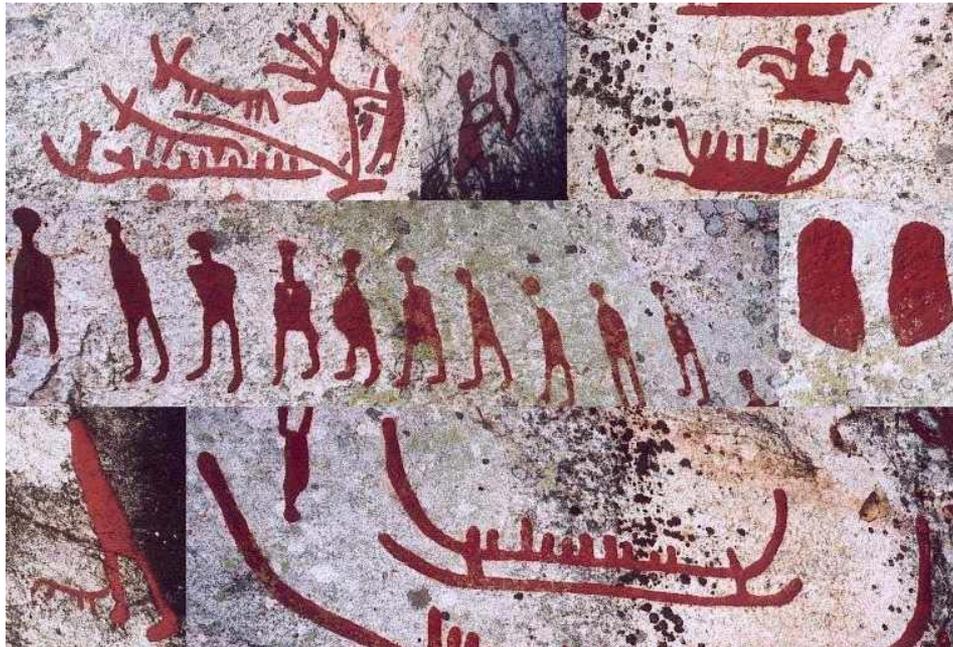


# Visualization to improve didactics in learning factories

Yvonne Eriksson, professor in  
Information Design

# Visual communication

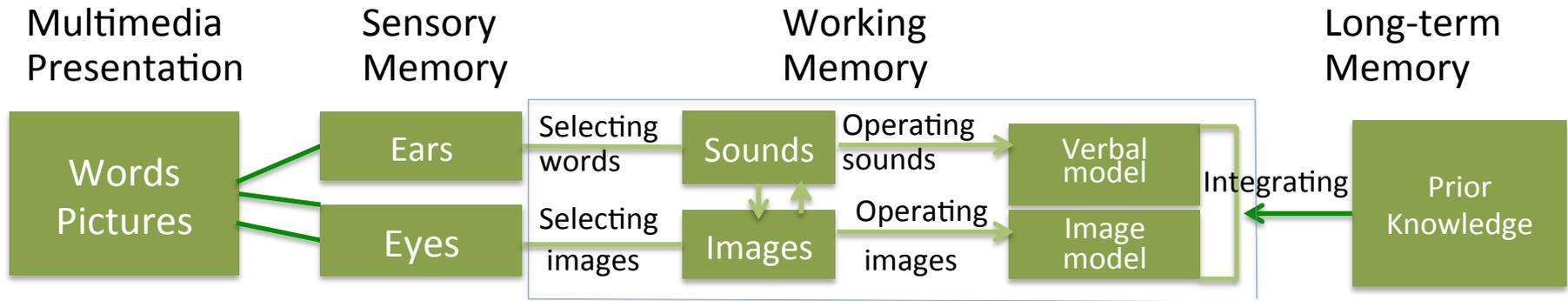
- Pictures – a long history and a long tradition.
- Pictures for learning and for demonstration.



# Visuals for learning

- Didactic – is a teaching method that follows a consistent scientific approach.
- Visuals for didactic – is visuals that follow a consistent scientific approach.

