Diagnosing IT's Impact on the Business

ABSTRACT----------

Businesspeople require information to do their jobs, and they expect IT systems to provide that information for them. Businesses pay for IT not because they are enamored with technology; businesses pay for IT because of the information they hope to get from IT systems. Consequently, effective metrics for an IT department are those that measure the usefulness of the information that IT systems deliver to businesspeople.

The quality and usefulness of the information that comes from IT systems should be the overriding concern of IT leadership and staff. This presentation offers metrics for measuring an IT department's data management maturity, data quality, and the usefulness of information that IT systems deliver to businesspeople. IT leaders and staff can use these metrics to diagnose their impact on the business and their contribution to the enterprise's success.

BIOGRAPHY----------

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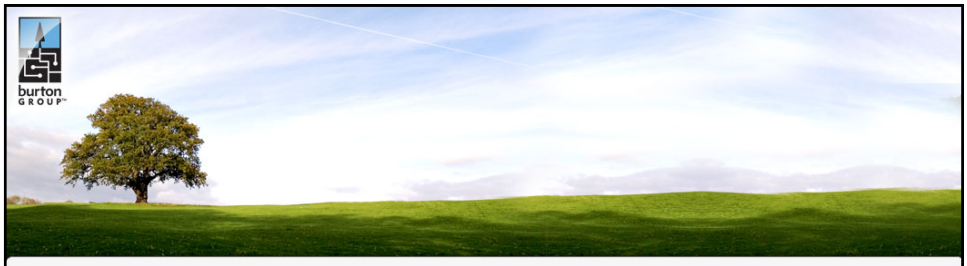
Lyn Robison is the Research Director for Burton Group's Data Management Strategies service. Lyn directs the research of Burton Group analysts who provide guidance for Global 2000 corporations on data management issues. He is the author of two books and numerous articles on information technology, and is a frequent speaker at IT industry conferences.



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IQ Metrics: Diagnosing IT's Impact on the Business

MIT 2009 IQIS
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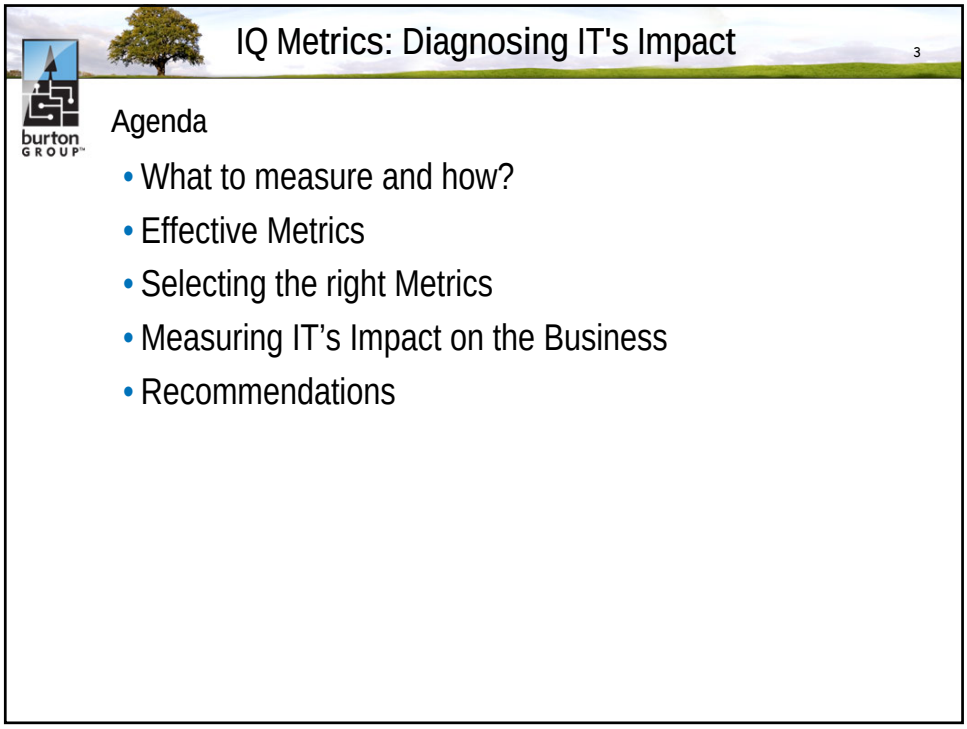
IQ Metrics: Diagnosing IT's Impact

