

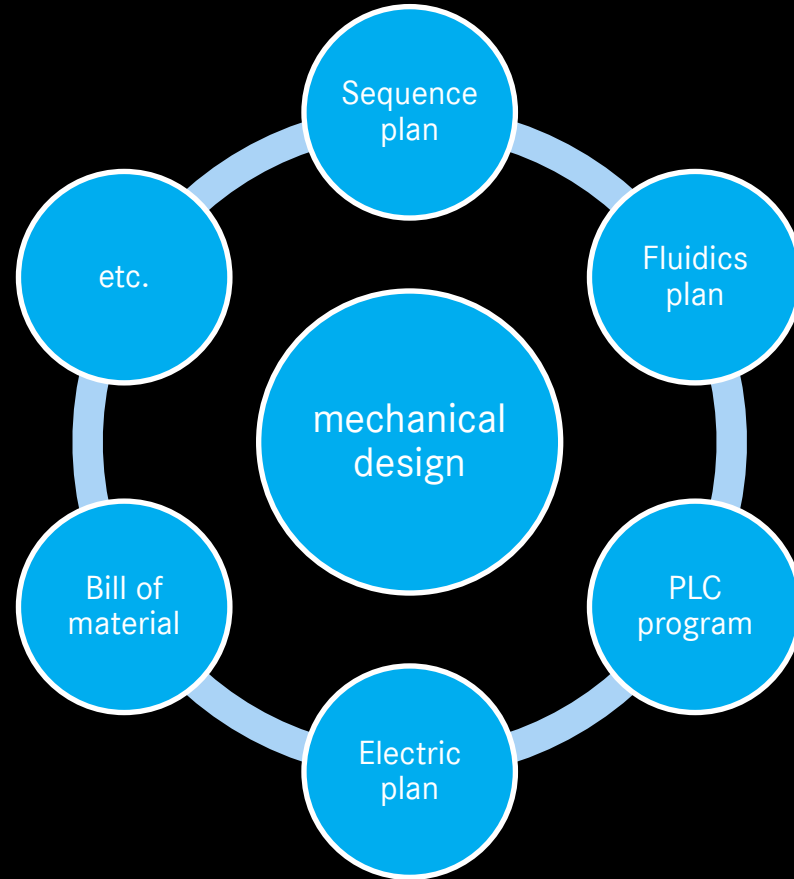
Practical Application of AutomationML in Engineering Toolchains

Fluidic workflow with Siemens NX and AutomationML
Joachim Burlein, TF/VAS Daimler AG

Mercedes-Benz
The best or nothing.



