How to build systems that *work*, *change*, and *last*

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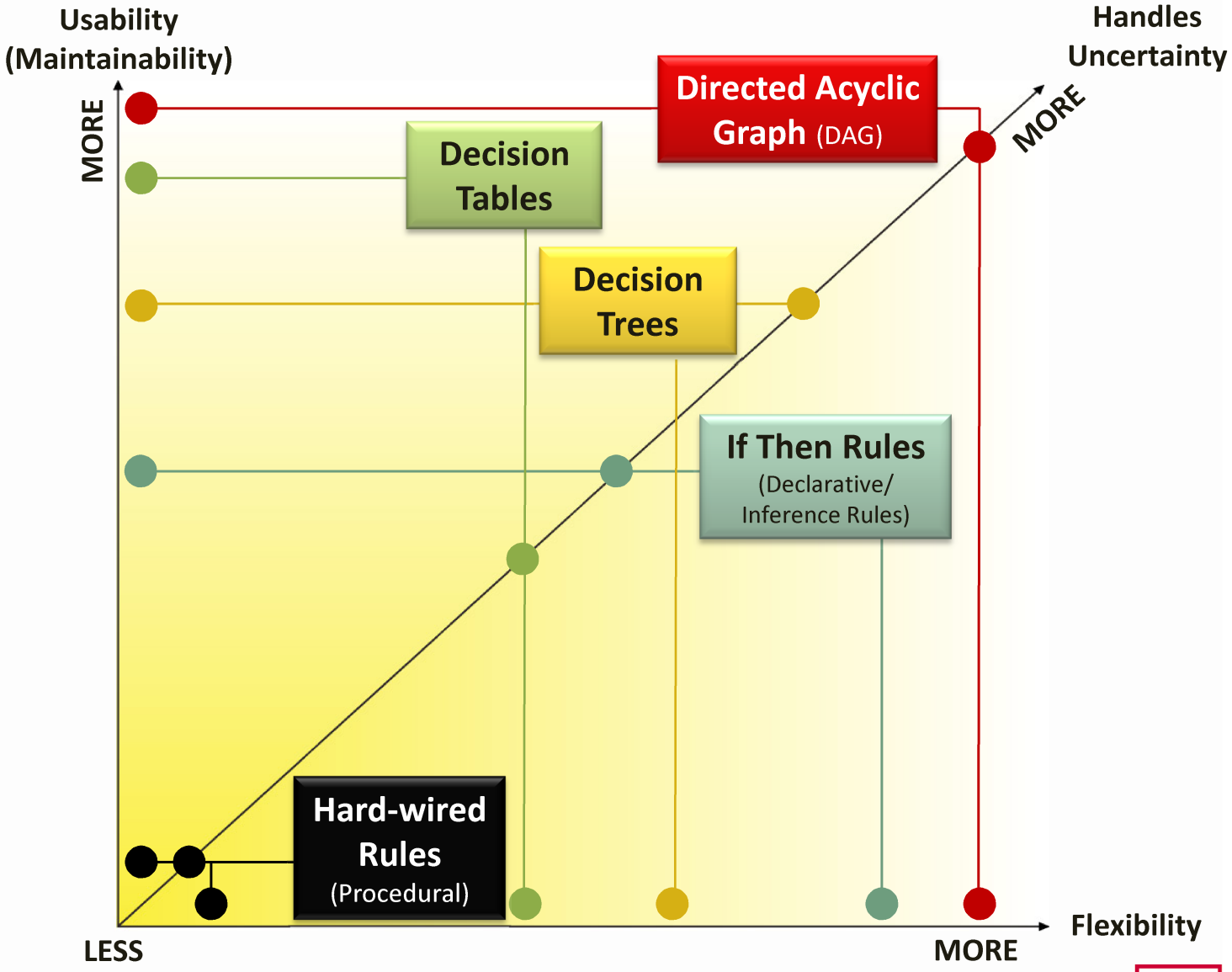
Use declarative rule-based languages
Leverage forward and backward chaining

http://www.cybersalt.org/cl_images/1zzzzxa/signs/signhospitalski.jpg

Don’t hard-code rules



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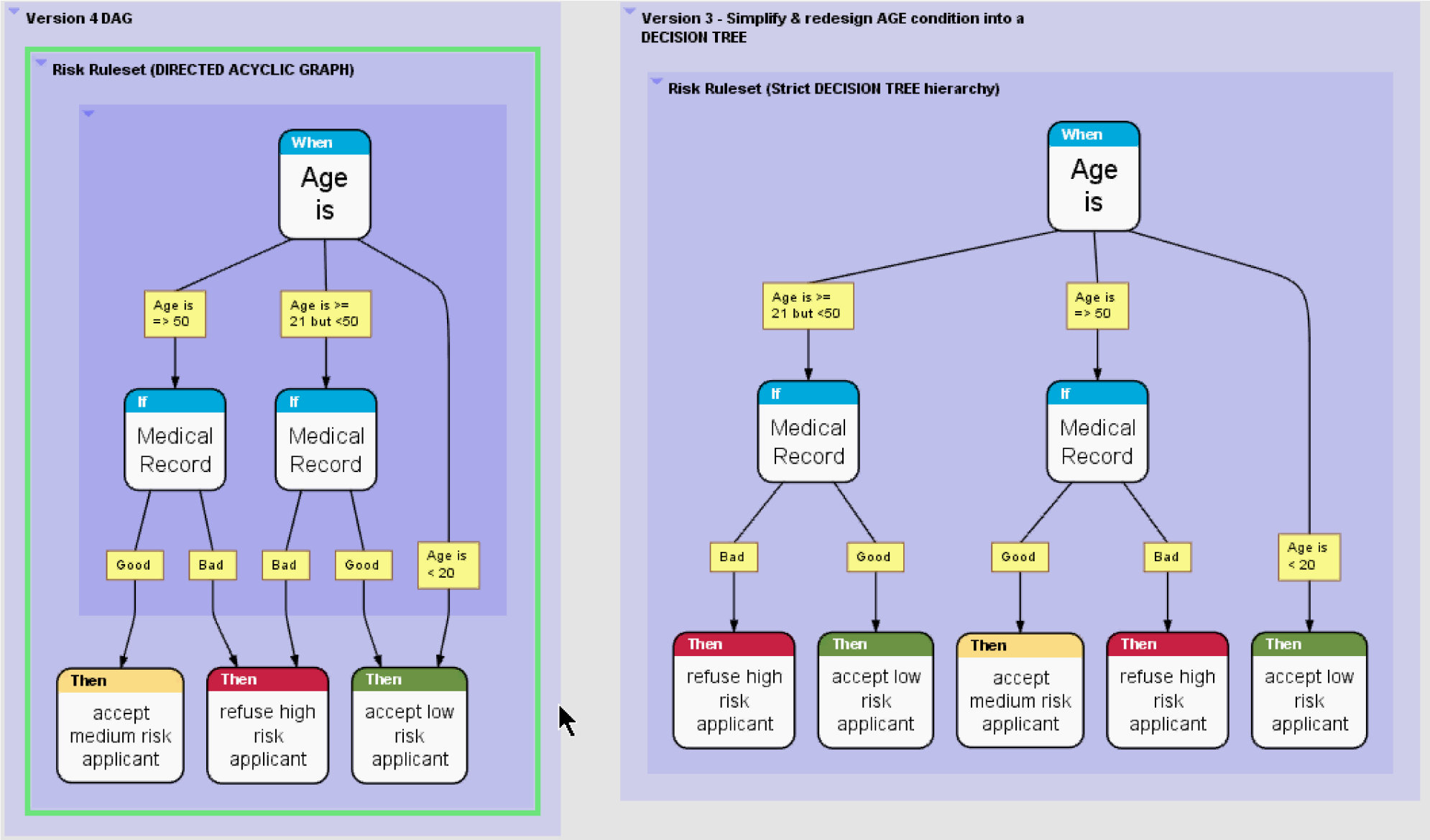
DAG and Decision Tree



To see a Flash video of the "Decision Tree vs. DAG RuleMap", visit www.RuleMap.com

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Use rule modeling and simulation tools

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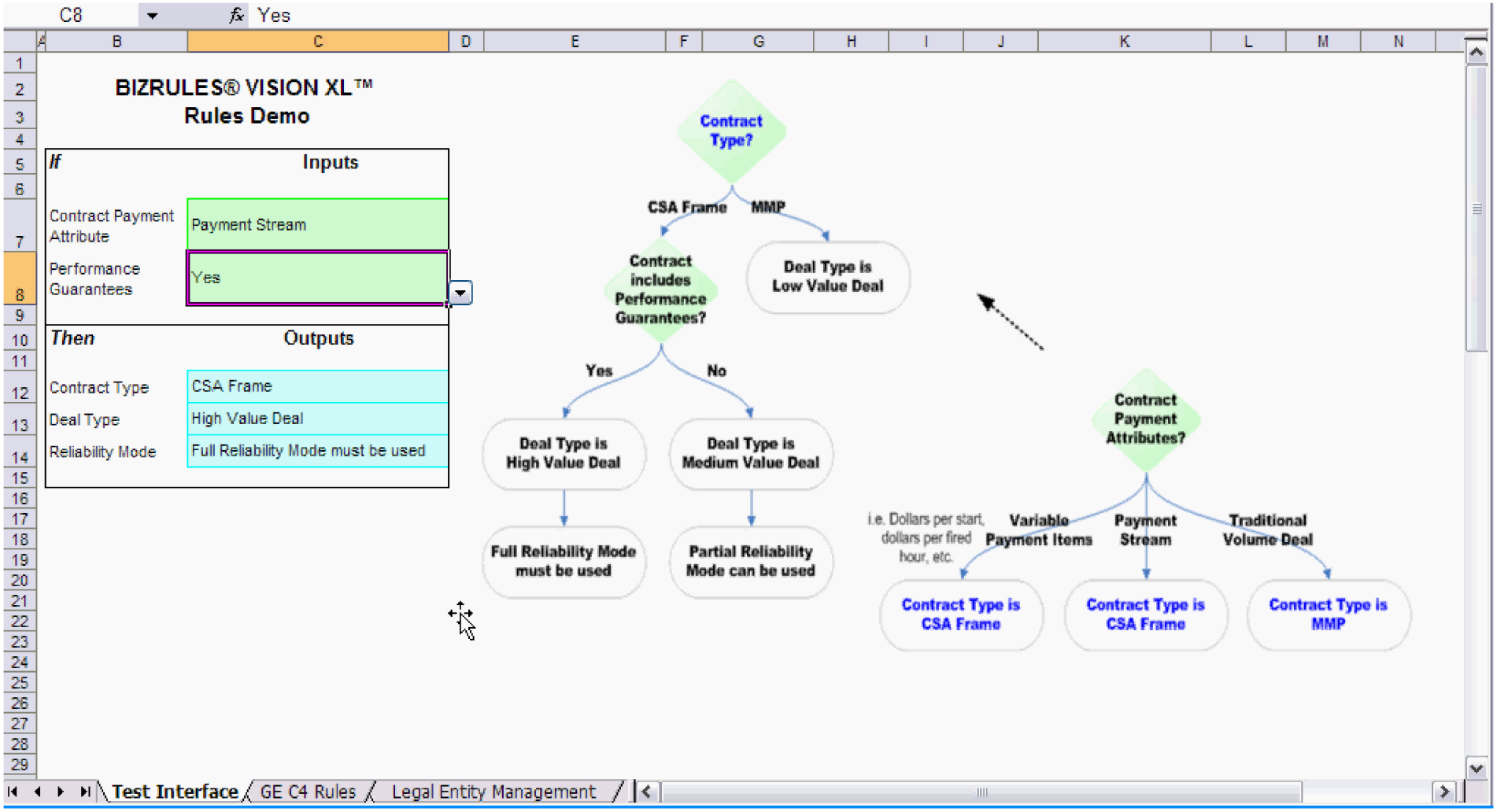
Rule modeling



To see a Flash video of the "Business Rules in Excel demo", visit www.RuleMap.com

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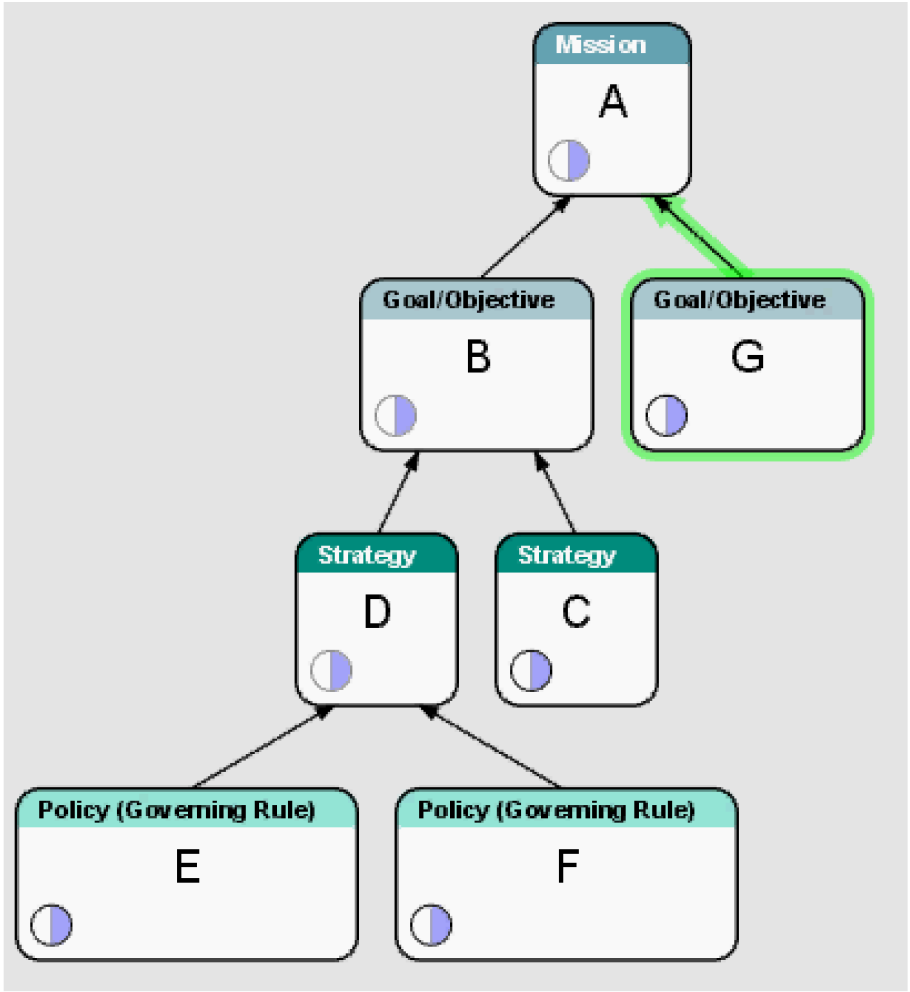
Rule simulation



