

8: Customisation and Services



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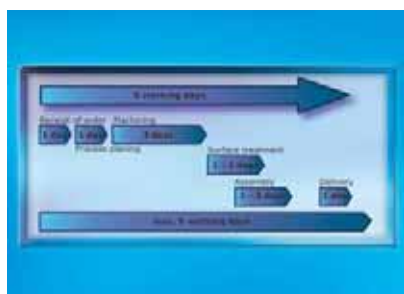
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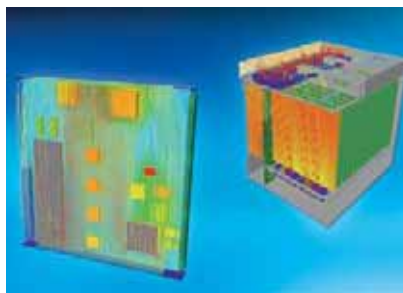


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8.1 Customised Front Panel Processing

Inexpensive and Efficient

Elma's machining possibilities open a greater range of applications.

The compact CNC milling, drilling and engraving machine is designed for efficient machining of aluminium. The high-frequency spindle runs with an RPM range of up to 60'000. This makes effective and precise machining of all the front panels possible, especially with smaller tools.



It is easy to produce your customised front panel. e.g. with cut-outs for:

- Electronic Connectors (e.g. D-Sub, SCSI, RJ45, USB...)
- Fiber-Optic Connectors
- LEDs
- Switches
- Terminals
- Handles
- Mezzanine Cards
- Display-Elements
- Your individual cut-outs

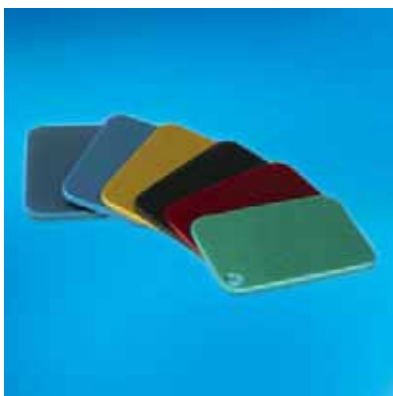
Use ELMA's front panel service not only for machining, but also for silk screen printing, electroplating, painting and assembling.

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8.2 Electroplating

- Our electroplating facility is one of the biggest and most sophisticated in the area. With more than a hundred programs, we have the possibility, to electroplate almost every aluminium part with it's optimal program.



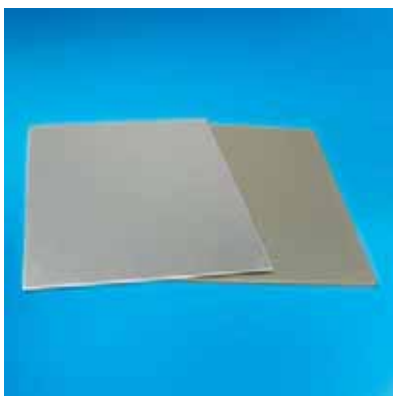
Anodising

Decorative and Hard Surface in Different Colours:

- Clear
- Deep black (MLW)
- Turquoise blue (PLW)
- Brand red (ML)
- Gold-Yellow (L)
- Blue (G)
- Turquoise green
- *All colours RoHS compliant*

Process:

With the anodic oxidation hard and wear-resistant aluminium surfaces are produced with sulfuric acid electrolytes. These oxide coatings improve not only the corrosion resistance, but can also give a decorative finish to components if a coloured dye is used. The layer thicknesses can be from 5 to 30 μm . Anodic oxide coatings are not electrically conductive.



Passivation

Corrosion Protection, Electrically Conductive:

- Clear (*RoHS compliant*)
- Yellow

Process:

With the passivation procedures by chemical action, thin layers (approx. 0.1 to 0.5 μm) result. These are yellow during the yellow chromate finishing and with the clear passivation finishing transparent. These layers are corrosion resistant and offer an outstanding adhesion for lacquer and powder coatings. Due to the small layer thicknesses the surfaces remain electrically conductive.

Use ELMA's front panel service not only for electroplating, but also for machining, silk screen printing, electroplating, painting and assembling.

