

APRIL 15 - 17 | ANAHEIM, CA

MSI and the Niagara Platform

This presentation will highlight the Smart Enablement Designs and Specifications that we're seeing across the UK market, and how we utilise the Niagara Platform to help us deliver these projects





MSI and the Niagara Platform

- Introduction
- What is a Smart Building?
- What is an MSI?
- Smart Deliverables in the UK
- What Makes a Successful MSI Project?
- Beyond Project Completion
- Our MSI Toolbox





Introduction

- John Clarke Operations Director
- One Sightsolutions



Product
DistributionTrainingMSI and
ConsultancyDevelopment



What is an MSI?

- By being a product distributor in the UK, we effectively ruled ourselves out of standard BMS projects – pushing us into new innovative areas
- This led to our first **"Master Systems Integrator"** project starting in 2015
- "It is the responsibility of the MSI to understand <u>all</u> the separate building systems, and work to integrate each of into a single smart building solution"



What is an MSI

- Each project has different end goals or use cases
- Understanding these at the outset provides the backbone to what needs to be achieved
- Early collaboration with the owners, consultants and construction team
- Review and understand all specifications to identify if the project goals have been identified and allowed for

Needs to understand the clients holistic requirement



Needs early engagement with the owner and construction team

Needs to review all sub systems and their overall relationship to the program



What is an MSI

• A typical MSI in the UK tends to come from one of three disciplines:





What is an MSI

 Our belief is that the MSI should understand more than a single core skillset – requiring a mix of:





What is a Smart Building?

- Uses technology to improve its efficiency, sustainability, and occupant comfort
- Use a variety of systems to collect data about the building's environment
- Can utilise the data to automate and optimise various building functions, such as HVAC, energy, power, lighting, security, access control and more user centric applications (e.g. room booking/ AV)





What is a Smart Building?







Remote POP Sites



Residential

Commercial Landlord and Tenant



What is the use case of the building?



Academic Buildings



Document Archiver



Commercial Tenant

Commercial Landlord



What is a Smart Building?



Residential Resident's experience, landlord energy usage and billing

What is the use case of the building?

What is the driver for the client?





Commercial Landlord and Tenant Staff health, well-being and productiveness, staff comfort



Remote POP Sites Understanding remote unmanned sites and energy usage



Academic Buildings Energy usage, space utilisation/ optimisation



Document Archiver Ensuring documentation environment is kept in a clean environment



Commercial Landlord Attracting tenants, understanding large portfolio of equipment, building usage



Commercial Tenant Staff health, well-being and productiveness, staff comfort

Smart Deliverables in the UK

- There are 6 typical elements in our smart project deliverables
 - While these elements can run in parallel, there are dependencies and items that bleed across from one into the other
 - The deliverables have various touch points across the project smart phases
 - It's the role of an MSI to assist in managing these deliverables





Understand and Test Site Wide Topology

- The key starting point for a Smart Building is to understand what systems are there, how we can communicate with them, and then test
- Policing security on all devices connected to the building network
- With all IP devices to go through an onboarding / pre-qualification process before being accepted





Single Pane of Glass

- A Single Pane of Glass (SPoG) allows access to a number of building services
- Benefits include the ability to monitor and change building conditions and also link into utility services, lift services, security systems, BMS and power systems to make intelligent decisions to increase visibility of what is happening in the building, as well as supporting energy saving opportunities and employee wellbeing programs









Smart Enablement

- These projects entail more than connectivity between systems within the building, they also include a gateway allowing data to flow from the building services to a cloud/ data lake/ database
- Adopting consistent naming approach across devices and points
- Utilising standard open building communication protocols – Most commonly MQTT
- Data validation!



```
"2022-11-20T16:01:24.951Z",
"oss/example/udmi/FCU-2003/events/pointset",
  "version" : 1,
  "timestamp" : "2022-11-20T16:01:24.835Z",
  "points" :
    "return_air_temperature_sensor" : {
     "present value" : 20
   "chilled water valve percentage command" : {
      "present value" : 11
   "discharge_fan_speed_percentage_command" : {
     "present value" : 30
   "discharge air temperature sensor" : {
      "present_value" : 21
    "return_air_temperature_setpoint" : {
      "present value" : 20
    "discharge fan run command" : {
     "present value" : false
   "heating_water_valve_percentage_command" : {
      "present value" : 15
   "actual_return_air_temperature_setpoint" : {
      "present value" : 20
```

