Project Haystack: Making Data Just Work
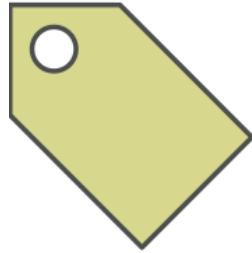
Project Haystack Is…

- **A community** of people working to address one of the key challenges in using smart device data…
- **The challenge:** Most device data has poor semantic modeling (information describing the meaning of the data)
- A manual, labor intensive process is required to "map" the data before it can be used in different applications
- This adds cost and slows the use of this valuable data
- **Project Haystack vision:** A standardized methodology for describing data will make it easier and more cost effective to analyze, visualize, and derive value from our operational data

The Challenge – A Use Case

- Analyze this: **zn3-wwfl4 = 25.1**

- Hmmmm… What is it? Deg C, F, KW, kPa, ???

- Need to know units. Lets say it is Deg C

- Hmmmm… Is 25.1 Deg C OK?

- What is it? Zone temp, Return air temp, chilled water temp? Lets say it's a Zone

- What is the schedule? Schedule #1 = 7:30 AM - 6:30 PM

- Is it an exterior zone? Yes

- Is supplied by a VAV box? Yes

- What AHU is it served by? AHU-1

- How can I convey these answers in a standard way that other software can interpret?

Project Haystack

Use Case – Haystack Representation of Data

id:	150a3c6e-bef0ee0e	(RecId)
clgsp:	74 °F	(Number)
dis:	zn3-wwfl4	(Str)
equipRef:	Headquarters AHU-1	(RecId)
exterior:	✓	(Marker)
floor:	4	(Number)
point:	✓	(Marker)
schedule:	occupied 1	(Str)
south:	✓	(Marker)
vav:	✓	(Marker)
zone:	3	(Number)
zoneTemp:	✓	(Marker)
mod:	9-Mar-2011 Wed 6:43:21PM UTC	(DateTime)

Haystack – What It Enables

- Applications that just work !

- Graphics can auto-generate just be reading the meta data associated with points

- Easier integration with external software applications – apps can understand and consume data without human interaction to "map" data

- A new generation of engineering tools to streamline project implementation tasks

Project Haystack

2015

Haystack Is More Than One Thing...

- **A methodology** for defining the meaning of smart device data
- Also known as semantic tagging, meta data or data modeling
- Open source, highly flexible, applicable to data of all types
- Example of Haystack tags to describe a point in a system:

```
AHU1-SAT = sensor, discharge, air, temp, deg F, ahuRef -> AHU-1

Point Name            descriptive tags              association tag
```

Haystack Is…

- **A set of standard equipment models** developed by consensus of the community
- An ongoing effort by "birds of a feather" to develop tagging models for equipment systems based on the Haystack tagging methodology

The following lists points commonly used with an AHU:

Discharge

- discharge air temp sensor
- discharge air humidity sensor
- discharge air pressure sensor
- discharge air flow sensor
- discharge air fan cmd
- discharge air fan sensor

Return

- return air temp sensor
- return air humidity sensor
- return air pressure sensor
- return air flow sensor
- return air co2 sensor
- return air fan cmd
- return air damper cmd

Mixed

- mixed air temp sensor

Project Haystack

Haystack Is…

- **A highly efficient REST API** that makes it easy to exchange Haystack tagged data among applications

- **A Java Reference implementation** of the Rest API that can be easily incorporated into applications and products to allow them to communicate via Haystack

- Members of the community have created **software plug-ins** to enable various systems to "speak" haystack. Example: the NHaystack module for Niagara® systems

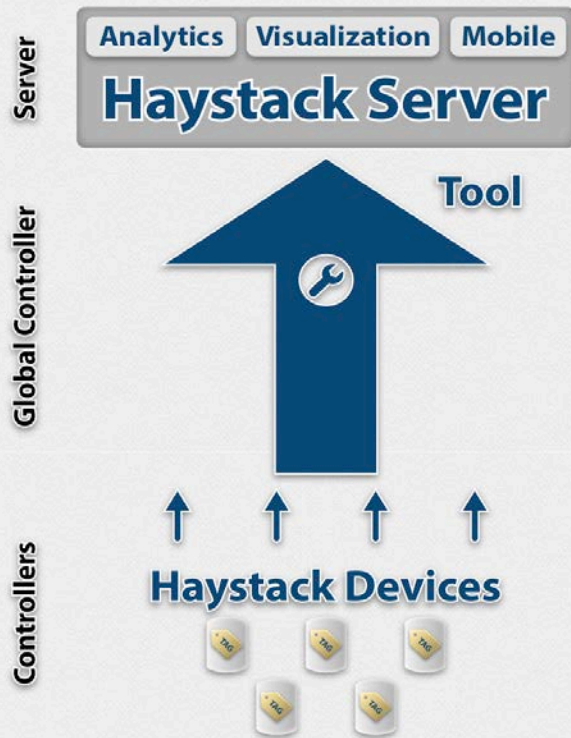- Others have built **software tools** to streamline the tagging process

