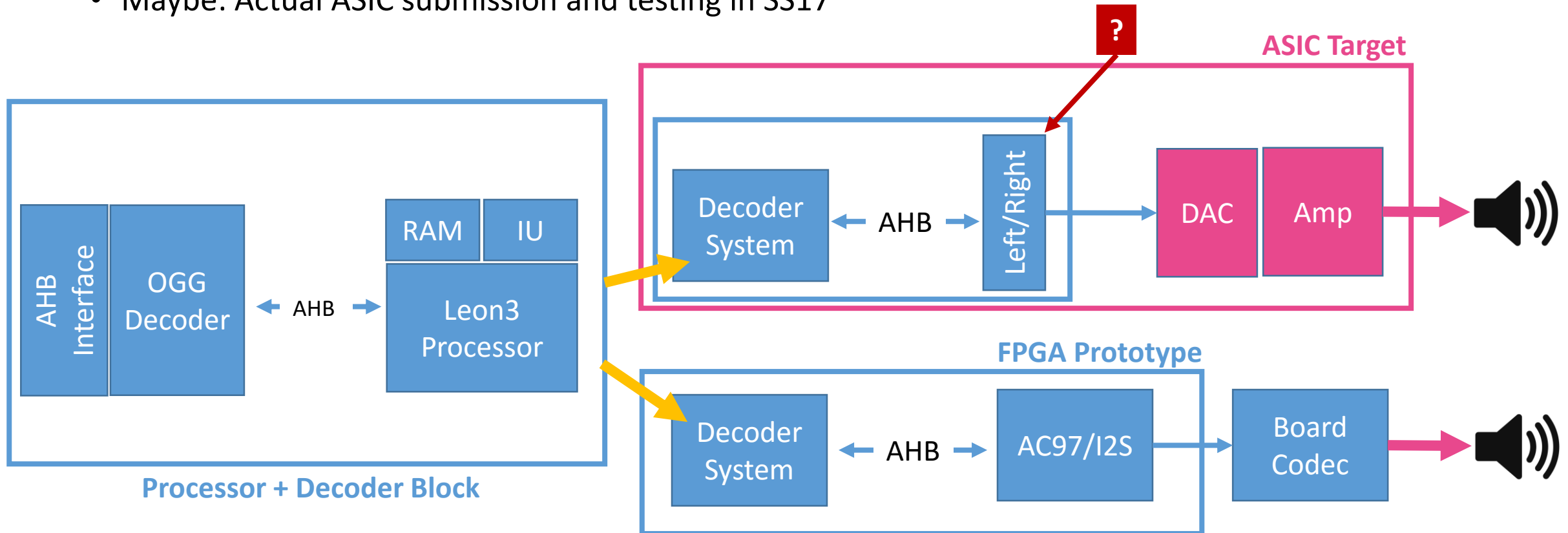# Praktikum System on Chip (PSOC)

PSOC Design

- OGG-Vorbis Decoder with Leon3 Processor and audio amplifier output
- Digital Design with Prototyping on FPGA and implementation in target ASIC technology
- Analog DAC and Amplifier Design with final ASIC top level integration
- Maybe: Actual ASIC submission and testing in SS17

PSOC ASIC Technology Choice

- Choose technology as if we would submit the ASIC
- 180nm AMS or UMC are good choices: Building Blocks available, not too expensive
- AMSH180:
  - Run February 22d , Price: 1100€/mm² , min 7mm² or min 5mm² if MiniASIC
  - 6 Metal layers
  - Memory generator available ? (need to ask AMS)
  - High Voltage Output (>5V)
- UMC180:
  - Run March 7th , Price: 15600€/block of 4mm²
  - Run 29th Feb, MiniASIC: 3160€/block of 1525x1525μ , two blocks possible
  - 6 Metal layers
  - Memory generator available
  - Only Low Voltage (IO is 3.3V)
- IPE Preference: AMS because of good contacts
  - -> Need to ask for Memory Generators -> available

PSOC Organisation

- Digital Design Part with ITIV:
  - Decoder Block and FPGA Prototype
- Analog Part and ASIC Top level with IPE
  - ASIC Left/Right Interface for DAC (with ITIV help?)
  - DAC and Amplifier Design
  - Top level integration: DRC/LVS etc…
  - Top level: Give ready-to-use blocks if needed to avoid too much work
- Organisation:
  - Digital Part as Block Course before semester begin?
  - Analog Part best spread over semester: Less stress, leaves time to fix unexpected issues and adapt to students progress speed
  - Define Milestones to keep good timing
- Evaluation:
  - Milestones Oral Examination is a good idea
  - Report at the end ? (maybe a bit too much work for the students)