# Challenges in Event Based Systems for Commercial Use

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# Discussion Overview

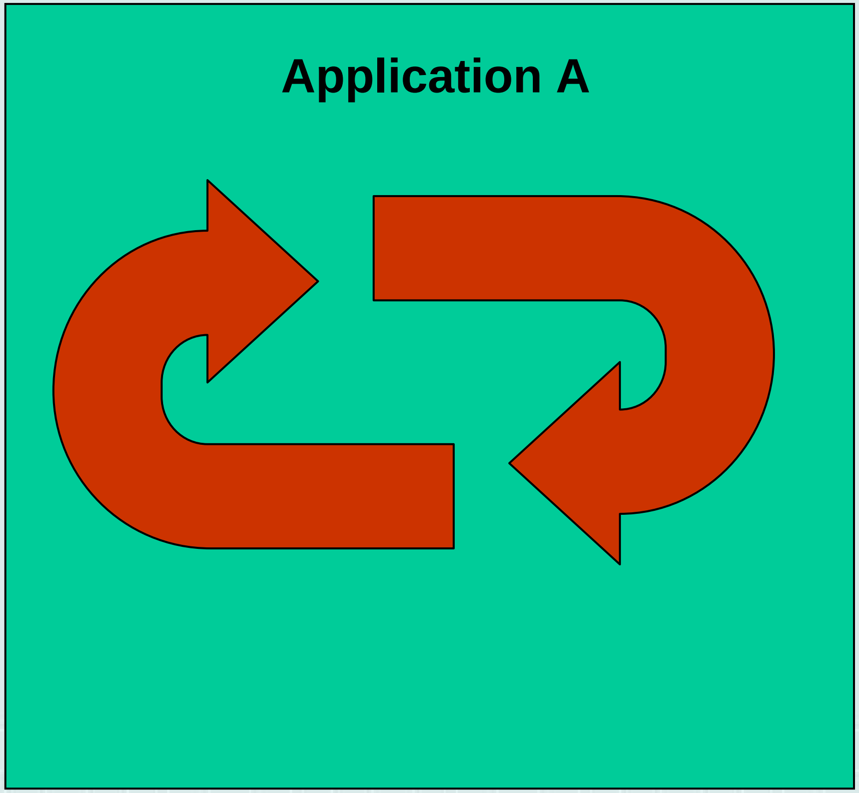
- Event based approaches have been used in commercial systems management for decades
  - Primarily for point to point integration between products that were not originally designed to work together.
  - Loose coupling is more cost-effective than rewriting lots of incompatible products
- The proliferation of approaches now beginning to succumb to brittleness and O(n2) complexity issues
- Where do we go from here?

# Events Aren’t New

- The idea arose from the need to get two or more pieces of software to inter-operate when they weren’t designed to do that in the first place
- Passing a message of some sort was easier than rewriting complex applications
- People realized the advantages of flexibility through loose coupling

