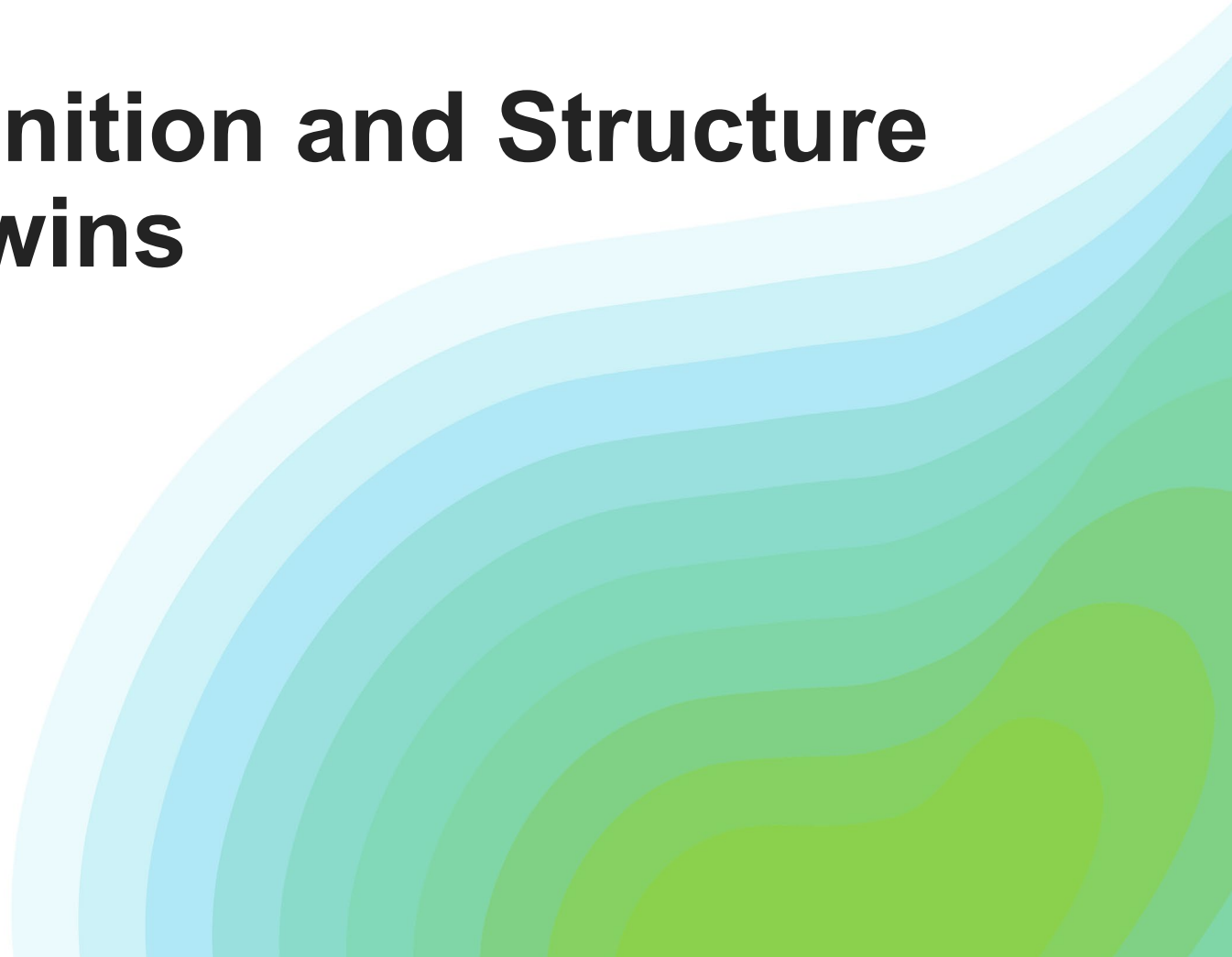


Optimizing Asset Definition and Structure for Enabling Digital Twins

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Key Concepts



Digital Twins Rely on Interoperable Data



Data Interoperability is a Challenge for Asset Definitions and Structures



Asset Registries, Finding the “LCC”, and Open Standards are Methods for Improving Interoperability

