

*A systems approach to
e-business development*

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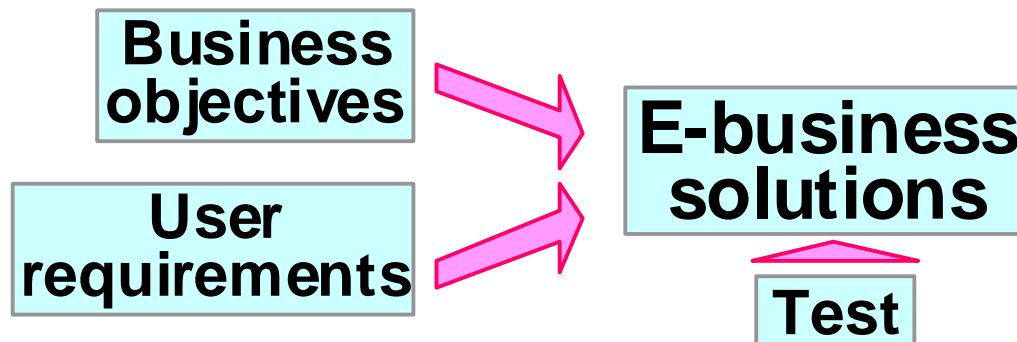
**The Nordic Systems Engineering
Boat Seminar 2000, 25-26th October**

Objectives and Structure

This presentation shows how requirements management (and systems engineering) are used to develop and operate e-businesses

This presentation is primarily about principles and methods, not tools

- 1: e-business is changing the shape of all businesses
- 2: Requirements in the new e-business lifecycle
- 3: Case studies
- 4: Setting up a requirements-driven e-business



*e-business is changing
the shape of businesses*

quality

In a knowledge economy, 'things' are worth less, while ideas, IP, and information are worth more - for everyone, not just dotcom companies

information

'Time to market with the right product' is critical - we have to shrink development times, reduce risk, improve quality

weeks not years

Constant mergers/acquisitions, process automation taken for granted, reduced manpower

globalization

Globalized competition, destruction of national trade barriers (*no local hiding places*), - companies must look outwards

quality

Increased customer knowledge of quality and functionality demands a richer product offering

software

Software as the dominant force of change in everything

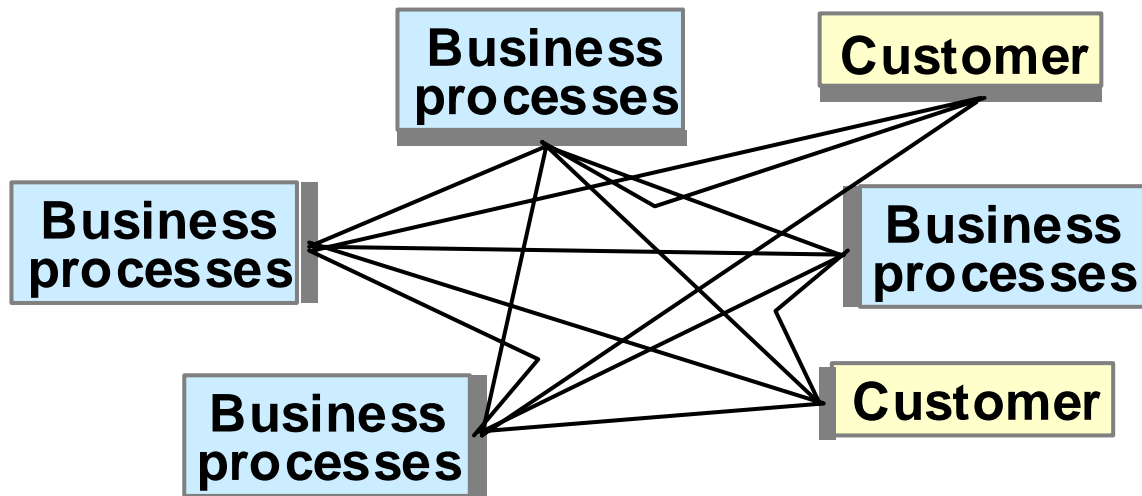
Outsourcing

Outsourcing of non-critical components, and use of bought-in 'transferred technology' and existing commercial components

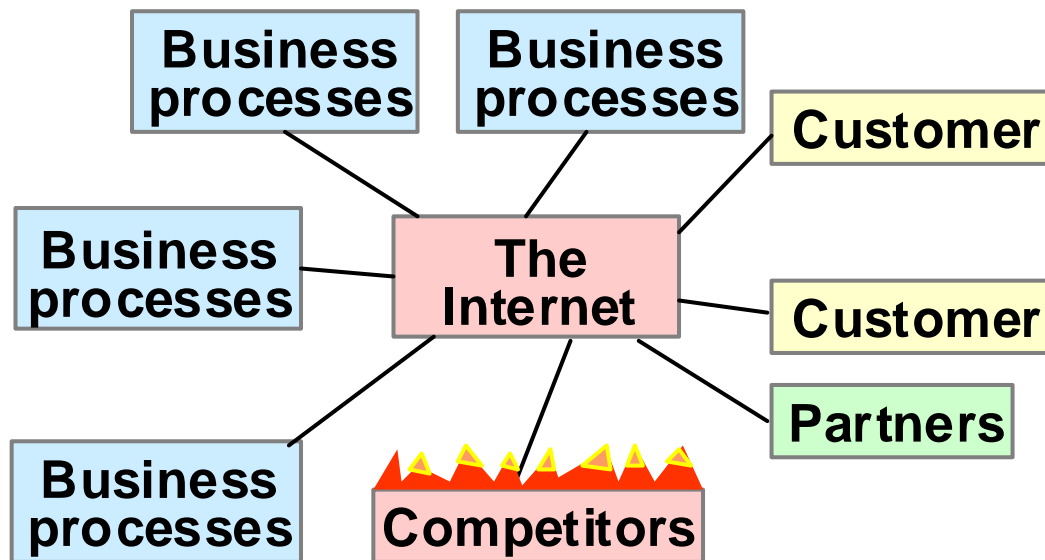
information

The company and its products are becoming knowledge-based through software - control is now through electronic information not paper

An industrial revolution that is changing the world ... rapidly



Applications were company-internal, mainframe-based and weakly connected to each other and to customers

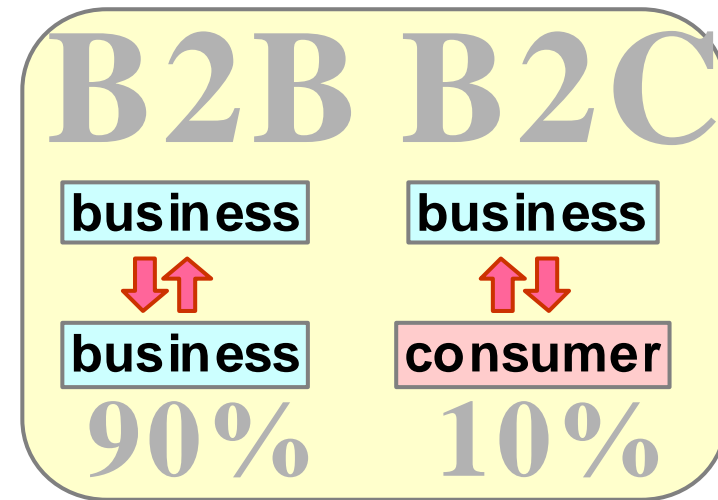


The Internet provides an information framework integrating businesses, partners and customers - .. and competitors

Communication in the Internet era

What is e-business?

