

## About Zentralverband Oberflächentechnik

- Established in 2000
- Counts more than 200 direct members (SMEs)
- Represents industry interests at EU & DE level
- Member of European Committee for Surface Treatment (CETS)

### The ZVO coordinates:

- Trainings for staff
- Work safety
- Innovation
- Fairs, expert committees and working groups



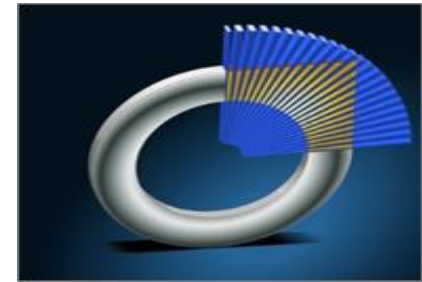
## Facts about the electroplating industry



**Automotive**



**Electronics**



**Design**



**Aerospace**



**Plumbing**



**Lifestyle**



**Information**



**Medical  
technology**



**Building**

## Main topics currently discussed:

- Circular economy
- Resource efficiency
- Restrictions
- Substitution

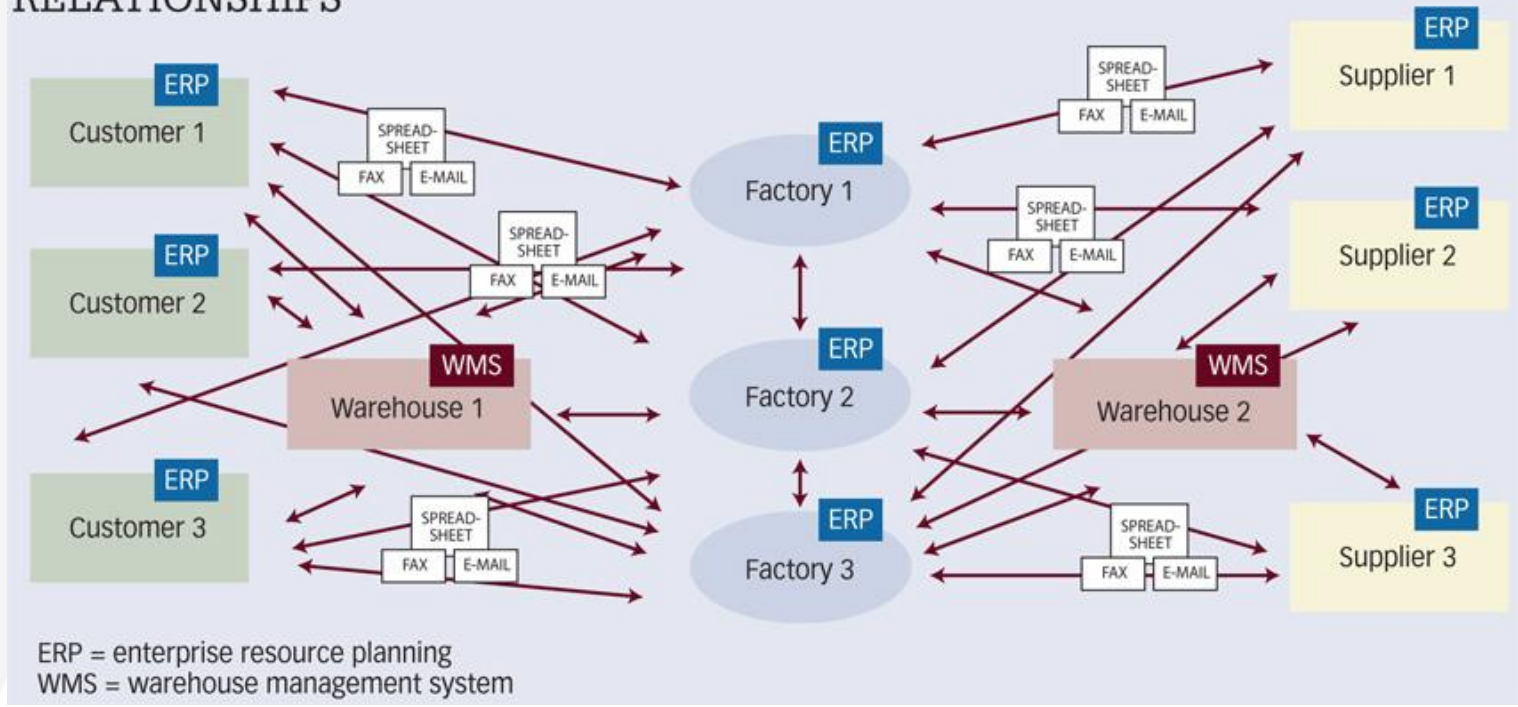
...what do they have in common?

