Tagging in the Trenches

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Agenda

- Introduction
- Background
- What? Why? Who? Where?
- How?
- Data Mining
- Contact Information

Introduction

- This talk is non-technical
  - Easily digested before lunch
- Focus on our experience in associating tags with elements of an HVAC application
  - What was our process
- Data Mining
  - Interesting observations

Background

- Facility Explorer (FX)
  - Based on Tridium Niagara AX originally, now Niagara 4
  - Johnson Controls specific appliance adds functionality to simplify construction of a Niagara station
  - Runs on Tridium JACE
  - Want to exploit Niagara 4 tags to enhance the product

What?

- What were we trying to do?
  - Organize tags and tag groups by HVAC application (Mixed Air Single Duct, Heat Pump, etc.)
  - Tags for Field Controllers (Devices) and Points
  - Focus on Johnson Controls Devices and HVAC applications

Why?

- Why are we doing it?
  - Facilitate automated tagging in the FX appliance
  - Based on Niagara 4 tag dictionary, tag and tag group implementation
  - Our solution involved software development of the “plumbing” and data population
  - This talk will focus on the data population

Who?

- Who was doing it?
  - Two people involved in development
    - One software engineer to do the plumbing (me)
    - One applications expert who knew the data (Robert Harland)
  - Reviews involved two additional people
    - One software engineer testing the plumbing (and indirectly the tags themselves)
    - One software engineer updating FX appliance to utilize tags in various views

Where?

- Where did we start?
  - Began with Haystack Dictionary in Niagara 4
  - Started with Haystack tags and tag groups defined for us by Tridium

How?

- How did we proceed?
  - Communication Mechanism
  - Data Population
  - Review

Communication Mechanism

- We choose Excel to maintain tag information
  - We have a start; already use Excel to organize information on a per HVAC application basis
  - Relatively easy to edit and distribute for review
  - Three types of data need to be maintained

Data to be Maintained

- Workbook containing any new Johnson Controls specific tags
  - Tag name
  - Type
  - Default (if applicable)
  - Definition
- Workbook containing any new Johnson Controls specific tag groups
  - Tag group name
  - Constituent tags (and values if applicable)

Data to be Maintained (continued)

- Associating tags/tag groups to devices and points
  - One worksheet per HVAC application
  - Rows are the points that are expressible in Niagara
  - Already contains a list of all possible points for an HVAC application
    - Name
    - Description
    - BACnet identifier (most of our field controllers are BACnet)

Data Population

- Initially a “heads down” effort by the applications expert
  - Reviewed tag dictionary, implementation descriptions and sample projects available via Project Haystack website
  - Select subset of HVAC applications to begin population
  - Select subset of points for each HVAC application
    - Points that are typically of interest

Data Population (continued)

- Iterate through the points
  - Start with Haystack tags
  - Don’t overload Haystack tags (e.g. don’t reuse stage to represent zoneNum)
  - When defining new tags
    - Always have a definition
    - Use marker tags whenever possible
    - Double check Haystack doesn’t have one that will fit the bill
    - Example: pidReset : Marker tag used to identify JCI PID Reset within an application

Data Population (continued)

- Assigning tag groups
  - Identify points that are common throughout our HVAC applications
    - This should allow for easier editing if add tags in the future
- When defining new tag groups
  - Use Haystack naming convention – camel case, full names of tags with value (if applicable)
  - List tags with value for any value tag
  - Double check that Haystack doesn't have one that will fit the bill
  - Example: chilledWaterFlowSensor :
    - chilled
    - water
    - flow
    - sensor

Data Population (continued)

- Send the initial population spreadsheets out for review
  - The opinions and questions of non-experts are valuable
  - Check for consistency in naming
  - Valuable review comes from consumers of the tags
  - Helps to be detail oriented
- Expand population to additional HVAC applications
  - Reuse what you can

