



Information Quality Program Implementation

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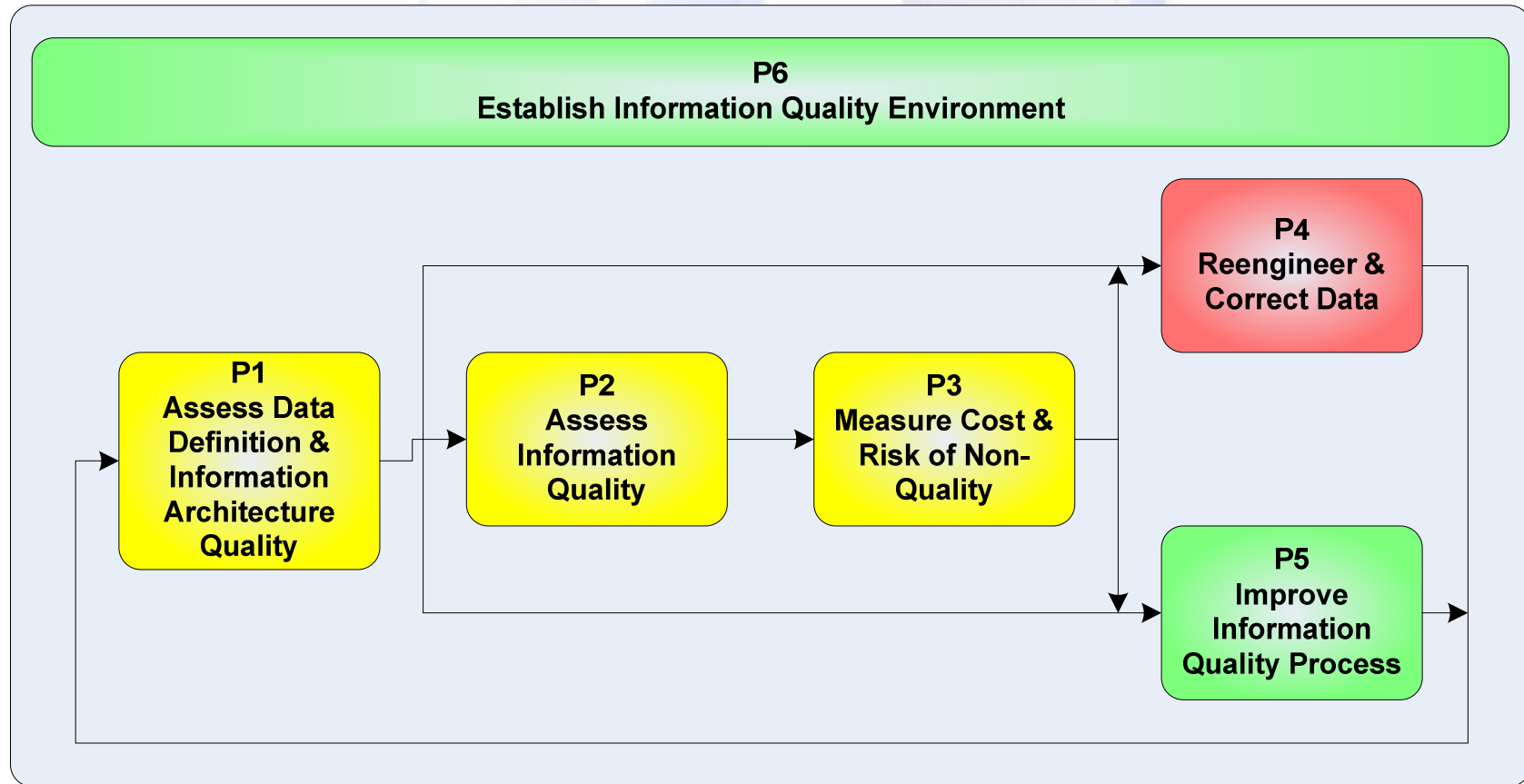
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Agenda of Topics

- The Total Information Quality Process
- The Premise of Process
- But Where do we Start?
- Modeling the Enterprise Business Processes
- Using Process Models to Drive Information Quality Solutions

The Total Information Quality Management (TQIM®) Process



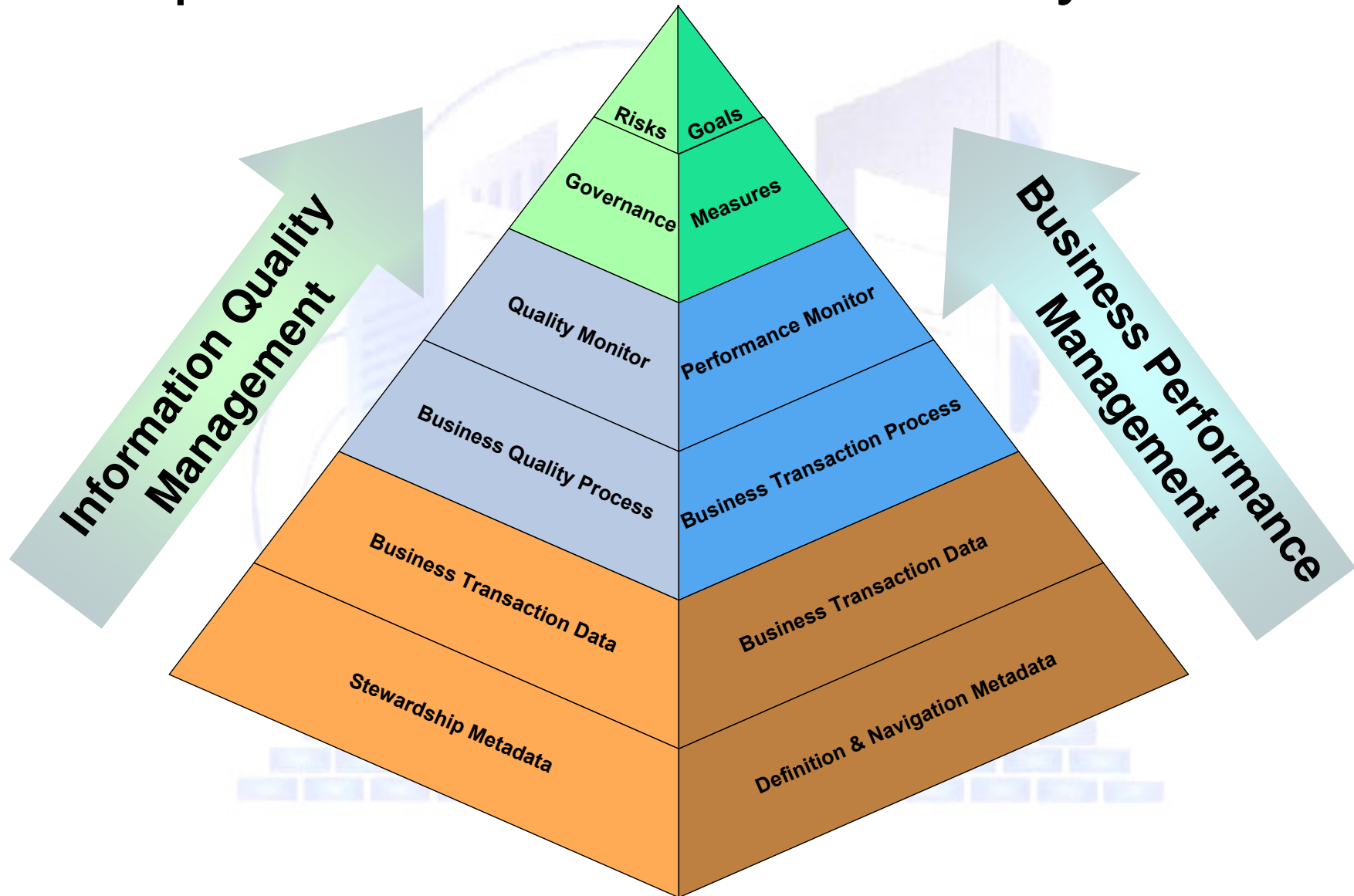
Larry English – Total Information Quality Management Process

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But Where Do We Start?