# A framework for a cognitive theory of multimedia learning



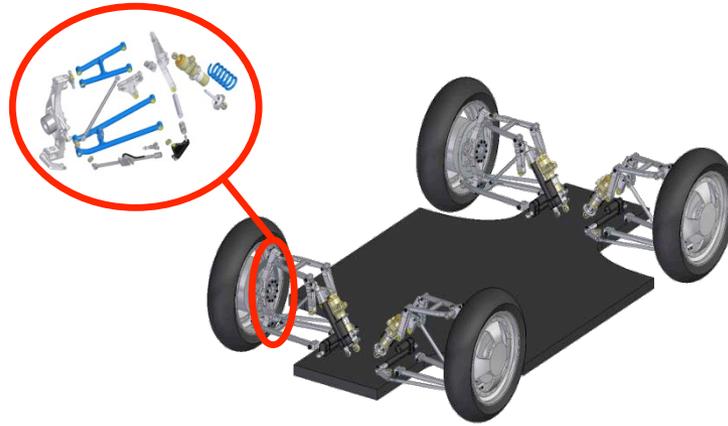
From: R.E Mayer (2003)

# Characteristics of visuals

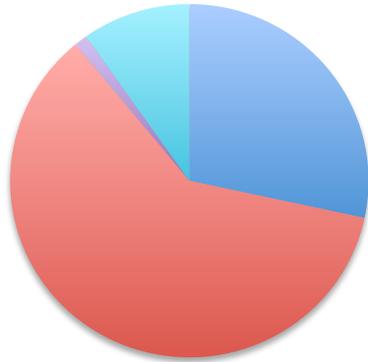
- Visuals can portray things.



- Visuals can show relations such as size and position.



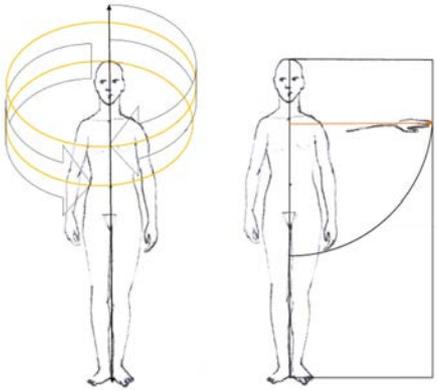
- CLII, CCCL, IV, LIX
  - 152, 350, 4, 59



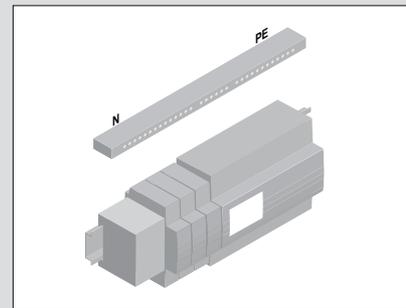
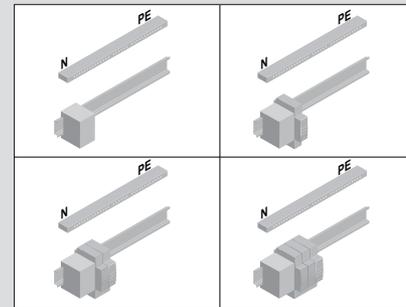
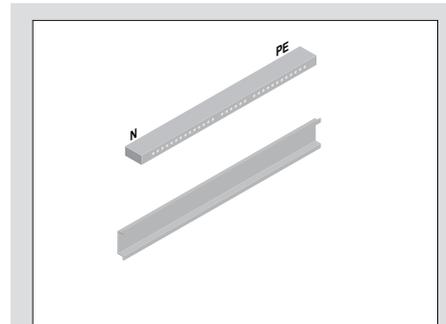
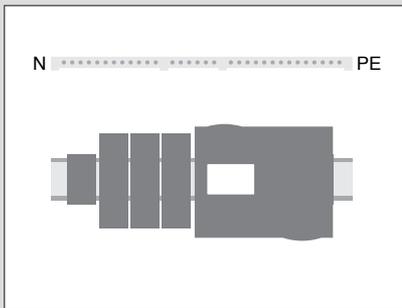
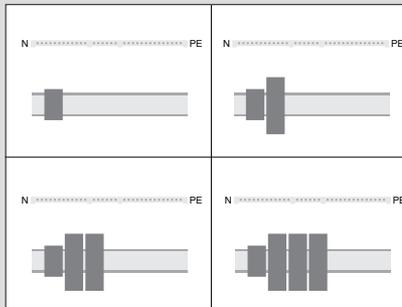
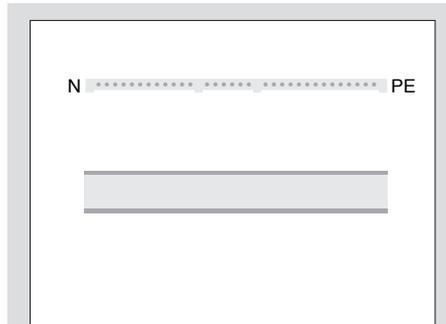
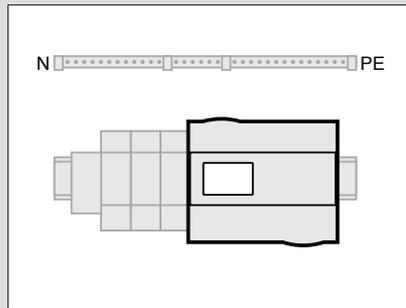
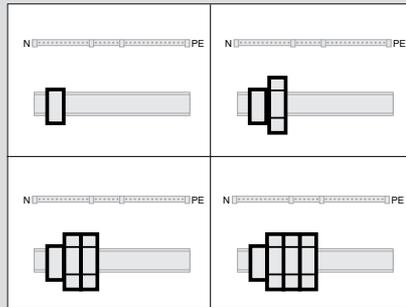
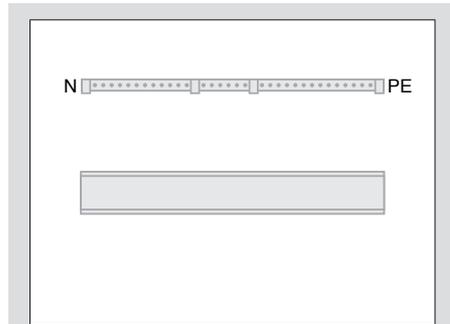
# From illusive to immersion

