

MDP

Android Remote Controller

Module Briefing

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Introduction

- The objective of the Android Remote Controller Module in the MDP is to introduce practical issues related to:
 - **Mobile Computing**
 - **Human Computer Interaction**



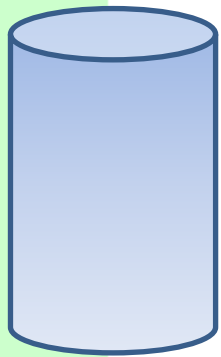
Android Tablet

What will you be doing?

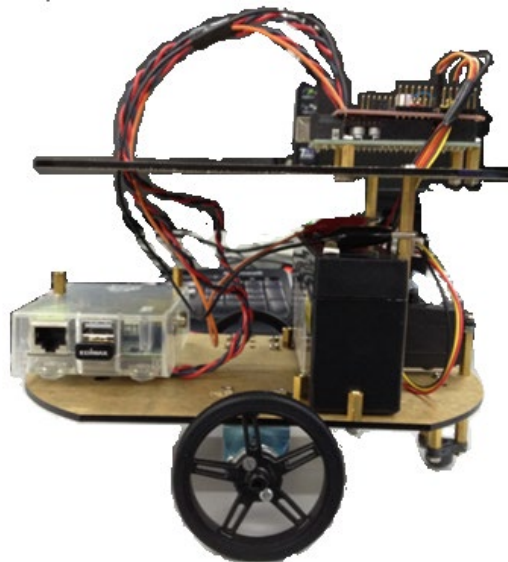
- Develop mobile apps on an Android-powered device.
- Design and develop graphical user interface-based apps.
- Implement wireless connectivity between Bluetooth-enabled devices.
- Design and implement graphical displays in your Android app.

How do you contribute to your team?

- Your Android tablet will be the **wireless remote controller** device for your team's robotic system.
- It will issue commands to robot to begin various manoeuvres in arena during the competition.
- It will allow the team to visualize the current status of arena and robot.

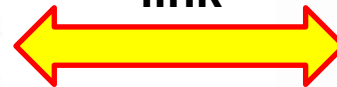


Obstacles
in arena



Robotic Subsystem

Bluetooth
link



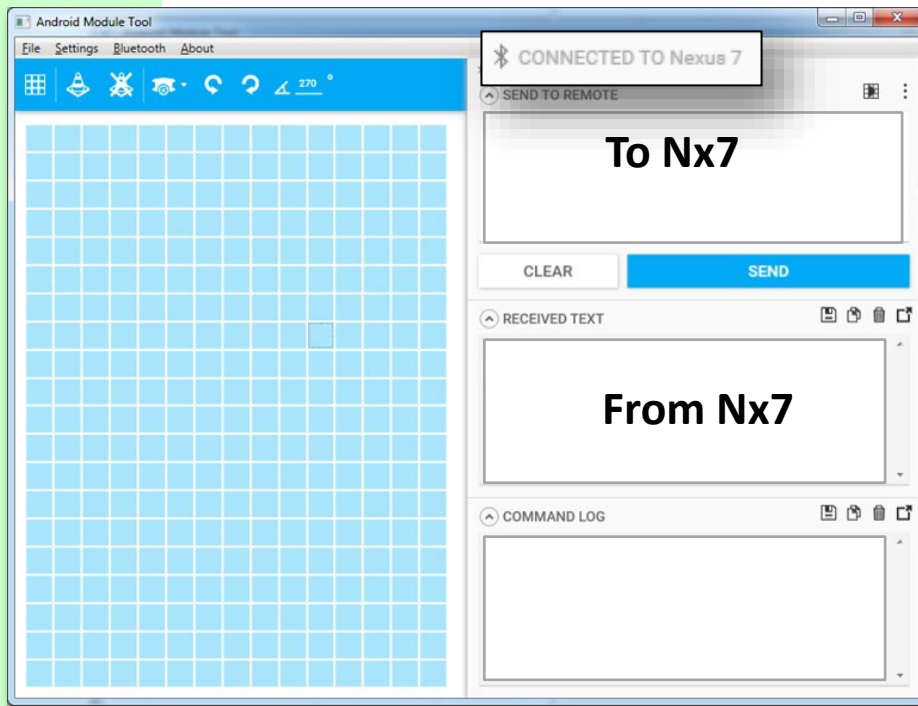
Android Tablet

How is this module assessed?

