P. 1: Instructions on Course Final Project
Sec 1 – Requirements, Structure & Proposal

COMPSCI 147
Internet-of-Things; Software and Systems

PROJECT GUIDELINES

- Teams of 2 students are required. Ideally same as lab groups.

- Suggest your own project plan/proposal
  - which can be done with the available components in the development kit.
  - or if you are eager to use additional components on your own.

- Diversity in projects are encouraged!

Healthcare, smart home, smart city, smart cars..

PROJECT SCHEDULE: PROPOSAL

- Use the project proposal template available on Canvas.
- Submit your project proposal on Canvas by 4/23.
- Proposals will be approved/asked to be revised by 4/30.
- If accepted, you can start working on it and/or buy additional hardware if required.
- If you are asked to revise (we will let you know why), you will have maximum 3 days to resubmit your proposal.

PROJECT SCHEDULE: REPORTS AND DEMO

- Progress report (template-based) + demo video due on Canvas in Week 8.
  - Include a link to your code in GitHub.
  - Include link to demo video (5 min video)
  - Initial plan + progress in any format.

- Final report due on Canvas in week 11.
  - Template-based
  - Try to make it detailed
  - Figures and photographs are welcome!
  - Include a link to your code in GitHub.
  - Need to do “final demo” of working project to TAs!

PROJECT GRADING

- Final Grading is done qualitatively based on
  - How much effort you spent
  - How challenging the project was
  - Quality of the project reports (particularly the final report)
  - Novelty and impact of the idea
  - Being able to answer questions about the code
  - Well implemented or not
  - And, of course, it should work (final demo)…
- Grading Rubrics are available on Canvas

PROJECT COMPONENTS REQUIRED

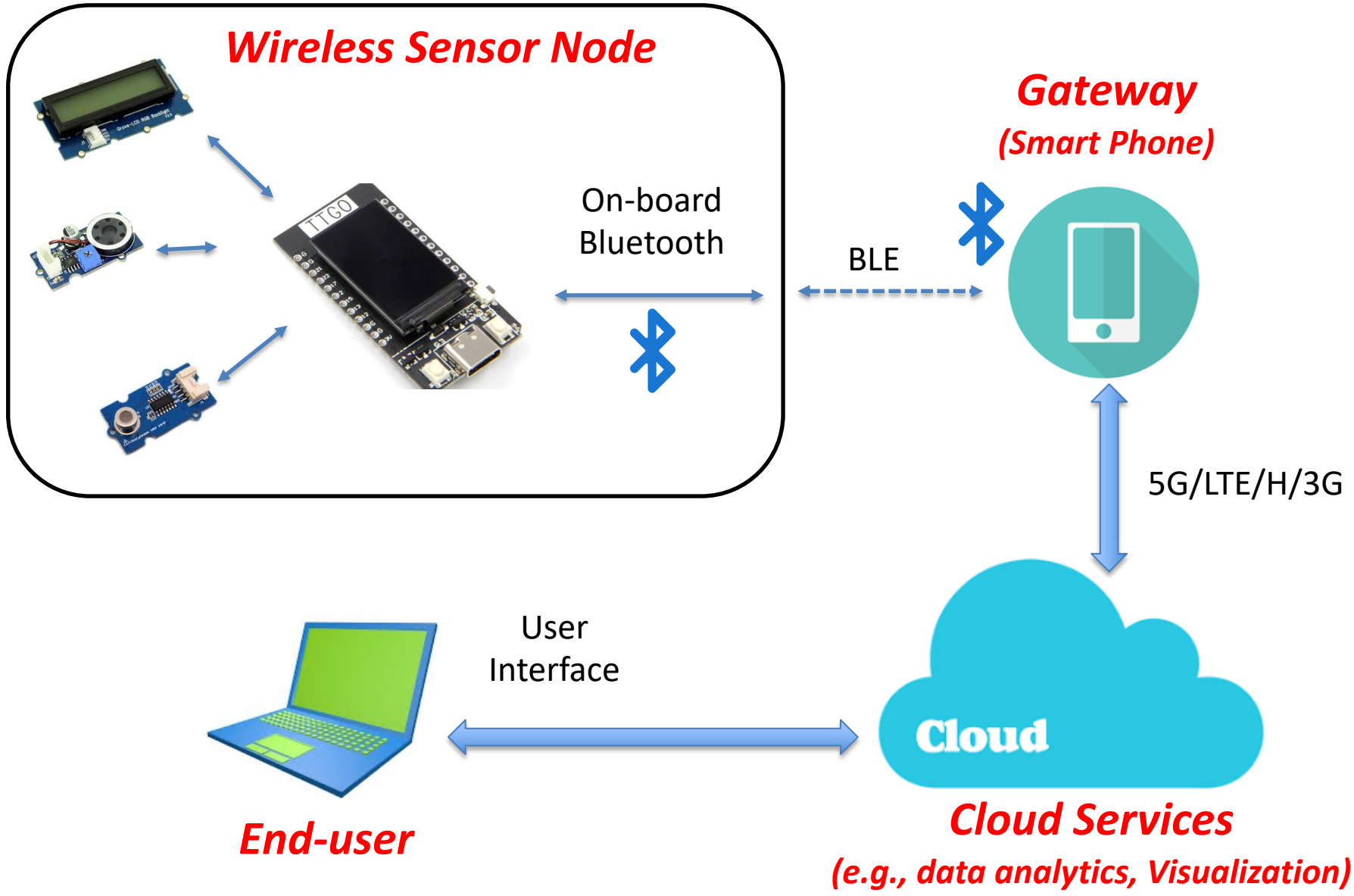
1. **Working with** sensors/actuators using your **development kit.**
   - ESP32 based TTGO.
   - You can use other boards if you like (e.g., Photon Redboard, Intel Galileo, etc).