Thesis

- Using a broadly-applicable set of information quality metrics, an IT department can measure its impact on the business and the contribution that IT is making to the enterprise's success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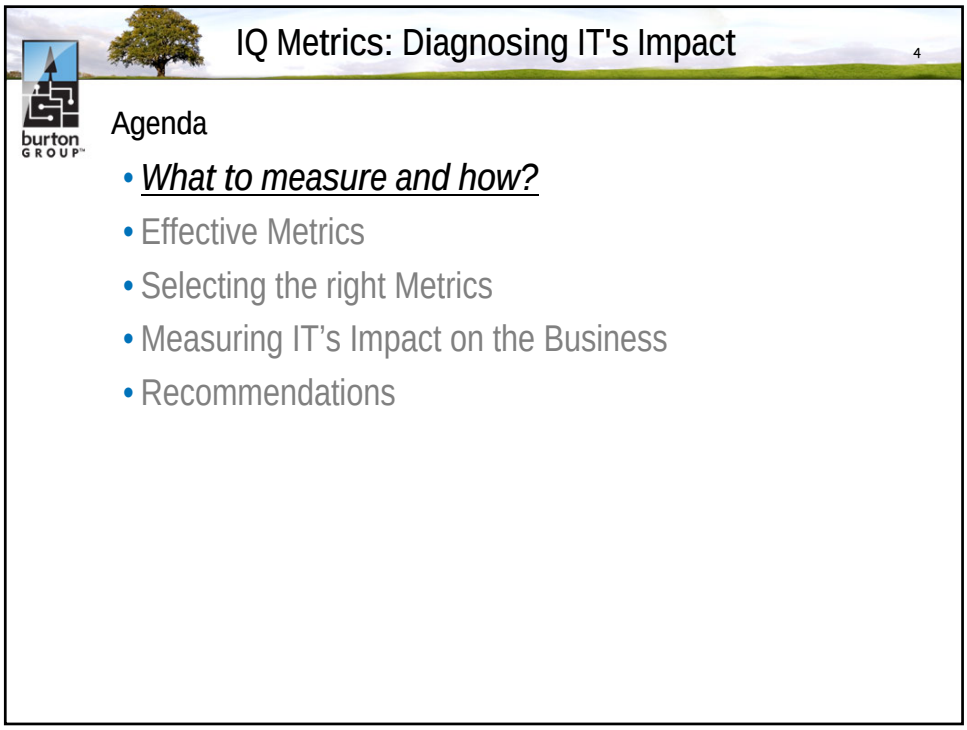
Agenda
• What to measure and how?
• Effective Metrics
• Selecting the right Metrics
• Measuring IT's Impact on the Business
• Recommendations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Agenda
• What to measure and how?
• Effective Metrics
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• Recommendations

What to measure and how?

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IT departments are expected to deliver information that is vital to the enterprise's success

- Businesses pay for IT not because they are enamored with technology
- Businesses pay for IT because of the information they expect IT systems to deliver to businesspeople
- Therefore, measuring the quality and usefulness of information that IT systems deliver to businesspeople is a fundamental component of effective IT metrics

What to measure and how?

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IT departments are expected to deliver information that is vital to the enterprise's success

- IT metrics rarely include any metrics that measure the value to the business of the information that their computer systems deliver
  - Without those metrics, an IT department has no idea what impact it is having on the enterprise it serves
  - IQ quality metrics are in fact some of the most effective IT metrics that can be employed in enterprise IT departments

What to measure and how?

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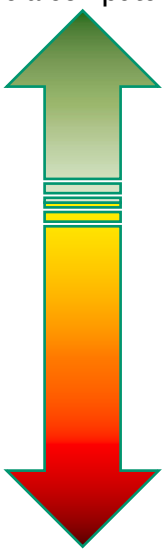
How would you describe a computer system that provides…



More information than what went in?	*Useful*
The same information that went in?	*Unnecessary*
Part of the information that went in?	*Wasteful*
No useful information?	*Useless*
Erroneous information?	*Dangerous*

