



SUMMER SCHOOL

05th September 2018

Advanced handling solutions

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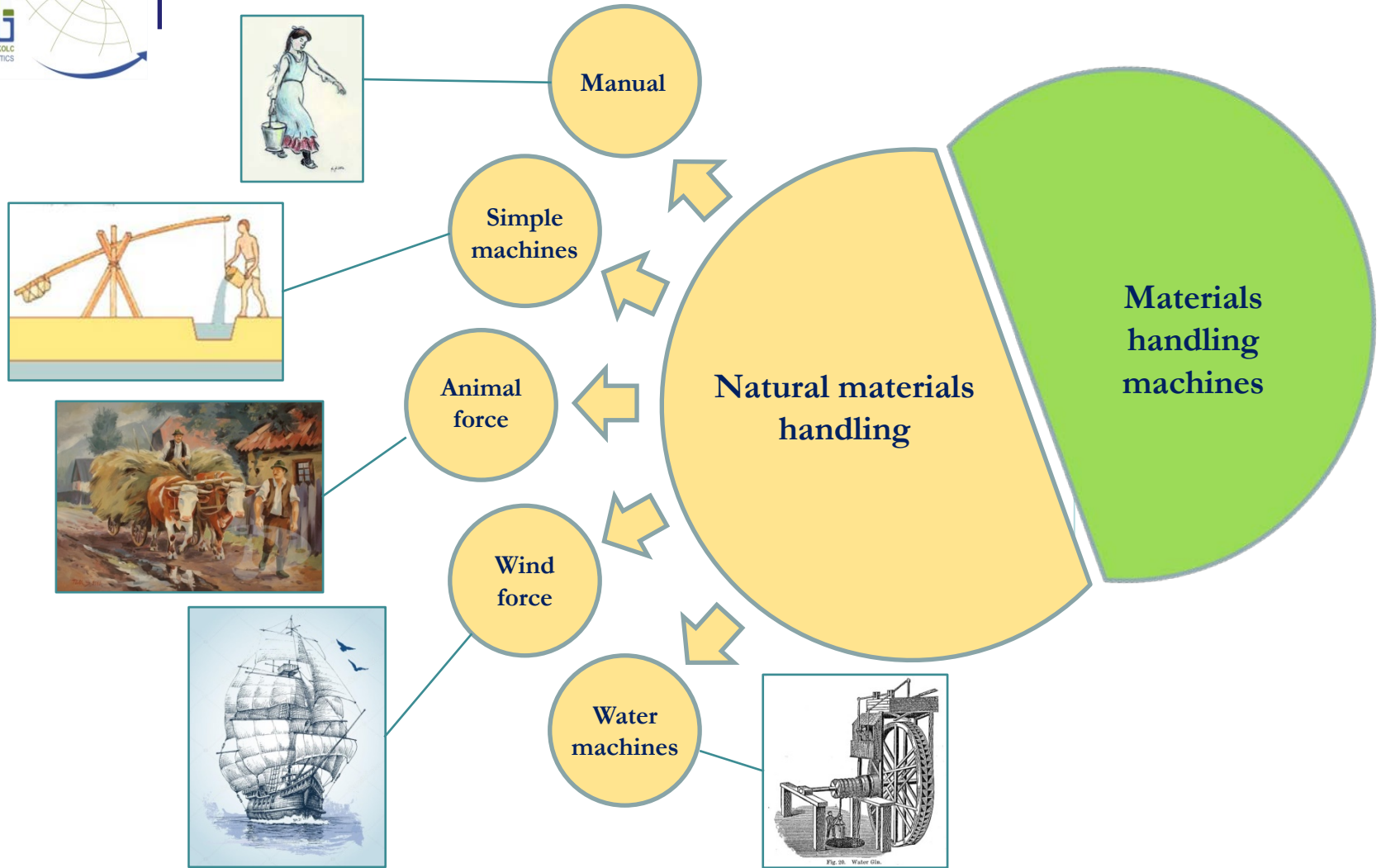
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Thematics

1. Realization of handling processes
2. Typical machines for handling tasks
3. Mobil handling units
4. Mounted handling equipment
5. Handling machines with towing elements
6. Transport paths
7. Development directions in technology
8. Future of the material handling
9. References

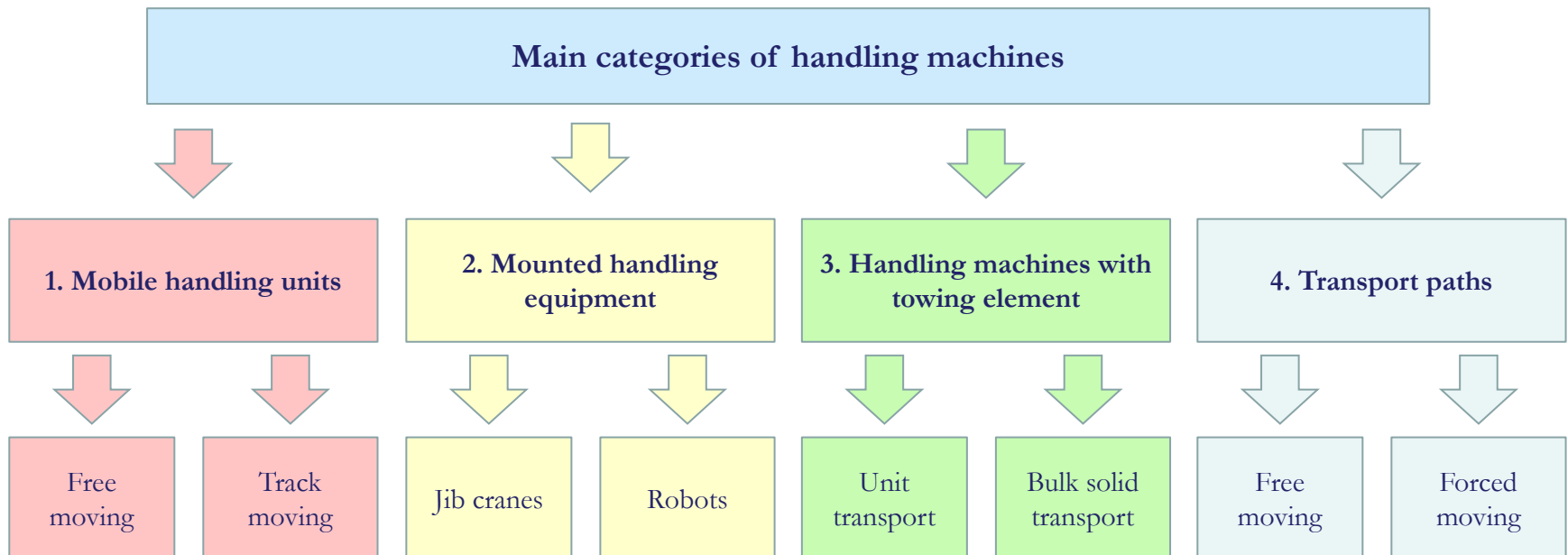
Realization of handling processes



Typical machines for handling tasks



There are different types of machines in the materials handling processes. In the aspect of the design and operation the most machines there are many similarities in their structure and operation.



