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SAPIENS
DECISION

Embracing Decision Model Standards

For Business Analysts

Barbara von Halle
June 30, 2016

www.sapiensdecision.com

Barbara von Halle

Barbara von Halle was a member of the OMG DMN 1.0 committee, is co-inventor of The Decision Model, The Event Model, and co-author of The Decision Model: A Business Logic Framework Linking Business and Technology published by Taylor and Francis LLC 2009. The fifth recipient of the Outstanding Individual Achievement Award from International DAMA, she was inducted into the Hall of Fame in 1995. Her earlier book, Business Rules Applied (Wiley) was a Jolt Award finalist from Software Development Magazine. And her first book, Handbook of Relational Database Design, continues to be a standard reference in database design. She was the most popular columnist in the leading publication, Database Programming and Design magazine for over five years.
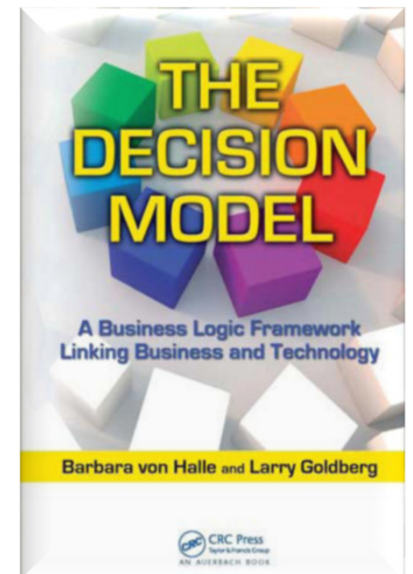
Sapiens – Corporate ID

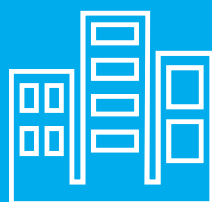**Leading global provider** of software solutions for the financial services industry

150+ customers, globally

Publicly traded on NASDAQ and TASE ("**SPNS**")

Global, with offices in NA, UK, Europe, and APAC

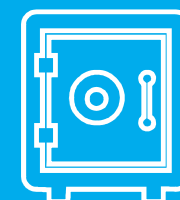**1700 +** Finance and Technology experts

2015 Revenue: **$179M**

2015 Profit: **$22.1M**

2016 Revenue Guidance: **$207M+**

~$94M cash position as of the end-of-year 2015

No debt

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What
Software and methodology for **business users** to manage the full cycle of regulatory, policy and operational **decisions** as business logic, treating this **logic as an asset** that can be **changed and governed** by the same business users.

How
A **model is created to represent the structure of the decision logic.** The model is validated and tested for precision during creation and when changes are made, enforces integrity, and is auto-transformed into executable code.

Our customers benefit from
- Reduced operational cost/risk
- Simplified business system implementation and maintenance
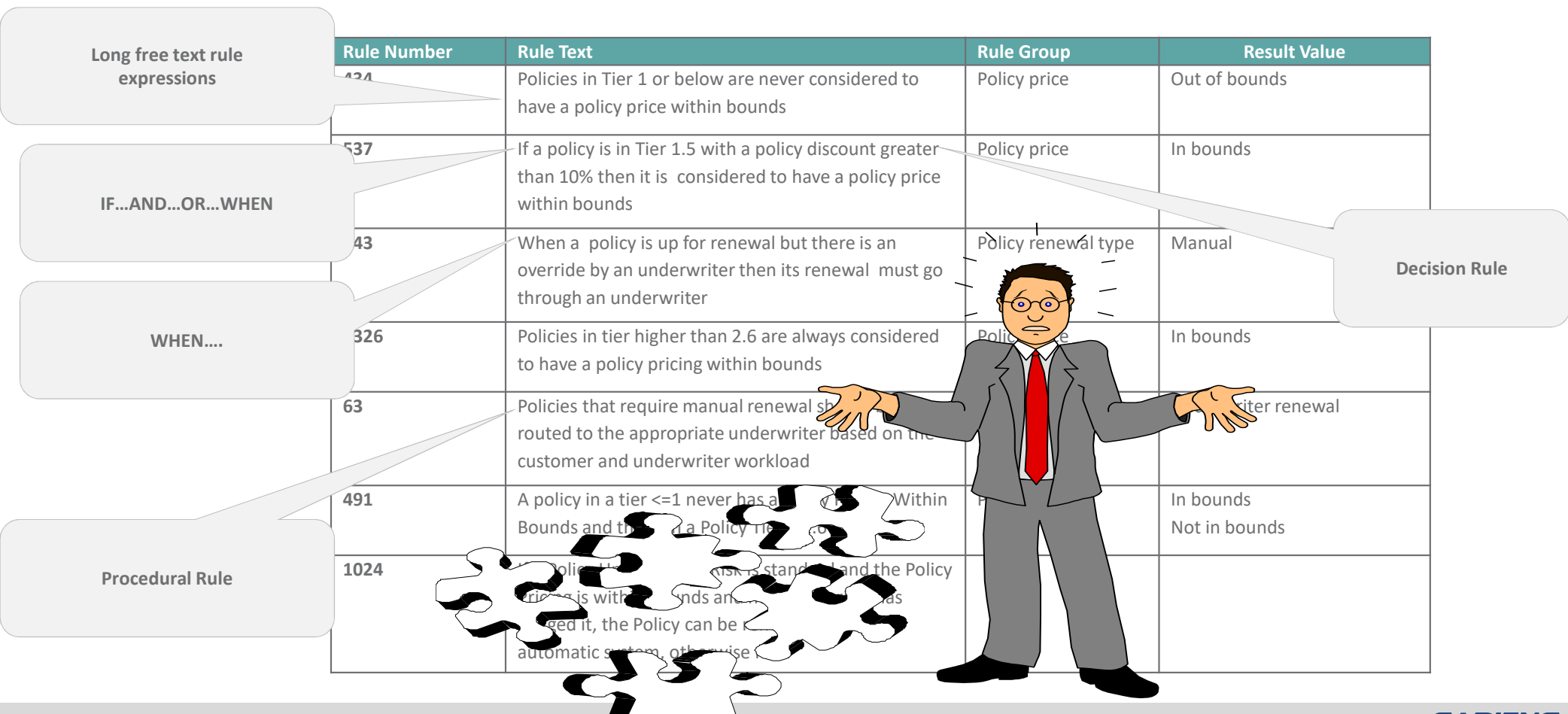- Faster time to market for new products, services and updates

