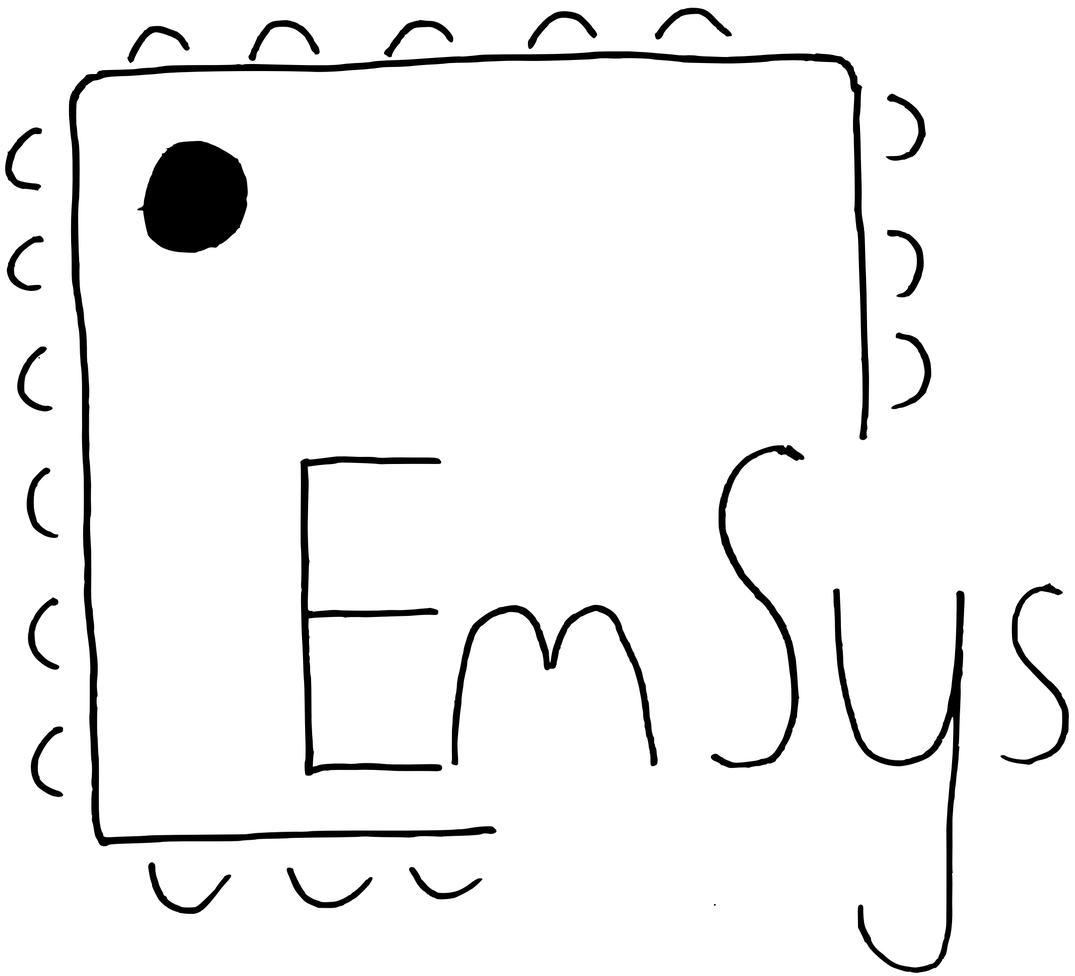

EmSys

SHARP Carousel

SHARP Carousel

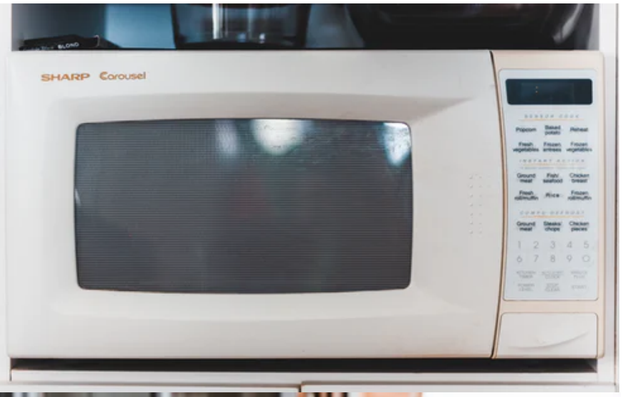
oyster
Transport for London
Issued subject to conditions – see over

SHARP Carousel

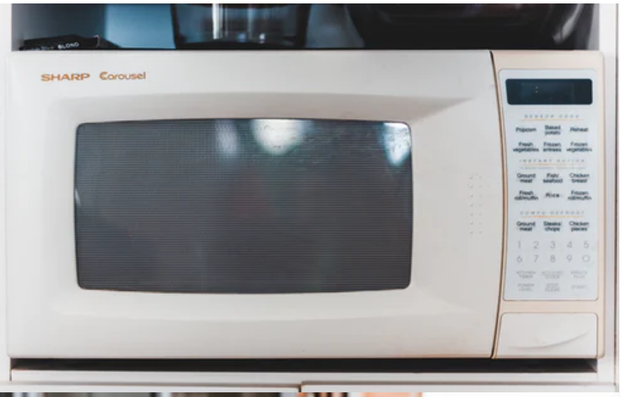
oyster
Transport for London
Issued subject to conditions – see over

SHARP Carousel

oyster
Transport for London
Issued subject to conditions – see over


SHARP Carousel

oyster
Transport for London
Issued subject to conditions – see over


SHARP Carousel

oyster
Transport for London
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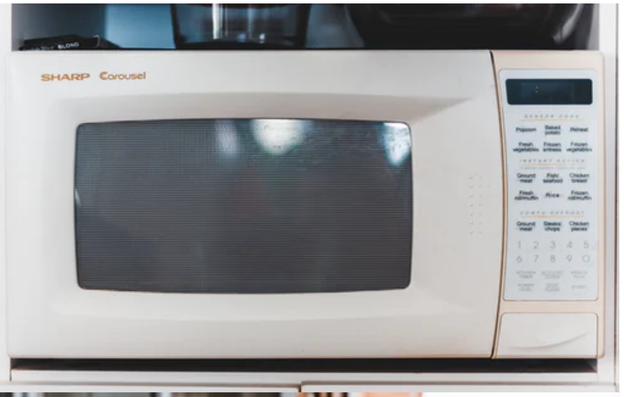
SHARP Carousel

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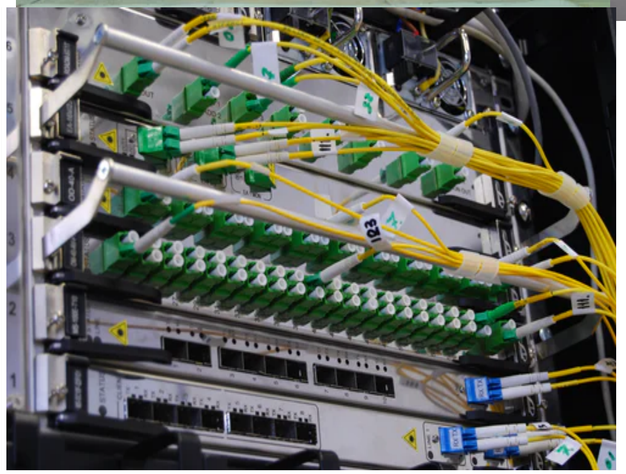

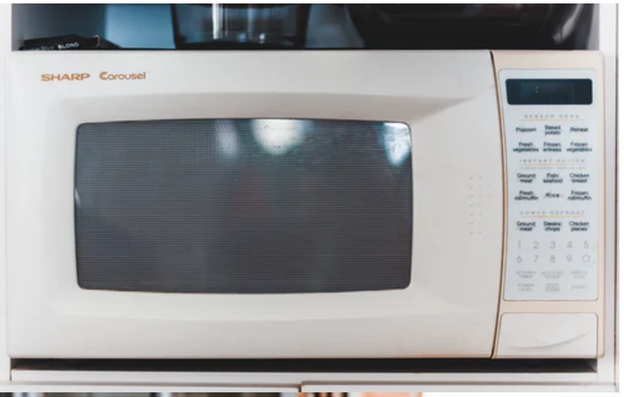
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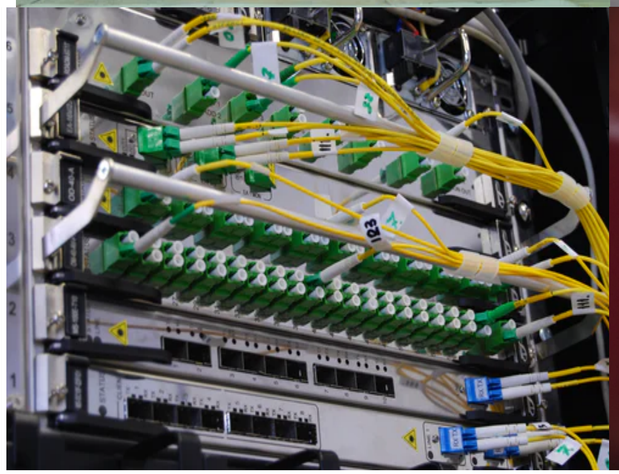

