SpaceWire activities in Japan

-- Space Cube I --

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and
Space Cube consortium

Space Cube I

Space Cube is a tool designed for the development.

VR5500CPU
(MIPS)

PCI

PCI Bridge(PCI9054)

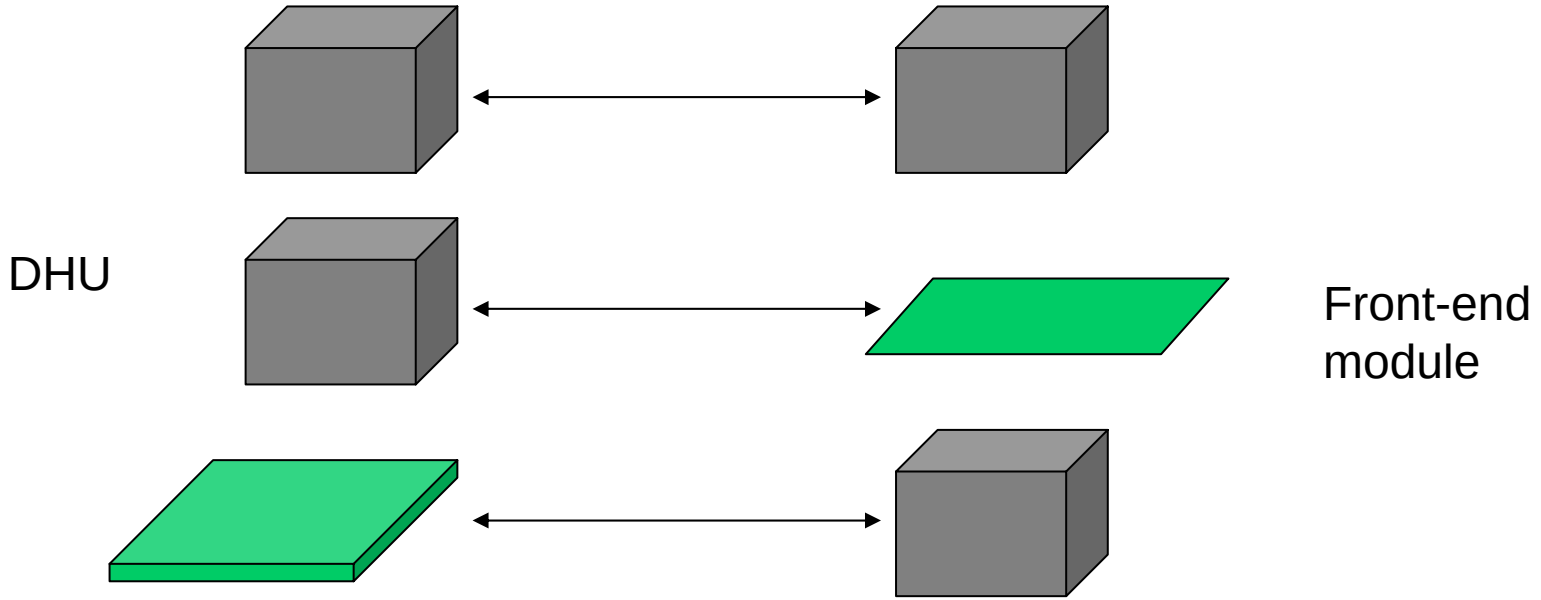
ALTERA
Cyclone
EP1C6F256C6

LVDS LVDS LVDS

SpaceWire (3 ports) >100Mbps
t-kernel (or LINUX)
(the same kernel as the flight model is preferable)
IP on the FPGA is available

Applications

- Ground test system
  - DHU emulation
    - DHU software development, Front-end module test
  - Front-end emulation
    - Test DHU, System integration test

