The Changing Roles of the Chief Architect and the CIO

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The Changing Roles of the Chief Architect and the CIO

Chief Architect becomes CDO and CIO keeps doing what they have been doing – together they are a stronger team …

datablueprint.com

vcubusiness
Virginia Commonwealth University

Peter Aiken, PhD

- 30 years of experience in data management
  - Multiple international awards
  - Founder, Data Blueprint (http://datablueprint.com)
- 9 books and dozens of articles
- Experienced w/ 500+ data management practices in 20 countries
- Multi-year immersions with organizations as diverse as the US DoD, Deutsche Bank, Nokia, Wells Fargo, and the Commonwealth of Virginia

Wordle.net

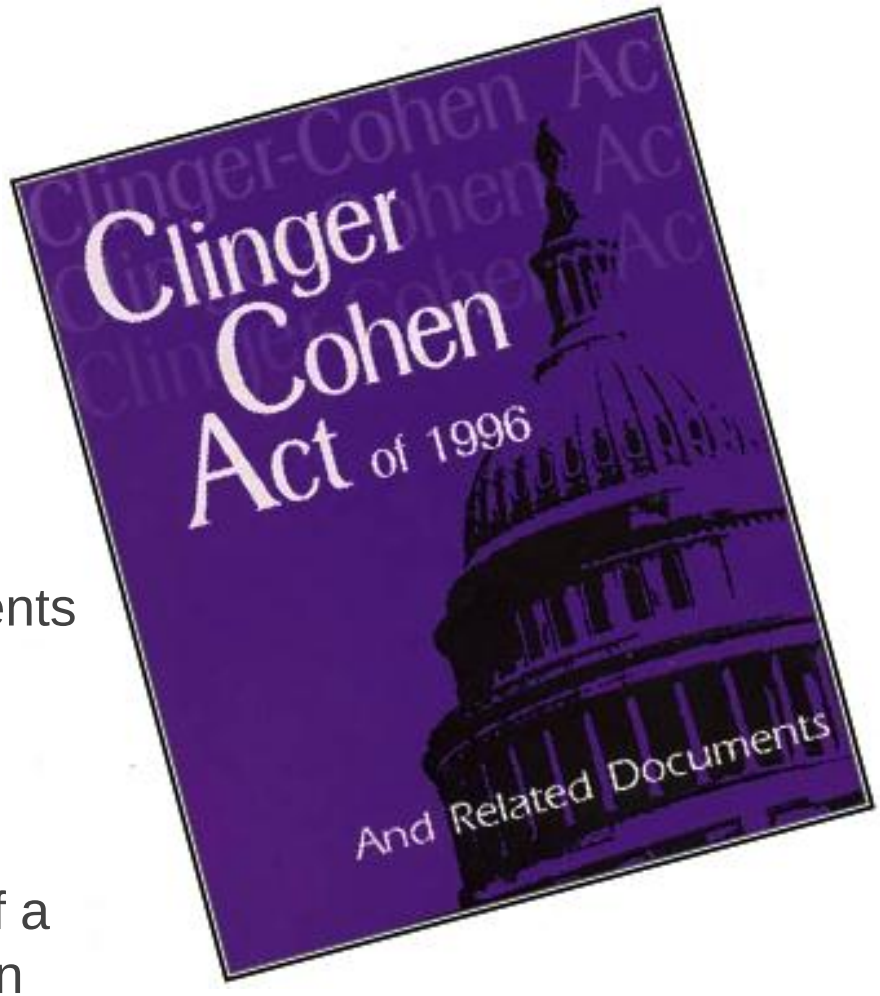
The Changing Roles of the Chief Architect and the CIO

- A bit of history
  - Clinger Cohen Act - how's it going?
- Motivations:
  - Poor data management performance to date
    - (requires additional or difference effort)
  - Recognition that data is not a project
    - (requires a difference approach)
  - Lack of domain expertise
    - (requires different career preparation)
- The role of a CDO - three necessary but insufficient prerequisites:
  1. Dedicated solely to data asset leveraging
  2. Unconstrained by an IT project mindset
  3. Reporting directly to the business

"Most significant IT reform of the last decade"

1996 (passed)

- Establish Agency CIOs
  - Link IT investments to accomplishments
- Requires
  - CIO "Milestone Decision" assessment
  - Establish process to select, manage and control IT investments (CMM Level 2)
- Responsible
  - "developing, maintaining, and facilitating the implementation of a sound and integrated information technology architecture"



The Clinger-Cohen Act: 10 Years Later

By Wes Andrues | July 11, 2006 | 0 Comments

Ten years ago, Congress passed the Information Technology Management Reform Act, later renamed for its co-sponsors, Rep. William Clinger, R-Pa., and Sen. William Cohen, R-Maine. The Clinger-Cohen Act fundamentally changed federal procurement of information technology, requiring that IT purchases be handled as capital investments and that chief information officers be appointed to lead the process of planning, acquiring and managing technology.
In this four-part series running over a month's time, retired Air Force Lt. Col. Wes Andrues, an IT policy consultant and CIO Certificate holder from the National Defense University, looks at the changes in the technology acquisition landscape in the years since the law was passed.

2006 (assessed)

- Mixed results
  - Federal Enterprise Architecture
  - "The landscape of federal information technology is not a clearly defined plain of reference points that can be empirically studied in pure isolation"
  - Planned 5% decrease in IT costs
  - 9% increase instead

- Some guidance exists
- Some experiences gained
- Some progress has been made

http://www.govexec.com/federal-news/2006/07/the-clinger-cohen-act-10-years-later/22227/

Government Executive

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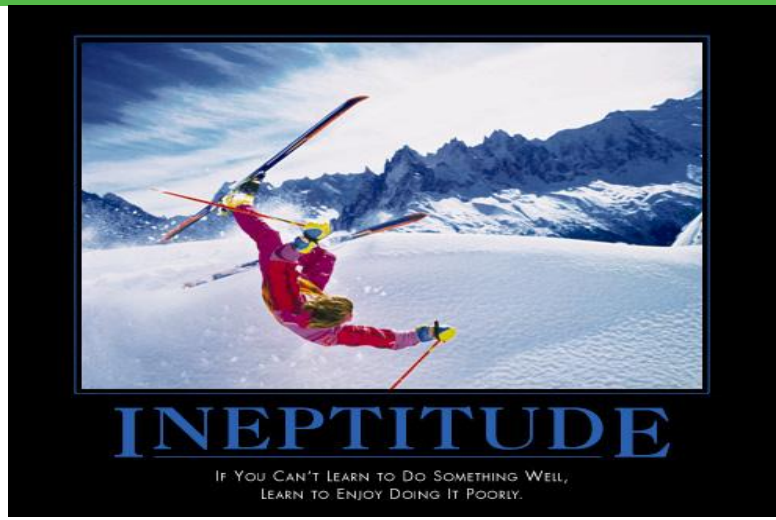
IT Project Failure Rates



Recent IT project failure rates statistics can be summarized as follows:

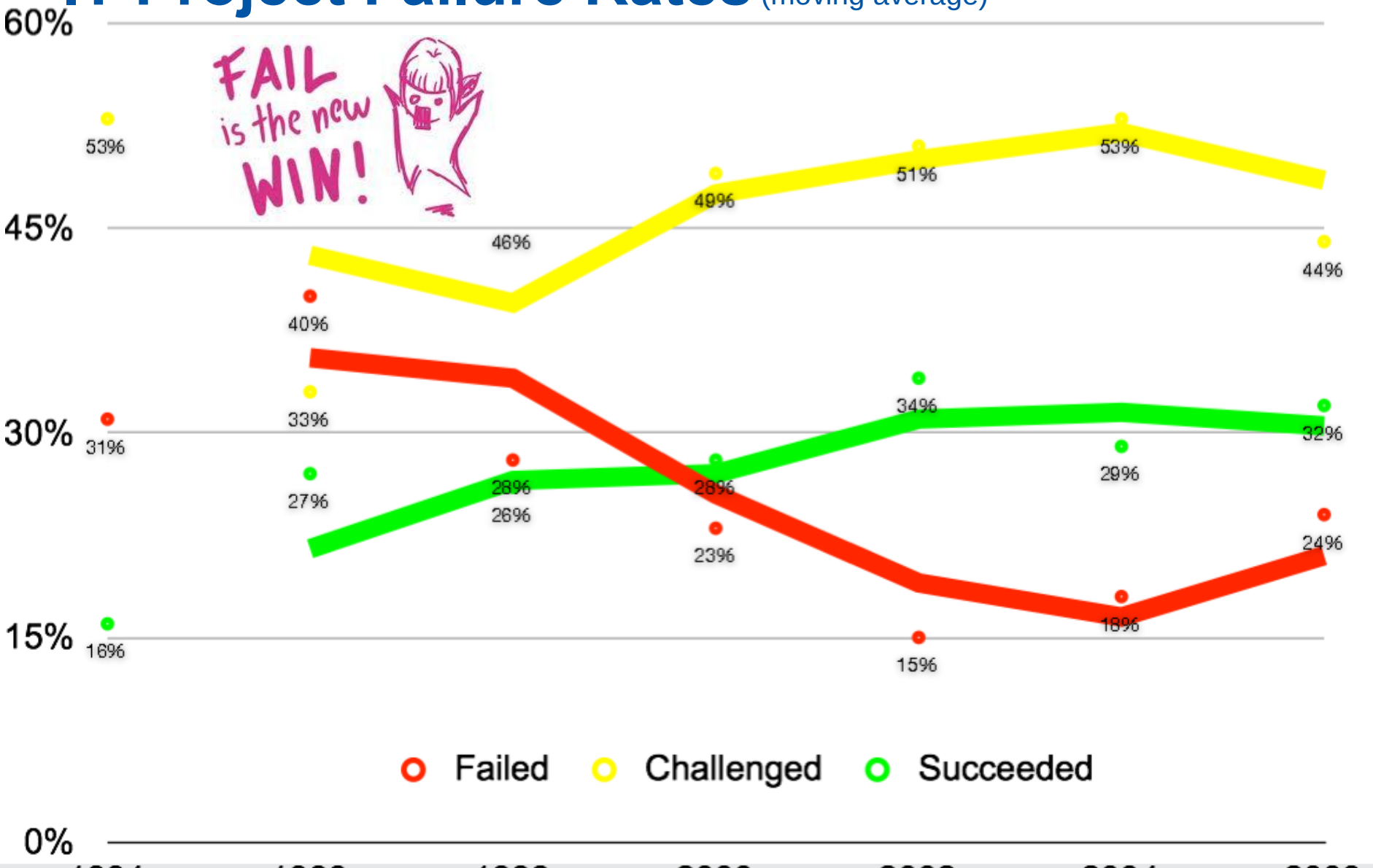
- *Carr 1994*
  - 16% of IT Projects completed on time, within budget, with full functionality
- *OASIG Study (1995)*
  - 7 out of 10 IT projects "fail" in some respect
- *The Chaos Report (1995)*
  - 75% blew their schedules by 30% or more
  - 31% of projects will be canceled before they ever get completed
  - 53% of projects will cost over 189% of their original estimates
  - 16% for projects are completed on-time and on-budget
- *KPMG Canada Survey (1997)*
  - 61% of IT projects were deemed to have failed
- *Conference Board Survey (2001)*
  - Only 1 in 3 large IT project customers were very “satisfied"
- *Robbins-Gioia Survey (2001)*
  - 51% of respondents viewed their large IT implementation project as unsuccessful
- *MacDonalds Innovate (2002)*
  - Automate fast food network from fry temperature to # of burgers sold-$180M USD write-off
- *Ford Everest (2004)*
  - Replacing internal purchasing systems-$200 million over budget
- *FBI (2005)*
  - Blew $170M USD on suspected terrorist database-"start over from scratch"

