

DiGI-VET

Project Number: 2018-1-DE02-KA202-005145

DIGI-VET

FOSTERING DIGITISATION AND INDUSTRY 4.0 IN
VOCATIONAL EDUCATION AND TRAINING

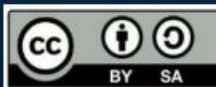
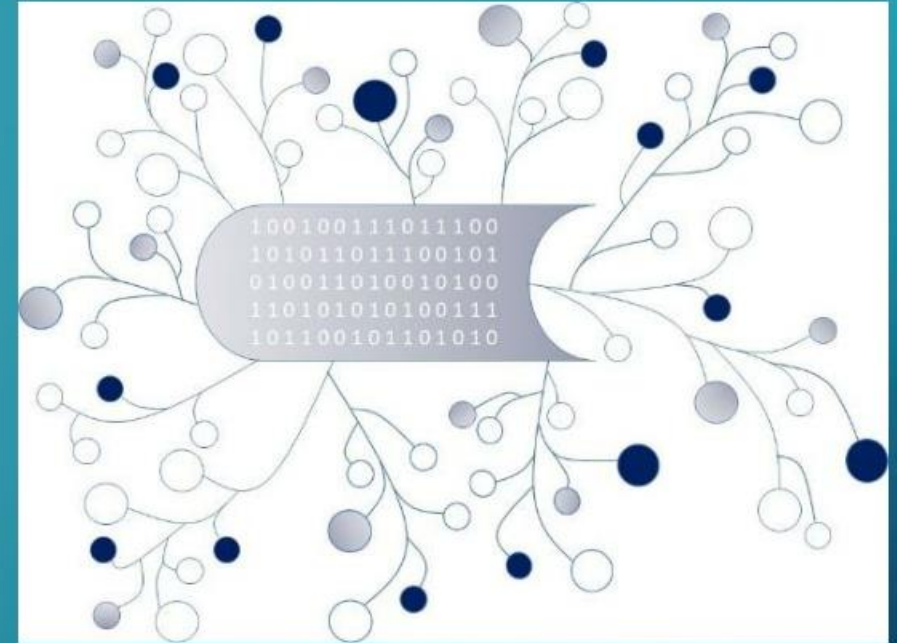
Training Modules for the Learner

Module B:

Industry 4.0 Terms and history

University of Paderborn, Jennifer Schneider

The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



Co-funded by the
Erasmus+ Programme
of the European Union



Agenda of Module B: Digitisation Terms and history

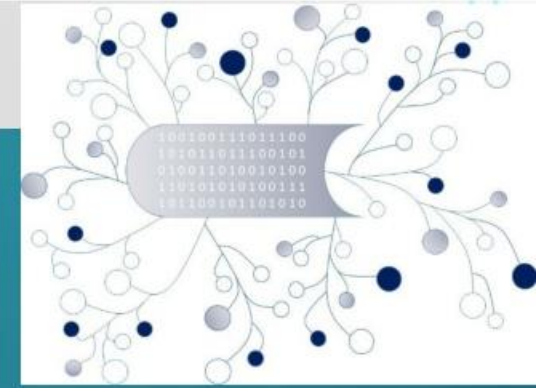
1. Mechanical loom and history of Industry 4.0

2. Industry 4.0

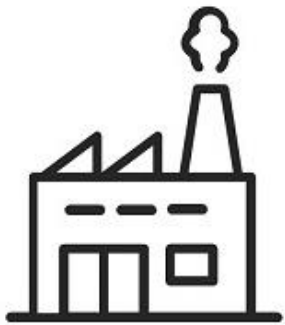
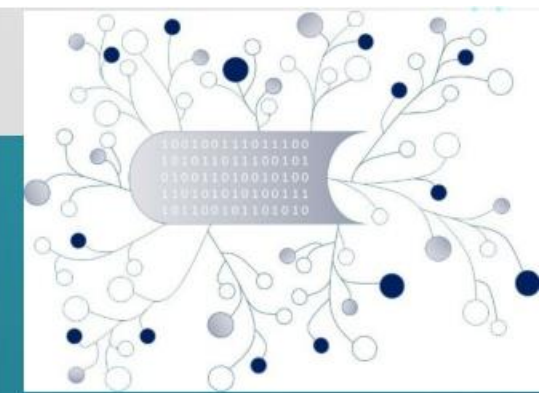
2.1 Task - Video

