Proposed ASHRAE Standard 223P

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All material presented here is the presenter's view on the AP-WG and 223P work, and does not represent an official ASHRAE position.

2019 Haystack Connect

Smart Data. Smart Devices. Smart Buildings. Smart Business.

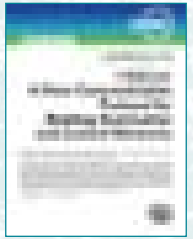
- Proposed ASHRAE Standard 223P
- Semantic Interoperability
- Domains and Models
- BAS-IM Model Scope
- 223P Contents
- Haystack 4.0 & Application Profiles

Proposed ASHRAE Standard 223P

"Designation and Classification of Semantic Tags for Building Data"

- The purpose of this standard is to provide a dictionary of uniform semantic tags. These tags shall be interoperable use of descriptive information on building data.

- This standard provides a dictionary of semantic tags for descriptive tagging of building data including building automation and control data along with associated systems.

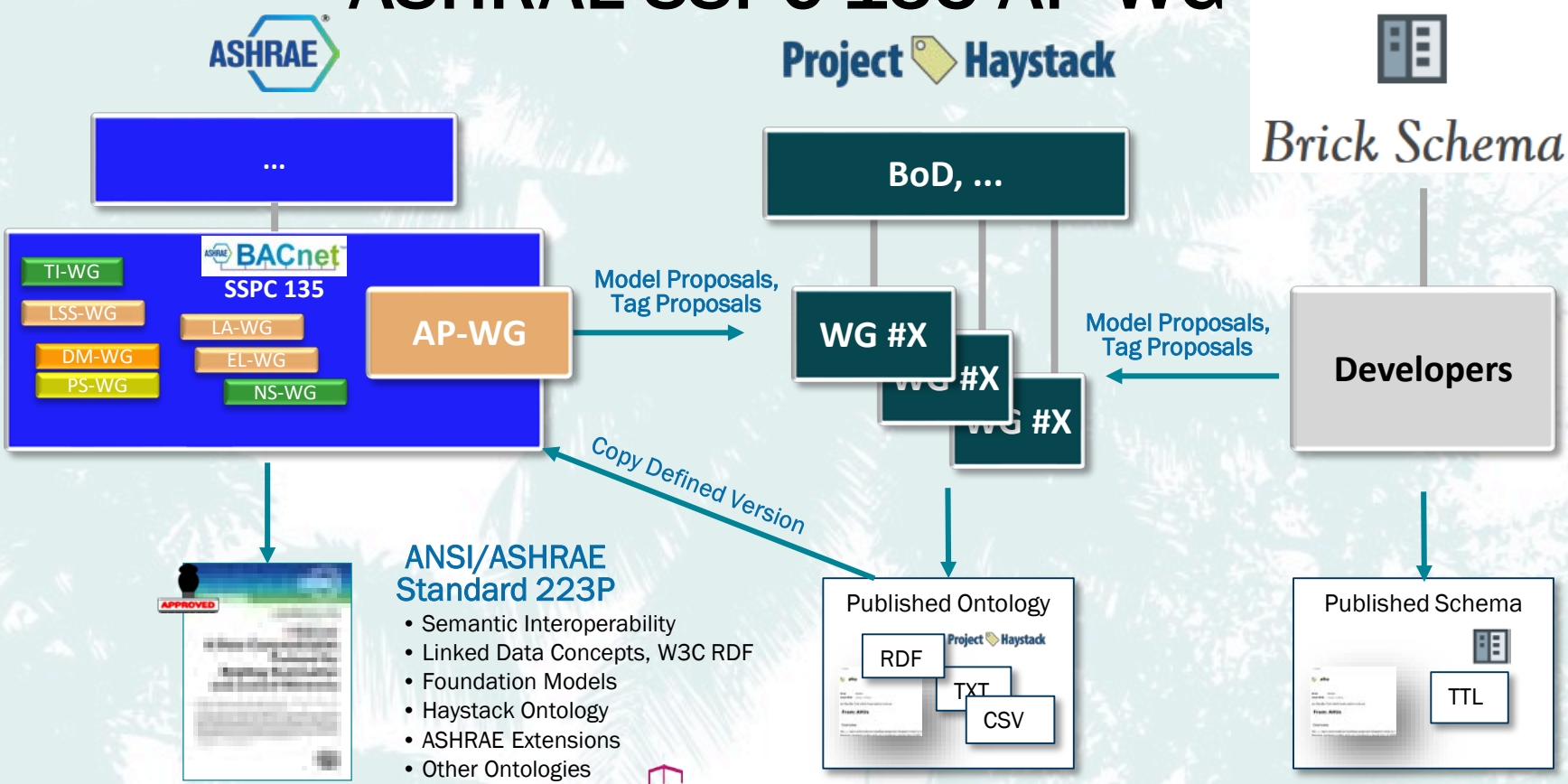


