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	CAD/CAM Data exchange guideline for suppliers		JED 200
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1 General principles

A continuous increase in CAD/CAM data exchange between WABCO and contracting companies results from WABCO's strategic decision to optimize the vertical integration of the product development and production processes by giving an increasing number of part design and tooling design tasks to external partners.

In addition to a standardized data exchange process, the proper and effective data exchange among the partners involved requires precise stipulations about the kind, volume and quality of the data to be exchanged.

The present guideline specifies rules for the administrative and technological processing of the data exchange between WABCO and their suppliers.

The WABCO team "Data Exchange" is the partner to be contacted for any data exchange issues

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This guideline is based on the VDMA¹/VDA² standard sheet 66318 "Regeln für den CAD-Datenaustausch" (CAD data exchange guidelines) and on the VDA recommendation 4950 „CAD/CAM-Datenaustausch“ (CAD/CAM data exchange).

2 Organizational processing of the CAD/CAM data exchange

2.1 Preparatory clarification

The proper execution of the data exchange depends on the content of the data and on the properties of the CAD/CAM systems involved. Prior to assigning an order, the data exchange modalities have to be agreed among

- The supplier
- The WABCO expert team placing the order
- The WABCO team "Data Exchange".

The WABCO team "Global Sourcing and Purchasing" effects the coordination of the agreement.

Prior to placing a CAD/CAM order, the following stipulations have to be made between the supplier and the WABCO expert team placing the order:

2.2 Volume of the data to be transmitted

The parties have to clarify the data needed as working document by the contractor, and the data that WABCO expects as a result of the transfer. The contractor and the acquirer have to reduce the CAD/CAM data to be transmitted in order to achieve these volumes.

Types of CAD/CAM models to be transmitted:

2D drawing
3D volume model

¹ Verband Deutscher Maschinen- und Anlagebau / German Machine and Plant Builders Association

² Verband der Automobilindustrie / German Association of the Automotive Industry

A productive CAD/CAM data exchange can be effected only if the possible types of models used by the sender and the addressee are largely equivalent.

2.3 Initial data exchange

During the initial data exchange, the following items have to be clarified:

Systems involved

The combination of the systems involved often allows a statement on whether a data exchange can be made in the required volume, on the difficulties to be expected and on the procedure to be used for the optimization of the transmission result (e.g. design guidelines, correction processors).

Interface processors needed

Depending on the type and volume of data to be exchanged, interface converters can be used in accordance with the **EDP technology requirements**. The required processors have to be present on both sides.

Contact persons

Both sides have to appoint competent partners to be contacted for any questions arising in the context of the data exchange and data transmission over the entire course of the project.

2.3.1 Questionnaire for CAD data exchange

In order to provide the answers to questions relating to the initial data exchange, WABCO will send a CAD data exchange questionnaire to the supplier. By e-mail, WABCO's team "Data Exchange" will send this questionnaire to a competent contact person at the supplier's. As soon as WABCO has received the questionnaire answered by the supplier, WABCO can establish the CAD data exchange relationship in the relevant system.

2.3.2 Supplier's information packet

In addition, WABCO will provide the supplier with supportive information in the form of a supplier info packet in order to ensure the proper CAD data exchange.

2.3.3 Pilot data exchange

If the properties of the CAD/CAM systems and/or interface processors involved are not sufficiently known, the exchange options between the systems involved have to be investigated by means of test models prior to starting the productive data exchange. The type and volume of the test models should be similar to the models to be exchanged later. The transmission of the data should be made by means of the interface processors and media intended for the productive data exchange operation.

In these tests, the following items shall be documented in particular: systems involved, relevant software versions, the interface processors used, the media used, as well as the problems occurred and potential solutions to the problems.

The execution of the order may be started only after having ensured that the data exchange quality has reached or will reach a level that is acceptable to the two parties involved.

2.4 Productive data exchange

The productive data exchange is performed on the basis of the agreements made in the preparatory clarification and pilot phases, and on the basis of the VDA recommendations

- VDA 4951/2 (ENGDAT/ENGPART) - DFÜ von CAD/CAM Daten (CAD/CAM data telecommunication)
- VDA 4914/2 ISDN Odette FTP
- VDA 4955/3 Umfang und Qualität von CAD/CAM-Daten (CAD/CAM data volume and quality)
- VDA 4961/2 Kooperationsmodelle und SE-Checkliste zur Abstimmung der Datenlogistik in SE-Projekten (cooperation models and SE checklists for the agreement of data logistics in SE projects)

During the contract period, **the contractor** is obliged to agree with WABCO any changes or updates to be made to their CAD/CAM system software or processors. Changes always have to be announced to WABCO in writing.

