

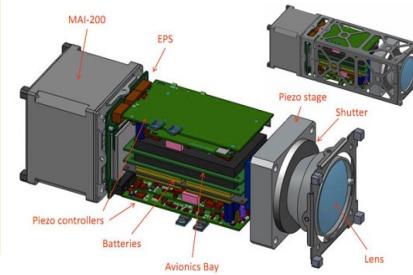
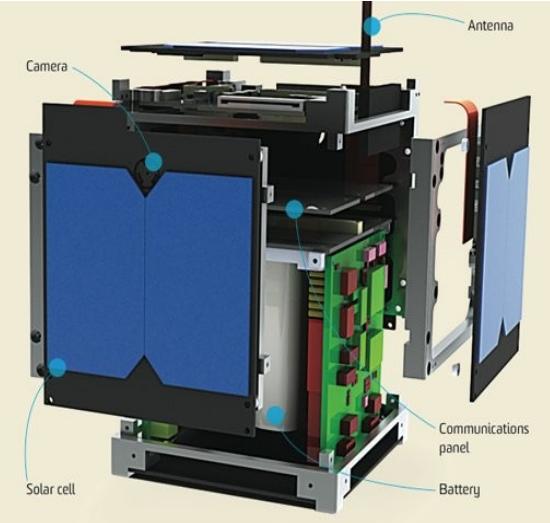
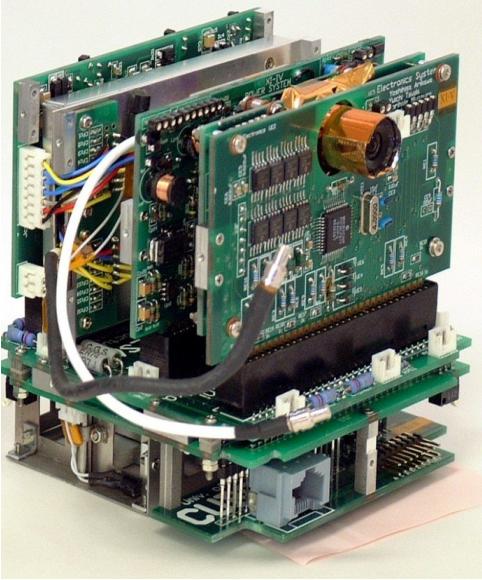
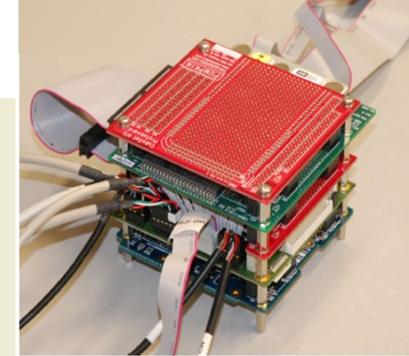
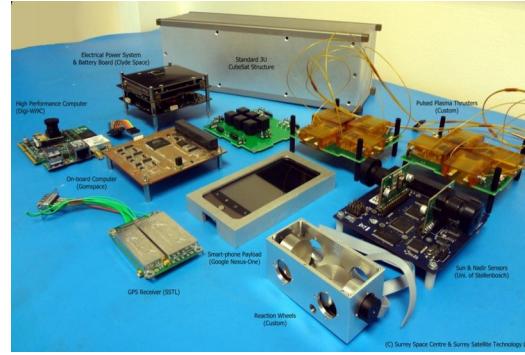
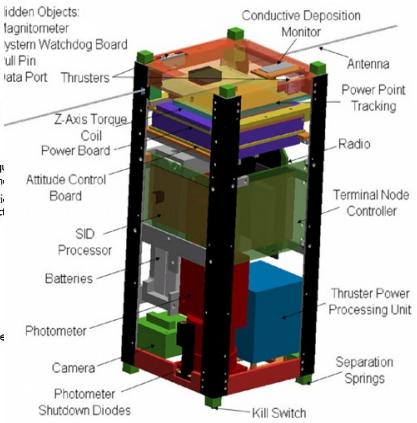
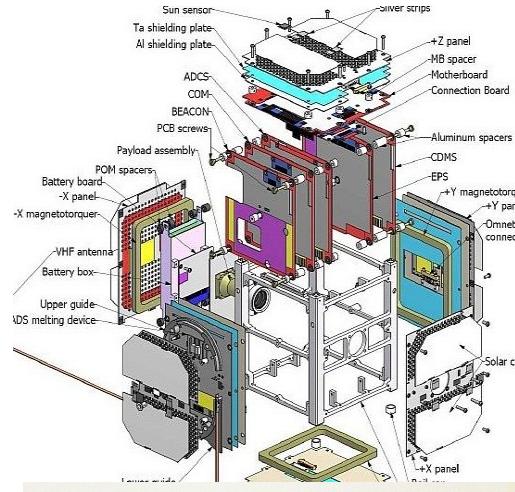


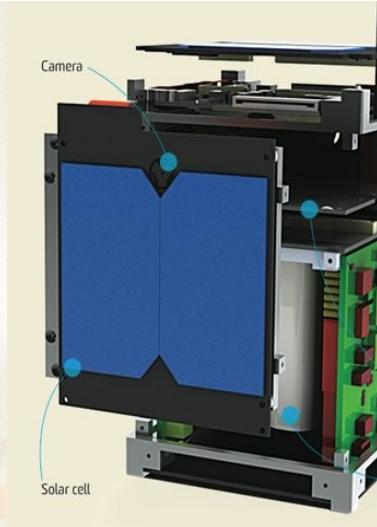
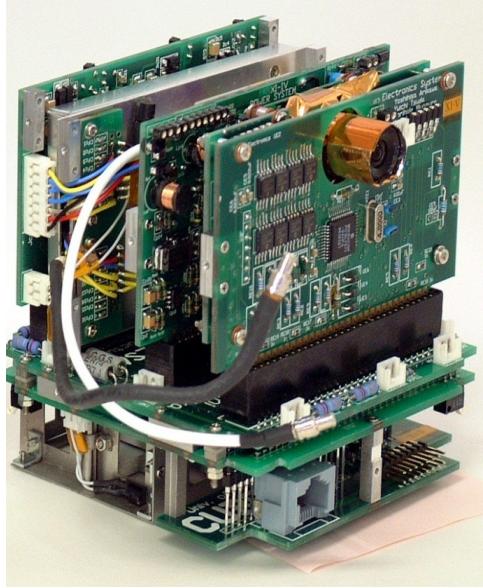
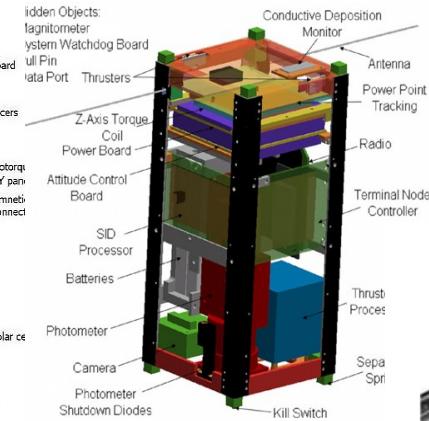
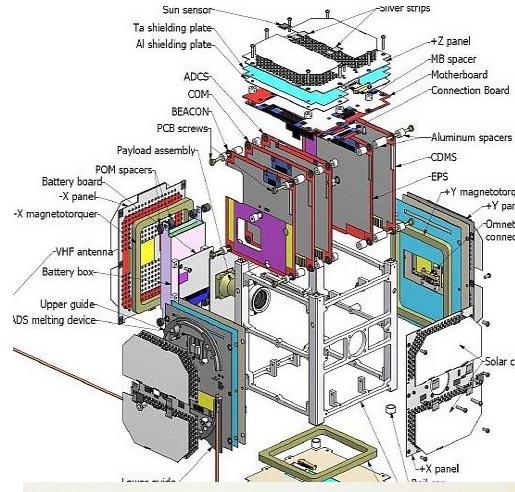
SpaceCAN