Our business
- Strong revenue growth
- Global 1000 customers
- Global footprint
- Significant R&D investment
- Structured, proven delivery methodology

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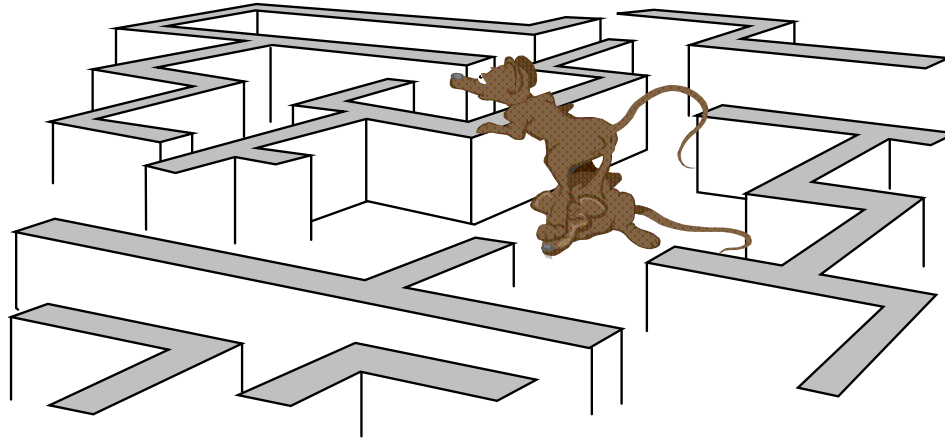
Part 1: Navigating and Leveraging the Unique World of DMN and TDM
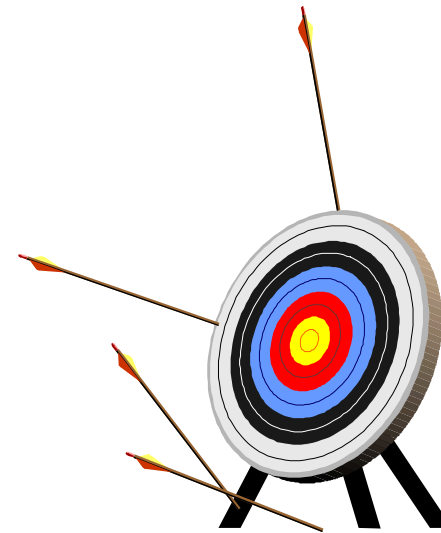
Before Decision Modeling: Common Business Rules Approach

	Rule Number	Rule Text	Rule Group	Result Value
Long free text rule expressions	434	Policies in Tier 1 or below are never considered to have a policy price within bounds	Policy price	Out of bounds
IF...AND...OR...WHEN	537	If a policy is in Tier 1.5 with a policy discount greater than 10% then it is considered to have a policy price within bounds	Policy price	In bounds
	43	When a policy is up for renewal but there is an override by an underwriter then its renewal must go through an underwriter	Policy renewal type	Manual
WHEN....	326	Policies in tier higher than 2.6 are always considered to have a policy pricing within bounds	Poli...	In bounds
	63	Policies that require manual renewal sh... routed to the appropriate underwriter based on the customer and underwriter workload	...iter renewal	
	491	A policy in a tier <=1 never has a... ...Within Bounds and th... a Policy ...		In bounds Not in bounds
Procedural Rule	1024	...Polic... ...isk is stand... and the Policy ...icing is with... ...nds an... ...as ...ged it, the Policy can be r... automatic system, otherwise ...		

Decision Rule

Common Results (Actual Case Study)

>15,000 rules

12 weeks

2 analysts

They gave up!

- **Incomplete**
- **Inconsistent (multiple logical errors)**
- **Unsustainable**
- **Not reusable**

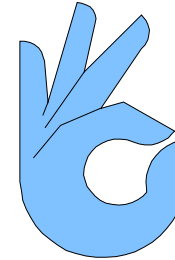SAPIENS
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Part 1a: DMN

Poll Question:

Were you familiar with the OMG Decision Model and Notation (DMN) before this Webinar?
(Y/N)

"The Decision Model and Notation (DMN) may be (one of) the most significant OMG standard to date."