2.2 Task - Multiple Choice Task

2.3 Task – Multiple Choice Task



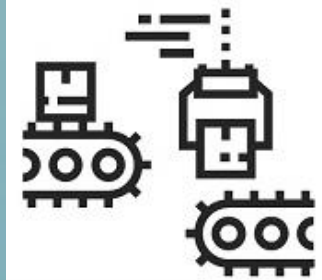
1. Mechanical loom and history of Industry 4.0



First revolution

(end of the 18th century)

-mechanical production on the basis of water and steam.



Second Industrial Revolution (beginning of the 20th century)

- happens during the introduction of conveyor belt, mass production
- Henry Ford and Frederick Taylor



Third revolution

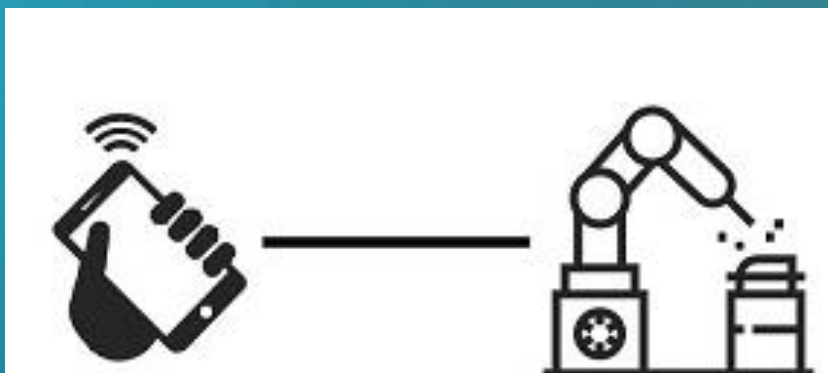
(middle of the 20th century)

- digital automation of production by means of electronics and information technology (IT) system

"Dieses Foto" von Unbekannter Autor ist lizenziert gemäß [CC BY-SA](#)
Link: https://elektrohelden.rexel.de/cfs-file/__key/communityserver-wikis-components-files/00-00-00-00-71/0_5F00_Industrie_5F00_Revolution.jpg

(Lasi, H., Fettke, P., Kemper, H. *et al.*, 2014)

1. Mechanical loom and history of Industry 4.0



Fourth revolution- Industry 4.0

(last decades of the 20th century)

- rise of autonomous robots, contemporary automation, cybersecurity systems, the internet of things, the internet of services, etc.
- one of the key driver: Industrial robots

"Dieses Foto" von Unbekannter Autor ist lizenziert gemäß [CC BY-SA](https://creativecommons.org/licenses/by-sa/4.0/)
Link: https://elektrohelden.rexel.de/cfs-file/__key/communityserver-wikis-components-files/00-00-00-00-71/0_5F00_Industrie_5F00_Revolution.jpg

(Lasi, H., Fettke, P., Kemper, H. *et al.*, 2014)

