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1909756

by Joshua Rees

FILE	15178_JOSHUA_REES_1909756_172461_1948712418.PPTX (834.26K)
TIME SUBMITTED	05-JAN-2021 02:00PM (UTC+0000)
SUBMISSION ID	140901899

WORD COUNT	321
CHARACTER COUNT	1636

Industry 4.0

Project background

- ▶ The project will be done in college.
- ▶ It will relate to industry as many industries use motor control.
- ▶ Motor control is very important in process as different speeds are required for different parts of a process.
- ▶ Such as in a cooling pump system, the motor needs to go fast to pump more or can slow down to pump less.

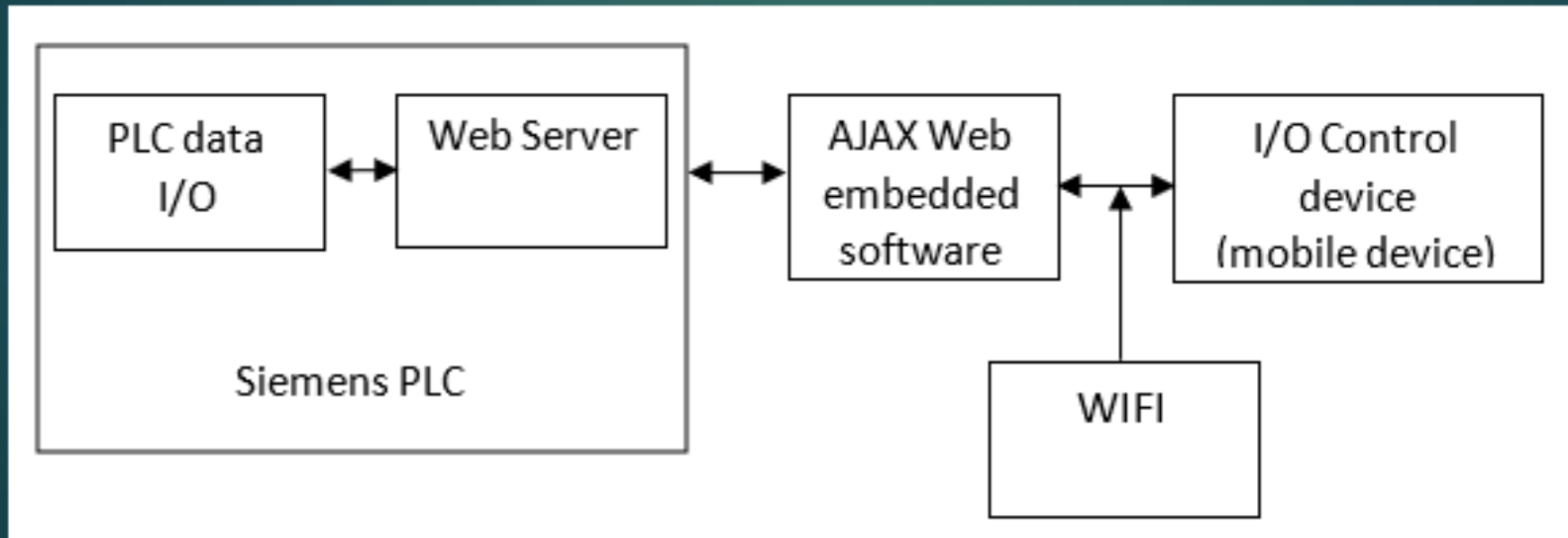


Aims and Objectives



- ▶ In industry it is important to make things as efficient as possible, such as in manufacturing it is key to keep the process lines running or they face profit loss.
- ▶ The objective of this project is to make the motor control as efficient as possible.
- ▶ Time saving.
- ▶ Alarms.

Project design



- HOW?
- WHAT?
- SAFETY AND RISKS?