Why We Believe that DMN is So Important

- The IT-Community's standard for decision modeling!

- A standard for a practice that isn't new because decision modeling (with The Decision Model) has been adopted by major organizations with outstanding success.

- Elevates decision management/modeling to a legitimate IT software space.

- Ushers in an era of living decision models as instruments of change(***).

- Opens the door to future innovation(***).

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The DMN Story – Exciting News for Everyone!!!

- **Decision Model and Notation (DMN)**
  - is a decision modeling standard maintained by the Object Management Group (OMG)

- **DMN history:**
  - DMN originated with representations made by Larry Goldberg and James Taylor at a December 2007 OMG Technical meeting
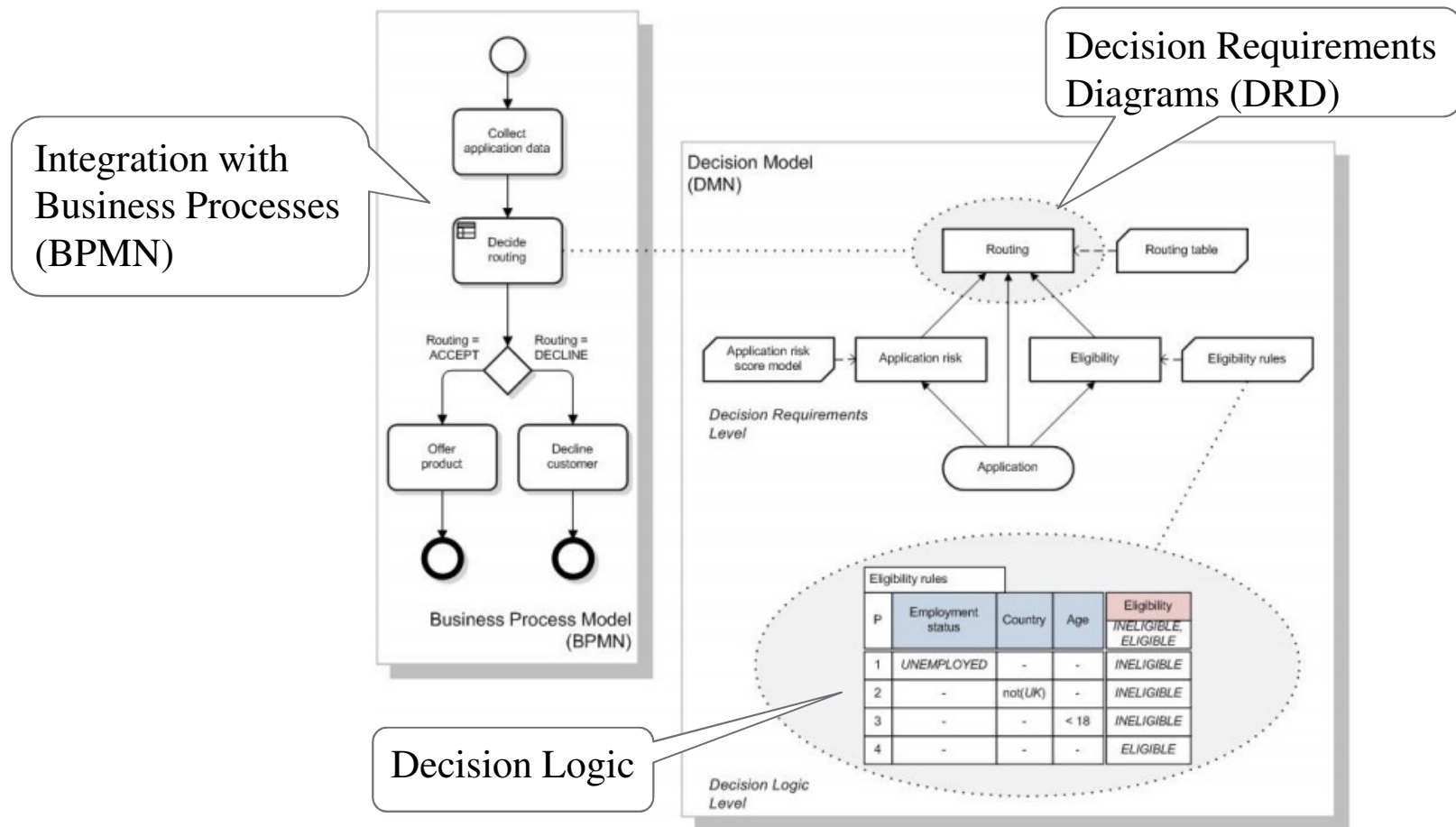 - DMN 1.0 published November, 2014
  - DMN 1.1 expected in 2016

IBM

Knowledge Partners International
kpi

ORACLE

DECISION MANAGEMENT SOLUTIONS

TIBCO
The Power of Now

FICO

Model Systems

KATHOLIEKE UNIVERSITEIT LEUVEN

Escape Velocity

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What is DMN Modeling?

