

Assignment 2 Specification

Networking for Connected Devices

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Computer Systems and Networks

HDip Computer Science 2019

Context

- 100% of your overall mark
 - Project ethos (1 overall project)
- For this assignment you are required to:
 - Propose a project.
 - Create a working project using networking/IoT standards & protocols.
 - Requires a "physical" aspect – sensors/devices
 - Present and communicate your work in a clear, correct manner.
- The project should incorporate the different layers (sensor, processing node, gateway, application) of an IoT/connected device architecture.
- Project will be assessed on its technical (e.g., features) content, complexity, applicability to domain and execution.

Theme: Marine

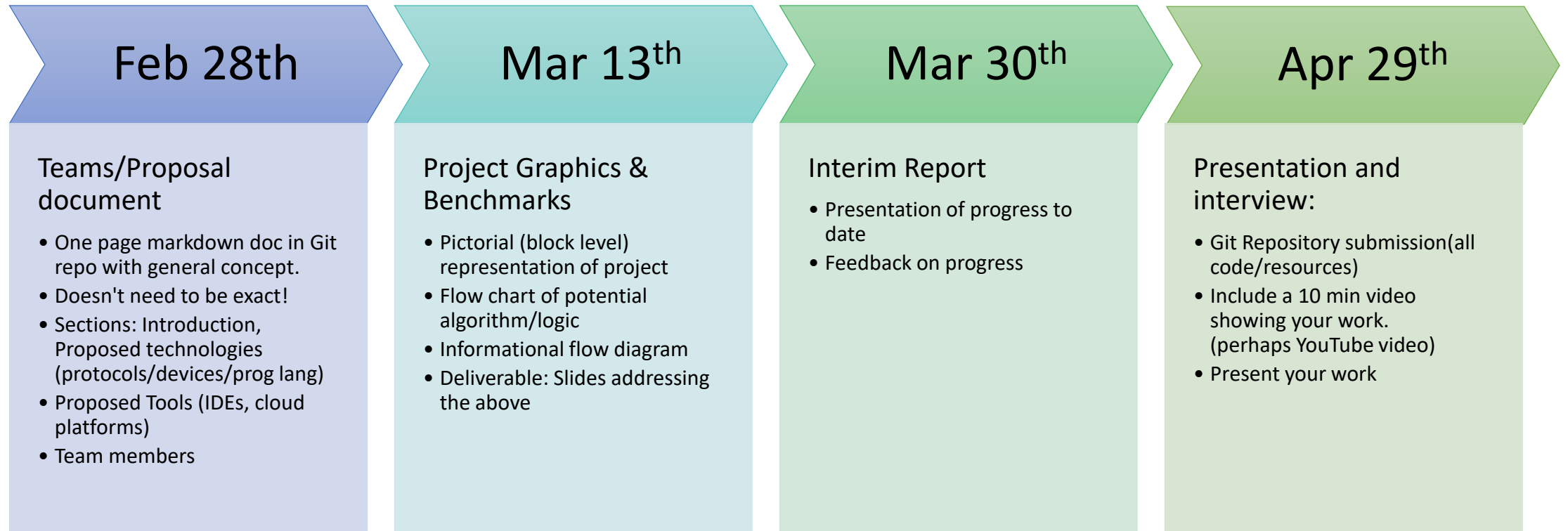


Requirements

"Include the different layers (sensor, processing, gateway, application) in an IoT Project."

Design	Propose and design solutions (e.g. See attached work packages)
Apply	Apply suitable IoT protocols and standards.
Model/ implement	Model/implement a solution to your proposal Use the knowledge, skills and practices from other modules Should be scoped correctly – can't build a production standard solution in a few weeks!
Present/curate	Present/curate your project Create a short video that demonstrates the project.

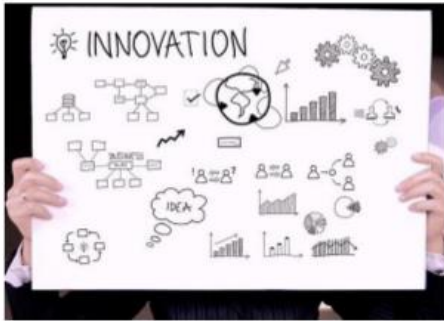
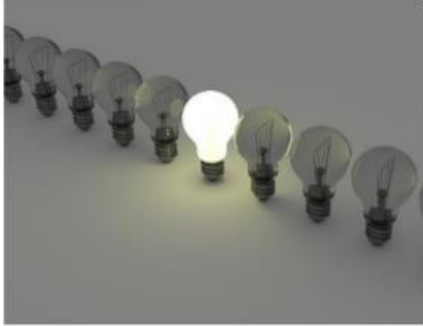
Timeline



