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# Forum on Internet of Things: Empowering the New Urban Agenda

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## IoT Standards Wars

**Sekhar Kondepudi Ph.D.**

Associate Professor

Director, Smart Buildings, Smart Cities & IoT Lab



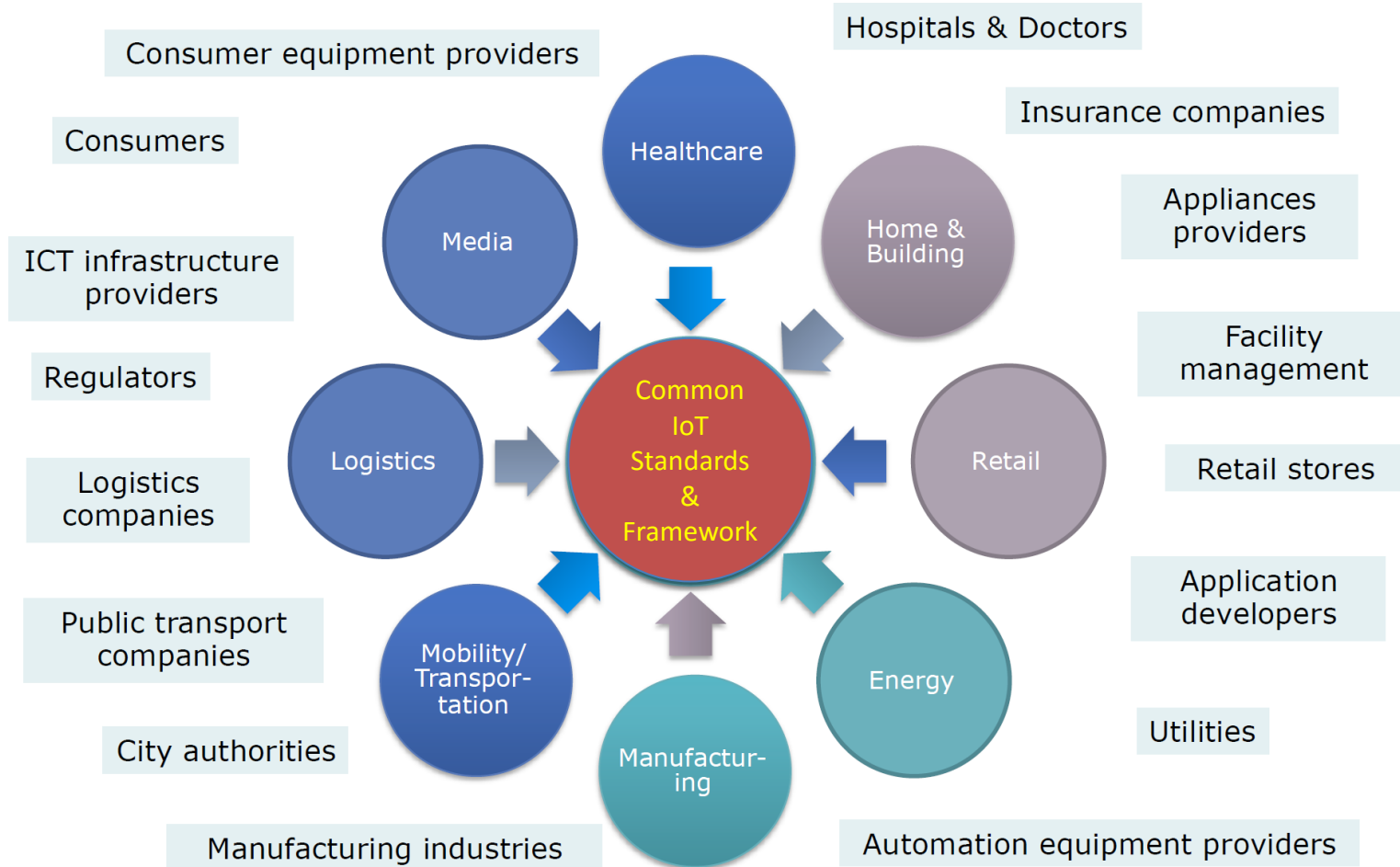
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# Agenda

