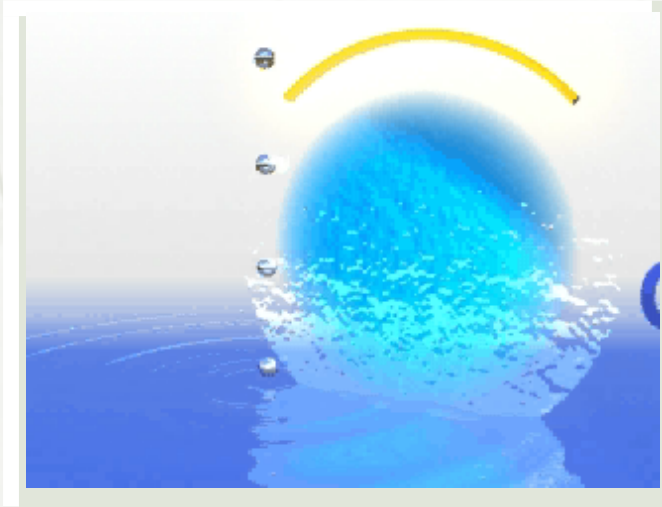




C W C I N C O R P O R A T E D



# Signature Plus Technology Overview

for

< client name here >

# Agenda

- CWC's Technology Philosophy and Drivers
- Signature Plus Architecture Overview
  - ◆ Thick client
  - ◆ Thin Client
- Integration Architecture Overview
- Configuration Technology
- Related Technologies
- Questions and Answers

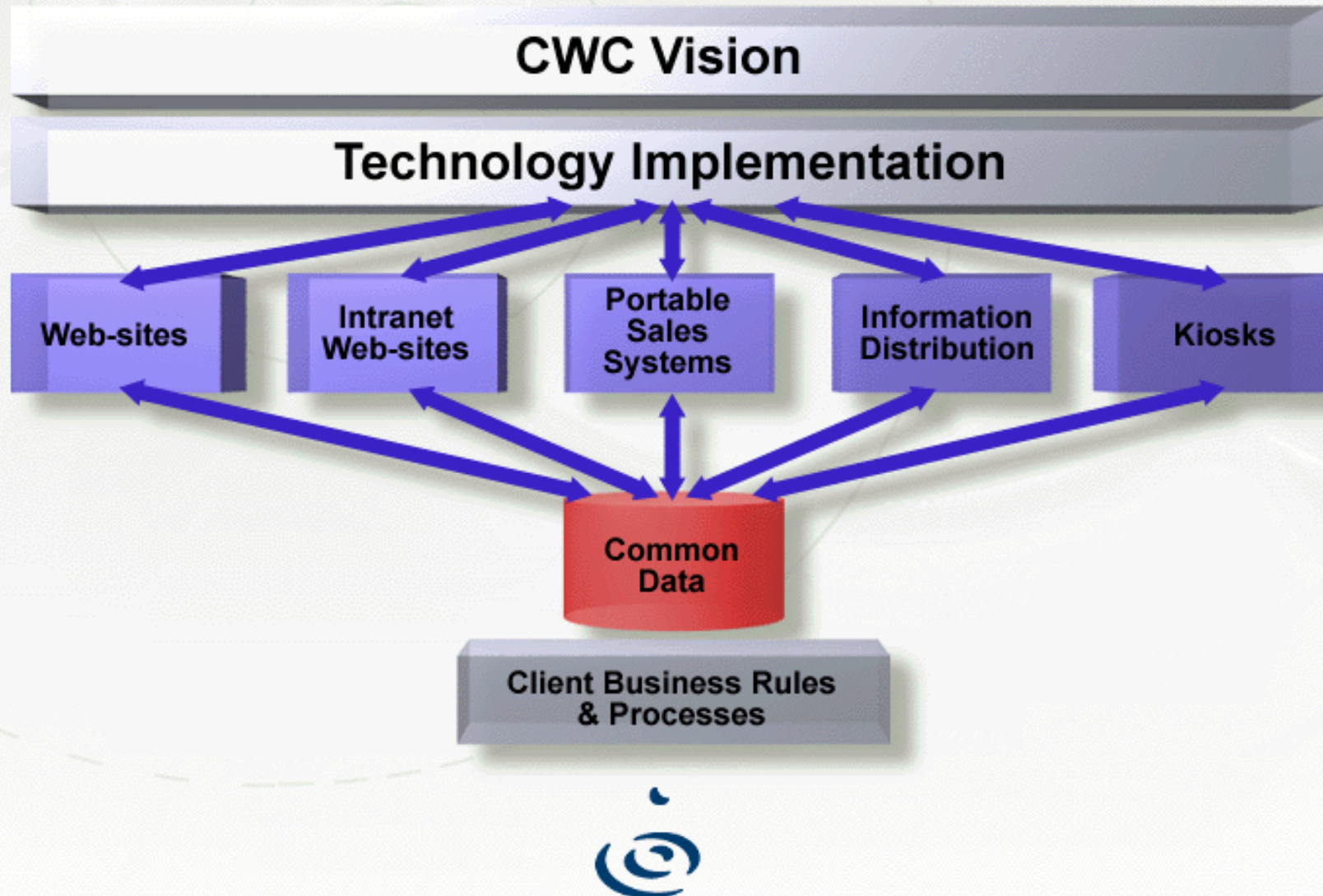


# CWC technology philosophy

- CWC is 'solution' focused
- Technology is an enabler
- Function drives technology
  - ◆ Not the other way around
- It is a position that relates to business issues
  - ◆ As well as to the Technologists



# Key Driver - Asset re-use





# Key Driver - Enterprise-scale integration

- Open, scalable technologies
- 24x7 reliability
- Enables asset reuse
- Leverages existing skill sets and tools
- Including:
  - ◆ Bi-directional data flow
  - ◆ Transactions
  - ◆ Business Object invocation



# Key Driver - Flexibility

- Minimize impact on:
  - ◆ Existing systems
  - ◆ Existing Processes
  - ◆ Existing personnel and skill-sets
- Facilitated by:
  - ◆ Generalized approach
  - ◆ Open, industry standard integration mechanisms



# Key Driver - Rapid time to deploy

- Highly data driven applications
  - ◆ Script driven
  - ◆ Dynamic Data Model
- Industry templates match business processes
- Minimal coding equals minimal risk
- Rapid deployment equals rapid ROI



# Signature Plus Background

- CWC has created TES applications for 15 years
- Custom application development
- Designed to match client's sales process
- High value to the client, but high cost
  - ◆ In terms of hard costs
  - ◆ In terms of time to deploy
- A 'product' was needed to address this situation





# Software 'Product' issues

- Typically, two types of software product:
  - ◆ Process-less
    - Excel, CAD, MS-Word
  - ◆ Fixed-process
    - Contact Manager, Quicken
- Neither type works well where a complex process already exists
  - ◆ Like your sales process!



# Creating a TES Product

- Very difficult to create a TES 'Product'
  - ◆ Products don't match the process
- This is why most TES projects fail
- The answer is a 'tailorable' product

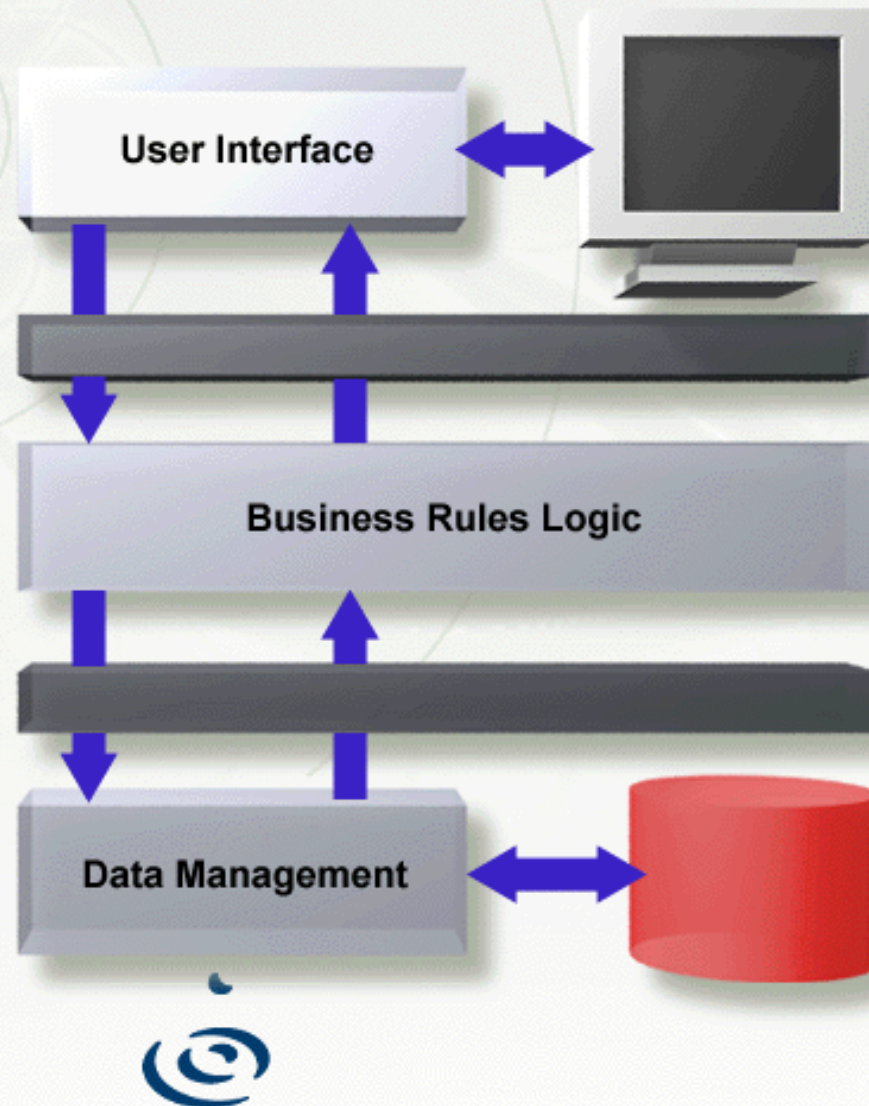


# What is a 'tailorable' product?

- Flexible framework
  - ◆ Process conformant
- Large scale modification to application
  - ◆ By CWC
  - ◆ By Client
  - ◆ By integration partners
- Allows changes at all three application tiers