# Ancient History – 1950's

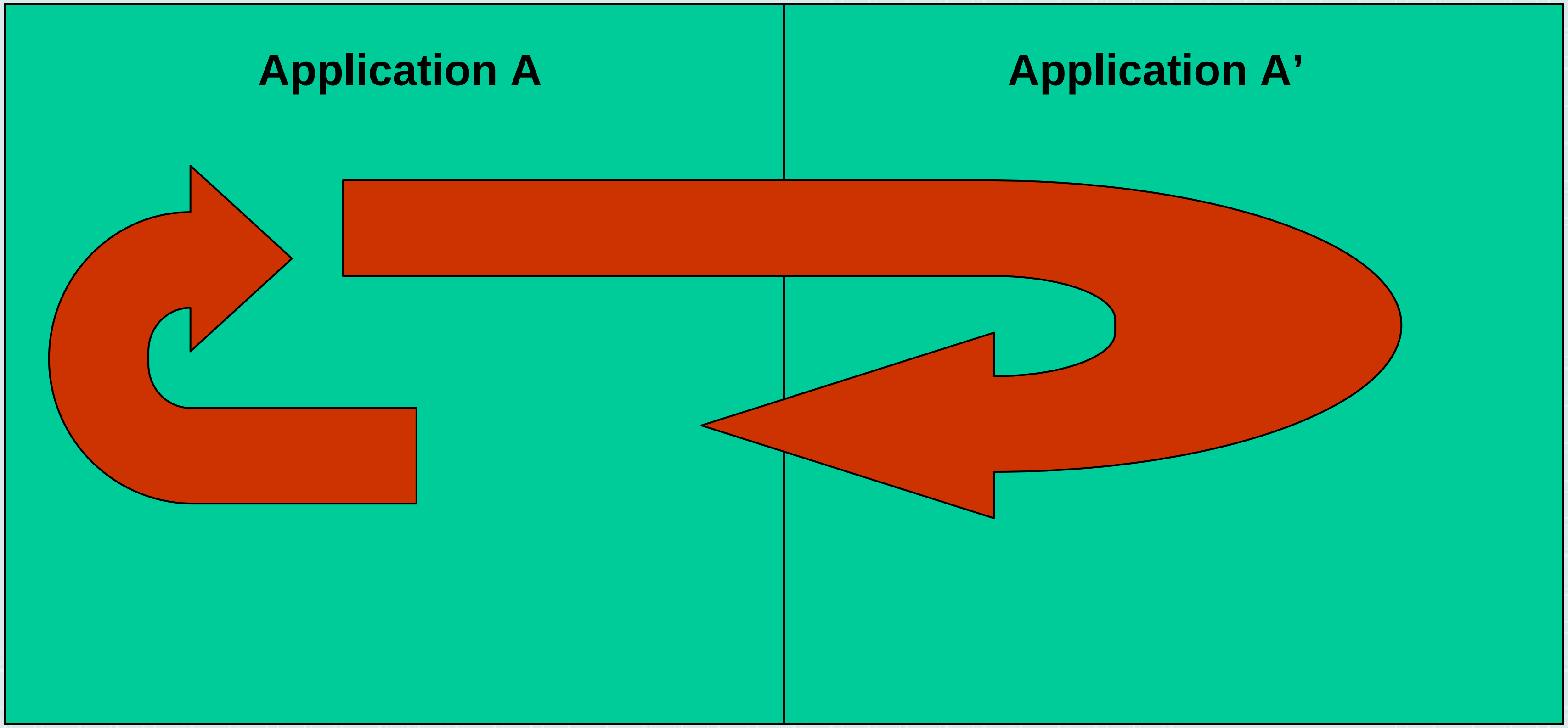
Stand alone applications



All control flows are internal to the program

# Ancient History – 1960’s-1970’s

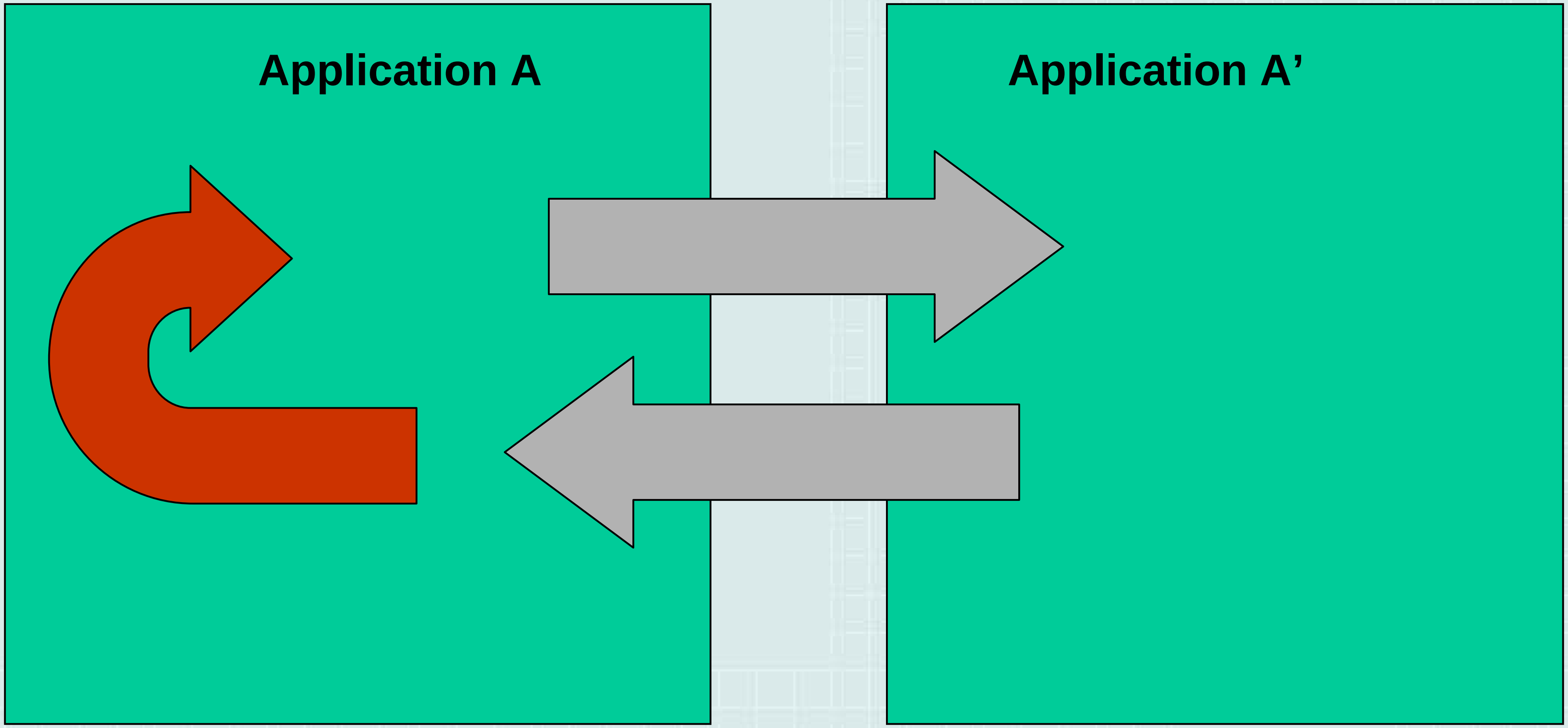
Tight coupling: Bound at link time



(Control flows are larger/longer, but still internal)

# Slightly More Recent – 1980s

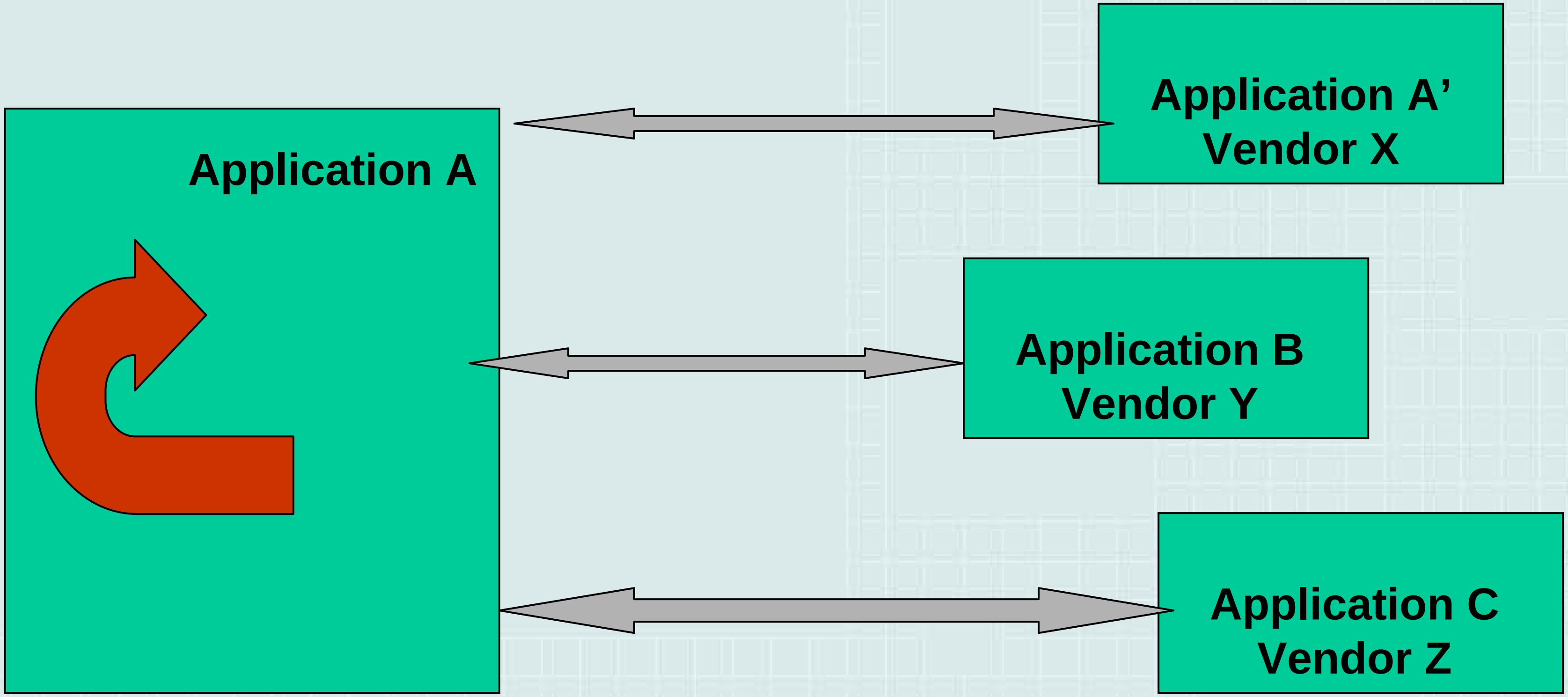
Loose coupling: Message Passing Between Functional Units



