



# Leica 3D Disto

## About DXF

# Advice...

This document contains some general information about DXF data.



Skip to the last pages if you are only interested in details concerning the Leica 3D Disto.

# DXF in general

DXF (Drawing Interchange Format) is a **file format for CAD data import and export**, developed by AutoDesk®

CAD software „A“



convert  
to DXF

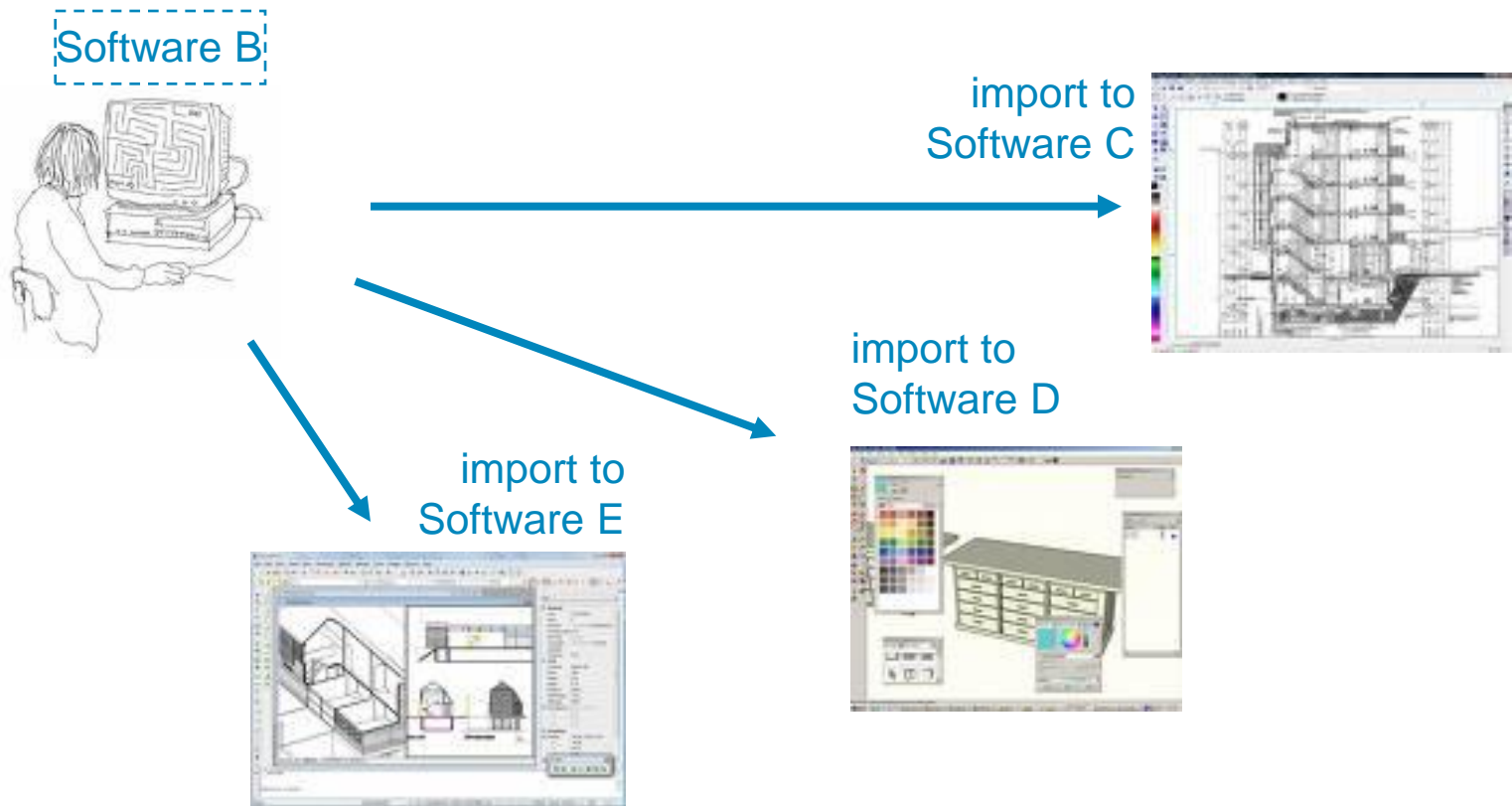


import to  
CAD software „B“



# History of DXF

It became a **worldwide standard format** for CAD data transfer.



# What a format is „DXF“?

CAD data format =  
powerful & complex



DXF data format =  
simple & editable **text format**

```
0  
SECTION  
2  
ENTITIES  
0  
POINT  
8  
zPoints  
10  
436432.4070051486  
20  
3883600.5180291827  
30  
0.0  
0  
POINT  
8  
zPoints  
10  
436632.7077017327
```