Artur Scholz
LibreCube Initiative

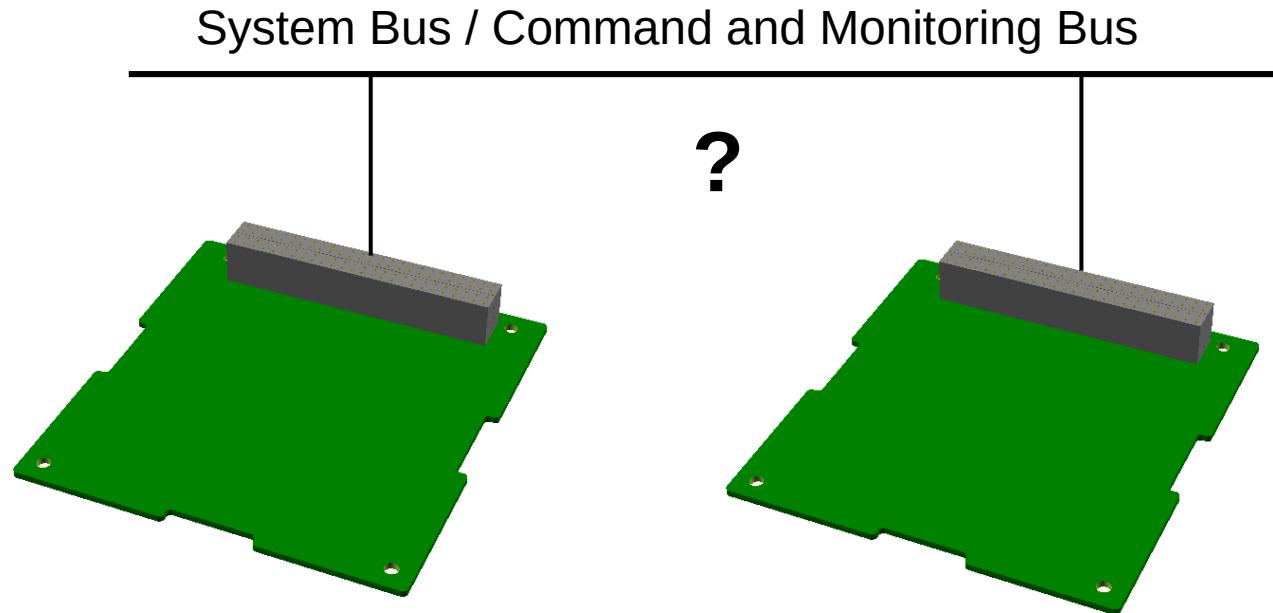


Interface Standardization





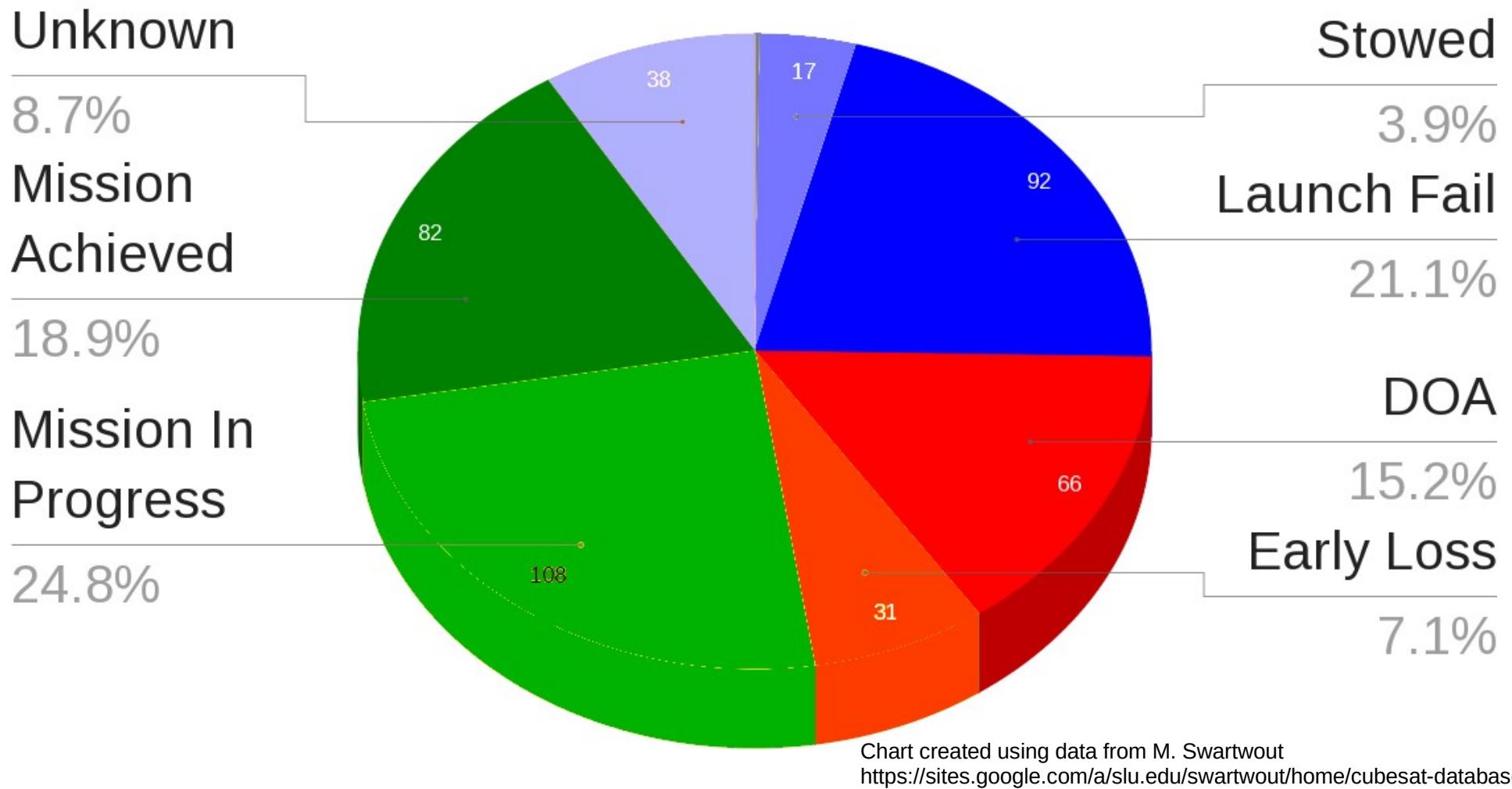
Data Interface

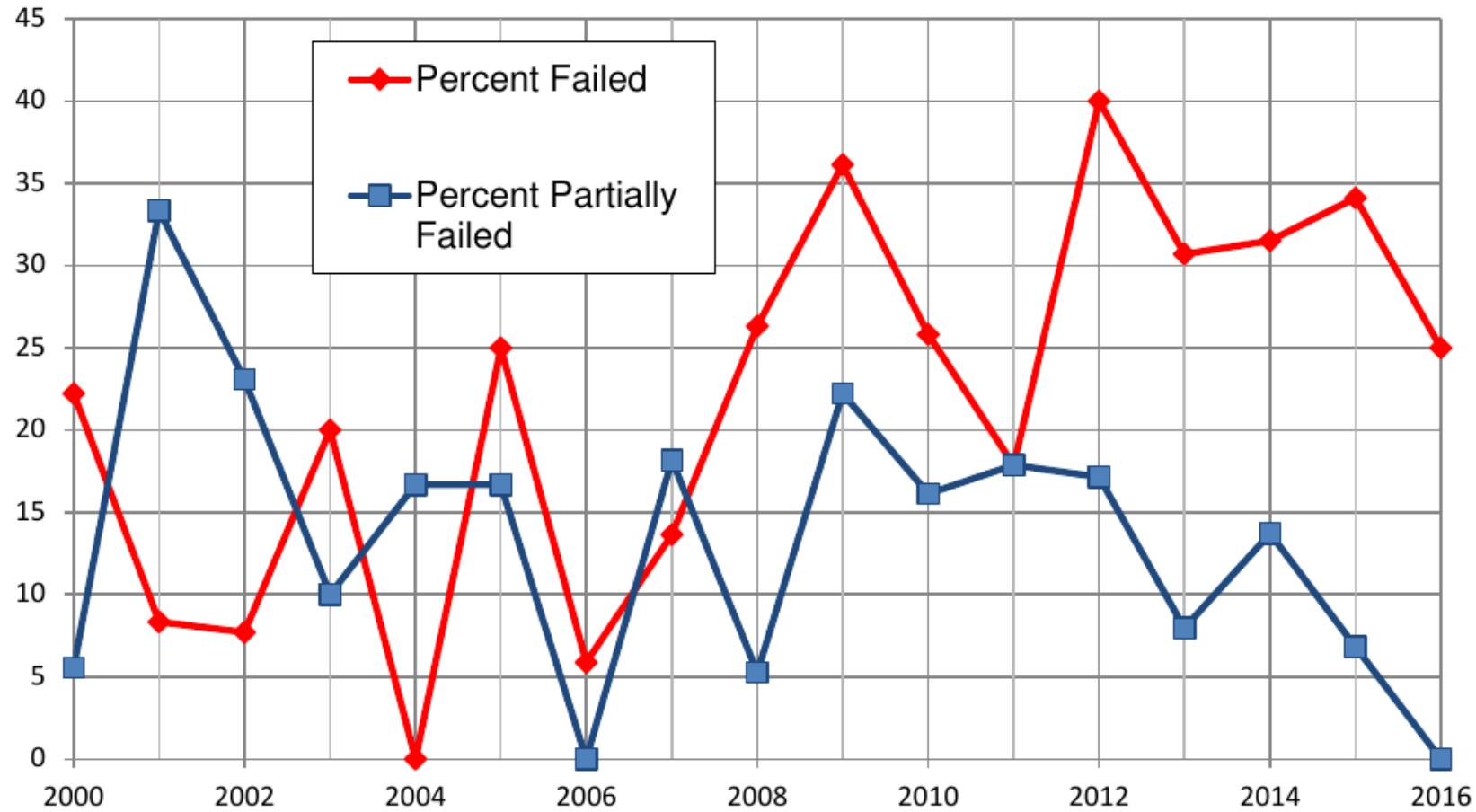


I2C

~~I2C~~

CubeSat Mission Status, 2000-present



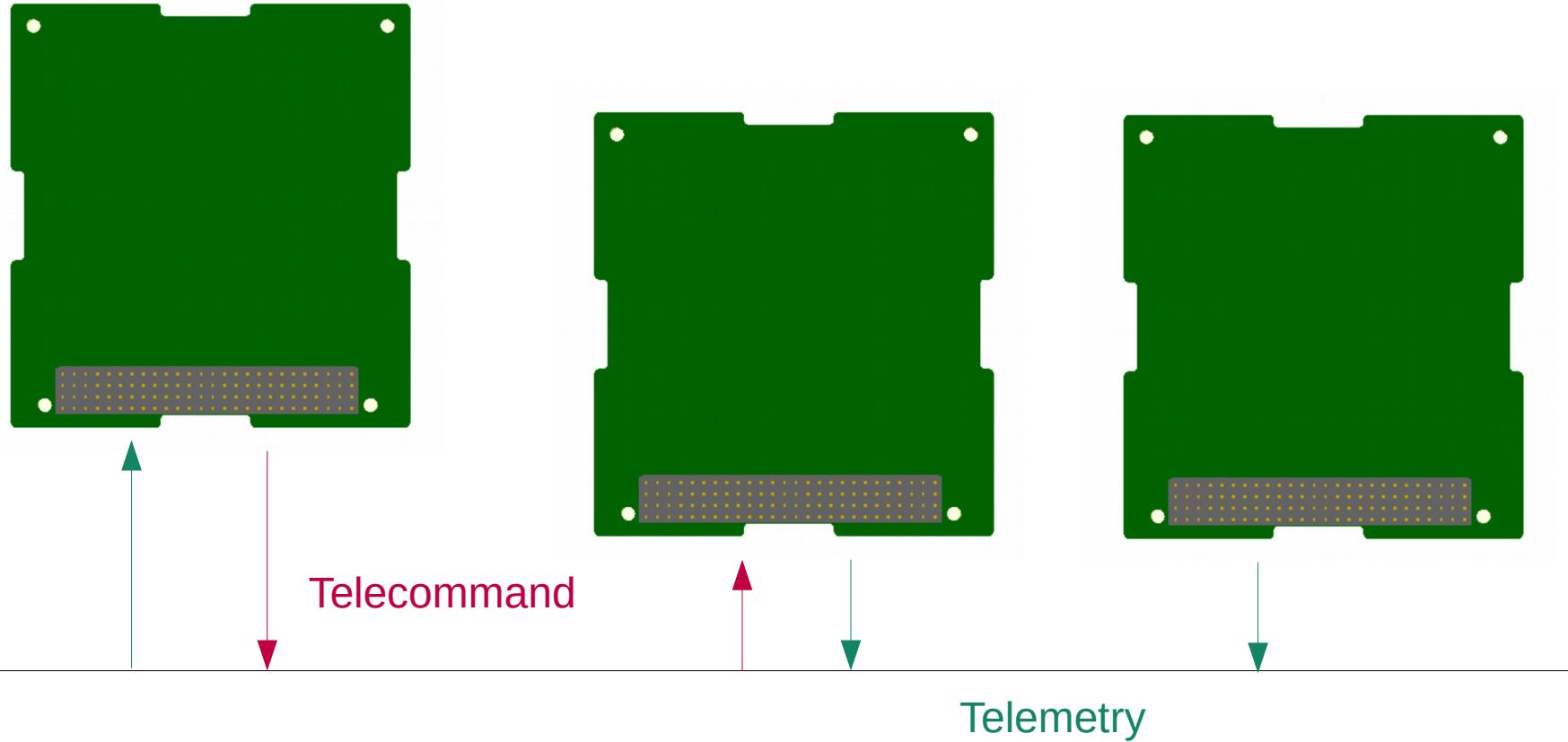


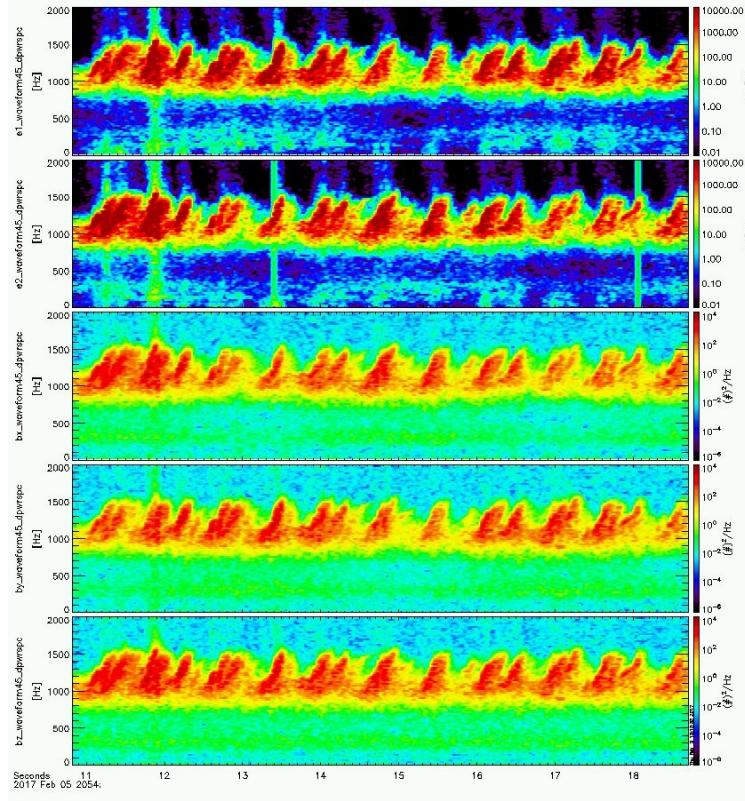