1 in 3 IT projects suffers on

- Price
- Schedule
- Functionality

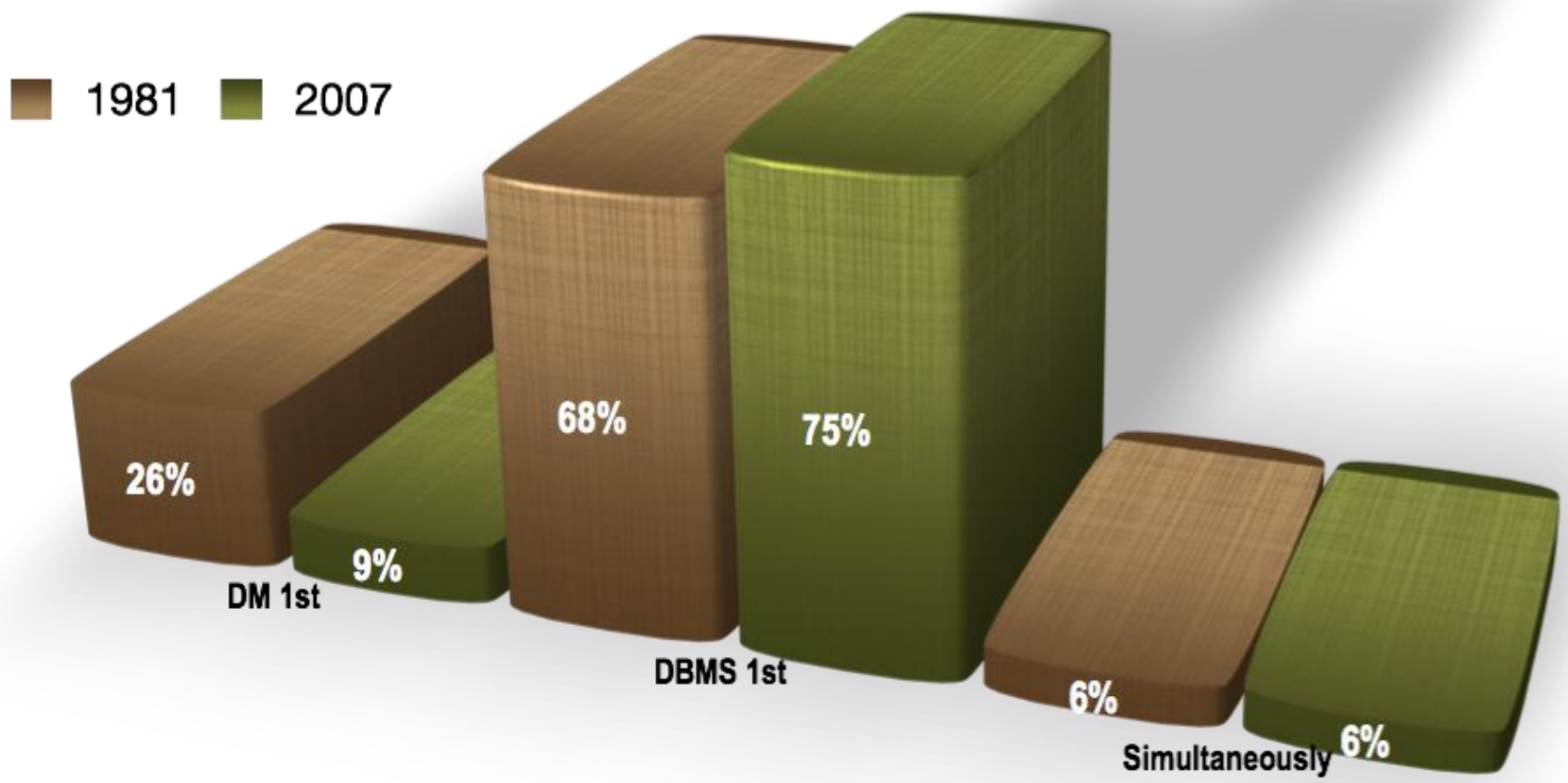
http://www.it-cortex.com/stat_failure_rate.htm (accessed 9/14/02)
New York Times 1/22/05 pA31

IT Project Failure Rates (moving average)



Source: Standish Chaos Reports as reported at: http://www.galorath.com/wp/software-project-failure-costs-billions-better-estimation-planning-can-help.php

DM Origins – Which arrives first – DM or DBMS?

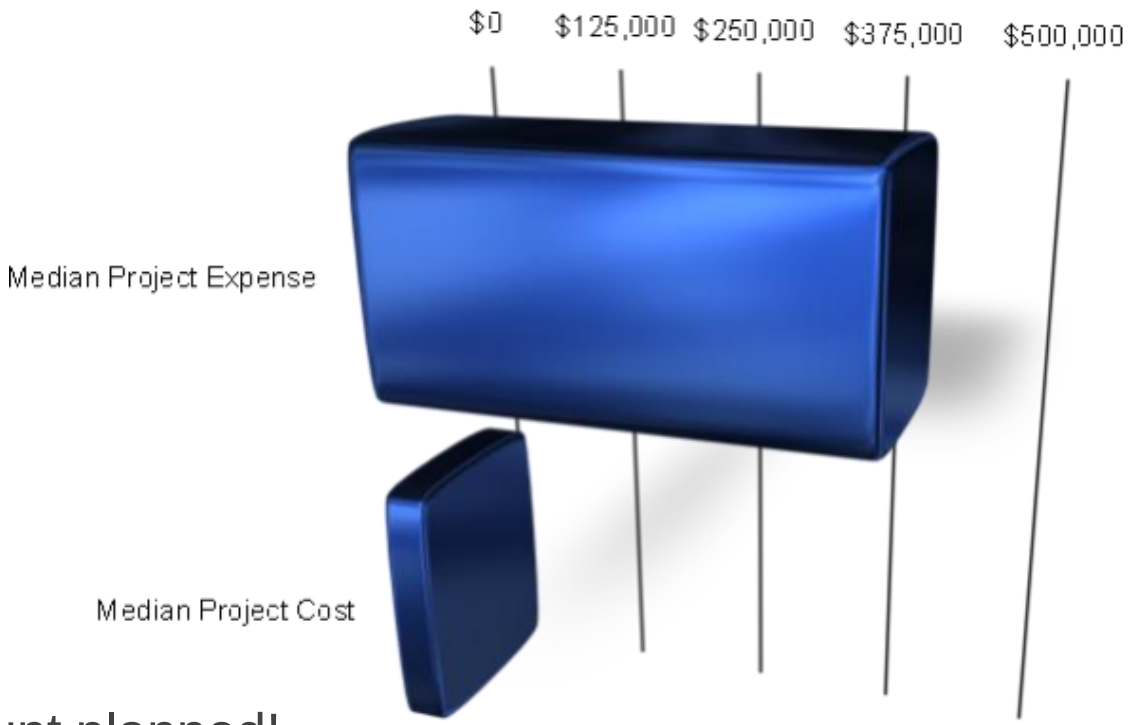


- A key indicator of organizational awareness
- 75% reacting instead of anticipating
- Best practices are obvious

