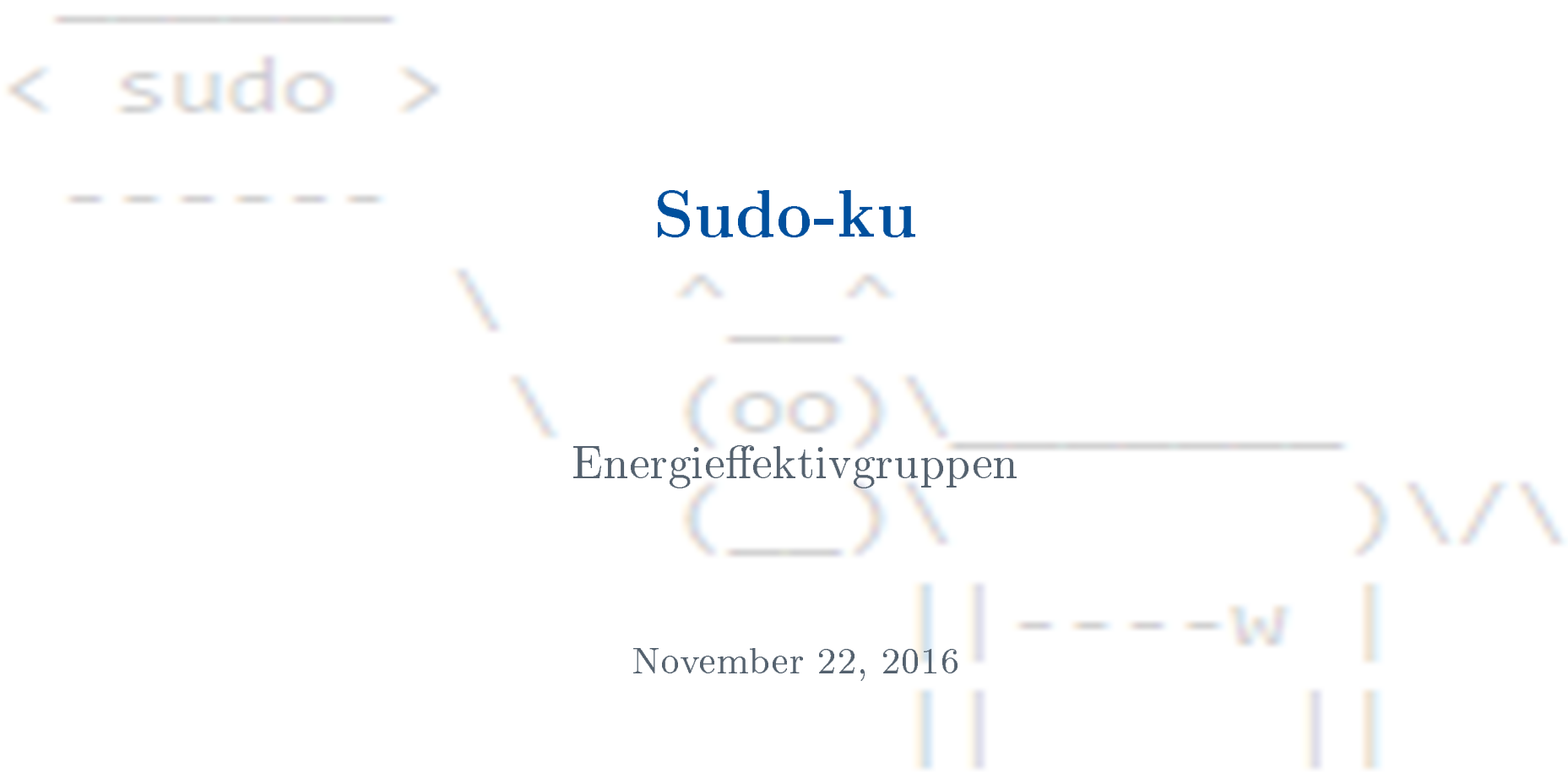
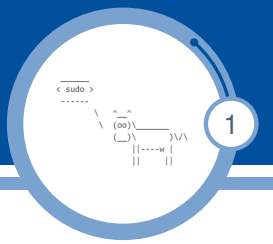