# Pros and Cons of the DXF format

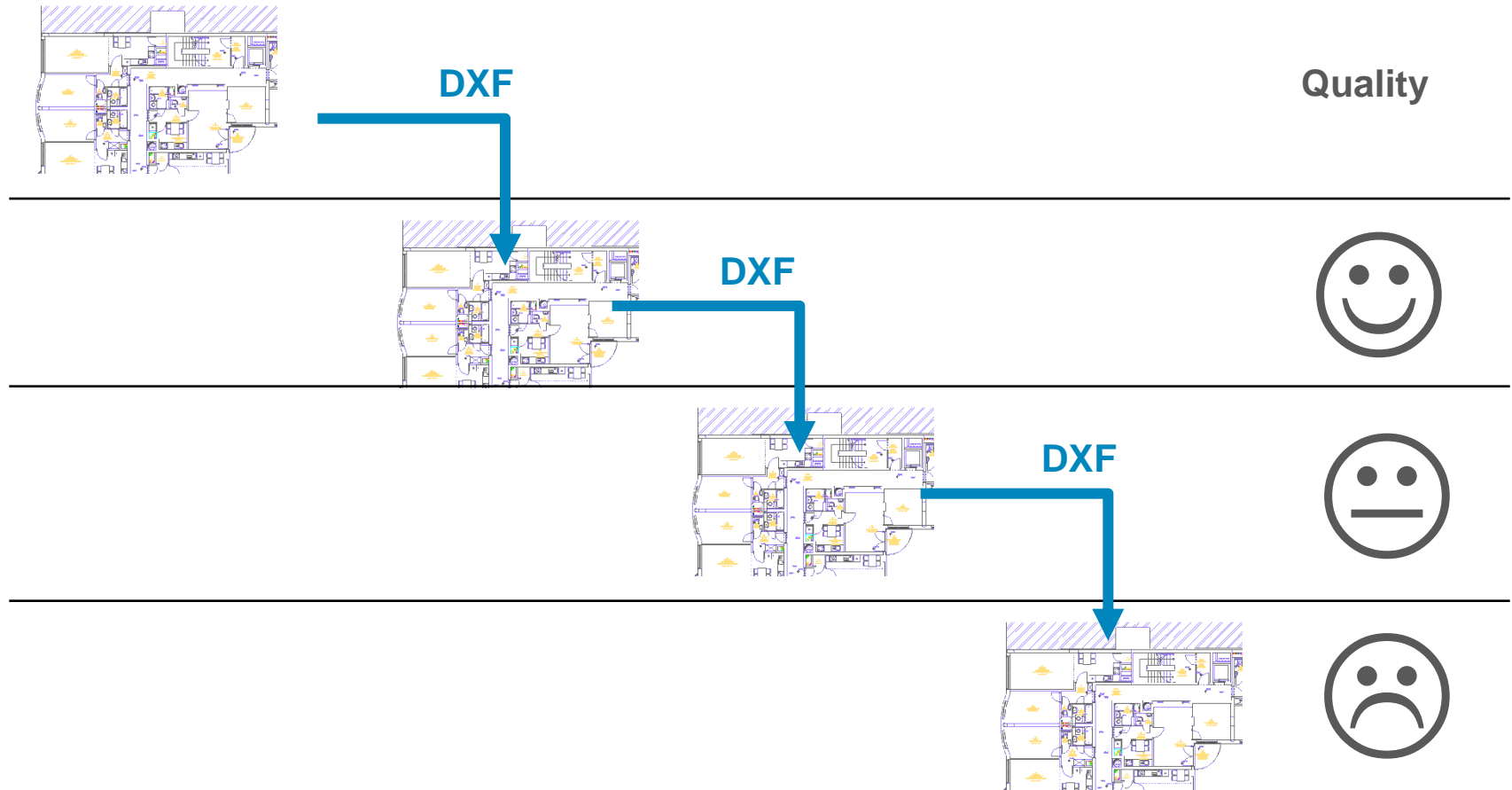
```
0
SECTION
2
ENTITIES
0
POINT
8
zPoints
10
436432.4070051486
20
3883600.5180291827
30
0.0
0
POINT
8
zPoints
10
436632.7077017327
```

- open format
- text file = easy to handle
- worldwide standard
- lots of CAD automatisms are lost
- some contents are lost



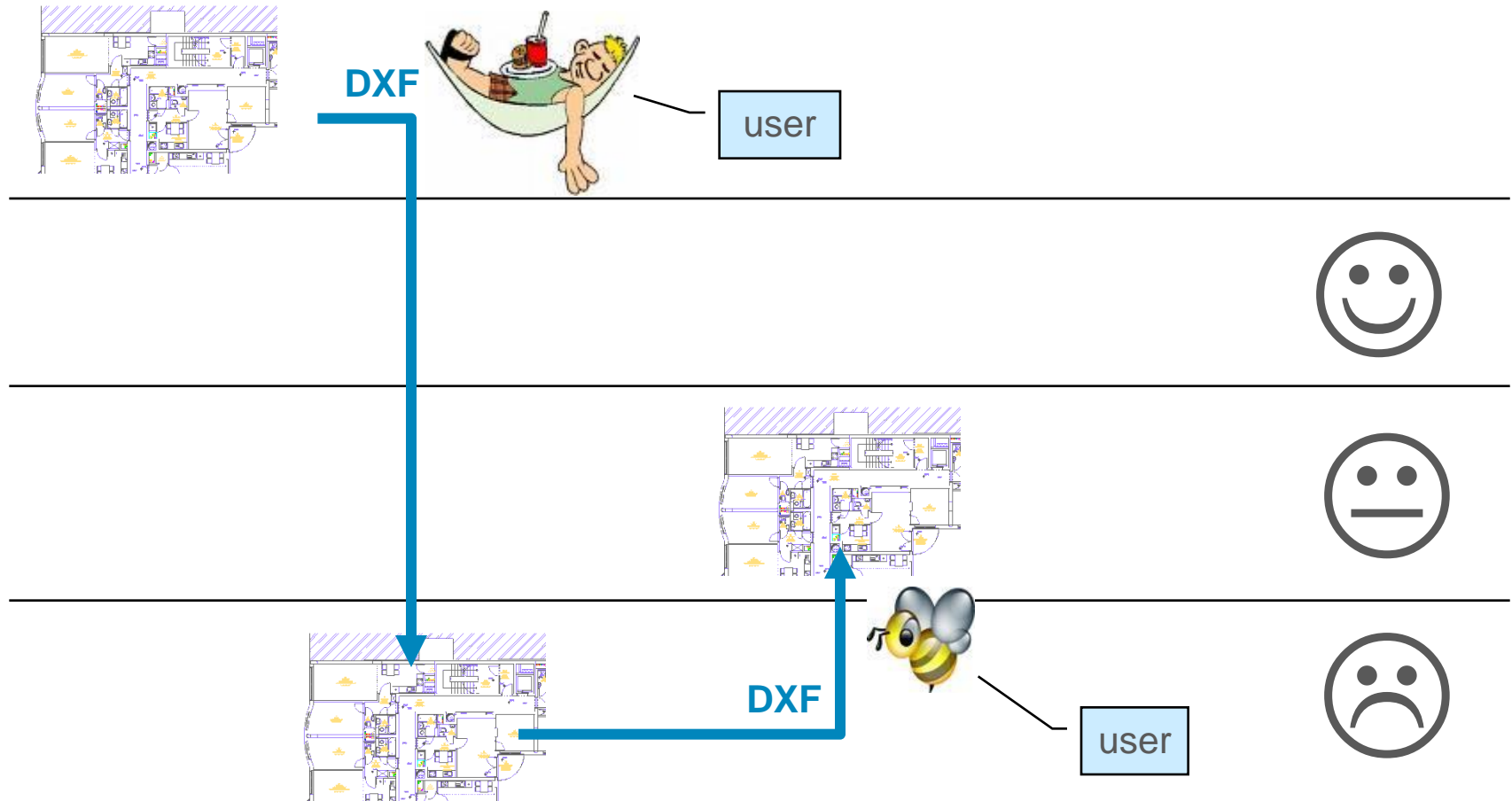
# Data quality decreases with each DXF export

