

LIT Exam Notes

System Testing

System Testing is a level of the software testing where a complete and integrated software is tested. The purpose of this test is to evaluate the system's compliance with the specified requirements. System testing: The process of testing an integrated system to verify that it meets specified.

- What is involved in system testing?
 - o Program/Application testing
 - Unit testing
 - Does the code work? Is it optimal?
 - o Inter-program testing
 - Testing program outputs to program inputs
 - o Complete system testing
 - Normal load testing
 - All conditions testing
 - Peak load testing
 - o Acceptance testing
 - Alpha and beta

White box testing (IT) – learn source code and test paths, test inner workings of code → does it produce correct output?

Black box testing (end user) – Is it functional for end user?

NASQAD Prevention methods – Kill switches

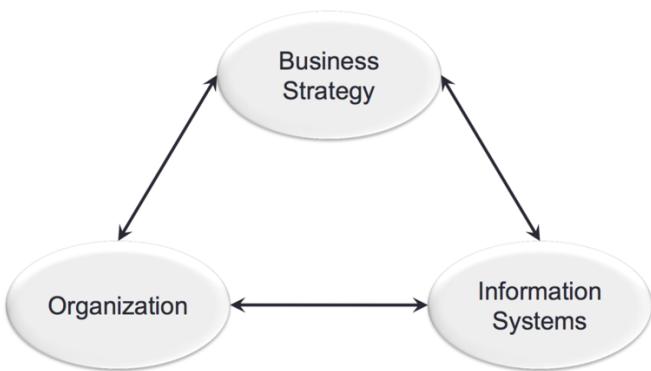
LIT – “No longer limited to helping organizations do a certain task better or more efficiently, digital technology has the potential to affect every aspect of business and private life, enabling smarter choices, allowing people to spend more time on tasks they deem valuable, and often fundamentally transforming the way value is created.”

Overview

- Three modules
 - o Intro
 - o Managing IT resources in the Firm
 - o IT-driven business transformations

Intro

Core Framework



Strategy → Scarce resources and environmental constraints mean we need a PLAN to achieve our vision

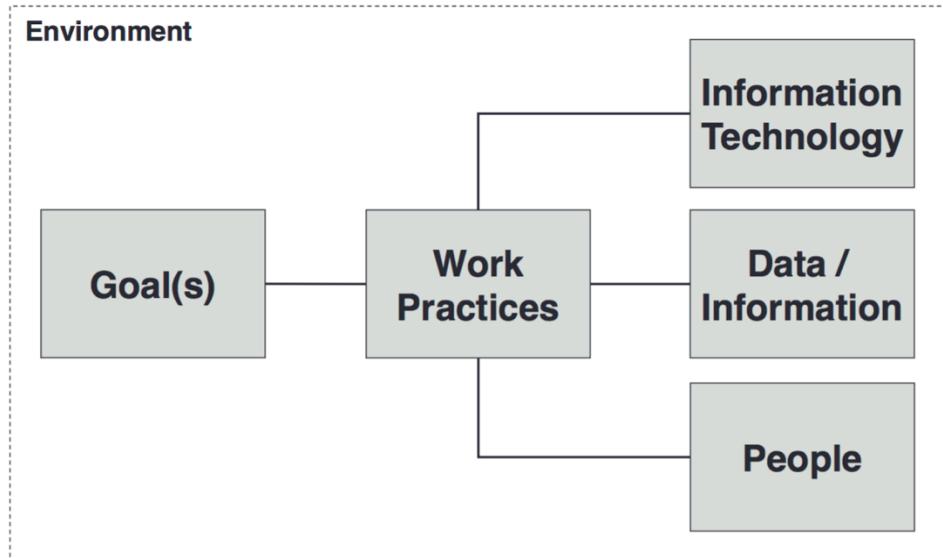
Systems → Our tech resources are FOUNDATION for structure and strategy – enable it to work or destroy it

Structure → ENGINE for how we configure our resources

Are all these elements aligned? If there anything we can do to make them aligned?

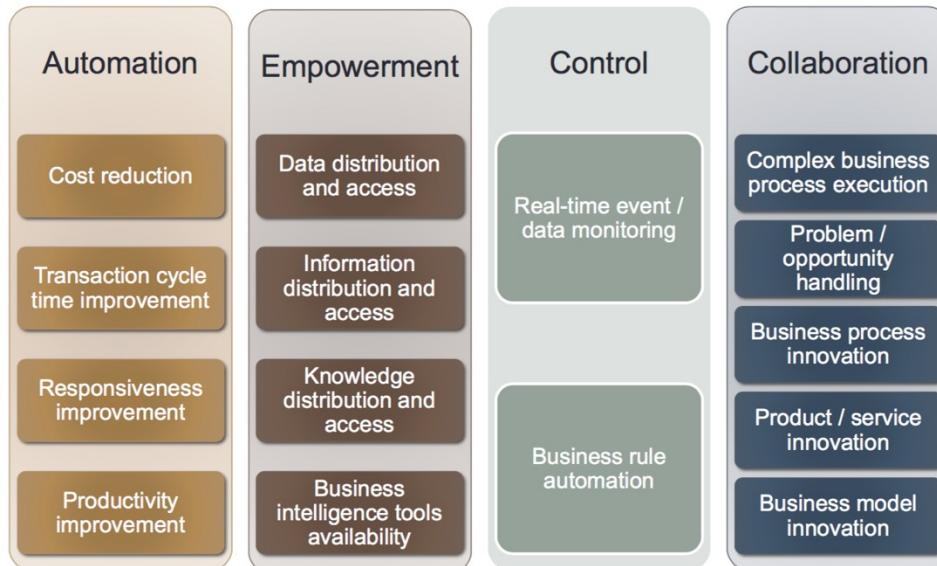
- Core framework is used to analyze if the new IT solution needs to change the current culture of compliment the existing one
- Link business needs with IT objectives
- Identify core issues → one IT, one business