- Introduction
- Platforms, Technologies and Protocols
- SDOs, Alliances & Industry Groups
- Working Together
- Wrap Up

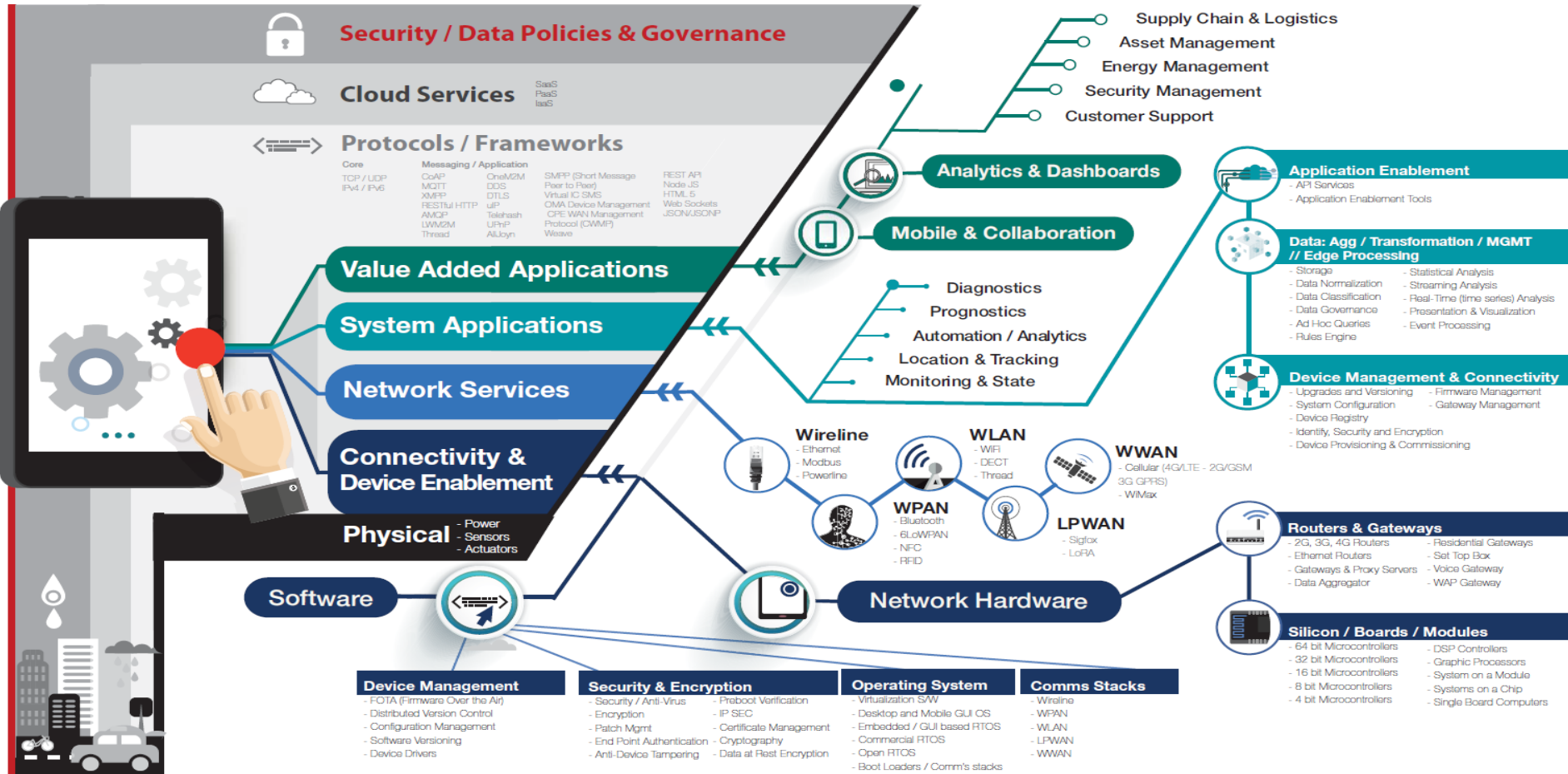


# Multiple Applications & Stakeholders



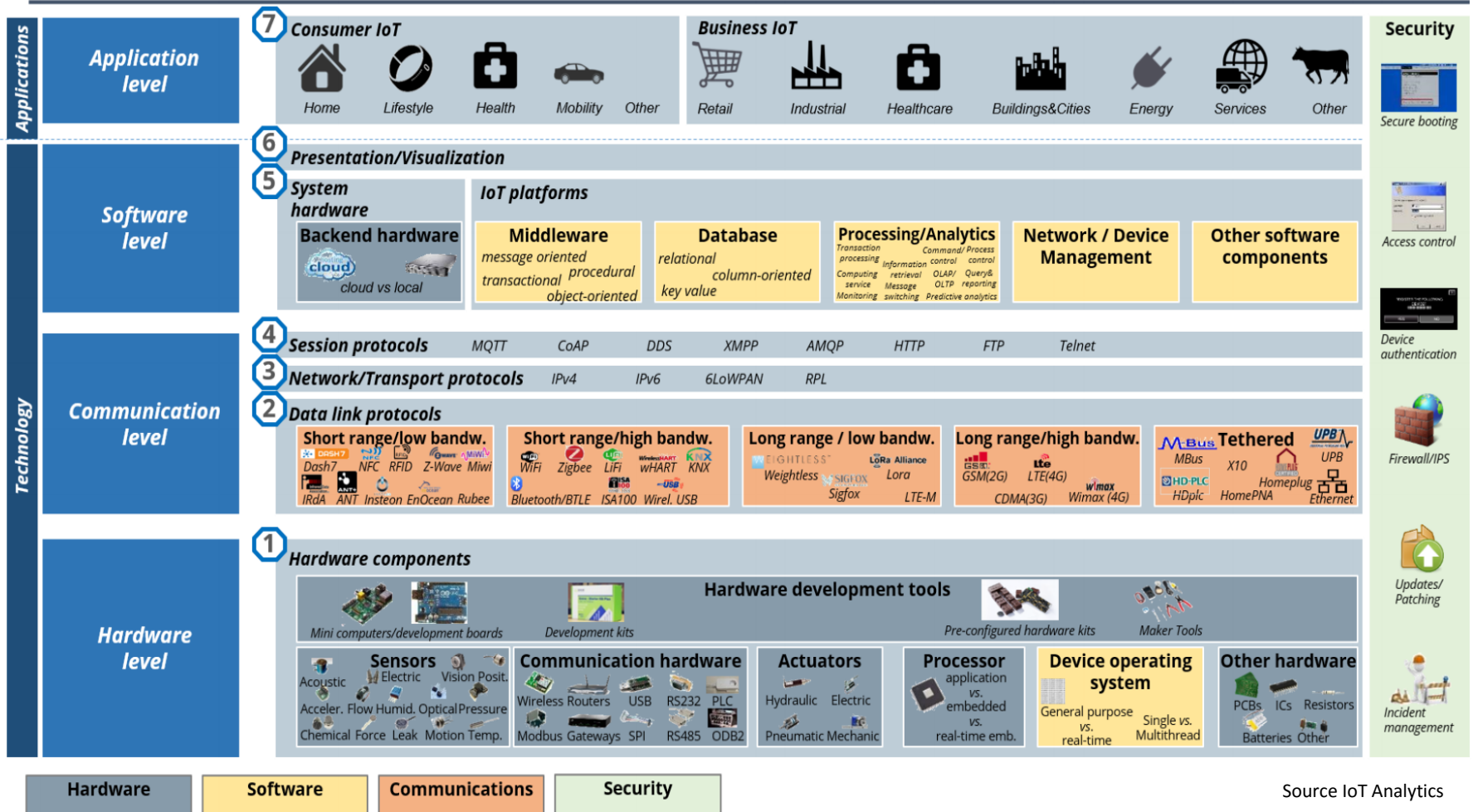
Adapted from IEEE P2413 Presentation

