

# Simplifying Business Rules Harvesting using Six Sigma Methodology

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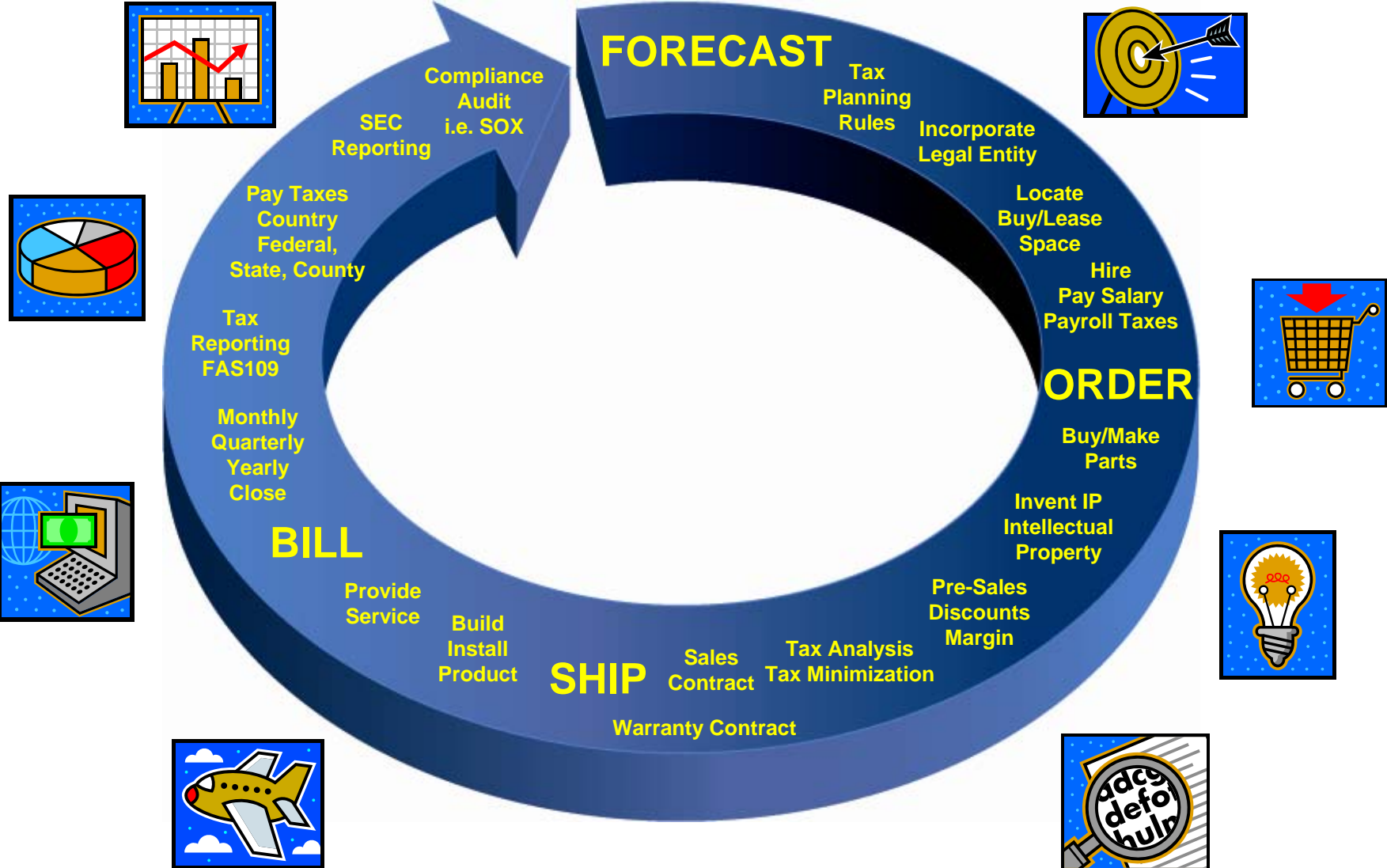


imagine

# AGENDA

- FOSB – Forecast, Order, Ship, Bill
- Business Challenges that we all face
- Turnkey Solution
- So many rules, where do they belong?
- When am I done?
- How do I begin?
- Six Sigma
  - Define
  - Measure
  - Analyze
  - Improve
  - Control
- Excel Pivot Chart & Table
  - Flexible Charts
  - Flexible Metrics
- Rule Management
- Demo
- Q&A

