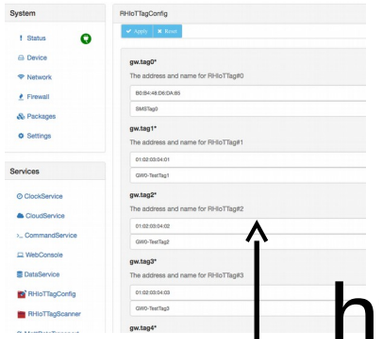
DEVNATION

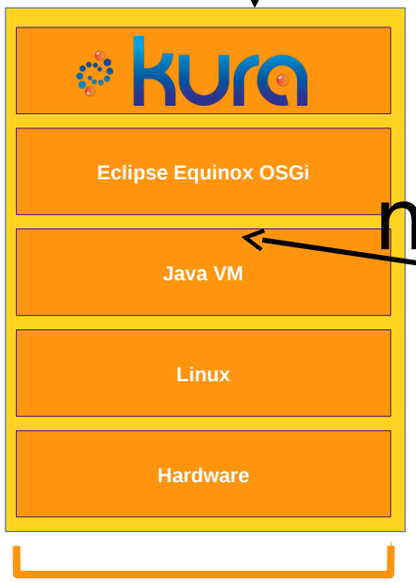
IoT CodeStarter

Building a RHIoTTag Based Game

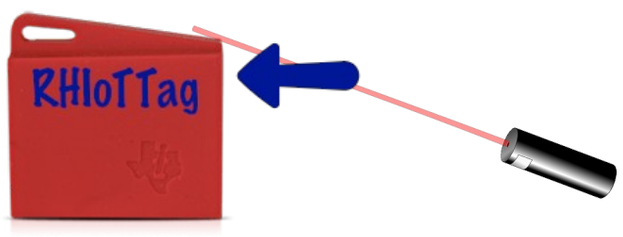
Game Architecture



http://



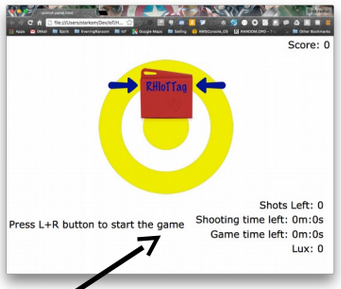
Device/Gateway
(data collection)



mqtt://

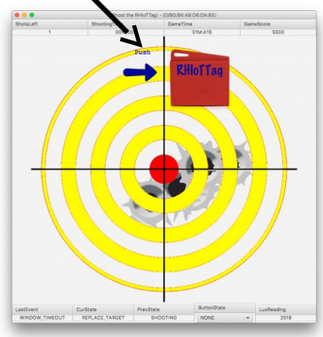
Cloud Msg Broker

Web



ws://

mqtt://



JavaFX

DevNation 2016
San Francisco

Code Projects

RHioTResearch GitHub Repos

https://github.com/RHioTResearch

Infrastructure

- BeaconScannerJNI
  - Bluez BLE stack native code integration
- CoreBeaconScanner
  - Base Java wrapper around BeaconScannerJNI
- RHIoTTagServices
  - Kura service maps BLE events to MQTT msgs based on game state machine logic
- RHIoTTagServicesDP
  - Bundles BeaconScannerJNI, CoreBeaconScanner, RHIoTTagServices into OSGi deployment package
- SensorTagFirmware
  - Customized SensorTag that puts tag into an advertising peripheral mode
  - Source code awaiting TI license changes