# The IoT Technology Landscape

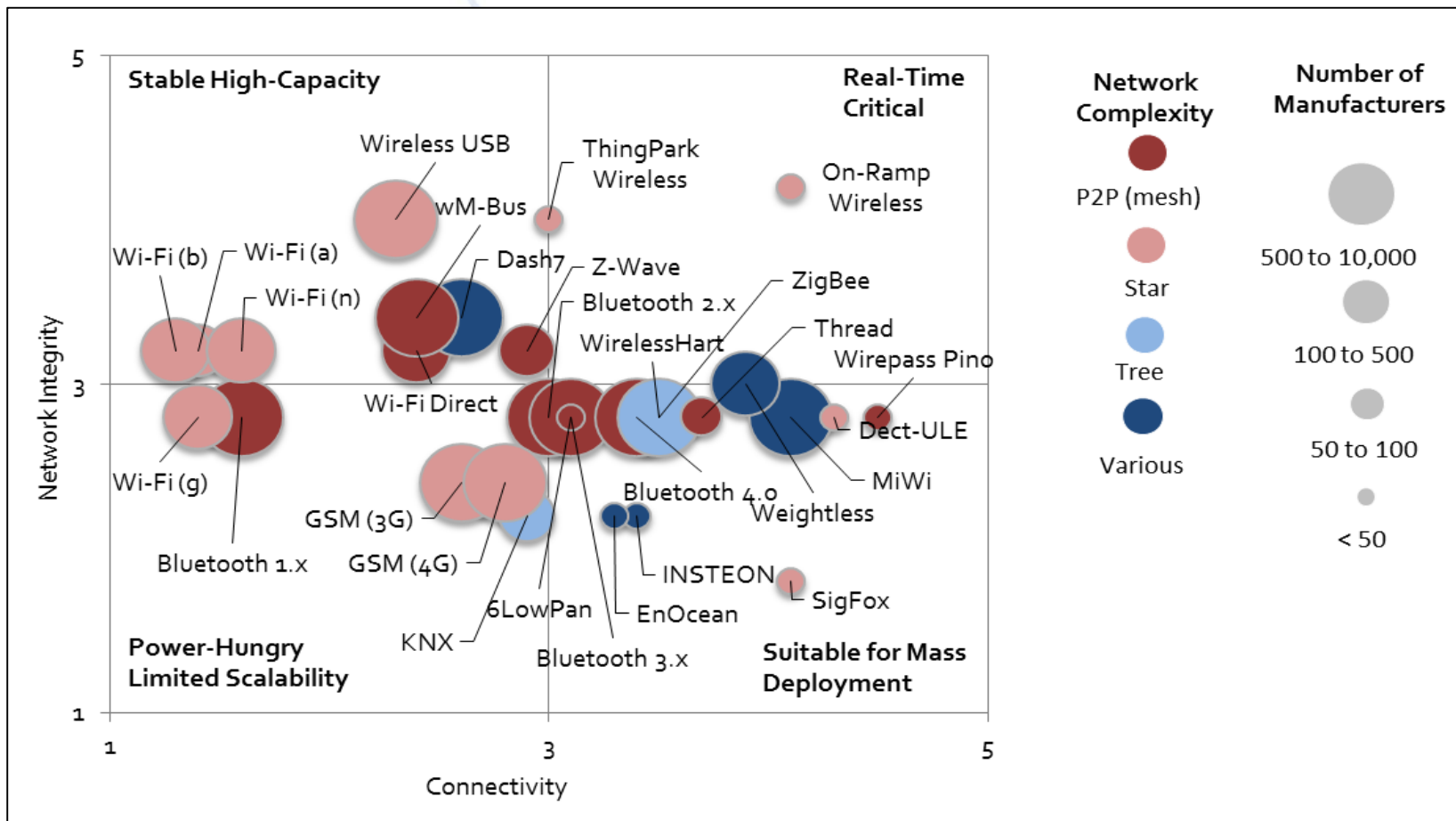


Harbor Research

# IoT Architecture with Many Part Pieces

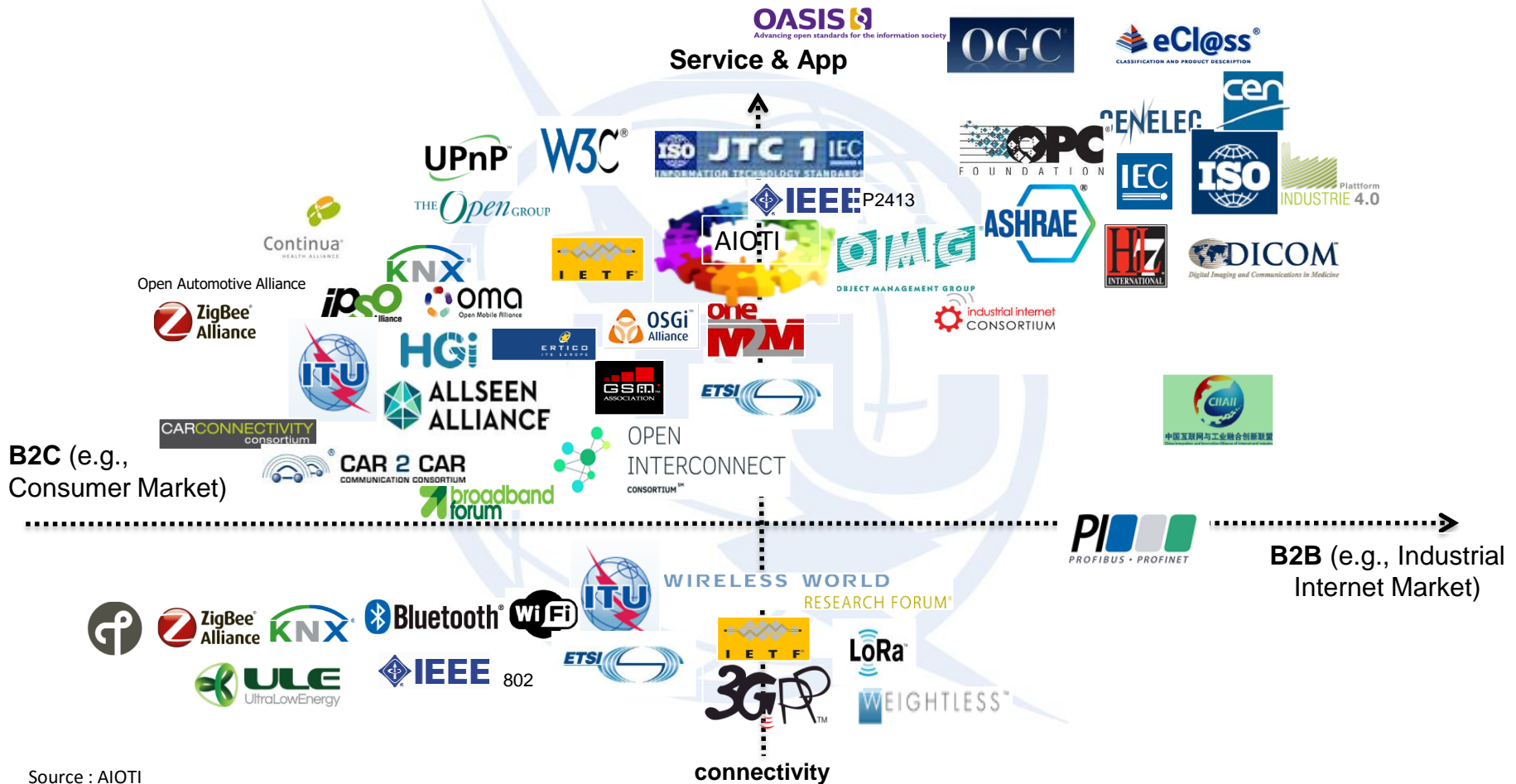


# IoT Wireless Landscape



Lux Research

# IoT SDOs and Alliances Landscape





# IoT Platform Technologies



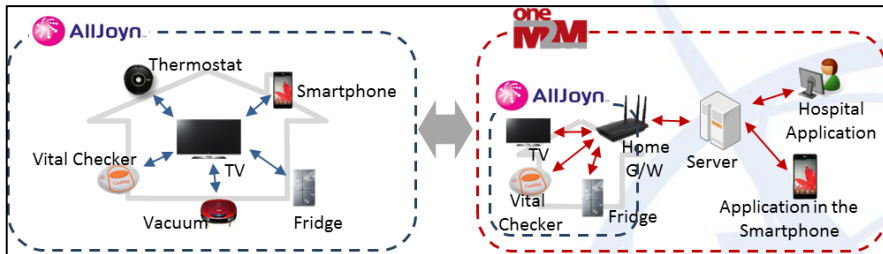
