



Smart and Sustainable Buildings on AWS

Building transformation is challenging

Building data is siloed across real estate assets and legacy building management systems

Companies are under pressure to reduce emissions and adopt more sustainable operations

Building owners are facing declining occupancy and evolving customer needs and must quickly adapt

Building transformation is a journey

Automated Building

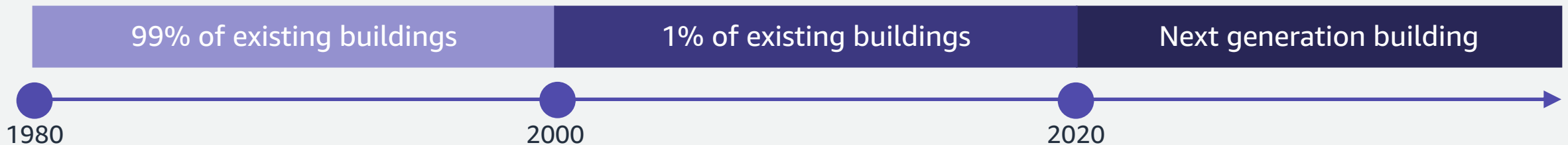
- Building management system
- Automated rules
- Limited connectivity
- Standardized processes
- Scheduled maintenance
- Inconsistent data structure
- Closed architecture / protocols

Smart Building

- IoT sensors
- Internet / cloud connectivity
- Remote monitoring / control
- Predictive maintenance
- Predictive analytics
- On-demand services
- Energy management
- Human centric (WELL)
- Open architecture, protocols
- Responsive security

Cognitive Building

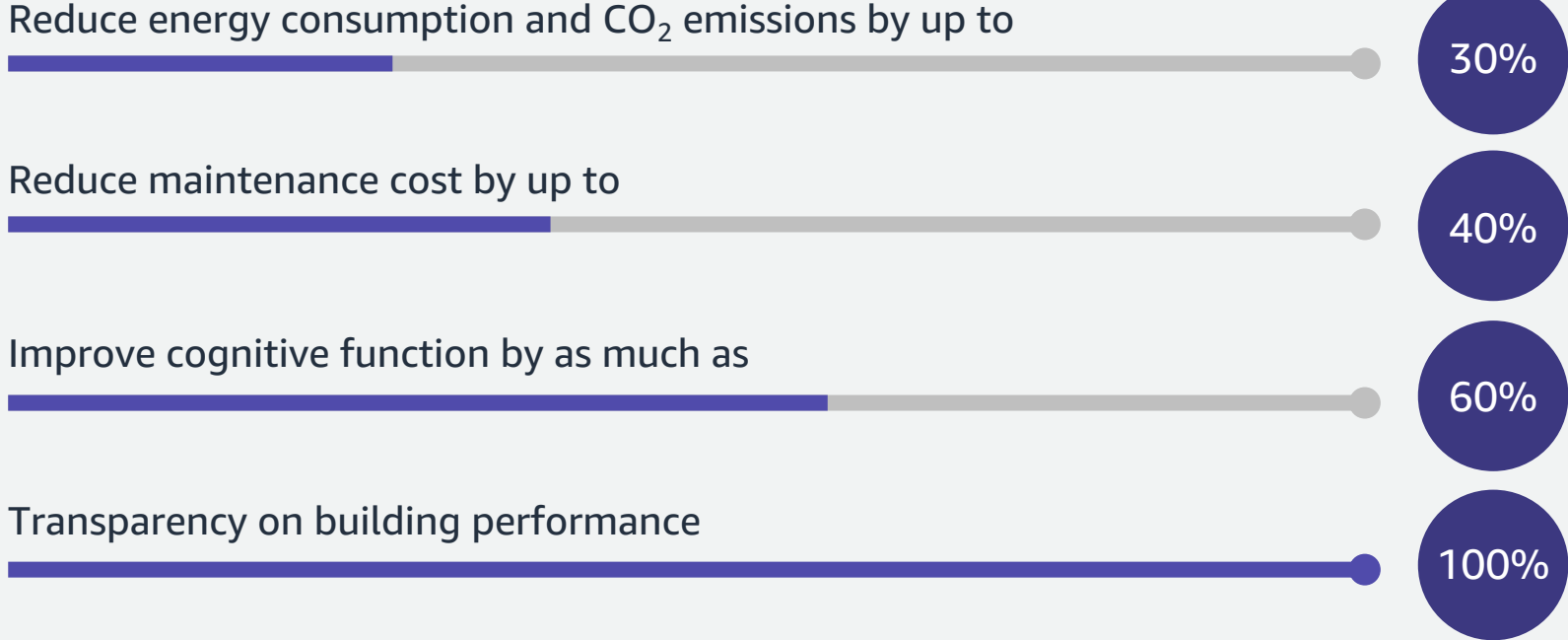
- Automated maintenance
- Machine to machine comms
- Energy / carbon neutral
- Threat aware
- Robotics enabled
- Computer vision
- Digital twin
- AR/VR based systems
- Self learning
- Self diagnosing
- Self healing