- In an e-business, virtual information-based systems replace older physical systems
- The Internet provides minimal-cost information access
- This applies to the product itself, but also to the way in which it marketed, and how it is developed
- The product offering needs to be reorganized to account for minimal information costs
- Every business and every part of the business is affected
- Results in reduced costs, elimination of the middleman, & closer interaction between the enterprise, its partners and customers
- Disintermediation - there is much less of a need for an intermediary between supplier and consumer



Basic statistics of e-commerce

- **US e-commerce \$43bn in 1999, \$1300bn by 2003 - about 10% of business by 2003**
- **Internet banking 2% in 1997, 4.7% in 1999, 13.7% in 2000**
- **Investing through the Internet - 0.8% in 1997, 1.1% in 1999, 2.4% in 2000**
- **Every minute 1.2 new servers are connected to the Internet (53,000 per month)**
- **80m users in 1997, 330m in 2002, 1000m in 2008**

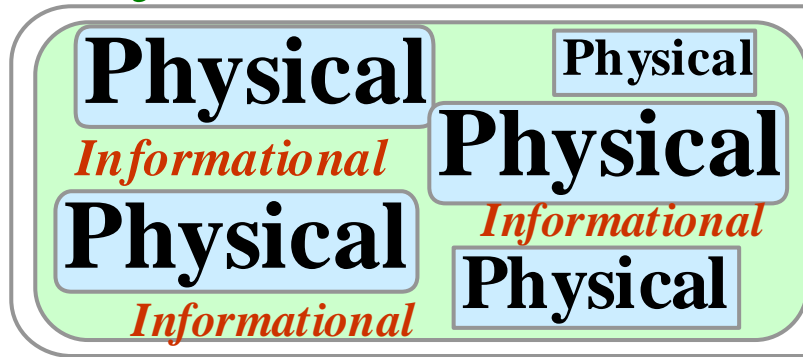
The economics of information

- The value of an organization is increasingly in its information assets rather than physical assets
- The economics of information are quite different to those of physical items (*“Blown to bits”*)
- The Internet destroys the barriers between information and its carrier (e.g. paper, TV)
- Information is subject to the laws of increasing return - find it once, use it many times, and you do not lose it when you sell it
- Every industrial product is a compromised bundle of physical and information elements
- The changing economics of Internet information means that different bundles are better compromises

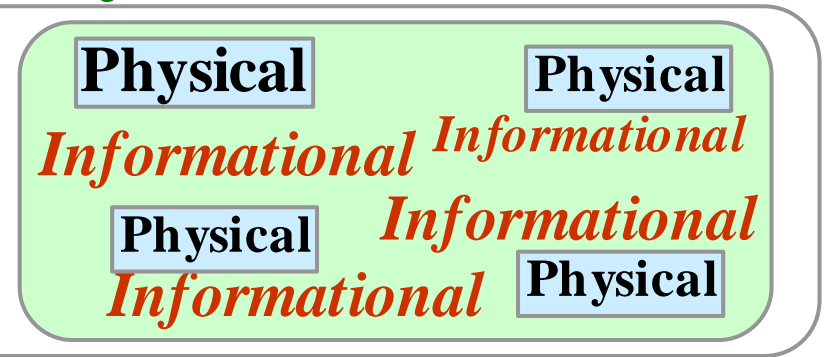
*“Ultimately we are an information broker” -
Jeff Bezos, founder of Amazon*

- Products and services must be deconstructed and re-shaped for a virtual world
- This applies everywhere e.g. IT systems, planes, weapons, communications & commercial products

Before



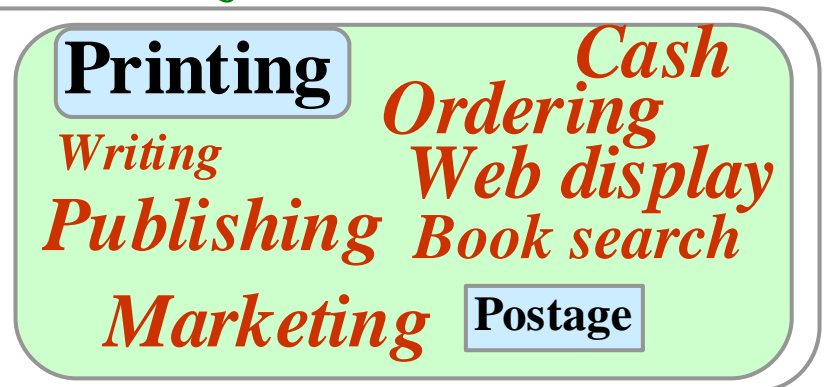
After



Local bookstore



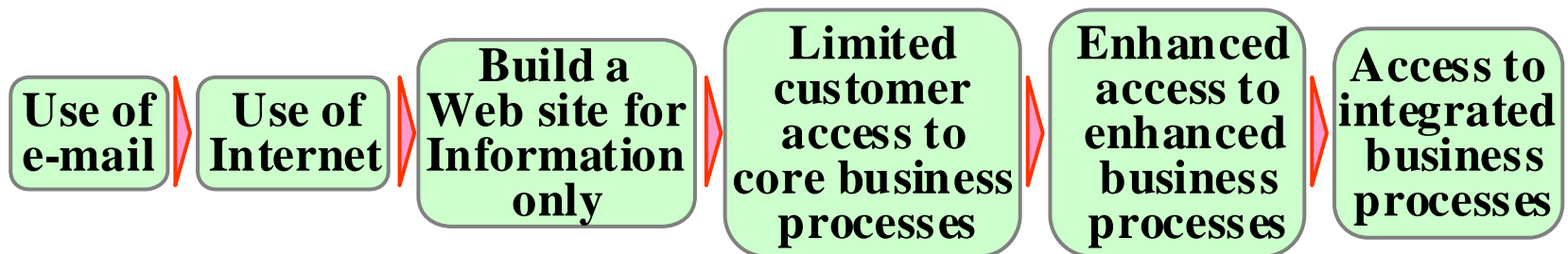
Amazon



The new nature of products

Internal adoption of e-business

- The internal adoption of e-commerce follows a path from e-mail from initial sensitization to Internet-based process improvement then cross-process investment
- The roadblock is the process definition and (now) exposing internal process to customers securely



**20 years of process improvement
now needs to move to Intranets**

**Enables global
information exchange**

**Process
re-design**

**Process
automation
and re-design**



**The
Internet**



Moore's Law

**Microelectronic
revolution**

Metcalf's Law

**More raw processing power,
information handling and
communication capability**

The business becomes virtual

Contradictions in e-business requirements

Time to market is even more critical than normal - we cannot delay development because of requirements or test (but both are essential)

We want the e-business site to be driven by enterprise objectives - but without stifling its innovation

The e-business must be able to evolve rapidly - innovation is always intense - and with a small window of predictability

Monitoring of competitors, tools and technology change is essential

There's always too much to do - so trade-offs of requirements vs resources is continual

Commercial products are used intensively - we have to choose and maintain them carefully (especially how they evolve)

***How can we have discipline without destroying innovation?
- easy: resources and organization***

Internet Auction Sites Need Sharp Customer Support

Netscape E-Mail Passwords Vulnerable

BILL LABERTS

One person's
e-commerce
horror show

**Consumers Gripe
About Web Shopping**

**Financial Reform Bill
Raises Privacy Worries**

**Threat of e-retailing
is overstated — for now**

'Polite' Sites May Do More Business, Research Says

Analysis Retailers were unprepared for the demands of seasonal e-commerce

E-commerce's dirty little secret
surfaces after teen-ager grabs
and gives away thousands of
credit card numbers

That was the glitch that stole Christmas

Dot-coms will disappear

**Poll: Most Businesses
Concerned About Piracy**

**Updated Wal-Mart Site
Offers Travel Services**

Staples Sues Hacker Over Web Site Incident

**WEB MERCHANTS
STUNG BY FRAUD**

**Worm Highlights
Weak Defenses**

Being first is important

○ *Being first in an e-business space is important - ask Amazon, Yahoo!, eBay, HotMail*