Cloud Data Storage

- One of the latest requirements in Smart Buildings is for a time series database to store the smart enabled data
- A key benefit here will be for the client to have open access to their data, and to change cloud platform while keeping historic data





IoT Sensors

- IoT sensors are now becoming a very popular addition to standard building services data found in today's commercial properties
- IoT sensors are often based on low power wireless technologies, e.g. LoRaWAN – these have a huge range in open spaces as well as through walls in buildings – particularly useful in retrofit





Cloud Applications

- Once a building is smart enabled, the scope for delivering to the business is huge
- Whether this is tenant focussed, looking at reducing of costs by optimising your energy management, or increasing the use of data to perform predictive maintenance across buildings/ estates
- We see there not being a single application here, but by correctly Smart Enabling a building, the client is able to 'plug and play' the relevant system at the relevant time



What Makes a Successful MSI Project?

- Consider the commercial chain you'll be working in Will you be empowered?
- End user engagement is key when delivering a smart building system - If the end users are not engaged with the system, they are less likely to use it effectively, which can lead to reduced performance and outcomes
- COMMUNICATION



Beyond Project Completion

- When Smart really happens...
- By understanding how end users are interacting with the system, the MSI can identify new opportunities to improve the system or add new features that will be valuable to the end users
- Ongoing change management key to data integrity



Our MSI Toolbox

- Core to our deliverables is always Niagara while not tied to using this from a specification point of view on our projects, we're yet to find a platform/ tool/ system that provides anywhere near the depth of integration and flexibility
- Our Niagara drivers have been born from project requirements before being turned into fully fledged products





Our MSI Toolbox

- Smart Build Connect a new tool developed to save time on Smart building delivery & reduce risk through automated commissioning status & data validation
- Module for open-source Data Warehousing / Data Access API





Smart Build Connect

IN SMART B						Q	
Dashboard	\sim	MANAGE ASSETS	EXPORT Q				
Add Dashboard			25 ▼				
Assets	\sim	ASSET	CATEGORY	÷ AREA	DEPLOYED ON	÷ STATUS	\$
Add Assets		CNTRL-1001	JACE	Basement	N/A		÷
Manage assets		CNTRL-1002	JACE	Basement	N/A		Ξ
		CNTRL-1003	JACE	Basement	N/A		:
Manage categories		DS-2001	DISPLAY	Basement	12th Oct 2023	ONLINE	
Export		DS-2002	DISPLAY	Basement	12th Oct 2023	ONLINE	:
Audit		TEST-1001	NETDEVICE	Unknown	N/A	OFFLINE ABSENT	: :
QR Lookup		TEST-1002	NETDEVICE	Unknown	10th Oct 2023	ONLINE FAULT	:
		TEST-1003	NETDEVICE	Unknown	10th Oct 2023		1
		TEST-1004	NETDEVICE	Unknown	7th Oct 2023	ONLINE VALIDATED	:
		TEST-1005	NETDEVICE	Unknown	N/A		:
		TEST-1006	NETDEVICE	Unknown	N/A	ABSENT	:
		TEST-1007	NETDEVICE	Unknown	N/A	FAULT	:
		TEST-1008	NETDEVICE	Unknown	N/A	INVALID	:
		TEST-1009	NETDEVICE	Unknown	N/A	VALIDATED	
		TEST-1010	NETDEVICE	Unknown	N/A		
		TEST-1011	NETDEVICE	Unknown	N/A		I



Smart Build Connect

SMART BUILD					Q	2				
 Dashboard Dashboard Add Dashboard 		AUDIT	ASSETS 81							
Add Assets Add Assets Manage assets Manage categories	(ERRORS	DUPLICATES	DUPLICATE GUID				
Export Audit										
QK LOOKUP		Start typing to search	🕆 AREA	DEPLOYED ON	+ IMPORTED	25				
	CNTRL-1001	JACE	Basement	N/A	YES	:				
	CNTRL-1002	JACE	Basement	N/A	YES	<u>:</u>				
	CNTRL-1003	JACE	Basement	N/A	YES	:				
	DS-2001	DISPLAY	Basement	12th Oct 2023	YES					
	TEST-1001	NETDEVICE	Unknown	N/A	YES					
	TEST-1002	NETDEVICE	Unknown	10th Oct 2023	YES	:				



Thank you for listening!

Now over to any questions...