Digital Twins Rely on Interoperable Data

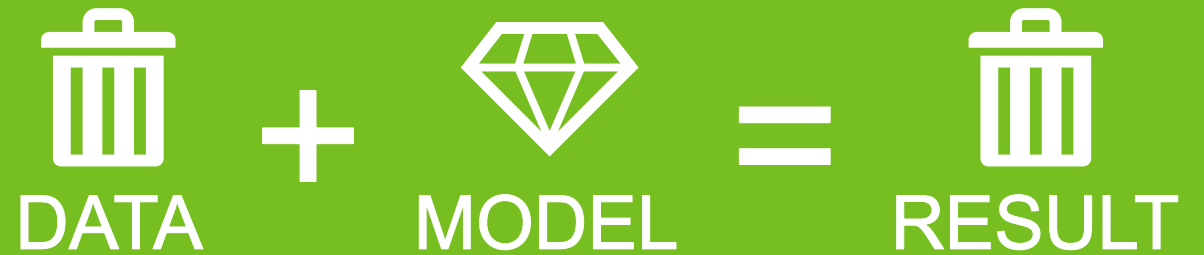


Data is Destiny

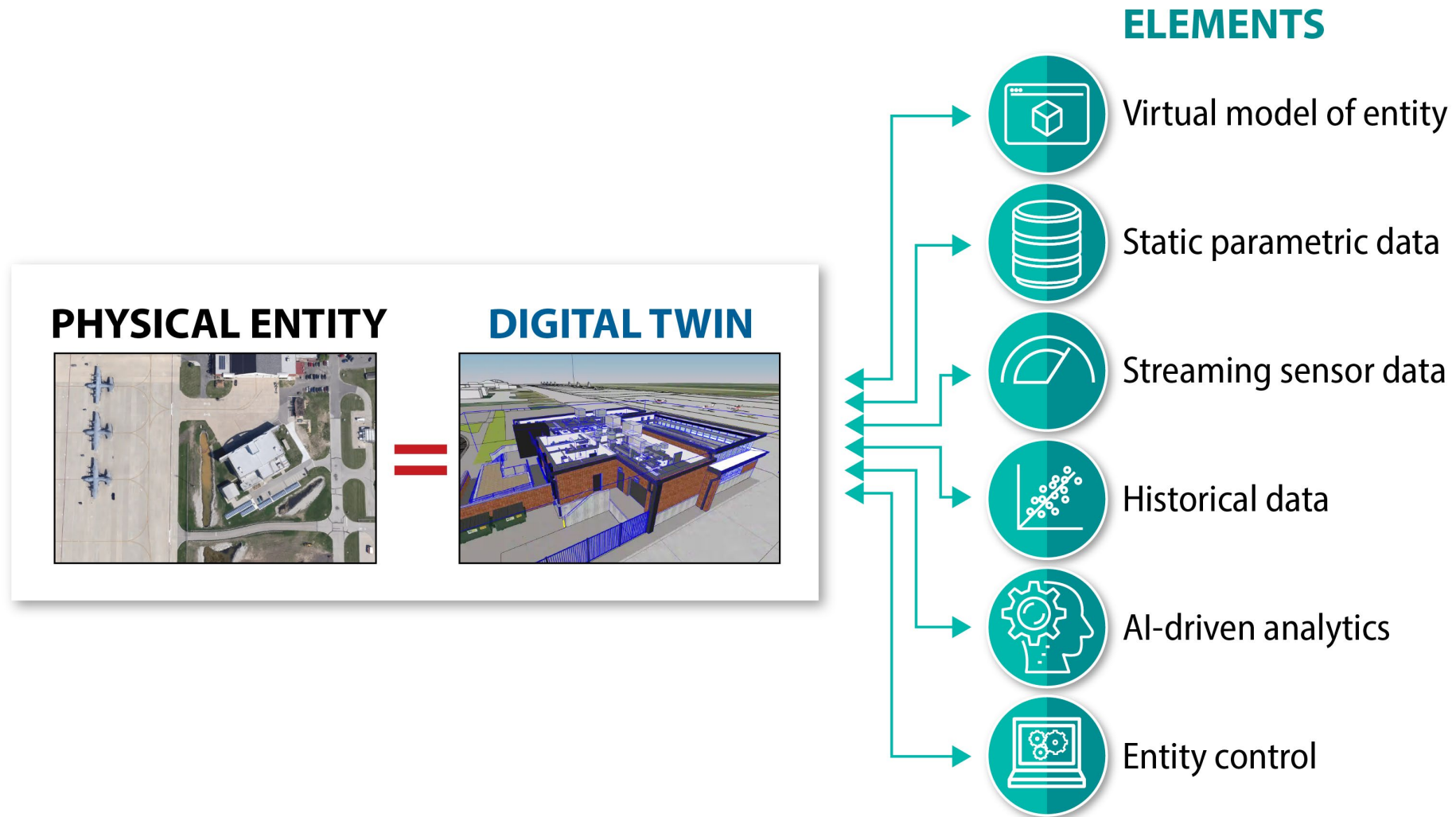
Technology has changed the speed and scale of data-driven decisions.

AI/ML models are entirely dependent on the data upon which they are trained.

Good data matters more than ever!



Digital Twin: Exercise in Integration



Semantic Integration vs. Technical Integration



1010
1010

Technical Integration is how data is physically exchanged.



Semantic Integration is how data is understood and interpreted.



AI's **analysis capability** can be made more effective with **semantic integration** and **data quality** is directly dependent on **technical integration**.