Sudo-ku

Energieffektivgruppen

November 22, 2016

Content



The Task

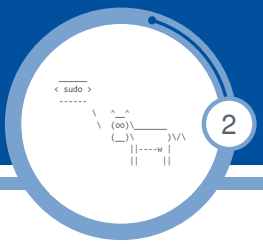
Binarized Neural Network

The Operation of Sudo-ku

Data flow and memory

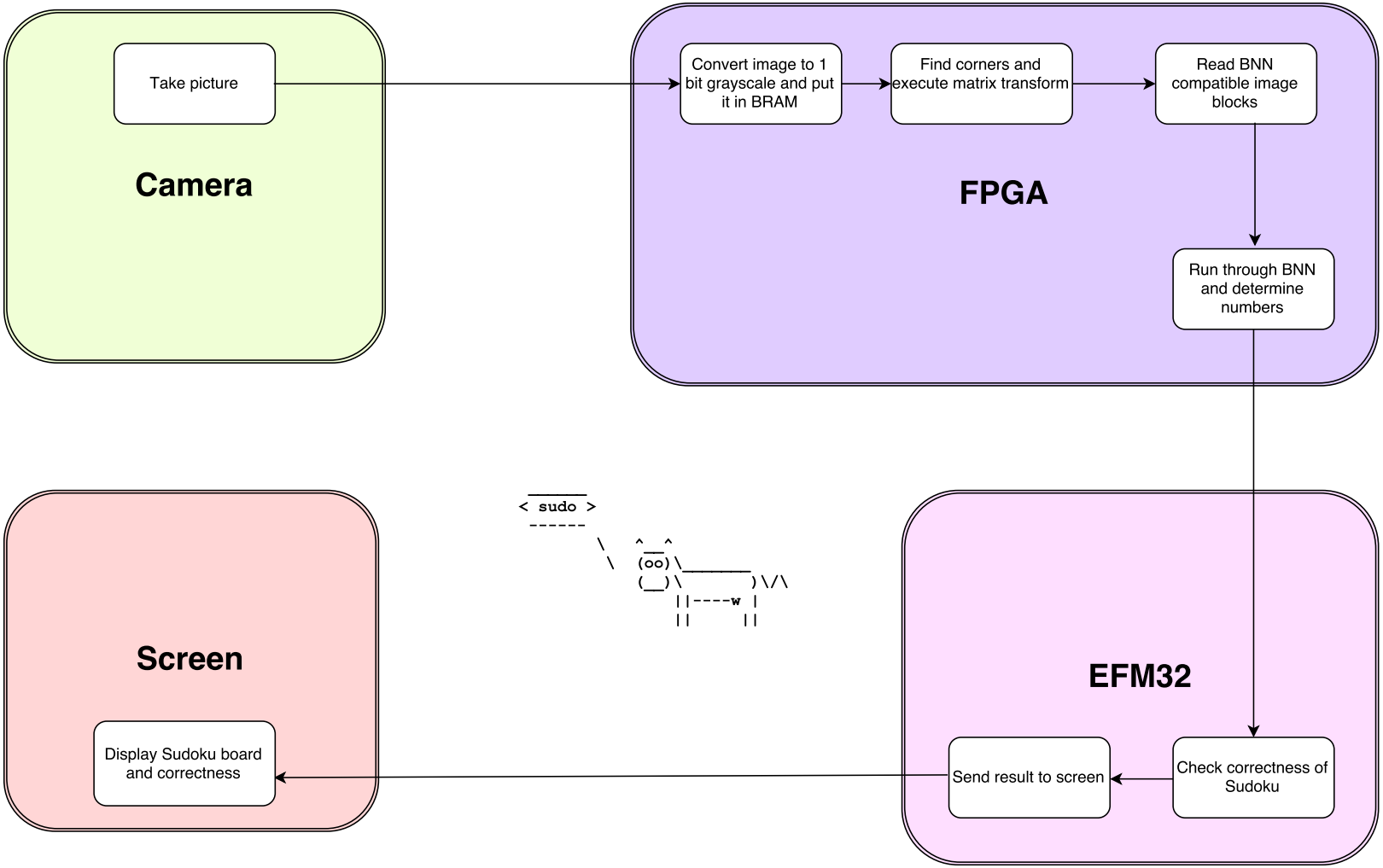
PCB Design

The task



- Construct a computer that makes use of binarized neural network deployed on an FPGA
- The BNN should recognize digits
- Computer must be battery powered
- Maximize battery life
- Sudoku solver that displays the board and correctness

