Fermentation Station

Agenda

1 | What's the Fermentation Station again?

2 | What we built

3 | Demo

4 | Retrospective

5 | Takeaways & Challenges

Recap: Fermentation Station

Functions

Presets for common ferments

Temperature Control up to 60°C

Humidity Control

Runtime over Days/Weeks

1 | Put ingredients into the box

2 | Start a recipe

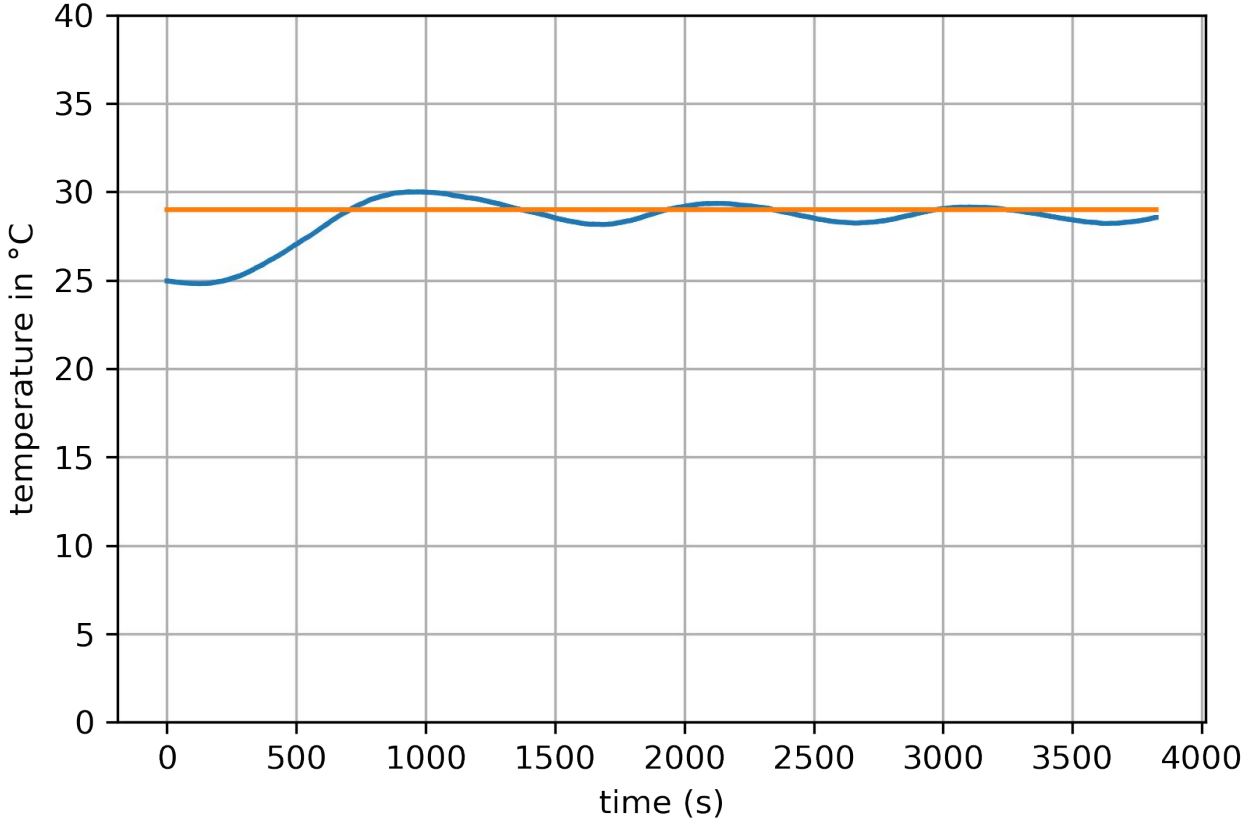
3 | Wait

4 | Enjoy your Ferment!

Hardware & Software

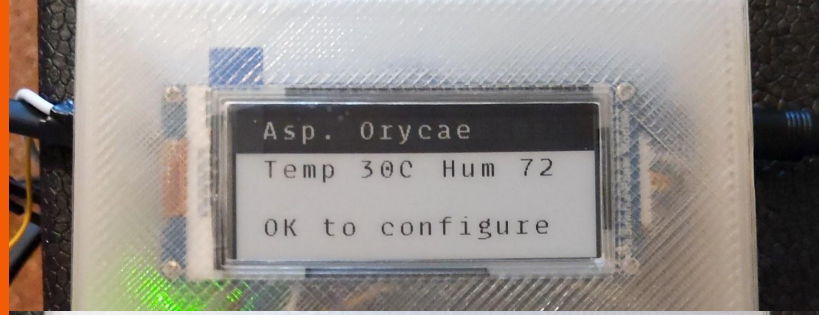
Program Flow	State Machine
Controllers	Renderer API, PID-Controller
Drivers	Display Driver
Hardware Interfaces	I2C, SPI & UART
Hardware	e-Ink Display, Capacitive Touch, Temperature & Humidity Sensor

Temperature Plot

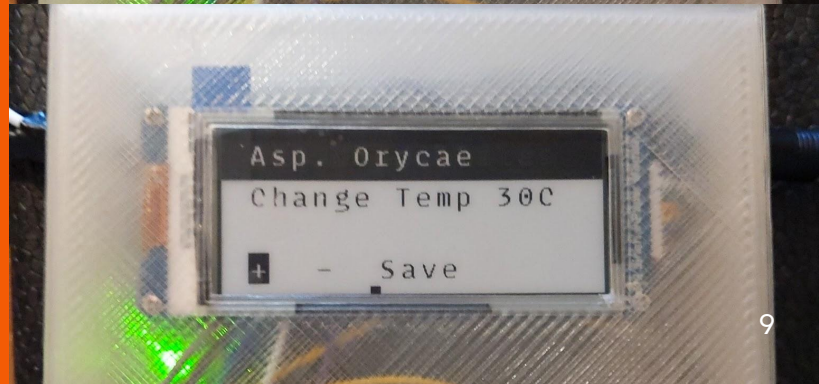


The Brain


IT'S YOUR
DEMOKRATIE


Asp. Orycae
Temp 30C Hum 72
OK to configure


Asp. Orycae
OK to start


Asp. Orycae
Change Temp 30C
+ - Save

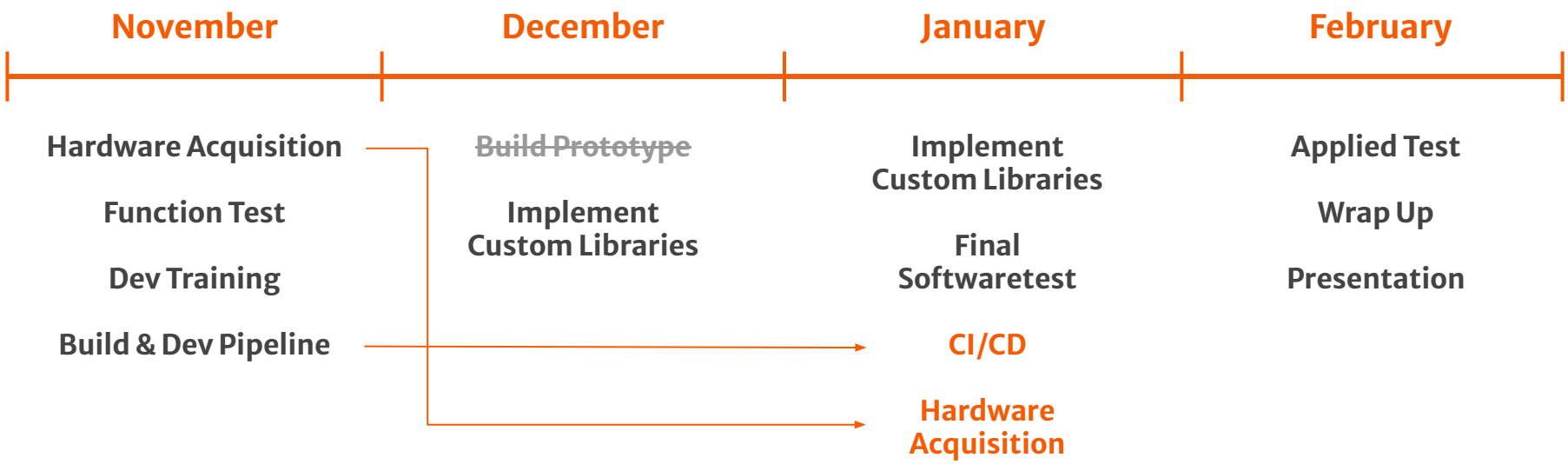
Risk Analysis Review

Risk	Impact	Occurrence?
Fire Hazard	high	no
Precision Issues	medium	no
HW Quality Issues	medium	yes
Reliability Issues	medium	no
Delays	medium	yes
Staff	medium	no

Costs

	Planned		Actual Price
Thermobox 45L	24,8		34,50€
Heatingelement	12,19		36,90€
Additional Parts (Perfboards, Buck-Converter, MOSFET...)	-		~15€
Total	<100€		140€

Milestones


November
December
January
February
Hardware Acquisition
Function Test
Dev Training
Build & Dev Pipeline
~~Build Prototype~~
Implement Custom Libraries
Implement Custom Libraries
Final Softwaretest
CI/CD
Hardware Acquisition
Applied Test
Wrap Up
Presentation

Lessons Learned

Embedded C is different

Documentations are your friends

Space is limited

Money is Time

Paired programming is key

Outlook

Custom recipes

Longer tests

Some optimizations

Building the last two stations :)


Thank You!