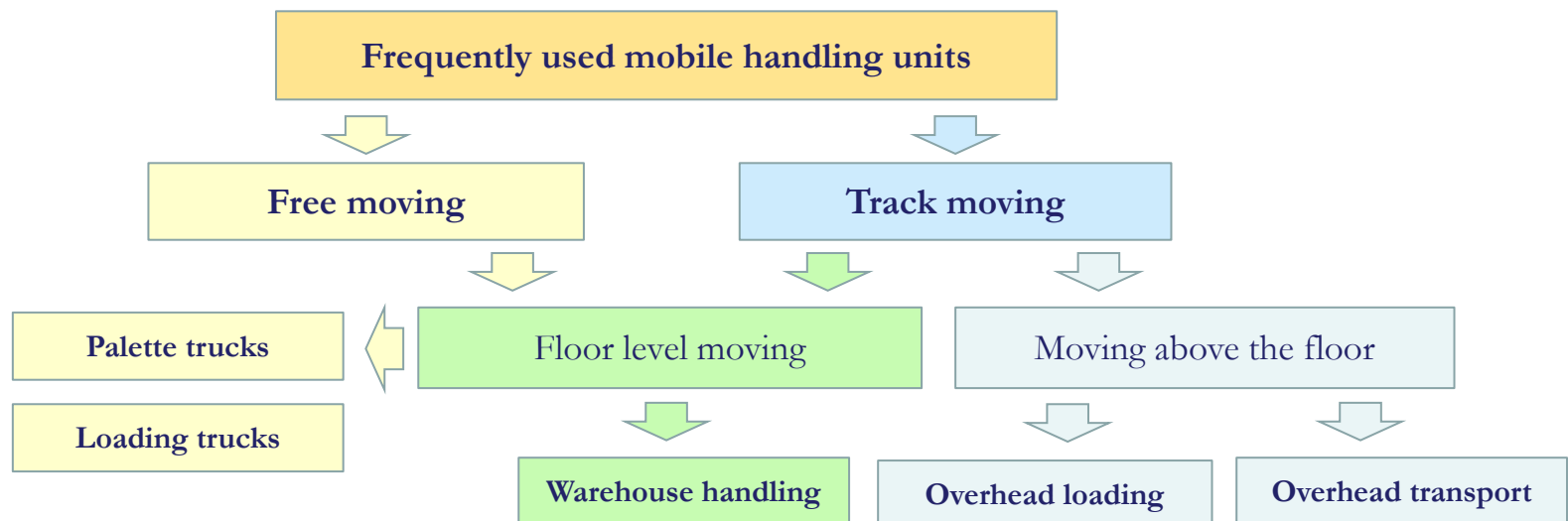
1. Mobil handling units

Goods are moving on individual, mobile transport units.

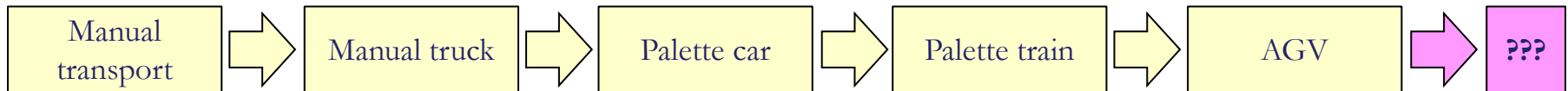
Units handle goods between the objects in individual transport cycles, in discrete quantities.

Operation of the units are individual and realized on different routes fitted to different control programs.

Mobile handling units involves trucks, running cranes, monorails, rack stackers, etc.



Solutions and evolutions → Palette trucks





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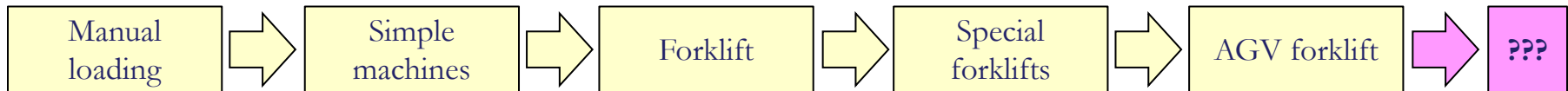


Schäfer Weasel System

1. Schäfer video.



Solutions and evolutions → Loading trucks





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Jungheinrich AGV forklift

2. Jungheinrich video.

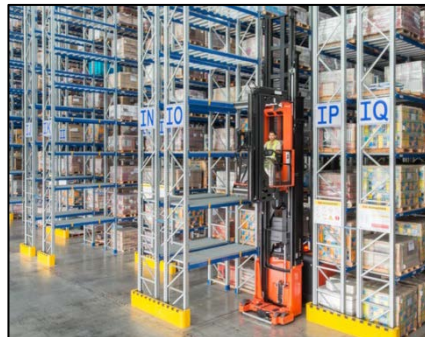
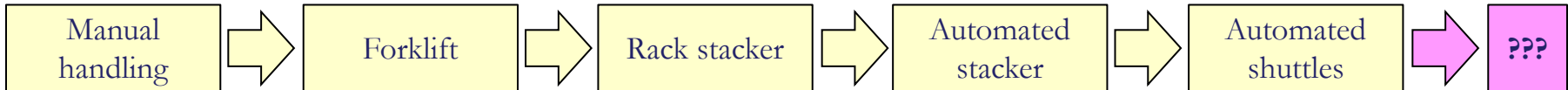




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Solutions and evolutions → Warehouse handling