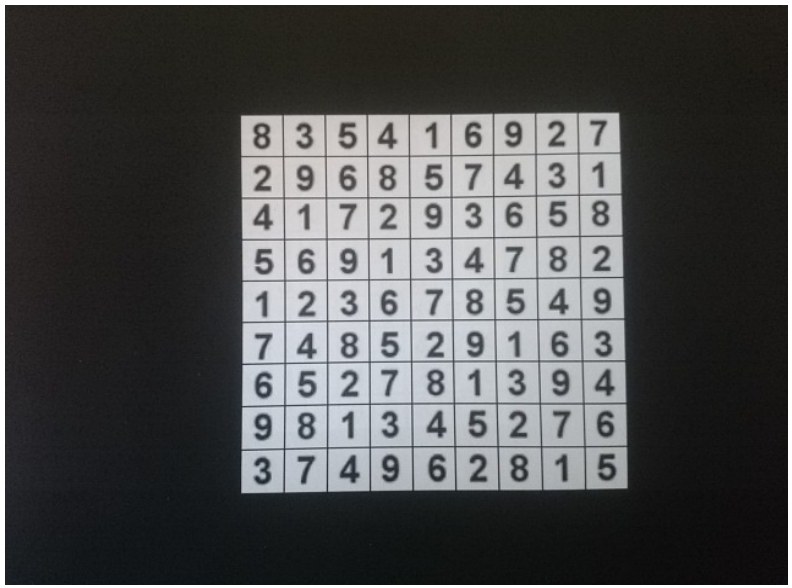
The Operation of Sudo-ku



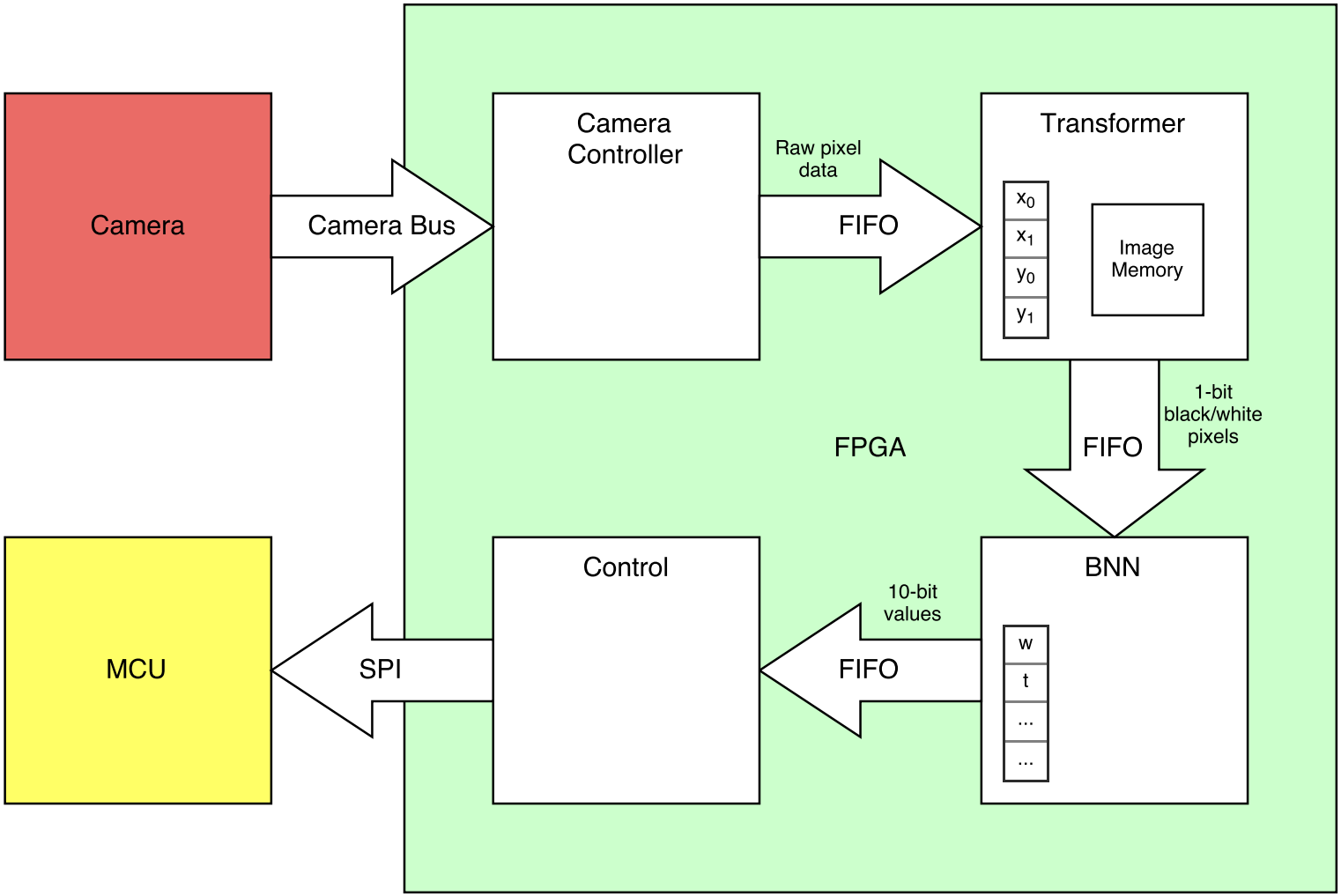
The operation of sudo-ku

Image restraints

- White Sudoku board on black background
- Not rotated more than 45 degrees in any direction

