



# ARTS Update

# ARTS

Association for Retail Technology Standards  
of the  **NATIONAL RETAIL FEDERATION**

## NRF Annual Convention January 13, 2008



# Agenda

Welcome and Introductions

ARTS 2007 Accomplishments

Announcing the SOA Blueprint

Retailer perspective of SOA and Blueprint

Retail Transaction Interface

Pavilion Highlights

UnifiedPOS moving to SOA

Video Analytics

The Model for Business Intelligence

Plans for 2008

Wrap-up with Q&A

Cy Young – Burlington Coat

Greg Wilmer – Big Lots

TB Announced

Roland Doemer – IBM

Richard Mader - ARTS

Frank May - Microsoft

Warren Brown - IntelliVid

Kirstin Wright – Retail Anywhere

Richard Mader - ARTS

Cy Young – Burlington Coat



# ARTS Board

- AccessVia
- Academy Sports
- Adidas
- Burlington Coat
- CSK Auto
- El Corte Ingles
- Epson
- Escalate Retail
- Fujitsu
- Home Depot
- IBM
- Kohl's
- Kroger's
- Limited Stores
- Microsoft
- NCR
- Oracle
- PCMS
- Reject Shop
- SAP

▪ New



# Membership

- **Members**
  - 188 Total
  - 108 Vendors
  - 80 Retailers
  
  - 57 New in 2007
  - 53 Cancelled
  
  - 40% International
- **New in 2007**
  - **NEC**
  - **Tesco**
  - **Nike**
  - **Kroger's**
  - **IKEA**
  - **Myer**
  - **REI**



# 2007 Accomplishments

- **ARTS XML**
  - POSLog for Foodservices
  - Pro-Con (NAFEM standards converter)
- **Announcing Today**
  - SOA Blueprint and Best Practices
  - Retail Transaction Interface (RTI)



# 2007 Accomplishments

- **Requests for Proposal (RFPs)**
  - Workforce Management
    - Now includes Task Management
    - Updates based on actual use
  - Disappointed by lack of contributions
    - POS Hardware
    - VoIP



# 2007 Accomplishments

- **Data Model**
  - New Dictionary in test
    - Cross references; Data Model and Schemas
    - Search and Sort
  - Lifecycle Management policy
  - Standard Data Warehouse (coming soon)
    - Data flow from Model – Schemas – Warehouse
    - Sample KPI's
    - Release schedule March



# 2007 Accomplishments

- **UnifiedPOS**
  - Release 1.12
    - MSR modification for customer data security
    - XML POS as basis for Web Services POS
  - See Press Release
  - Visit UnifiedPOS demo in Pavilion



# 2007 Accomplishments

- **Supporting Events:**
  - SOA Boot Camp
  - World Retail Congress, Barcelona
  - APRCE Conference, Tokyo
  - Technology Summit, Brussels
  - European Technology Council, London
  - RAI Technology Conclave, Mumbai



# Big Ideas

## ARTS and RIS News & IHL Consulting

**Tuesday 11:00 Exhibit Floor 3D-05**

- 5th Annual Store System Study
  - Joe Skorupa and Greg Buzek
- Updated NRF-ARTS WFM RFP
  - Ann McCool
- Panel discussion on these Topics
  - Above + Jeannine Ralston and Tim Hood



# ARTS and SOA

Greg Wilmer – Big Lots  
Work Team Co-Chair



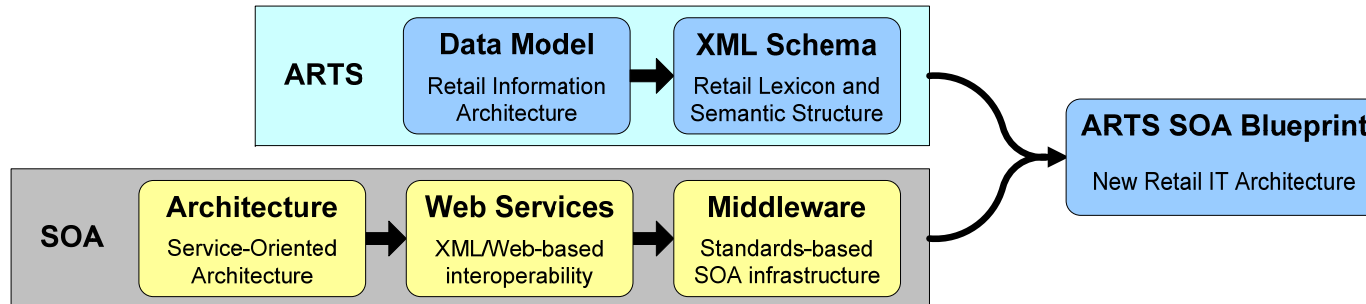
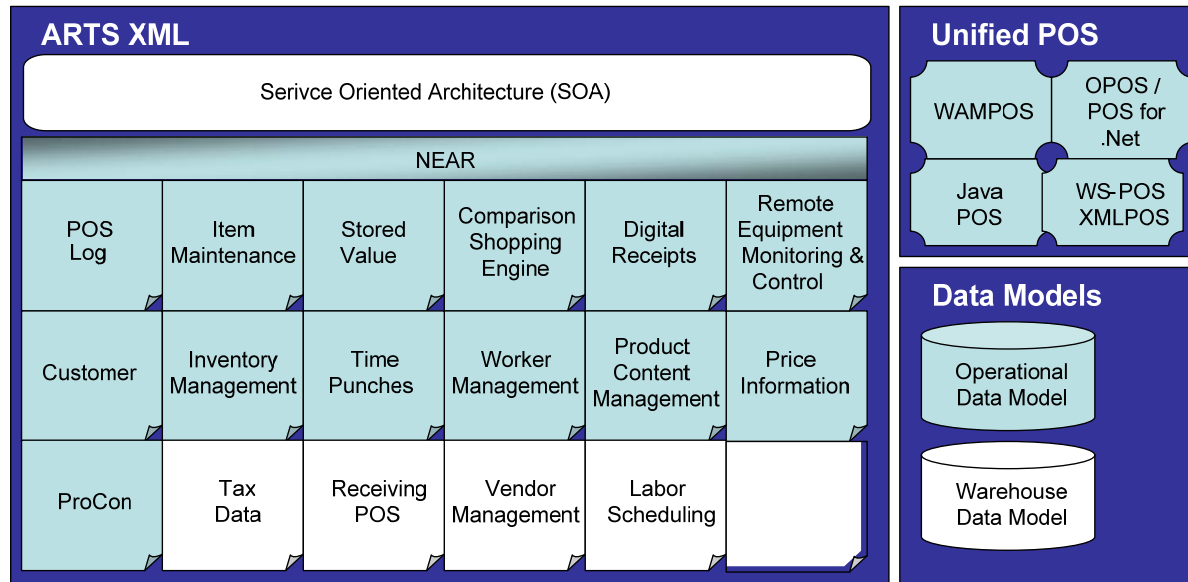
## What Is a Service Oriented Architecture?

