IPSO Semantic Working Group

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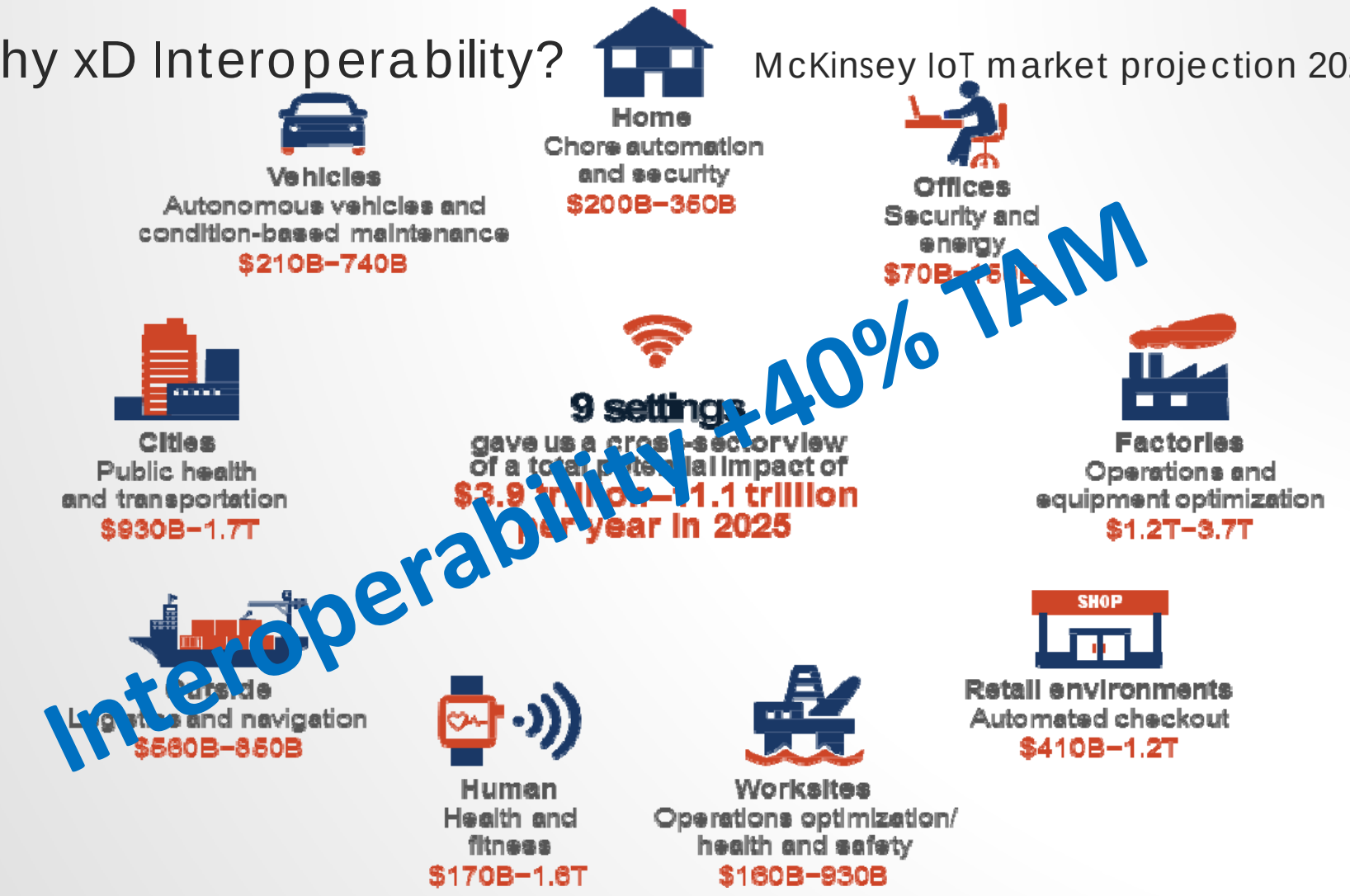
IPSO Sematic Interoperability WG

- Formed in 2016 after IPSO SO phase to work on interoperability across specifications and domains
  - Work with other specs, backward compatibility IPSO SO
- Not (yet another) data model
  - Representation of salient features of other models for interoperability
  - Terminology: “meta” model representation, annotation, markup?
  - Work plan
    - Architectural principles, requirements, meta-model description, mappings… OCF

Why xD Interoperability?