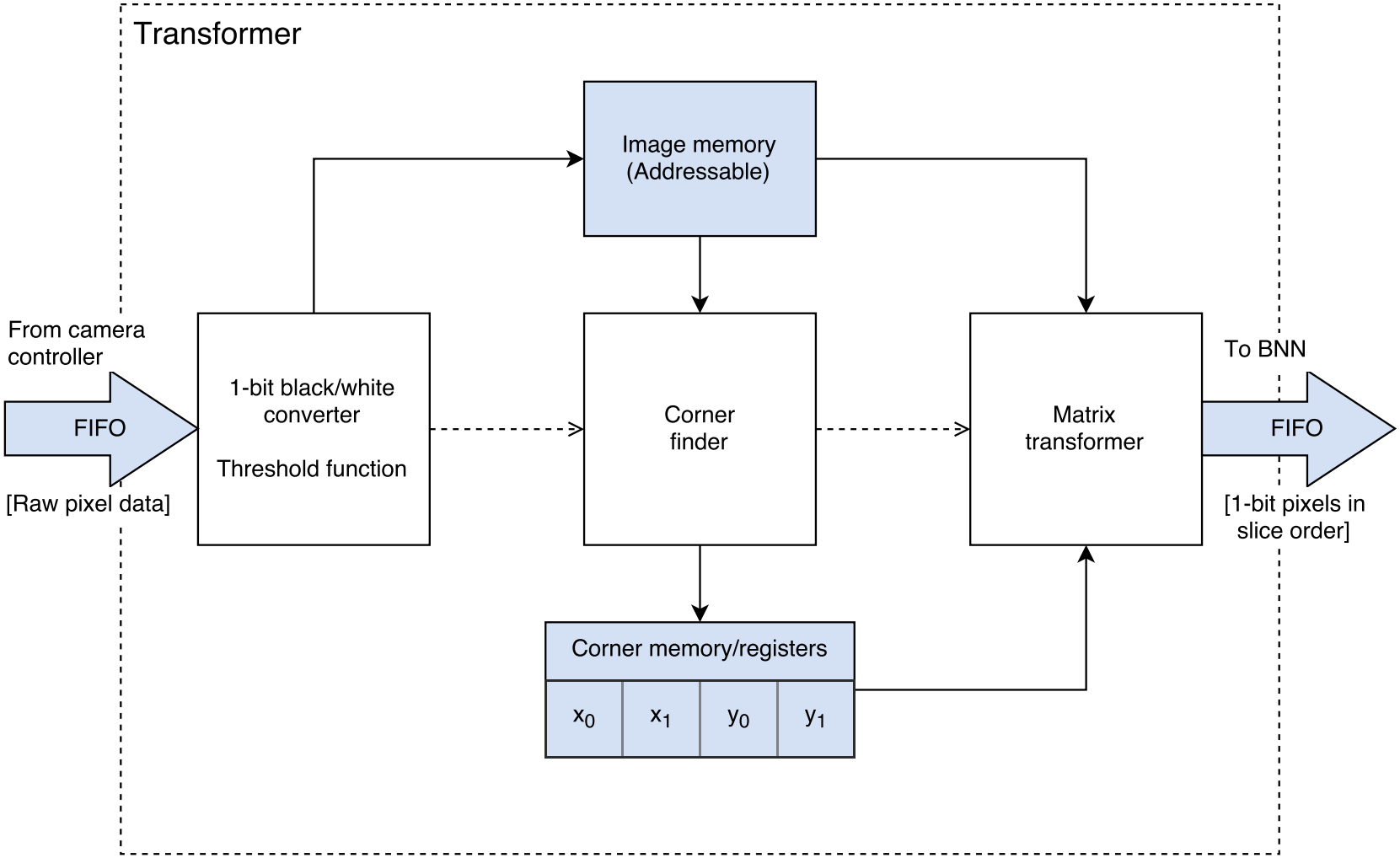


Data flow and memory
On the FPGA

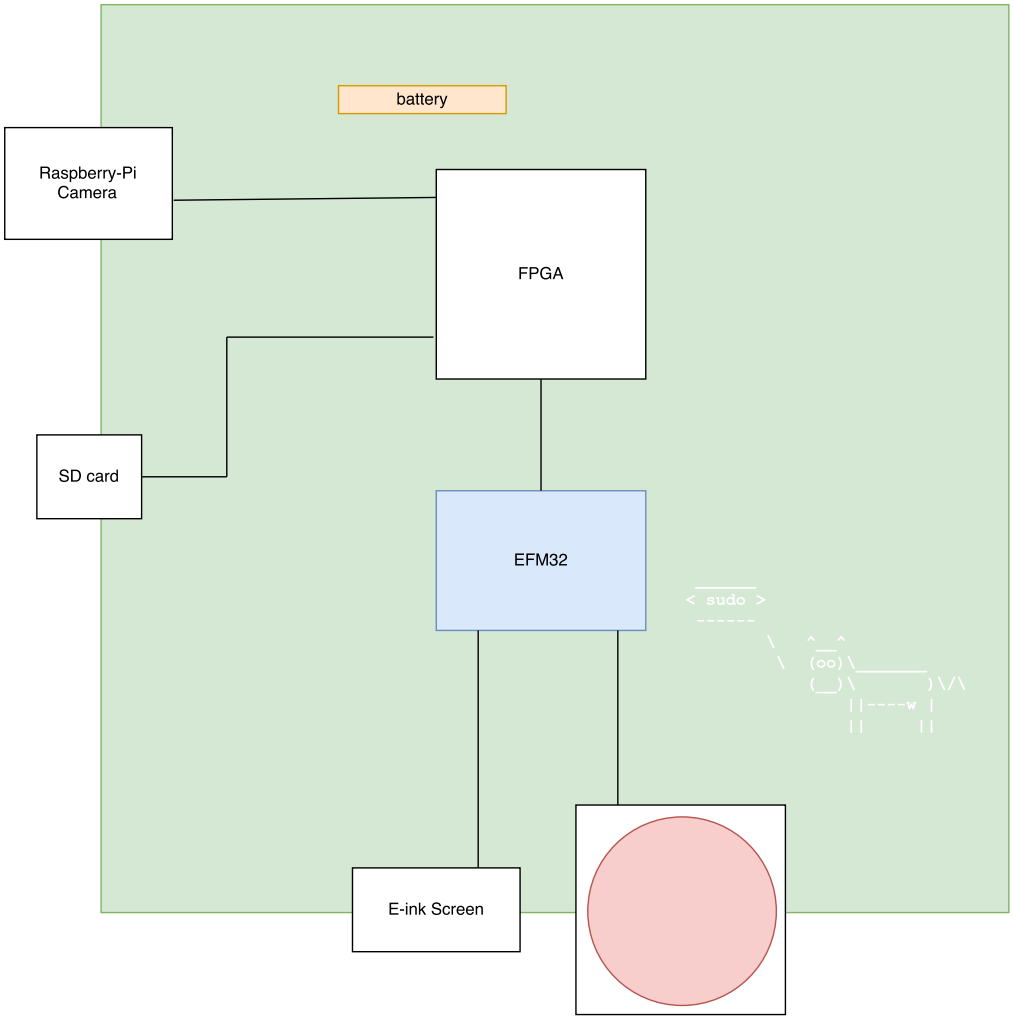


Data flow and memory

