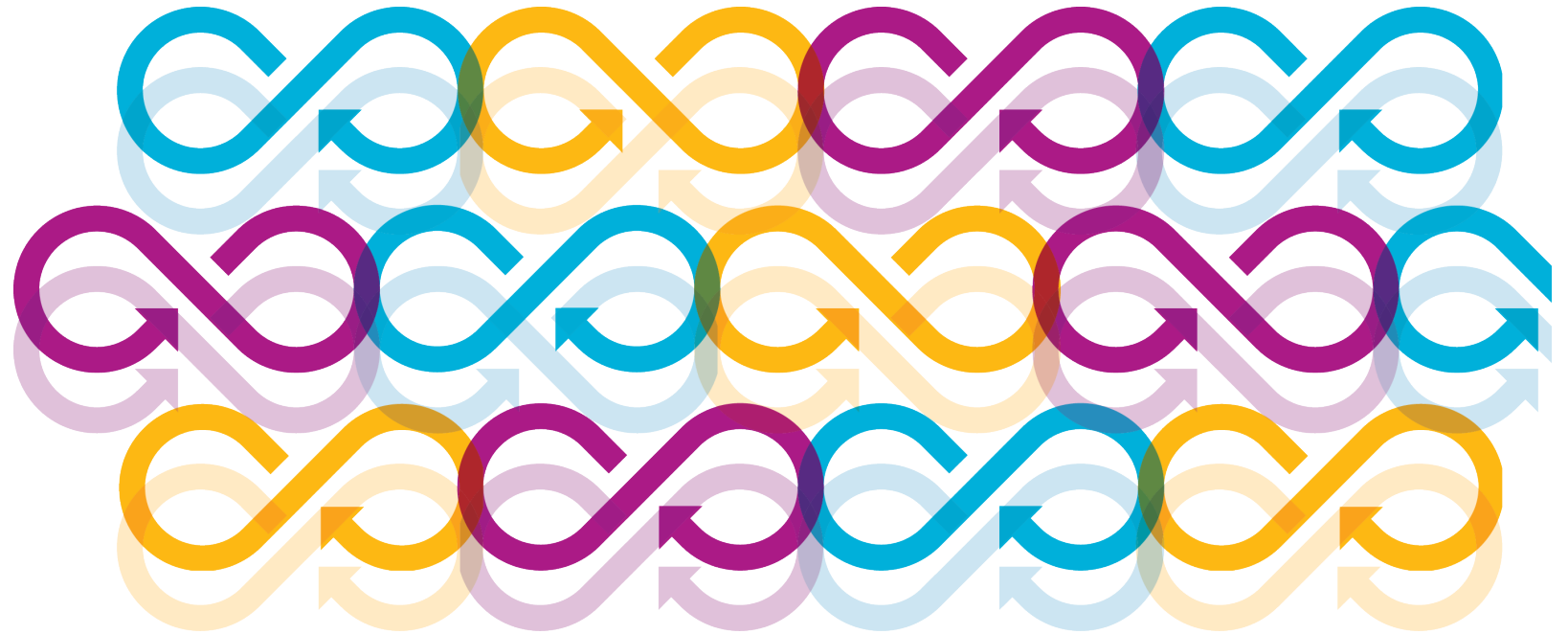


IBM Site, Facilities and Data Center Services

Supporting innovation and transformation with resilient data center infrastructures