Original data



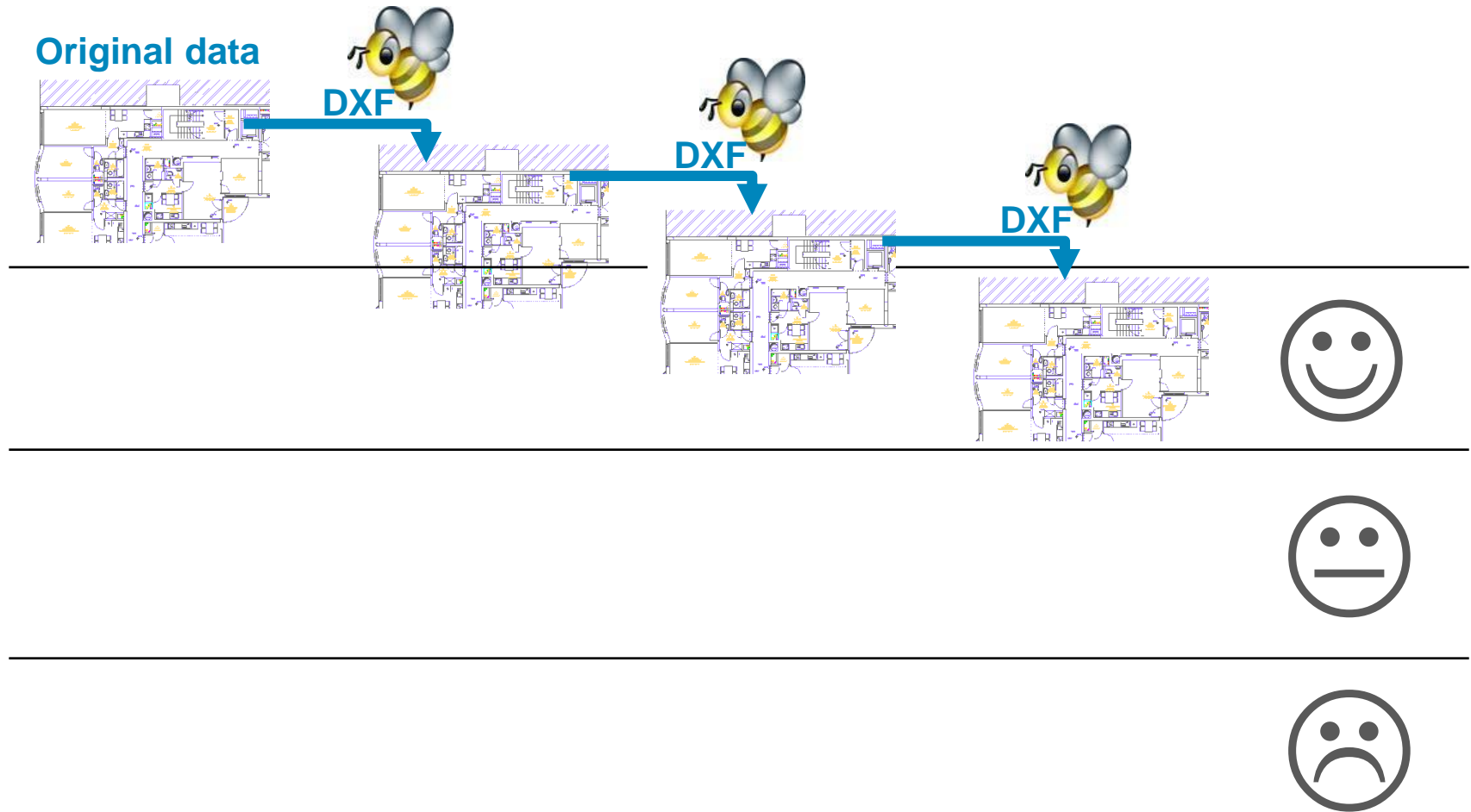
# Once lost, the data quality is hard to increase

Original data



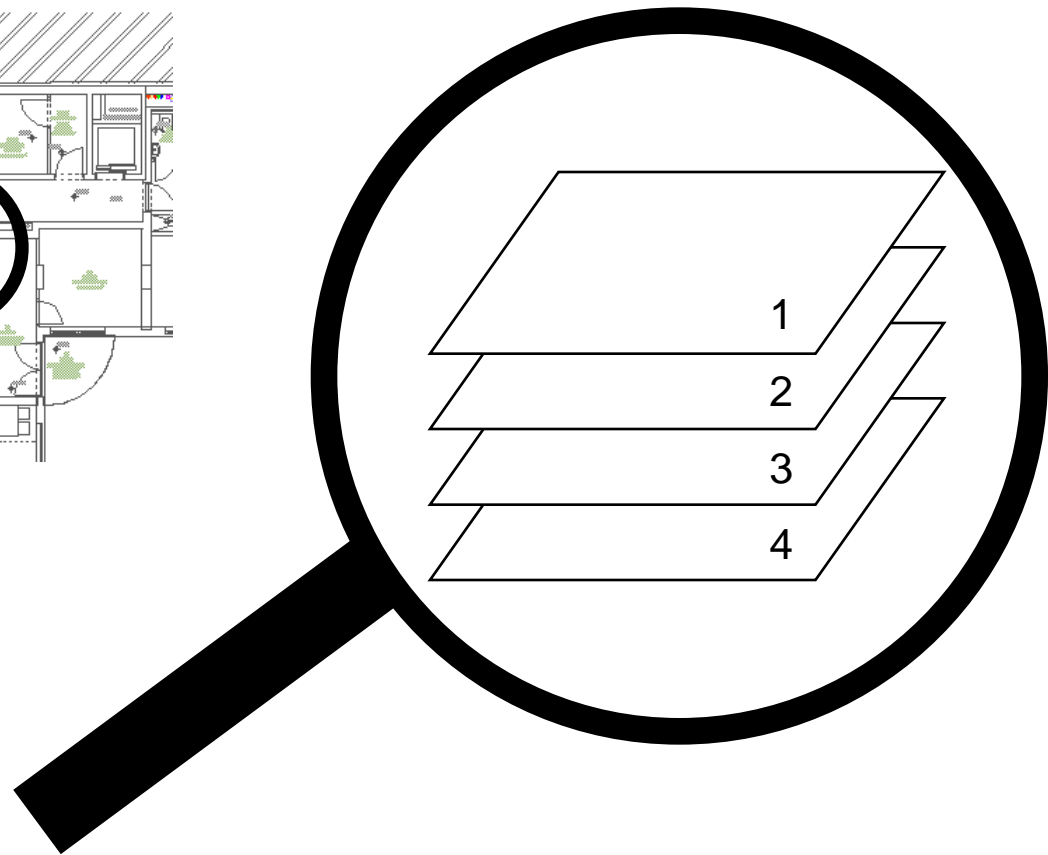
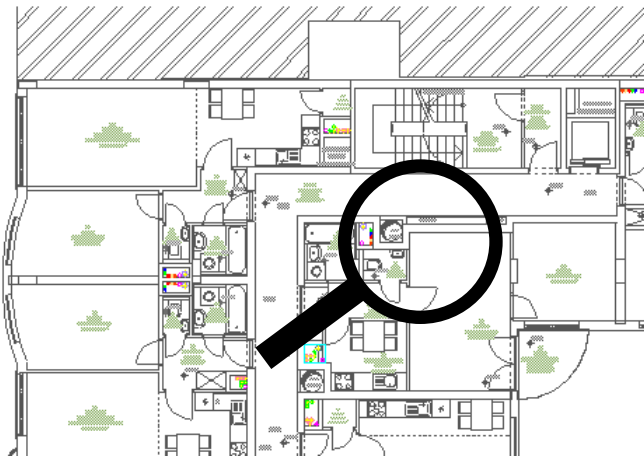