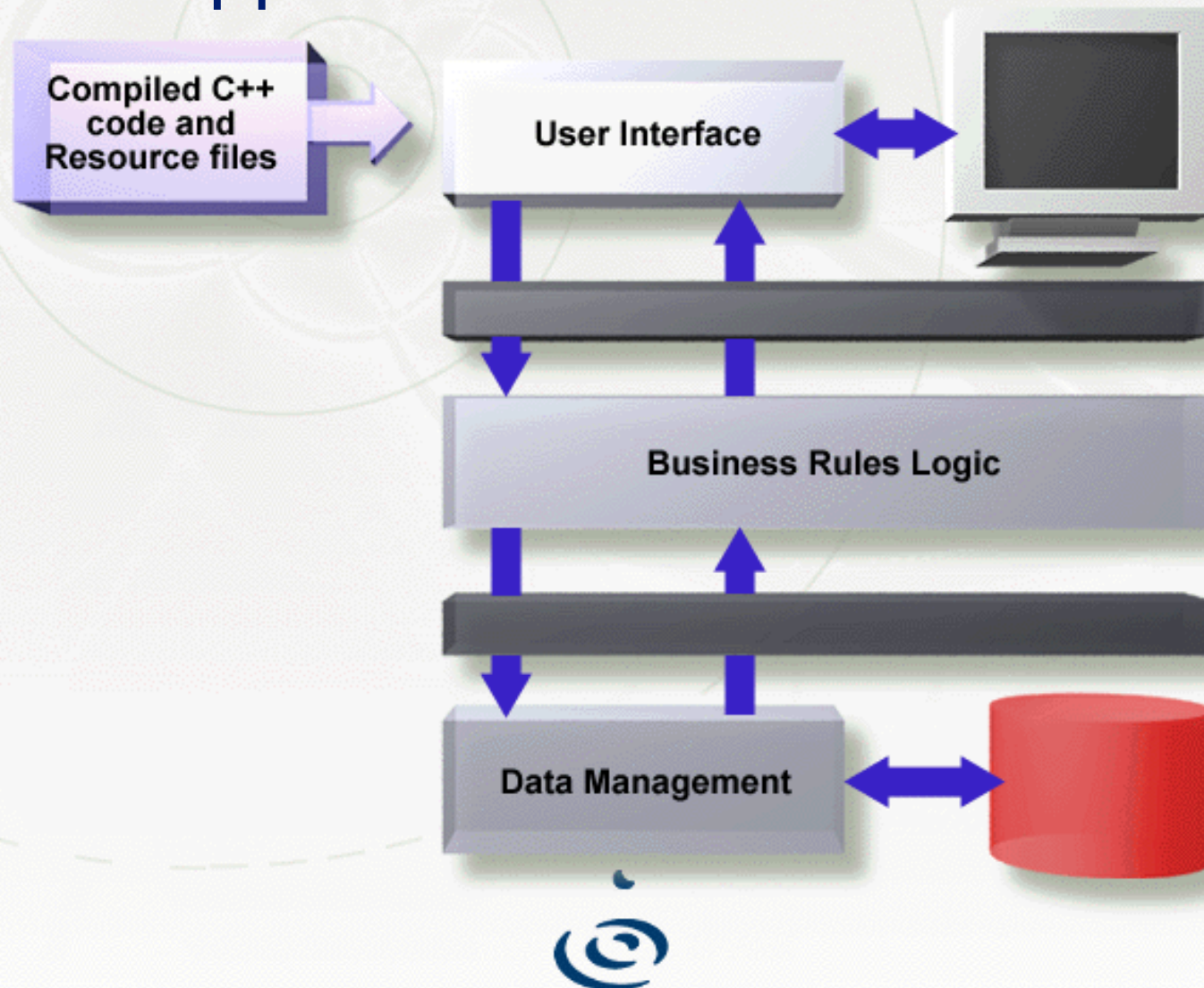


# Typical Application Architecture



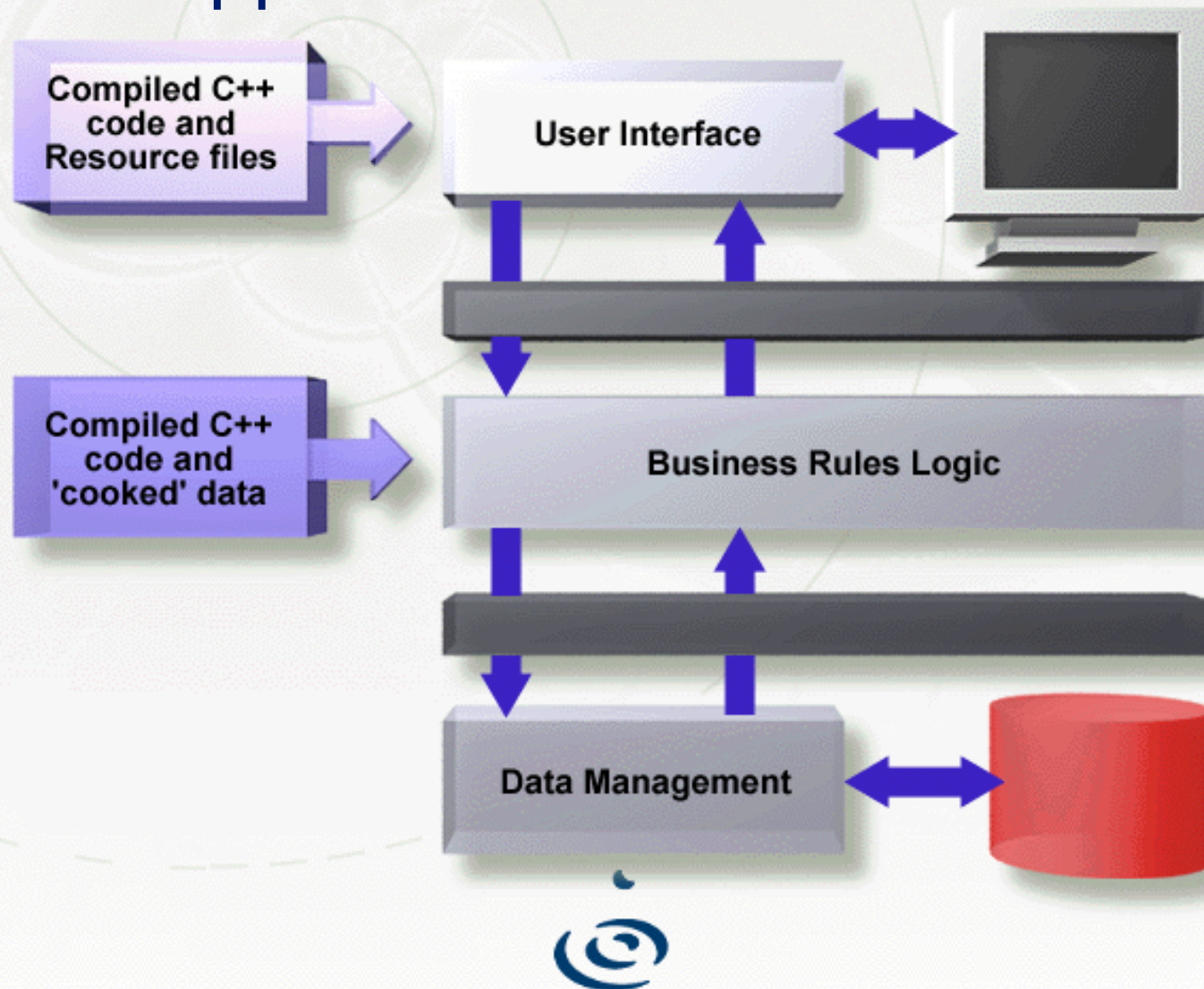


# Typical Application Architecture



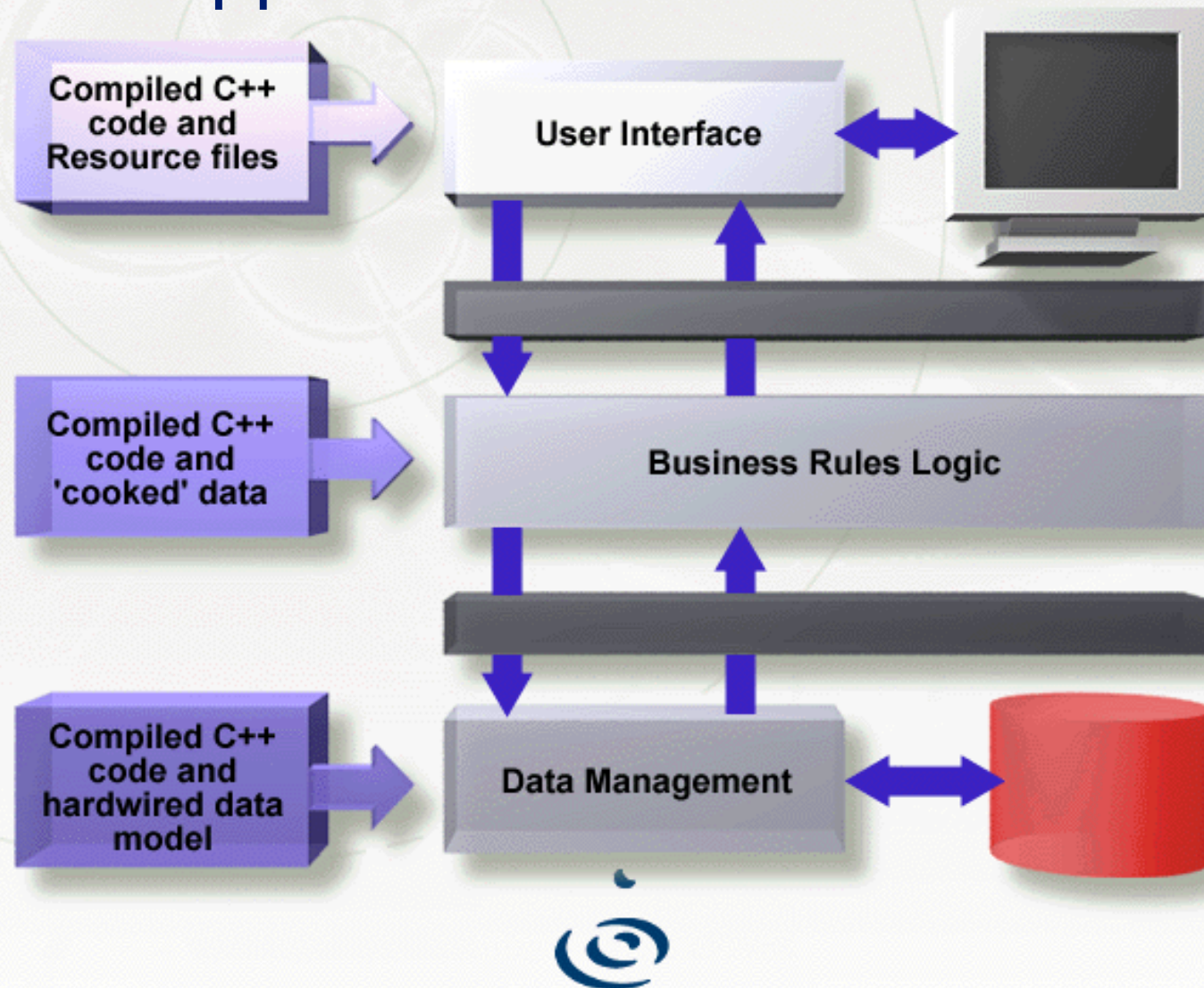


# Typical Application Architecture



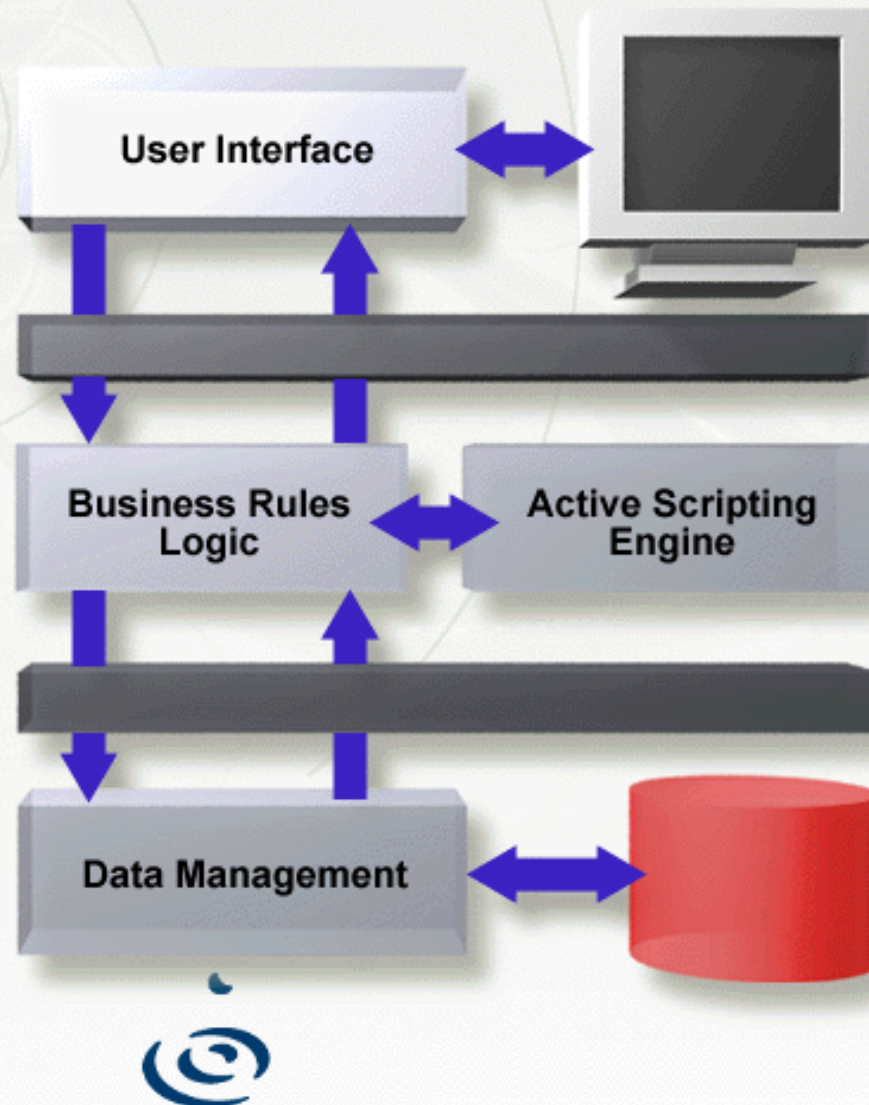


# Typical Application Architecture

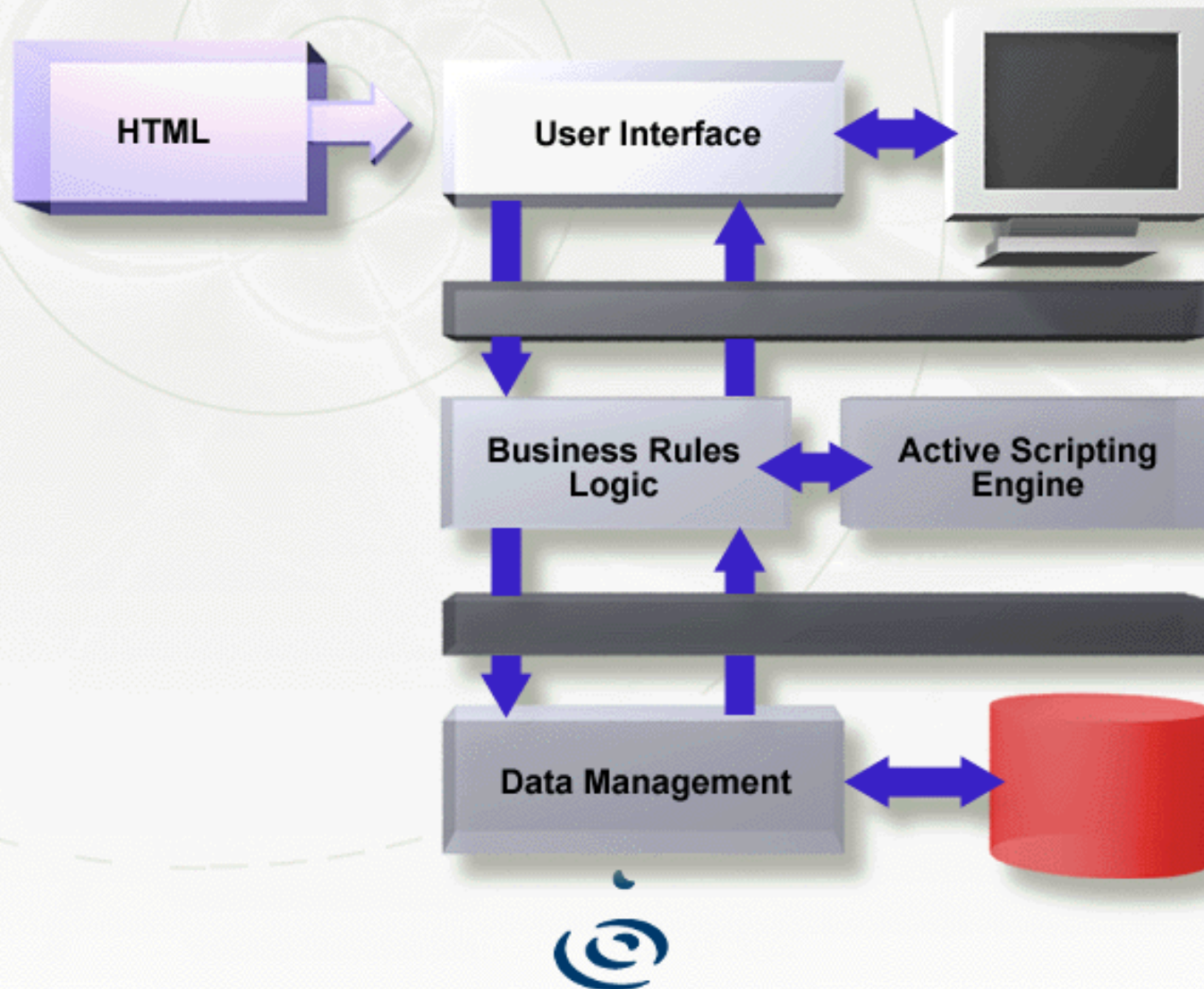




# Signature Plus™ Architecture

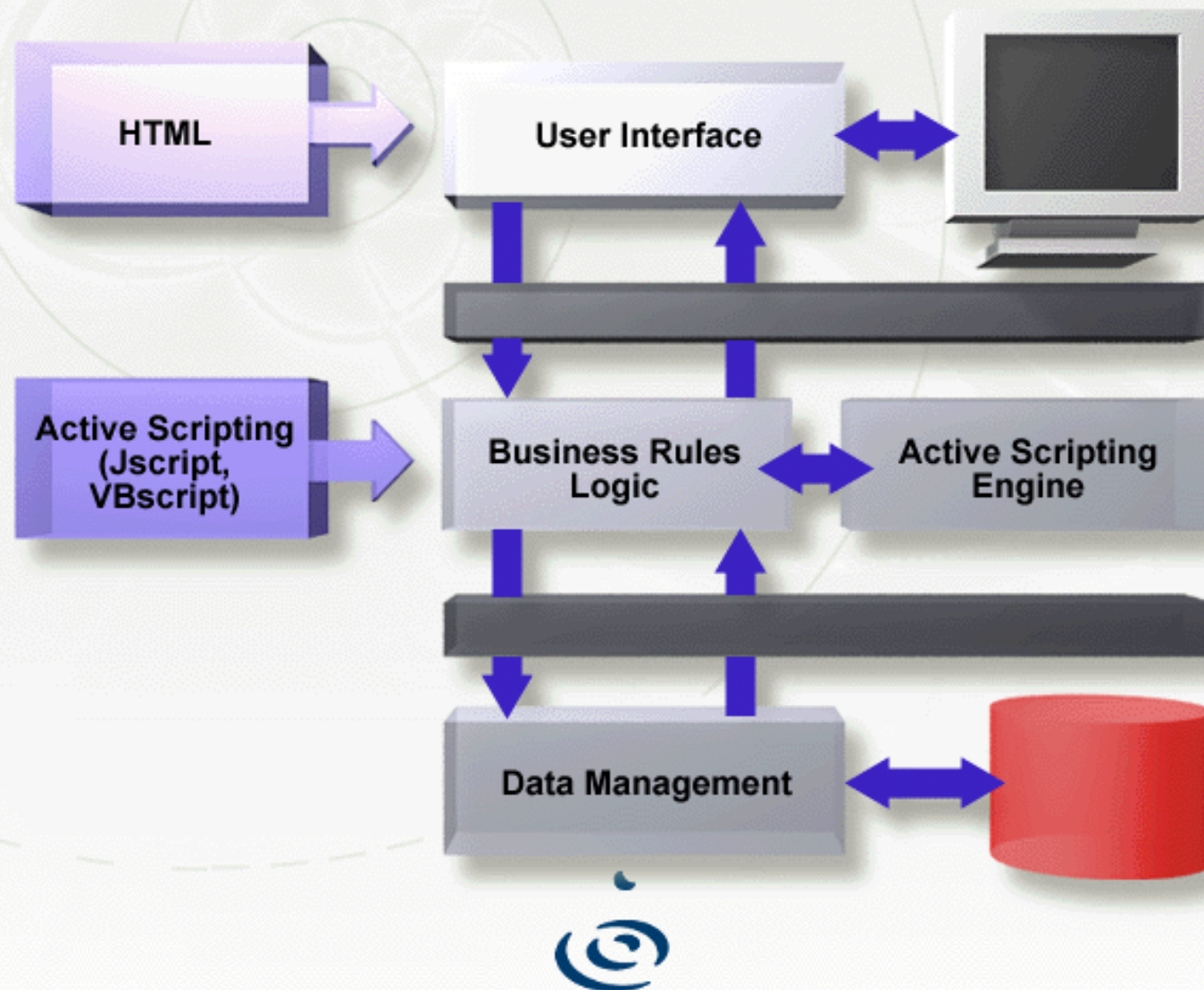