- A business centric approach to delivering information technology capabilities by using common services to perform basic business functions
- These services are software modules that fulfill basic business needs while hiding implementation complexity, and increasing maintainability and reuse

Traditional Architecture		Service-oriented Architecture
Functionality Driven	→	Process Oriented
Designed to last	→	Designed for change
Long development cycles	→	Iterative development
Tightly Coupled	→	Loosely Coupled
Application Specific	→	Heterogeneous
Object Oriented	→	Message Oriented



## What Uniquely Positions ARTS in the Retail SOA Realm?





## What's Been Completed to Date?

- **SOA Boot Camp** – An information / training class to familiarize retailers with the basics of SOA
- **SOA Blueprint for Retail** – An end state, implementation independent architectural depiction of the best practices for SOA for retail. An architectural overview of what is needed
- **SOA Best Practices** – Standards and conventions that ARTS will use to document future SOA based standards
- **Retail Transaction Interface (RTI) Service Description** – A service description containing a comprehensive set of XML message specifications for creating, populating, and completing retail transactions that reduces the time and cost of integration to retail transaction functions
- **WS-POS** – Brings the UnifiedPOS devices into the SOA world by enabling remote access to devices as services.



## What's Been Completed To Date?

### ARTS SOA Footprint

Education	ARTS SOA Boot Camp				<ul style="list-style-type: none"> <li>Overall SOA information</li> <li>Classroom format</li> </ul>
Overall Architecture	ARTS SOA Blueprint				<ul style="list-style-type: none"> <li>Architectural component of a retail SOA</li> <li>Required Tools</li> <li>Example uses in Retail</li> </ul>
Standards Conventions	ARTS SOA Best Practices				<ul style="list-style-type: none"> <li>Conventions and assumptions that will be used in all ARTS SOA standards</li> </ul>
ARTS Standards	Corp	Move	Sell	Buy	<ul style="list-style-type: none"> <li>Specific standards for logical domains</li> </ul>
	RTI				
	WS-POS	Device Services			
	ARTS SOA Common Services				
	XML Schemas	Application Interface / Message Standards			

Training

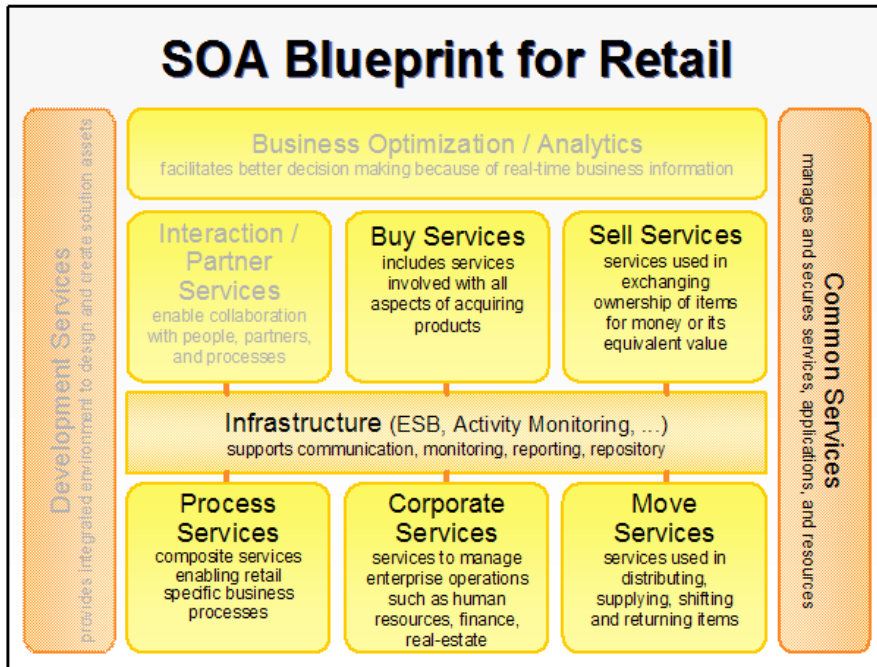
Technical Reports

Technical Specifications

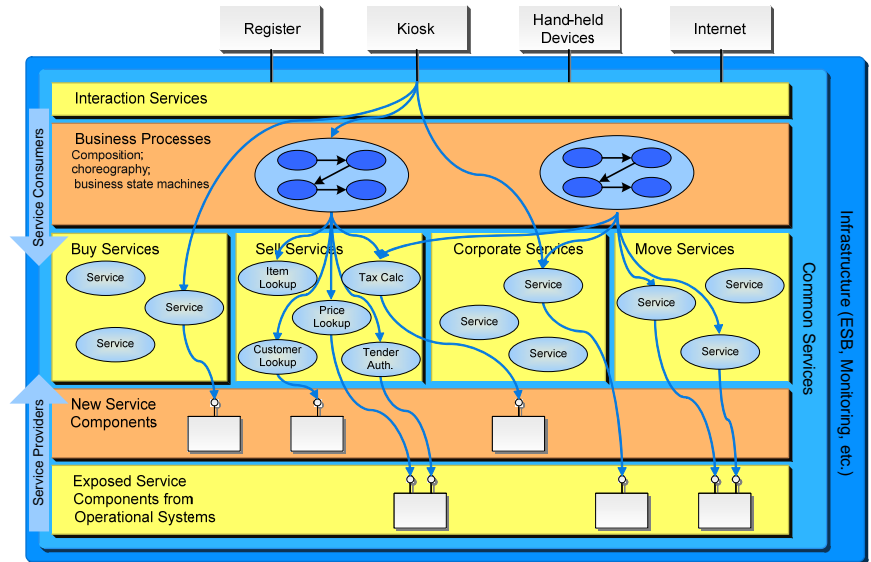


# What's In the Blueprint?

- Retail Architecture Based on SOA
- Infrastructure Requirements
- Logical Model
- Use Case Examples
- Path to SOA