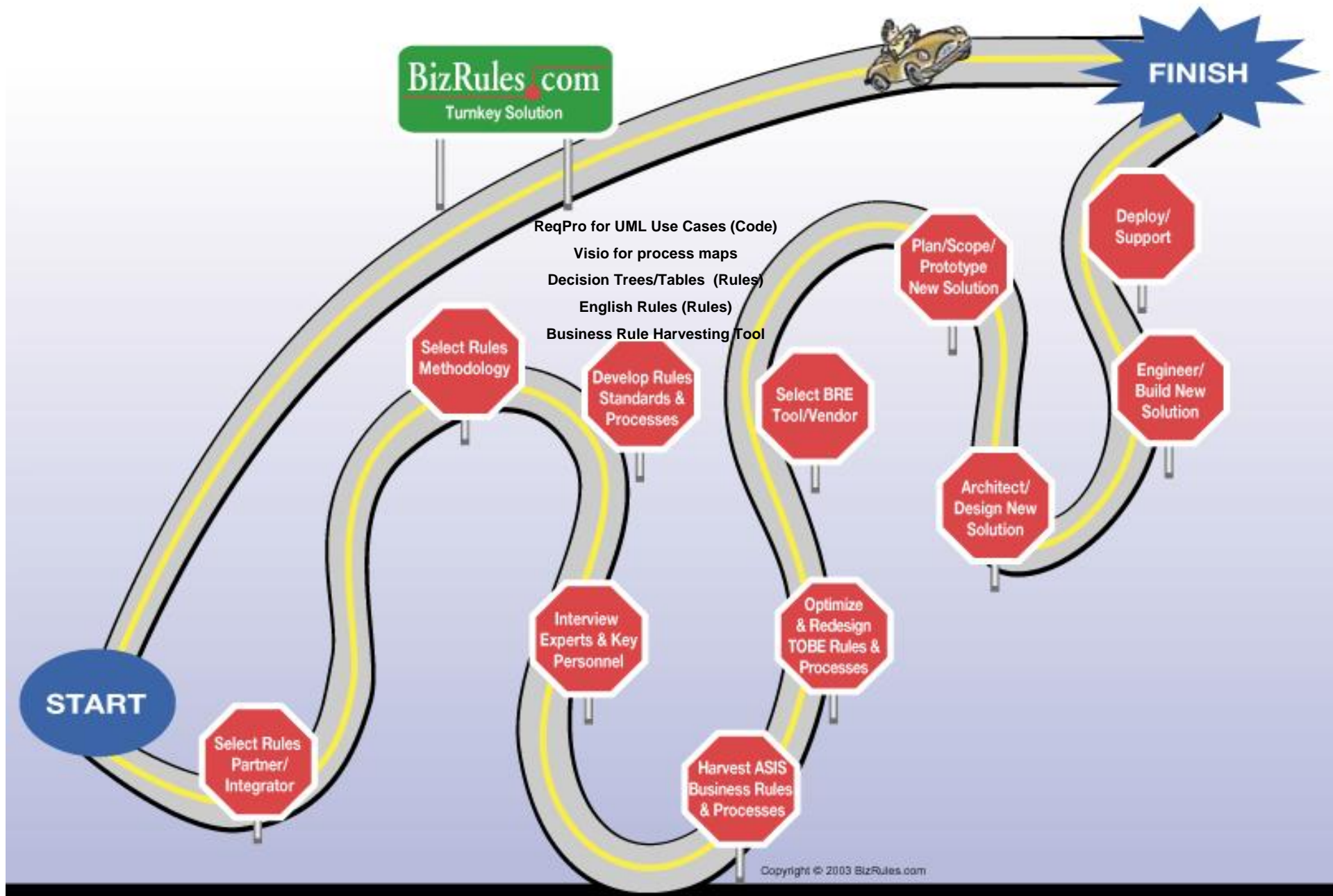
# Rule Engines drive key parts of the business



Business Rules Management System

# Six Sigma adds quality to Business Rules

- Six Sigma is a tool for quality
- Business Rules are a solution for
  - Agility
  - Costs
  - Compliance
  - Downsizing
  - Decisioning
- Need to get rules from SME to BRE
  - Harvest rules from people
  - Mine rules from code, documents



# Business Rules solve key business problems

## Business Challenge

System changes are time-consuming

Agility / Time to market

Maintaining business rules in many different places

Cost

Ensure employees follow the rules, policies, procedures, and laws

Governance / Compliance

The people who know how everything works are leaving

Downsizing

The experts who know the rules are retiring

Knowledge Retention

Put management decisions on auto-pilot

Knowledge automation /  
Decisioning

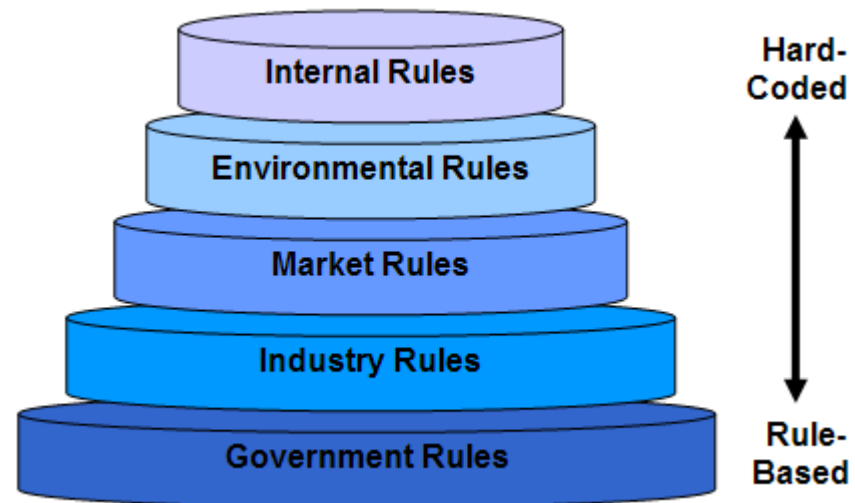
# What rules belong in the Business Rule Engine? What rules should be hard-coded?