# Signature Plus™ Architecture



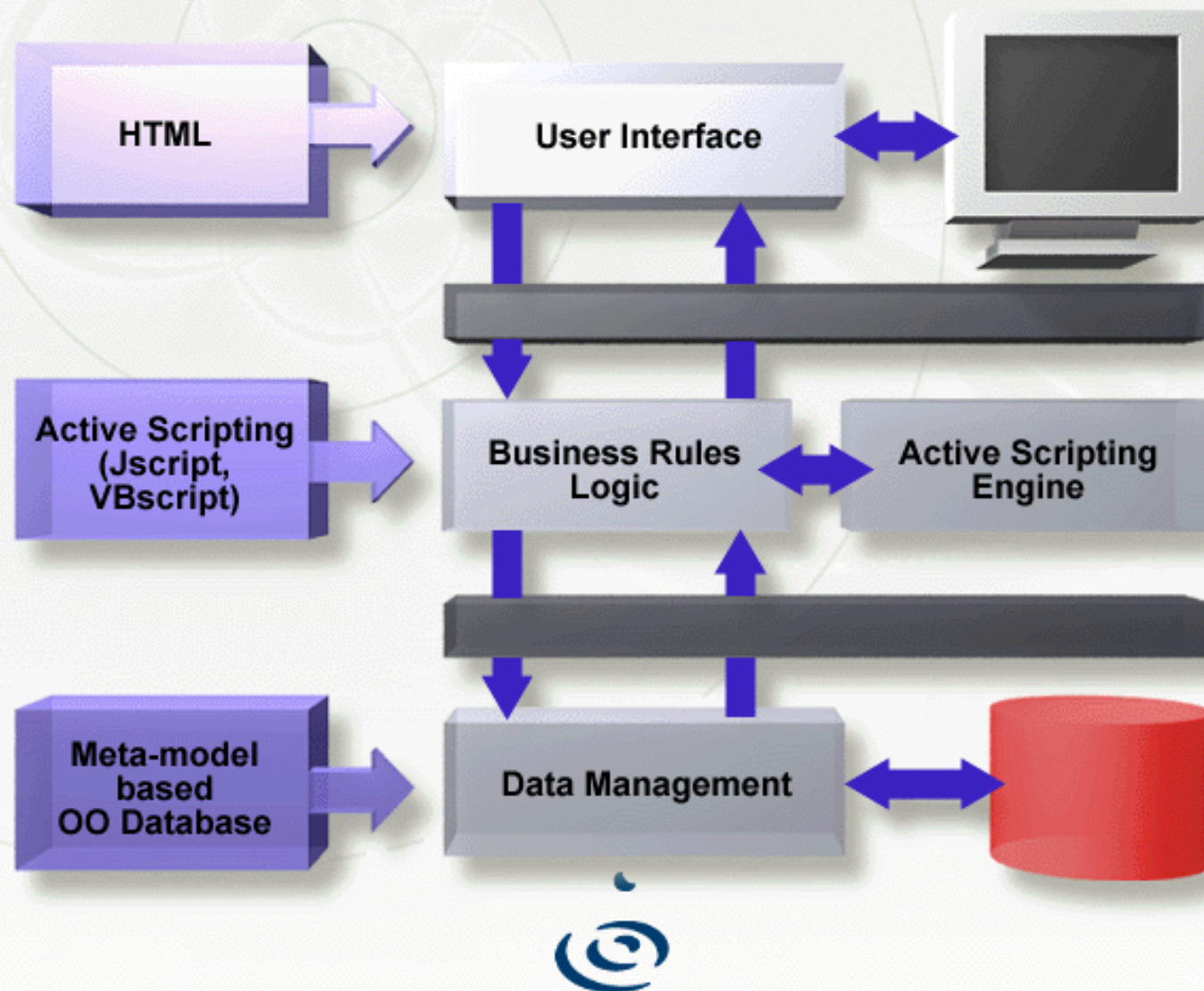


# Signature Plus™ Architecture





# Signature Plus™ Architecture



## **Tailorable vs. Customizable**

- Tailoring:
  - ◆ For Business process changes
  - ◆ Uses CWC data driven tools
  - ◆ RAD cycles
- Customization:
  - ◆ For major functional enhancement
  - ◆ Uses industry standard development tools
  - ◆ Typical software development cycles



## Functional Requirements Breakdown

- Typical client: 150 discrete Functional Points
- Breakdown analysis:
  - ◆ 70 - Met by base system (47%)
  - ◆ 70 - Met by tailoring (47%)
  - ◆ 10 - Requires customization (6%)
- >90% met by base system or tailoring
- This equals low risk, rapid time to benefit



# Signature Plus Architecture

- Flexible, scaleable, integrateable infrastructure
- Build around industry standards
- A building block for integration
- A framework for a robust TES solution





