

Early Supplier Involvement: involving suppliers early in development

Early Supplier Involvement (ESI) refers to the early involvement of suppliers in product development and procurement decisions, before the design and specification have been finalised. The aim is to leverage supplier expertise for feasibility, cost structure and manufacturing optimisation. In practice, ESI shortens development times, reduces material costs and minimises costly changes during the later ramp-up.

Key facts

- Early Supplier Involvement involves suppliers as early as the concept and development phase of a product.
- Typical success factors are partner suppliers selected early, clear confidentiality provisions and shared goals.
- The models most commonly used in practice are black-box, grey-box and open-book collaborations.
- Potential benefits typically lie in material costs, development time and first-build quality – concrete figures depend heavily on the project.
- Risks such as loss of knowledge, proximity to competitors or lock-in effects require clear contractual control.
- ESI interacts closely with pre-qualification, supplier co-innovation and the later ramp-up.

Definition: Early Supplier Involvement

Early Supplier Involvement (ESI) is a strategic procurement and development method in which selected suppliers are involved in the early phases of the product creation process – for example in drawing up the product requirements specification, design engineering or material selection. The supplier thus acts not merely as a contract manufacturer once the specification is complete, but as a development partner. ESI is regarded as part of supply chain management and integrated product development.

Distinction from traditional procurement

In traditional procurement, suppliers receive finished drawings and tender documents and compete primarily on price. With Early Supplier Involvement, by contrast, supplier knowledge flows into the design before the design and bill of materials are fixed. The focus therefore shifts from price pressure to total costs over the lifecycle, i.e. total cost of ownership.

Levels of integration: black box, grey box, open book

In practice, three levels of collaboration intensity are distinguished. In black-box integration, the supplier receives functional requirements and develops the solution independently. A grey-box collaboration means joint development in close exchange with the design team. In an open-book approach, both parties openly share cost structures, calculations and, in part, development resources – the most intensive, but also the most trust-dependent form.

Methods and procedure in the ESI process

ESI typically follows a structured process: selection of suitable suppliers, definition of interfaces and objectives, joint development with regular alignment meetings, and transition into series procurement. It is important that procurement is involved from the outset and not only at the point of award.

Supplier selection and pre-qualification

The foundation is a sound pre-qualification: the potential partner's capabilities, manufacturing technologies, capacities, quality system and financial stability are reviewed – often supplemented by an audit before collaboration begins. Only technologically leading and reliable suppliers are suitable for a close development partnership. It is also sensible to consider risk diversification in order to avoid ending up in a single-source situation from the outset.

RFX in procurement as a starting point

Even with Early Supplier Involvement, structured enquiry processes can be used. In procurement, an RFX in the early stage can be designed as a 'Request for Information' or 'Request for Proposal' containing development questions rather than a pure price enquiry. This preserves comparability and documentation without jeopardising the collaborative character.

Contracts, confidentiality and interfaces

Key building blocks are non-disclosure agreements, provisions on intellectual property and resulting inventions, target cost agreements as well as milestone and change management. In addition, price escalation clauses or a price formula prove useful for long lead times and volatile materials markets, for example amid raw material price volatility. A defined escalation and issue management process keeps development progress measurable.

Key KPIs for steering ESI projects

The success of Early Supplier Involvement can be measured using metrics from development, procurement and quality. As the effects depend heavily on the project, comparisons with previous projects handled without ESI are the most useful approach.

Time and cost metrics

Relevant metrics are the development time until production readiness, the number of engineering change requests and the target costs achieved compared with the original calculation. In practice, ESI projects frequently show fewer design-related changes after the design freeze, because solutions suitable for manufacturing are developed earlier.

Quality and delivery metrics

During ramp-up and series production, supplier metrics reveal the quality of the early collaboration: delivery performance (OTIF), first-build scrap, time to volume as well as the number and effectiveness of 8D reports for complaints. Logistics metrics such as days inventory outstanding (DIO) can also fall if material concepts such as consignment stock are considered early on.

Collaboration metrics

Soft indicators also prove valuable: adherence to development milestones, response times to enquiries, the share of supplier suggestions implemented and the cost savings realised from them. These are

often consolidated in regular supplier evaluations.

Risks and controls in Early Supplier Involvement

Besides its benefits, ESI entails considerable risks: loss of knowledge to competitors, dependence on individual suppliers, higher switching costs and a potential price disadvantage in later negotiation phases. Without clear governance, the collaboration can also slow down internal processes.

Contractual and competition law control

Contracts should clearly regulate confidentiality, usage rights to development results, exclusivity rules and claw-back rights in the event of insourcing. Competition law limits – for example when exchanging information with competitors in supplier alliances – must be examined on a case-by-case basis; legal statements are always general in nature and do not replace individual case review. An audit right over development and production sites ensures transparency regarding locations and capacities.