## •Rules that should be in the BRE:

- 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
  - Seasonality rules
  - Weather rules

## Rules that could be hard-coded:

- System Rules
- Internal rules
- Rules that you control
- Rules that never change



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







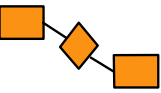
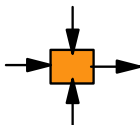
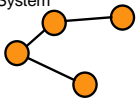
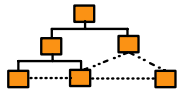
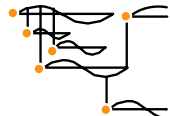
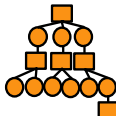
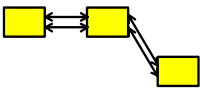
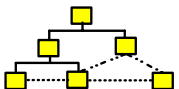
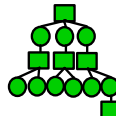

**Rule  
Completeness Matrix**

	What	How	Where	Who	When	Why
Business Area 1	✓	✓	✓	✓	✓	✓
Business Area 2	✓					
Business Area 3		✓		✓		✓
Business Area 4					✓	
Business Area 5	✓	✓		✓	✓	
Business Area N		✓				✓
	Internal Business Rules					
	Environmental Rules					
	Market Rules					
	Industry Rules					
	Government Rules					



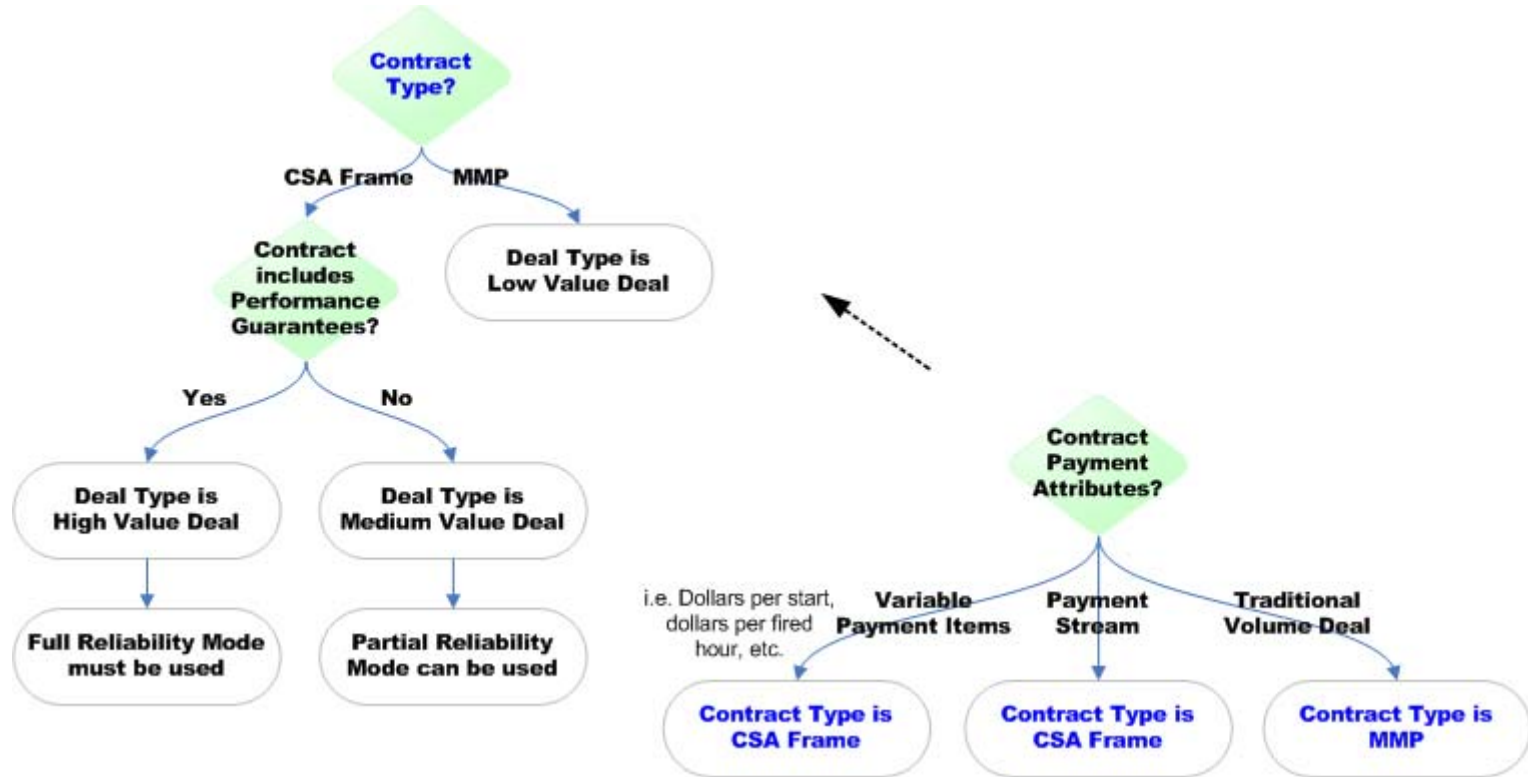


# ENTERPRISE ARCHITECTURE - A FRAMEWORK <sup>TM</sup>

DATA <i>What</i>	FUNCTION <i>How</i>	NETWORK <i>Where</i>	PEOPLE <i>Who</i>	TIME <i>When</i>	MOTIVATION <i>Why</i>		
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/Mean=Major Bus. Goal/Critical Success Factor	SCOPE (CONTEXTUAL)  <i>Planner</i>	
e.g. Semantic Model  Ent = Business Entity ReIn = 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)  <i>Owner</i>	
e.g. Logical Data Model  Ent = Data Entity ReIn = Data Relationship			e.g. Human Interface Architecture  People = Role Work = Deliverable			SYSTEM MODEL (LOGICAL)  <i>Designer</i>	
						e.g. Rule Design  End = Condition Means = Action	TECHNOLOGY MODEL (PHYSICAL)  <i>Builder</i>
						e.g. Rule Specification  End = Sub-condition Means = Step	DETAILED REPRESENTATIONS (OUT-OF CONTEXT)  <i>Sub-Contractor</i>
						e.g. STRATEGY	FUNCTIONING ENTERPRISE

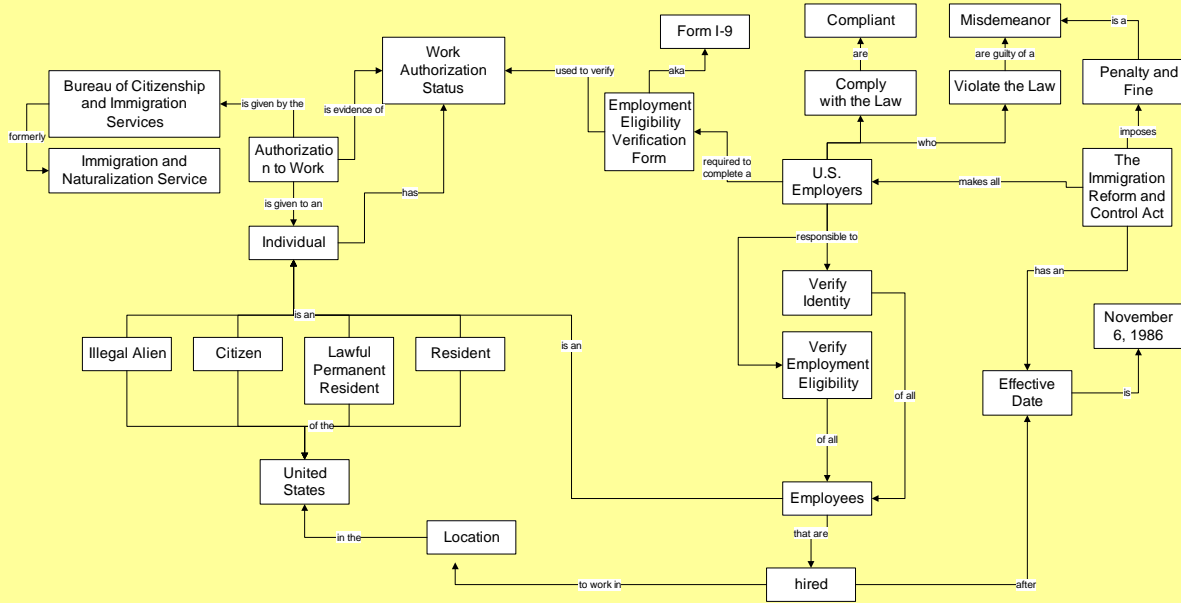
**We focused on modeling how the business works, not on documenting the requirements of the system**

# C4 Decision Tree Business Rules



LEGAL ENTITY MASTERFILE - CONCEPTUAL FACT MODEL(BUSINESS MAP)  
GL COMPONENT ENTITY

Employment Eligibility Verification BUSINESS MAP (FACT 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).

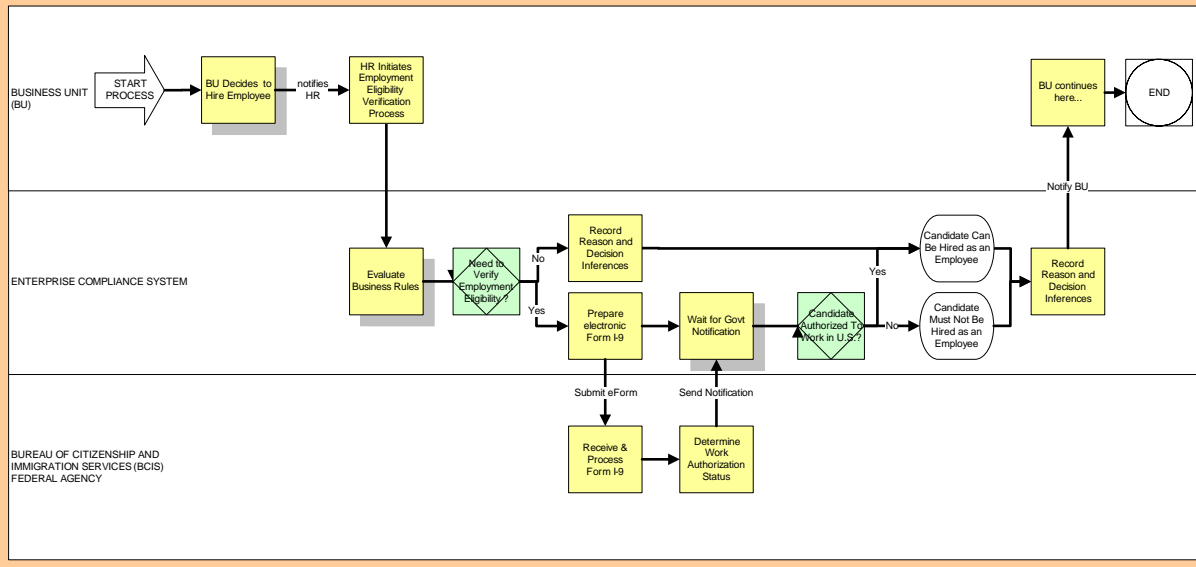
RULES

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.

