

Data catalogue: Structured access to master data, standard parts and supplier data in procurement

The data catalogue is a structured, central collection of descriptive data on materials, standard and catalogue parts, services and suppliers. In technical procurement it serves as the fundamental data basis for enquiries, quotation comparison and ordering. In practice, it increasingly replaces scattered Excel lists and paper documentation with a standardised, searchable reference work with defined mandatory and optional criteria per item line.

Key facts

- A data catalogue consolidates material master data, technical drawings, standard parts and supplier information in one central place.
- Unlike the classic product range of a trade catalogue, the industrial data catalogue often contains no stock items but descriptive master data with manufacturer references.
- Established classifications such as ECCMA eOTD, UNSPSC or eCl@ss are in practice the most common classification systems for the data catalogue.
- A well-maintained data catalogue typically significantly reduces duplicate purchases, incorrect orders and manual search times in day-to-day procurement.
- Data quality in the catalogue is a typical prerequisite for automation, for example in quotation requests or initial sampling (EMPB).
- The data catalogue is the data basis for KPIs such as delivery time, delivery performance or supplier performance assessment.

Definition: data catalogue

A data catalogue is a systematically structured directory of item, material and service data that serves procurement as a uniform reference for search, comparison and purchasing. It describes objects via standardised fields such as designation, classification, standard, material, dimensions and manufacturer reference. Unlike a pure ordering catalogue, it usually does not contain binding prices, but rather the technical data basis on which ordering and contract processes are built.

Distinction from product catalogue and supplier catalogue

A dealer's product catalogue lists saleable items with prices and availabilities; the supplier catalogue maps the product range of a specific supplier. The data catalogue, by contrast, is designed to be manufacturer- and supplier-independent: it describes the entire procurement-relevant scope of a company, regardless of whether an item is currently sourced from an A-supplier or a C-supplier. In many organisations both levels exist in parallel: the internal data catalogue as the master data foundation, with supplier catalogues attached beneath it containing current prices and terms.

Content elements

Typical contents include material master records, standard part and catalogue part references (e.g. DIN, ISO or manufacturer part numbers), drawing and document references, material and surface data as well as logistical information such as procurement type and typical delivery time. In addition, conditions from contract management may be stored, such as framework agreement references or price tiers. The field structure often follows an internal procurement data model that defines mandatory and optional criteria per data field: mandatory fields guarantee a minimum quality, optional fields allow differentiation.

Structure and data model of a data catalogue

A data catalogue lives from its structure. Without a consistent data model and classification, the catalogue quickly becomes an unusable data dump. In practice, its structure follows a few proven principles.

Classification and standardisation

The basis is a classification structure that classifies items according to functional characteristics – for example by eCl@ss, UNSPSC or a company-specific scheme. In addition, property values are recorded as characteristics with units, so that search queries such as “hexagon bolt M12, property class 8.8, zinc-plated” reliably return results. A uniform naming convention (nomenclature) prevents the same part from lying in the catalogue under five different designations – a frequent practical cause of duplicate material masters and unnecessary purchases.

Mandatory and optional criteria per data field

Every data field should be clearly defined: which information is mandatory (mandatory criterion) and which is optional (optional criterion)? For a standard part this is typically the standard number, designation, material and dimensions; for a bought-in part additionally the manufacturer reference and manufacturer part number. These field definitions belong in the procurement data model and are communicated to the specialist departments via requirements management. Only in this way do departmental data become a consistent catalogue rather than a collection of individual lists.

Supplier and price references

The data catalogue links items with sources of supply, conditions and contracts. Stored information includes, for example, approved suppliers, framework agreements from contract management, minimum order quantities and contractual delivery times. This linkage enables buyers to target qualified sources of supply when issuing quotation requests and to feed supplier performance assessment results directly into the selection decision.

Use in the procurement process: methods and approach

The data catalogue is not an end in itself, but a tool along the entire procurement chain – from demand notification via quotation request to order processing and assessment.

Demand capture and enquiry

Via the data catalogue, the specialist department submits demands by using existing item lines or triggering new master data requests. For repeatable demands this drastically reduces the effort: the requester selects from the catalogue instead of formulating a free-text request. For new items, procurement first checks via market analysis and market segmentation in procurement whether an

equivalent item is already catalogued or whether new initial sampling (EMPB) is required.

