ASCENT

Testing Laboratories & the Industry

4th Training in Rio de Janeiro

6th-9th of May 2019

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Content

- The idea behind
- Financing possibilities
- Organization and Management
- Examples of testing facilities/laboratories at HSD

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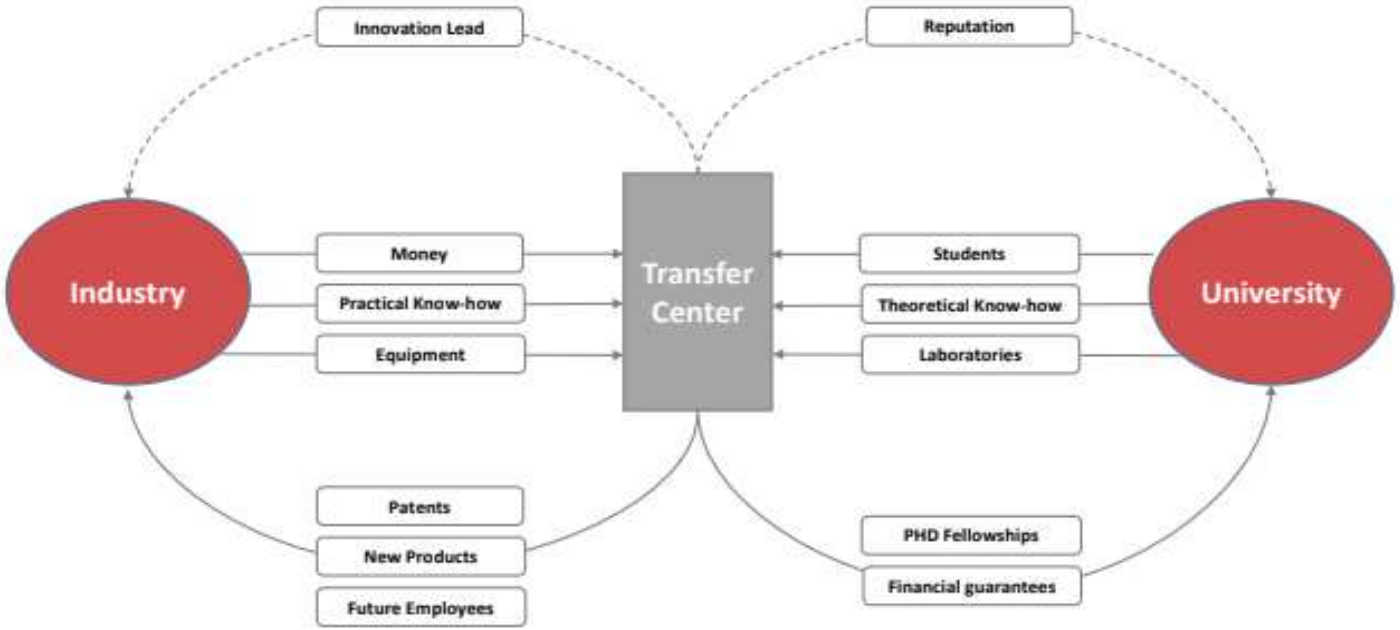
The idea behind

- Create a win-win-situation for all parties: students, teaching and industry



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The idea behind

- Industry provides practical know how, maybe gives money and also provides equipment
- University provides theoretical know-how, manpower/ideas of students and maybe existing equipment
- Industry has the chance to get innovative leadership, maybe new products or patents
- University improves its reputation
- Results flow back in industry as well as in teaching
- Not least both parties get to know each other, that may be advantageous for future final thesises, project works, or even PhD and employment relationships
- Partners of industry can come to university and hold “take-over” lectures
- Create sustainable connections!