DIGITIZED PROCESS



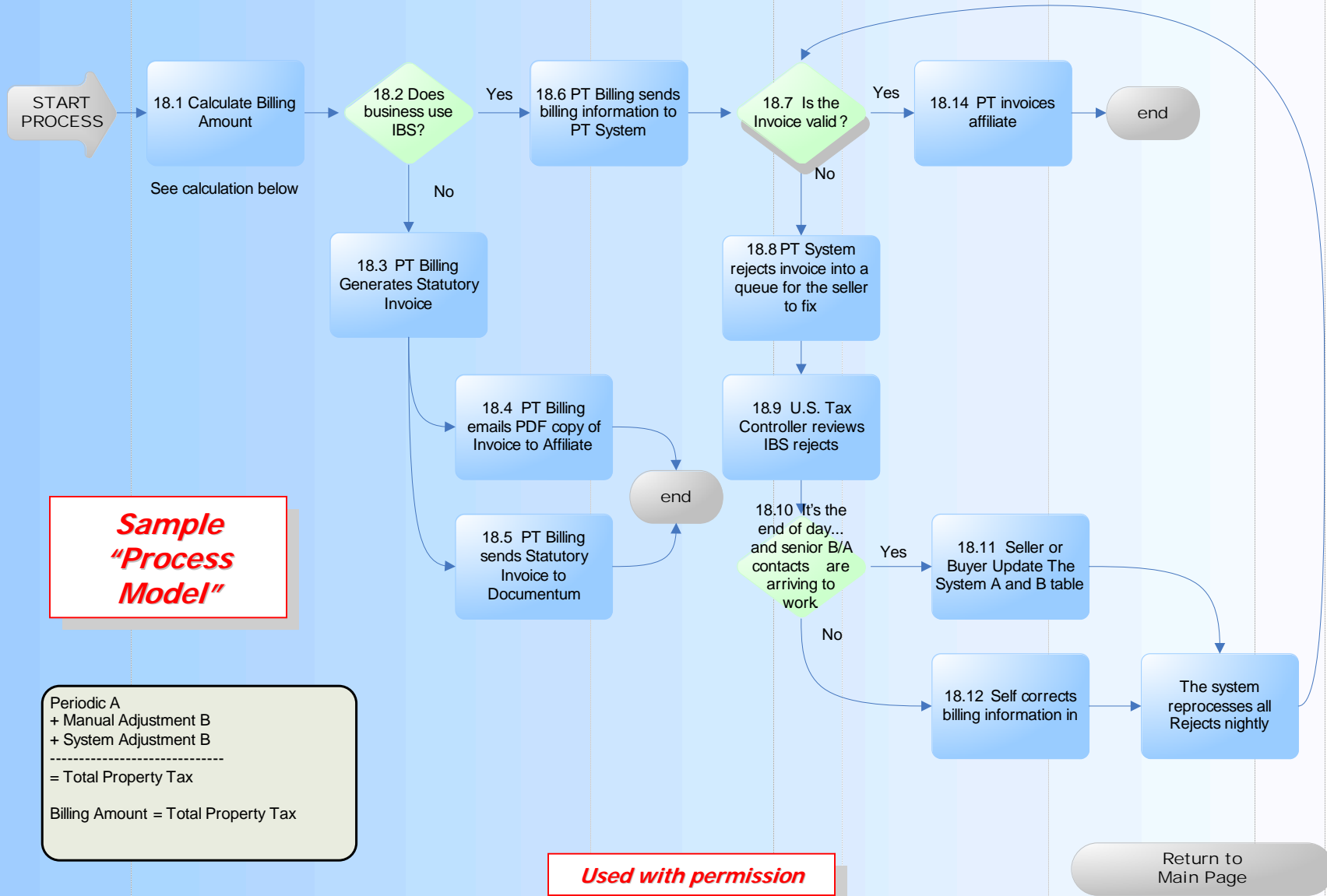
**Sample  
"Fact Model"**

**Used with permission**

# Tax Dept - Property Tax Business Process Model

## 18.0 Property Tax Billing Processes Internal Billing

Tax Dept  
Property Tax Billing Process



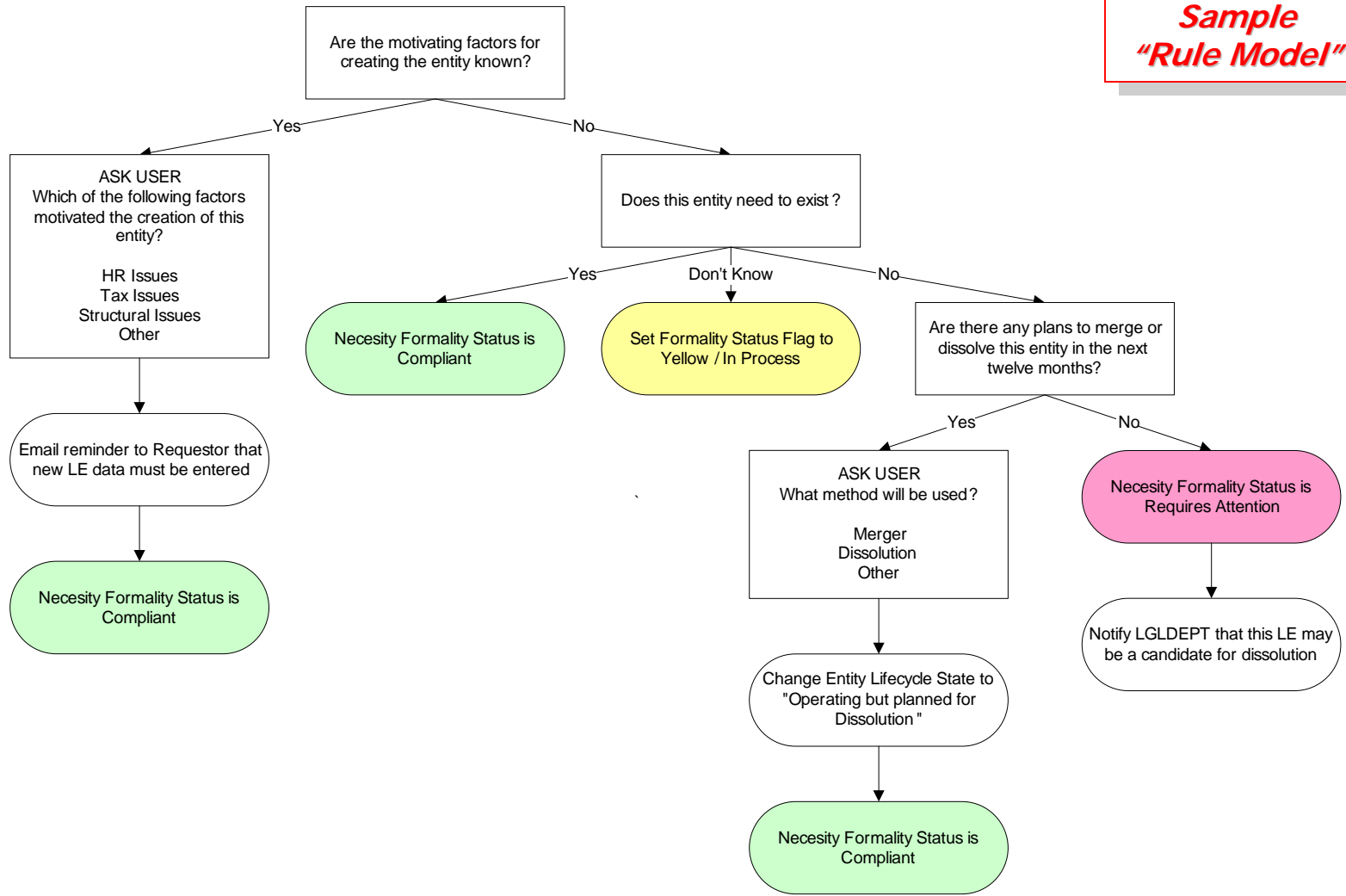
**Sample  
"Process Model"**

Periodic A  
+ Manual Adjustment B  
+ System Adjustment B  
-----  
= Total Property Tax  
  
Billing Amount = Total Property Tax

**Used with permission**

**LEGAL ENTITY MANAGEMENT SYSTEM- BUSINESS RULE MODEL**  
**SOX & GLOBAL STATUTORY COMPLIANCE02 - NECESSITY OF ENTITY FORMALITY RULES**

