

Semiconductor Industry:

Technology Drivers
Supplier Excellence

Semicon Days 2026 – Prague, Czech Republic

18th May 2026

Pacellico

Success

Solution

Business Strategy

Innovation
Branding
Solution
Marketing
Analysis
Ideas
Success
Management

Innovation
Branding
Solution
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SOCIAL NETWORK



Delivering high-quality, compliant product into the semiconductor sector can appear daunting. The protocols are strict — and for good reason.

01

The Voice of the Customer

What semiconductor manufacturers and tier-1 suppliers demand — and the rationale behind each protocol.

02

Supplier Selection & Compliance

Sub-tier supplier selection, ISO compliance, and audit-ready quality systems.

03

Change Management & Continuity

Copy-Exact discipline, contractual frameworks, and resilience through cyclic demand and systemic shocks.

04

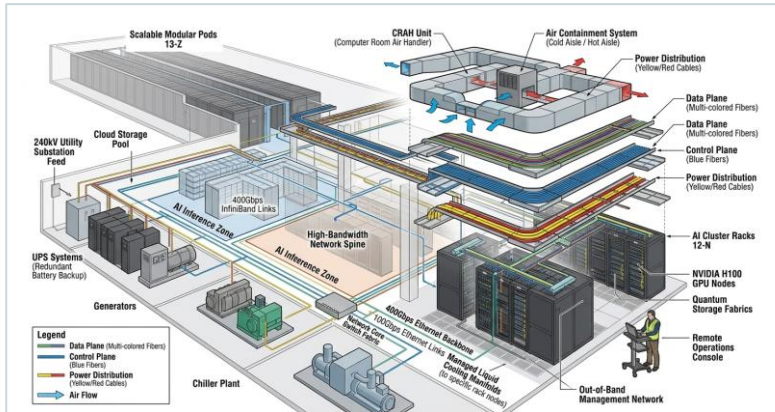
Looking 5–10 Years Ahead

How shifts in technology, demand and geopolitics will reshape sub-tier supply chains.

Disclaimer The views and projections expressed represent the subjective assessment of Pacellico s.r.o. based on currently available market data. Provided for illustrative purposes only and should not be taken as an indicator or assurance of future business opportunities or performance.

Forecast for the Semiconductor Industry · 2026 – 2030

Analyst consensus is variable in magnitude — but the upward trend is undisputed.

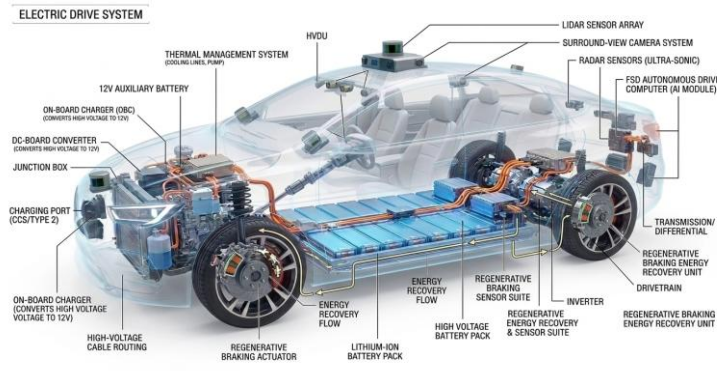


11–27%

CAGR

Data Centres & Servers

Generative AI- LLMs, Graphics Processing, high-bandwidth memory, control systems, satellites and communications.

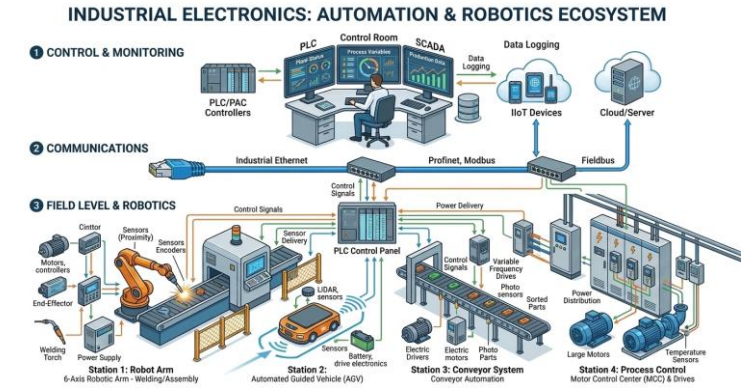


9–11%

CAGR

Automotive

EVs, charging infrastructure, Full Self Driving, battery management, traction inverters, in-vehicle connectivity.



7–10%

CAGR

Industrial Electronics

Factory automation, energy storage, power inverters, smart grid and robotics.

Commodities & Global Spend by Tier

From die design to raw materials — where spend lands across the supply chain.

Tier 0 / 1 / 2	Tier 3	Tier 3b	Tier 4	Tier 5
Die Design, Hybrid Design, Foundries	Advanced Process Tool Suppliers	Critical Subsystem & Component Suppliers	Speciality Materials & Consumables	Raw Material Suppliers
<i>Wafer Fabrication Plant Design & Manufacturing</i>	<i>Wafer Fabrication Plant Process Tools</i>	<i>Supply Chain: Tier 1 Systems</i>	<i>Supply Chain: Tier 2 System Components</i>	<i>Supply Chain: Tier 3 Raw Materials</i>
EUV Photolithography Deposition (CVD, PVD, ALD) Etching · Doping Thermal processing Metrology / SEMs Abatement systems	Process tools Abatement systems Measurement equipment Electron microscopes Autoclaves	Process chambers · valves Flexible couplings, bellows Sensors & control Manifolds · heating elements Vacuum pumps & controllers Catalysts, filters, gases	Electronics assemblies Sensors · castings Precision machined parts Seals & gaskets · hardware Formed sheet metal & pipework Motors · magnets · bearings	Electronic components Raw metals (Fe, Al, Ti, SS) Metal sheet, rolled coil Extruded / seamless tubing Motor laminations & coils
Global Market Revenue USD 140 bn	Global Market Revenue USD 100 bn	Global Market Revenue USD 20 bn	Global Market Revenue USD 7 bn	Global Market Revenue USD 2–3 bn

“Sweet spot” for most suppliers — Tier 3b & Tier 4

Whichever tier you deliver into, you will be measured against the following requirements.

Strict by design

Protocols governing the supply of goods and services into semiconductor manufacturers and their tier-1 suppliers are exacting.

Whichever supply tier you deliver into, you will be required to meet a defined set of standards.

Understanding the “why” behind each protocol is essential in delivering consistent and high-quality product to your customer.

Understanding why a protocol is mandated is the key to meeting it.

- 01 Cleanliness control**
Adequate component cleanliness end-to-end
- 02 Resilient supply**
Geo-politically stable, sustainable, energy-secure
- 03 Form–Fit–Function**
Full Copy-Exact protocol & mandate compliance
- 04 Cyclic-demand response**
Buffer stocks or rapid-response mechanisms
- 05 Key Performance Indicators**
Meet agreed KPIs for quality, delivery
- 06 Continuity ready**
Adequate disaster management & recovery process
- 07 Disciplined cost controls**
Tight controls within an agreed window, regular cadence
- 08 On-time delivery**
Product right-sourced into BCC sub-tier suppliers
- 09 Audit-ready**
Periodic audits of your facility and your suppliers
- 10 Continuous improvement**
Agreed program to correct any deficiencies

Vacuum is at the heart of semiconductor manufacture — and cleanliness is what makes it possible

Why vacuum matters

- Creates an ultra-clean environment
- Prevents wafer contamination by particulates
- Enables precise deposition (CVD, ion implantation)
- Allows EUV etching — 100% absorbed by air