Lock-in and second-source strategy

Anyone who embeds design decisions with one supplier early on often becomes tied to that supplier's technologies and production facilities. Deliberate risk diversification counters this: designing critical components to be second-source capable, keeping material standards independent, or securing tools and rights contractually with the customer. The procurement policy should specify the level of ESI intensity at which a second-source assessment becomes mandatory.

Securing delivery performance during ramp-up

During the ramp-up phase, bottlenecks frequently arise from expedited orders or short-notice volume changes. Clear agreements on flexibility zones, call-off quantities and capacity reserves are therefore essential. Logistics models such as consignment stock or agreed Incoterms – for example FCA for handover ex works or DDP for responsibility through to the construction site – are best defined during the ESI phase.

Current developments: ESI in the context of digital procurement

Early Supplier Involvement is increasingly supported by digital tools: shared data rooms, collaboration platforms for drawings and revision statuses, and data analytics in procurement for systematic supplier selection. Digital procurement makes market data, performance profiles and risk signals available earlier than was the case a few years ago.

Supplier co-innovation and innovation competitions

ESI is increasingly evolving towards supplier co-innovation: suppliers are involved not just for a specific project but on a long-term basis as a source of ideas – for example through innovation competitions, technology days or joint roadmaps. Particularly in electronics, battery technology and lightweight construction, the capabilities of suppliers are a decisive factor in product advantages.

Data-driven supplier selection

Data analytics in procurement helps to identify suitable ESI partners objectively: performance history, quality figures, capacity data and risk signals are consolidated. In practice, this significantly accelerates the shortlisting process, but does not replace personal audits and sample inspections.

Automated transactions after the ramp-up

After a successful ramp-up, the close collaboration often transitions into efficient routine processes. Concepts such as the PO flip from an order acknowledgement or evaluated receipt settlement (ERS), in which the invoice is automatically derived from goods receipt data, reduce transaction costs – an apt contrast to the intensive but partly time-limited ESI phase.

Typical metrics

Engineering change requests after design freeze: significantly reduced compared with reference projects

Effect of ESI on design stability; project-dependent

Delivery performance (OTIF): > 95–98 %

usual target range during ramp-up and series production

Target cost achievement: >= 95 %

achievement of jointly calculated target costs

On-time adherence to development milestones: > 90 %

metric for reliability during the collaboration phase

Practical example

A medium-sized machinery manufacturer is developing a new product line and involves its stamping and sheet-metal bending supplier as early as the design phase. Instead of finished drawings, the supplier receives functional requirements and contributes to sheet thicknesses, bend radii and tolerances. The result: fewer rework loops in prototyping, a more competitive cost target and a smoother ramp-up.

- Partner selection via structured pre-qualification, including an audit of the production site
- Agreement on a grey-box collaboration, confidentiality and clear provisions on intellectual property
- Joint target cost calculation with disclosure of relevant cost drivers
- Capacity and logistics agreements, including flexibility zones for the ramp-up

Conclusion

Early Supplier Involvement moves supplier knowledge to where it has the greatest leverage: the early phase of product development. Procurement professionals take on an architect role – they select partners, shape contracts and secure competitiveness and second-source options. The prerequisites for success are sound pre-qualification, clear interfaces and measurable objectives. When this succeeds, development time, change effort and total costs typically fall. Combined with digital procurement tools, ESI thus becomes a standard element of modern supplier management.

Frequently asked questions

What does Early Supplier Involvement mean?

Early Supplier Involvement (ESI) refers to the early involvement of suppliers in product development, before specifications and design have been finalised. Suppliers contribute manufacturing, materials and cost expertise directly to the development process. The goals are shorter development times, better design for manufacturability and lower lifecycle costs.

What benefits does Early Supplier Involvement offer for procurement?

Typical benefits include improved material availability, lower target costs through design for manufacturability and fewer engineering changes after the design freeze. In addition, procurement builds a closer relationship with capable partners. The concrete effects depend on the project and should be measured against previous projects.

What risks does early supplier involvement entail?

Key risks are loss of knowledge, dependence on the supplier (lock-in), higher switching costs and potentially weaker negotiating positions in series production. These can be countered through clear confidentiality and ownership provisions, second-source-capable designs and contractual rights to tools and data. An audit right over production sites also strengthens control.

How do you select suppliers for ESI?

Suitable suppliers have proven technological and manufacturing competence, stable quality and sufficient capacity. A structured pre-qualification involving audits, reference projects and financial metrics is standard practice. Data analytics in procurement and an RFX process with development-specific questions provide further support.

How does ESI differ from the traditional procurement process?

In traditional procurement, suppliers receive finished specifications and compete primarily on price. With ESI, they contribute to the solution before the specification is completed, for example through grey-box collaborations. The focus shifts from unit price to total cost of ownership and innovation performance.

When is Early Supplier Involvement useful and when is it not?

ESI is worthwhile for complex, innovative components with high change risk and long lead times. For standard parts with a good market price and many suppliers, the effort is usually not justified – a traditional tender is sufficient here. A clear procurement policy helps to restrict ESI deliberately to critical components.