*Sample  
"Rule Model"*



*Used with permission*

# DEFINE

- Clearly define the problem that we are having with our current process:
  - too much time to make changes
  - metrics take too long to put together
  - refererencing what I have harvested is difficult
  - too many files to manage

# Metrics were previously 'static' in PowerPoint

Business Area	Initial Knowledge Acquisition (Rule Discovery)	Knowledge Representation (Rule Modeling)	Rule Flow Models	Terms	Fact Models	Fact Tables (Lookup Tables)	Visual Rule Models (Logical Decision Trees & Tables)	Rules
Global	100%	100%	1	814	4	25	9	41
Topic A	100%	100%	1	-	1	-	8	33
Topic B	100%	100%		-	-	1 (428 rules)	-	
Topic C	100%	100%	1	-	2	9	32	126
Topic D	100%	100%	1	-	-	-	29	78
Topic E	100%	100%	1	-	-	-	77	252
Topic F	70%	70%	1	-	-	-	1	3
Topic G	100%	100%	1	-	-	-	8	39
Topic H	100%	100%	1	-	-	-	1	4
Topic I	100%	100%	1	-	-	-	5	15
Topic J	90%	90%	1	-	-	-	27	89
Topic K	100%	100%	1	-	-	-	7	24
Topic L	70%	70%	1	-	-	-	7	19
Topic M	100%	100%	1	-	-	-	16	50
Topic N	70%	70%	1	-	-	-	1	5
Topic O	70%	70%	1	-	-	-	1	5
<b>BRC v2 Totals</b>			<b>15</b>	<b>814</b>	<b>7</b>	<b>35</b>	<b>229</b>	<b>783</b>
BRC v1 Totals			2	456	7	29	103	397
Difference			13	358	0	6	126	386

# MEASURE

- Measure the current process by collecting data on
  - time
  - metrics
  - updates
  - sorting



# ANALYZE

- Analyze the current process using Six Sigma tools to hi-lite where the process breaks down.
  - harvesting method?
  - documentation method?
  - tools being used?

# IMPROVE

- Improve the current “as is” process to remove or improve the steps where the process breaks down.
- Collect data on the new “to be” process.
- Compare the “as is” and “to be” data to show that a significant statistical improvement has been made.