TPS = Title, Purpose, Scope

ASHRAE SSPC 135 AP-WG

- ASHRAE SSPC 135 is the BACnet Committee
- AP-WG is the Application Profiles Working Group of SSPC 135
- Historically, this group discussed ways to define "Application Profiles" for standardized representation of complex structures:
  - Use of BACnet Objects and Properties
  - Use of BACnet Structured View Objects
  - Use of Semantic Tags in BACnet Objects
  - Use of Linked Data, Semantic Interoperability
  - Reach out to Project Haystack and Brick
  - Proposal for new ASHRAE Standard, independent of BACnet
- AP-WG in charge of drafting Proposed ASHRAE Standard 223P

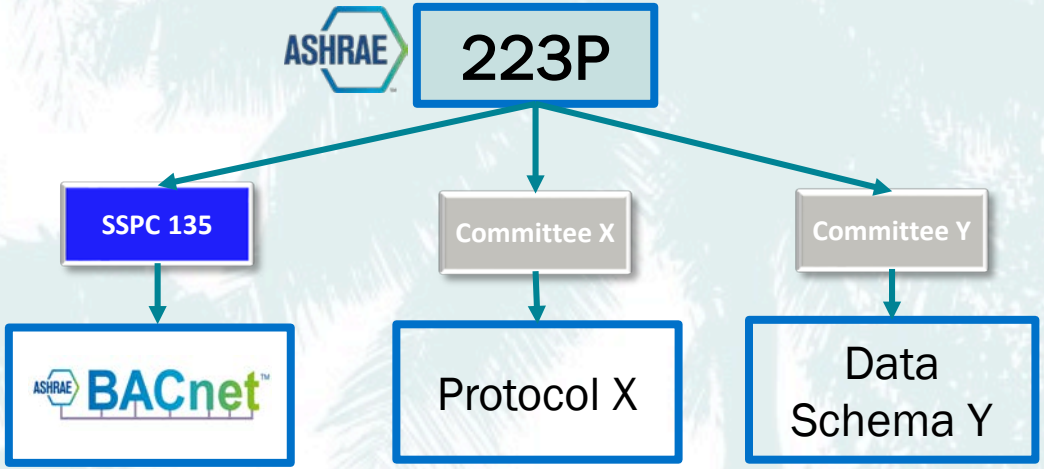
ASHRAE SSPC 135 AP-WG



Intended Way to ISO Standard

ASHRAE Standard 223P and BACnet

- 223P supports semantic interoperability for building data
- Support in particular protocols or data schemas is specific to those
- SSPC 135 will need to define how 223P is supported in BACnet objects, device descriptions, and the Abstract Data Model



