



 **PART**solutions

The Strategic Parts Management

Sustainable Cost Reduction for Standard, Supplier and
Company Parts for Engineering and Purchasing

**No time to sharpen your axe
while you are busy cutting
down the forest?**



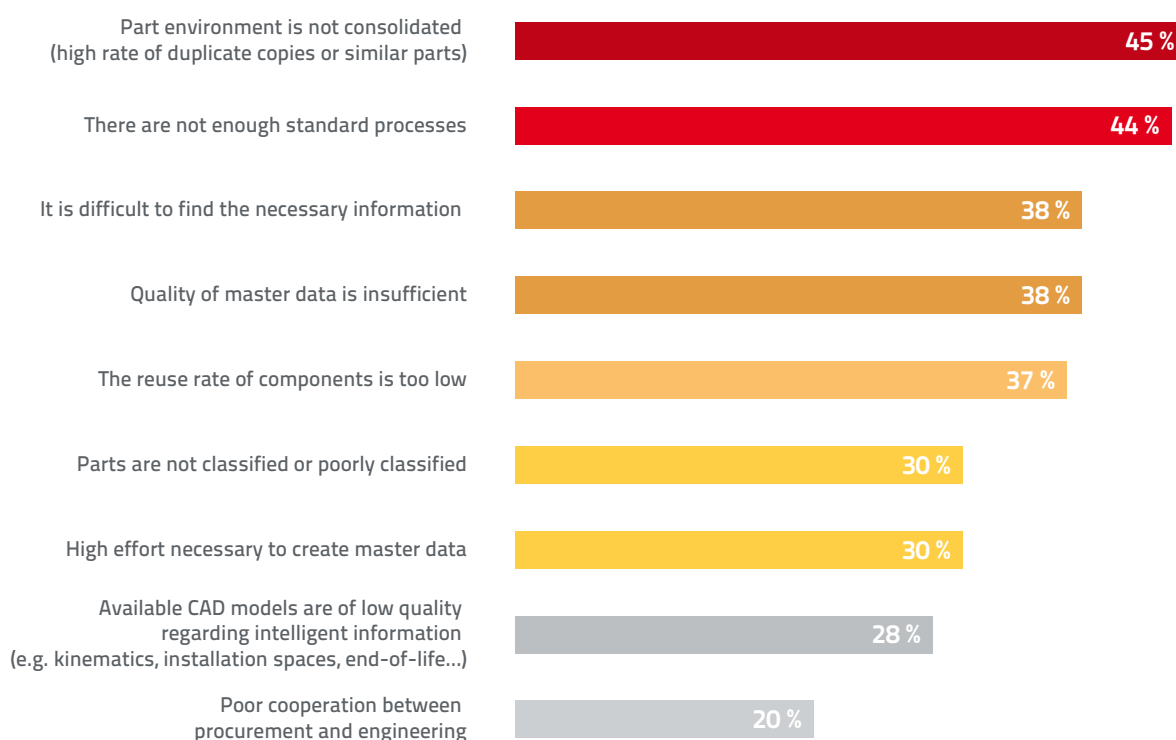
If you agree, then don't read any further

Industrial companies have to deal with many obstacles, which are often never resolved because the day-to-day business dealings always take priority. However, in the long-run this leads to a dead end which is a tremendous competitive disadvantage.

That's why now is the right time to tackle the problem!

The difficulties facing companies in the mechanical, electrical and plant engineering sector are often the same. We wanted to take a closer look and so we conducted a survey among approx. 70,000 engineers, designers and purchasers.

Where do companies see the most urgent need for action in the product development process?



Source: survey parts management & product development processes in the industry. CADENAS 2015

On the following pages we are presenting more interesting results of our survey and many possible solutions.

Stop ignoring existing problems and take the time to improve your development process. It is the only way that your company will be able in the future to launch competitive, innovative products on the market.

**When
searching
takes a
life time...**

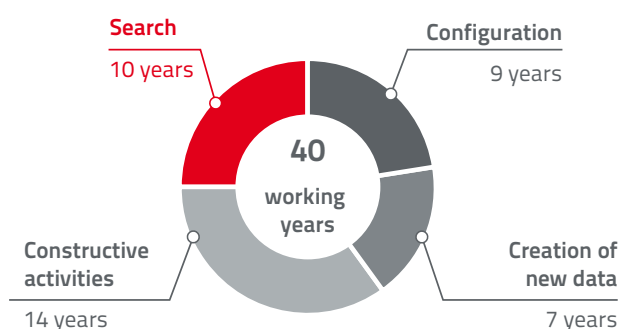


Finding information

Not searching, but re-designing parts from scratch is no solution either

Not searching in the parts master of existing components and instead simply designing anew is tempting at first sight in a chaotic database. It seems like a short-cut now, but will lead to extra work in the long run.

Why do so many engineers skip the search? They often have insufficient search tools and capabilities, which makes the process very time consuming.



» An engineer invests around 70 % of his time with non-constructive activities – 27 % search, 18 % creation of new data, 23 % configuration. «

Aberdeen Group, Component Supplier Management, March 2002

The consequence of insufficient searching or unnecessary re-designs:

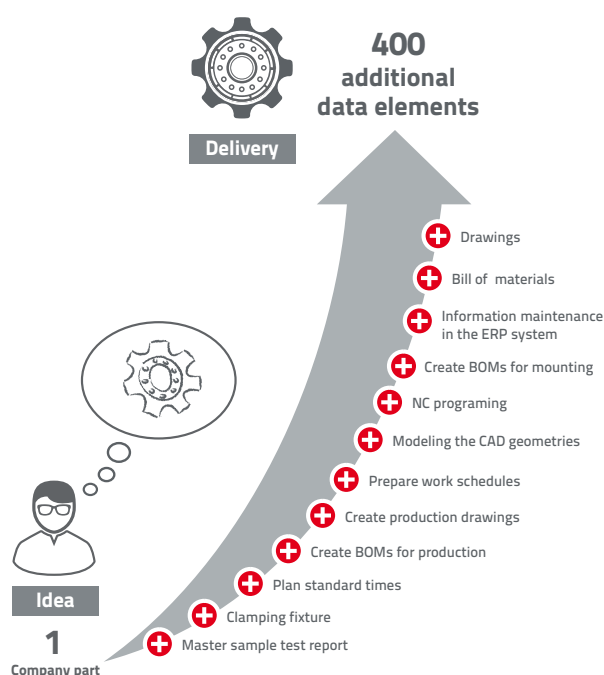
- 2D production drawings are not available and have to be created anew
- CAM programming has to be created for later production
- Master data files and work plans have to be created anew in ERP & PLM which is very time consuming and expensive

To find already existing components and reuse them saves you and downstream departments a significant amount of time. As an engineer, how could you use this time better? What about designing creative, new and innovative products?

Why is a newly created self-designed part so expensive?

A survey conducted by Rolls-Royce shows that every additional self-designed part in consequence requires 400 additional data elements, processes and parts. The expenses for every new component are accordingly high.

But also unnecessarily created standard & supplier parts cause significant costs. **See also page 16**

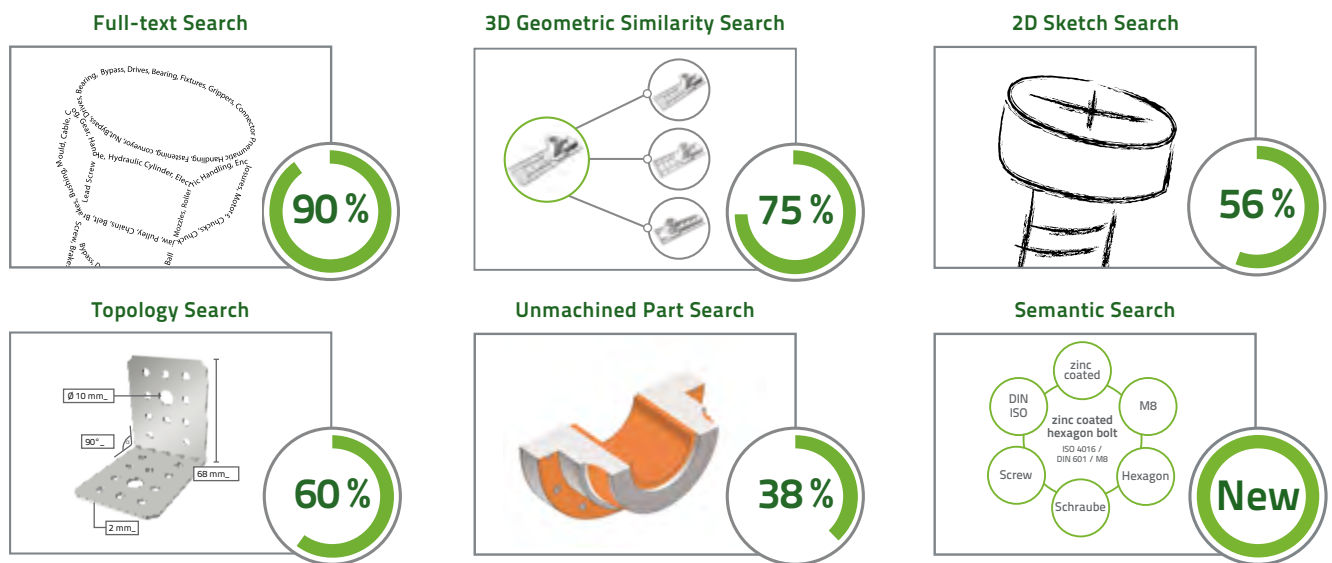


How we support you

Intelligent finding - reducing search times by up to 90 %

CADENAS' Strategic Parts Management PARTsolutions offers a multitude of intelligent search methods, which help to find the necessary part in a non-classified parts master. As our survey shows, engineers and purchasers have different needs regarding the optimal search method. With PARTsolutions, all search methods are available and can be combined in any desired way.

Which search methods are used and combined by engineers & purchasers?



CADENAS Intelligent finding features

	Company parts	Standard and supplier parts
Geometric Similarity Search (3D)	✓	✓
Search by Sketch (2D)	✓	✓
Full-text Search	✓	✓
▪ Synonyms		
▪ Related search terms		
▪ Keywords		
Topology Search	✓	✓
Color Search	✓	✓
Semantic Search	✓	✓
Unmachined Parts Search	✓	✓
Classification 2.0 with reference models	✓	✓
Purchase analysis	✓	✓
▪ Alternative suppliers		
▪ Make or Buy		
▪ Price search		
Speed	✓	✓
Searching more than a million parts < 5 s		

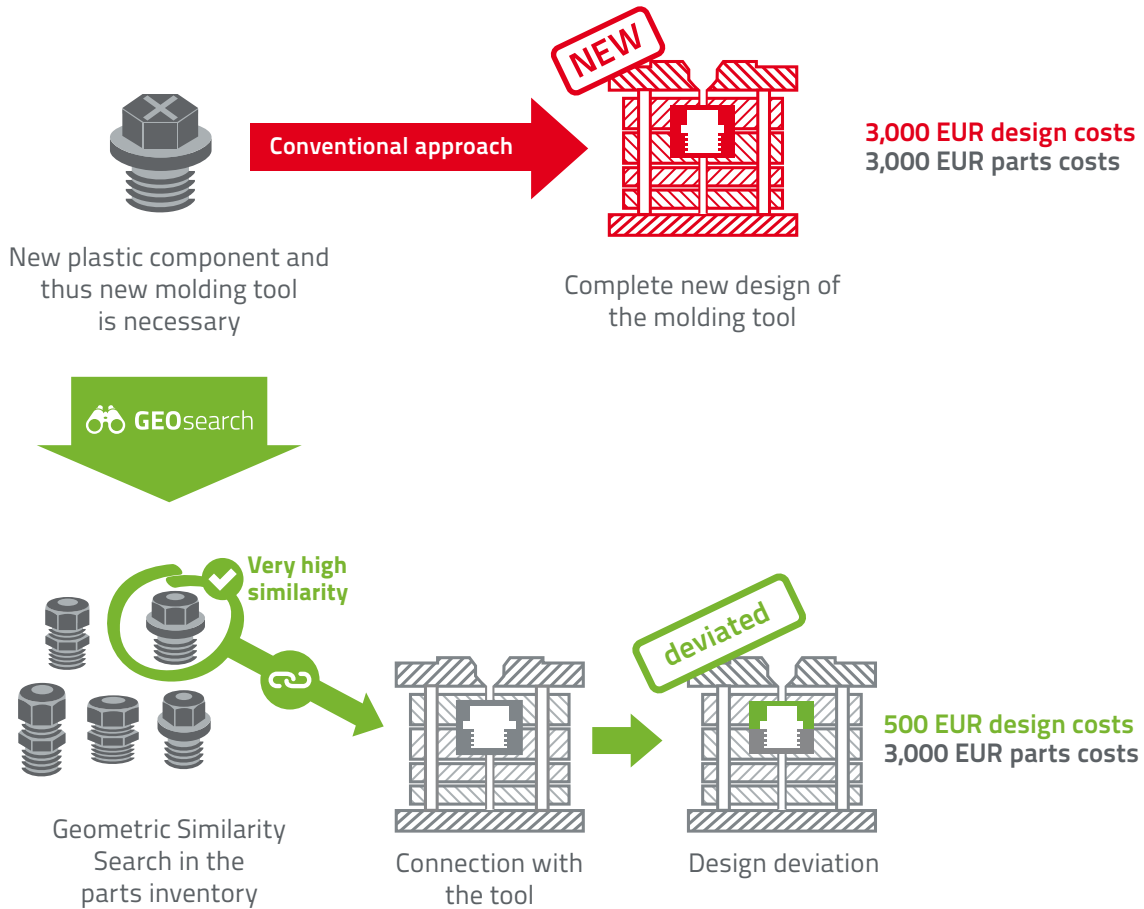
Features of search methods by alternative providers




	Company parts	Standard and supplier parts
Geometric Similarity Search (3D)	✓	✗
Search by Sketch (2D)	✗	✗
Full-text Search	✗	✗
▪ Synonyms		
▪ Related search terms		
▪ Keywords		
Topology Search	✗	✗
Color Search	✗	✗
Semantic Search	✗	✗
Unmachined Parts Search	✗	✗
Classification 2.0 with reference models	✗	✗
Purchase analysis	✗	✗
▪ Alternative suppliers		
▪ Make or Buy		
▪ Price search		
Speed	?	✗
Searching more than a million parts < 5 s		

Intelligent search features - combination is the answer

Solution example I - Design a new moulding tool at a favorable price

To design a new molding tool, geometrically similar plastic components are searched first. From this, the used molding tool can be derived. With a small modification of the existing tool, a suitable tool can be generated for the new component in very little time.

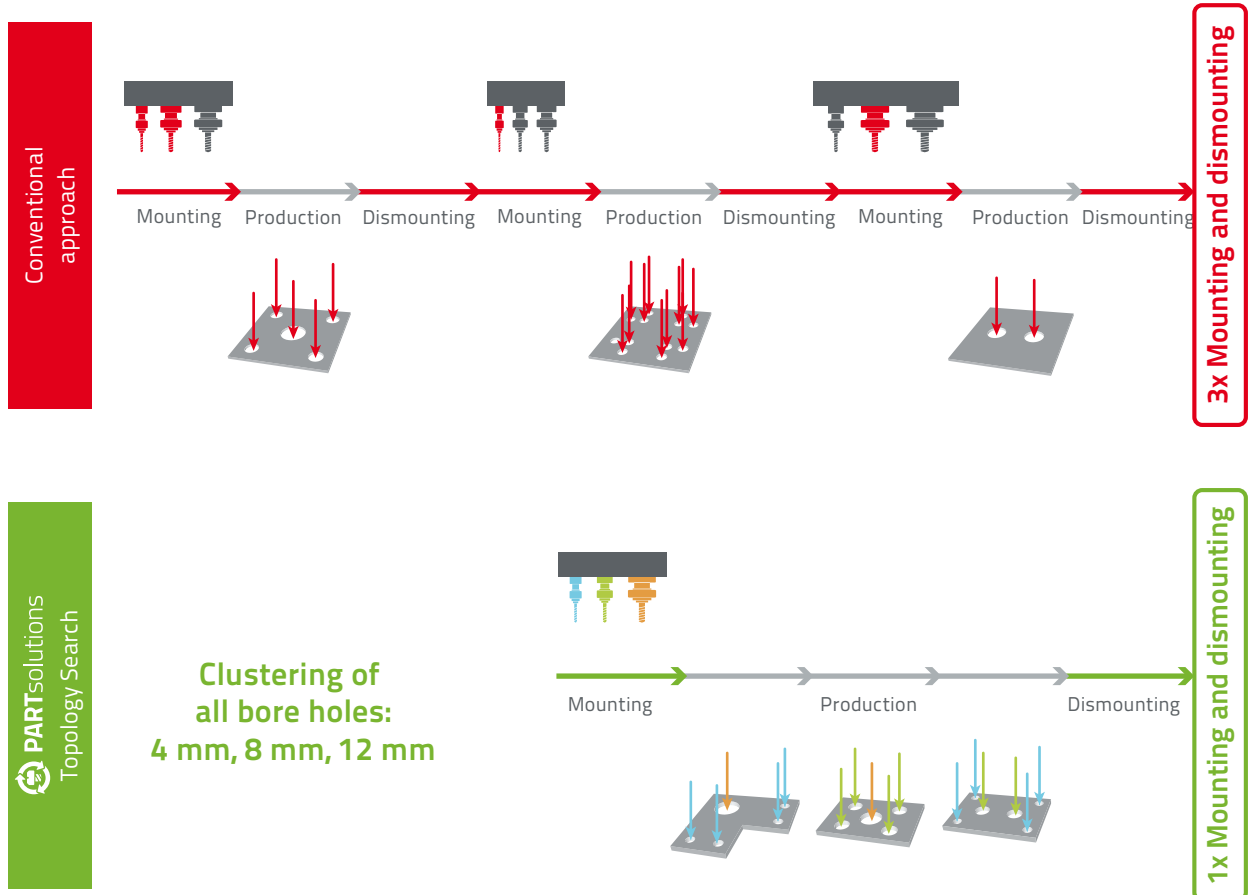


Problem	Features & Approach	Benefits
Molding tool has to be calculated and designed anew	<ul style="list-style-type: none"> Full-text Search Search by Sketch (2D) Unmachined Part Search Geometric Search (3D) Color Search Topology Search Parts catalog Parts-tool-connection 	<ul style="list-style-type: none">  Saving time needed for designing  Cost savings  Estimated price can be deviated, reducing calculation costs

Solution example 2 - Optimizing set-up times of low volume production

Especially with low volume production it is important to reduce manufacturing costs through efficient production planning. By using the Topology Search it is possible to identify similarities between parts, which leads to reduced set-up times.

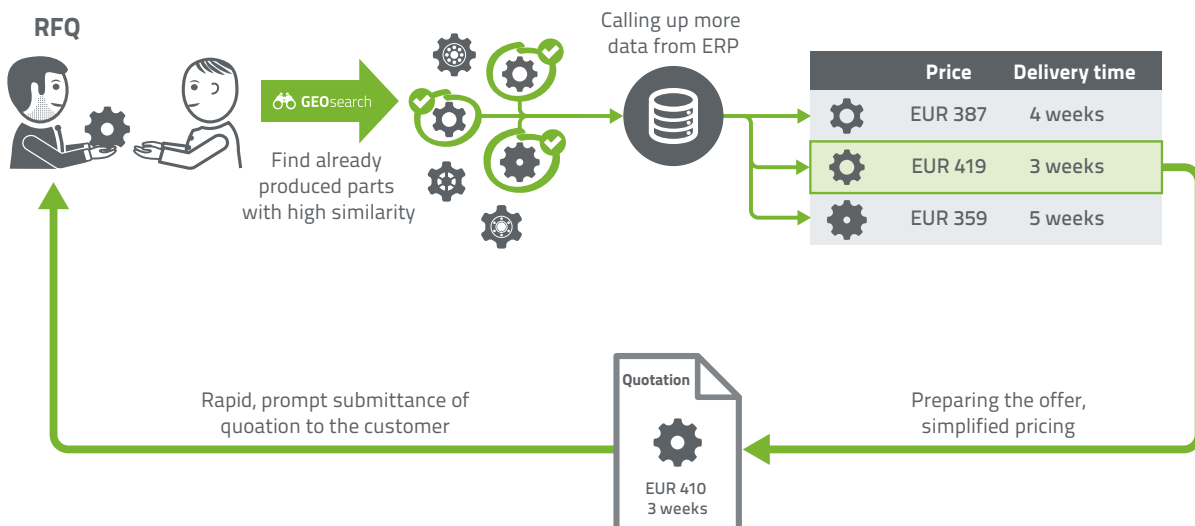
Optimizing set-up times of low volume production



Problem	Features & Approach	Benefits
Optimizing set-up times of low volume production	<ul style="list-style-type: none"> Full-text Search Search by Sketch (2D) Parts catalog Unmachined Part Search Geometric Search (3D) Color Search Topology Search Parts-tool-connection 	<ul style="list-style-type: none"> Fewer tool changes Less time effort

Solution example 3 - Quote preparation with Geometric Similarity Search

Individual customer offers often come along with a high time effort. At the same time customers expect a prompt processing of their request for quotation (RFQ). With the Geometric Similarity Search, offers of similarly already produced parts can be found. These can then be modified with little effort and customized to the specific RFQ.



Problem	Features & Approach	Benefits
Time and costs effort for offer calculation	<ul style="list-style-type: none"> Full-text Search Color Search Search by Sketch (2D) Geometric Search (3D) Parts catalog Topology Search Unmachined Part Search ERP-linking 	<ul style="list-style-type: none"> Less time effort ERP as knowledge database for offer calculations Less risk of miscalculations

GEOsearch: Airbus Award for Excellence

The project »GEOsearch Geometric Parts Search« was awarded the Airbus Award for Excellence:



Results project A380:

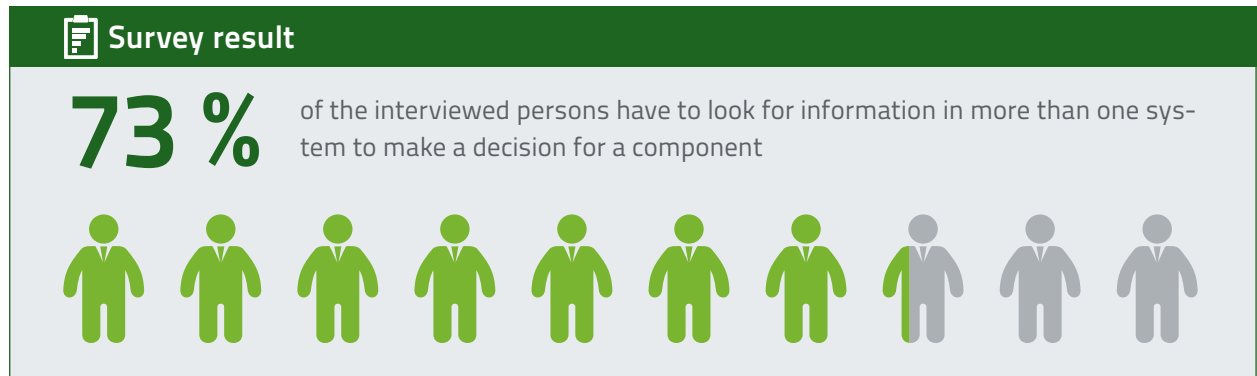
- Reusability rate of almost 40% with the Geometric Similarity Search
- Savings during the pilot phase were able to refinance the entire pilot
- Decision of the customer to implement the Geometric Similarity Search of the Strategic Parts Management as short term solution



More information on this topic can be found in our brochure: www.cadenas.de/brochure/geosearch

Get all information at a glance, without changing the system

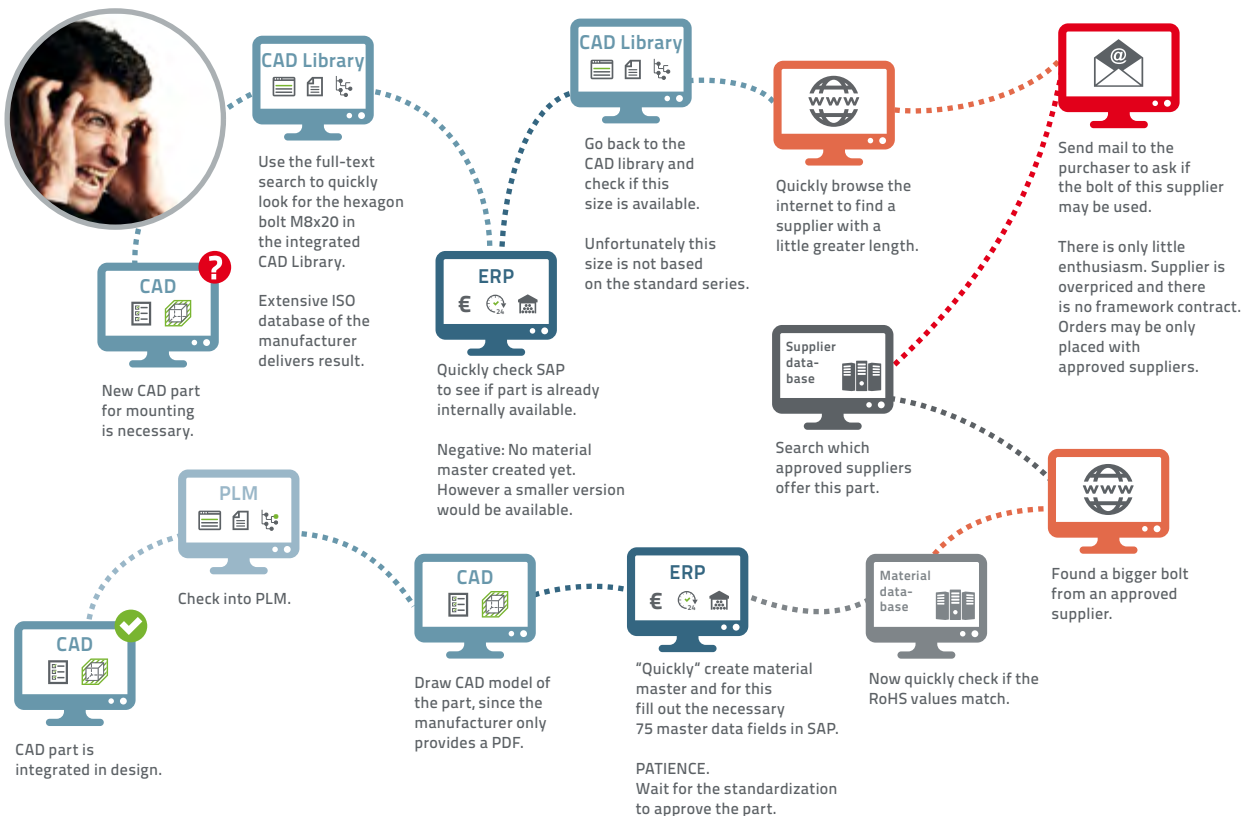
The decision for the best possible component can only be made if all relevant information is available. According to the survey, 73% of the interviewed persons have to access more than one system to get this information.



Source: survey parts management & product development processes in the industry. CADENAS 2015

Information search WITHOUT PARTsolutions

Without CADENAS' Strategic Parts Management, engineers and purchasers have to switch back and forth between the systems. This not only wastes time, but also prevents concentrated working on the project.



Information search WITH PARTsolutions

PARTsolutions by CADENAS has a multitude of interfaces to PLM and ERP systems. Without changing the system, all business management and technical information is available at a glance:

- **Information CAD system**
mounting conditions,
mounting space,
constructive requirements ...
- **Information PLM system**
ranges, further documents,
proof of use ...
- **Information ERP system**
price, availability, warehouse quantity ...
- **Information PARTsolutions**
geometry, weight, RoHS compliance,
global sourcing, standardization,
alternative suppliers ...



Thus the Strategic Parts Management PARTsolutions is a universal research system for engineers and purchasers regarding standard, supplier and self-designed parts.

» Since now all necessary information is available at a glance in only one system – for all users – the effort for information procurement was reduced by 40% due to the Strategic Parts Management. «



Bernd Postaremczak
Coordinator Parts Management
SMS group GmbH

SMS  **group**

Who profits?

Engineering ++

Purchasing ++

Standardization ++

Controlling ++

**Studied 8 semesters of
engineering only to
be a data typist?**




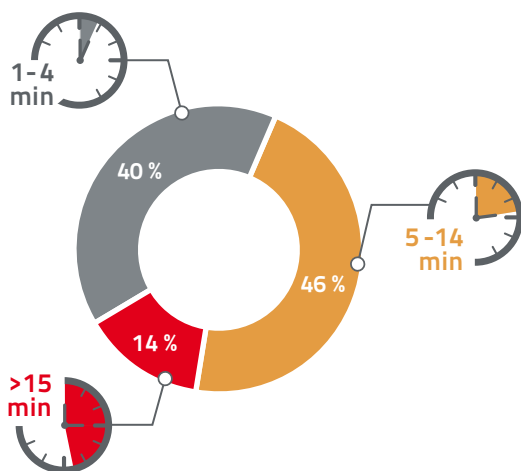
Creating clean master data


Weren't you actually going to develop innovative products?

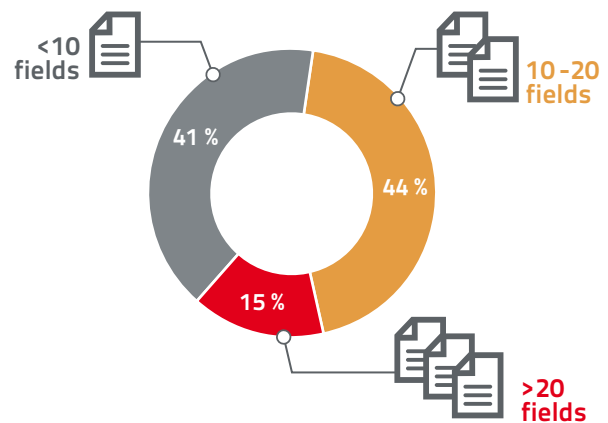
Instead of concentrating on the development of innovative products, your everyday working life as an engineer probably involves uninspiring tasks such as creating master data. Creating data files is not only annoying, but also requires considerable time and financial resources.

Avoiding the creation of new data files means saving costs

 **How much time do you need to create a new component in the system (PLM & ERP)?**



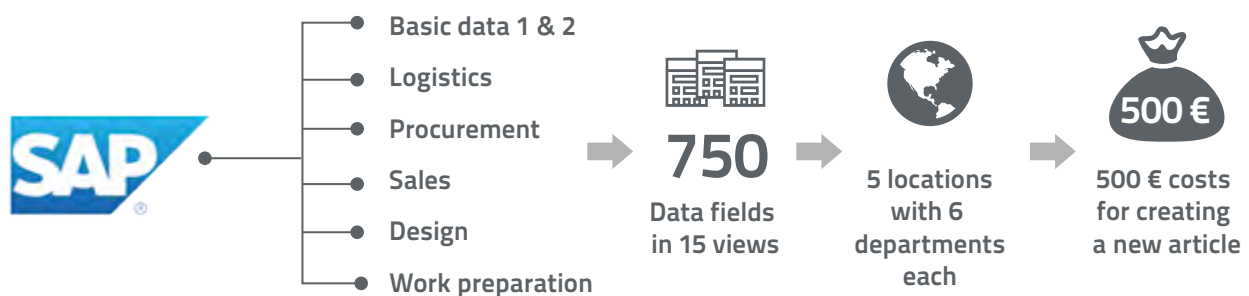
 **How many fields do you have to define in your company when creating master data?**



Source: survey parts management & product development processes in the industry. CADENAS 2015

Example from large-scale industry: How much does a newly created article cost?

An example from large-scale industry shows that, in SAP R/3, about 750 databases in 15 views are available for the modules basic data I&2, logistics, procurement, sales, design, production planning, etc. By creating a new article costs of 500 EUR would occur.

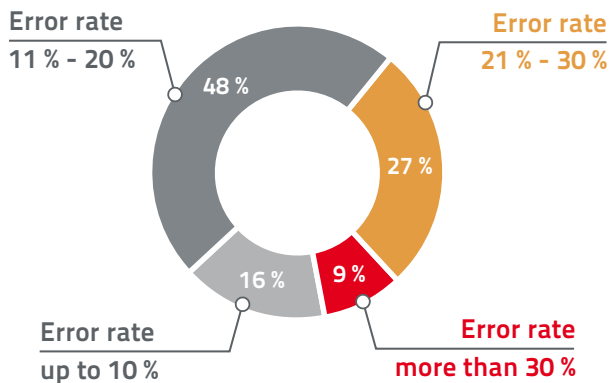


Clean master data ensures competitiveness



How high is the error rate of master data estimated to be by German companies?

(Number of duplicate copies, inaccurate classification, incomprehensible material texts, etc.)

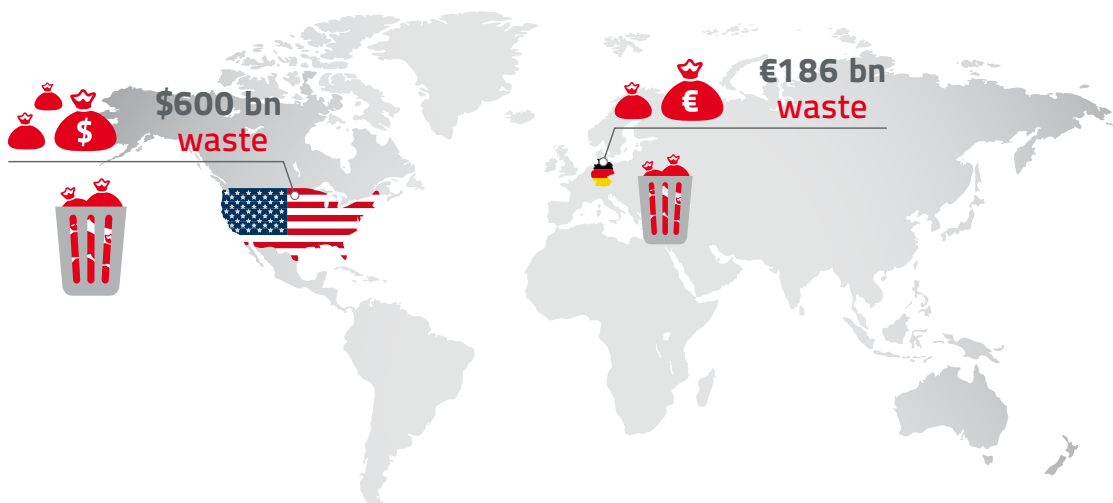


Correct, current, consistent, complete and redundance-free data are the key to success. Nevertheless hardly any company has clean master data.

It's a familiar problem, but most of the time, opportunities to solve the problem are missing. Instead, new parts generation is promoted every day and plenty of unnecessary and inaccurate components are imported into the database.

Annual economic damages due to defective data quality

A study of the Data Warehousing Institute found out that in the USA alone economic damages of around 600 billion dollars arise from defective data quality. According to the Fraunhofer IAO Institute, this means for Germany a burden of approx. 186 billion euros.



The consequences of chaotic master data are i.a.:

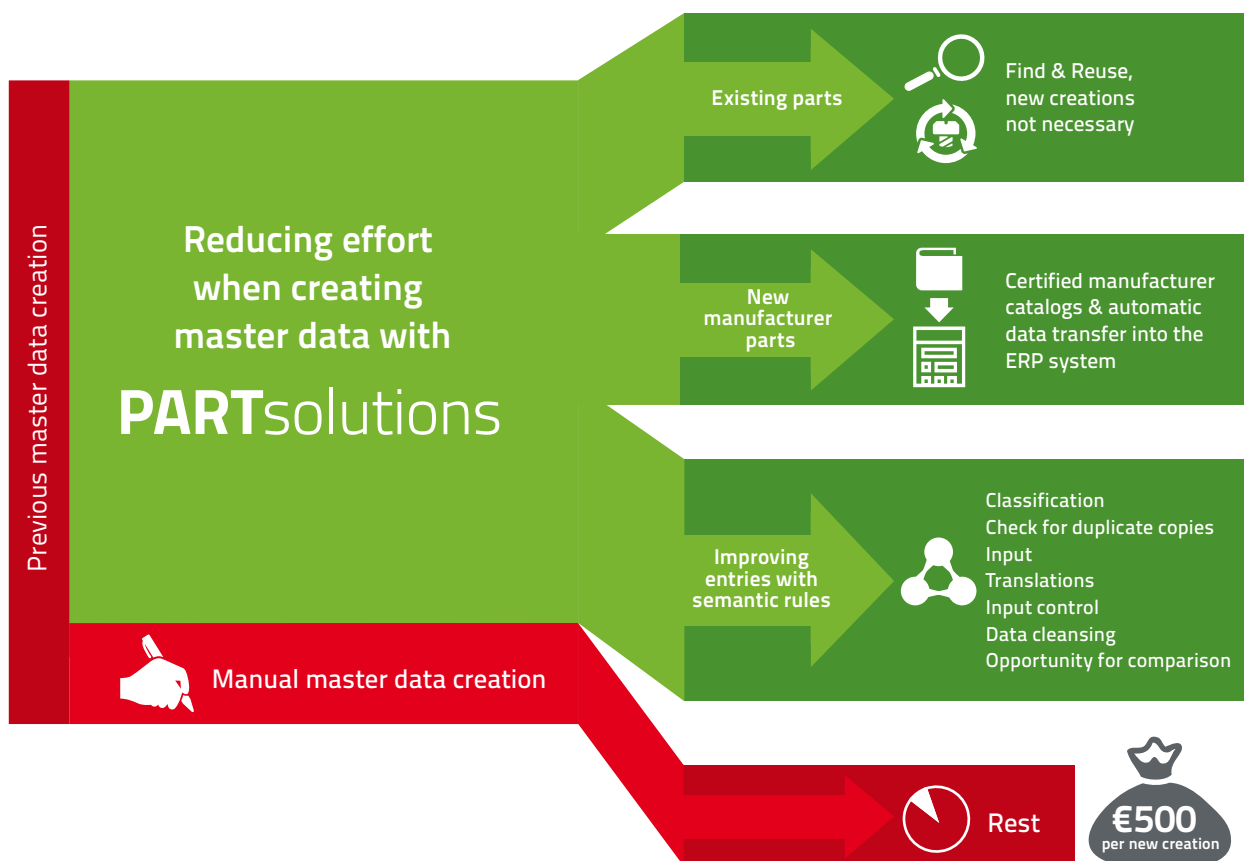
- Already existing components can't be found and will be created once more, which increases the proportion of an engineer's administrative tasks
- Procurement places several separate orders, instead of bundling orders to get lower purchase prices
- Engineers develop new products with outdated parts that can no longer be purchased or will soon expire

How we support you

To have more time for real engineering tasks, the amount of administrative tasks should be reduced significantly: From most of the newly created parts only a fraction would have actually been necessary, as experience shows. Regarding newly created parts that are really necessary, it is important to ensure a clean creation.

PARTsolutions helps you to decrease the creation rate of new parts and avoid inaccurate parts

- Find already existing parts to avoid creating them anew
- When you truly have to create new components, you can take over the attributes from PARTsolutions in SAP or another ERP system
- Due to semantic rules, the quality and correctness of newly created data is improved significantly



» On the average, every newly created part avoided means cost-savings of approx. 1,200 Euros for our company. Of course also in the future new components will be created at BOMAG since new products are being developed. But at least we have to avoid creating duplicate copies. «

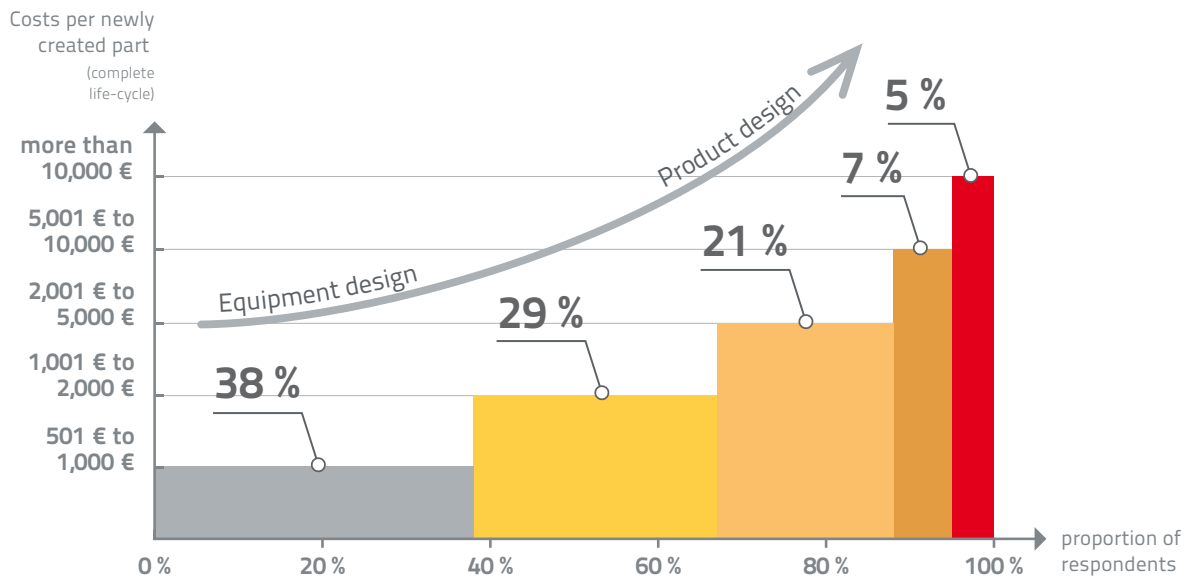
Reusing parts instead of creating new ones

Every newly created part entails extensive costs. These costs are incurred throughout the course of its entire life-cycle and exceed the sole costs of the initial data creation.



How high do you estimate the complete life-cycle costs of a component in your company are?

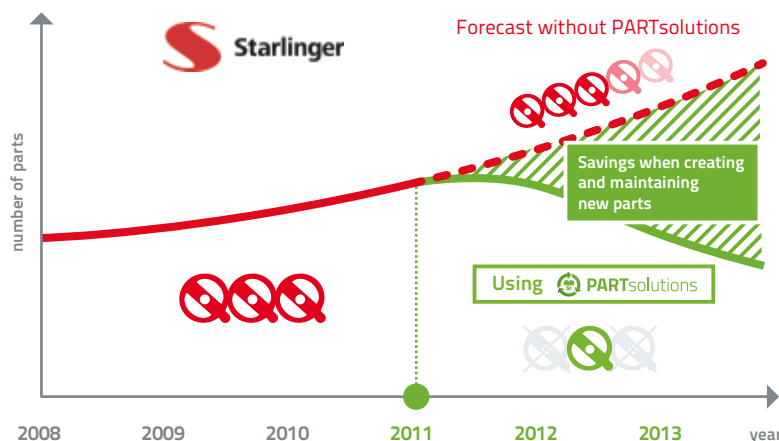
(Data creation, warehousing, fixed capital, end-of-life replacement, etc.)



Source: survey parts management & product development processes in the industry. CADENAS 2015

1,100 fewer parts and 1 million Euro savings at Starlinger & Co. GmbH

At Starlinger, the past trend of newly created parts was extrapolated to show the negative trend that would have incurred without PARTsolutions.



Result:

The amount of new A- and Z-parts created was decreased by approximately 1,100 parts during the observation period due to PARTsolutions.

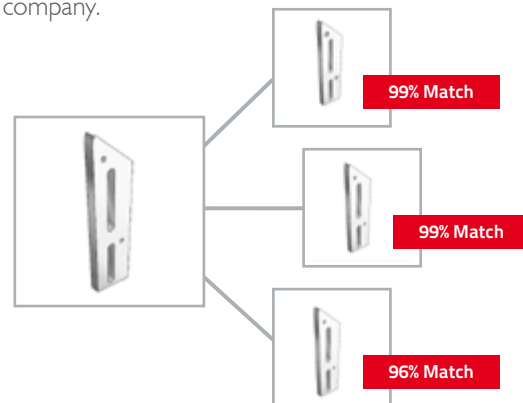
With estimated processing costs of approximately 700 EUR for a newly created part and annual maintenance costs of approximately 100 EUR, the savings amount to about 1 million euros by reducing newly created parts and increasing the reuse of parts.

Consolidate existing parts world

Potential analysis for cleansing duplicate copies

Almost every company has parts in its database, which have been created several times. Most of the times these duplicate copies result from typing errors or the product has a different designation when creating it. PARTsolutions supports you, so that in the future duplicate copies are no longer an issue in your company.

- With the intelligent search methods, even inaccurately or defectively created parts can be found, which prevents the creation of duplicate copies
- Automatically generated duplicate reports show you how cleaned up your parts data is



Survey result

65% of the interviewed companies have duplicate copies in their databases



Source: survey parts management & product development processes in the industry. CADENAS 2015

»» With CADENAS PARTsolutions we have a uniform structure in our part information data for the first time. Due to the clearly arranged catalog structure, components can be found easily and the new parts creation prevailing so far can be limited in a sensible manner. ««



Eberhard Ilg
Technical Management AIM
Assembly in Motion GmbH

Cleansing and avoiding outdated parts (End-of-Life)

Discontinued components are not uncommon, since manufacturers would like to offer their customers innovations.

However, discontinued parts incorporated into the design during the product development can cause high costs. Strategic Parts Management PARTsolutions by CADENAS helps you to always keep your parts data up-to-date.



Survey result

77%

of the interviewed companies have outdated or discontinued parts in their databases



Source: survey parts management & product development processes in the industry. CADENAS 2015

Clean new creation of parts master data

More than 700 manufacturer catalogs: Optimal basis for your master data

PARTsolutions offers engineers direct access to more than 700 certified CAD part catalogs of renowned international manufacturers. The extensive standard and supplier parts library of the Strategic Parts Management supplements your database with detailed parts information.

This ensures a perfect, cleaned up data inventory with correct manufacturer's designation and ordering numbers, which helps to significantly reduce the later search effort for suitable components.



» With PARTsolutions we have almost unlimited access to supplier data in 3D. The data acquisition is free of charge, of high quality and we can always rely on the topicality of the product data. «

Albert Paster
Head of Development/Design
Wilhelm Oberaigner GmbH

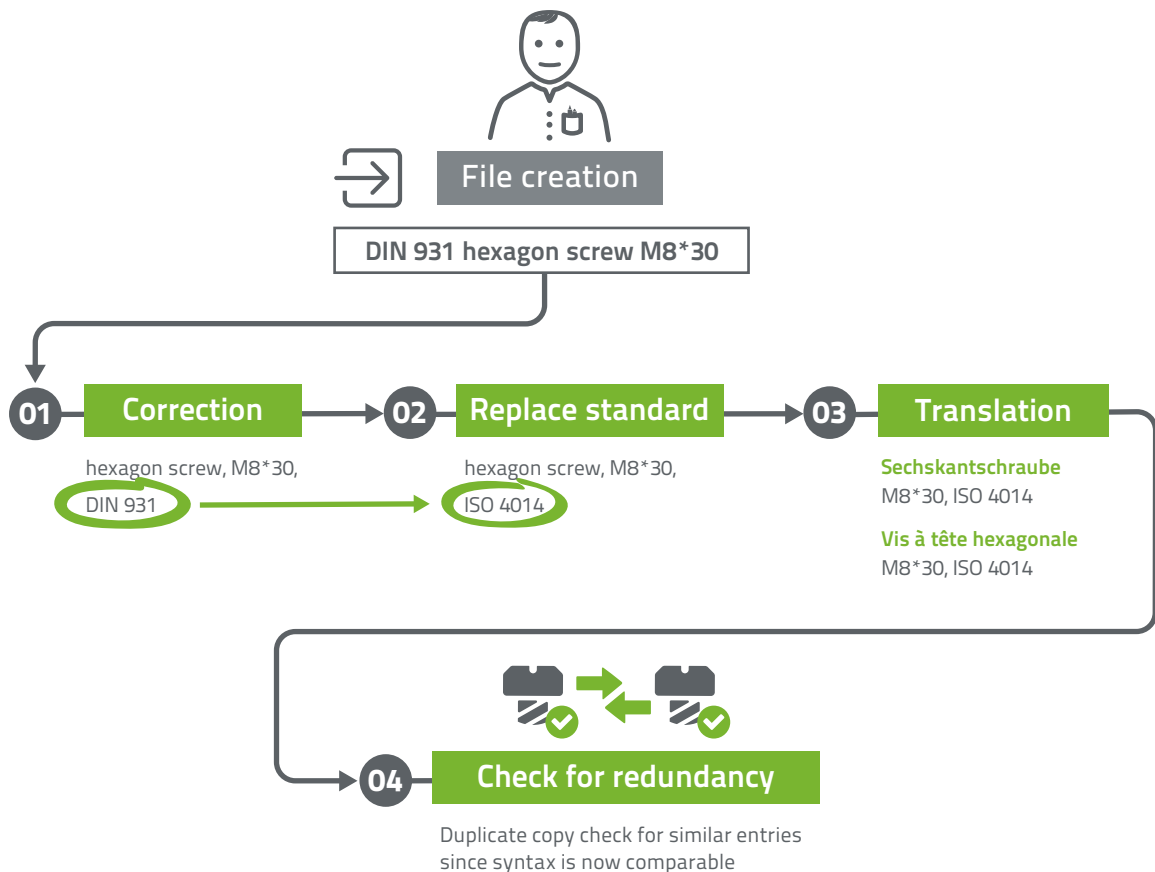




Creating master data by means of semantic rules

The Strategic Parts Management supports you with semantic rules when creating master data:

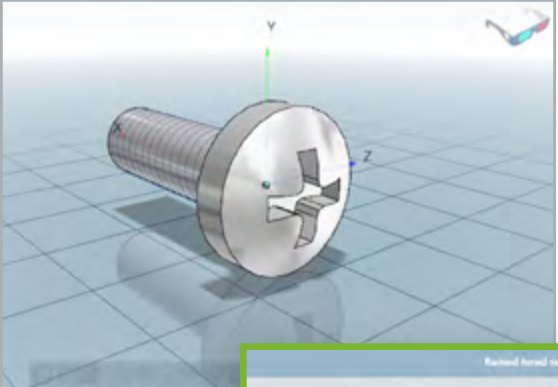
- Regardless of how the user structures the component designation, the entry is corrected according to the syntax specified in the company
- Standards that are entered are, for instance, automatically replaced by current standards, if necessary (DIN → ISO)
- Data can be created in one language and then is automatically translated by the semantic into different required languages
- Due to a uniform syntax of all data, a redundancy check of the newly created component is possible



Automatic transfer of material master data into the ERP system

Due to the ERP integration into the Strategic Parts Management, the material master data fields are automatically filled with part attributes from PARTsolutions. If a user selects a product data record in PARTsolutions, the part attributes are automatically transferred into the file creation mask of the ERP system.