Jacklin, Stephen A. "Small-Satellite Mission Failure Rates." (2019).

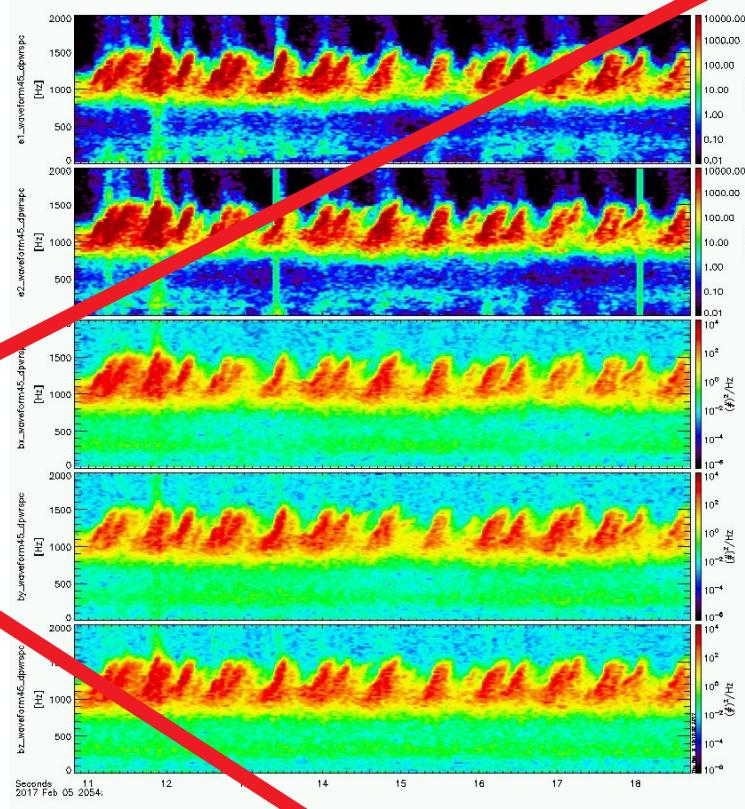
Complexity

~~Complexity~~

Simple & Robust







Telecommands

- switch unit on/off
- change mode/configuration of unit
- trigger action
- ...

Telemetry

- status of unit
- sensor readings (temp, voltage, current, ...)
- ...

MIL-STD-1553
SpaceWire
