

Fundamentals of Effective IT

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This Course Is *Not* About:

- How to develop a business strategy
- Why IT is important
- Specific tools, technology, or vendor solutions
- Building a data center
- Troubleshooting networks
- Programming for Network & Systems Management

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What This Course Does Cover:

- The basic elements of an effective IT organization
- How processes, people, projects, and practice must dovetail to create sustainable IT performance
- Ideas on developing a framework that's relevant to your organizational environment
- How network and systems management inform your internal operations
- Service Level Management as your interface with IT clients/customers

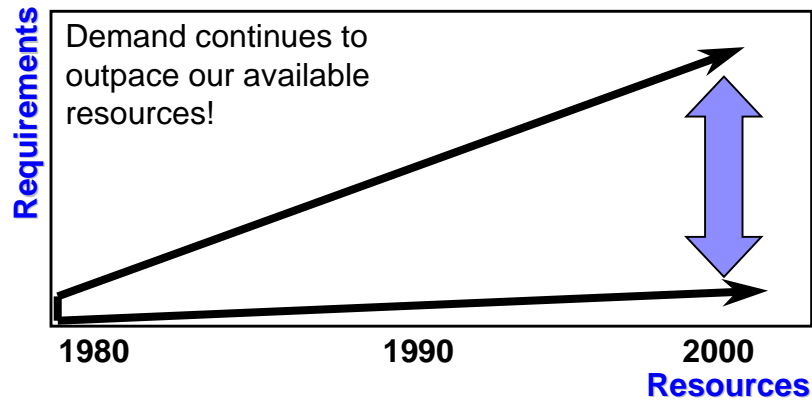
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Agenda

- What's driving (change in) the IT environment?
- Basic elements of effective IT
- The power of process
- The power of people
- The impact of environment
- Systems and tools... are *not* the silver bullet
- Building credibility, influence, and support

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The IT Gap



Requirements = users, applications, access, availability, etc.

Resources = processes, people, tools, systems, network, etc.

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The Influence of "Convergence"

data comm + telecomm

multi-media

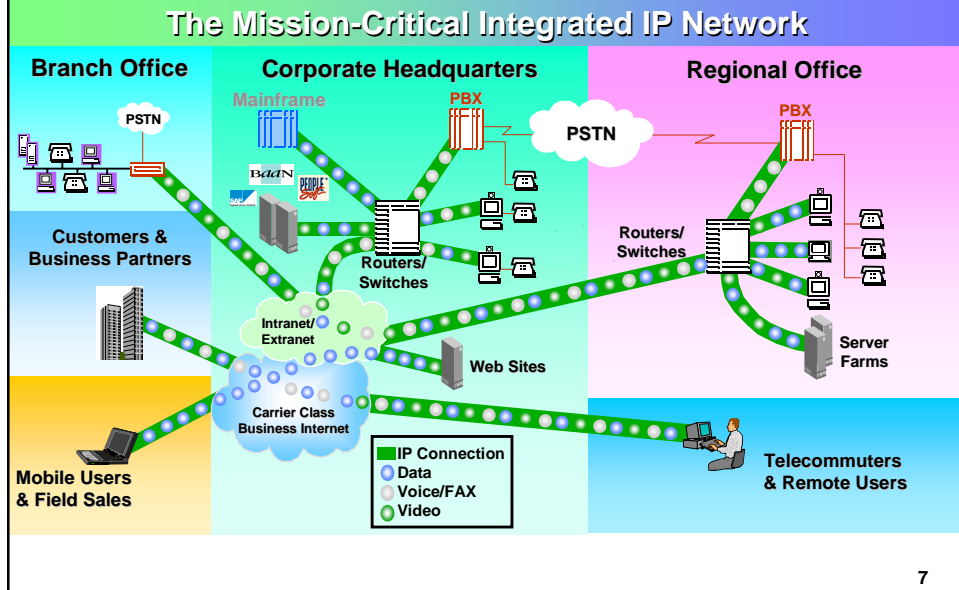
hosts + servers

LANs + MANs + WANs

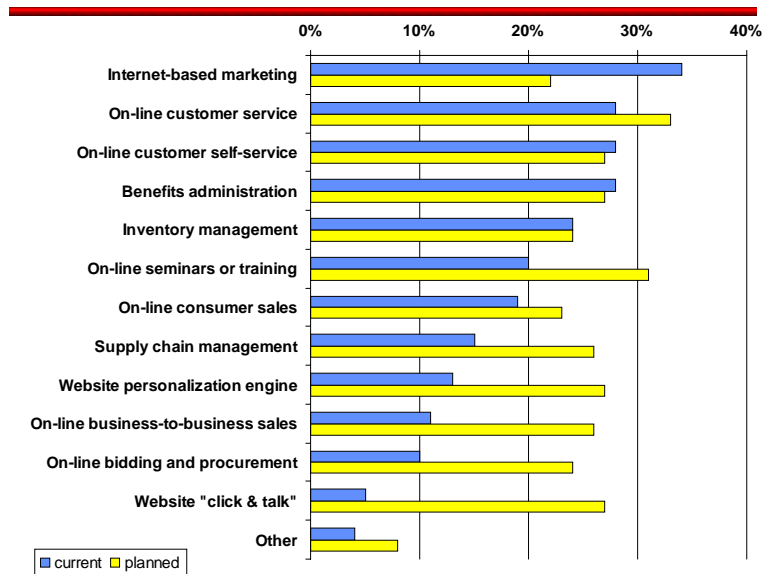
Traditional data + E-business data

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For example...



Investments in Web-based Activities



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Checking Your Approach

- The elements involved in enterprise IT typically include:
 - needs of multiple business units
 - products from multiple vendors
 - internal and external resources
- Your goal is to meet the agreed-upon business unit requirements, for all locations and departments.
- One major question is “what's the right mix of resources to use, for what, and when?”
 - * IT department
 - * Outsourcers
 - * Contractors
 - * Business units
 - * Vendors
 - * Consultants

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Important Characteristics

- Flexible - able to change as needs, priorities, products, and technologies change
- Tailored - no one solution is right for all companies; must be tied to or reflect culture
- Responsive - able to meet business unit needs
- Timely - able to stay on schedule

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Do You Know...?

- What are:
 - New Year's
 - President's Day
 - Memorial Day
 - Independence Day
 - Labor Day
 - Thanksgiving
 - Christmas
- % growth/change in your:
 - infrastructure
 - organization, staffing, skills
 - applications, services
 - NT + OO = EOO



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Basic Elements of Effective IT

- Policies & processes, put into practice
 - in alignment with business objectives
- People
 - organization, staffing, working conditions
- Software, hardware, network
 - applications, operations, management
- Communications
 - continuing dialogue with stakeholders
 - documentation, documentation, documentation

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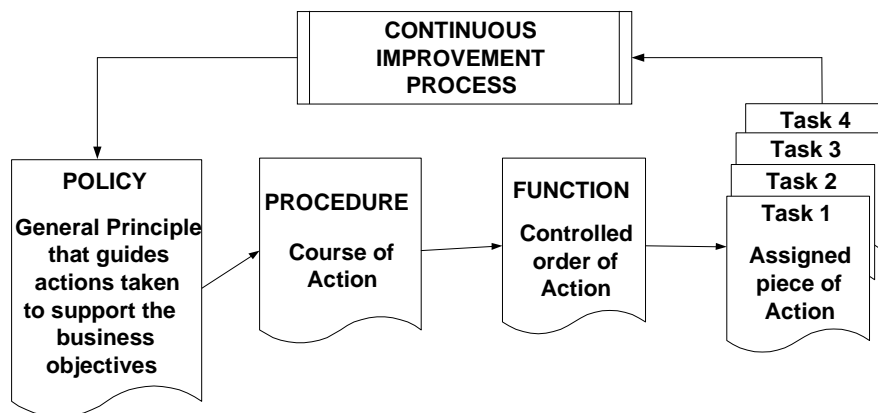
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What Can Process Do for You?

- Proactively define how you will run your IT business
- Get stakeholders engaged with process owners and performers
- Drive requirements for staffing and tools

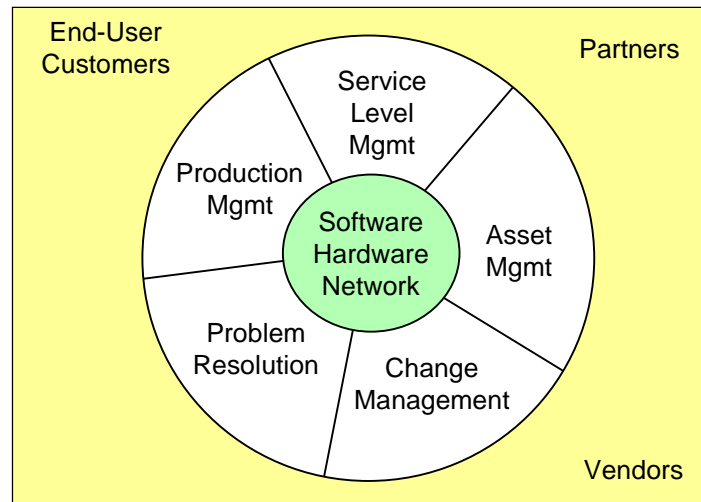
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How the Pieces Fit Together



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Sample Process Perspective



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Problem Resolution

- Is a global process for IT - everyone gets involved in some aspect
 - reactive: solving problems that have already occurred
 - proactive: using early warning signs to try to prevent problems
 - predictive: gathering and interpreting data for planning purposes
- Help Desk is typically the front-line interface for end-users of IT services
 - role and details must be defined within the context of global Problem Resolution process