# Diligence at import/export keeps high quality



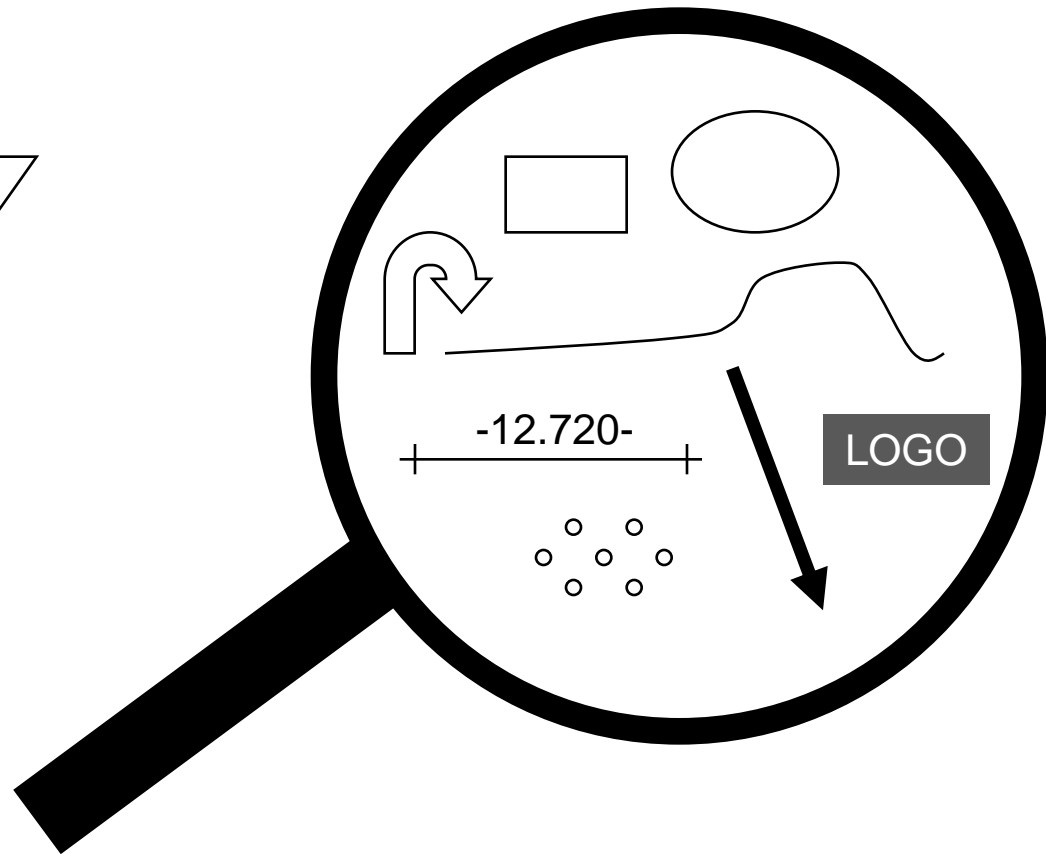
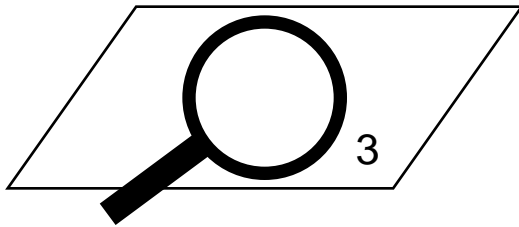
# Structure of CAD files

Most CAD systems use a **LAYER STRUCTURE**:



# CAD layer contents

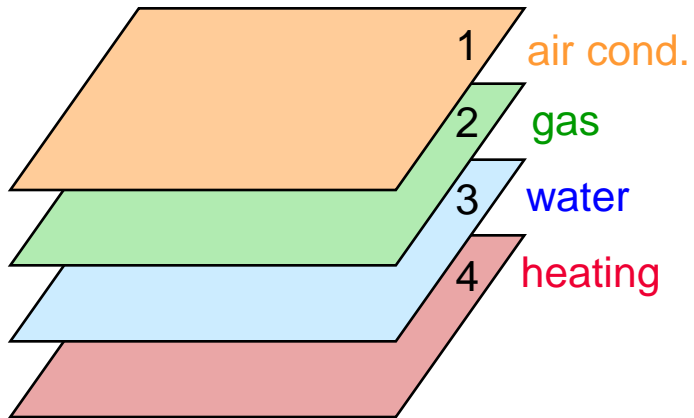
Each layer can contain different data: lines, polylines, points, texts, bitmaps, curves/splines, icons, hatchures, 3D-models, etc...