Information flow

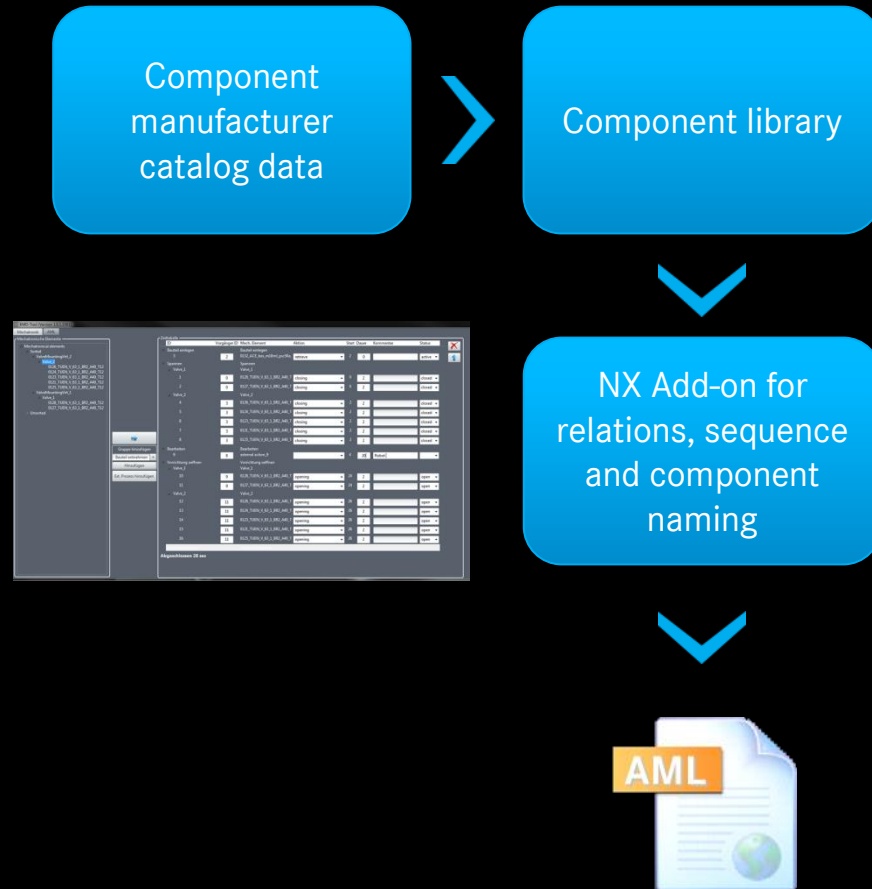


The way from a mechanic design to all related disciplines takes a lot of communication.

In the worst case information are transported via telephone, Email or paper.

Almost every change in one discipline has an effect in another discipline.

Advanced engineering toolchain

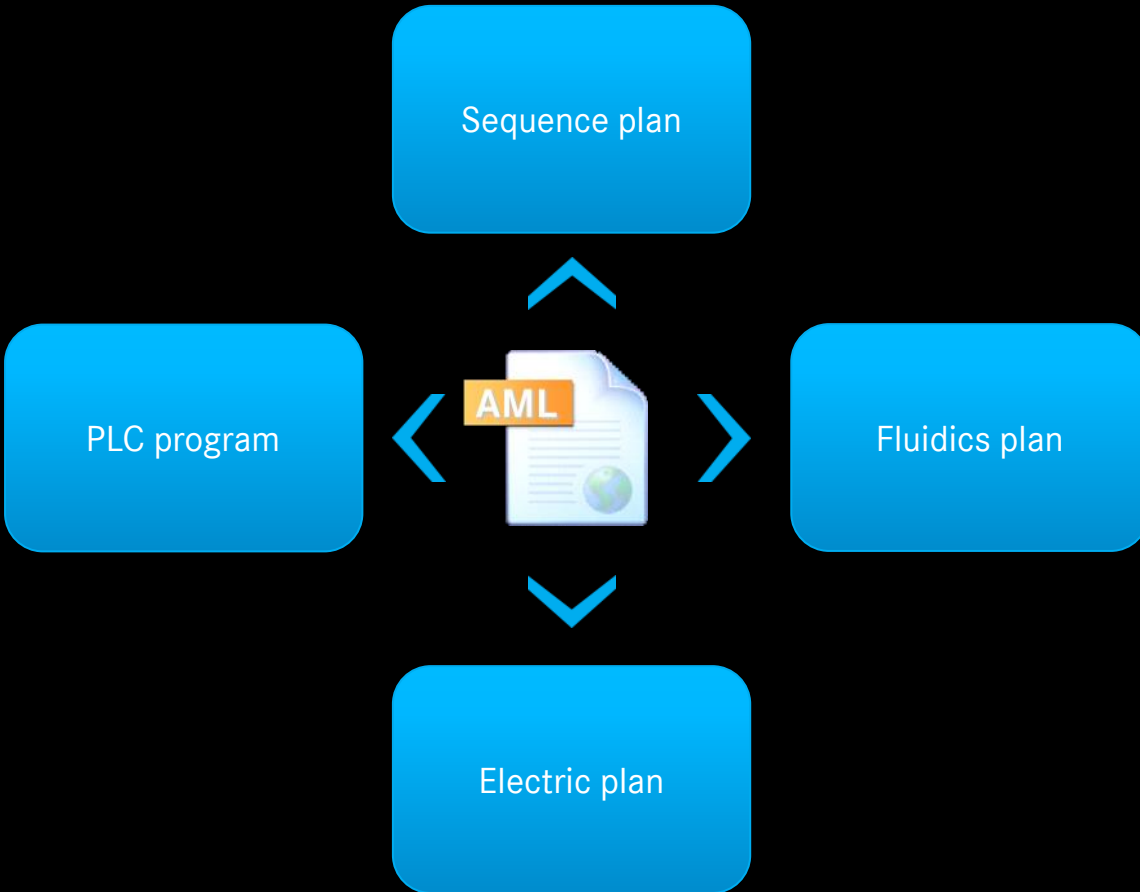


- Store data around the engineering objects as soon as possible
- When possible at the first usage of the object