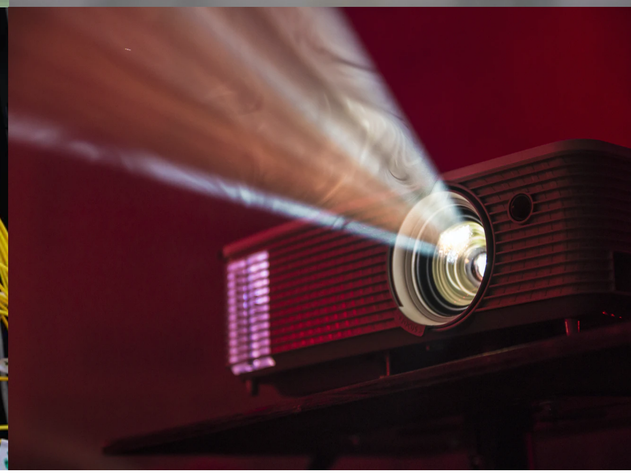

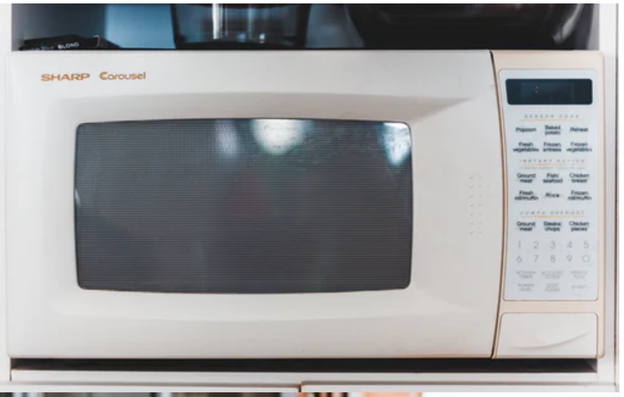
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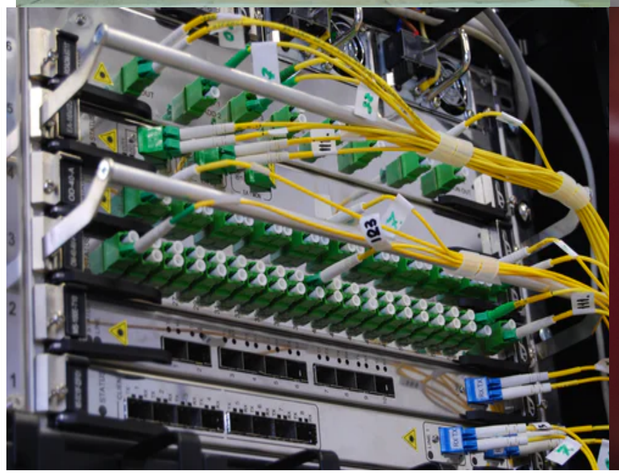

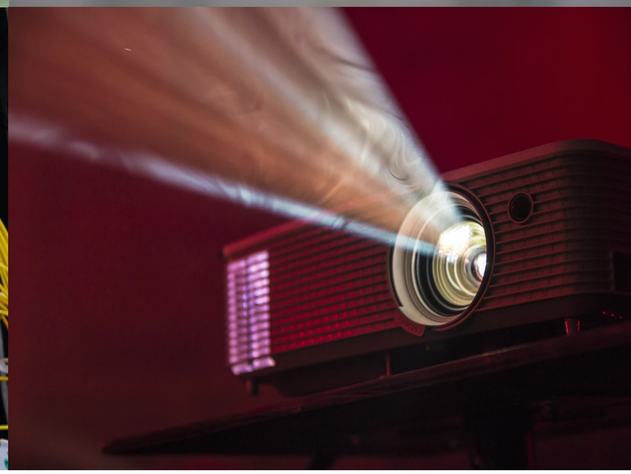

PUSH
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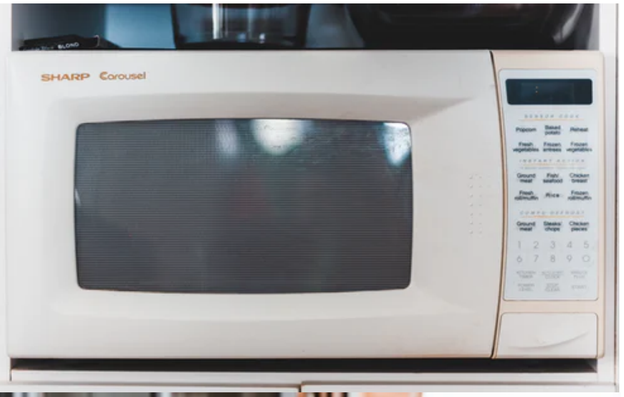
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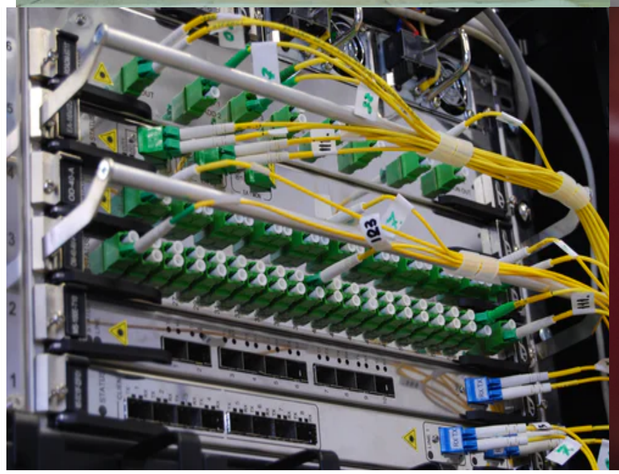

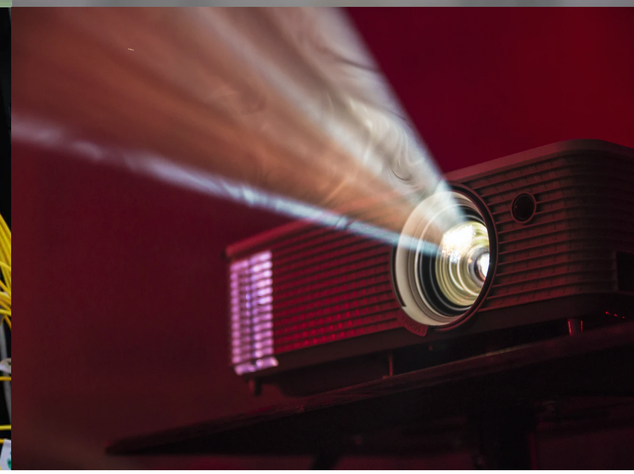

PUSH
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PUSH
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Tab
Caps Lock
Shift
Ctrl
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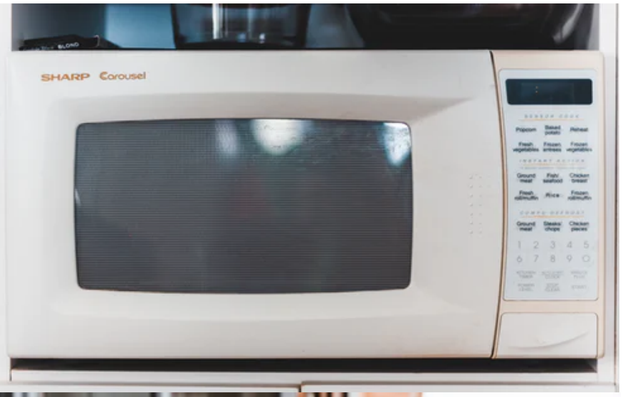
Alt


SHARP Carousel

oyster
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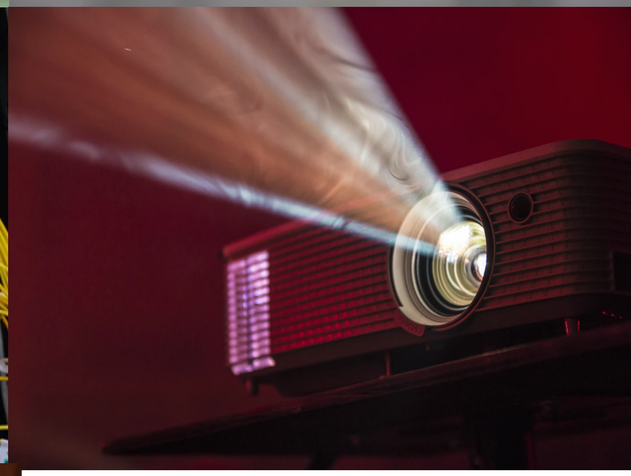

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PUSH
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Caps Lock
Shift
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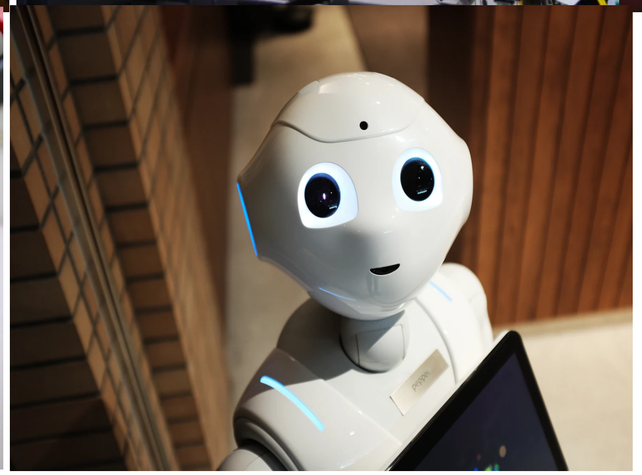
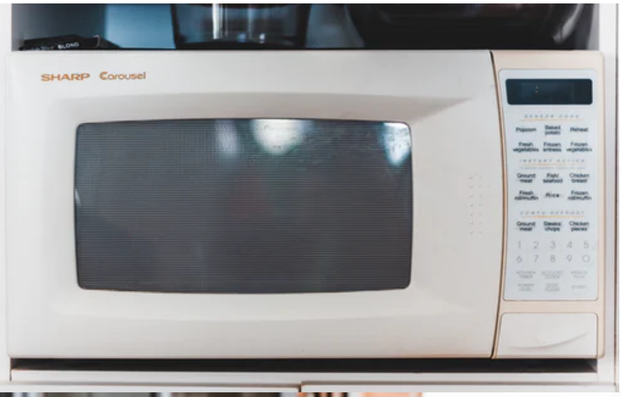
Win
Alt