To see a Flash video of the "Simple Strategy Rules RuleMap", visit www.RuleMap.com

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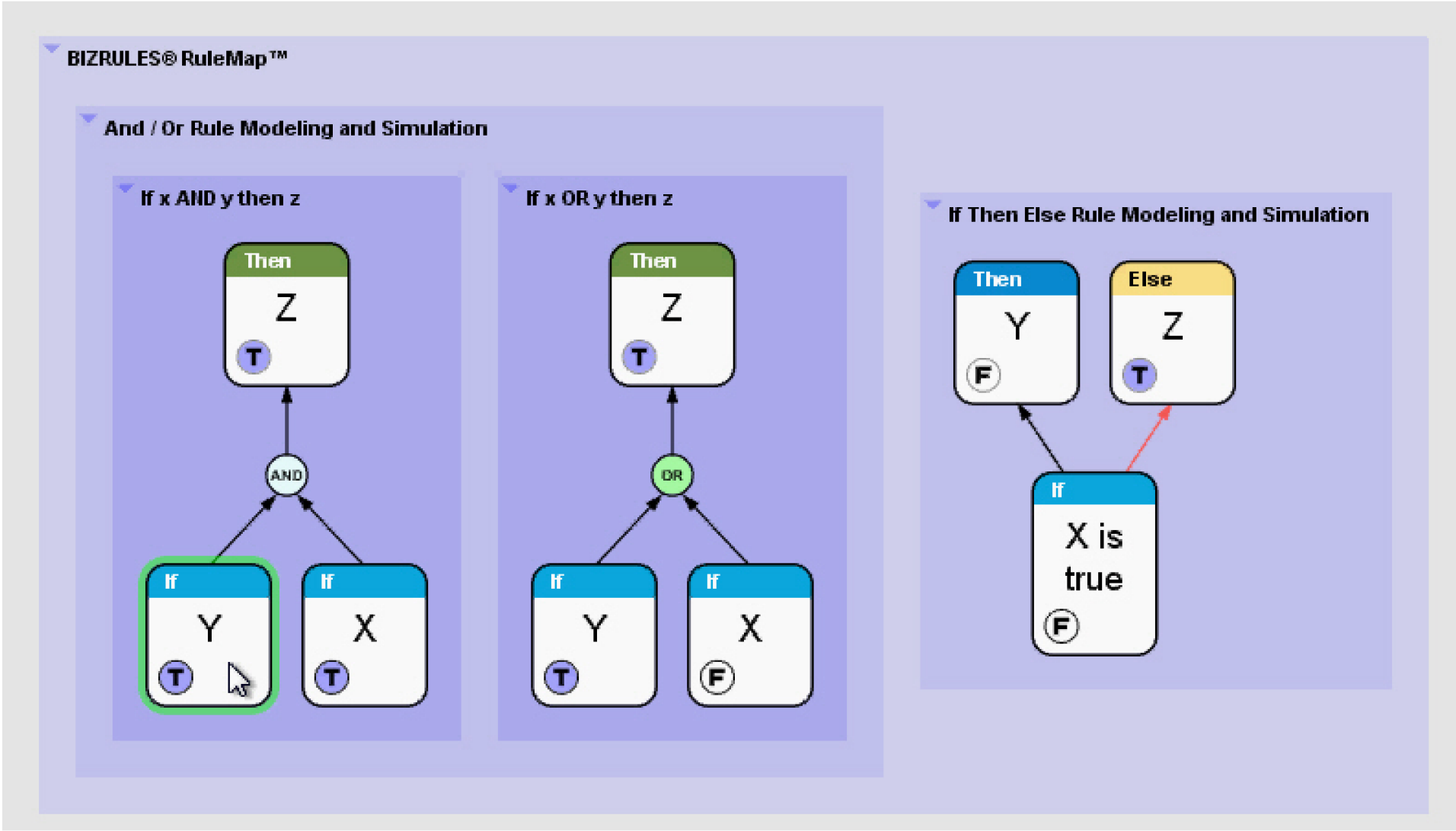
Rule simulation



To see a Flash video of the "Rule Modeling & Simulation Demo", visit www.RuleMap.com

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Design in parts and sub-parts

Product	Building	Airplane	**Enterprise Information System**	**DBMS**	**Rulebase Management System/BRE**
Part	Floor Structure Roof	Airframe Tail Wing	**Application**	**Database**	**Rulebase**
Sub-part	Support column Support beam Truss Wall	Cabin / Cockpit Rudder Flap Landing Gear	**Program** **GUI**	**Table**	**Rule Sets**
Sub-part	Floor / Ceiling Door Window Bathroom	Instrument Panel Window / Door Seat Wheel	**Component** **Window**	**Field / Column**	**Business Rule / Business Logic**
Sub-part	Doorknob / Hinge Roof tile Carpet Wiring / Outlet	Dials / Switches Glass / Shade Seat Belt / Floating Cushion Tire	**Object** **Button / Menu / Toolbar / Field**	**Type**	**Rule Condition/ Action (IF/THEN)**

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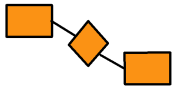
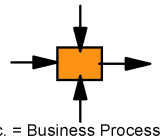
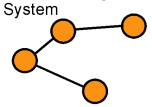
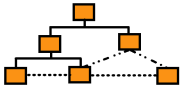
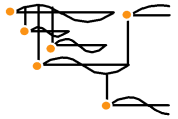
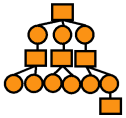
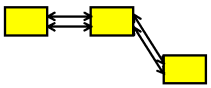
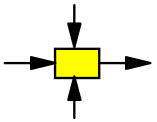
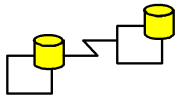
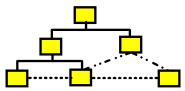
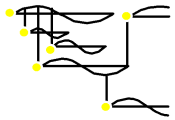
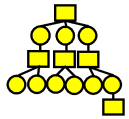
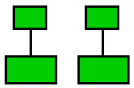
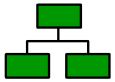
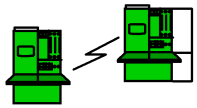
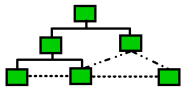
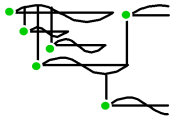
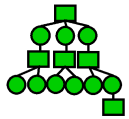
Use Enterprise Architecture… and do the engineering

	DATA *What*	FUNCTION *How*	NETWORK *Where*	PEOPLE *Who*	TIME *When*	MOTIVATION *Why*	
SCOPE (CONTEXTUAL) *Planner*	List of Things Important to the Business ENTITY = Class of Business Thing	List of Processes the Business Performs Function = Class of Business Process	List of Locations in which the Business Operates Node = Major Business Location	List of Organizations Important to the Business People = Major Organizations	List of Events Significant to the Business Time = Major Business Event	List of Business Goals/Strat Ends/Means=Major Bus. Goal/ Critical Success Factor	SCOPE (CONTEXTUAL) *Planner*
ENTERPRISE MODEL (CONCEPTUAL) *Owner*	e.g. Semantic Model  Ent = Business Entity Reln = Business Relationship	e.g. Business Process Model  Proc. = Business Process I/O = Business Resources	e.g. Business Logistics System  Node = Business Location Link = Business Linkage	e.g. Work Flow Model  People = Organization Unit Work = Work Product	e.g. Master Schedule  Time = Business Event Cycle = Business Cycle	e.g. Business Plan  End = Business Objective Means = Business Strategy	ENTERPRISE MODEL (CONCEPTUAL) *Owner*
SYSTEM MODEL (LOGICAL) *Designer*	e.g. Logical Data Model  Ent = Data Entity Reln = Data Relationship	e.g. Application Architecture  Proc .= Application Function I/O = User Views	e.g. Distributed System Architecture  Node = I/S Function (Processor, Storage, etc) Link = Line Characteristics	e.g. Human Interface Architecture  People = Role Work = Deliverable	e.g. Processing Structure  Time = System Event Cycle = Processing Cycle	e.g., Business Rule Model  End = Structural Assertion Means =Action Assertion	SYSTEM MODEL (LOGICAL) *Designer*
TECHNOLOGY MODEL (PHYSICAL) *Builder*	e.g. Physical Data Model  Ent = Segment/Table/etc. Reln = Pointer/Key/etc.	e.g. System Design  Proc.= Computer Function I/O = Data Elements/Sets	e.g. Technology Architecture  Node = Hardware/System Software Link = Line Specifications	e.g. Presentation Architecture  People = User Work = Screen Format	e.g. Control Structure  Time = Execute Cycle = Component Cycle	e.g. Rule Design  End = Condition Means = Action	TECHNOLOGY MODEL (PHYSICAL) *Builder*
DETAILED REPRESEN-TATIONS (OUT-OF-CONTEXT) *Sub-Contractor*	e.g. Data Definition Ent = Field Reln = Address	e.g. Program Proc.= Language Stmt I/O = Control Block	e.g. Network Architecture Node = Addresses Link = Protocols	e.g. Security Architecture People = Identity Work = Job	e.g. Timing Definition Time = Interrupt Cycle = Machine Cycle	e.g. Rule Specification End = Sub-condition Means = Step	DETAILED REPRESEN-TATIONS (OUT-OF CONTEXT) *Sub-Contractor*
FUNCTIONING ENTERPRISE	e.g. DATA	e.g. FUNCTION	e.g. NETWORK	e.g. ORGANIZATION	e.g. SCHEDULE	e.g. STRATEGY	FUNCTIONING ENTERPRISE

Enterprise Architecture – A Framework™
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Design and draw the business rule models

Anyone can draw a model… the hard part is knowing what to draw

simplexity

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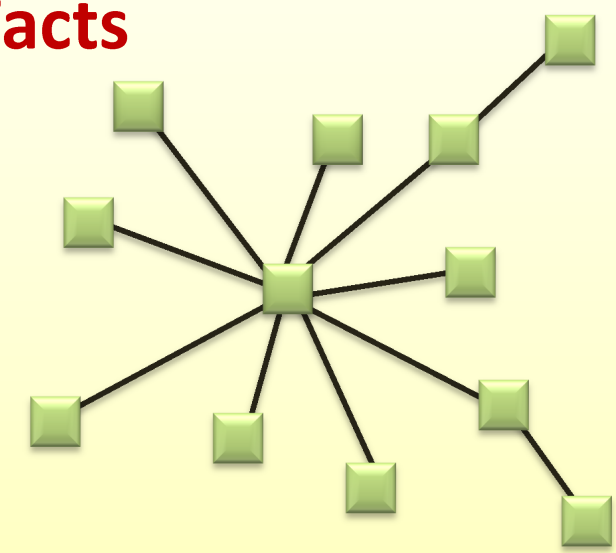
Business Rules Architecture

Data

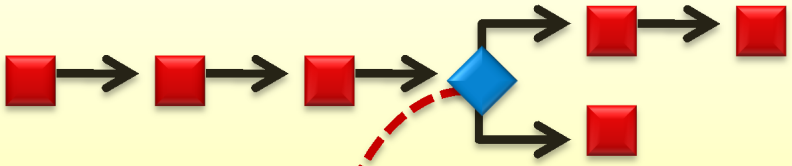
Rules

Terms

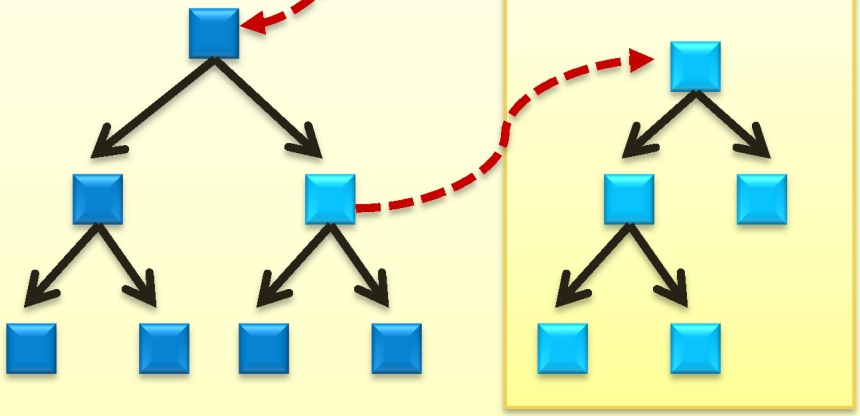
Facts



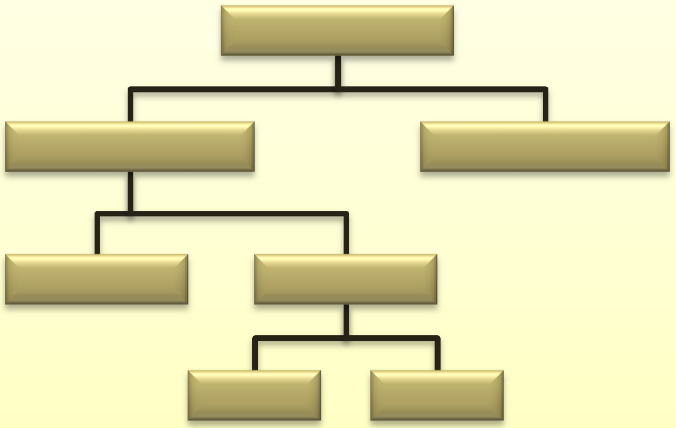
Process



Ruleset



Rulebase Hierarchy



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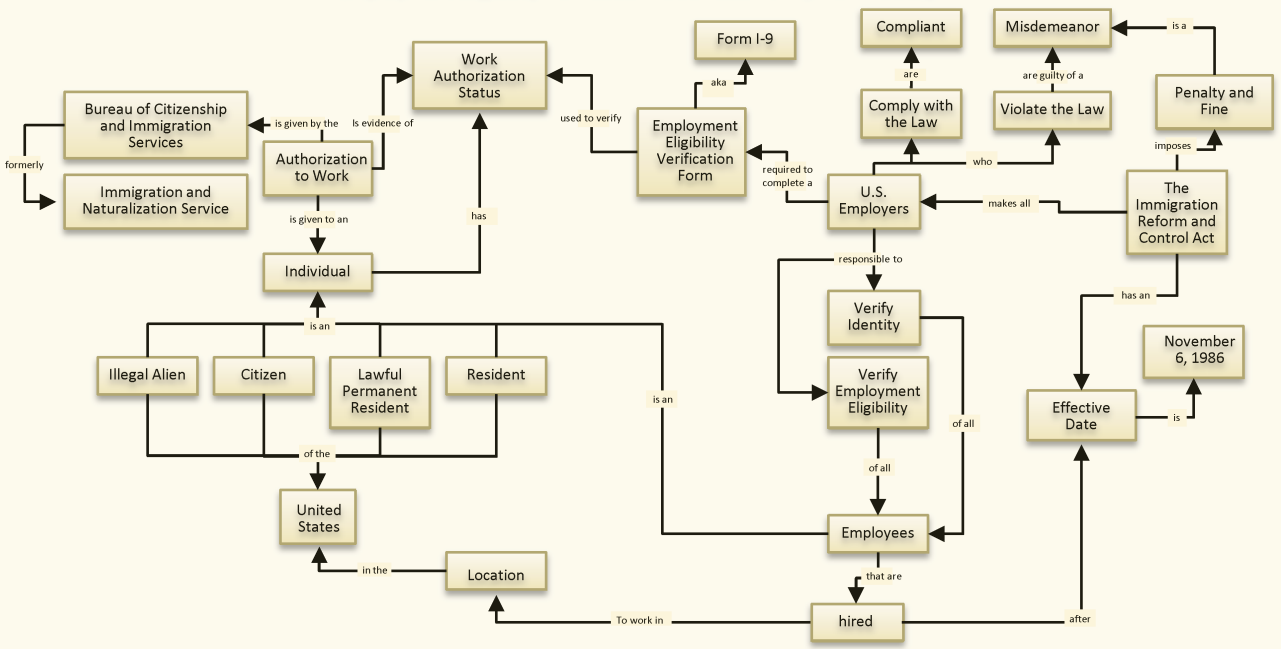
BIZRULES RULEBOOK EXAMPLE