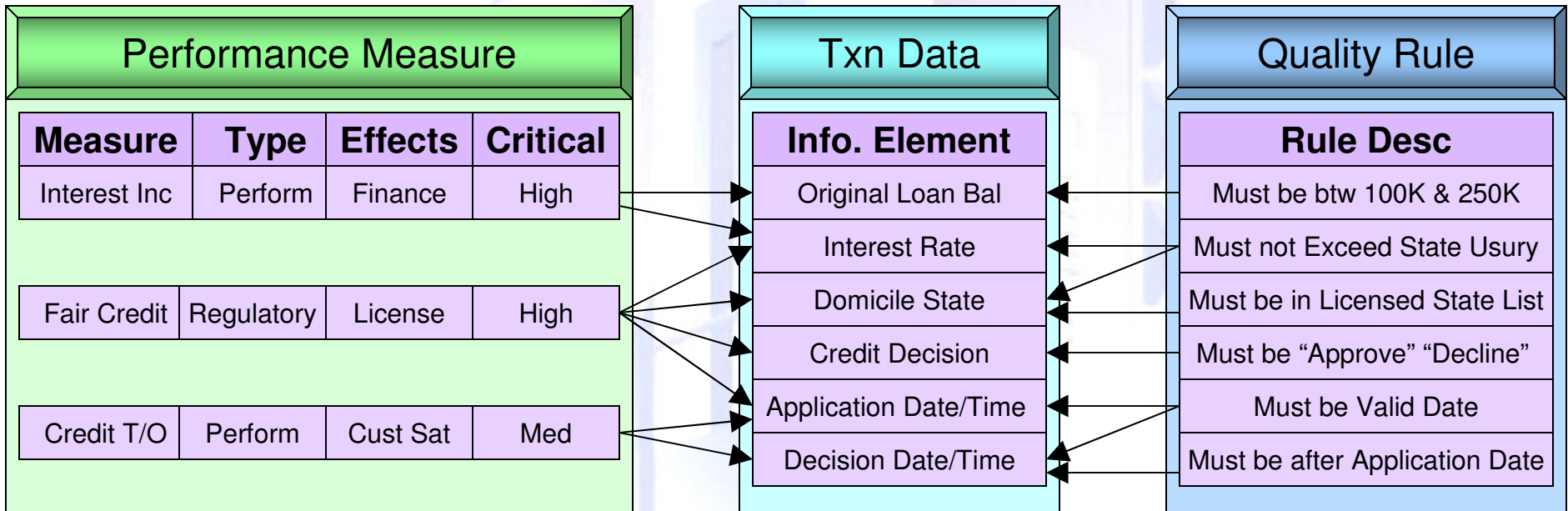
Corporate Data Governance Pyramid



What Data should be Addressed? Where do we start?

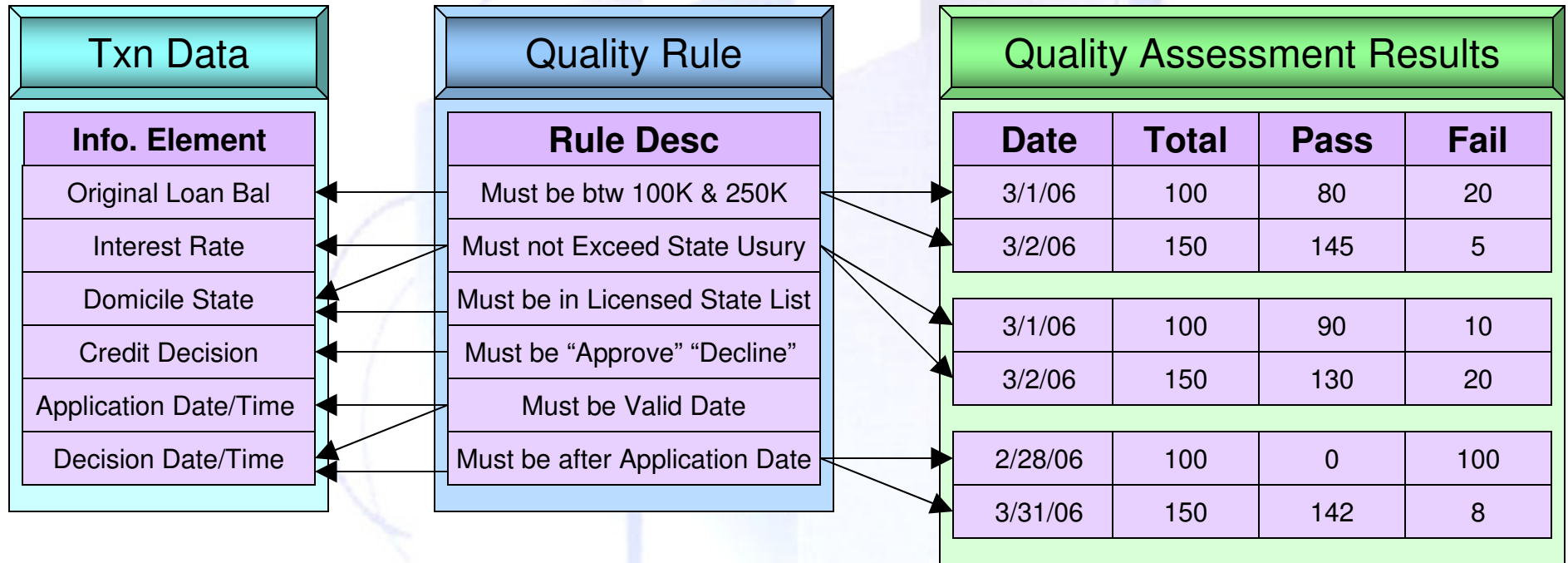
- Develop Performance Risk Model
 - Map Performance Measures to Quality Measures
 - Map Regulatory Compliance Measures to Quality Measures
 - Map Link = Business Transaction Data in Common
- Prioritize the Performance & Regulatory Compliance Measures
 - What could put you out of business?
 - What could put you in jail?
 - What could chase your customers away?
- Commission a Data Assessment Team

Mapping the Risk Model



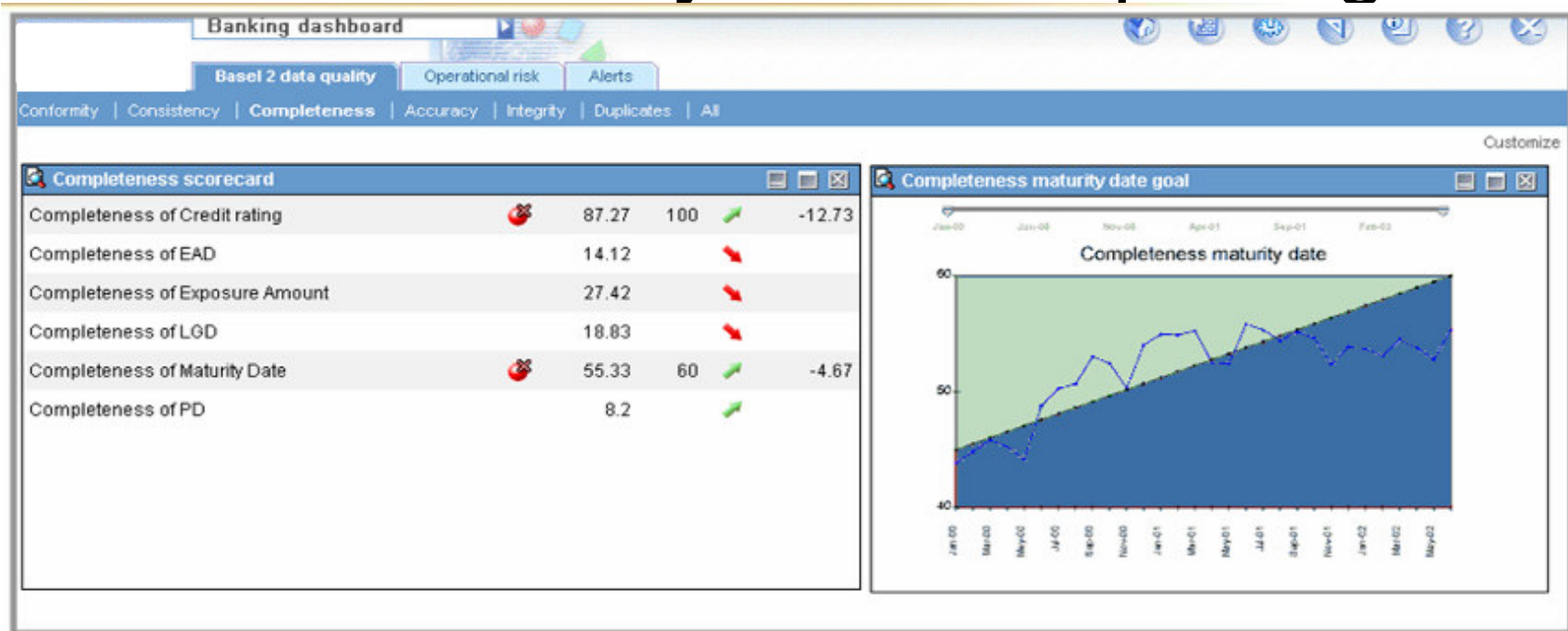
- Corporate Performance Measures, Regulatory Compliance Measures & Data Quality Rules are linked via the business transaction Data they share in common

Monitoring Quality Trends



- Capturing Periodic Assessments of Quality Rule compliance is key to identify improvement/erosion trends
- Trending is key to establishing an effective monitoring and alerting procedure

Data Quality Trend Reporting



Banking dashboard

Basel 2 data quality | Operational risk | **Alerts**

Customize

Do Action... Show: Default View

Subject	Date
<input type="checkbox"/> Alert Basel 2 data quality manager Email sent to Basel 2 data quality manager warning of breach. Integrity of EAD dropped beneath 95%	08/08/2004
<input type="checkbox"/> Alert Basel 2 data quality manager Email sent to Basel 2 data quality manager warning of breach. Completeness of EAD dropped beneath 80%	08/08/2004

How do we determine Data Quality?