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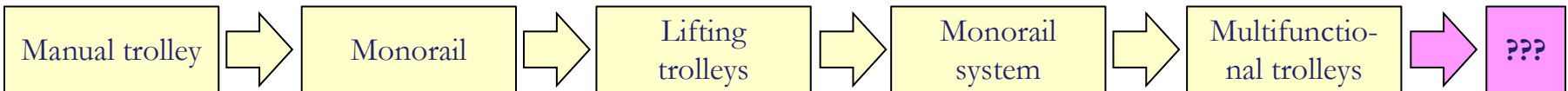
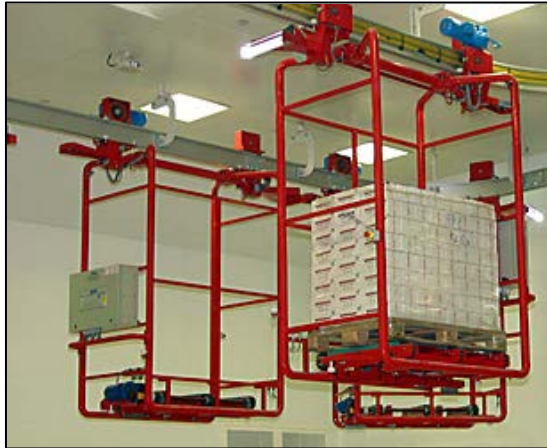


Schäfer Shuttle System

3. Schäfer video.



Solutions and evolutions
→ **Overhead transport**



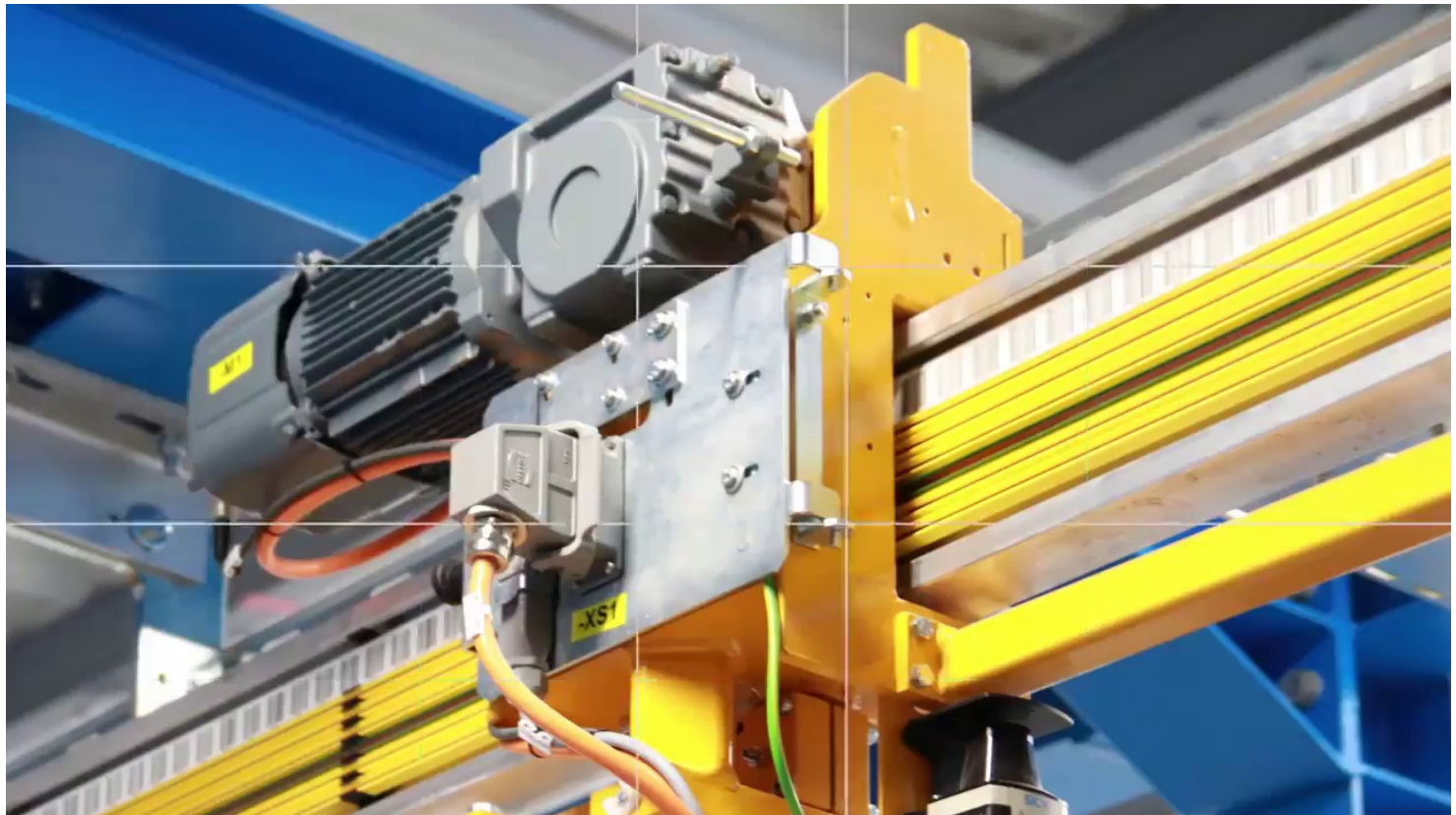


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LJU EMS System

4. Lju video.

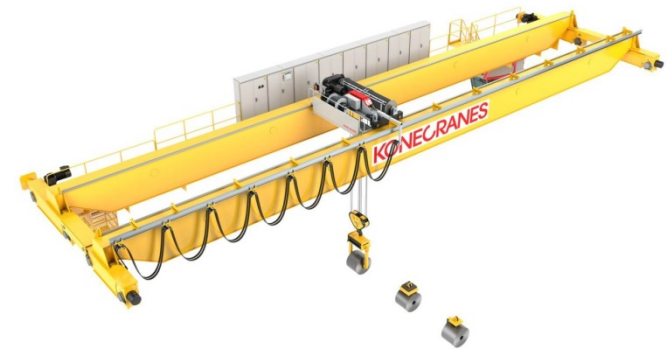
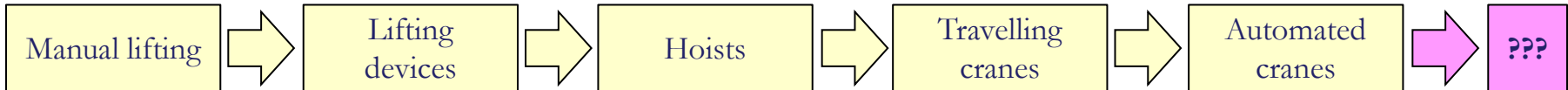
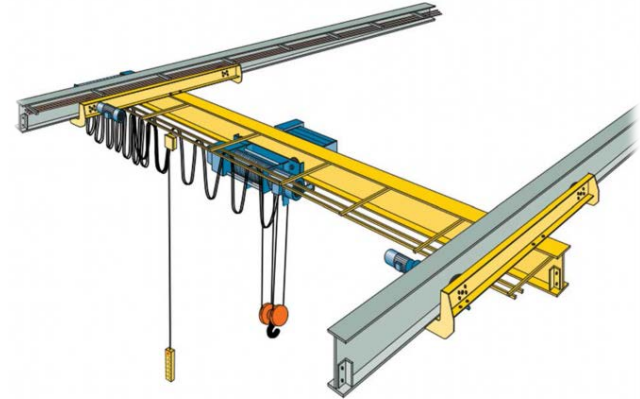