Why ETL and Data Migration Projects Fail

— *Joseph R. Hudicka*
Information Architecture Team

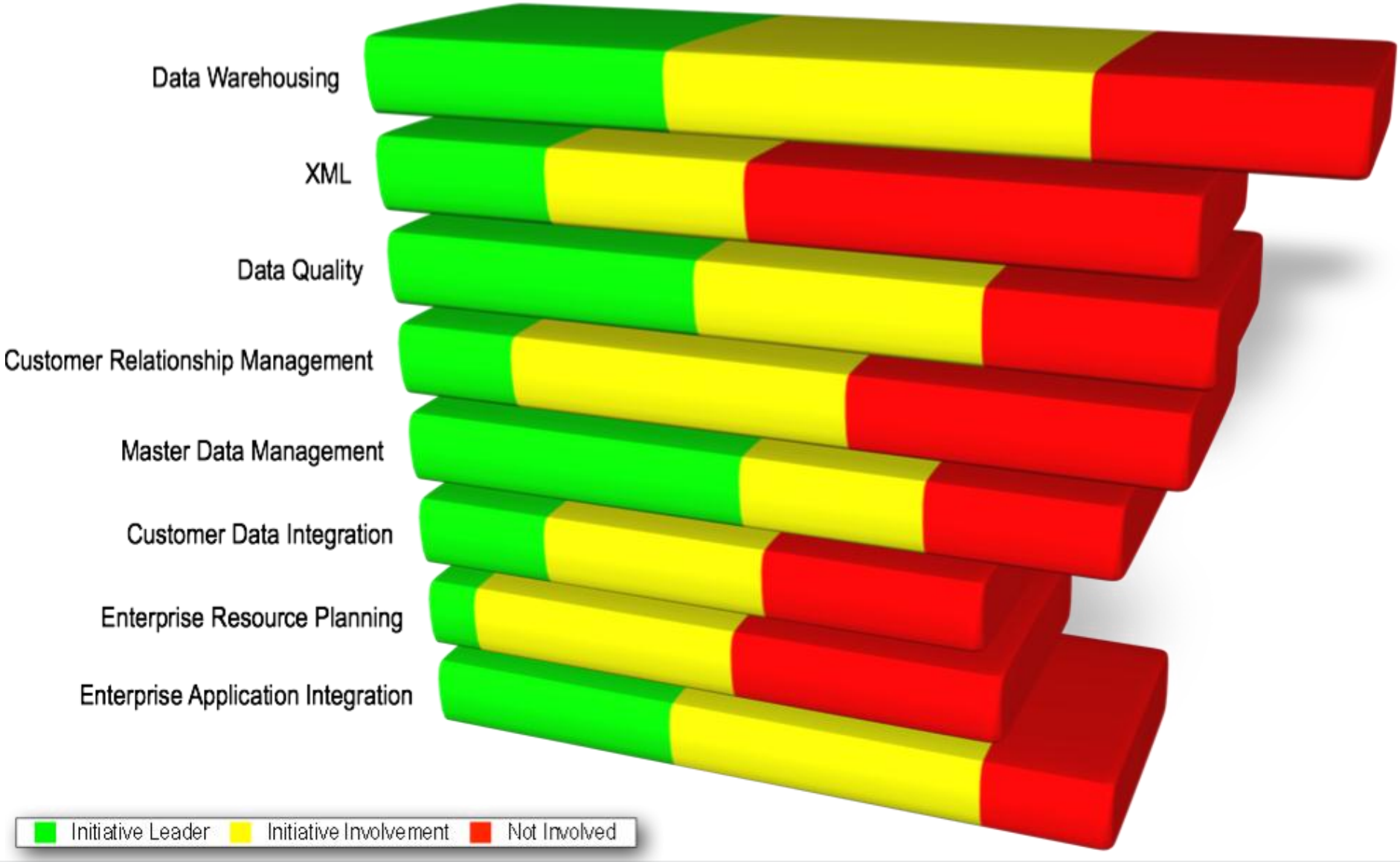
ODTUG MEMBER



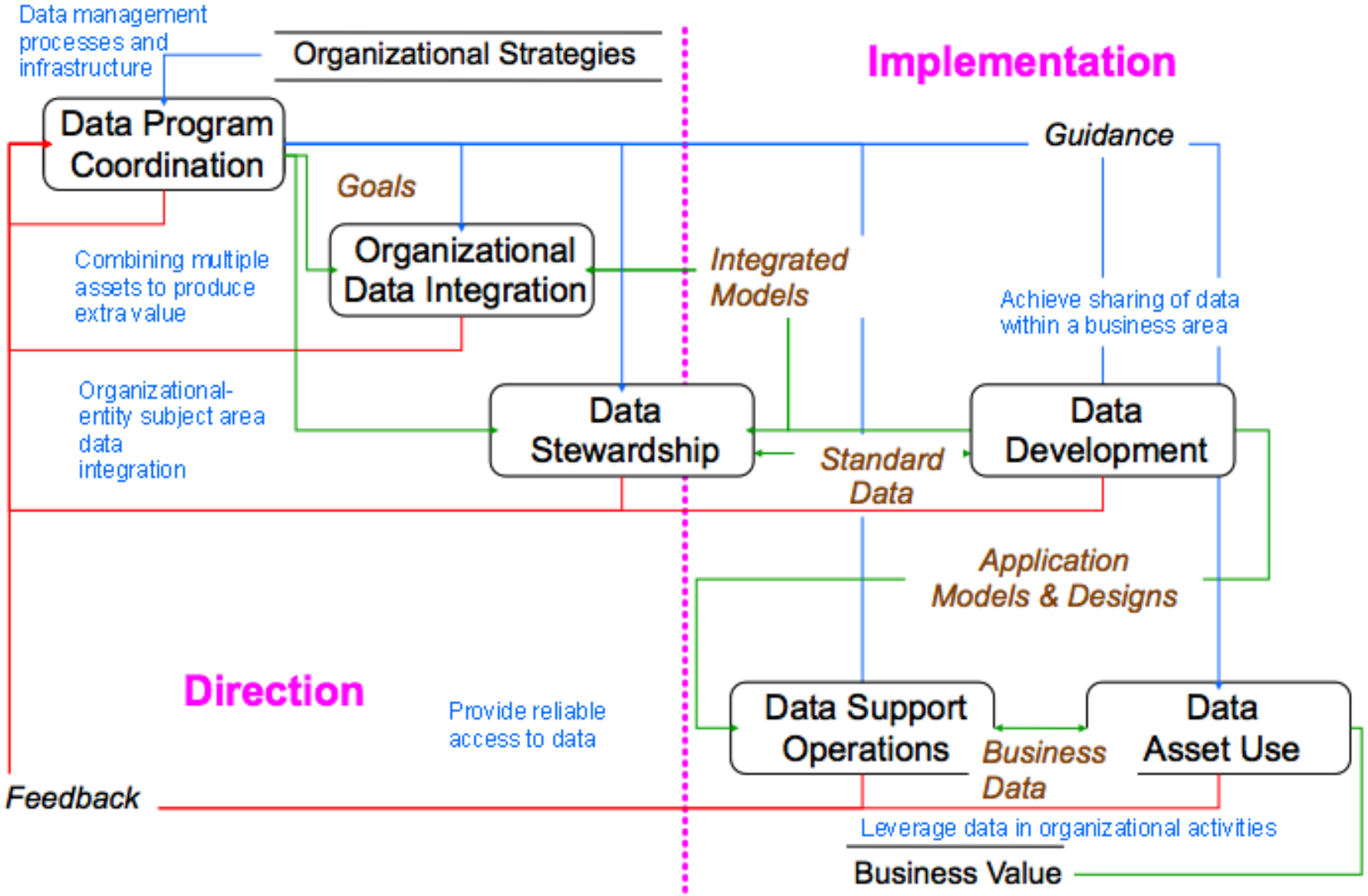
- Assessed 1200 migration projects!
  - Surveyed only experienced migration specialists who have done at least four migration projects
- The median project costs over 10 times the amount planned!
  - Biggest Challenges: Bad Data; Missing Data; Duplicate Data
- The survey did not consider projects that were cancelled largely due to data migration difficulties
- "… problems are encountered rather than discovered"

Joseph R. Hudicka "Why ETL and Data Migration Projects Fail" Oracle Developers Technical Users Group Journal June 2005 pp. 29-31

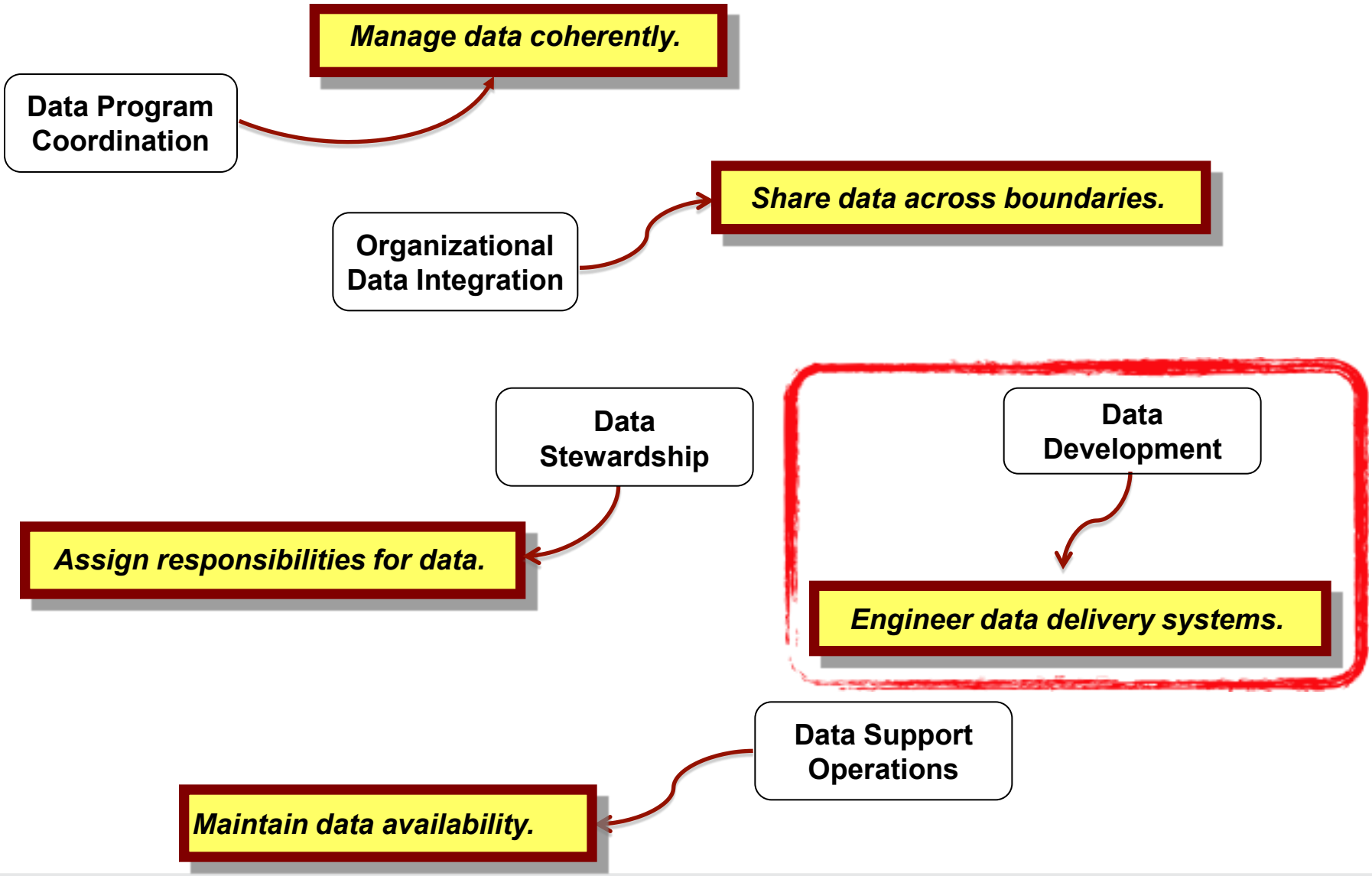
Not Enough Data Management Involvement



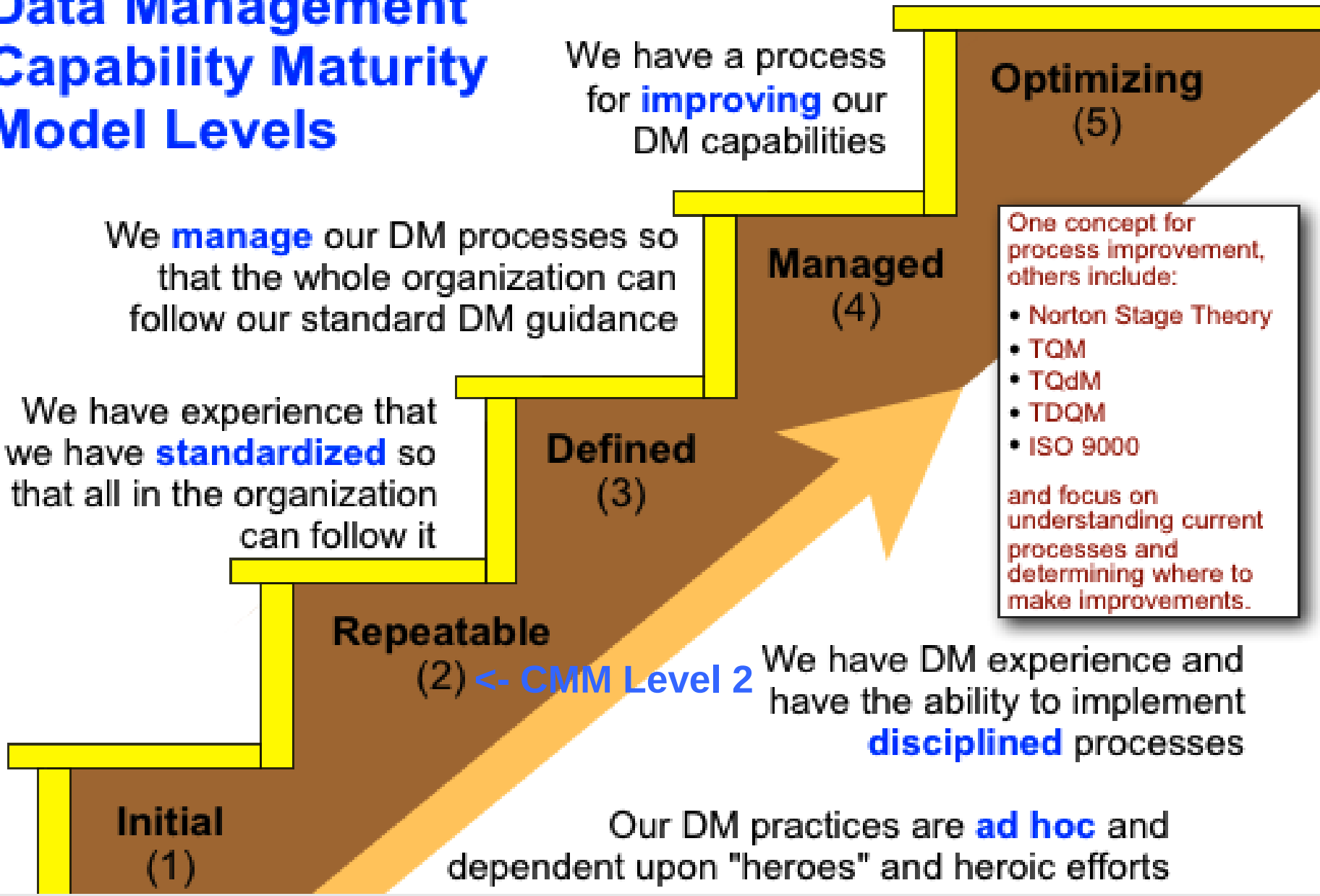
Organizational DM Functions and their Inter-relationships