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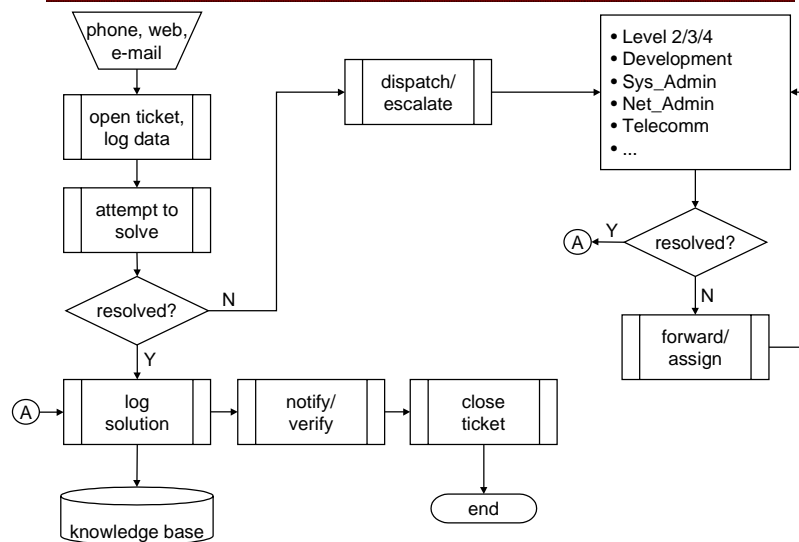
Keys to Help Desk Success

- Focused on customer care - taking *total* ownership of reported problems
- Properly mixes reactive, proactive, and predictive support
- Focused on business rather than technology (understands what is mission-critical to the business)
- Commits to SLAs that express what is important to BU managers, vs. what can or has been traditionally measured by IT



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Sample Call Resolution Flow



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What's Important along with the Process Flow

- OWNERSHIP
- TIMELINESS
- COMMITMENT
- COMMUNICATION
- KNOWLEDGE



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Sample Severity/Priority Levels

	DEFINITION	RESPONSE	RESOLUTION
1 (7x24)	No work-around; business is halted; financial loss	15 min	7x24, try to fix ASAP
2 (7x24)	Work-around can be established in reasonable timeframe	30 min	2 hrs
3 (M-F)	Job functions inconvenienced; normal bus. ops continue	1 bus day	5 bus days
4 (M-F)	Minimal bus. impact; general inquiry; delivery of supported technologies, services	2 bus days	5 bus days

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The Challenge of Collecting Data

- Need to guide the caller on what's relevant information
- Need to capture at earliest possible time to prevent repetition that frustrates the customer
- Organization is crucial to a useful knowledge base (may be assisted by tools)
- Consistent entry and representation are crucial to a useful knowledge base (completely independent of tools)

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Critical Success Factors

- *Service Level Agreements* - define your commitment to support your customer
- *Operating Level Agreements* - define your working relationship with, and expectations of, resolution partners
 - OLAs and SLAs MUST MATCH!!!!!!
- *Stewardship Report* - a means to show customers how you're doing against goals

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Top Help Desk Metrics *are they meaningful to your customer?*

Business Indicator	Industry Avg
Abandoned Rate (dropped calls)	~5-6%
Average Speed of Answer (how quickly incoming call is answered)	80% in 20 sec 100% in 100 sec
Average Handling Time (= avg talk time + after call work)	15 min (10 + 5)
Call Logging	100%
Quality (call monitoring, customer follow-up, ticket auditing)	100-96% - outstanding 95-91% - abv expectn 90-86% - meets 85% -< - below
Cost to Escalate	\$125
Cost Per Call	\$19-25 (full burden)
First Call Resolution (resolved on immediate contact, no assistance from 2 nd support group)	79% (w/ proper tools, skills, training, etc.)
Occupancy (time serving customer = ACD time + available time)	80% (first level)

source = Help Desk Institute

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Purdue, 1999 – 675 Call Centers

- ASA - 20 Seconds
- Average talk time - 3 minutes
- After call work - 1 minute
- Abandoned % - 3%
- Time in Queue - 30 seconds
- Percent closed on first call - 73%
- Abandoned time - 45 seconds
- Call Duration - 5 minutes

source = R. Muns, Help Desk Institute

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Some Resources for Additional Information

- Help Desk Institute
(www.HelpDeskInst.com)
- Project Management Institute
(www.pmi.org)
- EXIN provides IT Infrastructure Library (ITIL) exams and certifications
(www.exin.nl/en/exinanditil.htm)

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To Focus on Problem Prevention

- Analyze root causes and trends by creating reports on:
 - Top 5 problems
 - Top 5 Customers
 - All open tickets
 - Missed Problem Management guidelines
 - Tickets assigned by workgroup/individual ID
 - Percent by call type
 - Percent by priority
 - Percent of quick calls

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Putting It All Together

ANALYZE - PLAN - ACT - VALIDATE
communicate & be accountable!

- for example,
 - Help Desk leads weekly IT managers' meeting
 - Review chronics and analyze trends
 - Coordinate plans for solution
 - Report on progress



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Ways to Gauge Client Satisfaction

- Get regular feedback!
- Choose a method that best fits the environment and culture, e.g.,
 - telephone surveys
 - focus group meetings
 - hard-copy surveys
 - Voice Response Unit surveys
 - e-mail surveys
- Best when collected closest to service delivery time

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Change Management

- Is a controlled order of action (Formal Processes, Policies, Procedures, Functions and Tasks) when implementing changes
- Goals:
 - PROTECT THE INTEGRITY AND STABILITY of the existing environment
 - incorporate and implement change within the context of the total business environment
 - eliminate "surprise" packages of altered performance, downed operations, or loss of revenue in other areas of the total enterprise
- Testing rigor and depth of process match severity level and organization's risk tolerance

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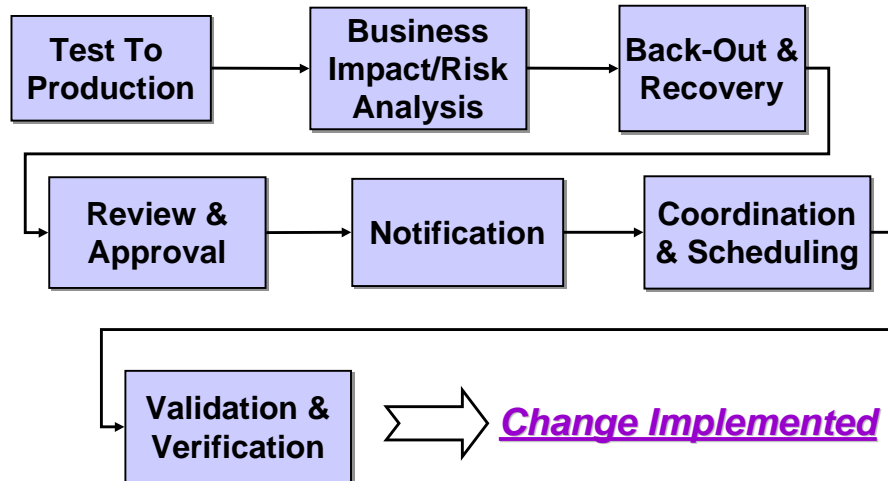
Why Change Management?

It is THE most critical process area

- introduces the concept of control required in today's complex IT environments
- addresses the root cause of a majority of IT problems! 56% of all problems are "self-inflicted", mostly due to poor change management
- *Must facilitate change, NOT impede it!*

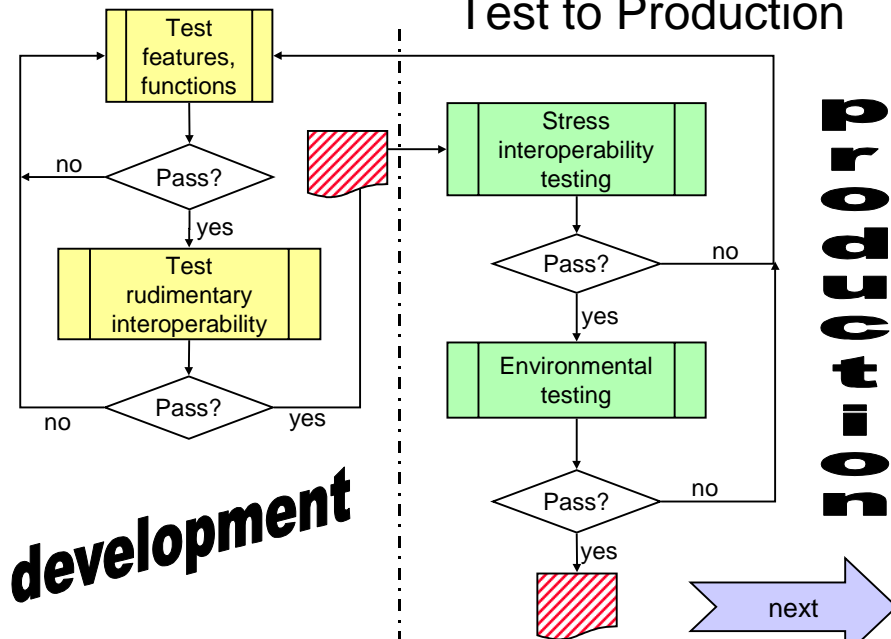
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One Approach to Change Management



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Test to Production



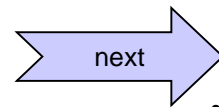
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Business Impact/Risk Analysis

Identify:

- mission-critical applications
- underlying serving technologies
- point-of-change risks
 - Defining technical risks
 - Determining points of failure

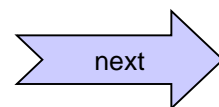
Define Corresponding Business Impact



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Back-out and Recovery Plan

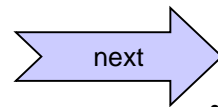
- Exactly how much time is available to enact change?
- What are major milestones of the change process?
 - success indicators
 - failure indicators
- How much time is required to execute recovery plan?
- Who declares change failure?
- Who is accountable for implementing back-out plan?