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Solutions and evolutions → Overhead loading



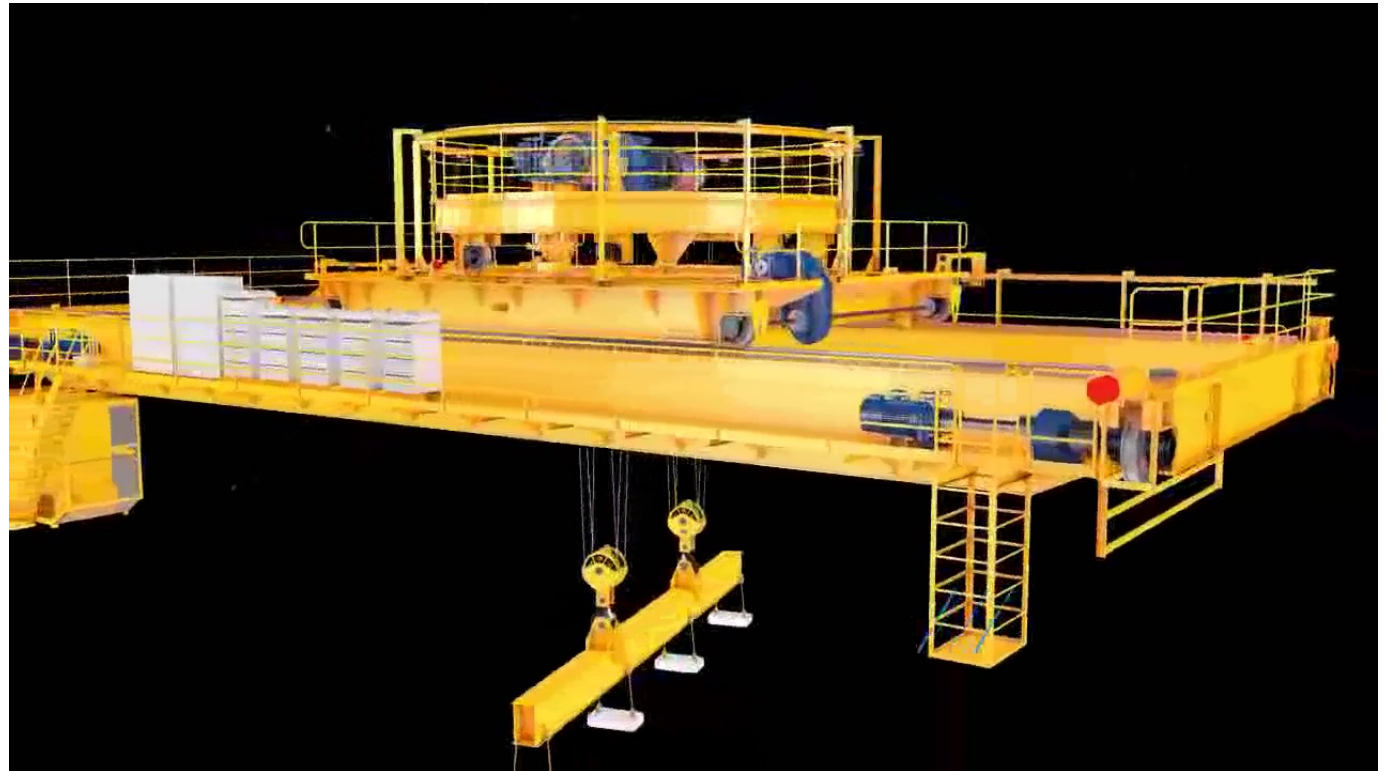


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Spaggiari automatic crane

5. Spaggiari video.





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2. Mounted handling equipment

Loading of goods at small distances can be realized by mounted equipment by linear or rotating direction.

This machines work in discontinuous cycles with discrete quantities.

Loading or transfer can be only realized by these machines.

Similar activities can be also actualized by the additional equipment of continuous handling devices (e. g. transfer solutions of roller conveyors).

Most important types:

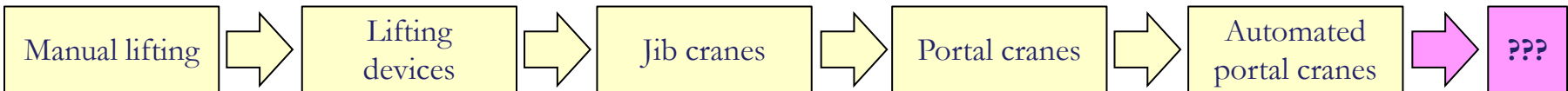
- jib cranes,
- portal cranes,
- robots,
- manipulators, etc.



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Solutions and evolutions → Jib cranes





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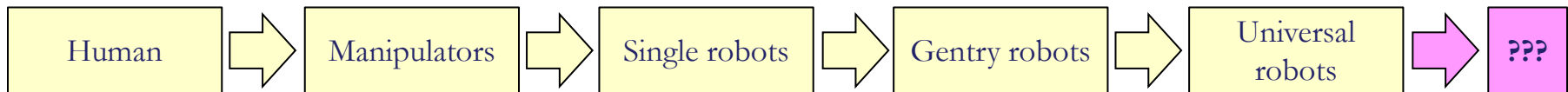
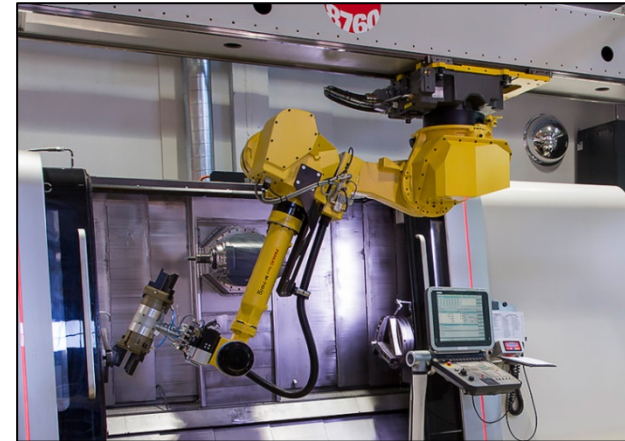