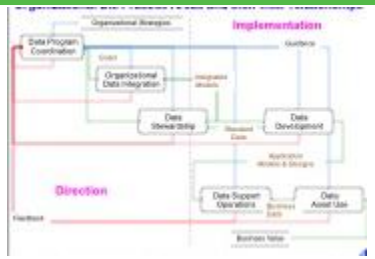


Organizational DM Practices



Data Management Capability Maturity Model Levels



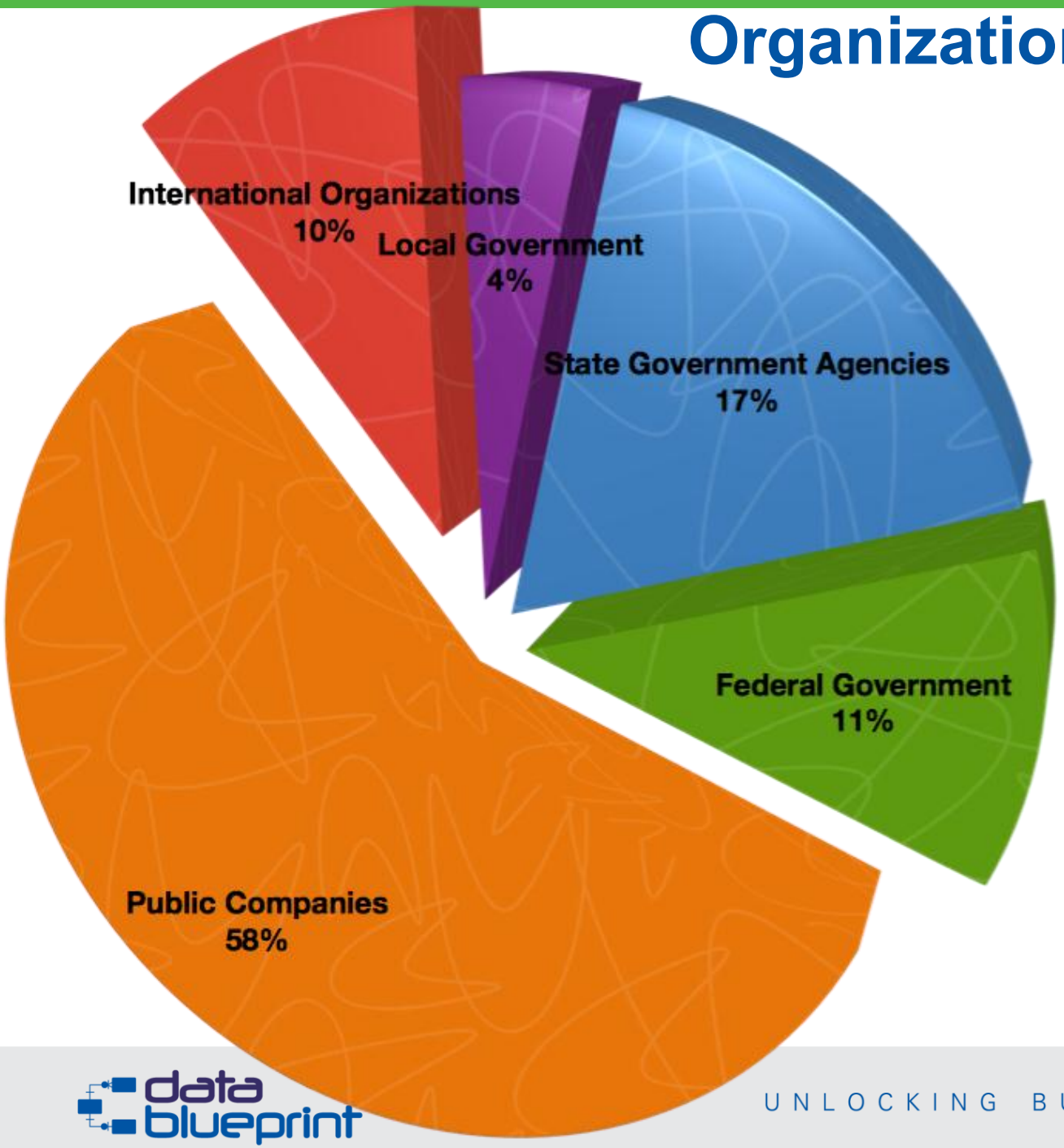


Assessment Components

Data Management Practice Areas	
Data program coordination	DM is practiced as a coherent and coordinated set of activities
Organizational data integration	Delivery of data is support of organizational objectives – *the currency of DM*
Data stewardship	Designating specific individuals caretakers for certain data
Data development	Efficient delivery of data via appropriate channels
Data support	Ensuring reliable access to data

Capability Maturity Model Levels	Examples of practice maturity
1 – Initial	Our DM practices are ad hoc and dependent upon "heroes" and heroic efforts
2 - Repeatable	We have DM experience and have the ability to implement disciplined processes
3 - Documented	We have standardized DM practices so that all in the organization can perform it with uniform quality
4 - Managed	We manage our DM processes so that the whole organization can follow our standard DM guidance
5 - Optimizing	We have a process for improving our DM capabilities

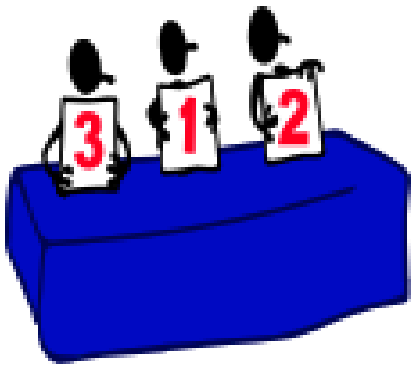
Organizations Surveyed

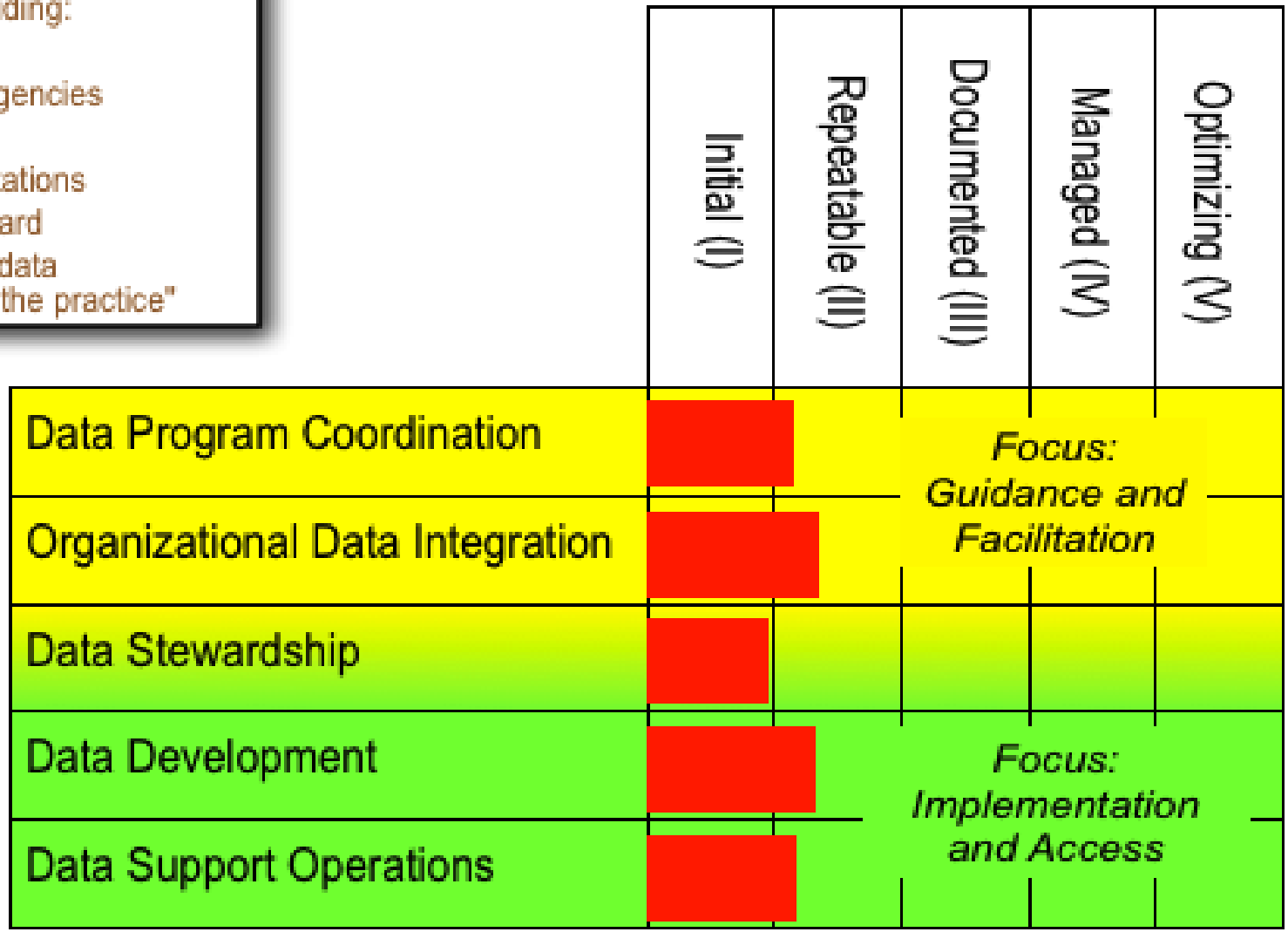


- Results from more than 500 organizations
- 32% government
- Appropriate public company representation
- Enough data to demonstrate European organization DM practices are generally more mature

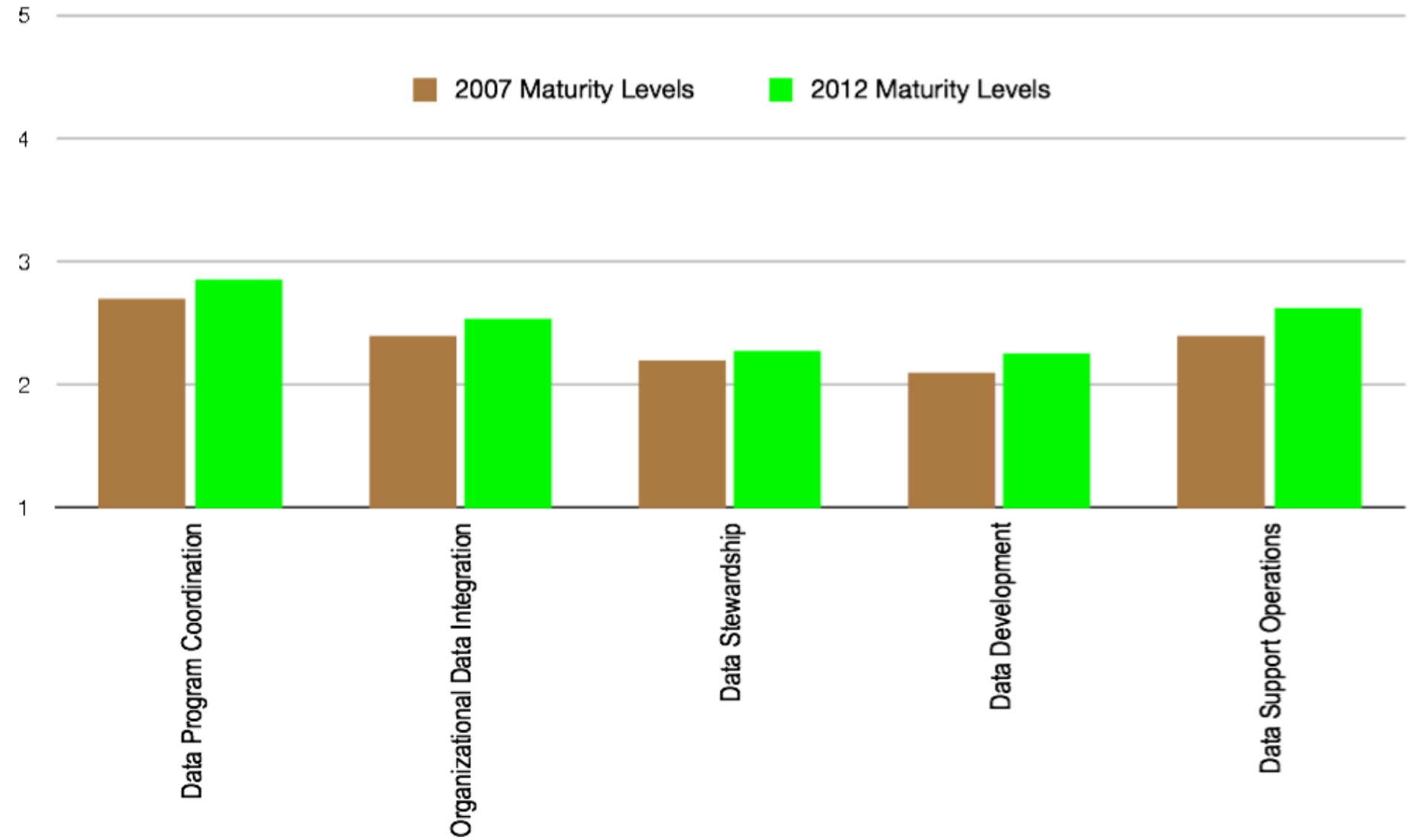
Data Management Practices Measurement (DMPA)