IQ Metrics: Diagnosing IT's Impact

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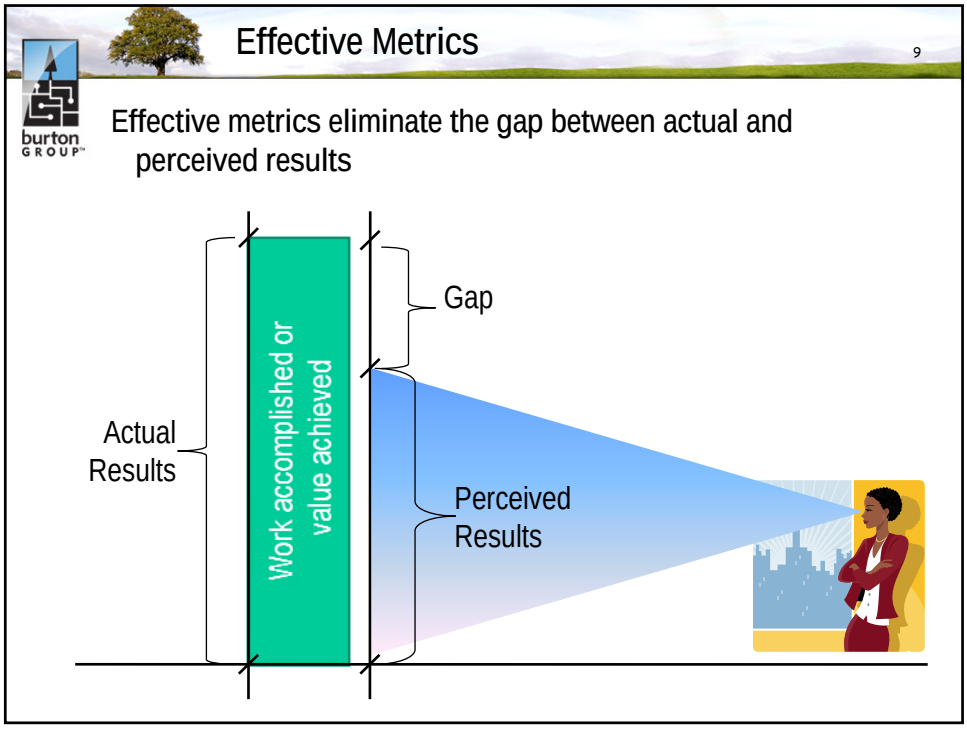
Agenda

- What to measure and how?
- ***Effective Metrics***
- Selecting the right Metrics
- Measuring IT's Impact on the Business
- Recommendations


Effective Metrics
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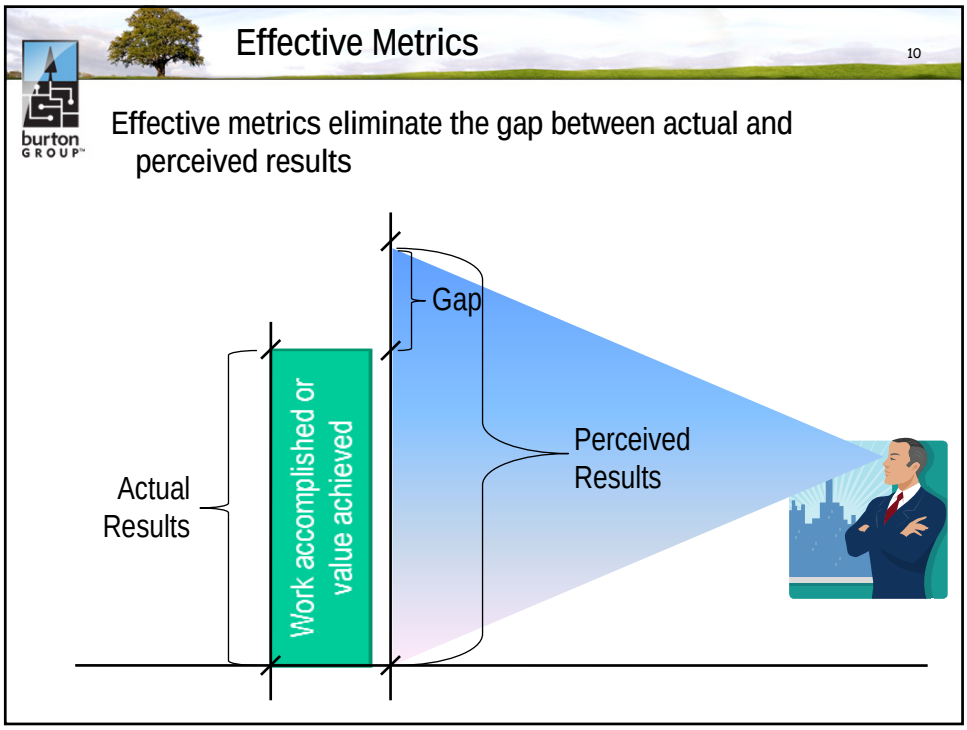
Effective metrics eliminate the gap between actual and perceived results
Gap
Actual Results
Work accomplished or value achieved
Perceived Results


