

# IEP BUT Evaluation: M3/FEEC

## Call for participation to FEEC representatives during the on-site visit (Oct 13, 2020)

### Answers to questions of IEP by FEEC representatives

To complement the FEEC representatives present during the on-site visit event on October 13, 2020 (administration, researchers, PhD students), kindly also invite the following FEEC representatives:

- Representative(s) of SIX research center  
represented by [prof. Aubrecht](#)
- Representative(s) of CVVOZE research center  
represented by [prof. Roman Marsalek](#), [assoc. prof. Jan Hajny](#)
- Representative(s) of departments dealing with basic subjects (at two representatives from different departments listed): Department of Physics, Department of Languages, Department of Mathematics.  
represented by [assoc. prof. Karel Liedermann \(Dept. of Physics\)](#)  
represented by [assoc. prof. Michal Novak \(Dept. of Mathematics\)](#)  
represented by [Mgr. Pavel Sedlacek \(Dept. of Languages\)](#)

# IEP BUT Evaluation: M3/FEEC

## Discussion topics and questions to FEEC representatives for on-site visit (Oct 13, 2020)

### General discussion topics and particular questions

The following questions are addressed to the corresponding groups of FEEC representatives, including staff members from administration, researchers, and PhD students. If need be, the groups will be asked individually. Groups are designated below as [\[group\]](#). The designation [\[research center representatives\]](#) below refers to representatives of SIX and CVVOZE research centers.

#### 1. Potential fragmentation issues in R&D [\[researchers and PhD students\]](#):

- a. Given the number of applied and contract research projects, does the research staff feel overwhelmed?  
[Within individual research teams, their heads mainly deal with a preparation and submission of the project proposals together with a participation of “his/her” research staff \(members of the team\). The participation of individuals in R&D projects does not exceed 1.2FTE in sum, whereas within new Rector’s Directive, the participation of individuals should not exceed 1.0FTE. Hence, we do not feel that the research team members involving in R&D projects are overwhelmed. The only one, who may feel overwhelmed is the team leader, who has to face complicated administration rules given by individual project funding providers \(e.g. Ministry of Industry and Trade, Ministry of Education, Technology Agency of the Czech Republic, Czech Science Foundation, etc.\) while preparing science and financial reports.](#)
- b. Does this hinder basic research?  
[Generally, not. The ratio between basic and applied research is given by the “portfolio” of funding providers in Czech Republic. Currently, there is only Czech Science Foundation \(GACR\) that](#)

supports pure basic research. Other Ministries/Agencies do primarily support applied research. Additionally, the amount of applied research has been increasing with foundation of Technology Agency of the Czech Republic (TACR). In this case, however, prior the dominant applied research basic research is present as well in such projects. However, at our faculty, we are also involved in a number of H2020 projects (OneNet, A-WEAR, SPARTA, Ruggedised, R3-PowerUP, CELTA), where beside the all the R&D activities a certain level of basic research can also be identified for sure. There are other projects to support international mobility and contacts with research groups abroad. The most significant of such networking projects is the COST Action CA15225, where BUT and our Faculty has the role of Grant Holder. Other networking projects are with selected countries (mainly China, Ukraine, Austria). No matter how beneficial such networking projects might be for the R&D groups at our faculty within the self-evaluation being focused on finance, such 2-3 year projects are “not interesting” as these have a financial support of approx. 20kEUR/year. Additionally, the Self-evaluation report had to list just applied research projects with annual budget above 1MCZK (approx. 38kEUR).

- c. What is the work balance between writing project proposals, participating in R&D projects and teaching?

Speaking about employees, this depends on case by case. Some are “academic staff”, dealing with teaching and R&D as well; then there is “R&D staff” dealing solely R&D; finally “technical staff” (represented mostly by PhD students), who help in preparing and performing experiments, hardware design etc. in the framework of various projects.

If there should be an increased demand to prepare a project proposal, PhD students can be more involved in teaching labs/numerical exercises as teaching activities are actually also part of their PhD studies.

[administration]:

- d. How is the balance between basic and applied research achieved?

According to the faculty financial income for R&D projects, the ratio at Faculty is approx. 80-90% for applied research (see also the graph “R&D Projects – in numbers” in the provided presentation). Actually, the “non-technical” departments are more involved in basic research projects.

- e. What are the specific measures (if any) applied on Faculty level to ensure this balance is maintained?

There are no direct measures. Regularly, the department heads and their employees are informed about current calls of GACR for project proposals, whereas annually about 30 proposals are submitted. The average success rate is of 20 to 25%, which we are not able to affect. As a result, annually approx. 14 projects are being solved (2018: 14; 2019: 16; 2020: 11) at the faculty, each with average annual budget of 1.6MCZK (60.4 kEUR).

## 2. Internal collaboration [administration]:

- a. How is work on research projects handled, if several departments are involved?

