

Graphical User Interface to Control Zigbee Mac/PHY Layers

Jérôme Vernez, Stephan Robert [@heig-vd.ch]

Characteristics

- The goal of the GUI is to control the MAC and PHY layers of a Zigbee Coordinator (IEEE 802.15.4a)
- RS-232 over USB to communicate with the Coordinator
- Functionalities:
 - Send/Receive MAC and PHY primitives
 - Simplified or Normal Script execution
 - Information display about the PAN
 - Graphical result (sensor, network statistics, ...)
 - Storage or send by TCP/IP the data from the PAN
 - Animation with accelerometer data
- Many Applications possible
- Portable Code (Win32, Linux, Mac OS X)

Language used

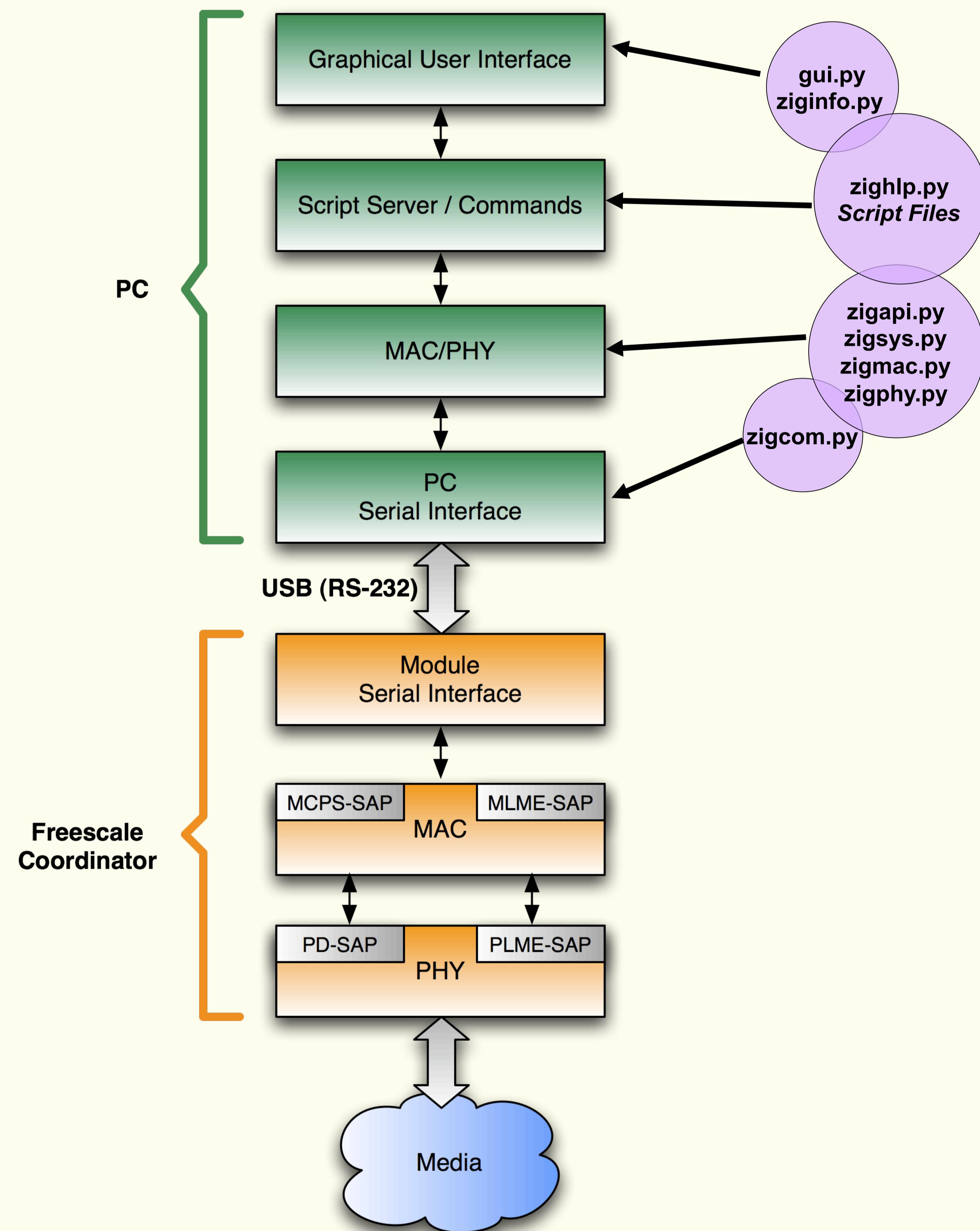


- Quick development
- Portable
- Powerful scripting
- Win32 executable generation (Py2exe)

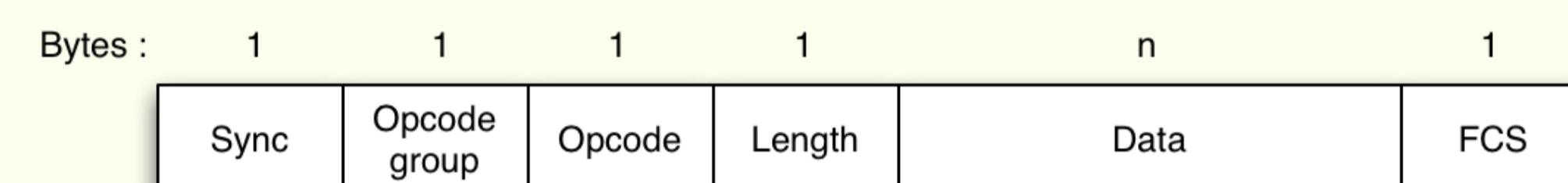


- Many APIs
- Native look and feel
- Very flexible
- Large community and documentation