Scope of an information system



Sources of value

Sources of Value in IS



Internal system – producing something internally

Approaches to improve requirements gathering

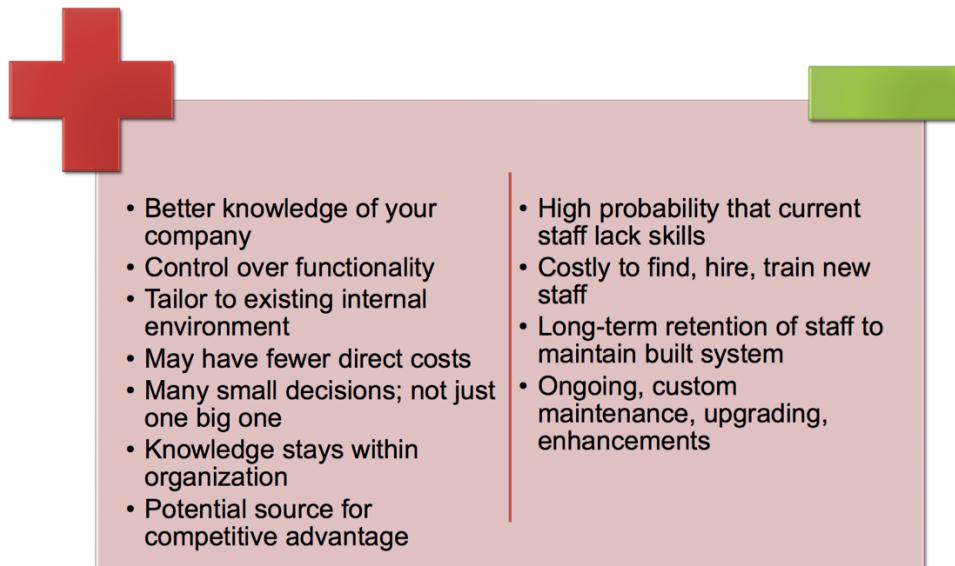
- Use business analysts
 - o Usually part of IT, sit and work with business line
- Prototyping
 - o Show users screen mockups of “working” system to get feedback
- Use cases
 - o Situational descriptions about how the system will be used
- Joint application development
 - o Dedicated effort that brings developers and users together

Key decisions/processes

- Assessing the potential business value of the new system
- Determining the system requirements
- Build vs. Buy
- Vendor selection
 - o Different software models
- Software development methodologies
- Project management
- Risk management
- Organizational implementation
 - o Integration with existing technology, testing, conversion, change management

Pros and Cons to building in house

Build It In House



Pros and Cons to buying externally

Buy It Externally



- Software is tested and works pretty well out of the box
- Matches external hardware and operating system changes
- Training and user communities exist
- Faster implementation
- Others to share experience
- Usually lower costs – can depend on location of “maker”

- Poor product fit to business need – what adapts? The business or the system?
- Many features in off-the-shelf software go unused
- Vendor risks – long term support and business viability
- Customization to improve fit impairs patches and maintenance

ERP

What is ERP - Enterprise resource planning (ERP) is business process management software that allows an organization to use a system of integrated applications to manage the business and automate many back office functions related to technology, services and human resources.

- Fully integrated
- Real time
- Every department + every process
- Modular in nature



Implementing ERP Software

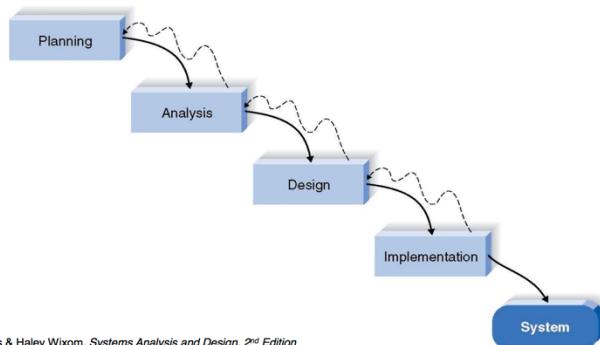
Advantages
<ul style="list-style-type: none">• Drive standardization across the enterprise resulting in greater operational efficiencies• Enables greater focus on strategic activities• Potential for rapid deployment of technology• Shared IT development costs• Simplify IT technical footprint