## Conceptual Architecture



## Infrastructure Requirements

<b>Business Process Analysis</b>	Process Modeling	Rules Editor	Simulation
<b>Application Server</b>	Registry	Rules	B2B
<b>Enterprise Service Bus</b>	Routing	Transforms	Adapters
<b>Business Process Execution</b>	Native BPEL	Human Workflow	Decision Services
<b>Services Management</b>	Mgmt	Security	SLAs
<b>Business Activity Monitoring</b>	Monitoring	KPIs	Alerts



# ARTS SOA Blueprint

## Table of Contents

- Abstract
- Retail Architecture Based on SOA
- SOA Tools
- Logical Business Services Model
- Value of SOA for Retail
- Example Use Cases
- Path to SOA
- Appendix with Sample Service Definitions



## What's In the SOA Best Practices Report?

- **SOA Service Interface Design & Considerations** – Describes recommendations for the service interface that is used to interact with the SOA Services including discussions around service granularity, coupling, versioning and reuse
- **SOA Service Naming Conventions** – Naming conventions for services including lexical and syntactic principles as well as service name nomenclature
- **Business Process Modeling Conventions** – Business Process Modeling Notation (BPMN 1.1)
- **UDDI Service Description** – How the service should be described in a UDDI registry
- **Web Service Components and Recommendations** – Recommendations around the message base, service discovery, service description and message security
- **XML Architecture** – Architectural requirements for the XML base including support for WSDL, existing Venetian Blind schema format, business concept based division of the schemas, etc.



# Get the Blueprint with Best Practices

- Free to ARTS members (download)
  - Webcast \$99
- Non-members
  - Download for \$249
  - Hard copies in NRF Bookstore
  - Download and 2 hour webcast \$399



## ARTS Update Session

# Retail Transaction Interface RTI

**Dr.-Ing. Roland Doemer**

doemer@de.ibm.com

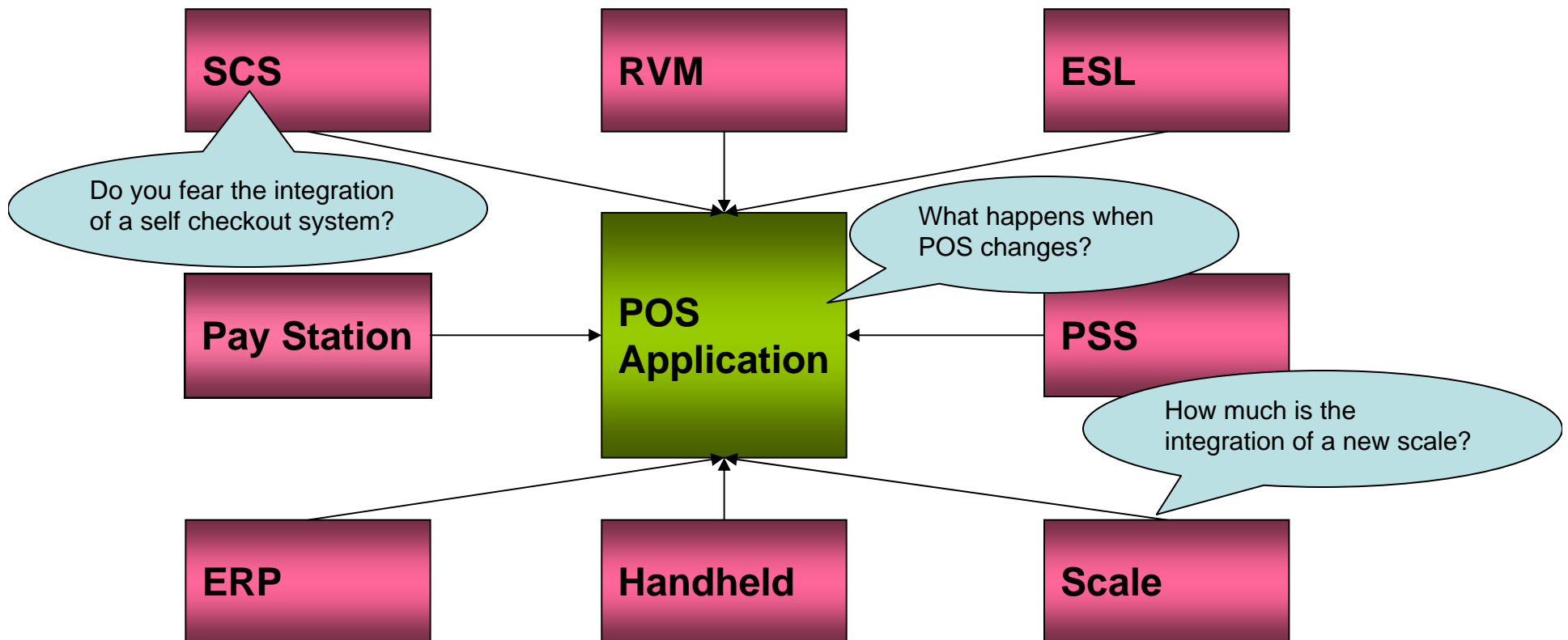
IBM Germany

Chief Architect Total Store North East Europe

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# The Challenge within Store IT





# The Approach from ARTS

- Plenty IT vendors have established interface families for special solution areas.
- Compatibility between vendors is not given.
- The POS system is the main function provider in the store.
- The amount of POS functions are clear.
- The major use cases in the store were defined.
- An XML structure is defined to represent all functions within the major identified use cases.



# The Status of the RTI Design

Proposal for a new standard interface for retail store business logic

IBM had the chair of this workgroup and the main work was done by 6 contributors.

Specification version 1.0 published.