- Illusions follows a system.
- A picture is a re-representation of something.
- The re-presentation effects the way we see, understand and think about it. It makes us think in a specific way.
- To make visible – to make tangible.

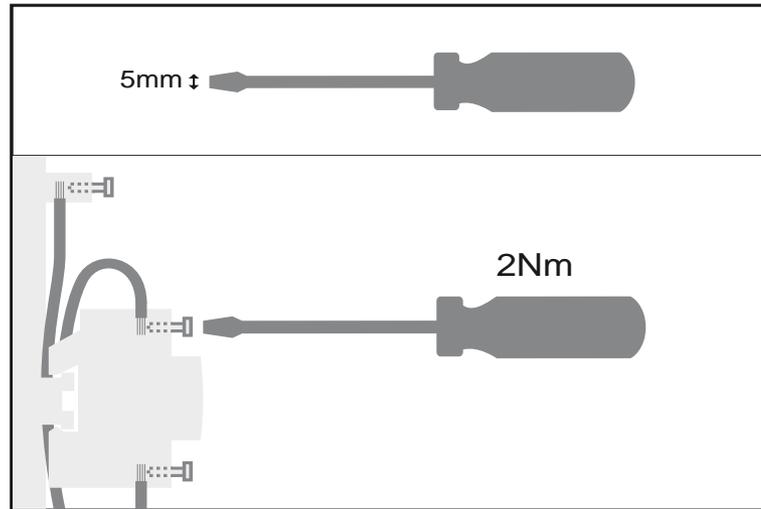
# Immersion



# What? Why? How?



# Indication of action



# The role of visual literacy

- An image is not merely a picture, but involves social activity and interaction between people.
- The importance to study the activity in order to understand “the nature of picture-based media as means of communication.”
- Developing an understanding and use of images to “a quality of mind developed to the point of critical perceptual awareness in visual communication”.

# But what is visual literacy?

- No single fixed definition.
- Socially constructed.
- “a broader reconceptualization of what we mean by literacy itself to suitably advance educational curricula rather than adopting merely function conceptions of it”