Challenges
<ul style="list-style-type: none">• Organizational change impact• Perception of setbacks• Discipline to maximize ERP software investment• Software was designed to meet common requirements across a broad customer base• Different implementation approach (solution driven vs. requirements driven)

When designing an IT system must decide between waterfall and prototype

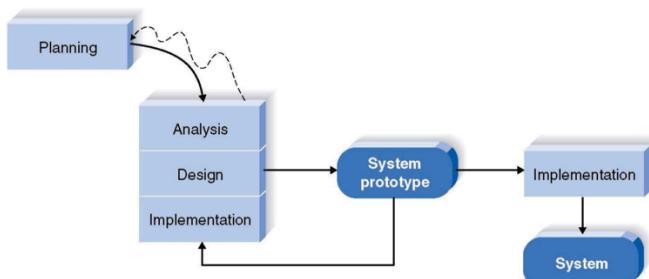
- The basic difference in the two approaches is that, Waterfall Model is more rigid compared to Prototyping approach.
- In prototyping we use evolutionary approach while in waterfall model we have a sort of linear, conventional approach.
- Waterfall Model is implemented in the projects where conventional product/software has to be delivered to the client. In such cases user is sure and clear about his requirements. He states them clearly to the development team and chances of ambiguity is bare minimum. While Prototype model is usually used in online projects where client is not sure about his requirements, his expectations and preferences need to be taken care of.

Waterfall Method - Predictive

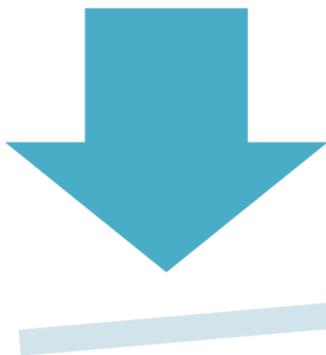


Dennis & Hailey Wixom, *Systems Analysis and Design*, 2nd Edition
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Prototyping - Adaptive



Assumptions of the Approaches



Predictive Planning

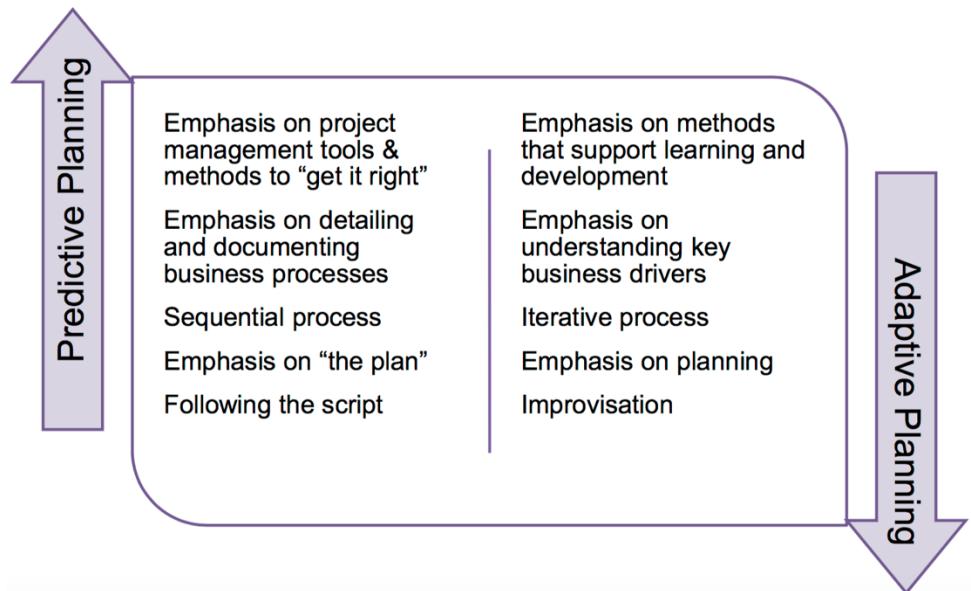
- Technology is fixed, static
- Impacts on processes, people can be readily predicted
 - The system will operate as the designers intend
- We can identify all the likely contingencies that will affect progress



Adaptive Planning

- Technology is dynamic
- Impacts on processes & people are at least somewhat emergent
 - Users appropriate technologies differently
- All contingencies cannot be conceptualized in advance