- Must understand the total life-cycle of the Data Asset.
- Need a functional understanding of Data asset – how does it serve the organization’s business objective?
 - How is the Data created? Who is responsible for the creation?
 - What is the source of the Data? Who is the source of the data?
 - How is it used? – Who uses it?
- Need a systems understanding of the Data asset
 - What does the Data *actually* contain?
 - When does the Data get interrogated? What is done with the interrogation results?
 - What systems enforce edits? What is done with the edit results?
 - Where else does the data go? Extracted? Migrated? Converted? Integrated? Transformed? Archived? Purged?

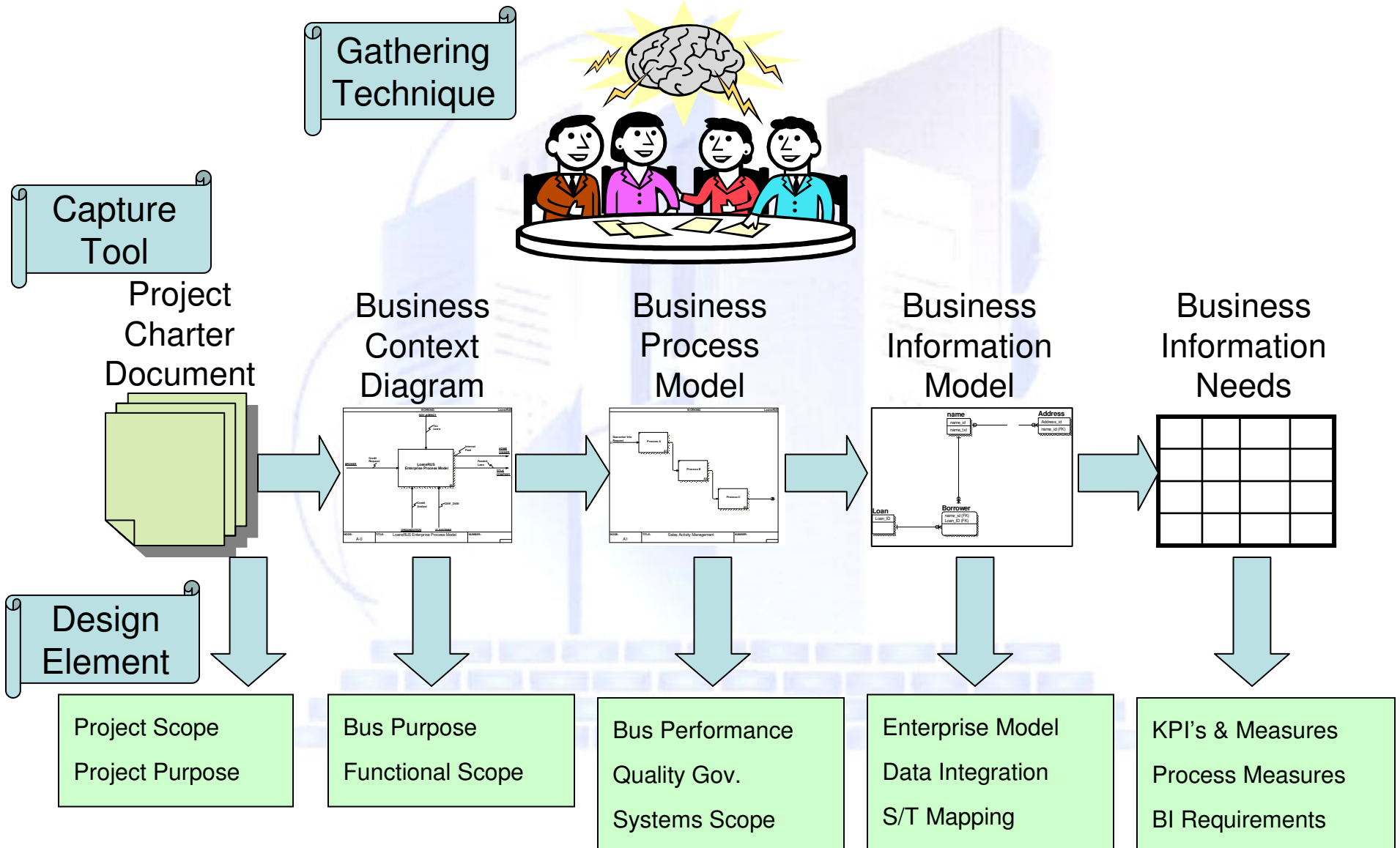


Modeling the Enterprise Business Processes

The Premise for Process

- Goal is to achieve Corporate Objectives
- Corporate Objectives are SMART
 - **S**pecific, **M**easurable, **A**chievable, **R**elevant, **T**ime-Based
- Key Performance Indicators (KPI's) are lag-time/outcome measures.
 - Have objectives been achieved?
- Process Measures & Activity Measures are lead-time measures.
 - Predictive indicators for KPI outcome measures
- Regulatory compliance protects the enterprise from business risks.
- Key Quality/Compliance Measures ensure accurate reporting of performance & regulatory compliance.
- Business processes produce the information from which measures are derived and regulatory compliance is assessed.
- Enterprise-wide governance enforces implementation of behaviors & policies to ensure production of quality business information.
- Business Process Owners drive information quality compliance by defining quality control rules & implementing quality assurance practices.
- IT enables data quality compliance via institutionalization of rules & practices within information management & information delivery systems.

Business Modeling via “Facili-Modeling”



What is a Business Process Model?

- The Graphical Representation of the enterprise's business execution life-cycle.
 - Defines the key business functions, processes and activities that take place day-to-day
 - Describes the interaction of those processes in the form of the information that is used by and shared among those functions, processes and activities.
 - Describes the association between those process and their enabling mechanisms (automation systems and organizations)
- Represents “What” the Business Does, NOT “how” it does it
 - Is Absent of Organizational Structures
 - Is Absent the constraints imposed by capabilities of Automation Systems