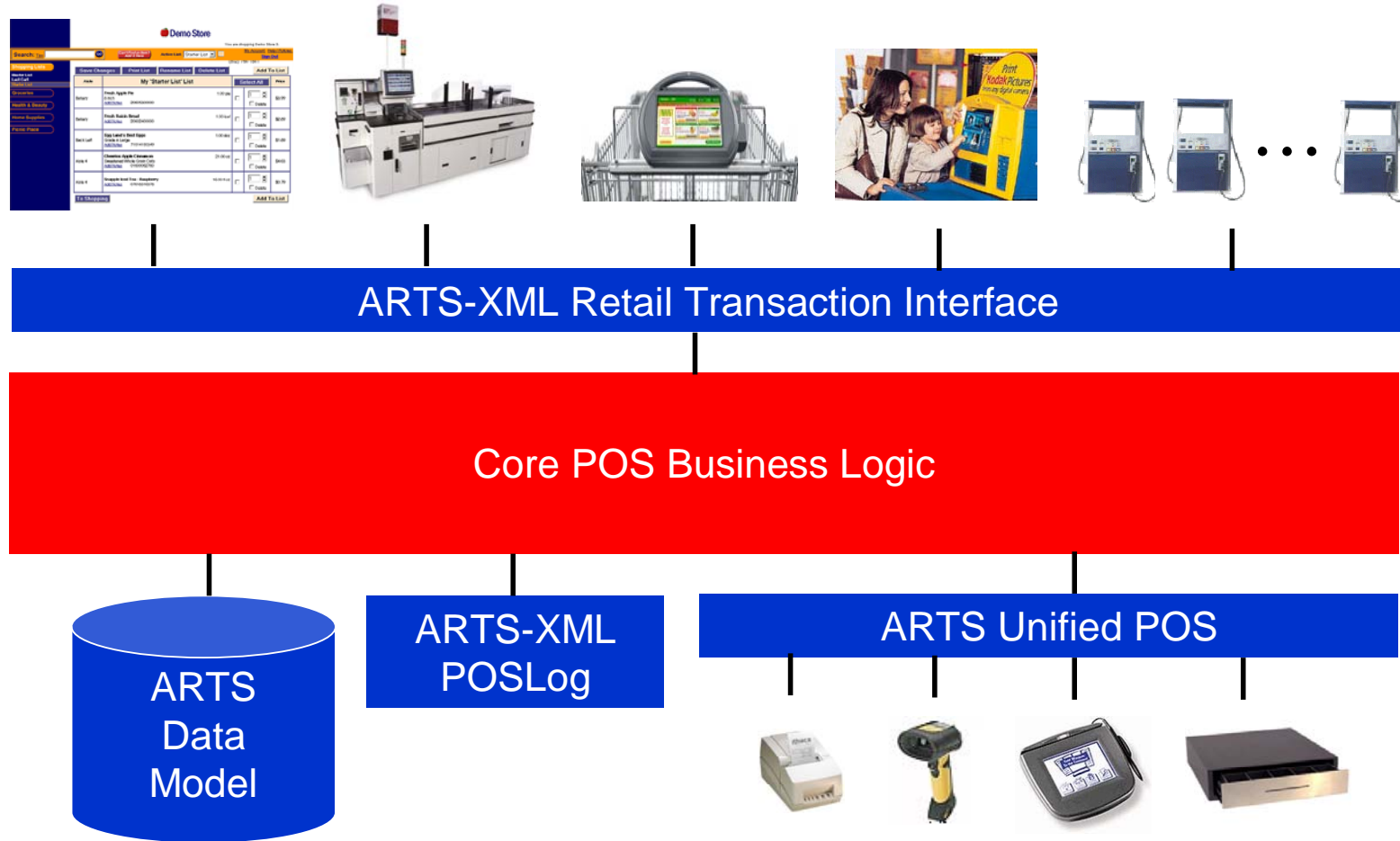
2007 ARTS focused on RTI definition

Foundation of a Technical Committee with 16 members

All major use cases were agreed and the XML schema is established.



# The Implementation as SOA Service



*RTI is a part of the over all ARTS SOA Support*



# The Benefits for each of us

- For the retailer
  - Less time and cost for integration.
- For the IT vendor
  - More solutions sold and rolled out.
- For the customer
  - Better shopping experience.



# Thank you!

For more information about  
an RTI SOA implementation  
contact

Roland Doemer  
**doemer@de.ibm.com**  
mobile: +49-172-625-3033



# ARTS Pavilion Highlights (booth 2155)

**Richard Mader - ARTS**

# NRF 97TH ANNUAL CONVENTION & EXPO

Jacob K. Javits Convention Center, New York City  
Convention: January 13-16, 2008 | EXPO: January 14-15, 2008



**ARTS**  
Association for Retail Technology Standards  
of the National Retail Federation

## Solution Center

Click on a question to see  
how ARTS can help

How does  
SOA help in  
retail?

How can I  
share printers  
& scanners to  
reduce cost?

How do I  
implement  
SOA?

How can I make  
checkout  
seamless across  
channels?

More  
questions  
about ARTS?

**How does SOA help in Retail?**

## **ARTS SOA Blueprint**

**A Service Oriented Architecture (SOA) enables business agility making your IT systems more responsive to changing business requirements.**

### **What is ARTS SOA Blueprint for Retail?**

The SOA Blueprint for Retail helps you understand how to get started with SOA.

### **What does the ARTS SOA Blueprint do?**

Specifically, the SOA Blueprint addresses:

- What is SOA
- What can SOA do for Retailers
- The key components of an SOA architecture
- How to govern and measure this new architecture
- Common services for Retail

### **Want to learn more?**

Visit the ARTS desk

Click for more  
on the blueprint

#### **To Do:**

Join ARTS to  
get a copy of  
the blueprint!