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The idea behind

- Keep in mind: HSD has NO specific department or study programme that only focusses on automotive topics
- In this presentation the “engineering departments” will be considered: mechanical and process technology + electrical and information technology

➔ At HSD those two departments share one building

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The idea behind

- Facilities are used for both, teaching and research as well as contract work
- Professors and students as well as employees work with the facilities
- Good mix of educational and practical work
- Use everything as often as possible and for as much applications as possible to make it worth and valuable
- Specific lectures and didactic methods were presented in the second training session, this presentation focusses on the equipment

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The idea behind

- Extra staff position: research and transfer
- support the idea of cooperation between university and industry and applied research
- Using for example the platform „matchbird“, which helps to connect ideas from university/young researchers and needs of industry
- The research and transfer center supports researchers for example with applying for subsidies or for doctoral sponsorships
- Support also start-ups, patent applications, national and international, for all departments ➔ many employees

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Financing possibilities

- Professors or departments money/savings
  - ➔ At HSD professors get a certain amount of money when they start their job, which they can use for buying equipment
- Acquisition request/application for large instruments and equipment
- Cooperation of different departments, pool the money
- Internal funding
  - ➔ Once a year there is a internal competition at HSD where students or little teams can hand in their ideas, the winner gets a certain amount of money from the HSD

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Financing possibilities

- Donations or gifts of companies/sponsors
  - ➔ Often for companies it is a good and relatively cheap possibility of advertisement when they put their name on some research projects of HSD
- Third-payed funds
  - ➔ like the ASCENT project is one
- Of course the possibilities can be combined for a purchase

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Financing possibilities

Process of purchasing and equipping:

- Writing applications
- Hand in several offers (minimum three)
- Controlled by administration

➔Very similar to the Austrian process

- It is very important to be as detailed as possible in the description of what you want and why you want that and what results are expected or what use is intended

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How laboratories are organized/managed

- The equipment belongs to one department and is used and managed by many persons like professors and employees
- Of course there is one person in charge officially, usually a professor

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Examples

➔ Machine hall	05-E
➔ Competence Center Automation Düsseldorf (CCAD)	05-4.044
➔ digital communication systems	05-2.068
➔ digital technology	05-2.080
➔ model factory Fab21	05-4.043
➔ sensor systems	05-4.049
➔ Flix	05-3.008

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Machine hall

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Machine hall

- The machine hall is located on the ground floor of the building
- Students and employees work there, also PhD students have their testing facilities there
- It is well equipped: metal cutting, grinding, milling, welding, …
- The machine hall is also used for example for experiments with the drone for visualizing tasks

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FMDauto

- Institute for product development and innovation
- Merger of members of both departments
- Simulation and experimental technology
- Mostly located in machine hall
- Many research projects, many PhD students and final thesises
- At the moment, the focus is on cutting methods in an agricultural context
- Measuring tasks ➔ contract work with small and medium-sized companies

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EduNet Room

- HSD is founding member of the ”EduNet World Association“
- International network of universities for supporting cooperation
- Department electrical and information engineering and “Competence Center Automation Düsseldorf” (CCAD)

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EduNet Room

- 100 universities from 29 countries belong to EduNet: electrical engineering, automation technology and information technology
- Support international cooperations between educational institutions and industrial companies
- Organiszation of practice and application oriented teaching and training projects
- Knowledge transfer (data base) within international network
- Exchange of lecture contents/concepts, guest lectures, internships etc.
- Computer lab