2. Industry 4.0

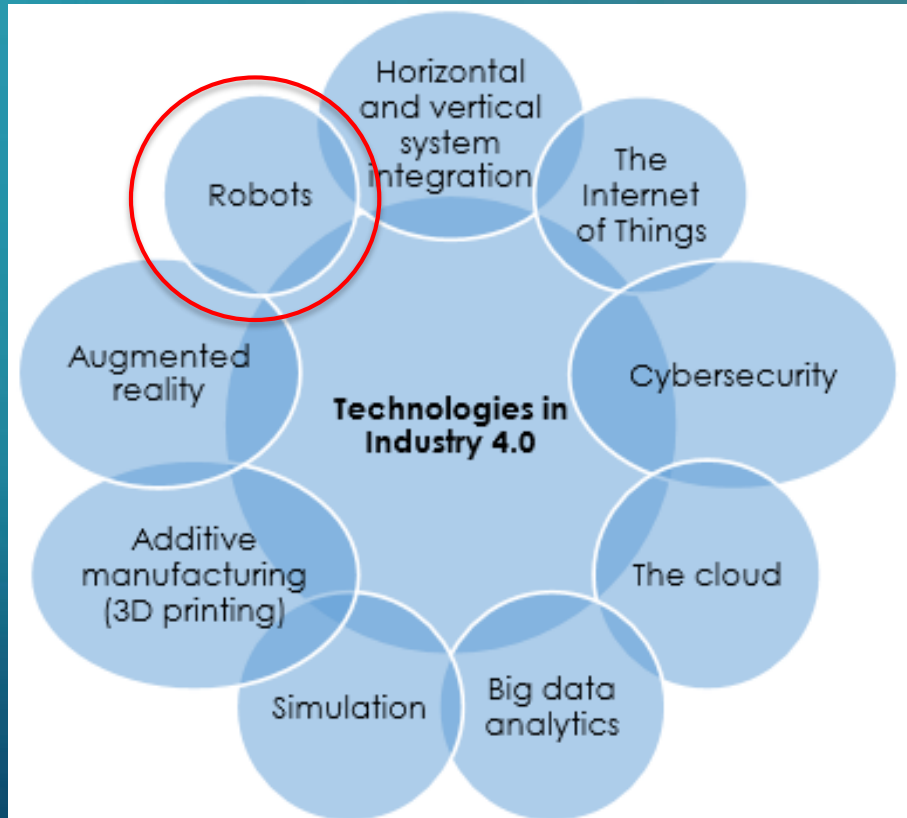


Figure: Technologies Related to Industry 4.0 by Bahrin et al.; 2016.

Industry 4.0

One of key drivers: **Industrial robots**

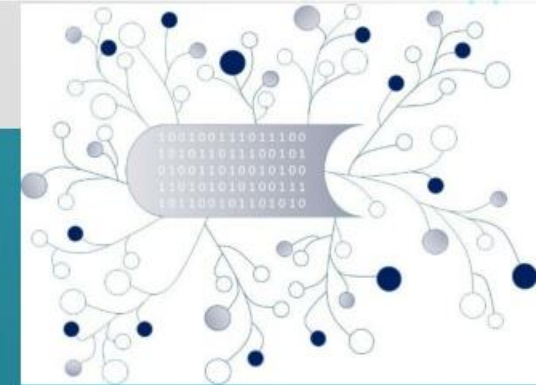
- becoming more productive, flexible, versatile, safer, and collaborative and
- are thus creating an unprecedented level of value in the entire ecosystem.
- Smart factories (heart of Industry 4.0) , will take on board information and communication technology for an evolution in the supply chain and
- production line that brings a much higher level of both automation and digitization.

(Lasi, H., Fettke, P., Kemper, H. et al., 2014)