# Visual literacy – visual cultural zone



# What are required from visuals in learning situations?



7. Se till att alla lagernålar är på plats.



8. Fetta in övre delen av planetgehjulet.



13. Montera lagernålar varv 2.



14. Ruckla till alla lagernålar fallit på plats.



13. Montera lagernålar varv 2.



14. Ruckla till alla lagernålar fallit på plats.



9. Placera axialbricka över lagernålarna.



10. Vänd planetgehjul i fixtur.



15. Se till att alla lagernålar är på plats.



16. Fetta in övre delen av planetgehjulet.



15. Se till att alla lagernålar är på plats.



16. Fetta in övre delen av planetgehjulet.



11. Placera 3st distansbrickor i planetgehjulet.



12. Placera monteringskrant på planetgehjul.



17. Placera axialbricka i över lagernålarna.



18. Montera 3 st lagerhjul till varje planetgehållare.

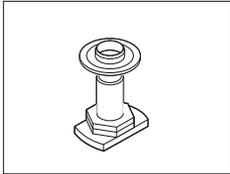


17. Placera axialbricka i över lagernålarna.

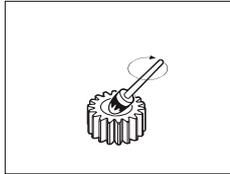


18. Montera 3 st lagerhjul till varje planetgehållare.

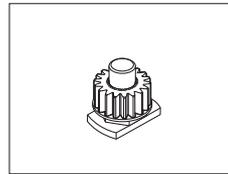
# What is required from the user?



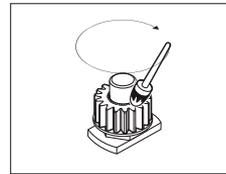
1. Placera monteringshysan på fixturen.



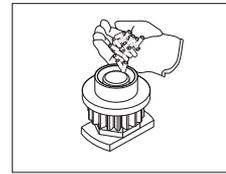
2. Fetta in lageryta på planethjulet.



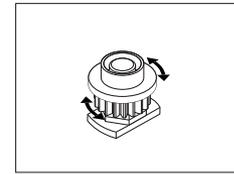
7. Se till att alla lagernålar är på plats.



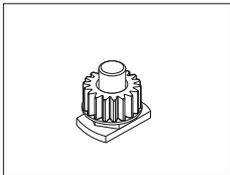
8. Fetta in övre delen av planethjulet.



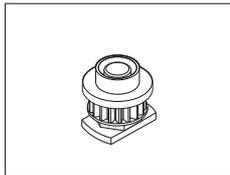
13. Montera lagernålar varv 2.



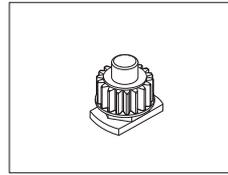
14. Ruckla till alla lagernålar fallit på plats.



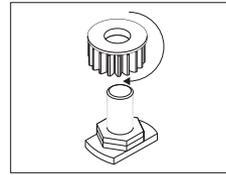
3. Placera planethjul i monteringsfixtur.



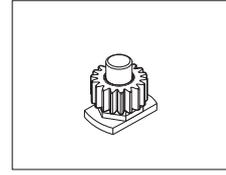
4. Placera monteringstratt på planethjul.



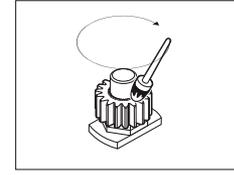
9. Placera axialbricka över lagernålarna.



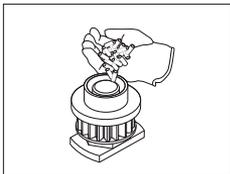
10. Vänd planethjul i fixtur.



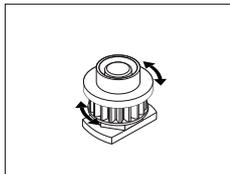
15. Se till att alla lagernålar är på plats.



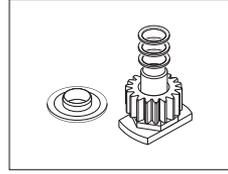
16. Fetta in övre delen av planethjulea.



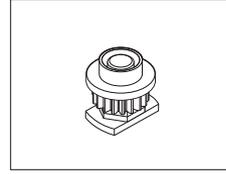
5. Montera lagernålar varv 1 (22st)



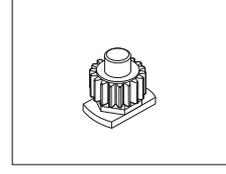
6. Ruckla till alla lagernålar fallit på plats.



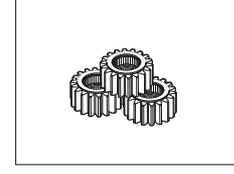
11. Placera 3st distansbrickor i planethjulet.