Integration with Business Processes (BPMN)

Decision Requirements Diagrams (DRD)
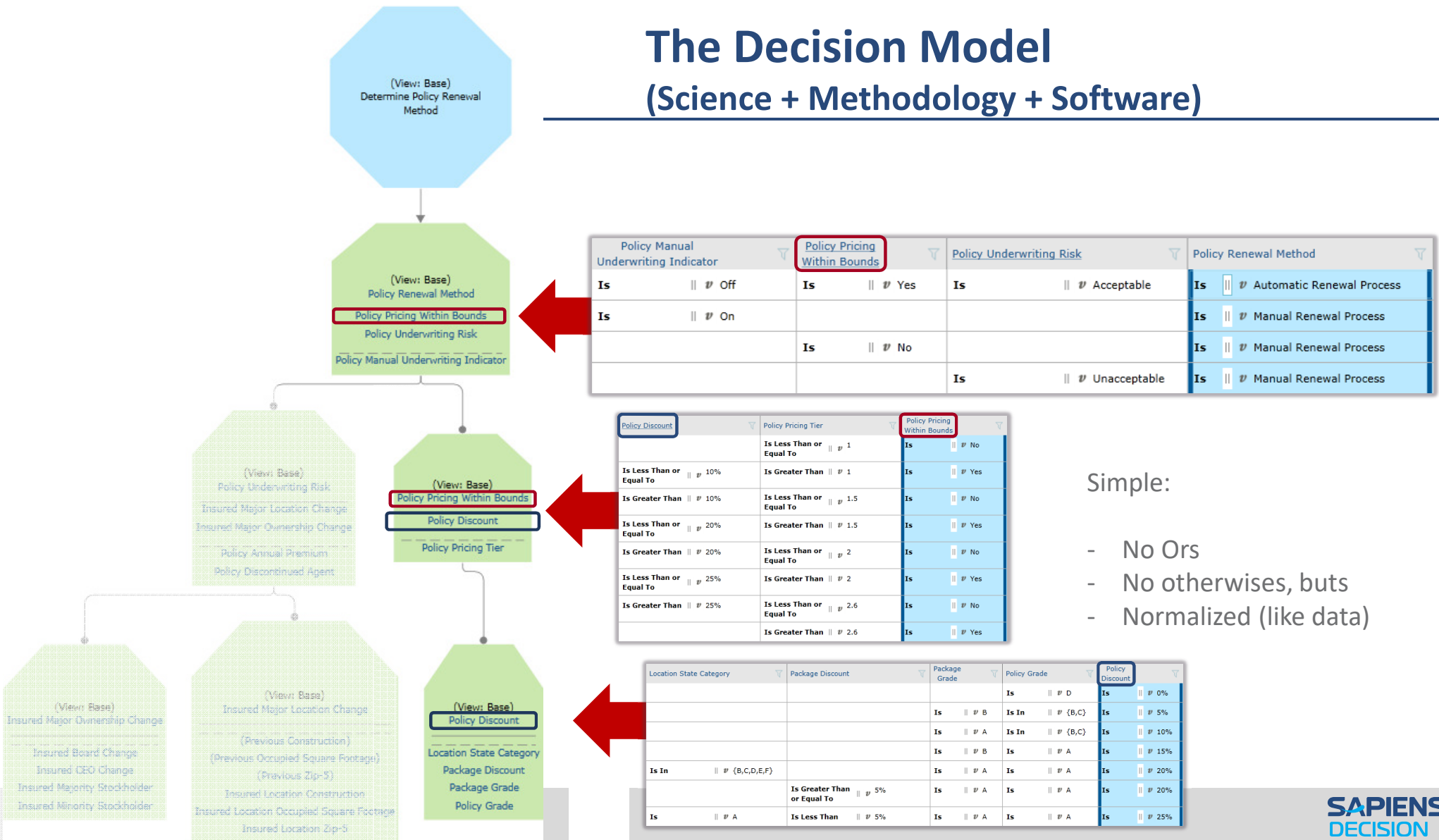
Decision Logic

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Part 1b: TDM

Poll Question:

*Were you familiar with TDM (The Decision Model) before this Webinar?
(Y/N)*

The Decision Model
## (Science + Methodology + Software)

Simple:

- No Ors
- No otherwise, buts
- Normalized (like data)

TDM Integrity Principles Detect the Following in Total Models

- **Overlaps in logic**
- **Gaps in logic**
- **Unnecessary redundancies in logic**
- **Broken links among connections**
- **Circular logic**
- **Expressions that don't make sense**
- **Violations of 1,2,3 (4) normal forms**