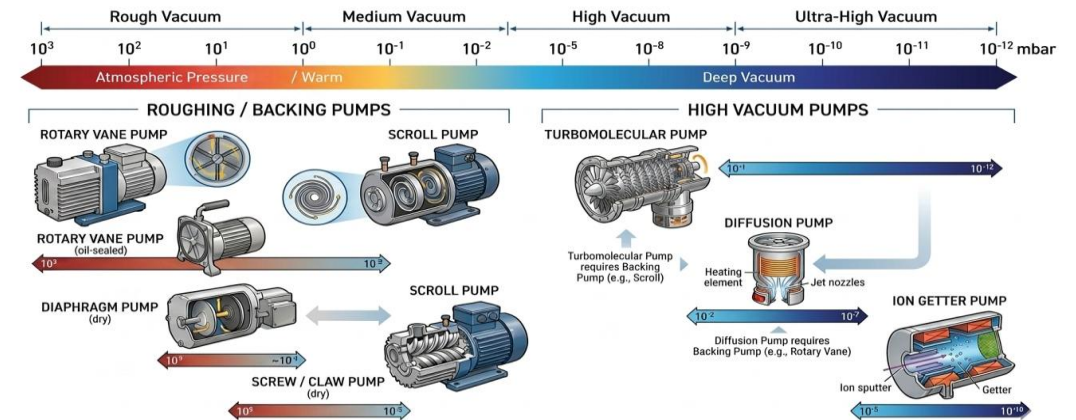
What affects vacuum

- Fingerprints and cutting oils cause outgassing (virtual leaks)
- Hydrocarbons are particularly destructive

Why cleanliness is non-negotiable

- Systems pump down to a negative working pressure (near-space)
- Outgassing causes contamination at a molecular level
- Zero hydrocarbon oils — dedicated CNC and cleaning plant

Vacuum regimes: from sea level to near-space



Cleanliness is what makes vacuum work at the extremes of negative pressure that is necessary to support wafer manufacture.

What “semicon-grade” mandates across cleanliness protocols, precision machining, and process control & capability.

- 01 **Cleanliness** Hydrocarbons, fingerprints, handling, storage, packing & logistics
- 02 **Particulate Contamination** ISO Class 8 (machining) → ISO Class 6 (assembly)
- 03 **Vacuum Systems Integrity** Helium leak testing for vacuum-ready assemblies
- 04 **Machining Tolerances & SPC** Process-capable operations at sub-10 μm tolerances
- 05 **Copy-Exact Compliance** Strict Form–Fit–Function discipline
- 06 **Inspection & Functional Test** Test facilities, setup, calibration ready
- 07 **Failure Analysis & Reporting** 8D and re-work protocols
- 08 **Process Evolution** Prepare for additive manufacturing, laser welding, EBW
- 09 **Metrology** Equipment with appropriate resolution and calibration
- 10 **Change Management** Cross-functionally approved, formalised, logged

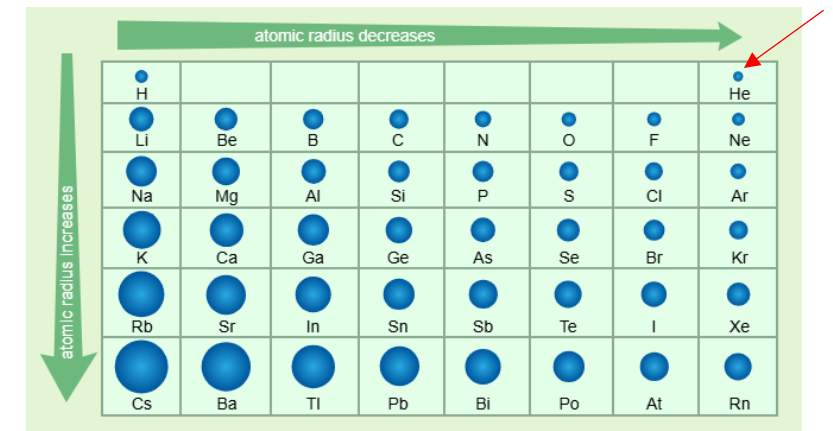
ISO CLASS 1 (foundry level)