12. Placera monteringstratt på planethjul.



17. Placera axialbricka i över lagernålarna.

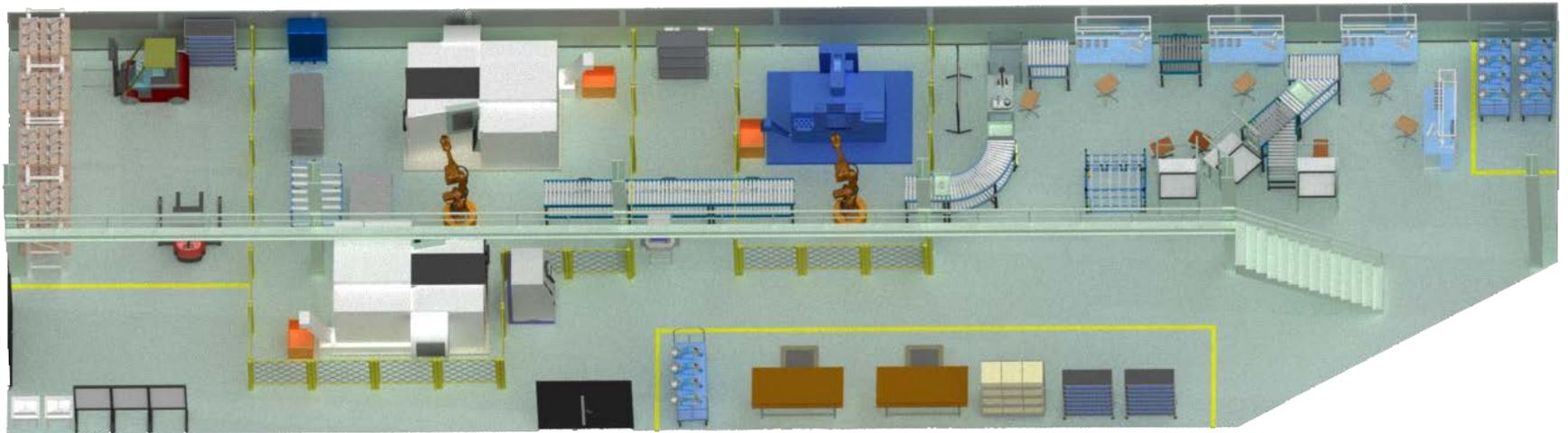