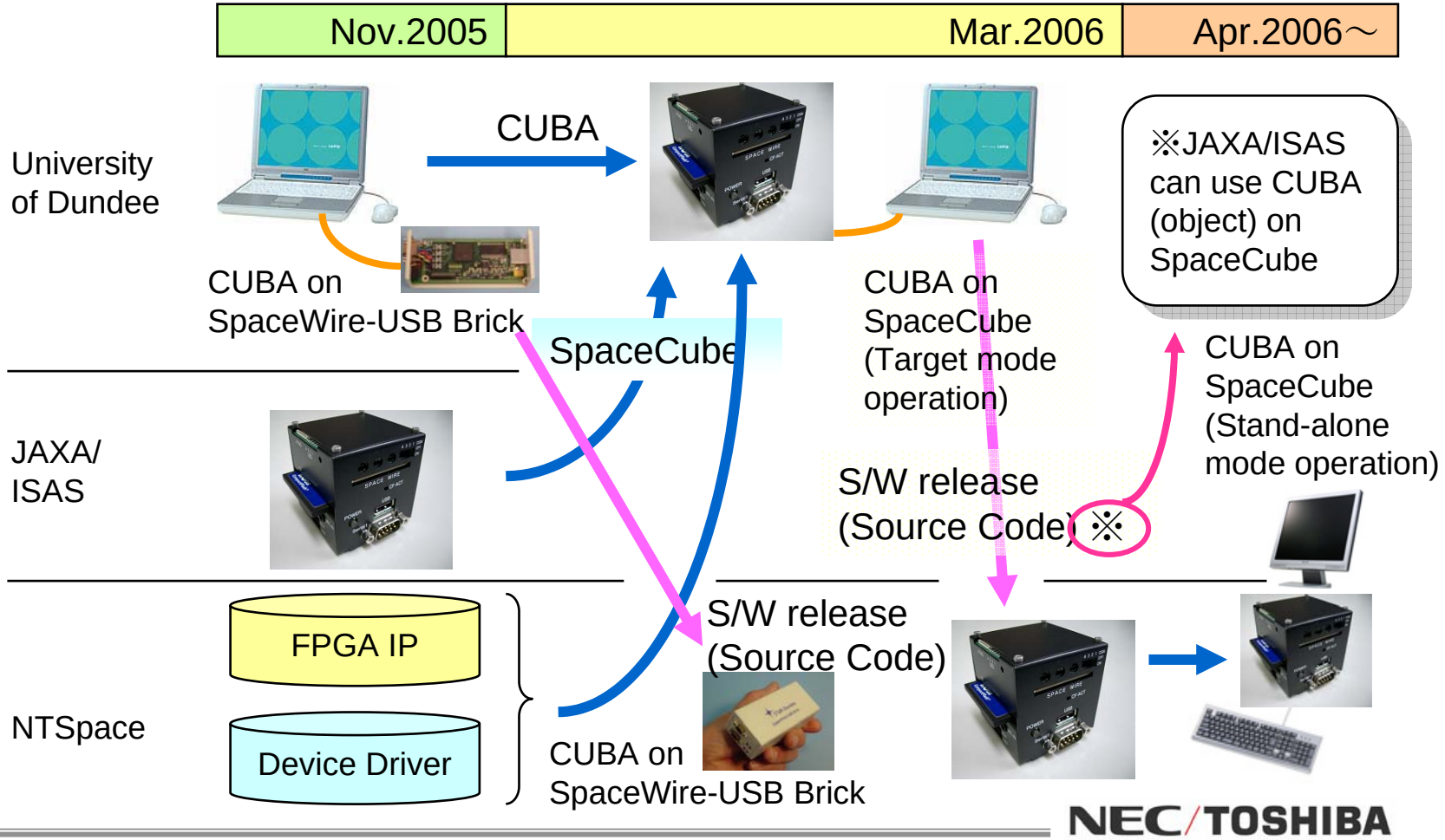


Applications

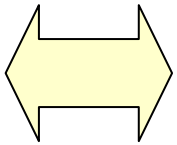
- Protocol tester
  - USB brick
  - Space Cube
    - CUBA (Space Cube Analysis Software)
    - NTSpace (Japan) - University of Dundee (UK)