- ▶ You grab the land
- ▶ Get the reputation and brand awareness
- ▶ Get the early and creative adopters
- ▶ Everyone has to discuss the domain relative to you

○ *But being first is not enough - ask PeaPod, Digital Research, CDNow, Apollo, 3DO*

- ▶ Everyone has someone to aim at, and copy from. They offer the same services, but better and cheaper, and you're out
- ▶ You get set in your ways, don't listen to customers, and the next disruptive change leaves you high and dry
- ▶ You choose the wrong architecture and can't scale up for new services
- ▶ The bricks and mortar brigade strike back (e.g. Barnes and Noble)
- ▶ Service is unreliable, and customers evaporate

Metcalfe's Law of increasing return

Case study in being first - HotMail

- Sabheer Bhatia had the idea for HotMail in Dec 1995, and sold 15% of the company for \$300k to a VC
- Development from Feb to July 1996 in secrecy, because the idea could have been cloned at any time
- Launched July 4th 1996, 100 customers in first hour, then 200, 250 per hour, >30m now
- No real rival ever emerged - a six-month lead was more than enough to crush competition
- Microsoft come sniffing in Autumn 97 with an initial bid for \$50m (or we crush you)
- After arm-twisting, HotMail sold on New Year's Eve 1997 for \$400m, shocking even Silicon Valley

“By the time that Microsoft figured it out, we had 6m customers” - Sabheer Bhatia

With bumps and crashes as the revolution happens

2000 saw many e-business collapses - BOO.COM burnt through \$120m, BOXMAN in CDs, CLICKMANGO in food

In other cases, the value of the business collapsed e.g. Amazon shares went from \$110 to \$20 - an asset loss of >\$20bn

Quality is important too

A site may initially be simple, but won't go far if it is low-quality

The challenges faced by e-commerce companies are the same for traditional organizations - quality, time to market, change management

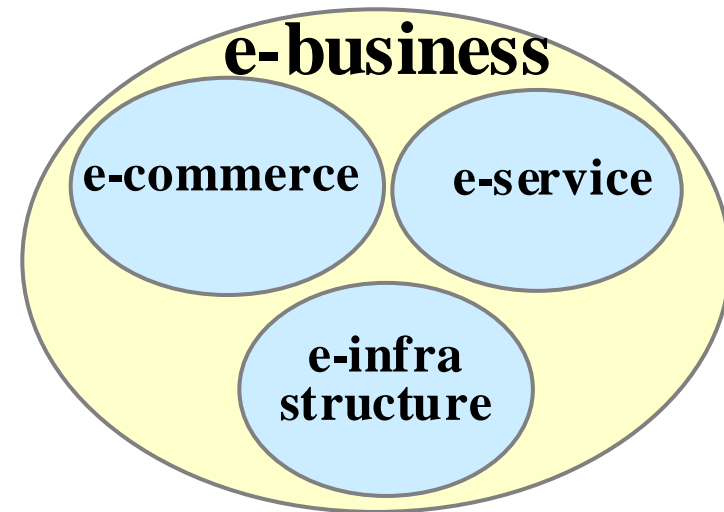
Quality has many dimensions such as reliability, scalability, attractiveness, security

Example requirements

“The e-business should have a positive cash flow within 30 months” – the CEO

“My credit card information must be secure” – the consumer

“The page shall load in less than 8 seconds for the average customer” – the designer



Quality is conformance to requirements - Crosby

e-business is a disruptive change

**from “The Innovator’s Dilemma” by Christensen*

- **Defending dominance is often a disadvantage**
- **Techniques that work for normal, smaller changes are not sufficient**
- **Upstart companies normal displace dominant companies in a period of disruptive change**
- **The best policy for a dominant company is to make its new group behave like a start-up**

Encarta vs Encyclopedia Britannica

Requirements in the e-business lifecycle

Drivers for the e-business lifecycle

- Cost becomes secondary
- Functionality can be implemented in parts, driven by priority
- Quality remains key particularly in security & scalability
- Performance is always an issue
- TIME is critical, particularly in comparison to the competition



Rapid release cycle

Information from Schwab

- ▶ New versions are released every 20-40 days
- ▶ Typically 30-50 new functions per release - the product gradually grows more complex
- ▶ Intense, continuous feedback from customers, new tools and concepts arising continuously
- ▶ Consequences:
 - ▶ *Requirements capture and prioritization are continuous, remorseless activities.*
 - ▶ *Testing has to be highly automated, with complete regression testing*
 - ▶ *Performance modeling and load analysis become critical*
 - ▶ *More subtly, you must continuously document the architecture - or guess what will happen?*

E-business system
release 1

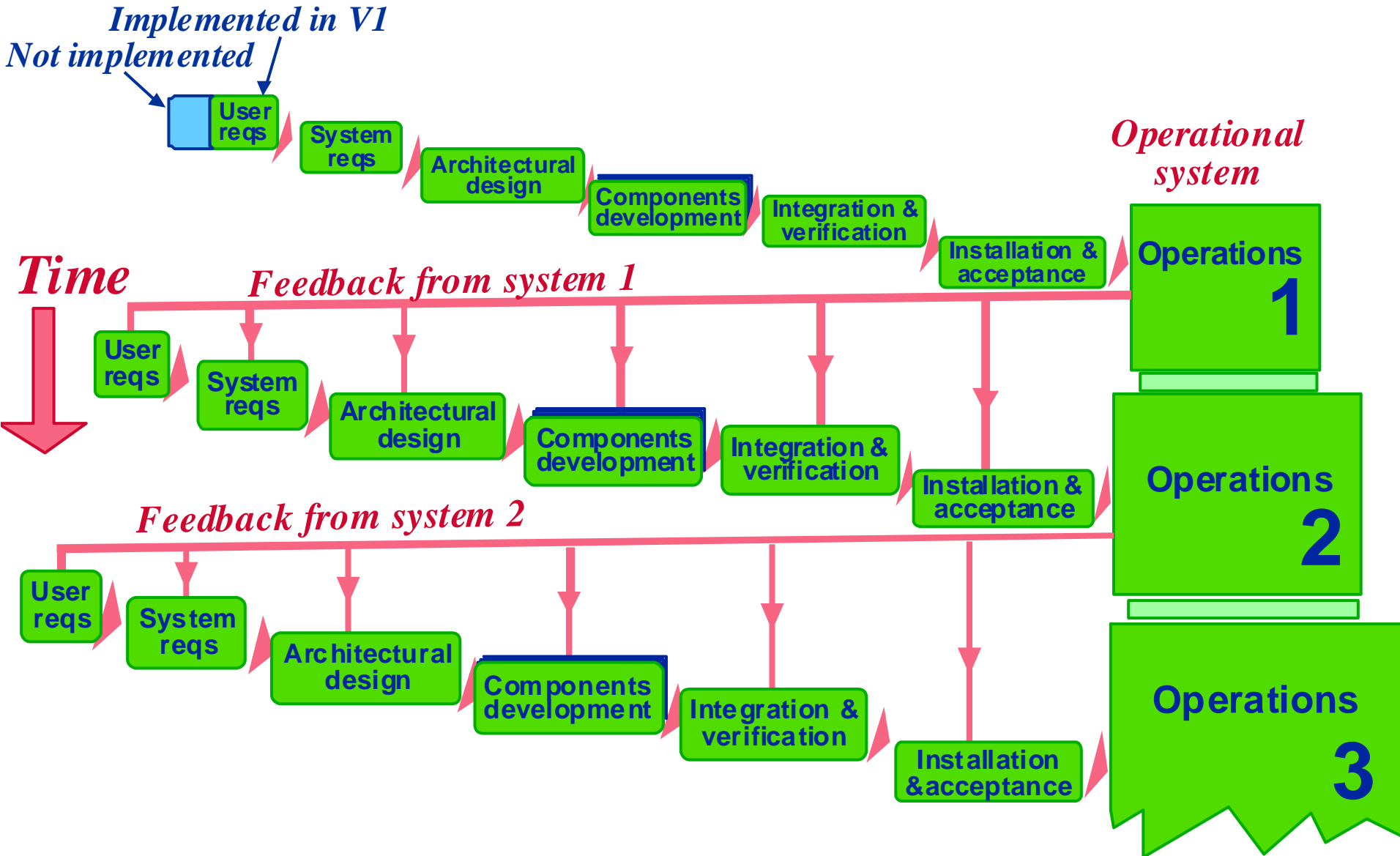


E-business system
release 2



E-business system
release 3

The evolutionary lifecycle



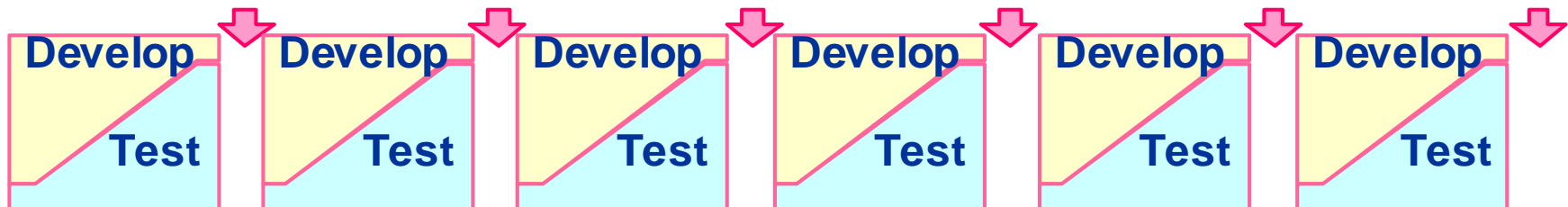
The new e-business lifecycle



The traditional lifecycle needs heavy modification:

- Totally evolutionary, releases every few weeks
- Feedback from users is intense and continuous
- Testing must be automated and continuous - bug-fixing has to be immediate
- Customer prioritization and compromise on requirements are integrated into the lifecycle

Release 1 Release 2 Release 3 Release 4 Release 5 Release 6



Prototyping

- Where you have to have something, but the risks are too high (e.g. unstable requirements), you have to prototype
- Prime uses for prototyping are for technology exploration and checking out commercial components
- Prototypes reduce risk by generating information - they are not real systems
- Prototypes can be physical representations, emulations, analysis models, drawings, feasibility studies, or modeling & simulation
- Prototypes are 'thrown away' after use



Educate your customer about the differences between prototyping and evolutionary development

The benefits of a requirements-driven approach

- e-business systems are complex, adaptive, expensive (\$.5 to \$5m), & business-critical
- The business objectives may be untypical - to maximize growth, value not profits
- A requirements-driven approach can:

Capture customer needs

Keep e-business aligned to business objectives

Ensure the right development activities are performed

Enable testing



“A closed data center was a castle. It was a lot easier world to manage”

- Emily Freeman, senior VP for e-business, Marsh Inc



Investment levels
Return on investment
Time horizons
Business rules

Business strategy



Commercial reality

Business objectives



User requirements



Systems requirements

Number of customers
Market share
Maximum investment
Customer retention targets

Time to complete an order
Web site availability
Ease of use
Range of payment types

Maximum downtime
Performance metrics
Maximum expected load
Security against hackers

Examples of different requirements

Business requirements for e-business

e-business has to be driven by business goals, not just technology for its own sake

Example business requirements

“All cost estimates shall be for the complete lifecycle, not just for developing the first version”

“The company shall have 20% of the market for non-branded aircraft parts”

“All Web servers shall use the same version of Linux”

Planning requirements

“Version 1 of the site shall be functional by July 2001”

“Business must be cash-flow positive within three years”

“The Web site shall cost no more than \$2m for the first two years”

“This is Columbus finding the New World.. What was his return on investment?”

e-business changes the business rules

The e-business site must be driven by enterprise objectives - but the business rules have changed

Market share and future value are typically more important than cash-flow

Innovation is always intense - and unpredictable

Monitoring of competitors, tools and technology change is essential

Trade-offs of requirements vs resources is continual

Commercial products are used instead of custom development in e-business

How can we have innovation without destroying discipline?

The business plan

Characteristics

Short, clear, verifiable (very difficult)

Resources match the objectives (unusual)

Tells us where the organization wants to be in 3-5 years

Stable and sensible - changes here will alter everything

Defines responsibilities and decision-making

Captures business rules

Differences compared a classic business plan

Traditional methods of cost-benefit analysis are not a suitable basis for e-business

*Much greater emphasis needed on opportunity costs
e.g. how much could it cost us not to be involved?*

*Needs to define the new value chain and physical/
informational bundle*

User requirements for e-business

Business-to-business requirements

B2B

Other businesses are the “users” and we have to find what is wanted (and vice-versa) e.g.

“The supplier must deliver an average of 3,000 motherboards per day”

“The supplier should see the status of all open support items”

Business-to-consumer requirements

B2C

Our customers have needs for the e-business which we must meet e.g.

“Keep my financial information confidential”

“complete an order for a book within one minute”

“see the order and price before commitment”

Prioritizing requirements

- You never have enough resources, but you want to give the customer the maximum for those resources
- Requirements have to be prioritized and costed - then straightforward to sort out those to implement first

<u>Requirements</u>	<u>Priority</u>	<u>Cost</u>	<u>Accepted?</u>
warned of a page load failure round the world within 5 minutes	4	300	Yes
no hacker shall be able to access server of the e-commerce system	5	100	Possibly
User shall be able to enter ZIP code to identify US location	2	300	No

- Simple scales for priority and cost let you filter requirements into prioritized groups

Systems requirements for e-business

Systems requirements define an abstract system -
to choose between solutions, avoiding lock-in,
checking design and performance

Functional requirements

“The system shall detect any attempt to penetrate the firewall”

“The system shall personalize the site for any user who has ordered items before”

Performance requirements

Performance requirements are key to coping with surges

“The system shall cope with a surge of 3X normal for a period of one hour”

Fault tolerance

“Any single failure of a server shall not affect customer service”

“The system shall continue to function after failure of any two server nodes”

Security requirements

- Security is a constant threat, with its nature changing in front of our eyes

What if a hacker penetrates the site and recommends competitors? Ask Staples

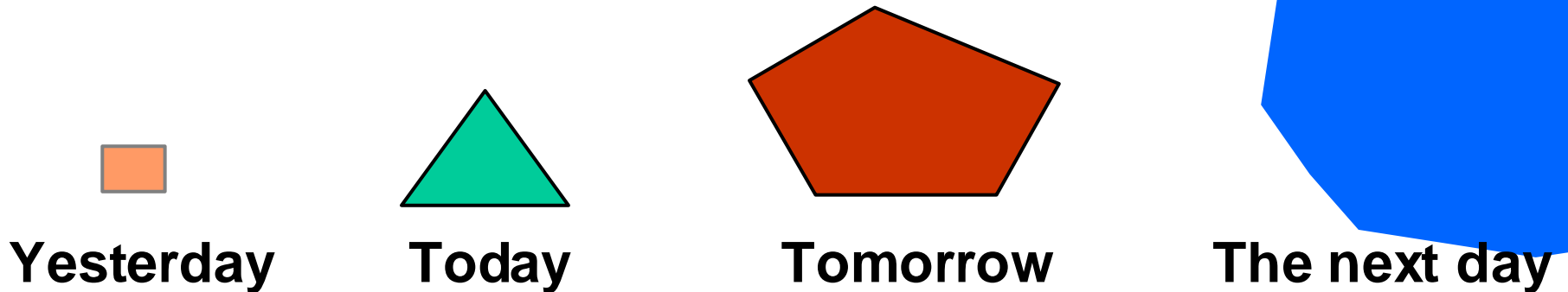
What if a bug allows access others' accounts and buy and sell shares? Ask Halifax.

What if the site goes down for a day, and has repeated crashes? Ask eBay

What if a hacker steals all your customers' credit card details and offers them for sale? Ask eUniverse

“Scaling is the most important thing we do” - Kim Rachmeler, Amazon Dir of Enterprise Management

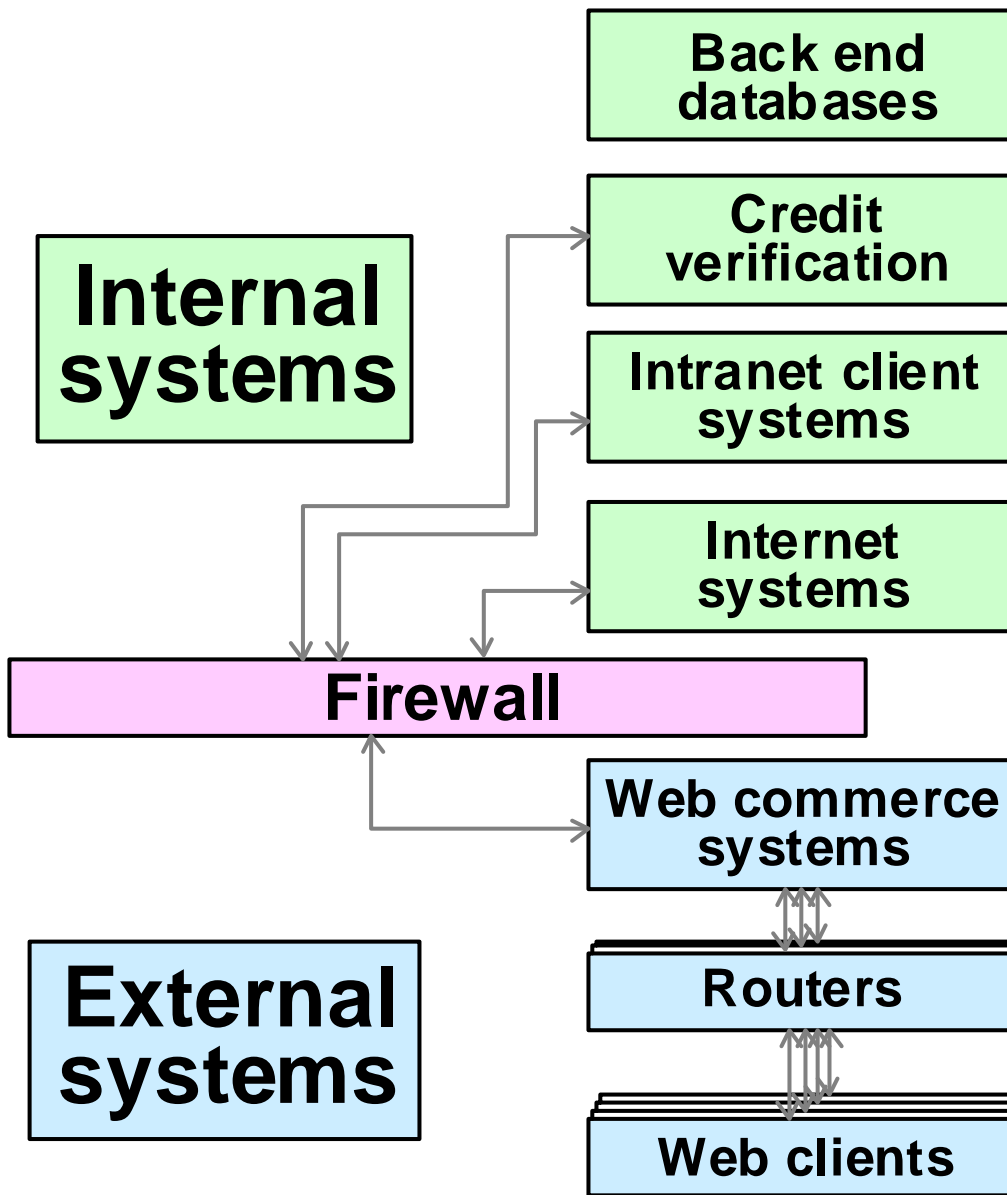
Scalability requirements



- It's easy to build and support a small e-business system, but it will grow and change
- You have to model the system performance to cope with surges of demand
- The net result - requirements such as network size, transaction handling, data throughput, page load timings
- This requires modeling tools and a systems architecture

The only Web site that doesn't change is... finished

System architecture

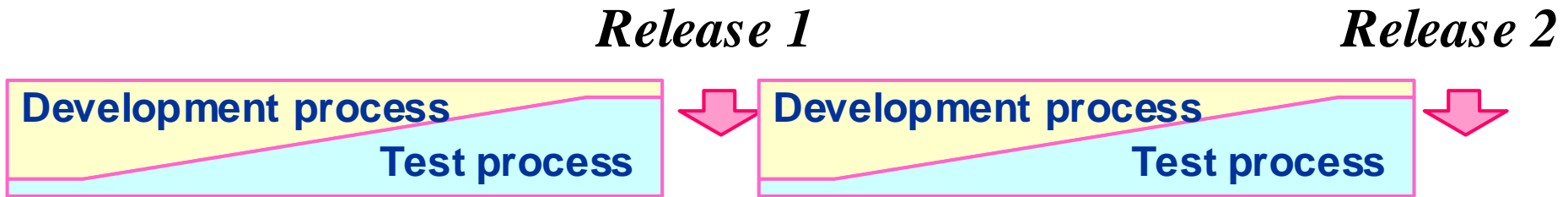


e-business systems are complex mixtures of hardware, people, software and interfaces

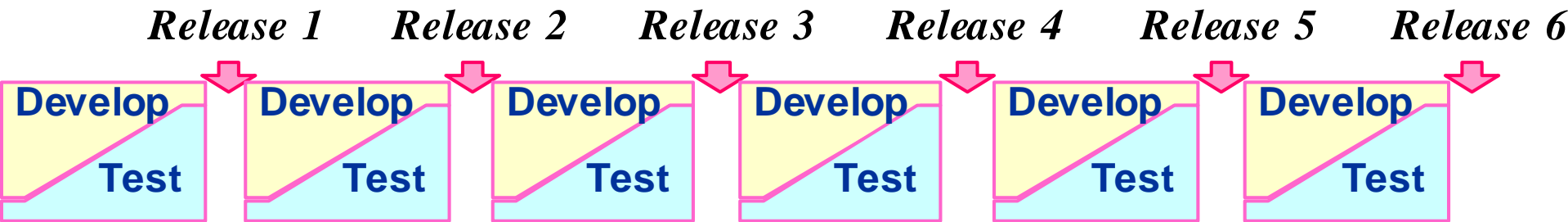
A solid architectural design is essential for allocating requirements, for test, evolution and allocation of development work

*“e-commerce is like an iceberg - the Web site that the customer sees is just the tip” - Debra Chrapaty, E*Trade CEO*

Testing in the e-business world



The whole product still needs testing against requirements



Testing must be automated

Requirements and configuration management

e-business has difficult problems of configuration management because of the number of releases and links to requirements and test