Examples:

- Relations between a cylinder and his valve
- Sequence flow of an fixture
- Component names (cylinders, valves, sensors)
- Article data(component library)

Reuse information



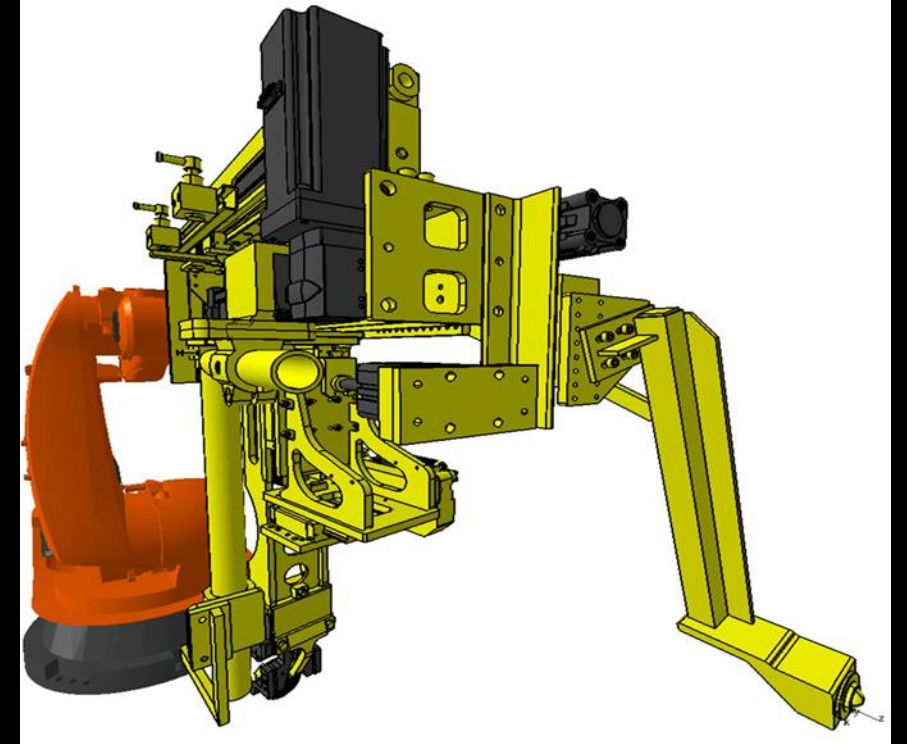
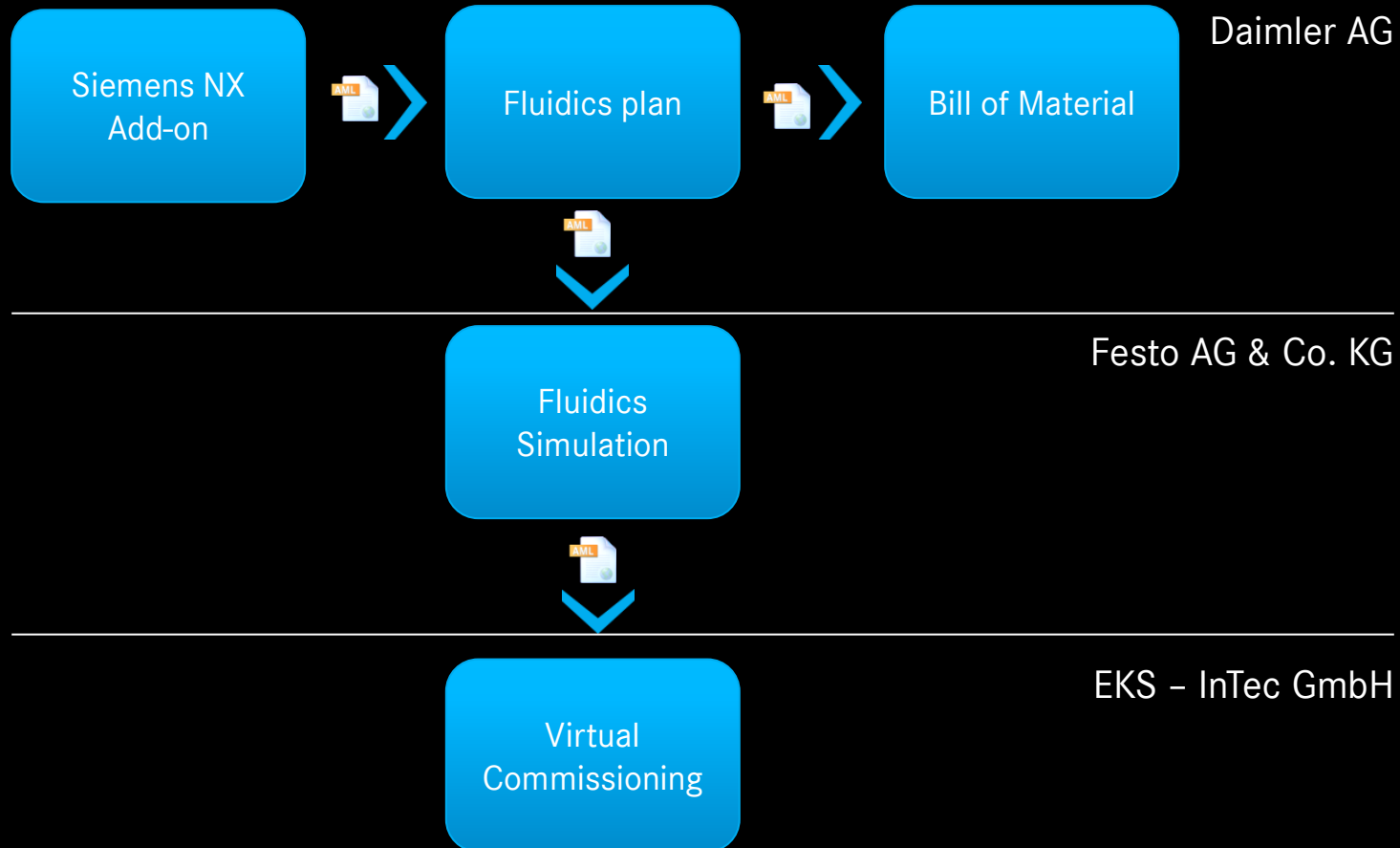
The additional data around an engineering object now can be used by other disciplines.