Quotation comparison and source finding

Based on catalogued specifications, procurement creates quotation requests with precise line items instead of vague descriptions. In combination with a supplier shortlist from the supplier master, quotations can be made directly comparable. Procurement portfolio analysis then helps to classify the procured items by value and risk and to assign suitable procurement strategies – such as framework agreements, pooling or low-cost country sourcing – per catalogue group.

Ordering, sampling and traceability

In operational order processing, the catalogue serves as a reference for order texts, material numbers and drawing statuses. For sampled parts, it links recommendations with batch or lot number data, thus enabling traceability back to the sub-supplier. Changes to specifications are updated via change services in the catalogue so that ordering and sampling are always based on the current data status.

Important KPIs and benefits of a data catalogue

The benefit of a data catalogue can be measured. Key KPIs relate to data quality, process speed and procurement costs.

Data quality and catalogue coverage

Typical KPIs are the proportion of complete data records (completeness rate per mandatory criterion), the proportion of duplicate material masters and catalogue coverage, i.e. the proportion of procurement volume handled via catalogued line items. In practice, completeness rates above 95 per cent and a duplicate share below 2 per cent are considered good guideline values. These KPIs often draw on the same data model that supplier performance assessment also uses.

Process KPIs

At process level, catalogue quality affects the processing time of demand notifications, the cycle time of quotation requests and the share of automation. A well-maintained catalogue shortens search times for requesters and buyers and reduces the rate of incorrect orders and returns. Indirectly, it also improves delivery performance, because precise specifications reduce misunderstandings with suppliers.

Cost and impact metrics

Benchmarking in procurement can be used to compare the volume handled via catalogue line items rather than via exceptions. Analyses derived from the catalogue – such as spend per material group or target costing per item – form the basis for negotiations and for the selection of A-suppliers. Environmental indicators such as a life cycle assessment (LCA) per material group can also increasingly be evaluated on a catalogue basis.

Risks and controls for the data catalogue

The biggest risk factor of a data catalogue is not the technology but the data maintenance. Neglected catalogues quickly lose acceptance and harm the process more than they help.

Data quality risks

Typical problems are duplicates, outdated manufacturer references, missing standard updates and

inconsistent designations. If drawing statuses or material specifications are not updated, incorrect procurement looms, up to and including quality problems with the product. Controls for this include regular data quality audits, duplicate matching and defined approval processes for new or changed items, ideally with technical review by engineering or quality assurance.

Governance, roles and permissions

A data catalogue needs clear responsibilities: who may create, who may change, who may approve? Without a role concept, uncontrolled growth results. Catalogue owners per material group, defined SLAs for master data requests and an escalation rule for conflicts between specialist departments and procurement have proven effective. Access for external partners – for example for supplier catalogues – should also be regulated via authorisation concepts.

Legal and contractual aspects

Catalogue content may contain copyright-protected manufacturer data, standards content or drawing-related documents. Licence terms for standards works and manufacturer catalogues must therefore be checked on a case-by-case basis. In addition, catalogue-based orders should be consistent with the framework conditions of contract management; deviations between catalogue information and contract terms are a frequent point of contention in disputes. Tax aspects – such as the correct issuance of a prompt payment discount invoice for catalogue-based orders – are governed by the respective contractual agreements and should be reviewed legally on a case-by-case basis.

Current developments around the data catalogue

Data catalogues are evolving from static lists to networked data platforms. Three drivers shape this development: standardisation, automation and sustainability data.

Automated master data maintenance and AI

Language models and matching methods increasingly support the classification of new items, the enrichment of missing characteristics and duplicate detection. In practice, this significantly shortens the cycle time of master data requests, but does not replace technical approval. In addition, machine-readable manufacturer data (such as electronic product catalogues) are gaining importance, as they can be imported directly into the company's own catalogue.

Sustainability and regulatory data in the catalogue

Regulatory requirements – for example on the recyclability of packaging in the context of the PPWR or on product carbon footprints – make additional data fields necessary. Material properties, recycle content and LCA values are increasingly recorded as catalogue attributes so that they can be systematically queried and evaluated in tendering and supplier assessments. The specific mandatory information depends on the product group and legal framework and must be checked on a case-by-case basis.

