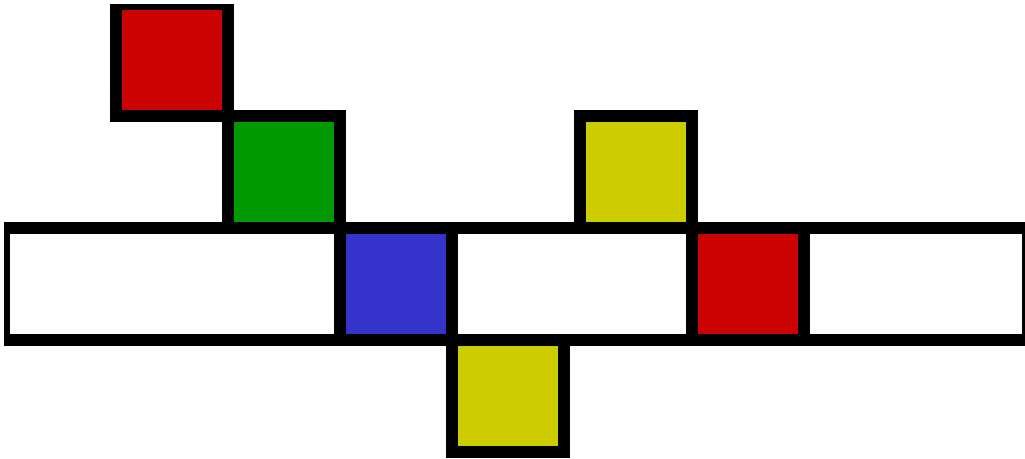# Business Rules Engines and Microsoft BizTalk Server 2004 BRE

For Miami Users Group, June 17, 2004
By Rolando Hernandez, BizRules.com

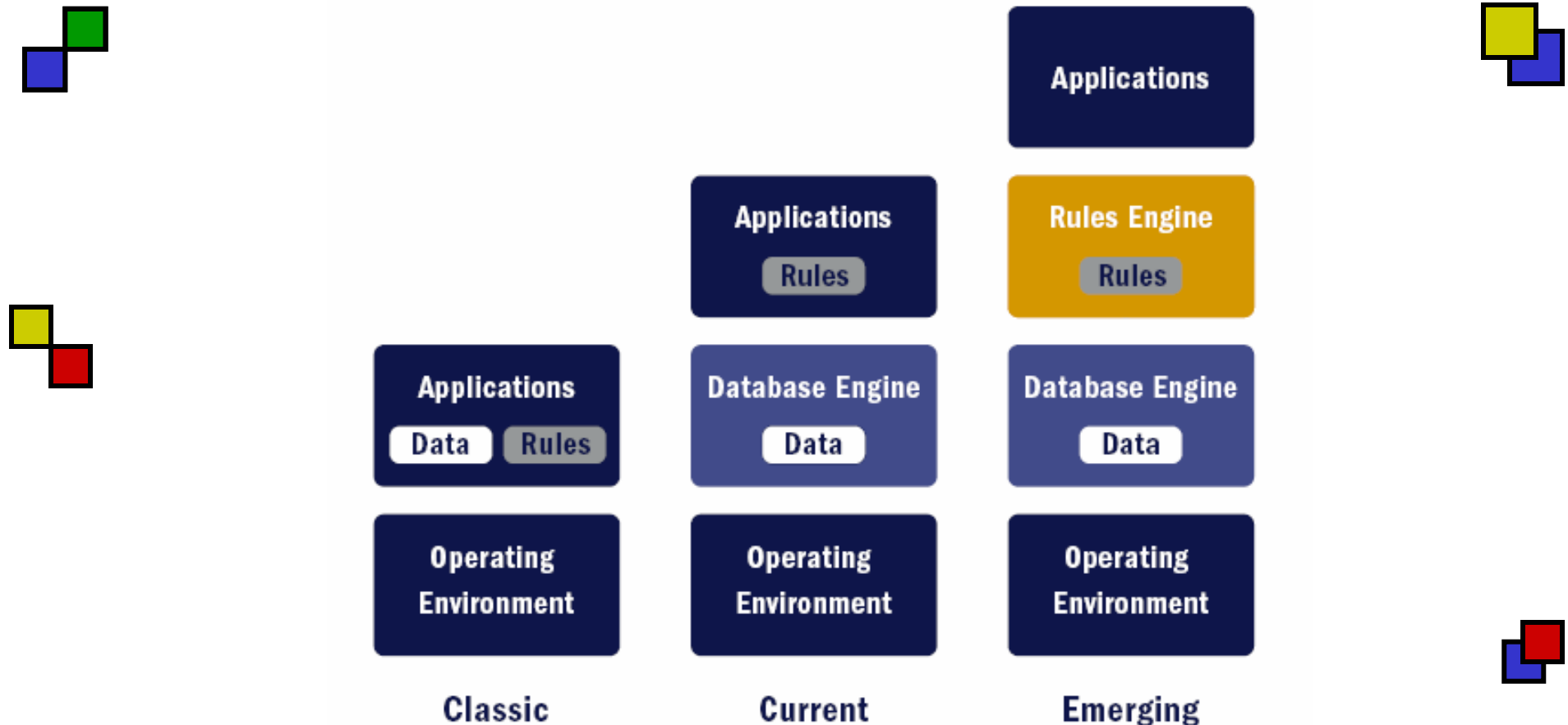# What's a Rule Engine ?