- The assessment of the Android remote controller module (ARCM) can be done independently of other modules.
- The **Project Deliverable Checklist** (20%) has a section on the Android remote controller module (section C).
- The deliverable checklist (section C) represents the **minimum** implementation you should undertake for this module.
- However, the ACRM team must **work closely** with the rest of the teams doing the other modules to ensure a **smooth integration** at a later stage.
- This is necessary for the team to participate in the **leaderboard competition**.

ARCM Deliverable Checklist

- C.1** Your Android app is able to **transmit** and **receive** text string over the Bluetooth serial link.
- C.2** Your Android app GUI can initiate **scanning**, **selection** and **connection** with Bluetooth device.



AMD Tool



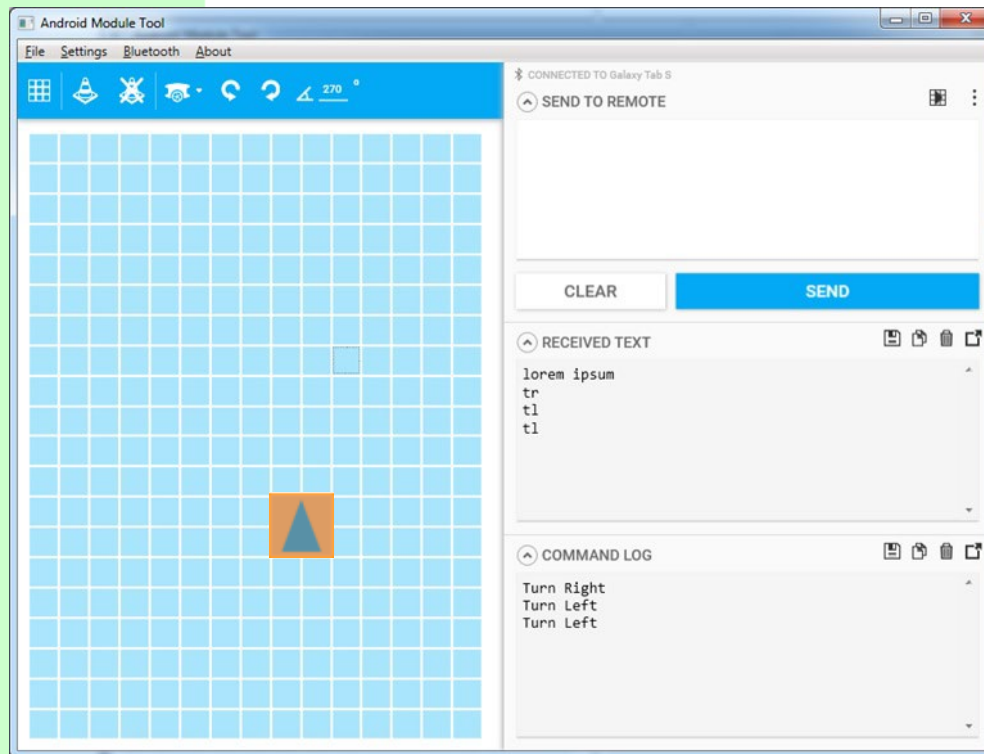
Bluetooth
link



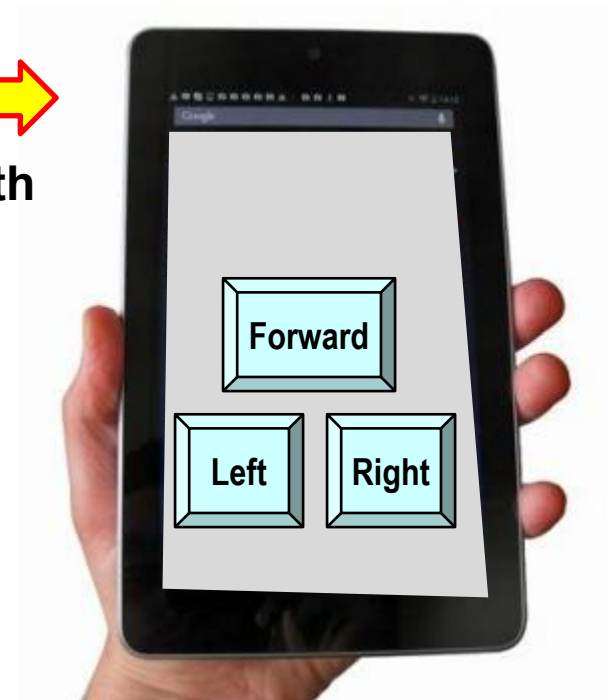
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ARCM Deliverable Checklist

C.3 Your Android app GUI provides interactive control of **robot movement** (via Bluetooth link).



