RUTGERS

Supporting M2M Applications in MobilityFirst Future Internet Architecture

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WINLAB
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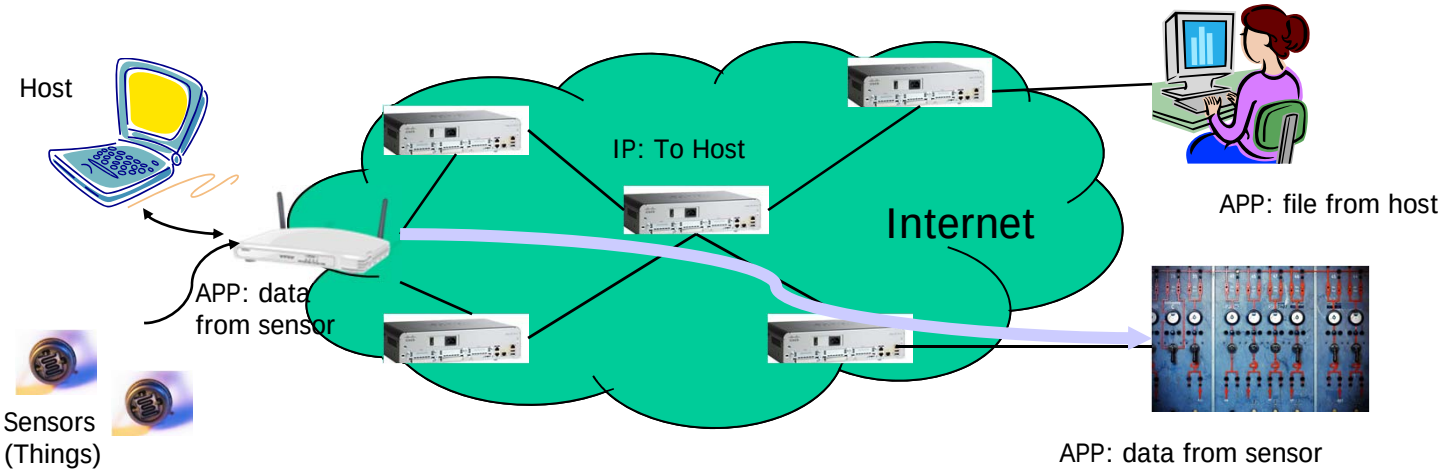
Internet is NOT aware of Things

- A host can be visible to Internet via its IP address
- A sensor is NOT visible to Internet, only visible by an Application



The big issue of M2M

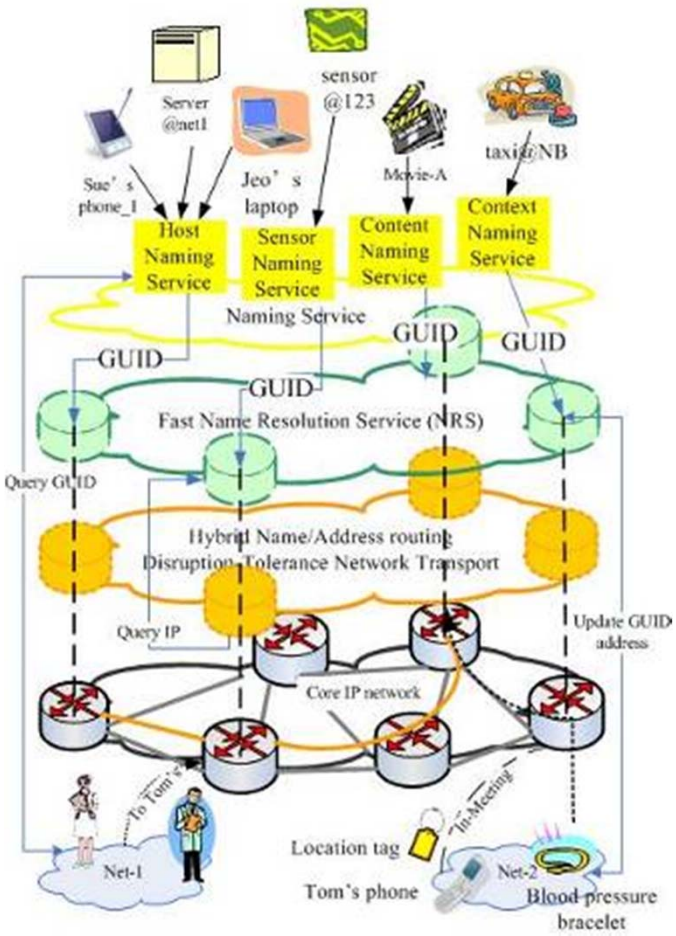
- Current M2M approach is inefficient:
  - Information is isolated, all the way from PHY up to APP layers
  - Too many standards at all different layers, nobody speaks same language. Middleware, web services are hard to standardize.
- Is Internet of Things (IoT) = M2M applications on top of current Internet?
  - If not, some fundamental changes in FIA are expected