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8.3 Painting



Powder Coating

Powder coating is a method of applying coatings to surfaces without using solvents. The coating is applied as a free flowing powder and heated to cause it to flow and adhere to the surface. The powder may be a thermoplastic or a thermoset polymer.

It is normally used to create a hard finish on metals. Powder coating is mainly used for coating of metals, such as "white goods", aluminium extrusions and automobiles. The polymer used by Elma is polyester-epoxy.

The most common way of applying the powder coating is to spray the powder using an electrostatic gun. The gun imparts an electric charge on the powder, which is then sprayed to the object which is grounded. The object is then heated, and the powder melts to form a hard coating.

Elma's most common colours:

- Light grey, RAL 7035, structure, silky lustre
- Elma blue, Pantone 280C, structure, silky lustre
- Jet black, RAL 9005, structure, silky lustre
- Blue grey, NCS 5010-R90B, structure, silky lustre
- Flame red, RAL 3000, structure, silky lustre
- Other colours on request

Wet Painting

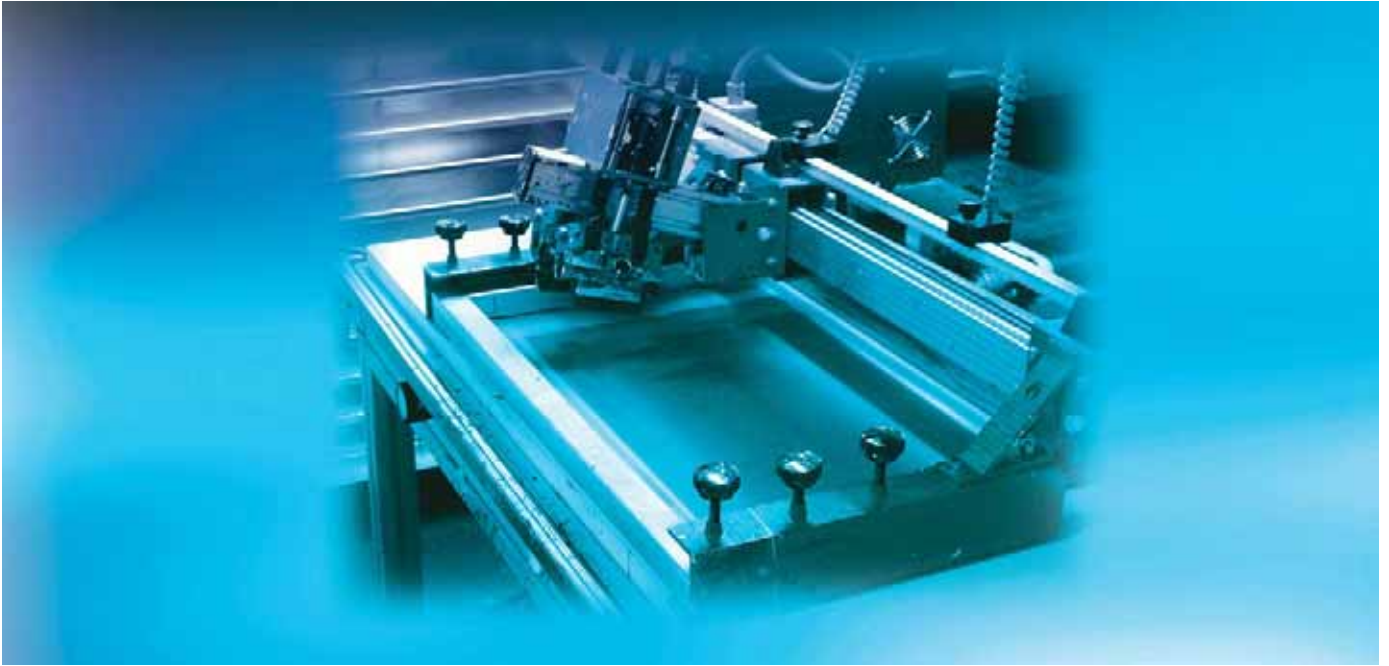
In a general, lacquer is a clear or coloured coating, that dries by solvent evaporation only which produces a hard, durable finish, that can be polished to a very high gloss, and gives the illusion of depth.