(Better, but still typically 1:1 relationships)

# Current Need

Loose coupling: Messages to/from Multiple Functional Units

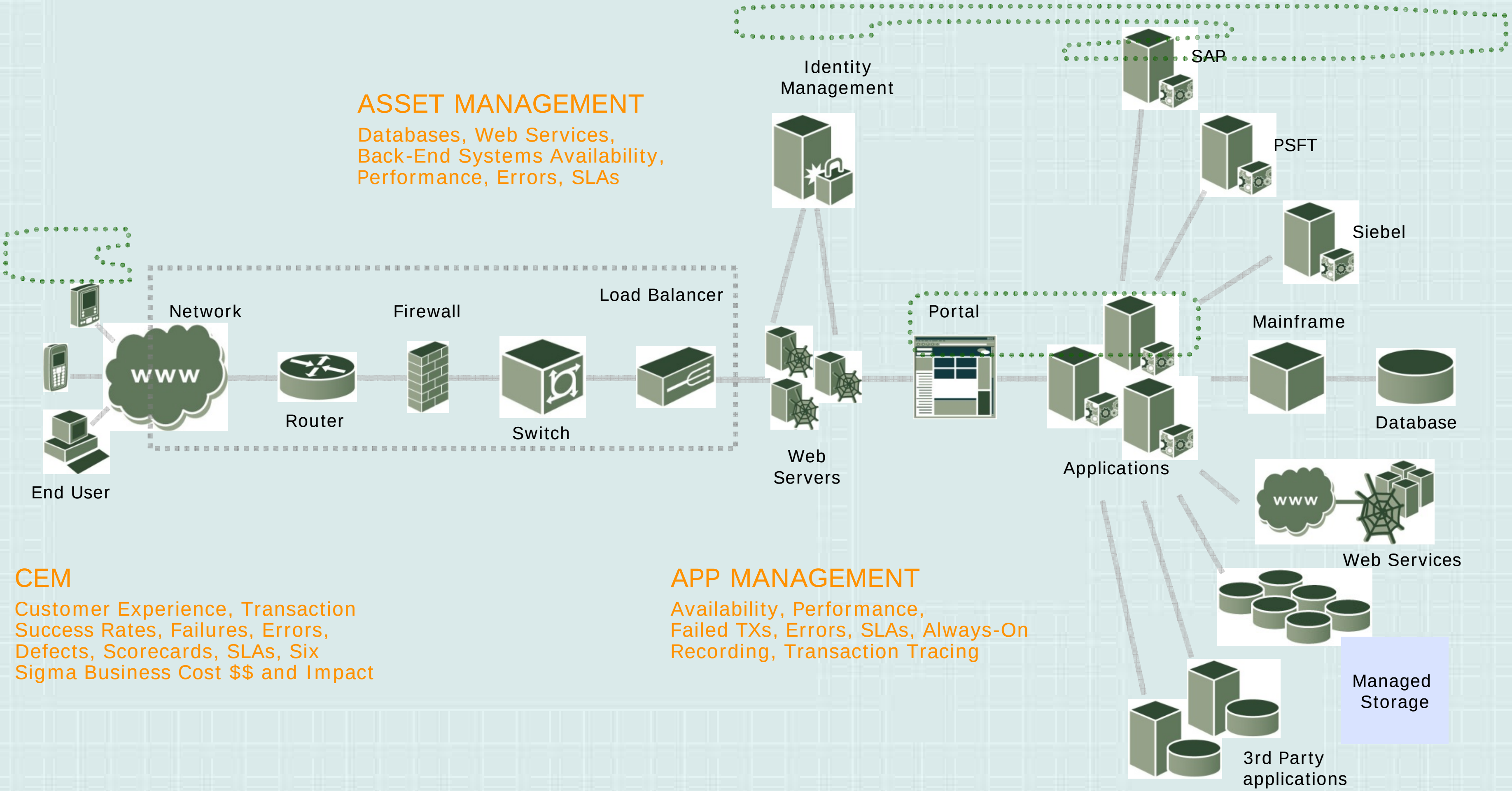


(Getting hard to manage)

# We Agree Events Are Great, But…

- Many event interfaces and programming models
  - Logs, streams, traps, proprietary interfaces
  - Variety creates complexity for developers
- Very large numbers of devices in the network
  - Variety creates complexity for users
- Complexity has gotten out of hand

# IT is Highly Distributed…



## IDENTITY MANAGEMENT

SSO, User Access, Service Provisioning, End System User Access, Entitlement Management

## ASSET MANAGEMENT

Databases, Web Services, Back-End Systems Availability, Performance, Errors, SLAs