This saves time when creating master data and moreover ensures correctly maintained master data.



The image illustrates the process of data transfer from a CAD model to an ERP system. A 3D model of a raised head screw is shown on the left. A green arrow points from this model to a table of screw specifications in the middle. Another green arrow points from the table to an ERP system interface on the right.

	Table			Profile			
	D3 [mm]	P [mm]	DIN913THREA	L [mm]	DIN913OPT1	DIN913OPT2	DIN913OPT3
M5x6-H	4.019	0.800	Right-hand thread	6.000	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
M5x6-H	4.019	0.800	Right-hand thread	6.000	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
M5x10-H	4.019	0.800	Right-hand thread	10.000	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
M5x14-H	4.019	0.800	Right-hand thread	14.000	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
M5x20-H	4.019	0.800	Right-hand thread	20.000	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The ERP system interface on the right shows the 'create mat.master' screen. It includes sections for 'Header data', 'General data', and 'Basic material'. The 'General data' section is highlighted with a green box, showing the following information:

- Description: **Raised Head Screw**
- Ind. Site Description: **DIN 7935**
- Form: **M5x6-H**
- Office: **RTD (08.BLDG/V5,...)**
- Old mat. number: **REF10002**
- Base Unit: **Pt**
- Material status: **60**
- Inspection Std. Dept.

Who profits?

Engineering ++

Purchasing ++

Standardization ++

Controlling ++

**Is this how you picture
standardization?**

Far from it!



Standardization

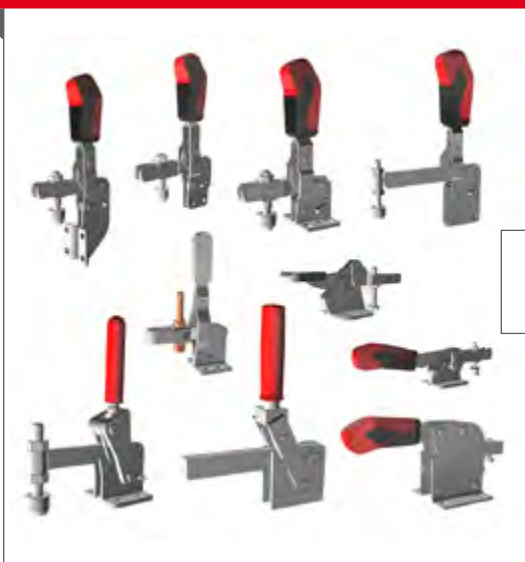
Used to be the department of castaways, nowadays it's a prestigious job

No competitiveness without standardization

The increasing globalization of markets and at the same time the growth of product diversity to meet individual customer demands puts companies under high competitive pressure. If every engineer additionally uses any component he can get a hold of, profitability is seriously jeopardized.

Therefore standardization is one of the key issues for companies to limit their product costs and stay competitive in the long term.

1,000 different parts



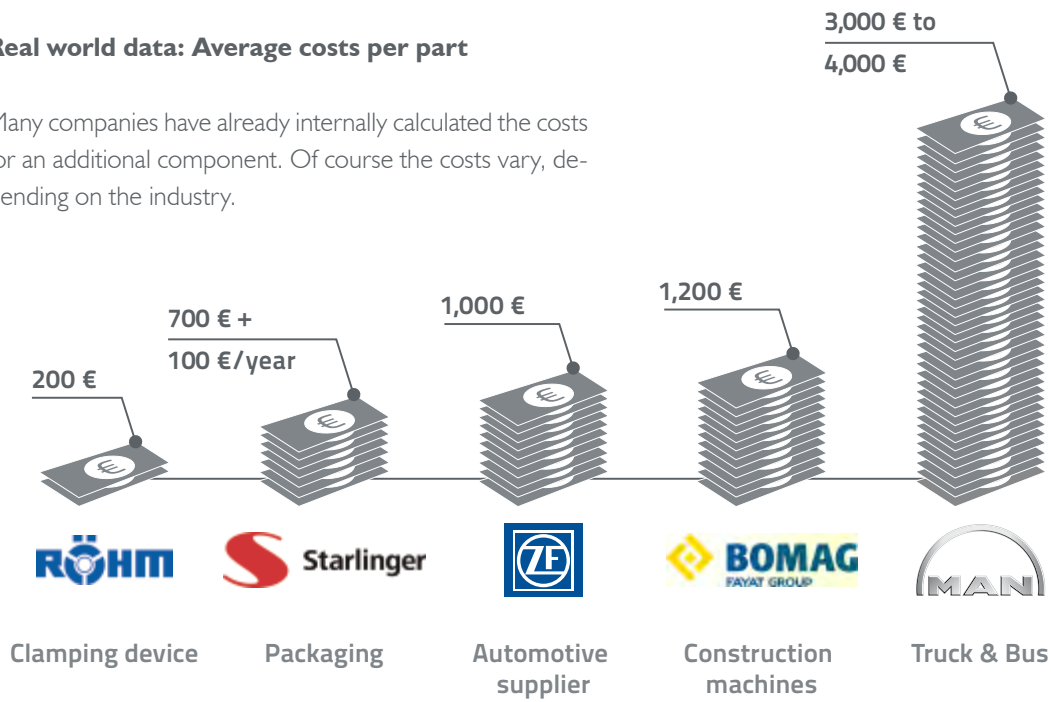
1,000 of the same part



VS.

Real world data: Average costs per part

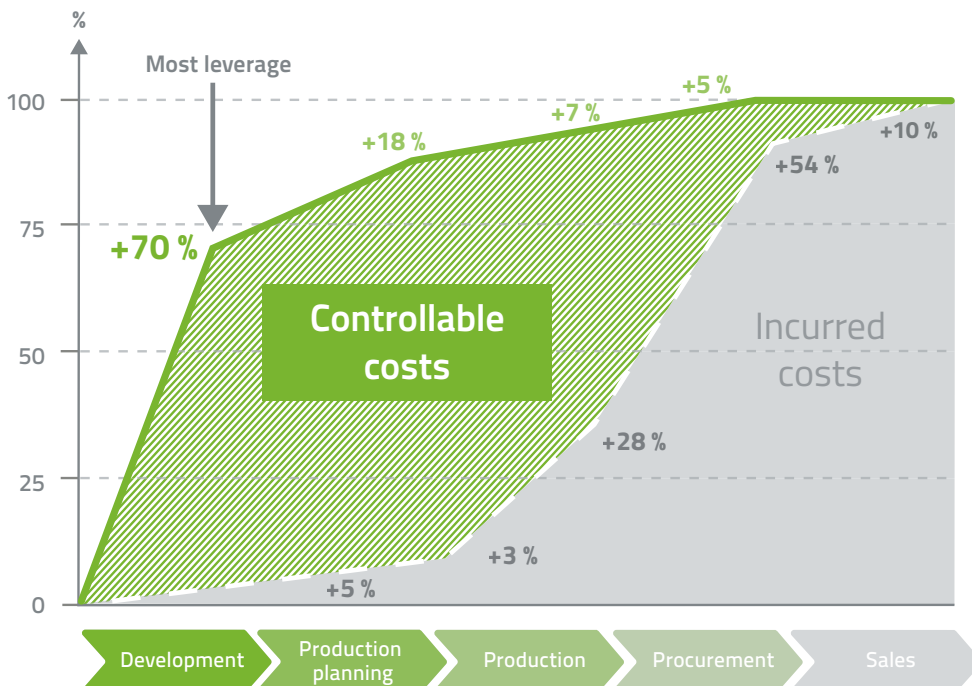
Many companies have already internally calculated the costs for an additional component. Of course the costs vary, depending on the industry.



70% of the total product costs can be influenced during the development phase

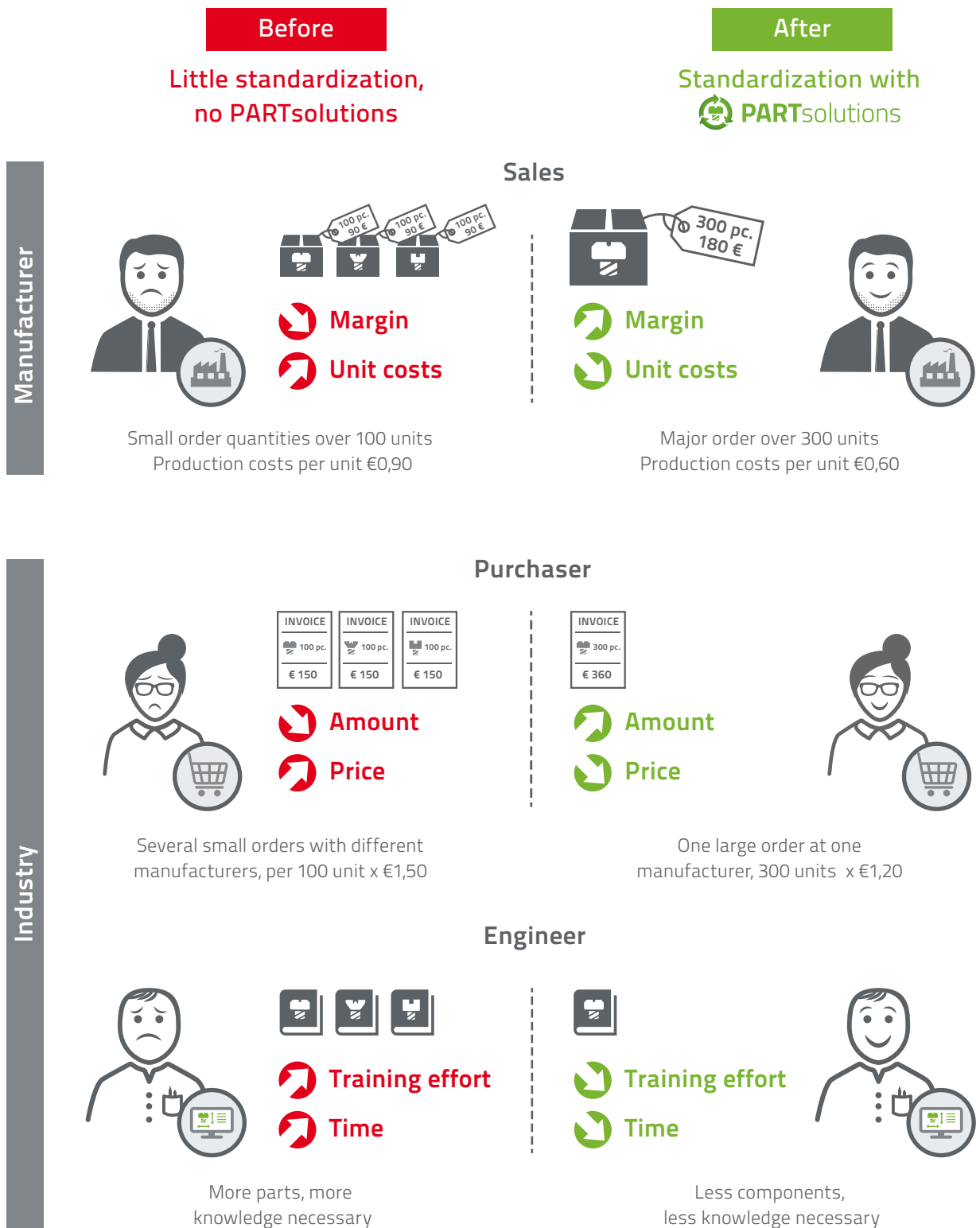
The biggest saving potential can not be realized with purchasing prices but at a much earlier stage.

By optimizing the reuse rate of existing parts and reducing parts multiplicity, you influence the expenses for your product during the development in a way that is not possible at a later point of time.



Use through standardization & reuse of parts for all sectors

Standardization allows companies to continue manufacturing a high product variety, inspite of reduced parts diversity. At the same time processes are streamlined and production and procurement costs are reduced. This results in a perfect win-win-situation for all concerned.



How we support you

With the Strategic Parts Management PARTsolutions, CADENAS offers a tool with a multitude of features to support standardization. This way you can reach a higher standardization level of your used components already during the design phase.

Defining release processes, preferred parts and suppliers

Only with organized structures and clear rules it is possible to optimize the product costs already in the development phase. Only released components marked green are available to the engineers for design. If in certain cases a new component is necessary, it goes through a release process that you defined.

The screenshot displays the PARTsolutions software interface, which is used for managing parts and suppliers. The interface shows a grid of parts, each with a status indicator (traffic light) and a magnifying glass highlighting a specific part labeled 'M6x21'. The traffic light indicators are used to indicate the approval status of the parts:

- Green:** Approved & preferred
- Yellow:** Approved
- Red:** Not approved, no MAT number

The magnifying glass highlights a part labeled 'M6x21' with a green status indicator, indicating it is approved and preferred.

Reducing the amount of parts

 **15 %**

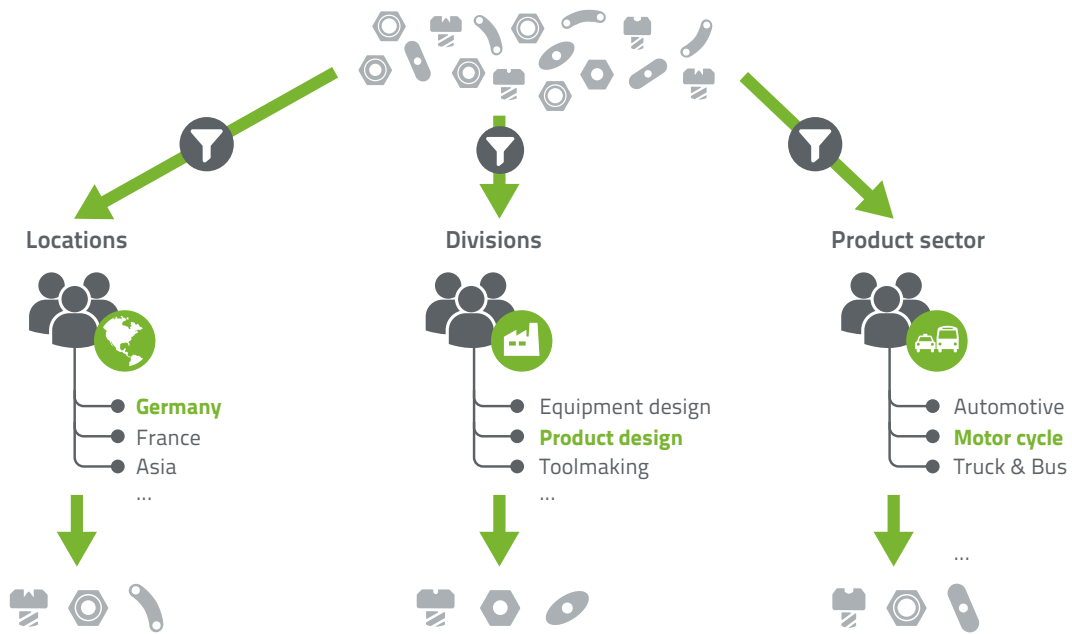
» PARTsolutions links every part with a color code. This helps engineers to select components we defined as standard parts regarding design and procurement. «

Jérôme Mercier
Project Manager
SNCF



Roles & Rights (Locations, business divisions, design type)

The Strategic Parts Management PARTsolutions allows you to tailor a role and right system according to your needs. This way different locations, business or design divisions can be granted different access rights. With this reasonable restricted selection possibility of components you can avoid parts proliferation in companies.



