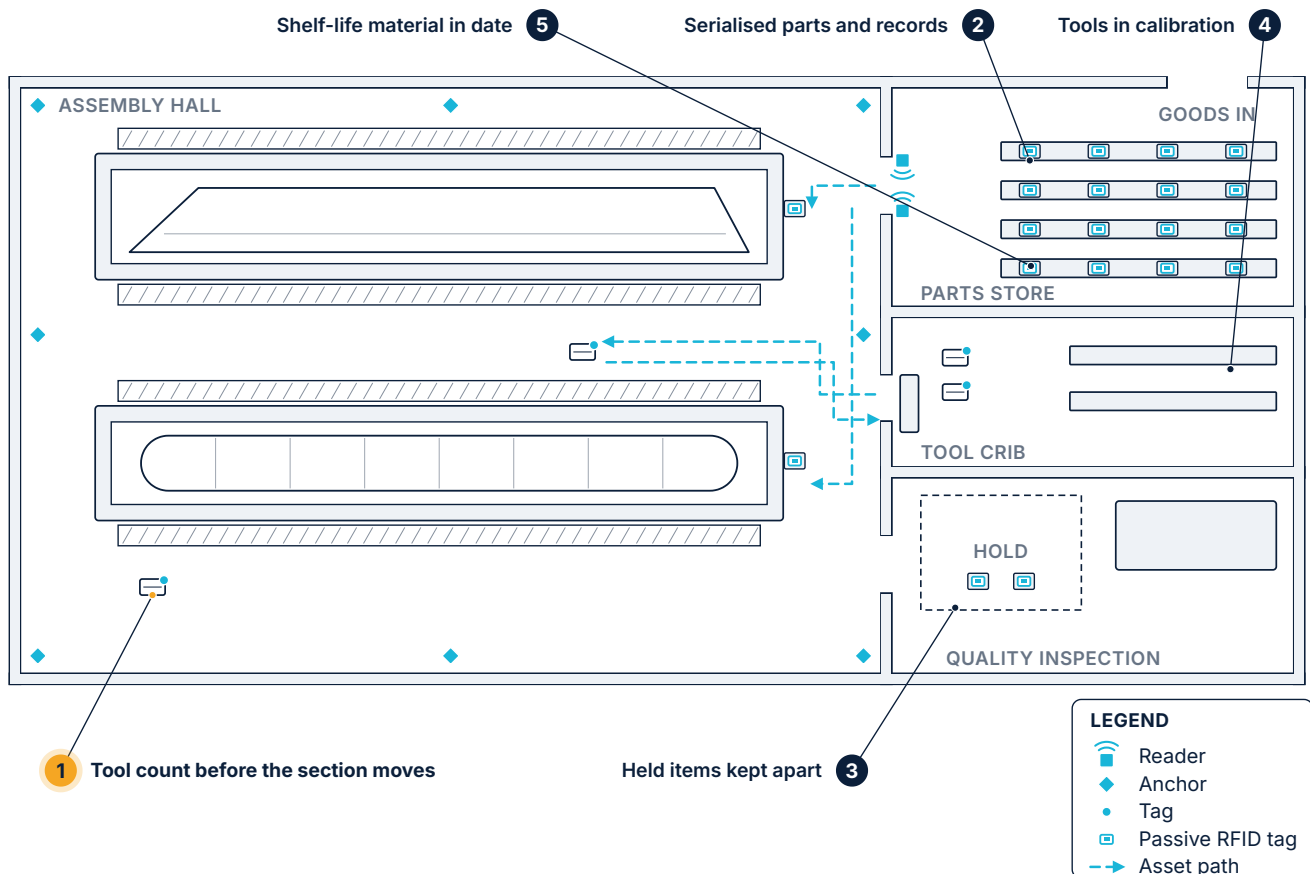


AEROSPACE MANUFACTURING · ASSEMBLY, CRIB, STORES AND COMPOSITES

The section is ready to move. Is every tool accounted for?

A plain guide for aerospace assembly: tools accounted for before a section moves, serialised parts and the as-built record, held items, calibration and prepreg out-time. A jig is the fixed frame that holds a section while it is built.



Callouts match the use cases on page 2. Legend: a **reader** reads passive RFID (radio-frequency identification) tags, which have no battery; a **tag** is an active tag, which has a battery; an **anchor** is a fixed unit that locates UWB (ultra-wideband) tags. Terms used: 2D code: a square barcode.