#### **To Do:**

Visit the  
ARTS desk





# Available in the Pavilion

- **For review:**
  - SOA Blueprint & Best Practices
  - RTI Specification
  - Press Releases
  - Updated WFM – RFP
  - Data Warehouse Model (draft not for release)

**Experts on retail applications and ARTS standard**



# Available in the Pavilion

- **Demonstrations:**
  - UnifiedPOS, web services, card protection
  - Video Analytics
  - Digital Receipt
  - Scales as POS
  - Application integration

**Experts on retail applications and ARTS standard**



# Web Services for Point of Service (WSPOS)

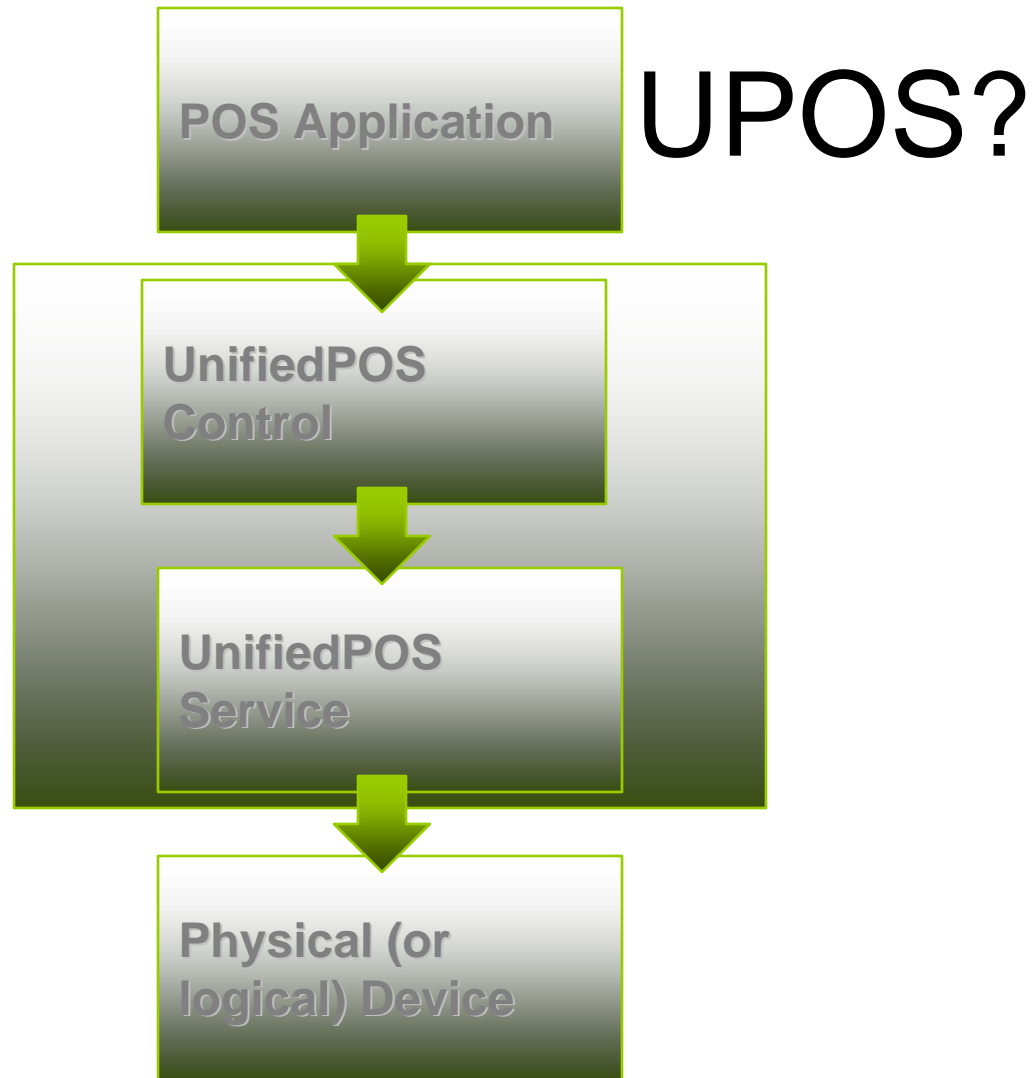
The Future Direction of the ARTS UPOS Standard

Frank May  
Retail Technology Strategist - Microsoft  
[frankmay@microsoft.com](mailto:frankmay@microsoft.com)