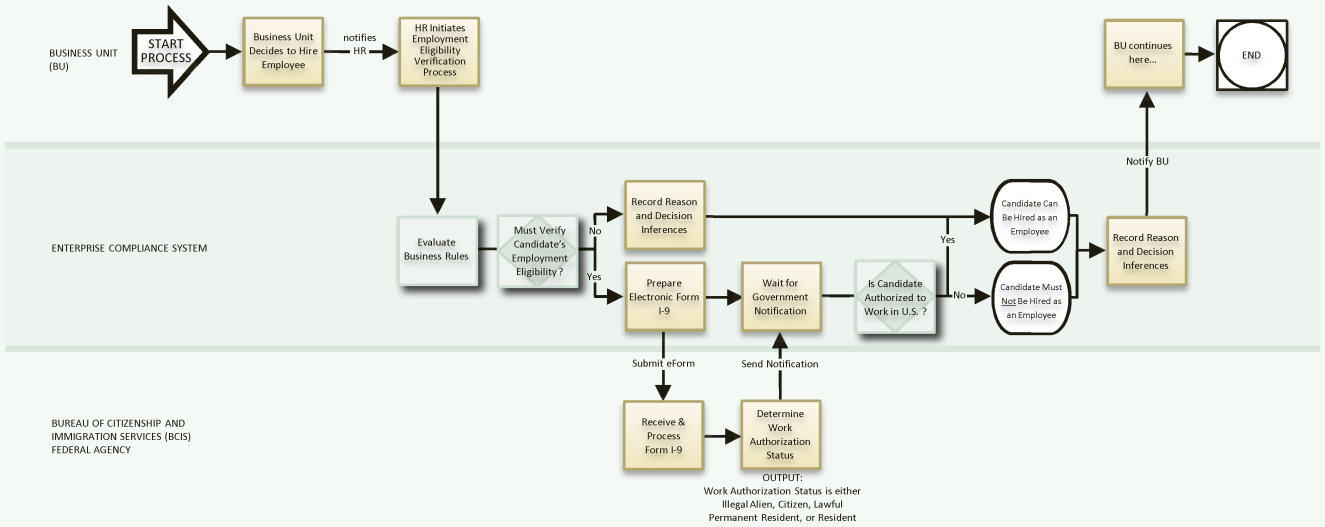
GLOBAL ENTITY MANAGEMENT – CONCEPTUAL FACT MODEL (BUSINESS MAP)
HR COMPLIANCE RULES

Source: This is from a BIZRULES presentation archived on the Web at http://bizrules.info/files/bizrules-brf2005orl.pdf.

Employment Eligibility Verification BUSINESS MAP (FACT MODEL)



DIGITIZED PROCESS (BUSINESS PROCESS MODEL)



TERMS

Authorization To Work
Illegal Alien
Individual
U.S. Citizen
Lawful Permanent Resident
Bureau of Citizenship and Immigration Services
U.S. Employers
Employing
Employment Eligibility
Identify
Employees
Hired to Work
Employment Eligibility Verification Form (Form I-9)
Work Authorization Status
Guilty
Misdemeanor

FACTS

An Illegal Alien is an individual, who is not a Citizen or a Lawful Permanent Resident and who has not been given Authorization To Work by the Bureau of Citizenship and Immigration Services (formerly, the Immigration and Naturalization Service).

GOVERNING RULES

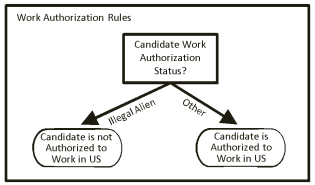
U.S. Employers must verify the Employment Eligibility and Identify of all Employees Hired to Work in the United States after November 6, 1986.

Employers are required to complete Employment Eligibility Verification Forms (Form I-9) for all Employees, including U.S. Citizens.

Anyone Employing an Illegal Alien without Verifying his or her Work Authorization Status is Guilty of a Misdemeanor.

BUSINESS RULES

Corporate / External / Compliance Rules Business Rules for Employment Eligibility		RULE NO. 1	2	3	4	5
NOTES	IF					
	Company is _____	a US Employer	not a US Employer	-	-	-
	Company wants to hire an _____	Employee	-	Con-tractor	-	-
	Candidate Work Location is _____	In the US	-	-	Outside the US	-
	Candidate Hire Date is _____ Nov. 6, 1986	After	-	-	-	On or before
	THEN					
Submit I-9 form	Company must verify Candidate's Employment	Yes	No	No	No	No
	Company must verify Candidate's Identity	Yes	No	No	No	No



Everything connects to everything else

"Principles for the development of a Complete Mind: Study the science of art. Study the art of science. Develop your senses - especially learn how to see Realise that everything connects to everything else."

Leonardo da Vinci

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Start Defining and modeling first…. Not coding!

"If I had 20 days to solve a problem, I would take 19 days to define it."

Albert Einstein

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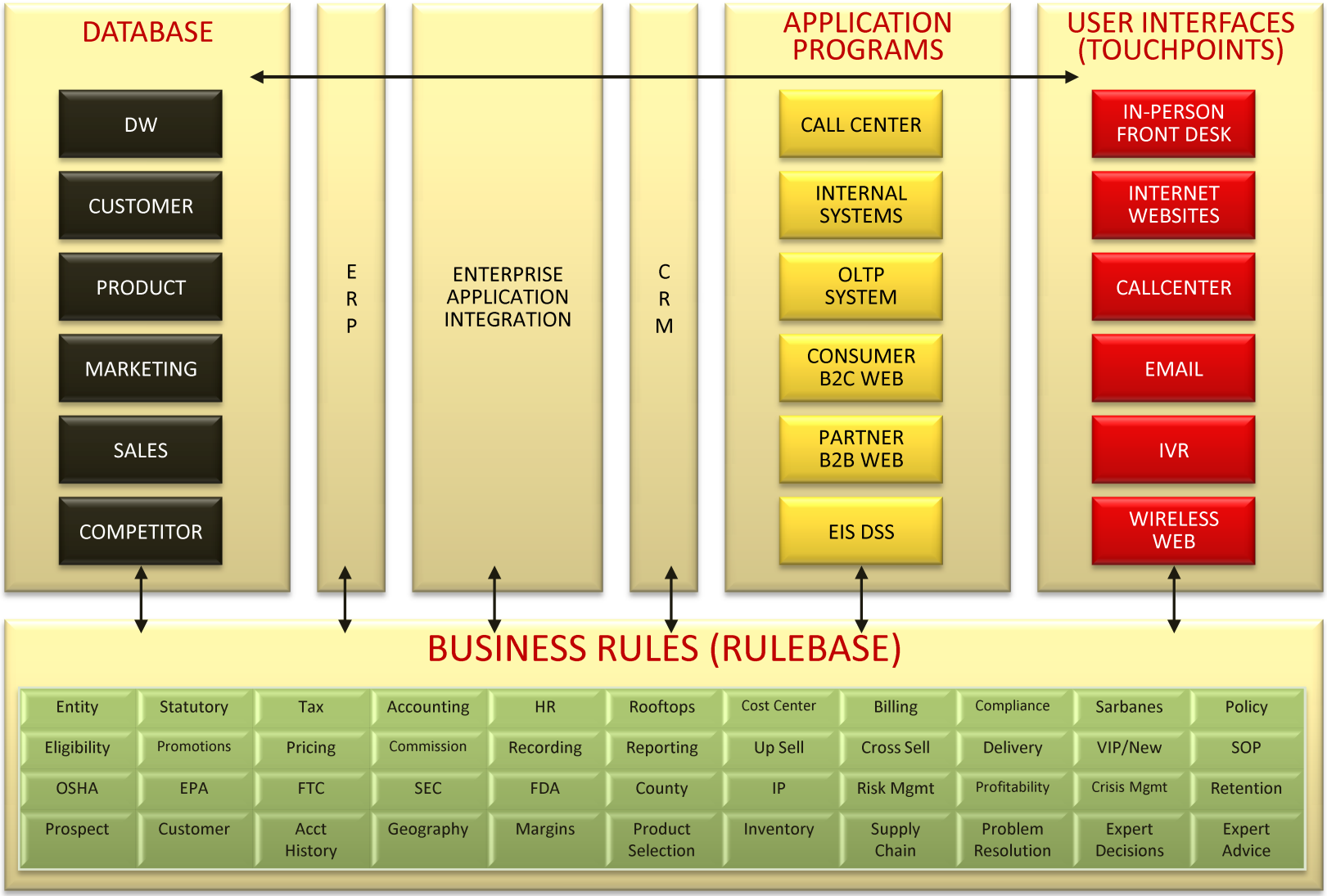
Rules centralization + rules integration



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What do we mean by business IT alignment?

- **Best Buy: Bogus Prices and a Secret Website**
  - 2007 Q1: Salesmen in stores show customers secret website, with bogus prices, while pretending to show customers prices from BestBuy.com
  - Tricks customers into paying higher prices: $879.99; even though it's on sale for $729.99
  - **Pricing rules used in BEST BUY stores conflict with governing rules established in the board room**
  - Public relations nightmare, now a legal issue
  - CT Attorney General has opened an investigation…

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Perform thorough or in-depth rule analysis

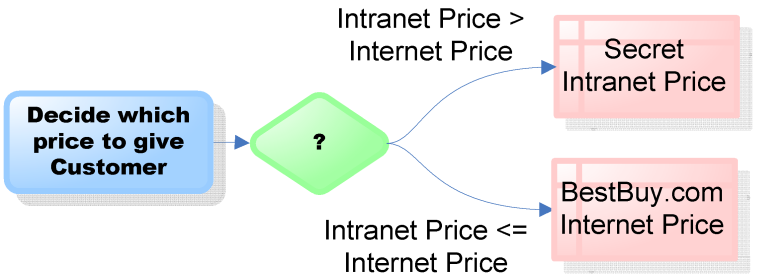
BIZRULES® Analysis of Best Buy Pricing Rules

BEST BUY® Mission, Goals, and Strategy
Pricing Policy
Business Rule #1

"Best Buy's policy is to always honor the lowest advertised price, whether from its Internet site or from a competitor."

As Built

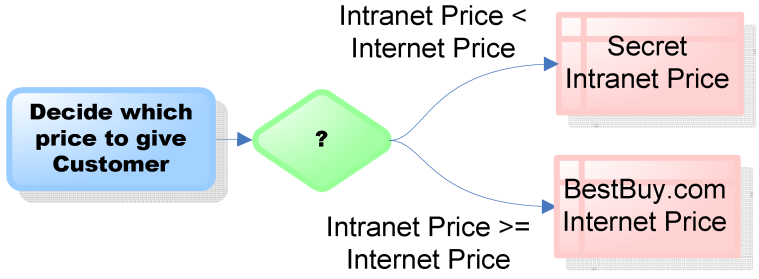
Business Rule #3
Mislead Customer into paying higher price



- This business rule is clearly **not aligned** to corporate strategy.
- This **poor quality** rule is **prescribed** by some salespeople.
- This rule shows **discontinuity** and **inconsistency** between online and retail stores.
- This store rule **cannot be reused** online because it **lacks transparency**.
- This rule **increases operations costs** because it's hard to explain and justify.
- This rule **raises questions about regulatory compliance**.
- You need **a thousand words** to explain this picture.
- This rule destroys customer confidence and trust.
- This rule is a public relations nightmare.
- This rule may be illegal.
- This is a "bait & switch" type of rule.
- This rule should never have been approved.
- This rule **raises questions about whether proper rules, processes, and controls are in place.**

As Designed

Business Rule #2
Always give customer the lowest advertised price



+ This business rule clearly shows **alignment** to corporate strategy.
+ This is the **high quality** rule **described** by the pricing strategy.
+ This rule shows **integration** between online and retail stores.
+ This rule offers **reusability** – the same rule can be implemented online and in the store.
+ This rule shows **transparency**.
+ This rule **reduces operations costs** because it's easy to follow.
+ This rule demonstrates **regulatory compliance**.
+ This **picture** is worth a thousand words.
+ This rule builds Customer Trust Management.
+ This is a "Best Buy" type of rule.
+ This rule is easy to approve, assess, test, and certify.
+ This rule **improves governance and controllership**.