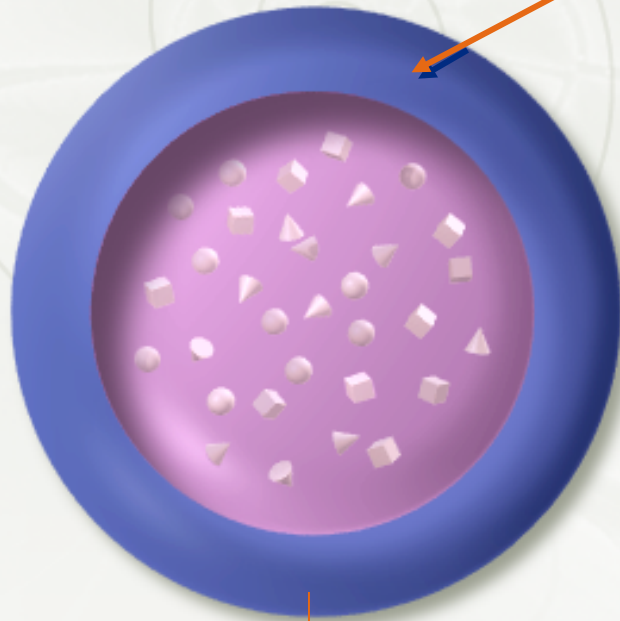
## Signature Plus Component Library

- Richest set of modular front-office functionality
- Industry-specific business components
- Productized from **Fortune 500** deployments, not demos
- Standard application objects/data serving multiple business initiatives



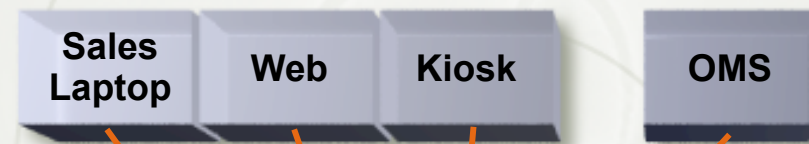


## Signature Plus Transformer



- Common mechanism to unleash unique Signature Plus component implementations
- Controlling data, UI and application components
- Unifying layer for all front-office data



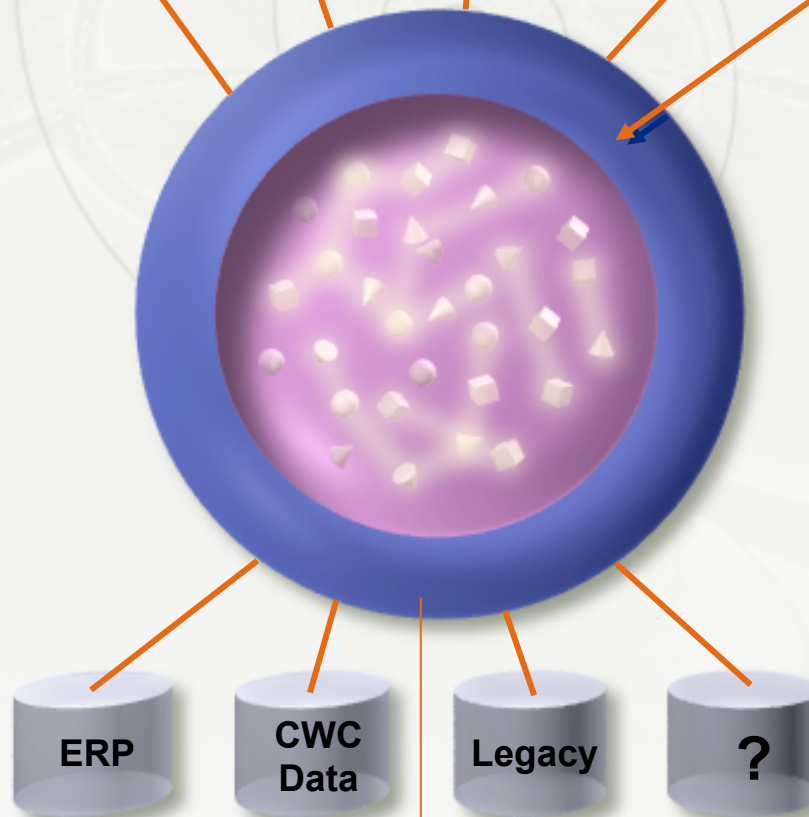


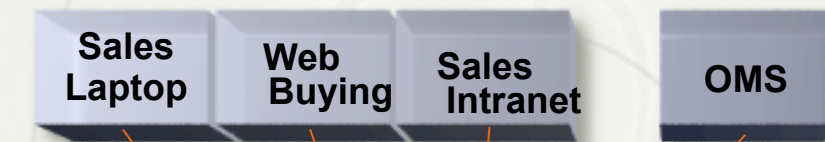
## CWC Transformer

Common Integration points  
for CWC, 3rd party and Legacy  
applications

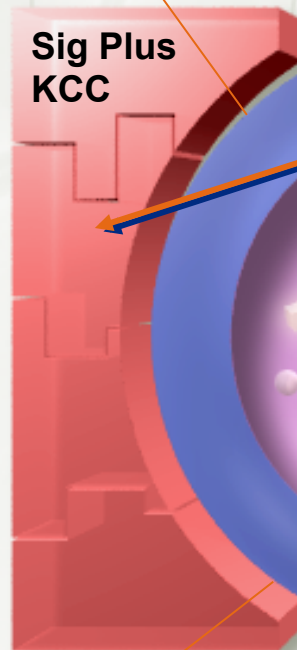
Common architecture to  
consolidate front-office  
applications

Bring back office investments to  
point of sale





## Signature Plus KCC

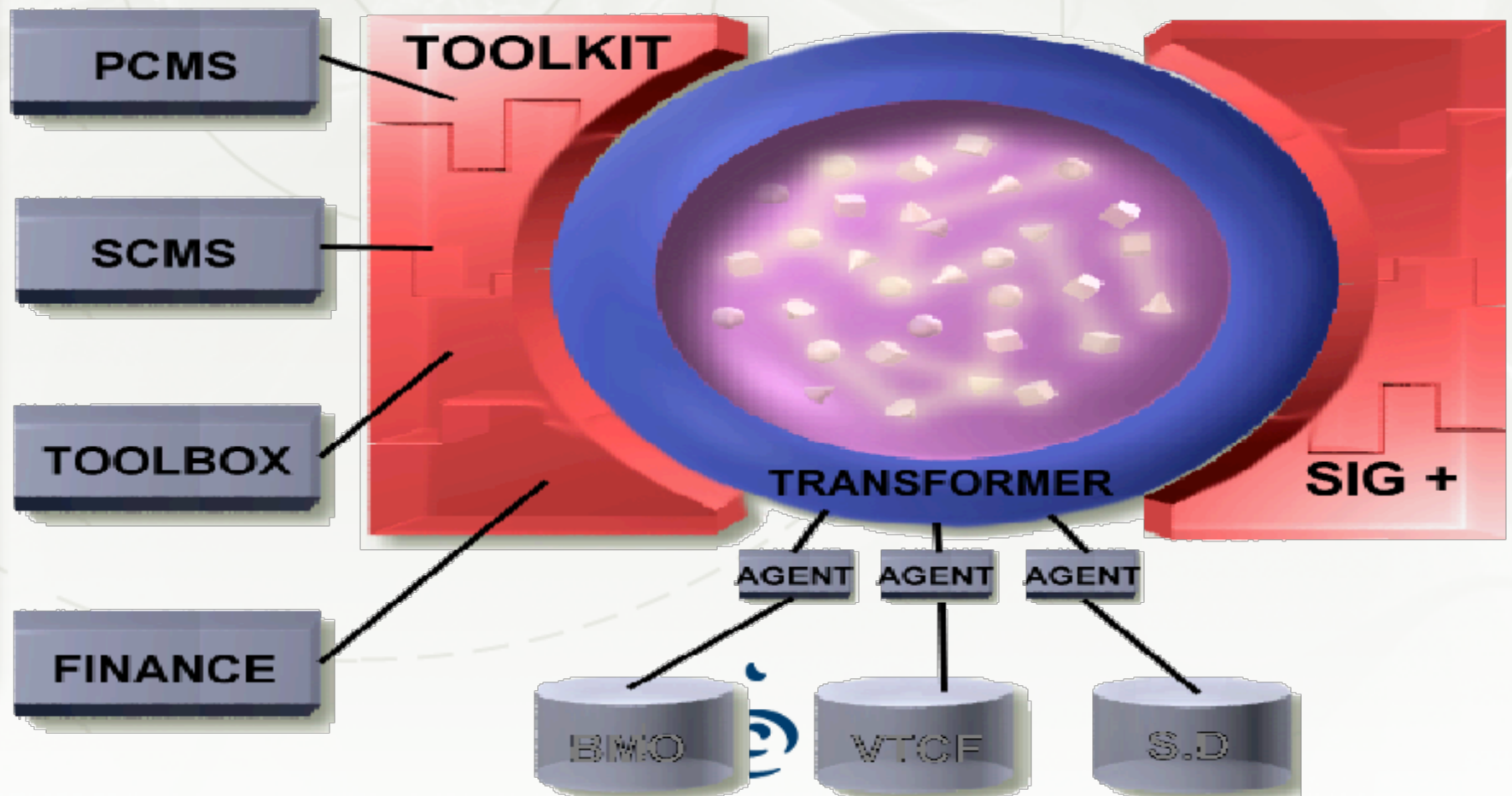


- Single set of integrated tools
- Manages CWC and non-CWC components
- Distributed role-based maintenance
- Optimized for international use
- Ability to test on the fly