Example for release processes of new parts

Engineer			✓	✓	✓	✓
Standardization				✓	✓	✓
Material testing					✓	✓
Procurement						✓
Approval state		●	●	●	●	●

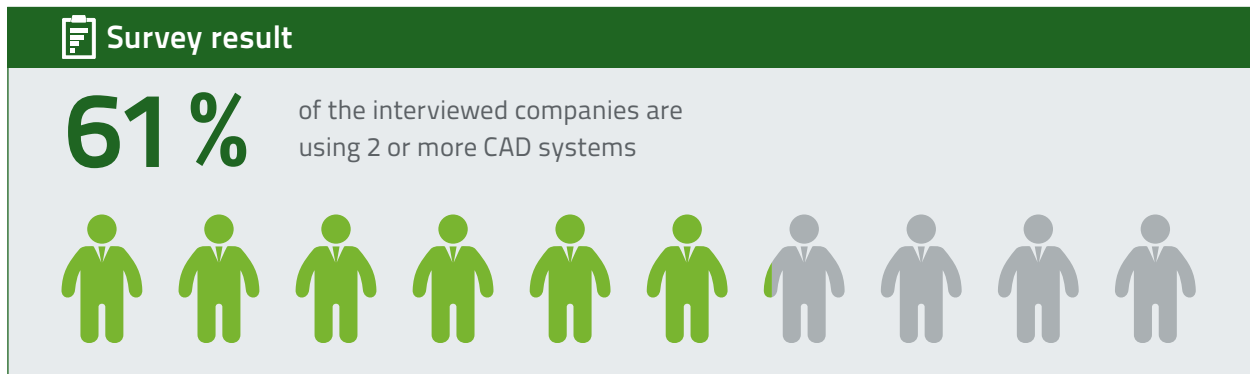
The multi-talent for Multi CAD



Multi CAD

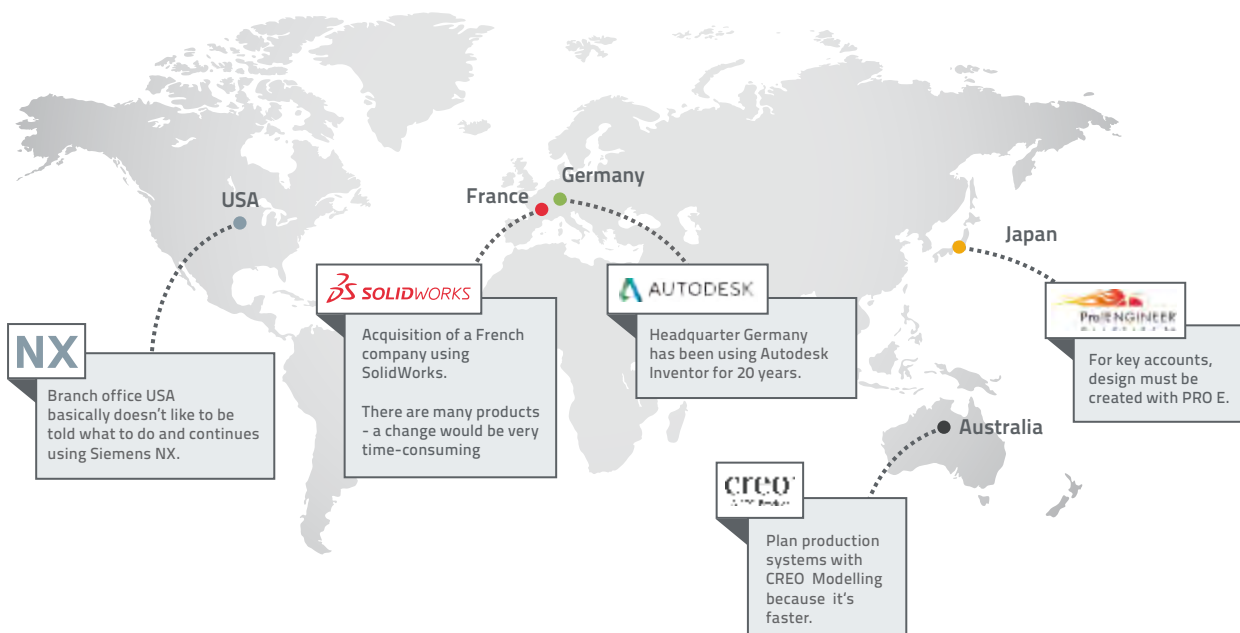
Optimal data for all CAD systems

Most engineers and designers have long ago accepted that productivity loss due to lacking CAD interoperability has become normal. According to a survey among German companies, 61% of all interviewed persons said that they are confronted with more than one CAD system in their company.



Source: survey parts management & product development processes in the industry. CADENAS 2015

Typical Multi CAD Scenario



Reasons for Multi CAD environment i. a.

- Due to mergers and acquisitions with other companies, further CAD systems are introduced into the organization
- Conscious decision to support different design processes in the best possible way (e.g. mechanical design, electronic design ...)
- Customer specifications make the use of certain CAD systems mandatory

Difficulties due to Multi CAD in the daily design work routine

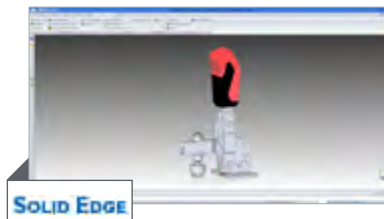
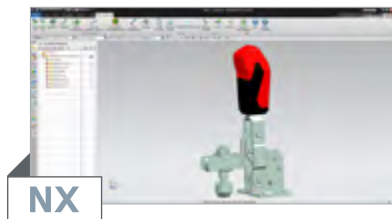
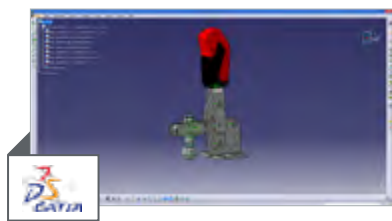
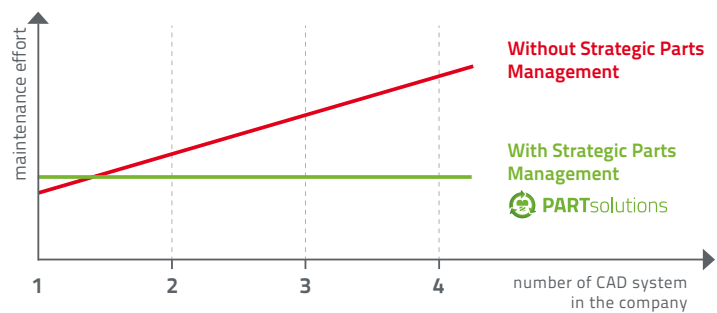
Despite the multitude of different CAD systems global development teams are supposed to develop a product from a single source. Such a Multi CAD system environment involves problems for the user as well as the company:

- Every CAD location has its own CAD specific data pool, data can not be exchanged with other locations or systems, causing unnecessary additional effort when maintaining data
- Several autonomous CAD data pools result in redundant parts creation and parts being procured several times in different ways which leads to higher procurement and storage costs

For companies this means a significant time and cost effort especially in the follow-up processing of CAD models.

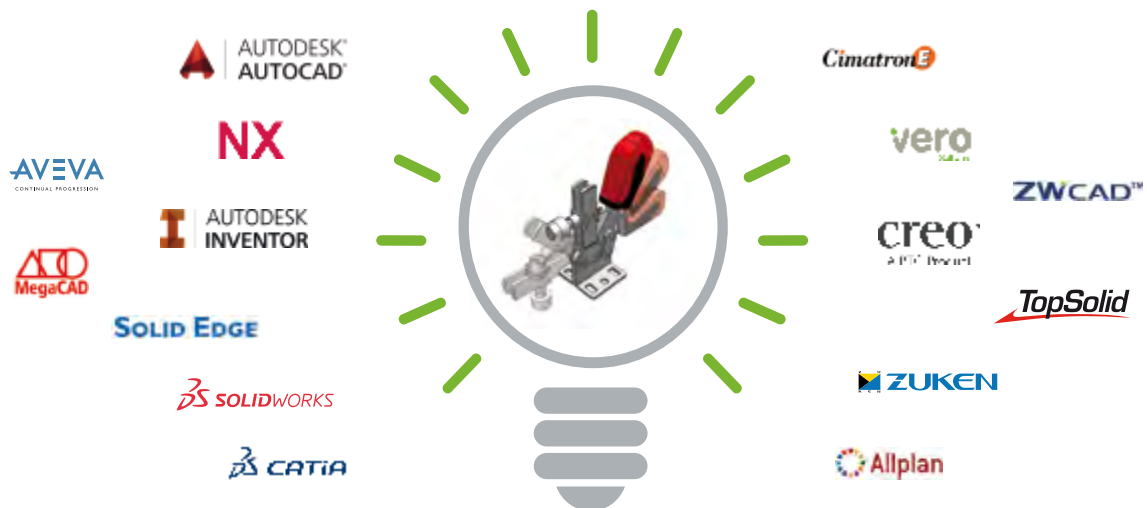
How we support you

CADENAS has a high performing data model which makes it possible to generate native CAD data for all CAD systems. As soon as more than one CAD system is used in a company, the internal maintenance effort is reduced significantly, thus your product development team can increase the productivity.



Intelligent 3D CAD models in 85 CAD formats

This is made possible by the intelligent CAD data of the manufacturer catalogs which are integrated in PARTsolutions. The components are available as native 3D CAD models in more than 85 different file formats of current CAD systems, such as Solid Edge®, NX™, Creo Parametric™, Autodesk® Inventor®, AutoCAD®, CATIA® or SolidWorks®.



Your benefit with PARTsolutions

- CAD Models supply intelligent information in all CAD formats, e.g. kinematics
- The effort caused by complicated data conversions and creating new CAD models is significantly reduced
- Errors and delays are minimized
- Allows optimized workflows, better cost control and a shortened time-to-market

»» We have six different CAD systems at Voith, but only one parts management system for all areas. The effort for standard and supplier parts management is thus decreased considerably. ««

Friedrich Spitzer
Voith IT Solutions

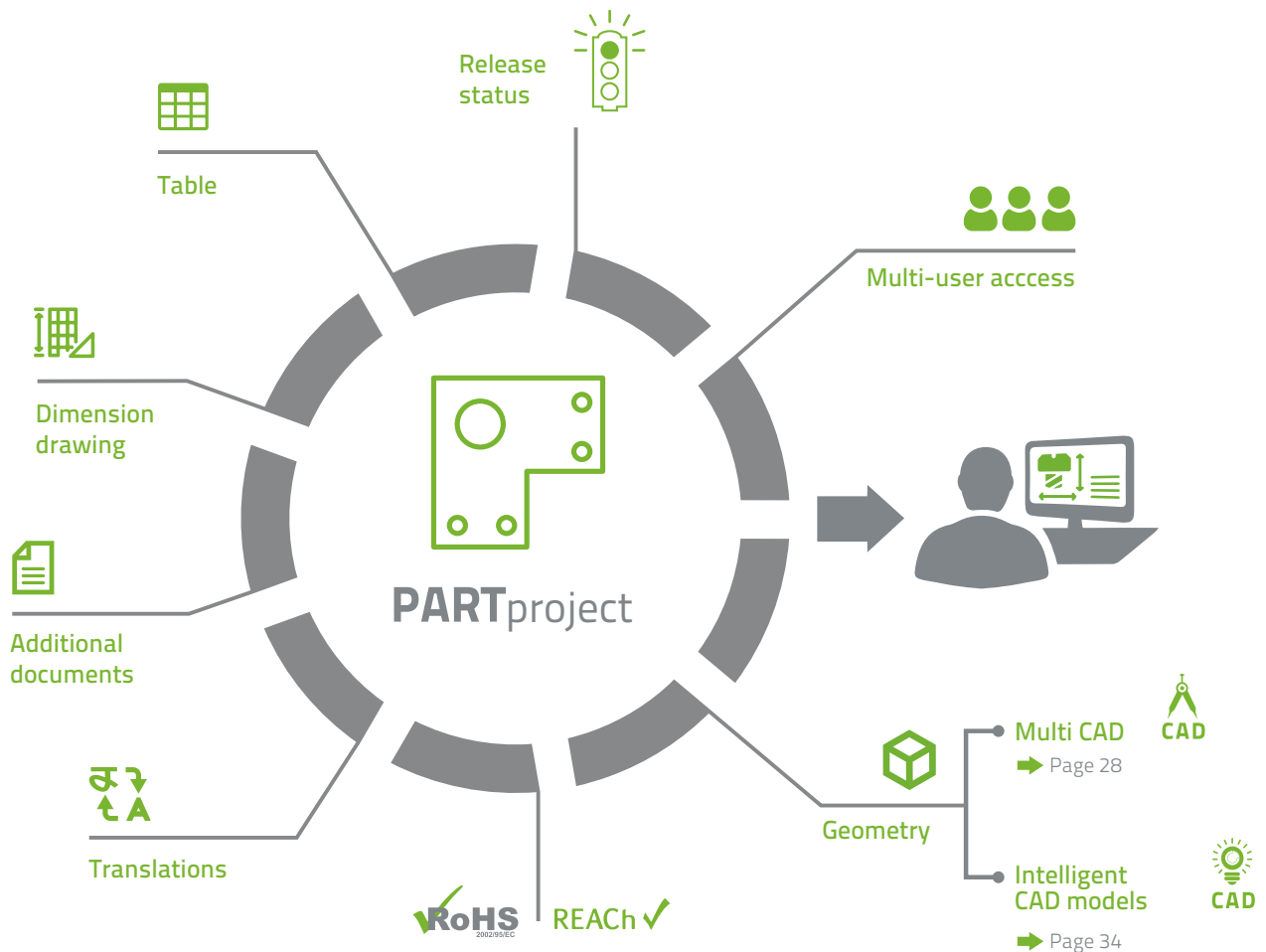
VOITH
Engineered reliability.



Factory standards and catalogs for repetitive parts with PARTproject

In CADENAS' PARTproject, all information needed by the engineer for presenting and selecting components and assemblies is consolidated, such as geometries, tabular layouts of properties, dimension drawings and additional information, etc.

Thus PARTproject supports the standardization department when creating catalogs for Multi CAD self-designed parts. The multi-user check in / check out feature lets you recognize who is working currently on which project. The color coding shows the status of the project.



»» The standardization department can now autonomously manage the 3D standard parts library used in our design department. CADENAS is the tool that was needed for an official linking between the ERP, CAD and PDM systems. ««

Alexis Rivaud
Tool-Data-and Process Workflow Analyst
Airbus Helicopters

PARTproject vs. CAD Software

	PARTproject	CAD
Training effort	3 - 5 days	1 - 2 months
Multi CAD ability	✓	✗
Project management, Multi-user	✓	only with PLM
Languages & Translation Memory	✓	✗

»» Our designers may not download CAD data from the supplier's websites. They have to apply for new parts via CADENAS, which are released centrally. ««



Bernd Postaremczak
Coordinator Parts Management
SMS group GmbH

SMS  **group**

Who profits?

Engineering ++

Purchasing ●

Standardization ++

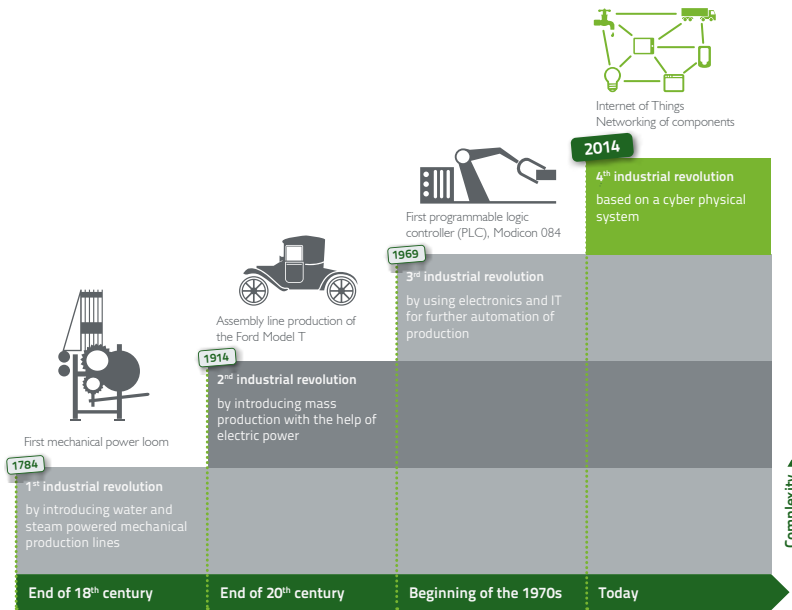
Controlling +

Not possible yet,
but we're
damn close



Intelligent standard & supplier part catalogs

This is how information exchange of your components will work out

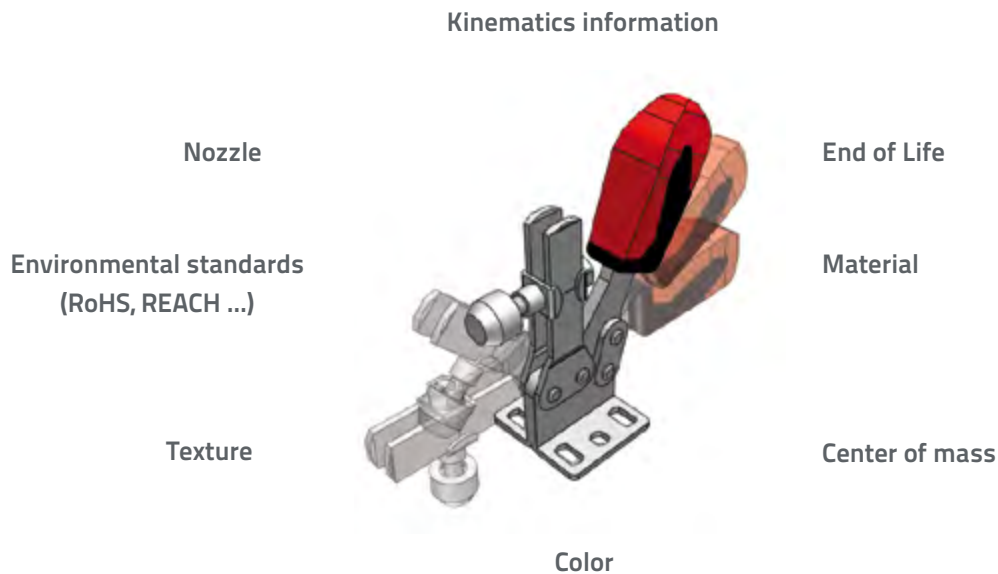


“Industry 4.0” and “Internet of things” are the keywords showing that there is a continuously increasing link between the real and the digital world.