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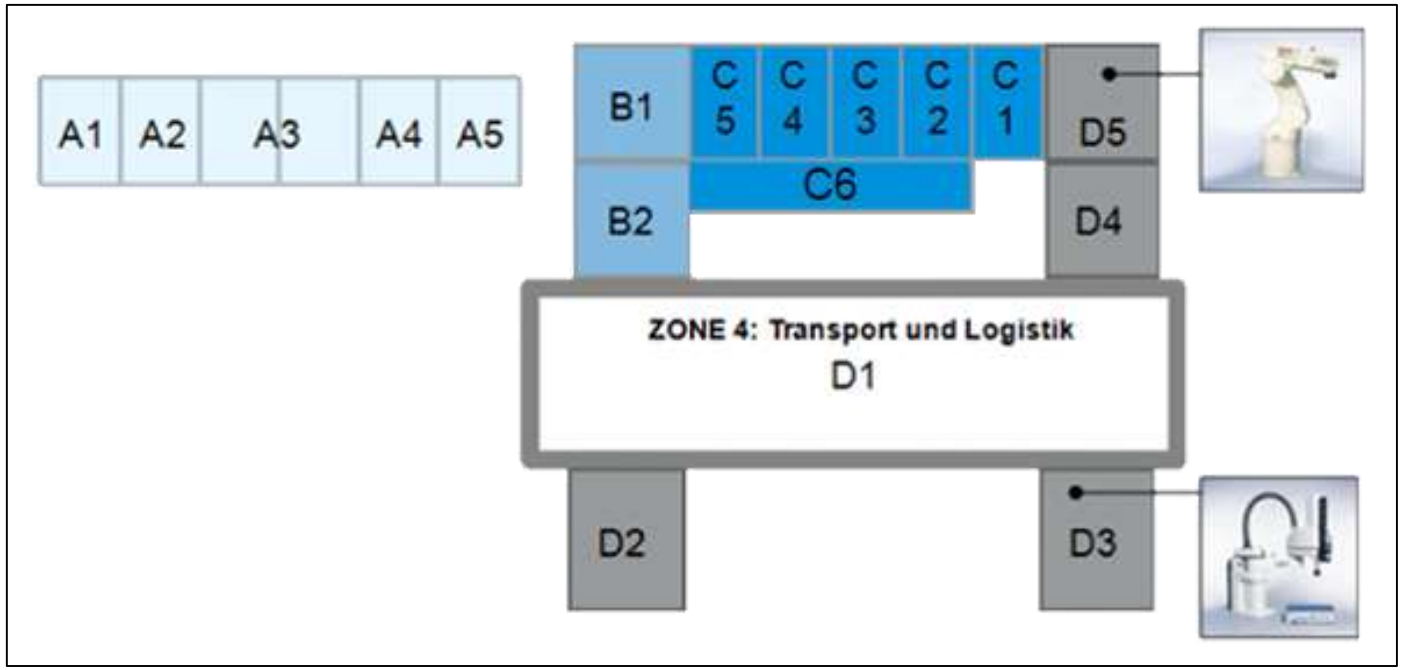
Fab21



- From Festo Didactic
- Laboratory process-informatics
- Learning factory for automation of hybrid processes
- Web based learning methods for automation technology
- Exchange of information and experiences between university and experts from the industry

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Fab21

- Festo is the best known provider of technical teaching, especially for industry 4.0 topics at the moment
- Automation of production and processes, both together, mechatronics, measurement data acquisition, control technology, programming
- Everything between incoming goods and outgoing goods department
- Represents liquids for example for food or pharma or chemical industry
- Different products, for example liquids with different colours or temperature or filling level
- Associated screen to overlook the process
- NOT a museum!!! Does never really work completely because so many students work on that at the same time on all the different topics, so most of the time single areas are working but not the whole leaning company