Source: BIZRULES Blog 3/16/2007 www.BizRules.com

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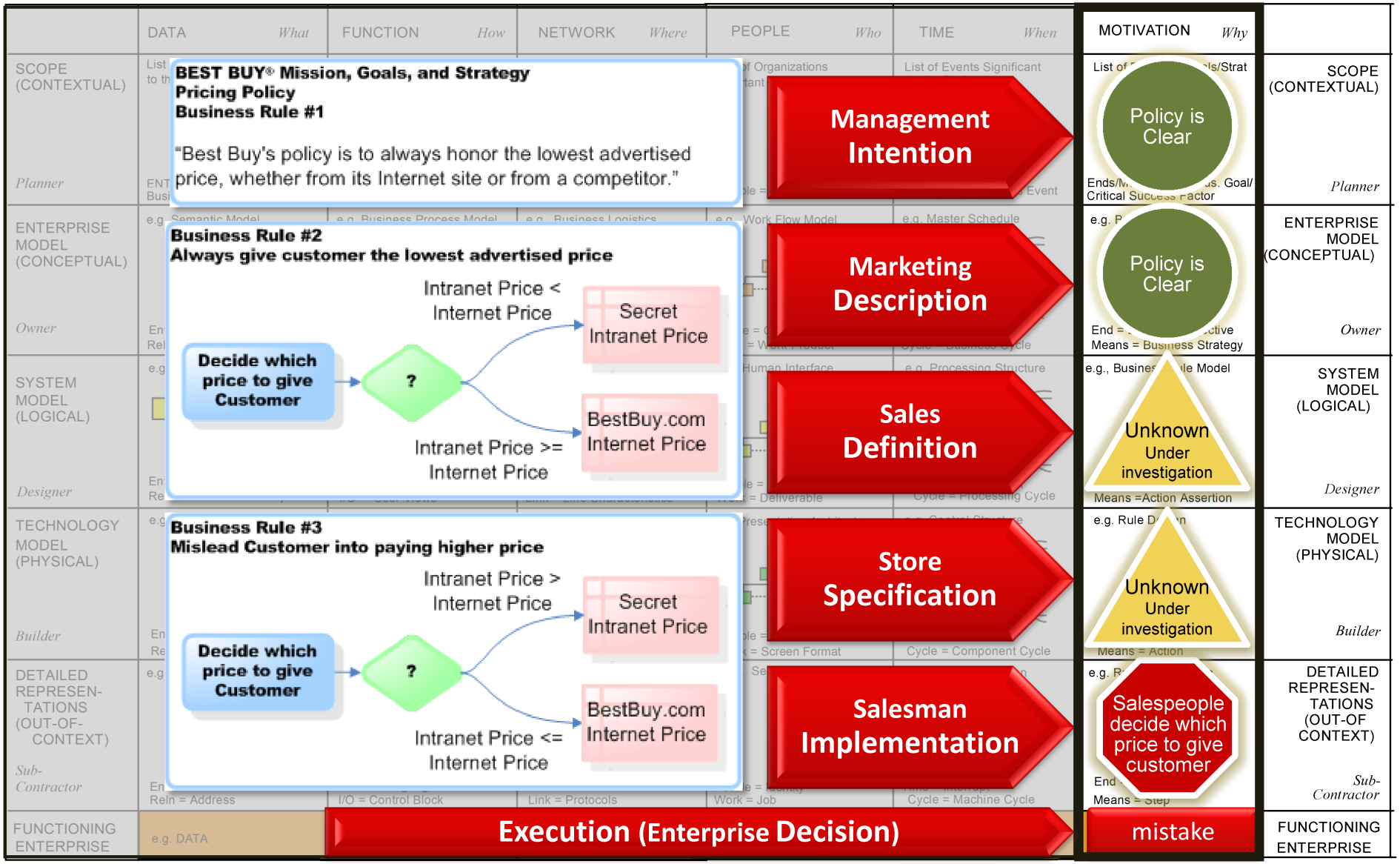
Align execution to intention… IT Systems to Business Strategy



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Top 5 questions customers ask BIZRULES

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Why are business rules so critical, complex, and confusing?

It's just IF X THEN Y, IF Y THEN Z right?

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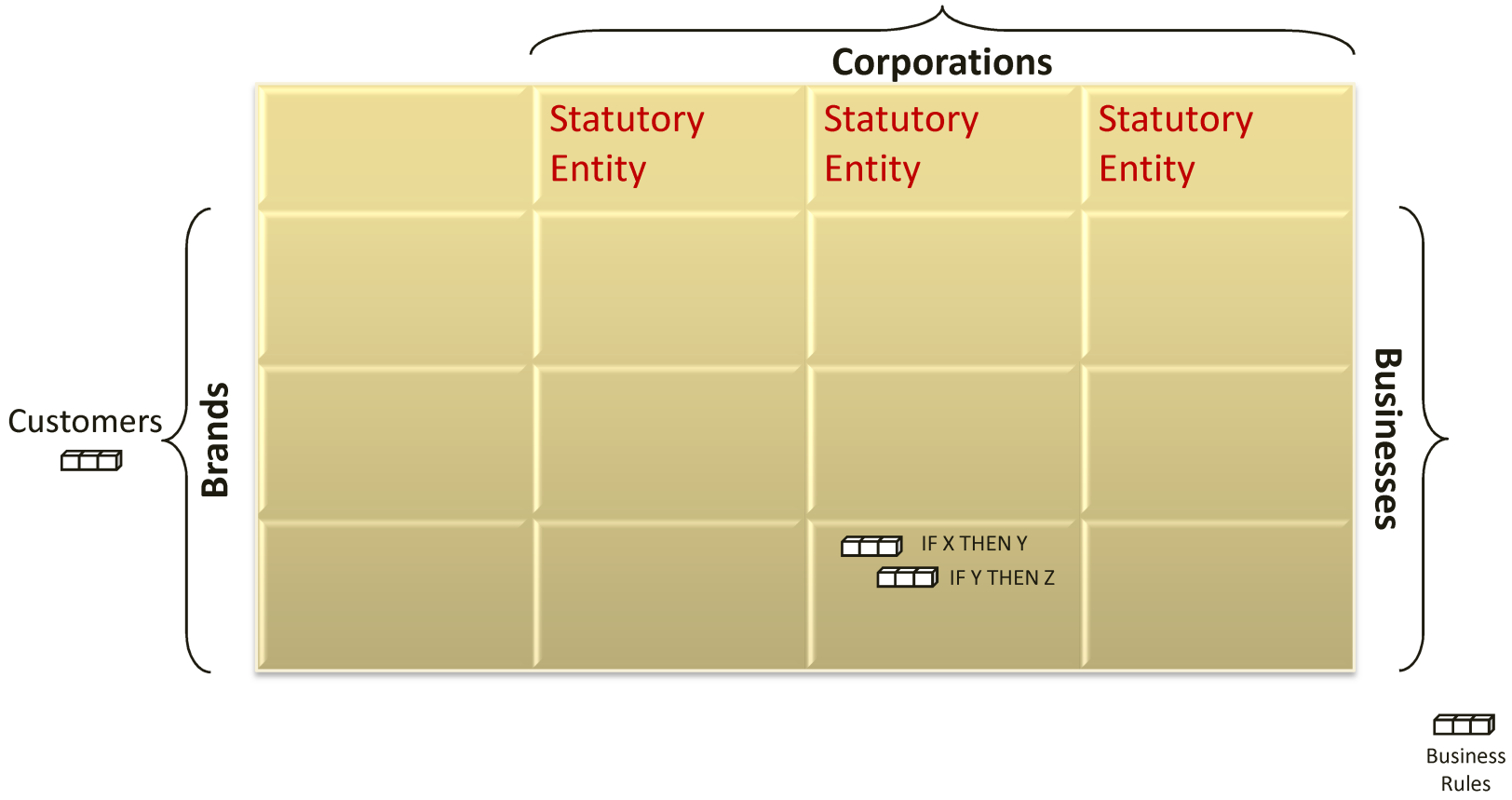
Why are business rules so critical, complex, and confusing?



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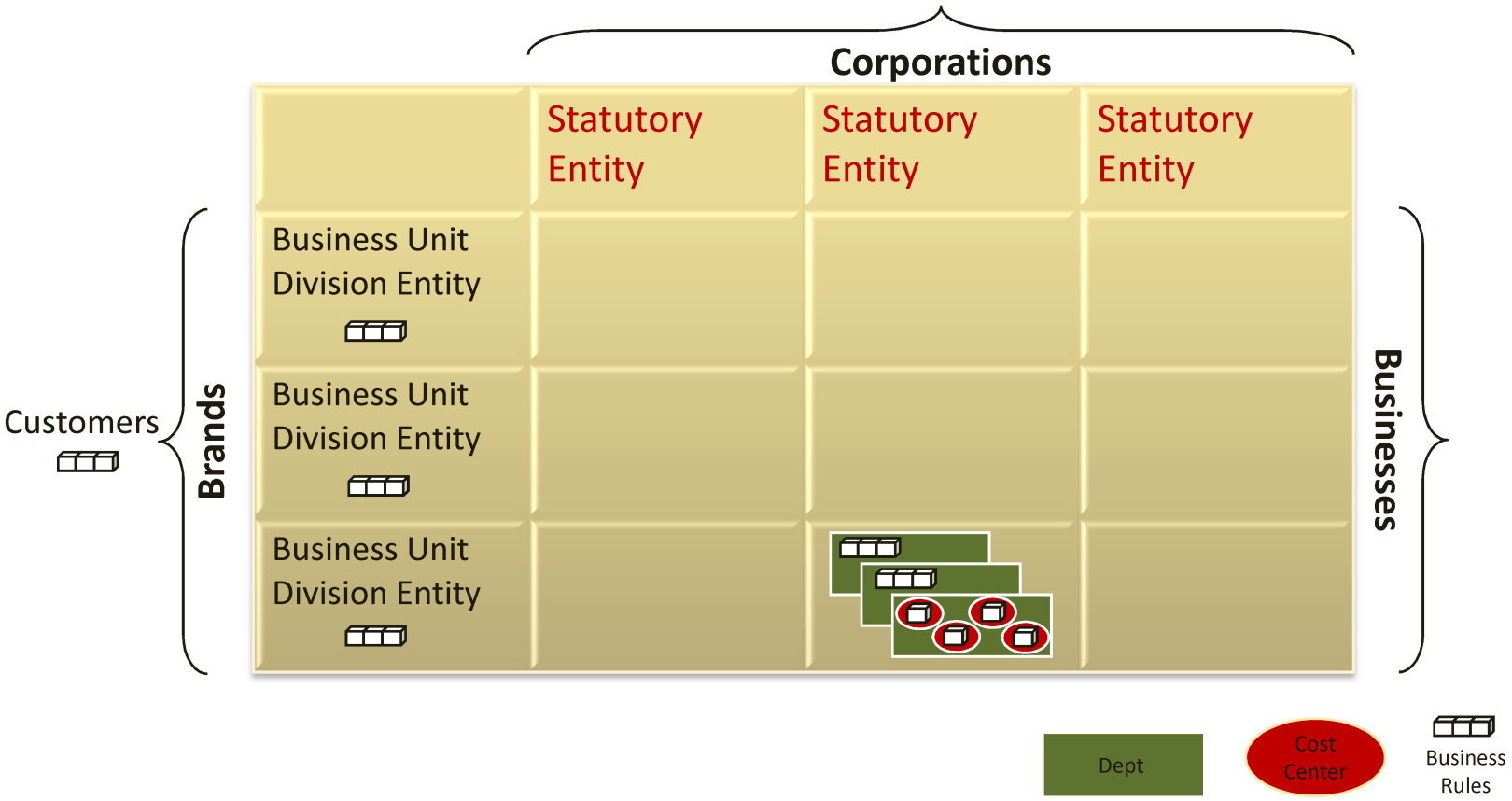

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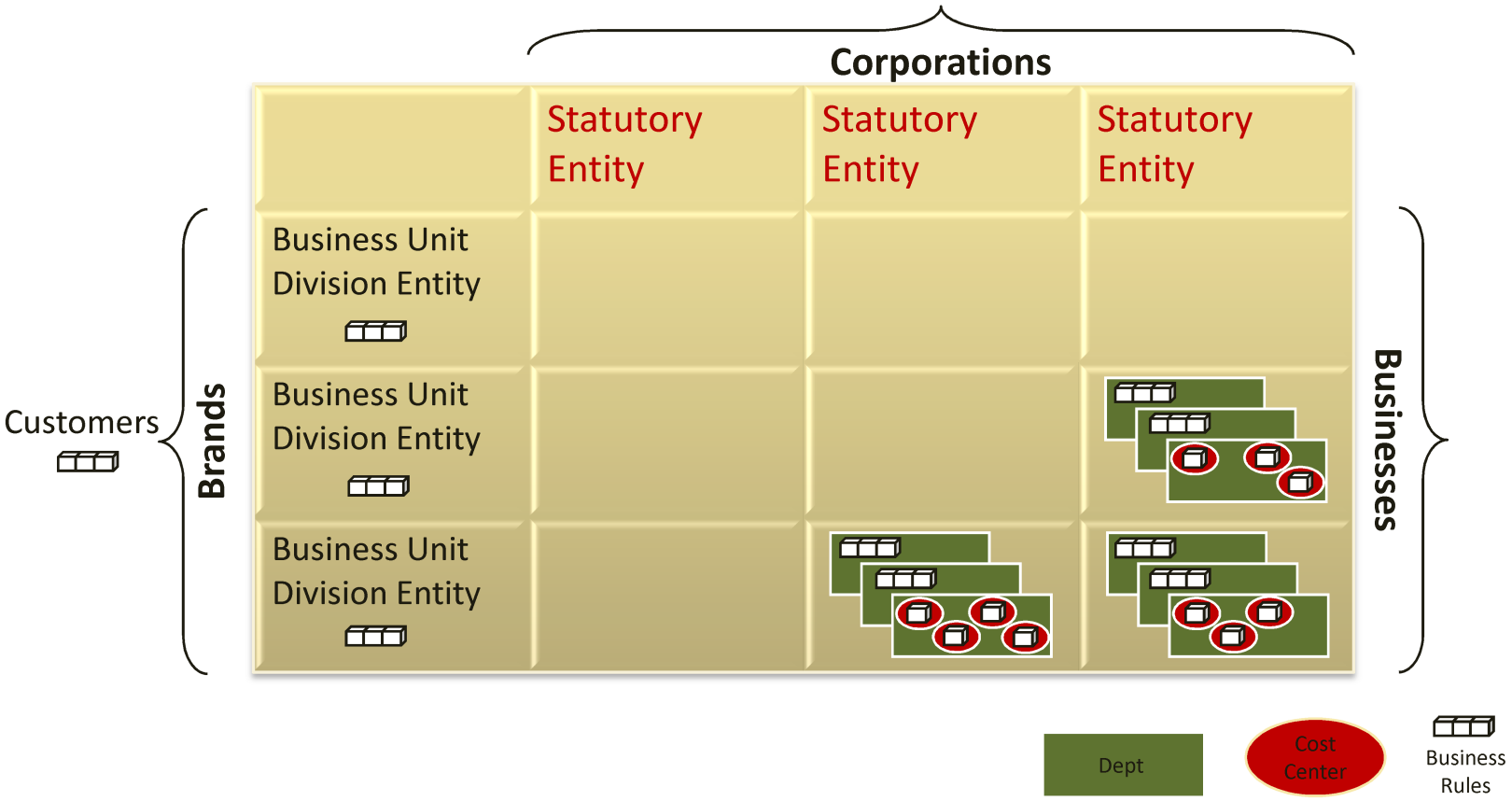

