

The Data Centre – Now you've built it, how do you manage it?

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Square Mile Systems

- UK based
- Our focus
 - Design of infrastructure documentation software
 - Integrate various toolsets
 - Help develop operational “best practices”
 - Apply the ITIL management framework to data centres and infrastructure
- Customers are typically large, multi-site,

Some Current Technology Themes

- Service Management - ISO20000/ITIL
- SOA (Service Orientated Architecture)
- Virtualisation
 - VPN, VLAN, SAN, Citrix, Virtual Servers, VOIP
- Power/cooling optimisation

**But what about better management practices
for the data centre?**

But.....

How can you have good management controls for the data centre

- Without accurate management information
- Without processes that are visible
- Without operational systems to update
- Without good communication
- Without ownership and accountability



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Best Practices? Guidelines?

Design using the latest standards TIA 942

Implement the latest technologies

But we keep the same old practices!



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Current DC Management Issues

- Environment limits – power, cooling
- Customers sending in auditors to check
- Speeding up 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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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
Supplier
Management

Resolution Processes

Incident Management

Problem Management

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Current Focus

- Trade Associations
 - AFCOM www.afcom.com
 - BCS DCSTGroup <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 training”)
 - Data Centre Design / Management / Technician (CableNet Training)



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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

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



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Changing Requirements

BEFORE

AFTER

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

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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



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?

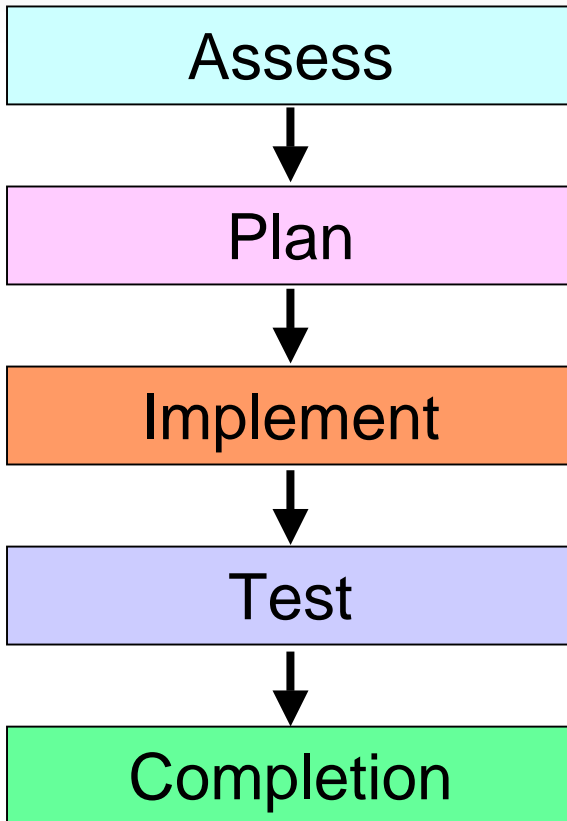
Who should do them?



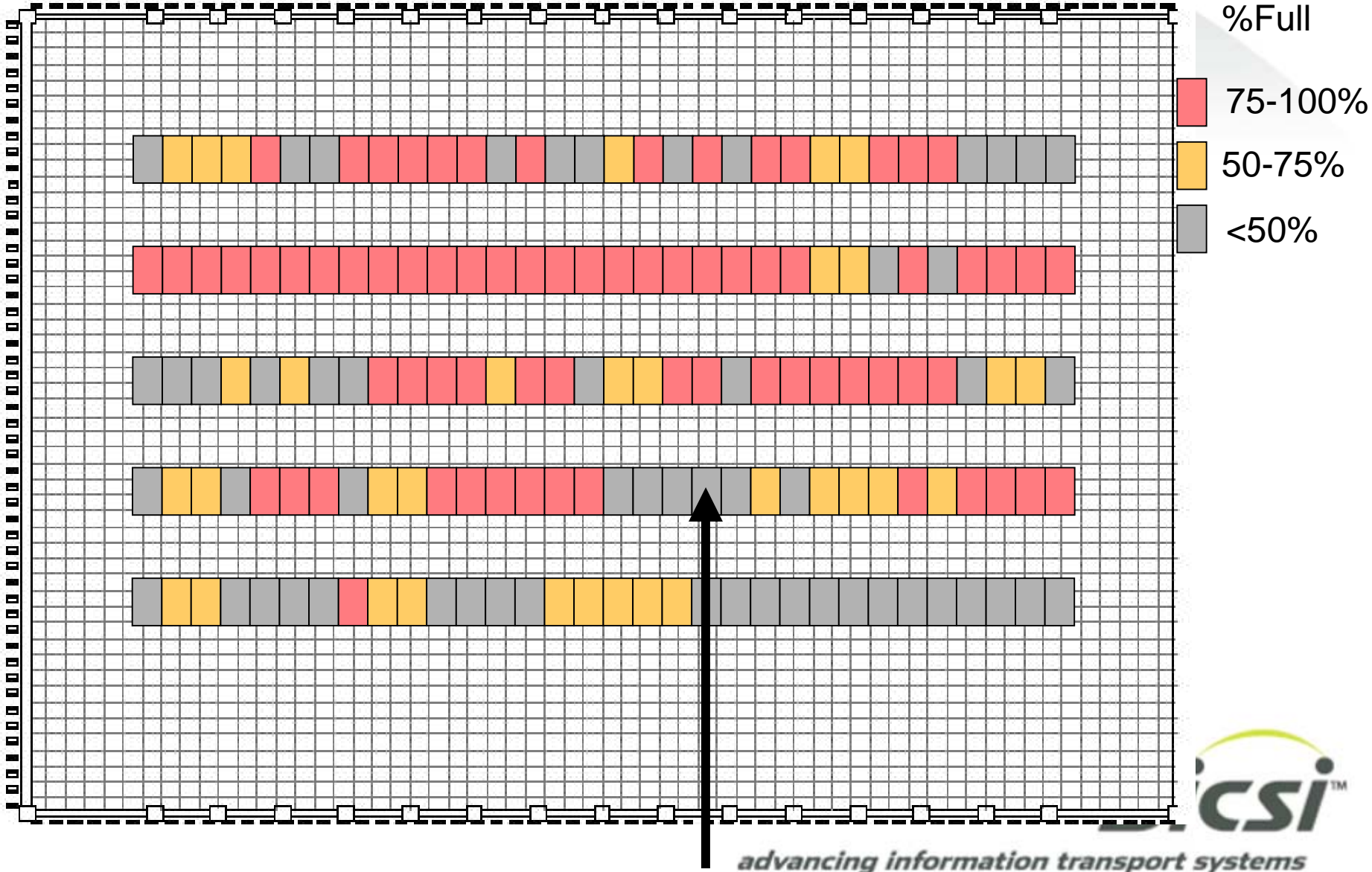
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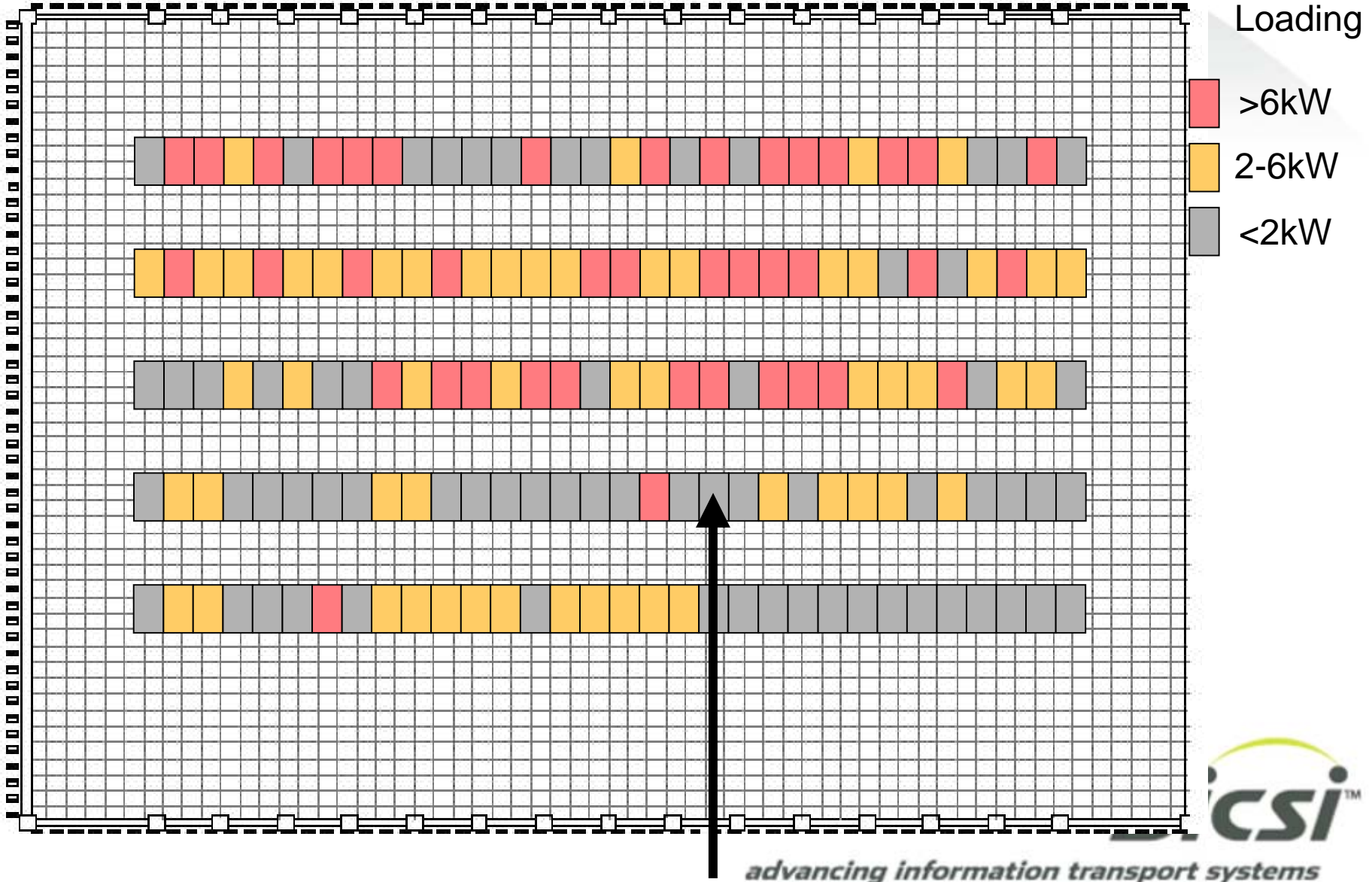
Provisioning Tasks



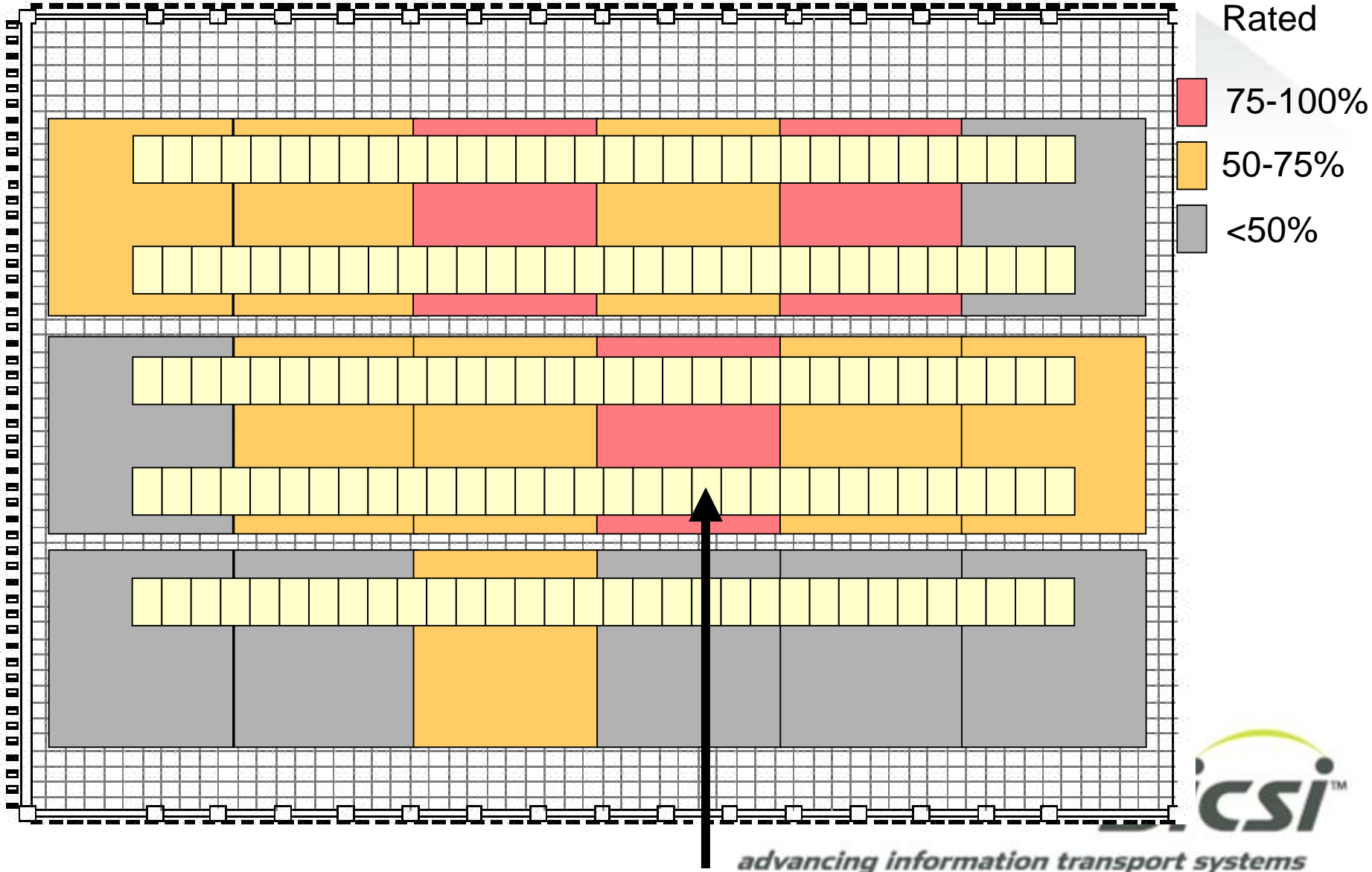
Rack Space



Power



Cooling



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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

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

Some tips - Practical Data Centre Management

Get installers or vendors to hand over documentation and toolsets directly suited to operational use

Develop improved processes before the data centre is handed over, not afterwards

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



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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