Software and Technologies

- ▶ Hardware

- ▶ Laptop or mobile device
- ▶ Router
- ▶ Profinet switch

- ▶ Software

- ▶ Web browser
- ▶ PLC server
- ▶ TIA software
- ▶ Web program software

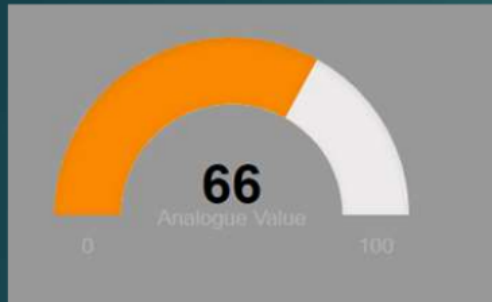
- ▶ Protocols

- ▶ Http
- ▶ Ethernet
- ▶ Profinet

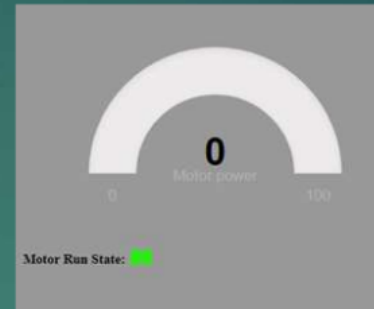
- ▶ Pricing

- ▶ Mobile £100
- ▶ PLC £350
- ▶ Router £20
- ▶ Budget £500

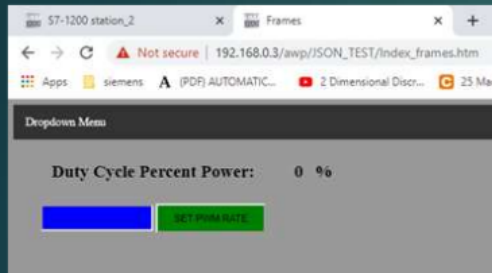
Proposed outcome



Test 1



Test 3



Test 2



Test 4

Siemens wincc SCADA

Pros

- ▶ Logging of data, such as alarms, events, trends of signals.
- ▶ Easy to see/change variables of machines
- ▶ Compatible with IOS and android
- ▶ Ease of programming (Very visual)

Cons

- ▶ Package is very expensive, typically £10k
- ▶ Have to pay for more tags
- ▶ Specifically used for PLCs
- ▶ All plugins are at an extra cost
- ▶ Software training is not well supported, cost of training is very expensive
- ▶ Remote access is limited