The core of *MobilityFirst*

- A globally unique identification (GUID, name) is given for every possible network entities – hosts, sensors, routers, content, context and more…
- Separation of naming and addressing
- Hybrid name/address routing – Internet core is aware of name (GUID)
- Fast name resolution (update and lookup of name/GUID to address mapping) at 50-100ms time scale

- Now sensors can be identified by core network through their names – GUIDs

Overview of *MobilityFirst*

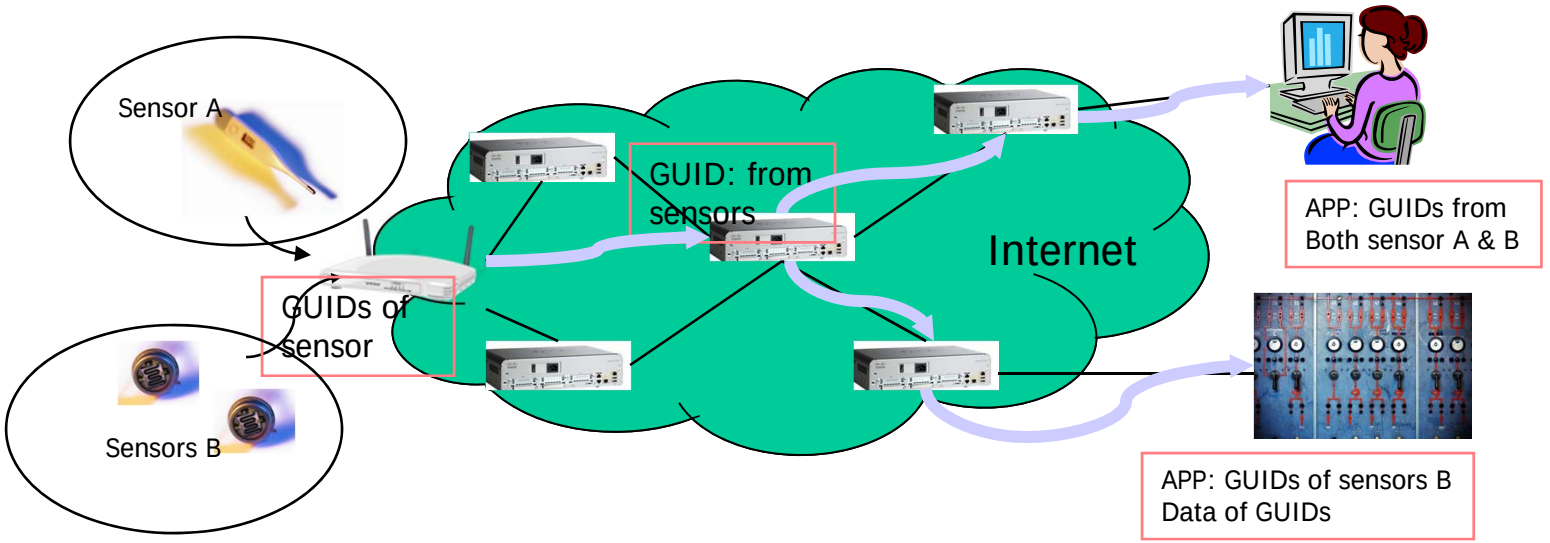


- Multiple name assignment services to give GUIDs (globally unique ID) to network entities
- A fast distributed name resolution service (GNRS)
- Hybrid name/address routing w/ disruptive tolerant network (DTN) transport