Effective Metrics
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Effective metrics eliminate the gap between actual and perceived results
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IQ Metrics: Diagnosing IT's Impact

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Agenda

- What to measure and how?
- Effective Metrics
- ***Selecting the right Metrics***
- Measuring IT's Impact on the Business
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Selecting the right Metrics

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Classes or types of IT metrics

- Project completion, system defects, operational uptime
- Business results
- Project business cases / justifications
- Data management maturity
- Data quality
- Business perception

Selecting the right Metrics

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Project Completion, System Defects, Operational Uptime

- These are the typical IQ metrics, but their effectiveness is questionable
  - Project completion
    - Easy to measure, important, but only measures a narrow aspect of IT
    - This metric has a sinister side: it could discourage sound IT practices
  - Software bugs
    - Easy to measure, but important only if the software is useful to the business
  - Operational uptime
    - Easy to measure, but important only if the systems are useful to the business

Selecting the right Metrics

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Business Results

- These could include…
  - Order to cash process improvement
  - Cross-sell or up-sell improvements
  - Reduction in customer complaints
- Business results are the ideal IT metric, but…
  - There must be an indisputable causal relationship between the business result and the IT systems in question
    - How much of the business result can IT take credit for?
  - Difficult to quantify
    - Can't quantify IT's qualitative contributions to the business using monetary units
  - Business goals and strategies will change over time and render these metrics obsolete

Selecting the right Metrics

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Project Business Case / Justification

- Each IT project should have been justified in a business case using quantifiable objectives
  - These objectives could theoretically be the basis for IQ metrics
- However, the value of each project's objectives will diminish over time as business priorities change
- Most IT departments lack the discipline to track how well projects from years in the past have delivered on their objectives

Selecting the right Metrics

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Data Management Maturity

- The data management maturity of the IT department is an IT-focused instead of business-focused concept
  - But data management maturity is a good indicator of an IT department's current ability to deliver information to businesspeople

Selecting the right Metrics

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Data Management Maturity

- For each enterprise data type:
  - Authoritative source (registry or system of record within an overall MDM strategy)
  - The governance and stewardship that is in place
  - Meaning of the data and attributes
  - The current DQ/IQ assessment
  - Current level of information find-ability using URIs
  - Accessibility of the data through service-oriented interfaces
  - Progress on information classification
  - Level of access control currently implemented

Selecting the right Metrics

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Data Management Maturity

Entity Type	MDM System of Record	Business Data Steward	Data Model	Data Quality Eval.	Locate using URIs	Service-based Interface	Security Classified	Access Control Established

Selecting the right Metrics

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Data Quality

- Automated data quality tools can objectively measure the quality of data that resides in IT systems
  - Gives the IT department and the data stewards on the business side an objective assessment of the consistency of the data that resides in IT systems
  - However, automated tools are limited in their ability to perform assessments of data quality
    - DQ is not merely ETL-based cleanup before the data is pulled into a data warehouse