Data Interoperability Enables the 5 A's of Data Quality



Abundant



Accurate



Accessible



Aligned

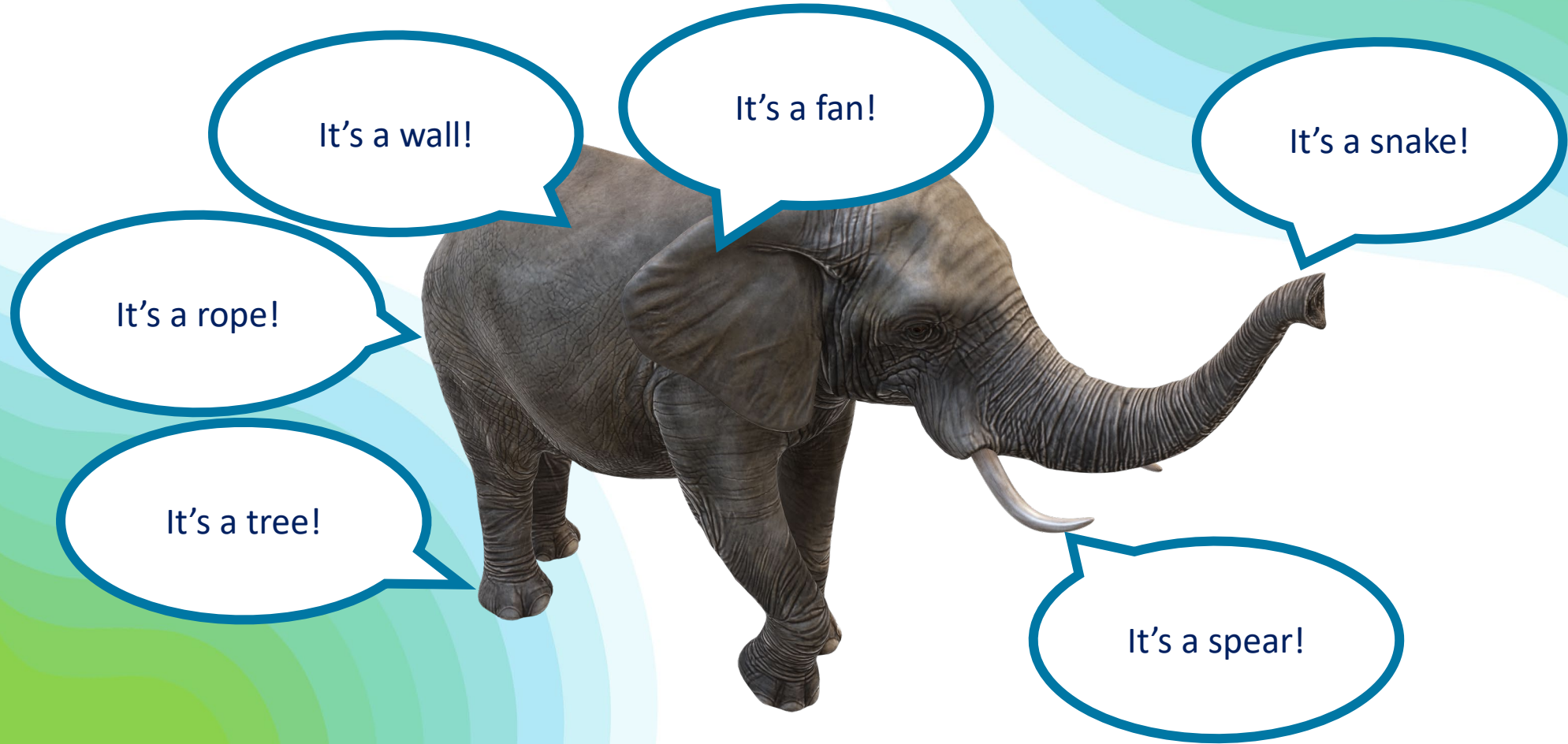


ASAP!

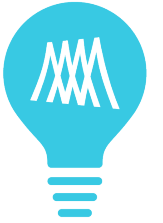
And leads to faster, more confident decisions that increase efficiency and reduce risk, leading to reduction in costs.

Data Interoperability is a Challenge for Asset Definitions and Structures

The Six Blind Men and the Elephant (A Parable)