RHioTResearch GitHub Repos

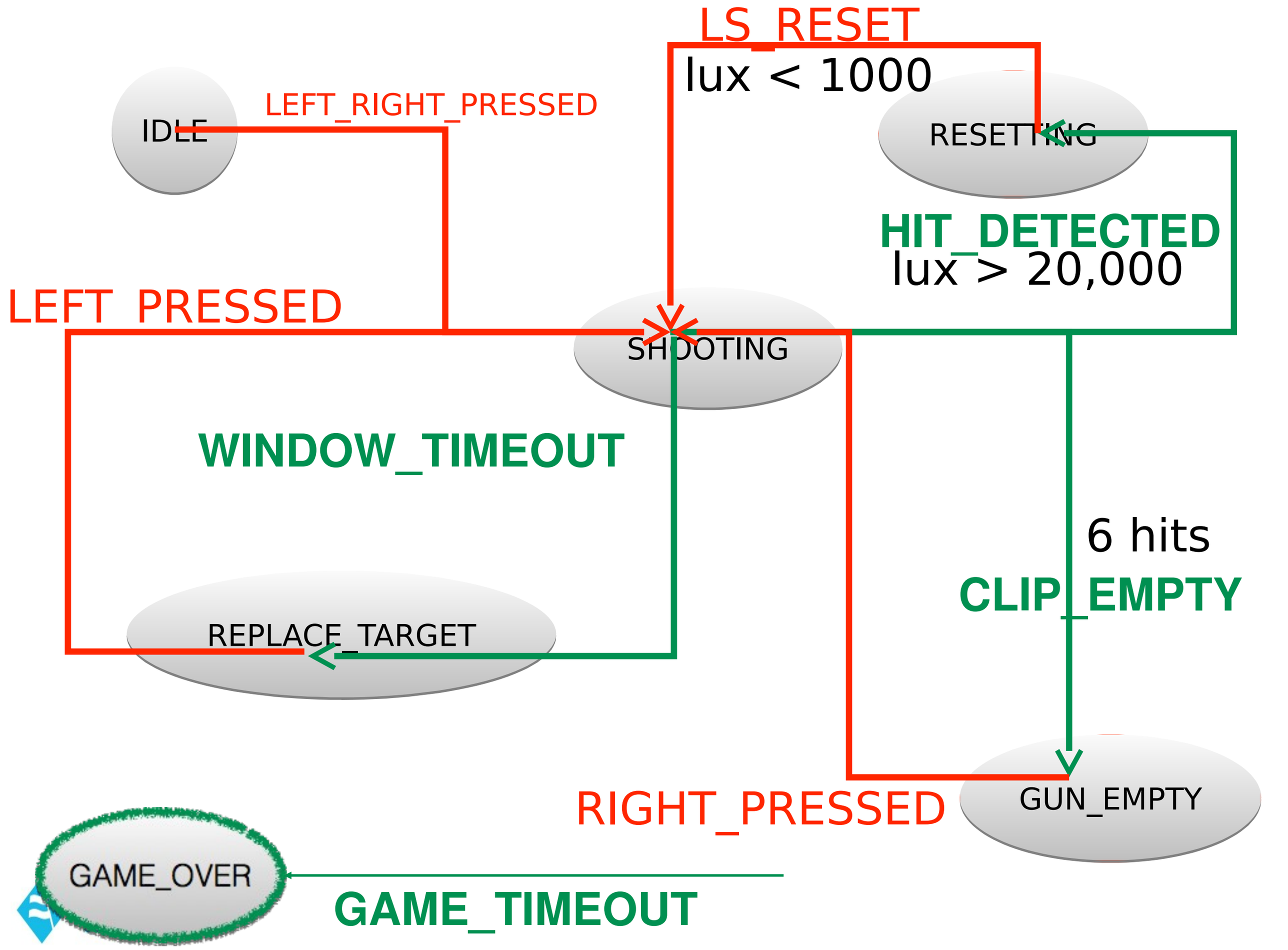
https://github.com/RHioTResearch

Frontend

- RHIoTTagGameProject
  - JavaFX version of game UI you will complete
- RHIoT-Dashboard
  - HTML/JavaScript version of game UI you will complete
- RHIoTTagGameScoreBoard
  - Code for scoreboard UI
- RHIoTTagGameSolution
  - Completed sample JavaFX game UI

Game State Machine

DevNation 2016
San Francisco


LS_RESET
lux < 1000
IDLE
LEFT_RIGHT_PRESSED
RESETTING
HIT_DETECTED
lux > 20,000
LEFT_PRESSED
SHOOTING
WINDOW_TIMEOUT
6 hits
CLIP_EMPTY
REPLACE_TARGET
RIGHT_PRESSED
GUN_EMPTY
GAME_OVER
GAME_TIMEOUT

MQTT Topics

Game Service Publishes to:

DN2016-GWN/org.jboss.rhiot.services.RHIoTTagScanner/data/{tag-address}

N = number of gateway, 0-13
{tag-address} = BLE address of tag sending the data

- You will setup a subscription for your gateway and RHIoTTag BLE address

Metrics, Set 1

Metrics are a named, typed data value found in the messages sent from the cloud broker

- ✔ rhiotTag.keys : int – mask of button states on RHIoTTag
- ✔ rhiotTag.lux : int – raw reading of the light sensor

Sent on receipt of every advertising packet

Metrics, Set 2

- rhiotTag.prevState : string – name of prev game state
- rhiotTag.newState : string – name of current game state
- rhiotTag.event : string – name of transition event

Sent when the game state information changes such as when a key press or state timeout occurs

Metrics, Set 3

- rhiotTag.gameTimeLeft : int – seconds left in game
- rhiotTag.gameScore : int – cumulative game score
- rhiotTag.gameHits : int – total number of target hits
- rhiotTag.shootingTimeLeft : int – seconds left in current window
- rhiotTag.shotsLeft : int – number of shots left in laser pointer

This information is included when the game is active

Metrics, Set 4

- rhiotTag.hitScore : int – score assigned to the hit
- rhiotTag.hitRingsOffCenter : int – number of rings from the center assigned to hit based on intensity

This information is included when a hit is detected

Code Projects

Getting Started

- git clone https://github.com/RHioTResearch/RHIoTTagGameProject
  - The JavaFX based application UI

- git clone https://github.com/RHioTResearch/RHIoT-Dashboard
  - The browser based application UI

- Start with the JavaFX based version as it provides a more complete README.md.

- Open the README.md in each project and follow the steps

Network Settings

WiFi SSIDs/key:

DN2016CS / DN2016CS-wifi

DN2016CS_5G-1 / DN2016CS-wifi

DN2016CS_5G-2 / DN2016CS-wifi