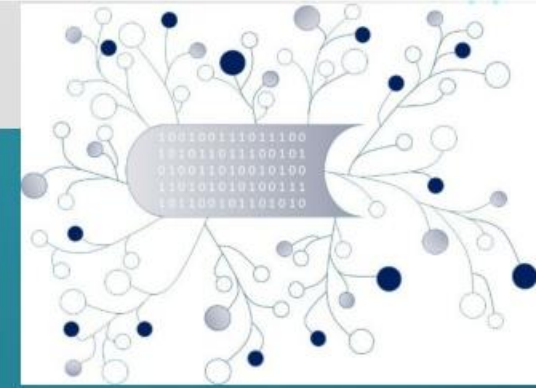
2.1 Task

Please watch the following video about the **history of Industry 4.0.**

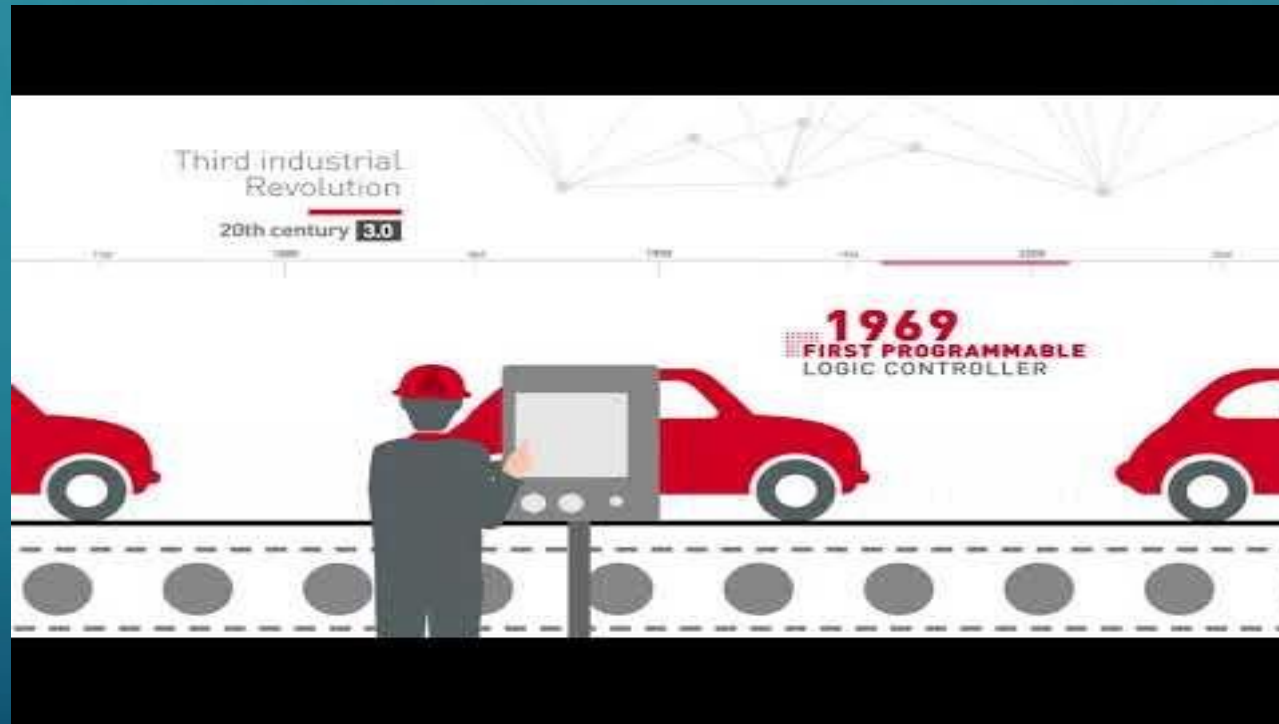
Please take some notes!



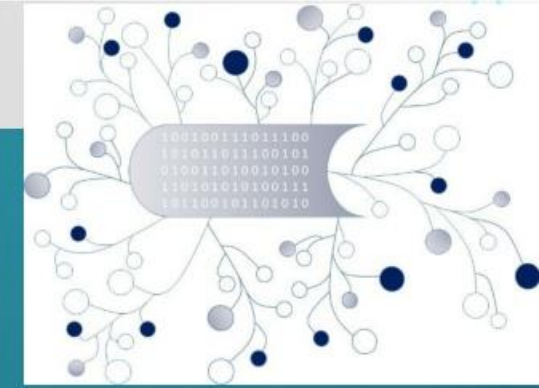
2.1 Task



TASK



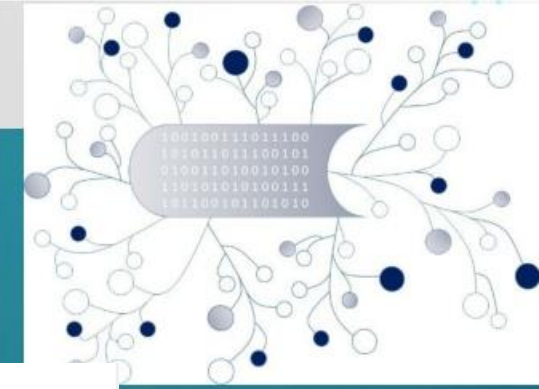
<https://www.youtube.com/watch?v=RPC7yo99Nxs>



2.2 Task

Please answer the next H5P.org tasks!

2.2 Task



The third revolution was in the middle of the 20th century.

What were the main changes for this revolution?

- Automatical production on the basis of water and sun.
- Mechanical production on the basis of water and steam.
- Digital automation of production by means of electronics and information technology (IT) system.
- The introduction of conveyor belt and mass production.

