

Data Center – IBM View

*Lessons from 500 modular
data center implementations
around the world*

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Iceland



Her kan du spare masser af penge på dit datacenter

Island stormer ind på datacenter-markedet.

Og vulkanlandet har nogle helt klare fordele, du kan drage nytte af.

http://www.computerworld.dk/modules/davinci/getfile.php?id=98127&width=534&scale_up

Change is accelerating ...

IT demand



82M Servers installed by 2013

20% Server workloads have been virtualized

650% Storage growth by 2012

<30% Disk storage is used effectively

Cost pressures



75% Of CIOs anticipate a strongly centralized infrastructure in 5 years

2-3% Increase forecast for IT spending

Need for flexibility



70¢ Of every \$1 is spent on maintaining existing environment

71% Of data centers are > 7 years old

5-60% Of IT workloads may be cloud-enabled

Clients can respond to these challenges in 4 ways.



Future proof existing data center infrastructure

*Double IT capacity or reduce
operational expenses
by 50%*



Rationalize the data center infrastructure across the company

*Improve operational efficiencies
while reducing operational
expenses by 50%*



Flexible design to be responsive to change

*Pay as you grow by deferring
40-50% of capital and
operational costs*



Integrated management of IT and data center operations

Lower operational costs up to 20%

Data center professionals need to manage requirements over a 15-20 year life – cloud adds a new variable.

Business objectives

- Meet business and IT growth
- Align capital and operating costs
- Flexible to support new technology
- Faster time to deploy
- Reduce risk
- Security



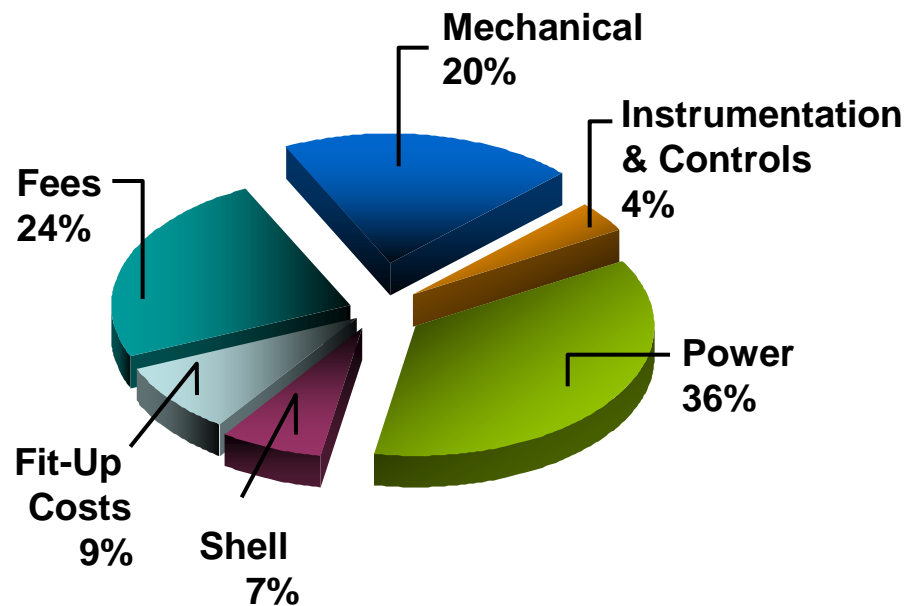
Data centre requirements

- High availability
- Provide required capacity
- Optimize capital costs
- Maximize scalability
- Maximize flexibility for technology and computing model adoption
- Minimize capital and operational costs
- Interconnect IT, data centers and buildings for data centre operations management excellence

Capital cost gets 100% of the focus and are 15% of the total cost. Major cost savings is the deferral of 40-50% of the electrical and mechanical capacity until it is required.