UART / RS-485
CAN Bus

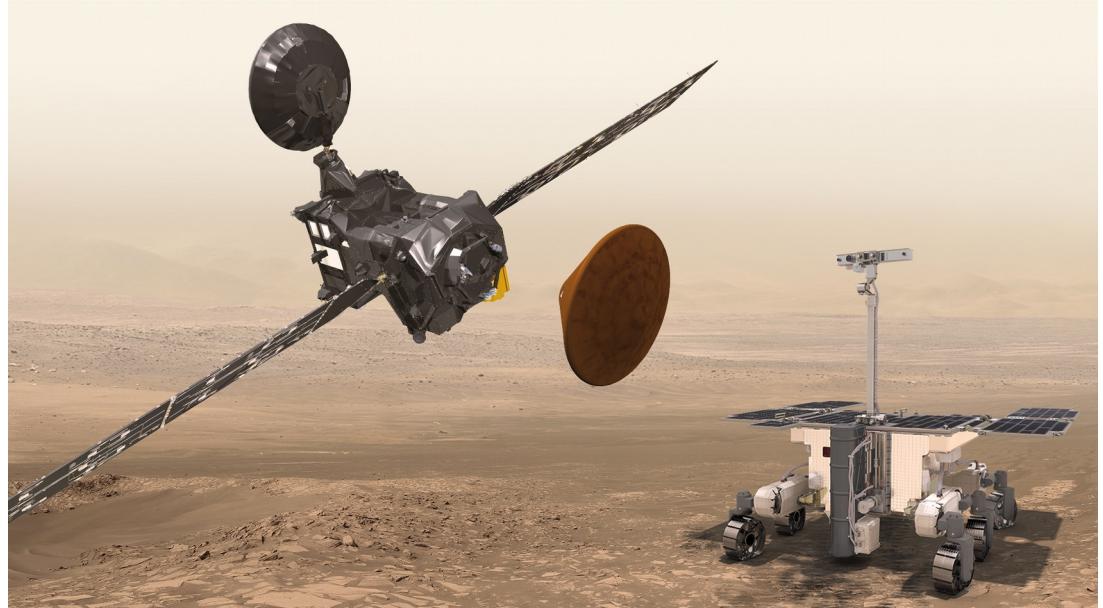
ECSS-E-ST-50-15C
1 May 2015



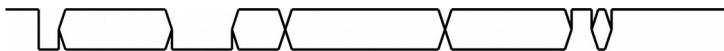
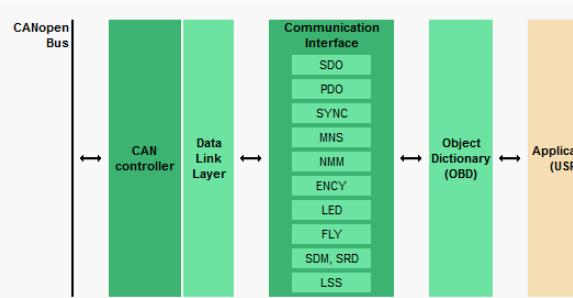
Space engineering

CANbus extension protocol

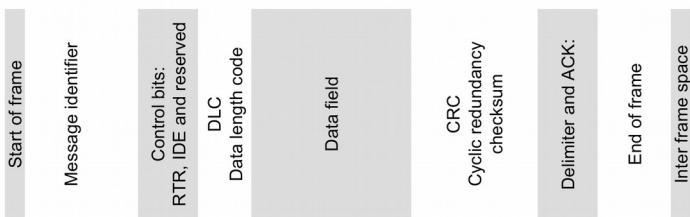
ECSS Secretariat
ESA-ESTEC
Requirements & Standards Division
Noordwijk, The Netherlands