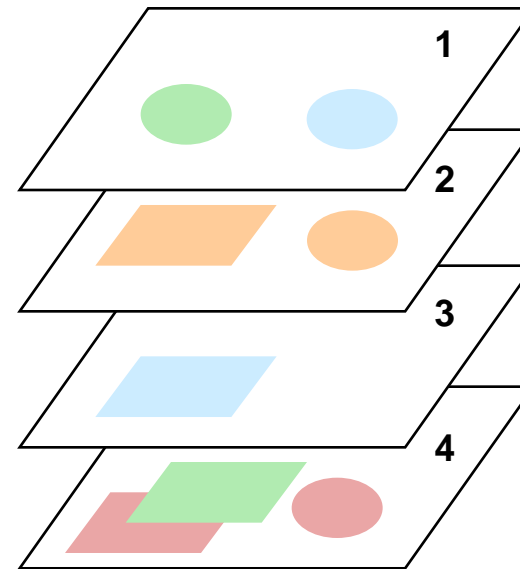
# Diligence with Layers



,good' layers: content is separated

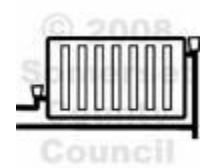


,bad' layers: content is mixed

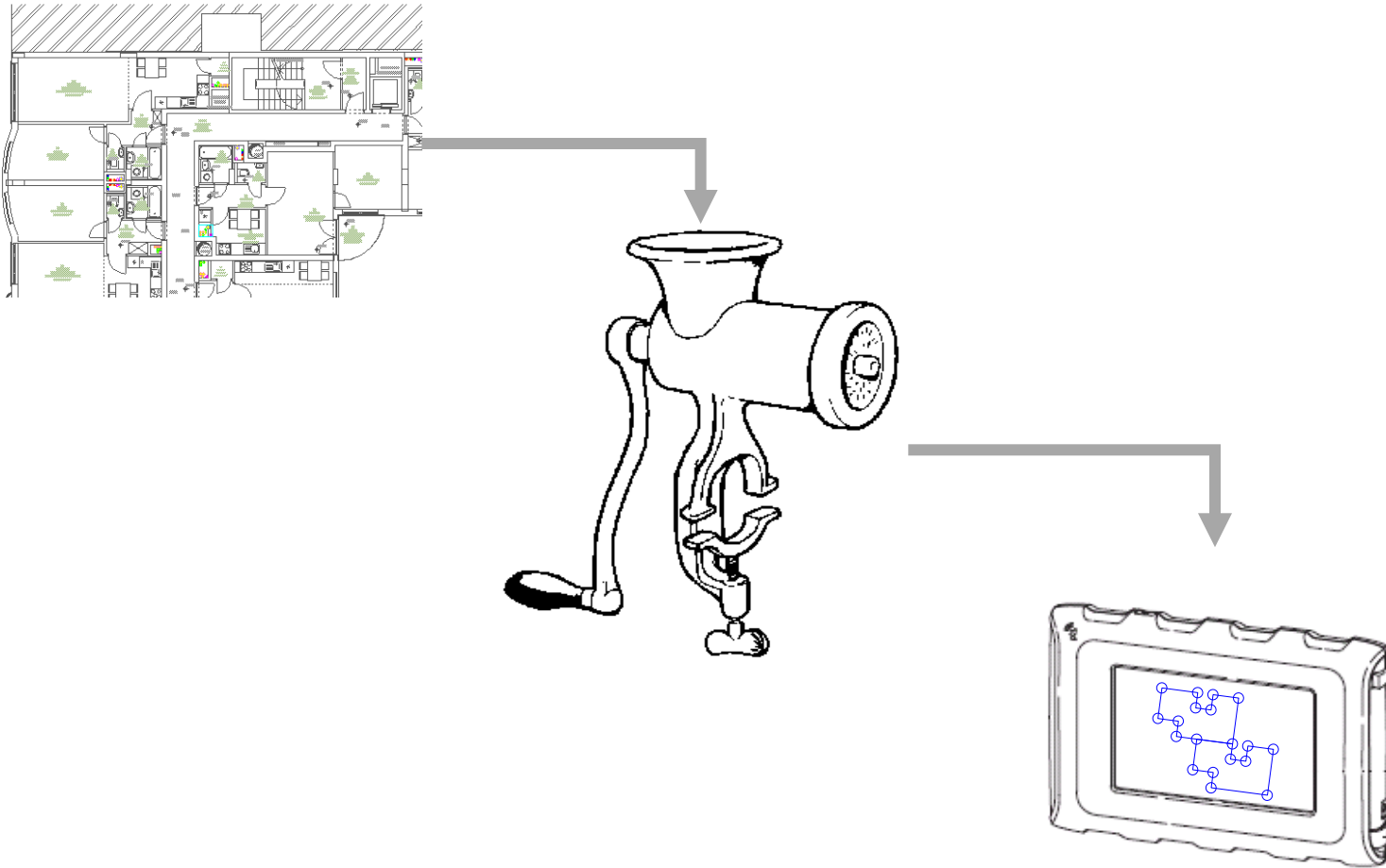


# Worth knowing

- „Blocks“:  
A block is like a ‚mini drawing‘. The user must tell the system how to handle them: import/export/ignore/explode/...?
- Colors and line styles:  
DXF is **not able to handle colors or line styles**, only ‚pen numbers‘ are managed → imported DXF data **never look like the original** data
- Splines are complex curves that can not be represented by radiuses. **DXF cannot handle splines** and divides them to a huge number of short straight lines with lots of points.
- Coordinate systems:  
Manipulation of the coordinate system (rotating, moving, scaling, etc.) has impact on accuracy and import/export.

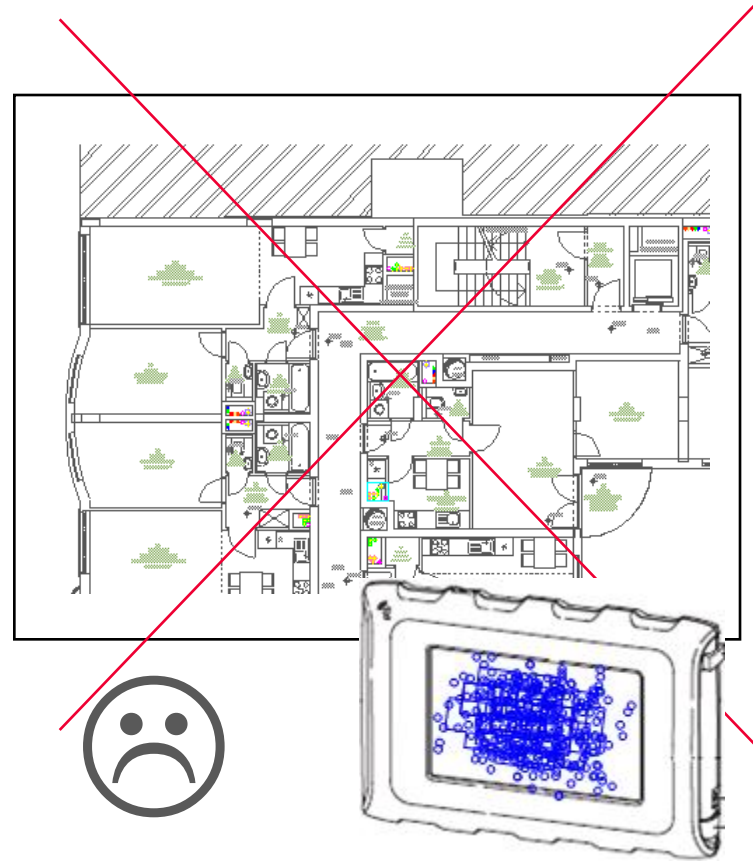
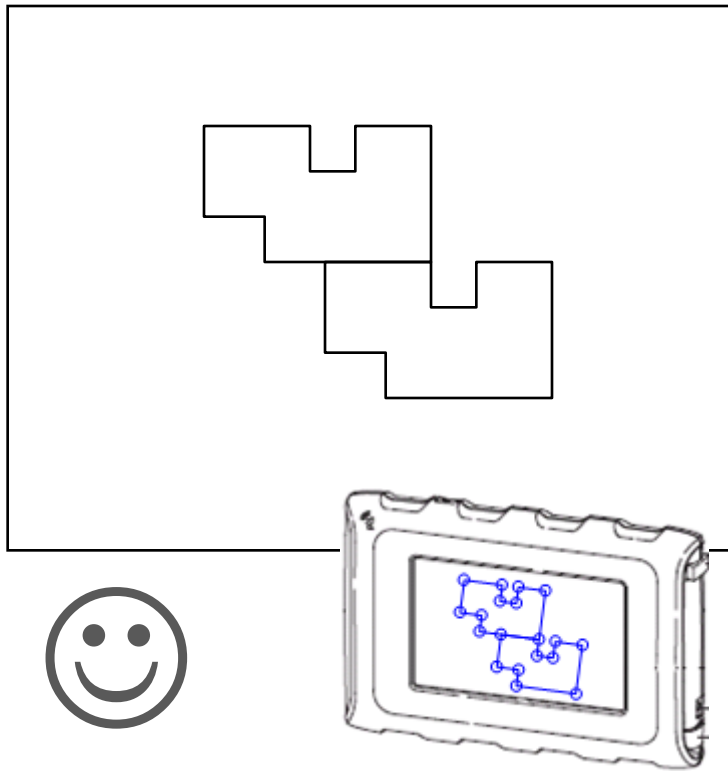