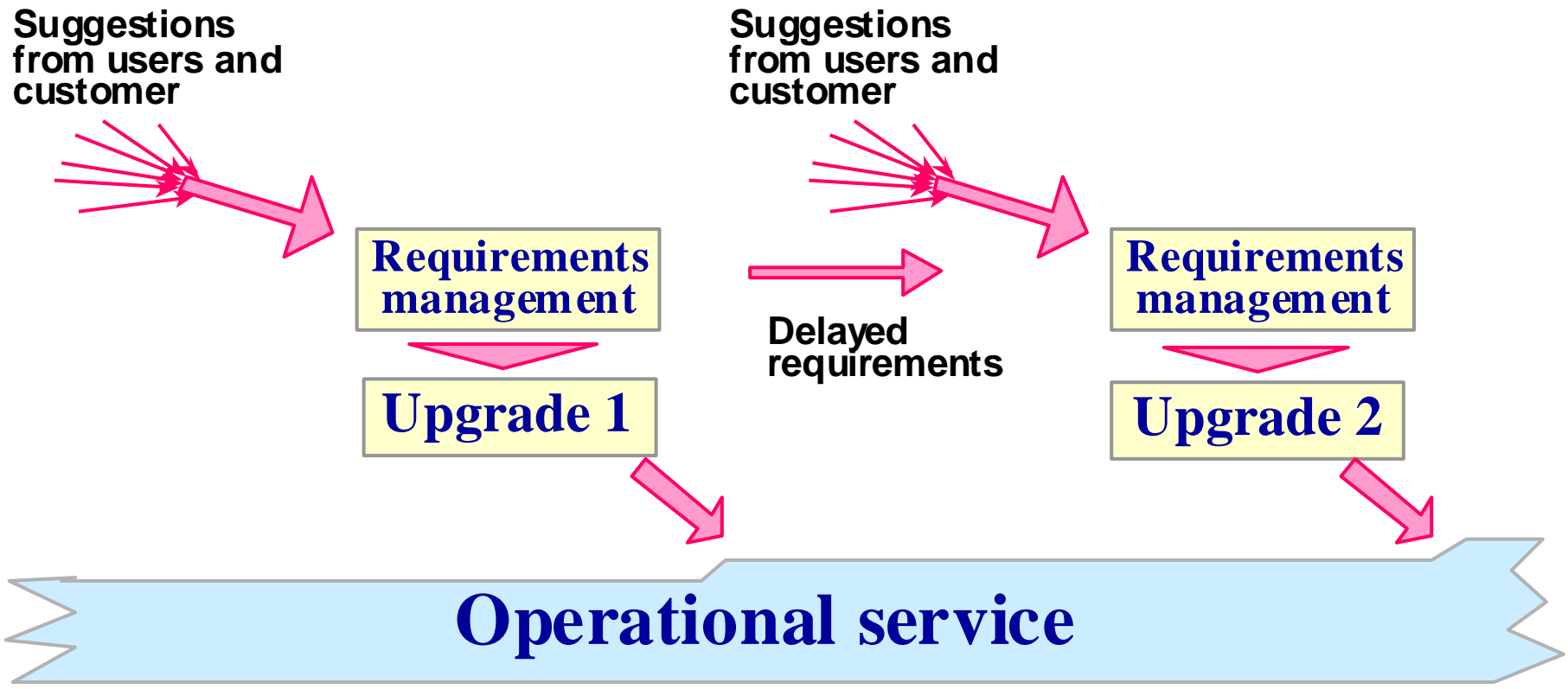
- DOORS stores every change of every object - but you still need conventional configuration management
- CM tools control information associated with particular releases
- Adds source code control to your traceability schema
- Allows compliance checking of components against the specific requirements for them
- Tells you what code in each release against which requirements - for management, tracking of evolution, release management
- Allows replication of old releases and knowing which requirements should have been met

DOORS links to CM tools (e.g. ClearCase and PVCS trace requirements to versioned files of the rest of the project information

Upgrading the e-business

- Change is an integral part of the e-business - a site will be significantly different in a year, or it won't exist
- New releases occur at regular intervals - the train metaphor - if a component isn't ready it doesn't go into the release
- Even if you have an architecture to start with, it is transformed over the course of a few months
- Two main forces of change:
 - Sustaining development: hundreds of small changes suggested by users that need to be collected as requirements and implemented on a cost-benefit basis*
 - Disruptive development: changes that alter the e-business landscape, primarily from technology developments. These require analysis and prototyping*

Evolution of the service



Change management

You need to collect every one

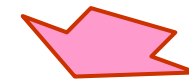
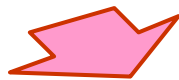
Customer suggestions

Development and operational tools are changing dramatically

Technology changes

Have you seen what they are doing?

Competitive analysis



Requirements system

- **Change is continuous, rapid and inevitable**
- **Customers will supply masses of small suggestions to improve your e-business**
- **Technology is currently transforming tools, techniques, and access to information**

Case studies

Case study - Charles Schwab

- Schwab are an excellent example of a “bricks and mortar” company transitioning to the virtual world.
- Schwab has developed a large, well-established and well-respected e-business infrastructure for their web-based products and services.
- Schwab four key goals for e-business:
 - ▶ *Develop requirements templates to drive and maintain consistency in requirements*
 - ▶ *Conduct ambiguity reviews to ensure that quality requirements are being developed*
 - ▶ *Link requirements to test cases*
 - ▶ *Effectively manage change*
- 1.5M clients in the first 3 months

Schwab turned to QSS to provide solutions to capture and manage the requirements process

Case study - Dell

- Dell sells PCs cutting out the middle-man
- Michael Dell's requirement in 1997: *“50% of turnover through the Internet by the end of 2000”*
- Users “design” and follow the construction of their own PC. Business clients can set up their own version of the Web site
 - ▶ *Dell replace inventory with information - paid 5 days before they pay their suppliers*
 - ▶ *4 hours to build each computer against a specific order - no warehouses of obsolete machines*

Case study - Boeing (PART) System

<1978

Manual system

Paper-based system

1978-95

Mainframe computerization

After 18 years, 10% of customers use mainframe EDI system for ordering. 5 day/week 8 hours per day system.

1996

Internet front-end

Customer numbers double to 20% within 3 months of Internet front end. 24 x 7 day operation

1998 -

e-business

Customer interactions create new applications, most customers now on-line,

2000 -

Integration of e-business processes

Integration of internal and partner processes

Case study - Encyclopedia Britannica

- Encyclopedia Britannica sold door-to-door for decades at several thousand dollars
- Microsoft bought a second-rank encyclopedia, put it onto CD-ROM (Encarta) and sold it initially for hundreds of dollars
- Microsoft introduced color and dynamic graphics, and gradually improved the text quality and cut the price down to <\$25
- Encyclopedia Britannica's market disappeared but eventually they decided to go for a CD-ROM and Internet service

People are after a good feeling when they buy an encyclopedia, so why not relieve your guilt for \$25 instead of \$3000?