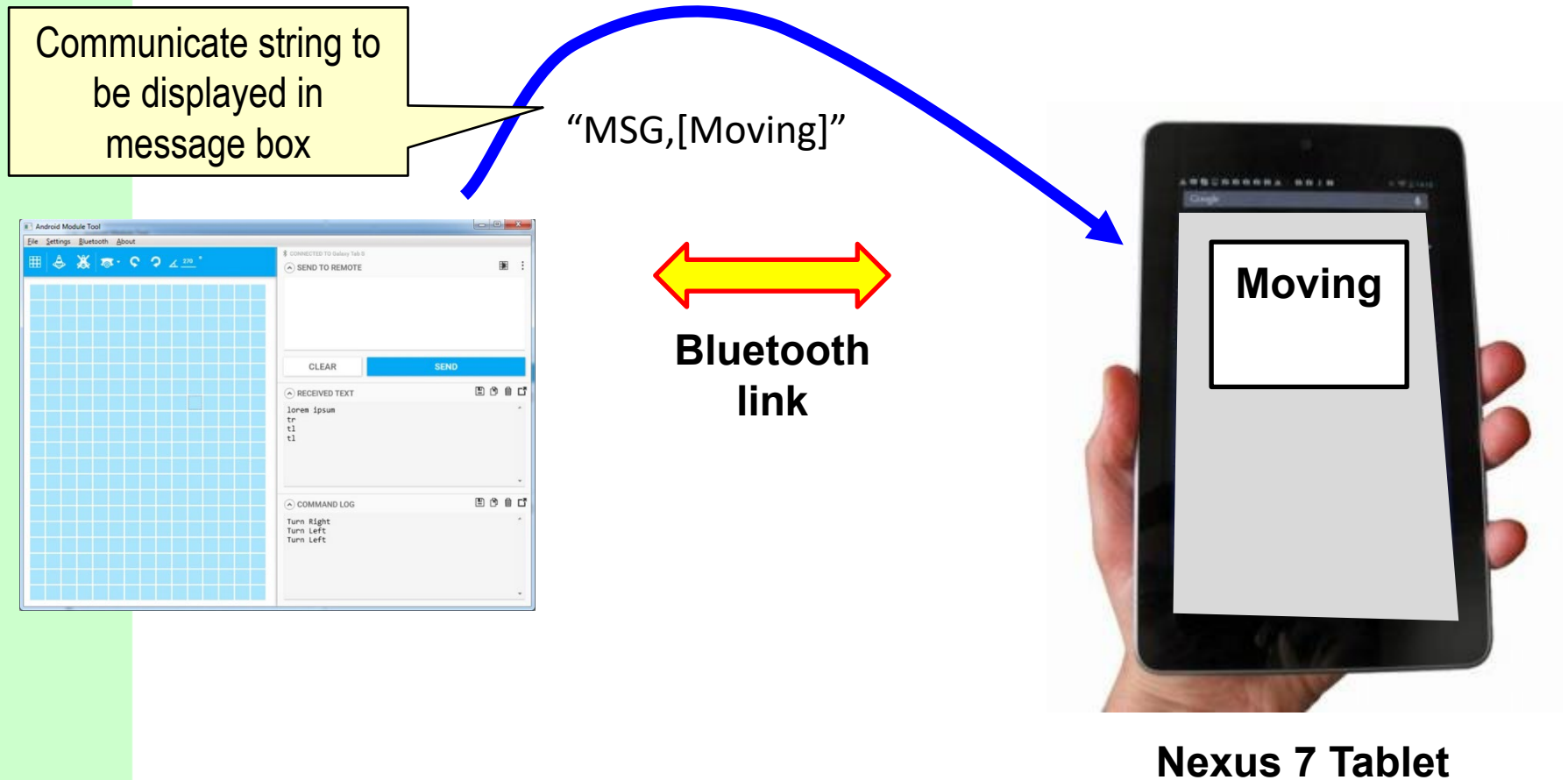
**Bluetooth
link**



Nexus 7 Tablet

ARCM Deliverable Checklist

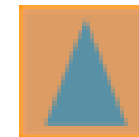
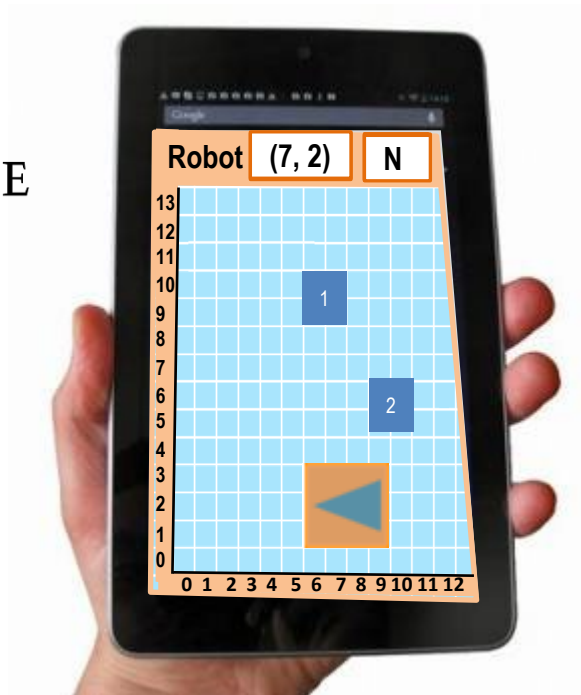
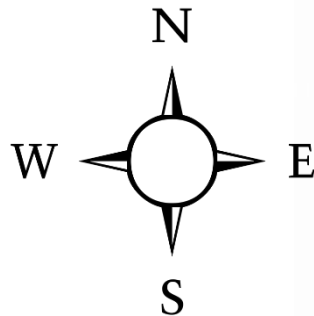
C.4 GUI provides a message box (text box) to display **remote message updates** from the robot system.



ARCM Deliverable Checklist

C.5 2D display of arena with obstacles and robot.

- Display obstacles with their respective numbers (small font) to identify each obstacle.
- Display the robot and its facing direction (covered in Checklist item C.10).