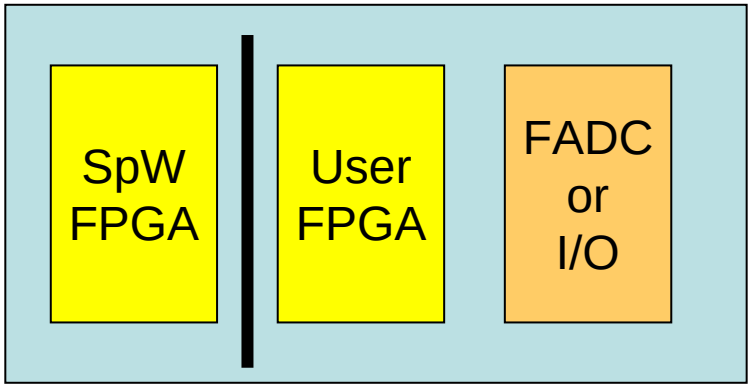
SpaceWire CUBA Software Road Map

❑ SpaceWire USB Brick to SpaceCube®



Front-end modules





Local BUS

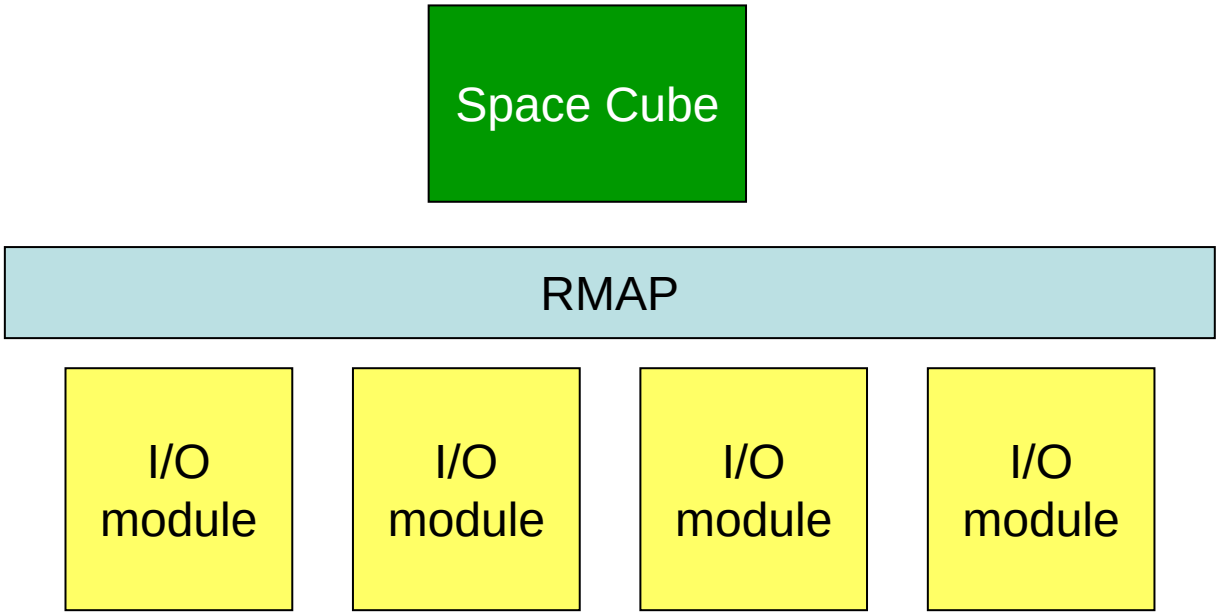
Space Cube works as DHU emulator
The I/O modules will be the reference module of the front-end modules.