Selecting the right Metrics

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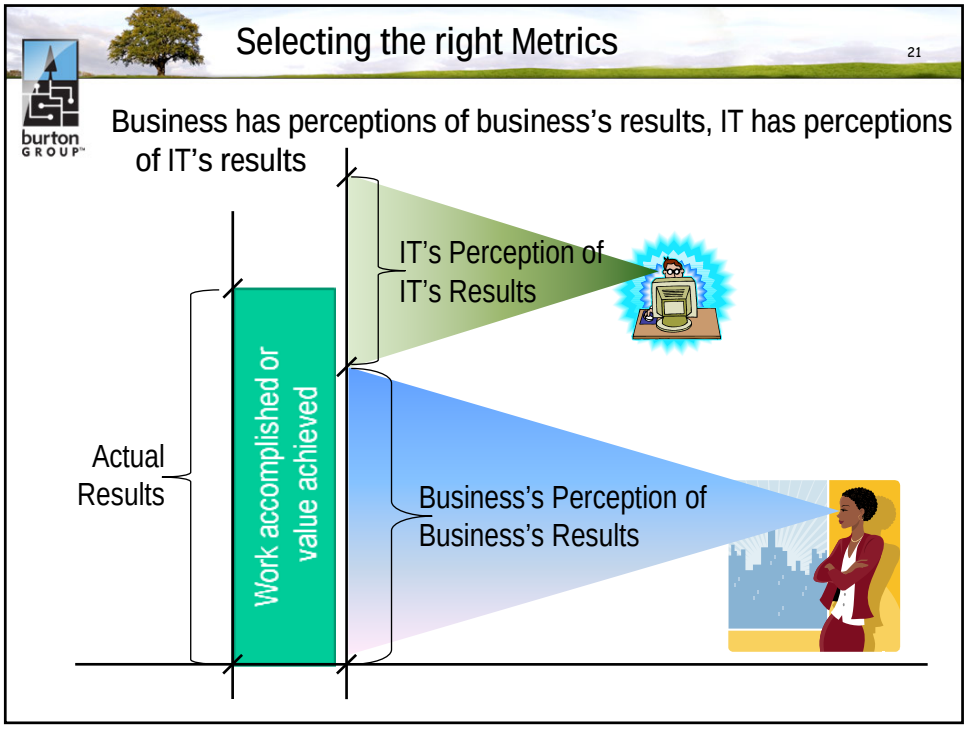
Business perception

- IT's contribution is rarely perceived the same by IT and by the business
- Businesspeople are the ones who use IT systems and services to do their jobs, so they have the best perception of IT's value
- The business ultimately decides what IT systems and services it will pay for, so a healthy IT department will be dialed in to the business's perceptions about IT


Selecting the right Metrics
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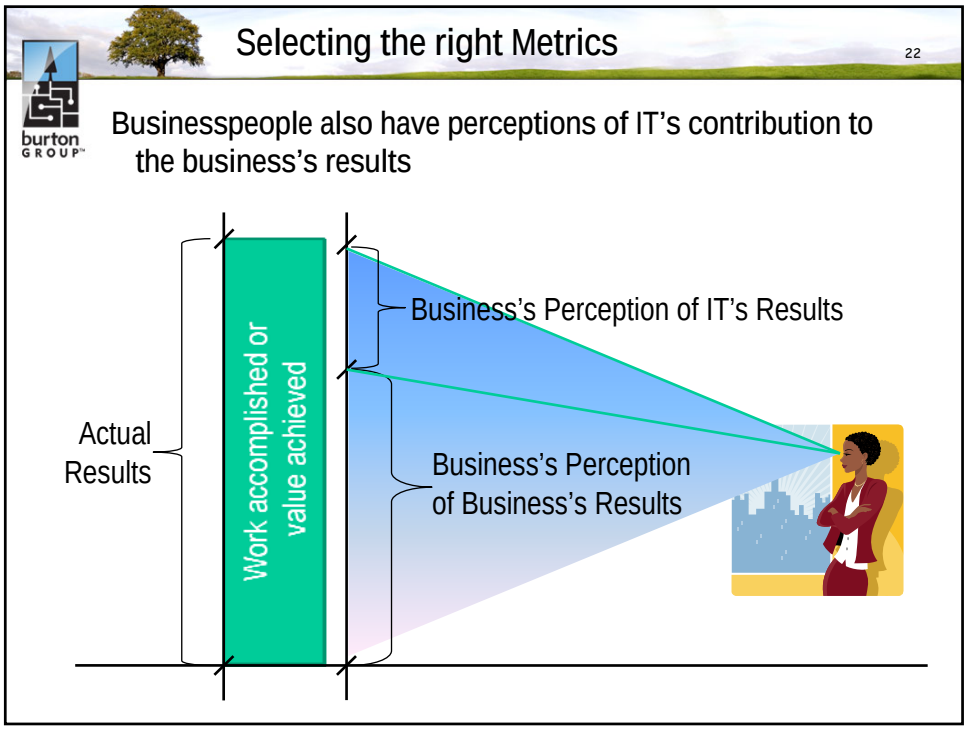
Business has perceptions of business's results, IT has perceptions of IT's results
IT's Perception of IT's Results
Actual Results
Work accomplished or value achieved
Business's Perception of Business's Results