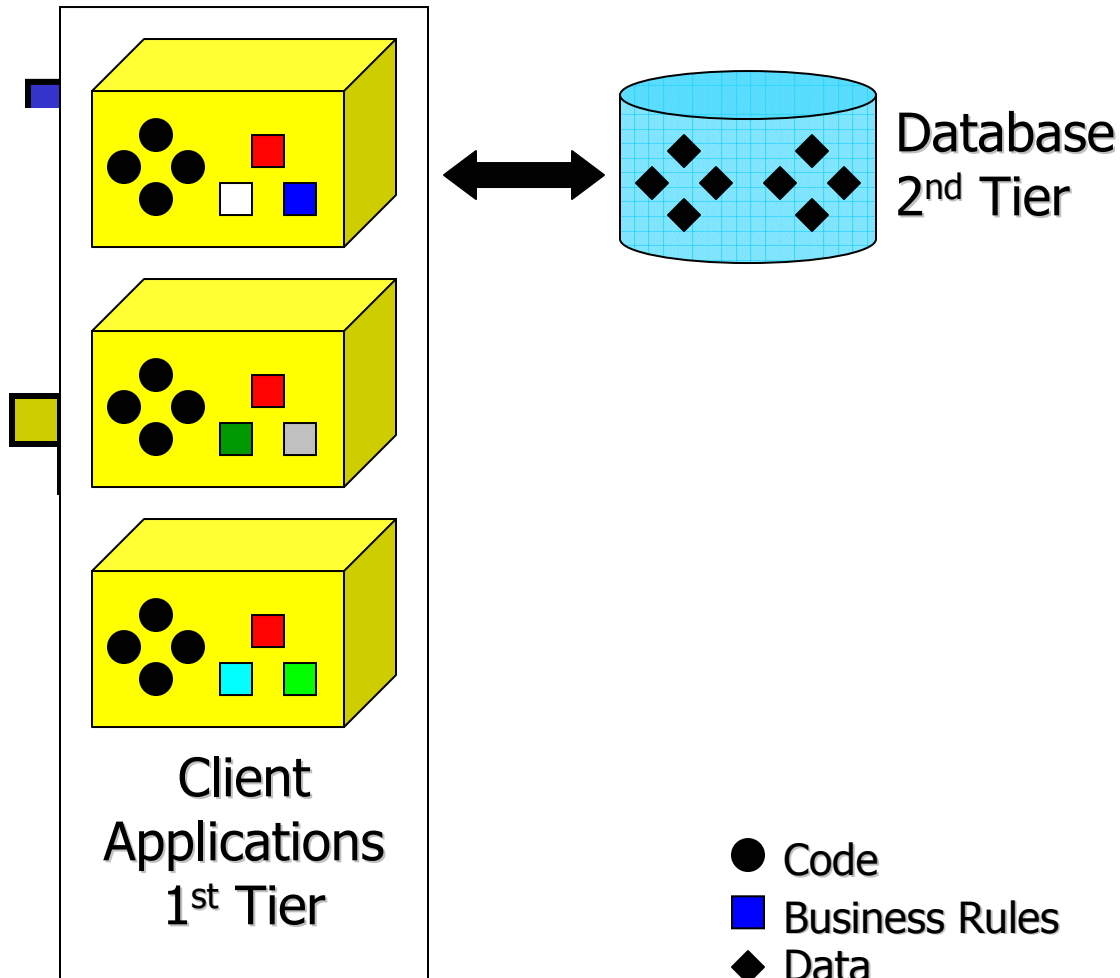# Database for data... Rulebase for rules
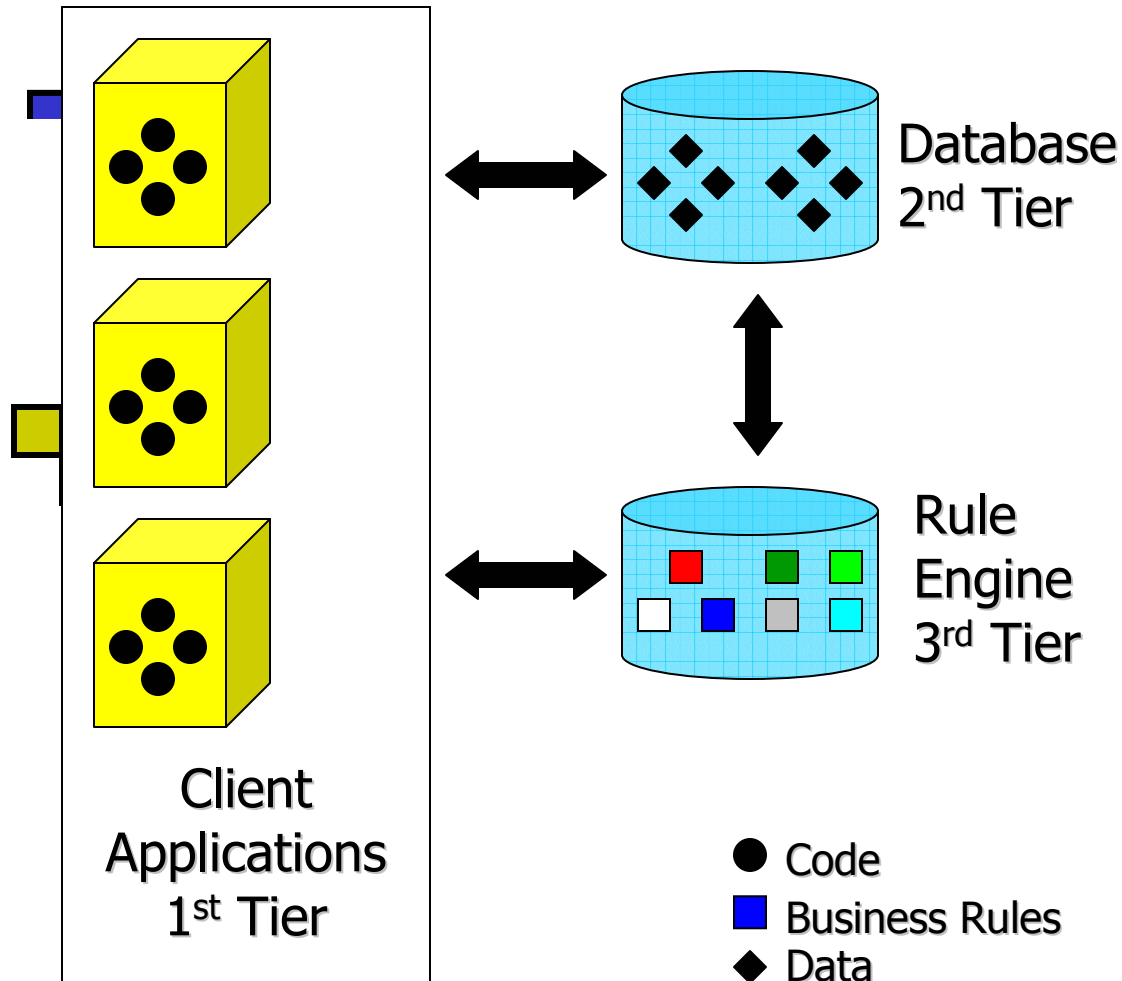