There is momentum for positive change

74% of commercial real estate leaders report that a smart building strategy produces a competitive advantage





Companies can transform their buildings to optimize energy use and reduce emissions with **Smart and Sustainable Buildings** on AWS



What makes a building smart?

Hardware

Sensors, building controls, cameras, and IoT devices

Capture data, process commands, and detect conditions

Software

User interface to interact with hardware and data

Allows building operators to monitor performance

Connectivity

Connect IoT devices to each other and the cloud

Coordinates local actions and connect to cloud compute

Analytics

Provide insights and assist in decision making at scale

Converts data streams into actionable insights

AI/ML

Identify patterns and anomalies to make better predictions

Enables autonomous operation and optimization



Security and Access Control



CCTV



Digital Signage



Fire Services



Hydraulics



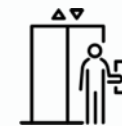
Lighting Control



Mechanical and Climate Controls



Equipment Metering



People Movement and Transportation

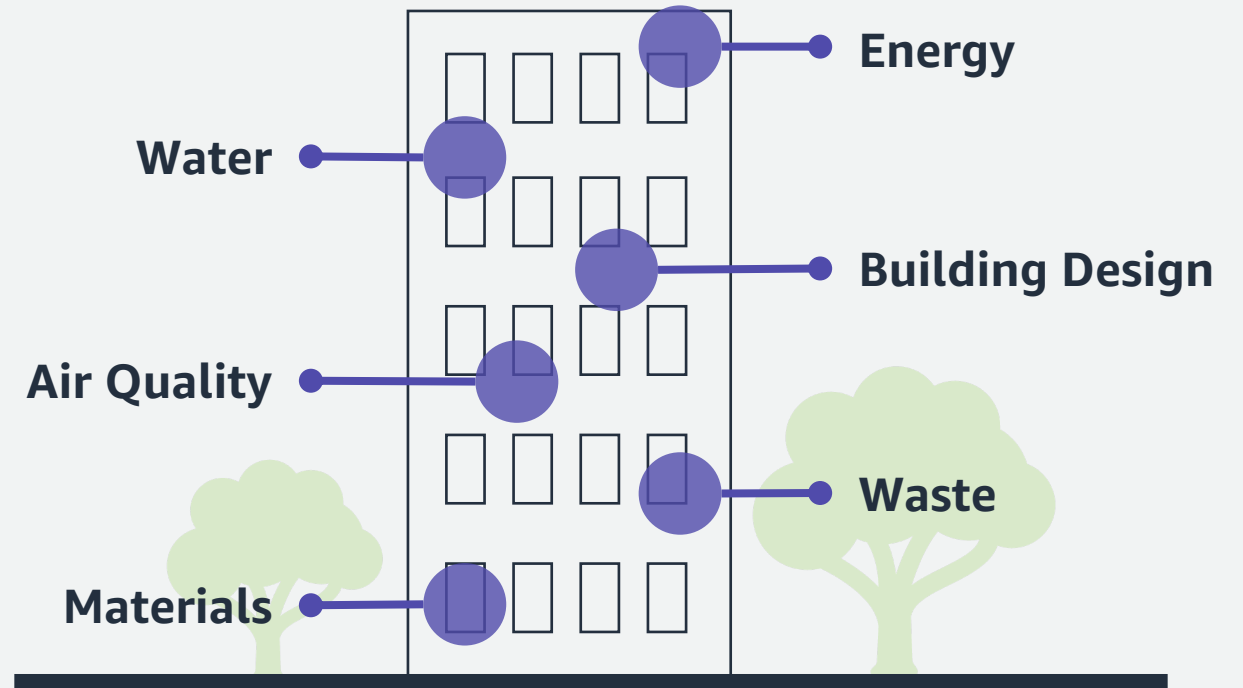


Waste and Recycling



What makes a building sustainable?

- Sustainable buildings provide a productive indoor environment with minimal negative impacts on the external environment.
- They are designed to minimize resource consumption and use renewable energy or carbon offsets to alleviate impacts.
- They also consider comfort, health, and productivity of occupants.
- Sustainable design is a well understood discipline but Sustainable Building Management is an emerging technology.



Leveraging data collection (IoT sensors, BMS, Databases), AI & Machine Learning to ensure buildings are operating at maximum efficiency to reduce carbon footprint and material consumption.

What are the key benefits?

Optimize building performance

Energy usage reduced by up to 30% and maintenance by up to 40% using automated energy management and predictive maintenance

Achieve sustainability goals

Use of materials, energy-efficiency, and technology-powered processes to accelerate progress to net zero ahead of schedule

Improve customer experience

Smart buildings achieve rents that command a 37% premium per net square foot while improving tenant health, safety, and security

Measuring Sustainability in Buildings



Source: GRESB

Energy Usage Intensity (EUI)

