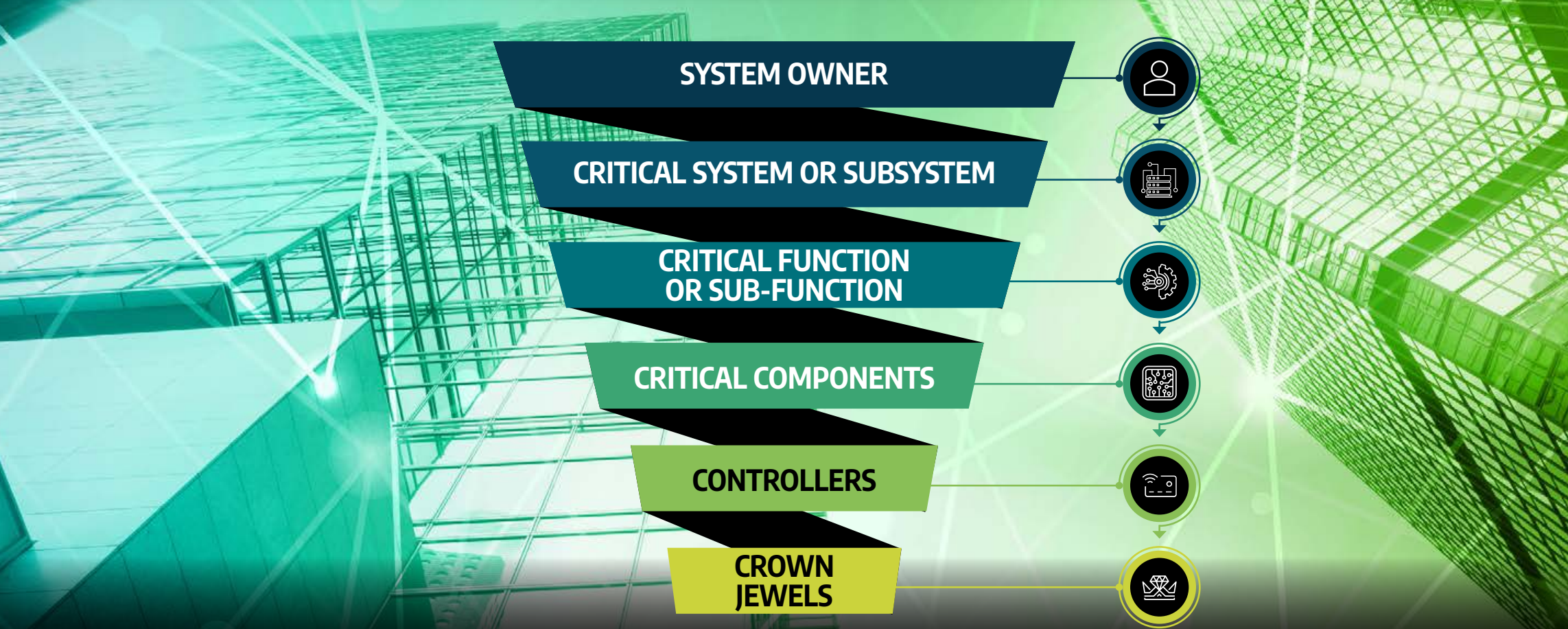


CROWN JEWEL ANALYSIS



SECTOR: BUILDING AUTOMATION SYSTEMS

Crown Jewel Analysis (CJA) is an iterative process that works top-down to systematically determine the physical & logical assets, data, and communication and control interfaces required for primary system function. Knowing the specific devices required for operations enables every aspect of vulnerability management, incident response, disaster recovery, and where detection and protection should be prioritized.

Building Automation Systems (BAS) are commonly found in Data Centers to handle the work of managing and recording data for managing various building systems. Additionally, BAS administrators can adjust the operation of these systems automatically to maximize the uptime and the operating efficiency. There are a few areas where BAS can play an important role in the data center.

Below is a simplified example of a Crown Jewel Analysis for typical building automation systems found within a co-location data center. Categories below are somewhat arbitrary and some products could be placed in more than one (or many) categories.

<div></div> <div>SYSTEM OWNER</div> <div>Specific provider within an industry discipline, geographic region or demographic that may be targeted</div>	<div>INGEN</div> <div>HYPERSCALE</div> <div>DATA CENTER</div>	<div></div> <div>CO-LOCATION (COLO) DATA CENTER</div>
<div></div> <div>CRITICAL SYSTEM OR SUBSYSTEM</div> <div>Collection of assets, facilities, networks and/or operators that provide a specific, collective function and output</div>	<div>BUILDING AUTOMATION SYSTEM</div> <div>EMERGENCY MANAGEMENT SYSTEM</div> <div>ELECTRICAL POWER MANAGEMENT SYSTEM</div> <div>DATA CENTER INFRASTRUCTURE MANAGEMENT</div>	<div></div> <div>BUILDING AUTOMATION SYSTEM</div>
<div></div> <div>CRITICAL FUNCTION OR SUB-FUNCTION</div> <div>Required principal tasks of a system such as heating, cooling, exchanging, pumping, separating, compressing, distributing, storing, etc.</div>	<div>LIGHTING</div> <div>HVAC/ROOF TOP UNIT</div> <div>ELECTRICAL</div> <div>ELEVATOR & OTHER MECHANICAL</div> <div>PLUMBING/WATER MANAGEMENT</div>	<div>AIR HANDLING UNIT</div> <div>SECURITY & SURVEILLANCE</div> <div>FIRE DETECTION & SUPPRESSION</div> <div>UPS</div>

Shown here are examples of physical and logical devices that are representative of these levels of the model. These will be unique to the critical function of the CJA. Items listed below are commonly found in the chemical industry and are not CJA specific for this example.

<div></div> <div>CRITICAL COMPONENTS</div> <div>Physical assets required to complete a system critical function</div>	<div>METERS</div> <div>PUMPS</div> <div>VAV BOX</div>	<div>SENSORS</div> <div>ACTUATORS</div> <div>VFD</div>
<div></div> <div>CONTROLLERS</div> <div>Represented by their direct interconnection between the logical and the physical network</div>	<div>LONTALK DEVICE</div> <div>HMI/USER INTERFACE</div> <div>BACNET DEVICE</div>	<div>JACE CONTROLLERS</div> <div>VAV CONTROLLER</div> <div></div>
<div></div> <div>CROWN JEWELS</div> <div>Critical data, logical assets and/or communication and control interfaces required to exercise control over components, and thus, functions</div>	<div>PLCs</div> <div>SENSORS</div> <div>MAINTENANCE LAPTOP</div>	<div>JACE CONTROLLER</div> <div>FIREWALL</div> <div>REMOTE ACCESS CONNECTION</div>

COMMON VENDORS:

