

# Best Practices for Managing Data Centres

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# Best Practices? Guidelines?

- Data centre needs to be replaced / upgraded
- Design using the latest standards TIA 942
- Implement the latest technologies
- But we keep the same old practices

But the world is changing!

New opportunities are opening up!



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# Current DC Management Issues

- Environment limits – power, cooling
- Customers sending in auditors to check
- Speeding up the provisioning processes
- No “big picture” just individual build documents
- Lack of ability to easily plan and manage capacity
- Lots of focus on automated tools, but not much on physical infrastructure that is easy to use for multiple purposes
- Hosting providers/customer interface issues
- Lack of clear direction and strategy
- Too many informal processes and knowledge bases

# Best Practice Management

## Management Frameworks

Project Management – Prince 2

Service Management

- the IT Infrastructure Library (ITIL)

- ISO 20000

Information Security - ISO 27001

Business Continuity - PAS56

For Data Centres – No accepted framework



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# Current Focus

- Trade Associations
  - AFCOM [www.afcom.com](http://www.afcom.com)
  - BCS DCSSGroup <http://dcsg.bcs.org>
- Conferences / Exhibitions / Events in 2007
  - Data Center World
  - DataCenter Dynamics
  - Data Centre Excellence
  - IDC's Enterprise Datacentre Conference
  - The Future of the Data Centre 2007
  - Gartner Data Centre Summit
  - Data Centers Europe
  - And others.....
- Training Courses (try searching on google)
  - Data Centre Design / Management / Technician (CableNet Training)



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# Changing Requirements

## BEFORE

## AFTER

	BEFORE	AFTER
<b>No. of Servers per cabinet</b>	3-6	30-40
<b>Power Disipated per cab.</b>	300-1000W	3kW - 25kW
<b>Current service to cabinet</b>	16A	32 A or 3 phase
<b>Types of Equipment</b>	Servers Monitor KVM Swith Power Strips UPS	Servers Power Distribution Units MidSpan Boxes Disk Arrays (Storage) Smart Power Strips Regular Power Strips
<b>Network types</b>	100Base-T	1000Base-T or 10G Base F
<b>No. of Data Cables</b>		
<b>Per server</b>	1 or 2	2 or 3
<b>Total</b>	20-30	300 - 400

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# TIA 942

- Good at specifying how a facility should be designed and installed to meet requirements
- Ongoing management is often left to vendors to recommend
  - O&M manuals
- Operational management is the customer's responsibility



## Tier Classifications per Uptime Institute and TIA-942 Draft Standard

	<b>Tier 1</b>	<b>Tier II</b>	<b>Tier III</b>	<b>Tier IV</b>
<b>Site availability</b>	99.671%	99.749%	99.982%	99.995%
<b>Downtime (hours/yr)</b>	28.8	22.0	1.6	0.4
<b>Operations Center</b>	Not required	Not required	Required	Required
<b>Redundancy for power, cooling</b>	N	N+1	N+1	2(N+1) or S+S
<b>Gaseous fire suppression system</b>	Not required	Not required	FM200 or Inergen	FM200 or Inergen
<b>Redundant backbone pathways</b>	Not required	Not required	Required	Required

# Practical Data Centre Management

- Organisation
- Facilities
- Systems
- Services
- Staffing
- Funding



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# Examples – Best Practice

- Procuring a new server
  - Policies - sign off, payment
  - Ordering process – life cycle
  - Purchase orders – common reference
  - Roles & responsibilities – specify, order, approve
- Backup Tapes
  - Regular schedule
  - Taken offsite
  - Checked on a regular basis

1. Policies or rules
2. Processes within and across teams
3. Roles & responsibilities



# ISO20000/ ITIL Framework

## Service Delivery Processes

Security Management

Service Level Management

Capacity Management

Service Continuity  
& Availability  
Management

Service Reporting

Financial  
Management

### Control Processes

Configuration Management

Change Management

## Release Processes

Release  
Management

## Relationship Processes

Business  
Relationship  
Management

## Resolution Processes

Incident Management

Problem Management

Supplier  
Management



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# Definition of Management

Planning what needs to be done to achieve a particular result.