Cleanroom Standard

≤ 10

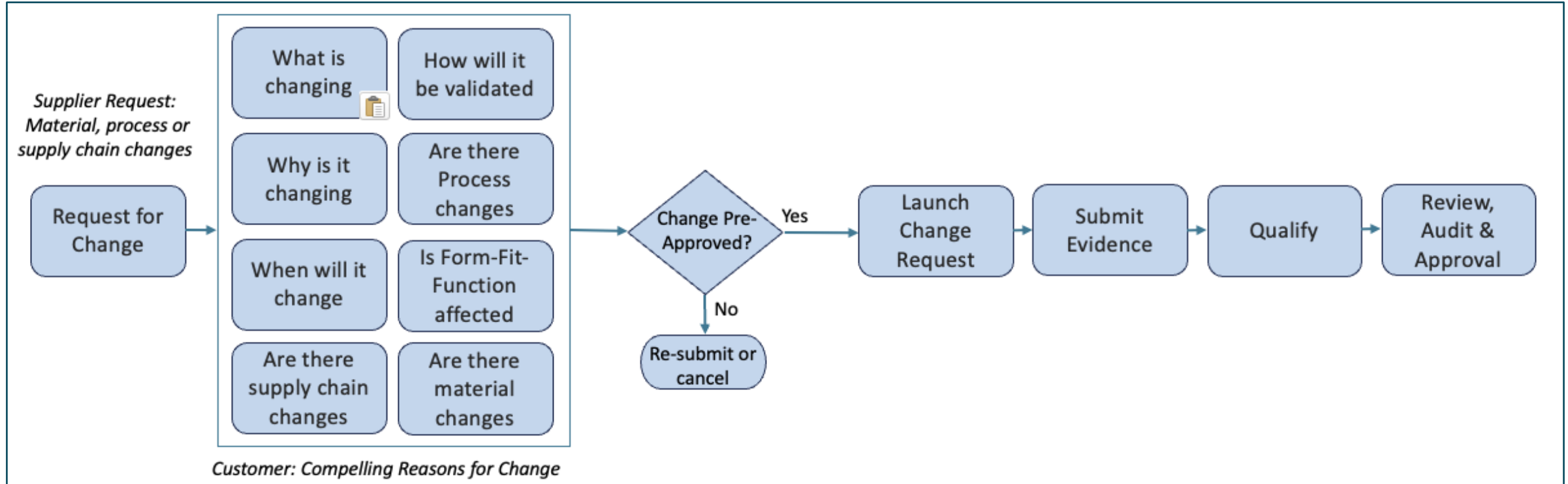
particles $\leq 0.1 \mu\text{m}$ per m^3

A single sub-micron particle can be the killer defect that ruins the whole die.



The Copy Exact* Process

Copy-Exact is a change-control policy used by every major semiconductor manufacturer. All process steps affecting form, fit, function or appearance remain fixed and unchanged without prior notification and approval.



Why implement Copy-Exact?

Pioneered by Intel in the 1980s, Copy Exact ensures that every change is reported, tested, approved and implemented correctly. Unregulated changes cause loss of product and down-time — even small ones can be profound. · Changes also affect service organisations and may require retrofit in the field.

Supplier Identification, Selection & Evaluation

Controlled process from specification to a qualified, audit-compliant partner.

1

Search

Component or system specification
→ cross-functional engagement

2

Request for Information

Capability, footprint, capacity,
references

3

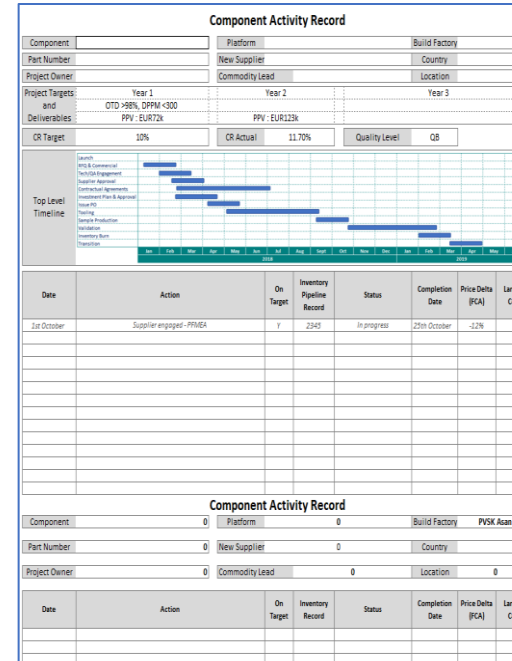
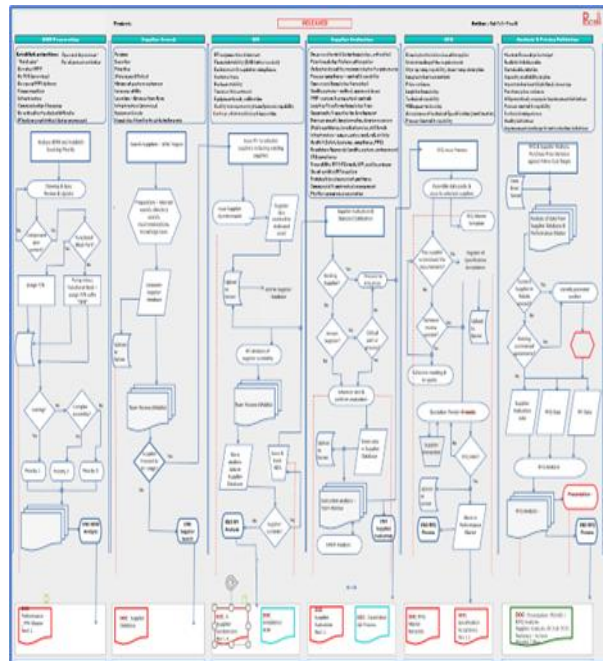
Evaluation & Gap Analysis

