

# WIND TURBINE GENERATOR

## PROJECT STATUS

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Video

# Project Starting Point

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Initial Product Backlog and scoring

Project planning

# INITIAL PRODUCT BACKLOG

		Author	Label	Projects	Milestones	Assignee	Sort
<input type="checkbox"/>	24 Open	<input checked="" type="checkbox"/> 0 Closed					
<input type="checkbox"/>	Read Documentation Accelerometer ADXL345	learning					
	#24 opened 8 days ago by elskater98	Done 3					
<input type="checkbox"/>	First Contact with electronic components	learning					
	#23 opened 8 days ago by elskater98	Done 8	3 tasks done				
<input type="checkbox"/>	Read Documentation ESP-01	learning					
	#22 opened 8 days ago by elskater98	Done 3					
<input type="checkbox"/>	Read Documentation DHT11	learning					
	#21 opened 8 days ago by elskater98	Done 3					
<input type="checkbox"/>	Revise Material	good first issue					
	#20 opened 8 days ago by elskater98	Done 2					
<input type="checkbox"/>	Read Documentation about NodeMCU module	learning					
	#19 opened 15 days ago by mvp17	Product Backlog 3					
<input type="checkbox"/>	Sprint Documentation	documentation					
	#18 opened 15 days ago by elskater98	Done 8					
<input type="checkbox"/>	MQTT Broker Development	enhancement					
	#17 opened 15 days ago by elskater98	Product Backlog 8					
<input type="checkbox"/>	Arduino interaction with R.Pi	enhancement					
	#16 opened 15 days ago by mvp17	Product Backlog 8					
<input type="checkbox"/>	Data Consumer: Ultrasonic LED bar representation	enhancement					
	#15 opened 15 days ago by mvp17	Product Backlog 8					
<input type="checkbox"/>	Data Consumer: Data log and Screen representation	enhancement					
	#14 opened 15 days ago by mvp17	Product Backlog 8					
<input type="checkbox"/>	Data Producer 2 development	enhancement					
	#13 opened 15 days ago by mvp17	In progress 8					
<input type="checkbox"/>	Data Producer 1 development	enhancement					
	#12 opened 15 days ago by mvp17	Done 8					

<input type="checkbox"/>	Test Data Producer 2	testing					
	#11 opened 15 days ago by elskater98	Product Backlog 5					
<input type="checkbox"/>	Test Data Producer 1	testing					
	#10 opened 15 days ago by elskater98	Done 5					
<input type="checkbox"/>	Test MQTT Broker	testing					
	#9 opened 15 days ago by elskater98	Product Backlog 5					
<input type="checkbox"/>	Test Supervision Station	testing					
	#8 opened 15 days ago by elskater98	Product Backlog 5					
<input type="checkbox"/>	Read Documentation MCP23017	learning					
	#7 opened 15 days ago by elskater98	Product Backlog 3					
<input type="checkbox"/>	Arduino interaction with ESP-01	enhancement					
	#6 opened 15 days ago by mvp17	Product Backlog 8					
<input type="checkbox"/>	Read Documentation I2C Protocol	learning					
	#5 opened 15 days ago by elskater98	Done 2					
<input type="checkbox"/>	Read documentation LCD Screen/Display	learning					
	#4 opened 15 days ago by elskater98	Done 2					
<input type="checkbox"/>	Install ChibiOS to Raspberry Pi	enhancement					
	#3 opened 15 days ago by elskater98	Product Backlog 3					
<input type="checkbox"/>	Prepare Raspberry Pi Environment	learning					
	#2 opened 15 days ago by elskater98	Product Backlog 3					
<input type="checkbox"/>	Prepare Arduino Environment	learning					
	#1 opened 15 days ago by elskater98	Done 3	3 tasks done				

# PROJECT PLANNING

## **First Sprint** (28 of October to 12 of November)

- Data Producer 1
  - Data Producer 2
- 

## **Second Sprint** (12 of November to 26 of November)

- MQTT Broker
  - Data Producer 2
- 

## **Third Sprint** (26 of November to 10 of December)

Supervision Station

# Project Development

Sprint Roadmap

# USER STORIES

## Sprint 1

1. As a Maintenance manager I would like to **know the temperature and humidity** at the top of the Wind Turbine Generator
  2. As a Maintenance manager I would like to **know the Wind Turbine Generator tower movement.**\*
- 

## Sprint 2

3. As a Maintenance manager I would like to **gather the data** from data producers using a **MQTT Broker**.
- 

## Sprint 3

4. As a Maintenance manager I would like to **represent graphically** the obtained sensor data, within the last 24h, in the Supervision Station.