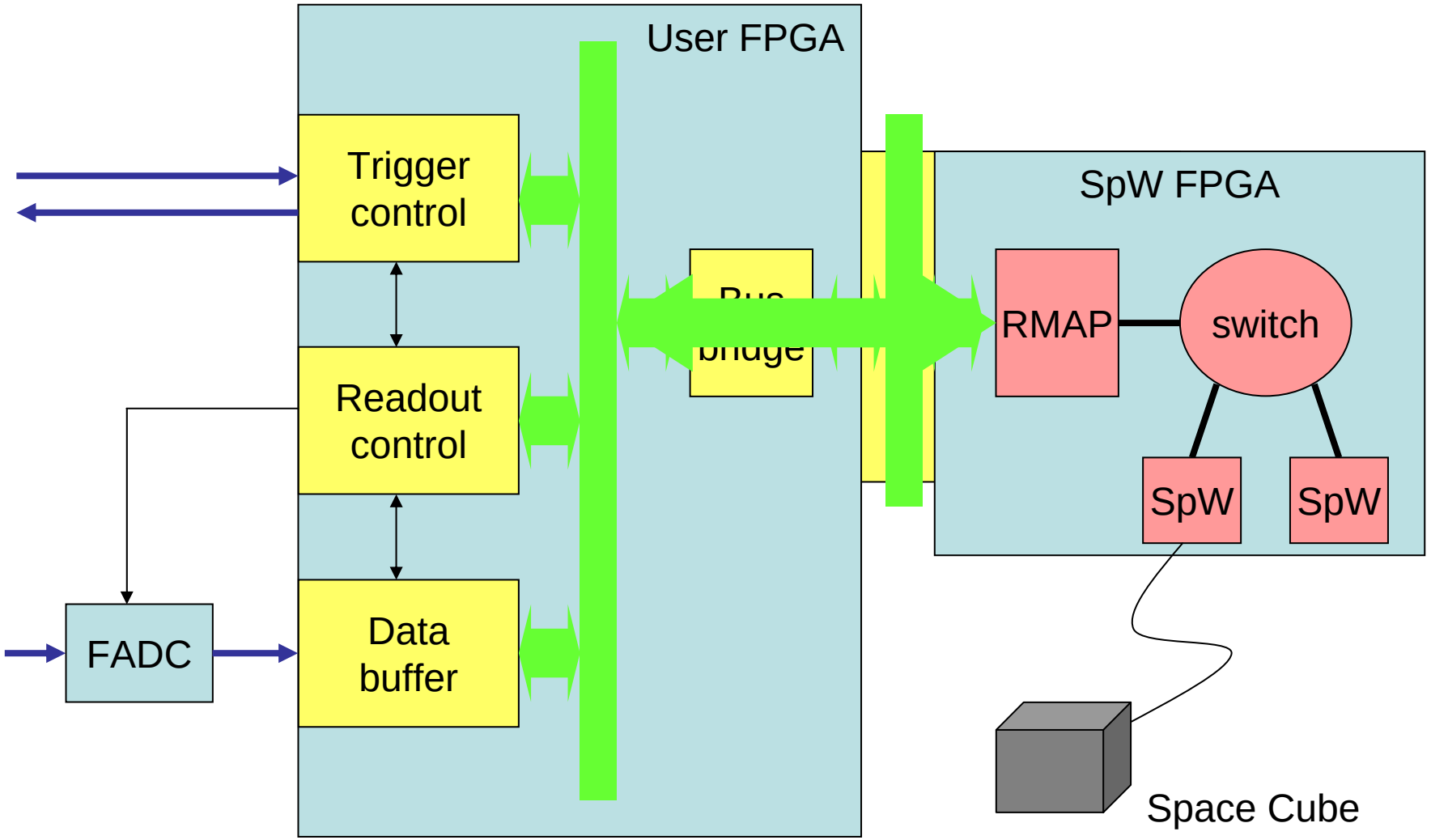
Modules

- 14 bit 10MHz FADC
- 12 bit 60MHz FADC
- 8 bit 500MHz FADC
- Digital I/O modules

I/O module

- Reference module
- Universal module




User FPGA
Trigger control
Readout control
Data buffer
FADC
SpW FPGA
RMAP
switch
SpW
SpW
Space Cube