Data center capital costs

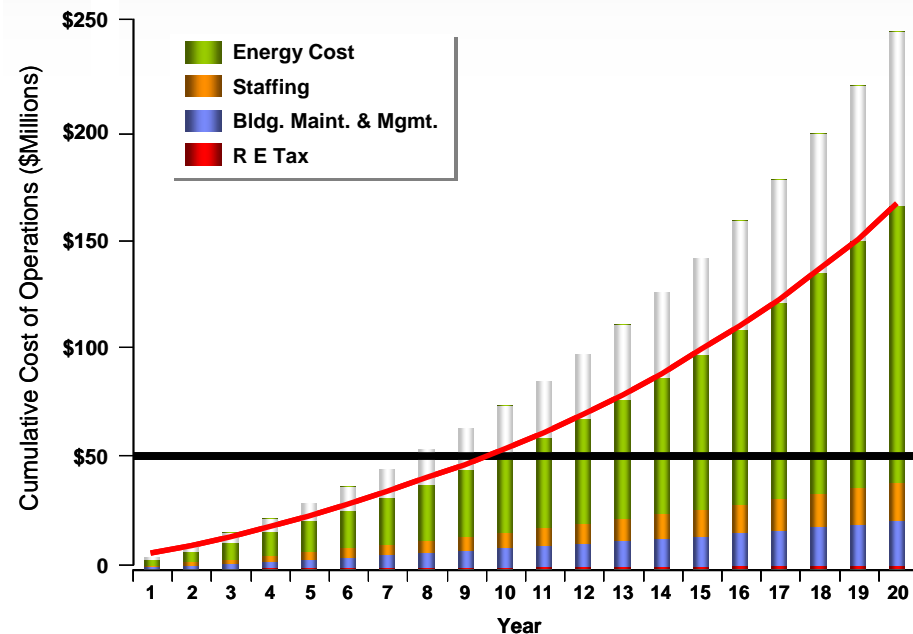
60% costs from mechanical / electrical systems