Selecting the right Metrics
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Businesspeople also have perceptions of IT's contribution to the business's results
Business's Perception of IT's Results
Actual Results
Work accomplished or value achieved
Business's Perception of Business's Results

Selecting the right Metrics

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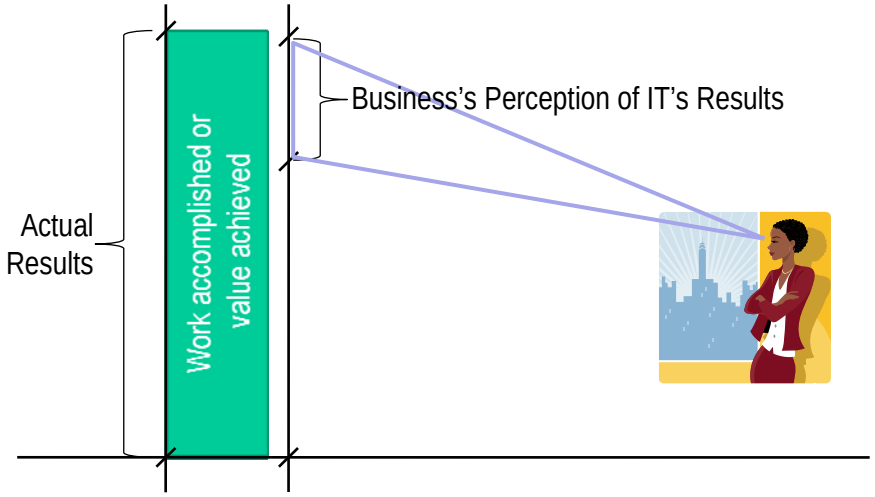
Businesspeople's perceptions of IT's contribution tend to be accurate, and are the basis for IT funding



Selecting the right Metrics

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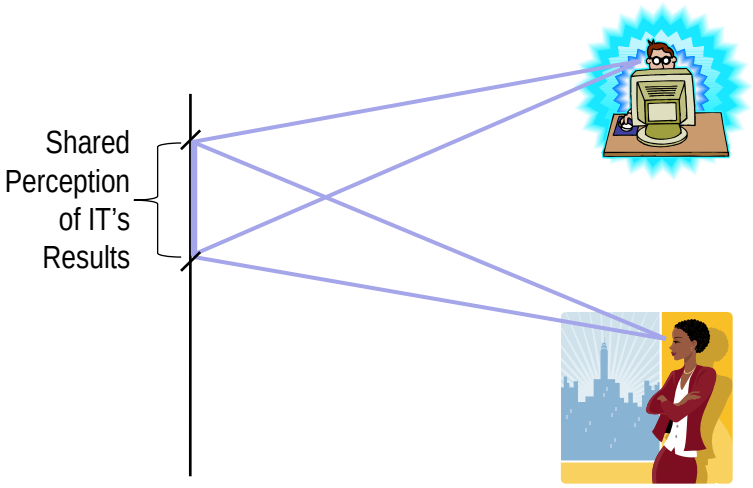
Healthy IT departments are dialed in to businesspeople's perception of IT's results



Selecting the right Metrics

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Businesspeople's Perception

- The business's perception of IT's results is a highly practical metric for an IT department to use
  - Accurate
    - Businesspeople are the authoritative source on the value of IT systems
  - Easily quantifiable (through inexpensive user surveys)
    - See examples later in this presentation
  - Broadly Applicable
    - As business goals change, existing IT systems may become less useful to the business, which will be reflected accurately in the user surveys
  - Actionable for IT
    - Enables IT to see where the business wants IT to improve
- Bottom line: IQ metrics are highly-effective IT metrics

IQ Metrics: Diagnosing IT's Impact

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Agenda

- What to measure and how?
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- Selecting the right Metrics
- ***Measuring IT's Impact on the Business***
- Recommendations