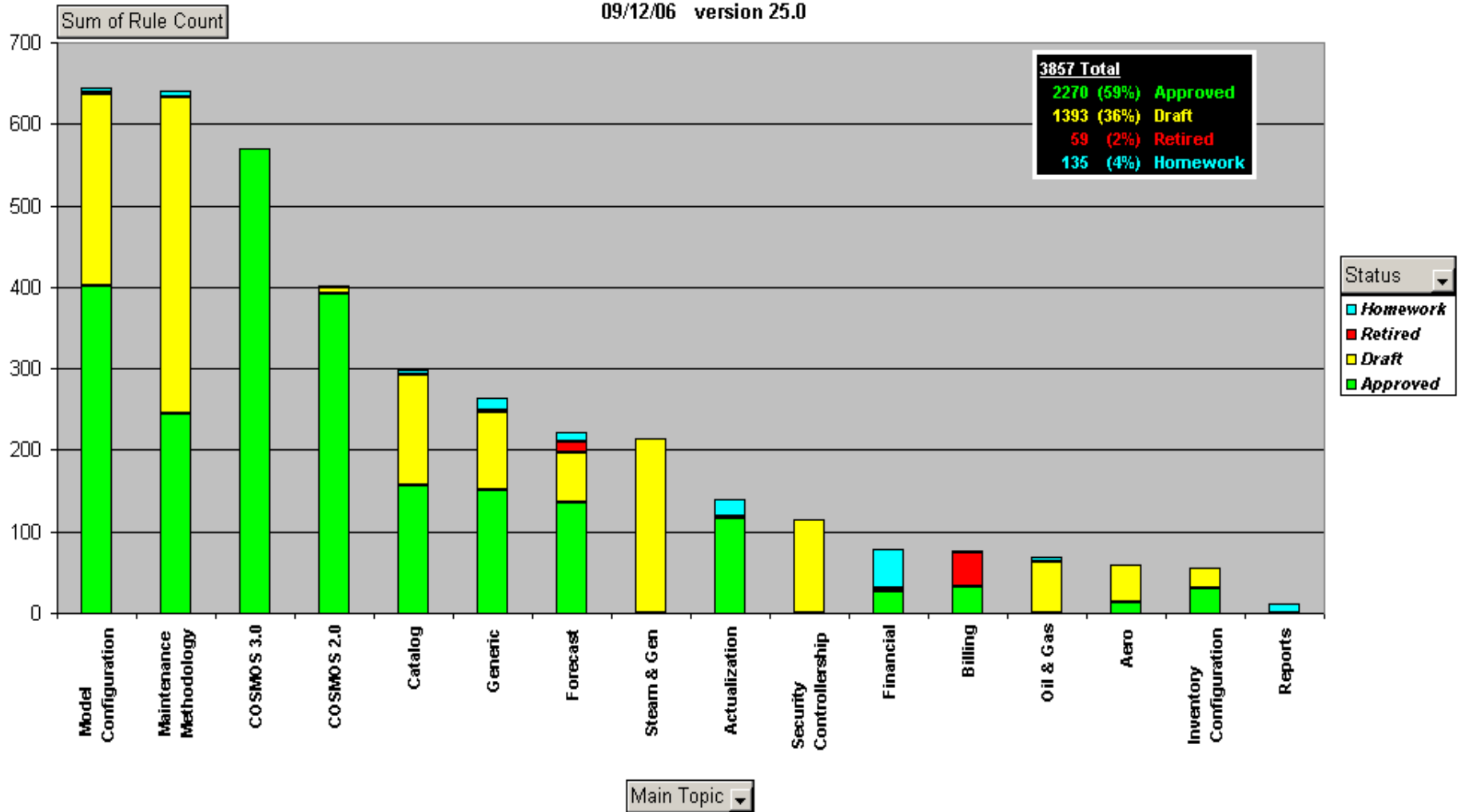
# CONTROL

- Control the new “to be” process so that the process stays in control over time regardless of user or subject.
  - the process has guard rails
  - the process is audited by QA
  - the process owner signs off

# Status

PM (All) BA (All) Harvested By (All) Harvested Date (All) SME (All) Sub Topic (All) Type (All) C4.0? (All) BRE? (All)

Project-X (Beta) Rule Book  
09/12/06 version 25.0



# Rule Management

Ref#	File Count	PM	BA	Harvested By	Harvested Date	Status	Source	SME	Main Topic	Sub Topic	Type	C4.0 ?	BRE ?	Comment	Link	Conceptual (Informal) Rule (DRAFT)	Logical Rule	Logical 'If
422	1	ALL	ALL	HB	03/17/06	Homework	Hank e-mail (3/13/06) filed		Generic	T's & C's	PJU Homework	Reviewed		Arun reviewed as of 5/1/06				
423	1	JC	SR	RH	03/17/06	Draft	Jay & Paul	JC	Model Configuration		Rule	Review		Arun reviewed as of 5/1/06	<a href="#">Model ITO'IA1</a>			
424	1	JC	SR	RH	03/17/06	Draft	Jay & Paul	JC	Model Configuration		Rule	Review		Arun reviewed as of 5/1/06	<a href="#">Model OTR'IA1</a>			
425	1	DP	JS	RH	03/17/06	Approved	KARD	Mariana & Efraim	Forecast	Parts	Fact	Reviewed		Arun reviewed as of 5/1/06		Cosmos only forecasts Full Sets		
426	1	DP	JS	RH	03/17/06	Approved	KARD	Mariana & Efraim	Forecast	Parts	Rule	Reviewed		Arun reviewed as of 5/1/06	<a href="#">Billing Decision Tree</a>	Depending on Risk of Loss and Title Transfer terms, for international contracts INCOTERMS also impacts SAB104	International Contract and INCOTERMS is DDP then GE pays Import Duties	International INCOTERM:
427	1	DP	JS	RH	03/17/06	Retired	KARD	Mariana & Efraim	Forecast	Parts	Rule	Reviewed		Arun reviewed as of 5/1/06	<a href="#">Billing Decision Tree</a>	Depending on Risk of Loss and Title Transfer terms, for international contracts INCOTERMS also impacts SAB104	International Contract and INCOTERMS is DDU then Customer pays Import Duties. i.e. Import Duties are unpaid to GE, and paid by the Customer	International INCOTERM:
428	1	DP	JS	RH	03/17/06	Retired	KARD	Mariana & Efraim	Forecast	Parts	Rule	Reviewed		Arun reviewed as of 5/1/06		-		
429	1	DP	JS	RH	03/17/06	Homework	KARD	Mariana & Efraim	Forecast	Parts	Ro Homework	Reviewed		Arun reviewed as of 5/1/06	<a href="#">CAPITAL PARTS FACT</a>	Develop a fact table to define which Parts are Capital Parts		

# METRICS

PM	(All)	▼
BA	(All)	▼
Harvested By	(All)	▼
Harvested Date	(All)	▼
SME	(All)	▼
Sub Topic	(All)	▼
Type	(All)	▼
C4.0?	(All)	▼
BRE?	(All)	▼

Sum of Rule Count		Status				Grand Total
Main Topic		Approved	Draft	Retired	Homework	
Model Configuration		402	235	1	6	644
Maintenance Methodology		244	390		6	640
COSMOS 3.0		569				569
COSMOS 2.0		393	7		1	401
Catalog		156	136		7	299
Generic		151	96	1	16	264
Forecast		136	61	13	12	222
Steam & Gen			214			214
Actualization		116	3		20	139
Security	Controllership		115			115
Financial		26	2	2	49	79
Billing		33		42	1	76
Oil & Gas			63		6	69
Aero		13	47			60
Inventory	Configuration	31	24			55
Reports					11	11
Grand Total		2270	1393	59	135	3857

**59%      36%      2%      4%      100%**

# DEMO

[..\My Documents\1 Rules Engine\Harvesting\PXB Rule Book v25.0 09-12-06.xls](#)