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Review and Approval

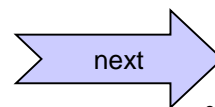
- Establish explicit review criteria
- Review Team - meets regularly
- Grants of authority
 - not every change is a big deal!
 - Well-defined, low-risk → delegate
- Process must have authority and consequences



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Notification

- Stakeholders
 - who needs to know about what
 - avoid overload that breeds ignorance
- Distribution Methodology
- Feedback Mechanism
 - crucial to avoid overlooking transient risk



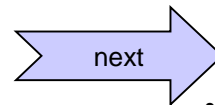
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Coordination & Scheduling

- Define severity levels to determine change cycles

<u>Day</u>	<u>Evening</u>	<u>Graveyard</u>
Mission Critical Outage	Software Distribution Basic Reboots Low Impact Changes	Maintenance Windows

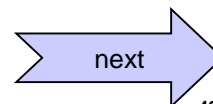
- Change opportunities by cycle
- Map competing initiatives
- Schedule & execute



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Coordination & Scheduling: Execution

- Managing change events
 - identify pre-requisites
 - » conditions
 - » concurrent vs. serial changes
 - identify relationships
 - » e.g., if change #1 fails, does it affect #4 or #5?
 - » also inverses in case back-out is necessary
 - who has timer and clip-board to check progress and decide go-forward vs. back - out?



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Validation & Verification

- Results checked at every milestone point against success criteria
- Report back to stakeholders
- Inform the Help Desk!

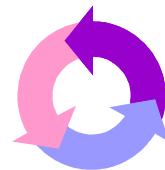
 **Change Implemented**

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Asset Management

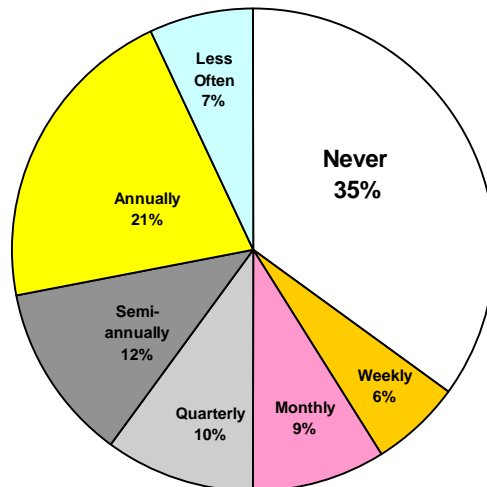
For Full Value...

- MUST tie problem, change, and asset management processes together!
- Otherwise asset information gets out of date in no time at all



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How Often Do You Conduct Asset Inventories?



Source = Gowan et al,
"Avoiding the Pitfalls of
Installing Systems
Management Suites", *IT
Pro* (IEEE), Jan/Feb 2000

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Asset Management Issues

- What data will be captured?
- How/where will data be stored?
- Who will enter data originally?
- How will data be maintained? & Who?
- When assets are retired, how long will data be kept?
- ...

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Production Management

- = Operations
- Often more “codified” - usually have procedures manuals
- Elements not often tied together from an over-arching process view
- Policy manuals seldom up to date and pertinent
- How to marry the best of centralized and decentralized perspectives and practices (so don't reinvent the wheel!)

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Typical Production Responsibilities

- Data retention
- System recovery
- Monitoring
- Install technology
- User set-up and delete
- Back-up
- Restore
- Business continuity
- Disaster recovery

Must encompass:

policies & processes

people

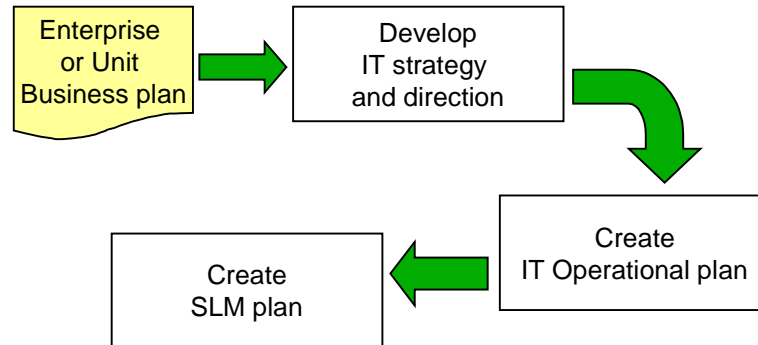
infrastructure

communications

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Linking IT to the Business

= the driving force toward
Service Level Management



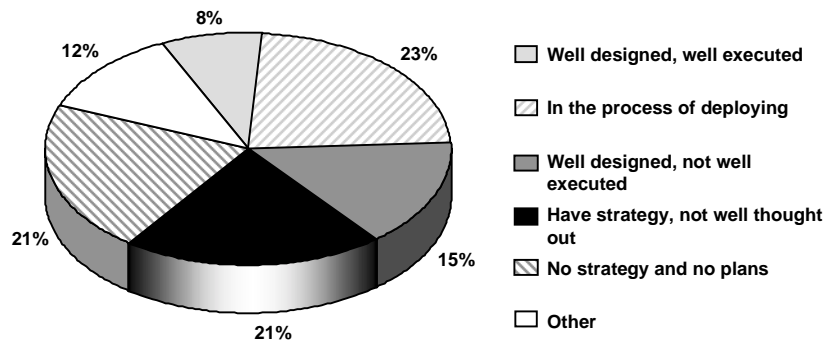
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Service Level Management

- Understanding who are your customers and what are their business needs
- Deriving what you can do to support their success in meeting objectives
- Distinguishing “packaged” and “custom” services
- Engaging stakeholders: consumers, performers/deliverers, suppliers
- Setting and managing expectations

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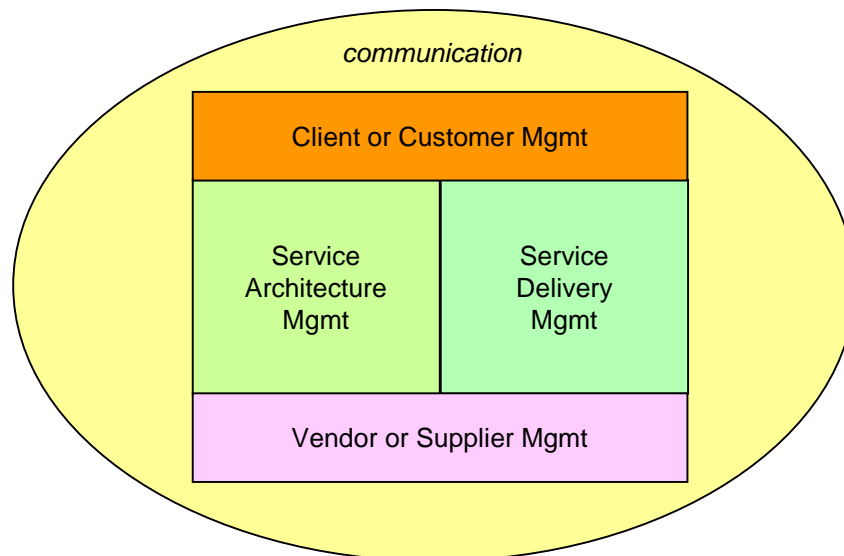
Your Approach to Service Level Management?



Source: Sage Research and Ashton, Metzler & Assoc., May 2000

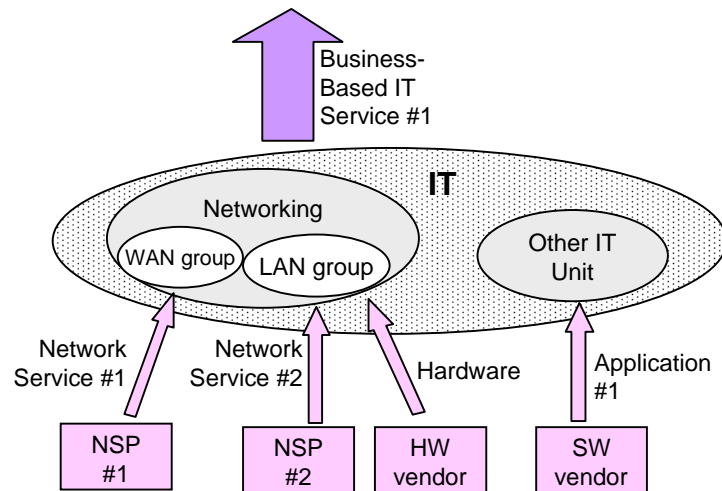
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Key Elements of SLM



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Tiered Model of Service Delivery



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Some Implementation Details

- Service Level Objectives (SLOs)
 - describe how IT will attempt to meet business unit requirements, based on business-driven goals and objectives
- Service Level Agreements (SLAs)
 - define partnerships between customers and IT and between suppliers and IT
- Operational Level Agreements (OLAs)
 - define the agreements among IT units or groups that enable optimum service delivery to customers
 - hand-offs, timetables, escalation procedures get built into each IT group's Standard Operating Procedures (SOP)
- Reports and satisfaction surveys must be designed from the customers' perspective - what is meaningful to them out of what you can actually measure!

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Service Level Management Learning Community

- On-line at www.nextslm.org
 - sponsored by BMC Software, Sun Microsystems, and PriceWaterhouseCoopers
- Offers:
 - articles, discussion
 - templates (Customer Satisfaction Survey, SLAs)
 - software vendor directory
 - reference material, links
 - benchmark tool and report

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How to Get Started

- Translate business strategies into IT service requirement(s)
- Pick one (or more) important service(s)
- Involve stakeholders in
 - developing service & process definitions
 - identifying key performance metrics
 - identifying key cost metrics
- Implement ongoing service architecture management functions
- Design & implement service delivery functions
- Use reporting to maintain dialogue with service users

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Keep in Mind...

- IT can collect a lot of data... and it's probably not meaningful to service users
- IT needs data different for production management from what Business Unit managers want to see
- Integrating data across all elements of infrastructure to create the customer view is not easy
- The purpose of data/reporting is to inform decision-making and influence behavior!
- You may want to start with "interim" SLAs

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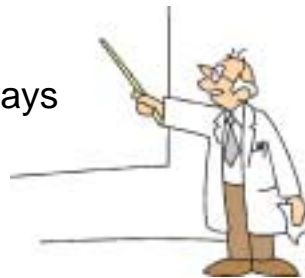
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It's Easy to Say:

- Let your process definitions drive your people requirements
 - organization
 - staffing levels
 - skills required
- and with people, there's always more to it than that!



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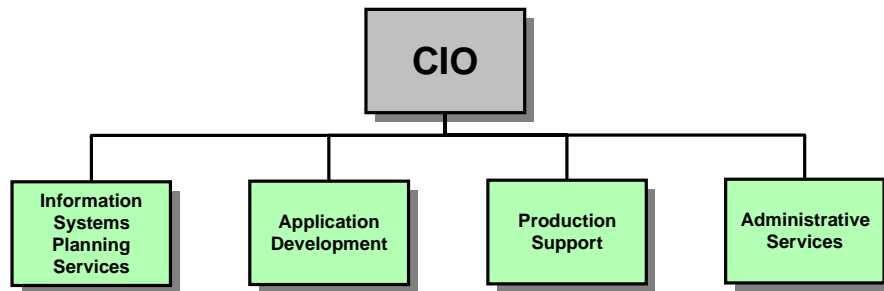
Major Functional Areas

- Planning & Architecture
 - preparing, discovering, forecasting, and developing methodologies for the successful operation of systems
- Application Management
 - designing, developing, and managing applications
 - building relationships with clients and vendors in support of business solutions
- Production Support
 - administering, supporting, and maintaining the operations of the systems that support the business requirements
- Administrative Services
 - processes that support/control all IS/IT functions

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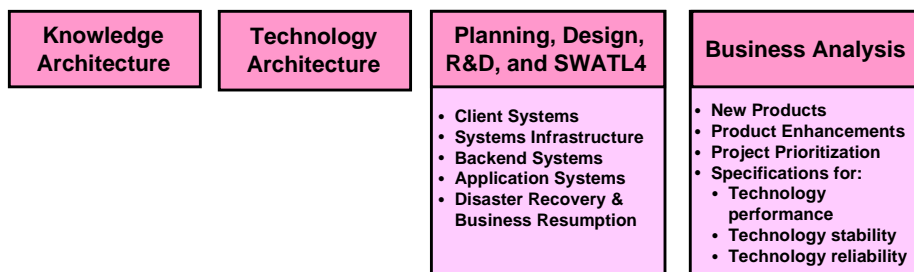
A Client Example



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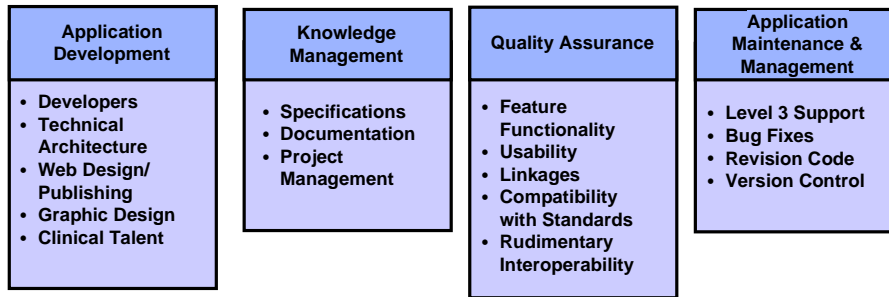
Information Systems Planning Services



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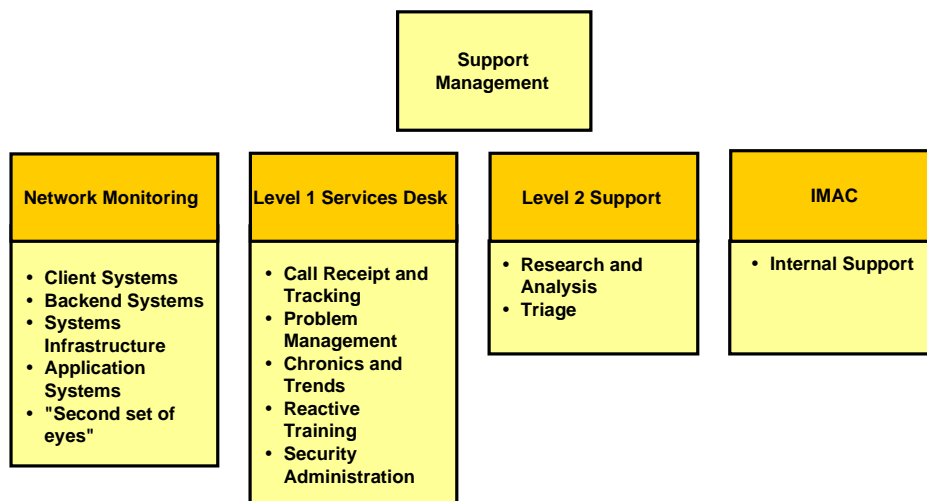
Application Development



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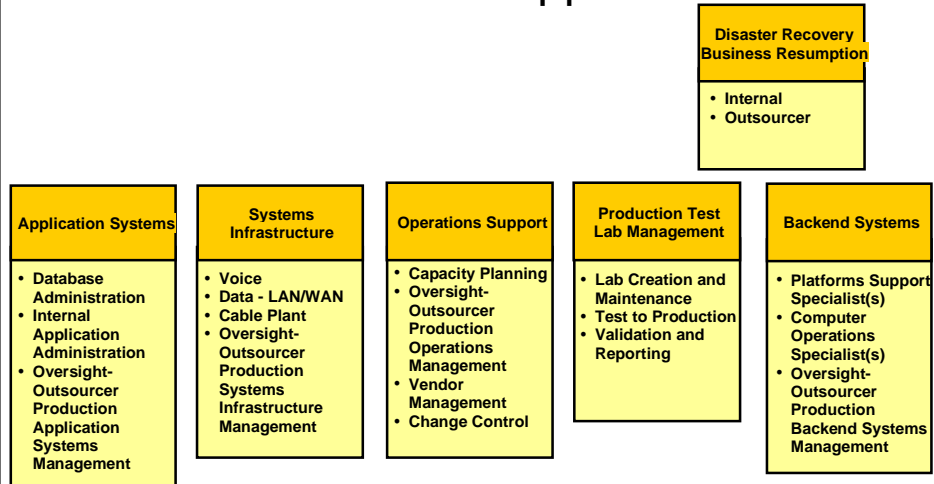
Production Support



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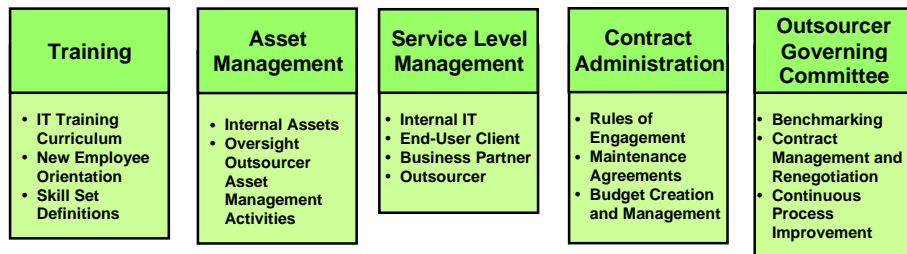
Production Support



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Administrative Services



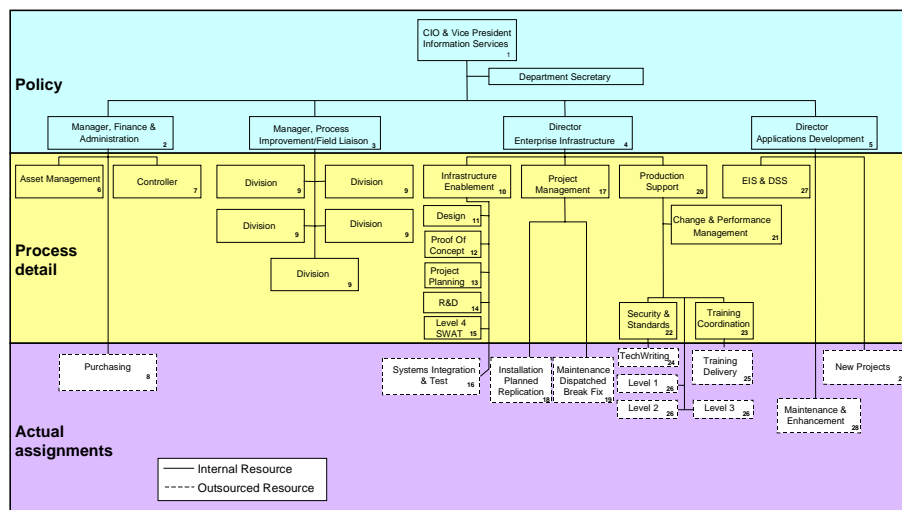
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Requirements for Success

- Understand your defined, formal processes
- Create a functional organizational model (FOM) that reflects how processes are performed
- Map existing organization to the FOM
- Identify any gaps
- Determine the method to fill each gap
 - Internal?
 - Contractor?
 - Outsource?
 - Consultant?

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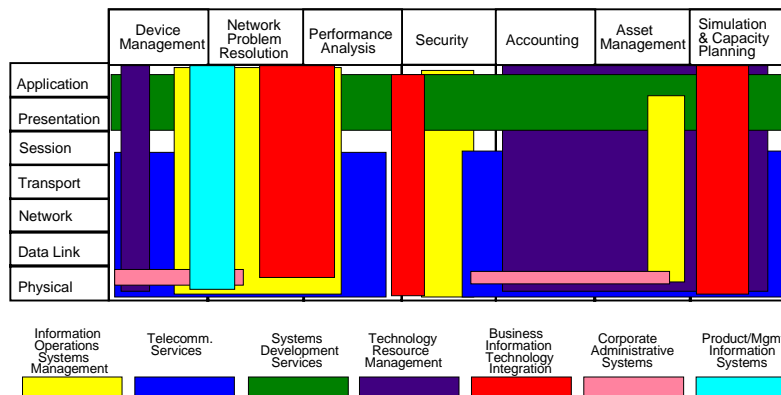
Who Should Do What?



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No Matter How Simple You Think It Is...

OSI Model and Organizational Functions

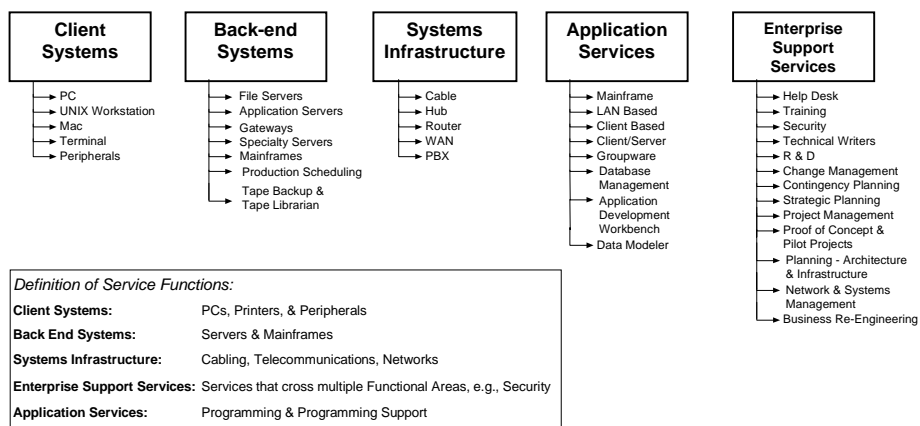


Source: OnSource Consulting, Inc.

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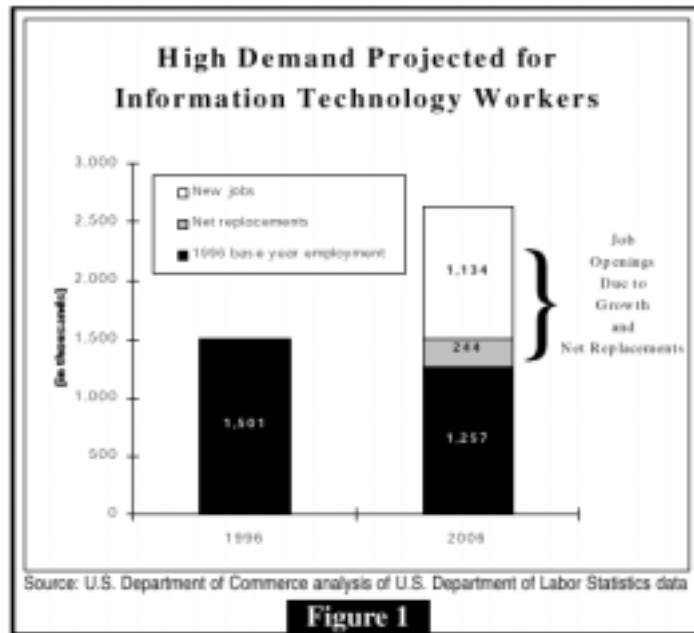
Another Functional Perspective

Service Responsibilities



Source: OnSource Consulting, Inc.

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Demand Update, April 2000

- ITAA interviewed 700 companies
 - 200 IT, 500 non-IT
- 10 million US IT workers
 - not including government, not-for-profits, small entrepreneurial firms
- ~1.6 million *new* IT jobs to be filled in 2000
 - about half will go unfilled!
 - small (50-99 people) non-IT firms need 70%
 - IT company needs are critical

Executive Summary, www.ita.org

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Some Demand Characteristics

- Geographical
 - South has the largest number of IT workers overall
 - Midwest has largest demand: 35% of total
 - Western is second: 28% of total
- Job types - 1/3 of all new are technical support, with required skills ranked as
 - troubleshooting (97%),
 - facilitation/customer service (91%)
 - HW, SW installation; configuration upgrades (82%)
 - systems operation, monitoring, maintenance (67%)

Executive Summary, www.ita.org

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Demand Characteristics, cont'd

- web-related talent = 13% of all IT jobs
- tech support, network administration = 50% of all IT jobs
- database development, software engineering = 20% of all new jobs

Executive Summary, www.ita.org

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Web Professional Salaries in the US

ROLE	1999	2000	% CHANGE
CTO	\$85-123K	\$92-135K	9.4
Internet P/A	\$50-73K	\$53.5-77K	6.5
Internet Network Architect	\$64-80.5K	\$67-85.5K	5.7
VP IS	\$102-155K	\$105-165K	5.1
Web master	\$51.5-73K	\$55-75K	4.4
CIO	\$113.5-180K	\$117-184K	2.6
IS Director	\$88-115K	\$88-120K	2.5

RHI Consulting, 2/7/2000

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From www.salary.com, Feb. 2001

POSITION	25 th %ile	50 th %ile	75 th %ile
C I T O	107,603	131,954	165,406
Director, IT	86,464	100,878	118,120
Mgr, Network Planning	75,110	83,923	95,688
Project Lead, Business Systems	64,741	72,918	81,622
Database Administrator	62,633	71,864	81,611
Unix Administrator	52,059	61,163	70,887
Webmaster	46,087	53,151	65,733
LAN Support III	46,135	53,682	63,176
Help Desk Support Sr.	38,445	43,831	50,042

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Recruiting Tips

- Assess your organization's identity & attractiveness to the ideal candidate
 - profile your ideal employee by finding out more about your own top performers
 - go “where the action is” to begin building relationships that lead to recruitment (e.g., soft sell)
- Be prepared to move fast and make a compelling offer
 - you told us your dream job includes...
 - we're going to give you four out of those six things
 - you have to market and sell the company & the job
- Treat candidates (AND employees) like investors and customers
 - they want to know their ideas and talents are valued and their contributions get rewarded

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Top 10 Recruitment Techniques (of 22) Ranked by Degree of Effectiveness

1. Employee referrals
2. Networking (professional, informal)
3. Temp-to-hire contractors
4. Internet ads - own homepage
4. Internet ads - fee for service sites
6. Internships
7. Search firms (contingency based)
8. Newspaper ads - local
9. Search firms (retained search)
10. Hiring out of consulting/contract organizations



Source: AeA's 2000 Information Technology Attraction & Retention Survey of 400 high-tech companies, 1-8-01,
http://www.aeanet.org/aeanet/PressRoom/pradet0000_workforcesurvey0101.htm

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Top 10 Recruitment Techniques Ranked by Prevalence

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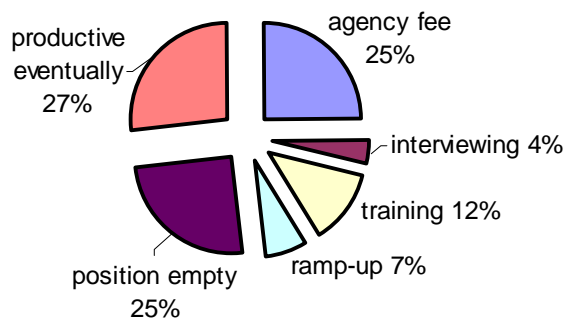


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A Sample Calculation

The Costs of Hiring a New Person (by portion of annual base salary)



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The Cost of Turnover

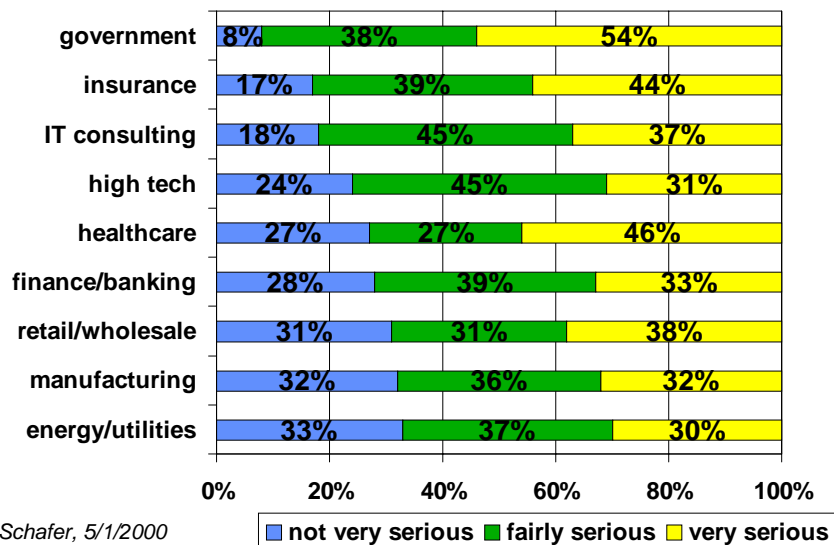
1998 Gartner Group study suggested costs include:

- Paying a new employee 15-35 percent more than your former employee
- A recruiter's fee of 20-30 percent of the new employee's salary
- Interview expenses
- A learning curve cost of 50 percent loss of productivity for three to six months
- Relocation fees
- And, ironically enough, payback of sign-on bonus and training fees to the new employee's previous employer

Total can be 100-250% of departing person's salary

79

Severity of IT Retention



80

Top 10 Retention Techniques (of 27) by Degree of Effectiveness

- 1. Challenging work assignments
- 2. Favorable work environment
- 3. Flextime
- 4. Stock options
- 4. Additional vacation
- 6. Support for career/family values
- 7. Everyday casual
- 8. High quality supervision & leadership
- 8. Visionary technical leadership
- 10. Cross-functional assignments
- 10. Tuition training/reimbursement
- 10. 401(k) matching

*Source: AeA's 2000
Information Technology
Attraction & Retention
Survey of 400 high-tech
companies, 1-8-01,
[http://www.aeanet.org/aeenet/
PressRoom/pradet0000_workf
orcesurvey0101.htm](http://www.aeanet.org/aeenet/PressRoom/pradet0000_workforcesurvey0101.htm)*

81

Top 10 Retention Techniques Ranked by Prevalence

- 1. Challenging work assignments
- 2. Favorable work environment
- 3. Tuition/training reimbursement
- 4. High quality supervision & leadership
- 5. Training programs
- 5. Support for career/family values
- 7. Everyday casual
- 8. 401(k) matching
- 9. Career development opportunities
- 10. Cross-functional assignments

*Source: AeA's 2000
Information Technology
Attraction & Retention
Survey of 400 high-tech
companies, 1-8-01,
[http://www.aeanet.org/aeenet/
PressRoom/pradet0000_workf
orcesurvey0101.htm](http://www.aeanet.org/aeenet/PressRoom/pradet0000_workforcesurvey0101.htm)*

82

Managing Technical Staff

- The secret to retention is great management!
- Dealing with egos
- Dealing with burnout
- Net-generation expectations



83

Top Motivating Techniques

- According to employees:
 - personal thanks
 - written thanks
 - promotion for performance
 - public praise
 - morale-building meetings

*Audience recommends:
Ken Blanchard's One
Minute Manager*

*Source: Linkage Inc.'s High Tech
Retention Survey,
www.linkageinc.com/retention*



84

A “Twenty-something” Perspective

- Top sources of job satisfaction:
 - people, culture, atmosphere, balance
- Other things they like:
 - challenge, learning, leading-edge and diversity, options, freedom, responsibility
- What they don't like:
 - cafeteria food, long commutes
 - bureaucracy/policy that impedes progress
 - counter-productive policies and procedures
 - waiting for authorization when they could fix it themselves



Source: “Hanging on to the New Kids on the IT Block” - Computerworld, 2/21/2000

85

Twenty-somethings, cont'd

- To bring out their best:
 - small, informal teams
 - continuous challenges
 - lots of autonomy
 - easy access to resources
 - interesting, important work
- Their advice to managers:
 - keep them growing (it's about training, not money)
 - challenge them and have faith in them
 - give them freedom and responsibility
 - don't promise what you can't deliver
 - pay attention (listen to their ideas)
 - let them loose (freedom to “go wild” with their ideas)



Source: “Hanging on to the New Kids on the IT Block” - Computerworld, 2/21/2000

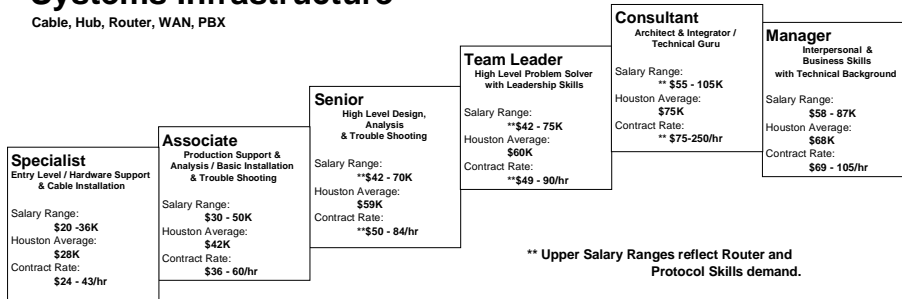
86

Well-defined Career Paths

Function:

Systems Infrastructure

Cable, Hub, Router, WAN, PBX



** Upper Salary Ranges reflect Router and Protocol Skills demand.

Preferred Skills:

Experience
Certifications
Preferred Education
Continuing Education
Career Track

(\$ amounts illustrate relationships, not current market value)

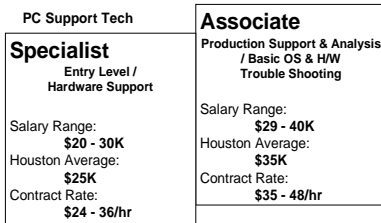
Source: OnSource Consulting, Inc.

87

Create Flexibility for Lateral Career Moves

(\$ amounts illustrate relationships, not current market value)

Client Systems



Lateral Career Path →

Enterprise Support Services

HELP Desk / Network Management Tech



Source: OnSource Consulting, Inc.

88

Skills Assessment and Development

- Do a formal assessment survey
- Maintain a skills database
- Balance skills against willingness to change and grow
- Have a formal continuing education plan



89

How to Do a Skill Set Analysis

Skill Set Documentation

Please fill out the attached Skill Set Document to reflect your current experience with the associated hardware and software. Circle the appropriate number for your experience level for each line item. If a line item isn't circled it is considered to be a "1" (i.e. No Experience). Each page has a category of hardware or software.

Listed below is an example:

Experience Level	Description Of Experience
1	No Experience -
2	No Experience - But I Am Currently Learning
3	Some Experience - Familiar In Theory Little Or No Hands On
4	Little Experience - Occasional Use or Occasionally Used In The Distant Past
5	Moderate Experience - Periodic Use & Can Work With Some Basic Options
6	Solid Experience - Regular Use & Can Work With Most Options
7	Strong Experience - Regular Use And Familiar With Many Advanced Options
8	Very Strong Experience - Have Attended Formal Training & Industry Certified
9	Expert Experience - This Is My Primary Area Of Expertise
10	Certified Instructor - Vendor & Industry Certified Trainer

Experience Level	Operating System/Operating Environment	Comments
1 2 3 4 5 6 7 8 9 10	Windows NT	
1 2 3 4 5 6 7 8 9 10	Netware	
1 2 3 4 5 6 7 8 9 10	Other	

Interested in learning

Source: OnSource Consulting, Inc.

90

The Skills Workers Need

- 62% of managers said the most important skill is a good knowledge base in the relevant area
- second most desirable: hands-on experience, but only 47% said this is key
- >1/3 of important skills cited are non-technical
 - good communication, problem-solving, analytical skills
 - flexibility; ability to learn quickly
- largest skills gaps and least availability are for enterprise systems integration and web development positions

Executive Summary, www.ita.org

91

Best Ways to Acquire Skills



- Pre-hire across all positions: 4-yr. colleges and private technical institutes
- By specific position: short courses, seminars, community colleges, informal training
- Preferences by position
 - DB development, SW engineering: 4-yr. colleges
 - web development: seminars, short courses
 - private technical institutes strong for enterprise systems analysis, DB development and administration

Executive Summary, www.ita.org

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Timing and Certification

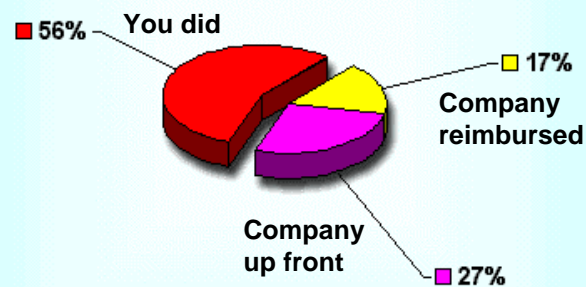
- 84% rated On-the-Job-Training as effective or very effective vs. 41% for pre-hire training
- Managers strongly preferred OJT when it has structured format and a defined curriculum
- Importance of certification = 3.5 on a scale of 5
- 50% rated certification as important or very important
- 10% of firms hire partially qualified workers and provide training to achieve qualification

Executive Summary, www.ita.org



93

Who paid for your last certification?



- You did
- Your company reimbursed you
- Your company paid up front

Source = TechRepublic

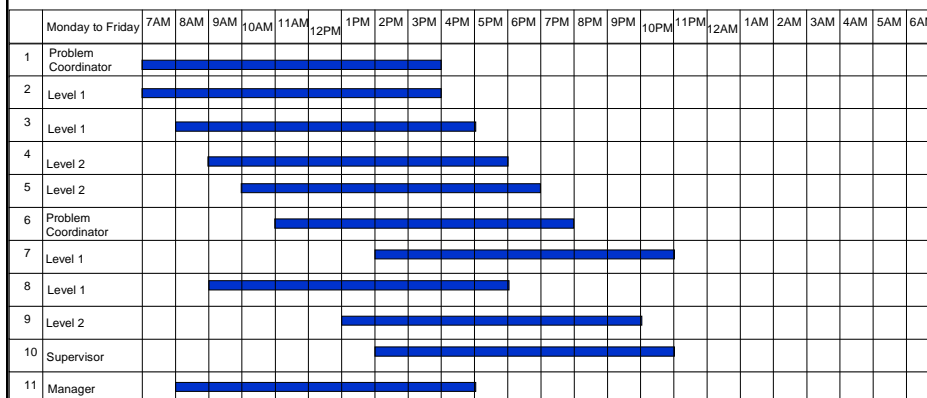
94

Adequate Internal & External Resources

- Proper level of internal staffing
 - hours of coverage
 - managed objects
 - volume of problems
 - emergency support
- Identify external resources & define roles
 - contractors
 - vendors
 - outsourcers
 - consultants

95

How to Map Your Staffing Requirements



Source: OnSource Consulting, Inc.

96

Help Desk Support Ratios based on Business Goals

<u>Type of company</u>	<u>Gartner says:</u>
Competing at the cutting edge of innovation	25:1 or 50:1
Competing on full service and overall value	60:1 or 100:1
Competing on a thin cost margin and scalability	125:1 or 200:1

Source: www.techrepublic.com "IT support staffing ratio"

97

Agenda

- What's driving (change in) the IT environment?
- Basic elements of effective IT
- The power of process
- The power of people
- The impact of environment
- Systems and tools... are *not* the silver bullet
- Building credibility, influence, and support

98

Environmentals

- Control center approach and layout
 - feeds from 2 different electric substations
 - telecom entry from 2 separate rights-of-way (need to verify diversity of routing)
 - a plan for alternate power (e.g., generators, batteries) with resources frequently tested over sufficient duration
 - appropriate fire protection & training
 - etc.



99

Environmentals, cont'd

- Designed to support 24 X 7 X 365
 - personnel safety
 - meal/food accessibility
 - weather
- Areas for staff during out-of-service time
 - personal locker instead of a desk
- Research library
- Easy access to simulation and problem resolution lab -- ONE LAB FOR ALL!

100

Ergonomics



- HVAC, lighting
- Personal keyboard, mouse, headset
- GOOD chairs

Keep OSHA in mind

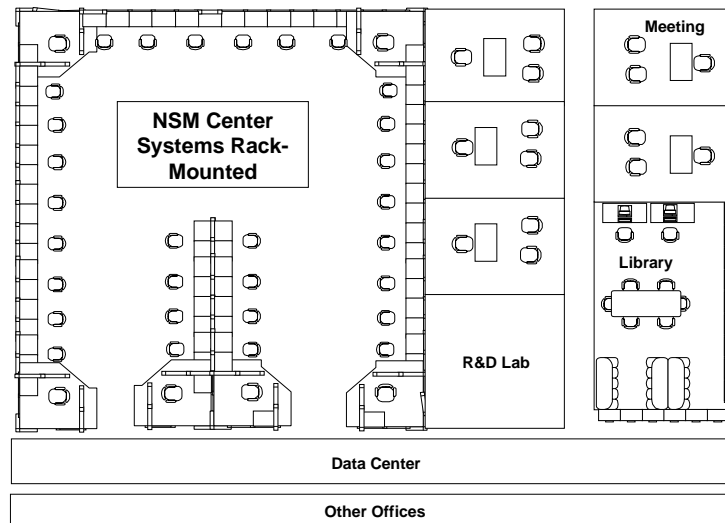
101

In Between...

- Supports and facilitates problem resolution hand-off and team troubleshooting
 - co-locate NOC, Help Desk, Command Center
 - no walls or low partitions so as NOT to block their view of each other's tools and technologies
 - *at minimum, on same network segment!*
- Whiteboards and markers; no sticky notes, paper, pencils or pens
- “Simon” board - ticker-style real-time status headlines on health & well-being of network and systems - in lights!
- Access to all tools without leaving station

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A Sample Layout



Source: OnSource Consulting, Inc.

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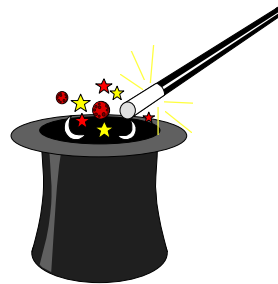
Agenda

- What's driving (change in) the IT environment?
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The #1 Question

- What is “the system” that runs IS/IT?
 - Network & systems management
 - Will you run it OR will it run you? (i.e., processes MUST come FIRST)
 - Enterprise Management System
- The 3 monitoring challenges:
 - reactive
 - proactive
 - predictive



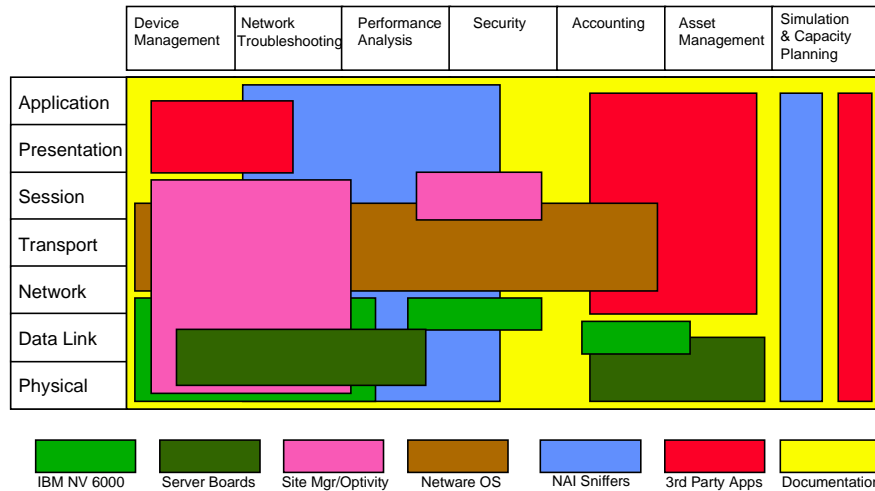
105

OSI Management Perspective

- Configuration management
 - parameter values, consistency/coordination
 - IMACs = installs, moves, adds, changes
- Fault management
 - detection, isolation, diagnosis, work-around /repair/replace
 - prediction, prevention
- Performance management
 - characterization, tuning, modeling
 - capacity planning
- Accounting management
 - asset management, cost models, billing
- Security management

106

OSI Reference Model and Network Tool Positioning



Source: OnSource Consulting, Inc.

107

Key Questions for Systems & Tools

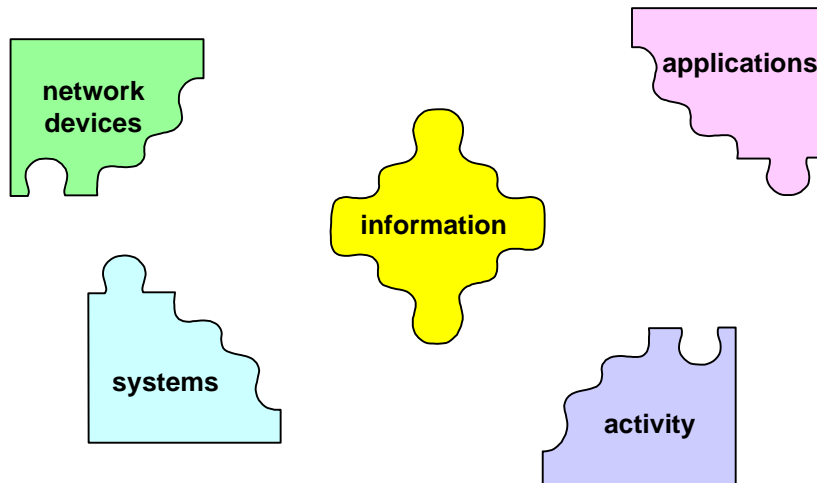
- How do they enable/support processes?
- How do they enable/support the people?
- How do they fit in the environment?
 - physical, logical
 - other systems & tools
- How well do they match/support the management culture and style?



MUST fit and reflect your services & applications!

108

What Needs to be Managed?



109

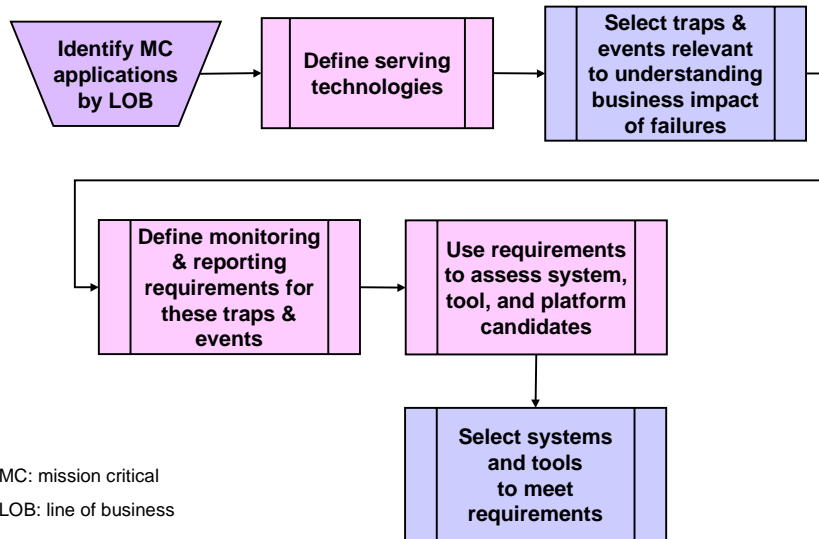
Context of Suggested “Definitions”

- Platform
 - an environment in which the vendor’s own and 3rd-party tools run
- Framework
 - an environment that ties together a set of tools all from one vendor
- Tool or toolset
 - capability to address a limited scope of function or group of related functions in one management area

this terminology is NOT uniformly used or accepted!

110

A Practical Way to Get Started



111

Desirable Characteristics



- Modular -- allows choice of best tool at right time
- Maintenance/upgrade programs -- allow steps along a path as needs/sophistication grow
- Industry-compliant for all key systems (e.g., SNMP, SNMPv2, RMON, RMON2, standard MIBs)
- Meet the needs of existing installed base

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Keep in Mind...



- “Manned” vs. “unmanned”
- Platform selection
 - Size, OS, fit in your environment
- Impact of available support
- What makes a “good deal”
 - Vendor selection and negotiation processes
- Support does not have to come from the vendor
- Does vendor philosophy and strategy match yours?