# The Big Boys

<p><b>AllSeen Alliance</b></p>	<p><b>Industrial Internet Consortium</b></p>
<p><b>Open Interconnect Consortium</b></p>	<p><b>Thread</b></p>



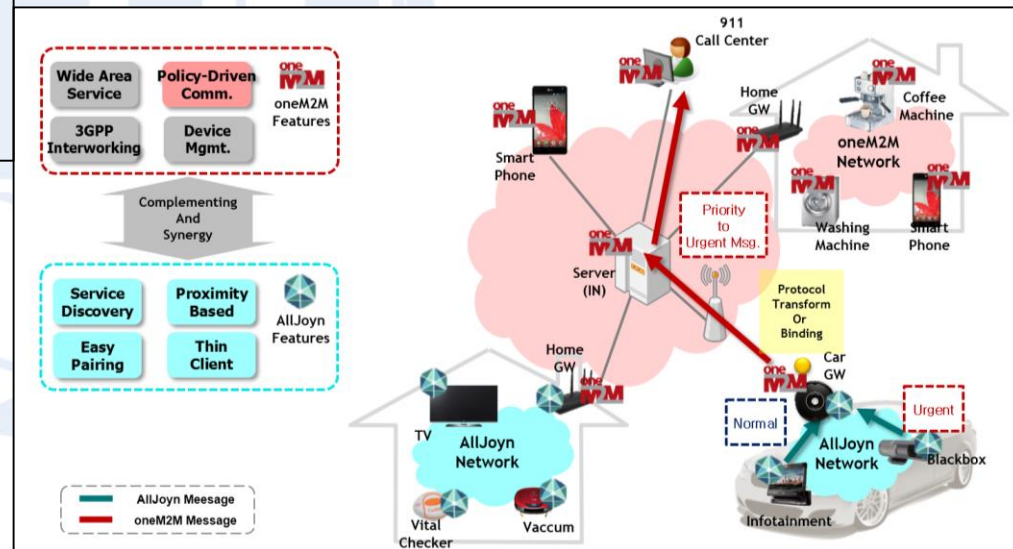
<p><b>one M2M</b></p>		
<p><b>ARIB</b> www.arib.or.jp/english</p>	<p><b>atis</b> www.atis.org</p>	<p><b>CCSA</b> www.ccsa.org.cn/english</p>
<p><b>TTA</b> www.ttaonline.org</p>	<p><b>TTA</b> www.tta.or.kr/English</p>	<p><b>TTC</b> Telecommunication Technology Committee www.ttc.or.jp/e</p>
<p><b>broadband forum</b> www.broadband-forum.org</p>	<p><b>Continuum</b> www.continuumalliance.org</p>	<p><b>HGI</b> www.homegatewayinitiative.org</p>
<p><b>ngm2m</b> www.ngm2m.jp</p>	<p><b>OMA</b> Open Mobile Alliance For a Connected World www.openmobilealliance.org</p>	<p><b>ETSI</b> World Class Standards www.etsi.org</p>
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# Example of Working Together