# TASKS, % COMPLETION

## Sprint 1

Task	Completion (%)	Team dedication time (h)
Revise Material	100	1
Read documentation ESP-01	100	2
Read documentation DHT11	100	2
Prepare Arduino environment	100	1
Frist contact with electronic components	100	4
Read documentation Accelerometer ADXL345	100	2
Data Producer 1 development	100	5
Data Producer 2 development	20	2
Sprint documentation	100	3
Read documentation LCD Screen/Display	100	2
Read documentation I2C Bus Protocol	100	3
Test Data Producer 1	100	3

14 days

30h dedication time

47/55

story points completion

## Sprint 2

Task	Completion (%)	Team dedication time (h)
Read documentation MCP23017	100	2h
Test MQTT Broker	100	1h
Test Data producer 2	100	2h
Data producer 2 development	100	12h
MQTT Broker development	100	8h
Read Documentation about NodeMCU module	100	2h
Documentation Sprint 2	100	3h
Data producer 2 documentation	100	2h
MQTT Broker documentation	100	3h

14 days

35h dedication time

69/69

story points completion

## Sprint 3

Task	Completion (%)	Team dedication time (h)
Prepare Raspberry Pi Environment	100	1h
Install ChibiOS to Raspberry Pi	100	1h
Arduino interaction with R.Pi	80	3h
Connect Raspberry Pi to LCD Screen via serial port	100	2h
Arduino interaction with ESP-01	50	2h
Test Supervision Station	80	5h
Data Consumer: Data log and Screen representation	70	4h
Sprint 3 documentation	100	3h
Supervision Station documentation	25	1h

14 days

22h dedication time

52/86

story points completion

# RESULTS, PROBLEMS/SOLUTIONS

## Data Producer 1

- Print properly temperature and humidity to LCD Screen.

```
void clean_screen()
{
    Serial.write(0x7C);
    Serial.write(0x00);
}
```

## General

- Bad Quality Wires; **Solution:** Replace by new ones.
- Failing Components; **Solution:** Replace by new ones.

## Data Producer 2

- ESP-01 and I2C LCD Library ( LiquidCrystal\_I2C.h);  
Solution: [https://github.com/johnrickman/LiquidCrystal\\_I2C](https://github.com/johnrickman/LiquidCrystal_I2C)

## Supervision Station

Arduino and Raspberry doesn't work property. **!NOT FIX YET!**

AT Commands; **Solution:** Simulate Client-Server.

SD Adapter.