The resulting AutomationML file is containing these data.

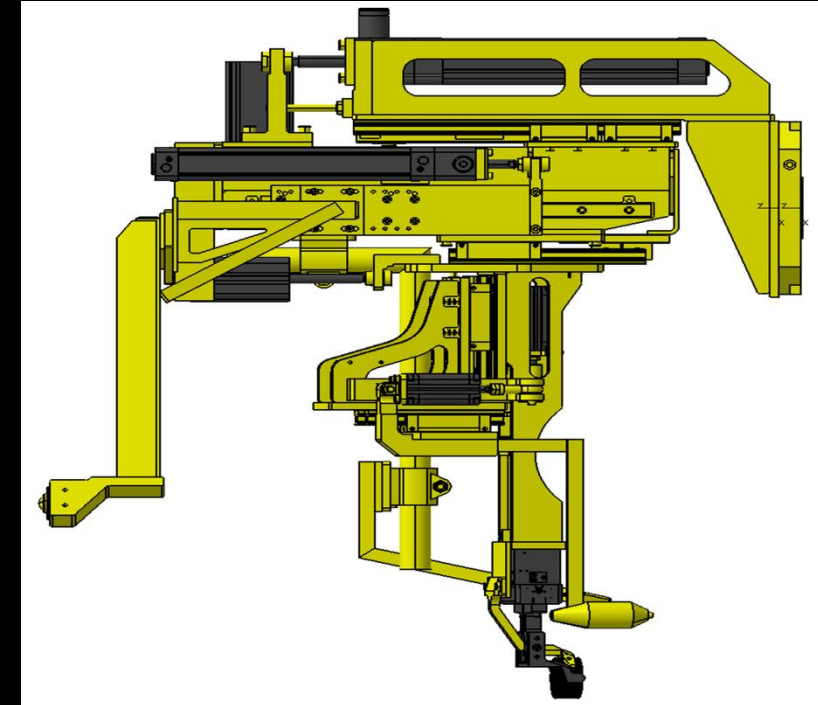
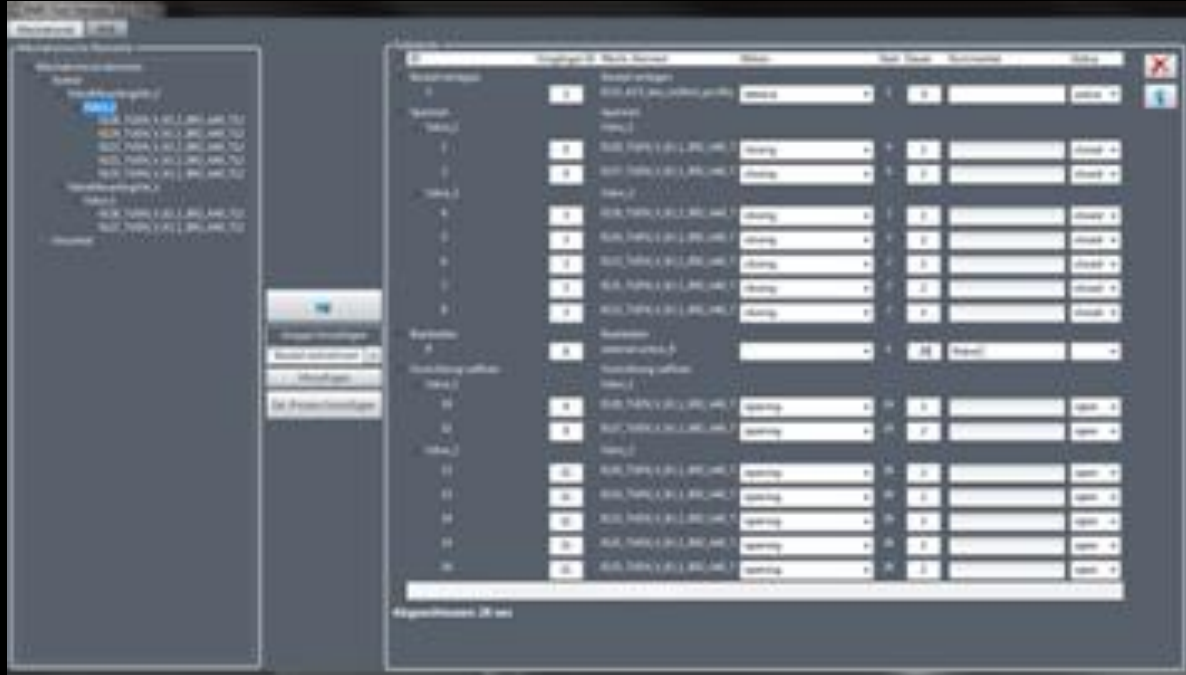
- All other disciplines can now use the data
- Using the revision methods of AutomationML enables updates to and from other disciplines

This prevents, e.g. typing errors, recurring information inquiry and multiple importer and converter.