Automatic portal crane

6. Portal crane video.



→ Robots in material handling





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Fanuc gentry robot

7. Fanuc video.



3. Handling machines with towing elements

For continuous transport of goods can be realized by towing elements, which can be

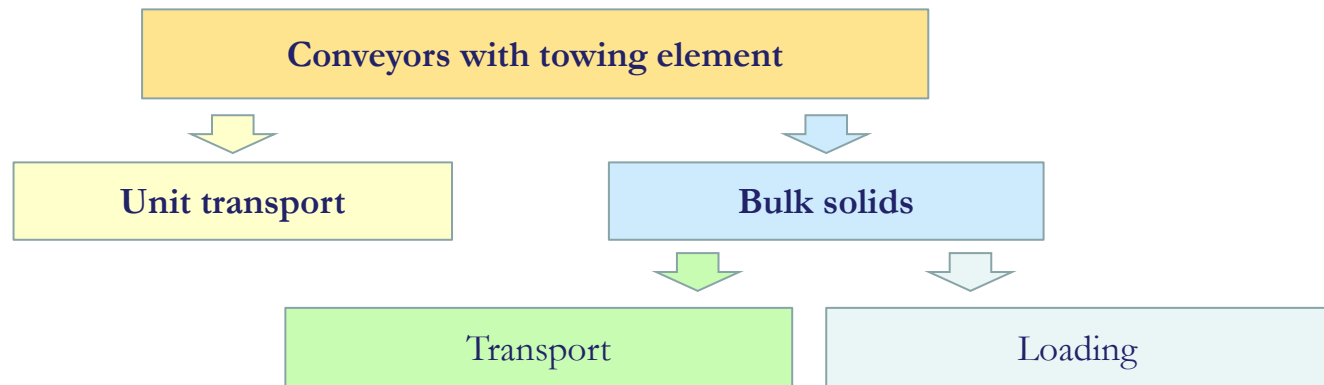
- rope (e. g. steel) or
- chain (e. g. roller chain).

Goods are transported on a hanger, in a transport car or in a bucket.

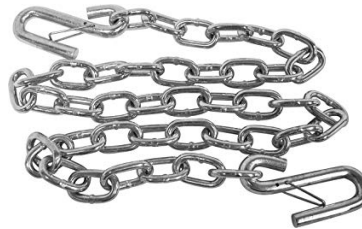
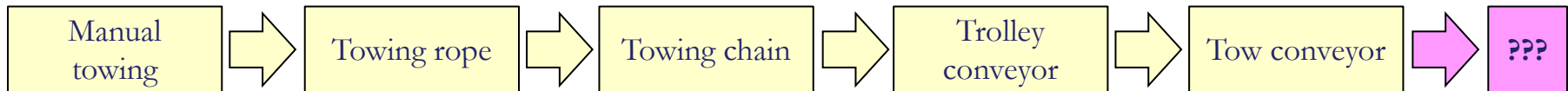
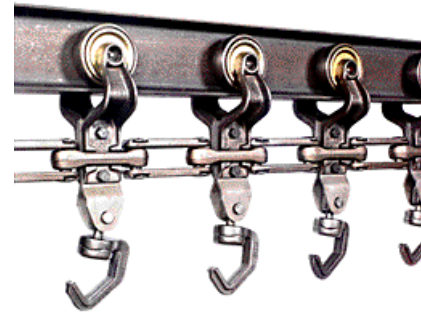
Track of the towing element determines the transport line.

Operation characteristics of the transport are defined by the parameters of the towing element.

Towing elements are used for chain conveyors, elevators, reclaimers, etc.



Solutions and evolutions → Conveyors for units





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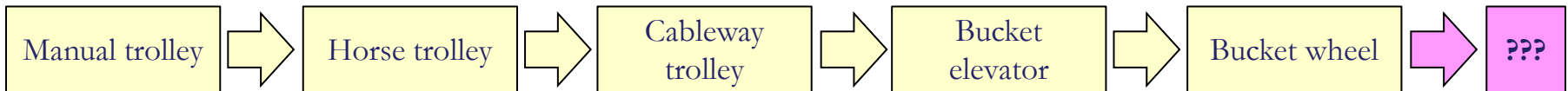
Lo-Tow inflow conveyor system