Elma's most common colours:

- Silver/Berluran Pantone 043.094.190, structure
- Other colours on request

Use ELMA's front panel service not only for painting, but also for machining, silk screen printing, electroplating, and assembling.

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8.4 Silk Screen Printing

Silk screening is a print making technique that creates a sharp-edged single-colour image using a stencil and a porous fabric.



Printing Technique:

A screen is made of a piece of porous, finely woven fabric (originally silk, but typically made of polyester or nylon) stretched over a wooden or aluminium frame. Areas of the screen are blocked off with a non-permeable material - a stencil - which is a negative of the image to be printed; that is, the open spaces are where the ink will appear.

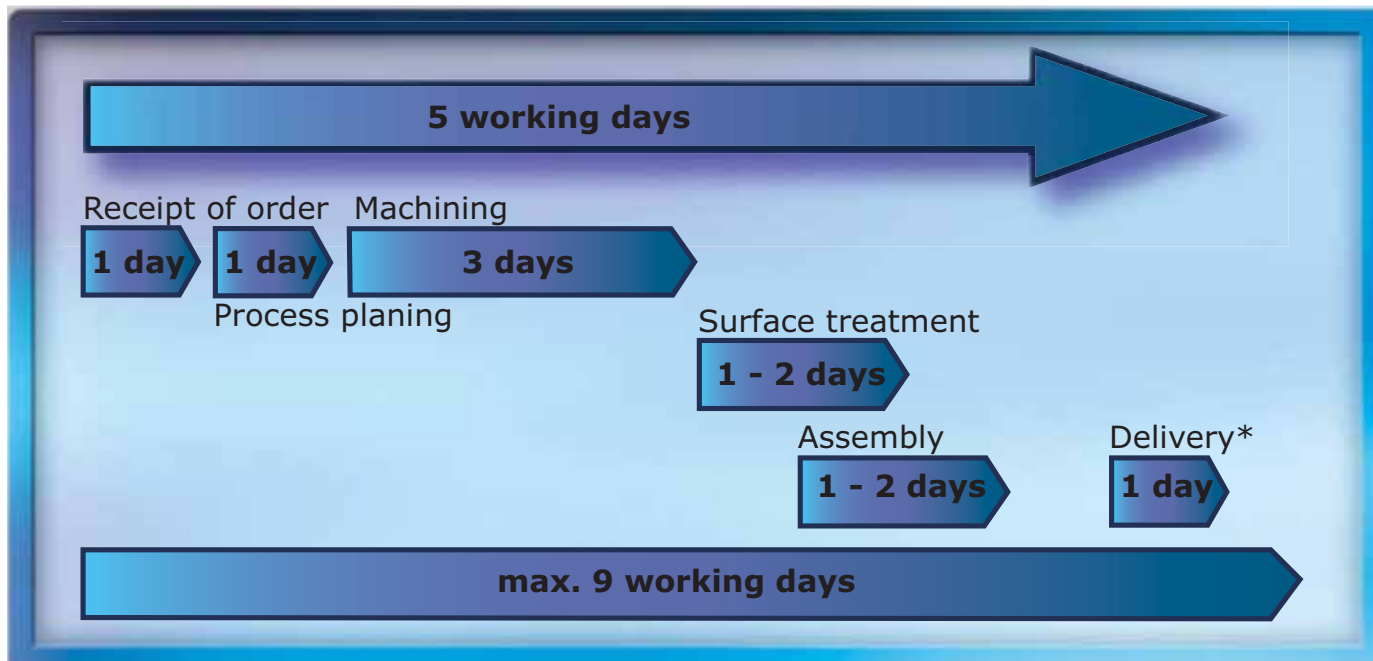
The screen is placed on top of the front panel. Ink is placed on top of the screen, and a squeegee (rubber blade) is used to spread the ink evenly across the screen. The ink passes through the open spaces in the screen onto the front panel below; then the screen is lifted away. The screen can be re-used after cleaning. If more than one colour is being printed on the same surface, the ink is allowed to dry and then the process is repeated with another screen and different colour of ink.