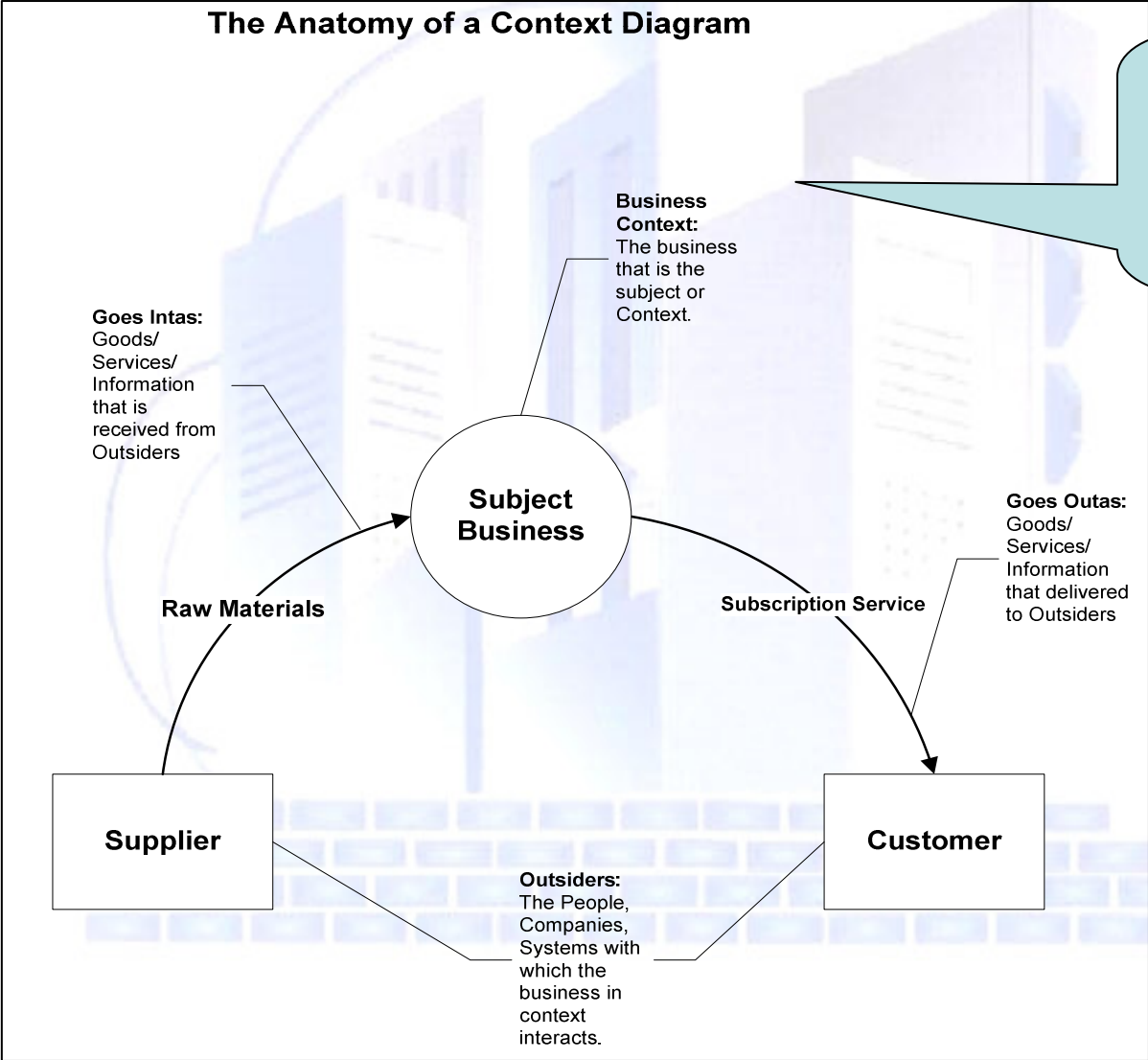
Process Model Levels?

- Context Diagram
 - Provides a means to scope the business modeling effort in context of the scope of the project for which requirements are needed.
- Process Flow Diagram – Functional Level
 - Provides an “at a glance” view of the overall enterprise functional life-cycle.
- Process Flow Diagram – Process/Activity Level
 - Provides a more detailed view of the key business processes or activities that support a business function.
 - Usually 3-6 levels of decomposition is sufficient for Data Warehousing & Business Intelligence projects
 - Usually 7+ levels of decomposition is necessary for operational support system and operational information integration projects
- Swim Lane Diagram – Task/Execution Level
 - Provides a participant point of view of the processes and the interactions between participant pools and lanes
 - Can be used to drive out detailed operational system specifications and business intelligence cause and effect analysis.

Process Model Methods & Notation

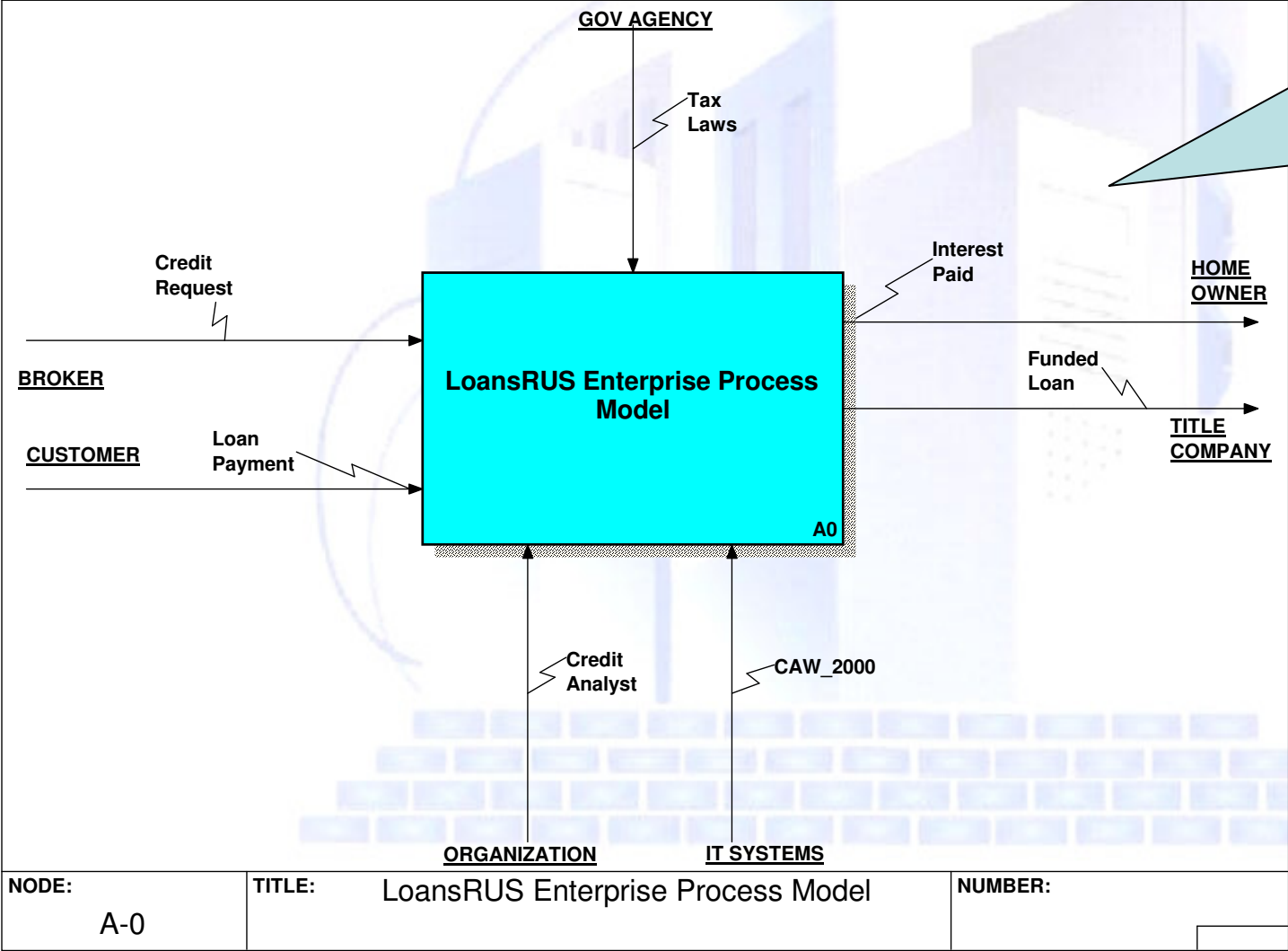
- **Integrated Definition for Functional Modeling (IDEF0)**
 - A method designed to model the decisions, actions, and activities of an organization or system and to promote good communication between the analyst and the customer.
 - Useful in establishing the scope of an analysis, especially for a functional analysis, thus are often created as one of the first tasks of a system development effort.
 - Derived from the Structured Analysis and Design Technique (SADT) and commissioned by the United States Air Force.
 - In December 1993, the Computer Systems Laboratory of the National Institute of Standards and Technology (NIST) released IDEFØ as a standard for Function Modeling in FIPS Publication 183.
- **Business Process Modeling Notation (BPMN)**
 - A method designed to provide a notation that standardizes communications understandable by business users, business analysts and technical developers.
 - Useful means to provide a common notation to visualize XML languages designed for the execution of business processes, such as BPEL4WS (Business Process Execution Language for Web Services).
 - In June 2005, the Business Process Management Initiative (BPMI.org) and the Object Management Group™ (OMG™) announced the merger of their Business Process Management (BPM) activities to form the Business Modeling & Integration (BMI) Domain Task Force (DTF).