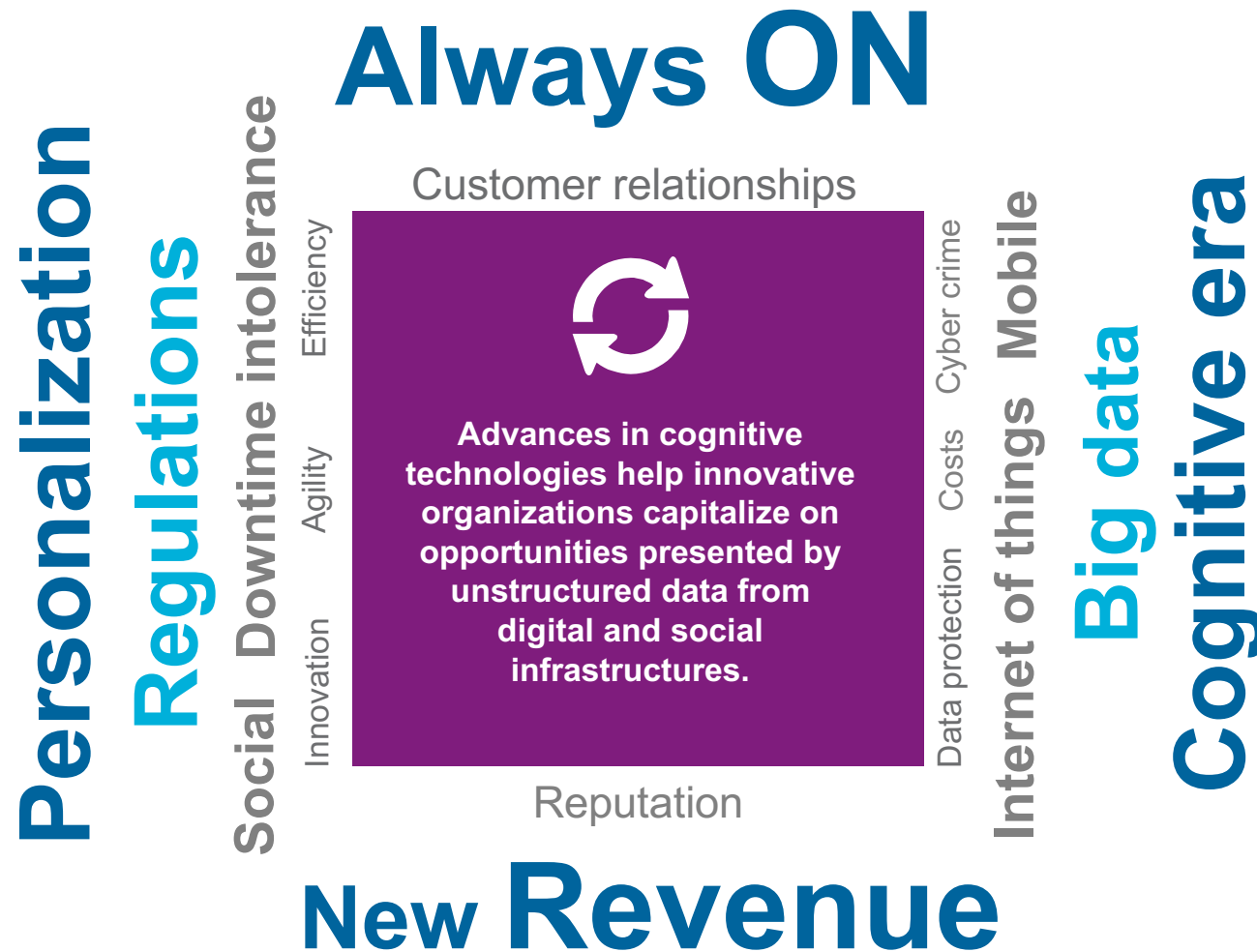
Girish Chandra - Data center Specialist

Agenda

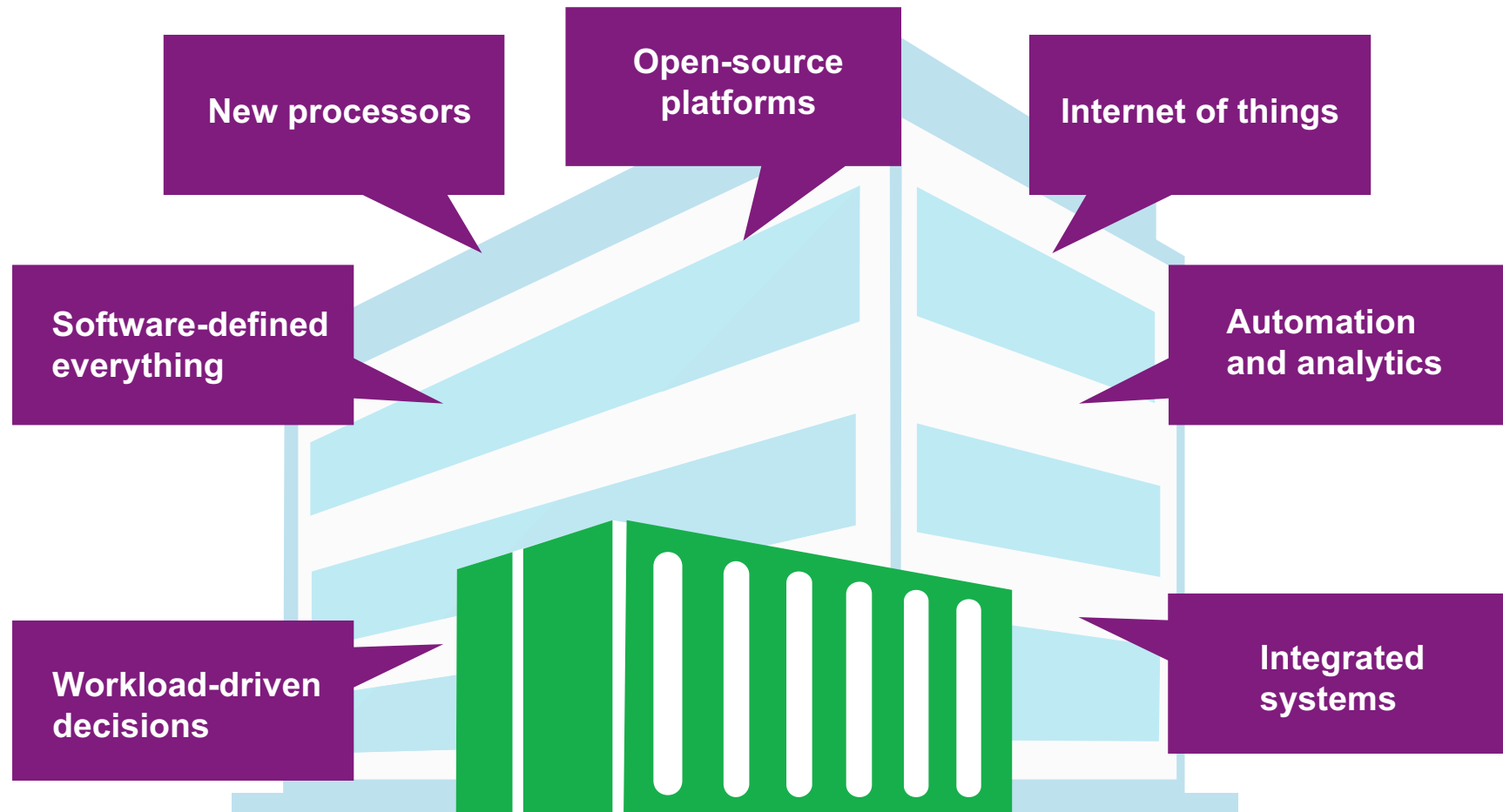
- Current market or industry situation
- Needs and challenges
- IBM Data Center Family
- Scalable Modular Approach
- Why Data Center projects go wrong
- IBM Solution
- Summary
- Q & A



Cognitive computing and digital technologies are transforming industries that use those capabilities to gain “always on” resiliency.



Your data center infrastructure and management need to evolve to meet the demands of these technology trends.



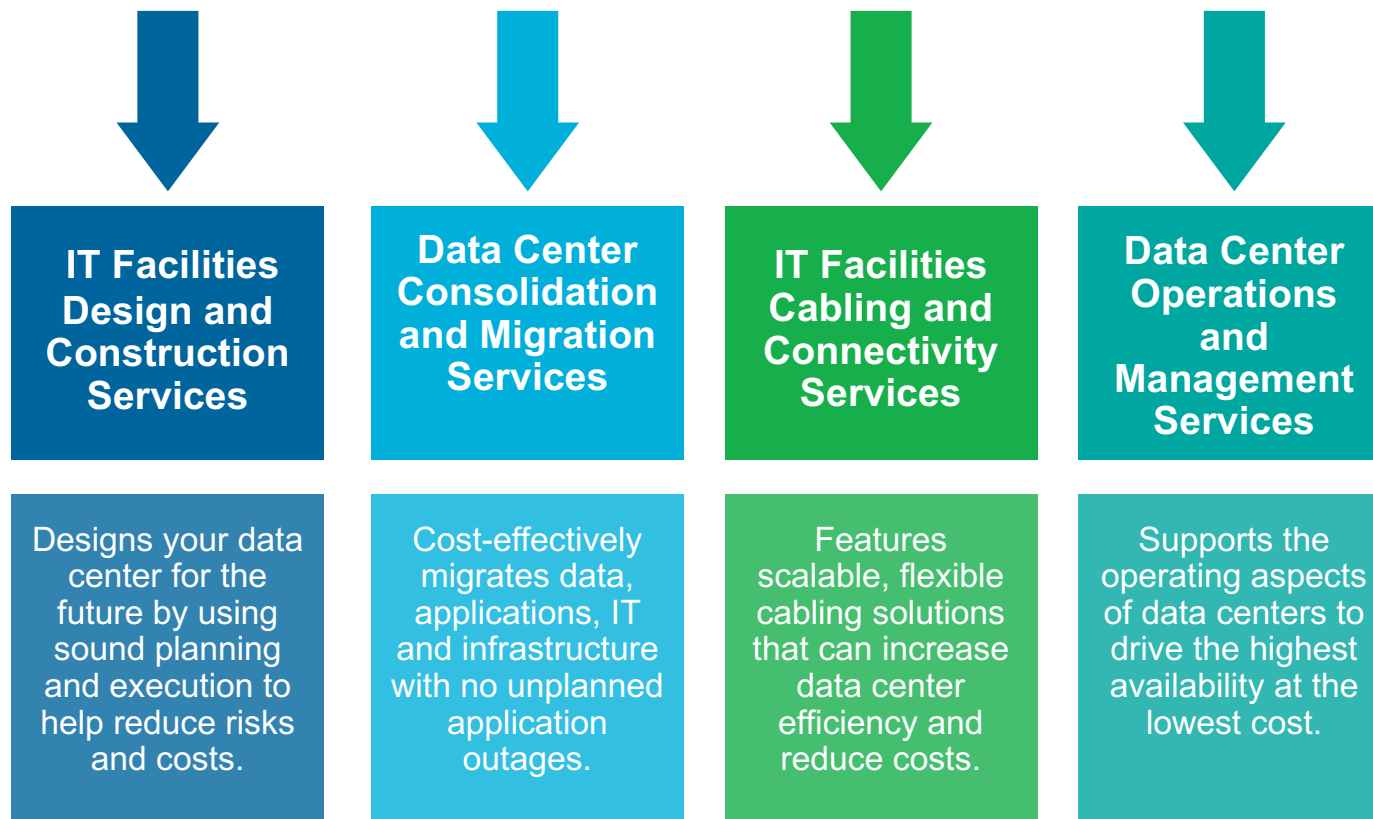
Source: IBM, "The next-generation data center. A software defined environment where service optimization provides the path", May 2014.



