

SENSES AMPLIFYING FOR THE VISUALLY IMPAIRED

Motivation:
We care

- Collision risks on ever changing environments
- Finding new directions is a big challenge
- They can not read posters with warnings
- “building a diverse and inclusive culture is the right thing to do”

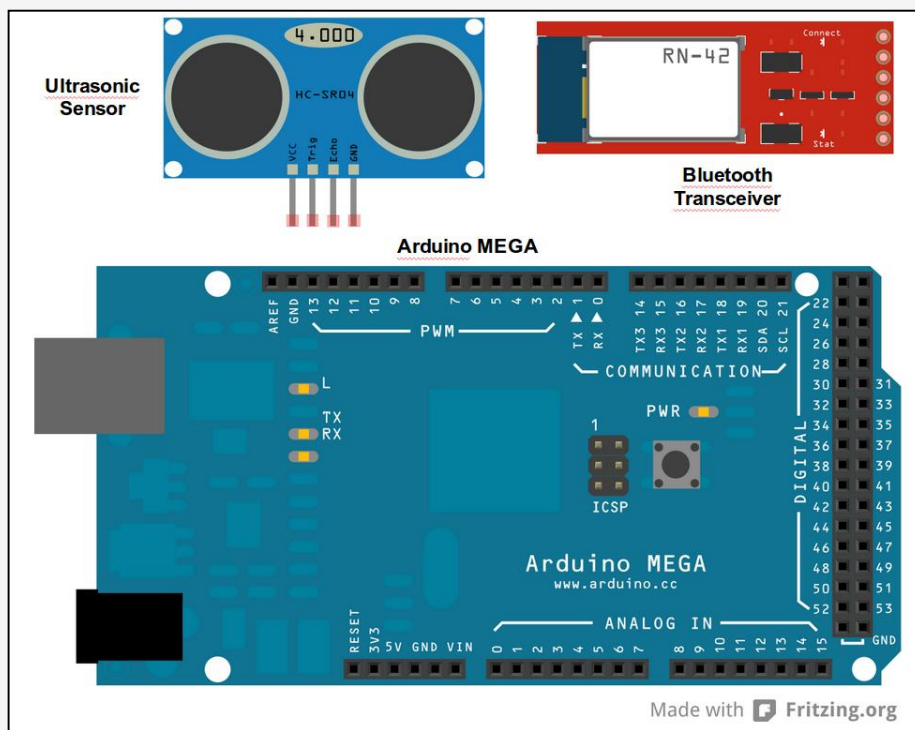


How we
can help

- Locomotion
- Navigation
- Poster reader

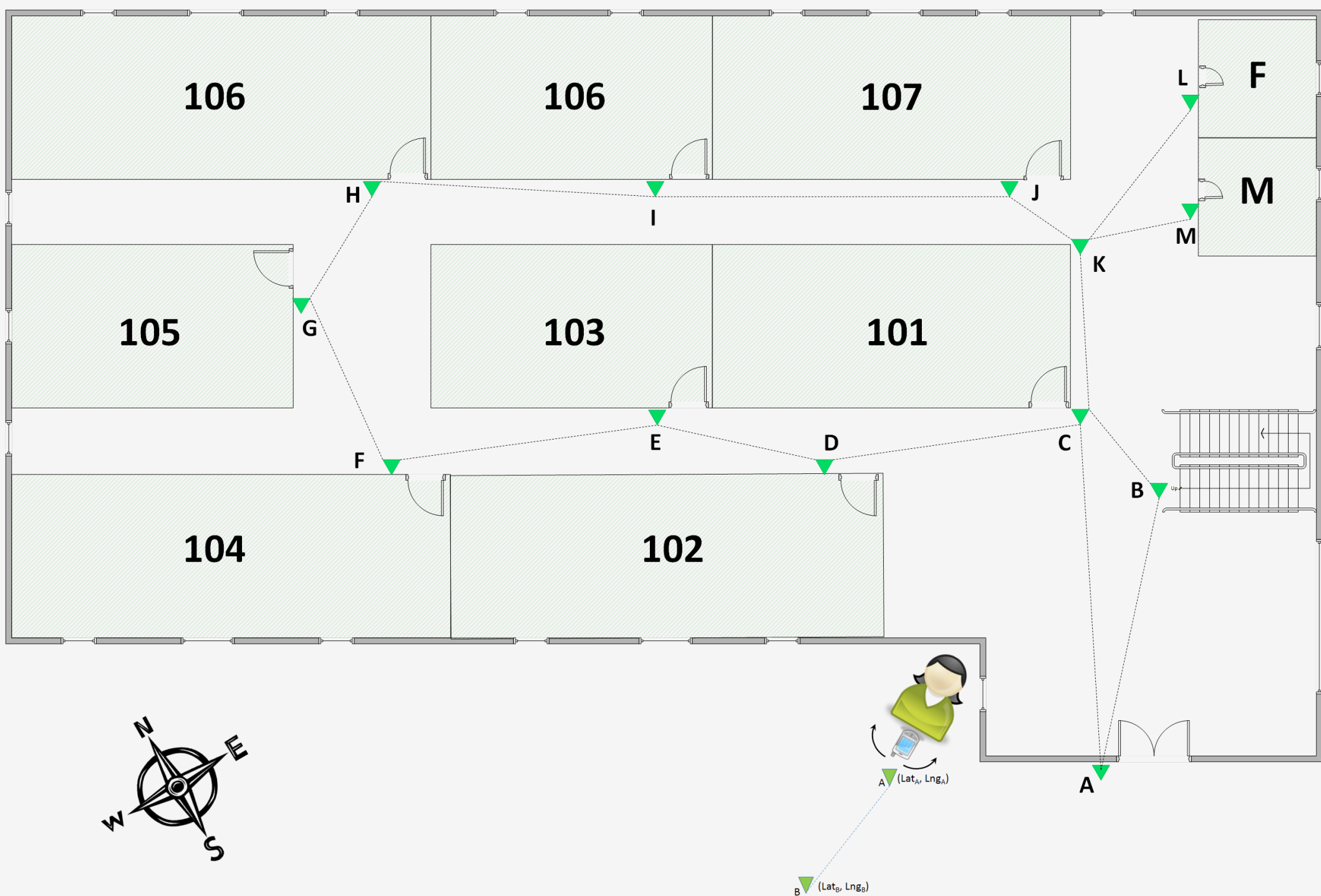
Locomotion

- Collision avoidance
- Smartphone UI not “visual centric”
- Very high precision and low power consumption
- Technologies
 - Android smartphone
 - Arduino w/ ultrasonic sensor
 - Bluetooth communication with smartphone
 - Text-to-speech, vibration and beeps



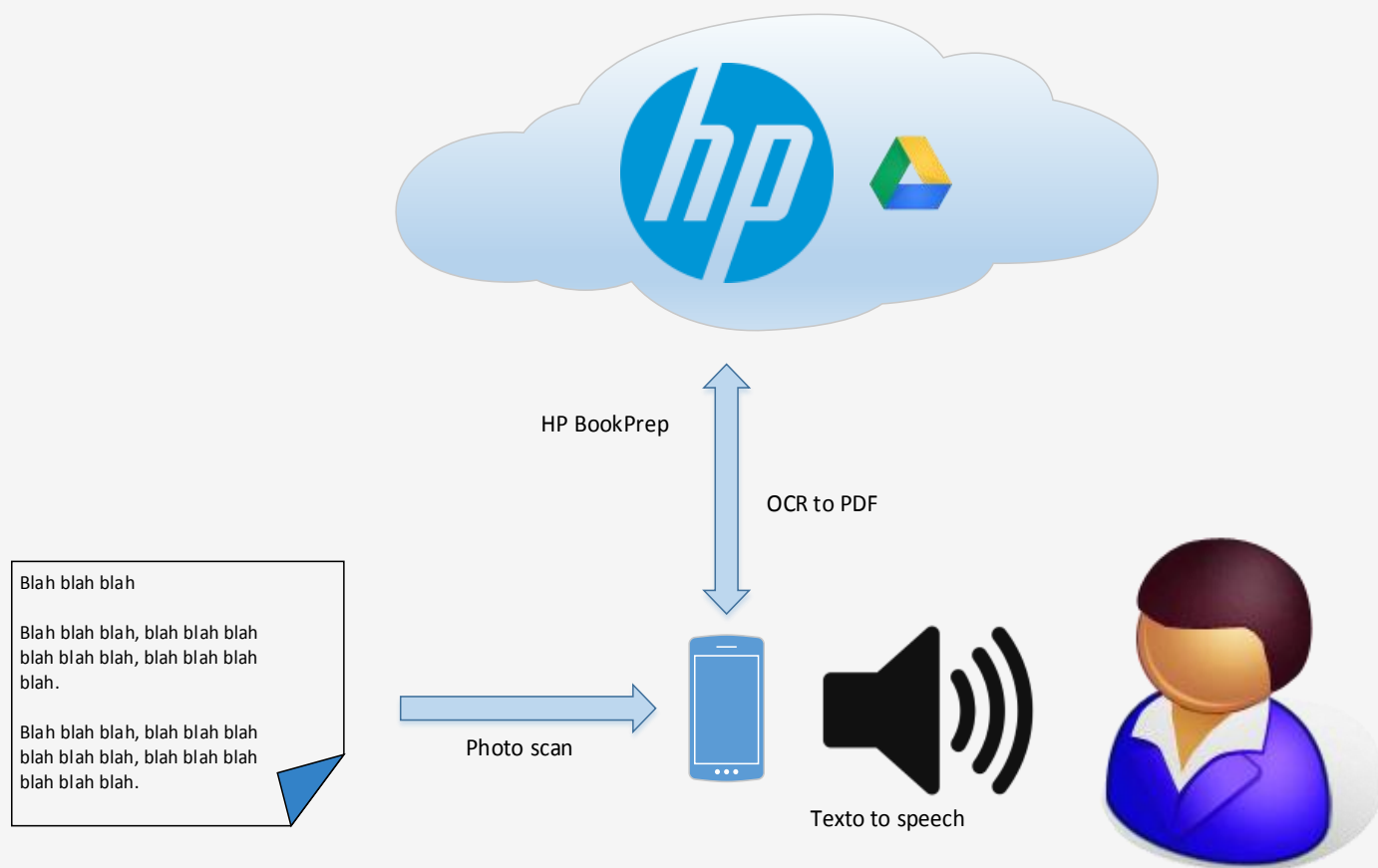
Navigation

- Indoor Navigation Assistant
- Turn-by-turn orientation
- Application can speech several informations about buildings and rooms
- Technologies
 - Android smartphone with NFC
 - NFC tags as waypoints
 - Geodetic coordinates uniformity
 - Buildings information stored @ HPCloud
 - Text-to-speech and vibration



Poster Reader

- OCR + Narration
- Technologies
 - HP BookPrep
 - Google Drive API



Project guidelines

- Uniformity of the geographic location model to ease integration with existing GPS applications
- Inexpensive and off-the-shelf components
- No changes in buildings infrastructure, no wireless network needed for location
- Must be useful for both visually impaired or not

Next steps

- Start navigation tests on HP POA site
- Investigate protection for the NFC tags
- Better and reliable ways to calibrate compass
- Increase assistive services provided through the HP Cloud

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