of data because you are anxious to show your homework. The listener gets overwhelmed. They lose confidence instead of gaining it.

Fix: Assessment is your synthesis — not your raw data. Give them the conclusion, not the spreadsheet.

Trap 2 Hedging Without a Recommendation

"There are risks on both sides and it's hard to say." Honest — but not leadership. Your stakeholder came to you because you are the person on the ground.

Fix: Be decisive AND appropriately cautious. Both at the same time.

Trap 3 Burying the Recommendation

Three minutes of data, context, analysis — then finally the answer at the end. The listener has mentally moved on.

Fix: Lead with the recommendation first when the listener is anxious. Decision first. Reasoning second.

Live Delivery — Your 2-Minute Stakeholder Update

Use SBAR template + Peer Feedback card



The setup —

You are calling your plant manager. It is 1am. Everyone else in the room IS the plant manager. They are evaluating you on 3 dimensions.



2 minutes HARD LIMIT —

I will hold up my hand at 1:45 as a warning. At 2 minutes I will cut you off. Your real stakeholders will too.



Peer Feedback card —

While listening — score the speaker on: Clarity (1-3), Decisiveness (1-3), Risk Transparency (1-3). Write one strength and one thing to sharpen.



Self-reflection first —

After delivering — I will ask: 'How did that feel? What would you do differently?' Say it before the feedback. It shows self-awareness.

Communication — 3 Things to Take Away



SBAR for every high-stakes update

"Situation — Background — Assessment — Recommendation. Under 2 minutes. Every time. Not just for crises — for project updates, quality escalations, customer calls."



Lead with the recommendation

"When the listener is anxious — give them the decision first. Then the reasoning. Their anxiety drops immediately and they can receive the rest of the information clearly."

3

Always close with a next update time

"I will call you at 3am or immediately if the threshold is triggered." One sentence. Stops your stakeholder managing you. Lets you manage the situation."

Closing Poll — Time to Measure the Shift

**Same question as this morning.
In ONE WORD — how do you NOW feel about making decisions
under time pressure?**

My One Change — Personal Action Plan

Pick up your Personal Action Plan card

1

One data-driven decision habit

Not 'I will use data more.' What SPECIFICALLY will you do differently? Name the habit precisely.

Not this month. Not eventually. This week.

2

The first situation you will apply it to

You know your calendar. Name a real meeting, decision, or moment that is coming up where this lands.

Be specific — which meeting? Which decision?

3

How you will know it is working

What will be different? What will your stakeholders notice? What will you notice in yourself?

Observable. Measurable. Yours.

3 minutes individual — then share with partner — then SIGN IT. This is a contract with yourself.

The Story — Revisited

The duty manager. 11pm. High-purity filling line.

Partial data. 14-hour deadline. Senior team unreachable.

That person still has to make a call.

But now — they have a data triage filter. A trend read.

A decision threshold. A pre-mortem. An SBAR script.

A Decision Log that documents every step of their thinking.

That person is not guessing anymore.

That is the difference between a manager who **survives** high-pressure decisions — and one who **leads** through them.