The more singular components communicate with each other in the manufacturing process, consequently the digital data must also be provided in an intelligent form.

What are intelligent CAD models?

component geometry alone is not sufficient for an engineer to make a decision, just as important is the component’s meta data. These make it possible to test motion sequences already in the CAD system and take information into account such as centers of mass, material or environmental standards during the product development etc.



Which intelligent information do engineers need?

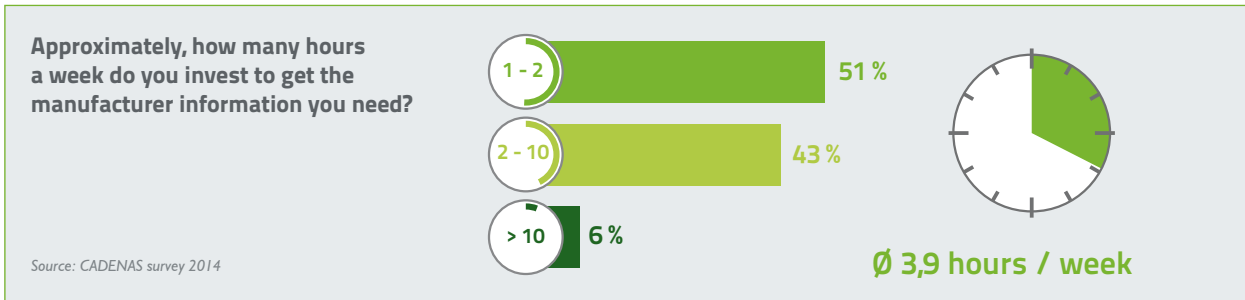
A survey conducted by CADENAS among 122,200 users in 2014 shows which intelligent information CAD models should contain so that engineers, technicians and purchasers can do their daily work smoothly.



Source: Which information do engineers need, CADENAS 2014

Time required for research without intelligent CAD data

If there are no intelligent CAD models, how much time do engineers invest weekly to get the necessary manufacturer information?



Effort for information procurement per engineer

Calculation is based on the average total of working hours:

- 8 hours per day
- 230 days per year
- 39 years until retirement
- €80 costs per hour

14,466.49 EUR per year

882 working days in the life of an engineer

Effort for the German economy

830,000 engineers are working in the design & development sector in the Federal Republic of Germany

Source: VDI, Ingenieure auf einen Blick 2012

corresponds to annually:

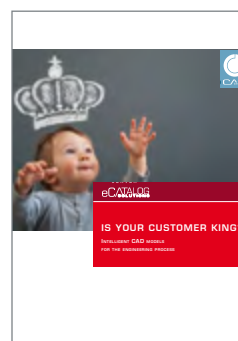
12,000,000,000 EUR

Information on the subject

This and other information on the subject "Intelligent CAD models" can be found in our brochure "Is your Customer King?"



Information on the subject
www.cadenas.de/brochure/smart-parts





How we support you

PARTsolutions by CADENAS provides you with product data from more than 700 certified manufacturer catalogs, to implement them into your design in the best possible way.

Why should a CAD model always be in a native format?

Since providing intelligent information in a STEP format is only possible to a certain extent, PARTsolutions by CADENAS offers native CAD models that can be used in your design without efforts.




<div style="border: 1px solid gray; padding: 10px;"> <p>Neutral CAD Format</p> <p>Simple CAD model, the engineer has to convert and rework and enrich with further manufacturer information first.</p>  </div> <div style="background-color: red; color: white; padding: 5px; transform: rotate(-15deg); display: inline-block;"> Post-processing: 12 MINUTES </div>	VS.	<div style="border: 1px solid green; padding: 10px;"> <p>Native CAD Format</p> <p>Intelligent CAD model with all design information that can be used immediately in the design without any search effort</p>  </div> <div style="background-color: green; color: white; padding: 5px; transform: rotate(-15deg); display: inline-block;"> Immediate use </div>
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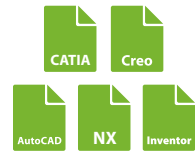
Reasons for native CAD data

- Native CAD models for maximum ease of use and functionality during the design phase, e.g. information about kinematics, work spaces, the simple simulation of designs without manual effort is possible
- CAD data enhanced with information avoids queries on the component or complex research almost entirely
- Better accuracy than with converted CAD data
- Possible to regard components according to certain standards (RoHS, REACH, DIN, ISO ...)
- And much more

➤➤ PARTsolutions generates intelligent parts for the respective CAD system in use, which allows the best possible processing and excludes loss of data. ◀◀

STEP vs. native

 possible
  only possible to a limited extend
  not possible



STEP

native formats

	STEP	native formats
Assistant & calculation guide	✓	✓
Automatic 2D dimensioning	✗	✓
Collision & work spaces	✗	✓
End of Life	●	✓
Coloring	✓	✓
Center of gravity & mass	●	✓
Procurement locations	✓	✓
Labelling standardized parts	✓	✓
Kinematics	✗	✓
Classification according to eCI@ss	✓	✓
Materials & substances	✗	✓
Multiple level of detail	✗	✓
Nozzle & connection information	✗	✓
Pictograms & translations	✓	✓
Intelligent placement & published elements	✗	✓
Standard delivery times	●	✓
Environmental standards	●	✓
Custom tariff numbers	●	✓
Additional documentation & case studies	✓	✓
Accessories & spare parts	✓	✓
Uniform variable designation	✓	✓
Subtraction solids & assembly geometry	✗	✓

Who profits?	Engineering ++	Purchasing ●	Standardization ++	Controlling +
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The early bird catches the „worm“



PURCHINEERING

How purchasing comes into play early on

Often there are different opinions in the departments about which component is the best: While the purchasing department prefers a product with a favorable price, an engineer chooses the best technical product.

Survey result

5%

of the interviewed companies said that purchasing decides which component is purchased.



Source: *parts management & product development process in the industry, CADENAS 2015*

In practice, an early involvement of purchasing happens way too seldom. Engineers develop a product on the basis of the required technical specifications. Afterwards a parts list is handed over to production planning. In consequence, the job of the purchasing department is only to procure the defined components at the best prices.

PURCHINEERING overcomes obstacles

PURCHINEERING is a combination of the words »purchase« and »engineering« and aims at the optimized cooperation of purchasing and engineering. Without an intensive cooperation of the purchasing and development departments, companies cannot fully realize their competitive edge.



Disadvantages due to a lack of cooperation between the purchasing & engineering departments

- Preferred parts and suppliers are not defined
- Components that could be procured externally are self-made, which is very costly (make-or-buy)
- Components and suppliers are not selected in regard to the technical and economic features
- No optimization of the process costs for C-parts, e.g. with Kanban

How we support you

Who controls the parts, which are created by the engineer ?

If intelligent search methods are available to the engineer, the conditions are ideal that standard parts or parts preferred by purchasing are used within the design.

But what happens if the engineer does not search or only searches superficially? The parts and supplier diversity increases, self-designed parts are developed instead of using supplier parts available on the market and preferred suppliers with existing framework contracts are neglected.

How are engineers "wired"



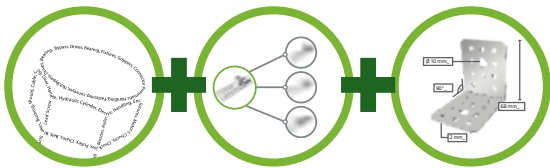
A new component is needed



The smart guy



Using intelligent finding, combination search



Same or similar component is found in the parts master



Still, errors can occur during the search or economic aspects are disregarded

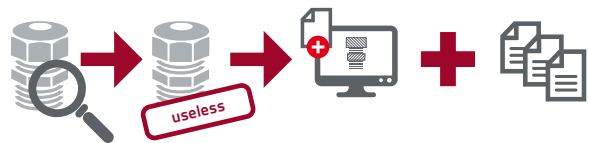


The "I have been doing it this way for 20 years" guy



"Intelligent finding? That's nonsense, I didn't need that back then either"

Superficial search without results & creating new geometry in CAD, complete new creation of master data



Creating duplicate copies

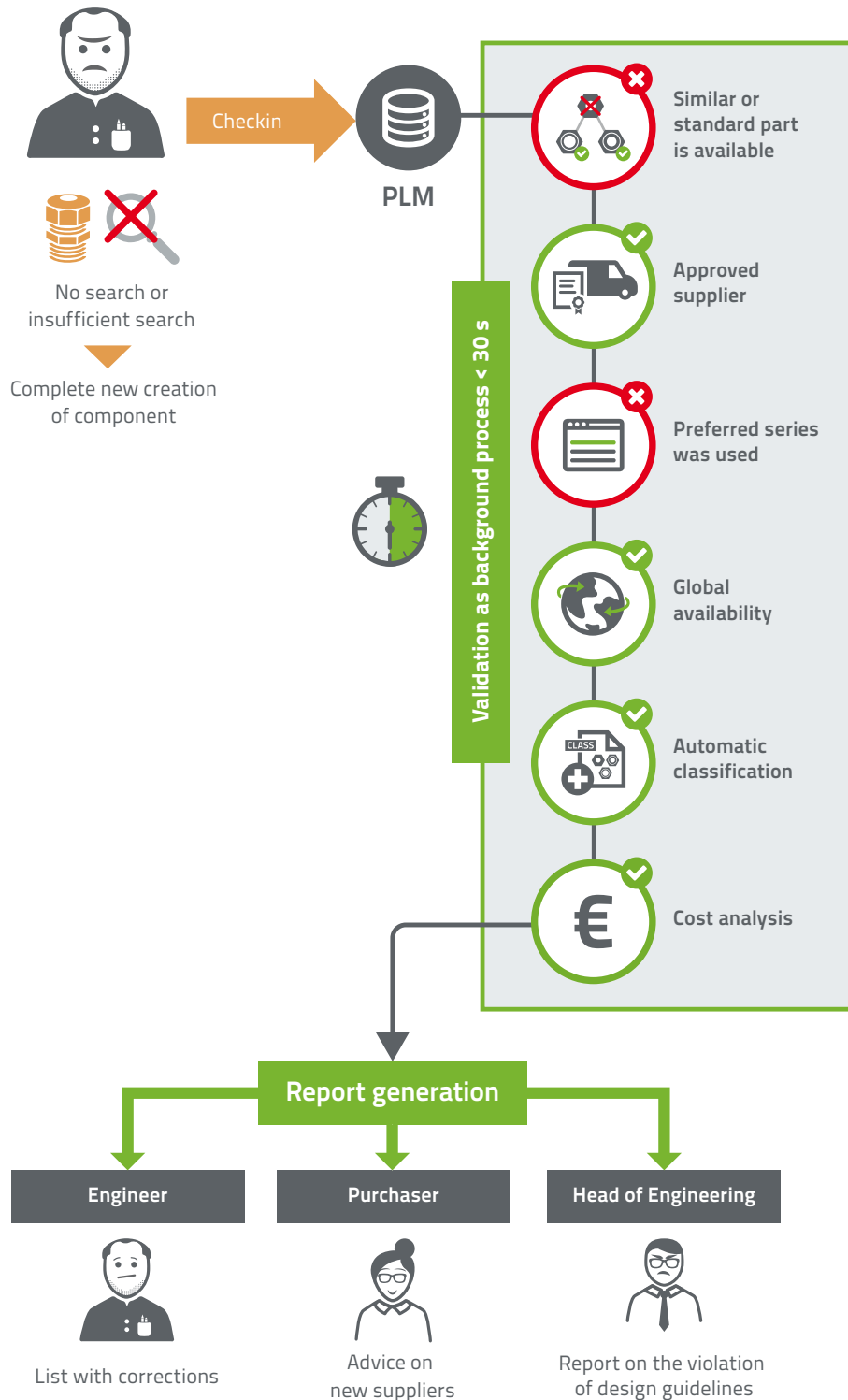


Higher parts management costs

PURCHINEERING 2.0: To trust is good, but to check is better!

With PURCHINEERING 2.0, an automatic service in the background monitors all parts that are newly checked in and examines whether the part really has to be created anew. If the new creation was unjustified, a report is generated over night and sent to the engineer concerned.

If desired, it is also possible to define different escalation levels: For instance, a report can be sent to the direct superior in case of triple misconduct.

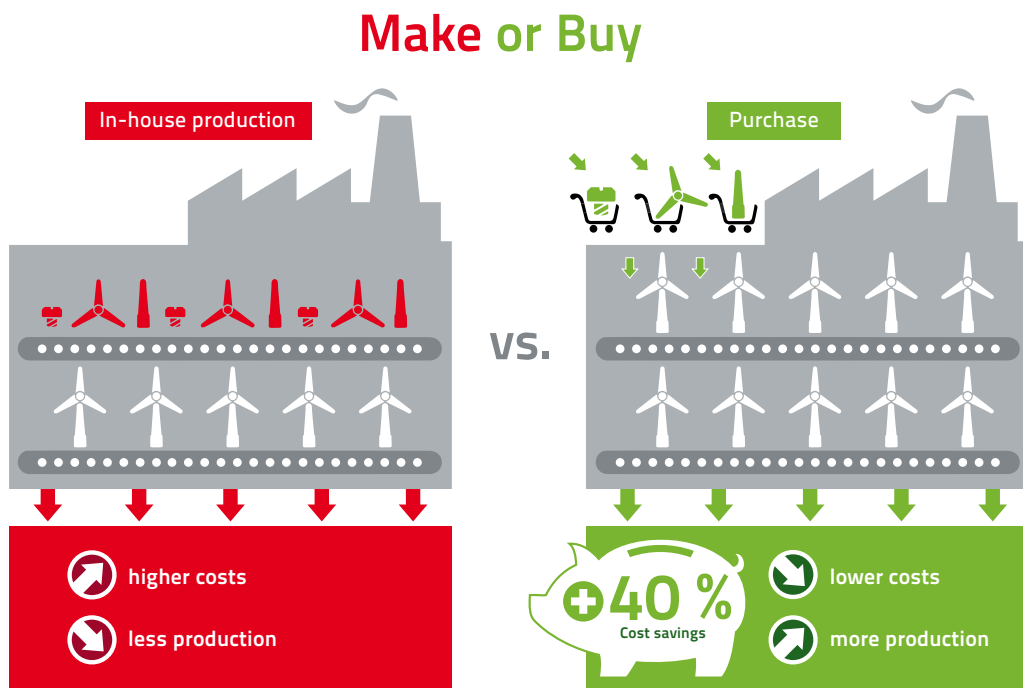


What PURCHINEERING can also offer you

Conduct make-or-buy analyses

Many companies produce most of their components themselves, although supplier parts are available to be purchased. The increased use of supplier parts however leads to new production capacities allowing companies to concentrate more intensively on their actual core competency.

Only PARTsolutions' Geometric Similarity Search can enable engineers to compare internal and supplier parts. This enables manufacturers to find the same or similar products from international manufacturers in the external parts world and seamlessly integrate them into their designs.



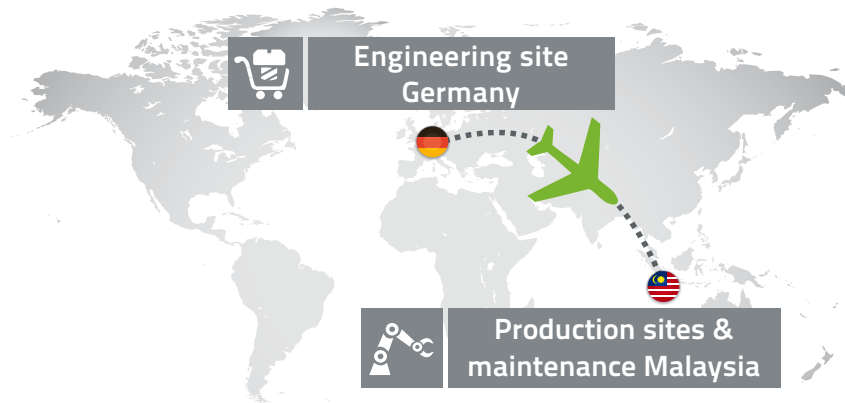
Product & supplier transparency

The Strategic Parts Management PARTsolutions by CADENAS offers purchasers and engineers the possibility to compare the technical with the commercial features of a component. This is the basis for the choice of the perfect component.

