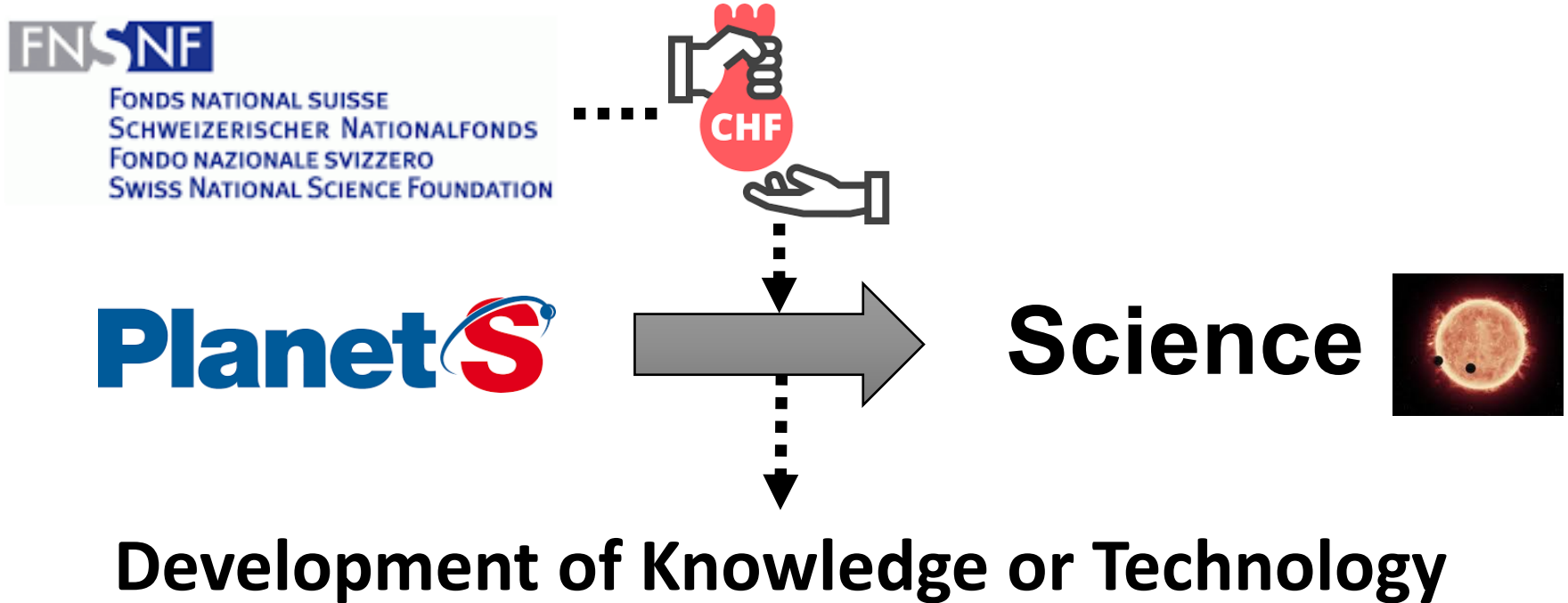Links to the industry, Bern, 17.09.2020

Technology Platform (TP): the externship programme
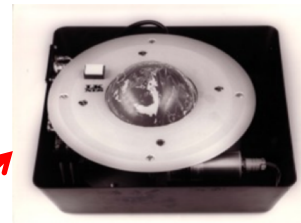
Piero Pontelandolfo

Outline

- Knowledge and Technology Transfer in PlanetS

- Knowledge Transfer with a short-term project:
  - Information about the programme
  - How the process works
  - Available projects

- Bench2Biz workshop

- Questions

KTT* in PlanetS: the Technology Platform

Development of Knowledge or Technology

Science

*: Knowledge and Technology Transfer

The National Centres of Competence in Research (NCCR) are a research instrument of the Swiss National Science Foundation

What is knowledge or technology transfer?

An example in the early 70's some engineers from CERN…
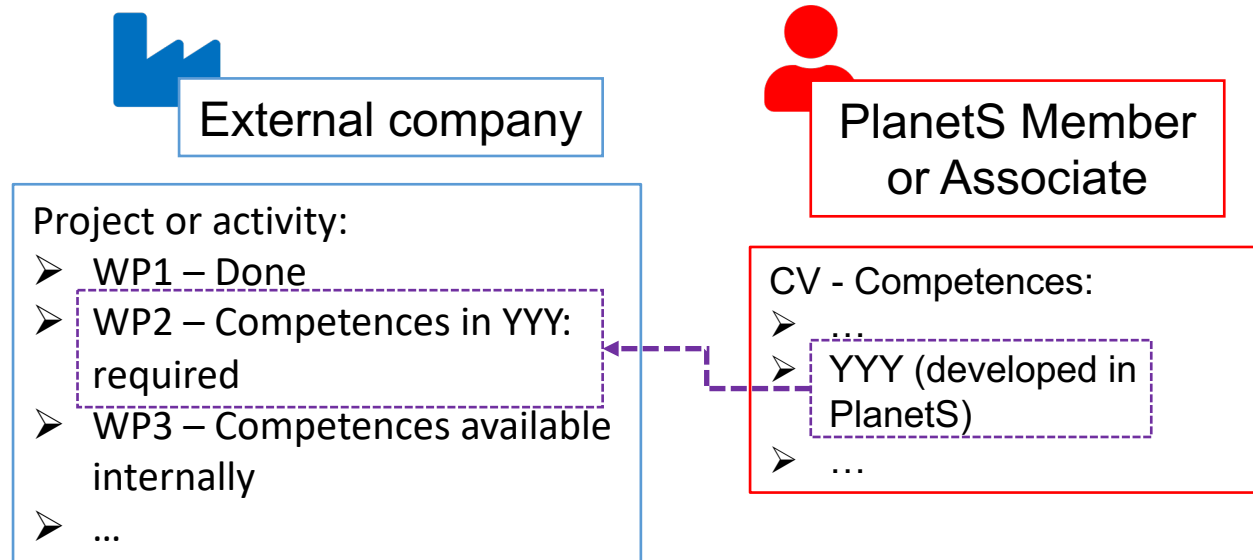
Track ball