Organising and directing appropriate resources.

Controlling and making adjustments as needed.

Motivating all those involved.



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# Common Management Issues (for the manager)

- Personal objectives
- Staff culture & working practices
- Accurate & relevant information
  - Toolsets, audits, reviews
- Available resources
- Organisational structures
- Differences in understanding of “risk”

# Provisioning a Server

You have a request to move 10 existing servers into a data centre

How many tasks can you identify?

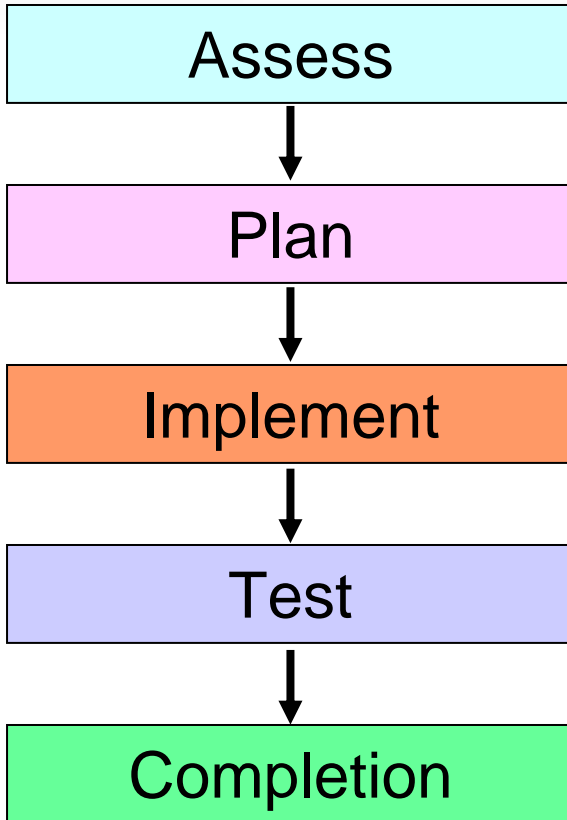
Who should do them?



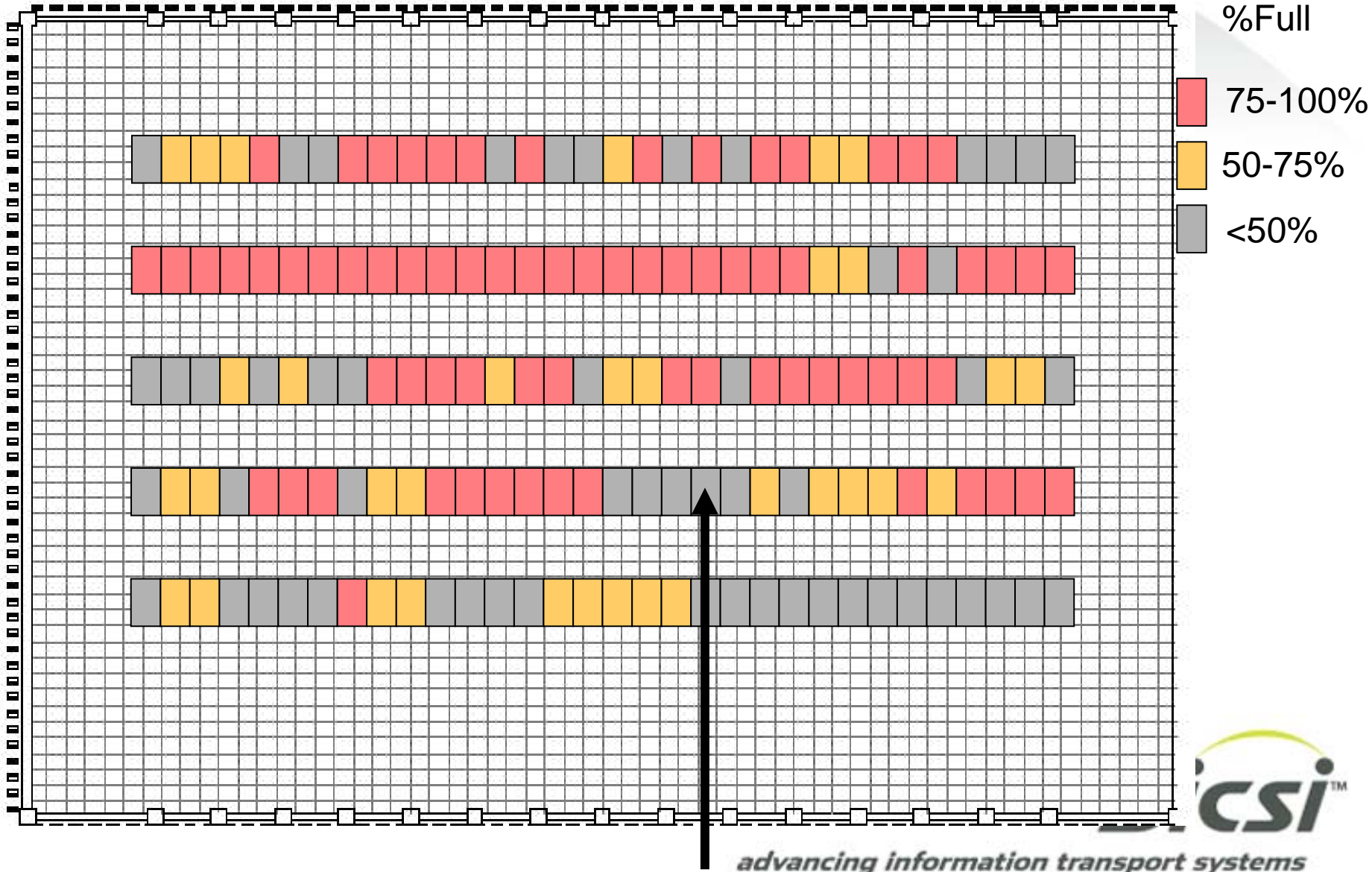
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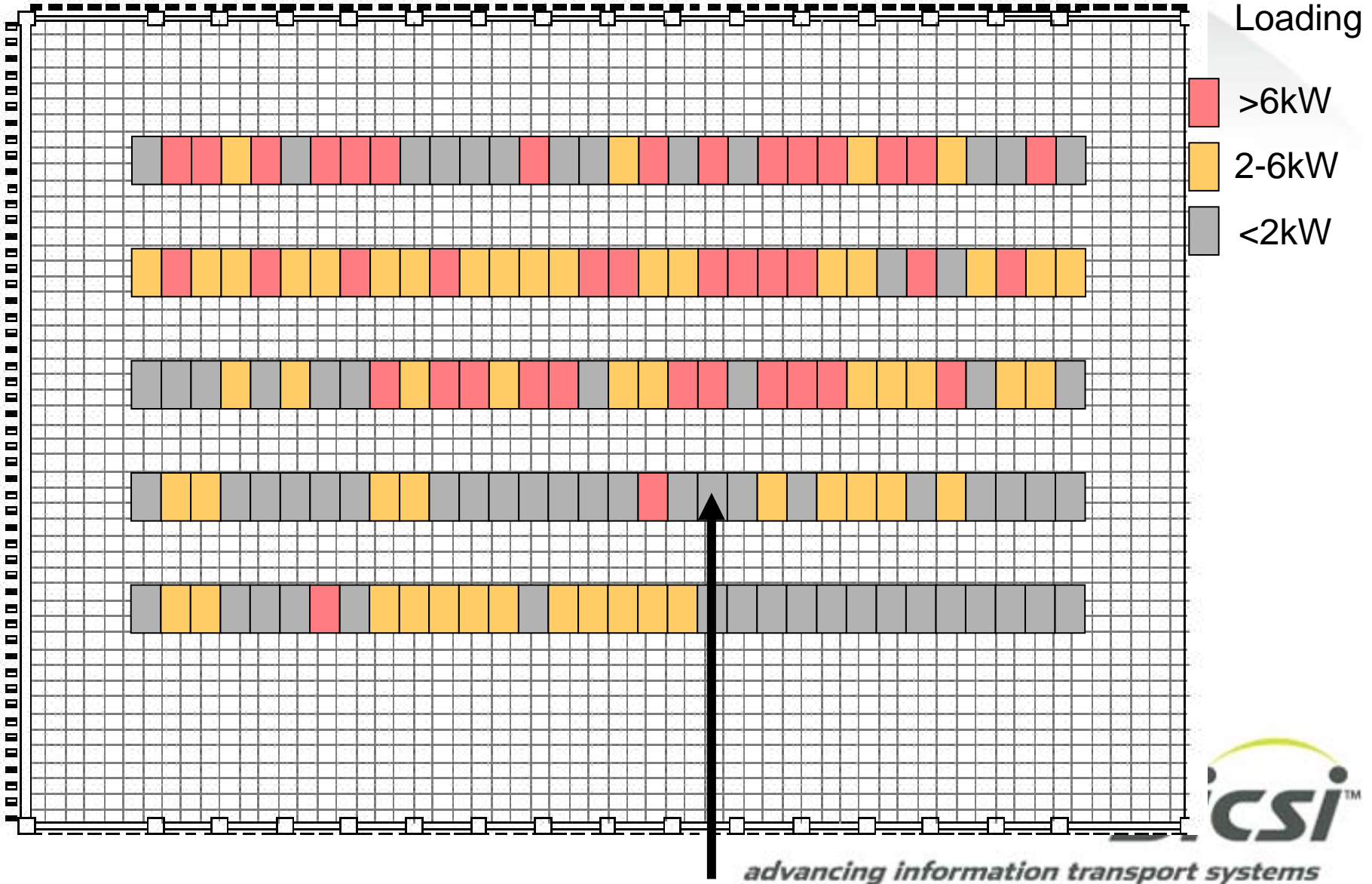
# Provisioning Tasks