Silk Screen Printing is Used on Front Panels e.g. to:

- Label front panel mounted components
- Name the product
- Put your company logo on the product
- Give some safety instructions
- Separate your product from others

Use ELMA's front panel service not only for silk screen printing, but also for machining, electroplating, painting and assembling.

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8.6 Front Panel Express: The Way it Works...

- Customised front panel processing in only 6 - 9 working days!
- Front panel express is Elma's rapid customisation service for front panels. It is designed to speed up your production programme and provide a fully customised front panel solution to your exact requirements.

1. Choose a front panel size
2. Choose the required handles
3. Draw the requested cut-outs and markings, preferable in a DXF format. You can download files of the handles and front panels from www.elma.com
4. Choose the requested surface:
 - Front side clear anodised and rear side conductive (standard if not indicated differently)
 - Front- and rear side clear passivated
 - Powder coating on request
5. Send us a positive film 1:1 for the silk screen printing
6. Indicate, if you would like the front panels assembled (standard) or not assembled
7. Send your specifications to our local partner
 - You will receive a prompt offer and you can place your order on the same day if required
 - For larger quantities you will receive a separate order confirmation

Note: This front panel express service is only for quantities up to 50 pieces.

*Delivery time might be a bit longer in remote areas

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8.6.1 Order Form for Customised Front Panel Processing

Location within the Sub Rack:

- front mounting
- rear mounting

EMC-Features:

- no EMC-Features
- extruded front panel with EMC-gasket

Dimensions:

front panel height _____ U
front panel width _____ HP
front panel thickness _____ mm _____ inch

Cut-Outs:

- as per attached paper drawing
 - as per attached dxf/iges file
 - corner radius max. 3 mm
 - corner radius max. 1 mm
 - corner radius max. 0.5 mm
- Attached drawing/file number: _____

Cut-Out Form:

description: _____

Material:

- aluminium
- sheet steel zinc plate

Internal Surface:

- no specification
- raw/untreated
- clear passivation (conductive)
- anodised, colour: _____
- powder coated, colour: _____
- free of lack or colour mist
- other: _____

External Surface:

- no specification
- raw/untreated
- clear passivation (conductive)
- anodised, colour: _____
- powder coated, colour: _____
- other: _____

Cutout Faces:

- no specification
- raw/untreated
- clear passivation (conductive)
- anodised, colour: _____
- powder coated, colour: _____
- other: _____

Silk Screen Printing:

- without
- single colour: _____
- multiple colour: _____

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Artwork Master:

- as per attached film
 - as per attached paper drawing
 - as per attached dxf/iges file
 - as per attached tif file
- attached drawing/file number: _____

Accessories

Front Panel Screws & Bushes:

- without
- press-in bushes M2.5
- captive screw head: _____

Handles:

- without
- top; type: _____
 - with ESD-pin
 - with microswitch
- bottom; type: _____
 - with ESD-pin
 - with microswitch

Coding Pins:

- colour
- positions: _____

Card Holder:

- without
- with 1 card holder in centre
- with card holder top
- with card holder bottom

Assembly:

- to be supplied assembled
- supplied unassembled

Additional Information:

Send this two pages to your local partner

Company

Department

Name

Street

Postal code

City

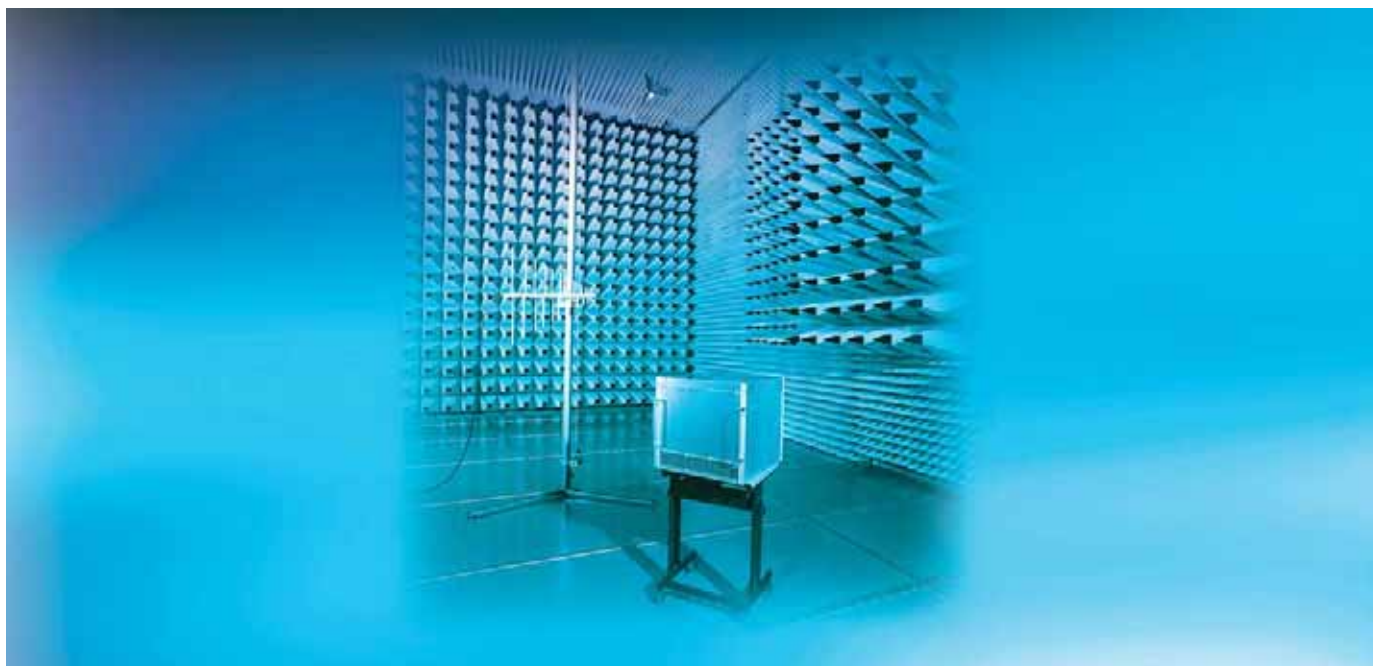
Phone

Fax

Email

Signature

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8.7 EMC-Service

"Electromagnetic compatibility is the ability of a system to operate in the intended environment without causing or suffering unacceptable degradation of performance due to unintentional electromagnetic radiation or response." The EMC characteristics of a system therefore consist of an appropriate immunity from interference (noise immunity) and a limited emission of interference (noise emission).

Elma's EMC concept describes three levels of electromagnetic shielding performance (Performance Level). The attenuation levels will simplify the selection of sub racks for the user.

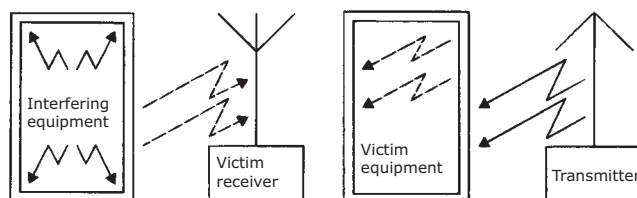
Test-set-up: The first measurement E1 is without the enclosure. The next measurement E2 is made with the transmitting antenna installed inside the enclosure. The difference between the received signal without and with the enclosure represents the shielding effectiveness in dB.

Performance Level	30-230 MHz	230-1000 MHz	1000-2000 MHz
1 / Elma: basic level	20 dB	10 dB	0 dB
2 / Elma: advanced level	40 dB	30 dB	20 dB
3 / Elma: superior level	60 dB	50 dB	40 dB

Sources of EMC problems and their containment

The operation of many electrical and electronic devices, e. g. equipment with microprocessors, involves the changing of voltage or current levels. This generates electromagnetic fields, which are radiated into space from the electromagnetic components and are coupled into cables.