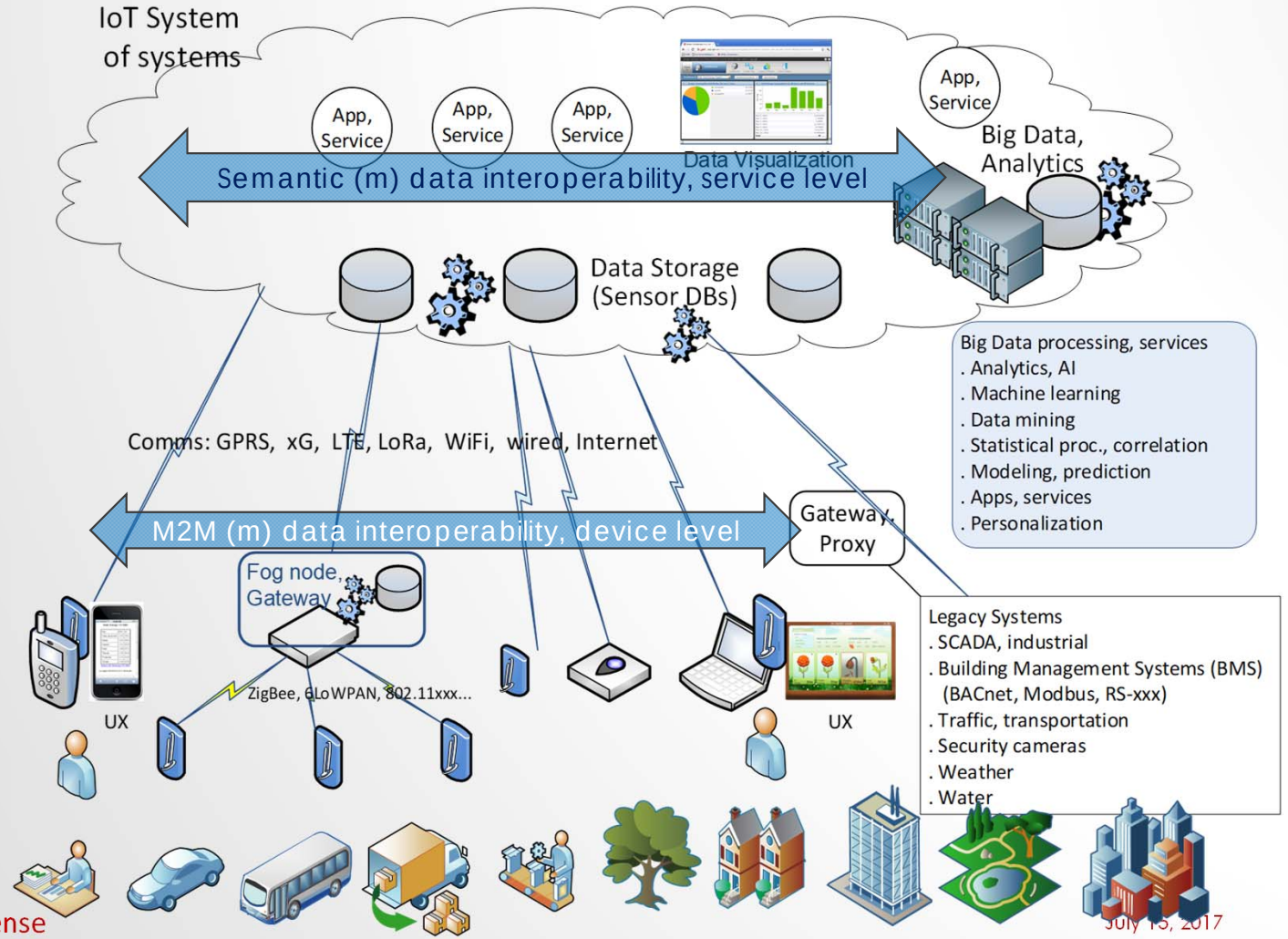


McKinsey & Co Global Institute report "IoT: Mapping the Value Beyond the Hype"

Why Interoperability?

- That 40% IoT TAM increase, and
- Enable IoT data aggregation across verticals and domains
  - Deliver IoT big-data promise: interoperable large, diverse data sets
  - Portable apps/services: data mining, analytics, optimization, ML, viz
  - Customers own their data – avoid vendor and cloud lock-in
- Who needs this? (few examples)
  - Smart buildings: HVAC, lighting, occupancy, elevators, security
  - Building operators: optimize across a portfolio of buildings, BMSs
  - Smart cities: holistic view of disparate systems: buildings, energy, transportation, lighting, security, emergency response
  - Industrial: optimize processes with multi-vendor machinery, tools
  - Transportation: collect data on traffic, mapping across vendors, v2v
  - Others …

Interoperability: what exactly?



Interoperability: what exactly?

- [IIC] conceptual interoperability: represent information in a format whose meaning is independent of the application generating or using it
- Data interoperability, multiple flavors
- Semantic, "service-level" interoperable data format across specifications, providers, and domains
- Syntactic, "device level", M2M. (most current standards)
  - Structured objects and properties to reflect physical objects
  - Interoperability intra-domain (spec), monoculture
  - Some specs also cover discovery, management, provisioning, security

IPSO Semantic WG, current status

- Cross-domain, “inter-specification” interoperability
  - Will work on both semantic and M2M (syntactic) interoperability
- Assumptions etc.
  - IoT system is in fully functional state (we don’t specify how) nodes discovered, configured, provisioned, security established
- Test use[r]s
  - Syntactic interop – universal home controller, heterogeneous devs
  - Semantic interop – cloud service API for aggregated data, sm. city
- Work in progress
  - Syntactic is a harder problem, needs data and interactions interop
  - Start with common data, meta-data interoperability = semantic
  - Re M2M (syn), define useful (reduced function?) interoperability

IPSO SemWG, other Q&As

- Opportunities for integration
  - Plenty, supposed to work with all others
- Opportunities for collaboration
  - Actively discussing partnerships
    - Progression: interest, technical, formal
- Research opportunities
  - Meta-annotation: format, expressiveness, completeness
  - Algorithmic vs. manual translation
  - Data, meta-data retrieval: APIs, languages?
  - Interactions: events, commands – representation and operation

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