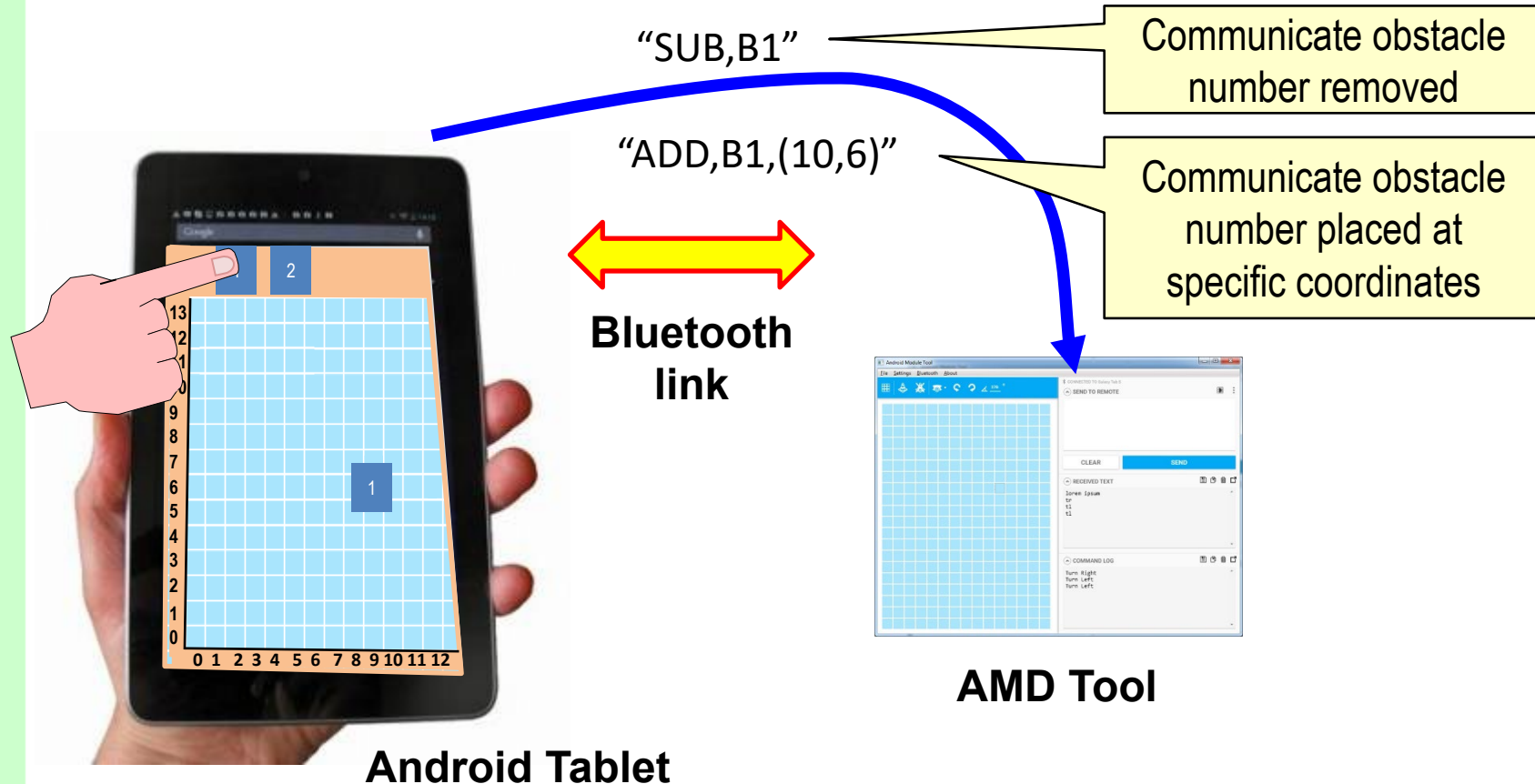


Android Tablet

ARCM Deliverable Checklist

C.6 Interactive movement and placement of obstacle in map.