This talk focuses on sensors and sensing data

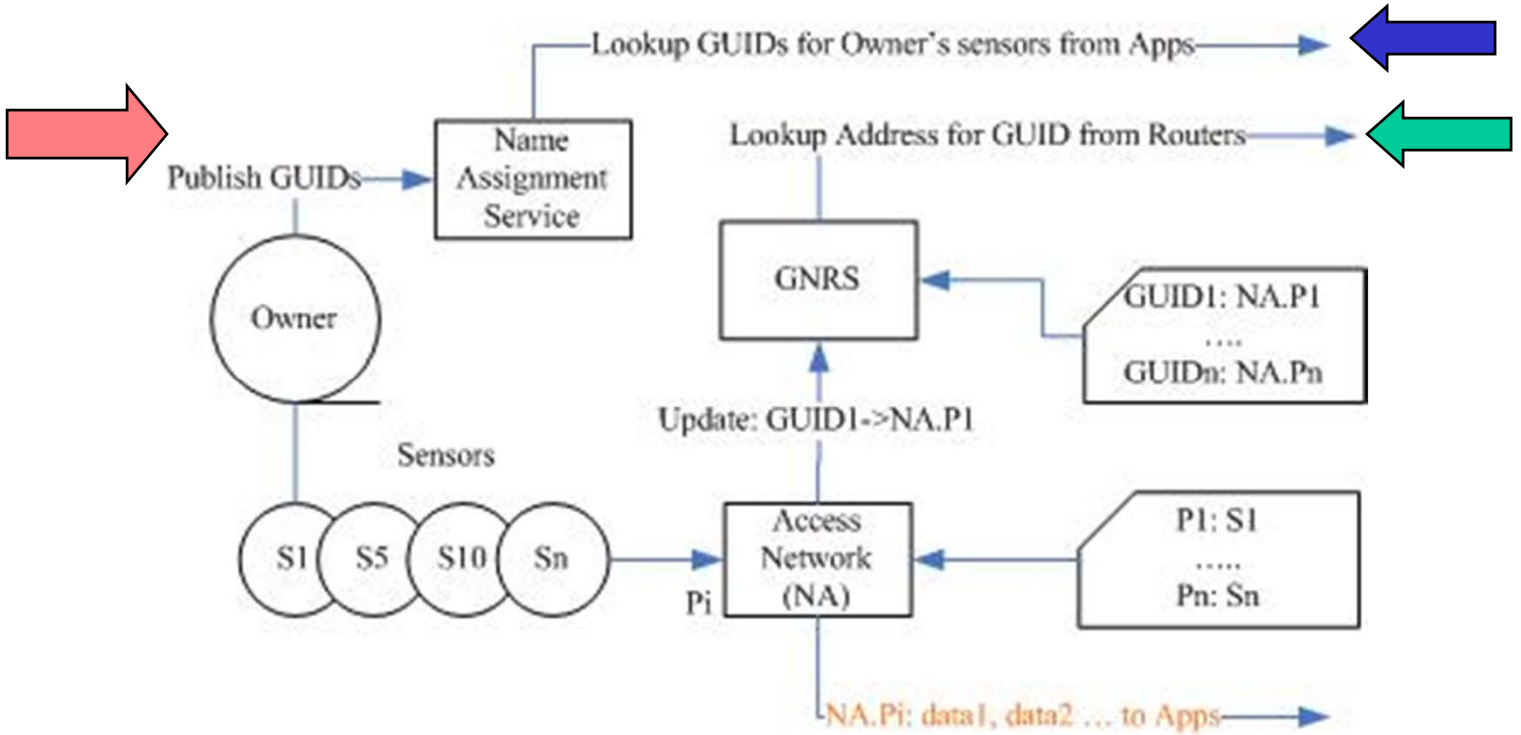
MobilityFirst Approach – GUIDs for Sensors

- Separation of data and applications – breaking the boundaries of isolated sensor islands, better accessibility and deliverability
- Enjoy mobilityFirst features– mobility, security, disruptive tolerant transport and routing



How does it work?

- Name sensors with GUIDs recogizable by MobilityFirst router
- No application specific gateway is required in access network



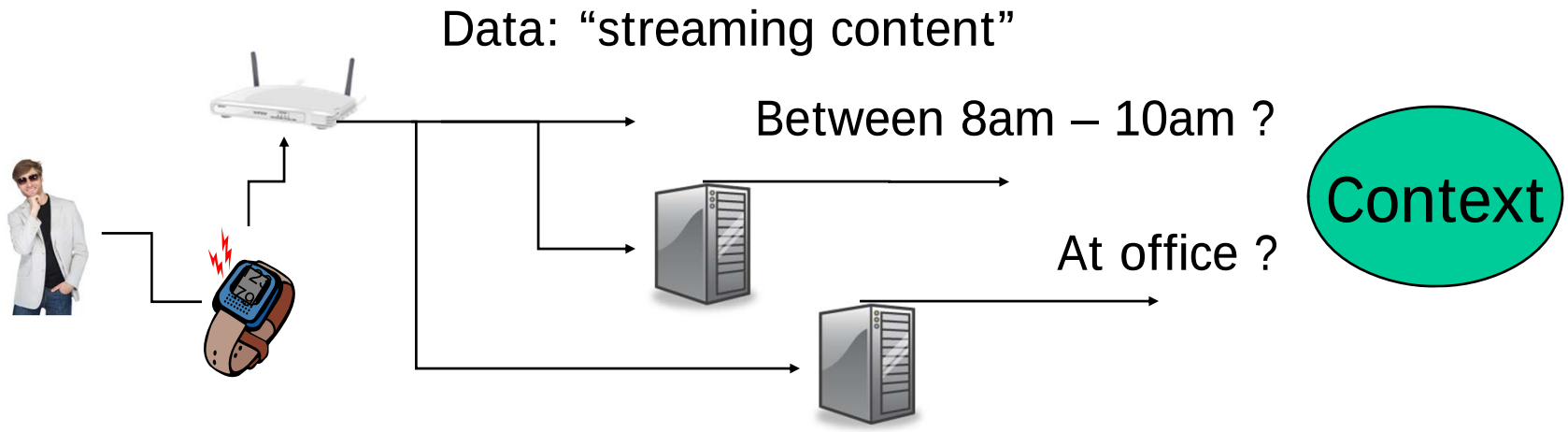
Standardizations

- GUID
  - Manufacture Key, owner Key
- Data format
  - Dynamic description at publisher
  - Standard data description, for example,