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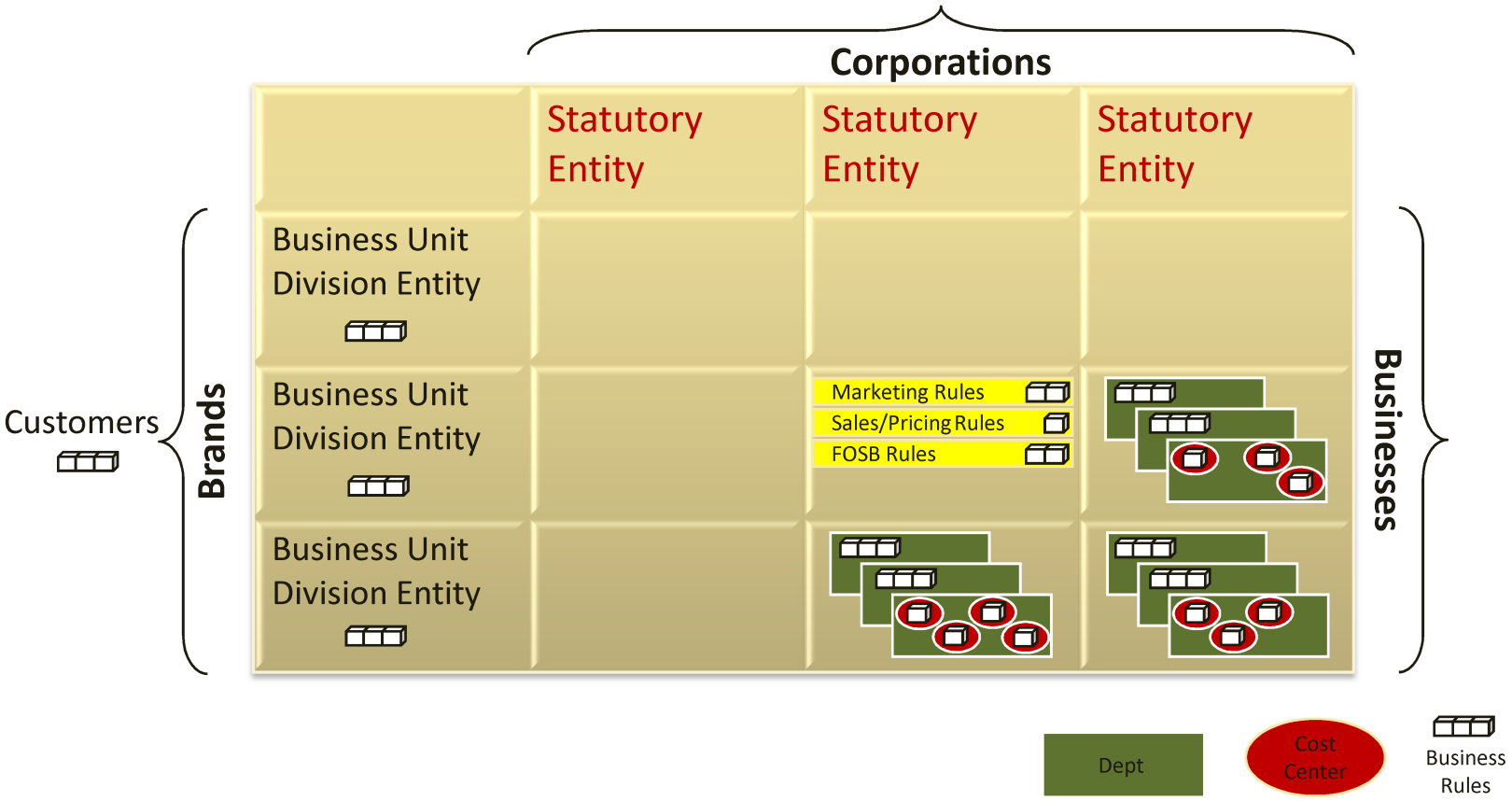

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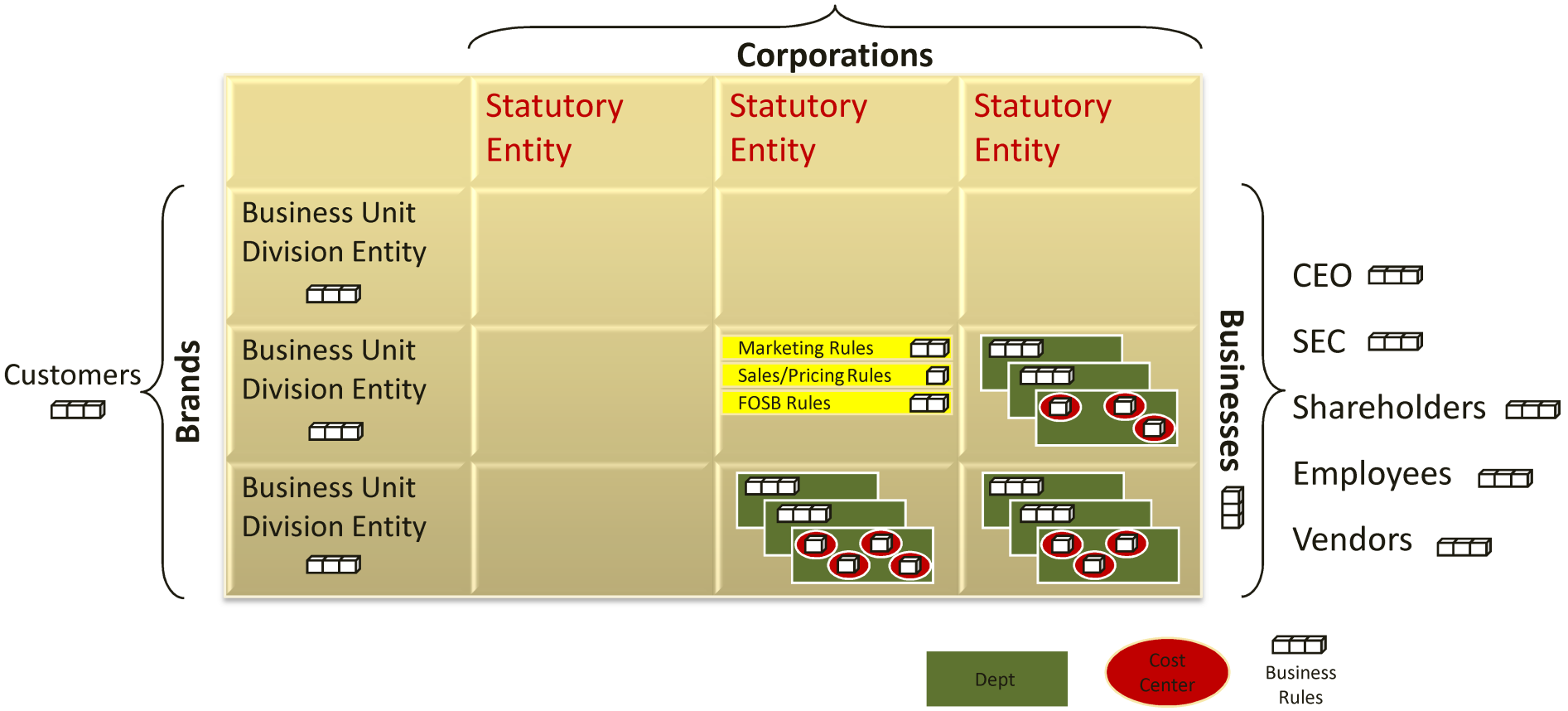

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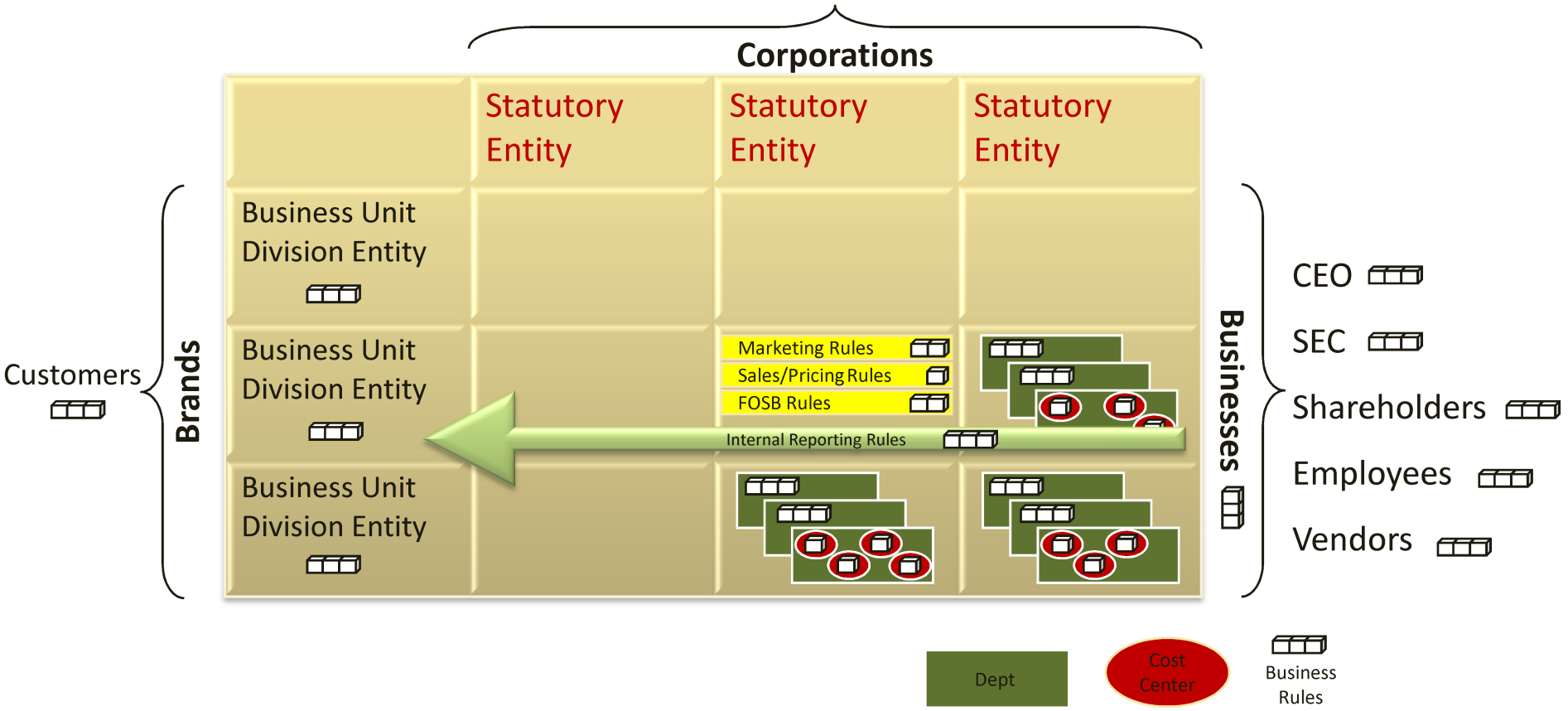

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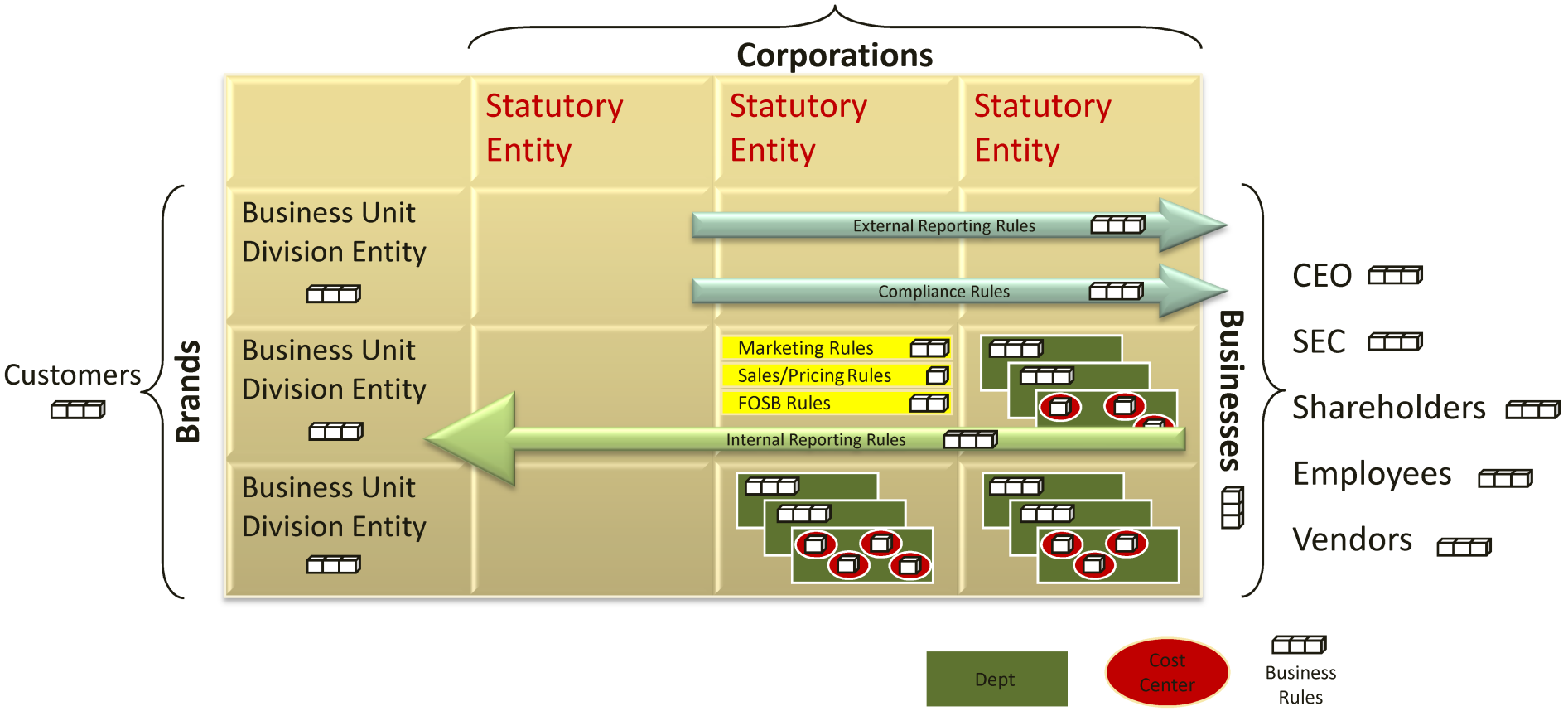

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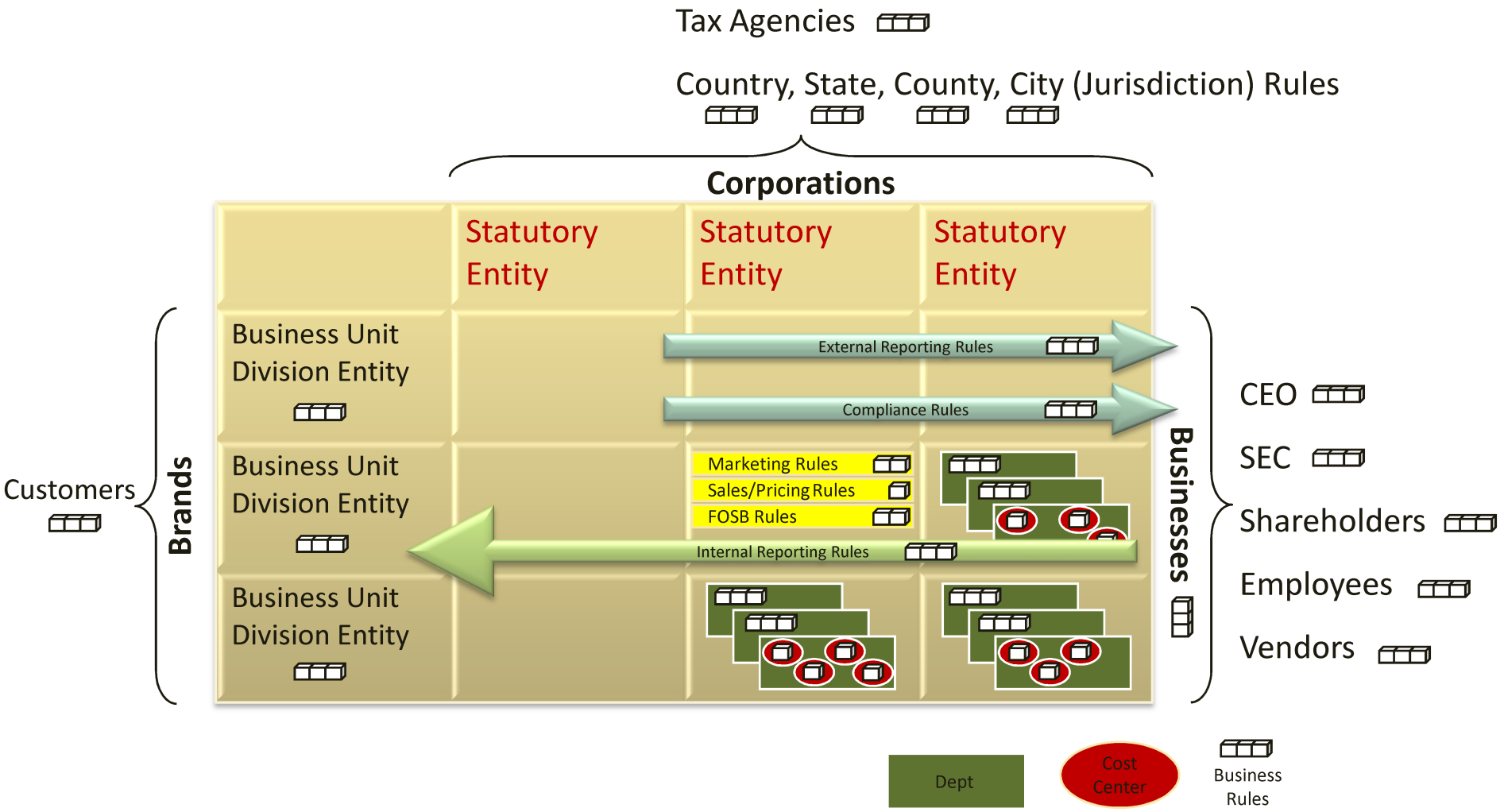

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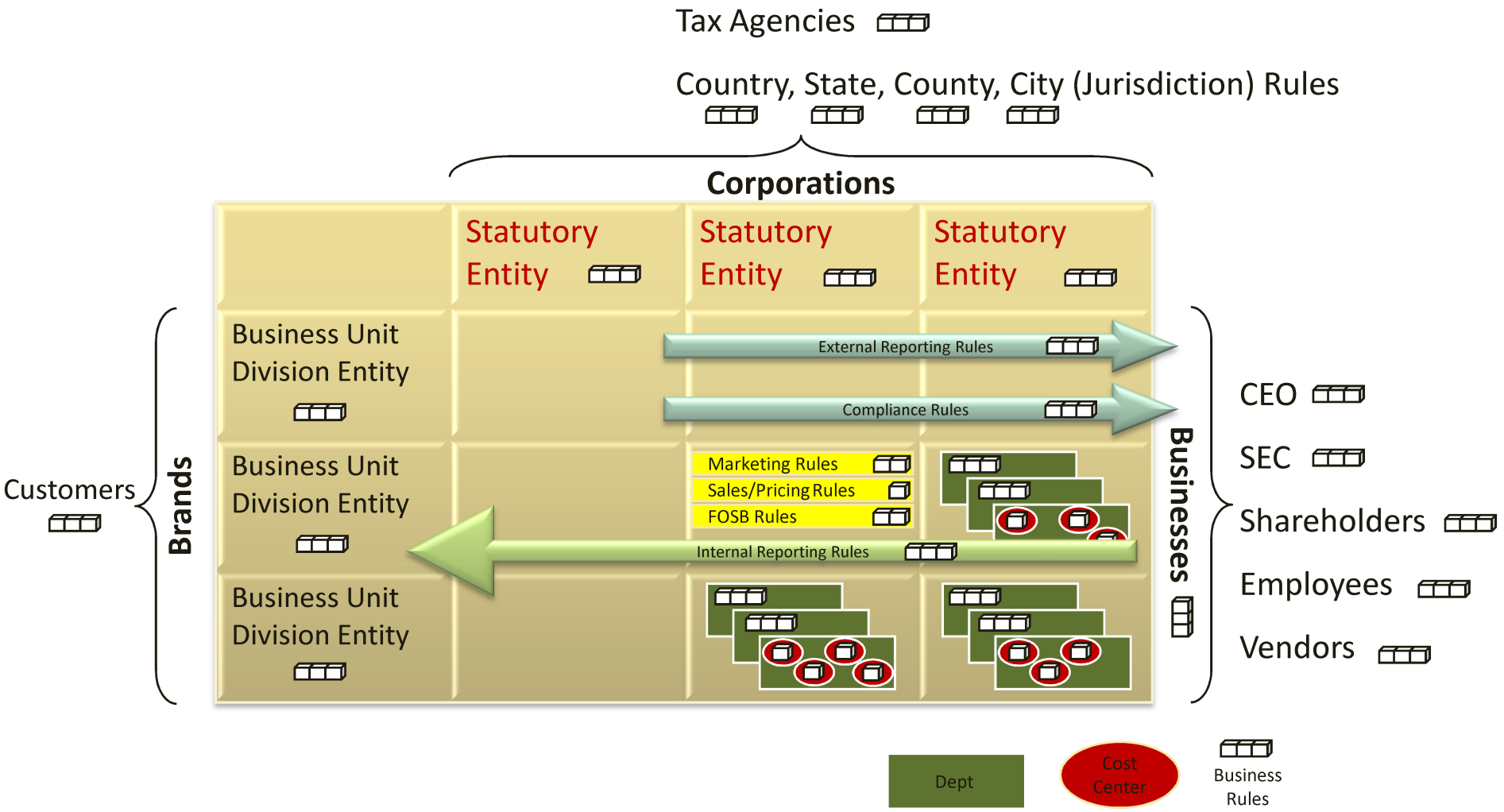

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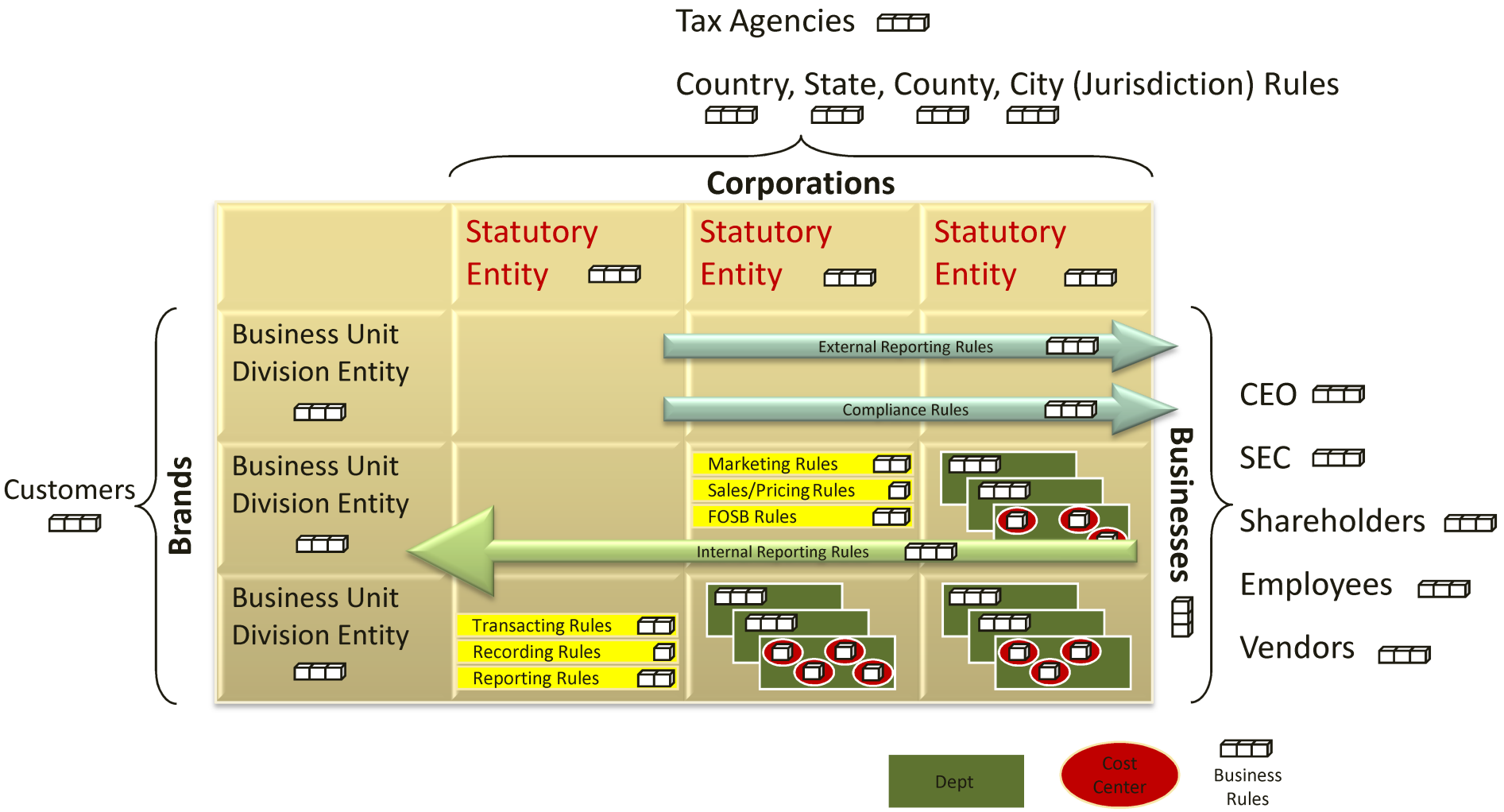