$\Rightarrow$**The Principles are in the book, Table 12.2**

$\Rightarrow$**Is this a big deal?**
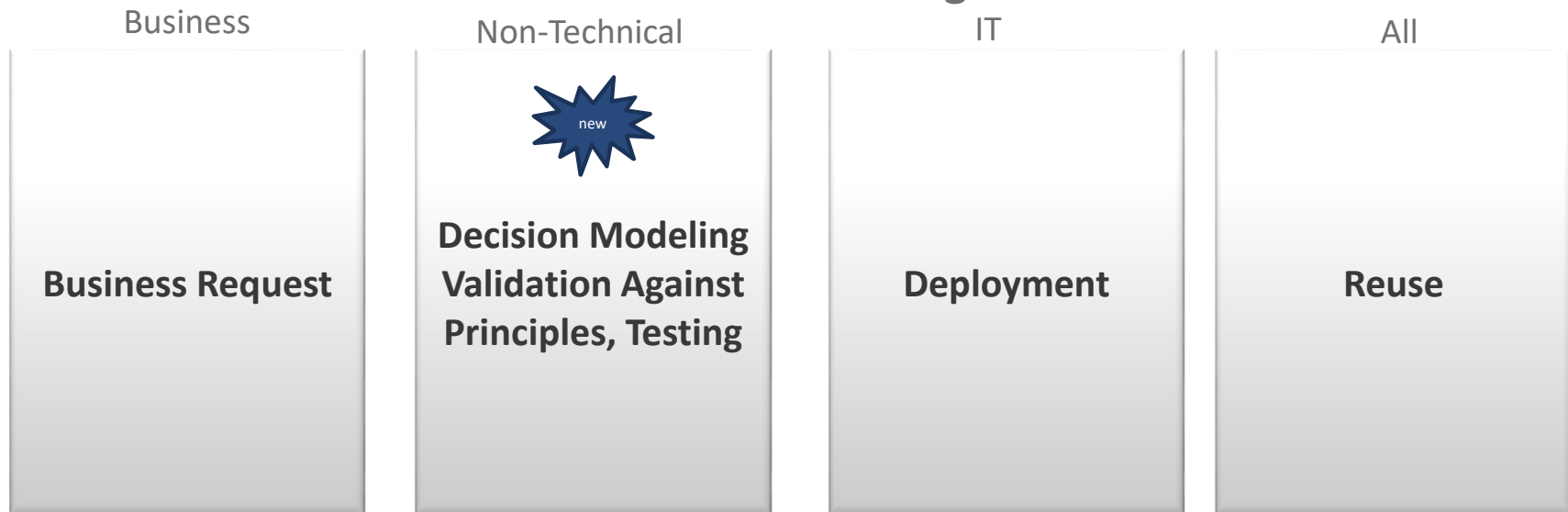
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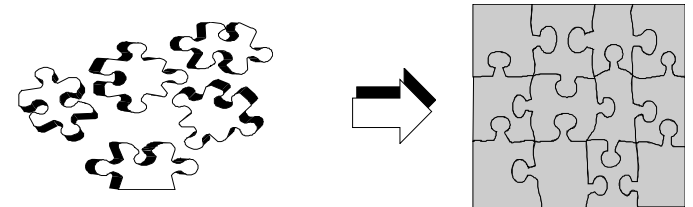
Decision Models in Production in our Clients <u>Today!</u>

- Securitization of mortgages
- Mortgage secondary market eligibility
- Mortgage origination
- Mortgage securitization pooling and administration
- Retail banking account management
- Client on boarding
- Derivation confirmation
- Investment banking back office operations
- Fraud detection
- Data quality/data acceptance

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Breaking Barriers Begins With Moving the Line in the Sand

Empower non-technical professionals to do more! Our Customers are Doing This Now!

Business	Non-Technical	IT	All
Business Request	new **Decision Modeling Validation Against Principles, Testing**	**Deployment**	**Reuse**

*Living Models emerge when changes are made to models –
Never again directly to program code!*

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Return to the Case Study:
Deliver a Strategically Managed Business Asset

>15,000 rules

12 weeks

2 analysts

- Incomplete

- Inconsistent (multiple logical errors)

- Unsustainable

- Not reusable

And Smash the Change Barrier!

24 Decision Models

149 Rule Family Views

3 weeks

3 analysts

+

Over 35,000 test cases generated automatically

✓ **Clarity**

✓ **Completeness**

✓ **Sustainability**

✓ **Validation**

>15,000 rules

12 weeks

2 analysts

- ■ **Incomplete**
- ■ **Inconsistent (multiple logical errors)**
- ■ **Unsustainable**
- ■ **Not reusable**