WHO SHOULD READ WHAT

KPI: key performance indicator, a measure you track. Everyone: your own row and KPI are in the table on page 4.

Production and assembly managers

Page 2 use cases, page 3 payback.

Tooling, crib and calibration leads

Page 2: use cases 1 and 4 and the KPIs you would own.

Quality, inspection and compliance

Page 2: use cases 2 and 3 and the audit KPI.

Composites, materials and stores

Page 2: use case 5.

IT and OT, finance, procurement, leadership

Page 3: technology, links and payback. OT means operational technology: the systems that run the floor.

One next step: book a free 30-minute call to talk through your site and your use case.

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What goes wrong today

Tool checks hold moves

Someone walks the jig first.

Records pieced together

Serials typed in, then rebuilt.

Holds that get lost

Labels come off held parts.

Out-time on a card

Freezer time written by hand.

USE CASES

Numbered to match the floor plan on page 1. Each card ends with the technology that usually fits.

1 Tools accounted for before a move

Pain: Chits show where a tool should be, so the check means walking the jig.

What good looks like: Open issues are listed before the move, by person and work order. It supports your FOD programme and never replaces the inspection.

Usually fits: [passive RFID or barcodes at the crib, confirmed in the survey](#)

2 Serialised parts and the as-built record

Pain: Serials are typed in at each step, then pieced together for the auditor.

What good looks like: Each serial is read at goods in and linked to its work order and assembly, so the record builds as work happens.

Usually fits: [2D codes or passive RFID to ATA Spec 2000 Chapter 9, labels on the rest, confirmed in the survey](#)

3 Nonconforming items kept apart

Pain: A label comes off, and a held part goes back into the flow too early.

What good looks like: Held items are marked in the system, and flagged if they leave the hold area before release. Quality makes every disposition decision.

Usually fits: [passive RFID or 2D codes, read at the hold exit, confirmed in the survey](#)

4 Overdue tools blocked at issue

Pain: Due dates sit on a sticker, so an overdue torque wrench can still be issued.

What good looks like: A tool overdue, or due before its return, cannot be issued, and the jobs a failed tool touched come from the issue record.

Usually fits: [tool records linked to calibration, checked at the crib, confirmed in the survey](#)

5 Prepreg and shelf-life out-time

Pain: Out-time is written on a card, so material is scrapped or used past its out life.

What good looks like: Rolls are read out of and back into the freezer, and material near its out life is flagged before cutting. Your material control procedure decides use.

Usually fits: [passive RFID or 2D codes on rolls, read at the freezer door, confirmed in the survey](#)

ALSO COVERED

- [Work in progress](#): each section found between stations.
- [Parts in sequence](#): the right parts at the right jig.
- [Shared equipment](#): stands and test sets found.
- [Stores and goods in](#): counts that match the register.
- [Equipment maintenance](#): serviced on recorded use.
- [Restricted areas](#): entries checked against access rights.

KPIS TO TRACK

A KPI is a number you track before and during the pilot.

KPI

WHO OWNS IT

Tools not back when the assembly moves

Production manager, FOD focal point

Assemblies with a gap in the as-built record

Quality manager

Held items found outside the hold area

Quality manager

Tools issued past calibration

Calibration or metrology lead

Material scrapped for out-time

Composites or materials manager

Time to answer an audit or records query

Quality and compliance

We agree how each KPI is measured, and the baseline, in the pilot plan.

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Technology fit

Pick the simplest option that answers the question you have

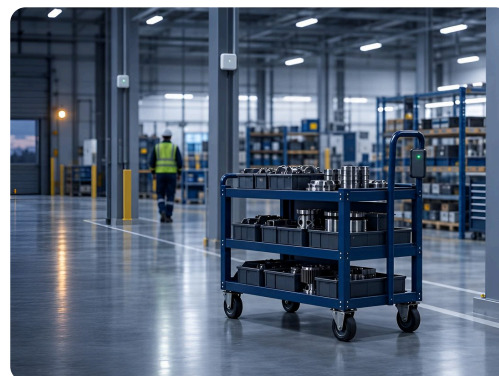
Technology	Where it fits here	Watch for
Barcode or 2D code (square barcode)	Crib counters, goods in, travellers and parts that already carry a code.	One scan per item, so it depends on discipline. No location between scans.
Passive RFID (radio-frequency identification, no battery)	Drawers and tool sets, hold exits and freezer doors. Parts tagged to ATA Spec 2000 Chapter 9 are read, not typed in again.	Metal and carbon fibre affect reads, so test on your real tools. Tags must not become foreign object debris (FOD).
BLE (low-energy radio tags with a battery)	Finding stands, trolleys and held items by zone.	Zone level only. Needs gateways (fixed receivers). Batteries need replacing.
Smart cabinets	Unstaffed issue of critical tools at the jig.	Only covers what is inside. Make sure you can export the records.