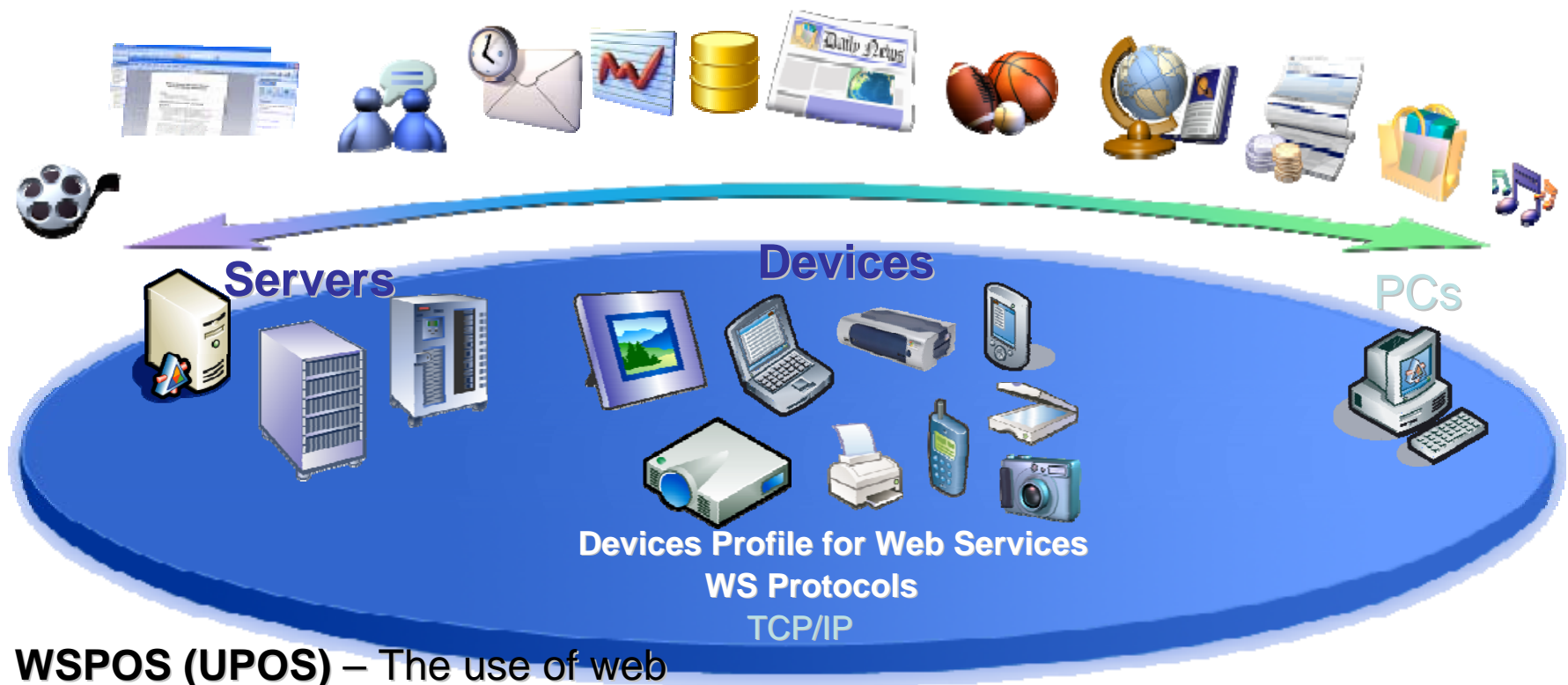
# Agenda

- What is UPOS?
- Web Services Extension to UPOS
- Benefits of Approach - Some Interesting Use Cases
- What are we demonstrating?
- What's Next?



# What are Web Services?

Network Protocols for Software talking to Software  
Services



**WSPOS (UPOS)** – The use of web services to control retail; peripherals in the store



# Extensions to UPOS

- UPOS defines the driver interfaces to POS Peripherals. Today....
  - An application owns a device
  - The device must be attached locally
  - Devices cannot be shared between applications
- With WSPOS....
  - Devices can be shared
  - Devices are accessible across the network
  - Cross platform interoperability is possible



# Benefits – Some Interesting Use Cases

## ● Retailer/ISV

- New application scenarios possible
  - Mobility Scenario - Line busting
  - Dressing room scenario
  - Kiosks
  - Customer – product information/location
- Interoperability
- Shared Devices

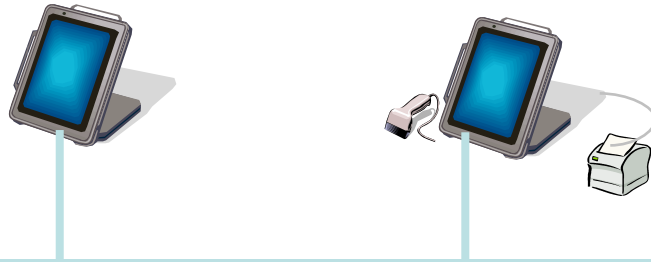
## ● Hardware Partners

- Develop one embedded driver
- Decrease development and maintenance costs



# What Are We Demonstrating?

## Microsoft Demo



## IBM Demo



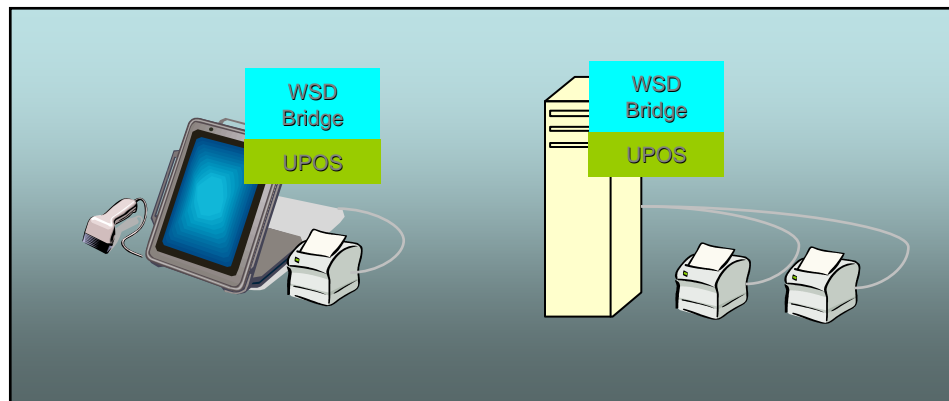
Ethernet Network

WSD POS devices are discoverable and controllable by any application on any machine on the network

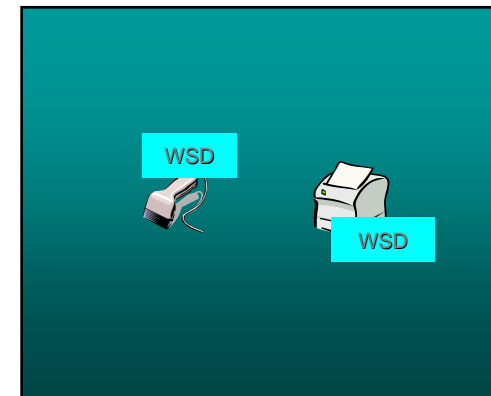
# Web Services On Devices

## POS Device implementations

Two possible implementations make WSD POS devices possible



In one implementation a WSD Bridge is used to expose UPOS devices As Web Service Devices. The Bridge code runs on the computer connected to the device.



In another implementation a WSD stack is embedded on the actual POS device.



# WSPOS Components

- XMLPOS – UPOS Properties, Methods and Events in XML format
- Web Service Definition Language (WSDL)  
– Defines the contract between the application and the device service
- WS\* Standards – Which pieces of the standard will we use? Imperative for interoperability



# Next Steps

- Which WS\* standards should we use?
- Looking for an incubation partner. We can build this solution today
- Discussing approach with partners and customers
- Part of SOA Store Systems architecture going forward
- WSPOS technology part of UPOS 2.0



# Video Analytics

Warren Brown - IntelliVid



## **IntelliVid**

### **Markets Served**

- Multi-line retailers, department stores, drugstores, chain specialty, grocery

### **Experience**

- The only Video Intelligence Software provider focused solely on the needs of retailers
  - 5 years of commercial installs in retail
  - Proven ROI in less than 12 months