- CMU's Software Engineering Institute (SEI) Collaboration
- Results from hundreds organizations in various industries including:
  - Public Companies
  - State Government Agencies
  - Federal Government
  - International Organizations
- Defined industry standard
- Steps toward defining data management "state of the practice"



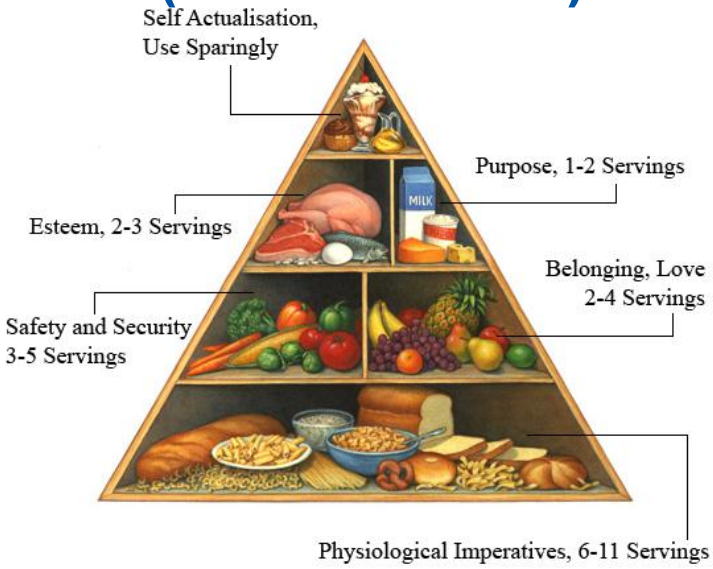


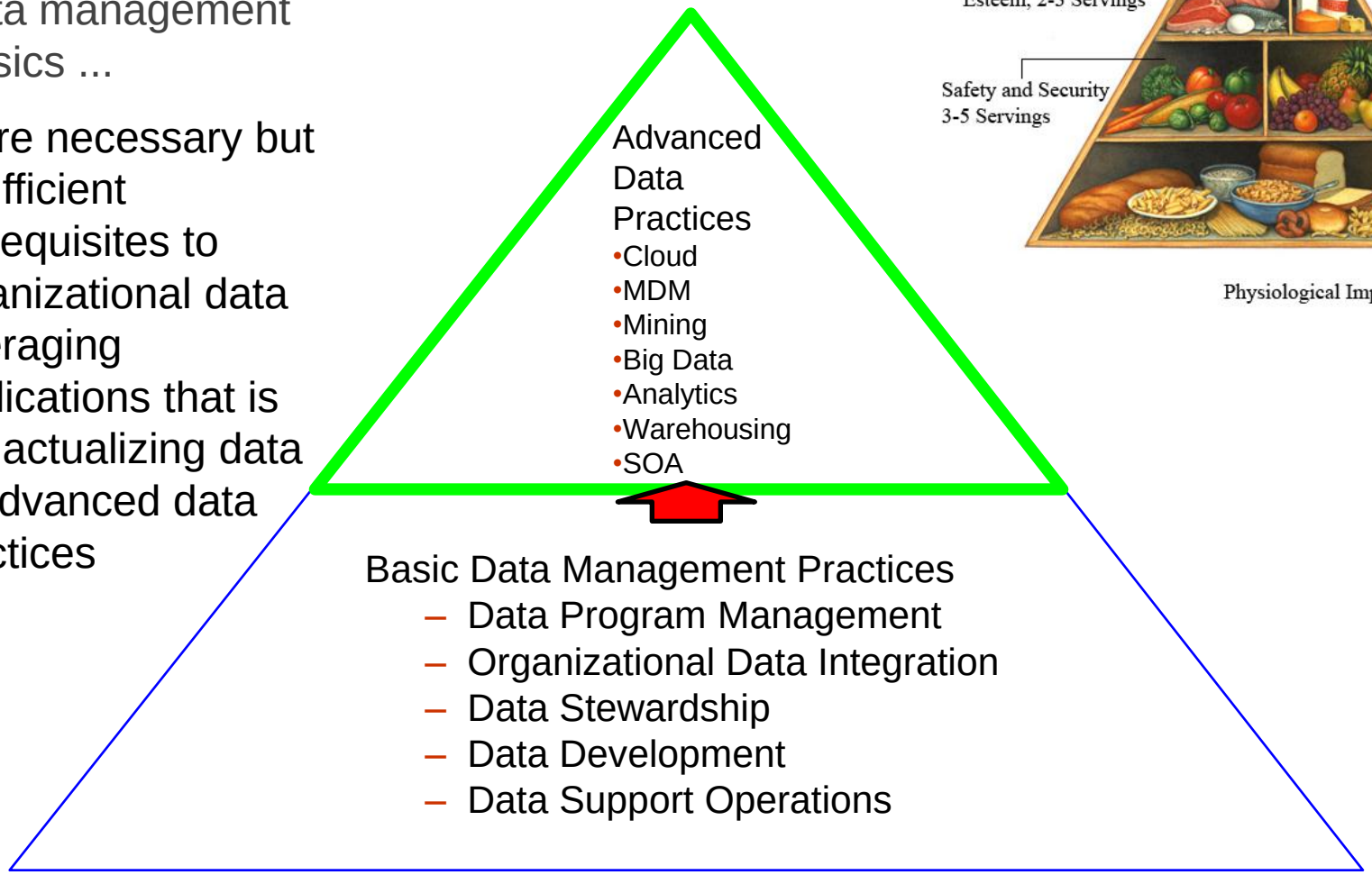
Comparison of DM Maturity 2007-2012



Hierarchy of Data Management Practices (after Maslow)

- 5 Data management practices areas / data management basics ...
- ... are necessary but insufficient prerequisites to organizational data leveraging applications that is self actualizing data or advanced data practices





http://3.bp.blogspot.com/-ptl-9mAieuQ/T-idBt1YFmI/AAAAAAAABgw/Ib-nVkMmMEQ/s1600/maslows_hierarchy_of_needs.png

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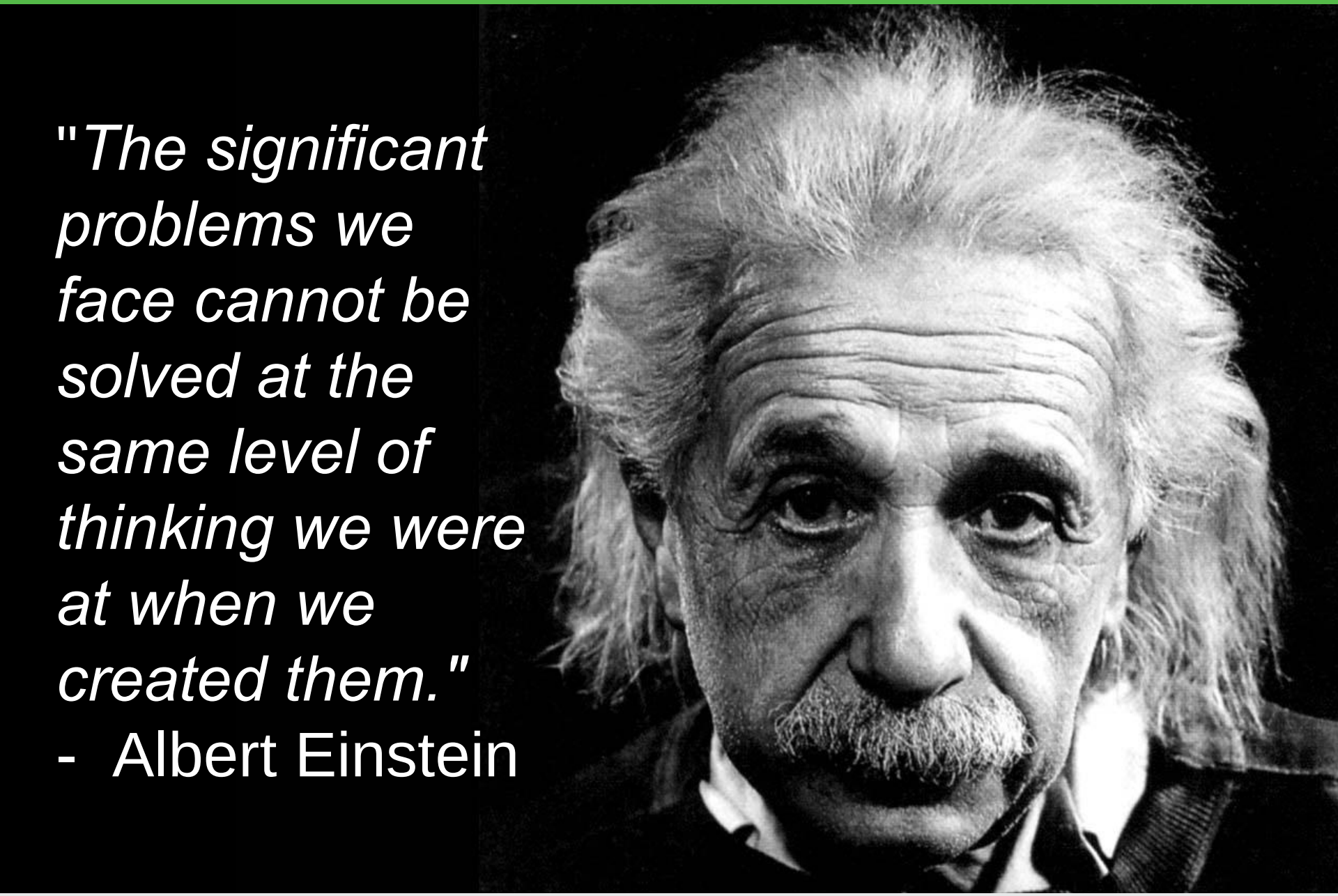
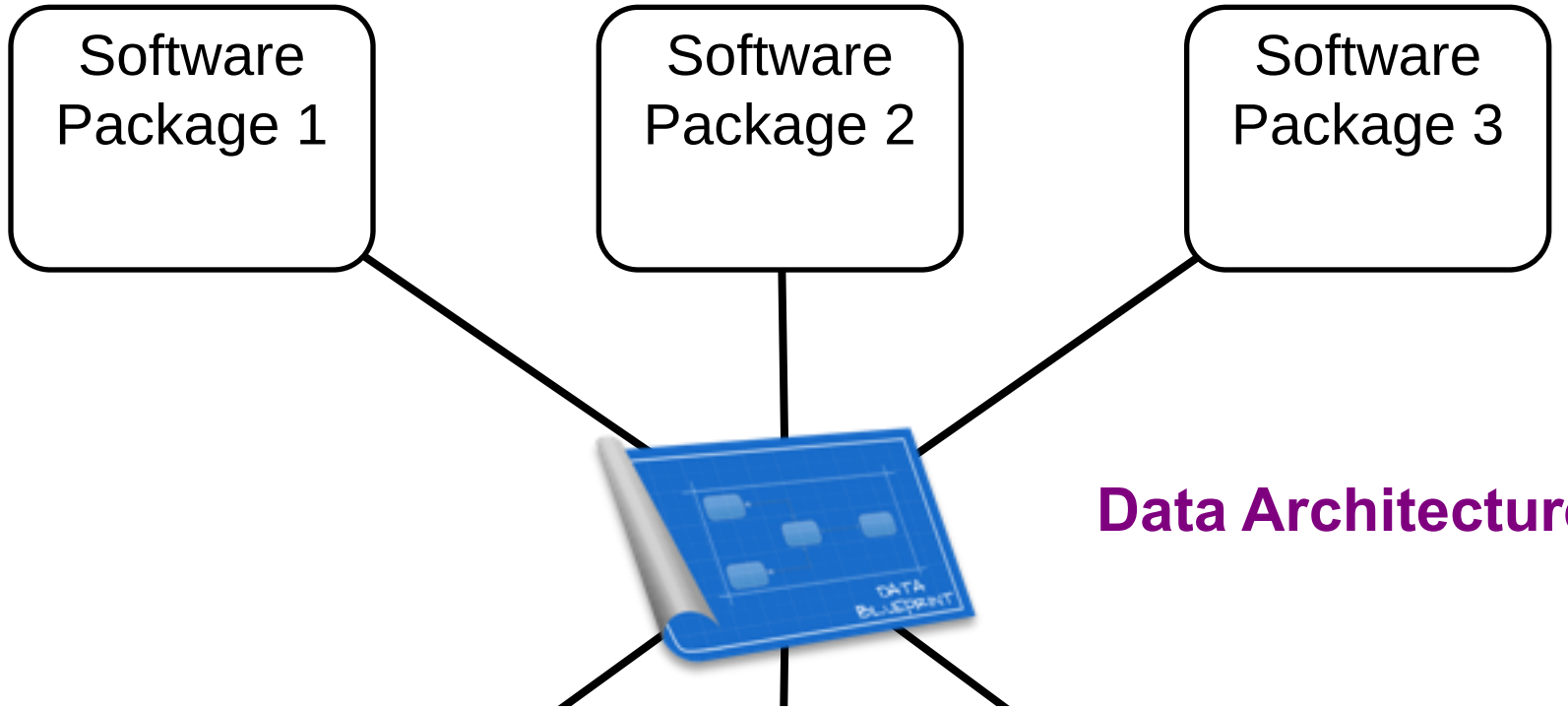
Application-Centric Development