# SPRINT RETROSPECTIVE

## Sprint 1

- Readjust Product Backlog tasks.
  - Strive to finish the sprint goal.
- 

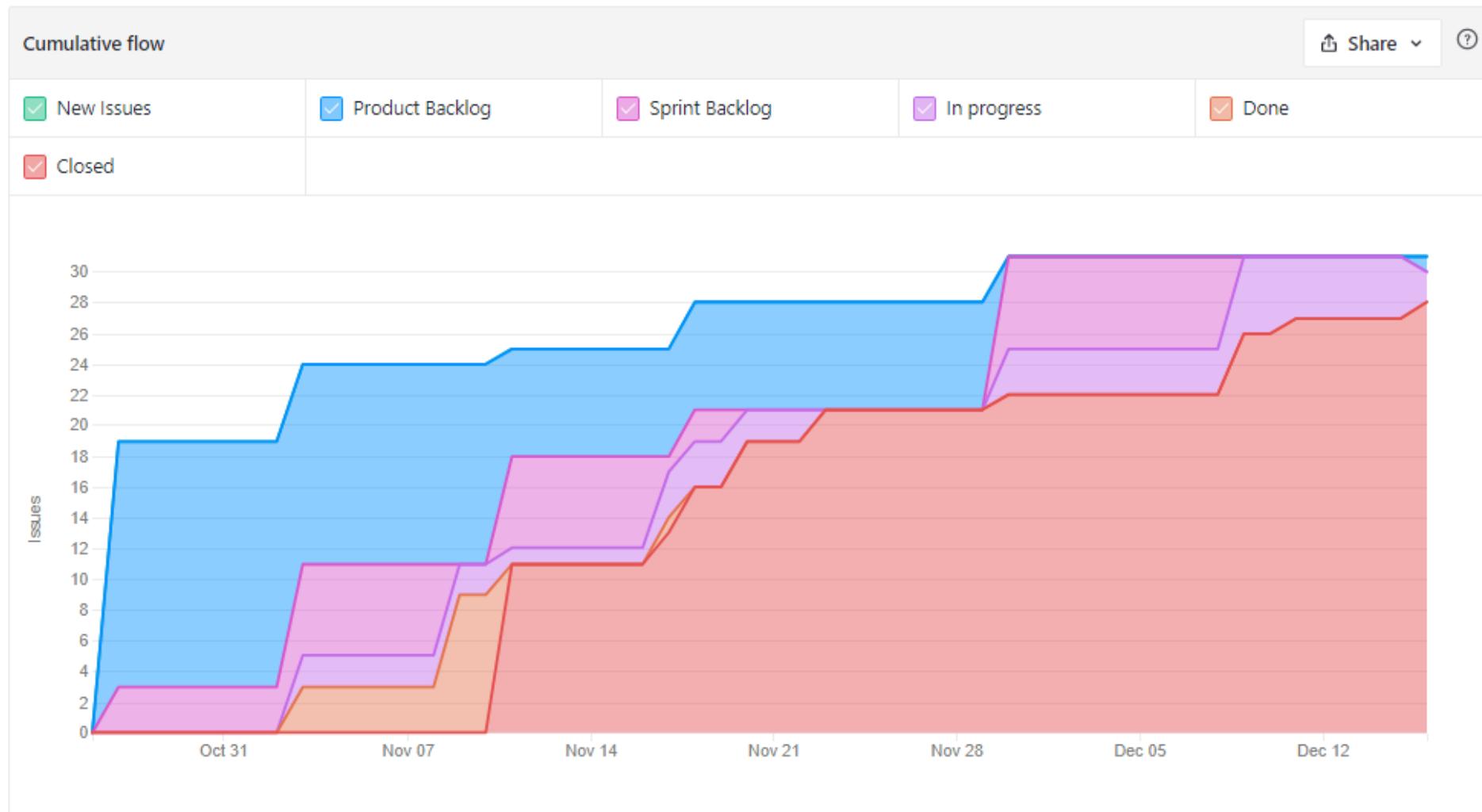
## Sprint 2

- The team worked well together and the sprint progressed smoothly.
  - Redefine some Product Backlog labelling.
- 

## Sprint 3

- The team have slowed down the work progress.
  - Need extra time to finish the last module.
- Foresight the difficulties and problems