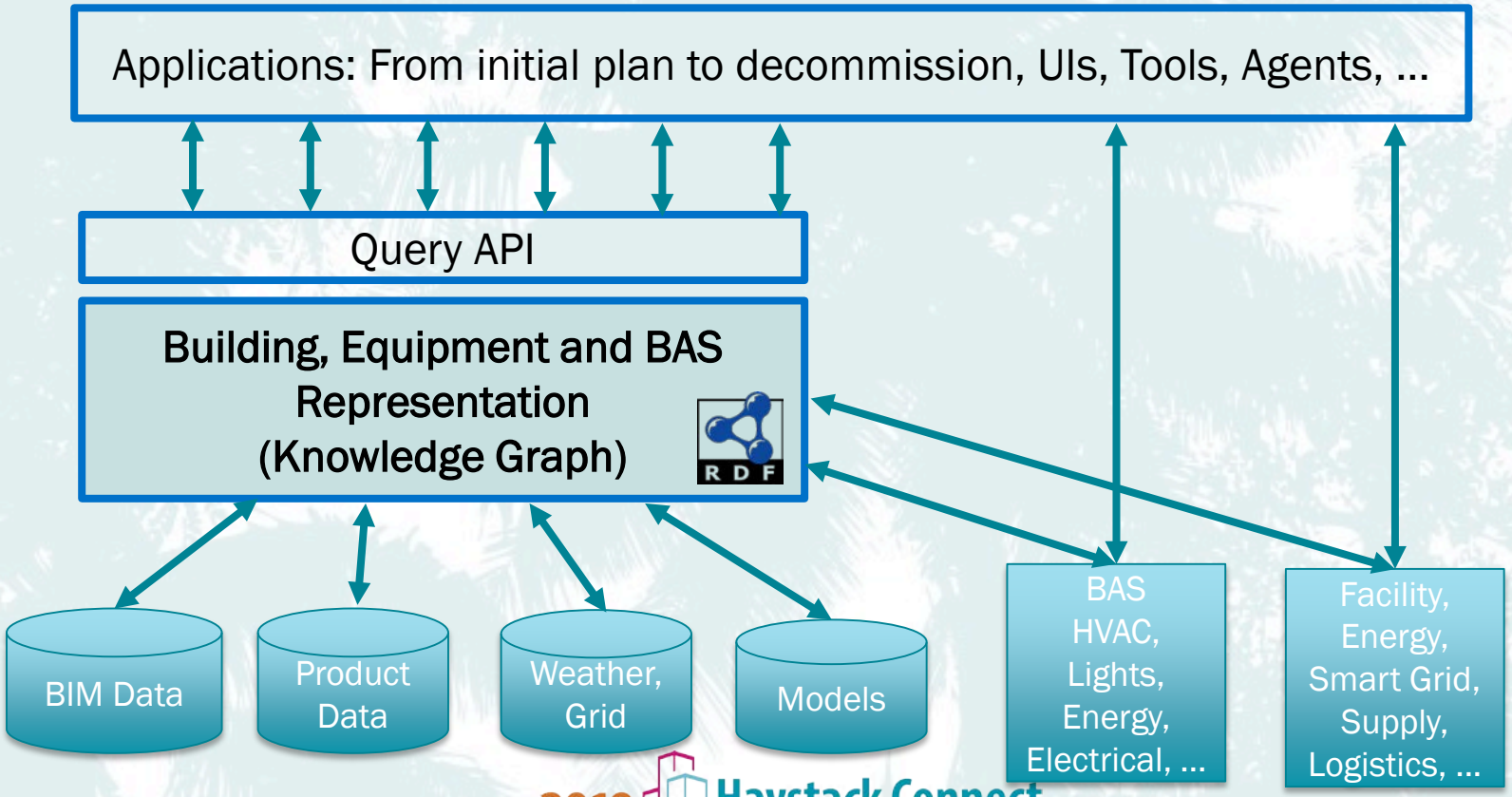
Current TPS Discussion

"Designation and Classification of Semantic Information for Building Data"

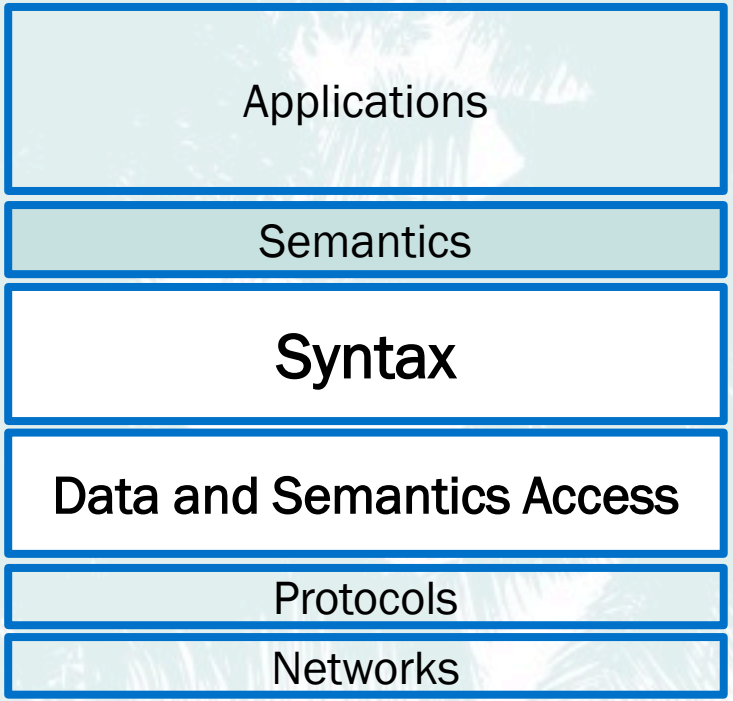
Building Automation Systems Information Model (BAS-IM)

- The **purpose** of this standard is to define an abstract, linked data information model defining concepts and requirements for describing building automation systems to promote semantic interoperability.
- The **scope** of this model includes equipment such as chillers, air handlers, and VAV controllers, the sensors and actuators used for control applications, direct digital control devices, and the connections between them.