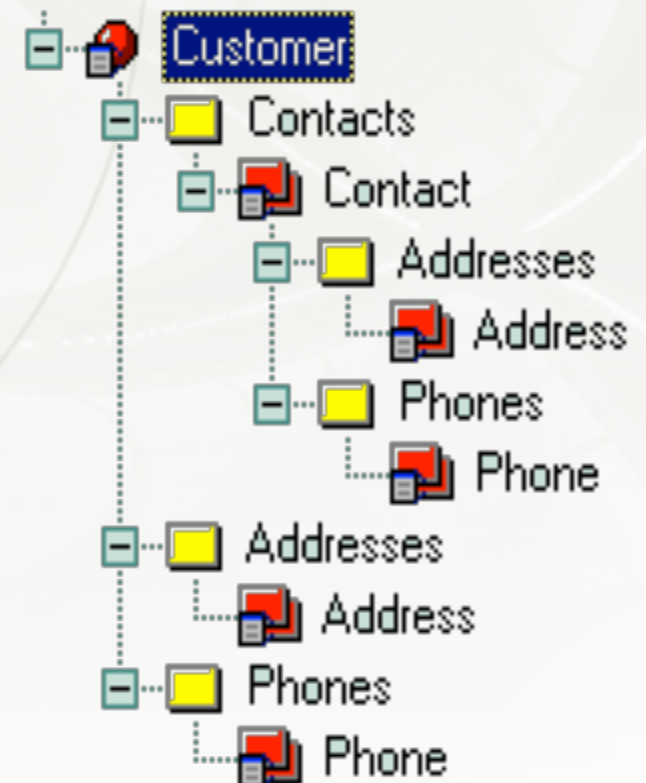
# Transformer Integration Agents

- 'Plug-ins' into Transformer Architecture
- Industry standard tools and techniques
- Software abstraction between Front and Back office data



# CWC Transformer based integration

- Signature Plus Client <=> Tools use it already
  - ◆ This requires a VERY flexible interface
  - ◆ And a VERY loose coupling
- Open, industry standard technology
  - ◆ Access Enterprise Data/Transactions as-is/where-is
  - ◆ Access Transformer through scripting
- Transport neutral


























## Object scripting example - Map RDBMS customer information

```
Sub ImportCustomers(DatabaseName)
  Set dao = CreateObject("DAO.DBEngine.35")
  Set db = dao.OpenDatabase(DatabaseName)
  Set tblCustomers = db.OpenRecordset("CWC01Company",READ)
  Do While Not tblCustomers.EOF
    Set Customer = Customers.Add
    On Error Resume Next ' Skip over null fields
    Customer.ID = tblCustomers.Fields("CustomerID").Value
    Customer.CompanyName = tblCustomers.Fields("Company").Value
    On Error Goto 0 ' turn off error trap
    tblCustomers.MoveNext
  Loop
End Sub
```



## Transformer provides a robust, scalable integration architecture

- CWC Transformer provides total access to Signature Plus
  - ◆ All the capabilities a robust integration requires
  - ◆ Same access as CWC's tools
- CWC Transformer uses industry standard technologies
  - ◆ Allows client to use familiar tools
  - ◆ Standards means the system will grow
- CWC's 14 experience pays dividends
  - ◆ IBM
  - ◆ General Motors
  - ◆ Freightliner Trucks
  - ◆ and many more

Name	Type
 Addresses	CWCObject
 ClientID	String
 CompanyName	String
 Contacts	CWCObject
 CustomerCity	Formula
 CustomerCode	String
 Discount	Long
 Email1	String
 Email2	String
 FirstName	String
 ID	Long
 JobTitle	String
 LastName	String
 MiddleName	String
 Notes	String
 Phones	CWCObject
 Suffix	String
 Title	String
 Type	Integer
 VAT	String
 WebPage	String



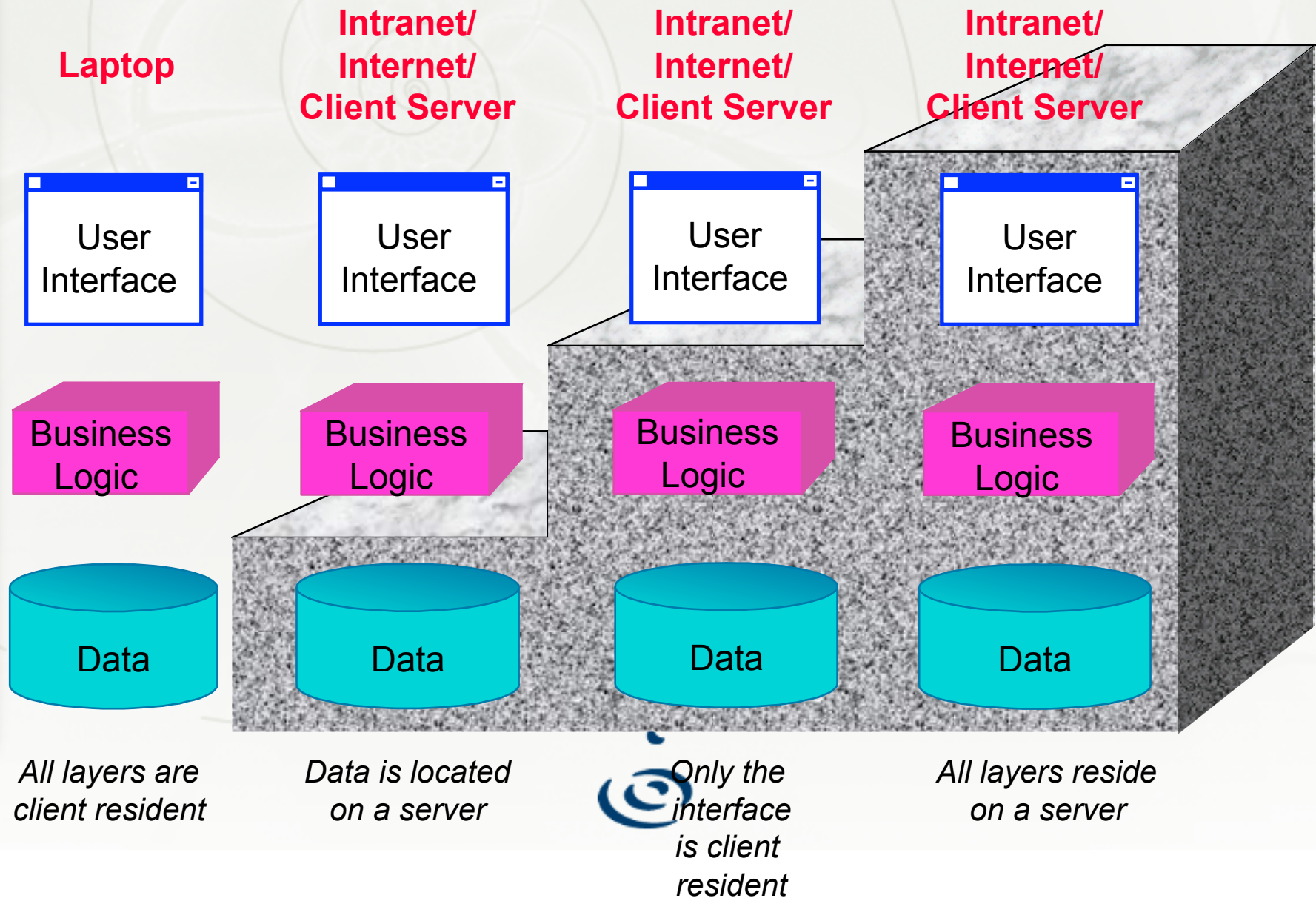
# Components & Multiple Platforms

- Same component used for multiple platforms
- Same data for all layers
- Same technology for all layers
- Same components can be deployed at various tiers
- UI and Business rules can be different for different platforms





# Multi-platform Architecture



## Signature Plus Web 2.5

- Open system offers great flexibility
  - ◆ Deployable as buying or selling solution
- Thin Client strategy based upon:
  - ◆ Active Server Pages
  - ◆ Java Based Configurator
  - ◆ Signature Plus Configuration Engine
- Allows the optimal solution to be deployed based on requirements



# Active Server Pages

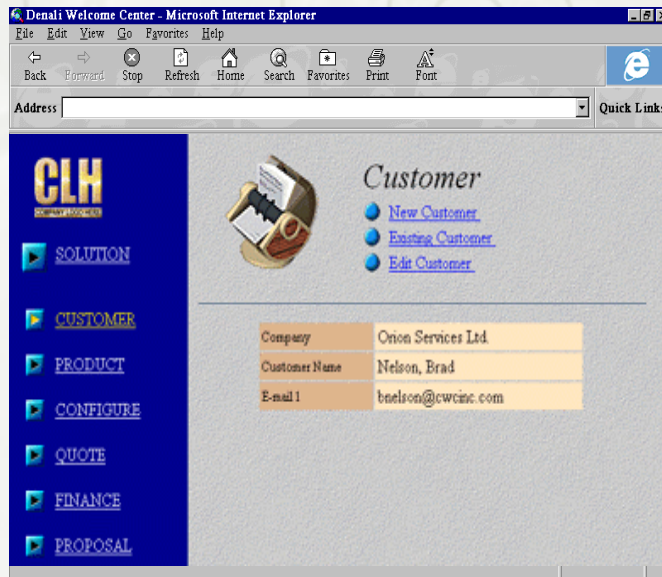
- Same Scripting Engine as Thick Client Application
- Client-side neutral
  - ◆ Generates pure HTML
- Allows reuse of scripted business rules