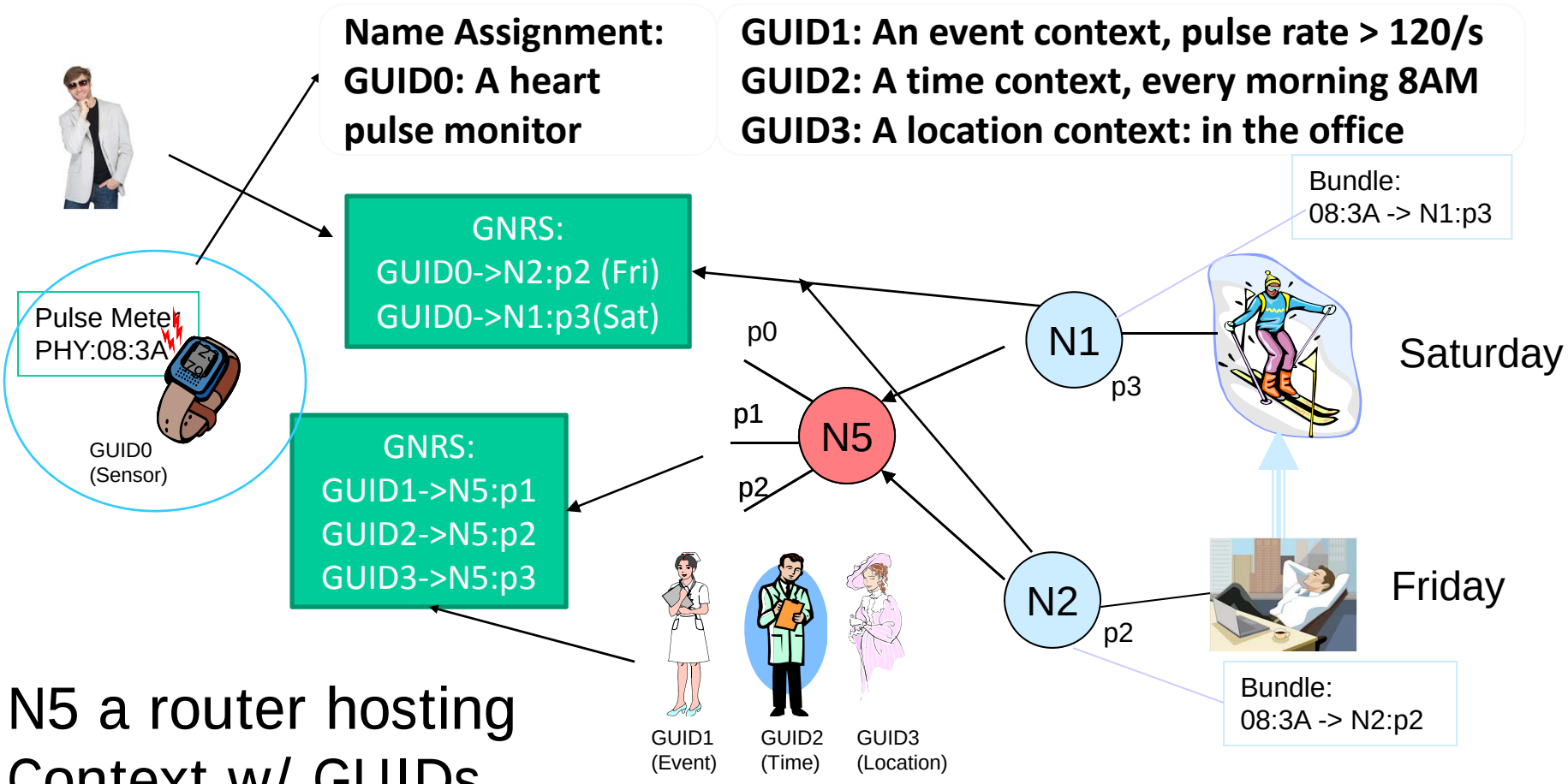
  DATA: GUID; capability name, capability value / <unit>; <cap name, cap value / <unit>>

Sensors as Content

- Sensor data – low rate streaming content
- Use context to handle variations



Context of sensor data



N5 a router hosting Context w/ GUIDs

Thank you!

Questions?