Definition of an Asset

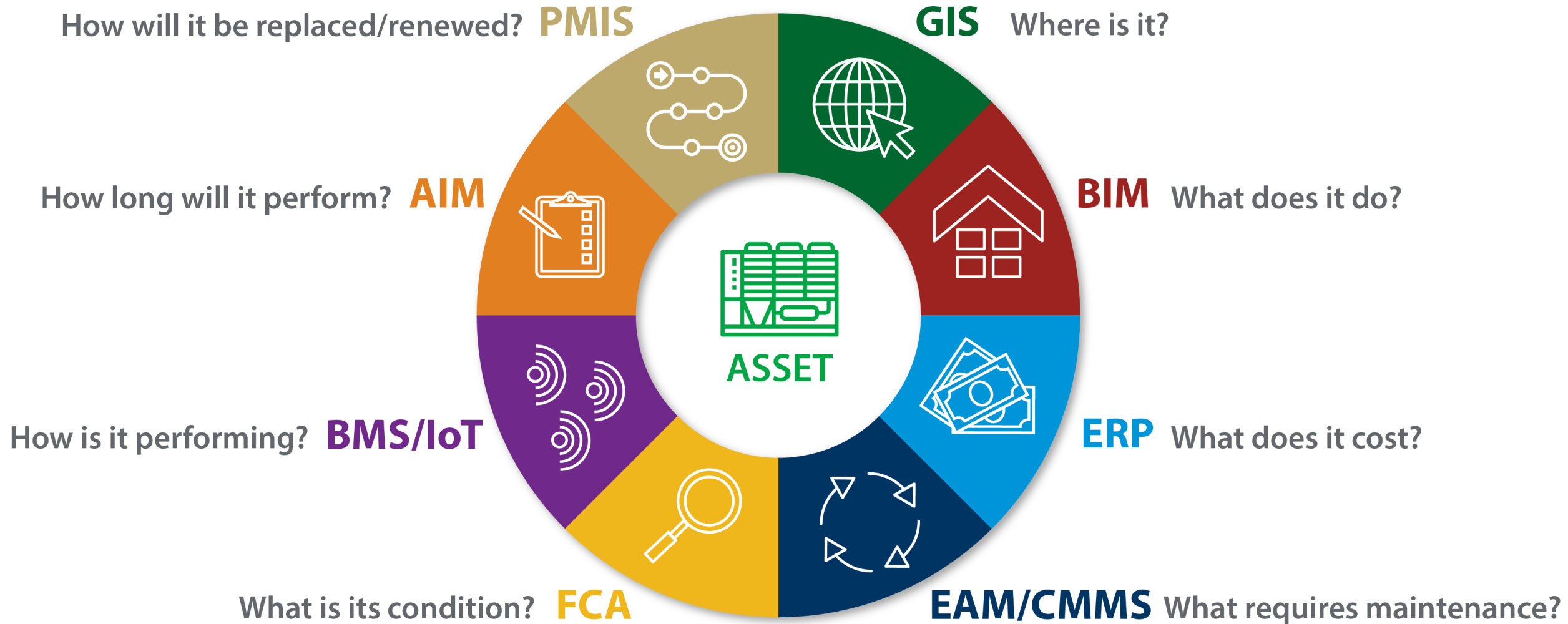
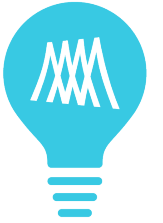


An item, thing, or entity that has potential or actual value to an organization.

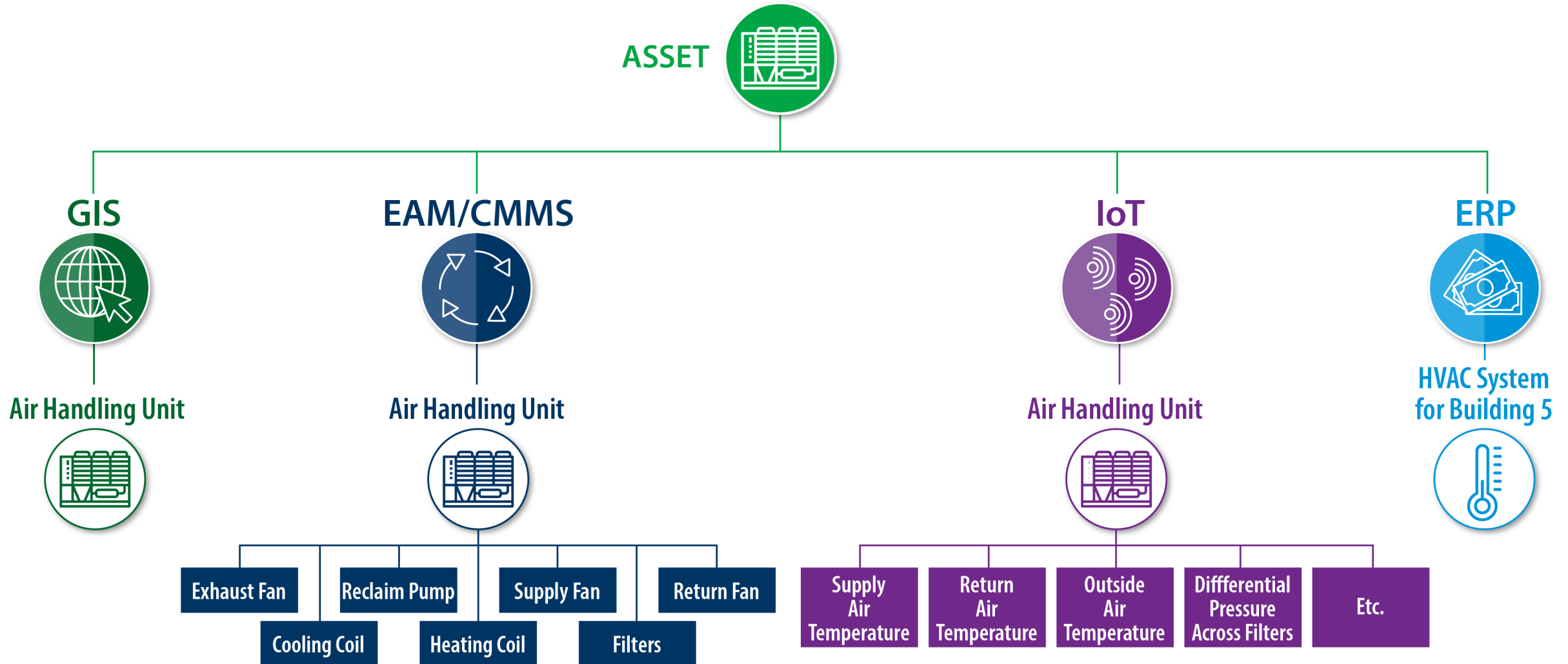
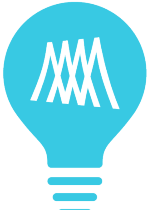
REQUIRES A
PERSPECTIVE