IDEF0 Context Diagram Components:



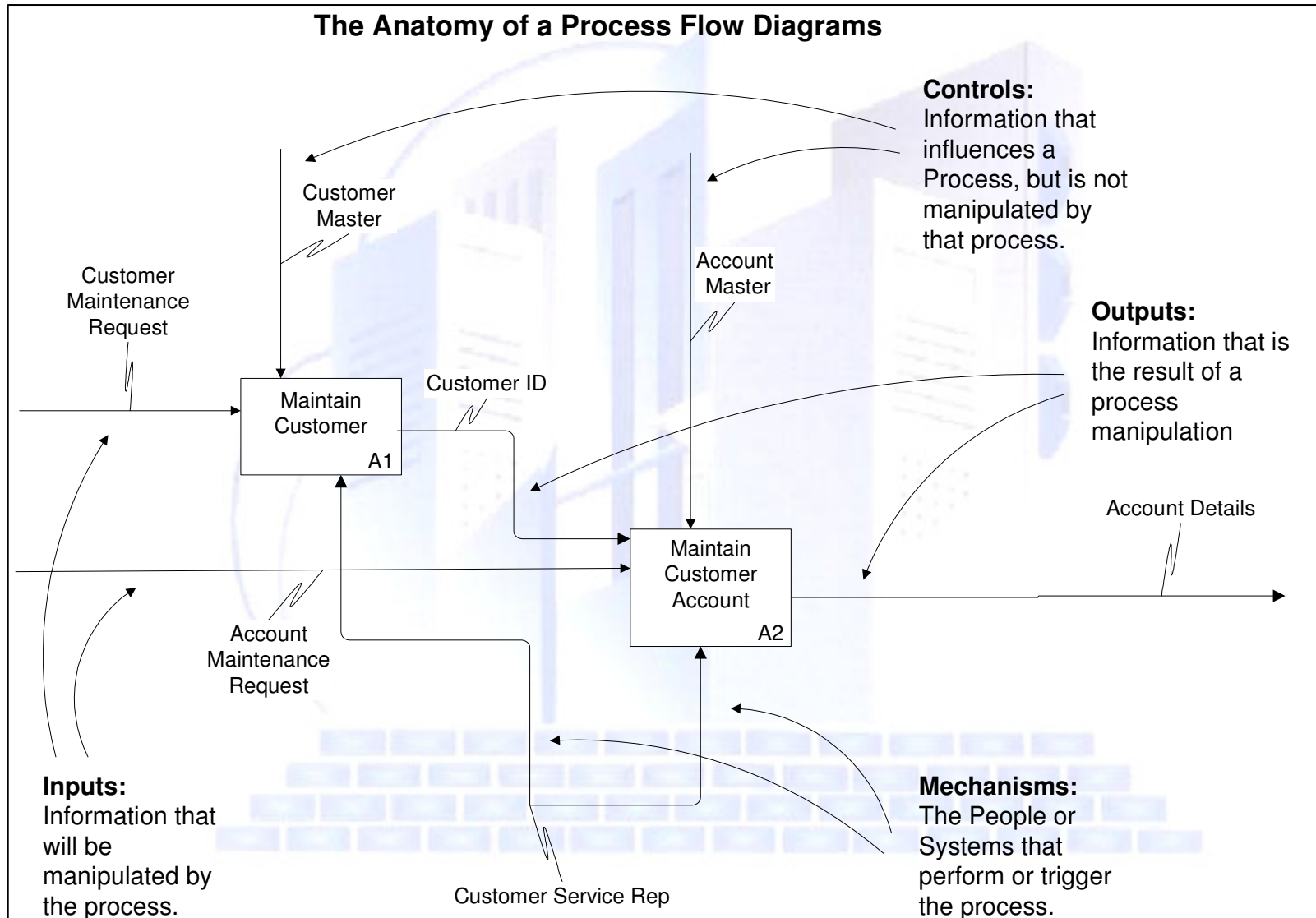
Use to scope the modeling effort in context of the project at hand.

Example IDEF0 Context Diagram



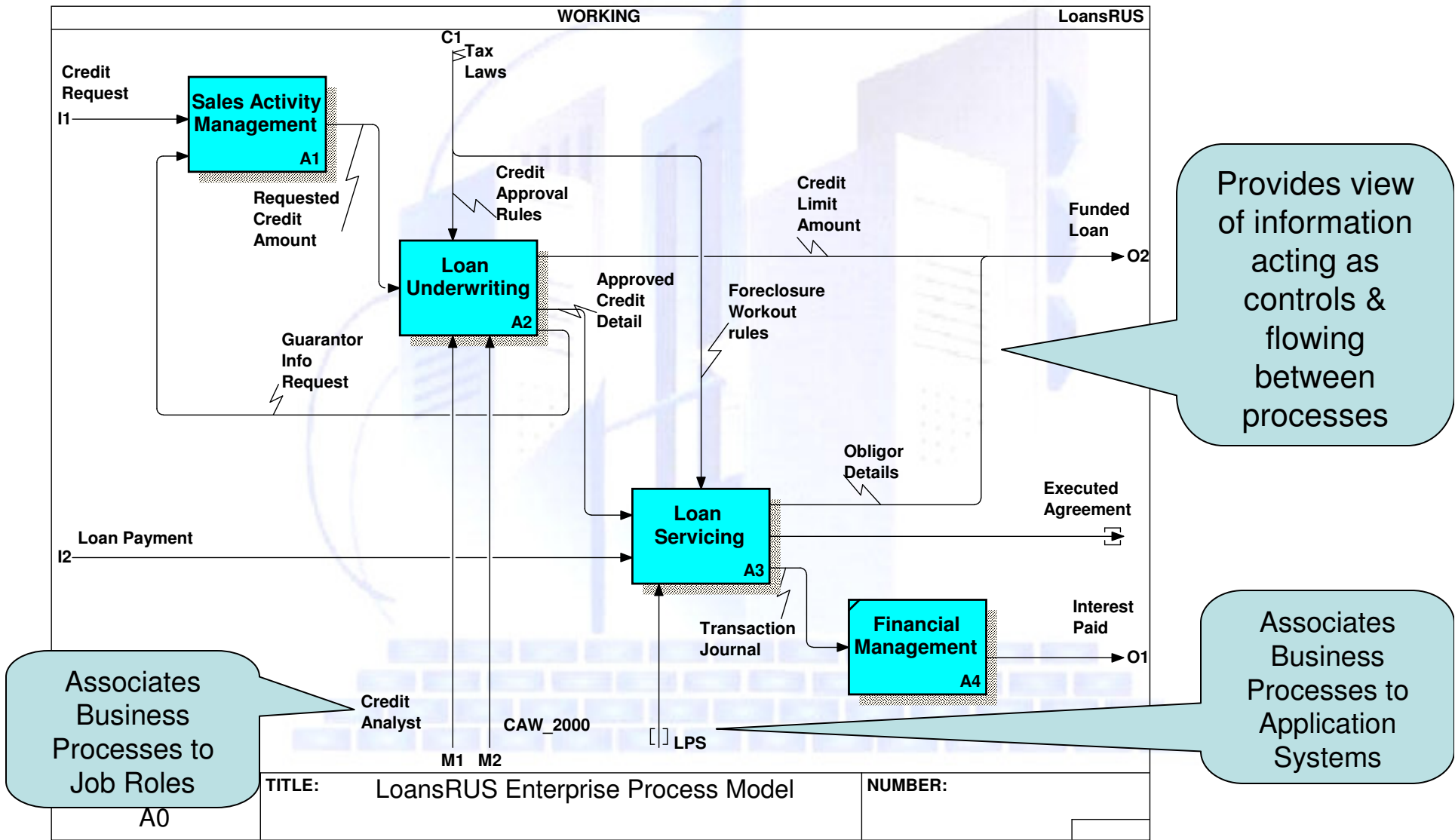
Identifies the high-level information inputs & outputs.