Architecture and File structure



Generic Command Frame Format



Script Example

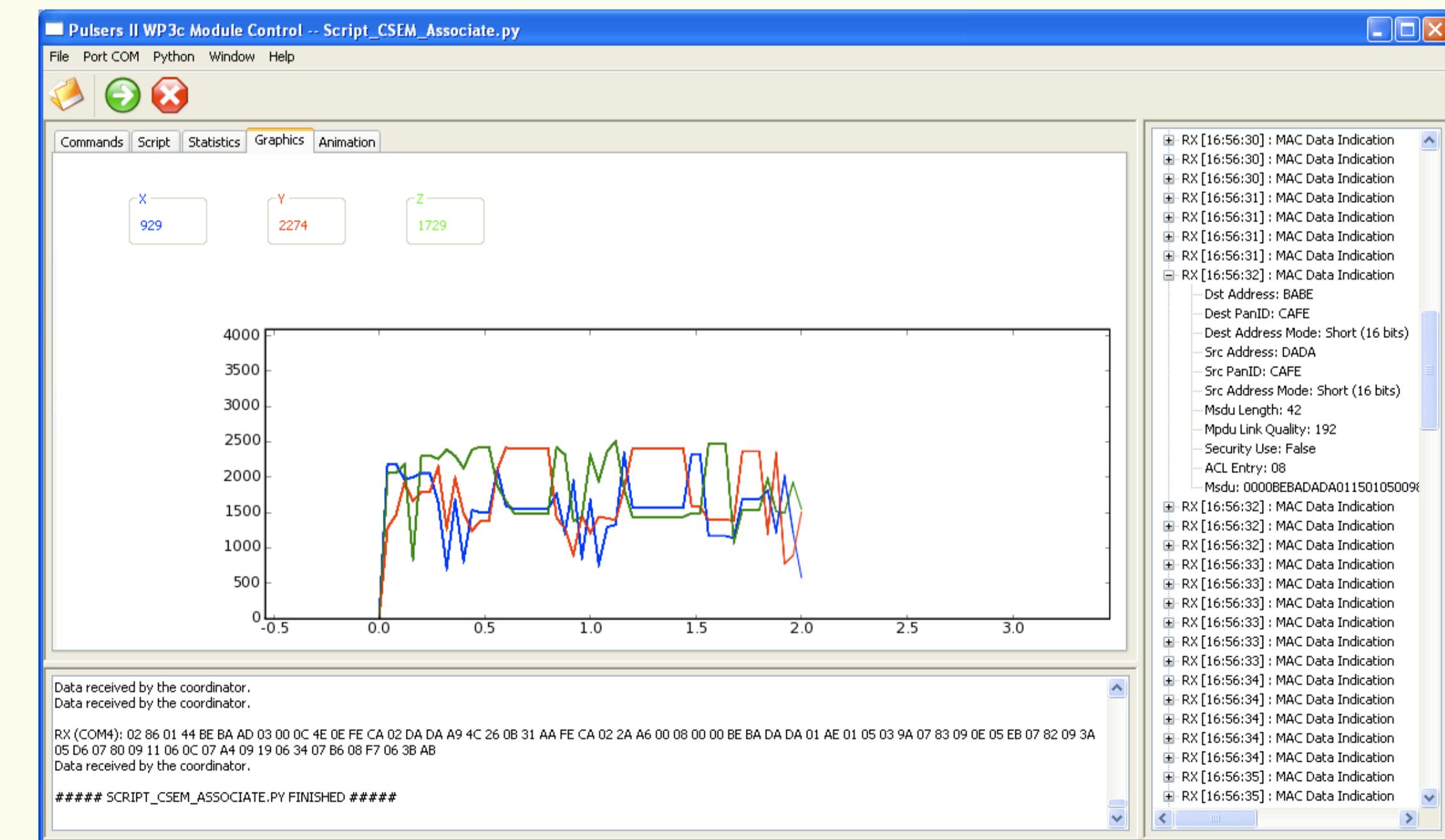
Examples of a Script file to initialize the Coordinator for a future association:

```

#Init one coordinator
Coord = hlp.Init(1) [0]
# Reset Coord
zighlp.ResetDevice(Coord,True)
# Initialize Coord PIB Attributes
zighlp.SetDeviceSettings(Coord, {"cmacAssociatePermit": True})
# Start the PAN
zighlp.StartPan(Coord, {"BeaconOrder": 0x07, "SuperframeOrder": 0x05})
# Wait an association
zighlp.WaitAssociate(Coord)

```

Current Interface (accelerometer plotting)



References:

- Development, Implementation and verification of a UWB Wireless BAN-based Platform with GUI, ICT Mobil Summit 2008, 10-12 June, Stockholm.
- Wireless Body Area Network Platform Verification, PIMRC 2008, 15-18 September, Cannes.