**More information available at the NRF-ARTS (#2155) and Cisco (#2328) booths**



# Video Intelligence for Retail

## Marketing / Merchandising

- Localize planning
- Understand in-store customer behavior

## Loss Prevention

- Detect & Prevent shoplifters
- Combat ORC
- Control employee theft

## Store Operations

- Improve customer service
- Reduce waiting
- Improve efficiency

## Supply Chain

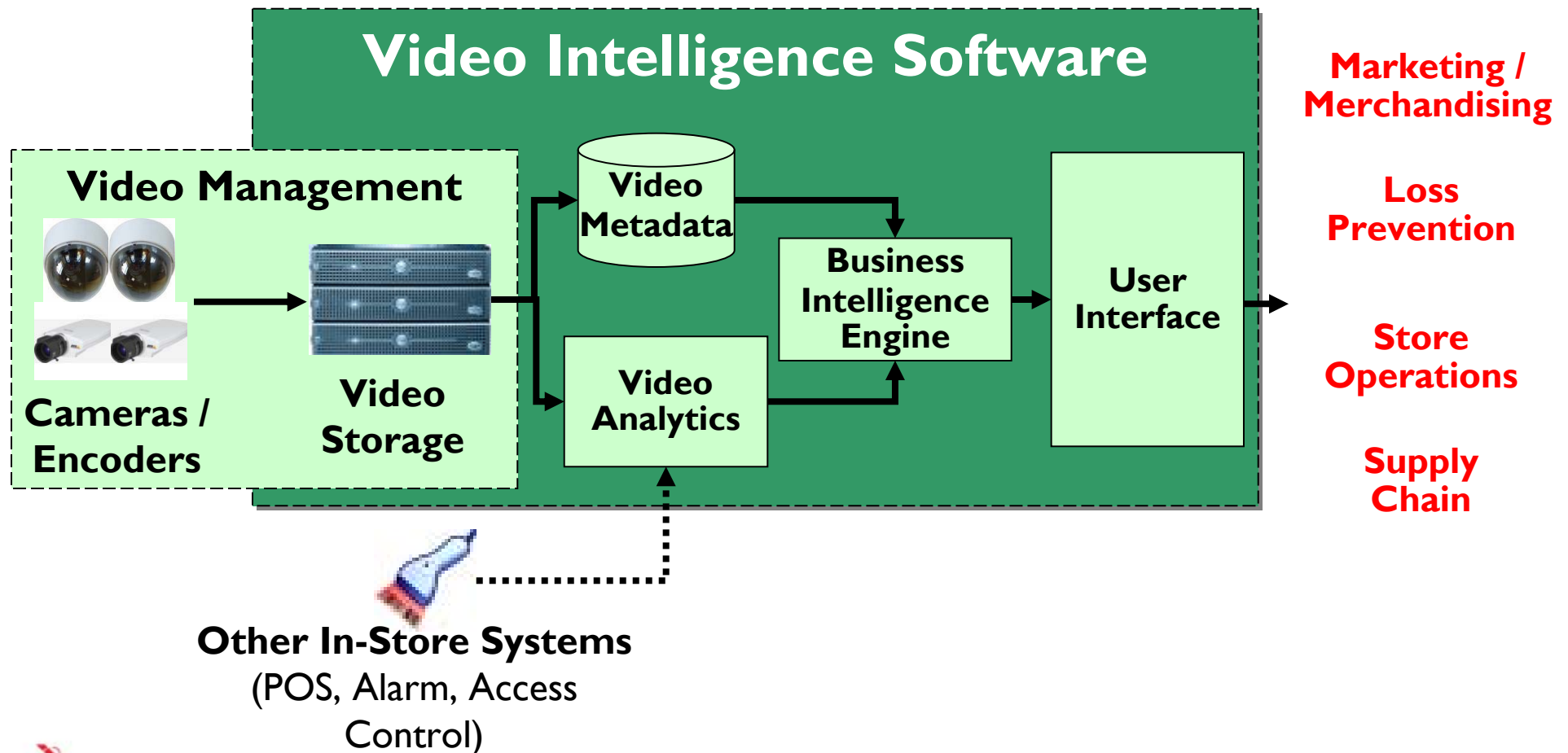
- Input to Stat-forecasting
- Out-of-Stock alerts





# Building an Intelligent Video Architecture

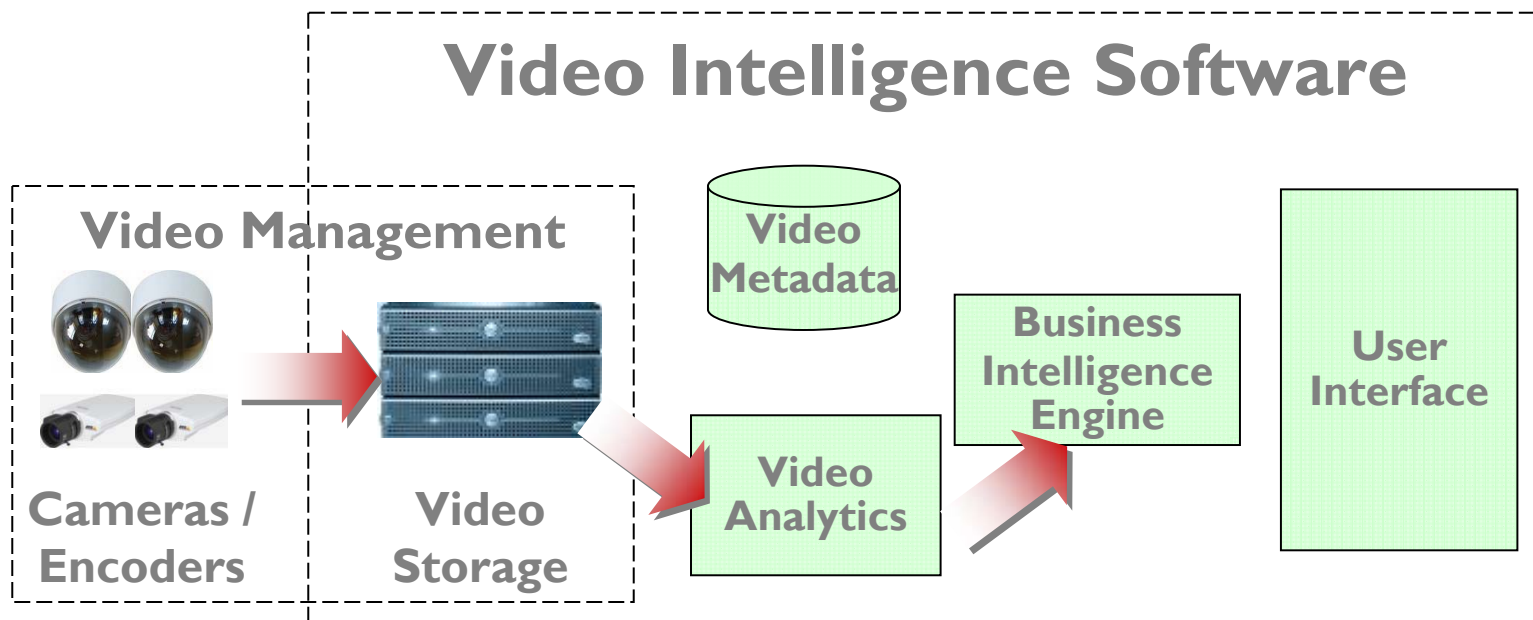
## What do Retailers Need?