Comparing Predictive and Adaptive Methods



Factors to consider when selecting a vendor

Factors to Consider When Selecting a Software Vendor

Technology

- Functionality
- Ease of Use
- Flexibility & Scalability
- Documentation

Cost

- License Fees
- Infrastructure
- Implementation
- Maintenance Fees

Process

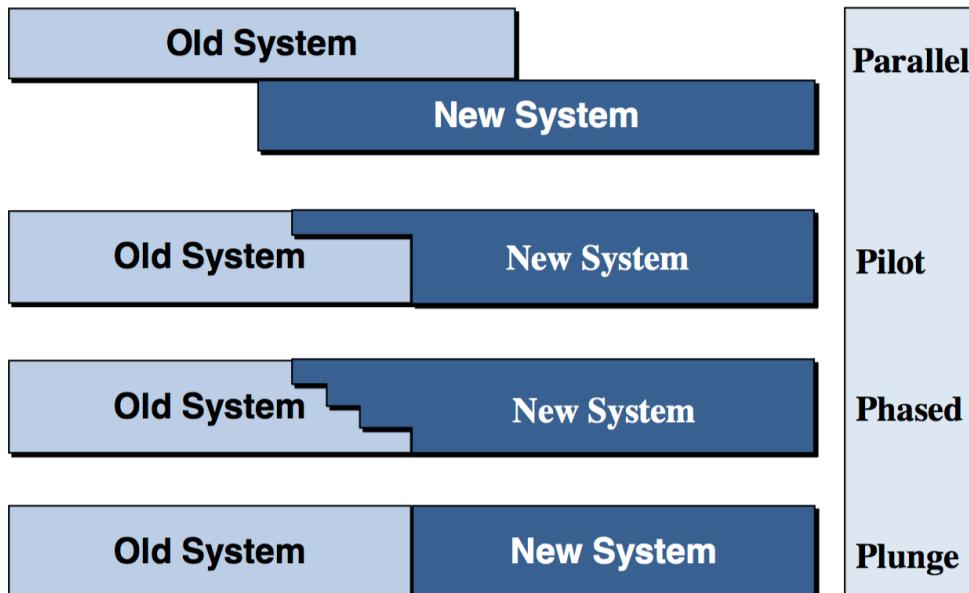
- Response Time
- Vendor Support
- Ease of Installation