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Fab21

The filling area

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Robot to grap the bottles

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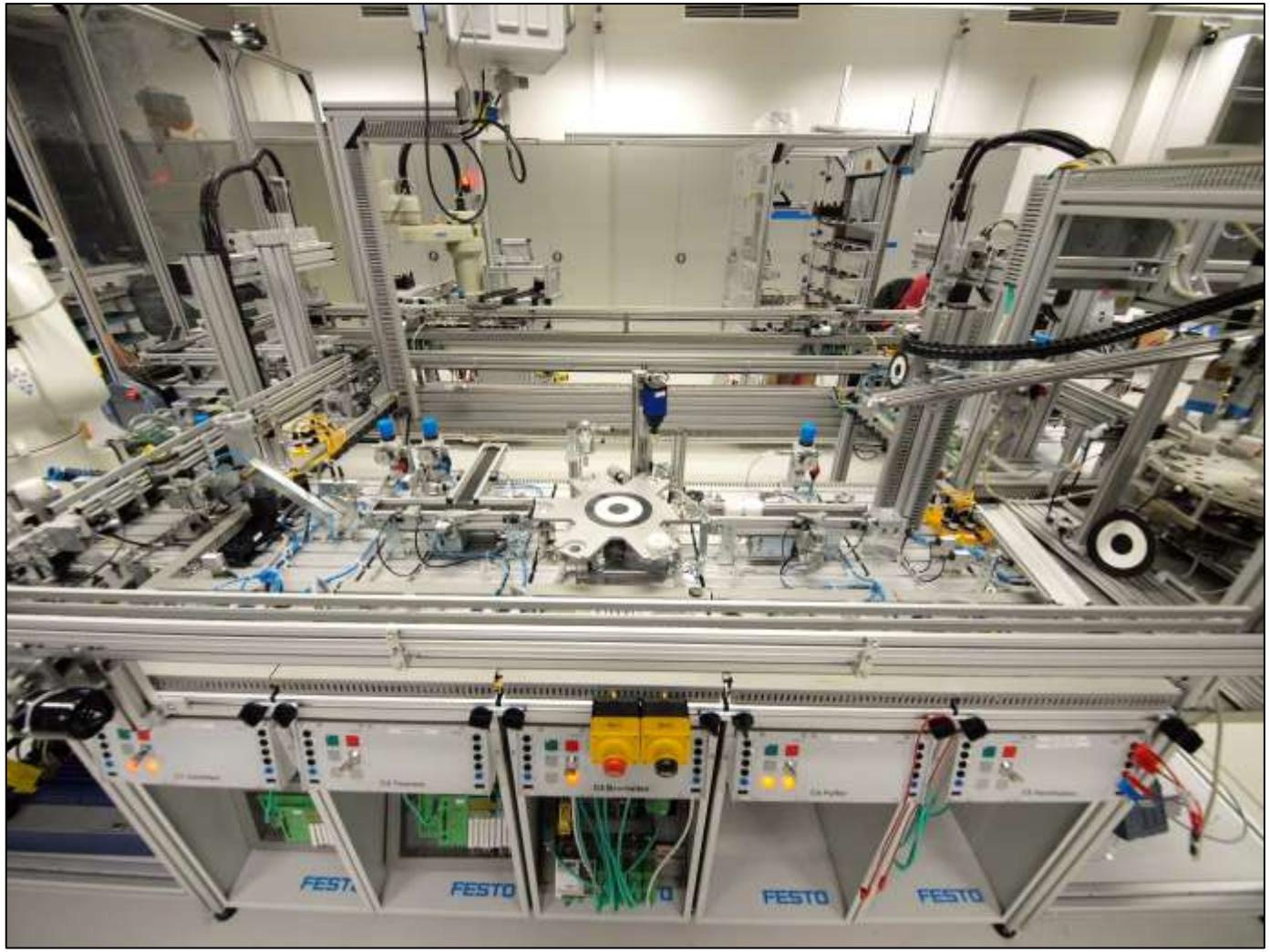

- Conveyor belt around
- Cover the bottles
- Logistic tasks
- Packaging
- Control and clean bottles

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Sixpack storing

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Packing the sixpacks

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Mobile robotics

- Base from automatic vacuum cleaner
- For automatic transportation
- Visually from everywhere to everywhere in the room on the fastest way
- Recording the driveway, creating a map

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Mobile robotics

- Topics are mostly first executed as research projects of employees and students, later they are than used to offer the results to industry to earn money with it and by that finance further research