8. Lo-Tow video.



Solutions and evolutions

→ **Conveyors for bulk solids**



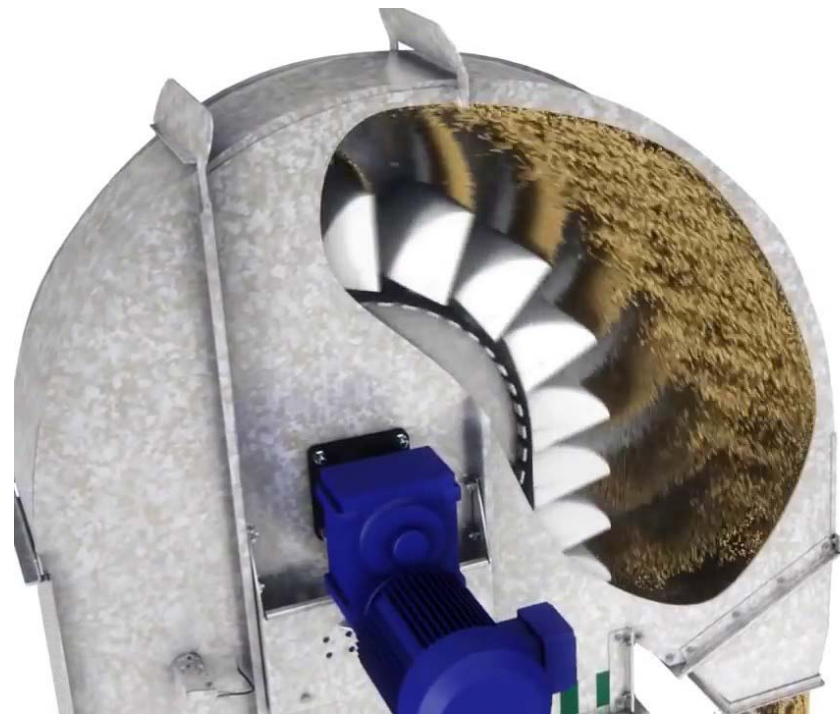


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Cimbria bucket elevator

9. Cimbria video.





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Noen K100 bucket wheel

10. Noen video.

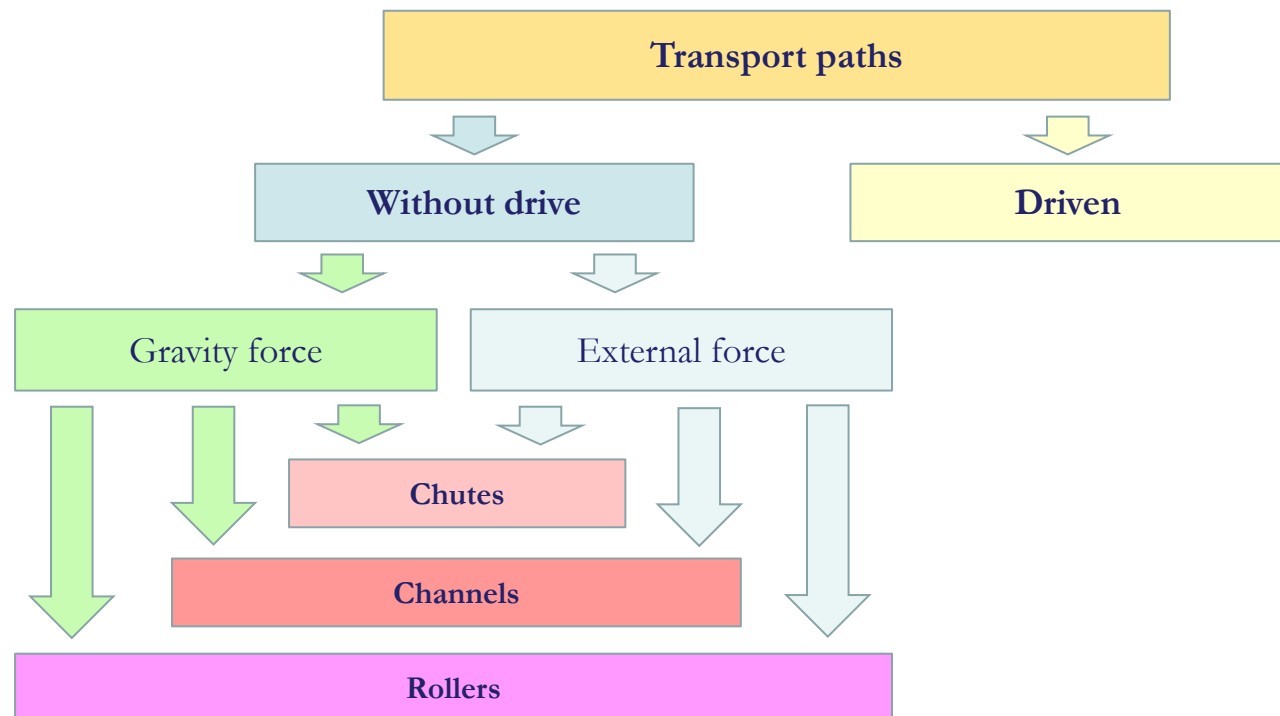


4. Transport paths

Transport paths applied for continuous moving of units and bulk solids.

Moving is caused by a the moving of the path or an external force.

Moving is realized along a given line which determines the moving parameters.

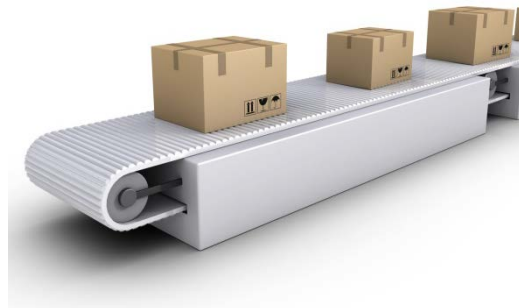
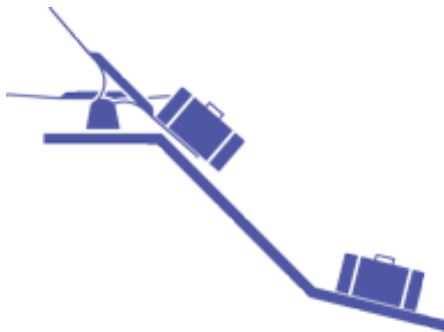
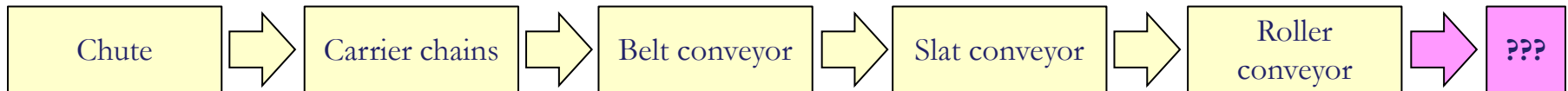
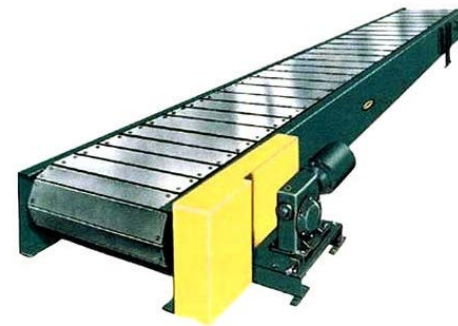
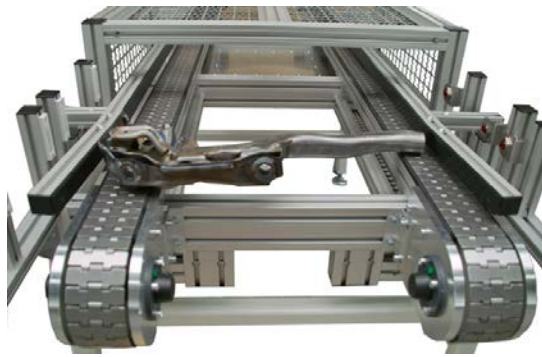




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Solutions and evolutions → Transport paths for units