Why Haystack Matters

- We want to easily utilize data from various sources for reporting, visualization, analysis, and decision making
- Lack of standardized naming conventions in control and equipment systems makes this a labor intensive effort
- Names on their own can't solve the challenge – too much information to be carried in a name
- This is a major barrier to utilizing the rapidly growing amount of data produced by smart systems
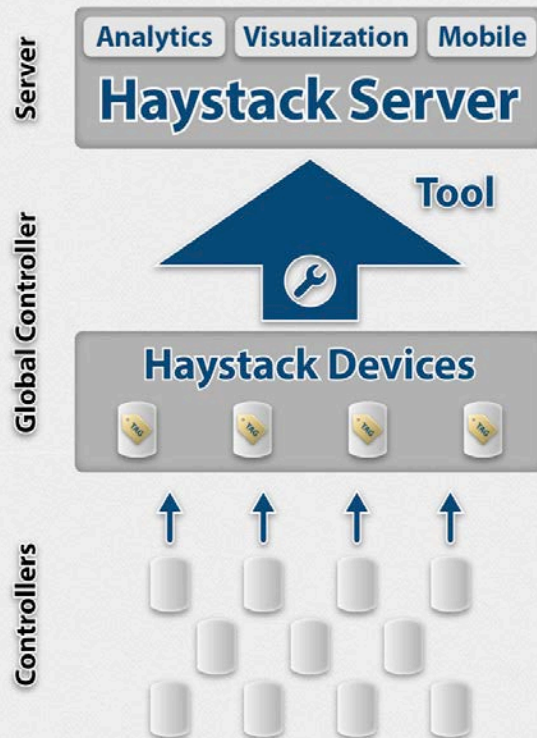
How Haystack Solves the Challenge

- Using Haystack, applications receive data **that includes essential meta data** (tags) to describe the meaning of the data

- This enables automatic interpretation of the data by software applications

- **Dramatically reduces engineering effort**

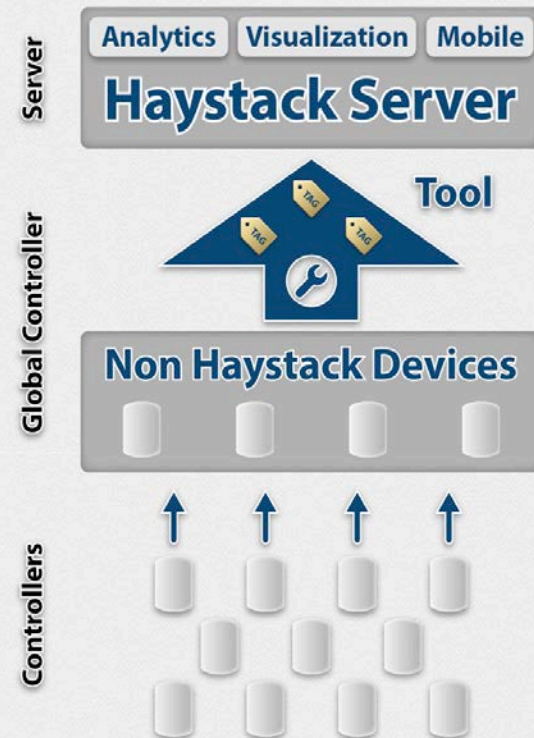- Machine-readable and people-readable!

Architectures Using Haystack

Tags exist in end devices
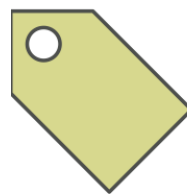
Tags exist in network controllers

Tags applied in server level application

Haystack – Adoption and Support

- Winner of 2013 Digie Award for Best Intelligent Building Technology Innovation
  http://project-haystack.org/forum/topic/100

- Inaugural Community-Produced Haystack Connect event May 2013:
  http://2013.haystackconnect.org

- Press announcement showing support from over 20 companies:
  http://www.prnewswire.com/news-releases/project-haystack-212890711.html

- Guide specification: http://www.skyfoundry.com/file/50/Guide-Specification-for-Data-Modeling-Standard.docx

- Project-Haystack 501C Corp formed June 2014
  http://www.ireachcontent.com/news-releases/project-haystack-announces-formation-of-non-profit-corporation-263428181.html

- Haystack Connect May 18-20, 2015
  http://haystackconnect.org/

Project Haystack

Consider Joining the Effort

- www.project-haystack.org
- Learn how to utilize Haystack to streamline your projects
- Contribute your knowledge
- Advance the effort, be a…

Project Haystack Supporter