# SPRINT RETROSPECTIVE

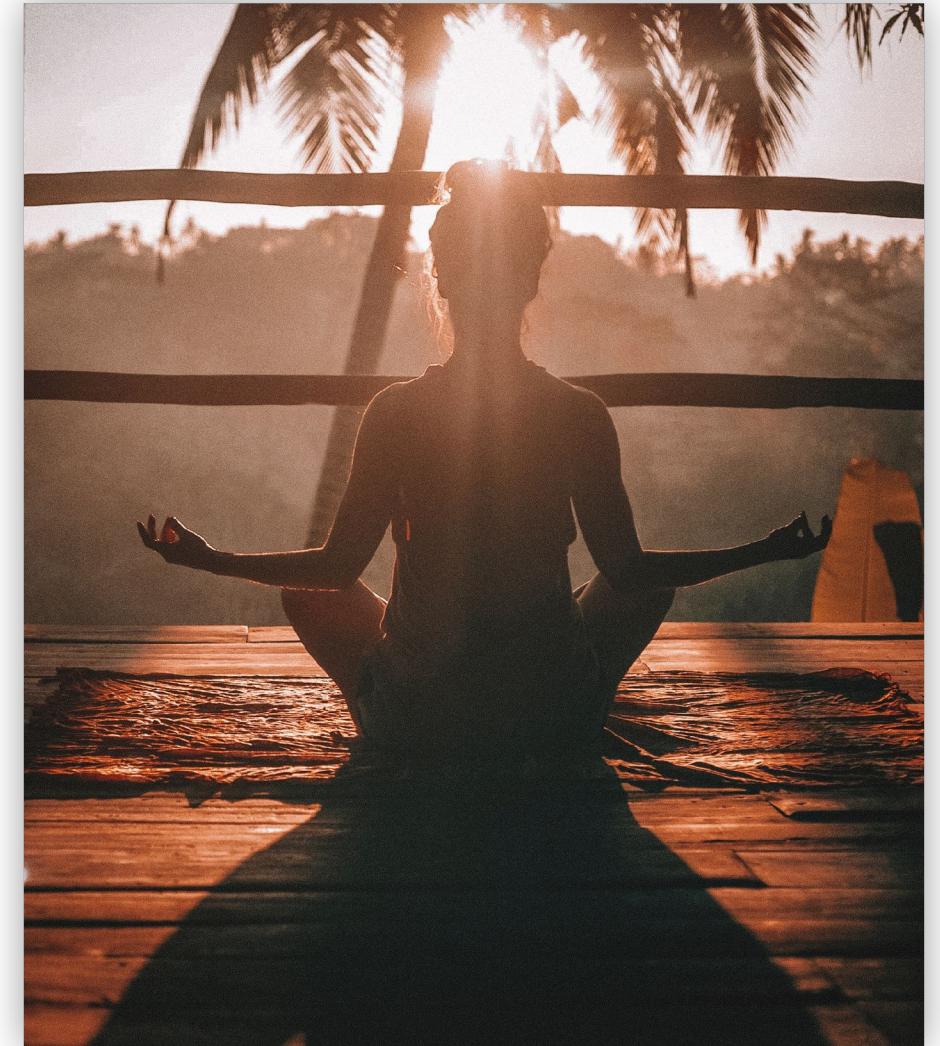


# Project development

Project development conclusion

# PROJECT DEVELOPMENT CONCLUSION

1. Learn about microcontrollers.
2. Hone electronic & programming skills.
3. Further network management.
4. Level up our patience.
5. Keep calm



# Current project status

Current PBI status (comparison with the starting point)

Tasks/User stories remaining

Detected challenges

Project demonstration

# CURRENT PBI STATUS

		Author	Label	Projects	Milestones	Assignee	Sort
<input type="checkbox"/>	3 Open	<input checked="" type="checkbox"/> 28 Closed					
<input type="checkbox"/>	Prepare Arduino Environment	learning					
	#1 by elskater98 was closed on 11 Nov 3	<input checked="" type="radio"/> 3 tasks done					
<input type="checkbox"/>	Prepare Raspberry Pi Environment	learning					
	#2 by elskater98 was closed 7 days ago 3						
<input type="checkbox"/>	Install ChibiOS to Raspberry Pi	enhancement					
	#3 by elskater98 was closed 7 days ago 2						
<input type="checkbox"/>	Read documentation LCD Screen/Display	learning					
	#4 by elskater98 was closed on 11 Nov 2						
<input type="checkbox"/>	Read Documentation I2C Protocol	learning					
	#5 by elskater98 was closed on 11 Nov 2						
<input type="checkbox"/>	Arduino interaction with ESP-01	enhancement					
	#6 by mvp17 was closed 5 days ago 8	<input checked="" type="checkbox"/> 1 task					
<input type="checkbox"/>	Read Documentation MCP23017	learning					
	#7 by elskater98 was closed 28 days ago 3						
<input checked="" type="checkbox"/>	Test Supervision Station	testing					
	#8 opened on 27 Oct by elskater98	<input checked="" type="checkbox"/> In progress 13	<input checked="" type="checkbox"/> 4 tasks				
<input type="checkbox"/>	Test MQTT Broker	testing					
	#9 by elskater98 was closed 26 days ago 8	<input checked="" type="checkbox"/> 3 tasks					
<input type="checkbox"/>	Test Data Producer 1	testing					
	#10 by elskater98 was closed on 11 Nov 5						
<input type="checkbox"/>	Test Data Producer 2	testing					
	#11 by elskater98 was closed 29 days ago 8	<input checked="" type="radio"/> 3 tasks done					
<input type="checkbox"/>	Data Producer 1 development	enhancement					
	#12 by mvp17 was closed on 11 Nov 8						
<input type="checkbox"/>	Data Producer 2 development	enhancement					
	#13 by mvp17 was closed 29 days ago 13	<input checked="" type="radio"/> 5 tasks done					
<input type="checkbox"/>	Data Consumer: Data log and Screen representation	enhancement					
	#14 by mvp17 was closed 1 hour ago 13		<input checked="" type="checkbox"/> 1				
<input type="checkbox"/>	Ultrasonic LED bar representation	enhancement					
	#15 by mvp17 was closed 16 days ago 8						
<input checked="" type="checkbox"/>	Arduino interaction with R.Pi	bug					
	#16 opened on 27 Oct by mvp17	<input checked="" type="checkbox"/> Product Backlog 13	<input checked="" type="checkbox"/> 2 tasks				
<input type="checkbox"/>	MQTT Broker Development	enhancement					
	#17 by elskater98 was closed 26 days ago 13	<input checked="" type="radio"/> 6 tasks done					
<input type="checkbox"/>	Sprint Documentation	documentation					
	#18 by elskater98 was closed on 11 Nov 8						