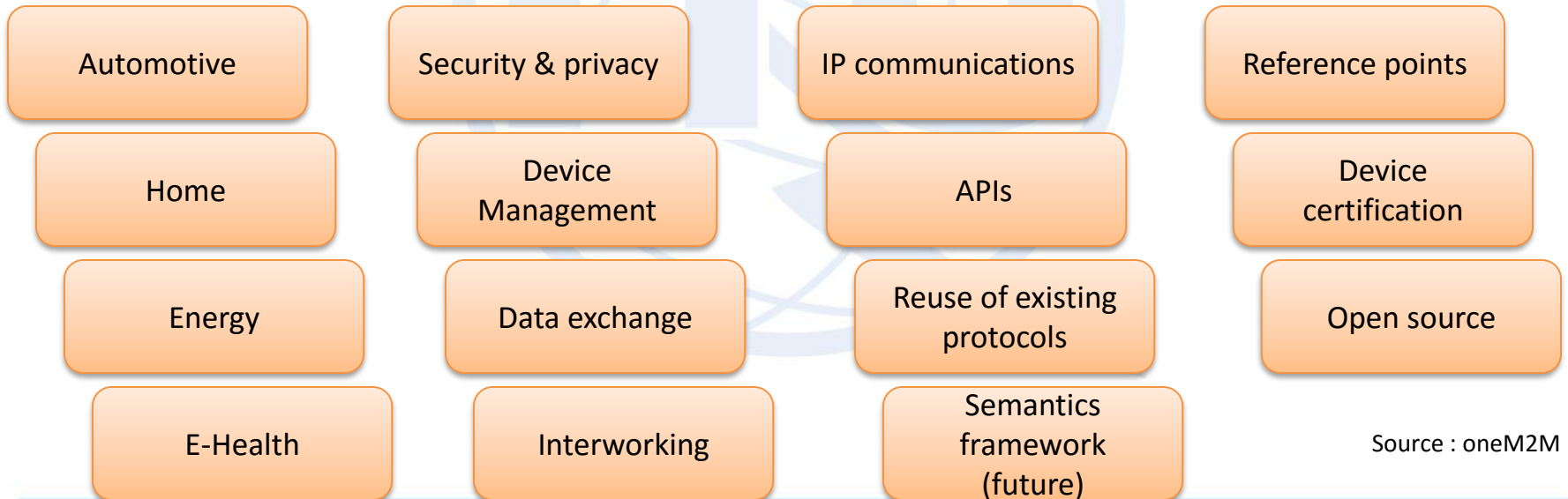


	AllJoyn	oneM2M
<b>Network Architecture</b>	Peer-to-Peer in LAN	Server-to-Client in WAN
<b>API Style</b>	RPC(RMI) API (Publish-Subscribe under development)	Resource-based API
<b>Discovery Style</b>	Proactive Discovery	Passive Discovery

Source : OneM2M



# Standardization Approach



Source : oneM2M

# Why does Standardization Matter ?

1

**Combat fragmentation**

- Healthy eco-system with economies of scale
- More partnering choices and opportunities for IOT industry stakeholders

2

**Lower CAPEX**

- Standardized protocols / APIs -> simplifies application development/deployment
- Cross-vertical standards -> same devices and back-ends in different industries

3

**Lower OPEX**

- Standard features to use networks more efficiently -> get better tariffs
- Flexibility for verticals -> utilize best transport network meeting business needs

4

**Time to Market**

- Reduced development, test and deployment lifecycles through focusing on core business (application logic)

Source : IEEE P2413

# General Observations / Suggestions

- Still Early Days
  - Many Initiatives
  - Reminiscent of VHS vs. BetaMax
  - Very Device & Consumer Centric
  - Not Smart City / Urban Centric
  - Many Proprietary Solution in Marketplace
  - Urgent Need for Standards – @ Internet Speeds
  - Must be truly Global – Applicable to both Developed and Developing World, especially since IoT is like 3 or 4G where the developing world will leapfrog technology history.
- Conduct detailed survey of current standards activities
  - Continually engage with other SDOs / Alliances and ensure there is open dialog and discussion
  - Understand their Context and Problems they are addressing
  - Develop understanding of the ITU and member states in terms of IoT especially in relation to Smart Sustainable Cities and Urbanization
  - Identify and address “gaps” and adapt appropriate pieces from other SDOs to the ITU standards activities as needed.



Sekhar Kondepudi  
[sekhar.kondepudi@nus.edu.sg](mailto:sekhar.kondepudi@nus.edu.sg)

M : +65 98566472