UNIQUE TO
ORGANIZATIONAL
CONTEXT

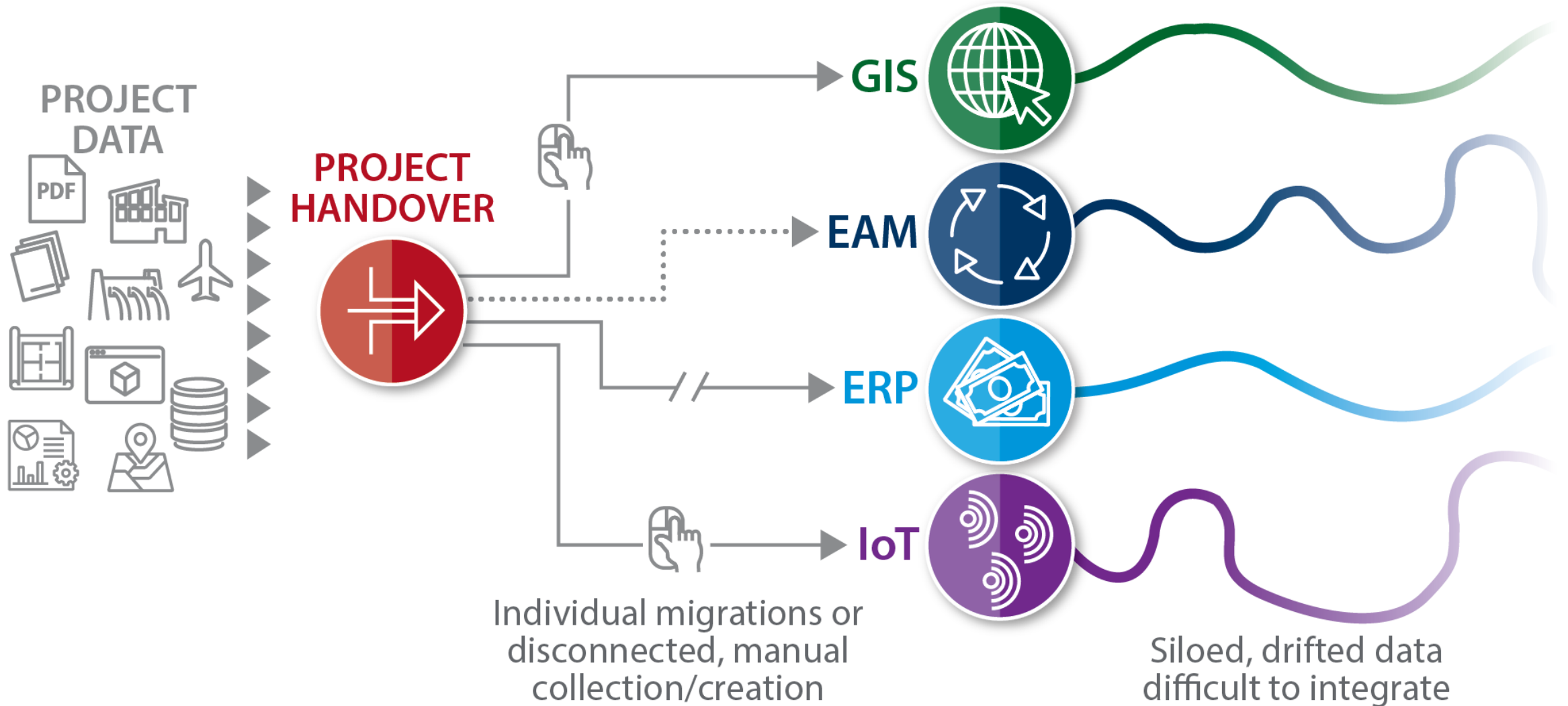
Asset Definition – Information Systems View