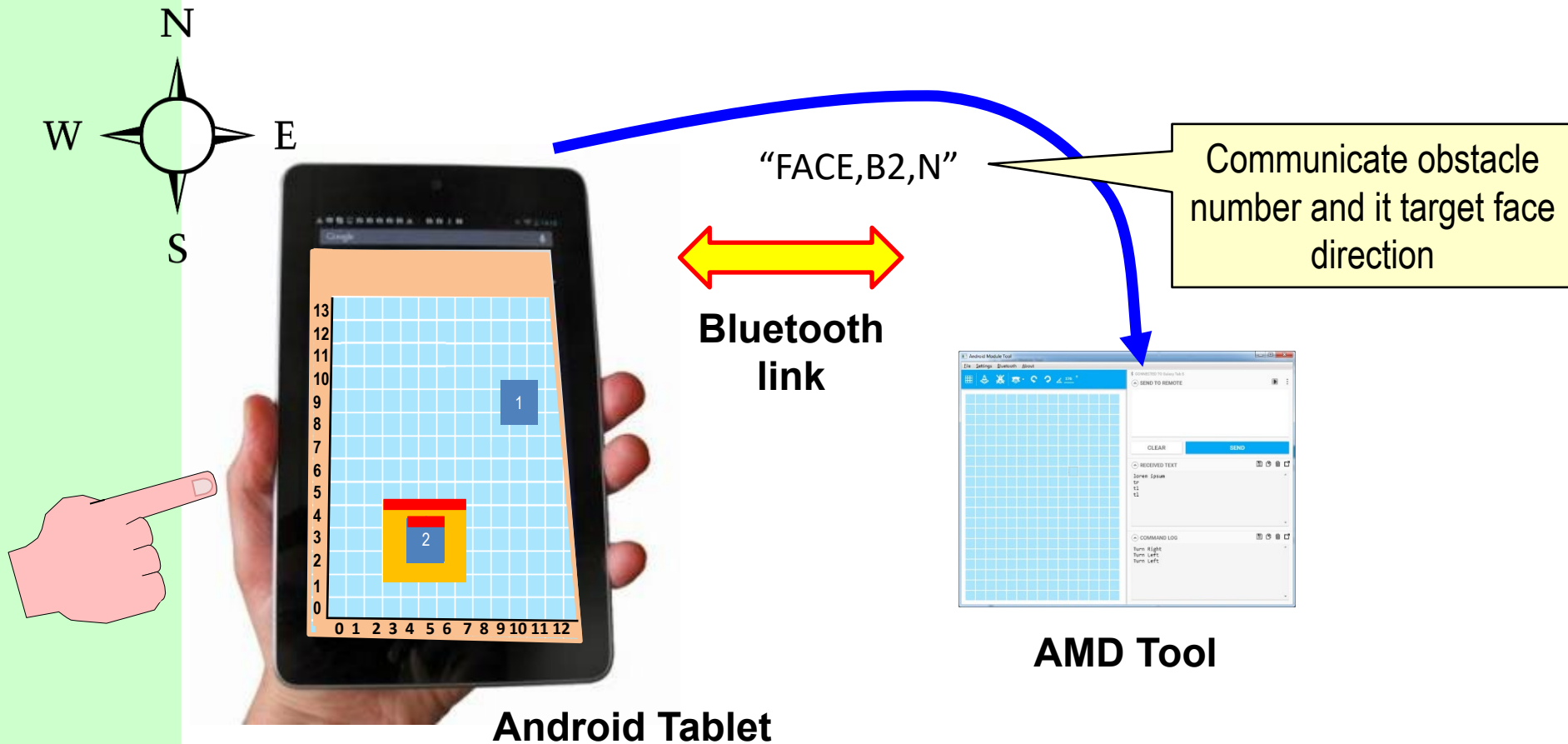
- Obstacles can be moved and placed into the map arena using “touch and drag” interactions.
- Dragging obstacle out of arena will remove it from the map.