SHARP Carousel

oyster
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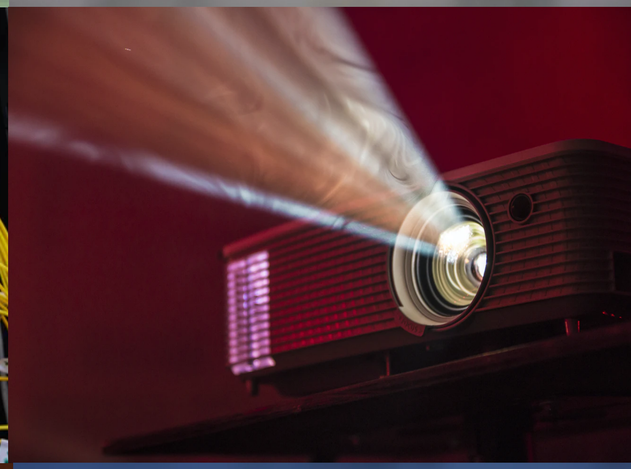

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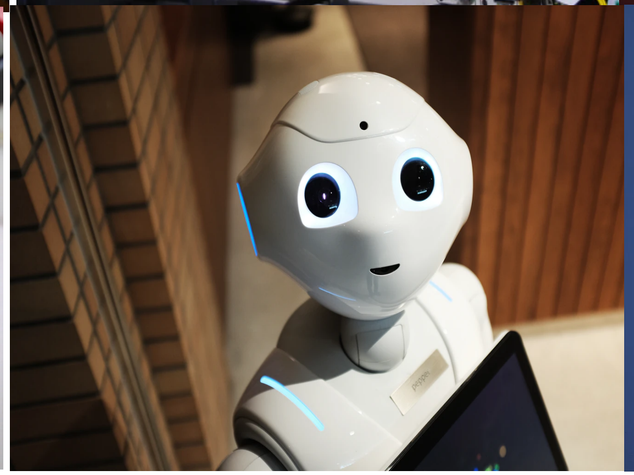


Nintendo GAME BOY
SELECT
START

Embedded Systems often...

Embedded Systems often...

- Are application specific

CASIO
F-91W
LIGHT
ALARM CHRONOGRAPH
ST
00:00 00
MODE
ALARM ON·OFF / 24HR
WATER
WR
RESIST

Embedded Systems often...

- Are application specific
- Physically change the world

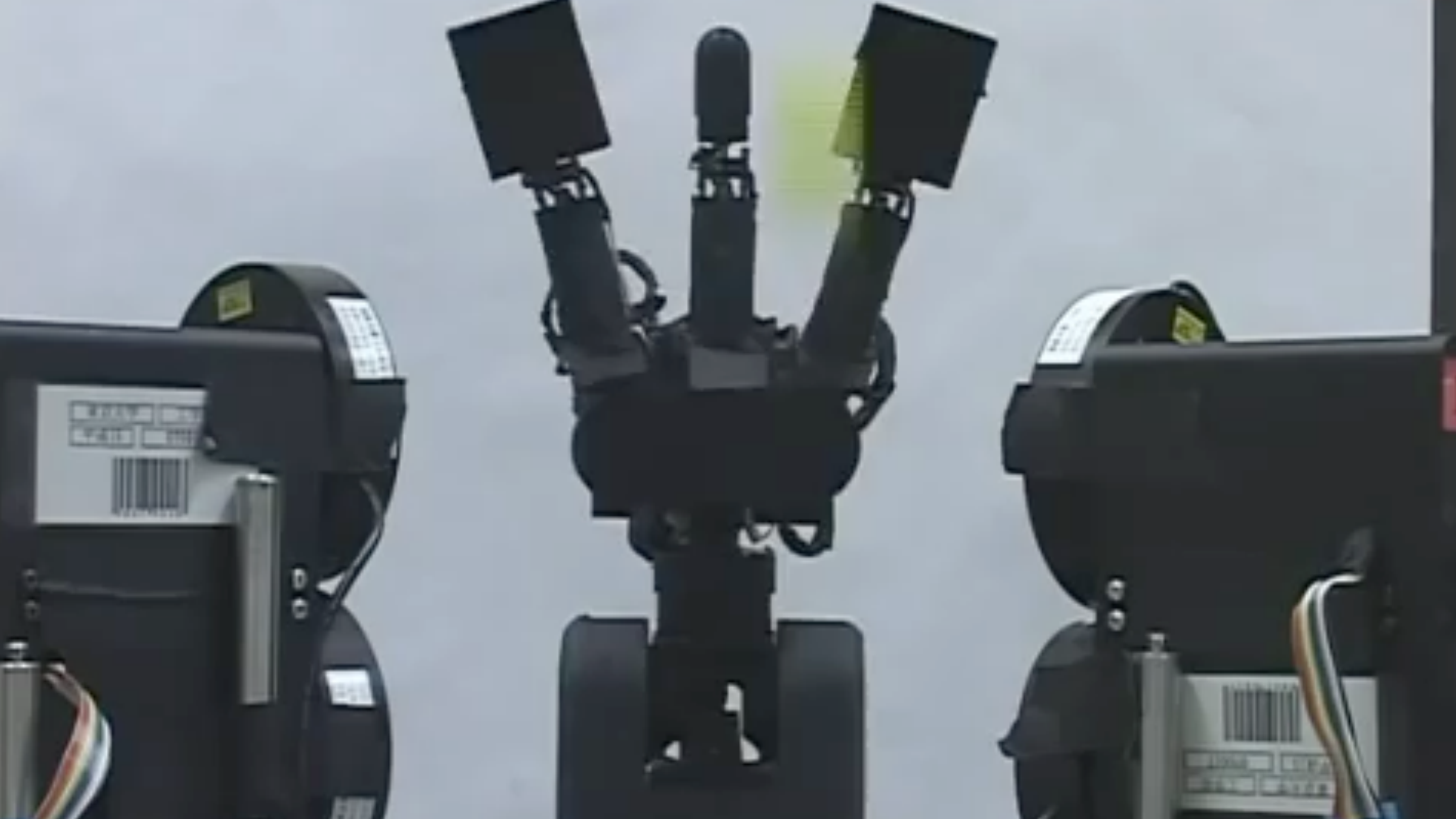
Ultimaker 2 Extended

Embedded Systems often...

- Are application specific
- Physically change the world
- Make sense of the world

Embedded Systems often...

- Are application specific
- Physically change the world
- Make sense of the world