2.5 Check and release of the data received

WABCO will check the CAD/CAM data received with respect to their content, structure and quality. WABCO will reject those CAD/CAM data that do not meet the data quality requirements defined by WABCO and specified in VDA recommendations 4951, 4955 and 4914.

The release will be made by the responsible WABCO designer.

If data insufficiencies are found in the course of action in the process chain, the originator (internal process chain partner or contractor) is obliged to eliminate without delay or cost all the insufficiencies found during the acceptance test.

2.5.1 Interface errors

As far as possible, any interface errors shall be eliminated in cooperation of the two partners. Each party will bear its own costs arising.

3 EDP technology prerequisites

Deviations from the rules defined below are allowed in exceptional cases only. They always have to be agreed in advance with the WABCO expert team concerned.

If due to a deviation problems occur, the supplier bears the responsibility for the consequences arising from these problems as well as for the immediate correction.

3.1 Data formats

Depending on the order, volume and content of the data, the contractor and the WABCO team "Data Exchange" have to agree the data formats to be supplied and received by WABCO.

Generally, the data can be exchanged either in the system-specific format of the CAD/CAM system used in the WABCO expert team placing the order, or in the neutral data formats IGES, DXF or STEP AP214 CC2.

WABCO prefers the data exchange to be made in the system-specific format PRO/ENGINEER.

If the contractor processes the data to be transmitted by means of the same CAD/CAM system as used by WABCO, the data shall be transmitted in the CAD system-specific format.

3.2 Data exchange in the system-specific format

Currently, WABCO uses the following CAD/CAM systems as basic systems for which data may be delivered in the system-specific format:

- PRO/ENGINEER

On request, the WABCO team “Data Exchange” will inform you about the version currently used at WABCO. Data provided by different installations of the same system, however, are not always compatible. These are the prerequisites for the proper data exchange:

- Identical or compatible computer hardware
- Identical operating system with the same or upward compatible version
- Identical or upward compatible CAD system version
- Use of the WABCO start models

3.3 Packaging of PRO/ENGINEER data

The following packaging procedures for PRO/ENGINEER data are currently supported by WABCO:

- TAR

Neutral interface formats (STEP, IGES, DXF, VDAFS etc.) shall not be supplied as TAR-Packet.

3.4 Data exchange in a neutral data format

For orders that are not processed with one of the CAD/CAM basic systems stated above, the data exchange will be made in one of the following interface formats:

- IGES (for 2D)
- DXF (for 2D – only if explicitly demanded by the WABCO expert team)
- STEP AP214 CC2 (for 3D)
- VDA-FS (for 3D – only if explicitly demanded by the WABCO expert team)

Any other interface formats (SET, DWG, etc.) are not supported.

4 Data transmission

The transmission of the data between WABCO and the contractor shall be made exclusively by data telecommunication.

Due to the high personnel and time expenditure required for the data exchange by means of data carriers, WABCO does no longer support the medium data carrier (CD, floppy disk etc.).

WABCO currently supports the following protocols and basic networks:

- Odette FTP via ISDN or ENX
- Odette FTP with ENGDAT, ENGPART via ISDN or ENX

As far as possible, the data exchange via ENX shall be preferred.

4.1 Alternative data transmission via ASP Service

If the supplier does not have their own ISDN or ENX/OFTP solution, the ASP Service provided by the SSC Company, for instance, may be used as an alternative. It works as a data transmission system on a secure and encrypted base (ISDN or Modem with 128 B.SSL). The supplier will have to pay fees for the use of this ASP-Service.

For more detailed information, please refer to:

<http://www.ssc-services.de/>

E-Mail: <mailto:Kontakt@SSC-Services.de>

Phone: +49 711 78 26 08 40

4.2 Use of ENGDAT / ENGPART

In order to ensure the correct and automatic forwarding to the responsible designer of the CAD/CAM data transmitted by the supplier, we recommend the use of ENGDAT and ENGPART.

5 Compression of CAD/CAM data

The following compression methods are currently supported by WABCO:

- (g)zip - **no zip archives!**
- UNIX compress

ZIP archives are not supported. The CAD/CAM data have to be compressed as individual files.

6 Contact

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