Capacitive touch screen

Knowledge Transfer with a short-term project

- **What?** A KT project in industry, research laboratory, etc.

- **Who can benefit?** PlanetS Members and Associates

- **How?** TP can fund up to 3 months of your salary with an ad hoc contract for you

External company

PlanetS Member or Associate

Project or activity:
- ➤ WP1 – Done
- ➤ WP2 – Competences in YYY: required
- ➤ WP3 – Competences available internally
- ➤ …

CV - Competences:
- ➤ …
- ➤ YYY (developed in PlanetS)
- ➤ …

How the process works
1ˢᵗ path – You find the project

1. Ok from your direct supervisor!

2. You find a project in collaboration with an external partner

3. The external partner and you submit the project to the TP

4. Iterations of the full proposal for the PlanetS Board acceptance

5. You, your supervisor and the external partner sign a 'Collaboration agreement'

6. *It's done!*

7. Your project on the TP web page, presentations to colleagues and other side activities

(Consider as process duration about 4 months)

How the process works
2ⁿᵈ path – The company proposed the project(s)

1. Ok from your direct supervisor!

2. The company proposes a project(s) to PlanetS people through the TP

3. The TP informs PlanetS about the project(s) by email and on the TP's web page

4. The external partner and you submit the project to the TP

5. Iterations of the full proposal for the PlanetS board acceptance

6. You, your supervisor and the external partner sign a 'Collaboration agreement'

7. *It's done!*

8. Your project on the TP web page, presentations to colleagues and other side activities

(Consider as process duration about 4 months)

Available short term projects (2018)

Camera hardware

Micro-Cameras & Space Exploration SA (MCSE) develops specific systems in the field of scientific instrumentation for space exploration.

- Project 1 (2018): **JUICE monitoring camera calibration**.

  The proposed project concerns the characterization and calibration of a color camera that is currently being developed for the JUICE mission to Jupiter.

- Project 2 (2018): **BRDF data collection**.

  A full straylight analysis requires data of bidirectional reflection function (BDRF) measurements for the respective materials and surfaces used in an optical system. The goal of the project is to define a BRDF database for typical materials and coatings.

Available short term projects (2019)

Automotive equipment

Sercalo Microtechnolgy supplies customers with high quality and top performance MOEMS (Micro-Opto-Electro-Mechanical Systems) components.

- Project 1 (2019): Sercalo is moving into autonomous vehicle market supplying micromirrors for beam steering in LIDAR. This market has high reliability standards (shock, vibrations, humidity, temperature...). Sercalo needs to further develop and automatize its testing equipment. The person who will be selected for the programme will interface with the automotive norm, micromirror production, test equipment to provide an automatized testing equipment.

(Un-)Available short term projects (2020)
Data scientist

NetGuardians helps 3 banks worldwide to fight financial crime and developed the smarter artificial intelligence solution made for banks to proactively prevent fraud.

- Project 1: The data sets NetGuardians has access to have a very large variety, whether regarding their size, origin, and the available variables are far from homogeneous. A crucial initial step is to explore and visualize these data in order to extract as many useful statistical information prior to designing machine learning models. The goal of this project is to explore state-of-the-art visualization tools and techniques (e.g. PCA, t-SNE, parallell coordinates, scatterplot matrices,…) and apply them to NetGuardians' proprietary data.

- Project 2: Labelling of banking transaction (fraudulent/genuine) is a critical problem when fighting banking fraud. By nature, these data are highly unbalanced, and the availability of labels is extremely scarce, not to say nonexistent. Artificial labelling can be performed via label propagation techniques that would be complementary to NetGuardians's fully unsupervised approach. The goal of the project is to explore these state-of-the-art artificial labelling strategies and quantify their robustness once applied to NetGuardians' data sets.

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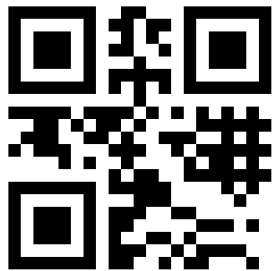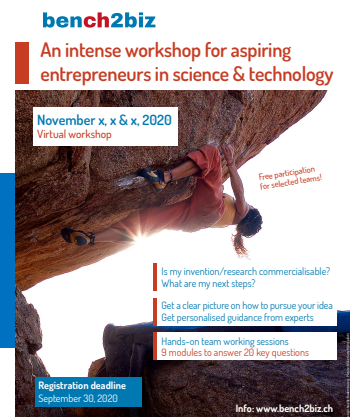
Thank you for your attention!

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