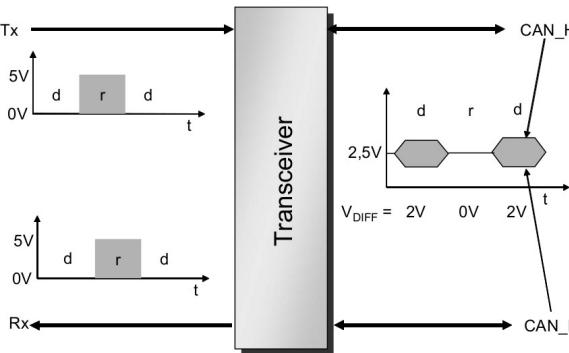
Higher layers

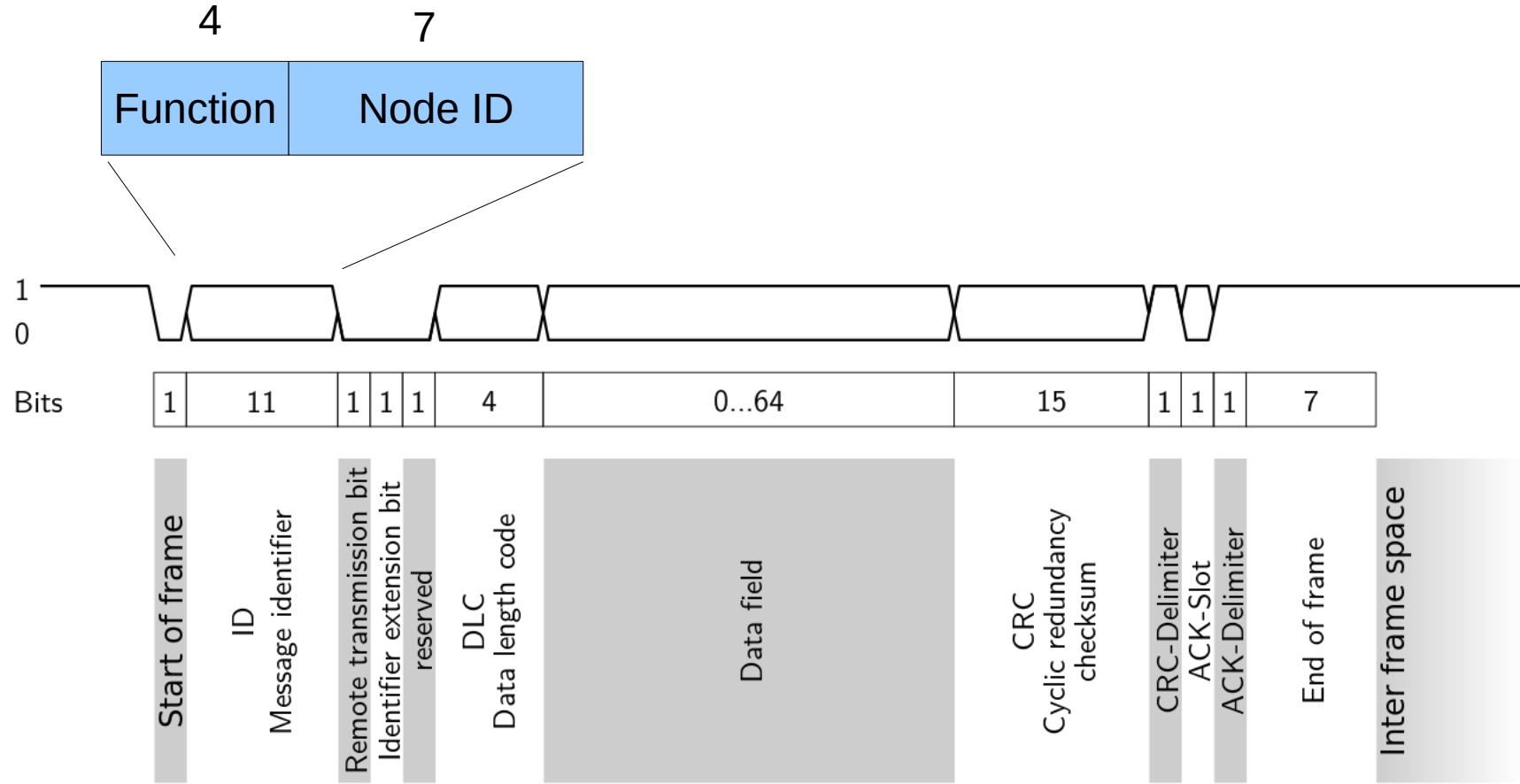


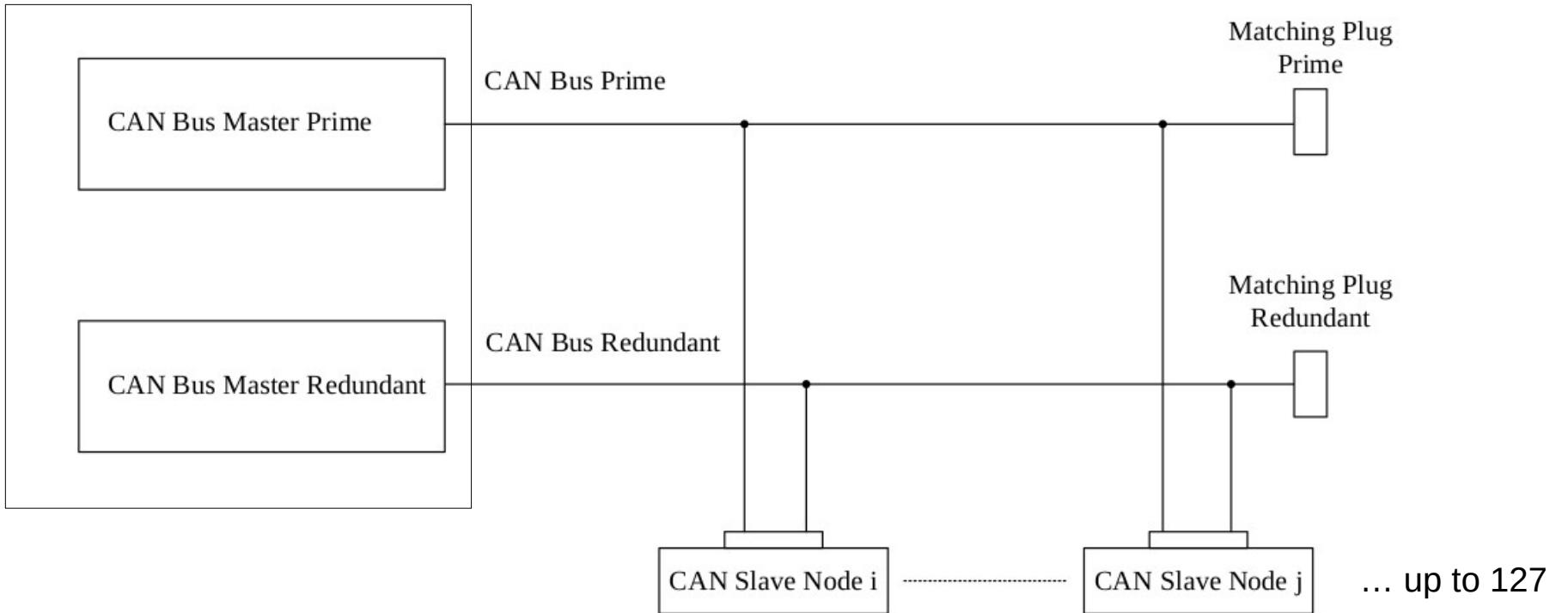
Data link layer

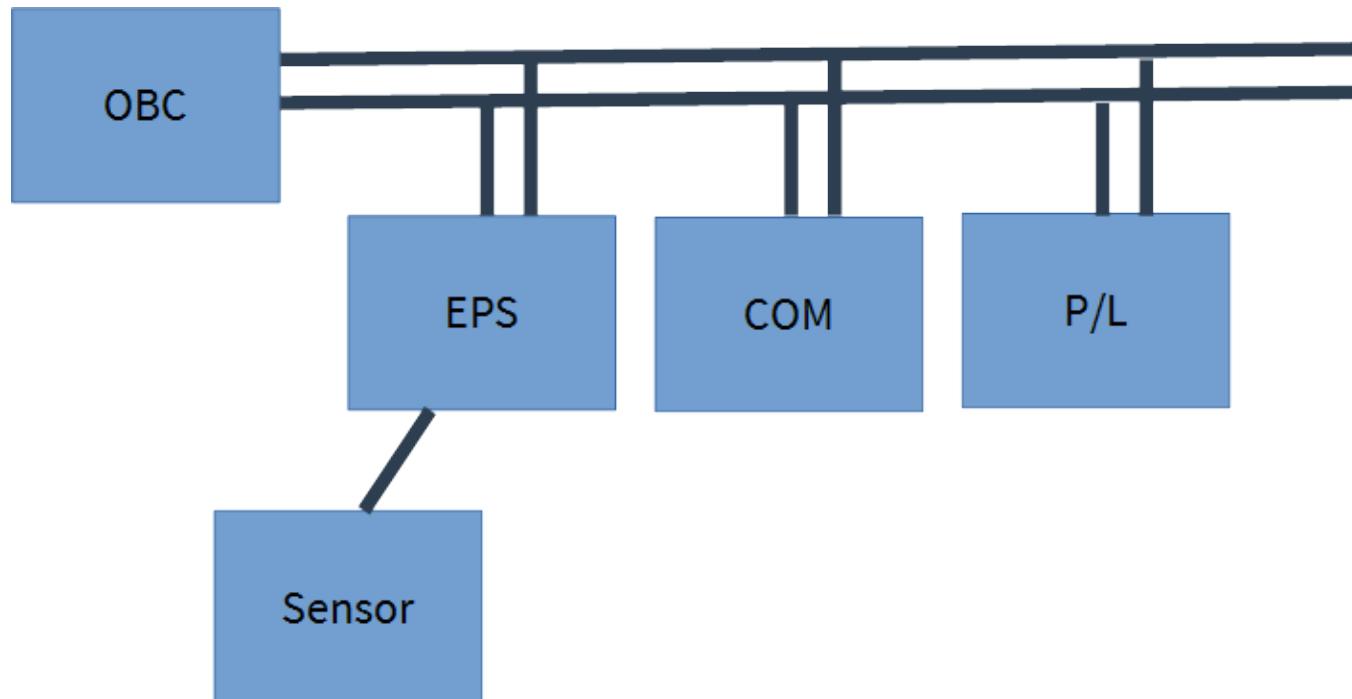


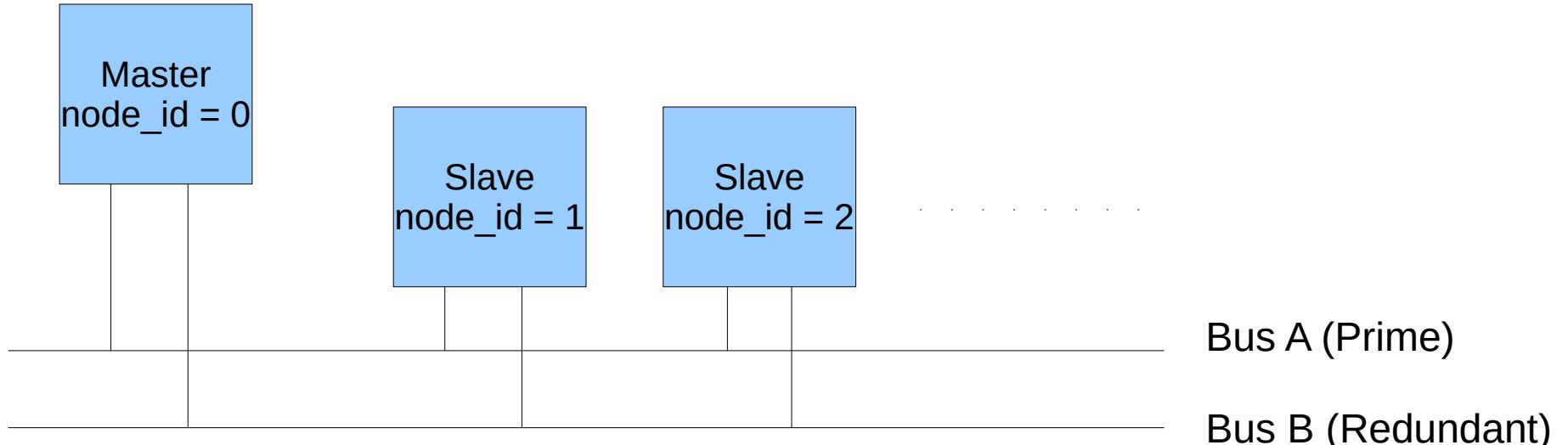