ARCM Deliverable Checklist

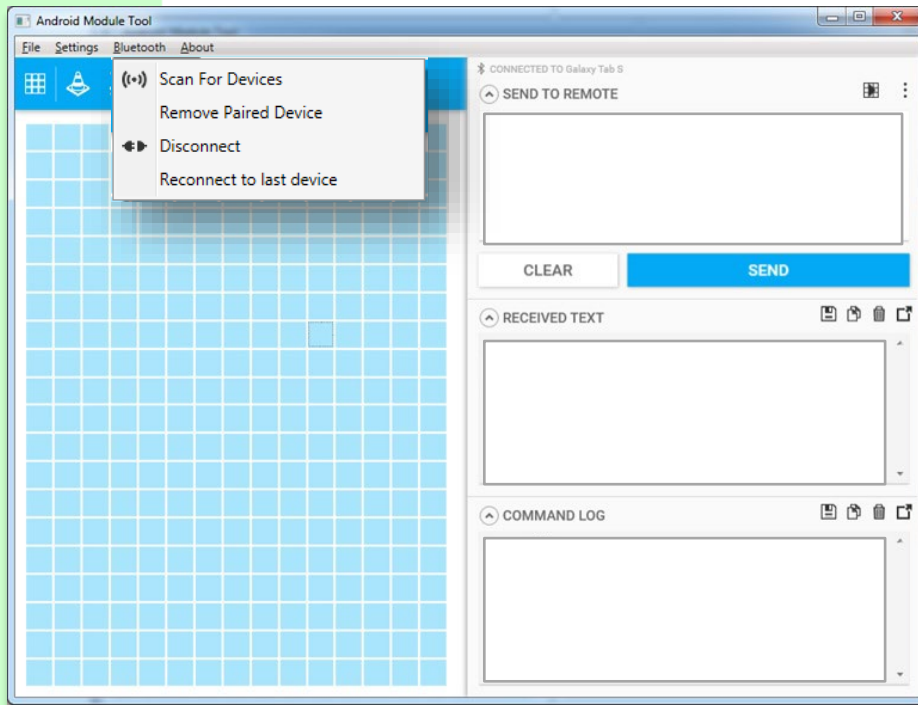
C.7 Annotate face of obstacle that has target image

- Design and implement an interaction technique that will allow you to specify which face (N,W,E,S) of the obstacle has a target image.
- At the end of the interaction, this info must be transmitted to the robot.



ARCM Deliverable Checklist

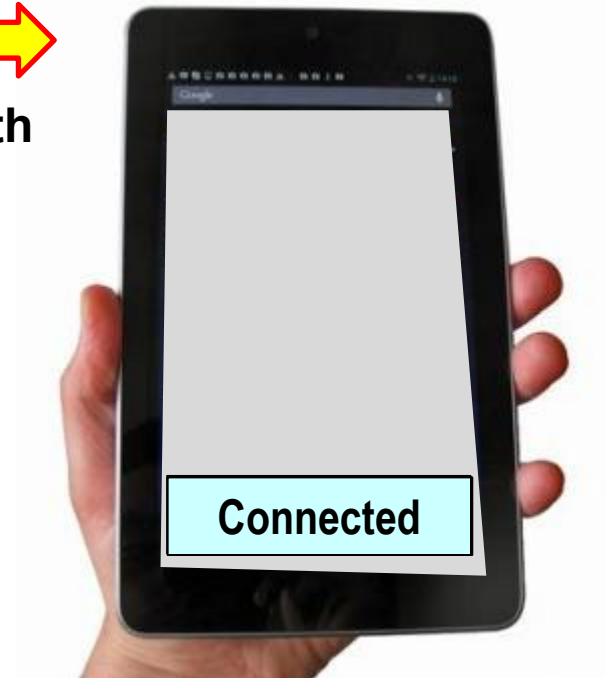
C.8 Your Android app provides **robust Bluetooth** connectivity.