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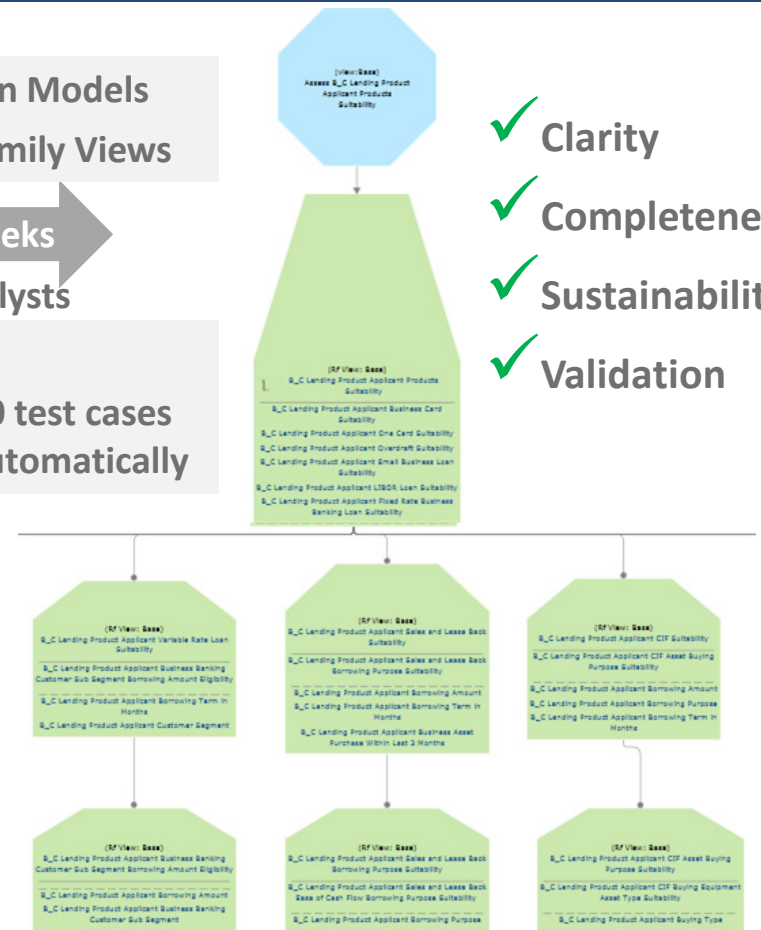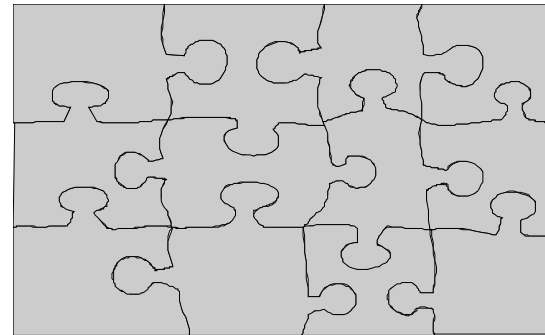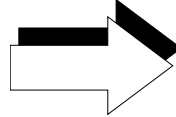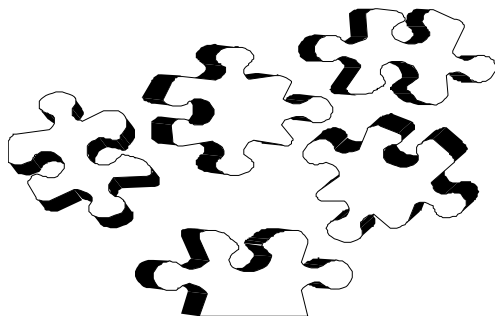
Part 2: Supercharging Your DMN Models

Poll Question:

Are you working on a current decision modeling project? (Y/N)

Example 1: TDM Incompleteness Detection

		Conditions				Conclusion	
Row ID	Rule Pattern	Work Time from Home Percentage		Home to Office Distance Miles		Work Location Acceptable Indicator	
1	1	Is Between	{50, 100}			is	acceptable
2	1	<	10			Is	unacceptable
3	2	Is Between	{10,40}	<=	40	Is	acceptable
4	2	Is Between	{10, 40}	>	40	Is	unacceptable

Business-Name	Business Data Type	Business Values	Business Definition
Work Time from Home Percentage	Percent	0-100%	Allowable time to work from home office
Home to Office Distance Miles	Integer	0-1000	Travel distance from home office to employer office
Work Location Acceptable Indicator	Indicator	{acceptable, unacceptable]	

Original Business Source: (goal: minimize commute time)

1: If Work Time From Home Percentage is between 50 and 100%, then acceptable.

2: but if it is less than 10%, then it is unacceptable.

3. Yet, if the Work Time From Home Percentage is between 10% and 40% and the Home to Office Distance is within 40 miles, then the Work Location Acceptable Indicator is acceptable,

4. Otherwise, it is not.

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Example 1: TDM Incompleteness Detection

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Row ID	Rule Pattern	Work Time from Home Percentage		Home to Office Distance Miles		Work Location Acceptable Indicator	
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Example 1: TDM Incompleteness Detection

		Conditions				Conclusion		Message
Row ID	Rule Pattern	Work Time from Home Percentage		Home to Office Distance Miles		Work Location Acceptable Indicator		
1	1	Is between	{50, 100}			is	acceptable	
2	1	<	10			Is	unacceptable	
3	2	Is Between	{10,40}	<=	40	Is	acceptable	
4	2	Is Between	{10, 40}	>	40	Is	unacceptable	
5	?		{40,50}	?	?	is	???	

Original Business Source: (goal: minimize commute time)

1: If Work Time From Home Percentage is between 50 and 100%, then acceptable.

2: but if it is less than 10%, then it is unacceptable.

3. Yet, if the Work Time From Home Percentage is between 10% and 40% and the Home to Office Distance is within 40 miles, then the Work Location Acceptable Indicator is acceptable,