113

Options for Negotiation

- Free installation support
- Free training credits
- Value-added services
- 1-800 support
- Free upgrades
- On-site post-sale support
- Performance bonus
- Value-based billing

114

Platform Candidates

- Hewlett-Packard - OpenView - solutions manage: networks, servers, storage, applications
 - Network Node Manager (NNM), Policy Xpert
 - AssetView, Desktop Administrator, ManageX, etc.
 - VantagePoint: operations, performance, etc.
 - OpenView Express: special grouping for mid-tier
 - Service Desk, etc.
- Aprisma (formerly Cabletron) - Spectrum
 - Enterprise Solutions
 - Service Provider Solutions
 - Broadband Cable Management Solution

115

Applications Compatible with HP-OV NNM 6.1

Application	HP-UX 10.20	Solaris 2.6	NT 4.0
3Com Transcend Enterprise Mgr	5.0	5.0	1.0
Agilent NetMetrix	6.0*	6.0*	
Agilent NetMetrix Performance Center			1.0
Nortel Optivity-NMS	9.0*	9.0	9.0
CiscoWorks 2000 Campus	2.2*	2.2*	2.2*
CiscoWorks 2000 Resource Manager Essentials	2.0*	2.0*	2.0*
CiscoView	4.2	4.2	4.2
HP Customer Views for NNM	1.0	1.0	1.0

116

Spectrum 6.0

Family of Infrastructure Management Solutions

- Branch Office Manager
- Site Manager
 - SpectroServer Knowledge Base (fault mgmt for up to 250 devices)
 - Systems management gateway to Compaq Insight Manager
 - Trouble ticketing gateway to Remedy ARS
 - Enterprise LAN device management
- Enterprise Manager
 - SpectroServer Knowledge Base (unlimited # devices)
 - More client licenses for desktop access
 - Systems management gateway to Compaq Insight Manager
 - Trouble ticketing gateway to Remedy ARS
 - Enterprise LAN device management
- Multi-vendor device support (recent deal with Cisco)

117

Framework Candidates

- Computer Associates - Unicenter TNG/
- Tivoli - NetView TME (now includes NetView, which was originally OEMed from HP-OV - probably only polling is similar today)

118

CA Unicenter TNG

- Unicenter TNG Framework = architecture
 - GUI with open APIs
 - data repository and data model (object model is superset of CORBA)
 - communication facility for sharing information across a network
 - » Common Communication Interface
 - » Event Notification Facility
- Many choices for underlying hardware / OS
- Development partners
 - see http://vip.ca.com/dpp/directory/tng_partners.htm

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Toolsets

- Problem Mgmt + - Remedy,
- Server Mgmt - Compaq Insight Manager, HP "server manager"
- Performance monitoring - Concord's Network Health, Ganymede's Pegasus
- BMC Patrol
- Test suites - Netcom's SmartBITS, Ganymede's Chariot
- Correlation engines - SMARTS, Avesta's Trinity
- Application performance: Optimal response time predictor, Ganymede Pegasus, FirstSense
- Lucent e-pro from NetCare (comparable to Concord)

Think business impact of failures, degradations, etc.

Think process-driven, with links among problem, change, & asset management

121

Some Advice

- Big, comprehensive platforms take major effort to install, learn, & use
- A small set of carefully selected, compatible tools may be better than a huge platform
- Strive for a common back-end DBMS

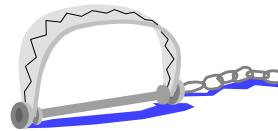


122

Of course, technology keeps
marching along...



*Just what does “network
management” encompass
anyway?*



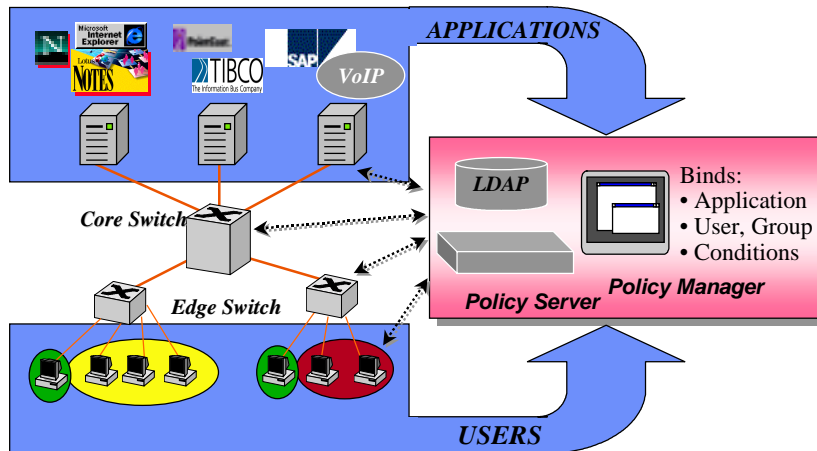
123

Policy-based Management

- QoS Policy
 - application: UDP,TCP port #
 - system or individual: IP host address
 - group or VLAN: IP subnet address
 - time: ToD, DoW, WoQ, etc.
- Security Policy
 - application: access
 - system or individual: privilege or authentication
 - group membership: privilege
 - time: access

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Policy Management Overview



125

Technologies Supporting Policy-Based Management

- Policy Transaction Protocols
- User Registration Servers
- Directory Services
- Directory Service Access Protocols
- Network Management Data Interchange and Data Modeling
- Directory Enabled Networks

126

Agenda

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127

Selling it Internally

- Do IT staff understand the business?
- Do IT staff understand how the technology supports the business?
- Do IT staff understand the impact of technology failures?
- Do IT staff understand their roles in all of this?



128

Developing IT Buy-in

- Get them involved in the planning process
- Publish defined service levels & results
- Publish maintenance windows
- Cross-rotate support people & encourage knowledge transfer
- Explain the value of engaging with the support team
- Keep them informed

communication!

129

Developing Executive Management Commitment



- Outline the risks involved
 - risk of doing, risk of not doing
- Understand true costs
- Get them involved in the planning process (need to have CFO as an ally!)
- Define how return on investment will be achieved (e.g., mean time to return to operation & cost of downtime)
- Tangible and intangible benefits

130

Map Technology Strategy to Business Objectives

- Identify business objectives and timeframe
- Define required supporting technology (not wish list)
- Perform gap analysis between current and required
- Identify risks
- Design to meet requirements
- Prepare transition/implementation plan

131

Work with Total Cost of Ownership

- Too much history of late and over budget
- Too many trips back to the well
- You mean it doesn't last forever?
- Importance of life cycle perspective
- Use industry data carefully

The letters 'TCO' are rendered in a bold, 3D, sans-serif font. The letters are primarily yellow with a gradient of orange and red on the sides, giving them a metallic or glowing appearance. They are positioned in the bottom right corner of the slide content area.

132

References on Value Methodologies

- General information
 - www.eitforum.com
- Applied information economics
 - www.hubbardross.com
- Balanced scorecard
 - www.bscol.com, www.rens.com
- Economic value added
 - www.sternstewart.com
- Economic value sourced
 - www.metagroup.com: select Products & Services, then Initiatives - Business Value Consulting
- Portfolio management
 - www.metricnet.com, www.metagroup.com
- Real option valuation
 - www.pwcglobal.com: enter term in search field



133

Establish Success Criteria

- Define pieces of action
- Define roles & responsibilities
- Define & gain full funding
- Define deliverables
- Define what “complete” means
- Define what “successful” means

134

Common Pitfalls

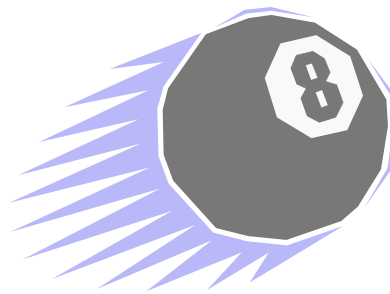
- Failure to take an enterprise approach
- Inaccurate or incomplete documentation
- Failure to plan
- Failure to gain executive management commitment
- Under-funded



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Pitfalls, cont'd

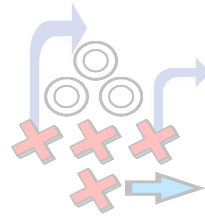
- Believing the vendors
- Non-dedicated resources
- Getting out of scope
- Failure to develop policies, processes, & procedures
- Failure to train your staff
- Unrealistic timeframes or scope or staffing - these are NOT independent variables!



136

Developing an Implementation Plan

- Business unit involvement
- Regular and on-going review of long-term plan
- Executive level involvement
- Life-cycles & planned obsolescence
- Formal project planning tools



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Success Factors

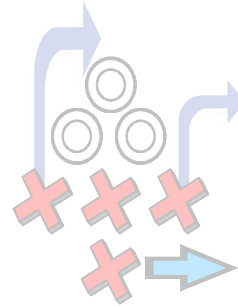
- Establish real timeframes
- Provide fallback pockets
- Review resource allocations carefully
- Evaluate long-term commitment of team members
- Establish milestones



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Success Factors, cont'd

- Document changes
- Build detailed implementation plans by task
- Allocate resources by individual
- Publish results
- Plan - Do - Review - Iterate !!!!!



139

Project Management Institute

- www.pmi.org
- certification program
 - Project Management Professional
 - 4500 hours experience prior to exam
- PMBOK (“pembok”)
 - Project Management Body of Knowledge
 - document available for free download

Coverage includes management of:
integration, scope, time, cost, quality,
human resource, communications,
risk, procurement



140

The Importance of Budgets

- Under-funded technical support can cost twice as much as the proper level of support
- Network & systems management solutions are not inexpensive
- Many organizations are critically under-budgeted



141

How to Establish Budgets

- Create a global plan & build the budget
- Establish quarterly outlays
- Define Categories
 - Client Systems
 - Back-end Systems
 - Systems Infrastructure
 - Application Systems
- *Include a “contingency line / fund”*



142

Budget Steps, cont'd

- Put needs in priority order
 - Must have
 - Should have
 - Nice to have
- Include all areas
 - Hardware & software
 - Training
 - Travel costs
 - Internal & external staffing
 - Maintenance



143

Success Factors

- Gauge your commitment
- Identify ability to be successful
- Plan! Plan! Plan!
- Gain executive management commitment
- Purchase antacid
- Lease straight jackets
- Hang on for the ride
- Enjoy the positive results



144

Questions?
Discussion?



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Thank you!



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