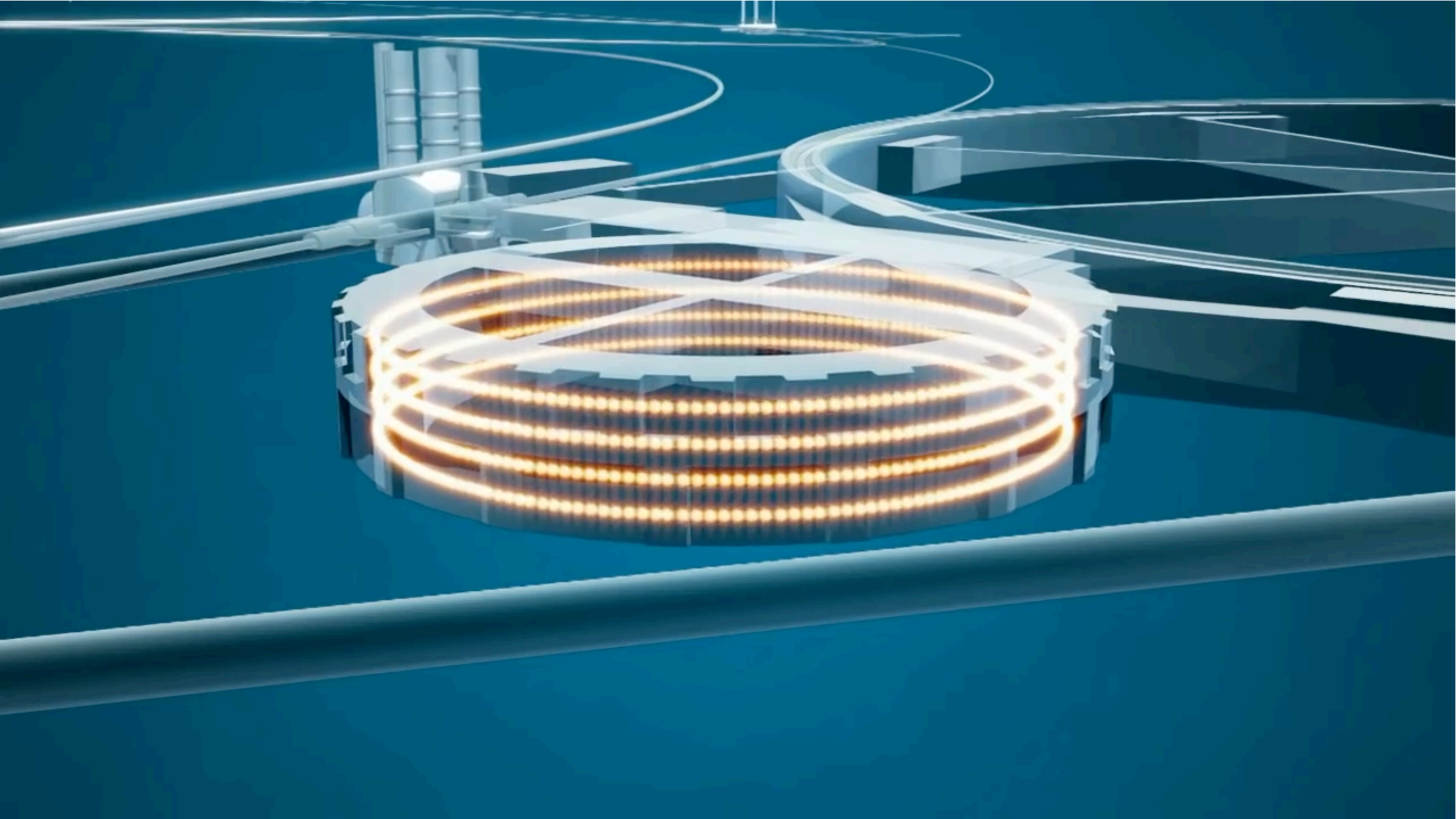


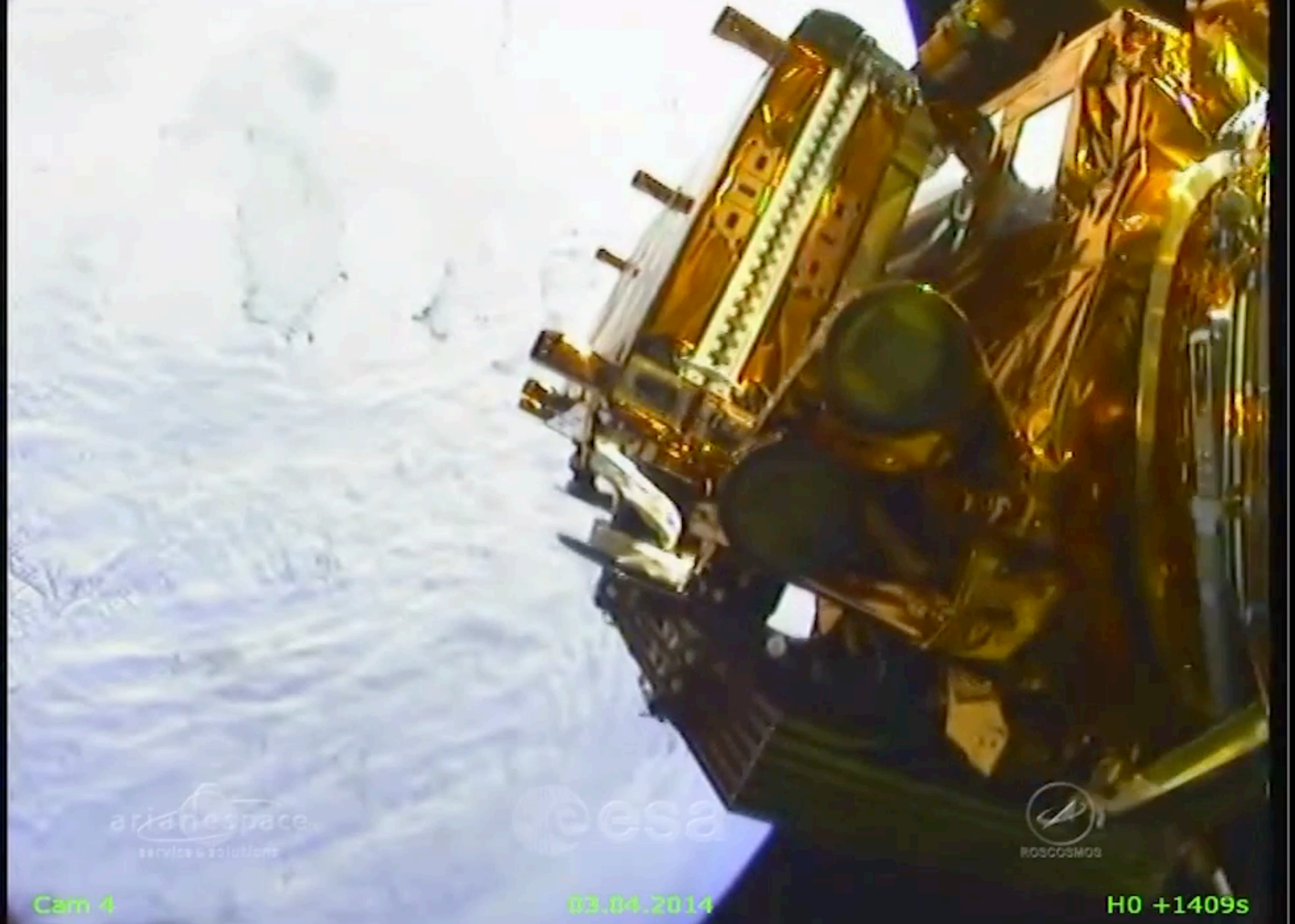
Embedded Systems often...

- Are application specific
- Physically change the world
- Make sense of the world
- Need to be safe & reliable

Embedded Systems often...

- Are application specific
- Physically change the world
- Make sense of the world
- Need to be safe & reliable
- Operate in extreme environments




arianespace
service & solutions
esa
ROSCOSMOS
Cam 4
03.04.2014
H0 +1409s

Designing computer systems
that are constrained:

Designing computer systems that are constrained:

- Latency

Designing computer systems that are constrained:

- Latency
- Power

Designing computer systems that are constrained:

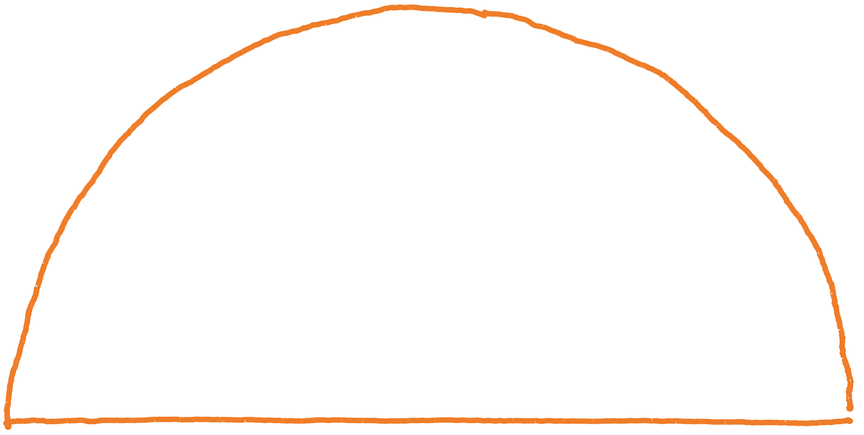
- Latency
- Power
- Memory

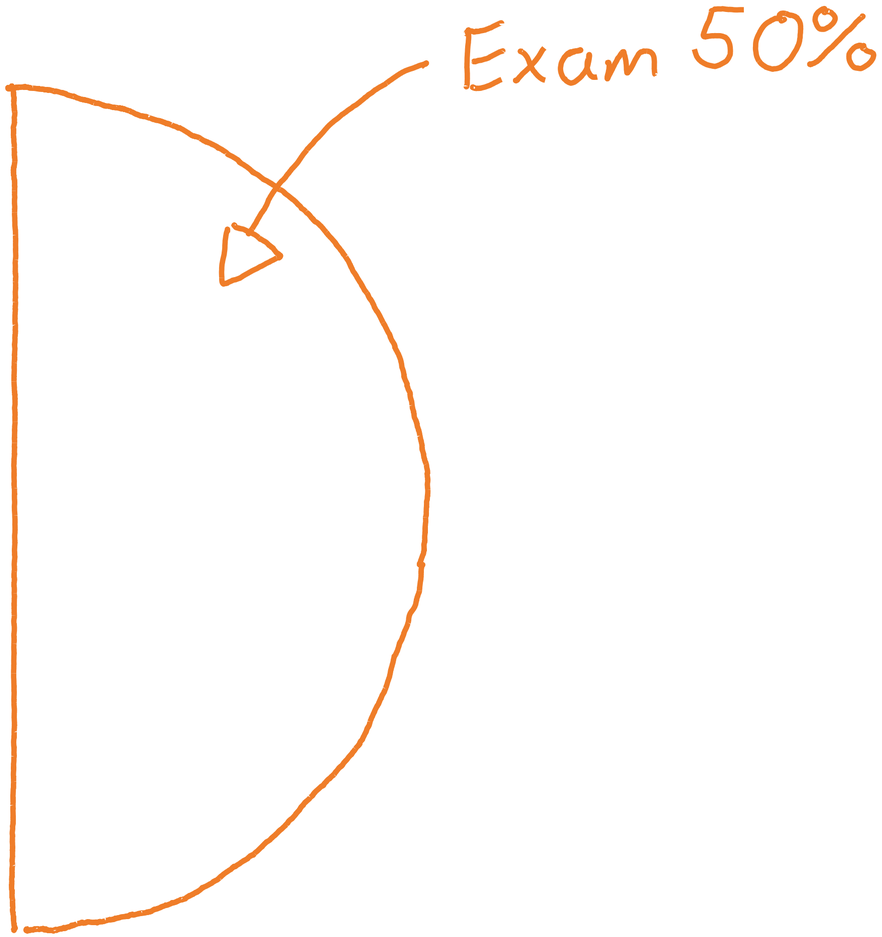
Designing computer systems that are constrained:

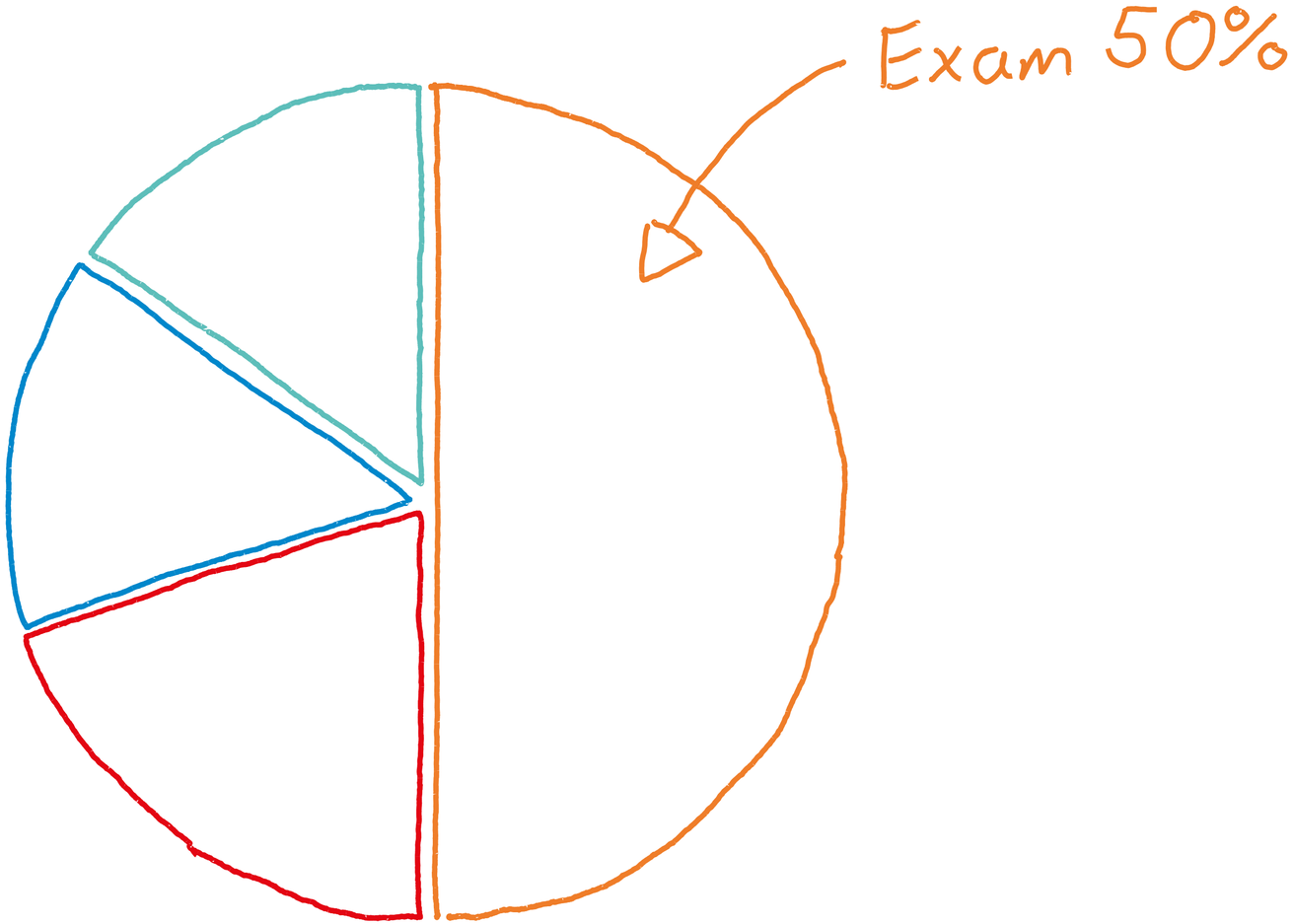
- Latency
- Power
- Memory
- Computational performance

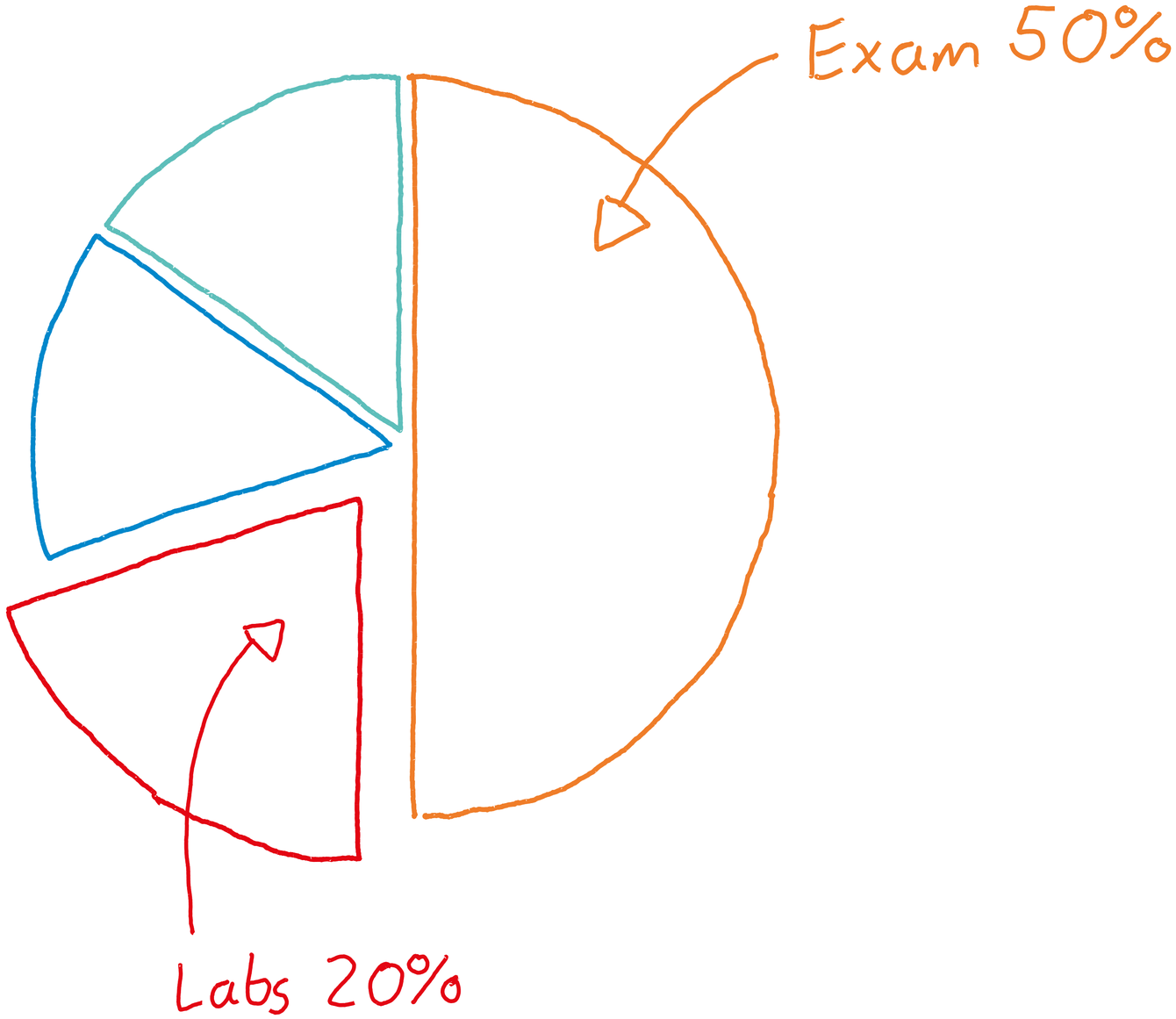
Designing computer systems that are constrained:

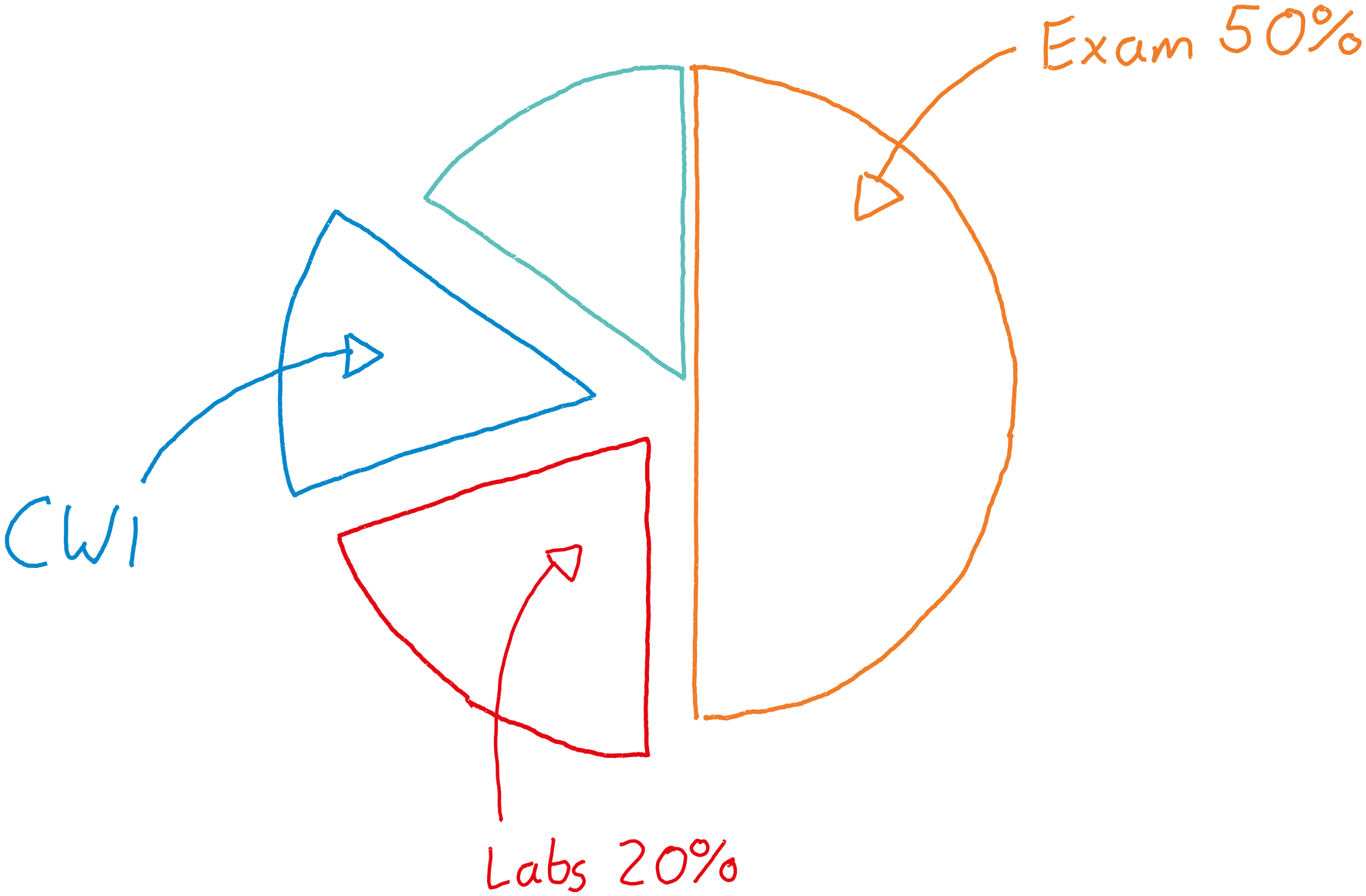
- Latency
- Power
- Memory
- Computational performance
- Cost

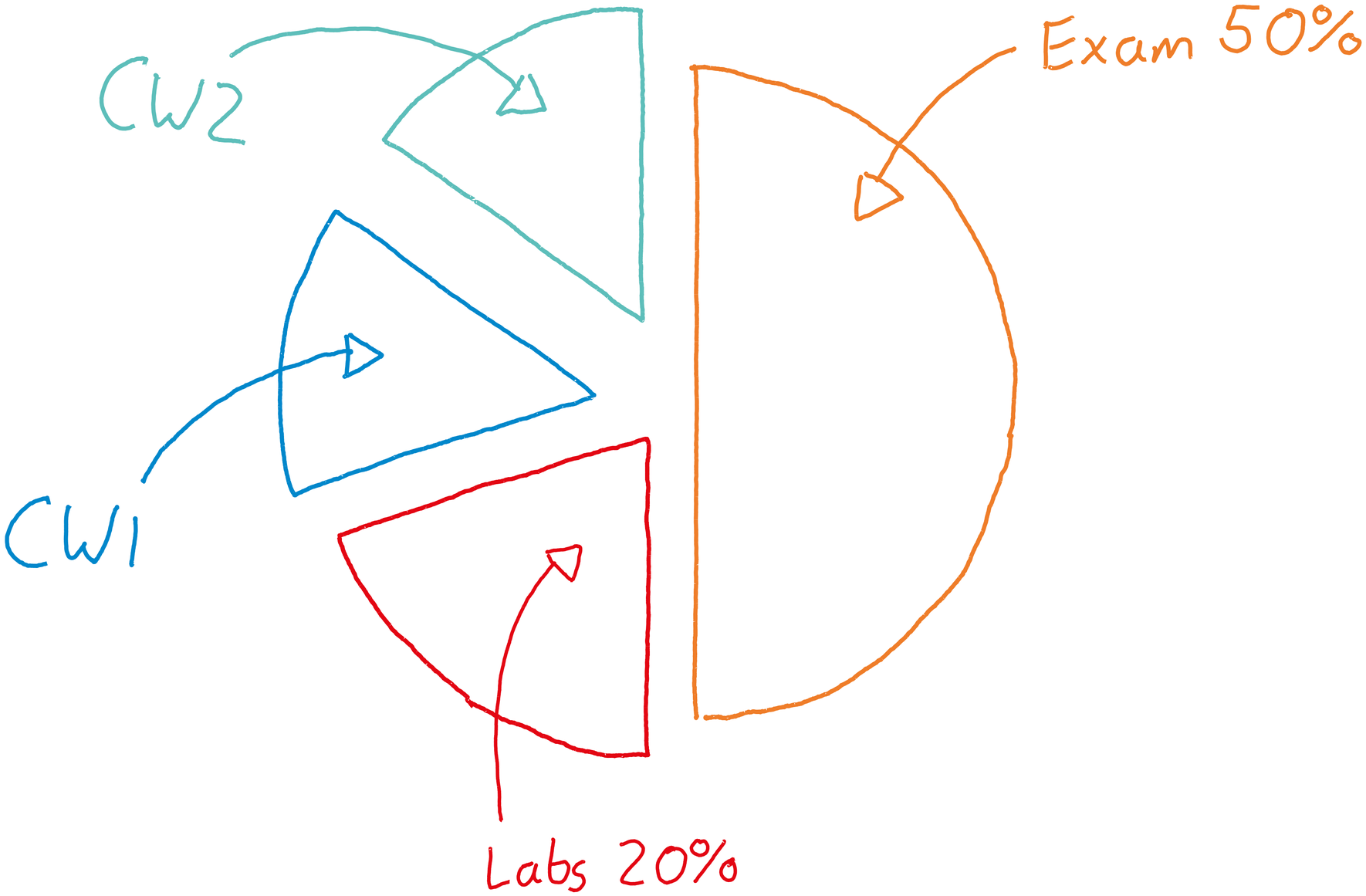



Exam 50%


Exam 50%


Exam 50%
Labs 20%


Exam 50%
CW1
Labs 20%


CW2
Exam 50%
CW1
Labs 20%

Labs and CW

- Work in pairs (sometimes threes)
- Two parts
  - Microcontroller programming
  - Hardware description
- Take home hardware kits

5RWF

Picking Up The Hardware

Friday 1st October (Tomorrow)

Picking Up The Hardware

Friday 1st October (Tomorrow)

9:30 - 13:59	Room 409 (my office)

Picking Up The Hardware

Friday 1st October (Tomorrow)

Room 204 Computational Foundry

14:00 - 15:00	Groups	0 - 19
15:00 - 16:00	Groups	20 - 39
16:00 - 17:00	Groups	40+

Labs

- Do in your own time
- Lab sessions are for support

Wed	09:00 - 13:00
Fri	14:00 - 18:00

- Assignments are released periodically but are marked in batches

Lectures

- Thursday 14:00 – 16:00
- Aim for 1 hour long lectures

Lectures

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Fail at this constantly

Lectures

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Fail at this constantly

Lectures

- Thursday 14:00 – 16:00
- Aim for 1 hour long lectures

  Fail at this constantly

- Content is hosted on GitHub

Demonstration & Lab 1 intro

Universal Asynchronous Receiver Transmitter (UART)

Universal Asynchronous Receiver Transmitter (UART)