Networking with supplier and marketplace data

Data catalogues are increasingly merging with external source-of-supply information: links to marketplaces and supplier networks make it possible to check catalogued items directly for availability and alternative suppliers. This strengthens procurement resilience and accelerates source finding – especially for bottleneck materials or in project procurement with many new items.

Typical metrics

Completeness rate of master data: > 95 %

Proportion of data records that fulfil all defined mandatory criteria.

Duplicate rate: < 2 %

Proportion of duplicate material masters in the catalogue stock.

Catalogue coverage: > 80 %

Proportion of procurement volume handled via catalogued line items.

Master data request cycle time: < 5 working days

Typical guideline value for creation and approval of new catalogue items.

Incorrect order rate: < 1 %

Proportion of ordered items with specification deviations; decreases with catalogue quality.

Practical example

A mid-sized mechanical engineering company with around 40,000 material masters struggled with high incorrect order rates and long enquiry times because parts were recorded under changing designations and specifications were scattered across emails and drawing folders. The company introduced a central data catalogue with eCI@ss classification, binding mandatory criteria and defined approval processes.

- Clean-up of the existing stock: duplicate analysis and enrichment of missing mandatory criteria within twelve months.
- Introduction of a nomenclature with mandatory fields per material group, agreed between engineering and procurement.
- Connection of the catalogue to the procurement workflow: demand notification via catalogue selection, automatic transfer into quotation requests and orders.
- Catalogue-based source management with references to framework agreements and supplier performance assessment results.

Conclusion

The data catalogue is the master data foundation of a high-performing technical procurement function. It creates transparency over materials, specifications and sources of supply and makes processes from enquiry to order processing faster and less error-prone. What matters is less the software than the discipline: clear mandatory and optional criteria, a consistent classification and regulated approval processes. Companies that systematically measure and maintain their catalogue quality achieve tangible benefits in practice in cycle times, duplicate purchases and negotiating power. The data catalogue thus becomes a prerequisite for automation, sustainability reporting and resilient procurement.

Frequently asked questions

What is a data catalogue?

A data catalogue is a central, structured collection of item, material and service data that serves procurement as a reference for search, enquiry and ordering. It contains master data such as classification, standard, material and manufacturer reference. Unlike a dealer's product catalogue, it usually does not describe stock items with prices, but rather the technical data basis of procurement.

What distinguishes a data catalogue from a product catalogue?

A product catalogue lists saleable items with prices and availabilities from a specific supplier. A data catalogue, by contrast, is manufacturer-independent and describes the entire procurement-relevant scope of a company, including supplier and contract references. It is more of a master data foundation than a sales tool and serves standardisation, not direct selling.

Which classification systems are used for data catalogues?

In industry, eCl@ss and UNSPSC have become established as widely used classification systems; in addition, there are company-specific schemes and standards systems such as DIN or ISO for standard parts. The choice depends on the industry, ERP environment and international orientation. What matters most is applying the chosen system consistently and mapping the characteristic logic in your own data model.

What benefits does a data catalogue bring to procurement?

A well-maintained data catalogue reduces duplicate purchases, incorrect orders and search times, shortens the cycle time of enquiries and makes quotations comparable. It creates a reliable data basis for KPIs such as spend per material group and for strategies such as portfolio analysis or target costing. In addition, precise specification reduces the risk of errors towards suppliers and indirectly improves delivery performance.

How do you build a data catalogue?

First, a data model with mandatory and optional criteria per data field is defined, followed by a classification structure and a naming convention. Next comes the clean-up of the existing stock: duplicate matching, enrichment of missing characteristics and approval by the specialist departments. Finally, roles, approval processes and quality KPIs are established so that the catalogue remains permanently up to date.

What risks do data catalogues have?

The biggest risks are poor data quality, duplicates and outdated specifications, which can lead to incorrect procurement. Added to this are governance issues such as unclear responsibilities and missing approval processes, as well as legal aspects concerning the use of third-party catalogue and standards data. Regular data quality audits and clear role concepts are the most important countermeasures.