# How to optimize a DXF file for the Leica 3D Disto



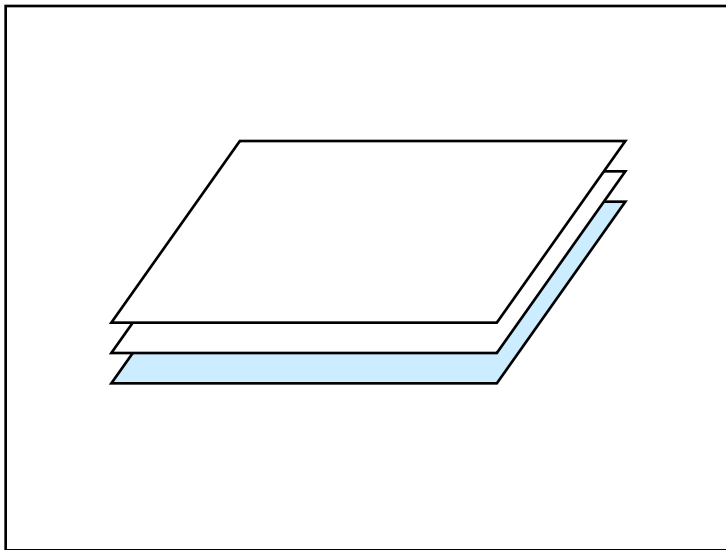
# How to optimize a DXF file for import to 3D Disto

content reduced to the necessary

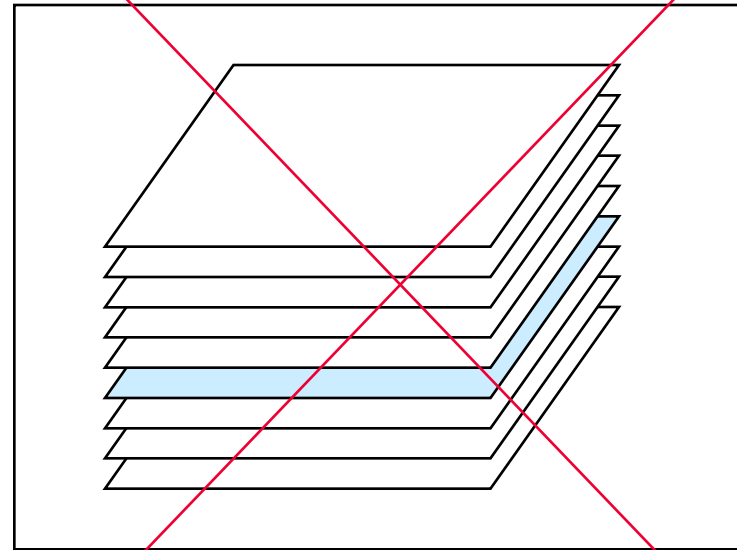


# How to optimize a DXF file for import to 3D Disto

reduced number of layers



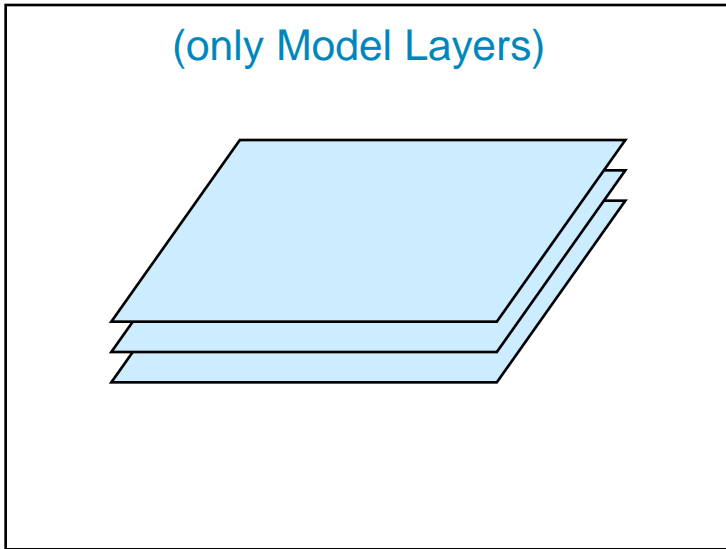
unnecessary layers



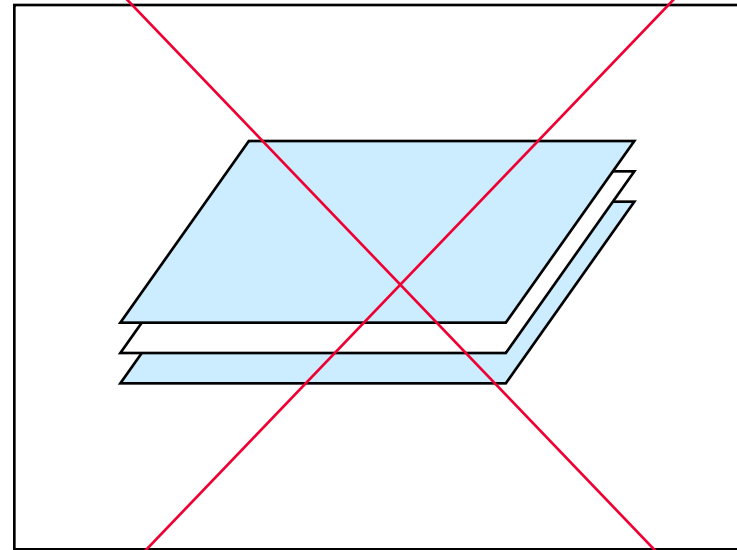


# How to optimize a DXF file for import to 3D Disto

file without „Paper Layers“  
(only Model Layers)