Applications

Applications
Rules

Rules Engine
Rules

Applications
Data | Rules

Database Engine
Data

Database Engine
Data

Operating Environment

Operating Environment

Operating Environment

Classic

Current

Emerging

Traditional programming approach using hard-coded rules

Database
2nd Tier

Client
Applications
1st Tier

● Code
■ Business Rules
◆ Data

Problems

• **Duplicate rules must be coded & maintained in many systems**

• **Hard to isolate rules from code during maintenance**

• **Even harder to change and test apps**

• **Takes months to change 'hard-coded' business logic**

• **Redundant development & maintenance costs**

Modern rules-based approach using a Rule Engine instead of hard-coding rules

Database 2nd Tier

Rule Engine 3rd Tier

Client Applications 1st Tier

● Code
■ Business Rules
◆ Data

Benefits

- **Shared rules (Reuse)**
- **Rules coded once**
- **Rules are isolated from code**
- **Smaller Applications**
- **Easier to change and test applications**
- **Takes days to change business rules → Faster Time to Market**
- **Lower Development & Maintenance costs**

New Application Development Model
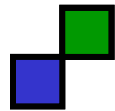
- **Model-Driven Architecture (MDA)**
  - **Models generate the code automatically**

- **Business Process Management (BPM)**
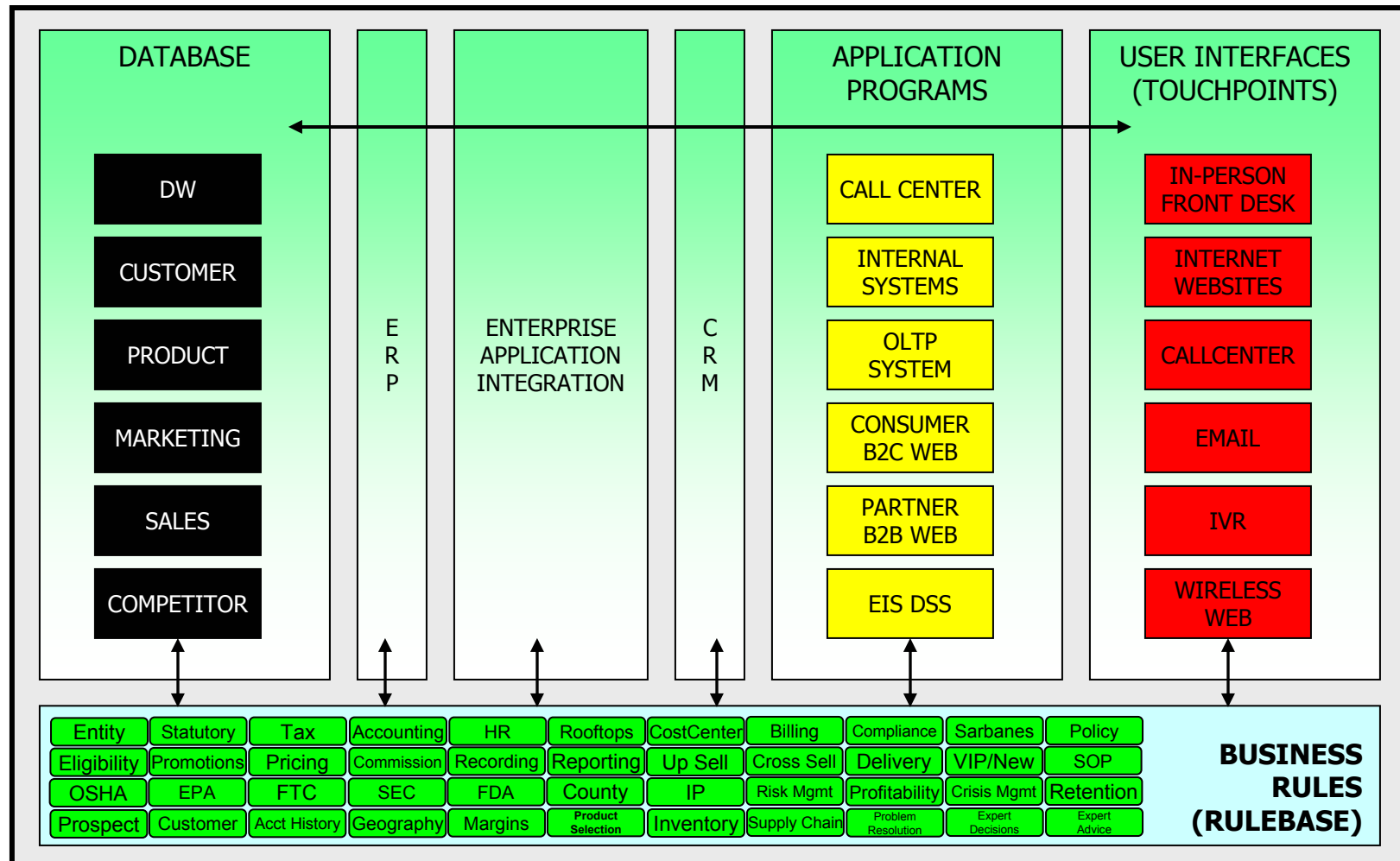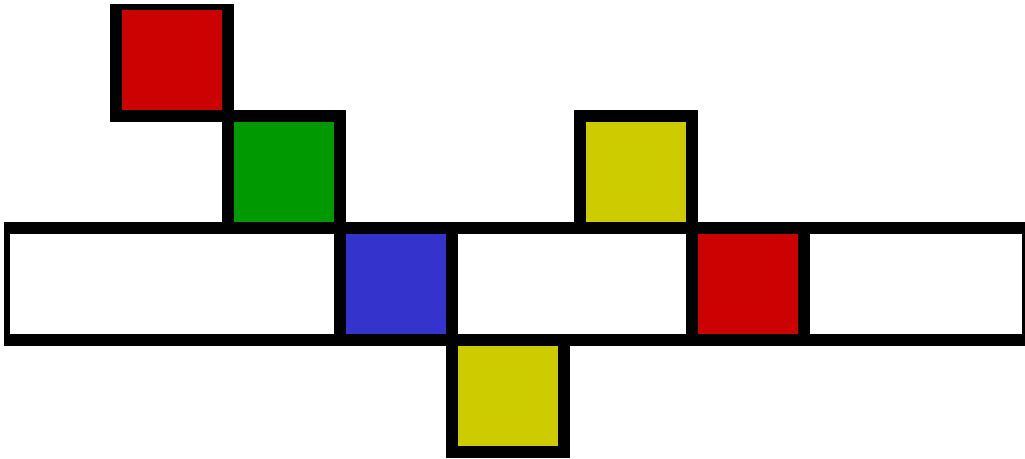 - **Automate, optimize, simulate**

- **Business Rules Management (BRM)**
  - **Enables business people to write their own rules**
  - **Code/development/maintenance costs reduced from 20-30% to 40-50%**

- **Higher value business modeling replaces coding**
  - **Business people will model processes/rules themselves**
  - **Fewer IT coders needed → Coding jobs going offshore will disappear**
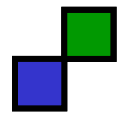
Shared Rules & Enterprise Rules Architecture

	DATABASE		ERP	ENTERPRISE APPLICATION INTEGRATION	CRM	APPLICATION PROGRAMS	USER INTERFACES (TOUCHPOINTS)

DATABASE
- DW
- CUSTOMER
- PRODUCT
- MARKETING
- SALES
- COMPETITOR

ERP

ENTERPRISE APPLICATION INTEGRATION

CRM

APPLICATION PROGRAMS
- CALL CENTER
- INTERNAL SYSTEMS
- OLTP SYSTEM
- CONSUMER B2C WEB
- PARTNER B2B WEB
- EIS DSS

USER INTERFACES (TOUCHPOINTS)
- IN-PERSON FRONT DESK
- INTERNET WEBSITES
- CALLCENTER
- EMAIL
- IVR
- WIRELESS WEB

BUSINESS RULES (RULEBASE)

Entity	Statutory	Tax	Accounting	HR	Rooftops	CostCenter	Billing	Compliance	Sarbanes	Policy
Eligibility	Promotions	Pricing	Commission	Recording	Reporting	Up Sell	Cross Sell	Delivery	VIP/New	SOP
OSHA	EPA	FTC	SEC	FDA	County	IP	Risk Mgmt	Profitability	Crisis Mgmt	Retention
Prospect	Customer	Acct History	Geography	Margins	Product Selection	Inventory	Supply Chain	Problem Resolution	Expert Decisions	Expert Advice

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Who uses Rule Engines?