Asset Definition – Information Systems View



No Linkage – The Frayed Thread



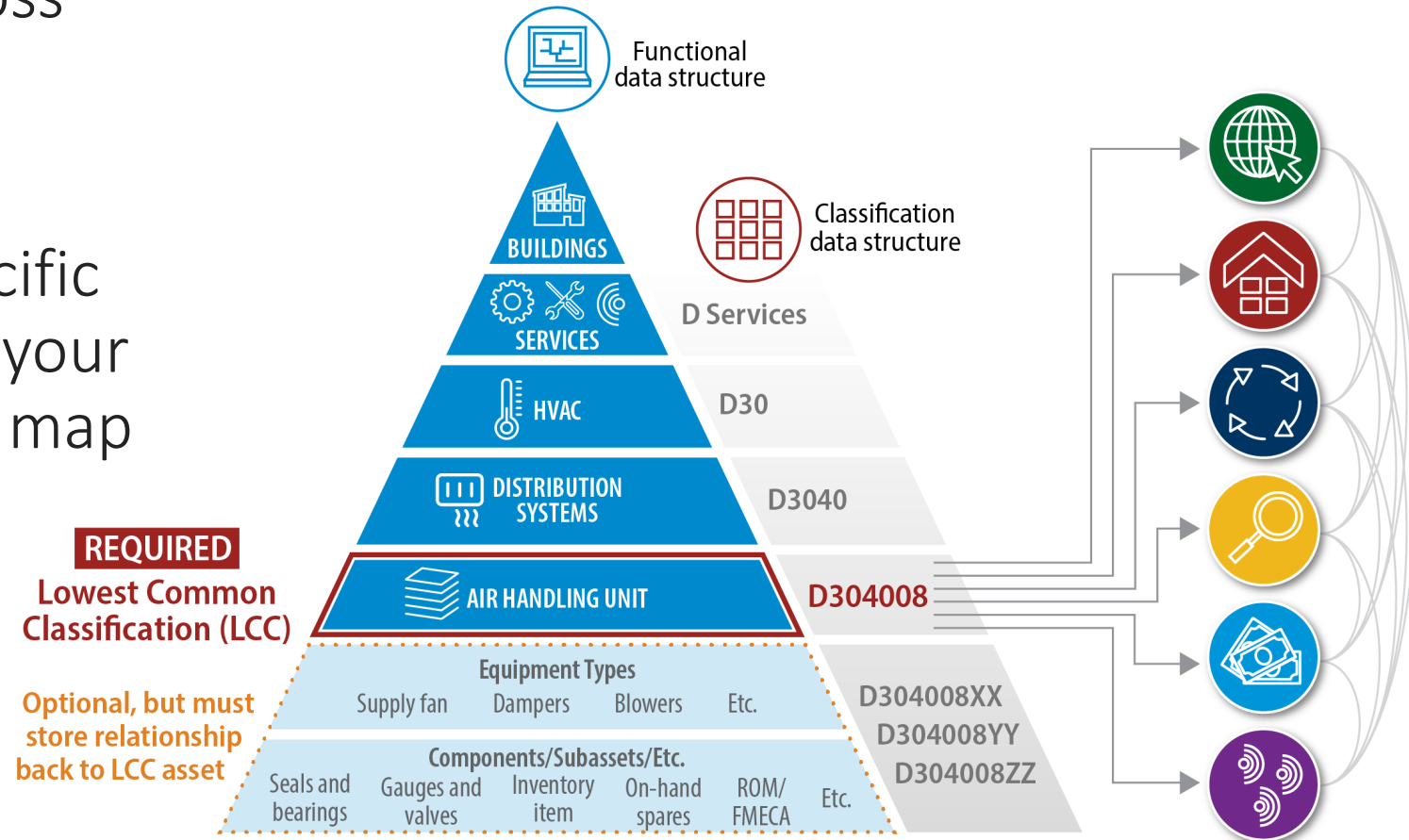
Improving the Interoperability of Asset Definitions and Data Structures

Finding the Missing Link

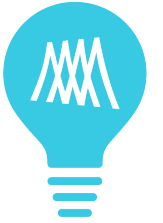


Objective: Simplify semantic integration of Asset Types across systems.