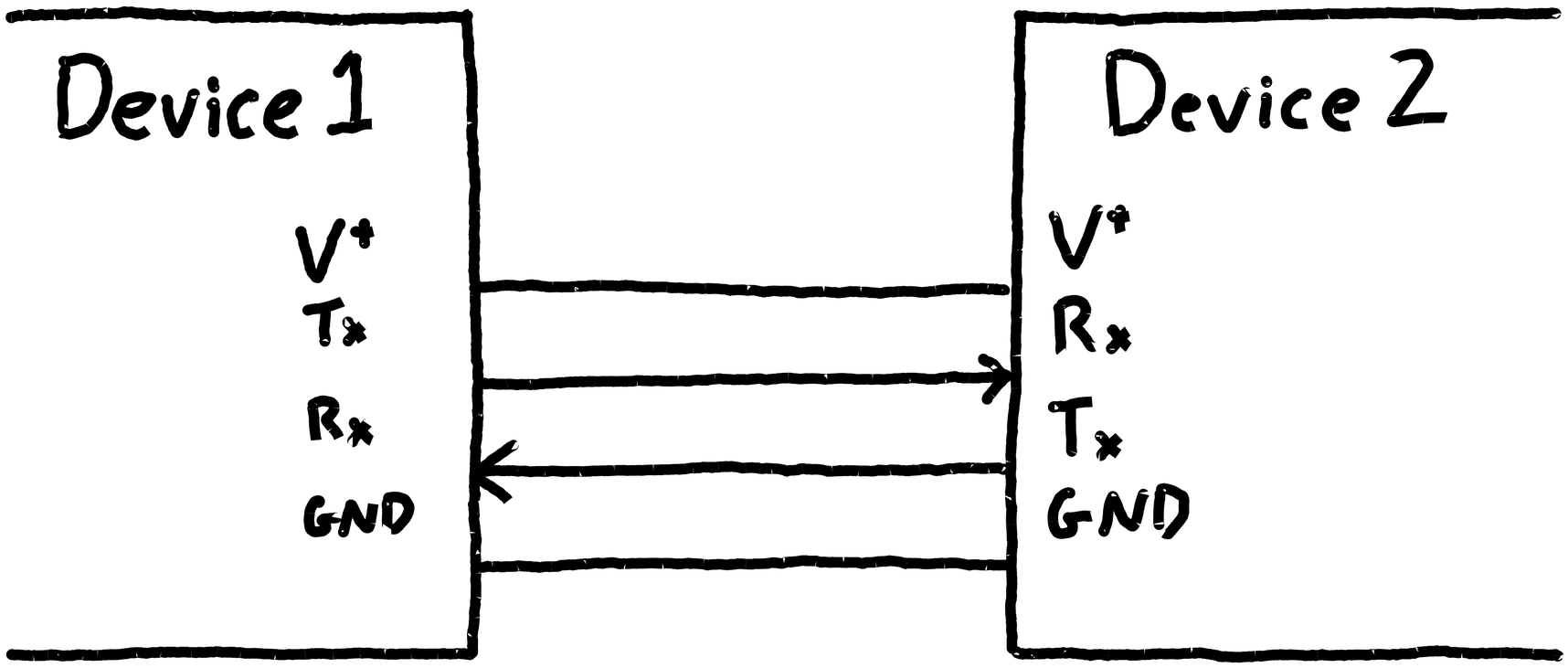
A protocol for sending bits down a wire.

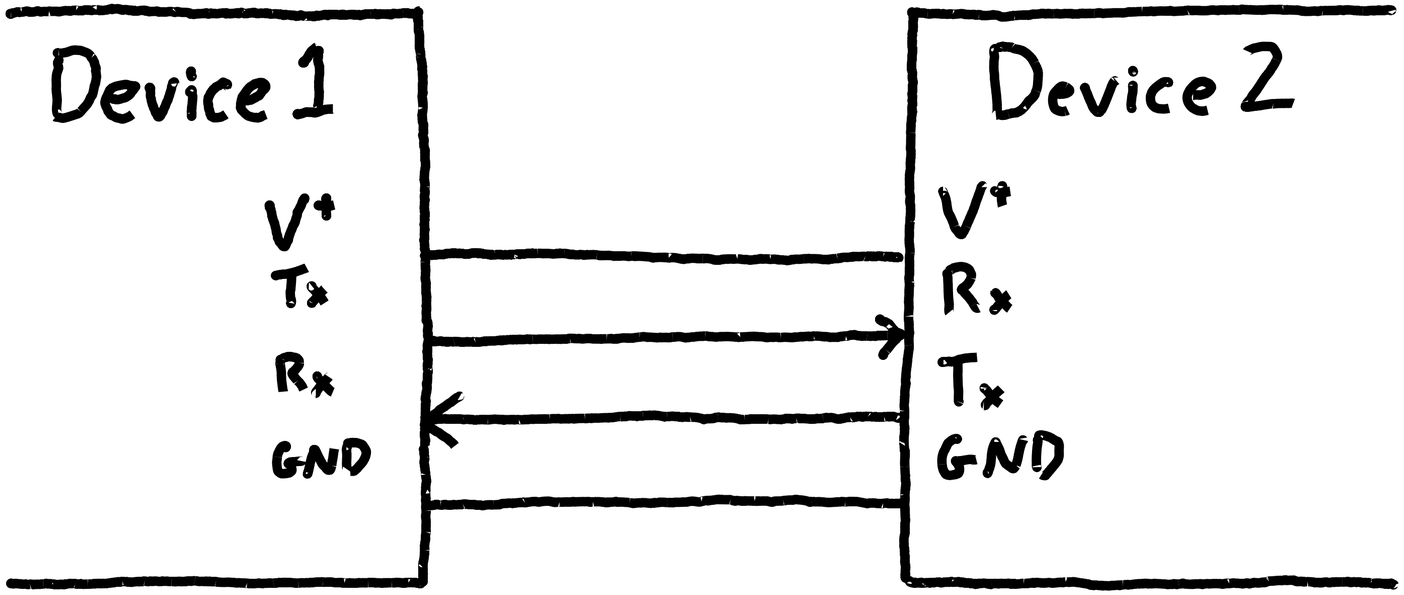
Universal Asynchronous Receiver Transmitter (UART)

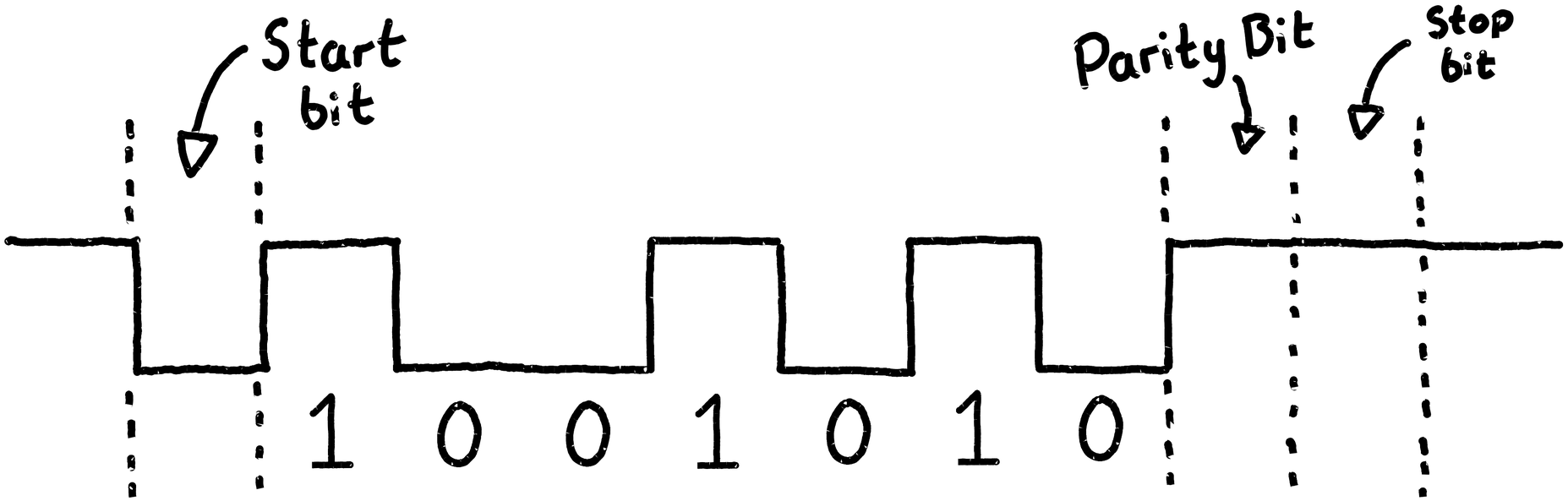
A protocol for sending bits down a wire.

Connects two devices together with 4 wires.

Universal Asynchronous Receiver Transmitter (UART)




Device 1
V+
Tx
Rx
GND
Device 2
V+
Rx
Tx
GND


Start bit
Parity Bit
Stop bit
1 0 0 1 0 1 0

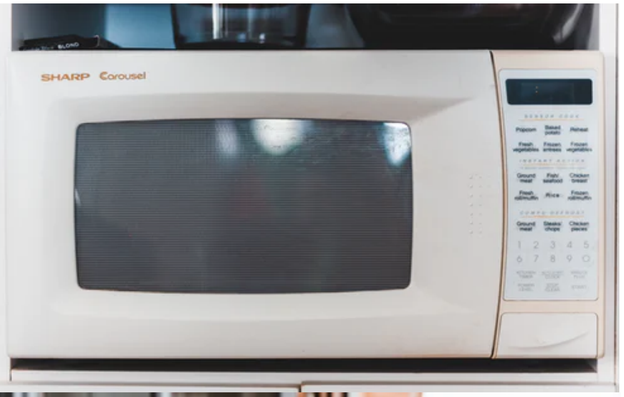
Run | Session 1

Session 1

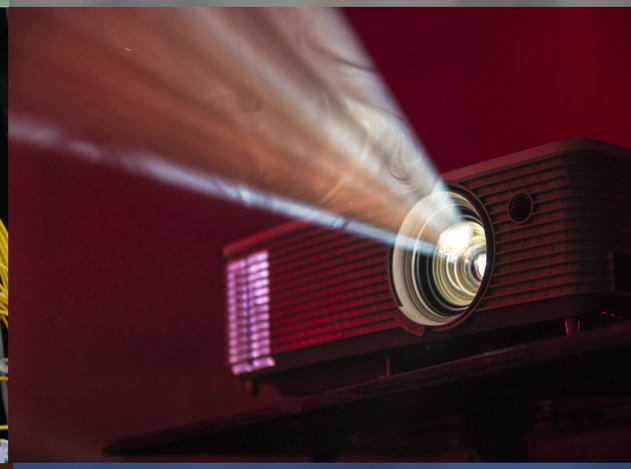
Saleae Logic | 20 M samples | 6 MHz

+695 ms | +700 ms | +705 ms | +710 ms | +715 ms | +720 ms | +725 ms | +730 ms | +735 ms