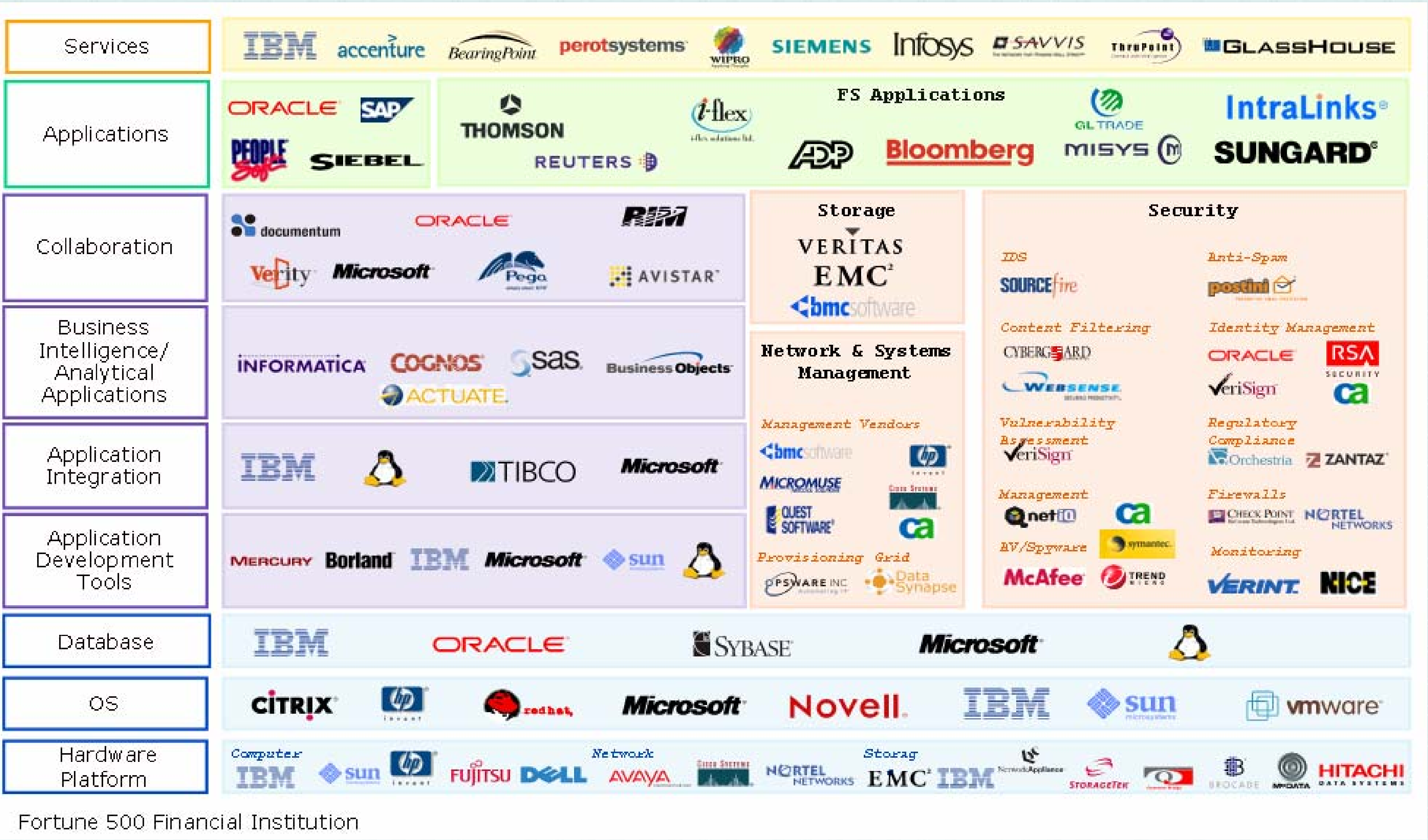
## CEM

Customer Experience, Transaction Success Rates, Failures, Errors, Defects, Scorecards, SLAs, Six Sigma Business Cost $$ and Impact

## APP MANAGEMENT

Availability, Performance, Failed TXs, Errors, SLAs, Always-On Recording, Transaction Tracing

# Complexity Is Out Of Control…



| | |
|---|---|
| Services | IBM, accenture, BearingPoint, perotsystems, WIPRO, SIEMENS, Infosys, SAVVIS, ThruPoint, GLASSHOUSE |
| Applications | ORACLE, SAP, PEOPLESoft, SIEBEL<br>FS Applications: THOMSON, REUTERS, i-flex, ADP, Bloomberg, GL TRADE, MISYS, IntraLinks, SUNGARD |
| Collaboration | documentum, ORACLE, RIM, Verity, Microsoft, Pega, AVISTAR |
| Business Intelligence/ Analytical Applications | INFORMATICA, COGNOS, sas, Business Objects, ACTUATE |
| Application Integration | IBM, Linux, TIBCO, Microsoft |
| Application Development Tools | MERCURY, Borland, IBM, Microsoft, sun, Linux |
| Database | IBM, ORACLE, SYBASE, Microsoft, Linux |
| OS | CITRIX, hp, red hat, Microsoft, Novell, IBM, sun, vmware |
| Hardware Platform | Computer: IBM, sun, hp, FUJITSU, DELL<br>Network: AVAYA, Cisco Systems, NORTEL NETWORKS<br>Storag: EMC, IBM, Network Appliance, StorageTek, BROCADE, McDATA, HITACHI DATA SYSTEMS |

**Storage**
VERITAS, EMC, bmc software

**Network & Systems Management**

*Management Vendors*: bmc software, hp, MICROMUSE, Cisco Systems, QUEST SOFTWARE, ca