Vendor

- Financial Viability
- Market Focus
- Expertise

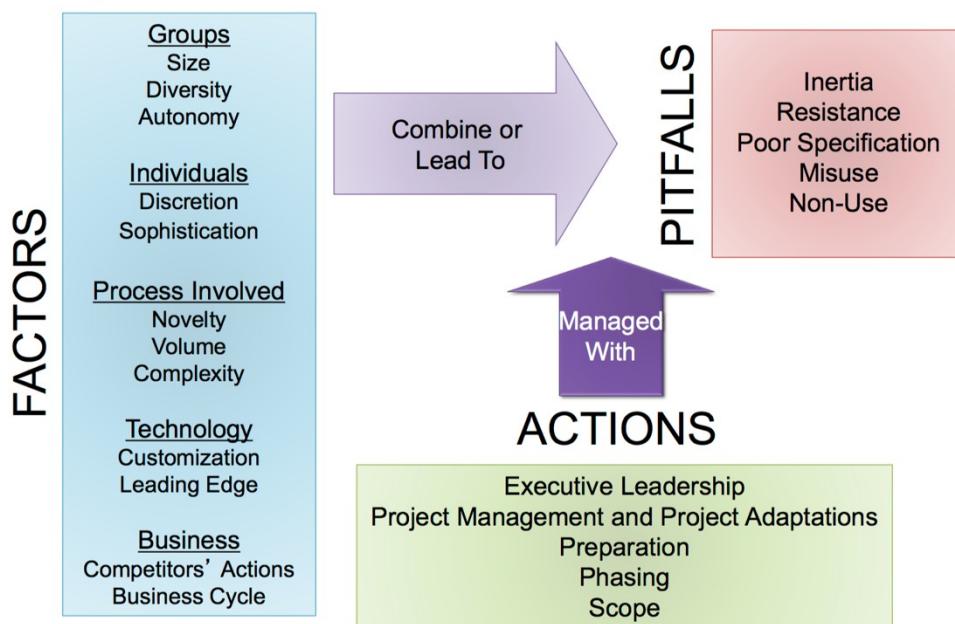
Implementation Choice

IT Change Conversion Strategy Choices

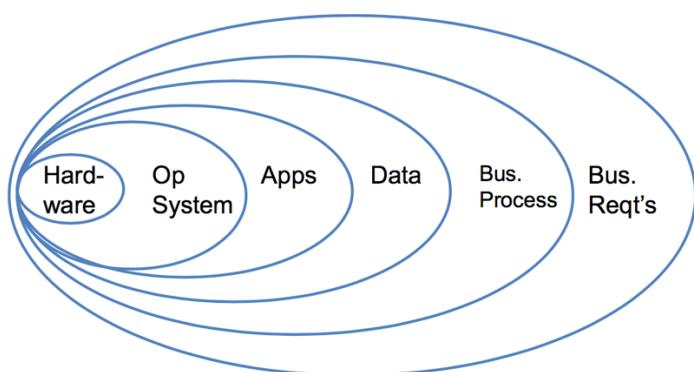


Implementation model

Implementation

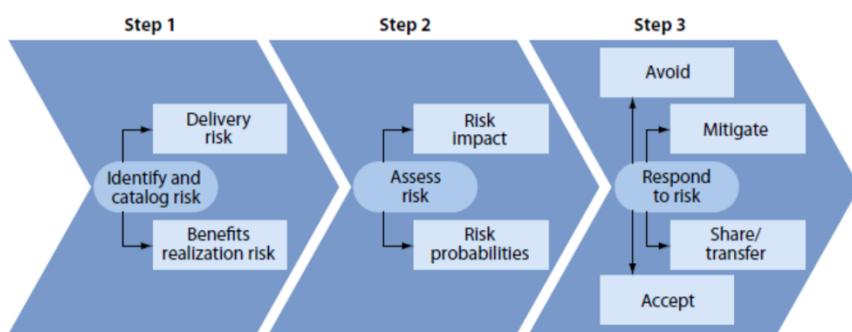


The IT Onion



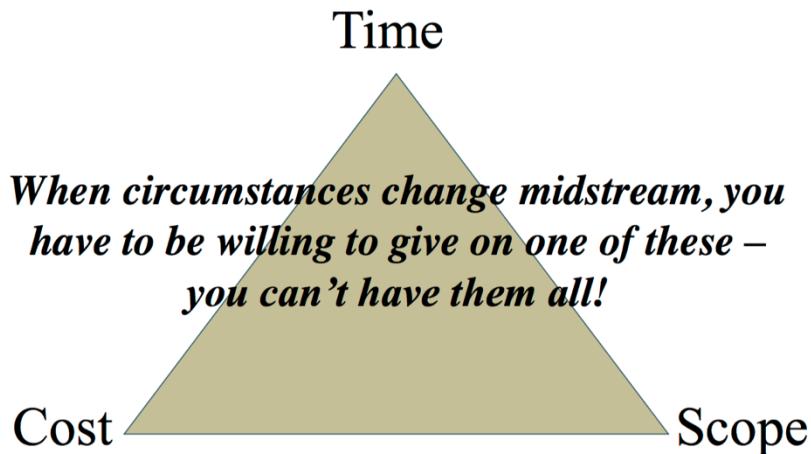
Risk and Mitigation

Figure 1 An IT Investment Risk Framework



Iron Triangle

Levers in Project Management (Iron Triangle)



Why do IT projects fail?

Why Do Projects Fail?

- Poor Project Assessment**
 - weak business case, no ROI, magic bullet thinking
- Poor Project Planning**
 - Poor estimation, weak planning, no risk assessment, poor requirements analysis
- Poor Project Management Processes**
 - Poor monitoring, scope creep, lack of testing, escalating commitment, mythical man month
- Inattention to Vendor Relationships**
 - Poor vendor selection, adversarial approach, no mechanisms for dispute resolution
- Implementation Challenges**
 - Poor change management plans, lack of user involvement, poor communications, failure to plan for use (not just implementation)
- Lack of Management Involvement and Support**
 - No business champion, no access to resources, approval versus involvement

Big Data

Why not use Excel?

Excel doesn't:

Handle large data (beyond 65,536 rows and 256 columns)

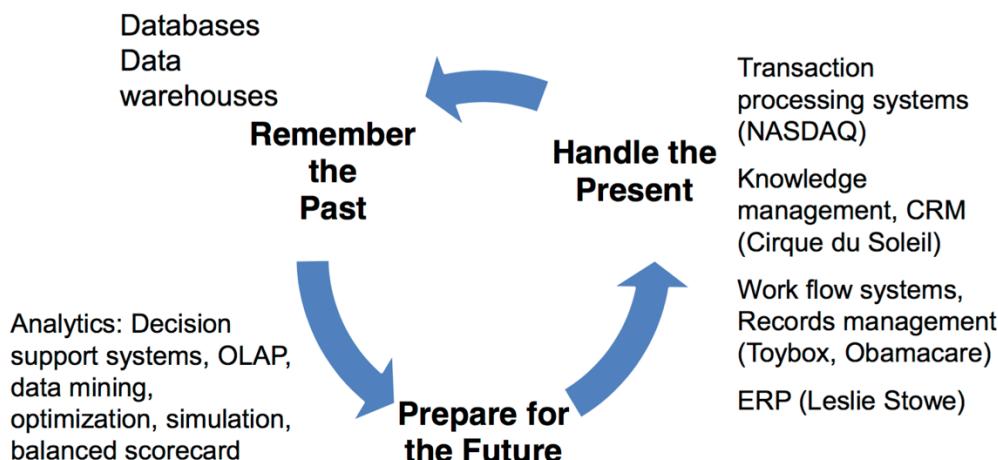
Disconnected from data sources

No version control

Not geared to multiple users

Doesn't enforce referential integrity

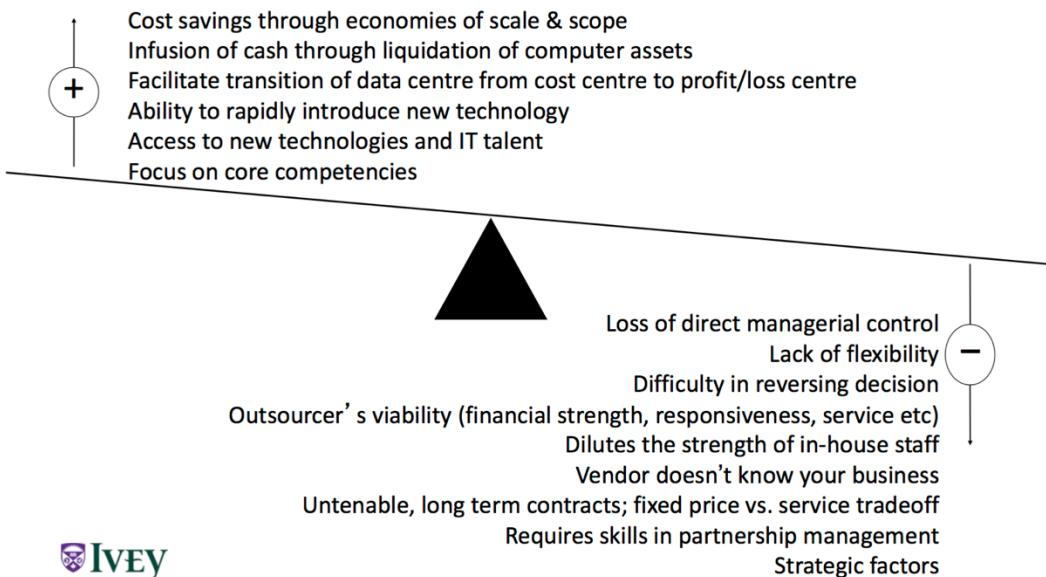
Managing the Data Lifecycle



Why do companies outsource IT?

- Access to talent/capabilities
 - o 24/7 service, R&D, specific skills
- IT cost management
- Focus on more core competencies, outsource the rest
- IT & Business value creation
- Fast implementation

Outsourcing Pros & Cons



 IVEY

While outsourcing it's also important to write out a contract

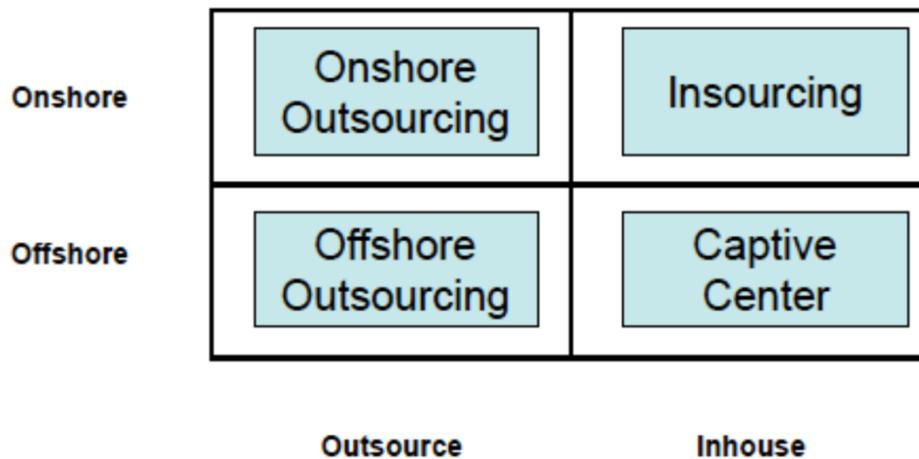
- Three important clauses to consider
 - o Performance clause
 - o Evolution clause
 - o Reversibility clause
- Maintaining the relationship
 - o Largest hidden cost: monitoring and negotiating
 - o Normal ongoing management costs have been reported to be in the range of 8-10% of the yearly contract amount
 - o How expensive is it to adapt the contract?

Outsourcing vs. Offshoring

Outsourcing is the *transfer of ownership* of a business process to an external organization

Offshoring is the movement of internal business processes to offshore locations. Ownership of the process is retained by the organization – *labour arbitrage* is motivating factor.

Outsourcing Model



What factors do you consider in choosing and outsourcer?

- Look for knowledge and experience
- Establish key performance indicators
- Select a company sponsor
- Determine reasonable timelines
- Establish reasonable expectations
- Avoid scope creep
- Relinquish control over operations
- Consider cultural issues
- Value your people

In case of attack

Business Continuity Planning vs. Disaster Recovery Planning (DRP)

- Business Continuity Planning are designed practices into everyday work which ensure the business continues (pandemic illness, loss of machinery, key supplier...)
- Disaster Recovery Planning attempts to identify specific types of threats and designs appropriate preventative measures and recovery options
 - Subset of the Business Continuity Plan



Elements of Disaster Recovery Plan

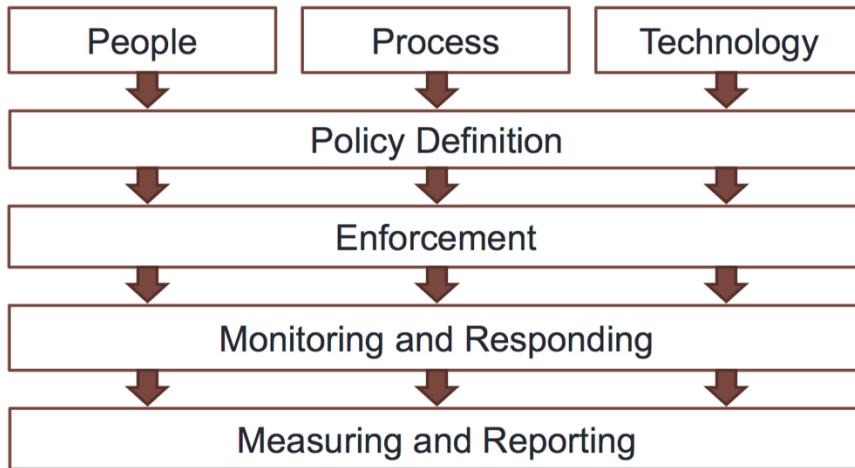
- Data
 - Backup
 - Real time redundancy
- Hardware
 - Redundancy by design
 - Preventative Maintenance
 - Alternate Data Centres
- Connectivity
 - Redundant Networks and Connections
- Physical Space
 - Fire Suppression, Locked, Generators,
 - HVAC
- Security
 - Authentication
 - Virus scanning
 - Intrusion Detection Systems (IDS)
- Users
 - Authentication (i.e. Passwords, Biometrics)
 - Access Control
 - Policies