The right mix depends on your site. We confirm it in the survey.

Integration

Events land in the build record, not in a separate screen

- **MES and ERP:** events reach your MES (manufacturing execution system) and ERP (enterprise resource planning) against the work order.
- **Quality and calibration:** hold status and due dates each come from one source.
- **Data handling:** we work within your export-control process for build data, plans and location records.
- **People:** Check local privacy and employee-consultation rules, such as works councils or unions, before tracking people, or tools and equipment linked to people.



ROI AND PAYBACK

ROI (return on investment) compares what you gain with what you spend. Payback is the time until the savings cover the cost.

What drives payback here

- Assemblies held at a station while someone looks for a tool
- Time spent rebuilding as-built records for the customer or auditor
- Composite material scrapped because its out-time is not known
- Repeat audit findings on tools, calibration and held items

If the benefit is not bigger than the running cost, there is no payback.

Bring to the call

- A layout of your assembly hall, crib, stores and lay-up room
- Rough counts of crib tools, serialised parts and freezer rolls, from your records
- The MES, ERP or tool system you use today
- One recent tool, part or record that took too long to find

We work out payback with you from your own pilot data, not technology provider averages. **Bring rough figures to a free 30-minute call.**

One next step: book a free 30-minute call to talk through your site and your use case.

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Book a free 30-minute call

What it means for you: find your role and your KPI

YOUR ROLE	WHAT IT MEANS FOR YOU	YOUR KPI
Production or assembly manager	Sections move without a tool hunt.	Tools not back when the assembly moves
Tooling or tool crib supervisor	Open issues listed per assembly.	Tools not back when the assembly moves
Quality manager	As-built records ready on request.	Assemblies with a gap in the as-built record
Inspector or review board	Held items flagged before they move.	Held items found outside the hold area
Calibration or metrology lead	Overdue tools blocked at issue.	Tools issued past calibration
Composites or materials manager	Out-time recorded at the freezer door.	Material scrapped for out-time
IT and OT teams	Events into MES and ERP.	Events reaching the linked system
Finance, procurement and leadership	Payback on your numbers from one jig.	Payback months, go or no-go

Events reaching the linked system: the share of events that arrive without manual entry.

How a TRACIO project works: five stages

1 Discovery Your pain points, site, process and KPIs.	2 Assess and shortlist Site survey, then the options that fit compared.	3 Pilot with KPI baseline KPIs measured first. Pass marks agreed in writing before set-up.	4 Integrate If useful, one agreed link into your MES or ERP, under your change control.	5 Multi-site roll-out After a go decision, one hall or crib at a time.
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How a pilot runs: set-up, then live weeks in normal use, then a short written report with a go or no-go.

Questions we hear

"We already have a system."

We give a free second opinion and check how it performs against your KPIs, using your live data and a site visit.

"How do we know it will work here?"

Judge us on method: a pilot, KPIs measured before and during it, and a written go or no-go.

"Can you bid with us, or for us?"

Yes. We team with integrators, or act as the buyer's independent adviser, but never both on the same bid.

"Do you sell or resell hardware?"

No. We don't sell hardware, so our advice stays independent. We rent pilot equipment and offer survey and installation support.

Free second opinion

Send us your technology provider's quote or spec for a free second opinion. What to send: the quote or spec, a floor plan or site photos, item counts and your current process. For controlled or classified material, describe it on the call first and we agree an approved transfer route.

TRACIO consultancy fees

- **UK:** £3k to £30k per project, £1,200 a day
 - **Europe:** €3.5k to €35k per project, €1,400 a day
 - **US and Canada:** \$4k to \$40k per project, \$1,600 a day
 - **Middle East and Australia:** \$4k to \$40k per project, \$1,600 a day
 - **Rest of the world:** \$3.5k to \$35k per project, \$1,400 a day
- Scoped per project, no packages. Fees cover our work only; hardware, software licences and other supplier costs are separate. \$ = US dollars. Travel extra.

Why TRACIO: we work for you, not for the technology providers. We compare the options across the market that fit your site, provide site surveys and installation support, and work worldwide under your change control.

One next step: book a free 30-minute call to talk through your site and your use case.

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