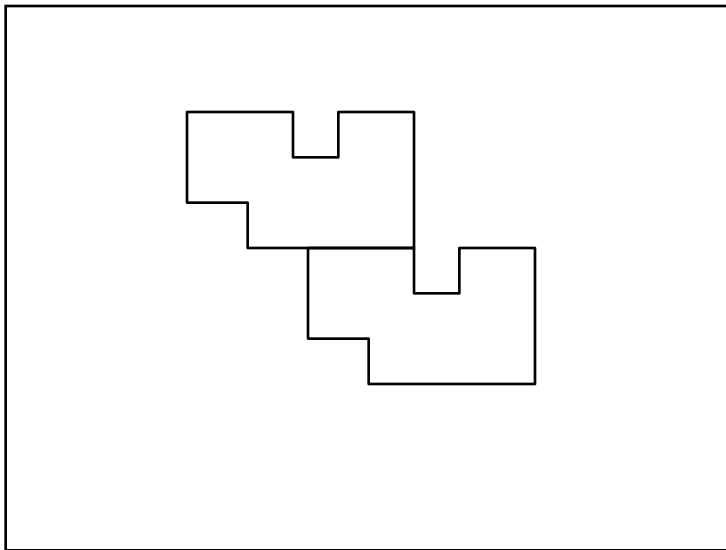


file with „Paper Layers“

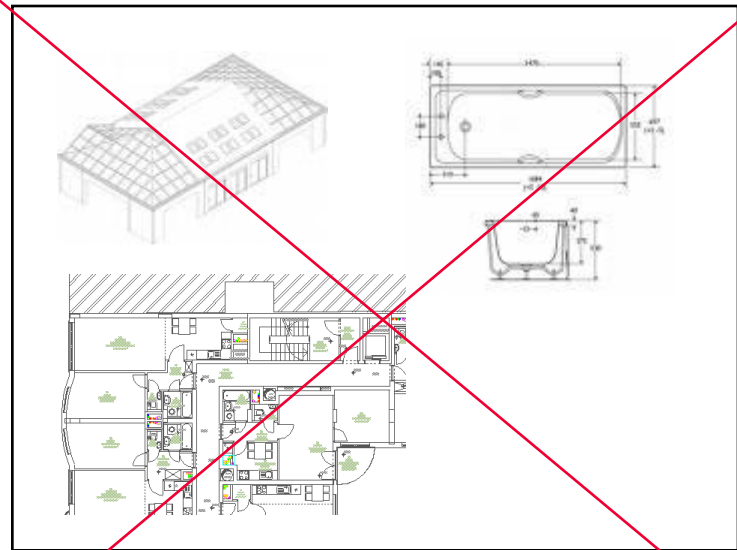


# How to optimize a DXF file for import to 3D Disto

1 drawing per file

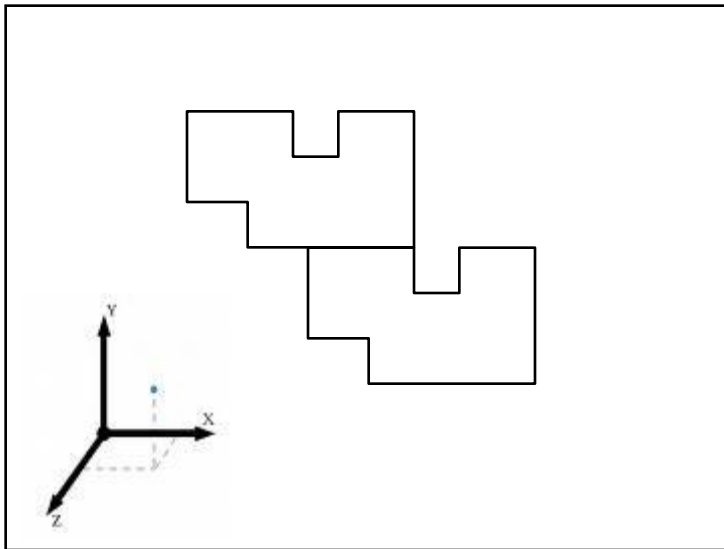


several drawings, perspectives, details, invisible contents, etc. in one file

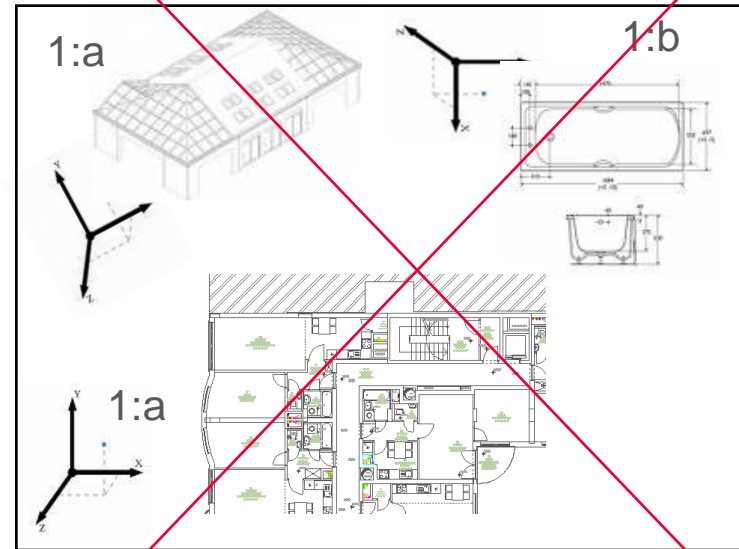


# How to optimize a DXF file for import to 3D Disto

1 coordinate system  
1 scale



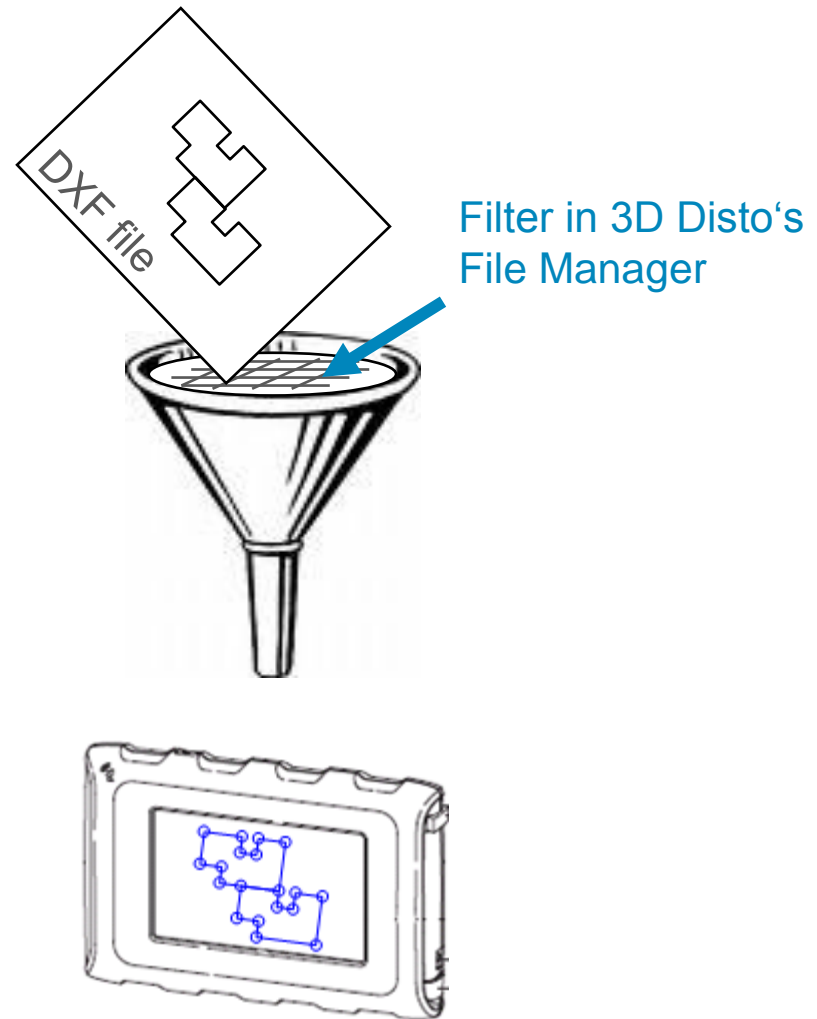
several coordinate systems,  
different scales



# What contents can be imported to the 3D Disto?

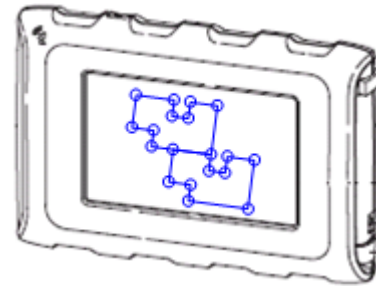
Imported elements:

- lines
- center points of circles
- singular points
- line end points
- polylines, 3D-polylines and lightweight-polylines
- block reference points



# Hierarchy of imported elements and coordinates:

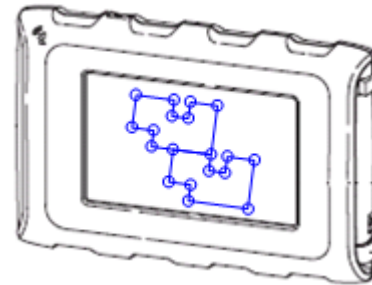
- only Root elements are imported, no Block contents
- coordinates are imported 1:1 (no scaling, no rotation, no offset)
- the full dimension of the data is imported uncontrolled (equal to the CAD ,Zoom All' function)