Example AVANTI Demonstrator

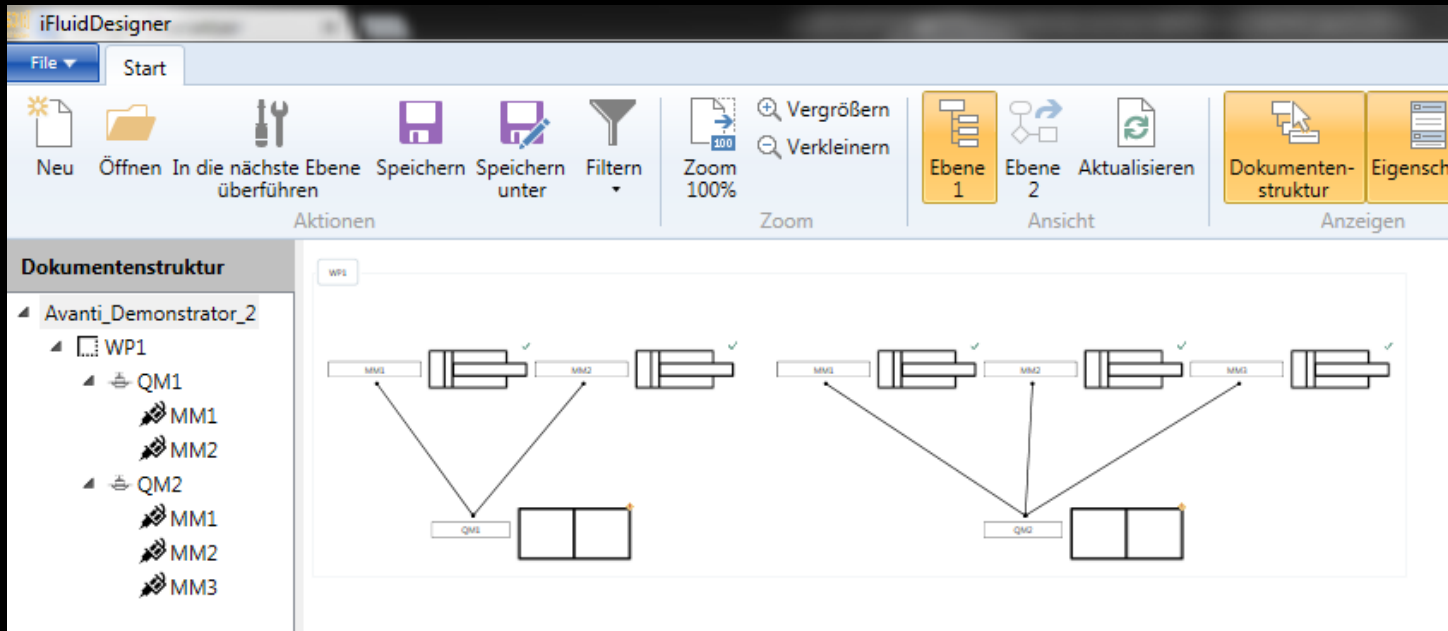


Example AVANTI Demonstrator Step 1



Using the NX Add-on to add information about cylinder / valve relations and fixture sequence

Example AVANTI Demonstrator Step 2 iFluidDesigner Level 1



- The AutomationML file is read by iFluidDesigner which allows a easy editing of the fluidics information from the NX model
- In Level 1 only the relations between cylinders, valves and the valve block are shown

Example AVANTI Demonstrator Step 3 iFluidDesigner Level 1



Eigenschaften

ID: 81e303b9-aadf-4dfb-8a42-f8de05a1f168

Name: QM1

Header Information

Version:

Copyright:

Description:

Artikelliste

Bauteil: Ventil

Typ: DirectionalControlValve

Ventil-Typ: 5 / 2

Textfilter: Filtern

Name	OrderNumber	Manufacturer	Description
FES.537953	537953	Festo AG & Co. KG	VMPA2-M1H-J-PI Magnetventil
FES.533342	533342	Festo AG & Co. KG	VMPA1-M1H-M-PI Magnetventil
FES.537952	537952	Festo AG & Co. KG	VMPA2-M1H-M-PI Magnetventil
FES.533343	533343	Festo AG & Co. KG	VMPA1-M1H-J-PI Magnetventil
FES.539182	539182	Festo AG & Co. KG	VSVA-B-B52-ZD-A2-1T1L Magnetve
FES.539156	539156	Festo AG & Co. KG	VSVA-B-B52-ZD-A1-1T1L Magnetve
FES.539159	539159	Festo AG & Co. KG	VSVA-B-M52-MZD-A1-1T1L Magnet
FES.539185	539185	Festo AG & Co. KG	VSVA-B-M52-MZD-A2-1T1L Magnet
FES.546768	546768	Festo AG & Co. KG	VSVA-B-M52-MH-A2-1R5L Magnetv
FES.534557	534557	Festo AG & Co. KG	VSVA-B-B52-H-A1-1R5L Magnetven
FES.184508	184508	Festo AG & Co. KG	MEBH-5/2-D-3-ZSR-FR-C Magnetve
FES.184502	184502	Festo AG & Co. KG	JMEBH-5/2-D-2-ZSR-C Magnetventi
FES.566995	566995	Festo AG & Co. KG	VSVA-B-B52-D-D2-1R5L Magnetven
FES.151844	151844	Festo AG & Co. KG	VL-5/2-D-2-FR-C Pneumatikventil
FES.546727	546727	Festo AG & Co. KG	VSPA-B-M52-M-A2 Pneumatikventil
FES.184495	184495	Festo AG & Co. KG	Magnetventil
FES.184509	184509	Festo AG & Co. KG	JMEBH-5/2-D-3-ZSR-C Magnetventi
FES.151014	151014	Festo AG & Co. KG	VL-5/2-D-1-FR-C Pneumatikventil
FES.561364	561364	Festo AG & Co. KG	VSVA-B-B52-D-D1-1R5L Magnetven
FES.561262	561262	Festo AG & Co. KG	VSVA-B-M52-MD-D1-1R5L Magnet