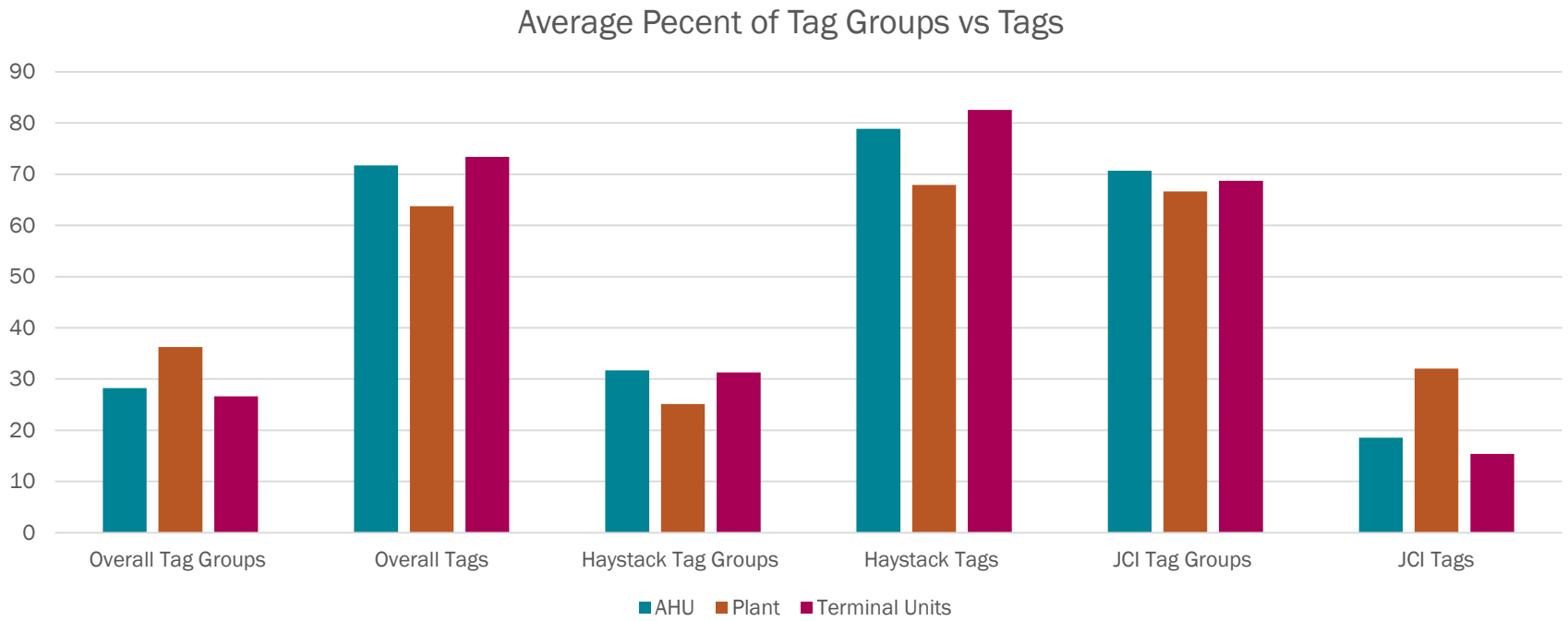
Data Mining

- We completed tagging for 22 HVAC applications in three broad categories:
  - Air Handling Units
  - Central Plants
  - Terminal Units
- Total New Johnson Controls tags defined: 80
  - 35 not used in these HVAC applications
- Total New Johnson Controls tag groups defined: 201
  - 16 not used in these HVAC applications

Data Mining (continued)

- Most Popular Overall Tag Groups
  - Temperature Setpoint (discharge or zone)
- Most Popular Overall Tag
  - cmd (by far)

Use of Tag Groups vs Tags



Thank you!

- Contact information
  - Mary Boelk – mary.boelk@jci.com
  - Johnson Controls booth in Haystack Connect 2019 Exhibit Hall – with Robert Harland
- Time for lunch!