4. Otherwise, it is not.
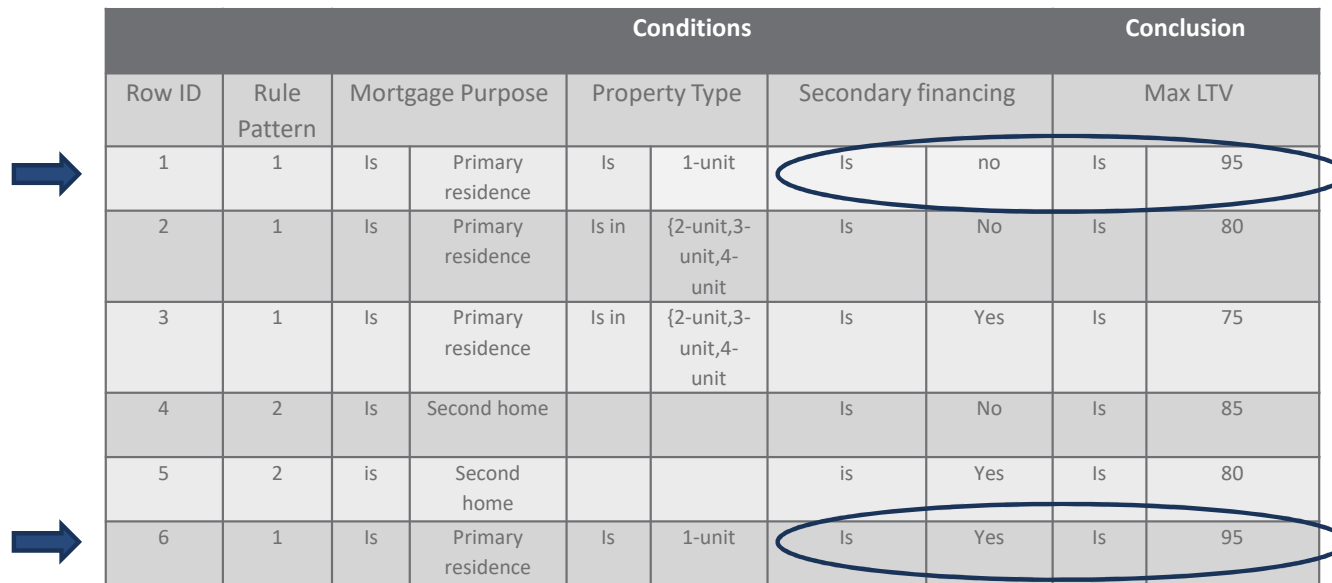
Example 2: TDM Irrelevant Condition Detection

		Conditions							Conclusion
Row ID	Rule Pattern	Mortgage Purpose		Property Type		Secondary financing			Max LTV
1	1	Is	Primary residence	Is	1-unit	Is	No	Is	95
2	1	Is	Primary residence	Is in	{2-unit,3-unit,4-unit	Is	No	Is	80
3	1	Is	Primary residence	Is in	{2-unit,3-unit,4-unit	Is	Yes	Is	75
4	2	Is	Second home			Is	No	Is	85
5	2	is	Second home			is	Yes	Is	80
6	1	Is	Primary residence	Is	1-unit	Is	Yes	Is	95

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Example 2: TDM Irrelevant Column Detection

The magic of normalization science

Irrelevant condition

Row ID	Rule Pattern	Mortgage Purpose		Property Type		Secondary financing		Max LTV	
								Conclusion	
1	1	Is	Primary residence	Is	1-unit	Is	no	Is	95
2	1	Is	Primary residence	Is in	{2-unit,3-unit,4-unit	Is	No	Is	80
3	1	Is	Primary residence	Is in	{2-unit,3-unit,4-unit	Is	Yes	Is	75
4	2	Is	Second home			Is	No	Is	85
5	2	is	Second home			is	Yes	Is	80
6	1	Is	Primary residence	Is	1-unit	Is	Yes	Is	95

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Example 3: TDM Redundant Row Detection

The magic of normalization science

			Conditions						Conclusion	
Row ID	Rule Pattern	Mortgage Purpose		Property Type		Secondary financing			Max LTV	
1	1	Is	Primary residence	Is	1-unit			Is	95	
2	1	Is	Primary residence	Is in	{2-unit,3-unit,4-unit	Is	No	Is	80	
3	1	Is	Primary residence	Is in	{2-unit,3-unit,4-unit	Is	Yes	Is	75	
4	2	Is	Second home			Is	No	Is	85	
5	2	is	Second home			is	Yes	Is	80	
6	1	Is	Primary residence	Is	1-unit			Is	95	

Redundant rows

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Example 3: TDM Redundant Row Detection

The magic of normalization science

Conditions								Conclusion	
Row ID	Rule Pattern	Mortgage Purpose		Property Type		Secondary financing		Max LTV	
1	1	Is	Primary residence	Is	1-unit			Is	95
2	1	Is	Primary residence	Is in	{2-unit,3-unit,4-unit	Is	No	Is	80
3	1	Is	Primary residence	Is in	{2-unit,3-unit,4-unit	Is	Yes	Is	75
4	2	Is	Second home			Is	No	Is	85
5	2	is	Second home			is	Yes	Is	80

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Three Ways You Can Supercharge Your DMN Models (or TDM Models) without Software!

1. **Create a glossary and establish a Glossary Administrator**

   Business-friendly names, definition, and data values

2. **Apply TDM structural principles (1-7) to DMN decision tables**

   Cells conform to headings (based on business glossary)
   Decision table has only one conclusion
   Decision table does not have irrelevant conditions