Over 90% of the Fortune 100 use AI and Business Rules Engines

- **Use Artificial Intelligence to make their systems smarter**

- **AI is not widely publicized or well understood...**
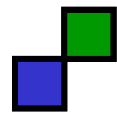   - **But those who use it successfully cannot live without it**

DuPont

"For every **$10,000** spent to develop expert systems, we realize **$1 Million** in savings and profits - adding up to over a $1 Billion."

www.exsys.com

American Express Authorizer's Assistant

- 35,000 business rules in "Authorizer's Assistant"

- **Rule-Based Expert System handles <u>all</u> AMEX credit card authorizations worldwide**
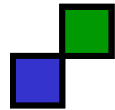
- "This system has never been down in 13 years."

- **Guess how many** people it takes to maintain this mission-critical rule-based system?

- Business rules simulate the decision process of experienced credit agents

Marilyn Stark, Director, American Express
http://bizrules.com/us/page/art_keytocrm.htm

Sabre and Orbitz

- SABRE
  - Next Generation Travel Technology Platform
  - **Rules will "improve developer productivity by 100%"**
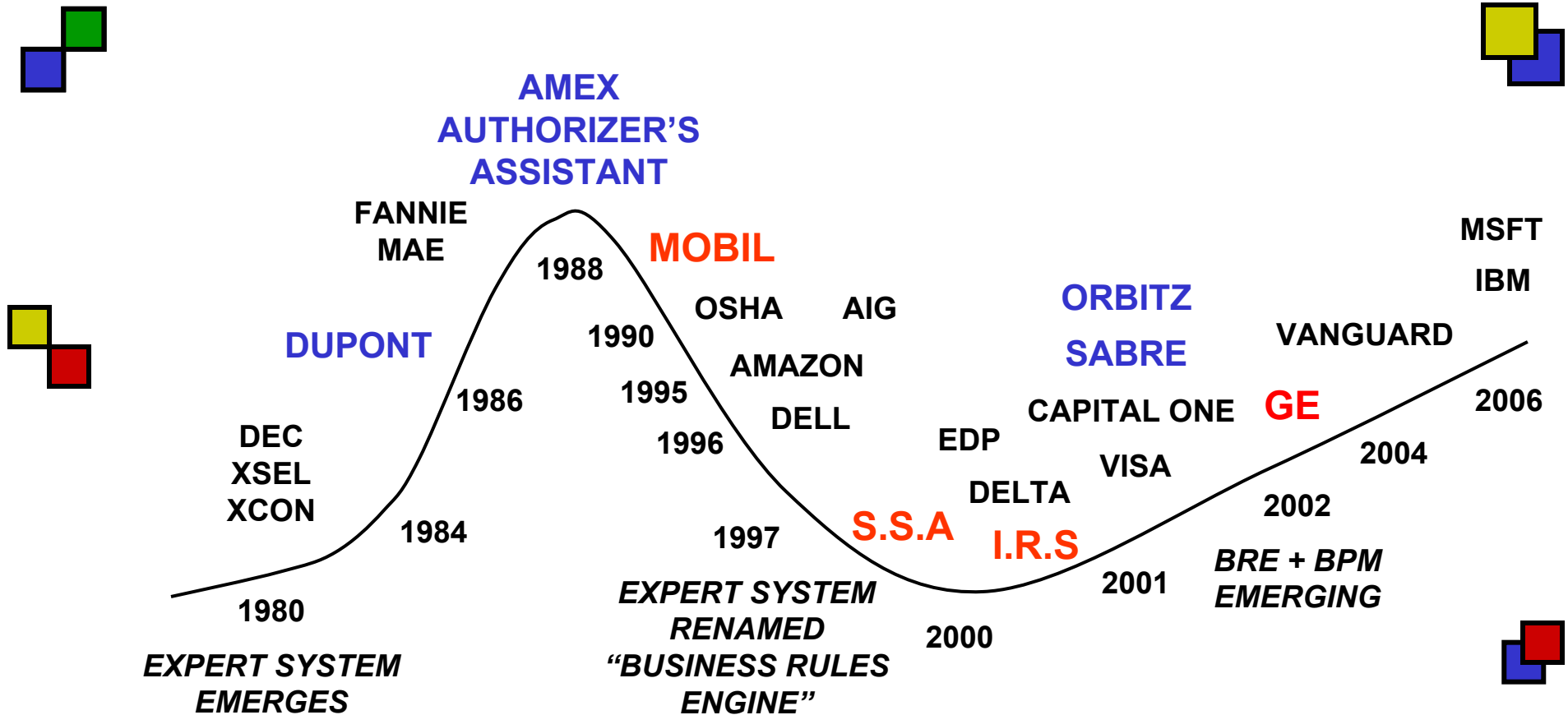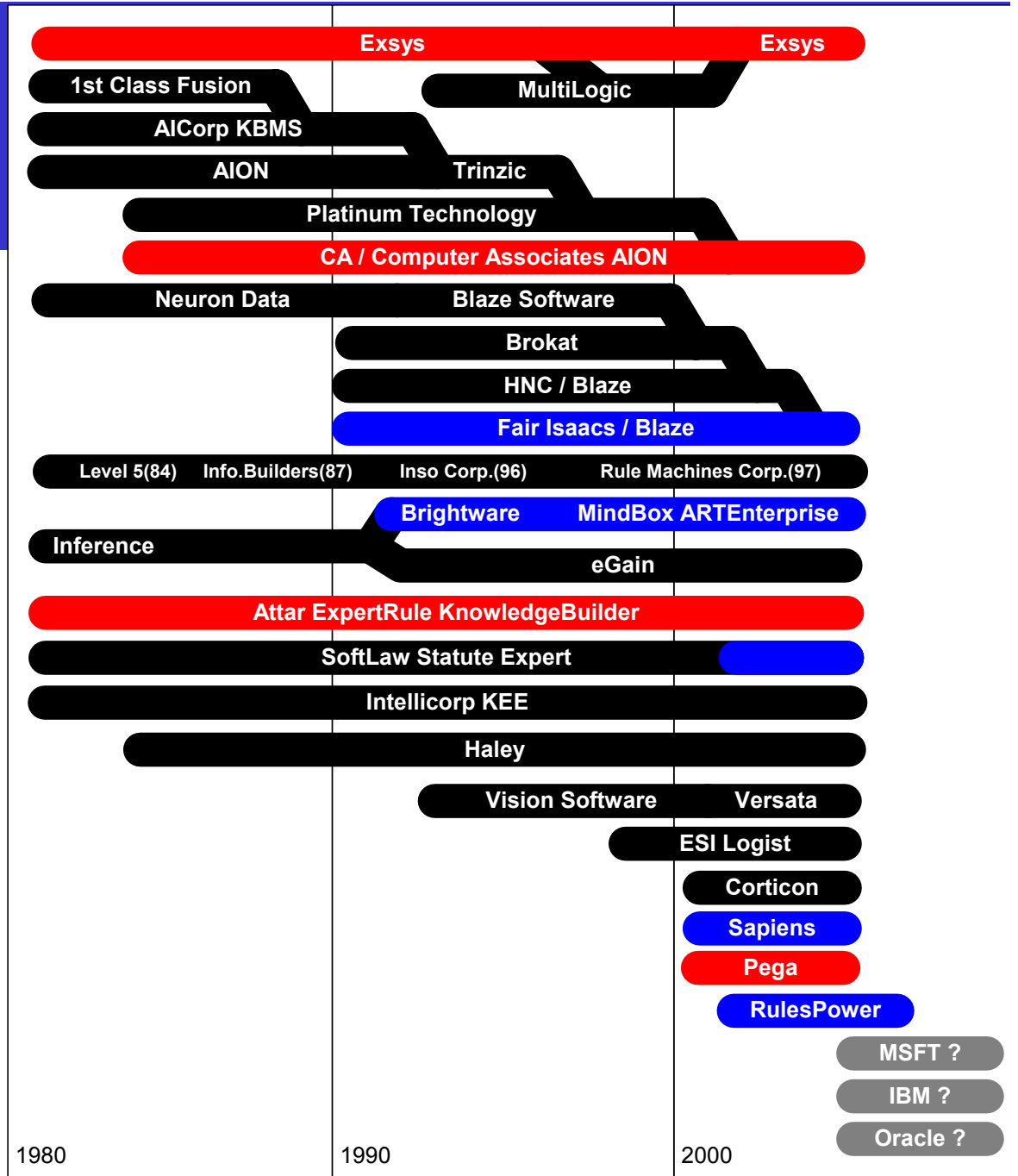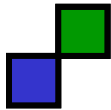 - **Rules will "reduce cycle time to update fare requirements (rules) by 75%"**

- ORBITZ
  - Competitive edge is **rules-based search engine**
  - Built by ITA Software, owned by AI Ph.D.'s from MIT

Business Rules Hype Cycle

AMEX
AUTHORIZER'S
ASSISTANT

FANNIE
MAE

MOBIL

MSFT
IBM

OSHA   AIG

ORBITZ

DUPONT

1988

SABRE

VANGUARD

1990

AMAZON

CAPITAL ONE   GE

2006

1986

1995

DEC
XSEL
XCON

DELL

EDP

VISA

2004

1996

DELTA

2002

1984

1997

S.S.A   I.R.S

2001

BRE + BPM
EMERGING

1980

*EXPERT SYSTEM
RENAMED
"BUSINESS RULES
ENGINE"*

2000

*EXPERT SYSTEM
EMERGES*

Rule Engine Family Tree

	1980	1990	2000
Exsys			Exsys
1st Class Fusion		MultiLogic	
AICorp KBMS			
AION		Trinzic	
	Platinum Technology		
CA / Computer Associates AION			
Neuron Data		Blaze Software	
	Brokat		
	HNC / Blaze		
	Fair Isaacs / Blaze		
Level 5(84)	Info.Builders(87)	Inso Corp.(96)	Rule Machines Corp.(97)
	Brightware	MindBox ARTEnterprise	
Inference		eGain	
Attar ExpertRule KnowledgeBuilder			
SoftLaw Statute Expert			
Intellicorp KEE			
Haley			
	Vision Software	Versata	
	ESI Logist		
	Corticon		
	Sapiens		
	Pega		
	RulesPower		
	MSFT ?		
	IBM ?		
	Oracle ?		