Qualify against semicon-grade
requirements

4

Routine Audit

Recurring audits, KPIs,
improvement loop

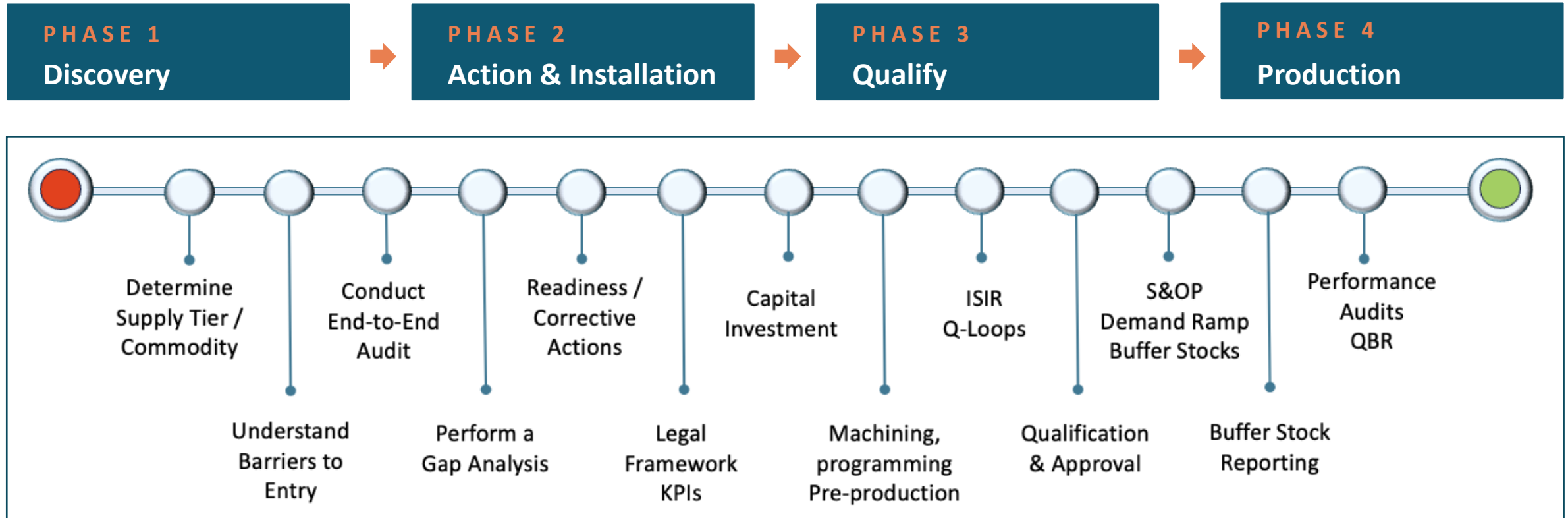


The supplier we need:

- ✓ Robust & sustainable
- ✓ Favorably located geographically
- ✓ Secure - energy, materials, finances, skilled labour, IT systems
- ✓ Scalable & buffered
- ✓ Willing to enter contractual agreements
- ✓ Health & Safety aware & regulated
- ✓ Quality system / ISO 9001 compliant