Measuring IT's Impact on the Business

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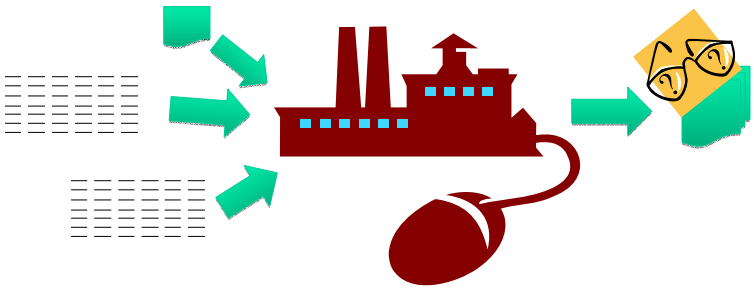
- Information is a manufactured product
  - Data (raw materials) come in
  - Processes are applied by computer systems (machine tools)
  - Sub-assemblies of information may be combined with data
  - Finished information comes out the end of the process
  - The quality and usefulness of the finished information should be IT's overriding concern



Measuring IT's Impact on the Business

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Information quality is a multi-dimensional concept

(the iPod succeeded because of its information quality)

Dimension	**The extent to which…**
Accessibility	Information is available, or easily and quickly retrievable
Appropriate Amount of Data	the volume of information is appropriate for the task at hand
Believability	Information is regarded as true and credible
Completeness	Information is not missing and is of sufficient breadth and depth for the task at hand

Measuring IT's Impact on the Business

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Information quality is a multi-dimensional concept

Dimension	The extent to which…
Ease of Manipulation	Information is easy to manipulate and apply to different tasks
Free-of-Error	Information is correct and reliable
Interpretability	Information is in appropriate languages, symbols, and units, with clear definitions
Relevancy	Information is applicable and helpful for the task at hand

Measuring IT's Impact on the Business

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Information quality is a multi-dimensional concept

Dimension	The extent to which…
Security	Information is restricted appropriately to maintain its security
Timeliness	Information is sufficiently up-to-date for the task at hand
Understandability	Information is easily comprehended
Value-Added	Information is beneficial and provides advantages from its use

IQ Metrics: Diagnosing IT's Impact

Agenda

- What to measure and how?
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- ***Recommendations***

Recommendations

Data Management Maturity

- Track the IT department's data management maturity
  - Measure the IT departments ability to competently manage data and deliver information to the business
  - For each enterprise data type:
    - Authoritative source (registry or system of record within an overall MDM strategy)
    - The governance and stewardship that is in place
    - Meaning of the data and attributes
    - The current DQ/IQ assessment
    - Current level of information find-ability using URIs
    - Accessibility of the data through service-oriented interfaces
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Recommendations

Data Management Maturity

Entity Type	MDM System of Record	Business Data Steward	Data Model	Data Quality Eval.	Locate using URIs	Service-based Interface	Security Classified	Access Control Established

Recommendations

Data Quality

- Use automated data quality tools to assess the consistency of the data that resides in IT systems
  - Use them to obtain objective measures of data quality

Recommendations

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Businesspeople's Perceptions

- Use surveys to measure Businesspeople's perception of IT's contribution (see examples later in this presentation)
  - Measure information quality (IQ): the quality of the information that is delivered to businesspeople
  - Use the survey results as subjective measures of information quality

Recommendations

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Take Periodic, Regular Measurements

- Track data management maturity and information quality consistently over time
  - Track data management maturity and conduct user surveys of information quality on a periodic, ongoing basis
  - Measure information quality and data management maturity before and after each relevant IT project and track and report on the improvement or lack of improvement

Recommendations

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Combine objective data quality assessments with survey results of information quality

- Compare the results of the data quality assessments with the results of the user surveys to determine where:
  - Data quality is actually poor and users' perceptions of it are poor too
  - Data quality is actually poor but users erroneously believe it is good
  - Data quality is actually good but users erroneously believe it is poor
  - Data quality is actually good and users' perceptions of it are good too
  - Use these assessments to determine the root cause of problems with information quality and usefulness

IQ Metrics: Diagnosing IT's Impact

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Details

- Survey questions
  - Need to yield consistent results – the users of an IT system should give consistent answers about that system
    - These questions use "anchored scales", which are ordinal measures utilizing numeric indicators, each of which is associated with a set of words or phrases that help the respondent to "anchor" his or her evaluation. Anchored scales also force a structuring of whatever issue they are being used to assess – issues are otherwise treated as highly qualitative and complex matters that are not very easily shared. Anchored scales provide an opportunity to open such issues to multiple inputs and reduce the risk of narrowly based judgments.
  - Must not combine multiple questions into a single question
    - Did he stab you with a knife on Thursday?
  - Must not let the perfect be the enemy of the good
    - Use them despite the values being unevenly distributed on the scale

IQ Metrics: Diagnosing IT's Impact

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Questions that indicate whether we have a Problem:

- How well does this application provide the information that you currently need to do your job?