Physical layer











Services

Redundancy management

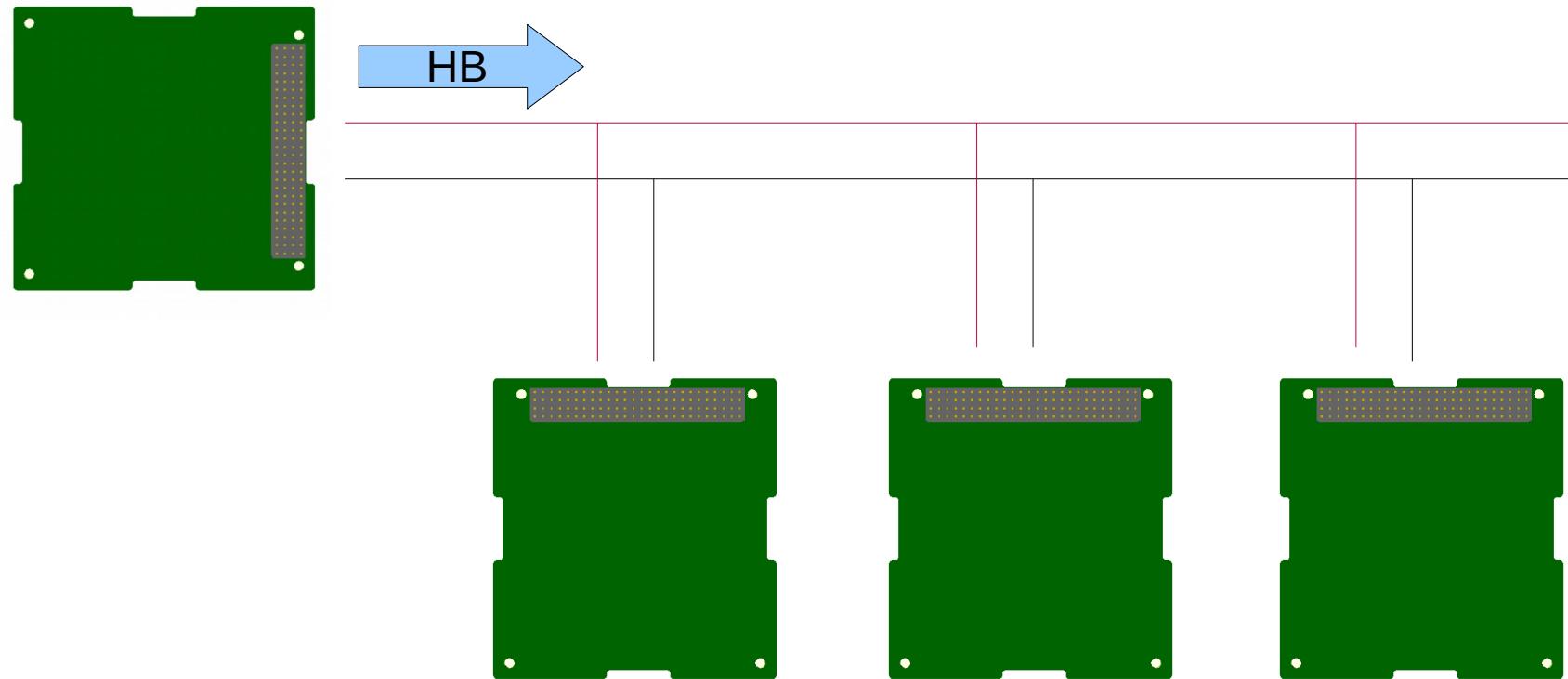
Synchronization

Time distribution

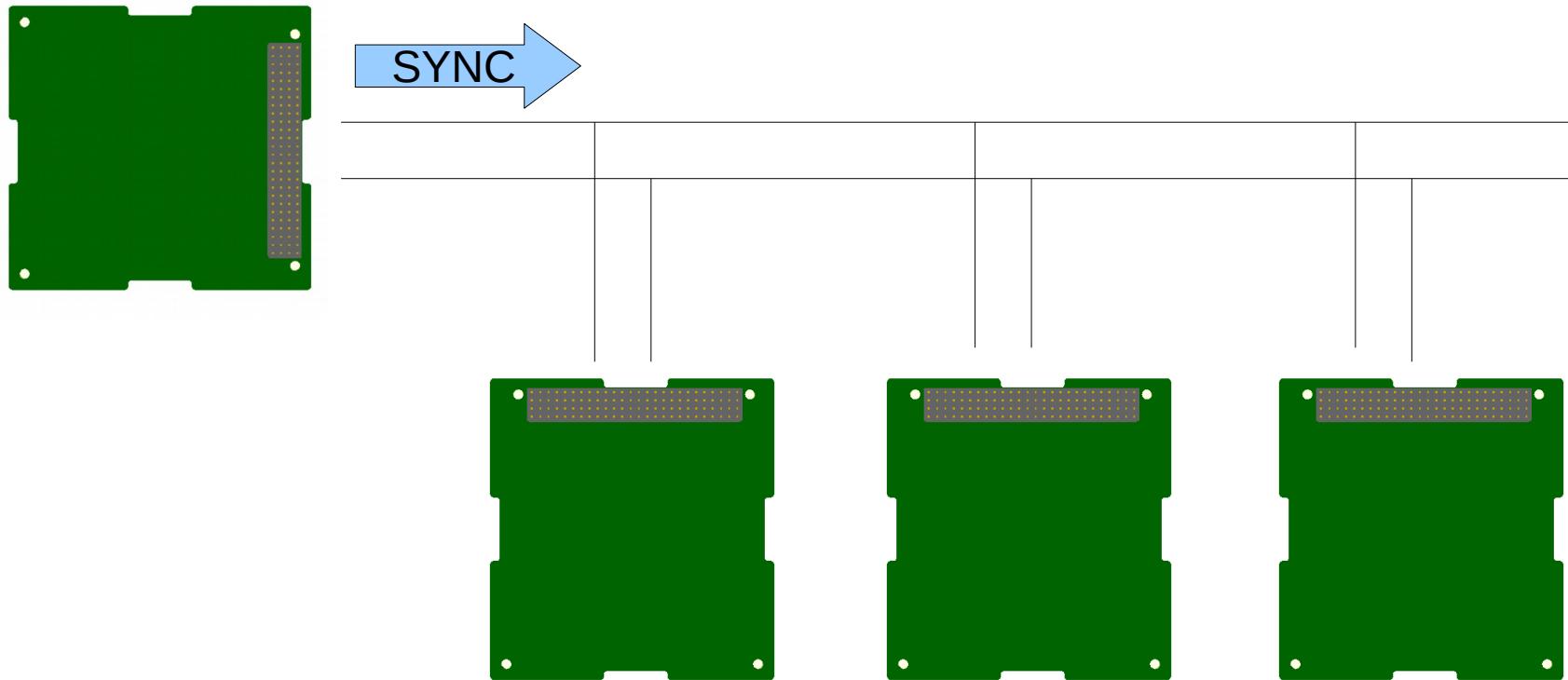
TC/TM exchange