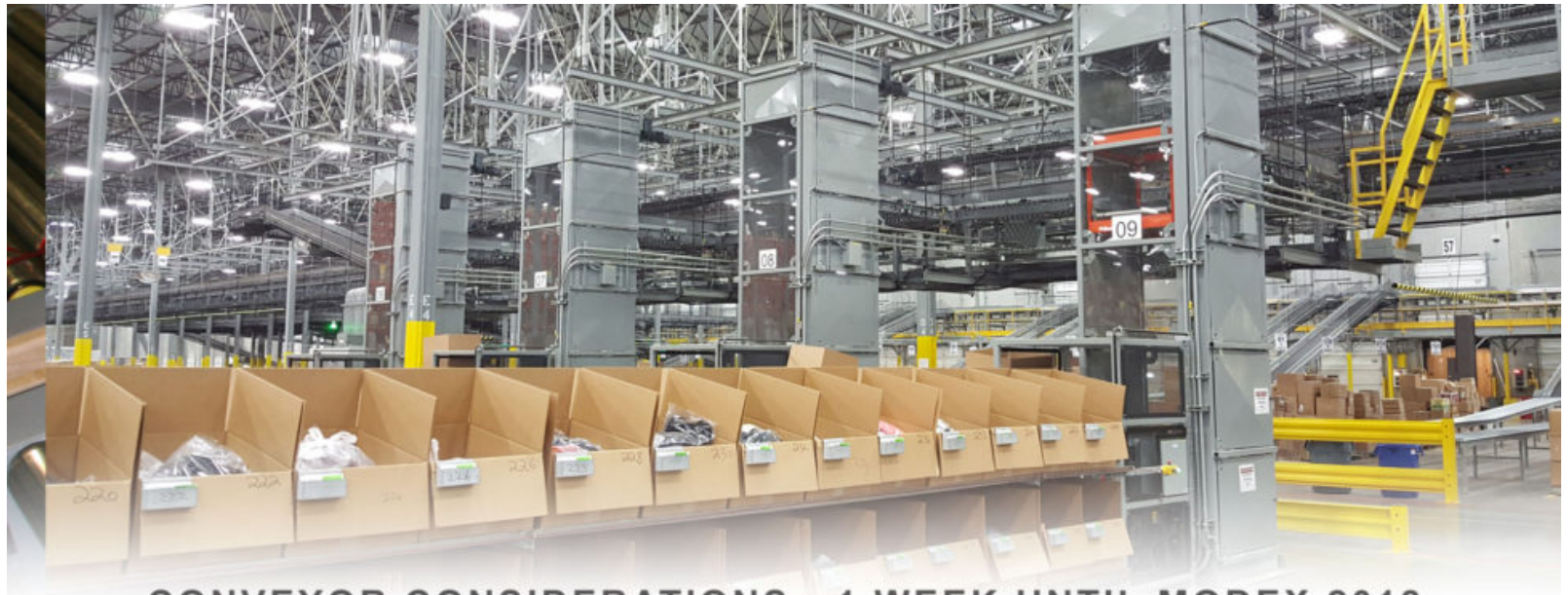


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ConTech conveyor system

11. ConTech video.



CONVEYOR CONSIDERATIONS - 1 WEEK UNTIL MODEX 2018

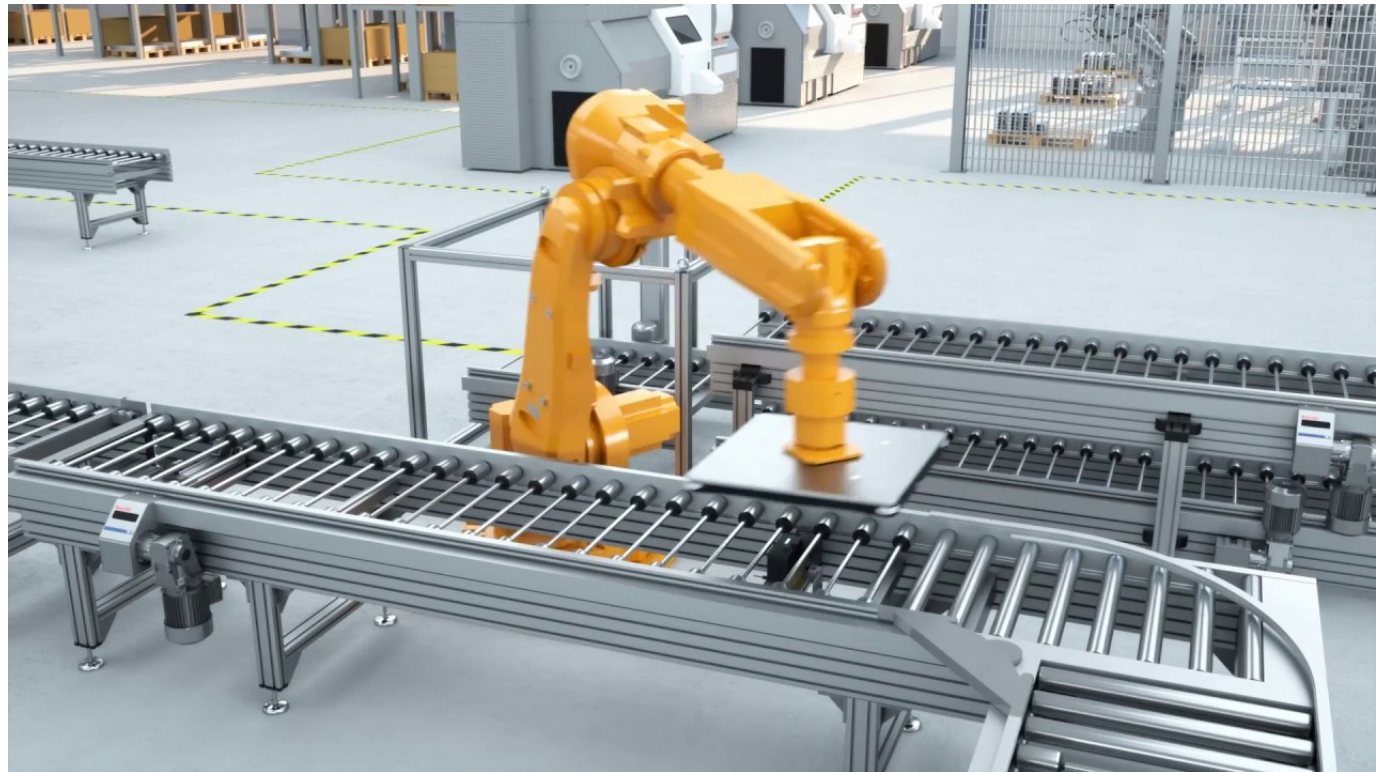


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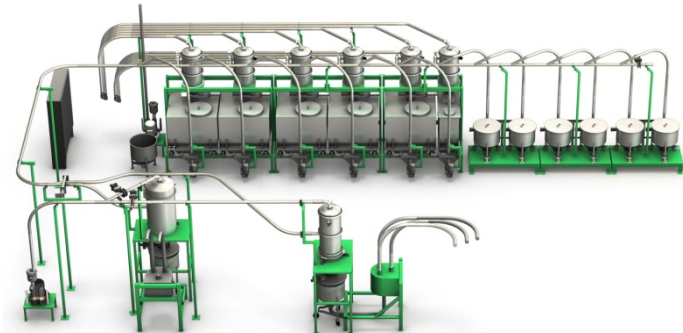
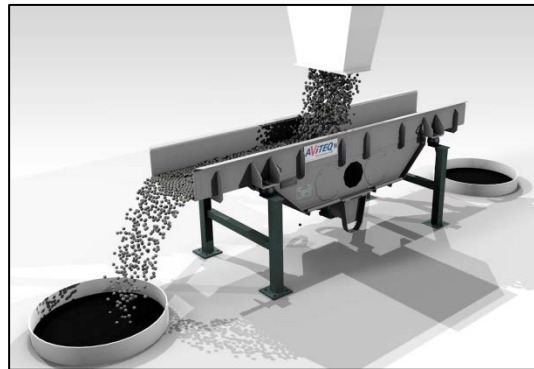
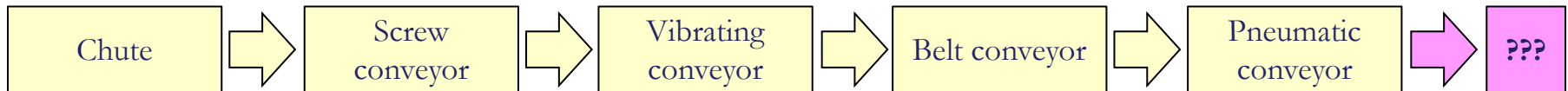


Bosch-Rexroth conveyor system

12. Bosch-Rexroth video.



→ Transport paths for bulk solids