D0
D1
D2
D3
D4
D5
D6
D7


SHARP Carousel

oyster
Transport for London
Issued subject to conditions – see over



PUSH
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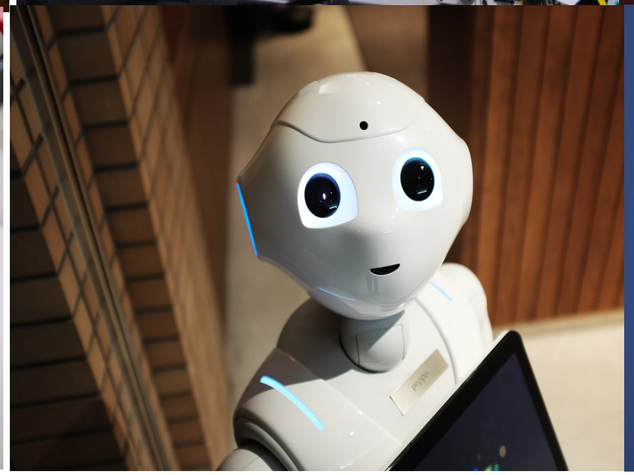
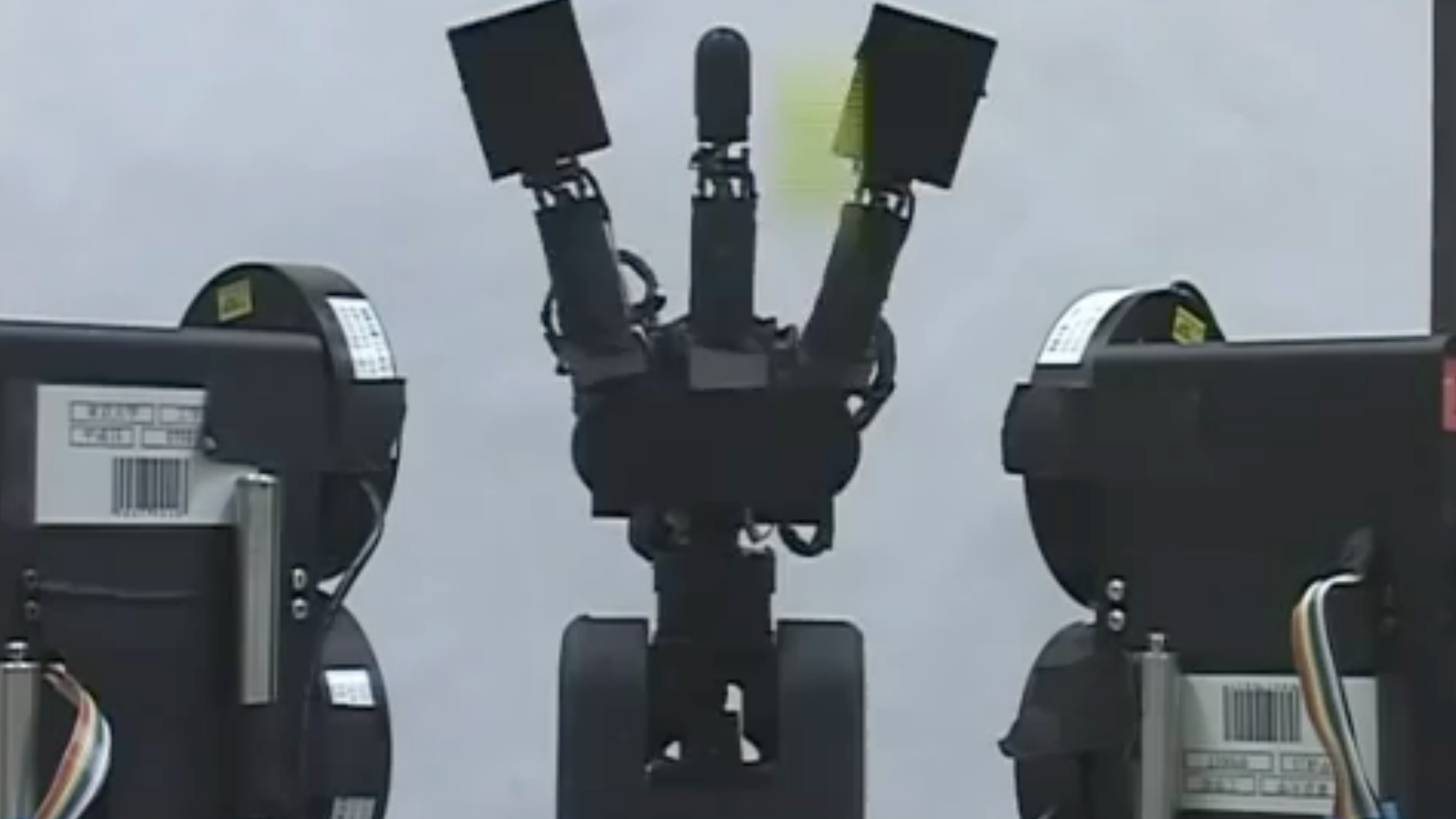
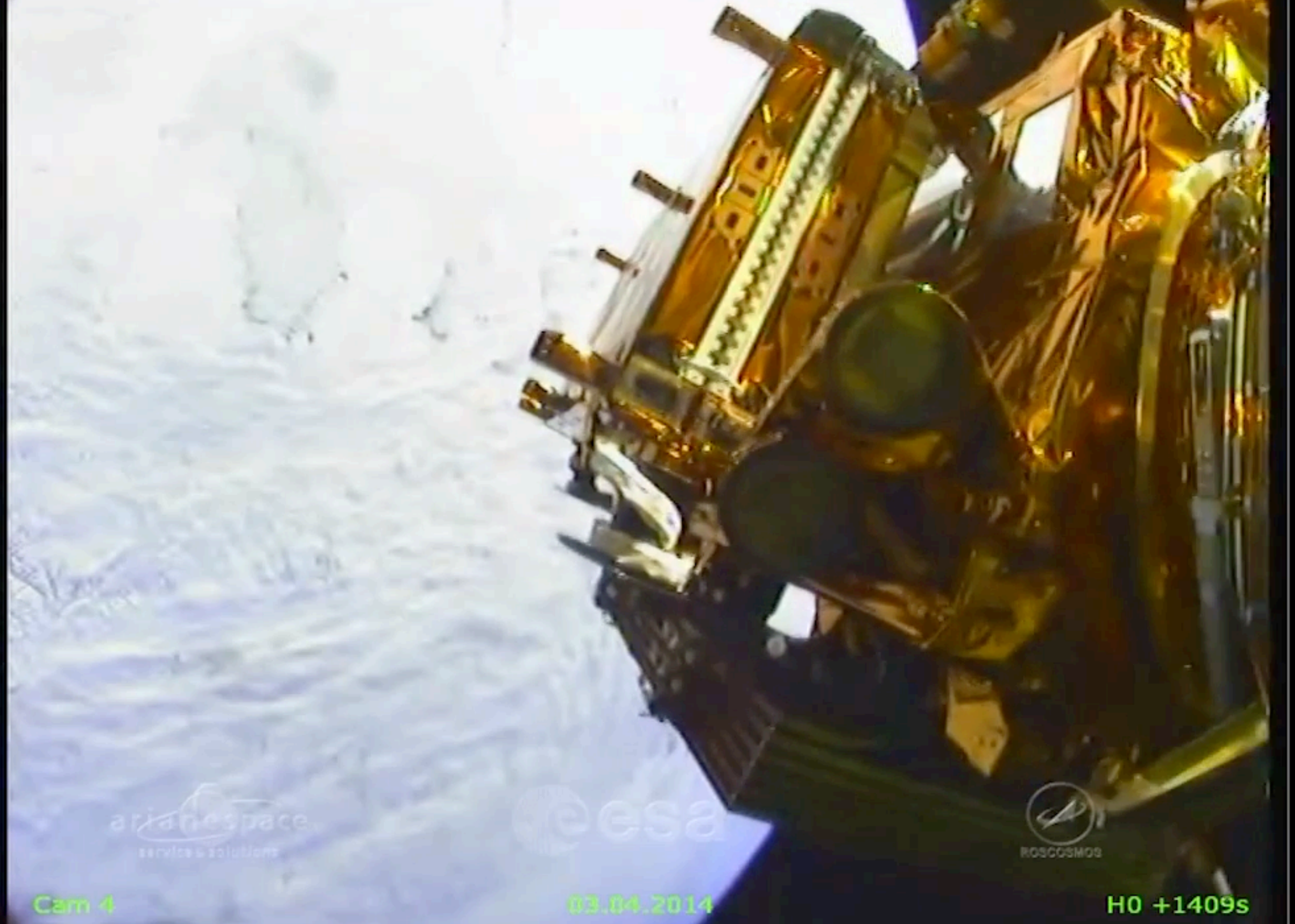
PUSH
BUTTON
FOR



Nintendo GAME BOY
SELECT
START

CASIO
F-91W
LIGHT
ALARM CHRONOGRAPH
ST
00:00 00
MODE
ALARM ON·OFF / 24HR
WATER
WR
RESIST




arianespace
service & solutions
esa
ROSCOSMOS
Cam 4
03.04.2014
H0 +1409s

Logic
Analyzer
24 MHz 8 CH

Picking Up The Hardware

Friday 1st October (Tomorrow)

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