*Provisioning Grid*: OPSWARE INC, Data Synapse

**Security**

*IDS*: SOURCEfire

*Anti-Spam*: postini

*Content Filtering*: CYBERGUARD, WEBSENSE

*Identity Management*: ORACLE, RSA SECURITY, VeriSign, ca

*Vulnerability Assessment*: VeriSign

*Regulatory Compliance*: Orchestria, ZANTAZ

*Management*: netIQ, ca

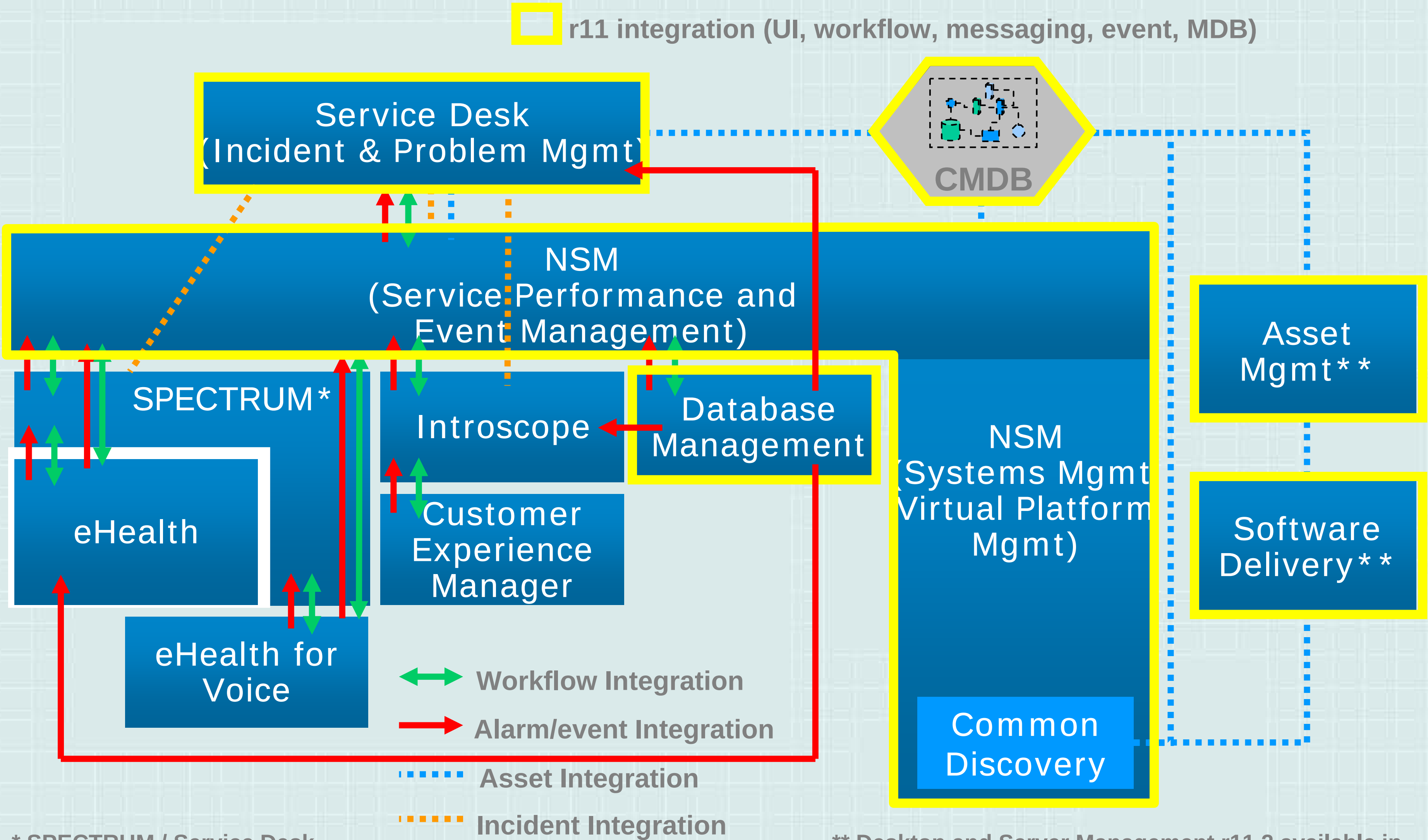
*Firewalls*: CHECK POINT, NORTEL NETWORKS

*AV/Spyware*: symantec, McAfee, TREND MICRO

*Monitoring*: VERINT, NICE

Fortune 500 Financial Institution

# Typical Integration Picture Now



r11 integration (UI, workflow, messaging, event, MDB)

Service Desk (Incident & Problem Mgmt)

CMDB

NSM (Service Performance and Event Management)

SPECTRUM*

eHealth

eHealth for Voice

Introscope

Customer Experience Manager

Database Management

NSM (Systems Mgmt Virtual Platform Mgmt)

Common Discovery

Asset Mgmt**

Software Delivery**

Workflow Integration

Alarm/event Integration

Asset Integration

Incident Integration

* SPECTRUM / Service Desk integration scheduled for 1H 07

** Desktop and Server Management r11.2 available in Q1_07 will provide common discovery integration.

# What’s Wrong With Events?

- There are just too many event formats
  - It is no big deal when you’re only interested in a few things
  - It is completely unwieldy if you’re interested in many things
- Management products are by their nature interested in many things