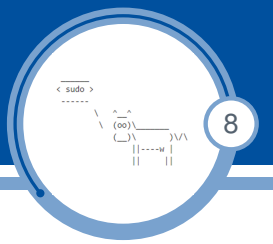
In the Transformer-module

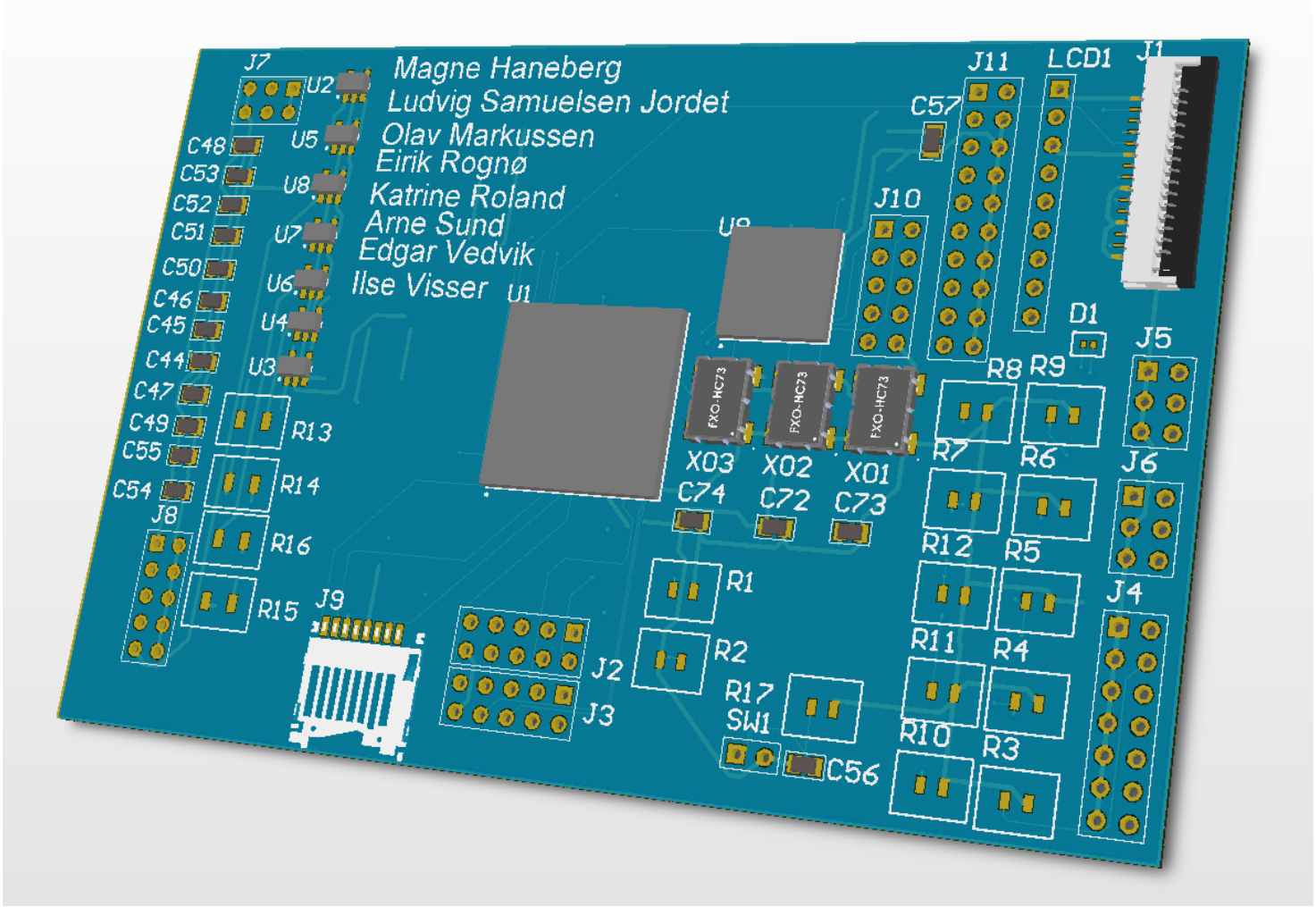


PCB Design
High Level Schematic



PCB Design
Energy estimates



	Idle	Load
Estimated	0,36W	0,48W
Measured	0,77W	0,81W

PCB Design
3D Drawing