Each involved dept/faculty/research organization has its own budget to use. Already during the project proposal writing, for each dept/faculty/research organization the R&D tasks, expected deliverables and mainly responsibility is specified, respectively. Following these tasks, independently or in cooperation with more depts., one of the depts. is declared as “lead”, who controls the activities to provide the deliverables on time.

- b. How is internal infrastructure shared between departments and with other units of BUT?

Primarily, the infrastructure is shared within the joint projects directly or indirectly. Dealing the tasks by one dept. (or in cooperation with another one), using the infrastructure located at the specific dept. it is shared through reaching the expected deliverable that is consequently used by other depts. participating in the project’s tasks.

The infrastructure may also be used by individuals (but still employees of the university). Regularly, the faculty depts. organize so called “Days of Closed Doors”, to which the university employees are invited. At these events, individuals from different depts./faculties get aware about the R&D activities and infrastructure as well that may be available for sharing. Later, the on-side

usage of the infrastructure depends on the discussion between the one being interested and the employee responsible for the laboratory, where the required instrument is located.

While internal collaboration is not directly related to the objectives of evaluation inside Module 3, it is still important to understand if and how it is done to assess other criteria.

### 3. Drop in PhD student numbers and related issues [PhD students]:

- a. Please assess your work conditions.
- b. How do you, as PhD students, interact with domestic and foreign companies? How does these interactions affect your post-graduation career?
- c. Do you feel like working with many internationally recognized companies is beneficial to your potential to proceed with an industrial career abroad?
- d. Do you consider pursuing an academic career? In FEEC, or in a different BUT Faculty? In a different Czech university?
- e. Do you have enough time to partake in original research, or are you overwhelmed with applied and contract R&D activities?

[administration]:

- f. Please describe how you see the decline in PhD students on the level of FEEC and also in the context of developments in the whole university.

Of course, the drop in the number of PhD students is not desired as it results in “brain drain” and decrease of potential know-how that might be reached by the PhD students during their studies. This drop is caused by the presence of industry companies that are located in Brno and near neighborhood, who “drag” already our master students (our potential PhD students) with very generous offers which cannot be competed by the faculty. Even if we cooperate with these companies within joint applied research projects, in this case, the companies are “enemies”. However, with most of them, we are able to agree on have a PhD student, who is at the same time employed with the joint applied research project, which is advantageous for all.

Anyway, as from the Self-evaluation report (covering years 2014 – 2018) the drop of PhD students could be observed, currently, we have noticed an increased (even if slight) interest in PhD studies in the ratio of master students (see the chart “Students” in the provided presentation; 2018: 296/896, 2019: 322/835 and 2020: 328/820).

### 4. Technology transfer and spin-off companies [administration, research center representatives]:

- a. Please assess the current situation with technology transfer. Since the majority of applied and contract research is conducted in FEEC research centers, what is the connection to the developments occurring in the rest of FEEC, is there some gateway to enable efficient technology transfer or is there any plans to set one up?

The research centers CVVOZE and SIX were established within a financial support from government to acquire infrastructure and establish new research teams. The centers are currently a “trade mark” for public and industry partners as once presenting ourselves as “faculty” we are understood as “those, who give education in labs” and not as a potential partner with unique possibilities in the infrastructure. Hence, the centers now associate relevant departments of the faculty, whereas the established research teams continue in their research using laboratory equipment of the centers.

From the faculty (and centers) point of view the gateway is the Transfer Technology Dept. (OTT) located at rectorate. Within the faculty we employ the Business Development Managers - BDMs (Jiri Kouril and Vratislav Harabis) and Technology Transfer Manager – TTM (Vratislav Harabis), who are part of the Dean’s office – Dept. of Science and International Relations ([https://www.fekt.vut.cz/en/faculty/structures/dek\\_vo](https://www.fekt.vut.cz/en/faculty/structures/dek_vo)). They (mainly TTM) are in close contact both with OTT (rectorate level) and with the individual researchers at the faculty through their results (prototypes, utility samples, etc.) as these results are stored by the researchers in the university central database. The activity in technology transfer has been substantially improved within last couple of years (approx. since 2016). It was also indicated in the chart at the on-line presentation, where the increase of income from sold licenses can be seen. It was also mentioned during the presentation that in 2020 we sold a license to the URC Systems company (<https://www.urc-systems.cz/en/>) for 900kCZK (approx. 34kEUR). It was not indicated in the presented chart as we currently wait for the

bank wire transfer. Our strategy for the next future is to continue in support of TT, where we believe the faculty starts to be successful mainly through the cooperation with industry partners within the applied R&D projects providing results, where we have co-authorship and based on the joint agreements (company-university) on IP rights and using the project results. As the evaluation report was limited to years 2014-2018 only, the new activities covering the last two years are not included there.

- b. The same regarding the establishment of spin-off companies. Again, as the majority of research projects is handled at the center level, can centers themselves be at least informally considered to be units similar to university spin-offs?

Formally, the majority of the research is covered by the centers, but actually performed within departments and their research teams. As far as spin-offs/start-ups concerns, we are fully dependent on activity/guidance/information courses of OTT. However, as far as I know the guidance/information courses is mainly about description of how to protect the intellectual properties (in Czech Republic and abroad), not e.g. a list of simple/main steps how to establish spin-off and what the faculty researcher (and his/her team) must provide and what the OTT will provide.

[administration]

- c. How do you see further interactions with governmental, academic and industrial partners, what is your current priority in these interactions? How does this fit into the strategy of the whole university?

Industry: representatives of our industry partners are members of Faculty Scientific Board, participate at final state exams, are tutors of the bachelor/master/PhD theses. They cooperate with us within joint research projects and are interested in contract. Our employees take part in various advisory boards in industry, e.g. Petr Toman in the platform for information exchange CIRED – distribution networks, platform for sustainable energetics, etc.

Academic: joint projects, participation at final state exams, memberships in Faculty Scientific Boards  
Government: our employees participate at preparation of strategic documents, recently e.g. the Regional Innovation Strategy of the South Moravia Region 2021-2027.

## 5. Popularization of R&D&I and public communication [all groups]

- a. Please assess the results of the activities of FEEC in popularizing R&D&I.

Within the last two years we put emphasis on our own PR, by hiring employee, dealing only with PR stuff. Subsequently, our activities on social media channels (Facebook, Instagram, Twitter, YouTube) have extremely increased. Hence, we do not need to rely on the PR dept. of the university that much anymore. On the other hand, through the contact between faculty and university PR, the faculty is currently more visible in media. For example, as a result, during September 2020 only, there were 38 spots/articles in TV/newspaper etc. about our faculty. Currently, we have concentrated mainly, on Czech media, as our prime aim is to address our potential students mainly, whereas the majority is Czech and Slovak (who also understand and even speak Czech). On the other hand, starting with accreditation of new study programs taught completely in English language, we will focus on the social media channels abroad.

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- b. Does your involvement in professional societies, such as, for example, IEEE, have a positive impact on popularization of R&D&I or involving more people into the engineering field as part of public communication?

For sure, participation of our employees in professional organizations/associations enables us to present ourselves and our activities in more details, e.g. Petr Baxant - Czech society for Illumination, being part of Internal Commission on Illumination, Petr Toman – National committee of CIGRE, Norbert Herencsar – IEEE Journal editor, member of IEEE Czechoslovak Section. The aim of these associations is also popularization of technology and popularization of education in technology; however, we are not able to directly observe/evaluate the impact.

The faculty departments and their heads are also aware of the “power of popularization”, consequently our employees are visible in media presenting our R&D results or commenting current topics of technology progress.

- c. Please also describe the involvement of FEEC and its individual research centers (SIX, CVVOZE) in popularization/public activities.

Previously, the centers were part of university project to popularize R&D, whereas a number of propagation videos were created.

Another activity that started in the middle of 2019, was an international (English speaking) Summer School planned for summer 2020, primarily based on our contact to GCU (China), but was ready to be open for other international participants. Due to COVID-19, this event has been re-scheduled for the next year.

Another activity to address public society is the unified visual style of the web pages of the university/faculties and currently we are working on the same approach for the departments web pages (not finished yet).

We continue in organizing of other events such as student competition conference EEICT, BUT Junior (for children), Elektrikárium, Science night, Merkur perFEKT Challenge and others, just under the restrictions of COVID-19. Newly, BUT runs a “channel” VUT podcast on technologies called “Technicky vzato”, where Ludek Zalud, our expert on robots, had his main speech on robotics (<https://www.vutbr.cz/podcast>, in Czech only)

Next to the above answers, we also would like to attract your attention to the supplement material with the presentation of the faculty - the presentation-overview of the R&D groups, (available at: [https://www.vutbr.cz/www\\_base/vutdisk.php?i=234175a478](https://www.vutbr.cz/www_base/vutdisk.php?i=234175a478)) and links to some videos in English with presentation of the CVVOZE research center and its research programs (skip the first 20 seconds with the necessary introduction part):

CVVOZE - Centre for Research and Utilization of Renewable Energy:

<https://youtu.be/RtgMcUIQWho>

Electromechanical Energy Conversion:

<https://youtu.be/hkTmozGTr9o>

Chemical and Photovoltaic Energy:

<https://youtu.be/jtlPCIwUgQU>

Generation, transmission, distribution and use of electrical energy:

[https://youtu.be/2orEfVN5S\\_0](https://youtu.be/2orEfVN5S_0)

Switchgear laboratory:

<https://youtu.be/WSUh0Pw2ls0>

High voltage laboratory:

<https://youtu.be/fxJwDjdPZrk>