3. **Apply TDM integrity principles (12-14) to DMN decision tables**

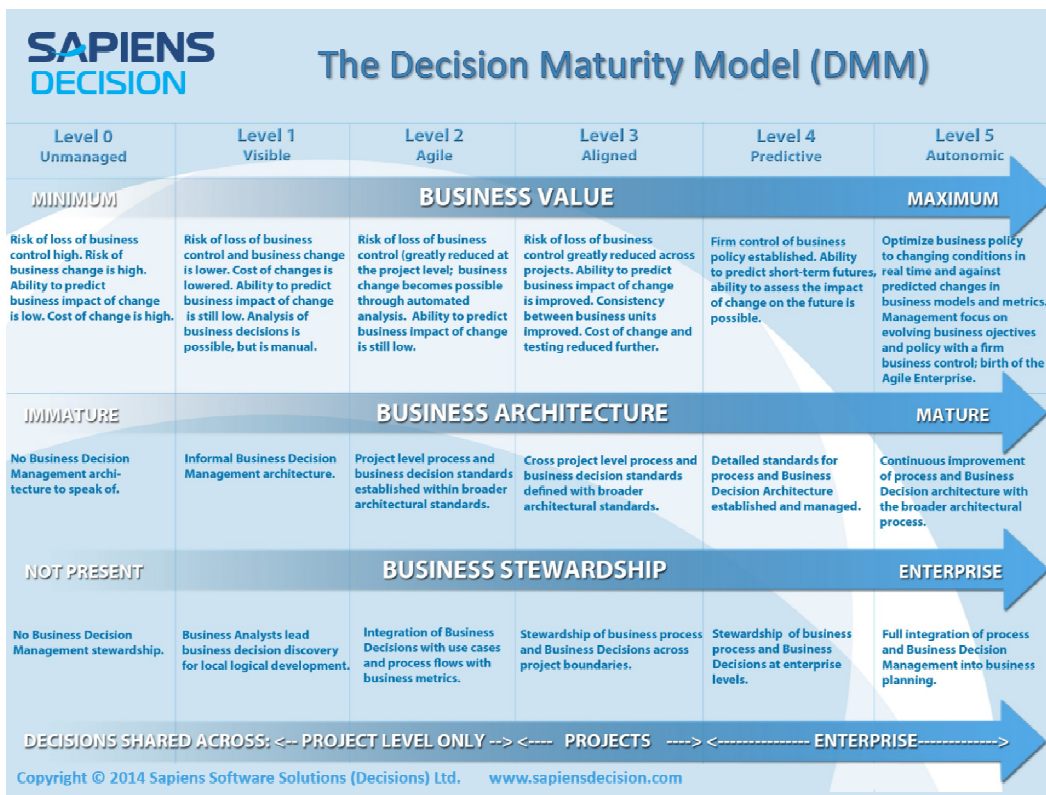   Conditions and conclusions cover all domain values
   No duplicate rows

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Part 3: Tailoring a Roadmap

Poll Question:

Are you interested in decision modeling/management software? (Y/N)

Simple Guide for Organizations

The Decision Maturity Model (DMM)

Level 0: Unmanaged
  no tool needed

Level 1: Visible
  Sketching tool
  No execution ability
  (requirements to IT)

Level 2: Agile
  Modeling/execution tool
  simple, limited automation
  (BRMS or other)

Level 3: Aligned
  Enterprise suite
  Cross-project (views)
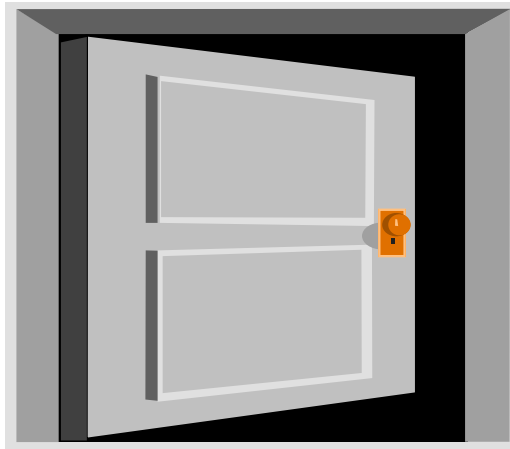 Any/many-execution

Level 4: Predictive
  Analytics

Level 5: Autonomic
  Real time change

DMN
(or TDM)

TDM

Part 4: Embracing an Intriguing Future

This the beginning, not the end, of a New Journey

Data   Process   Decisions

Complex Event Detection

Sapiens DECISION Roadmap: Steadily Increasing DMN Support

- **Render pre-existing models in DMN and TDM (Today)**

- **Sketch models from start to finish in either standard (Coming)**

- **Support DMN expression language FEEL (Pending Market Demand)**

- **Plus more…ask for an NDA for details**

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Call to Action

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Your Call to Action

Read the Primer on TDM

- Get a head start on decision modeling and management by learning about the principles in The Decision Model.

- Download and read the primer from here:
http://www.sapiensdecision.com/appro ach/the-decision-model/

- Or directly from here:
http://info.sapiens.com/navigating-current-and-emerging-decision-modeling-methods-and-standards.html

Schedule a Demo

- Let us come by and show you and your management how to start a decision modeling project

- In less than 2 hours, we can have your business analysts reducing costs

- info@SapiensDecision.com

Pick a Decision to Model

- Don't worry about the low-hanging fruit…they aren't going anywhere

- Pick a good, meaty, complex process with lots of decision logic.   Let us show you how you can tackle it and save the day!

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Questions and Answers

Followup Contact Information:

TDM Primer: www.SapiensDecision.com
Google A Primer for The Decision Model Sapiens

TDM Templates: www.kpiusa.com /download
Demo: info@Sapiens.Decision.com
Barb: Barbara.vonhalle@Sapiens.com

Thank You

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