Integrated Systems for Industry and Space Applications
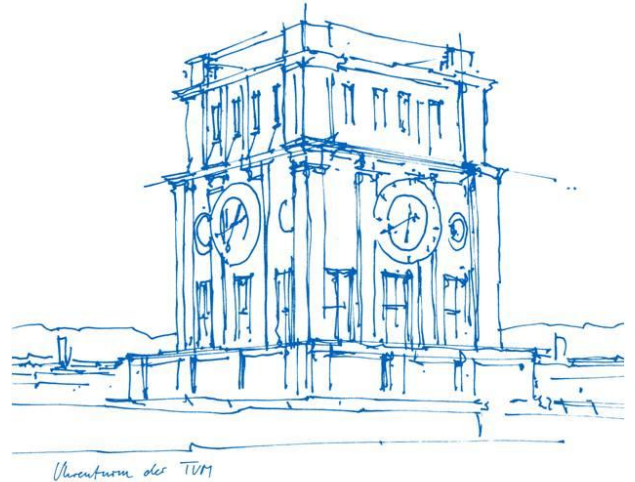# Final Presentation

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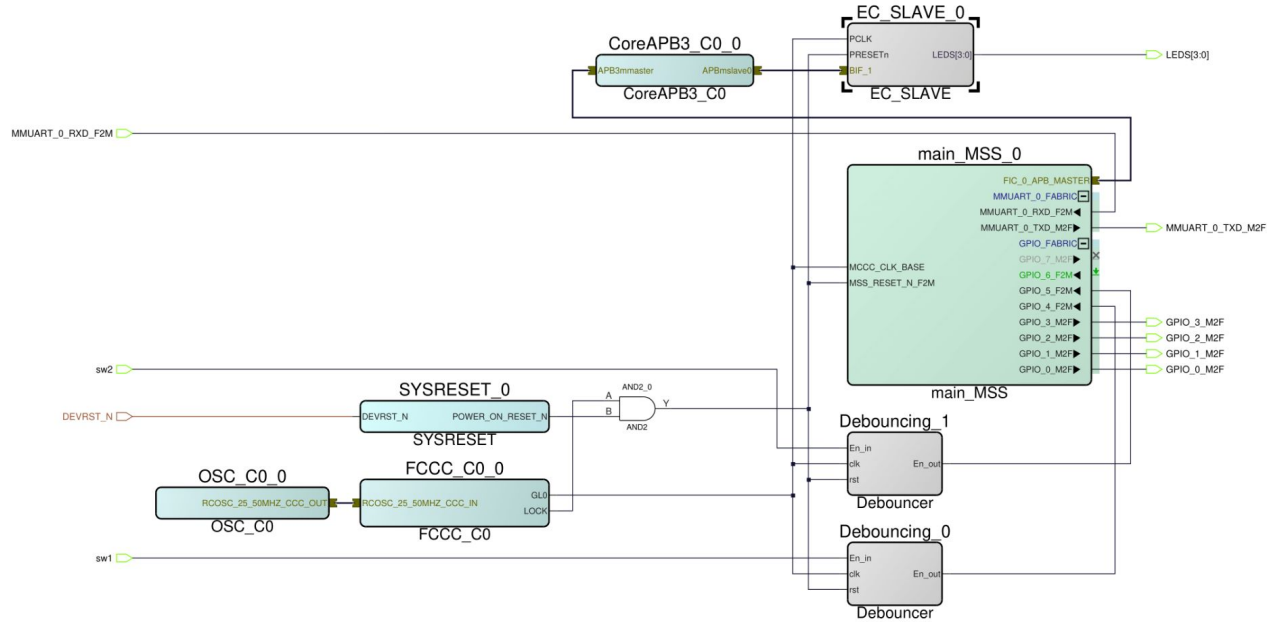
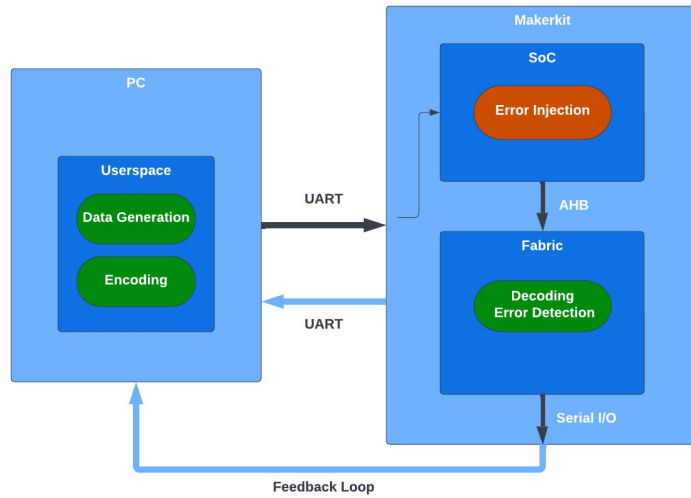Chair of Integrated Systems