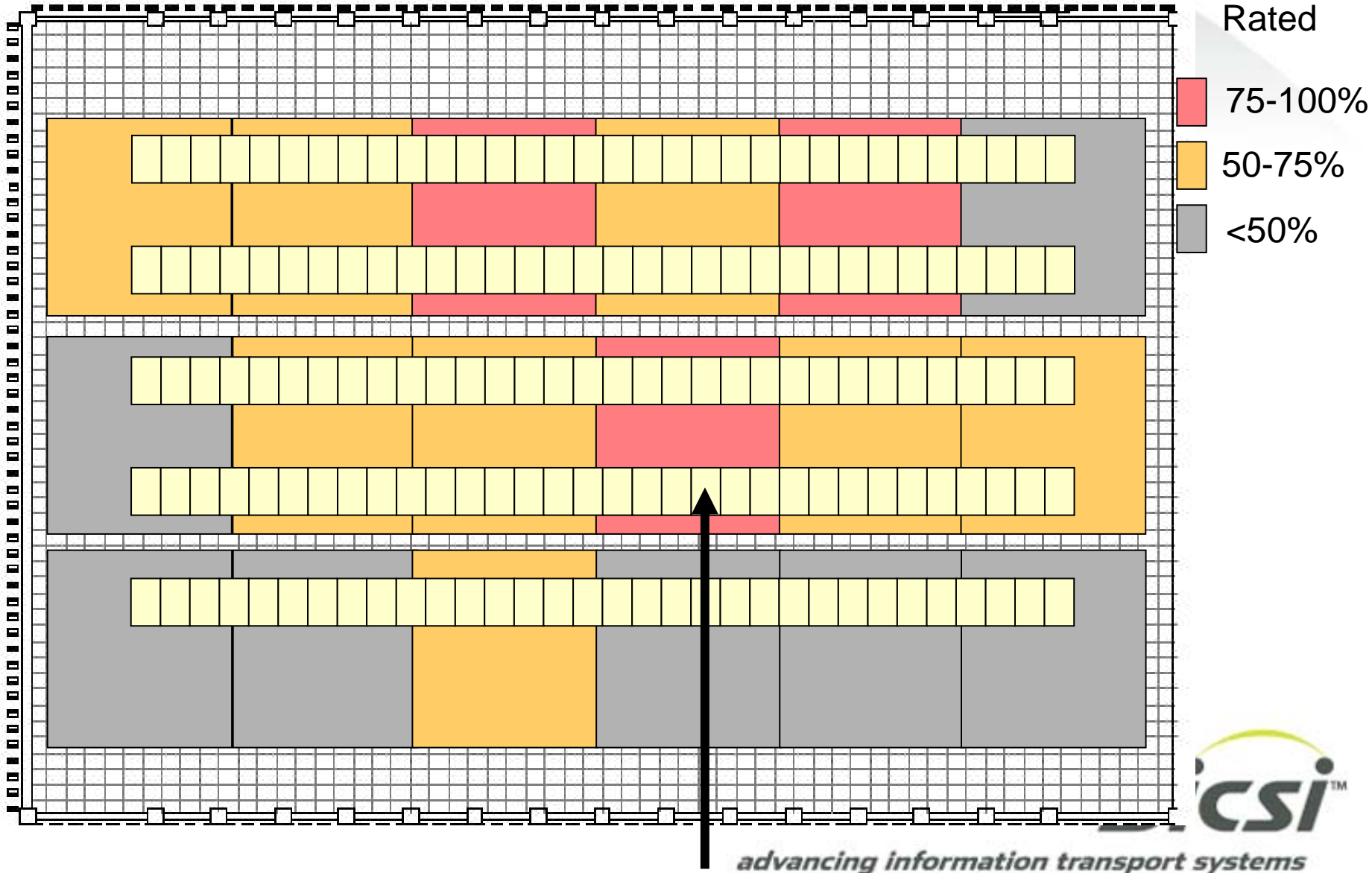
# Rack Space



# Power



# Cooling



# Required Information

- Space
- Environment
- Asset
- Connectivity
- Device configurations
- System / service configurations



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# Reducing Provisioning Times

- Reduce discovery time
  - Management toolsets and knowledge bases
- Remove the “physical” aspect
  - Virtualisation, pre-order kit
- Optimise Processes
  - Formalise workflow
  - Use common knowledge bases



# Changing Times

How do you know your critical equipment is being managed well in a hosting centre?

1. Management processes which are visible
2. They cover all aspects of the environment
3. Evidence that processes are actually followed
4. Technical and other information is easily available



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# Managing Change

We have installed 10 servers in the data centre

How many records or management systems would you expect to have been updated or modified as a result of the additional servers?

Probably 15-20 minimum



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# Management Team Issues

- Change management coordination
- DR & business continuity
- Backups and recovery
- Charging & billing
- Optimisation of resources
- Maintenance practices
- Resilience testing



# Reducing Information Overload

- There is potentially a huge amount of data, so focus is required
- Knowledge of components is duplicated, so focus on reducing the number of possible data sets
- Start with information held by specific teams, before looking at information sets across teams

# Practical Data Centre Management

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# New Opportunities

Customers wanting more management support from suppliers and vendors

Handover documentation of a data centre could be more than O&M manuals and test results

Integration with ITIL management framework



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