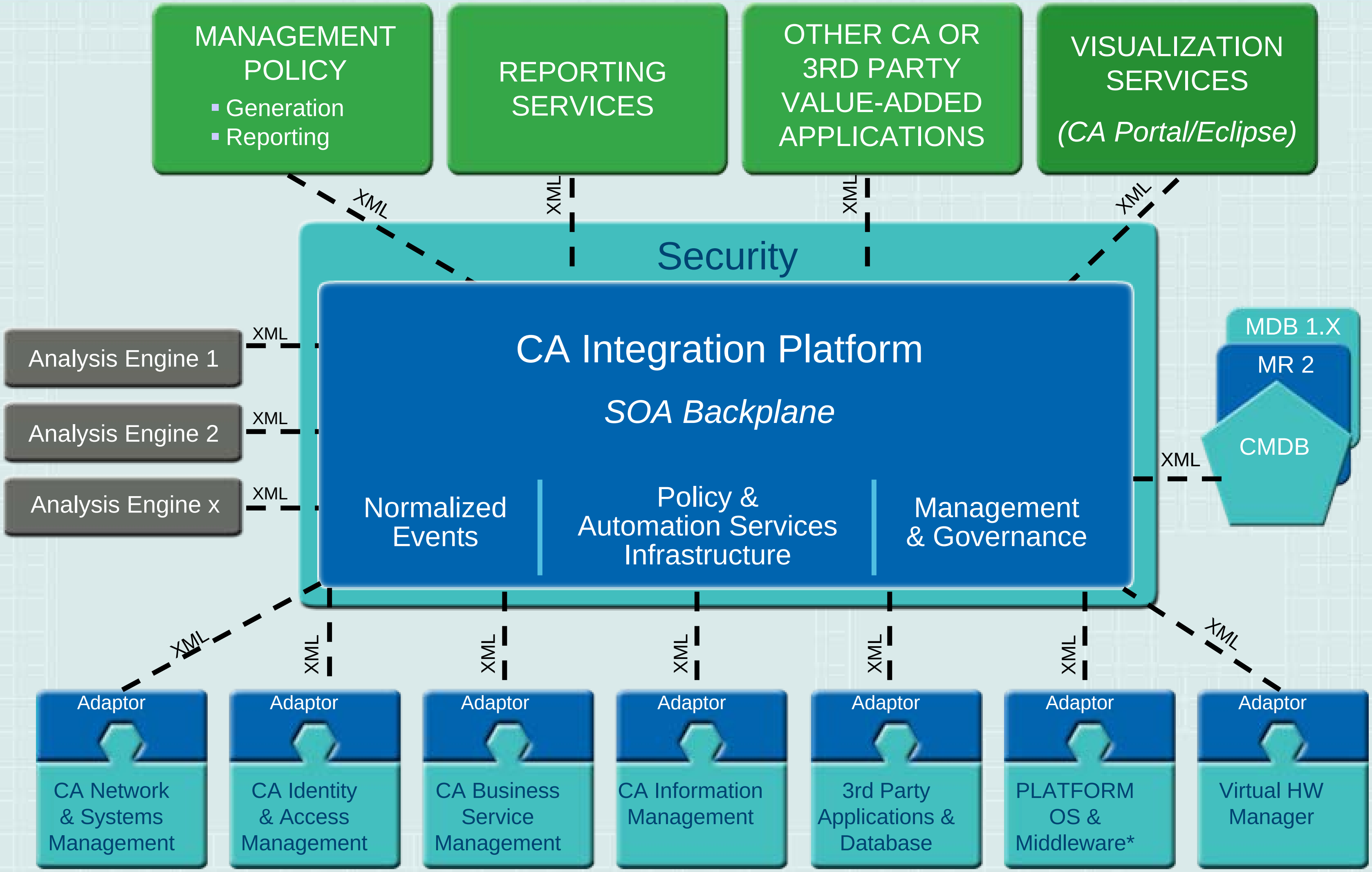
# Too Many Permutations

- Single message producer single consumer
- Single producer multiple consumers
- Multiple producers and consumers
- Easy to do for 1:1 or 1:few
- Becomes burdensome for 1:many
- Need a broker to make sense of it
- But which one do you choose?

# Is There A Way Out?

- Standards are a way out
- Map existing event sources into a common format understood by all consumers
- Provide a single mechanism for subscriptions and notifications
- Provide a rich and resilient mechanism for describing topics of interest

# Our Future Architecture



*Mainframe & Distributed

# Closing Plea

- DEBS are the right answer to the problems facing the management software industry
- Academic insights needed to help us find solutions to pressing problems
- Work within the scope of the standards
- Don’t create brand new standards, make the ones we already have better