- In support of strategy, the organization develops specific goals/objectives
- The goals/objectives drive the development of specific systems/applications
- Development of systems/applications leads to network/infrastructure requirements
- Data/information are typically considered after the systems/applications and network/ infrastructure have been articulated
- Problems with this approach:
  - Ensures that data is formed around the application and not the information requirements
  - Process are narrowly formed around applications
  - Very little data reuse is possible

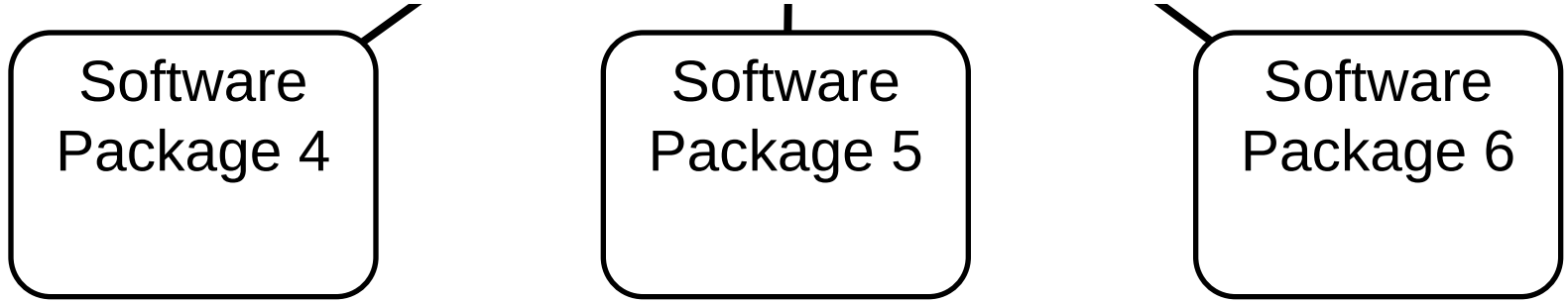
Original articulation from Doug Bagley @ Walmart



An organization's data architecture ...



... maps between and across software packages



What does it mean to treat data as an organizational asset?

- Assets are economic resources
  - Must own or control
  - Must use to produce value
  - Value can be converted into cash
- An asset is a resource controlled by the organization as a result of past events or transactions and from which future economic benefits are expected to flow to the organization [Wikipedia]
- With assets:
  - Formalize the care and feeding of data
    - Cash management - HR planning
  - Put data to work in unique and significant ways
    - Identify data the organization *will* need [Redman 2008]

Data-Centric Development Flow

- In support of strategy, the organization develops specific goals/objectives
- The goals/objectives drive the development of specific data/information assets with an eye to organization-wide usage
- Network/infrastructure components are developed to support organization-wide use of data
- Development of systems/applications is derived from the data/network architecture
- Advantages of this approach:
  - Data/information assets are developed from an organization-wide perspective
  - Systems support organizational data needs and compliment organizational process flows
  - Maximum data/information reuse

Designing for Evolution is Different than Creating New Systems

Common Organizational Data
(and corresponding data needs requirements)

.....

Evolve

Future State

(Version +1)

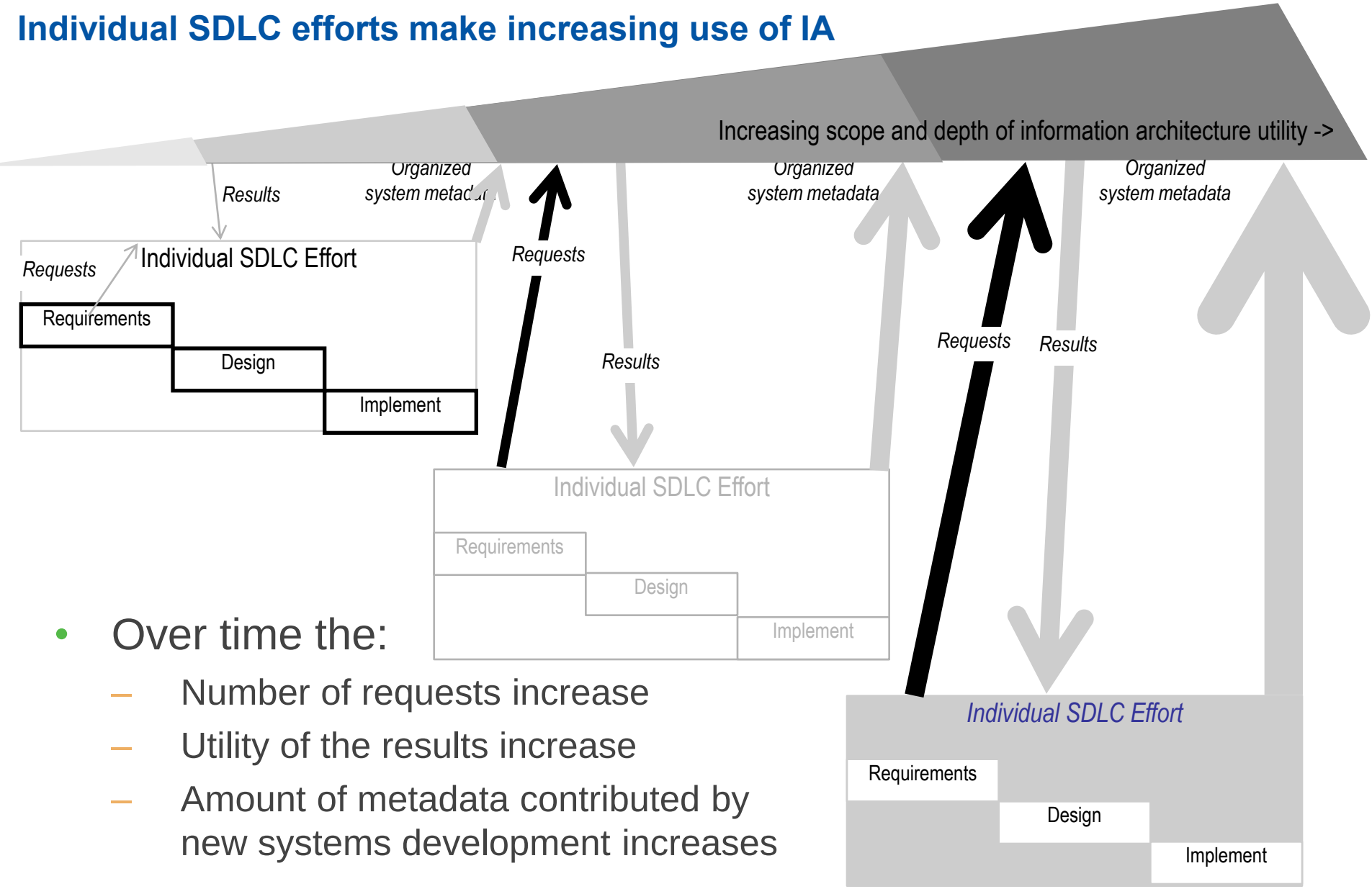
Data evolution is separate from and external to the system development life cycle!