## Interventions in complex dynamic systems!

„Complexity characterises the behaviour of a system having components interacting in multiple ways and following local rules!“

Meaning: there is no reasonable higher instruction to define the various possible interactions

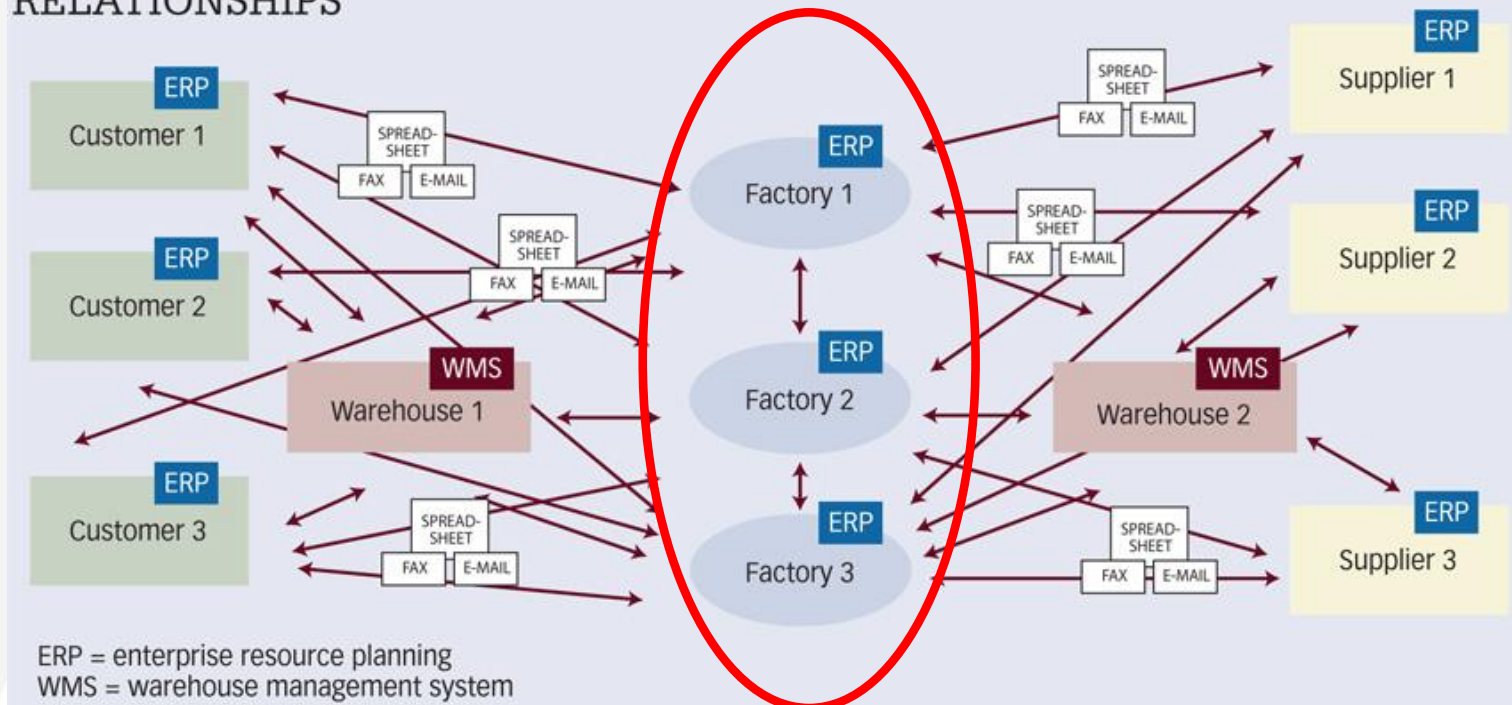
[FIGURE 1] COMPLEXITY OF TRADITIONAL MANUFACTURING RELATIONSHIPS



## How can impacts of interventions/changes/deviations be

- quantified
- avoided or
- at least identified?

[FIGURE 1] COMPLEXITY OF TRADITIONAL MANUFACTURING RELATIONSHIPS



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**The simplified supply chain approach is insufficient and risky!**

**To draw reliable conclusions about**

- **drawbacks**
- **Side effects**
- **Risk-risk-trade-offs**
- **Regrettable measures**

**we need a holistic approach!**

**Complex dynamic systems are generally  
not simple  
and  
not transparent  
to human mindset!**

**Modelling and simulation may overcome this limitation**



**Thank you for your attention!**

## **Contact details**

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