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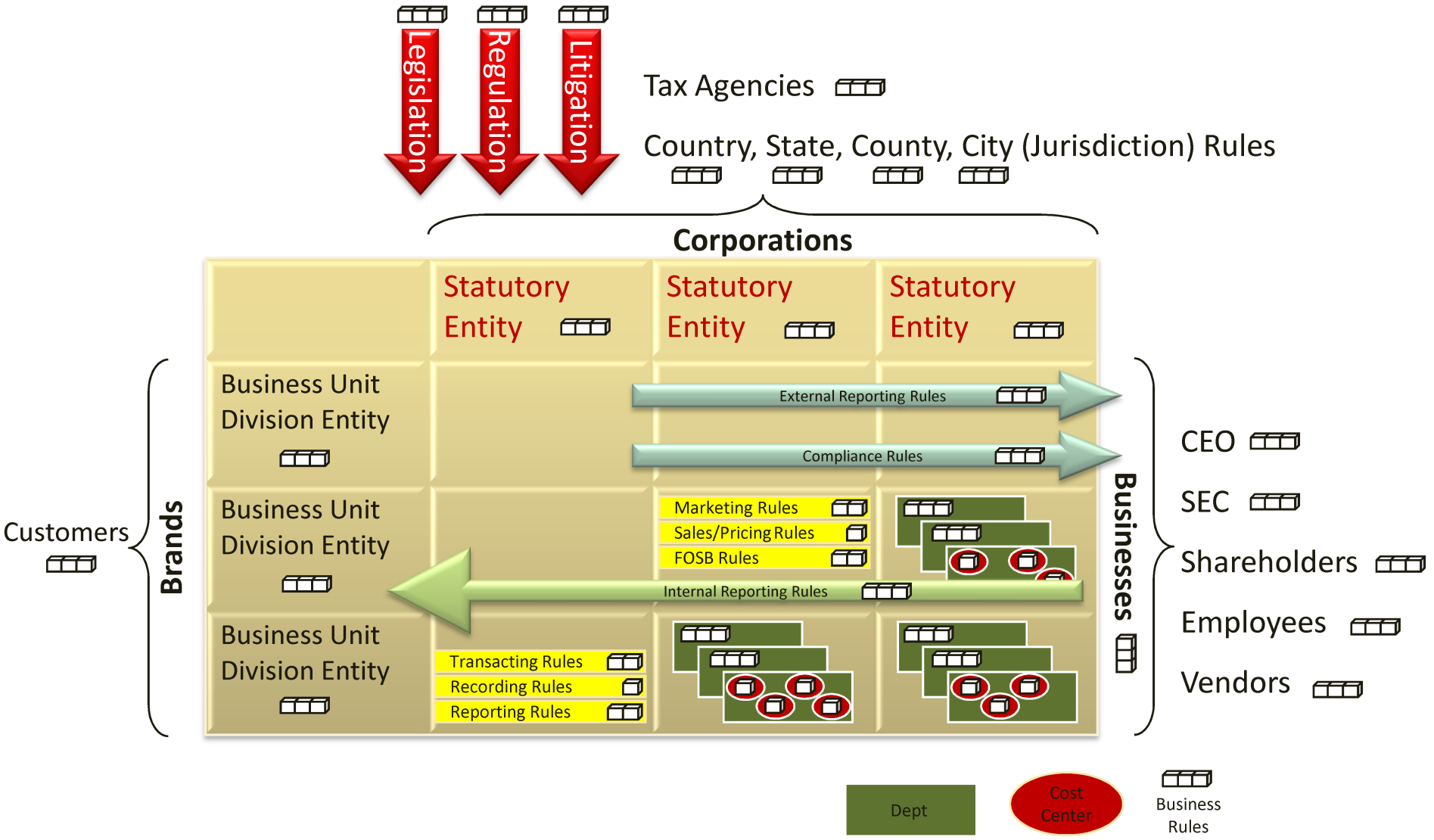

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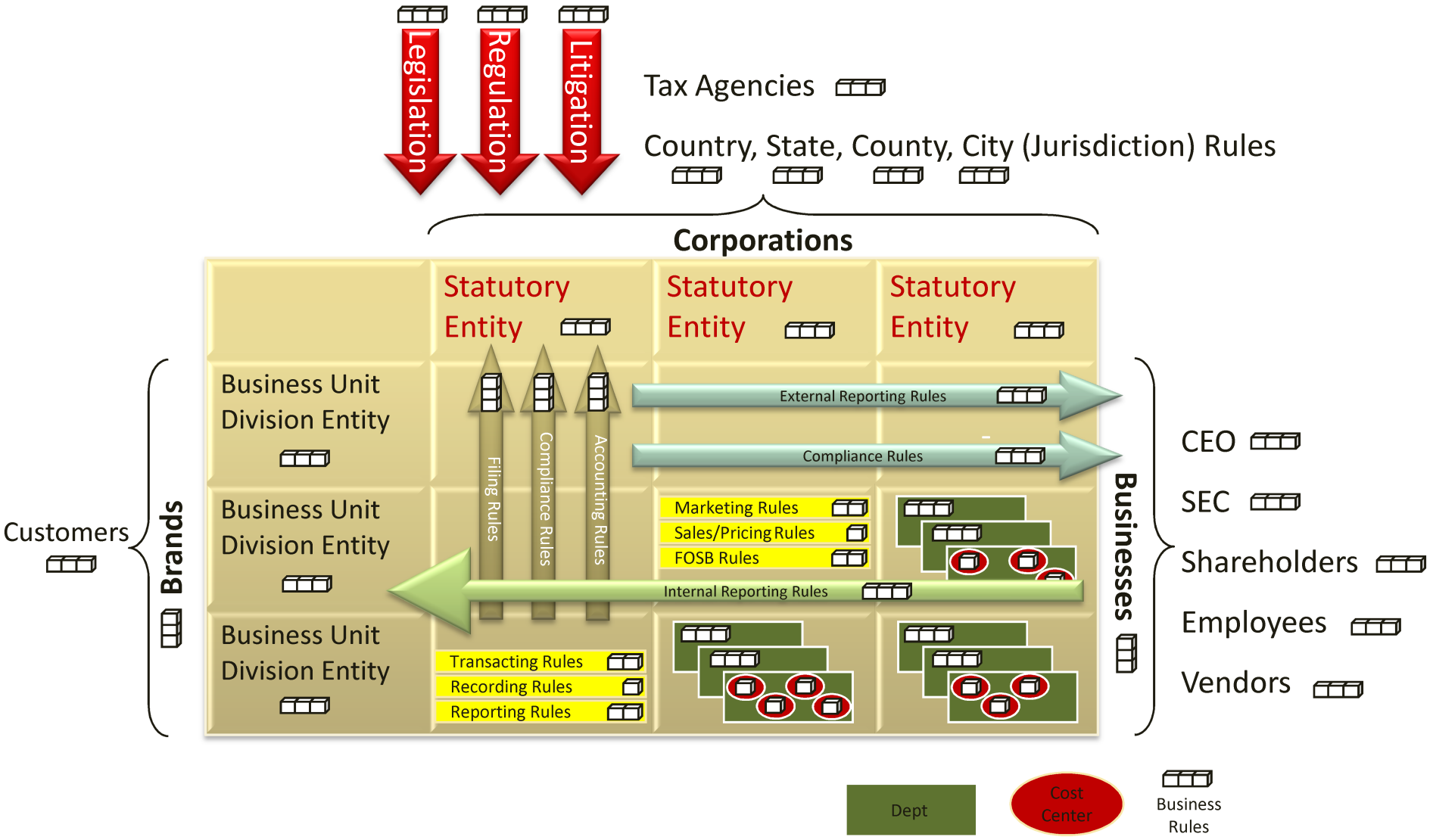

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So many rules…where do they belong?

Rules that should be in the BRE:

- Internal business rules
- External rules
  - Governing rules
  - Regulatory rules
  - Legislative rules
  - Compliance rules
- Rules that you do not control
- Rules that change often
- Industry rules
- Market rules
  - Competitor rules
  - Pricing rules
  - Promotion rules
- Environmental rules
  - Economy rules
  - Seasonality rules
  - Weather rules

Rules that could be hard-coded:

- UI rules
- Code or system rules
- Computer program rules
- Rules that you control
- Rules that never change

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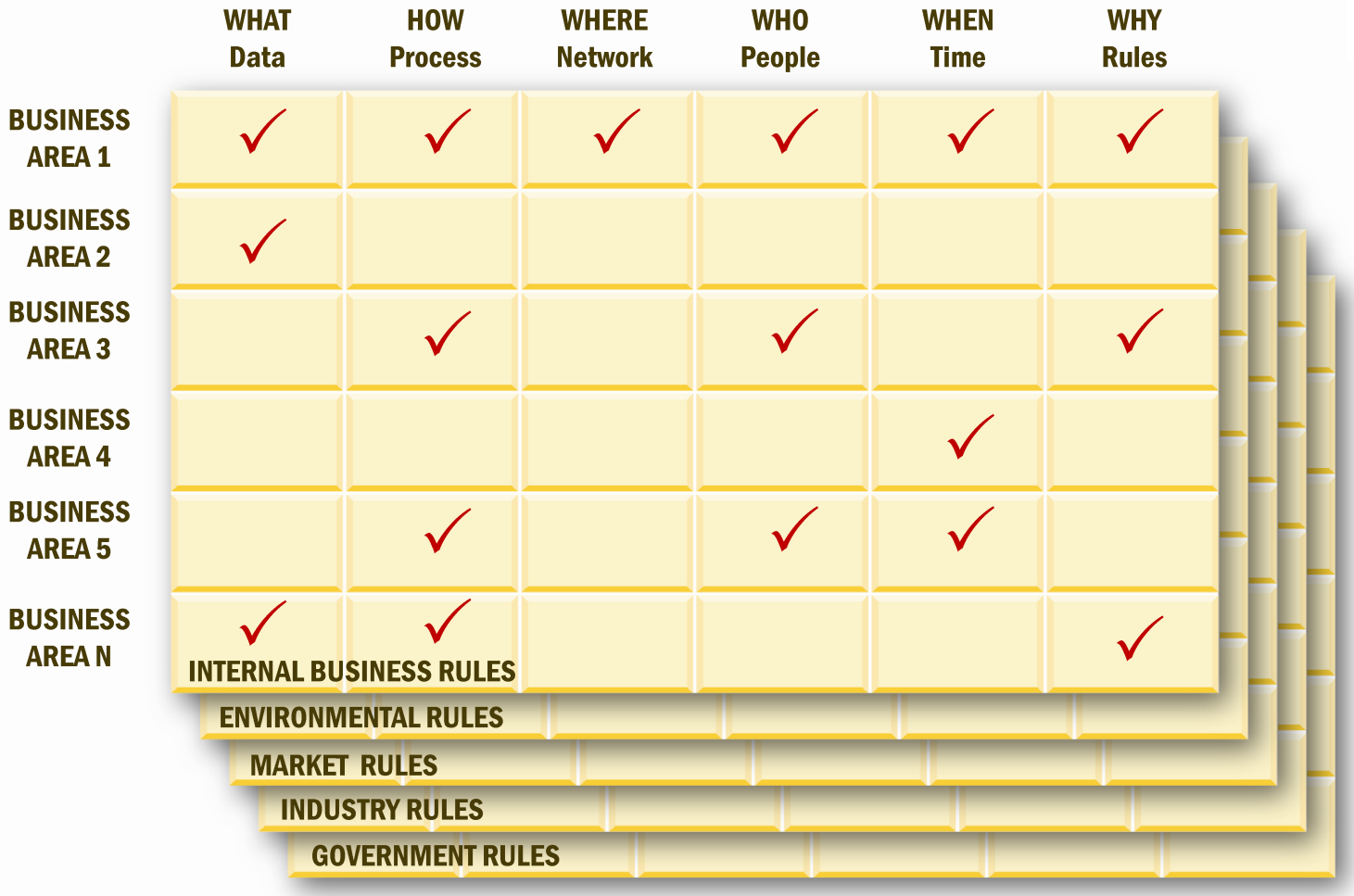
When am I done?

How do you know when you're done harvesting?
How do you know when you have all the rules?



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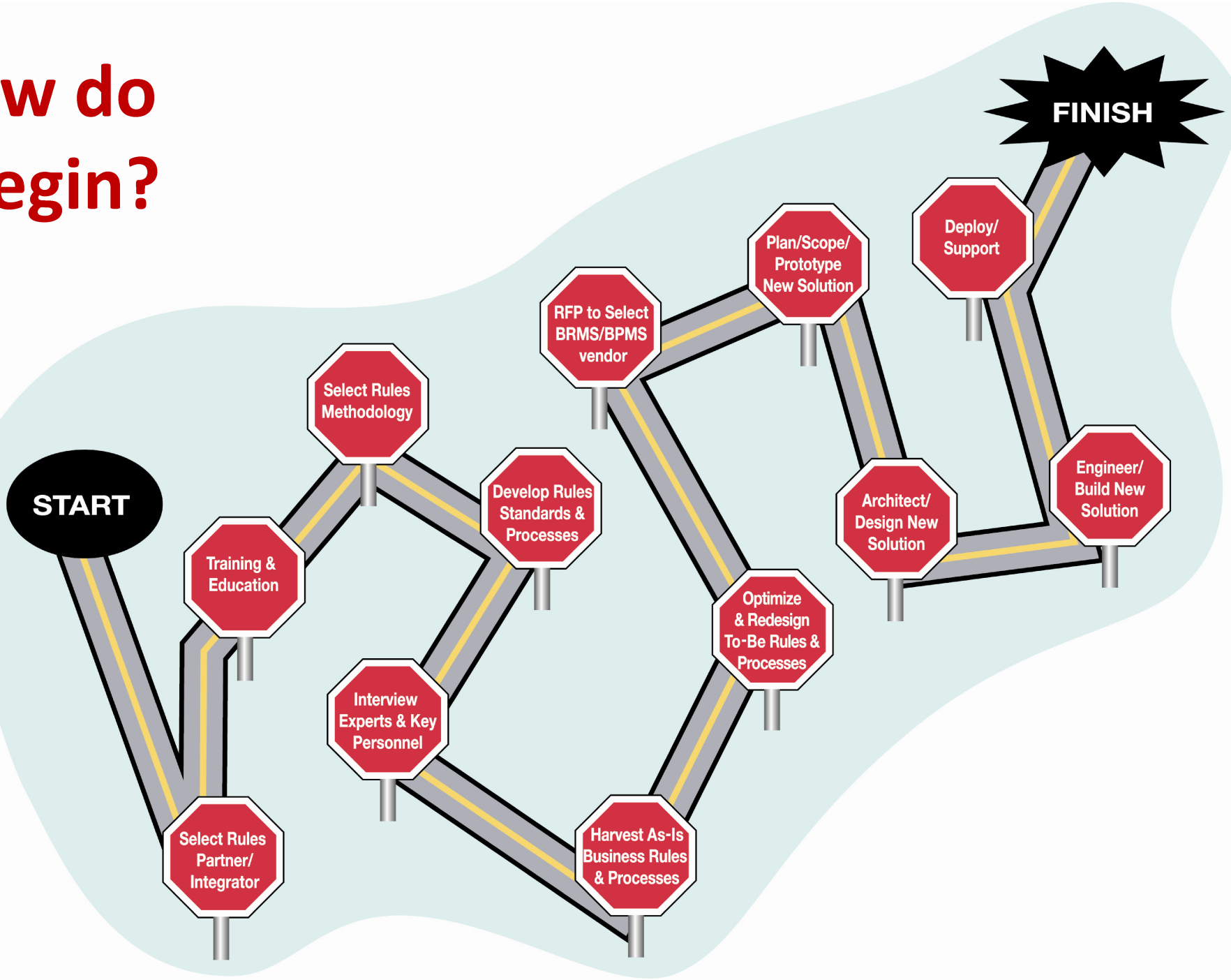
How do I begin?