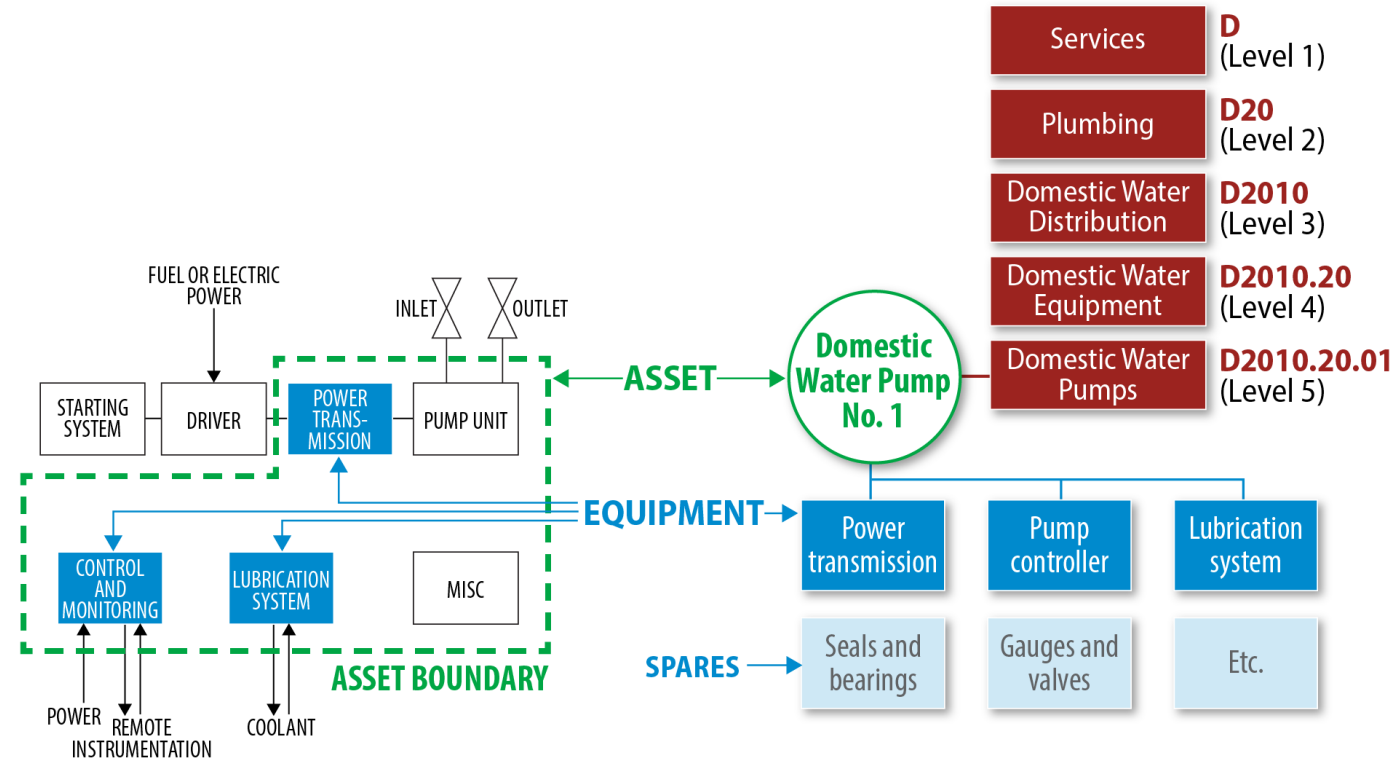
Method: Identify a shared specific list of asset types that each of your asset information systems can map to.



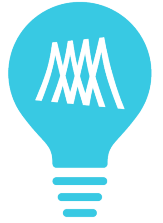
Tips for Finding the LCC



1. Utilize an industry standard classification structure as backbone.
2. Define “System” vs. “Asset” vs. “Equipment”
3. “Assets” can provide a value-added service on their own.
4. Work top-down through your chosen classification hierarchy for each type of asset you manage.



Putting it Together: The Asset Registry



AIR HANDLING UNIT: AHU 5.1.1

| | | | | | | |
|--|---|----------------|------------------|------------------------------------|---|-------------------|
| | GIS Geographic information system | In GIS: Yes | ID: AHU 5.1.1 | Location: 27.916076, -82.502253 | | |
| | BIM Building information modeling | In BIM: Yes | ID: AHU.1.1 | Model: BLDG5_MEP | System: HVAC | Room: MECH 201 |
| | EAM Enterprise asset management | In EAM: Yes | ID: AHU5.1.1 | Parent: 05-019-01 | Children: EF01, PU01, SF01, RF01, CC01, HC01 | |
| | FCA Facility condition assessment | In FCA: No | ID: N/A | FCA Parent: BLDG5.D3050 | | |
| | ERP Enterprise resource planning | In ERP: No | ID: N/A | ERP Parent: P.2003-0568 | | |
| | BMS Building management system | In BMS: Yes | ID: AH 501 | | | |