Munich, 17th of January 2023

Agenda

- System Presentation and Comparison to Initial Design

- System Verification

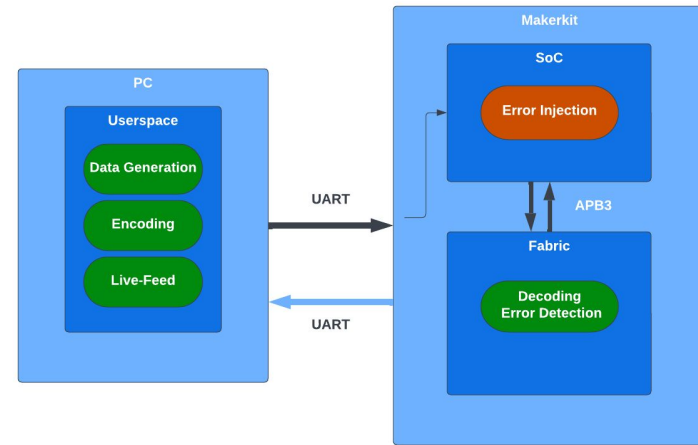- System Demonstration

- Lessons learned

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System Presentation and Comparison

System Presentation and Comparison

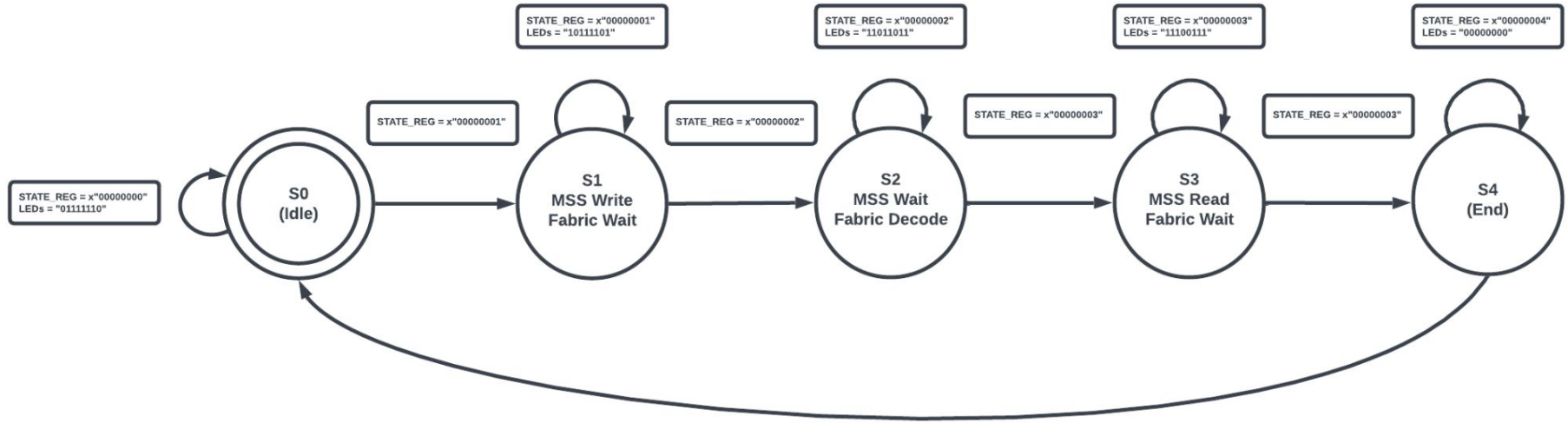
Initial Design

Final Design

System Verification

- Updated Specifications
  - Communication:
    - PC - MSS: UART
    - MSS - PC: UART
    - MSS - Fabric: APB3
    - Fabric - MSS: APB3
  - Data:
    - Size before Encoding: 128B
    - Encoding/Decoding: Hamming Codes (16, 11)
    - Size after Encoding: 192B
  - Error Injection:
    - Takes place in the MSS
    - Randomly flip 1 bit per Block
  - Error Detection/ Error Correction
    - Takes place in the Fabric
    - Process controlled by FSMs
    - Gives a Feedback about Number of Errors

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MSS - Fabric Combined FSM

System Demonstration

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Challenges and Lessons Learned

- Understanding Memory Mapping Registers in order to utilize APB3 Bus Architecture
- Hardware Design x Software design paradigms
- Finite State Machines are crucial in Hardware and SoC designs in general
- Testing, Testing and Testing!
- Plan all possible scenarios and corresponding reactions!

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Thank you for your attention

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