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Sub project / GAP (incl. sub projects): GAP III (A02, A03, B02)

Date and location: 28.03.2022, Teams

Participants: Martin Vossiek, Robert Weigel, Robert Schober, Amelie Hagelauer, Laura Cottatellucci, Stefan Erhardt, Stefan Brückner, Jasmin Kolpak, Fabian Michler, Aditya Gupta, Nikita Shanin, Kenneth Mayer.

Keeper of the minutes: Stefan Erhardt

Date and location for next meeting: 25.04.2022, Teams

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| **topic 1 – Time plan**  *reported by Stefan Erhardt* |
| content/description: |
| * The completion of the Empkins Beacon V2 system (24 GHz non-miniaturized, 1-ch EMG) is still in progress (Stefan Brückner and Jasmin Kolpak). It is now planned to start measurements in April 2022 in the LHFT lab. * 11.-14.-04. Video shooting -> A02, A03 and B02 have shared their screenplays amongh each other at the last two GAP III PhD meetings. * LTE will build up a miniaturized 24 GHz Empkins Beacon (numbered V5) right after the V2 system is completely characterized. Therefore, a miniaturized, flexible beacon will be available still within 2022 for the use in the medical/psychological applications. |
| tasks and responsibilities: |
| * Stefan Brückner will design the adapter board for Empkins Beacon V2 |

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| **topic 2 – Progress report of subprojects**  *reported by every PhD student – slides are available on GAP III FAUbox folder* |
| content/description: |
| * A02 by Stefan Brückner:   + Circularly polarized antenna is now manufactured and will be measured soon.   + V2 system is still in preparation; microcontroller firmware is ongoing.   + Stefan contacted Björn Eskofier regarding first joint publication of LHT+LTE+MAD about Empkins Beacon V2 localization setup. * A03/LTE by Jasmin Kolpak:   + EMG for Empkins Beacon V2 is fully functional, now working on wireless data transfer and live visualization in MATLAB * A03/LTE by Fabian Michler:   + Measurements on 61 GHz antenna and Substrate Integrated Waveguide (SIW) structured ongoing, now researching the influence of silicone molding. * A03/MNT by Aditya Gupta:   + Presentation on current oscillator design (sub-harmonic injection, 22nm SOI)   + Tapeout of first test structures in May 2022 * B02 by Nikita Shanin:   + Work on journal paper as extension to last year’s conference paper.   + Simulations on RF power harvesting efficiency at -15dBm and -5dBm Note by Stefan: 20µW resp. 200µW are very low compared to the approx. energy consumption by empkins beacon.   + Master thesis on hardware implementation of RF energy harvesting circuit (supervised by Nikita and Jasmin) * B02 by Kenneth Mayer:   + Simulations on power transfer in MISO systems   + Optimization in terms of antenna spacing and MISO configuration Note by Stefan: Position of receiver (Empkins beacon) can be assumed to be known, also with dynamic movements. |
| tasks and responsibilities: |
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| **topic 3 – Organizational topics** |
| content/description: |
| * Stefan Erhardt:   + Jour Fixe on last Monday of each month, next meeting: 25.04.2022   + Stefan Erhardt leaves FAU end of April; Fabian Michler will be the new project manager of A03/LTE and organize the GAP III meetings. * Martin Vossiek:   + Preparation of patent, in collaboration with Björn Eskofier, will take approx. 3 weeks   + Patent shall be filed before the Empkins patent workshop (05.05.2022)   + It is expected that at least all A projects submit a patent on their own   + It is important to not disclose any information before filing the patent to external people. That includes written information by email which is considered to be monitored by foreign services. |
| tasks and responsibilities: |
| * Fabian Michler creates new meeting series * Martin Vossiek sends patent draft to involved collegues (not defined yet) by secure method. |

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| **topics for next meeting**  *may be changed due to new organizer* |
| 🞏 Time plan  🞏 Progress report of subprojects  🞏 Organizational topics  🞏  🞏 |

**Notes:**