(Message exchange via ISO-TP)

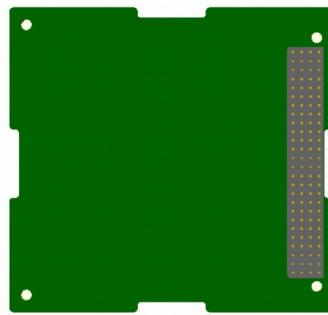
Redundancy



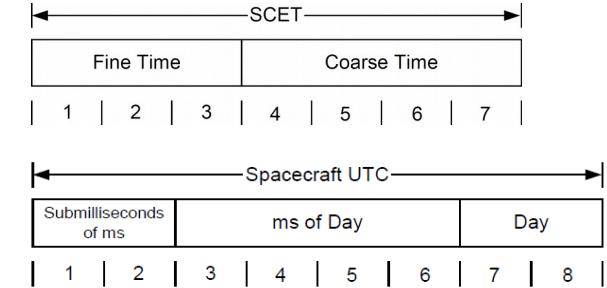
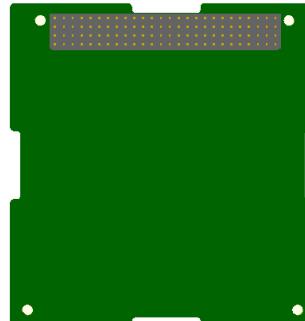
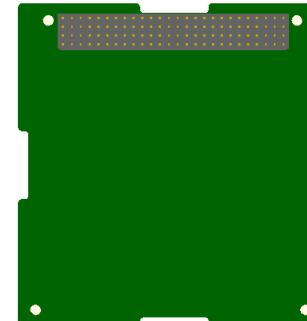
Synchronization