18. Montera 3 st lagerhjul till varje planethållare.

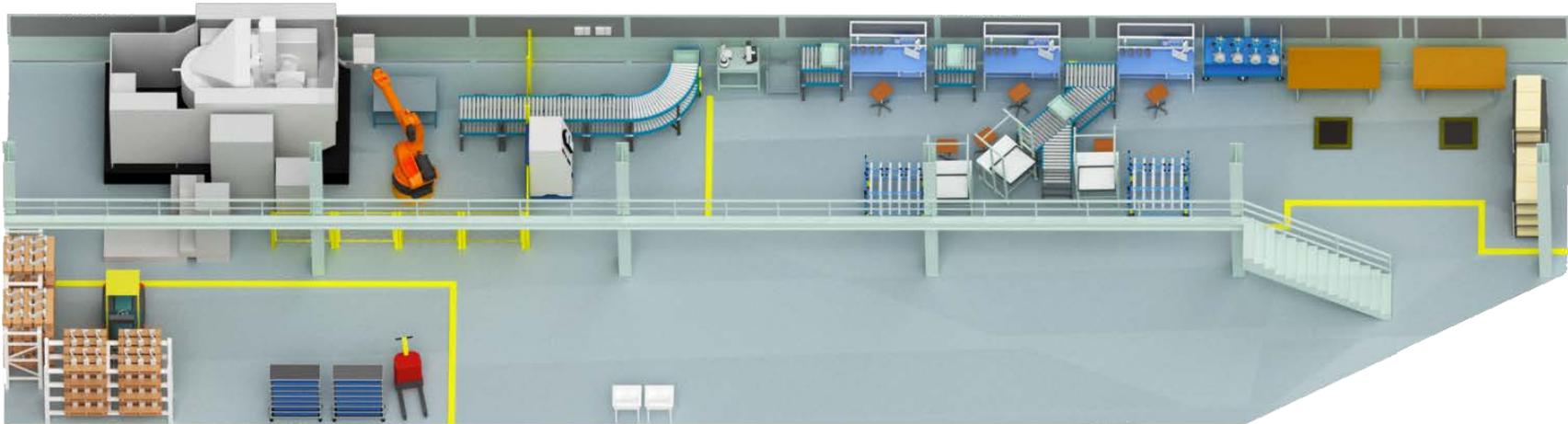
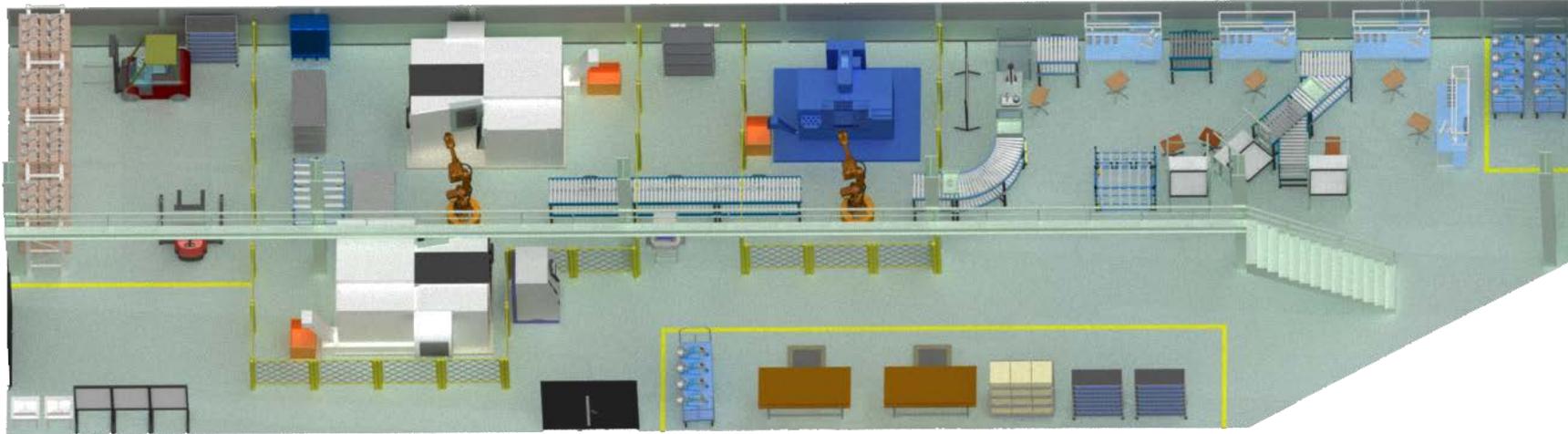
# From one production system to another