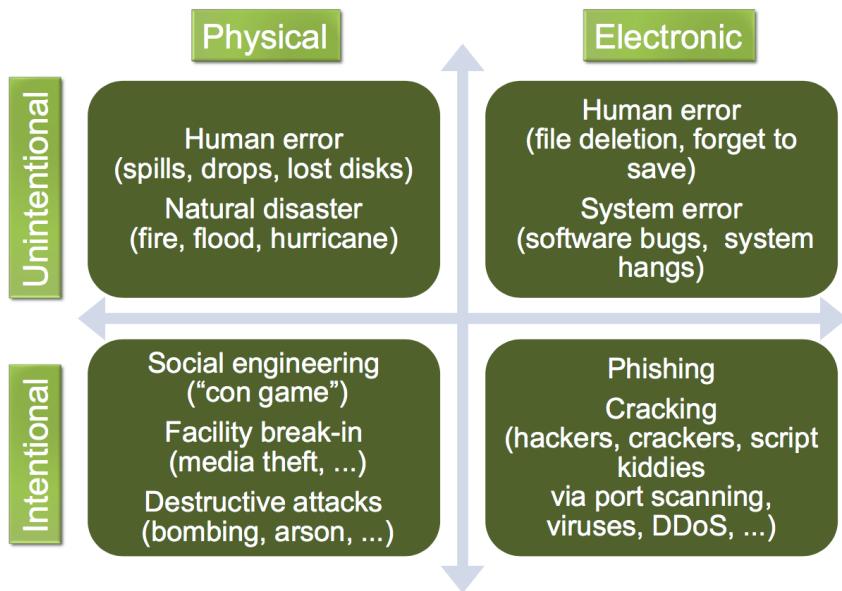
Security Priorities

- Prevention
- Detection
- Reaction

Information Security Framework



Security Threat Framework



Disruption

Three trends w/disruption

- Mobility → connectivity of people and things
- Big data → collecting data from everywhere in real time & analytics for evidence based decisions
- Social media → Collaboration & engagement

How do you find Potential Disruptive Innovations

Political and regulatory change	<ul style="list-style-type: none">Makes usage possible where it wasn't before
Economic change: makes solutions more affordable	<ul style="list-style-type: none">Increasing price of oil makes green solutions more feasible (and vice-versa)
Technological change	<ul style="list-style-type: none">The application of the underlying science has opportunity for improvementAvailability of new components creates new modes of delivery/services
Sociological change	<ul style="list-style-type: none">Will societal forces or development of complementary companies make something more desirable?

An innovation that through a series of Political, Economic, Sociological and Technological changes will displace a current way of serving a market

How do you Compete with a Disruptive Innovation

Set up a separate company/division/line

- KEY: Use different strategic resource allocation decision making depending on place in product life cycle – Discount airline arms of major airlines

Sell off the existing wing and bet on new

- KEY: Sell high and strong corporate repositioning – IBM & Lenovo
- ??? Paypal ???

Cannibalize yourself

- KEY: You can develop the new product and kill your old one – Telephone companies and VoIP

Thriving from Disruptive Innovation

The only way to not be disrupted is to be the disruptor

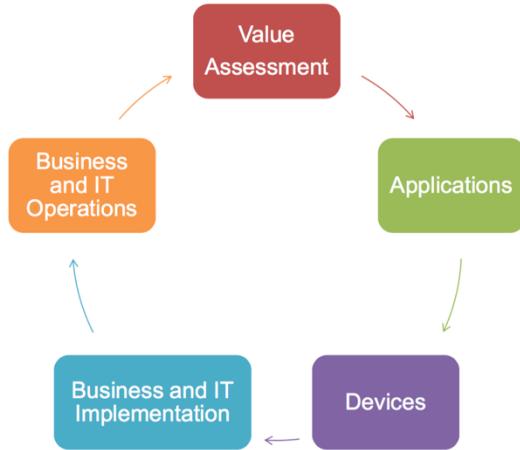
Develop a culture that values experimenting, learning from failure and innovating

Develop measures that recognize and reward experimenting, learning from failure and innovating