# The Role of Standards in Intelligent Video

Standards for Digital Video and Video Analytics will allow vendors and retailers to focus on producing results, not getting the pieces to work together



*Interactions That Will Benefit from Standards*



# The ARTS Model for Business Intelligence

**Kirstin Wright – Retail Anywhere  
Chair ARTS Data Model**



# Goals of a Data Warehouse

- Make information easily accessible
- Present information consistently
- Adaptive and resilient to change
- Protect information assets
- Foundation to improve decision making
- Business community must accept

- The Data Warehouse Toolkit by Ralph Kimball



## A Rich Foundation for Business Intelligence

- ARTS Data Model
  - 10 Business Functions
  - 216 Subject Views
  - 632 Entities
  - 3,755 Attributes
  - 59 Domains
- ARTS XML
  - 15 Sets of standard XML messages
- ARTS Request For Proposals
  - 7 RFP(s)
- ARTS Data Dictionary
  - 27,975 Entries



# Logical Progression to BI

- Develop an example of a Data Warehouse
- Data Warehouse Structure and Definitions
  - Derive from the ARTS Data Model (v5.1)
  - Provide mapping from DM to DW
  - Use ARTS Dictionary to cross-reference XML map
- Operational Data Source options
  - Operational ARTS Database
  - ARTS XML messages



# Initial Blueprint for BI

- Business Process
  - POS Retail Sales and Returns
- The Grain
  - Sale/Return Line Item
  - Most atomic grain
  - Highly dimensional



# Facts

- Sales Quantity
- Gross Sales Amount
- Transaction Price Modification Amount
- Item Price Modification Amount
- Net Sales Amount
- Retail Store Currency Net Sales Amount
- Tax Amount
- Cost of Goods Sold



# Dimensions

- Location
  - Describes **where** activity occurs in the Enterprise
- Time
  - Tells **when** activity occurs
- Customer
  - Identifies **who** is purchasing goods and services
- Item
  - Names, describes, classifies **what** is being sold





# Sales View

- Sales by Time Dimension
- Sales by Location Dimension
- Sales by Item Dimension
- Period Sales Crosstab
- Location Sales Crosstab



# Merchandising View

- Fast Selling Item Analysis
- Slow Selling Item Analysis
- Vendor Sales Performance Analysis
- Category Performance Analysis
- Item Sales by Geographic Location
- Basic Item Affinity Sales Analysis
- Item Sales over Time



# Additional Business Views

- Inventory Control
- Order Management
- Workforce Management
- Customer Relationship Management



# Sample Key Performance Indicators

- Prior Period over Current Period Sales
- Sales per Unit Area
- Top Selling Items
- Bottom Selling Items



ARTS Illustrated Sales per Square Ft KPI						
Sales Period: 01-01-2007 - 12-31-2007						
Store	Area		Sales	Sales/SqFt	Std Dev	Alert
100	23,000		\$ 2,340,000	\$ 101.74	2.544	↑
101	24,500		\$ 1,590,000	\$ 64.90	0.426	↔
102	30,000		\$ 1,560,000	\$ 52.00	(0.316)	↔
103	32,000		\$ 1,534,000	\$ 47.94	(0.550)	↓
104	25,000		\$ 1,226,056	\$ 49.04	(0.486)	↔
105	26,000		\$ 1,351,636	\$ 51.99	(0.317)	↔
106	35,000		\$ 1,794,000	\$ 51.26	(0.359)	↔
107	36,000		\$ 1,860,716	\$ 51.69	(0.334)	↔
108	35,500		\$ 1,666,028	\$ 46.93	(0.608)	↓
All Stores	267,000		\$ 14,922,436	\$ 55.89	(0.092)	↔
Aggregate Metrics:			Average SlS/Sq Ft	\$ 57.50		
			Std Dev	17.392334		
			Median SlS/Sq Ft	\$ 51.69		



# ARTS Blueprint for BI

- Inaugural release early 2008
- Over 100 pages to start
- Incorporate feedback from ARTS members
- Expand and improve through a formal release strategy



# ARTS Plans for 2008

Richard Mader - ARTS



# ARTS Plans for 2008

- **ARTS-XML**
  - Tax Transaction
  - Scale Management
  - Speed of Service
  - Expand/enhance SOA Blueprint
  
- Suggestions??



# ARTS Plans for 2008

- **Data Model**
  - Data Warehouse
  - Dictionary
  - Release 5.2



# ARTS Plans for 2008

- **UnifiedPOS**
  - Release 2.0
    - Web services
    - Shared devices



# ARTS Plans for 2008

- RFP's
  - POS Hardware?
  - VoIP
  - Business Intelligence
- Your call.....



# Supporting Activities

- Expand Australian chapter
- European Technology Council
- Best Practices with CIO Council
- Events
  - SOA Boot Camps
  - Technology Summit – Amsterdam
  - Euro-Shop



# Wrap-up and Q&A

Cy Young – Burlington Coat



# **ARTS Pavilion (booth 2155)**

## **Big Ideas Tuesday 11, 3D-05**

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