We deliver consistent, high-quality services worldwide designed to support IT and technology trends.

IBM Modular Data Center and Facilities Strategy Services

Helps you rationalize your data center portfolio to address availability, adaptability and efficiency



Data Center Statement of Requirements (SOR)

The SOR identifies and documents the physical requirements for the proposed Data Center

- ✓ Review current environment and customer requirements
- ✓ IT Requirements – Rack quantities and kW/rack estimations
- ✓ Determine construction and architectural requirements
- ✓ Determine reliability requirements
- ✓ Electrical & mechanical infrastructure required to support a 7X24 operation (N, N+1, N+2,...)
- ✓ Space allocation requirement for the electrical and mechanical infrastructure
- ✓ Requirements for fire suppression
- ✓ Space allocation and programming requirements for staff
- ✓ Requirements for Network Operations Center (NOC) or Command Center
- ✓ Physical security and environmental monitoring considerations
- ✓ Develop conceptual Data Center layout
- ✓ Develop conceptual electrical and mechanical single line drawings
- ✓ Develop estimated budget and construction timeline



IBM can provide a complete solution and help clients implement a solution any where and in any climate



DETERMINE REQUIREMENTS



What are your data center requirements?

- Strategy
- Intended use
- Growth requirements
- Installation location
- Integration with existing systems

DETAILED PLANNING / DESIGN



Create a design based on the requirements.

- Flexibility to support multiple technologies
- Scalable to meet current and future needs
- Complete infrastructure systems
- Incorporate into existing or new facilities

TURNKEY SOLUTION



Turnkey solution:

- Installation site design
- Permit processes
- Site preparation and installation
- Security system design and installation
- Connections to existing or new utilities
- Incorporate into campus aesthetics

START UP TESTING/ SITE TURNOVER

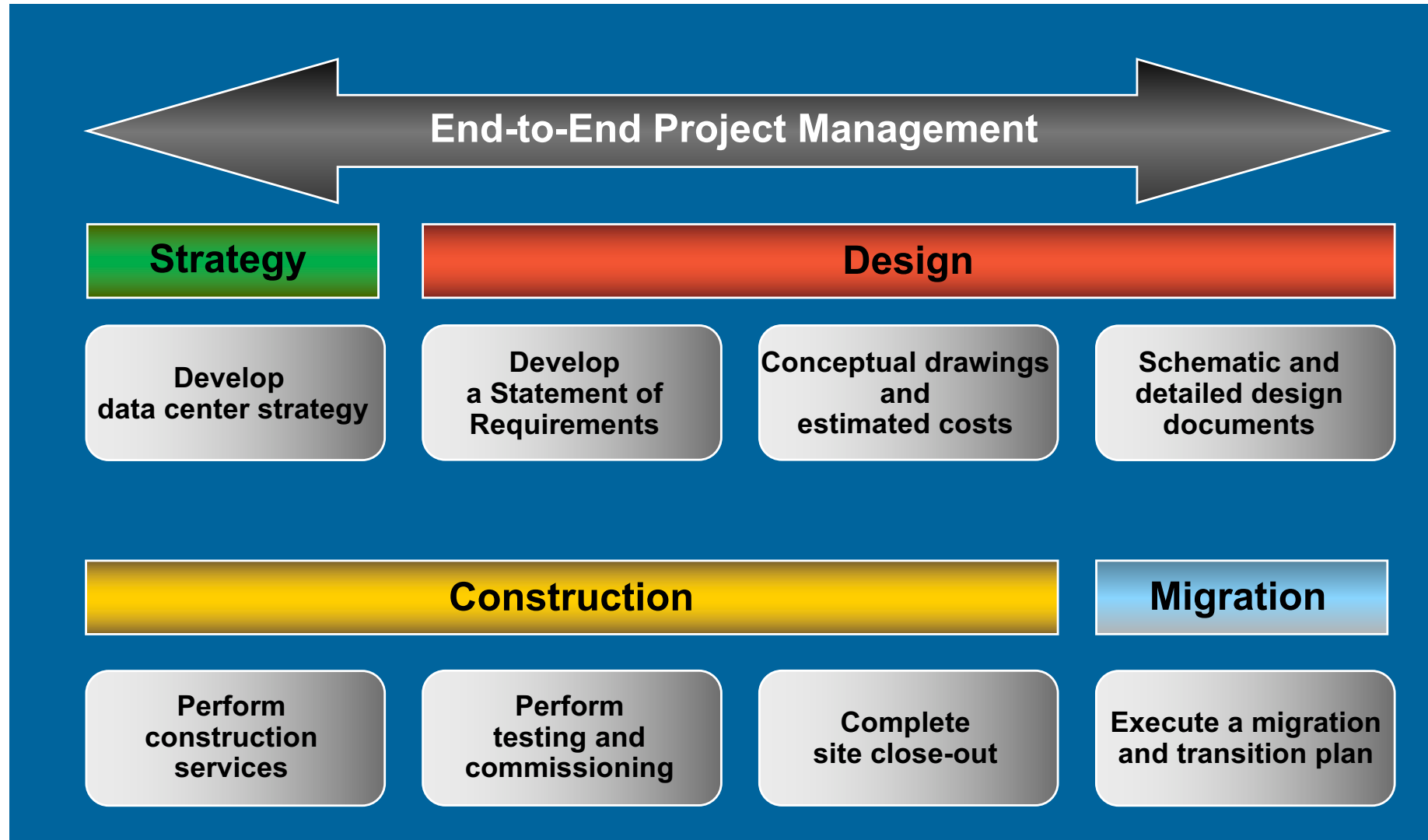


Site turnover:

- IT equipment relocation and migration
- Start up / test complete solution
- Client operation training
- Ongoing maintenance and service coordination