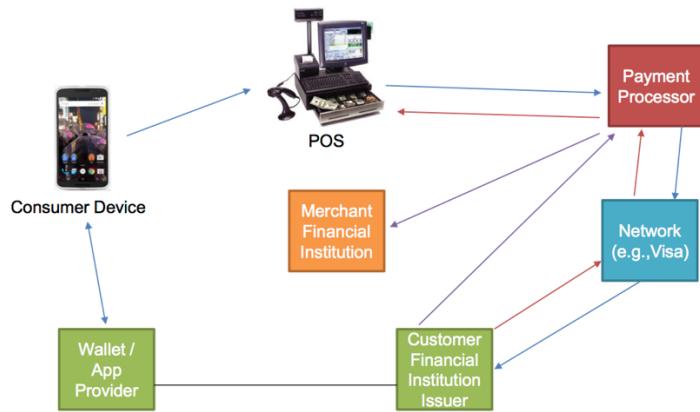
Articulate visions that are better than what your customers can imagine

Mobile technologies

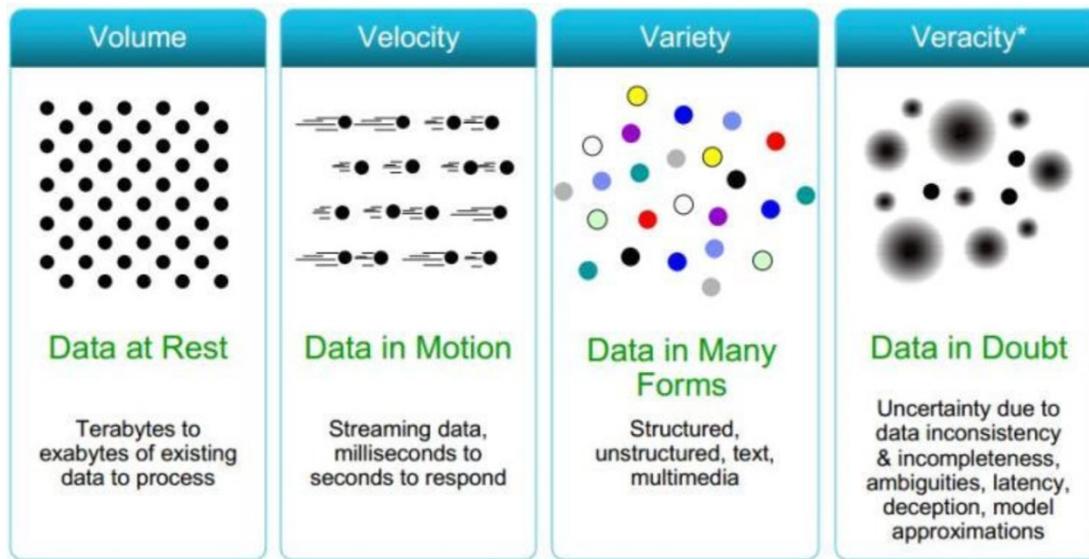
Putting it All Together: Mobility Strategy



How do mobile payments work?



Four Key Characteristics of “Big” Data



Given these analytical techniques – what can you do with Big Data?



Three ingredients you need to find value in data?

- Data
- Analytics
- Mindset

What do you think is the technological core of today's disruption?

1. DATA – big data and analytics
2. Cloud computing – renting IT infrastructure and capability as you need it
3. Mobile technologies – untethering computational power and putting it in people's pockets
4. Computation, storage and networks – gaining more power even as costs fall
5. Sensors and actuators – determine conditions and then can take action – independent of human intervention
6. Natural user interfaces – touching surfaces: speaking directly to technology

Nicole's Exam Lessons

1. Information systems is not just about technology
2. As general managers, you have a critical role to play in the effective utilization of technology in your organizations
 - a. How much should we spend?
 - b. On what?
 - c. Standardized vs. decentralized
 - d. Quality of service needed
 - e. Risk management
 - f. Accountability
3. The fit between business strategy, organization and information systems is a delicate yet critical balance.
 - a. More tech is not necessarily better
4. IT capabilities must be cultivated over time - This is a mindset
5. It is sometimes OK to adjust your business processes to match what is provided by a technological solution
 - a. Failures is often a result of social and not technological failings
6. Even with standardized technology, integration is difficult
7. Control doesn't guarantee security
8. New technologies bring both intended and unanticipated opportunities and challenges.
9. Leaders have a responsibility to think critically about the influence of technology on society
10. There are no silver bullets

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Key Decisions/Processes Learned in LIT

- Assessing the Potential Business Value of New Technologies
- Determining the System Requirements
- Build vs. Buy
- Vendor Selection
 - Different Software Models
- Software Development Methodologies
- Project Management
- Organizational Implementation
 - Integration with Existing Technologies, Testing, Conversion, Change Management
- Security and Privacy Risk Recognition and Management
- Digital transformation – opportunity recognition and assessment
- Digital transformation – creating fit between IS-Strategy-Organization
- Digital transformation – taking action

Analyze/Judge/Perform...

- Analyze the alignment of IT capability and organizational resources to firm strategy and propose actions which close gaps and improve both IT and firm performance.
- Assess IT projects including buy versus build decisions, vendor selection and vendor management.
- Lead IT project teams from development, to design and implementation and value extraction, identifying and mitigating key risks
- Judge IT security risks, develop policy, people practices, and tools in conjunction with IT tools to protect the firms IT assets.
- Scan for and assess transformative technologies to create new IT enabled strategies for the firm.