Case study - Hire.com

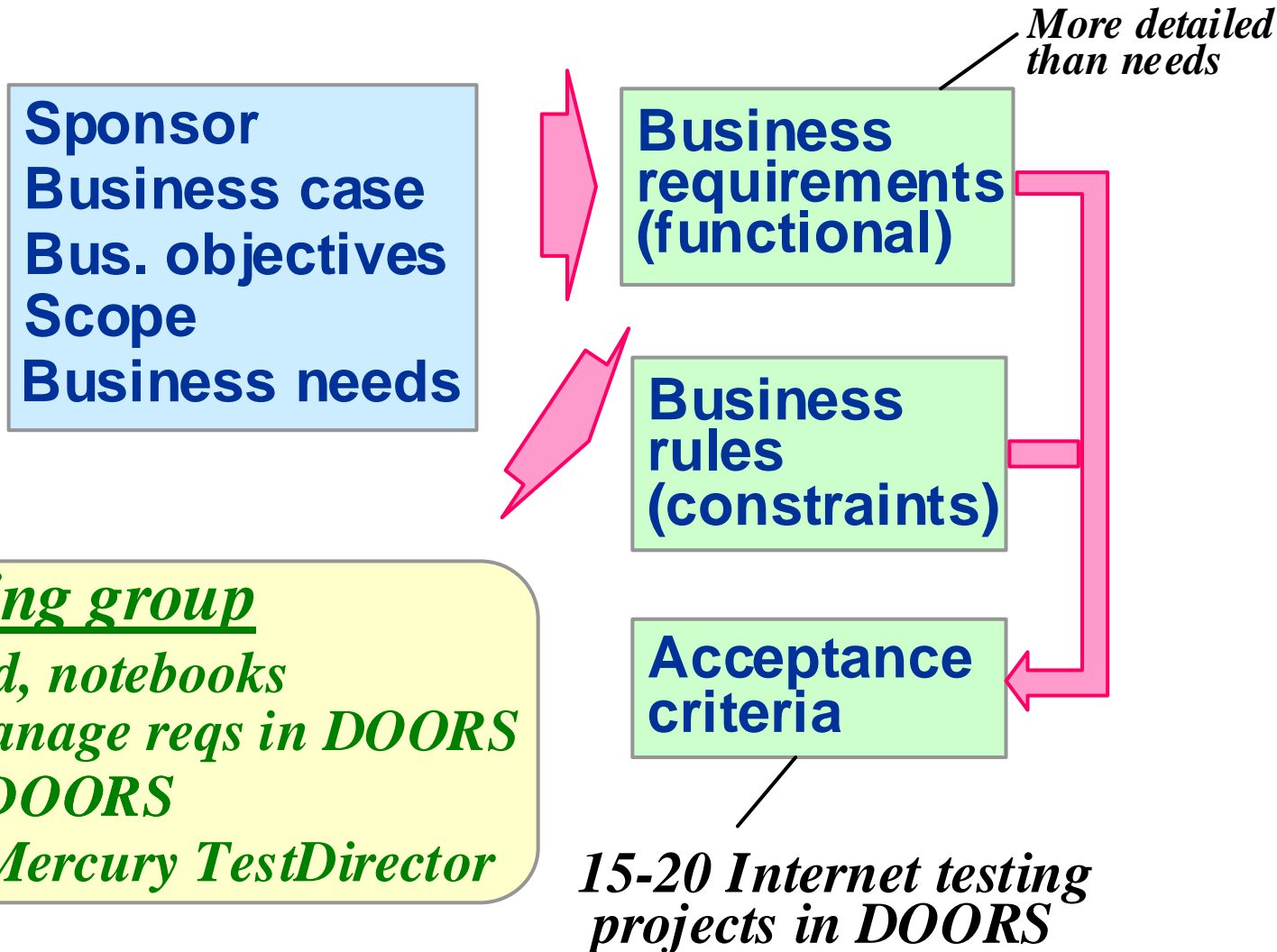
- Hire.com - the leading talent acquisition and retention e-recruitment ASP
- Hire.com customizes, integrates and hosts e-recruiting for organizations
- Major roll-outs every 4 months, with incremental releases every 6 weeks
- Rapid e-business iteration demanded a solid process and tight requirements control
- Multiple editors working in parallel on documents against requirements
- Hire.com chose DOORS to assist solid development process and tight requirements control

"Hire.com's e-Recruiter is by far the most effective e-recruiting tool on the market"

Ed Rankin, CEO & founder of People Solutions.

Case study - USAA

Building an Internet-based IT infrastructure for insurance and banking using a requirements-based validation process



Internet testing group

Drafts in Word, notebooks
Import and manage reqs in DOORS
Test plans in DOORS
Test cases in Mercury TestDirector

What are e-businesses using requirements for?

(all new QSS customers since March 2000)

EGreetings.com - free electronic greeting cards. Use-Case driven process (using DOORS 'Use-Case Librarian'). Trace between High-Level requirements, Textual Use-Cases, OO Models in ROSE, QA documents (test plans, ambiguity documents, and more 2000 objects on their web site)

Boats.com - a web site for custom boat building. Brand new, want the usual traceability and process support

NetNanny.com - filters adult material so parents can let their kids use the net. Second time around wanted better process and traceability to tie things together.

HomeGain.com - provides estimates of your homes value. Same as above.

eVoice.com - turns your VoiceMail into a wav file attachment and sends it to you as Email. Want to connect marketing docs to design and test.

Dotcom applications typically:

- *involve a large amount of data, but not necessarily many document types*
- *take rapid change to a whole new level (some companies release every 3 weeks!)*
- *are often OO (as GUI-type apps tend to be), and Use-Case work is common*
- *Time-to-market is everything. Cost is not a high-priority issue*

Close To Home - The Basics

- Most work is insourced (outsourcing would be more 3x more expensive and not receive the priority)

Key e-business functions

**Maintenance
& point releases**

**Comprehensive
re-design**

**Marketing, ad
campaigns, copy
editing**

Special projects

**Technology analysis
and prototyping**

**Hosting & site
management**

Continuous correction and small updates every day

Every 12 months both front and back-office are re-architected (handled as a separate project)

Internet-based marketing activity (e.g. seminars, Webinars)

Separate projects sometimes paid for by other departments, e.g. knowledge base for support, French/German sites, WAP, automated licensing and business partners area

Essential to explore new tools and techniques

Hardware, contracts, performance checking etc

Case study - Close To Home

- Quotes from Stephanie Pirrie, Web and e-commerce marketing manager for this 'anonymous' company
- ▶ *“A great Web site is evolutionary. User requirements are the basis of good design, and you must capture, track and manage them on an ongoing basis”*
- ▶ *“As the requirements change, you have to map them to design and retain traceability”*
- ▶ *“My background is marketing, so I wondered if a disciplined approach might be too complicated. I had a go, and I’m glad I did”*
- ▶ *“The right process and tool support to manage complexity is essential”*

Eat your own dog food!



Close To Home - the results

- 12,000 leads/year, at about 25% the cost of other marketing techniques
- Reduced support calls due to support services and knowledge base
- Reduced printing, postal costs, and delays due to immediate literature availability
- Added functionality for customers such as Webinars, automated licensing*, newsletters and access to technical material
- Web site becoming more integrated with the rest of the company (“The Connected Organization”)