Development Roadmap for a Potential Supplier

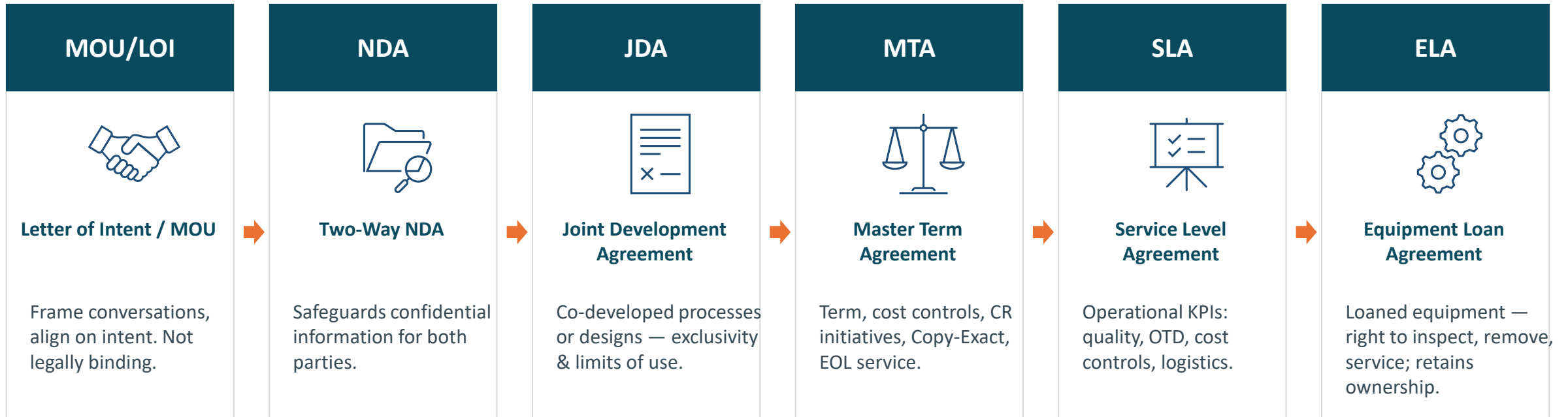
Four phases — from objective discovery to a steady-state and scalable production.



Key Take-away Points

- Understand your insertion point and core dependencies
- Identify barriers to entry early
- Action plan with cross-functional engagement
- Lock in a suitable legal framework
- Engage a semicon-aware external agency where useful
- Ensure KPIs and targets are met across the organisation

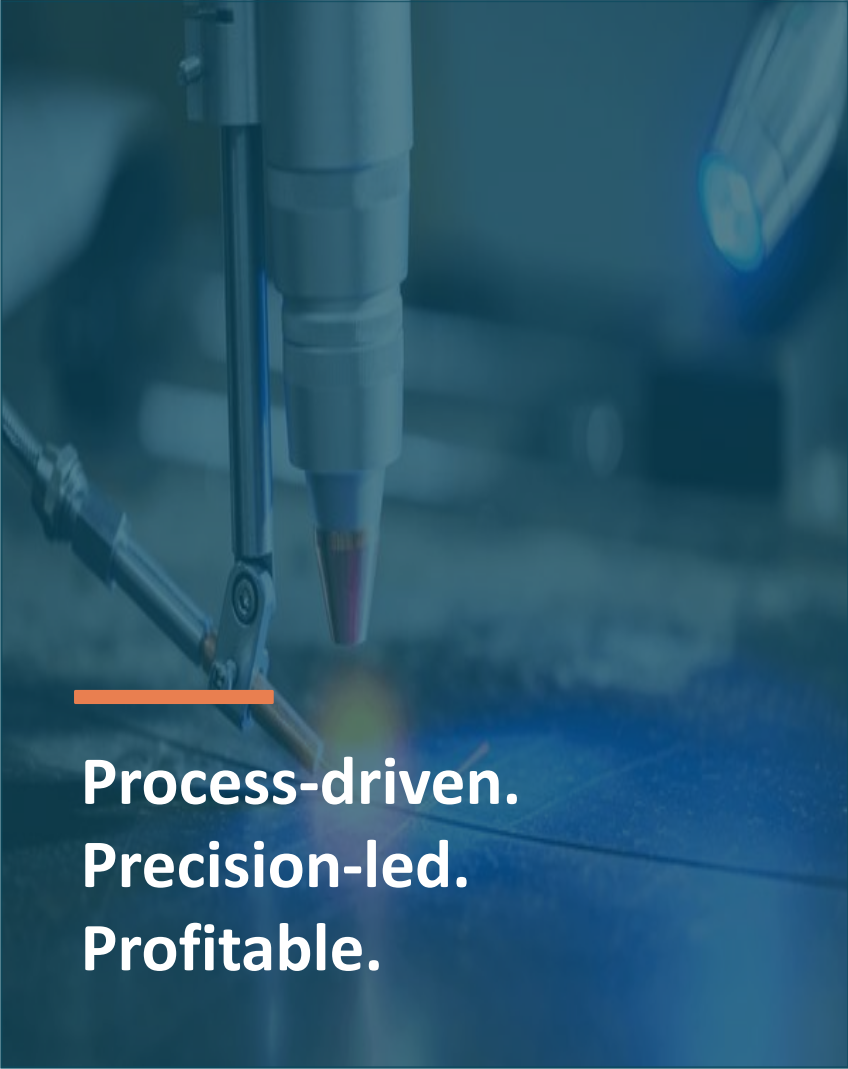
Six instruments — the legal framework for a mutually beneficial engagement.