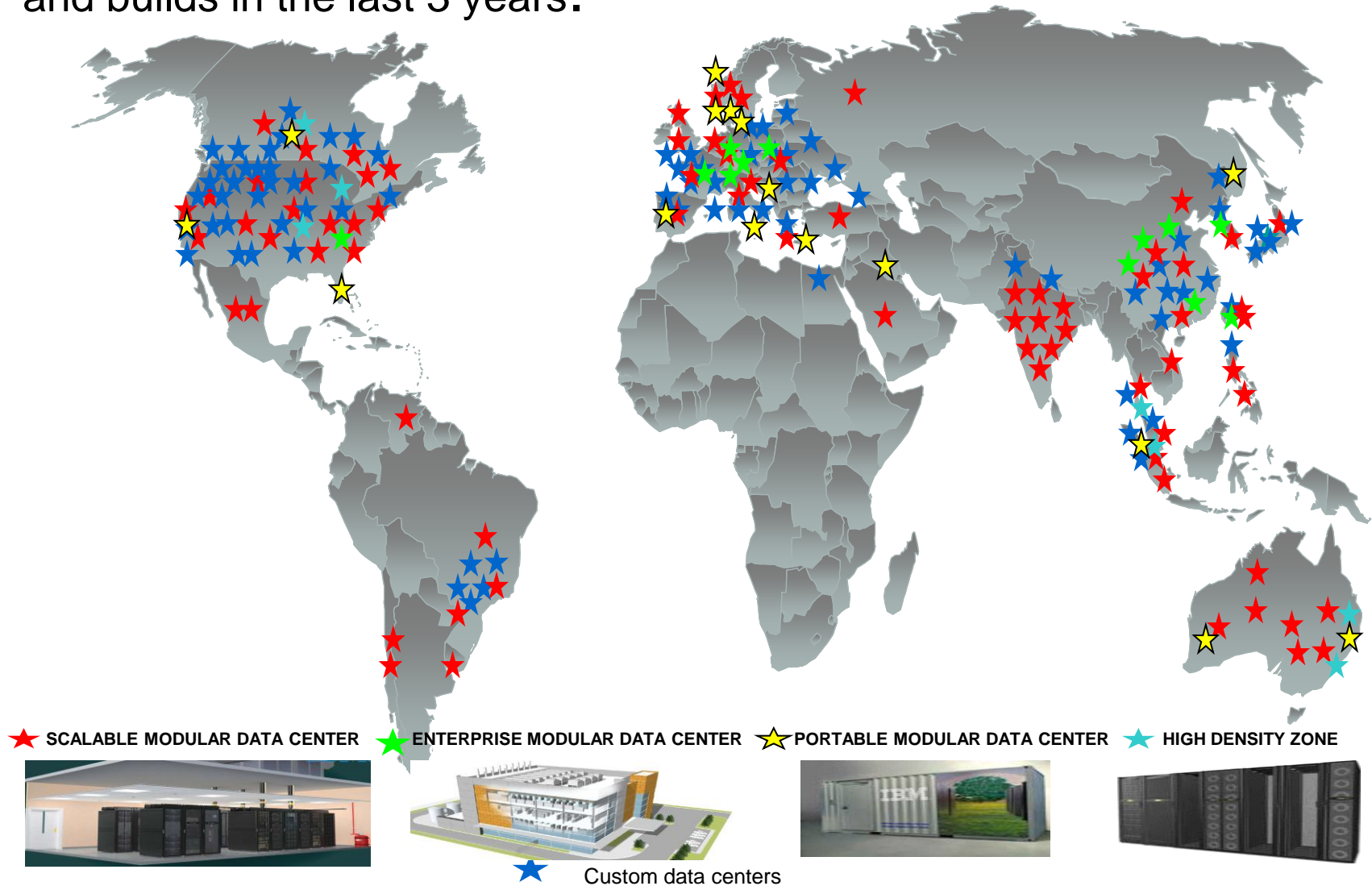
Source: IBM Estimates

Operating costs

3- 5X capital costs



IBM has global experience with over 500 modular data center design and builds in the last 3 years.