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What are some Benefits of using Business Rules Approach

- **Reduces system development and maintenance costs by 20, 30, 40, 50% or more**

- **Speeds up Time to Market**

- Rule Engine **automatically determines** when and in what order to fire the rules

- **Changes** are easy - Adding new rules does not "break" old rules

- Rules can be **shared** across applications

- **Eliminates** Redundant and duplicate business rules

Business reasons for using business rules engines (BRE) instead of hard-coding rules
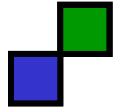
- **Business rules are proven technology;**
  - Although it may be emerging technology for some companies, global leaders like **AMEX** and **DuPont** have been saving <u>billions</u> of dollars for over 15 years

- **Rule engines becoming mainstream**
  - Gartner says **BRE penetration going from 20% to 80%** over next few years
  - Coding rules using a BRE results leads to **20-50% reduction in Application Development & Maintenance costs** vs. hard-coding rules.

- **Bill Gates**
  - **"Within a decade, we should be able to reduce the amount of code [companies] write by at least a factor of five."**

- **Exponential rule growth problem**
  - The RETE inference engine algorithm is the only known and proven algorithm that does not slow down as more rules are added. <u>With hard-coded/duplicated rules, performance degrades exponentially</u>

- **PCs are 1000x times more powerful now**
  - Yes, rule engines were slow in the 1980s, but PCs were only 10mHz

Technical reasons for using business rules engines instead of hard-coding rules

- Applications require very **complex business logic**

- Rule-based languages speed up **developer productivity**

- Traditional looping, branching, **IF/THEN** functions are designed for controlling program flow, not processing complex business rules

- **Rules embedded/buried** in program code is costly & redundant

- **Database triggers and stored procedures are not "rule engines"** and do not provide intelligence, reasoning, inference, forward chaining, backward chaining, rule chaining, or pattern matching

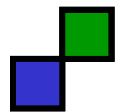- **Cannot share hard-coded rules** across applications

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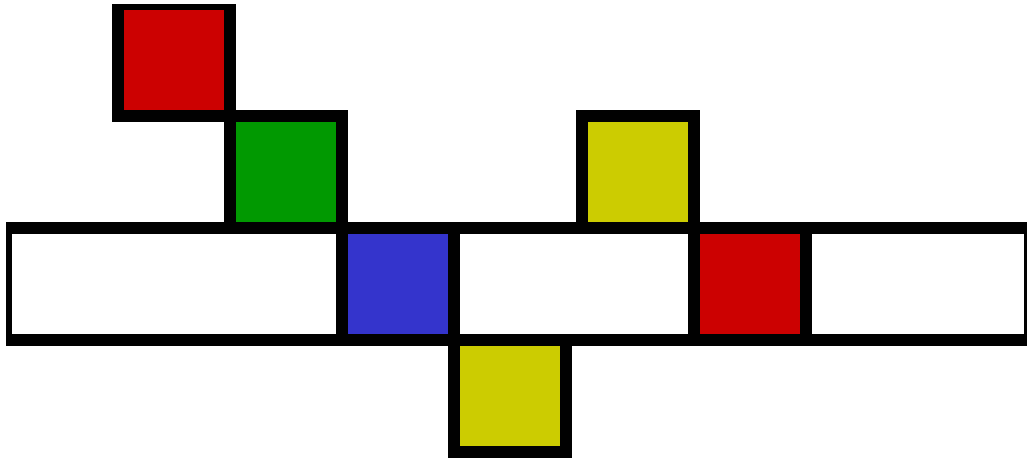
The Strategic Value & ROI
of the Business Rules Approach

**According to business rules analysts
and practitioners**

What's the Strategic Value & ROI for Business Rules Engines?

- **Prevent business mistakes**

- **Reduce Application Development & Maintenance Costs by 20-50% up to 80-90%**

- **Ensure compliance with regulations, legislations, policies, and guidelines**

- **Ensure correct and consistent decision-making**

- **Automate decision-making & knowledge-based business processes**
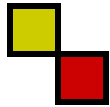
- **Capture corporate knowledge before it's lost**

Reduce Applications Development & Maintenance costs by 20-50% or more today
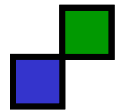
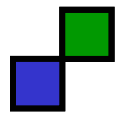- **Gartner reports from 20-30% to 40-50% reduction in AD&M costs today**

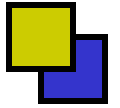- **AIG reports 3 to 1 reduction in AD&M costs (67%)**

- **DuPont, AMEX, Sabre, Orbitz…**

Reduce Applications Development & Maintenance costs by 80-90% in 5-10 years

- **Gartner: We will see 10 to 1 savings in AD&M (90%) as we learn to manage this new technology**

- **Bill Gates says we will get "at least" a 5 to 1 reduction in AD&M in next few years (80%)...**

Jim Sinur, Senior VP and Distinguished Analyst, Gartner

- "While we're seeing the early adopters get significant ROI, we think once we learn how to manage this technology, as it matures, <u>we will see some of the ratios that were talked about, 10 to 1</u>.

- I think the real power here is we're putting the business rules back in the hands of the business users at a maximum, and at a minimum you're <u>changing the way programmers work in that you don't have to go thru a long fixed overhead cycle to make changes</u> to the computer systems. You can change the rules near real-time."

http://bizrules.com/us/page/ftcmtg_part2.htm

How will a 50% to 90% reduction in development costs affect developers?