Jquery Software



Pros

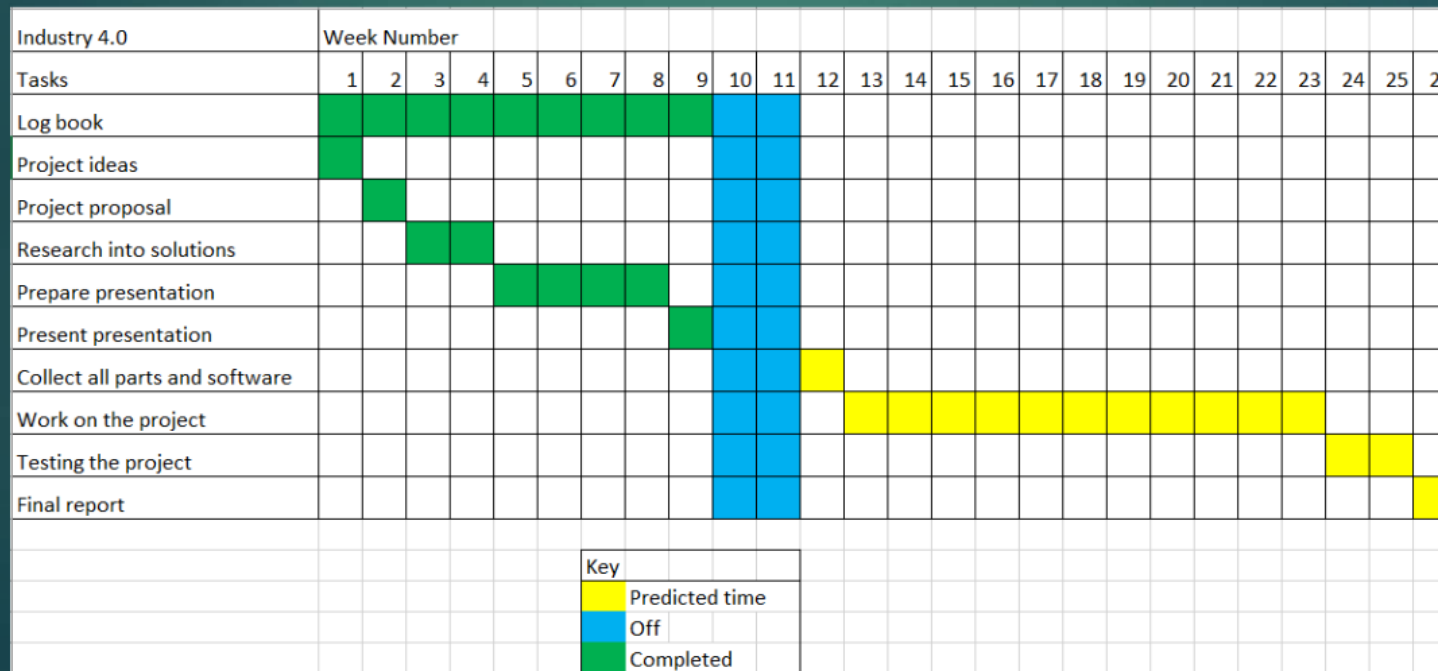
- ▶ Add plugins easily
- ▶ Code is simple with effects and animations (SVGs)
- ▶ It has excellent support community to fix bugs quickly
- ▶ Excellent integration with Ajax
- ▶ Comes with MIT license and is open source
- ▶ Compatible with most platforms (IOS, Windows, android)
- ▶ Free
- ▶ Wide range of remote access

Cons

- ▶ Has a large number of versions
- ▶ The library will have to be updated constantly by yourself

Critical choice

	Siemens SCADA	Jquery
Price	£10,000	Free
Add plugins	Pay extra	Easy and free
Compatibility	Few	Most



FINAL GRADE

GENERAL COMMENTS

55/100

Instructor

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JOSHUA REES

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RESEARCH-INFORMED LITERATURE

 The background for this project was not very well explained. There should be details about the web server in the PLC and the advantages for industry. 4.5/10 There is evidence of research in the presentation. 6.5/10

11/20

KNOWLEDGE AND UNDERSTANDING

 The project purpose is identified but there should be more emphasis on the web server services for industrial machines. 2.5/5 Constraints with codes of practice and standards were explained with questioning. 3/5 Environmental and sustainability was covered in the questioning and the advantages of remote io was identified in this area. 3/5 Functional design should have included more detail. 2.5/5 Response to questioning was reasonable. 5/10

16/30

ANALYSIS

 Problem was clearly defined but needed more information on the web server and the PLC. 2.5/5 Functional design specification was explained but there were some parts that were not very clear

10/20

about the Ind 4.0 development using web technologies. 5/10 There was an argument for the final solution which did explain some of the technologies. 2.5/5

PRACTICAL APPLICATION AND DEP.

 Design specification does contain some details and was reasonably explained which was aided by a good block diagram. Technologies have been identified in this section. 3/5 The argument for the critical choice of final solution offered some good points which were further identified during questioning. 6/10 Project plan identified the work breakdown and provides a timeline. However some changes need to be made to the chart. 3/5

12/20

SKILLS FOR PROFESSIONAL PRAC.

 Slides have some good detail and identify the essential technologies. 3/5 Quality of the delivery overall was good and a good effort was made to identify the technologies needed. 3/5

6/10