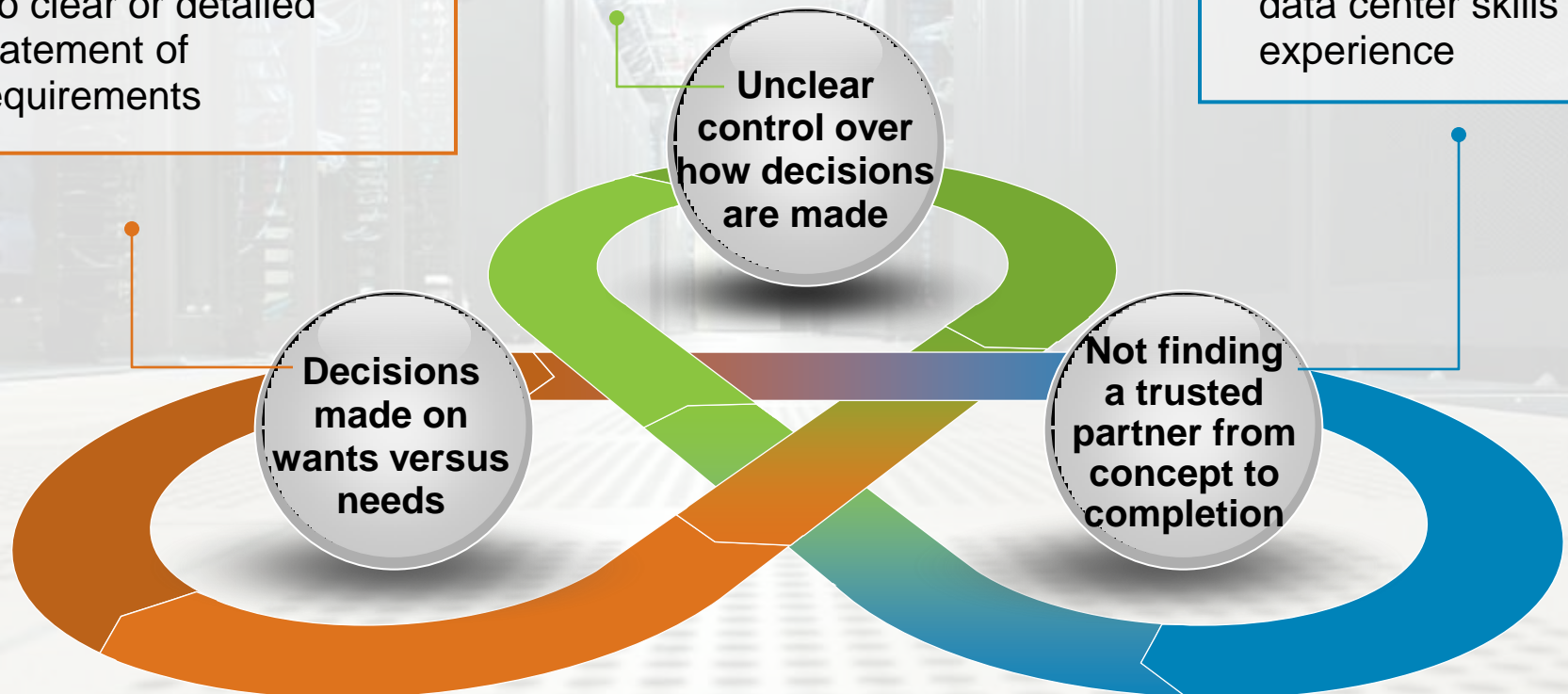


Ways data center projects often go off track ...

- Plans need to reflect unpredictability of business and technology over 10-30 year period
- No clear or detailed statement of requirements

- No governance process to make decisions based on facts
- Operating vs. capital costs are not a standard part of the design and evaluation process
- The real estate, technology and operational management teams are not all equal players

- Clients take on the responsibility by themselves with minimal current data center skills or experience



Insure your data center strategy can meet business and IT requirements over the long term. Tools help balance business requirements with objective analysis