Watts/interior space

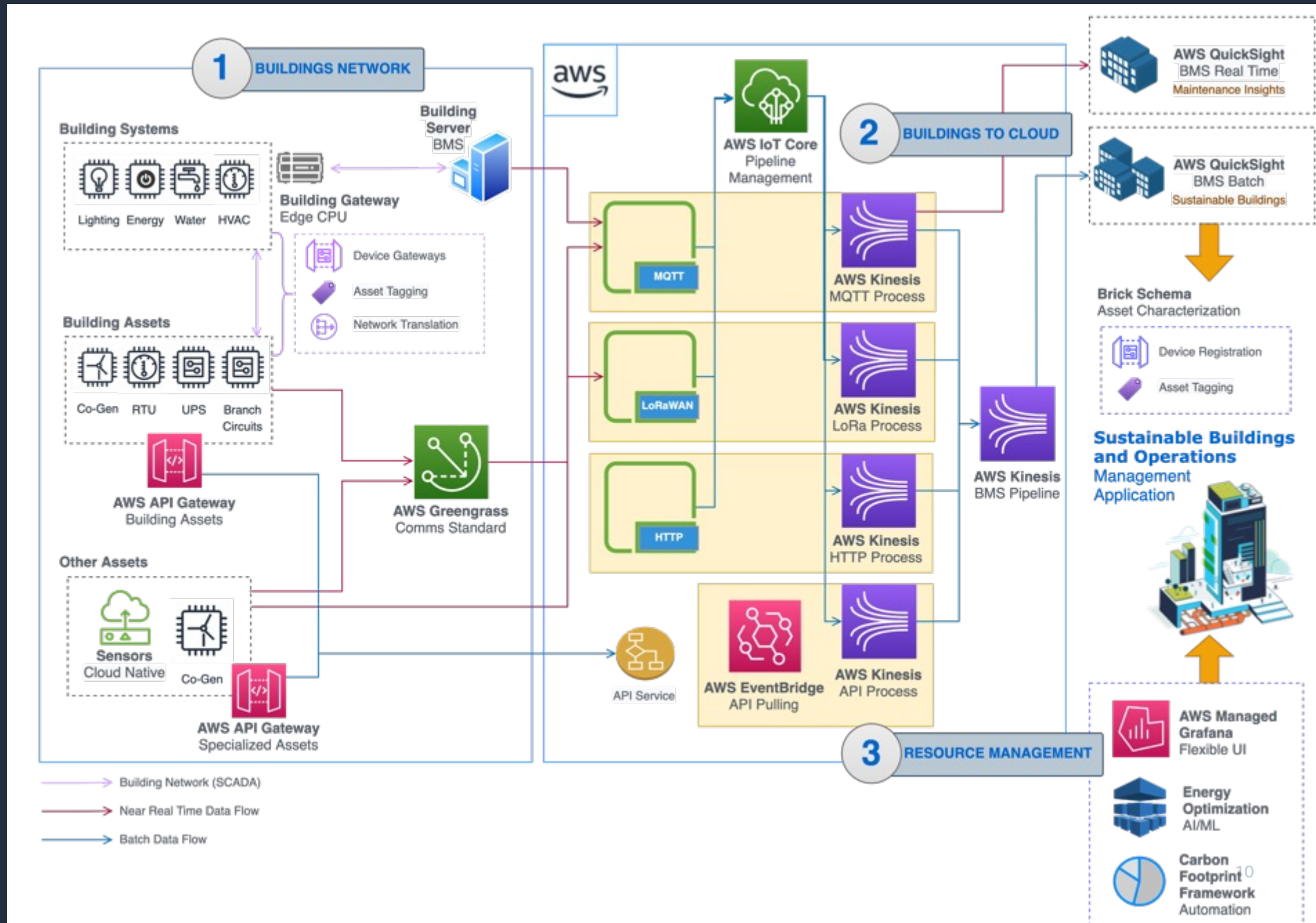


Data Acquisition Reference Architecture

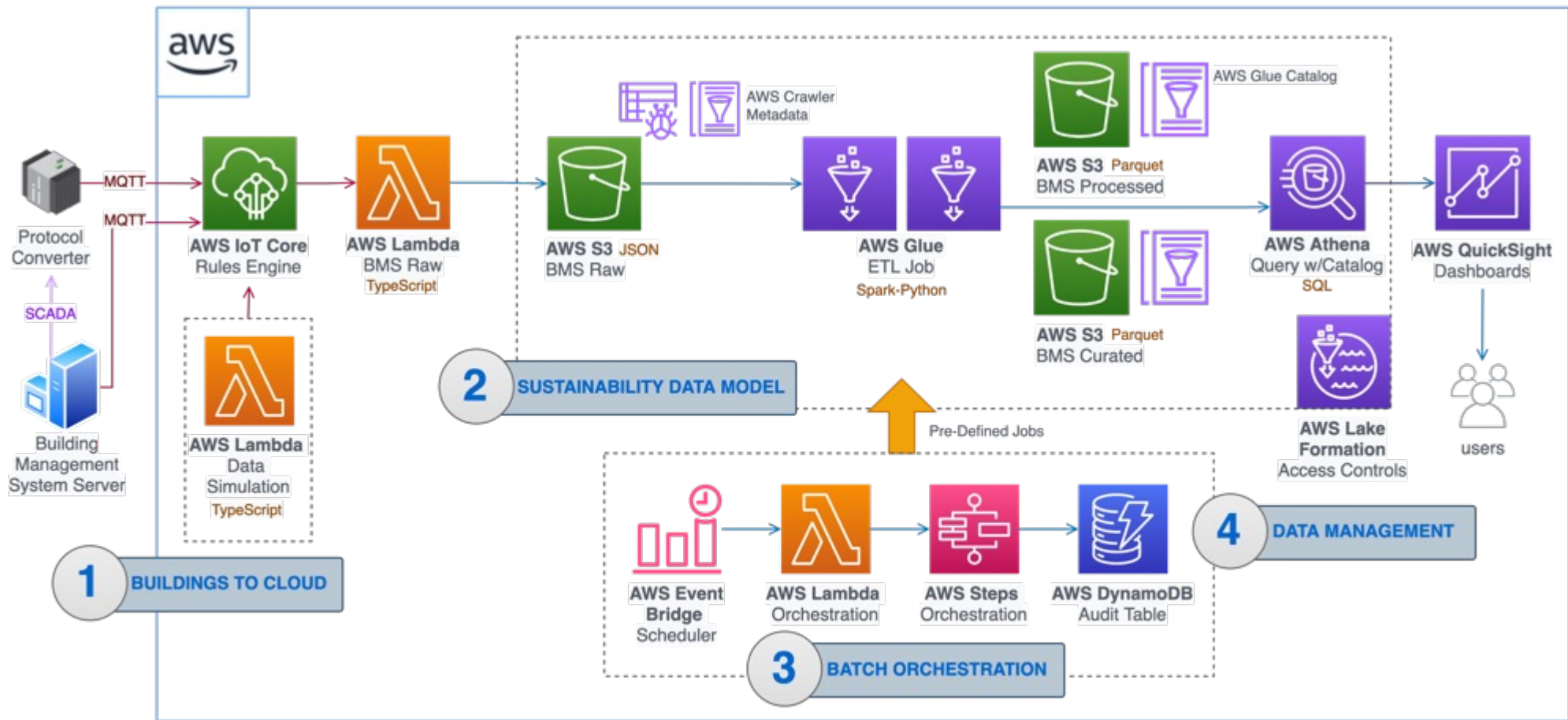
Flexible connection options for building infra and operations.

Repeatable method to add new assets to the cloud.