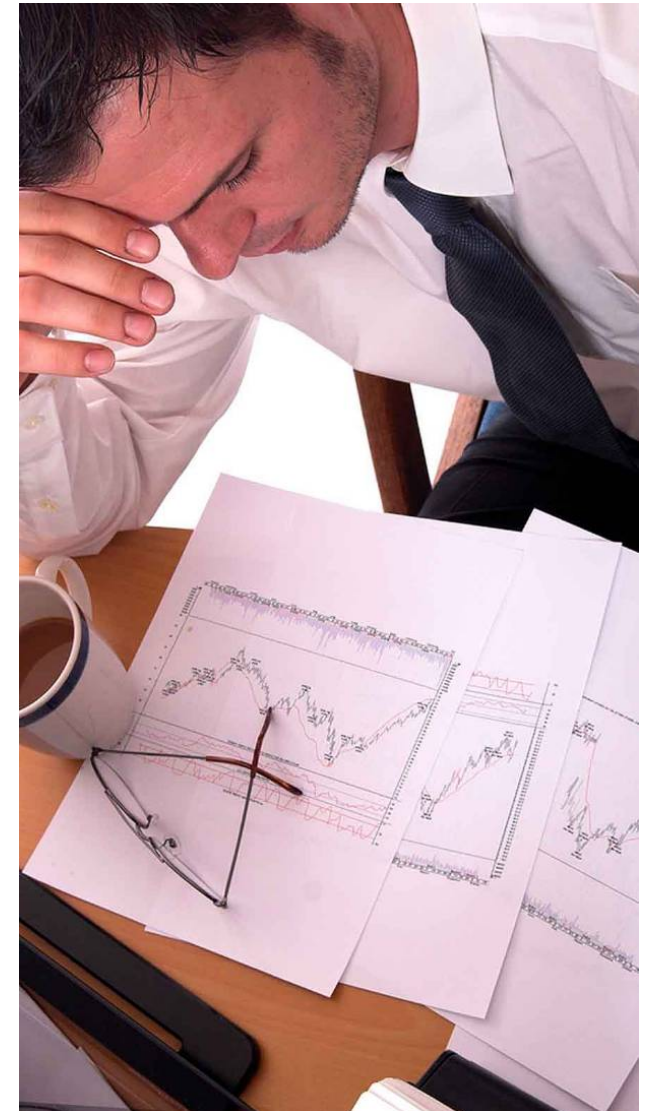


Methodology - IBM can provide end-to-end expertise to plan your data center strategy through design, build, and migration

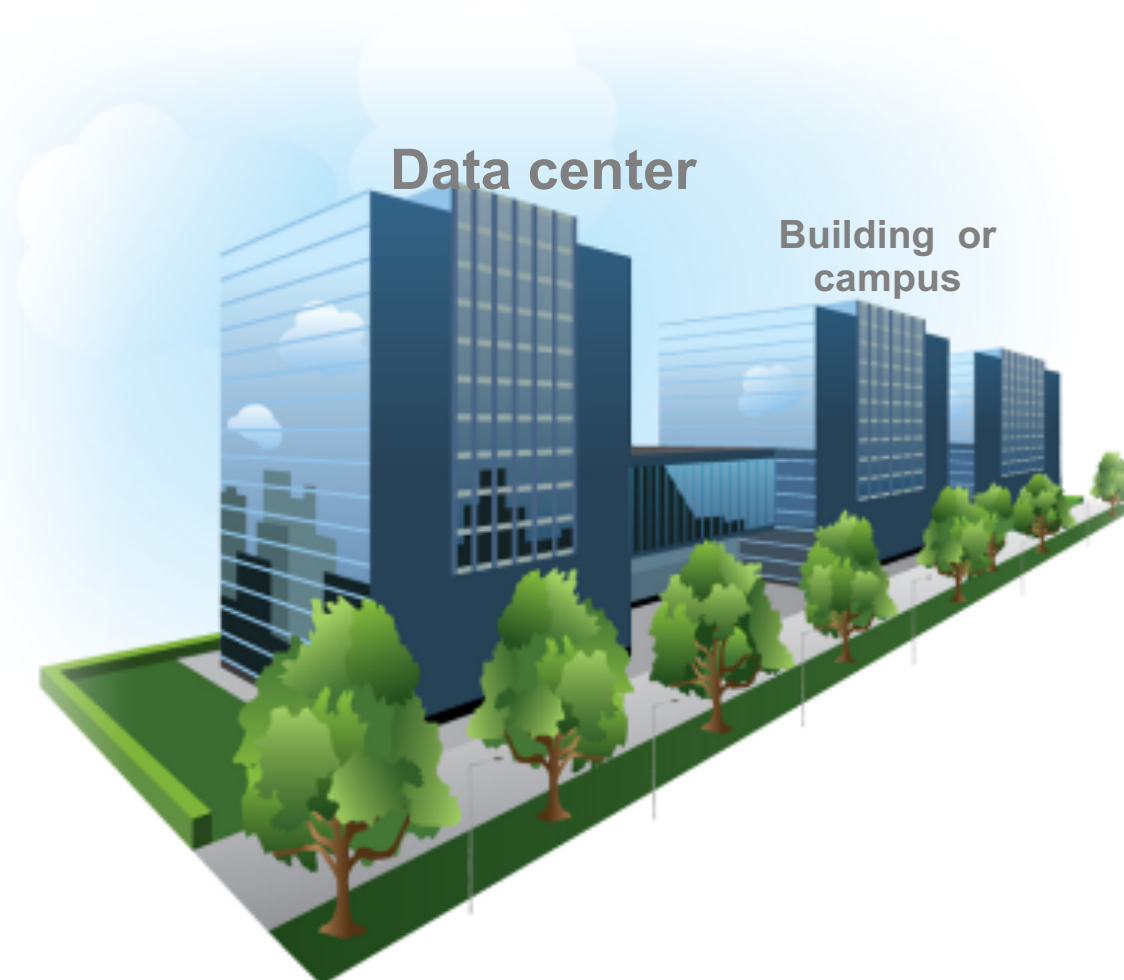


Why do data center projects go off track?

- Clients take on the responsibility to manage the overall project without the data center centric skills or experience.
- No trusted partners were established that were motivated for the overall successful outcome ... groups of **niche experts** focused on their own areas of expertise.
- There was no clear and detailed **statement of requirements** as the starting point.
- The statement of requirements did not include a **risk assessment** accounting for the unpredictability of growth, technology and computing models.
- **Operating costs** are not a standard part of the design and evaluation process.
- There is no **governance process** to make the design trade-off decisions quickly in a fact based environment
- The **real estate, technology and operational management** teams are not on an equal footing.



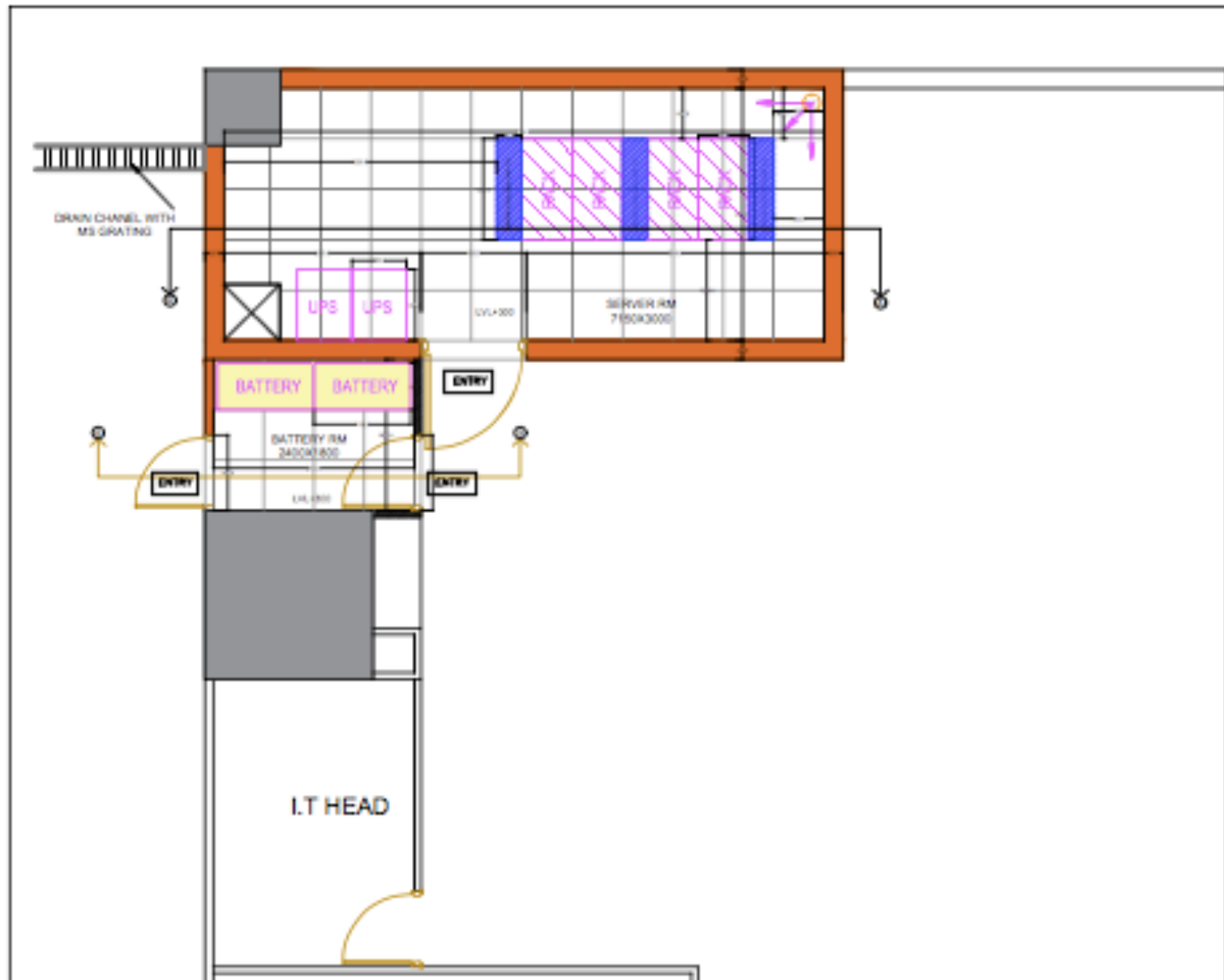
IBM Solution for Rajiv Gandhi Cancer Hospital Hospital - Rohini.