A correctly drafted legal framework:

- ✓ Sets the mutually beneficial terms of the engagement
- ✓ Provides a measured series of corrective actions
- ✓ Builds in fair, risk-managed ramp mechanisms (up or down)
- ✓ Ensures KPIs are agreed and being met
- ✓ Delivers confidence to make capital investments — with forecastable ROI

Seven principles that define how your partner with your supply base.



**Process-driven.
Precision-led.
Profitable.**

01

Process-driven & exacting

Treat delivery into semicon as a holistic discipline.



02

Core competences

Establish core skills and processes, keeping them in-house or close-coupled.



03

Best Cost, not Lowest Cost

Take account of the Total Cost of Ownership.



04

Quality is paramount

Treat every part as if it needs to be CE-compliant.



05

Engineering Changes

Avoid them where possible — lock specifications and processes.



06

Fit for Purpose products

Avoid over-engineering and promote process capability.



07

Reliable, traceable sub-tier

Engage with sub-tier suppliers who use traceable and certified sources.

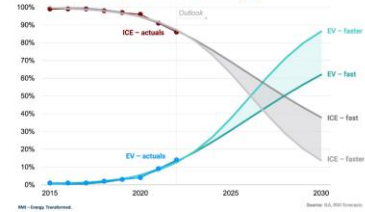




The road to carbon neutral:

Reduced emissions, abatement systems and renewable energy
Photovoltaics, energy storage and conversion

Global EV and ICE market share forecast (%)

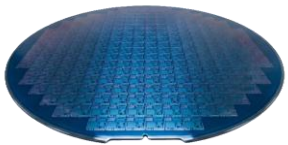


The evolution of component manufacturing from fossil fuelled transport to EV:

Intensifies the reliance on semiconductors, transfer gears.

Going: ICE internal components - pistons, crankshafts, camshafts, valves, exhaust systems, clutches, synchro gearboxes, automatic transmissions, engine blocks and heads.

Evolving: Power steering, water pumps, & AC compressors to electrically driven systems.



Terafab

Extreme Scale Expansion: 100,000 to 1 million wafers per month, 10 million sq.m foundry.

Structure: Indicates a shift toward vertically integrated manufacturing with accelerated design iterations.

Supply Chain Impact: Tier 1 and tier-2 suppliers mostly affected, requiring a diversification of the supply chain to meet this massive forecast demand.

Space-Based AI Data Centres: 80% of output is planned for satellites in space, bypassing terrestrial power grid and cooling constraints using solar energy in orbit.

The world is set for an unprecedented uptick in semiconductor demand.

2030

Full-capacity target

There is no delay possible.

Operational stability is required in 12–18 months.

From ICE to EV

Supply chains for precision parts are evolving rapidly — gears, seals, coolant systems, electronics, transfer couplings.

Capital is required

Opportunities exist for suppliers willing to invest in plant and equipment now, not later.

Solutions must be five-fold

Robust · compliant · secure · scalable · contract-locked.

Global, cross-functional teams

US, EU, Asia — from C-suite advisory to manufacturing and design execution.

Robust

Compliant

Secure

Scalable

Contract-locked

If you need support for any aspect — reach out for a consultation.

Thank You

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