- **"Business Rules Engines allow fewer people to code at a higher level of abstraction, faster.**

- **Programmers will need to change and adapt to this new development model or face downsizing**

- **Programming jobs going offshore today are not coming back. Those offshore jobs will disappear."**

Rolando Hernandez, BizRules.com

Rolando Hernandez
CEO & Chief Rules Officer, BizRules.com

- **"There's a big problem in IT in America which is a lot of jobs are going to India... It makes sense for CEO's to send programming overseas... It is more cost-effective, it's cheaper. So we need to be more productive.**

- **This technology (Rule Engines) is sort of a faster way to program, so that one programmer using this technology can do the equivalent work of ten programmers the old way.**

- **Imagine if businesses get it and they start hiring IT people back to work who are out of work, and then you don't have to send that work overseas because one US programmer might be as productive as ten of the 'old way' programmers."**

        http://bizrules.com/us/page/ftcmtg_part2.htm
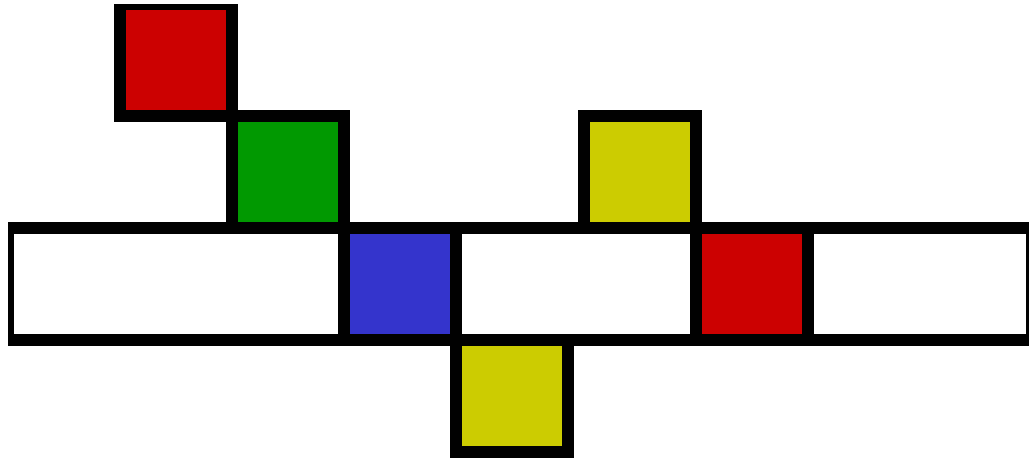
The True Strategic Value of the Business Rules Approach and Business Rules Engines (BREs)

According to Bill Gates

Bill Gates

Gartner Symposium/ITxpo 2004, Mastermind Keynote Interview, March 30, 2004 San Diego, CA

- "Many of the Holy Grails of computer science that have been worked on for over 30 years will be solved in this 10 year period."

- We'll model IT systems to make them behave in very rich automatic ways. **We'll model your business processes so that instead of writing lots of lines of code to customize software for you versus some other company, it's just going into this visual model** and saying our approval process is slightly different, our payment process is slightly different."

- **So we won't be writing as much code.** We won't have the kind of complexity that we have today.

- It's expressing, without code, exactly what the steps are that need to take place."

Bill Gates (continued)
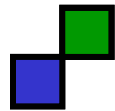
- **"The heart and soul of this is to take what is required, large amounts of code, and say that a business analyst can do these things.**

- **The beauty of this is the model… <u>The key breakthrough in coding is to write less code</u>.**

- **Corporations and governments need the platform to be so high-level that with these modeling tools the amount of code they're writing [is decreased].**

- **Within a decade, we should be able to <u>reduce the amount of code [companies] write by at least a factor of five</u>."***
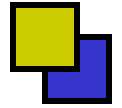
* 80% reduction

Bill Gates (continued)
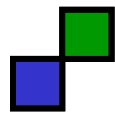
- **"The tools should make [sure] you're expressing those things in a way that a non-programmer can understand.**

- **The [consulting] services get refocused away from writing a bunch of blue code to whatever the true business value is:**
  - **[designing the business model…]**
  - **Designing what the resource allocation algorithm should be…**
  - **Designing how when you're working with a new partner what the model should be…**

- **It's a real shift in the services model.**

- **We're talking a 10-year timeframe. This does not happen overnight. This is what the IT industry owes to it's customers."**

Rule Engine Family Tree

Exsys — Exsys

1st Class Fusion — MultiLogic

AICorp KBMS

AION — Trinzic

Platinum Technology

CA / Computer Associates AION

Neuron Data — Blaze Software

Brokat

HNC / Blaze

Fair Isaacs / Blaze

Level 5(84)   Info.Builders(87)   Inso Corp.(96)   Rule Machines Corp.(97)

Brightware   MindBox ARTEnterprise

Inference — eGain

Attar ExpertRule KnowledgeBuilder

SoftLaw Statute Expert

Intellicorp KEE

Haley

Vision Software — Versata

ESI Logist

Corticon

Sapiens

Pega

RulesPower

MSFT ?

IBM ?

Oracle ?

1980   1990   2000

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