# Web 2.5 Application Flow

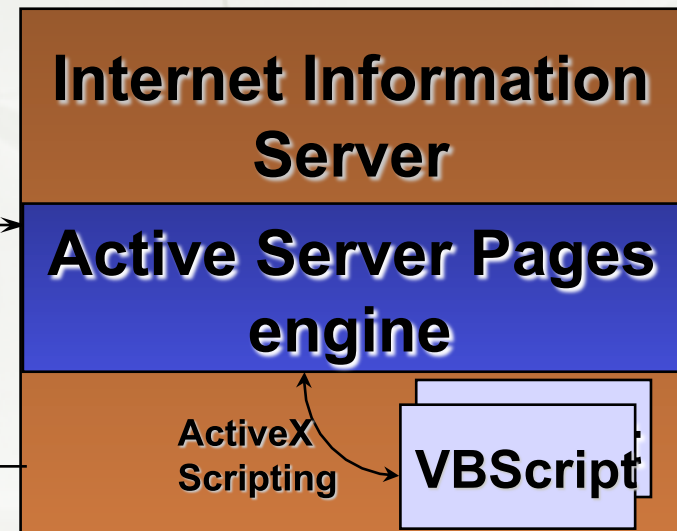
## Client



## Server

HTTP  
request

HTTP  
response



Invokes  
component  
(OLE)

Interprets  
page



Fetches results  
(OLE/DB, ODBC)

# Java based Internet configuration

- Uses Java-based client
- Again, client neutral
- Off-loads UI processing to the client
  - ◆ Allows very interactive User Interface
  - ◆ Industrial Strength On-line Configuration
- Benchmarks support our claims



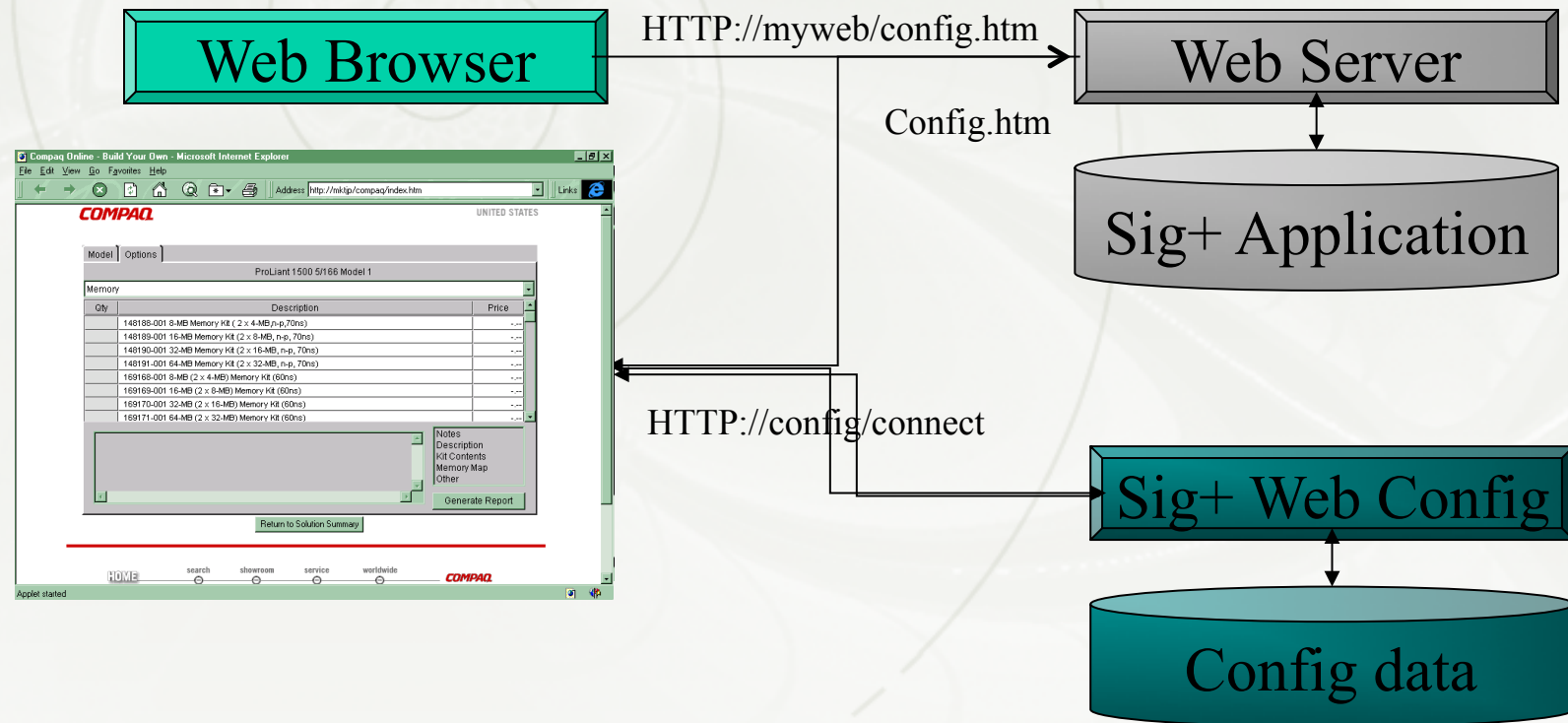
## 3-rd Party benchmark

- Baseline Server:
  - ◆ Pentium 100Mhz Single Processor
  - ◆ NTAS 4.0
  - ◆ 64 MB RAM
  - ◆ 200 MB Swap-file
- Benchmarks:
  - ◆ 27,000 concurrent sessions
  - ◆ 450 simultaneous transactions without degradation





# Java based Internet configuration

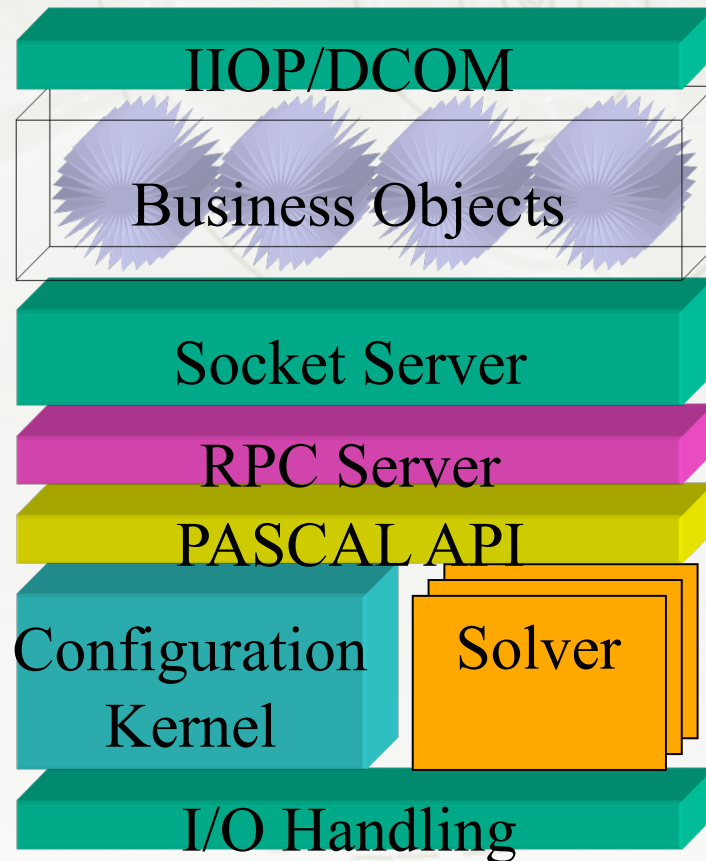


# Configuration Technologies

- Configuration is a CWC core competency
- Signature Plus provides deep functionality
- Same engine in both thick and thin client
  - ◆ Supports our core driver regarding reuse
  - ◆ Allows flexible deployment



# Configuration Run-time Architecture



- Layered Architecture
- Flexible
- Scaleable





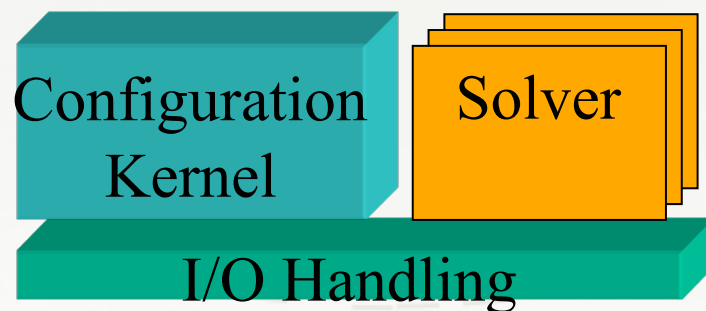
# Configuration Kernel

- Provides common services to configuration components
- Manages memory for configuration and solution state



# Solvers

- Apply specific configuration technologies.
- Leverage kernel for common services



# Solvers

- Boolean Map
  - ◆ Simple table like structure
    - PLA Structure (I.e., AND, OR, NOR, NAND, XOR planer processor).
  - ◆ Very Fast
    - Many MB/s
  - ◆ Very Small
    - 4800:1 Compression
  - ◆ Original solver-- 14 years