Grade Spectrum

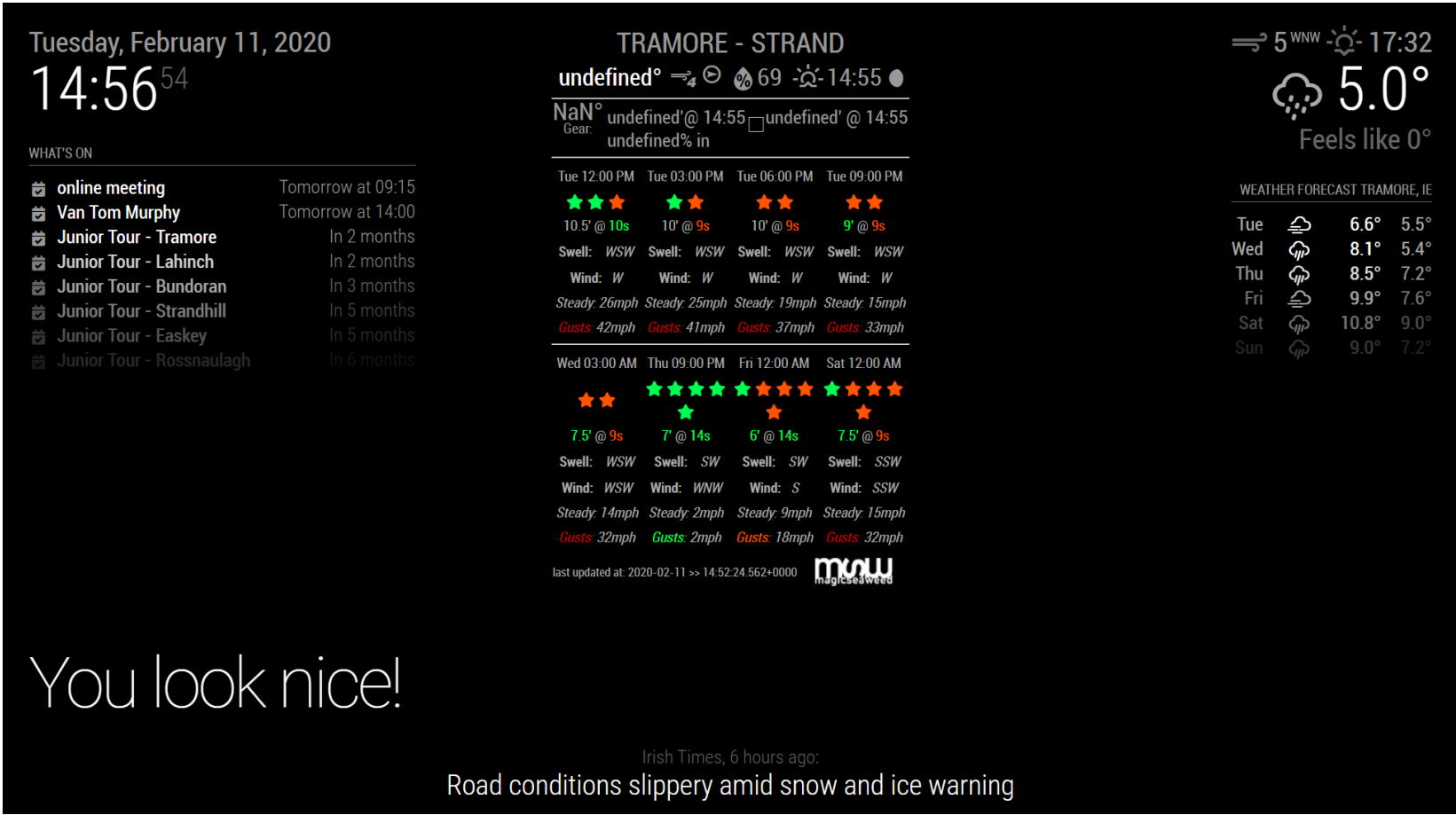
	Combined knowledge (15)	IoT Technologies (35)	Solution (35)	Communication (15)
Base (40-49)	2 programme strands present in output. Basic knowledge of each exhibited. (e.g. programming, database, computer systems)	Physical/Data link layer solution. Minimal devices	Basic solution that may form basis of overall application. Sensor focused.	Minimal (1) communication resource used (simple read me) and video.
Good (50-64)	apply concepts from more than two modules/strands..	Wireless protocols. >1 protocol. Interconnected devices.	Solution with clear IoT and domain application. Includes processing/ gateway function	Portfolio/repository includes clear presentation, documentation.
Excellent (65-80)	>2 strands as above and including more advanced knowledge and concepts.	Lightweight messaging. Architecture that mediates between high and low level devices.	IoT Application of good prototypical standard. Used to evaluate overall suitability for a production system.	Additional communication resources (e.g. instruction video, learning resources)
Outstanding (80-100)	All above, including self-acquired knowledge over and above module content.	All previous to excellent level. Excellent Use of Cloud/IoT specific platforms	Novel solution of clear applicability to specific domain. Could result in employment offer.	All the above, accessible project platform (e.g. web site)

Other Considerations



- "Permissionless Innovation"!
 - You don't have to limit yourself to module technologies. You can integrate other devices/ systems
 - We used Python but you can use any other programming languages/ frameworks if you want. (Remember, the RPi can run Node/Java/JavaScript)
- Have a look at other IoT project examples for inspiration.
- It's OK to "simulate sensors"
 - You can simulate data (e.g. GPS location.)

Possible Concept: Conditions Dashboard for TBay



Possible Concept: Safety Sense Buoy

- Safety Buoys becoming more popular for open water swimmers
- Create a device that:
 - Attaches/integral to buoy
 - Transmits location, heading every 2 mins
 - Emergency button (notifies nok, then emergency services)