IDEF0 Process Flow Diagram Components:

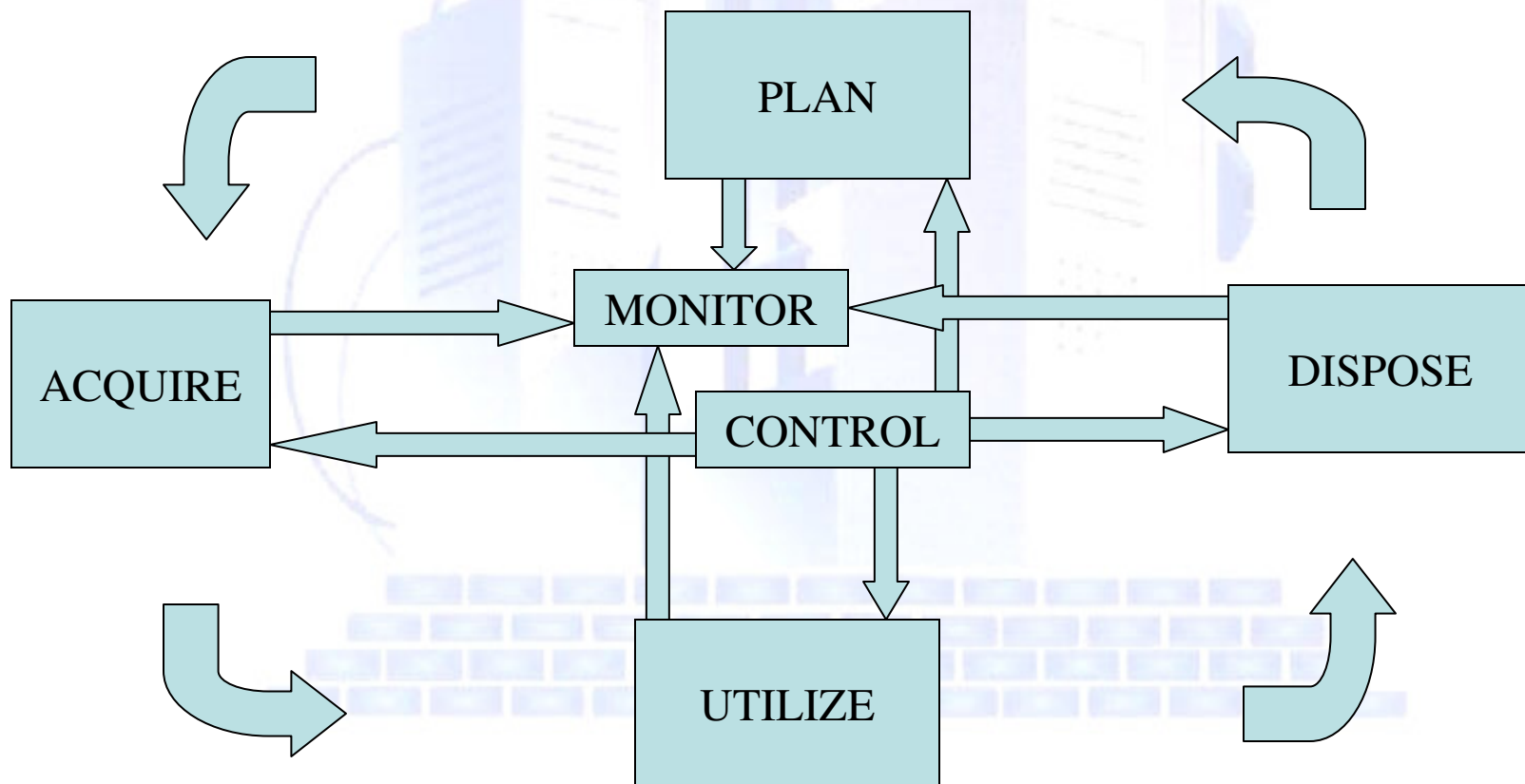


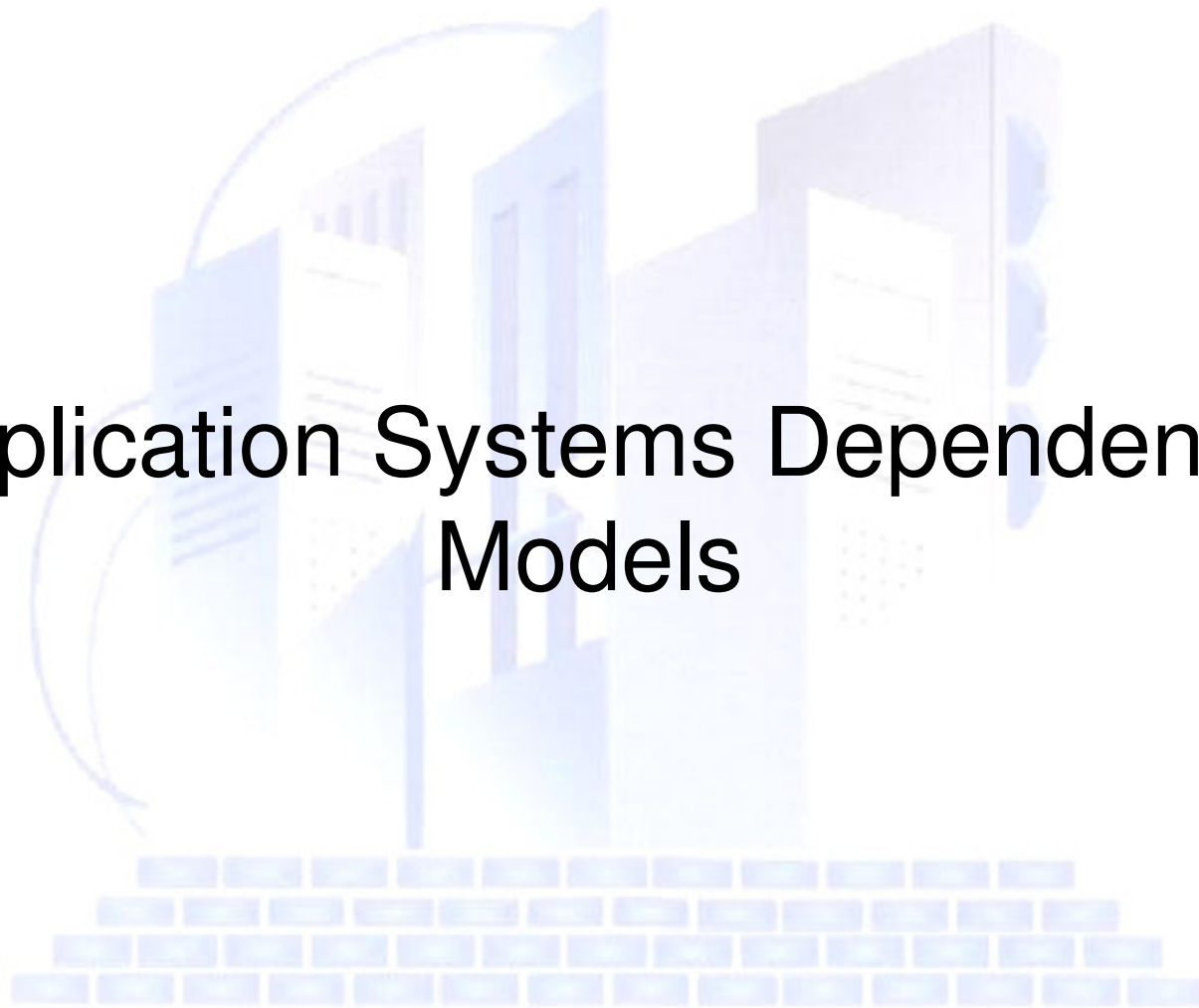
Business Process Modeling Practical Approach: **Overview of Business Process Modeling Concepts**