Architecture Model



Semantic Interoperability



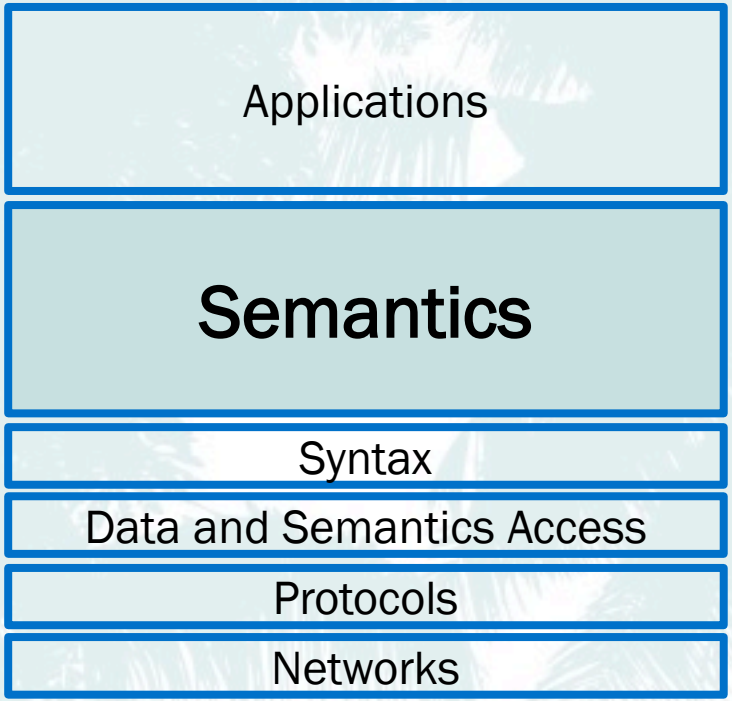
Lower Layers Interoperability

- Serialization of semantic information
- Data and Linked Data Languages (JSON, JSON-LD, …)
- Model Languages (TTL, RDFS, OWL, …)
- Query Languages (SPARQL, Gremlin, …)

- REST APIs, Protocols, Data Schemas
- Events, Push, Pub/Sub
- Query Endpoints

How much and what of this to be in scope of 223P to be discussed.

Semantic Interoperability



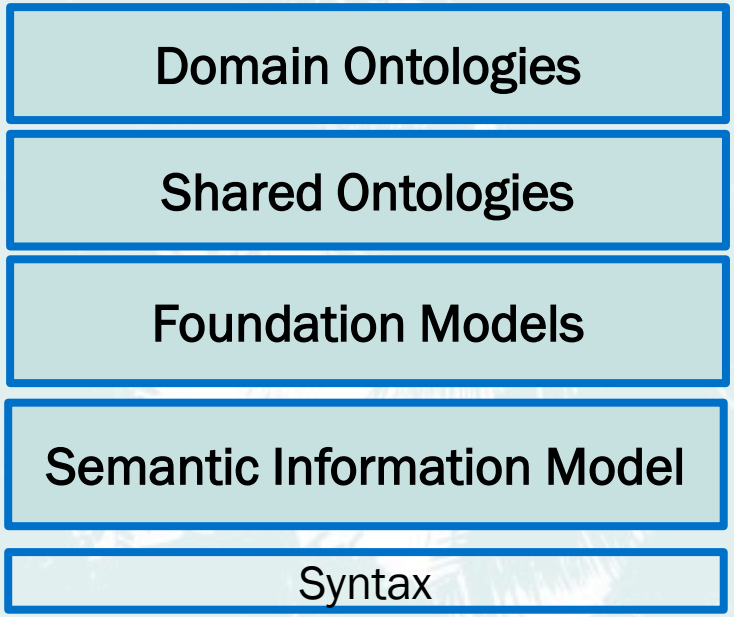
- Domain Models
- Shared Models
- Foundation Models
- Semantic Information Model

This is in scope of 223P:

"Building Automation Systems Information Model"

BAS-IM

Semantic Interoperability



- BAS-IM and others: Haystack, BRICK, SAREF, FIEMSER, BuildingSync, ASHRAE 205P, ACRIS, …
- QUDT, BOT, SSN, …
- SKOS, SOSA, …
- Semantic Graphs, W3C RDF, RDFS, SHACL, …