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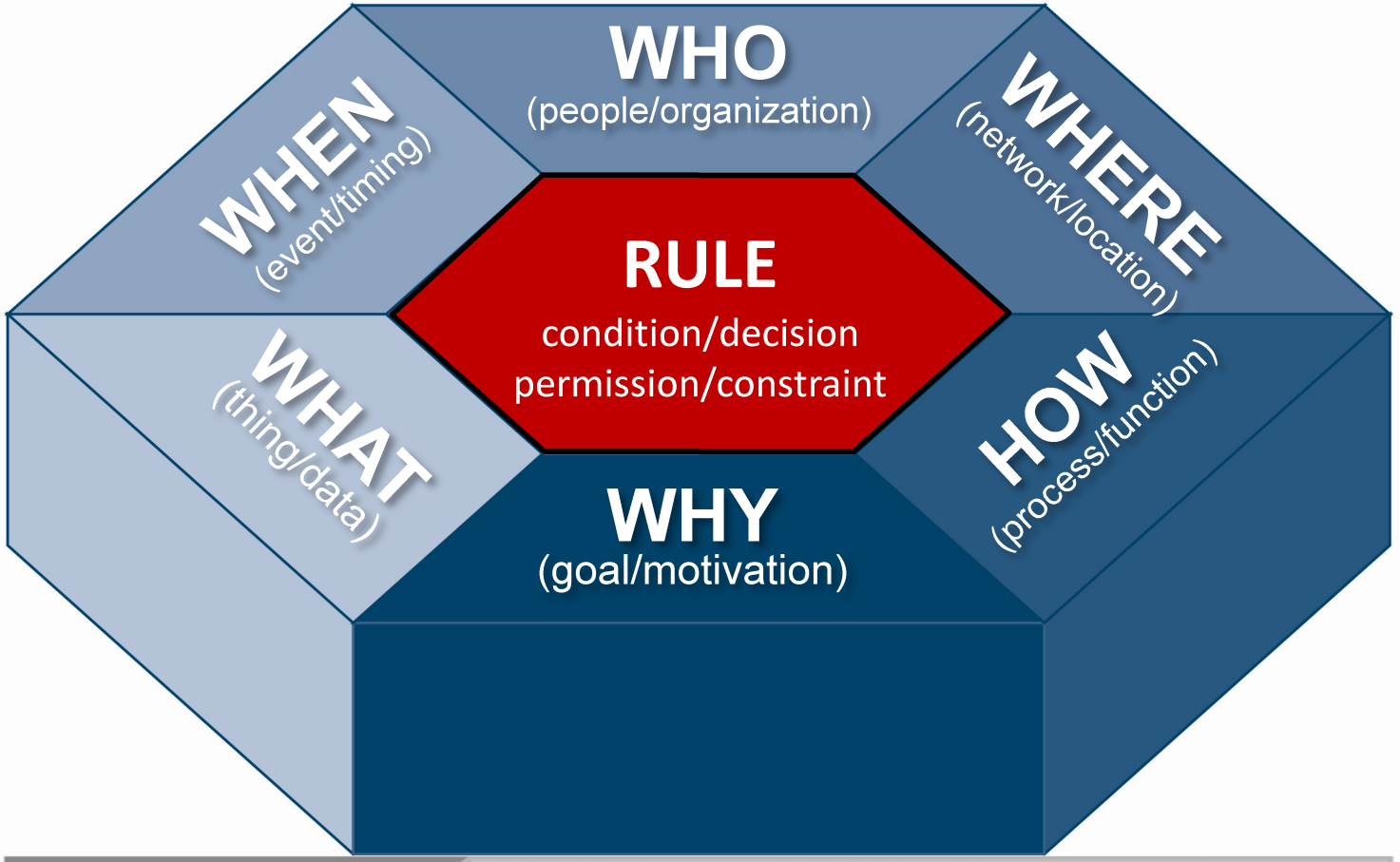
How do we fit rules into the Enterprise Architecture?



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Create the Business Rules Architecture

Ensures that all the parts of the business system connect, fit, work, change, and last

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Enterprise Architecture – A Framework™

	DATA *What*	FUNCTION *How*	NETWORK *Where*	PEOPLE *Who*	TIME *When*	MOTIVATION *Why*	
SCOPE (CONTEXTUAL) *Planner*	List of Things Important to the Business ENTITY = Class of Business Thing	List of P… Busin… Functi… Business Process	Location		Event	List of Business Goals/Strat Ends/Means=Major Bus. Goal/ Critical Success Factor	SCOPE (CONTEXTUAL) *Planner*
ENTERPRISE MODEL (CONCEPTUAL) *Owner*	e.g. Semantic Model Ent = Business Entity Reln = Business Relationship	e.g. Bu… Proc. = … I/O = Business Resources	Link = Business Linkage	Work = Work Product	Cycle = Business Cycle	e.g. Business Plan End = Business Objective Means = Business Strategy	ENTERPRISE MODEL (CONCEPTUAL) *Owner*
SYSTEM MODEL (LOGICAL) *Designer*	e.g. Logical Data Model Ent = Data Entity Reln = Data Relationship	e.g. Application Architecture Proc .= Application Function I/O = User Views	e.g. Distributed System Architecture Node = I/S Function (Processor, Storage, etc) Link = Line Characteristics	Work = Deliverable	Cycle = Processing Cycle	e.g., Business Rule Model End = Structural Assertion Means =Action Assertion	SYSTEM MODEL (LOGICAL) *Designer*
TECHNOLOGY MODEL (PHYSICAL) *Builder*	e.g. Physical Data Model Ent = Segment/Table/etc. Reln = Pointer/Key/etc.	e.g. System Design Proc.= Computer Function I/O = Data Elements/Sets	e.g. Technology Architecture Node = Hardware/System Software Link = Line Specifications	Work = Screen Format	Cycle = Component Cycle	e.g. Rule Design End = Condition Means = Action	TECHNOLOGY MODEL (PHYSICAL) *Builder*
DETAILED REPRESEN-TATIONS (OUT-OF-CONTEXT) *Sub-Contractor*	e.g. Data Definition Ent = Field Reln = Address	e.g. Program Proc.= Language Stmt I/O = Control Block	e.g. Network Architecture Node = Addresses Link = Protocols	Work = Job	Cycle = Machine Cycle	e.g. Rule Specification End = Sub-condition Means = Step	DETAILED REPRESEN-TATIONS (OUT-OF CONTEXT) *Sub-Contractor*
FUNCTIONING ENTERPRISE	e.g. DATA	e.g. FUNCTION	e.g. NETWORK	e.g.	Enterprise Decision	e.g. STRATEGY	FUNCTIONING ENTERPRISE

Terms

Mission & Goals/Objectives
Management Intention

Facts & Fact Models

Strategy & Policy (Governing Rules)
Informal or Detailed Description

Rulebase/Rulesets
(Textual/Decision Trees/Decision Tables)
Detailed Logical Definition

Formal/Detailed Rules
(Textual/If…Then)
Detailed Technical Specification

Source Code (Automated Rules)
Implementation

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Follow a Business Rules Methodology

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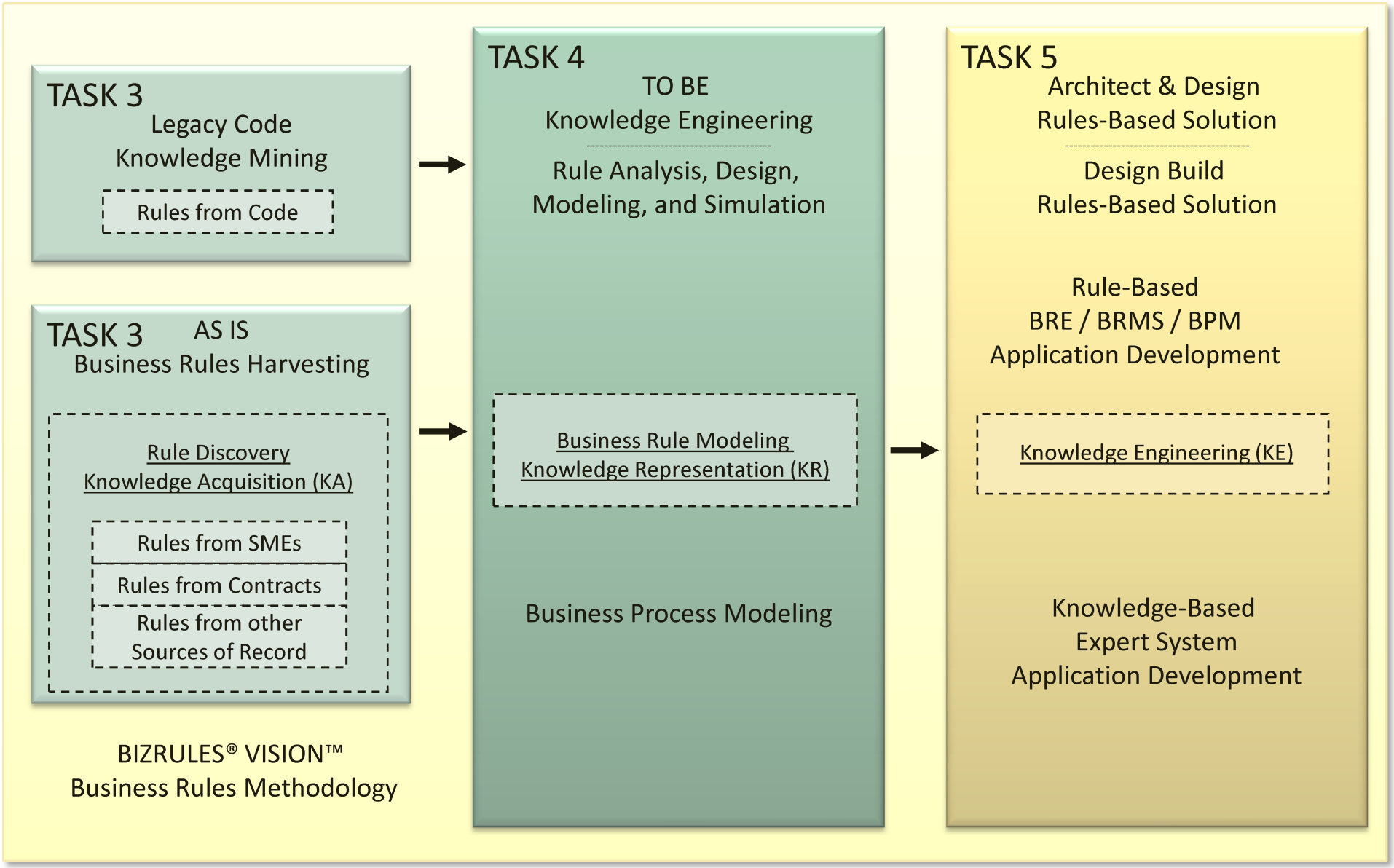
BIZRULES® VISION™ Methodology Overview



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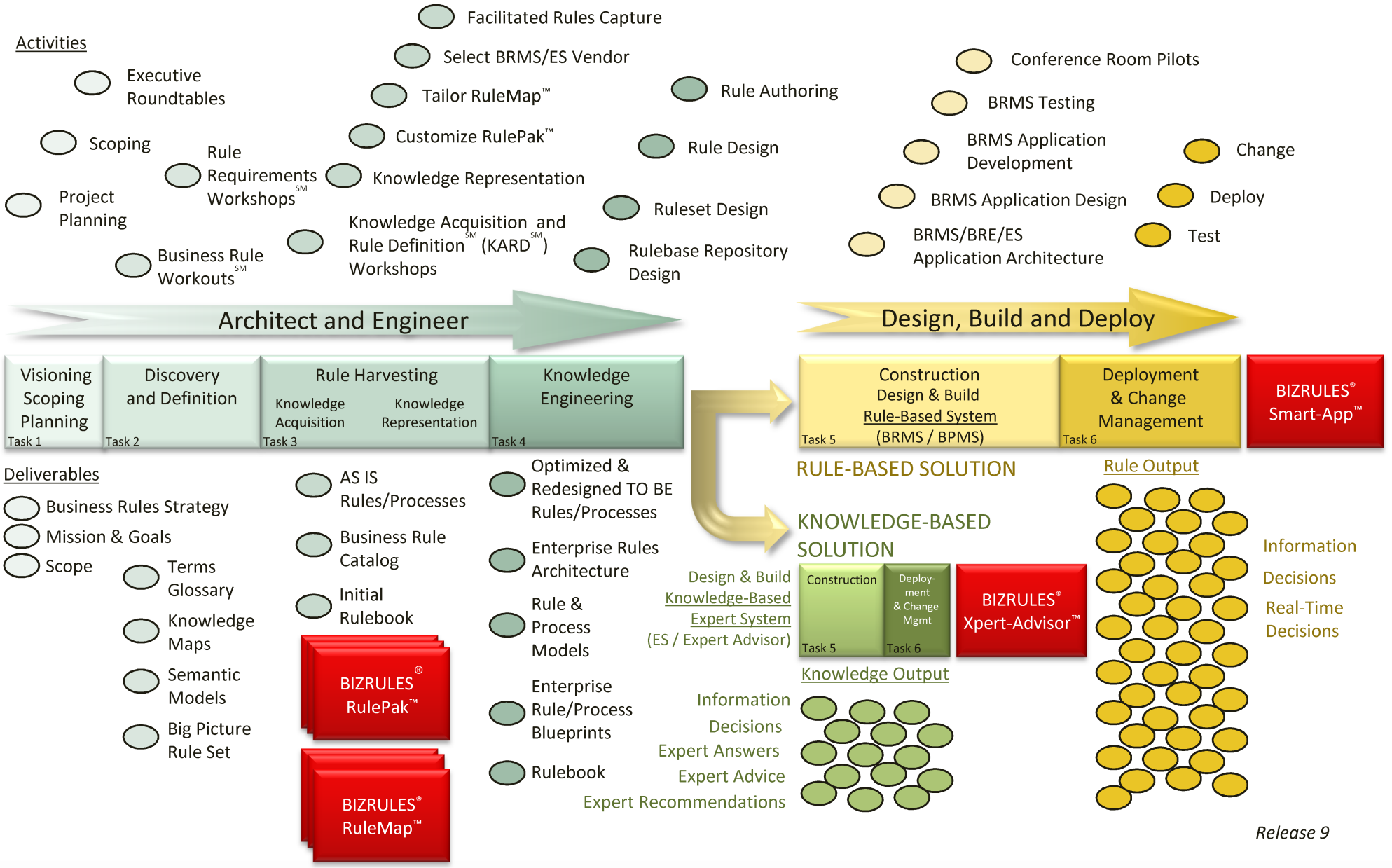
BIZRULES® VISION™ Methodology for building Rule-Based and Knowledge-Based Solutions



Release 9

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Thank you

Rolando Hernandez
Chief Rules Architect, BIZRULES
ORF2008@BizRules.com
972-987-1685

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