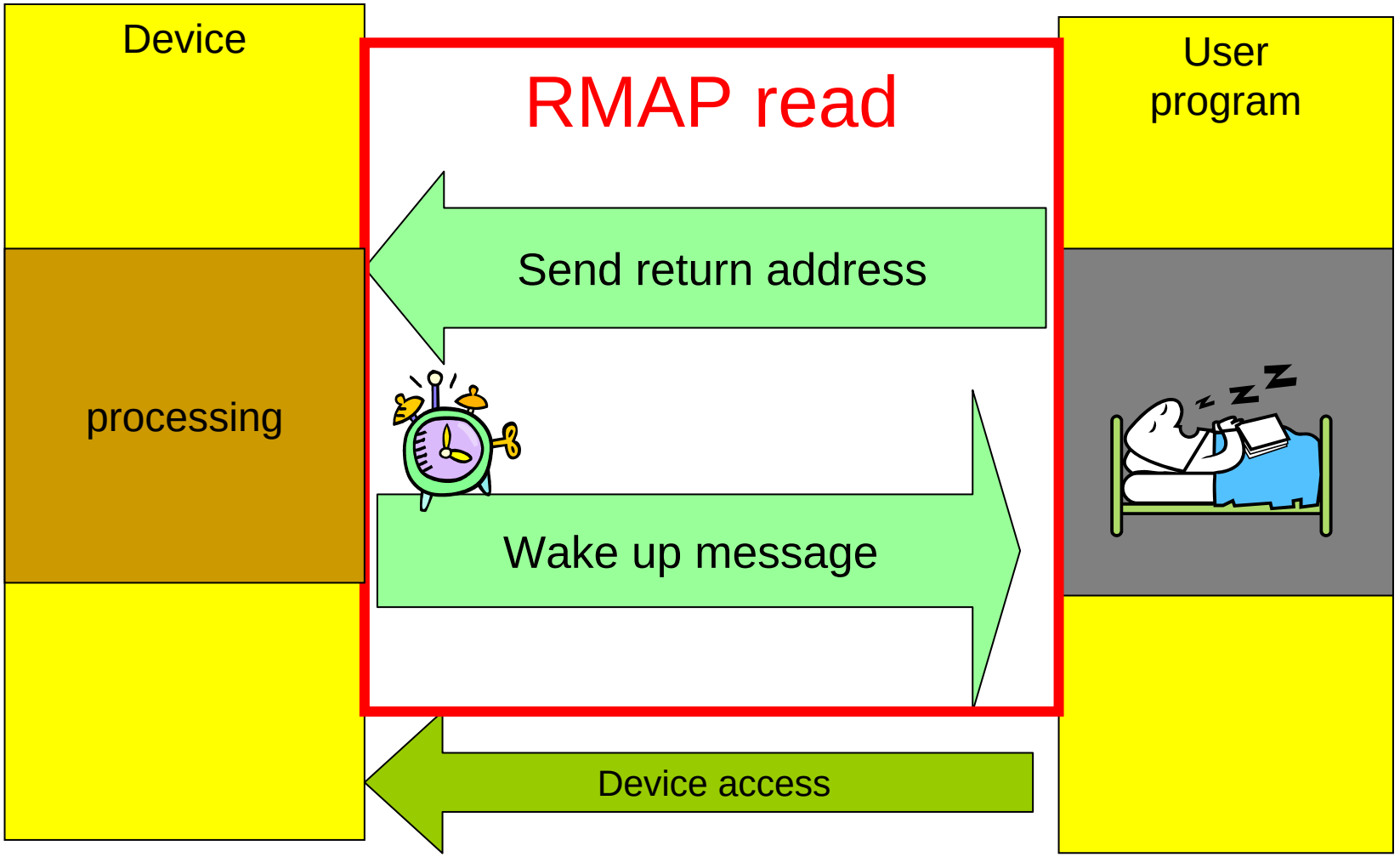
Space Cube

- Space Cube is commercially available now.
  - With CUBA software
    - CUBA is commercially available
  - CPU with FPGA+LVDS interface

Work in Japan

- Test of RMAP
  - In developing the CUBA, a few feedback were made.
- Usage of RMAP
  - Signalling using RMAP
- User consortium
  - Expand the number of users to accelerate the development/debugging.

Event signalling



Summary

- Space Cube
  - Commercially available
    - w/w.o. SpaceWire
- Application
  - Test and develop system
    - CUBA software is commercially available
      - Star Dundee
    - Universal module in RMAP virtual BUS domain
- Space Cube user consortium
  - Extend non-space applications