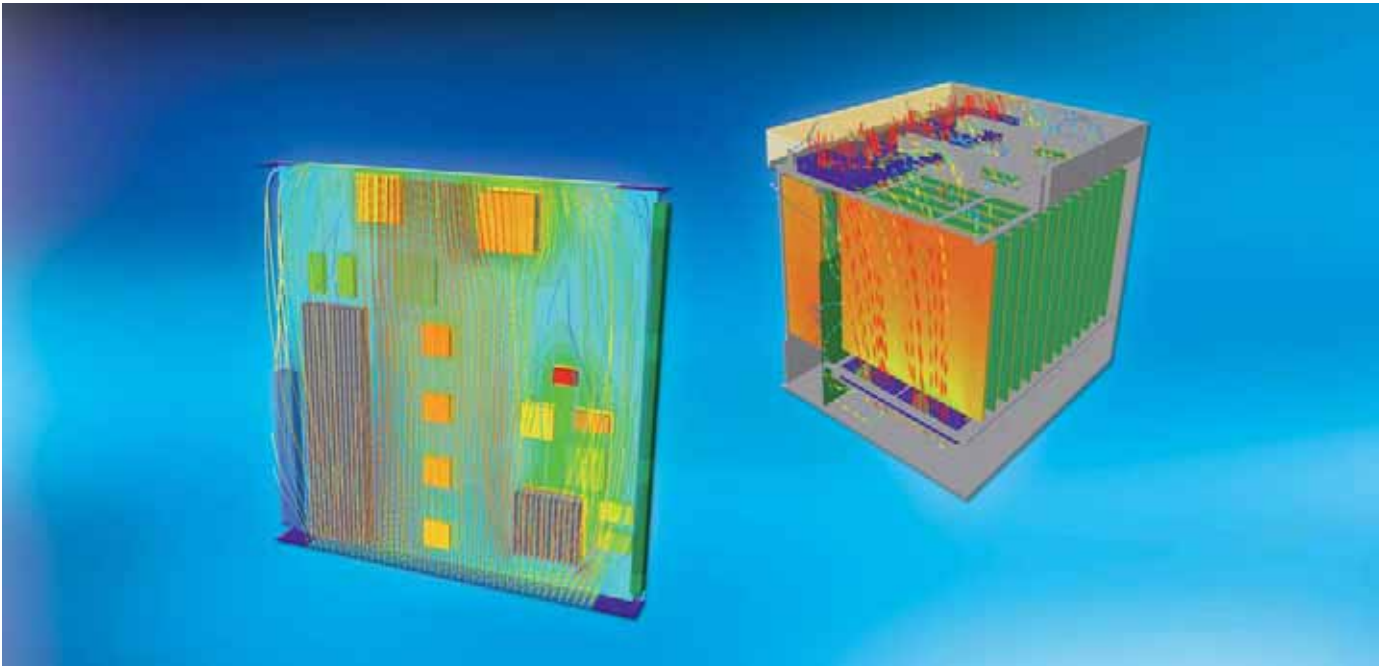
The illustration shows the role of a shielded enclosure. It protects the sensitive electronic equipment from the influence and limits the emission of interference.



We are aware that the enclosure is only one link in the chain of EMC measures.

In order to help customers in getting their plug-in units, racks and systems in conformance to the regulatory EMC directives, Elma offers also the possibility to make EMC pre-compliance tests. By using the performant measurement equipment (spectrum analyser and generator from Tektronix) we can provide our customers with measurements that will help in meeting the requirements for EMC, both for radiated and conducted emission.

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8.8 Thermal Analysis

Today's trend for 19" system based technology is rapidly moving towards "more power", "smaller", "cheaper" and "more integrated". Any of these items can lead to thermal problems. Systems can either be built and tested empirically or be subjected to theoretical simulation and calculations to determine thermal characteristics. Simulation can determine optimum airflow and component positioning early in the project lifecycle.

Elma offers CFD (Computational Fluid Dynamics) Simulation early enough in a project to identify any thermal problems which could adversely affect the performance of the system.

CFD benefits include:

- Optimised solution
- Cost effective, can work from customer CAD data
- Possibility to replace prototype stages in a project
- Faster product development

What results can you expect from a thermal simulation?

- Quick proof of the design, before building prototypes
- Optimised flow over the hot components, if required
- Complete flow and temperature field
- Results given in easily accessible visual data and written formats

This is one way for "cool" solutions! May we help you to save more time and money?

For more information and a checklist contact us directly: cfid@elma.ch