Example IDEF0 Functional Level Process Flow Diagram



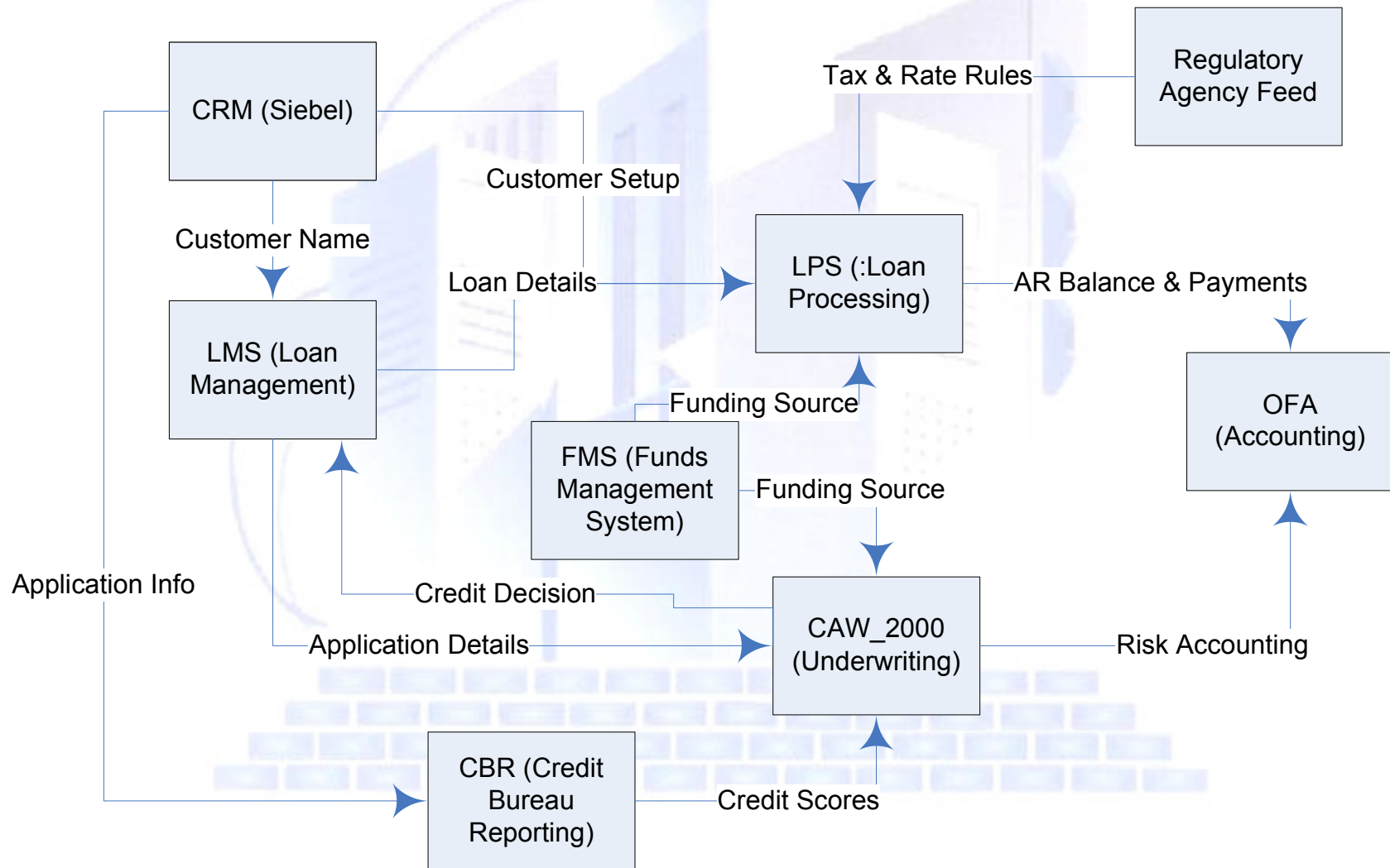
Resource Management Cycle





Application Systems Dependency Models

Application Dependency Model



Application Heat Maps

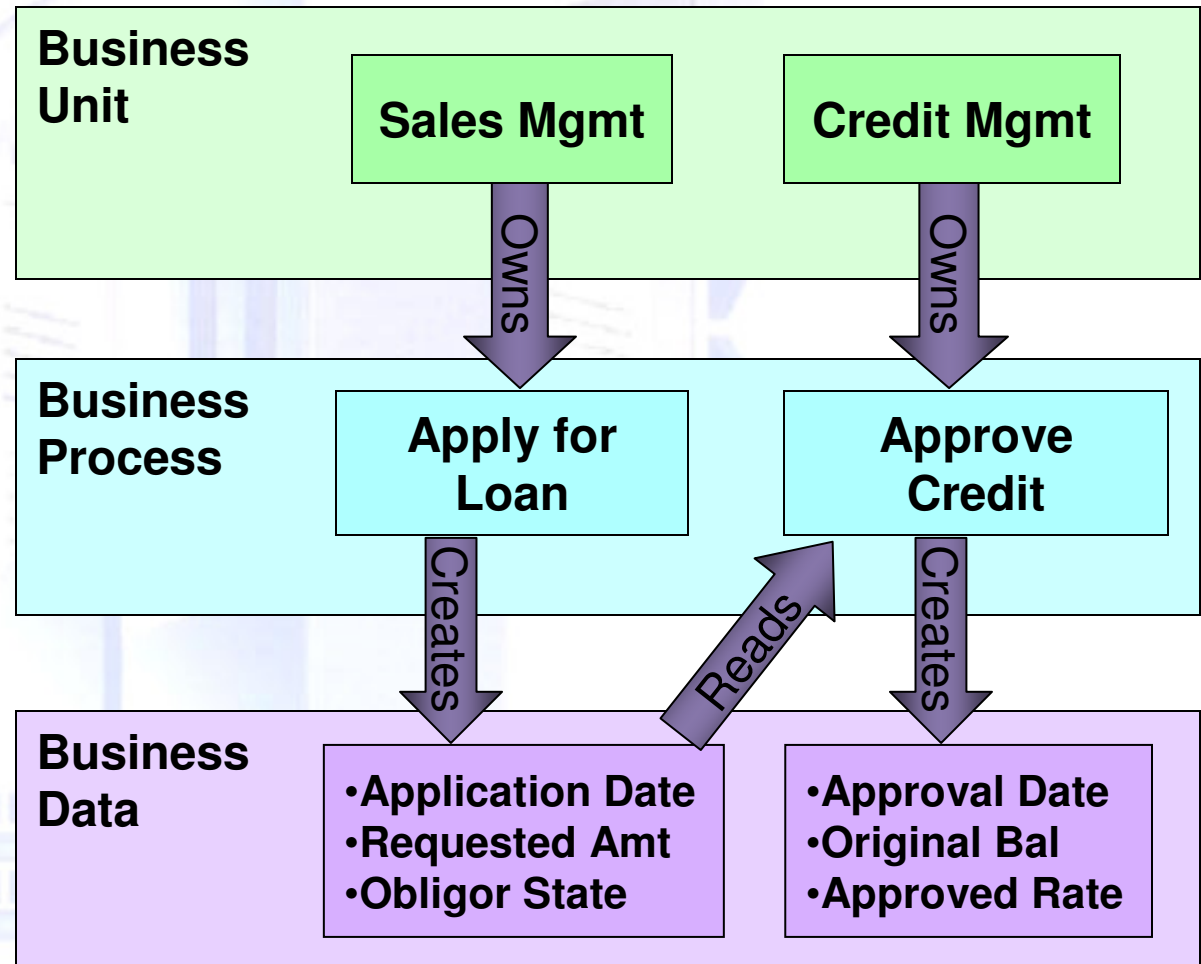
Appl Process	CRM	LMS	CBR	FMS	CAW_2000	LPS	OFA
Sales Activity Mgmt	Cons Sales	Comml Sales					
Loan U-Writing			Cons Credit		Credit (All)		
Loan Service	Cons Ops			Cons Finance		Ops (All)	Ops (All)
Fin Mgmt						Cons Ops	Corp Ops



Using Process Models to Drive Information Quality Solutions

Determining Data Ownership

- Data Stewardship is a function of Process Ownership:
 - Process Produces Data
 - Process Consumes Data
- Who should be involved in the assessment results review is a function of:
 - Process Ownership
 - Process Critical Dependency

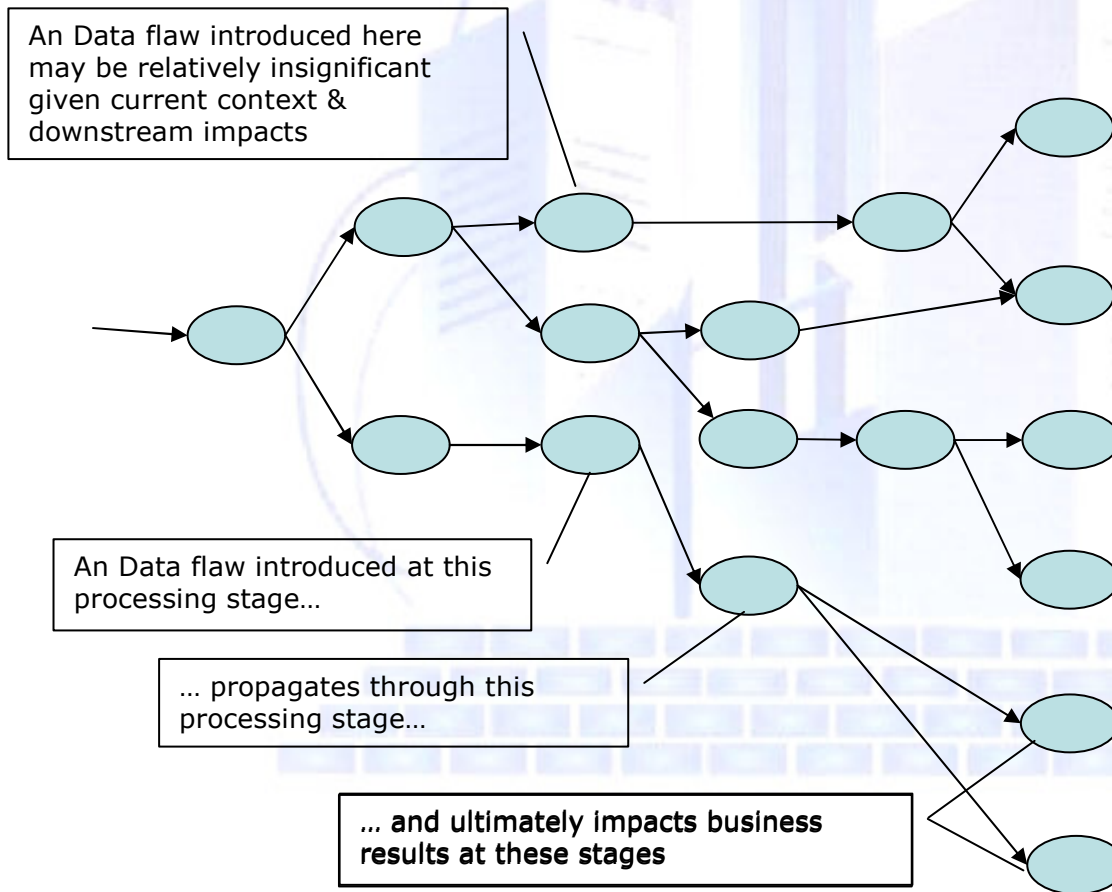


Determining what needs to be done?