	Supplier A	Supplier B	Supplier C	Supplier D	Supplier E
Part: Hand wheel	✓	✓	✓	✓	✗
Material: Steel	✓	✓	✓	✗	✓
Availability: immediately	✓	✓	✗	✗	✗
Price: <5 €	✗	✓	✓	✓	✓

Global Sourcing

Global Sourcing is a procurement strategy which aims to use both local and international suppliers. In doing so, the choice should not only be based on price, but also location, as transport may be more expensive than the product itself.



Benefits of PURCHINEERING

CADENAS' Strategic Parts Management PARTsolutions offers you the possibility to optimize the cooperation between purchasing and engineering and realize tremendous competitive advantages.

- Simple to integrate into the existing business process
- Background process creates no effort and cannot be bypassed
- Signals at an early engineering phase
- Information to the designer or other departments
- Increased restriction of creating new parts for all kinds of parts
- Preventing new suppliers
- Preventing new sizes
- Focus on supplier parts instead of self-designed parts

»» In PARTsolutions our engineers are shown a sensible selection of available components, which were determined by purchasing in advance. This supports us decisively in consolidating our suppliers. ««



Thorsten Raabe
Manager Design Mechanical Development
AIM - Assembly in Motion GmbH



Who profits?

Engineering +

Purchasing ++

Standardization +

Controlling +

**You can really find your way
around in such chaos?
You sure?**

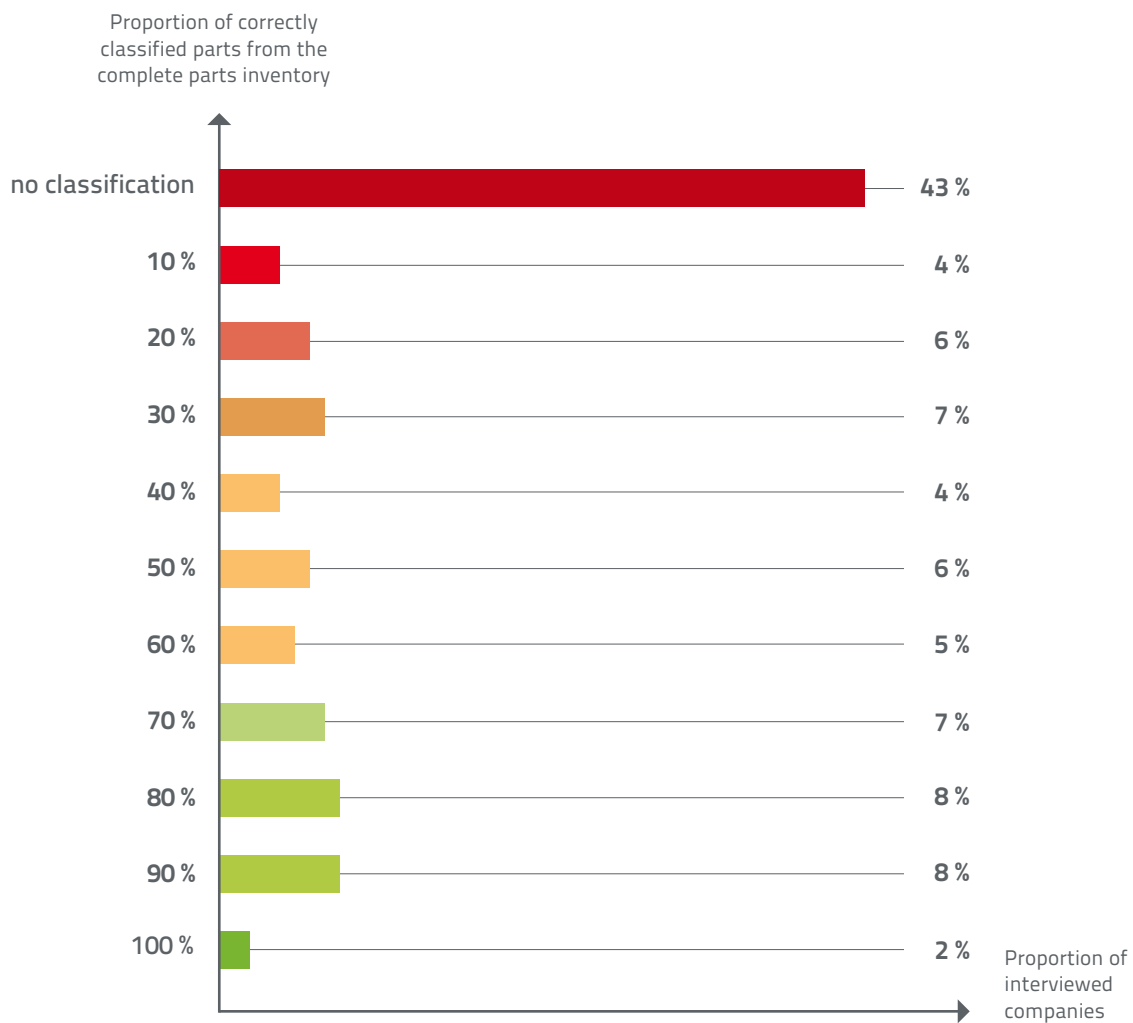


Classification

A tidy house means a tidy mind

Classified parts master data allows engineers and purchasers to efficiently find the required component. Still, most companies have trouble successfully implementing a classification system for their parts master data.

What percentage of your parts master is already classified in a correct way?



Source: parts management & product development process in the industry, CADENAS 2015

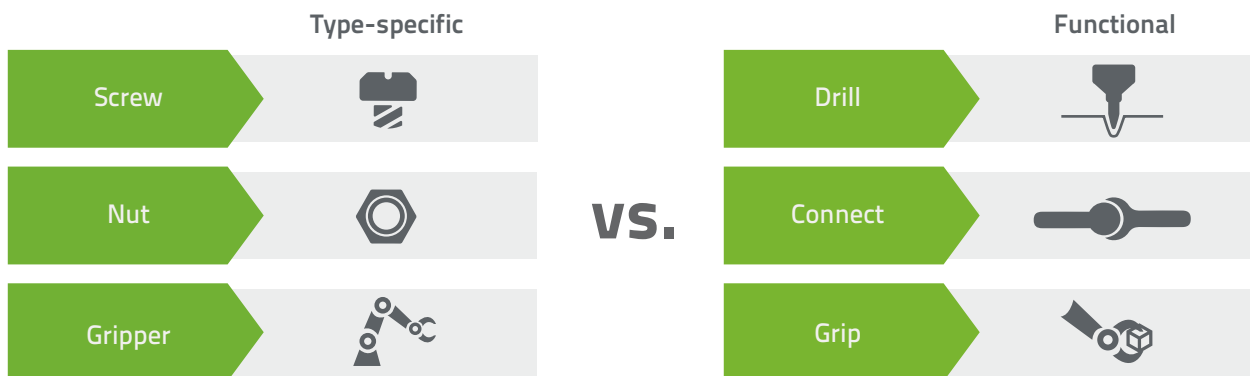
Classification means a lot of effort but what is the result?



Obstacle 1: Which system is the right one?

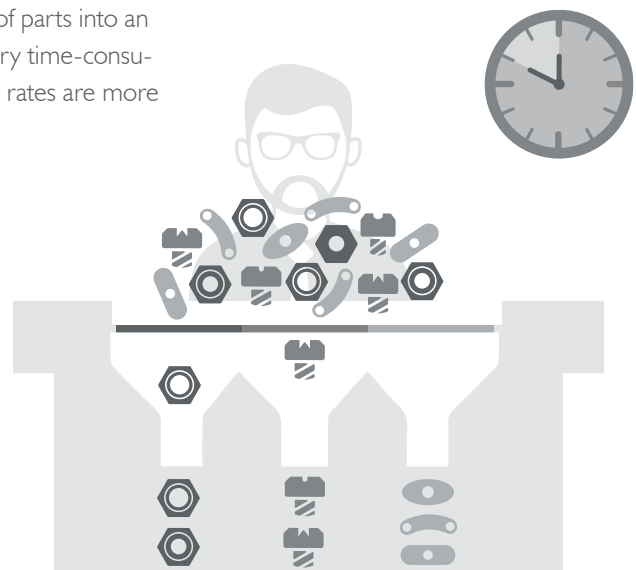
Universal classifications such as eCI@ss or ICS are perfect for standard components. However, for company specific products they are usually poorly-suited.

Another obstacle where many companies already fail is the question of whether one should classify functionally (connecting, milling, drilling ...) or type-specifically (screw, nut ...). A functional classification would be especially good for inexperienced young professionals.



Obstacle 2: Time-consuming manual classification

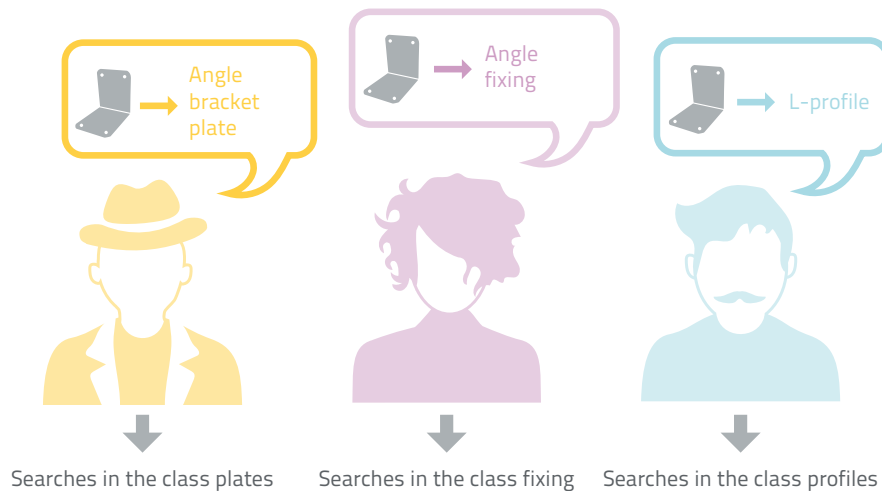
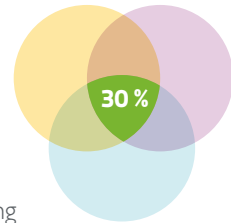
The correct manual assignment of parts into an existing classification system is very time-consuming and costly. Therefore error rates are more likely to occur.





Obstacle 3: Little correspondence between the users & language barriers

Many already fail when trying to define the right classification system, some companies might make it to the actual classification of the parts master data. However here, at the latest, it becomes clear, why only few companies possess a parts master that is classified correctly to 100%: Different employees have a different subjective perception of how a part should be classified correctly. According to expert estimates, the matching rate of a component classified by three different employees is around 30%.

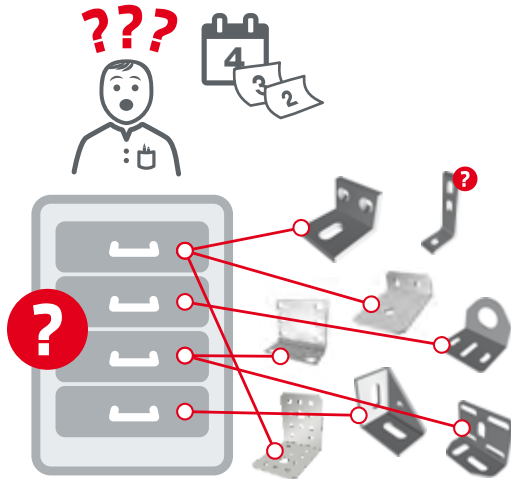


Although the German language is very suitable for classification due to its differentiation, there are many technical terms that cannot be distinguished in other languages. This makes the correct classification of components harder in companies where multilingualism is inevitable.



How we support you

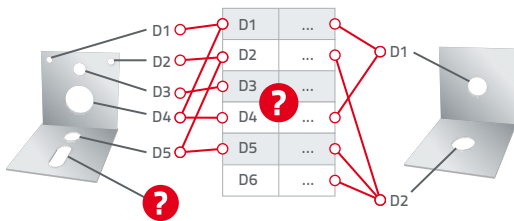
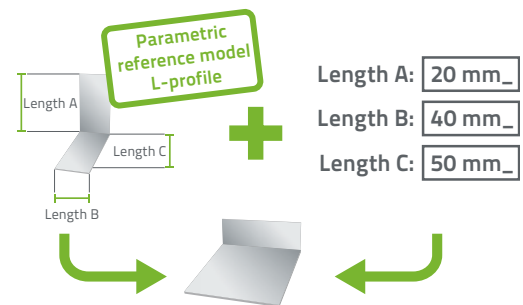
Classification 2.0 – Parametric reference model instead of manual classification



With classification 2.0 parametric reference models are stored for each class. If for instance, an L-profile with certain dimensions is necessary, the system looks for parts that are geometrically similar to the parametrically prepopulated reference model.



In contrast to the traditional classification, there is no complex preliminary manual work necessary with classification 2.0.



Some shortcomings of the conventional classification systems can also be compensated: If for instance drilling holes should be regarded in the classification, then additional classes would be actually necessary for the amount of holes (L-profile with 2 holes, L-profile with 3 holes ...). Information about the size and arrangement of the drilling is anyway still not yet available.

With classification 2.0, it is possible to take part classes (e.g.: L-profiles) as well as the amount and sizes of holes into account. With a topology search the system finds in your database the exact component with the necessary drillings for your design in an uncomplicated way.

Topology: 3 holes, Ø 5 mm



Checking amount and size of the holes in the complete database

Which order type are you? Decide for yourself!

How to process and find information in the best way basically depends on your parts master, your company processes and the working methods of your employees.

Whether semi-automatic classification or intelligent finding, with the innovative features of the Strategic Parts Management PARTsolutions, CADENAS offers the best solution for all approaches and requirements.

	Semi-automatic classification with Classification Toolbar	Classification 2.0 see pg. 50	Intelligent finding with PARTsolutions see pg. 6
Order system	Necessary to build up a class system	Building up a parametric reference model class system	No effort
Classify	High effort	Definition of the part if asked	No effort
Correspondence between classifier/user	Medium	High	High
Operation & training	low training effort, but knowledge about the classification system is necessary	Simple operation, but knowledge about classification system is necessary	User has to work strategically, intensive training
Ignorance (No-use) by user possible?	Yes	Yes	Now background search points out parts to user
Exact search for fixed class and defined values	Yes	Yes	Limited
Showing senseless terms	No	No	Yes, but also innovative suggestions
Suitable for which parts?	Simple and complex parts with little deviations regarding kind and amount of characteristics, parts without CAD geometry or adhesives, oils, electrotechnical parts where the outer form is irrelevant	Simple and complex parts with any CAD geometry	Parts that can be sketched easily, complex parts with distinctive topology, CAD geometry existing, complex geometry with few exact parameters

» Engineering is excited about the new search possibilities with PARTsolutions. Especially the combination of classifications and sole geometric similarity is liked very much. The fast and complete 3D preview has become indispensable for us. «

Lutz Ginsberg
Manager Development City Bus
MAN Truck & Bus AG



Who profits?