<input type="checkbox"/>	Read Documentation about NodeMCU module	learning					
	#19 by mvp17 was closed 26 days ago 3						
<input type="checkbox"/>	Revise Material	good first issue					
	#20 by elskater98 was closed on 11 Nov 2						
<input type="checkbox"/>	Read Documentation DHT11	learning					
	#21 by elskater98 was closed on 11 Nov 3						
<input type="checkbox"/>	Read Documentation ESP-01	learning					
	#22 by elskater98 was closed on 11 Nov 3						
<input type="checkbox"/>	First Contact with electronic components	learning					
	#23 by elskater98 was closed on 11 Nov 8	<input checked="" type="radio"/> 3 tasks done					
<input type="checkbox"/>	Read Documentation Acelerometer ADXL345	learning					
	#24 by elskater98 was closed on 11 Nov 3						
<input type="checkbox"/>	Documentation Sprint 2	documentation					
	#25 by elskater98 was closed 23 days ago 8						
<input type="checkbox"/>	Data Producer 2 documentation	documentation					
	#26 by mvp17 was closed 28 days ago						
<input type="checkbox"/>	Data Producer 2 documentation	documentation					
	#27 by mvp17 was closed 28 days ago 8						
<input type="checkbox"/>	MQTT Broker documentation	documentation					
	#28 by mvp17 was closed 23 days ago 5						
<input type="checkbox"/>	Connect Raspberry Pi to LCD Screen via serial port	enhancement					
	#29 by mvp17 was closed 7 days ago 8						
<input type="checkbox"/>	Sprint 3 documentation	documentation					
	#30 by mvp17 was closed 7 days ago 13						
<input checked="" type="checkbox"/>	Supervision Station documentation	documentation					
	#31 opened 16 days ago by mvp17	<input checked="" type="checkbox"/> In progress 13					

# TASKS/USER STORIES REMAINING

# TODO: 3 Issues

155/194 Story Points (39)

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Dead Line: **10 Jan. 2022**



As a Maintenance Manager I would like to represent graphically the obtained sensor data, within the last 24h, in the Supervision Station.

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3 Open		✓ 28 Closed	Author ▾	Label ▾	Projects ▾	Milestones ▾	Assignee ▾	Sort ▾
<input type="checkbox"/>	<span>Supervision Station documentation</span>	<a href="#">documentation</a>						
		#31 opened 16 days ago by mvp17						
<input type="checkbox"/>	<span>Arduino interaction with R.Pi</span>	<span>bug</span>						
		#16 opened on 27 Oct by mvp17		2 tasks				
<input type="checkbox"/>	<span>Test Supervision Station</span>	<span>testing</span>						
		#8 opened on 27 Oct by elskater98		4 tasks				

# Project Conclusion

Final Conclusions

# FINAL CONCLUSIONS

- Team Work
- Hardware and Software Engineering
- Embedded Controllers
- Obtain and transfer data from remote sensors
- Allow multi-platform interaction
- Internet of Things (MQTT Protocol)

Thank you!

Q/A?

**Video**