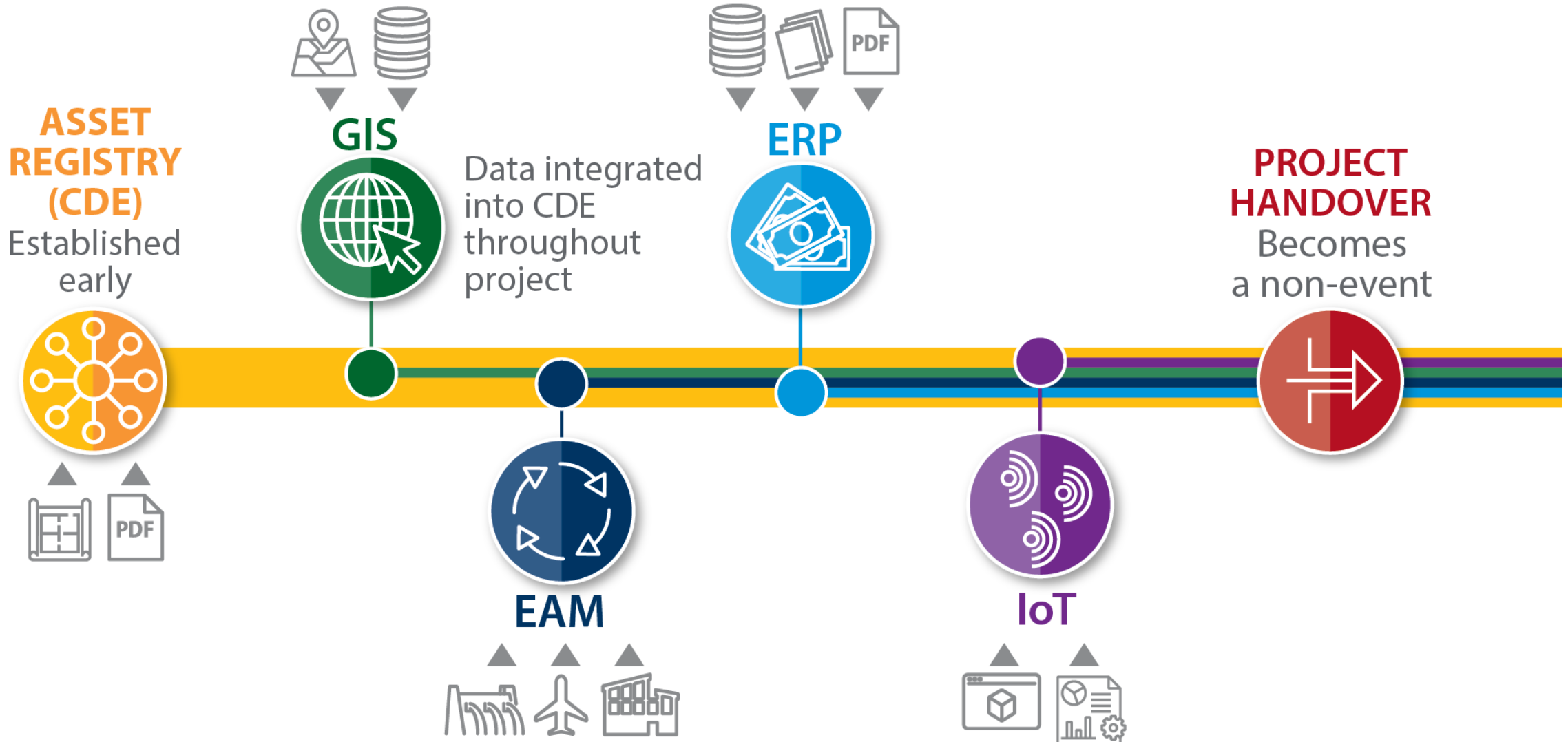
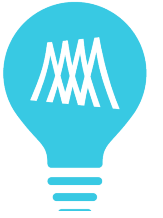
Allows for different system-based schemas.

Provides the data interoperability “decoder ring.”

Stores anything considered to be an asset.

Does not own asset data, only stores relationship to records in enterprise systems.

Asset Registry Binds the Golden Thread



Open Standards

Publicly available specifications that provide a common framework for designing and implementing interoperable systems.

Transparent

Collaborative

Consensus-driven

Freely
Adopted

Freely
Implemented

Freely
Extended

Benefits of Open Standards



Interoperability



Innovation

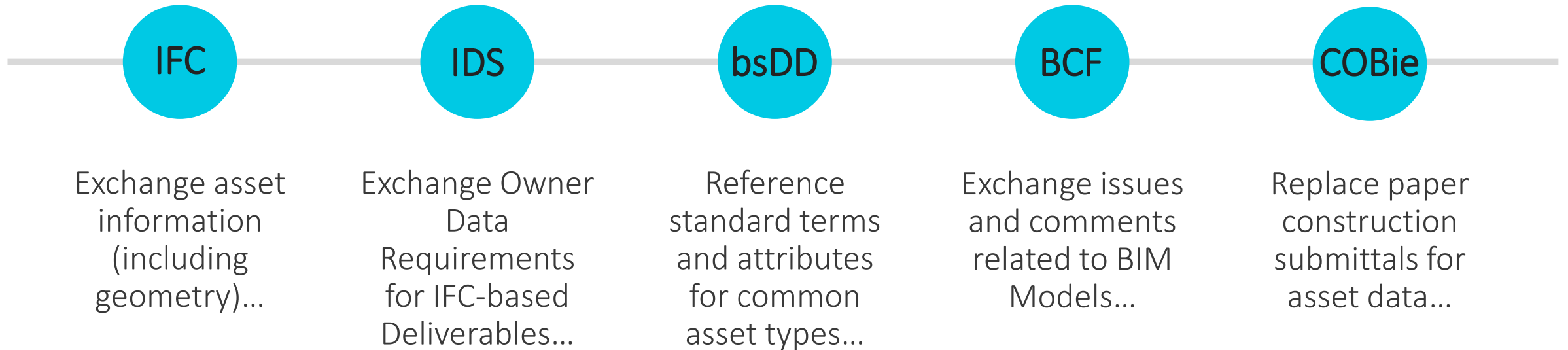


Reduced Vendor
Lock-In



Collaboration

Example of Open Standards for Asset Data



... regardless of software!

Final Thoughts

Digital Twins thrive on INTEROPERABLE DATA!

Most Owners' data is NOT INTEROPERABLE!

**Asset registries, LCC's, and open standards
improve INTEROPERABILITY!**



Thank You!

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