- Auto-includes
- Auto-excludes
- Available
- Unavailable



# Solvers

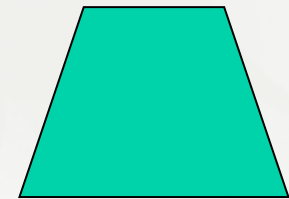
- Conditional Logic
  - ◆ Propositional Assertions
    - IF <Boolean statement> THEN <assertion> ELSE <assertion>
  - ◆ Fast Boolean processor
    - ~37,500 ops on i486-66MHz
  - ◆ Small memory footprint





# Solvers

- Constraint Solver
  - ◆ Bounded Constraints
    - e.g., aircraft weight and balance limits
  - ◆ Fuzzy Constraint optimization



# Solvers

- Resource Solver

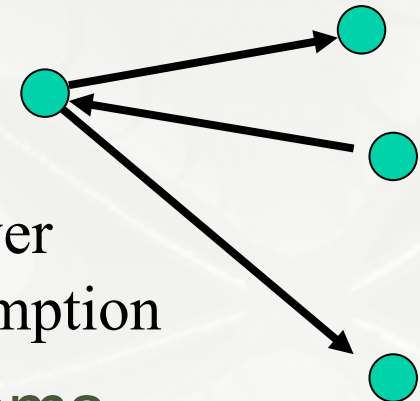
- ◆ Scoped resource networks

- e.g., power\_resource
- power\_resource  $\Leftarrow$  power\_supply.power  
power\_resource  $\Rightarrow$  card.power\_consumption

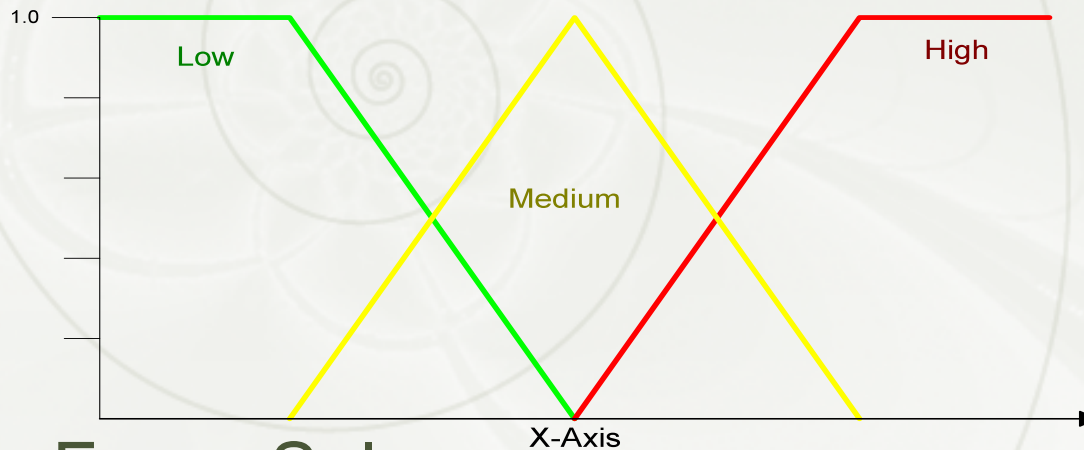
- ◆ Proven circuit simulation algorithms

- ◆ Scalable

- Building heating and cooling 3000 nodes



# Solvers



- Fuzzy Solver
  - ◆ Advanced Fuzzy Logic
  - ◆ Expert Normalization
  - ◆ Specification by Class
    - I.e., specification by vocational use.



# Solvers

- Calculation Solver

- ◆ Math operations in other solvers

- i.e., sine, cosine, power, modulus, logarithms, etc.
    - matrix operations
    - 3D graphics operations

- ◆ E.g., center bearing on shaft is limited by a calculation of shaft.length, shaft.radius, shaft.torque\_limit, shaft.rpm\_max.

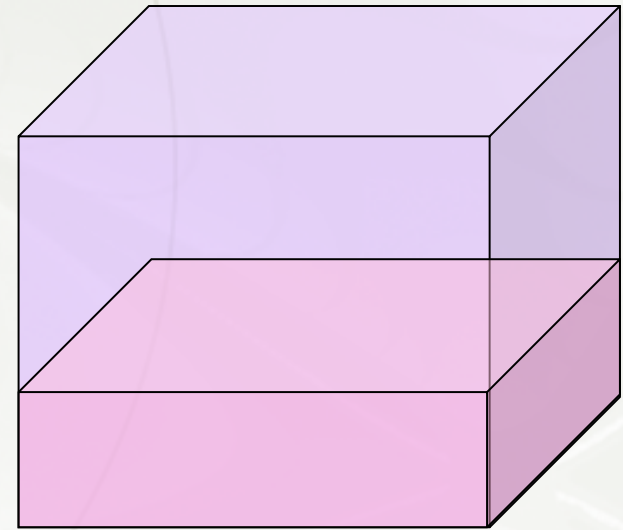
- reduced rule count by 750,000.





# Solvers

- Spatial Solver
  - ◆ 4D bounded value
    - Euclidean space
    - Time varying spatial fields
  - ◆ Moving parts clearance
  - ◆ Packing Optimization



# Solvers

- Simulation Solver
  - ◆ mathematical models used to simulate performance
  - ◆ performance calculations can be used in other configuration rules
  - ◆ One CWC system uses 27 performance calculations



# Solvers

- Parts Solver
  - ◆ Links parts lists into product model
  - ◆ Provides patented search and indexing algorithms for performance
  - ◆ Can link with competitive information for cross-references
  - ◆ Provides the ability to select parts by environment and property constraints (“spec by vocation”)



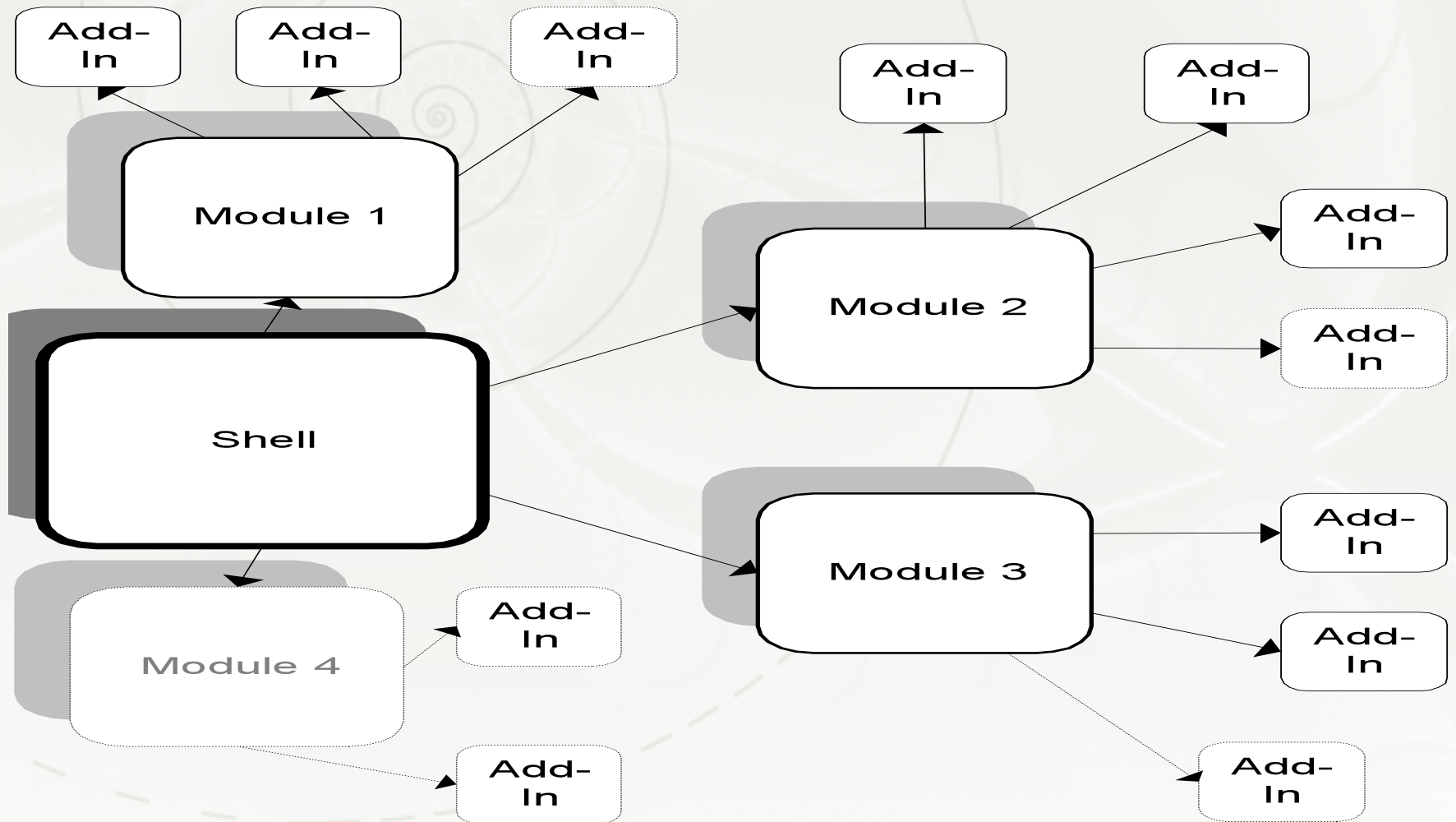
# Technologies

- These are the underpinnings of the system
- Support the Design Goals





# Pluggable Architecture



# Open Technologies

- Easily integrated with other components and enterprise solutions
- COM
- ActiveX
- HTML
- ODBC
- JavaScript
- VBScript