Systems
Development
Activities

Create

New Organizational
Capabilities

Individual SDLC efforts make increasing use of IA



- Over time the:
  - Number of requests increase
  - Utility of the results increase
  - Amount of metadata contributed by new systems development increases

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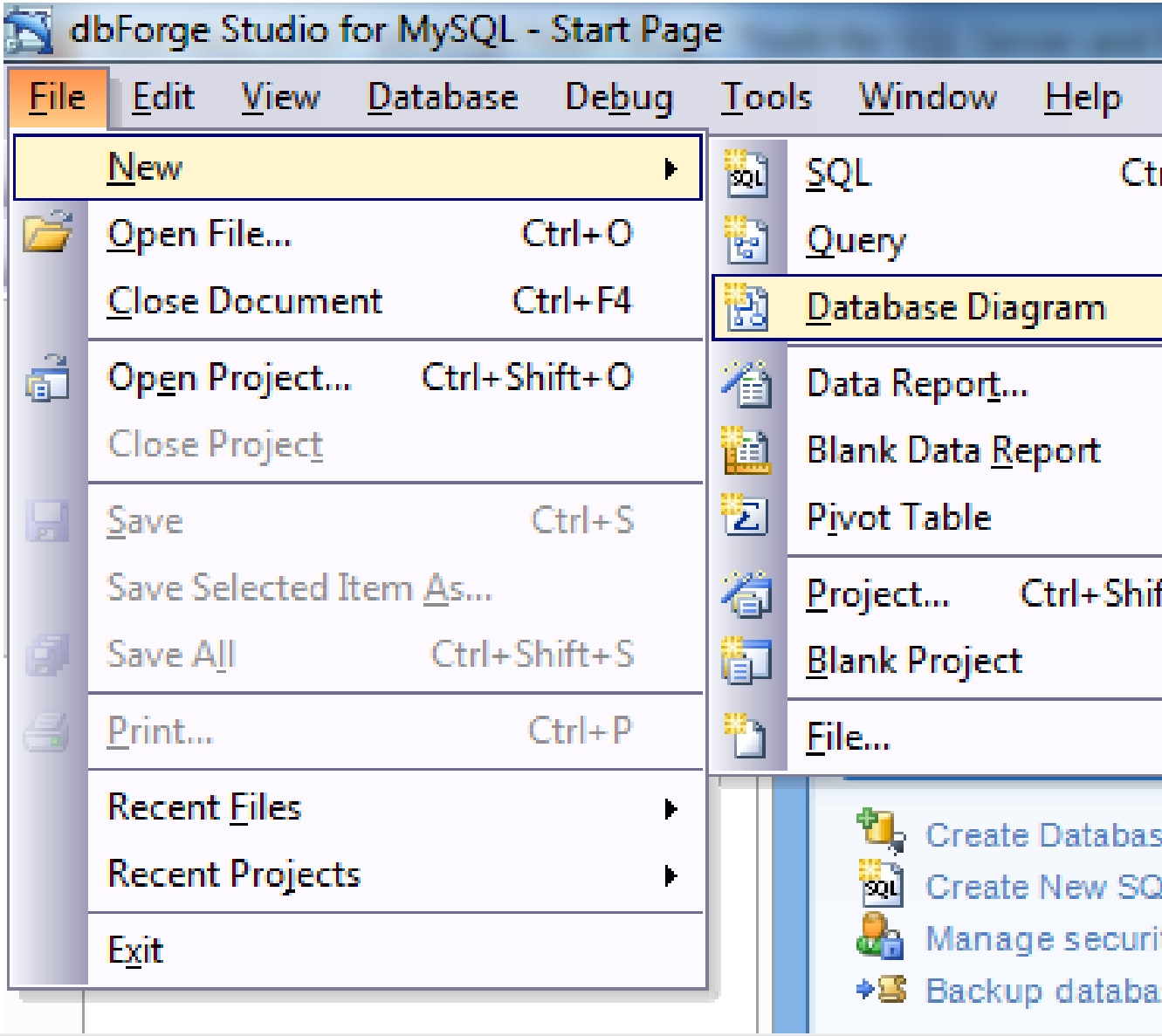
What do we teach knowledge workers about data?

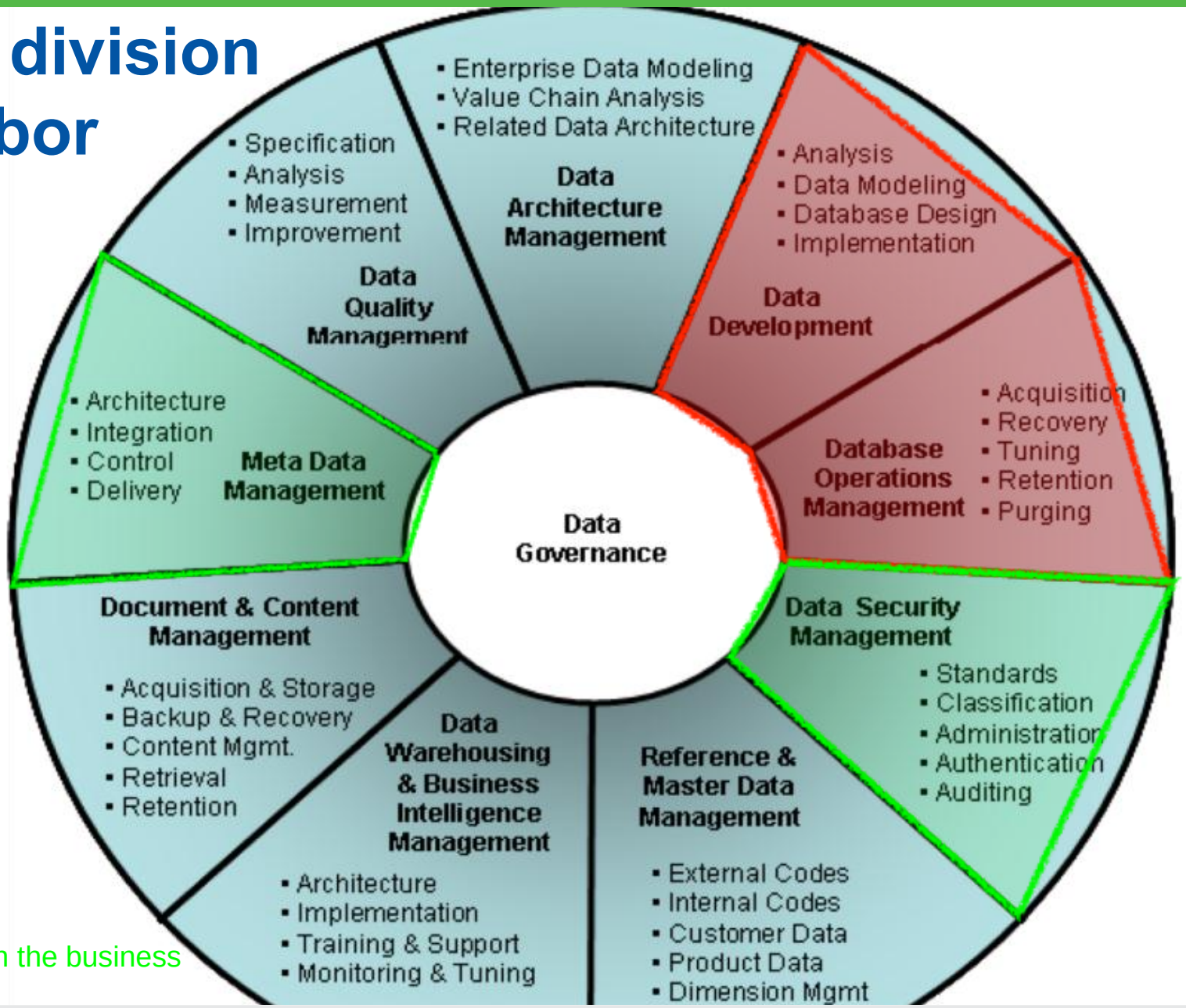
What percentage of them deal with it daily?

What do we teach IT professionals about data?

- 1 course
  - How to build a new database
  - 80% of IT expenses are used to improve existing assets
- What impressions do IT professionals get from this education?
  - Data is a technical skill that is used to develop new databases
- This is not the best way to educate IT and business professionals about every organization's
  - *Sole, non-depletable, non-degrading, durable, strategic asset*



New division of labor



IT Only

Shared with the business

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Chief

C-level

CRO

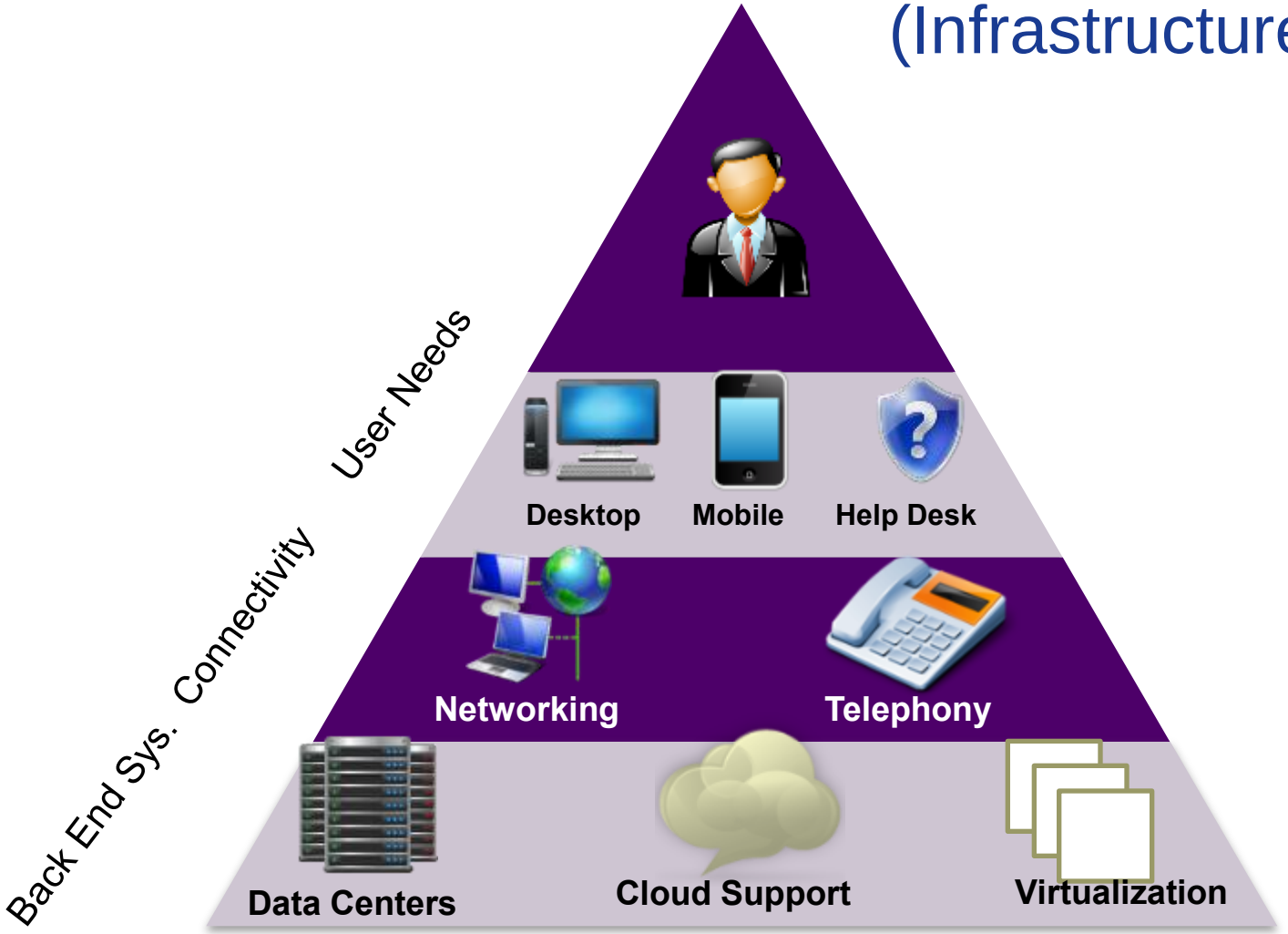
The "Chief Officer" Title

- Chief
  - The head or leader of an organized body of people; the person highest in authority: the chief of police
- Chief Financial Officer (CFO)
  - Individual possessing the knowledge, skills, and abilities to be both the final authority and decision-maker in organizational financial matters
- Chief Risk Officer (CRO)
  - Individual possessing the knowledge, skills, and abilities makes decisions and implements risk management
- Chief Medical Officer (CMO)
  - Responsible for organizational medical matters. The organization, and the public, has similar expectations for any of chief officer – especially after the Sarbanes-Oxley bill.