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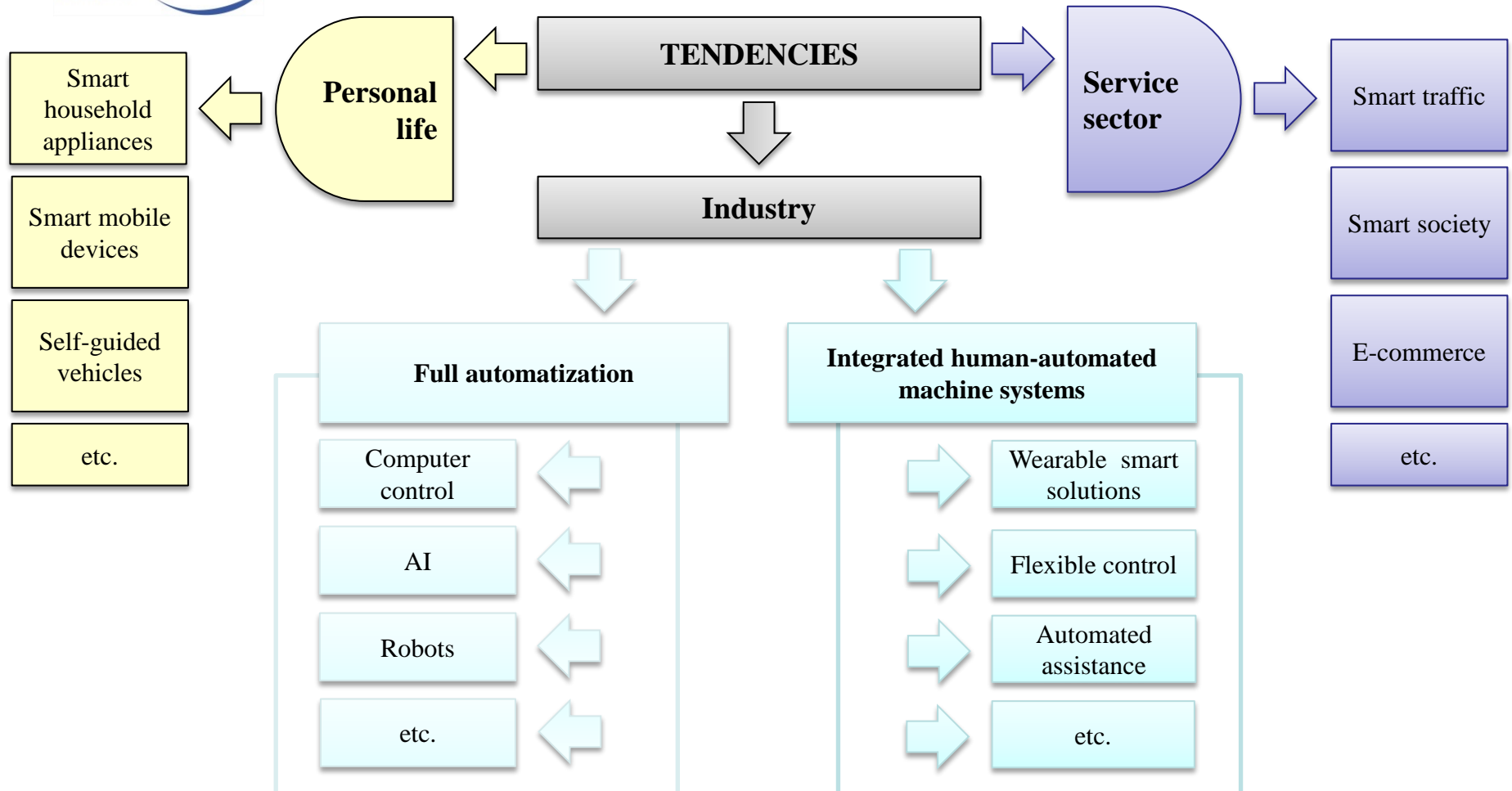


Sugar handling system

13. TECHX video.



Development directions in technology





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Future of the material handling

Some special solutions.





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Automated BMW car factory

14. BMW video.





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References

1. Schäfer
2. LJU
3. Spaggiari
4. Fanuc
5. Lo-Tow
6. Noen
7. ConTech
8. Bosch-Rexroth
9. TECHX
10. BMW
11. etc.