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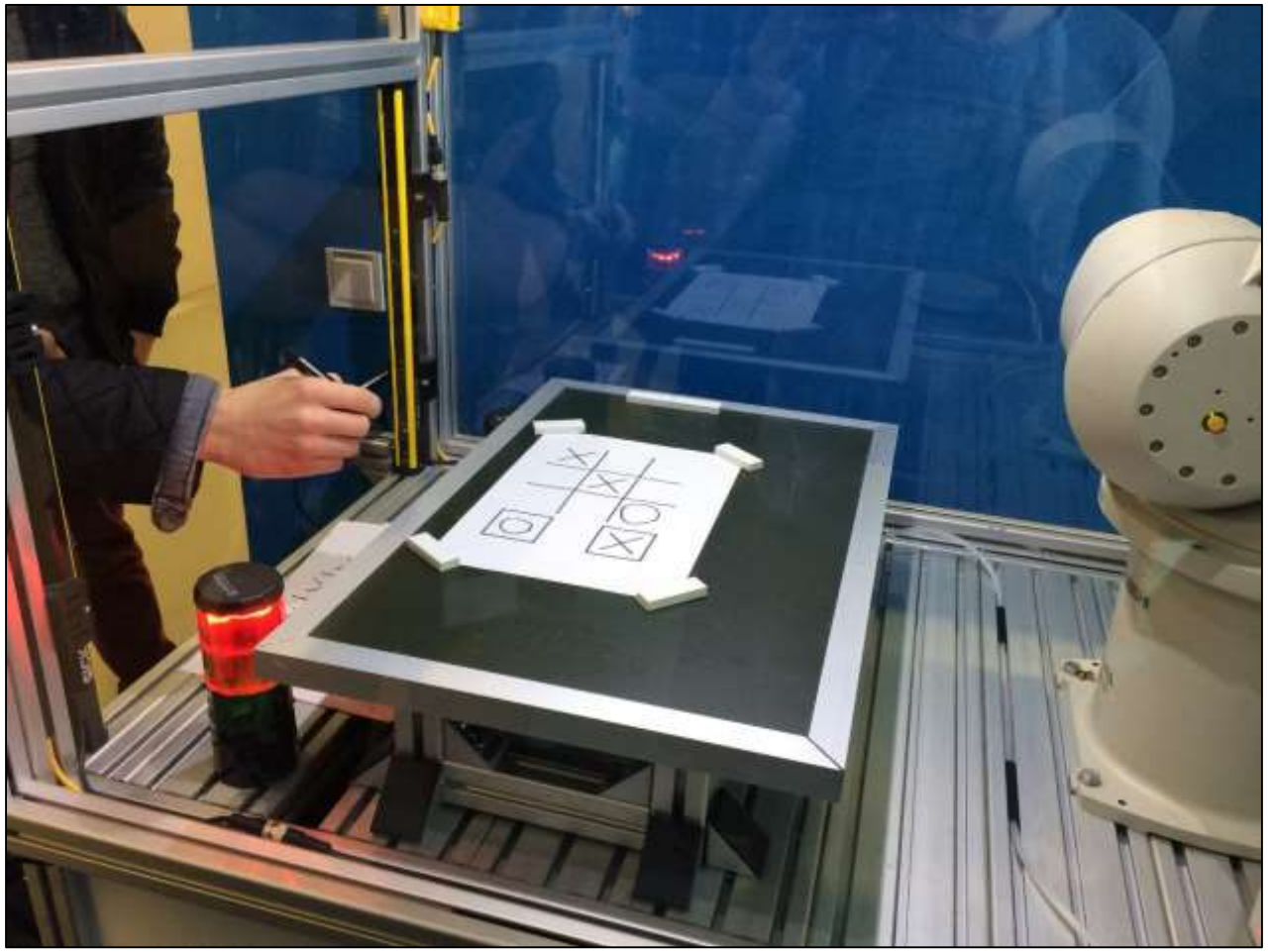
Sensor systems



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Sensor systems

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Sesor systems

- No direct industrial application but playful learning and good for visualization and not least advertisement
- Used for open house days and visits for example

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Flix

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Flix

- Flix laboratory = multipurpose room, also used for team meetings and oral exams
- On the right there is the planning table for visualize machine hall layouts for example
- Visualization is the main topic of Flix, also Eye-Tracker and drone
- investments not only into directly visible equipment but also in Software
  - ➔ f.e. a software called „Witness“, that helps to visualize and calculate production systems, can be also executed on that planning table, software is very expensive, licenses must be bought, different ones for teaching and for commercial use, both user cases are performed at HSD, for teaching within lectures and also to offer it to potential customers, maybe within a final thesis

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ISAVE

- Institute of sound and vibration engineering
- Not linked to any of the departments because topics are overlapping
- Topics of mechanical engineering but also of media

  ➔ vibration technology and fluid mechanics but also record studio technology
- Equipment examples: reverberation chamber, very low sound reflection room, acoustics wind tunnel and other test stations with innovative measurement technology

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