[dictionary.com]

CIO Taskings

(Infrastructure Focus)

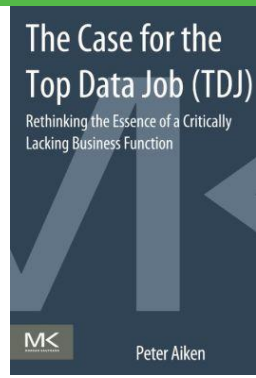


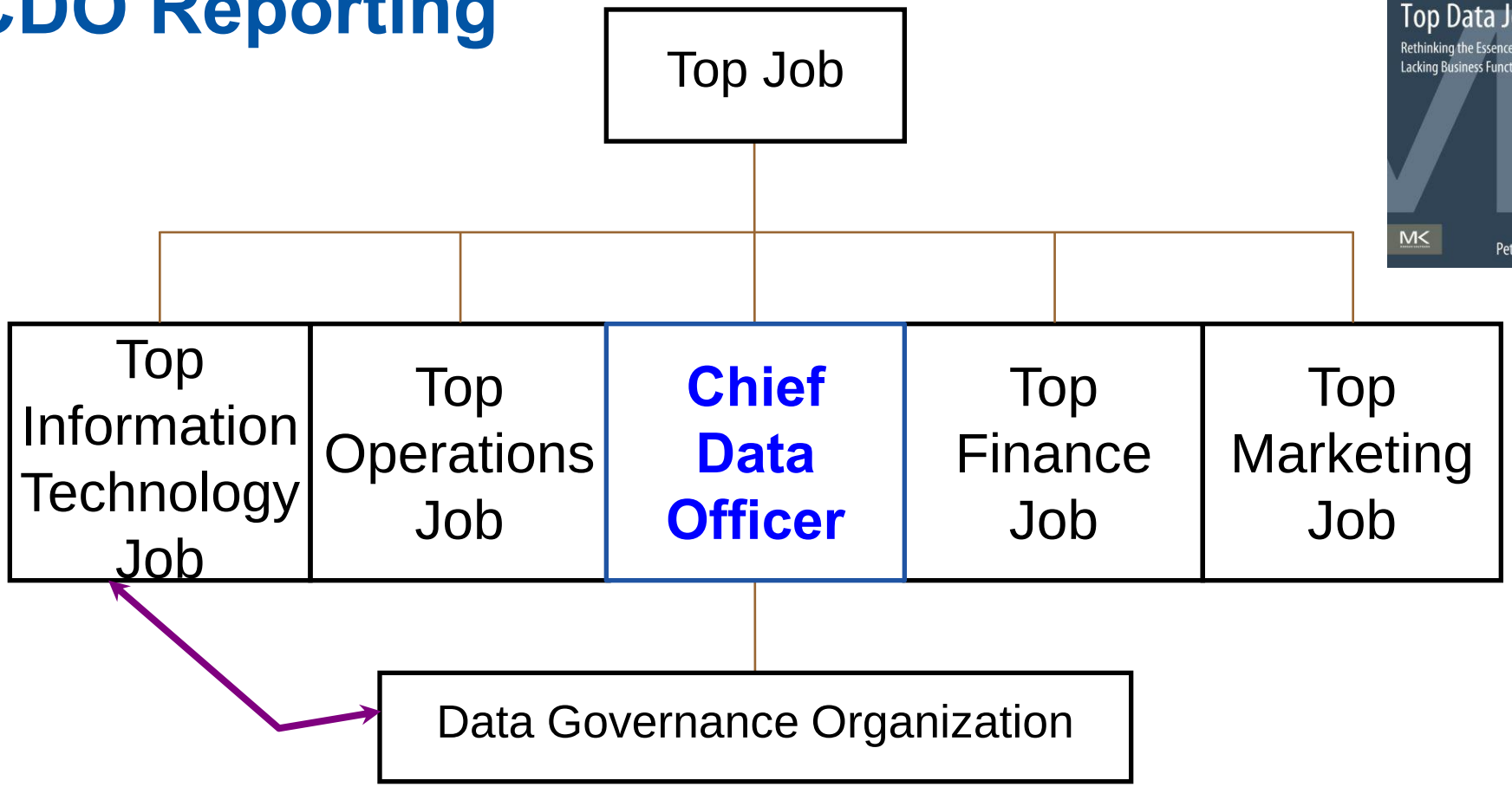
- **The Top Job**
  - Finance
  - Operations
  - Sale/Marketing
  - HR
  - Risk
  - Technology/CIO
    - Align IT initiatives with business goals
    - Improving IT operations performance
    - Cultivating the IT/business partnership
    - Cost control/expense management
    - Implementing new systems
    - Leading change efforts
    - Driving business innovation
    - Redesigning business processes
    - Developing and refining business strategy
    - Negotiating with IT vendors
    - Managing IT crises
    - Developing market strategies & technologies
    - Security management
    - Studying trends to identify opportunities

Information?

Where does data go?

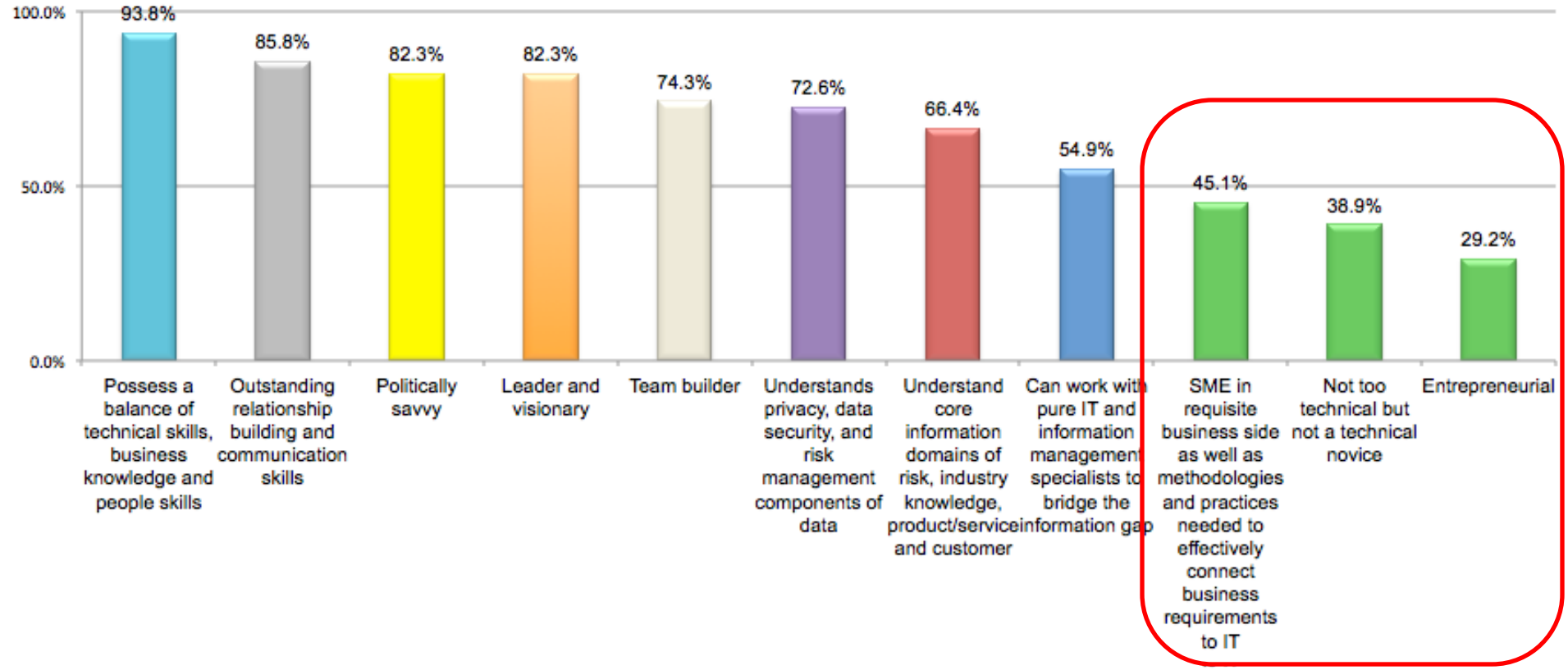
CDO Reporting





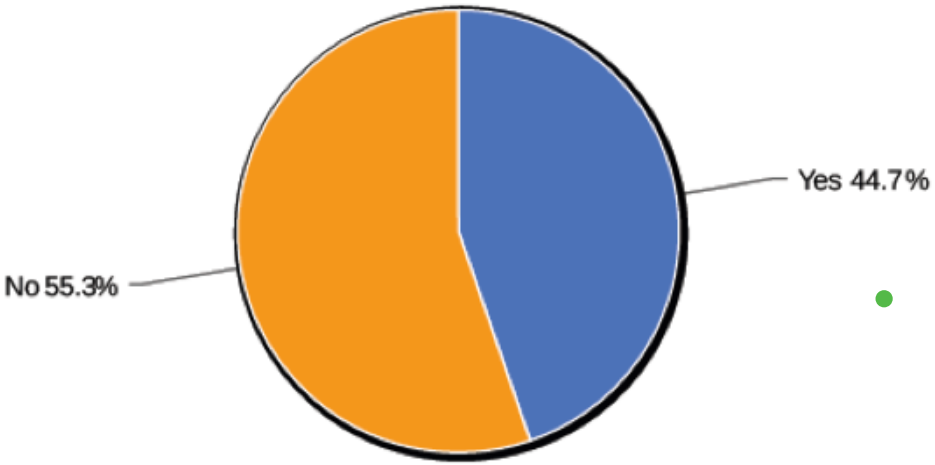
- There is enough work to justify the function
- There is not much talent
- The CDO provides significant input to the Top Information Technology Job

What key traits are necessary to be a successful CDO?

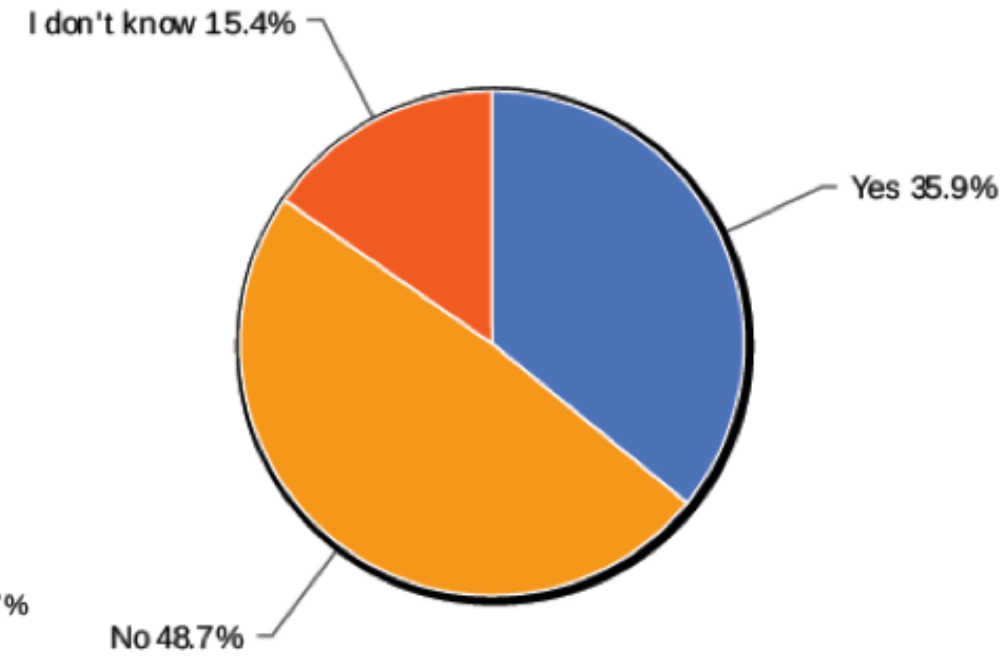


Source: 2013 CDO Survey

73% of CDO Functions Are Less that 1 Year Old



- Does your CDO have a budget?



- Does your CDO have a staff?

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Chief Electrification Officer

- Chief Electrification Officer – responsible for electrical generating and distribution systems. The title was used mainly in developed countries from the 1880s to 1940s during the electrification of industry, but is still used in some developing countries.

UNLOCKING BUSINESS VALUE

Questions

– *Please use Chat – send to Eric Sweden*

Presenters' Contact Information

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