✓ Check

↻ Reuse <> Embed

H-P

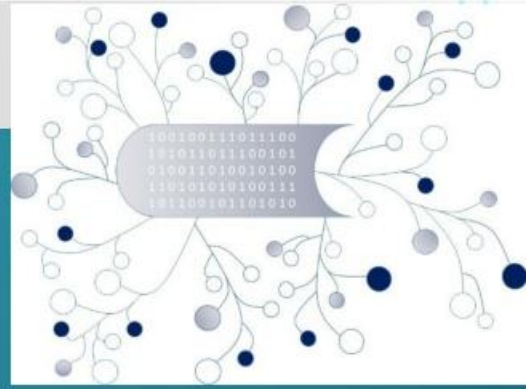
TASK

What's next?

You can use the following shortcode to insert this interactive content into posts, pages, widgets, templates etc.

[h5p id="1"]

2.3 Task



TASK

What are technologies in Industry 4.0?

- big data analysis
- the cloud
- simulation
- no horizontal system integration
- cybersecurity
- vertical system integration
- robots

Check

[Reuse](#) [Embed](#) H-P

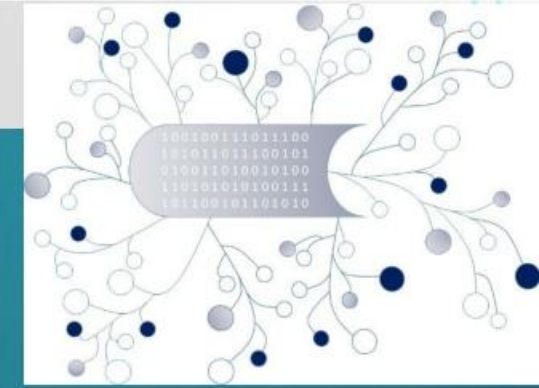
Shortcode

What's next?

You can use the following shortcode to insert this interactive content into posts, pages, widgets, templates etc.

[h5p id="2"]

Agenda of Module A: Digitisation Terms and history



- Bahrin, M. A. K.; Othman, M- F.; Azli, N. H. N.; Talib, M. F. (2016): INDUSTRY 4.0: A REVIEW ON INDUSTRIAL AUTOMATION AND ROBOTIC. Jurnal Teknologi , Centre for Artificial Intelligence and Robotic, Universiti Teknologi Malaysia, Kuala Lumpur, Malaysia. Link: https://www.researchgate.net/profile/Fauzi_Othman/publication/304614356_Industry_40_A_review_on_industrial_automation_and_robotic/links/57ac15aa08ae3765c3b7bab8.pdf
- Geisberger E, Broy M (2012) agendaCPS: Integrierte Forschungsagenda Cyber-Physical Systems. acatech, München
- H. Kagermann, W. Wahlster, J. Helbig. 2013. Recommendations For Implementing The Strategic Initiative Industrie 4.0: Final Report of the Industrie 4.0 Working Group. Ulrike Findeklee: Acatech – National Academy of Science and Engineering.
- Lasi, H., Fettke, P., Kemper, H. *et al.* (2014): Industry 4.0. *Bus Inf Syst Eng* 6, 239–242. <https://doi.org/10.1007/s12599-014-0334-4>
- William M. D. (2014): Industrie 4.0 - Smart Manufacturing For The Future. Berlin: Germany Trade & Invest.

Online Source:

YouTube:

<https://www.youtube.com/watch?v=RPC7yo99Nxs>

Picture:

"Dieses Foto" von Unbekannter Autor ist lizenziert gemäß CC BY-SA

Link: https://elektrohelden.rexel.de/cfs-file/_key/communityserver-wikis-components-files/00-00-00-00-

CONTACT

Universität Paderborn
Department Wirtschaftspädagogik
Lehrstuhl Wirtschaftspädagogik II
Warburger Str. 100
33098 Paderborn

<http://www.upb.de/wipaed>
<http://digivet.eduproject.eu/>

Prof. Dr. Marc Beutner

Tel: +49 (0) 52 51 / 60 - 23 67
Fax: +49 (0) 52 51 / 60 - 35 63
E-Mail: marc.beutner@uni-paderborn.de

The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.