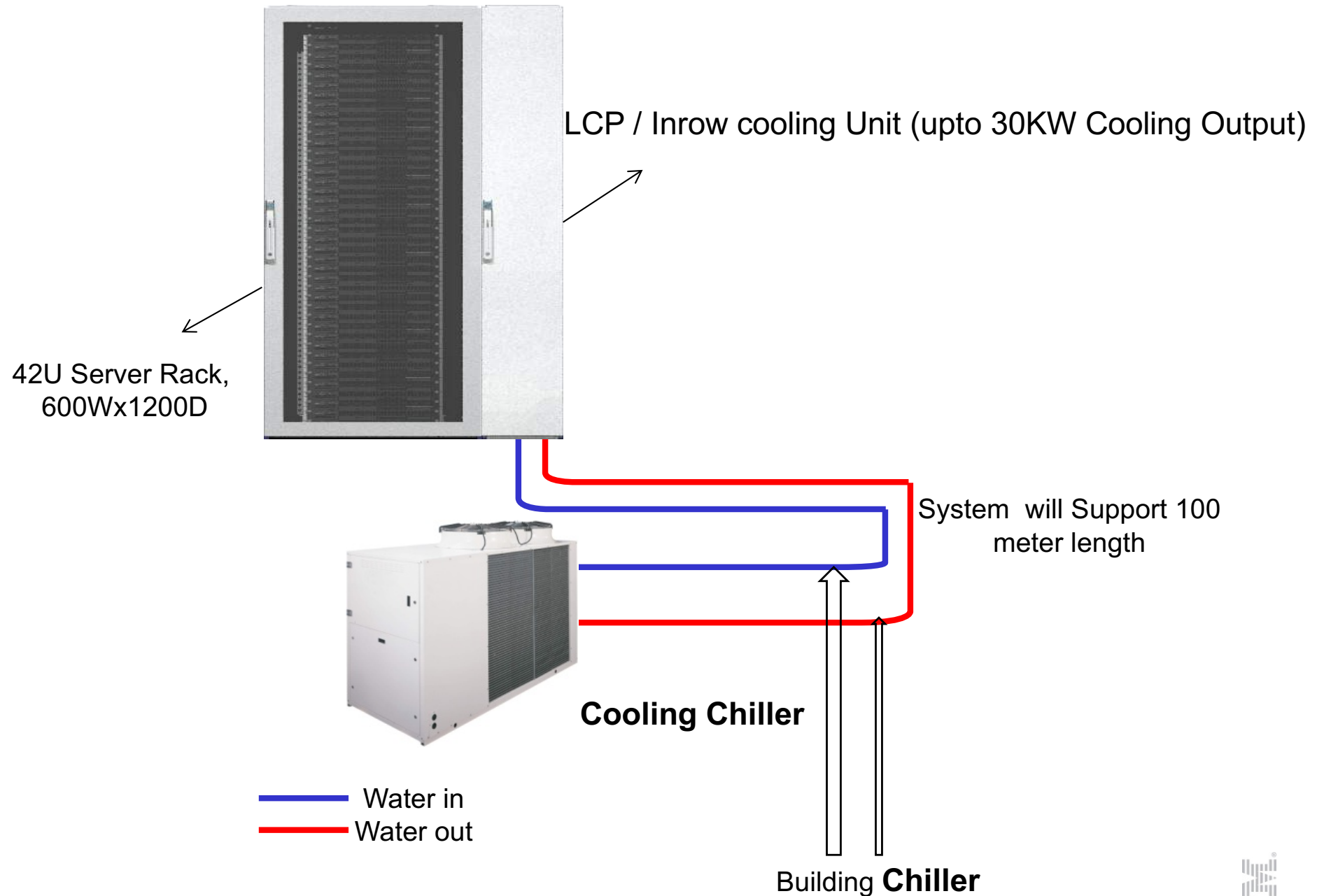
¹Leadership in Energy and Environmental Design