AMD Tool



**Bluetooth
link**

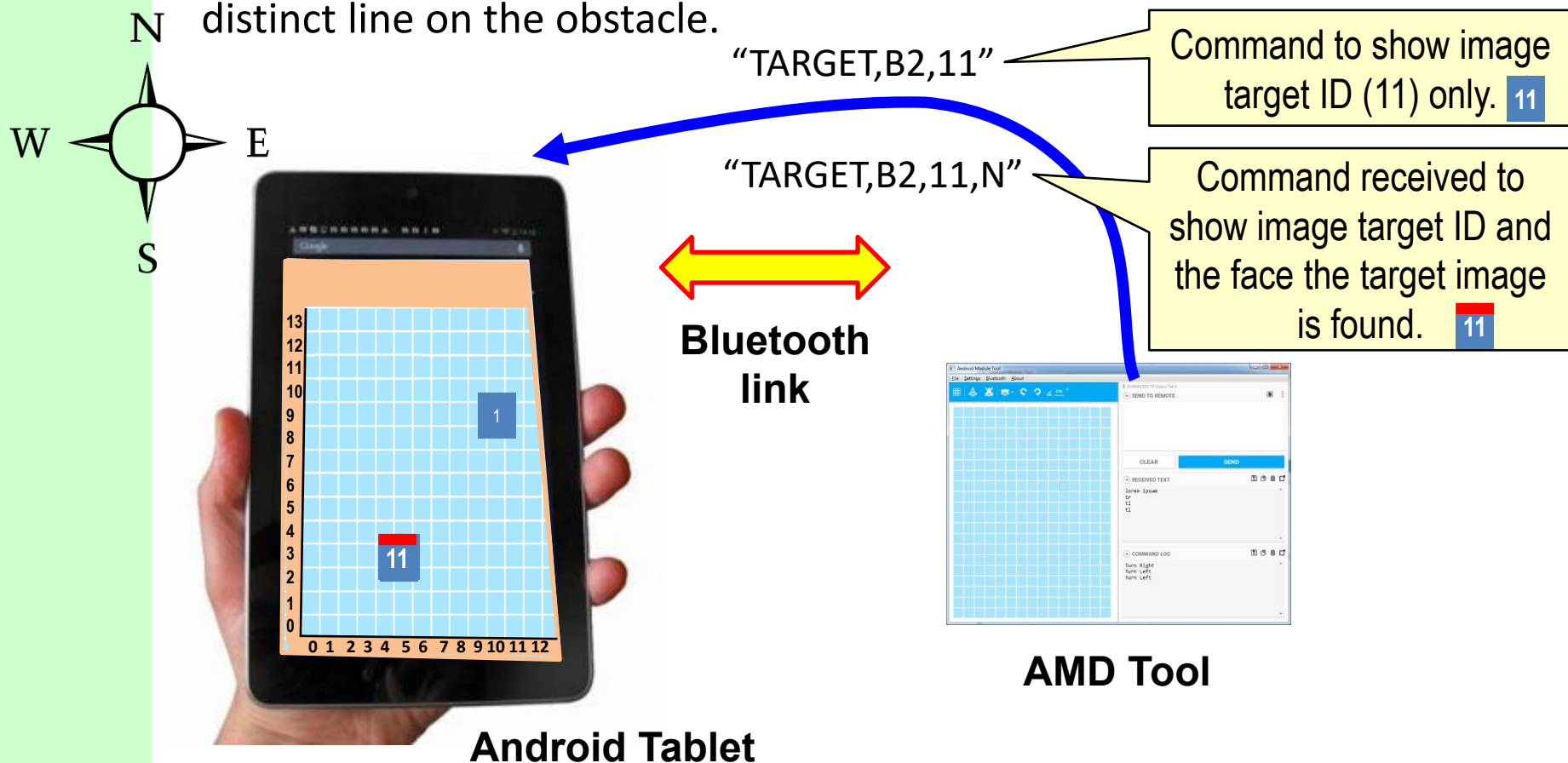


Android Tablet

ARCM Deliverable Checklist

C.9 Display image target ID on specific obstacle block

- Appearance of obstacle block changes when a target ID command is received via the Bluetooth link to display target ID found by robot.
- If face where target is found is also sent, then this is displayed with a distinct line on the obstacle.



The End

Have an Android hAPPy experience!

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