BAS-IM Model Scope

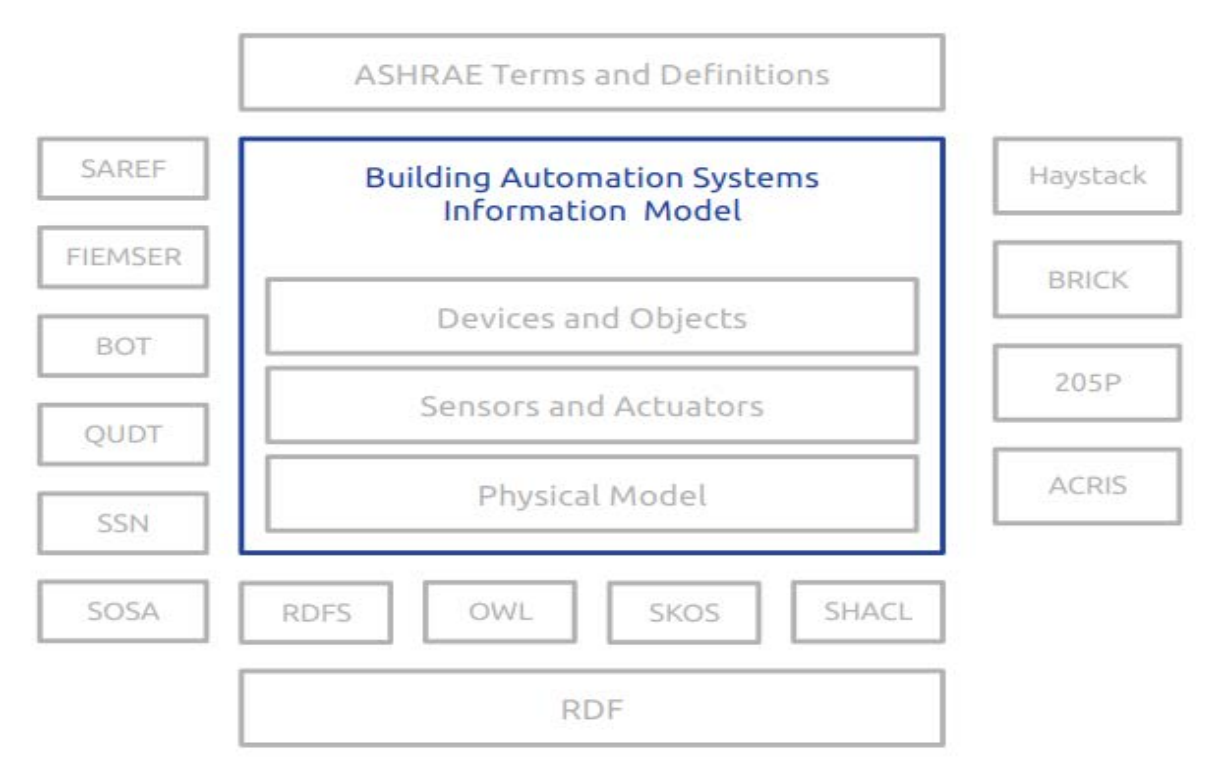


Figure by Joel Bender

BAS-IM Model Scope

- Physical Model
  - Building, Space, Environment, Equipment, Piping, Wiring, Connections, Flows, Devices, …
- Sensors and Actuators
  - Connect the physics with the building automation system
- Control Devices and Objects
  - Control device, points and object models
  - Control program and control function block models

- Basic models by 223P only
- Based on selected shared and foundation ontologies
- Co-exist with other application ontologies,
- Mappings, bridges, etc. possible
- Vocabulary definitions and concrete models by application domain bodies, such as ASHRAE committees, Project Haystack, Brick, CEN, etc.

223P Contents

- Semantic Information Model Concepts
- Foundation Models Support Profiles
- Shared Ontologies Support Profiles
- BAS Information Model and Support Profiles
- Domain Models Support (-> Haystack 4.0)

- And maybe: Support Profiles for Lower Layers

Application Profiles & Haystack 4.0

- Application Profiles are structures and points of AHUs, VAVs, RTUs, etc.
- Haystack 4.0 provides mechanisms for definition of application profiles.
- Project Haystack is the preferred and capable community for defining application profiles.
- Referenced by 223P, alignment to BAS-IM by AP-WG
- Freezed Haystack models in RDF as part of 223P

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