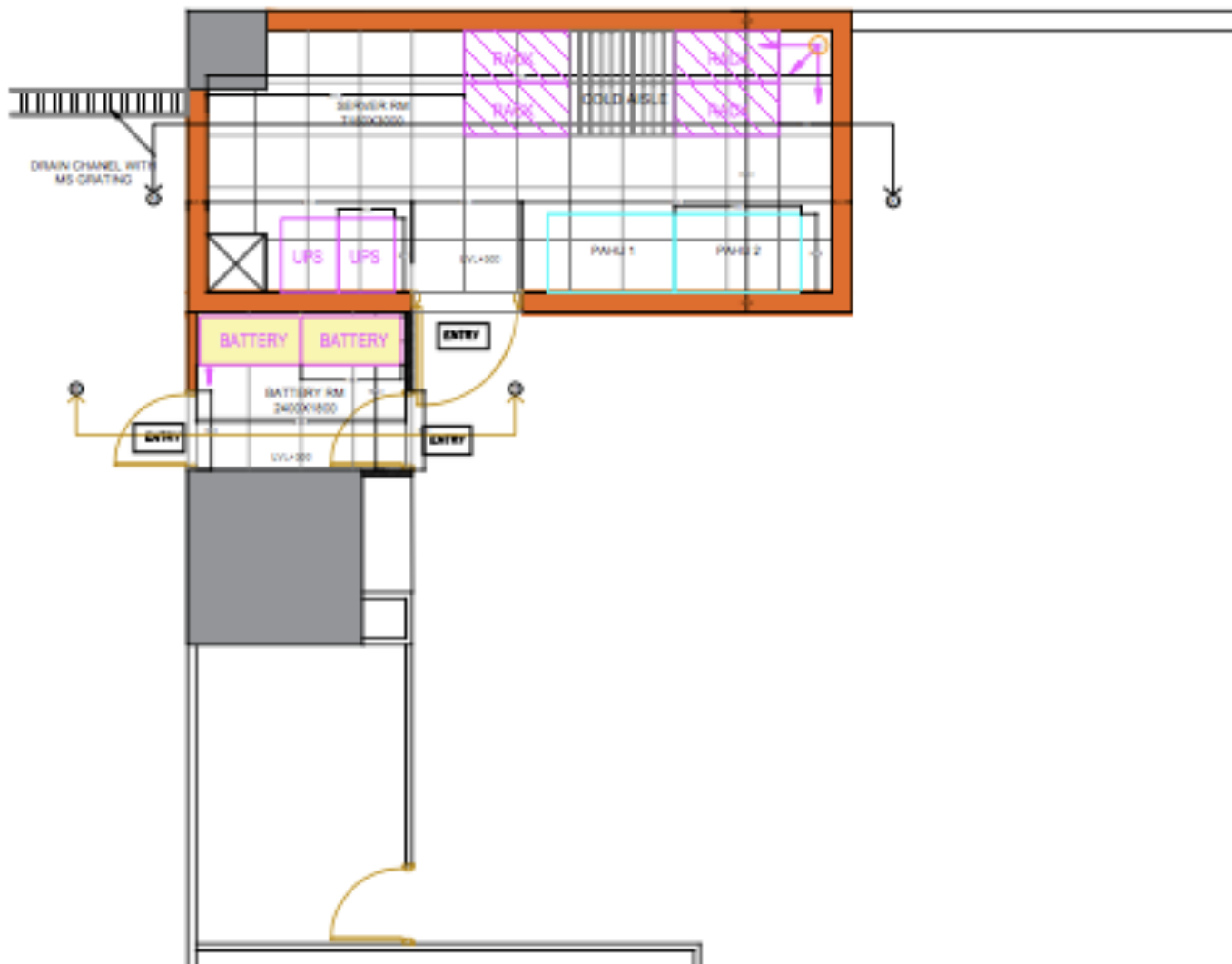
Server Room Layout : Option 1



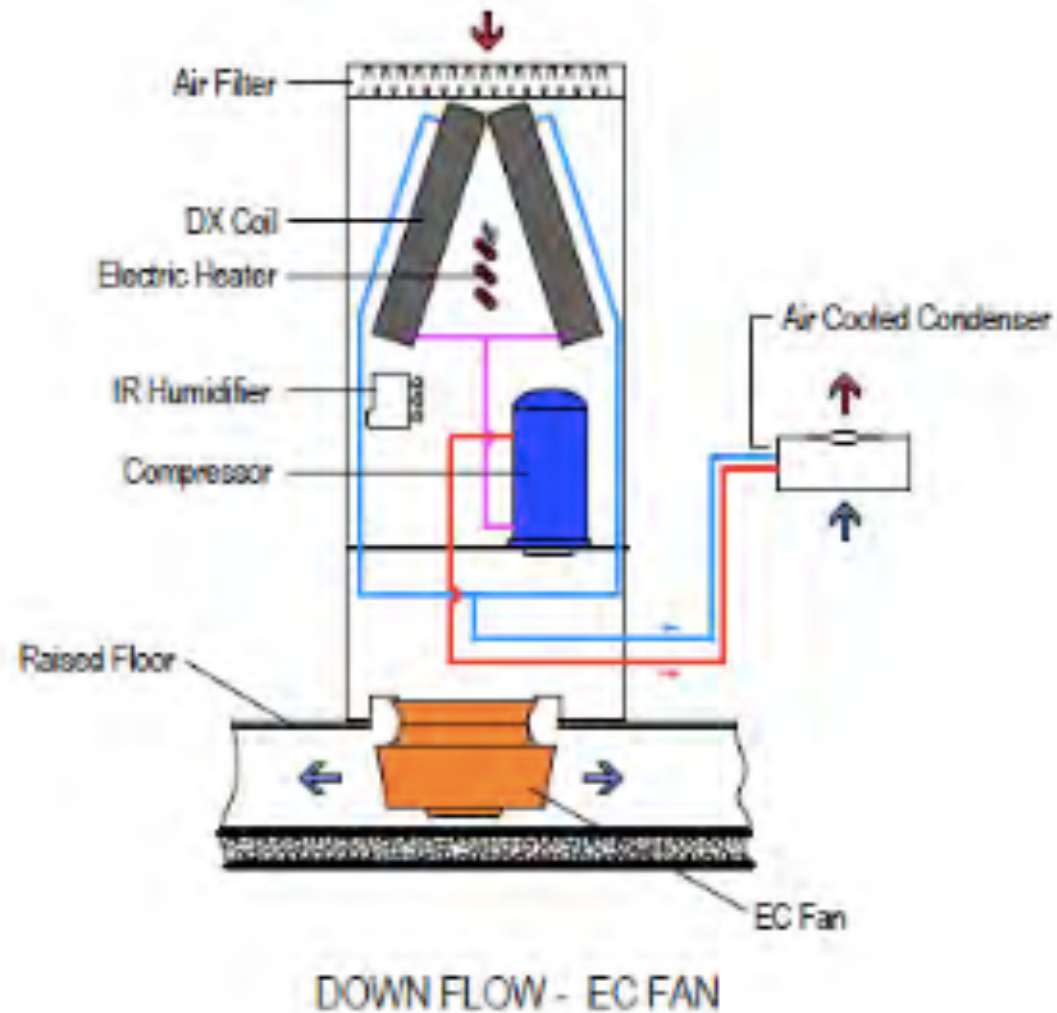
Line Diagram



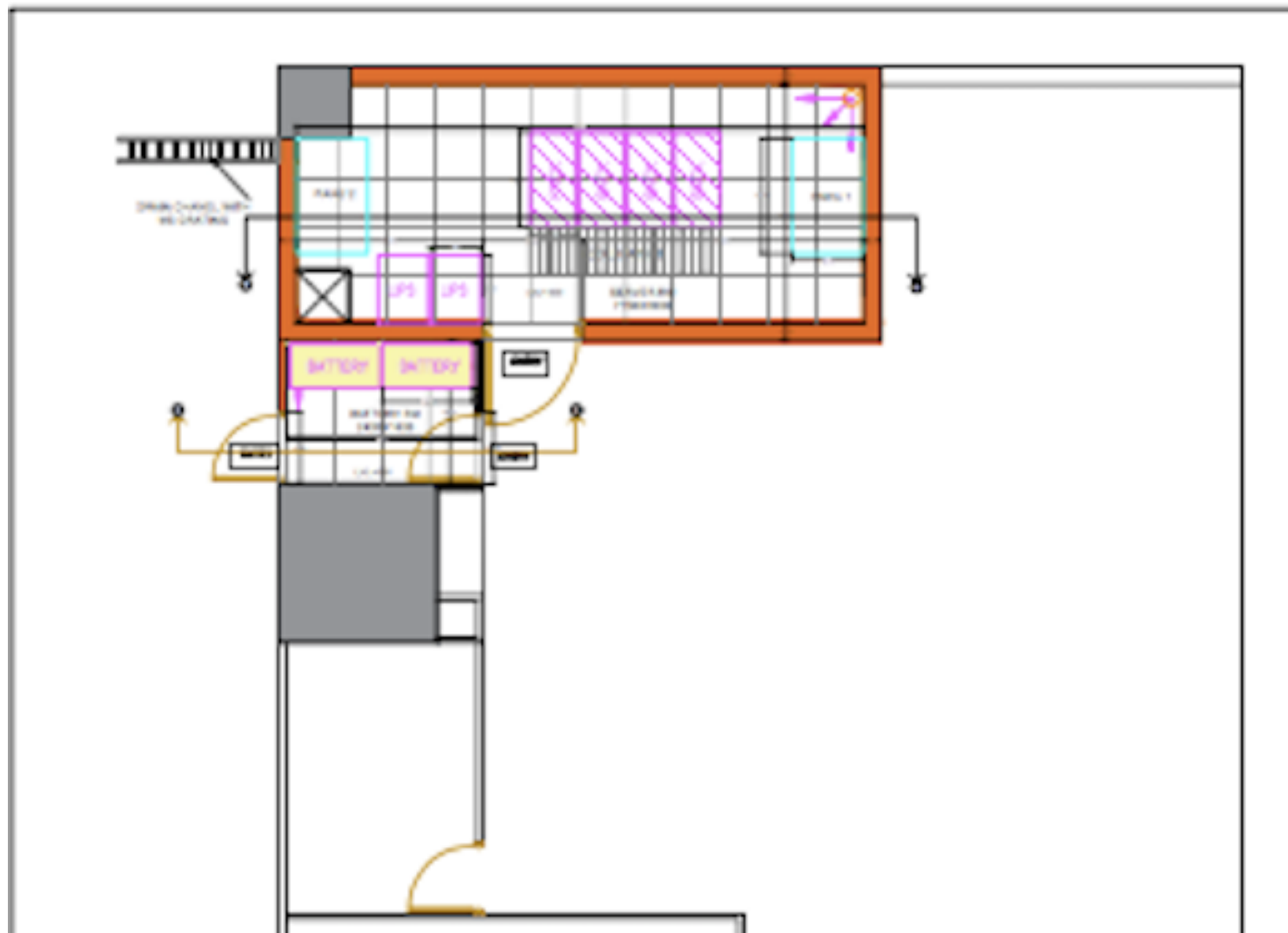
Server room Layout – Option – 2



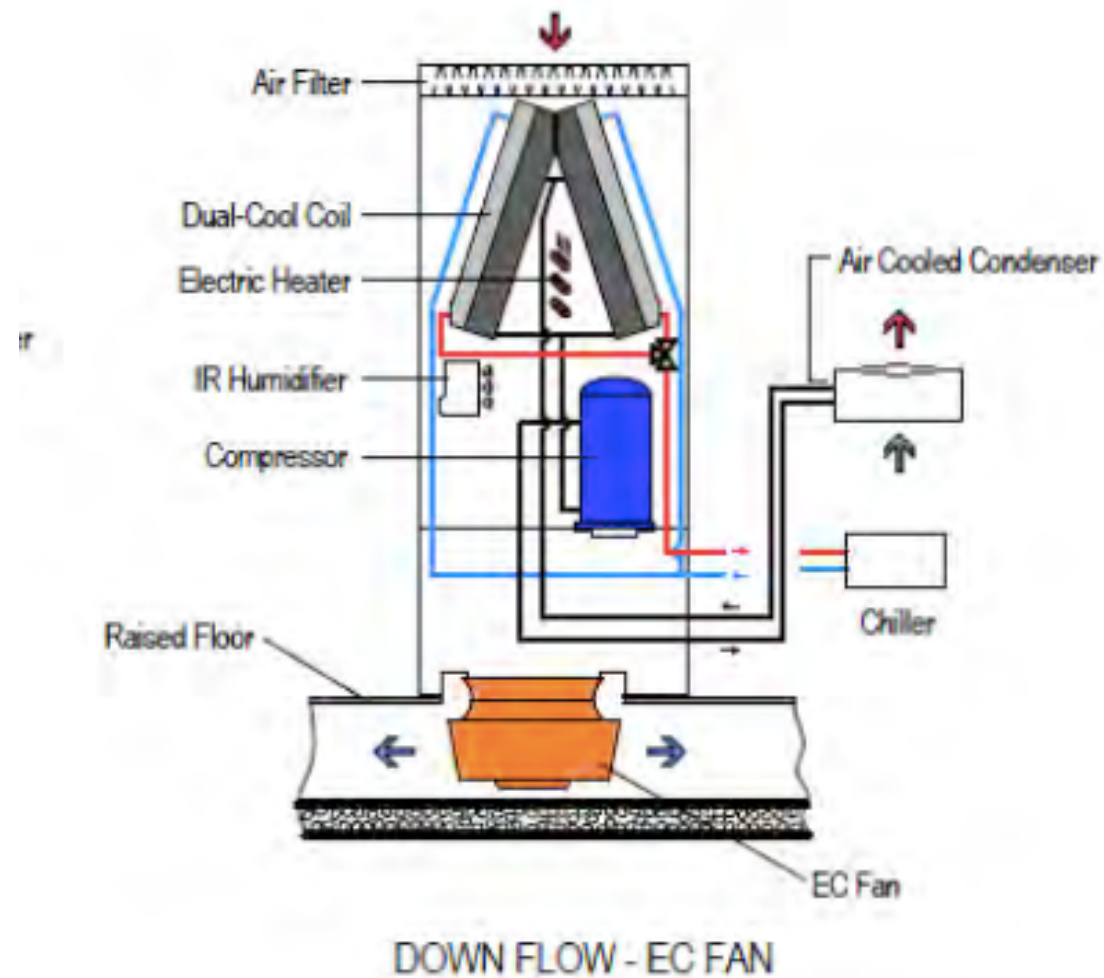
Cooling Solution With DX based



Server room Layout Option 3



Cooling Solution with Dual Coil



Solution Pros & Cons

Solution	Pros	Cons
Option 1- Inrow With Air cooled Chiller System	Air Cooled Chiller - can support 100 meter distance from indoor to out door	Separate Chiller ie required
	Operation cost will be minimum	
	Building Chiller Pipe can also utilize	
Option 2 - PAC with DX based	Energy efficient system compare to DX refregirant based system	
	No chiller is required	High operation cost
	Only outdoor unit will be placed outside the building	Maximum 60 meter distance between indoor to out door unit
Option - 3 PAHU With Dual coil Cooling system	Front through Unit can be best where the total height is less than 3 Meter	
Option 4 Inrow DX based cooling	Dual cooling coil	Space concern
	Building Chilled water can be used	In DX cooling coli max distance from indoor to outdoor 60 meter
Option 4 Inrow DX based cooling	This creates paths for airflow that are more clearly defined and shorter distances. This also allows for a much more predictable airflow, allowing the cooling system to achieve a higher power density. Row-based cooling systems are also more efficient due to the reduction in the length of the airflow path.	Inddor to Out door unirt can go max 35 meter