The first step in making sustainability initiatives data driven



Batch Processing Reference Architecture



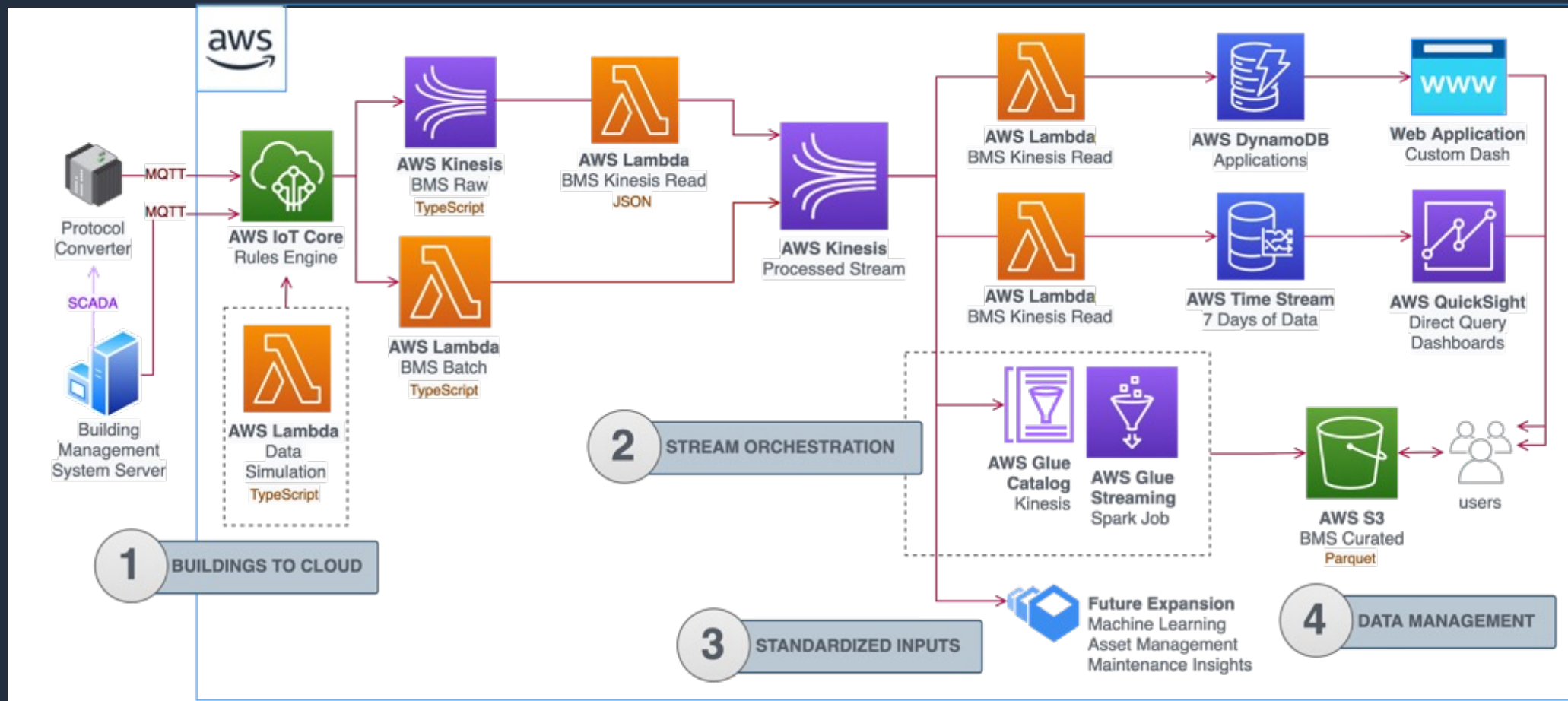
- Building Network (SCADA)
- Near Real Time Data Flow
- Batch Data Flow

Ideal for building sustainability reporting use cases

Standardized Storage environment for sustainability data

Data normalization and management tools

Near Real Time Processing Reference Architecture



Building Network (SCADA)
 Near Real Time Data Flow

Ideal for building maintenance services use cases

Standardized Storage environment for sustainability data

Data normalization, streaming and management tools

Proven customer success

A retail chain was using varying capacities of UPS devices across stores of similar size. Using Phantom, the company performed asset benchmarking to recommend new UPS devices resulting in a reduction in baseline energy consumption by 48%.



[Learn more](#)

Truist Park (the home of the Atlanta Braves) uses Abound to capture data from air quality sensors and report on visual displays providing guests and staff a real-time look at how systems are working together to improve air quality.



[Learn more](#)

A global real estate investment trust (REIT) with over 12,000 rentals used Cognizant Smart Buildings to integrate multiple assets and systems resulting in improved operational efficiency of facility management and marketability of the properties.



[Learn more](#)

Brookfield Place was able to improve visibility into building operations for all stakeholders – from the board room to the boiler room. The productivity of the operations team went up by 30% and Facilio also reduced energy spend by 15%.



[Learn more](#)



Proven customer success

The Howard Hughes Corporation used KONE 24/7 Connected Services at 110 North Wacker in Chicago, IL to extend the life cycle of equipment through predictive maintenance and upgrades.



[Learn more](#)

Rudin was able to reduce their carbon emissions by 44% years before their commitment and reduce their annual energy costs by \$5 million across their 10 million square foot office portfolio.

prescriptive data

[Learn more](#)

Siemens' comprehensive set of building automation, microgrids, connectivity solutions, IT platforms, energy storage, and smart metering, resulted in a reduction of carbon emissions and creating a business case worth €643,000 per year for Sello.

SIEMENS

[Learn more](#)





Thank you!