

# Bluetooth Smart Devices and LE on Linux



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INdT

Independent and non-profit Research and Development Institute, founded by Nokia and focused on the generation of new concepts, products and solutions for areas related to mobile technologies and the internet.

## INdT Areas:

- Product Creation
- OSS & UI
- Apps & Services
- Manufacturing & HW Technology

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# Agenda

- Intro to BLE technology
- LE profiles supported by BlueZ
- Broadcaster & Observer
- Current support status
- Work in progress
- Demos

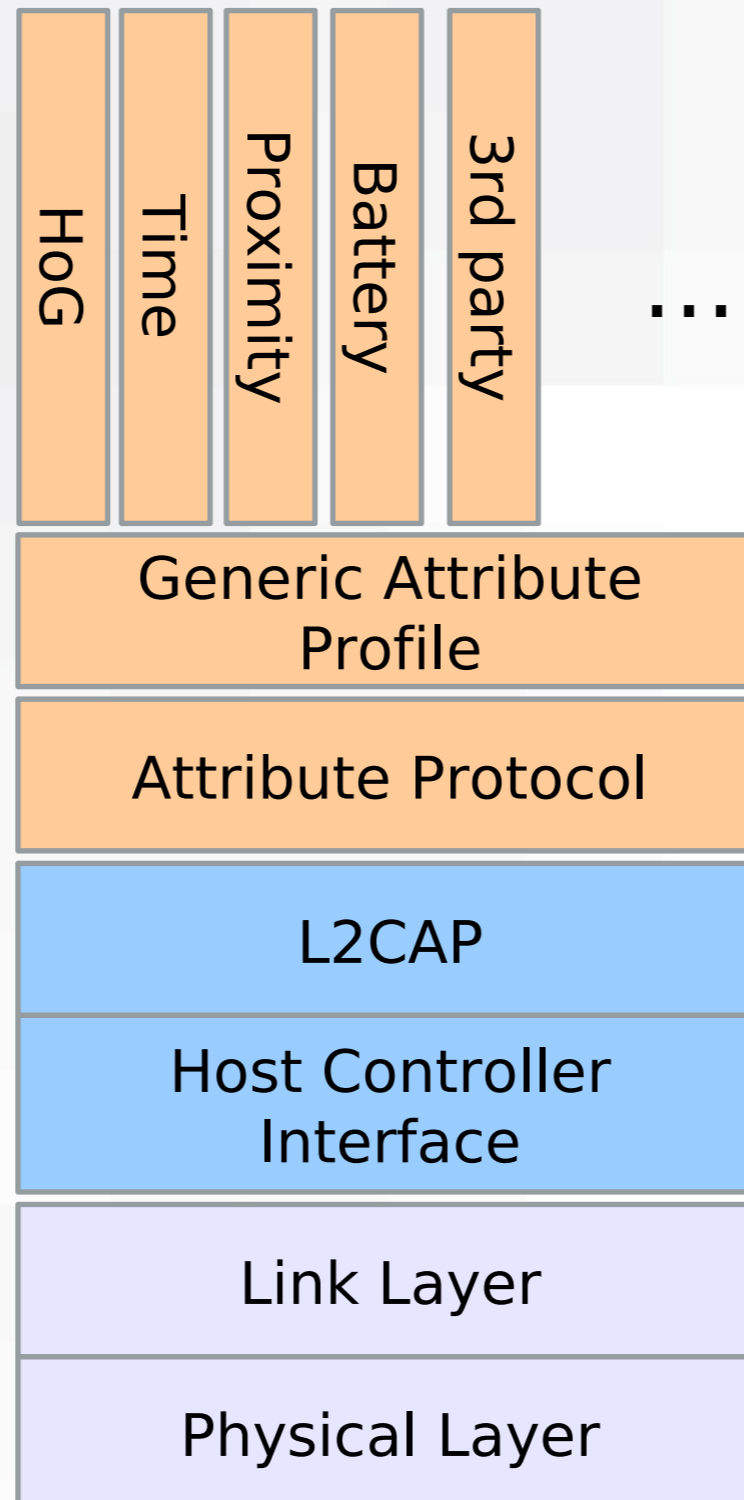
# Bluetooth Low Energy

- Specified in Bluetooth 4.0
- Low power consumption
- Coin-cell battery devices
- Fast connection establishment
- Short range

# Market

- Consumer electronics and PC
- Fitness and Wellness
- Medical
- Mobiles phones
- Sensors and Automation

# BLE System



# Generic Attribute Profile

- Database of attributes
- Characteristics: groups of attributes
  - Declaration
  - Value
  - Configuration
- Services: sets of characteristics
- GATT API

# Proximity Profile

- Reporter / Monitor
- When reporter distances from monitor an alert is emitted
- D-Bus API to set the alert level
- Link loss is supported ATM,  
path loss still to be implemented



# Find Me Profile

- Locator / Target
- Emit an alert on the remote device upon a command (user interaction)
- D-Bus API to set the alert level
- Notification for apps (Target)

# Time Profile

- Synchronizes the current local time
- Timezone and DST information
- No API needed

# Health Thermometer Profile

- Thermometer / Collector
- Temperature measurements at periodic intervals
- D-Bus API to configure the interval and to register an agent to receive the measurements

# HID over GATT Profile

- LE Human Interface Devices
- HID encapsulated into ATT
- No API is needed

# Broadcaster and Observer

- Undirected connectionless data transfer
- Broadcaster
- Observer
- Use-cases
  - Sensors
  - Info advertisement

# BLE support status

- Device discovery
  - LE-only
  - Interleaved
- Connection management
- Security Manager Protocol
  - Just works
  - Passkey entry
- BLE support enabled by default in kernel 3.5, improved in 3.6

# BLE support status

- Generic Attribute API
- Profiles support
  - Proximity
  - Find Me
  - Time
  - Health Thermometer
  - HID over GATT
  - Scan Parameters
  - Heart Rate
  - Cycling Speed and Cadence

# Work in progress

- GATT API improvements
- Broadcaster and Observer APIs
- Profiles
  - Alert Notification
  - Phone alert status



## INFO + CONTACT

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