- Determine root cause of Quality Problem
 - Need for Training
 - Changes in Processes & Policies
 - Changes in Quality Rules
 - Changes in Systems
- Develop Implementation Plan
 - Identify People Resources
 - Identify System Resources
 - Develop Timelines
 - Develop Cost/Benefit Statement & Return on Investment
- Update the Program
 - Re-Prioritize the initiatives
 - Establish Execution Governance

DQ Cause and Effect Analysis

Using the Process Flow Diagrams

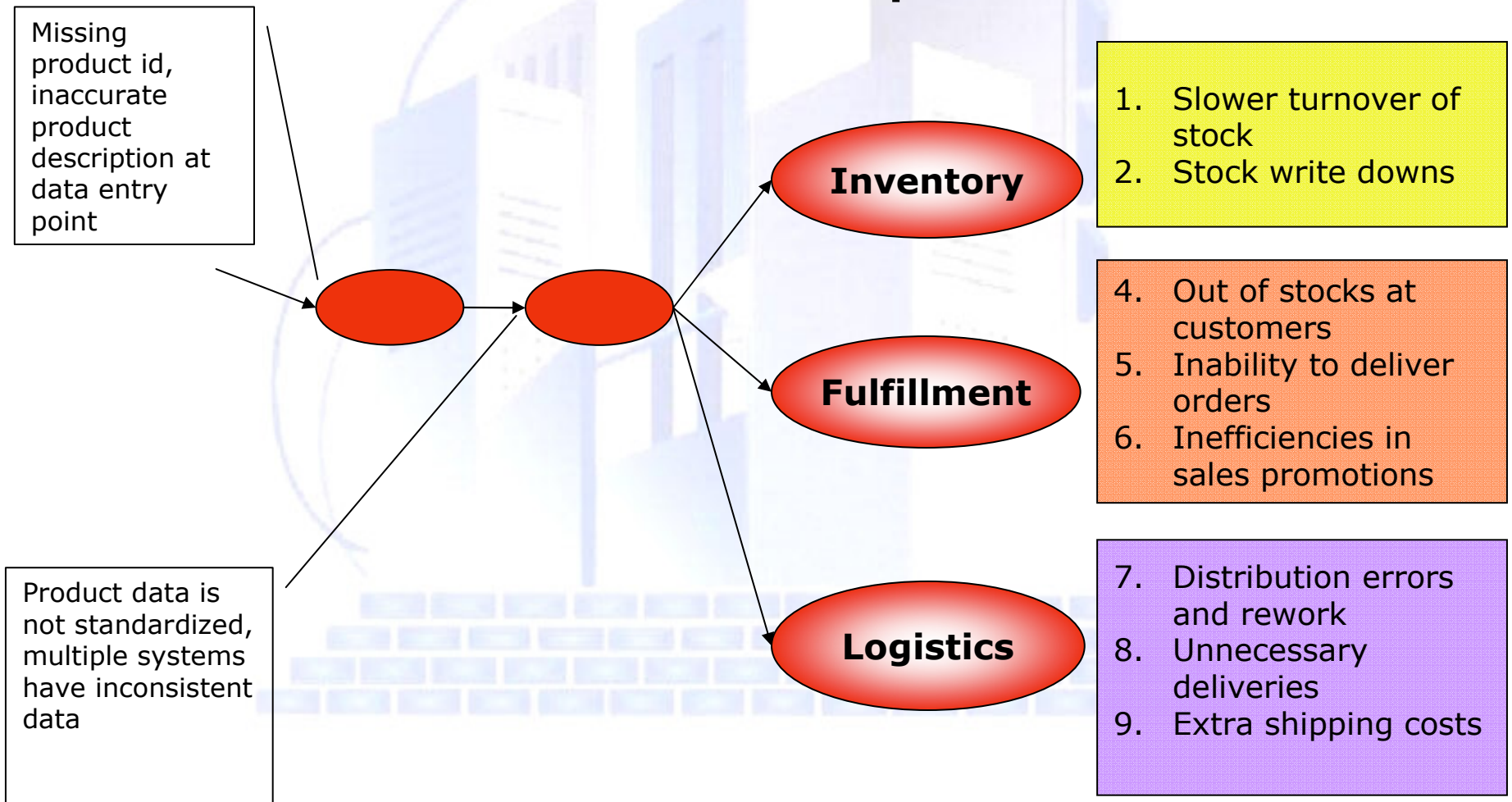


Determining the value of fixing the process where the flaw is introduced must be correlated to the cost of the eventual business impacts.

But you have to have an explicit understanding of the business model to find out where the flaw is introduced!

Data Flaws Incur Business Impacts

– An Example



Quantification Variables For Data Failures

Problem	Issue	Business Impact	Quantifier	Yearly Incurred Impact
Missing product id, inaccurate product description at data entry point	Inability to clearly identify known products leads to inaccurate forecasts	Slower turnover of stock	Increased cost	\$30,000.00
		Stock write downs	Increased cost	\$20,000.00
		Out of stocks at customers	Lost revenue	
		Inability to deliver orders	Lost revenue	\$250,000.00
		Inefficiencies in sales promotions	Speed to market (and lost revenue)	\$20,000.00
		Distribution errors and rework	Staff time	\$24,000.00
		Shipping costs	Increased shipping costs	\$78,000.00
		Unnecessary deliveries	Staff time	\$23,000.00

Researching Costs and Impacts

- Historical data associated with work/process flows during critical events can provide cost/impact details
- Consult:
 - Issues tracking system event logs
 - Management reports on staff allocation for problem resolution
 - Interview key personnel
 - Review external impacts (e.g., stock price, management spin)
- Identify key quantifiers for business impact

Assigning Quantifiers

- Evaluate actual costs (or revenues) based on quantifying variables
- Examples:
 - Count the number of extra hours of staff time are incurred when flaws require increased manual intervention
 - Costs duplicated when initial attempts fail (e.g., bad shipping address)
 - Sum up increased shipping, logistics, inventory costs
 - Assign probabilities to risk impacts
- Collect incurred costs as related to underlying problems (this will come in handy when prioritizing solutions)

Investments to Remediate

- Assess investments to develop and maintain a solution:
 - Tools
 - System design, development, implementation
 - Hardware
 - Maintenance
 - Staffing

Assessing Solution Investment - Example

Problem	Issue	Solution	Software	Staffing
Missing product id, inaccurate product description at data entry point	Inability to clearly identify known products leads to inaccurate forecasts	Parsing and Standardization , Record, monitoring linkage tools for cleansing	\$150,000.00 for license 15% annual maintenance	.75 FTE for 1 year .15 FTE for annual maintenance

Developing Business Case

- Bring the Business Benefits & Implementation Investments together
- Secure endorsement of Business Benefits by Business Sponsor & IT Sponsor
- Get Finance involved to develop the Financials
 - Validate numbers
 - Assign benefit method (ROI, Payback Period)
- Get Program Office involved to recommend/prioritize initiative to executive management

Summary Points

- The TIQM ® Methodology has at it's core a critical dependency on understanding process.
 - The TIQM® process
 - The Business Processes that Produce and Consume Information
- Information is the empirical means to measure performance and assess quality, BUT Information is a by-product of Process.
- Modeling the Business Processes provides a consistent, enterprise-wide approach to documenting complex Information Quality rules
- Business Process Models provide valuable insight during the analysis of the cause & effect due to poor Information Quality on the business processes AND Application Systems.



Thank You!