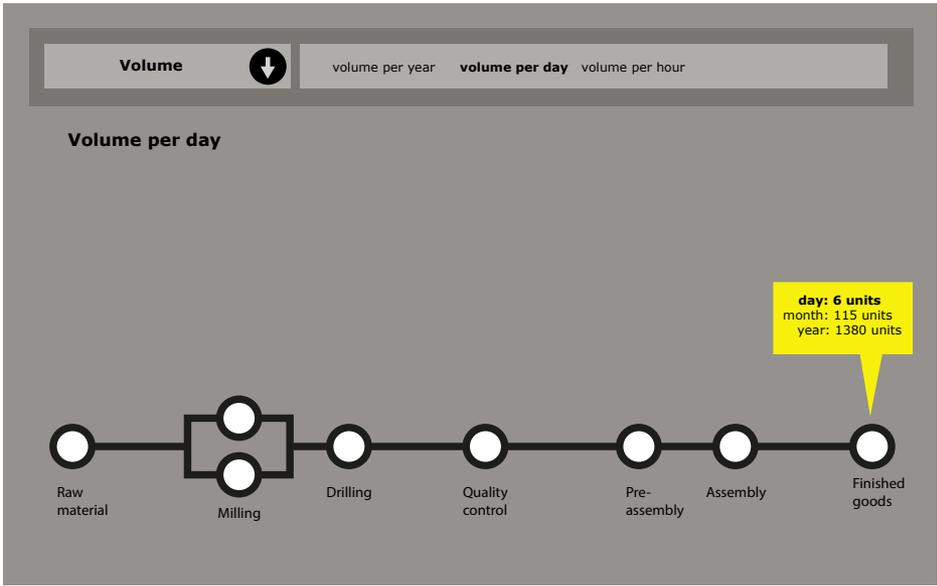


# Factory layout



# Comparison



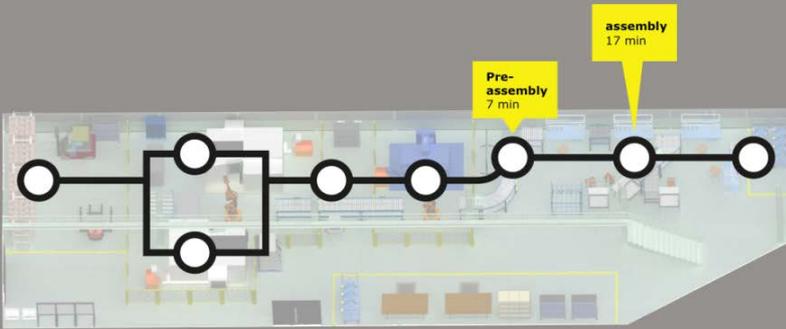


time



cycle and machining change over **assembly** maintenance

### Assembly

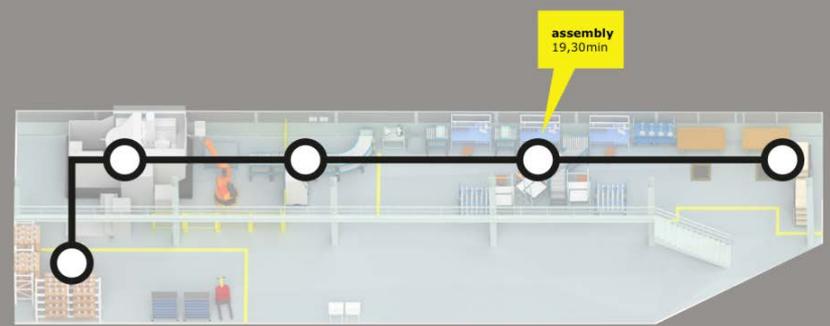


time



cycle and machining change over **assembly** maintenance

### Assembly

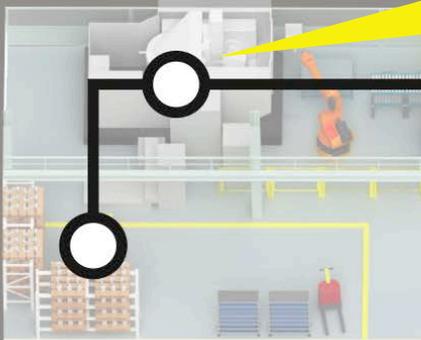


time

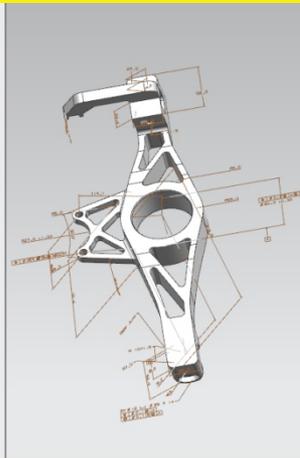


cycle and machining change over **assembly** maintenance

## Assembly



- Part Navigator
- Name
  - PMI
  - 3D Centerline (3)
  - 3D Centerline (7)
  - Center Mark (305)
  - Center Mark (306)
  - Cylindrical Dimension (122)
  - Cylindrical Dimension (166)
  - Datum Feature Symbol A (25)
  - Datum Feature Symbol B (25)
  - Datum Feature Symbol C (32)
  - Datum Feature Symbol D (17)
  - Diameter Dimension (273)
  - Diameter Dimension (287)
  - Diameter Dimension (288)
  - Diameter Dimension (292)
  - Directed Parallel Dimension (2)
  - Feature Control Frame (265)
  - Feature Control Frame (266)
  - Feature Control Frame (275)
  - Feature Control Frame (286)
  - Feature Control Frame (289)
  - Feature Control Frame (293)
  - Feature Control Frame (332)
  - Feature Control Frame (337)
  - Hole Dimension (274)
  - Horizontal Dimension (311)
  - Horizontal Dimension (312)
  - Horizontal Dimension (314)



# Conclusion

- It does exist science and theories for learning and learning processes.
- It does exist theories for visuality and vision.
- It does exist theories for design of user friendly interfaces.
- The challenge is to combine these theories and knowledges in a way so the visuals will improve the didactics in a learning factories.