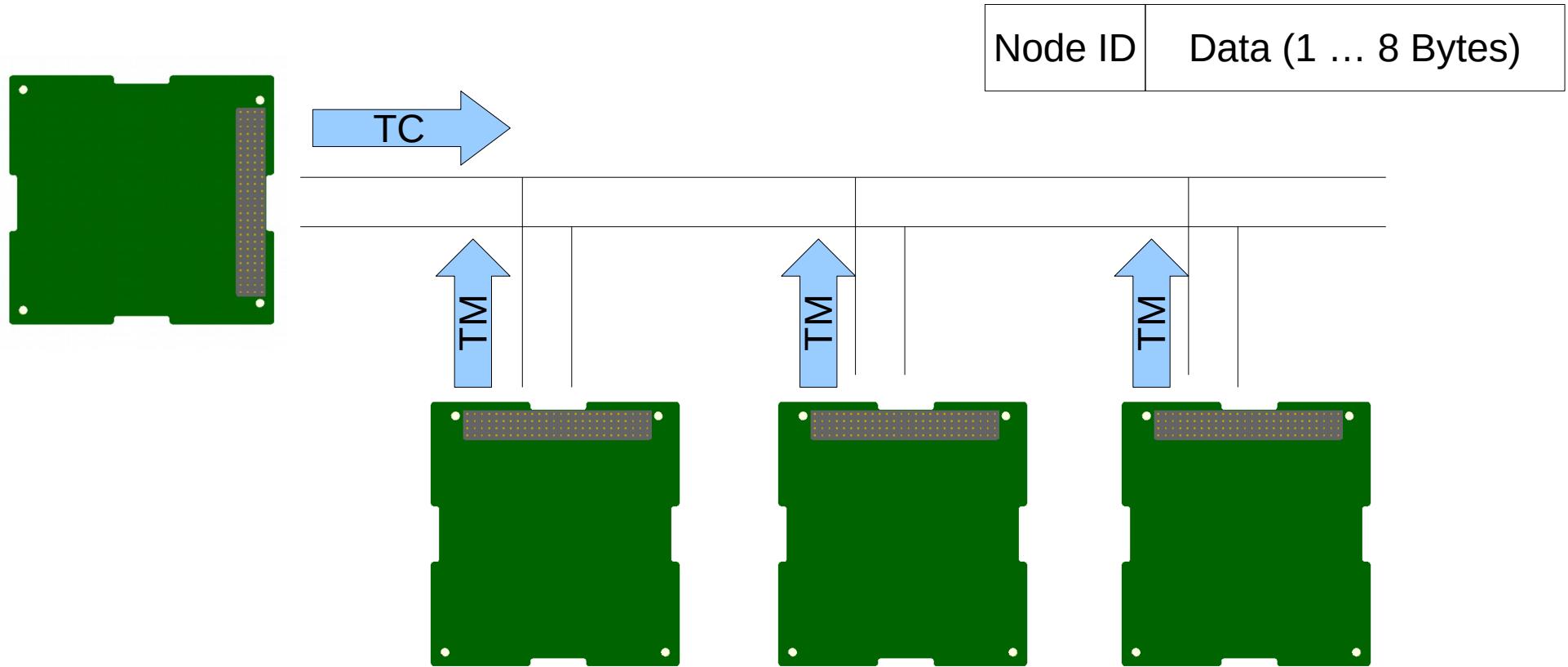
Time distribution

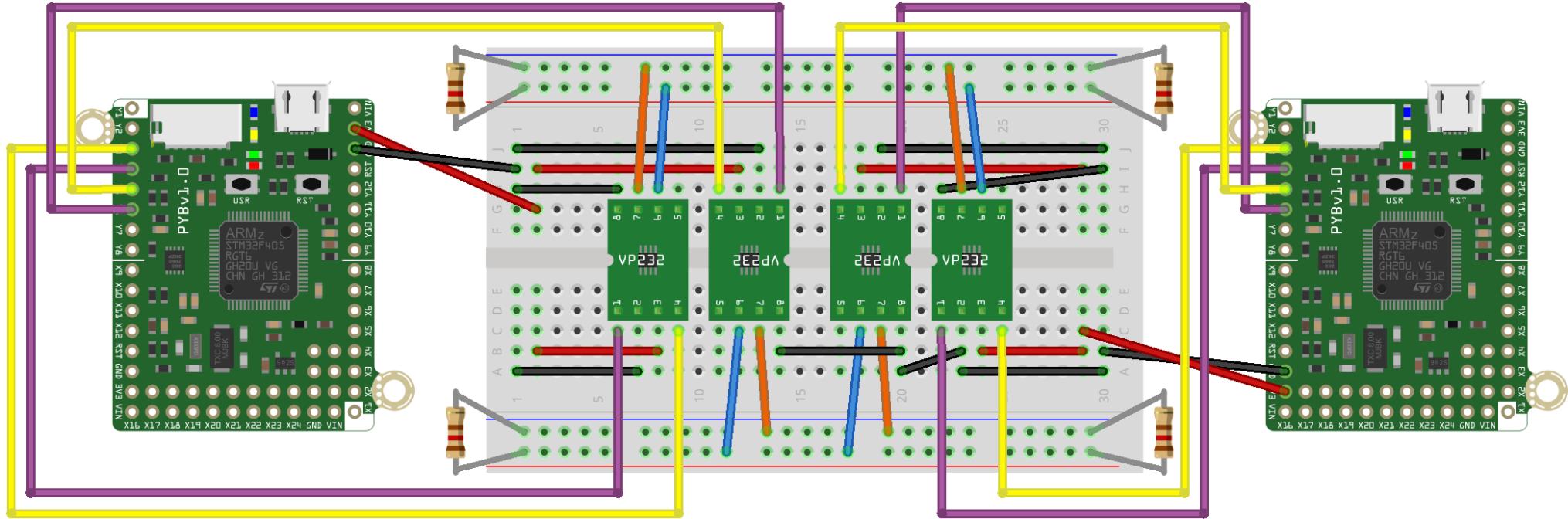


SCET → UTC



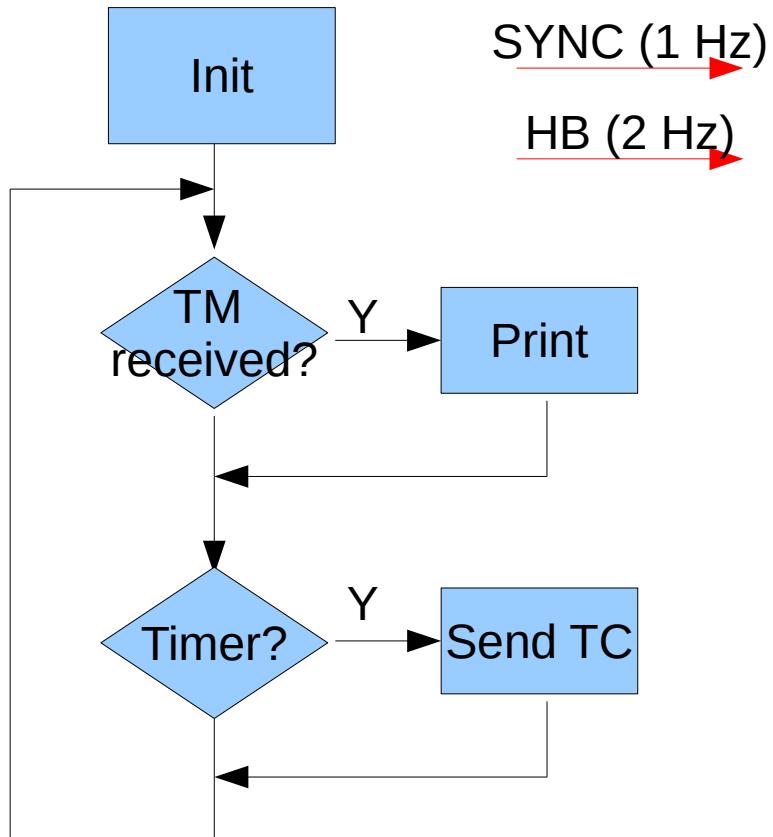
TC/TM exchange





fritzing

Master node



Slave node