Details

Name: FES.534557

Id: 83cf6909-0f64-4546-a2e1-b2

OrderNumber: 534557

OrderType: VSVA-B-B52-H-A1-1R5L

DaimlerPartNumber: B833200457104

Description: VSVA-B-B52-H-A1-1R5L Mag

TechnicalDescription: Magnetventil VSVA-B-B52-H-

Manufacturer: Festo AG & Co. KG

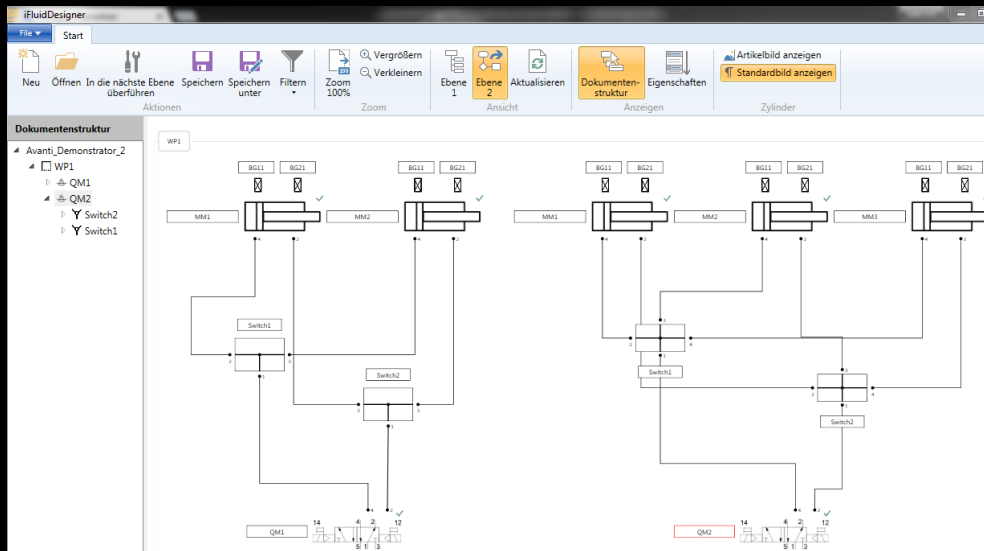
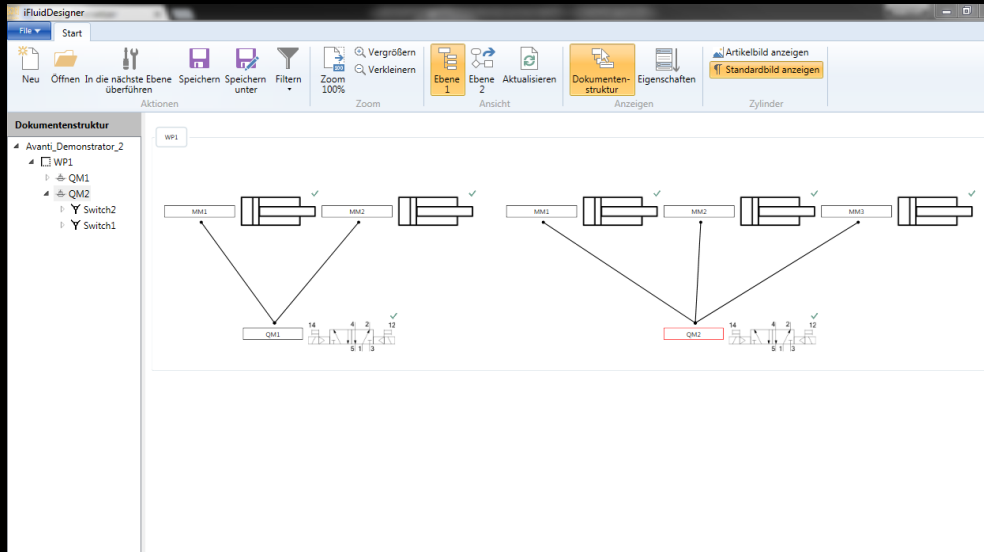
Symbol

14 4 2 12
5 1 3

OK Abbrechen

- To enrich the given data from NX, the fluidics engineer must assign the correct valves from the component library
- NX and iFluidDesigner use the same base component library, so iFluidDesigner already knows the cylinders which are used in the NX model