Engineering

Purchasing

Standardization

Controlling

Bad communication leads to trouble down the line





International communication

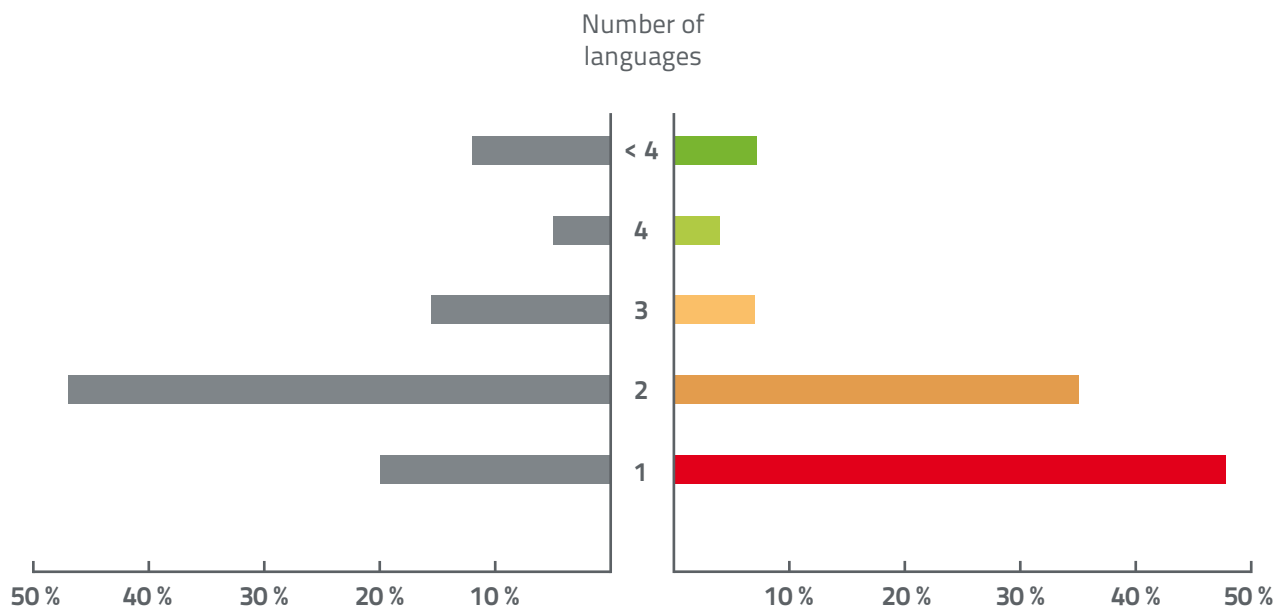
How international communication can work out in the future

Globalization does not stop in the development department. Whoever wants to stay competitive has to integrate globally available knowledge in product development. That is why development sites spread around the globe are often an inherent part of the business strategy.

Thus, companies have the task to coordinate and synchronize the development work of their teams distributed around the globe - even if they speak different languages.

 **In how many languages should your parts master ideally be available or how many languages are spoken in your company?**

 **In how many languages is your parts master actually available in the system?**



Source: Parts management & product development process in the industry, CADENAS 2015

»» When I first founded CADENAS, I wouldn't have thought that other languages could be relevant for our software except German. First the European languages kept us occupied, then the Asian. In retrospect, switching to multibyte characters cost us a lot of time. ««



Jürgen Heimbach
CEO
CADENAS GmbH

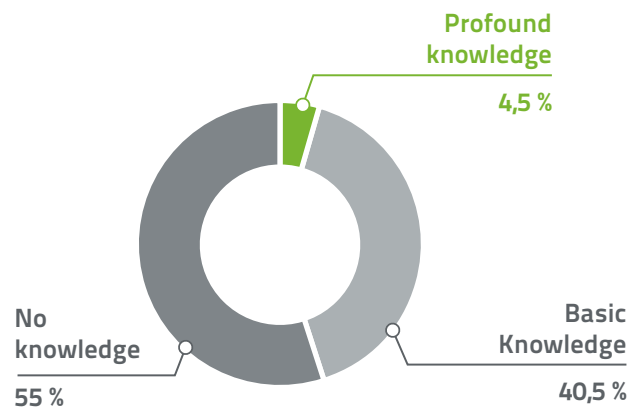


How we support you

Multilingualism of the master data

Although 45% of the engineers speak English, less than 5% have a truly good command of the English language.

Existing English skills among engineers:

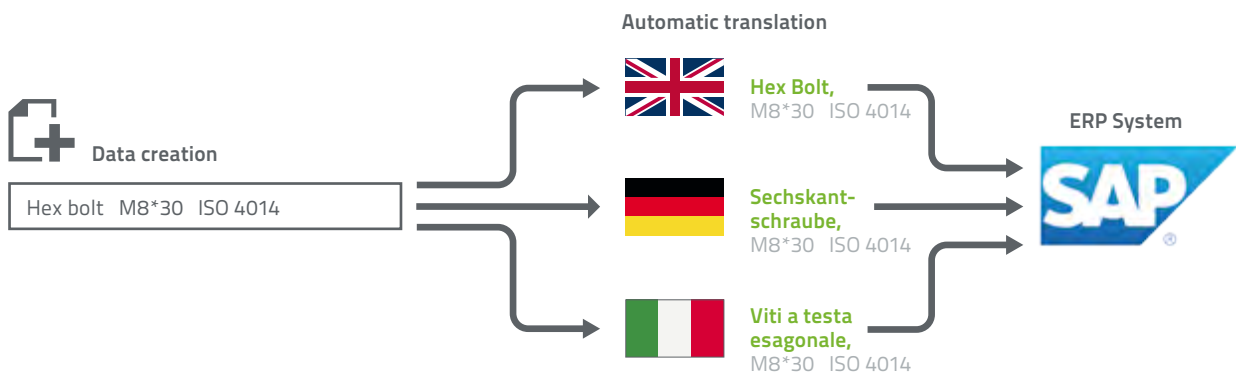
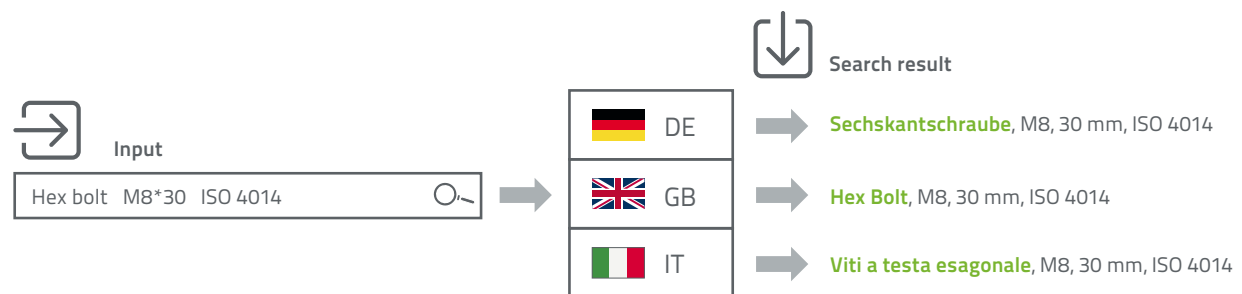


The Strategic Parts Management PARTsolutions by CADENAS is able to offer standard and purchased parts in many international languages. This means that searching in one particular language for example won't trip you up.



Data creation and search in all languages with semantic

Users can create data in CADENAS' Strategic Parts Management PARTsolutions in their native language. By means of the semantic stored in the system, the component is automatically translated into different languages and can be easily found by all international colleagues.



» With the implementation of PARTsolutions, we are provided with all required foreign standard and supplier parts. Data from SAP systems can be directly integrated into the PDM systems. This saves us time and costs in design, improves information technology and optimizes the effective management of standard parts. «

Guangming Wang
Project Manager
CNR-Tangche



Who profits?

Engineering ++

Purchasing ●

Standardization +++

Controlling +

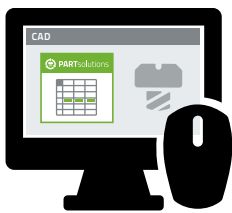
**Runs in any
environment**



Flexibility at any location

The workplace of engineers and purchasers is no longer restricted to their own office. The trend is towards decentralized working. Mobile and stationary access to all information of the project are indispensable. The prerequisite for a smooth project flow is to have access to project data from anywhere, independent of the end device.

Desktop application and seamless solutions



PARTsolutions by CADENAS has numerous interfaces to CAD systems (Solid Edge, NX, Creo Parametric, Autodesk Inventor, AutoCAD, CATIA, SolidWorks ...), PLM systems (Teamcenter, Windchill, Enovia ...) and ERP systems (SAP, proALPHA, infor ...). Thus purchase, engineering and standardization obtain all managerial and technical information about a component at a glance without changing the system.

Access at the construction site, factory or in meetings



The times are over where you had to bring along loads of file folders filled with design drawings or project documents, to have at least the most important information available. In spite of the great effort, access to PLM and ERP data was only possible from the office desk.

By using the Strategic Parts Management and the available PARTsolutions app, engineers and planners always have access to all relevant information from internal systems.

Access for external engineering service providers



The cooperation with external engineering service providers is often difficult. The main reason for this is a different data pool: While the internal product development team has all necessary information, external project partners only have restricted knowledge.

Optimize the communication with subcontractors and engineering service providers with CADENAS' collaborative online supplier portal PARTcommunity Enterprise and promote externals to observe your internal.



Mobile App

Android, iOS & Windows 10



- Search and visualize in 3D within your self-designed, standard and supplier parts world
- Call up ERP information from systems like SAP
- Find components with 2D Sketch Search and 3D Geometrical Similarity Search



Access via role and rights system, depending on the planned project

External service providers

via web platform



- Direct linking to the Strategic Parts Management PARTsolutions: all internal and external participants of the project have the necessary information from PLM and ERP
- Restricting parts multiplicity at external suppliers, since internal standards are also available to external suppliers
- Simply activate and terminate accesses, depending on the project duration and statistical traceability of activities
- CAD data and component geometries are always up-to-date
- For the duration of the mutual project, all released standards and manufacturers can be listed. Filtered standards as well as CAD data can be provided as a download service

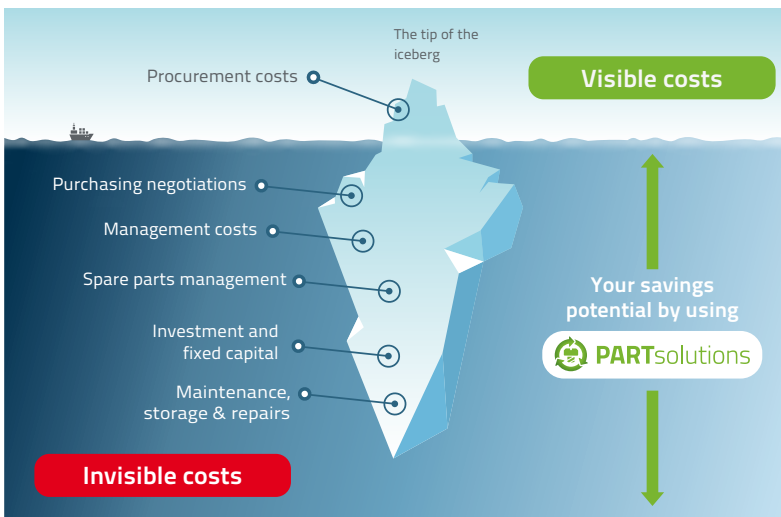


Do you prefer
flushing your money
down the toilet?

Controlling PARTsolutions - A solution that pays off!

Market pressure on companies constantly increases in the mechanical and plant engineering sector. This is often countered by a growing individualization and differentiation of the products, which is a benefit for the customer but also a rise of the variant and parts diversity and thus increases overhead costs.

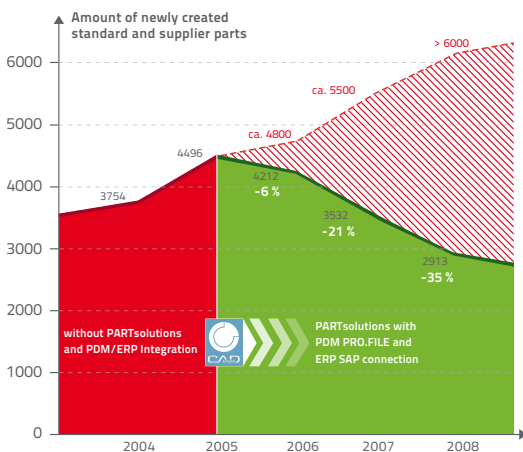
The procurement price is only the tip of the iceberg!



Looking at the entire life cycle of a product, the complete parts costs are much higher than the procurement price. Factors like purchase negotiations or administration costs are often disregarded.

This is why reducing the parts multiplicity with PARTsolutions influences the costs for your end product sustainably already in the development phase.

Other companies already set precedent: Successful use of the Strategic Parts Management PARTsolutions



» Due to the coupling to SAP materials management 35 % fewer supplier parts were newly created. The savings at process costs are significant. «



Peter Zander
KUKA Systems GmbH



Many of the world's leading companies already rely on PARTsolutions

With PARTsolutions by CADENAS, it is possible to reduce the total product costs in development and design by 70%, which secures the competitiveness of your company in the long term.

This is why already 154 out of Germany's top 1,000 world leading companies rely on CADENAS' software solution.

» PARTsolutions is an inherent part of the global MAN PLM strategy and allows our engineering innovative possibilities to work globally, efficiently and successfully. «

Alexander Reuter

IT-Department Manager CAx Applications, Methods & Infrastructure

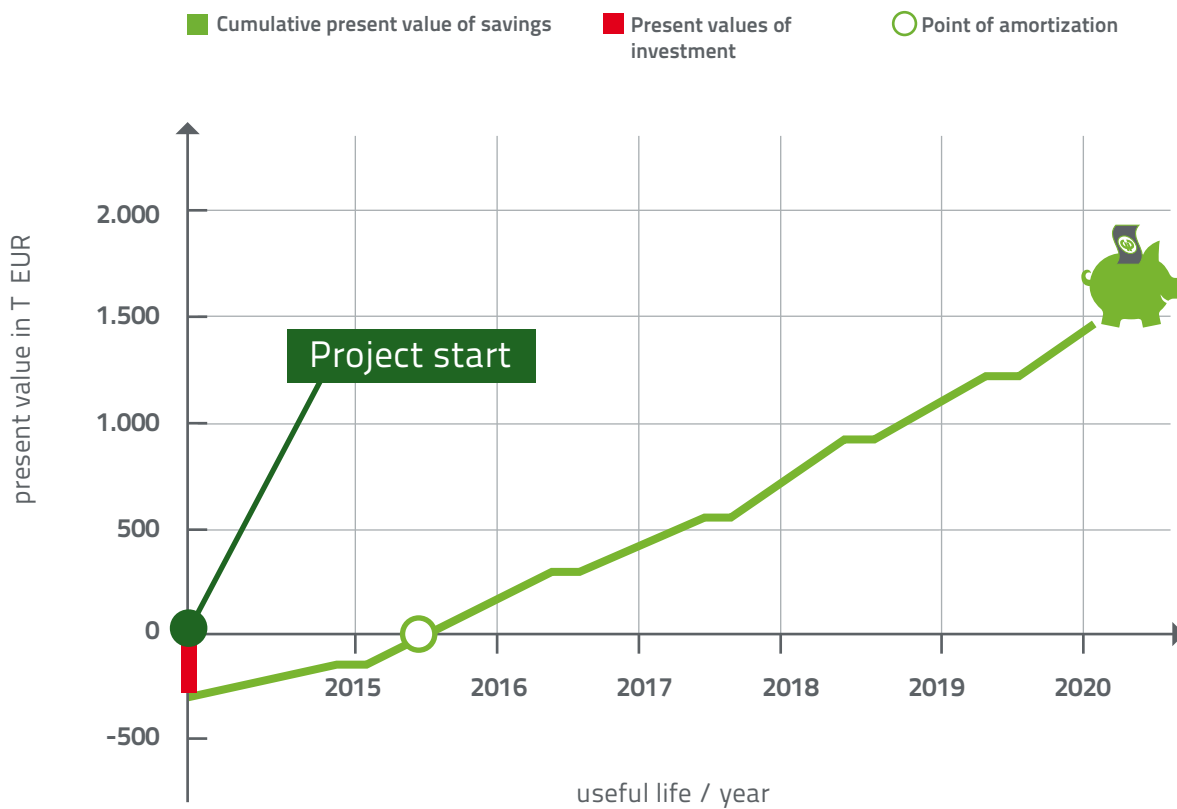
MAN Truck & Bus AG



We let the numbers speak - Make your individual ROI analysis

Would you like to know which savings potential is hidden in your company?

We will carry out an individual ROI analysis for you.



What are you waiting for?

Contact us at Info@cadenas.de or by phone at +49 0821 2 58 58 0-0 and let us show you which savings and optimization potential the Strategic Parts Management PARTsolutions offers to your company.

Who profits?

Engineering ++

Purchasing +

Standardization ++

Controlling ++

CADENAS unites manufacturers & suppliers of components with the industry!



CADENAS solutions for
manufacturers & suppliers of components

The Electronic Product Catalog



The software solution to create and promote Electronic CAD Product Catalogs.

The Intelligent CAD Models



More than geometry: Optimal product and engineering data with the maximum comfort and functionality.

The Smart Engineering Solution



Know who and where your customers are: Offer products at the right time, right place and to the right people.

The Vertical Marketplaces



Numerous online marketplaces with millions of users to multiply your Electronic CAD Product Catalog.

BIMcatalogs.net



Technologies and Know-hows of the Electronic Product Catalog for the architectural sector.



CADENAS solutions for
industrial buyers of components

The Strategic Parts Management

Sustainable cost reduction of standard, supplier and company parts for engineers and purchasers.



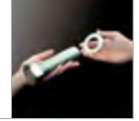
The Geometric Similarity Search

Find available CAD geometries in a smart way and classify them semi-automatically.



The Supplier Portal

The platform improves the communication to external suppliers.



The PURCHINEERING Concept

Improves the cooperation between purchasing and engineering.



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