- X and Y coordinates are imported, Z (height) is ignored



# „Purging“ the data

User-defined or undefined colors or line types cause import problems to any software. Even if you delete such data some layers or blocks might still be existing.

→ It is recommended to **execute the PURGE command** several times before you generate a DXF file.



# Versions

## Importable versions:

- [StringValue("AC1009")] AutoCad12,
- [StringValue("AC1012")] AutoCad13,
- [StringValue("AC1014")] AutoCad14,
- [StringValue("AC1015")] AutoCad2000,
- [StringValue("AC1018")] AutoCad2004,
- [StringValue("AC1021")] AutoCad2007

## Exported version:

- [StringValue("AC1009")] AutoCad12

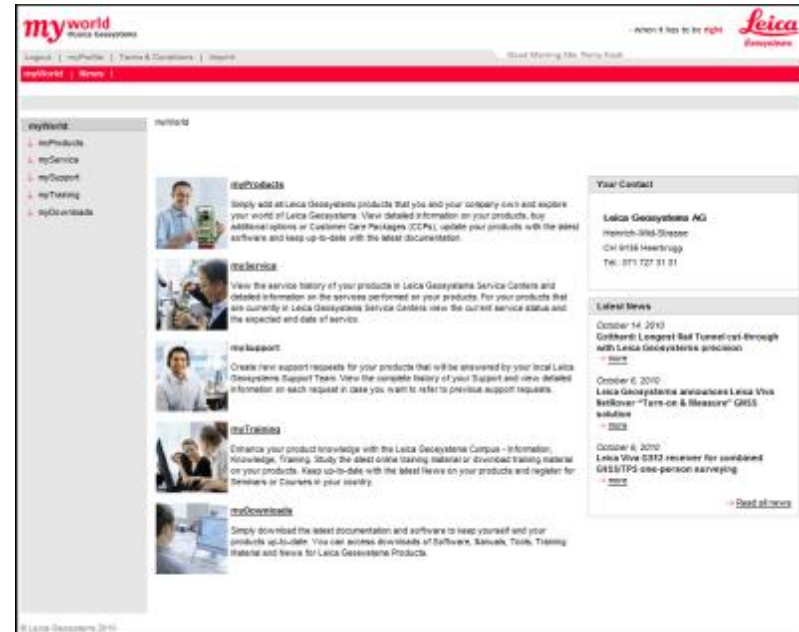
# myworld

## Further tutorials for download

If you register at myWorld@Leica Geosystems you will have access to a wide range of services, information and training material:

- warranty extension
- tutorials
- software updates
- support
- manuals
- ...
- ...

<https://myworld.leica-geosystems.com>  
[www.3ddisto.com](http://www.3ddisto.com)



- when it has to be **right**

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