2. **Low range wireless communication** (e.g., Bluetooth, Wi-Fi) to an access point (e.g., your mobile phone or Wi-Fi access point)

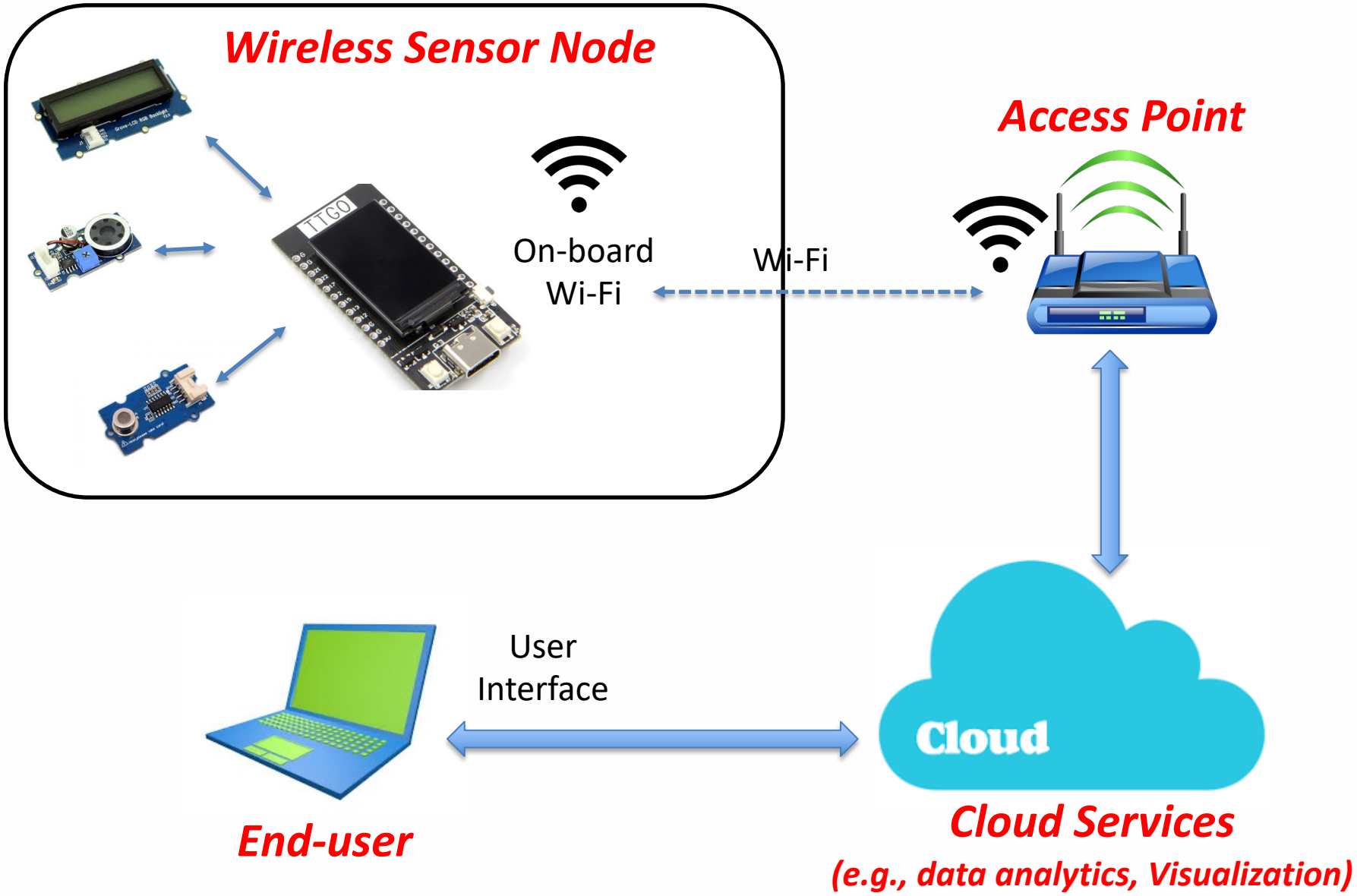
3. **Cloud connectivity**
   - Sending the data to a cloud service provider (e.g., Microsoft Azure, Amazon AWS, etc.)
   - You can send the data directly from the sensor node to the cloud, or send the data first to your mobile (app) and then forward it to the cloud

4. Some **data analytics** and visualization using available services at the cloud
   - For example:
     - https://azure.microsoft.com/en-us/develop/iot/
     - https://discover.microsoft.com/azure-iot-building-solutions-dev-guide/

PROPOSED ARCHITECTURE 1 (SENSOR-MOBILE APP-CLOUD)



ARCHITECTURE 2 (SENSOR-CLOUD)



PROPOSAL STRUCTURE

Proposal Template is available on Canvas in the proposal assignment.

- Project Title and student/team information
- Project proposal description:
  - Motivation, current solutions and goals.
  - Approach: Explicitly mention what wireless protocol you plan to use (Wi-Fi, BLE,...).
  - Which architecture (Architecture 1 or 2, or any other).
  - The list and quantity of the required components (Given time constraints, it is always best to plan with the ones you already have).
  - Project Deliverables (how you plan to demo the project)
  - Include a link to a short proposal video presentation.

- Proposal length about 5 pages
- Upload to its corresponding Canvas assignment

COMMON REASONS FOR REQUESTING PROPOSAL REVISION

a) The proposal is too simple and does not comply with all the requirements

b) The proposal is too complex and heavy as a course project

c) The proposal presents adequate complexity, but it is *meaningless*.

d) The required devices are difficult to buy/get on time.

e) …