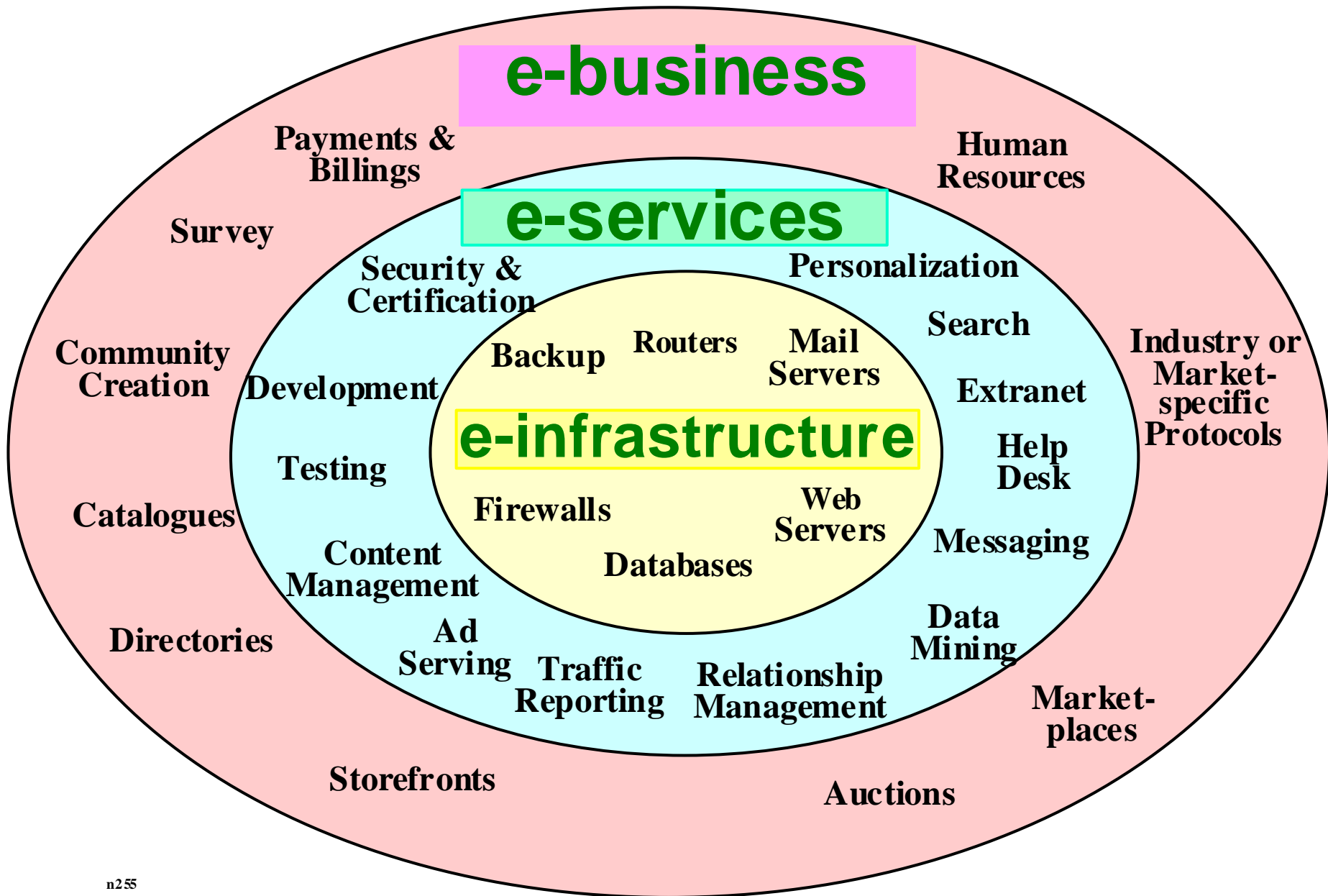
Comments from the e-business team

“We were lucky, we didn’t have a large historical infrastructure to integrate”

“Things go in and out, you have to have a modular architecture to cope”

“Unusual firewalls, portal software and variable browsers are our main testing headache”

Do you think you need requirements?



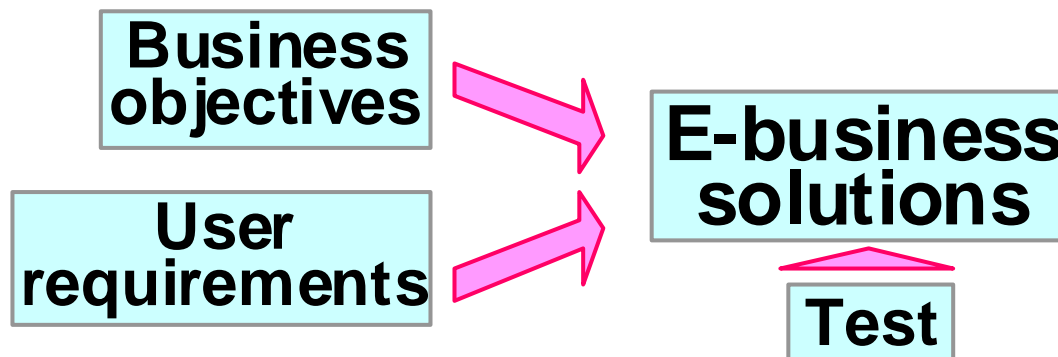
Summary

Steps to e-business success

- 1: Requirements-driven processes**
- 2: Reduce risk**
- 3: Understand the economics of information**
- 4: Increase customer attractiveness**
- 5: The technical challenge is automating the process**
- 6: The really tough challenge is cultural**

1: Requirements-driven processes

- Traditional discipline is essential to cope with the complexity of any successful e-business initiative
- e-business must be driven by business objectives - even though they are initially wrong
- Time to market, rapid release cycles, competitive analysis, automated test are essential for time to market
- Handling requirements properly is the single most important factor in project success
- Requirements capture the customer experience, the business expectation, the quality needs and so drive the implementation



2: Reduce risk

- Continuous evolutionary development - e-business is not a marathon, but a series of sprints
- Collect every suggestion from customers into your requirements system
- Prioritize user needs
- Prototype all risky activities
- Automate the test process
- Product offering, resources, performance, security, scalability, competitiveness and attractiveness are key risks
- Model the performance under worst-case conditions
- Scan the news for other people's disasters - then check your system

Risk management is essential in e-business

3: Understand the economics of information

- **The cost of information has changed dramatically - so our old product/information is obsolete**
- **Most of the strategies for old business still apply - economics of scale, market share, innovation, domain knowledge, competency**
- **Information is the glue holding the value chain together**
- **Reach and richness are your way of gaining and retaining customers**
- **Distance and cost no longer constrain reach or richness**

4: Increase customer attractiveness

- In a world of better knowledge, you have to provide a better customer experience**
- Communicate the key needs of customers to your team through requirements**
- Improve customer retention ('stickiness') by a high quality, continually improving customer experience**
- Customers can provide instant feedback - good or bad - to everyone**
- The customer experience can be captured in the requirements tool**

5: The technical challenge is automating the process

- So far the big changes have been to bring Internet technology to the outside of single internal processes
- The technology behind the firewall is huge and difficult to evolve quickly
- Most e-business applications are thin wrappers around a traditional process model
- The challenges:
 - ▶ *Rebuilding internal processes with Internet technology*
 - ▶ *Upgrading the processes for an e-business paradigm*
 - ▶ *Integrating multiple processes within a company*
 - ▶ *Integrating those process with partners and customers - securely*

6: The tough challenge is cultural

- The reconstructed business will rarely be the same as the old
- Historical baggage in a company prevents it acting as a start-up
- Acting like a start-up is hard - passive resistance by the existing organization is likely to be a problem
- Visionary management needs to step back, look at the old and new value chain, and reconstruct the business

Westinghouse assigned the new transistor industry to the Vacuum Tube Division

Fit with organization's processes	Bad	Use a heavyweight team within the existing organization	Use a heavyweight team in a separate spinout organization
	Good	Use a lightweight or functional team within the existing organization	Development can occur in-house through a heavyweight team, but commercialization almost always requires a spinout
		<u>Fit with organization's values</u>	
	Good (sustaining innovation)		Poor (sustaining innovation)

- When the project fits with the company values, but not with its processes, it requires a heavyweight (dedicated) team within the existing organization
- When the project doesn't fit the organization's processes or values, it requires a spinout and a heavyweight (dedicated) team
- For example, Digital couldn't compete in the PC world because their minicomputer development processes took too long and used internal component production

Summary

- e-business is critical to the company's future & the public face of the business
- e-business systems are complex developments
- A requirements-driven approach is essential
- Start small, grow large, use the intense customer feedback, technology and competitive analysis to shape system evolution
- e-business needs enterprise objectives
- A continuous evolutionary approach based on requirements is needed

Getting it right - quickly