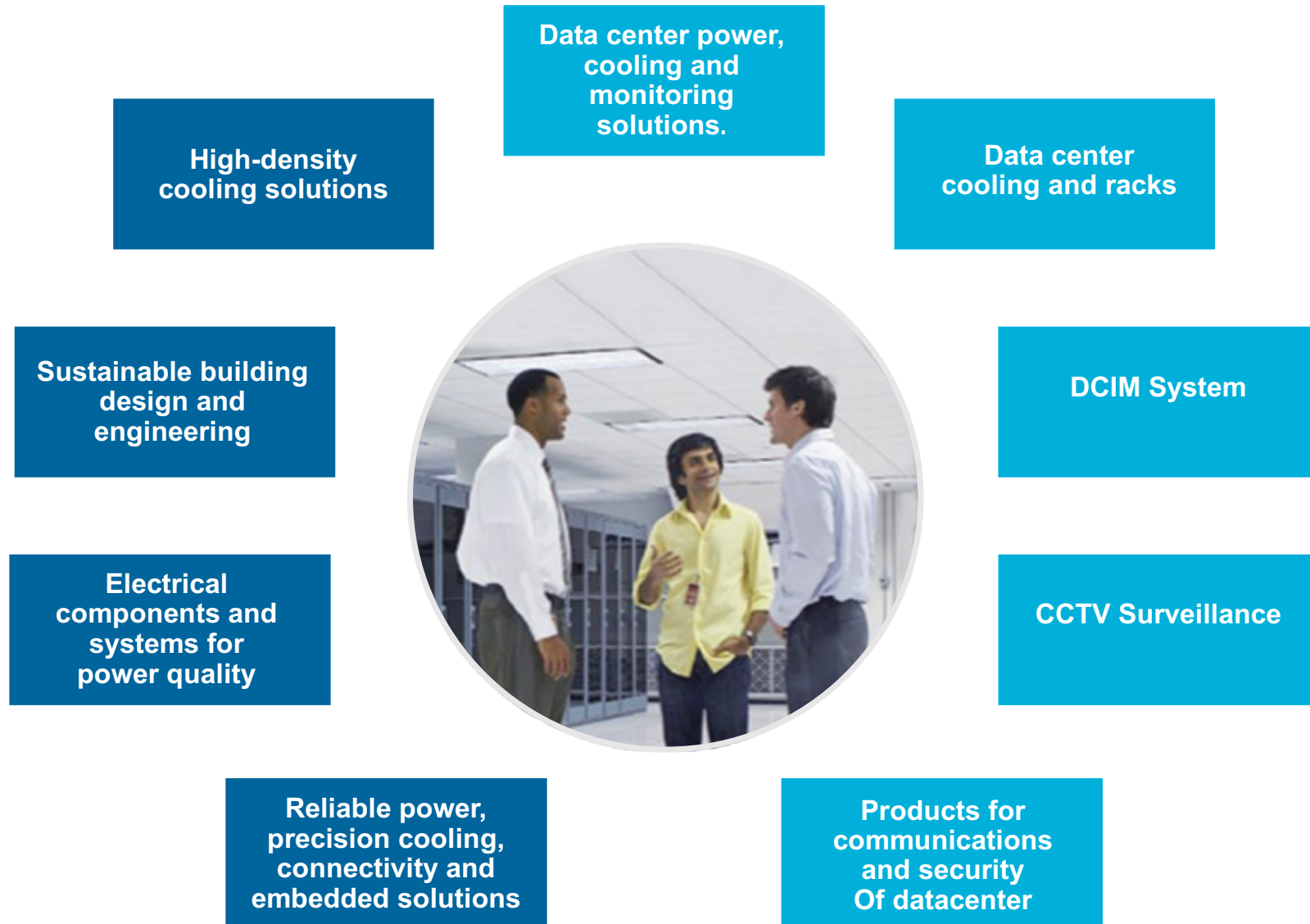
UPS system



The UPS Module improved efficiency, lower cost of ownership and better customer service through high availability.



As a global systems integrator, we use an ecosystem of alliances to provide robust data center solutions.



Case study: IIT Delhi

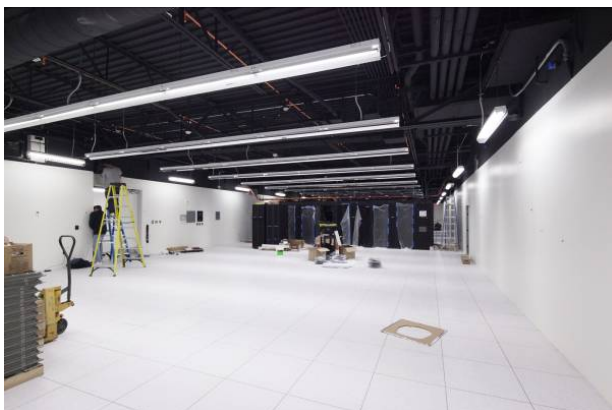
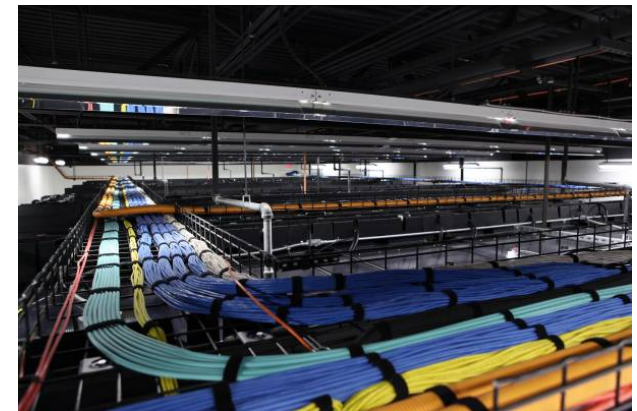
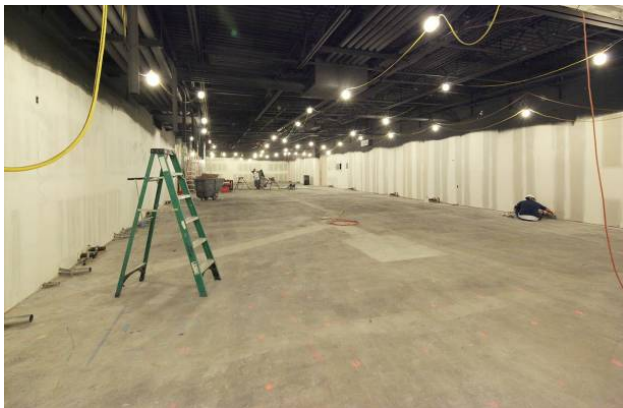
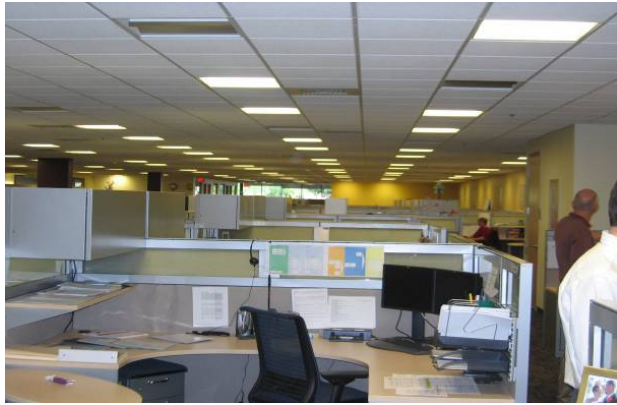








AAA Data Center — IT White Space, Staging Room, (2) UPS Rooms, Electrical Room, Outside Equipment Yard



AAA Equipment Yard – (2) 2.25MW, (1) 1.25MW Generators, Load Bank, (3) Chillers, Chilled Water Storage



City of Hope Data Center –

IT White Space, Network Operations Center, War Room, Staging Room, DEV & QA Labs, Help Desk, War Room, Break Room, Staff Space, Intelligent Conference Room, Hoteling Space



Las Vegas Review Journal - IT White Space, Network Operations Center, (2) UPS Rooms, Print Room Staging Room



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Thank You

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