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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.
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| 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 -5dBmNote 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 configurationNote by Stefan: Position of receiver (Empkins beacon) can be assumed to be known, also with dynamic movements.
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| 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.
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| 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:**