Example AVANTI Demonstrator Step 3 iFluidDesigner Level 2



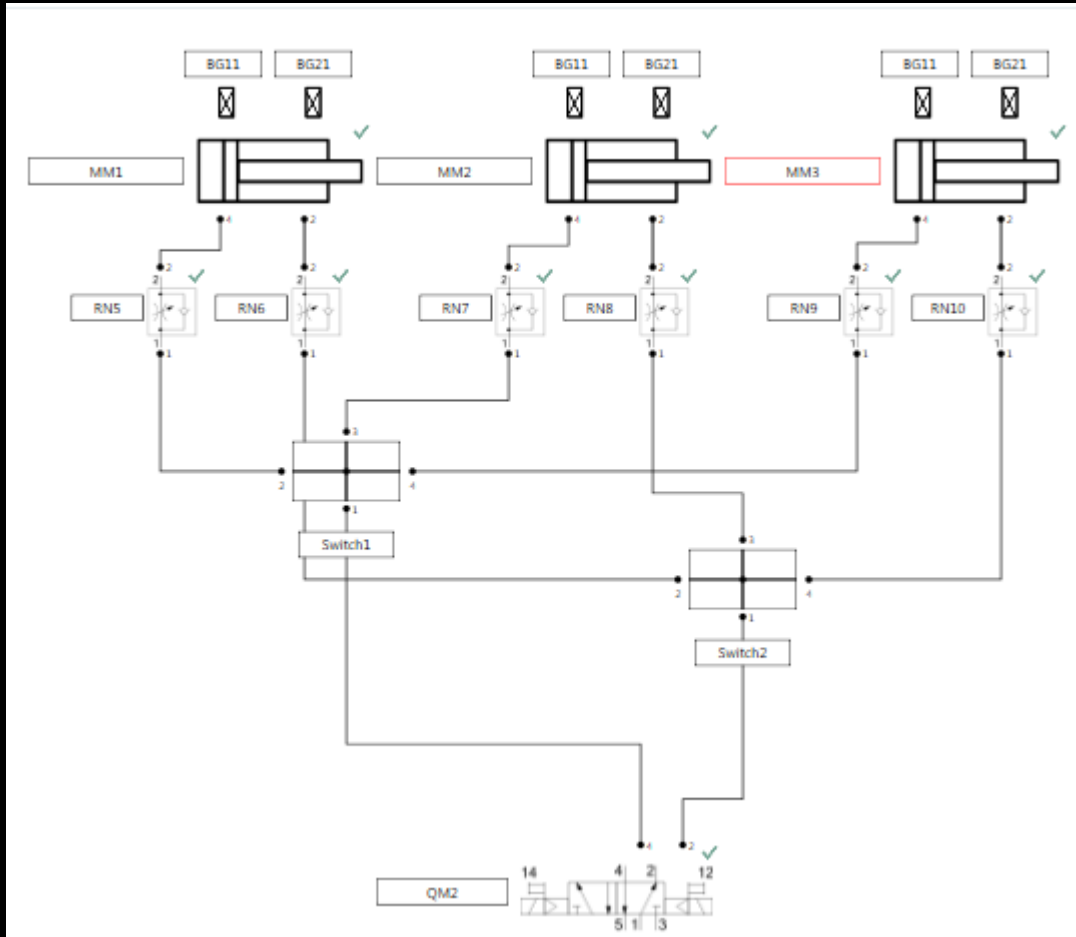
- With assigned article data, iFluidDesigner is able to create a functional fluidic plan
- iFluidDesigner has not the task to create a perfect fluidic plan, it just presents the result in a easy manner
- In every step its also possible to change the relations between cylinder and valve / valve and valve block easily, if necessary. Also the initial position of a cylinder can be changed
- Changes to the original NX data use the revisioning methods of AutomationML
- This enables the NX Add-on and other tools to keep track of changes

Example Step 3 iFluidDesigner Level 1 to Level 2



iFluidDesigner Live

iFluidDesigner next steps



Next steps for iFluidDesigner are:

- Import created fluidic data to a fluidic engineering tool like EPLAN Fluid or Festo FluidDRAW to create a fully qualified fluidics plan
- Implementing Level 3, which means that all relevant objects like tubes, fittings etc. has attached article data for creating a bill of material