Enable growth

New business and acquisition plans

Virtualization and cloud adoption plans

How many and where are assets needed

Ensure availability

Cost of outages

Vulnerabilities

Resiliency level

Data replication techniques

Improve efficiency

In-source or out-source

Lease or own

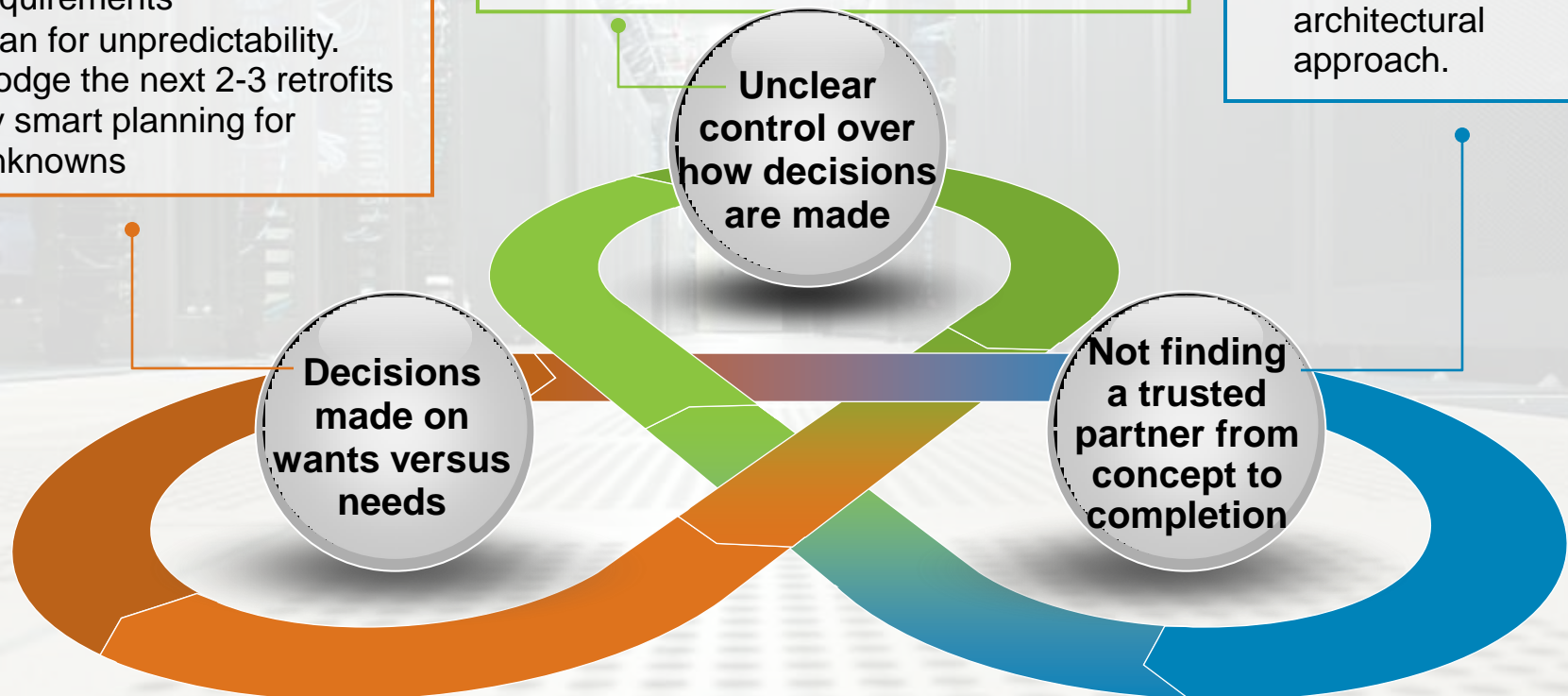
Shift spending to new application development

Lessons learned from 500 IBM modular data center implementations.

- Insure your data center strategy can meet business and IT requirements over the long term
- Best investment is an upfront statement of requirements
- Plan for unpredictability. Dodge the next 2-3 retrofits by smart planning for unknowns

- Good modular design is an insurance policy with a 5% premium versus 60% later
- Major cost savings is the deferral of electrical and mechanical capacity until it is required
- No single electrical and mechanical approach is cost effective for all sizes and power densities

- There is not a one-size-fits-all strategy.
- Find a partner who doesn't use a fixed architectural approach.



Focus on improving the efficiency of your data centers with an integrated approach to improving operations.



1992 1997 2010

Boulder clients supported

8-12 30+ 200+

Service Level Agreement percent

97-99 99.9 99.9999

US command centers

100+ 3*** 23

Boulder command center operators **

120 120 105

Server to FTE ratios*

4:1 40: 1 350: 1

Knowledge platforms

100+ 1

Problem and change tool instances ****

89+ 1



Measurement and Metrics



Tools and Technology



Organization and Governance



Process and Procedure



Skills and Resource



Physical Environment



Knowledge Management

Leverage IBM's experience to help



White papers: http://www-935.ibm.com/services/us/index.wss/itservice_library/igs/a1026000

For facilities managers: www.ibm.com/services/siteandfacilities

Modular concepts are valued in small & big environments.

Scalable modular data center



15-25% lower TCO than traditional data centers

Enterprise modular data center



Defer 40-50% of capex and opex cost

Portable modular data center



Fully functional data center

High density zone



35% lower cost than site retrofit

Capacity before you need it so it is ready when you need it

Maximize flexibility for future technology and computing models

Provide insight to make capital and operating trade-off decisions

Interconnect IT, data centers, and buildings for operations management excellence

Watch a video at : <http://www-03.ibm.com/systems/data/flash/dynamicinfrastructure/datacenterdesignsolutions/>

IBM site and facilities services



Extend the life of an existing data center



Data center strategy



Data center consolidation and relocation



Modular data centers



Scalable modular data center (SMDC)



Enterprise modular data center (EMDC)



Portable modular data center (PMDC)