0) None of the information that I need is currently provided by this application, so I have to keep track of the data myself.

1) Some of the information that I need is currently provided by this application, but I also have to maintain my own sources for information that is important to me.

2) Most of the information that this application provides is useful to me, but I still have to keep track of some of my own information outside of this application.

3) I get the information that I need from this application, but it is cumbersome to get and there is some additional information that would be nice to have.

4) I have complete information on everything that I need – this application is the best source for the information that I need to do my job.

IQ Metrics: Diagnosing IT's Impact

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Questions that indicate how to fix the Problems:

- How trustworthy is the information that this software application provides?

0) I know that the information in this software application is erroneous beyond repair and I can never trust the accuracy of information that this software application provides.

1) I am uncertain whether or not I can trust the accuracy of information in this software application.

2) I frequently find errors and inaccuracies in the information that this software application provides.

3) This software application provides generally accurate and credible information for me.

4) This software application is a perfectly accurate and believable source of information on which I can reliably base my decisions and my work.

IQ Metrics: Diagnosing IT's Impact

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Questions that indicate how to fix the Problems:

- How complete is the information that comes out of this software application?

0) This application does not give me any of the information that I need about the things that are central to my job – I have to retrieve information from other sources because the information that this application provides is so incomplete.

1) Because the information that this software application provides is so incomplete, this software is only a minor source of information about the things that are central to my job.

2) This software application is an important source of information about the things that are central to my job, but that information is not as complete as I need it to be.

3) This software application is a primary source for the information I need about the things that are central to my job and that information is complete through most of the process.

4) This software application is my single source for complete information about all of the things that are central to my job throughout the entire process.

IQ Metrics: Diagnosing IT's Impact

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Questions that indicate how to fix the Problems:

- How up-to-date is the information that comes out of this software application?

0) This application does not give me any up-to-date information that I need about the things that are central to my job.

1) This software application provides very little up-to-date information about the things that are central to my job.

2) This software application provides some up-to-date information about the things that are central to my job, but that information is not as up-to-date as I would like.

3) This software application provides the up-to-date information I need about the things that are central to my job and provides that up-to-date information through most of the process.

4) This software application is always provides up-to-date information about all of the things that are central to my job throughout the entire process.

IQ Metrics: Diagnosing IT's Impact

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Questions that indicate how to fix the Problems:

- How relevant is the information that comes out of this software application?

0) This application does not give me any information that is relevant to the things that are central to my job.

1) This software application provides very little relevant information about the things that are central to my job.

2) This software application provides some relevant information about the things that are central to my job.

3) This software application is a primary source for relevant information I need about the things that are central to my job.

4) This software application is my single source for relevant information about all of the things that are central to my job throughout the entire process.

IQ Metrics: Diagnosing IT's Impact

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Questions that indicate how to fix the Problems:

- How clear and understandable is the information that this software application provides?

0) This software application provides information that I do not understand and is therefore impossible to use for the task at hand.

1) This software application provides information that is difficult to understand and is therefore only marginally useful for the task at hand.

2) This software application provides information that is not always clear and understandable.

3) This software application provides information that is generally understandable and that is generally useful for the task at hand.

4) This software application provides information that is clear and understandable.

IQ Metrics: Diagnosing IT's Impact

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Questions that indicate how to fix the Problems:

- How concise is the information that this software application provides?

0) This software application provides information that is at the wrong level of detail and therefore impossible to use for the task at hand.

1) This software application provides information that is often at the wrong level of detail and therefore only marginally useful for the task at hand.

2) This software application provides information that is sometimes at the wrong level of detail and that is useful for the task at hand only after I manipulate it and work with it for a while.

3) This software application provides information that is generally concise and at about the right level of detail and that is generally useful for the task at hand.

4) This software application provides information that is concise, at the right level of detail, and easy to transform and apply to multiple tasks.

IQ Metrics: Diagnosing IT's Impact

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Conclusion

- By employing metrics that measure an IT department's data management maturity, objective data quality, and subjective information quality, an IT department can measure its impact on the business and its contribution to the enterprise's success