

Data Systems

The Past Issues & Future Vision

EDI Usage

- Fortune 500 & Government
- Companies mandated
- Only 100,000 out of 6 million in NA

EDI Issues

- Cost
- Complexity
- Inflexible (not extensible)
- Trading Partner agreements required

XML Usage

- Low Cost of Entry
- Simple to Use & Easy to Learn
- Extensible (flexible)
- Vendor & Platform Neutral
- Designed for the Internet
- Universal in Scope

XML Issues

- Large Footprint
- Namespace (recognition & collision)
- Languages from Schemas
- Non-support of Float Point Formats
- Scalability (Element order & Construct)

Open Site Architecture Key Issues

- Exposes Data to All Authorized
- Supports Legacy Systems
- Neutral Set of API's
- No Single Point of Failure
- Minimizes Duplicate Processors
- Supports Scalability of Site Network
- Supports Multiple Devices & Network
- Provides Performance & Cost Benefit

Open Site Architecture Additional Requirements

- Multi-platform Support
- Multi-version Support
- Application Independence

Suggested solution

- Web Services using LDAP
- Universal Plug'n Play
- Message Broker
- JXTA

Web Service Issues

- Not Design for Devices
- High Overhead for Devices
- LDAP Potential Single Point of Failure
- Requires Services (DHCP,UDDI)
- Requires Upfront Configuration
- Requires Powerful Processors

Message Broker Issues

- Vendor Compatibility
- Requires Guidelines & Best Practices
- Authentication Complexity
- Performance Questions

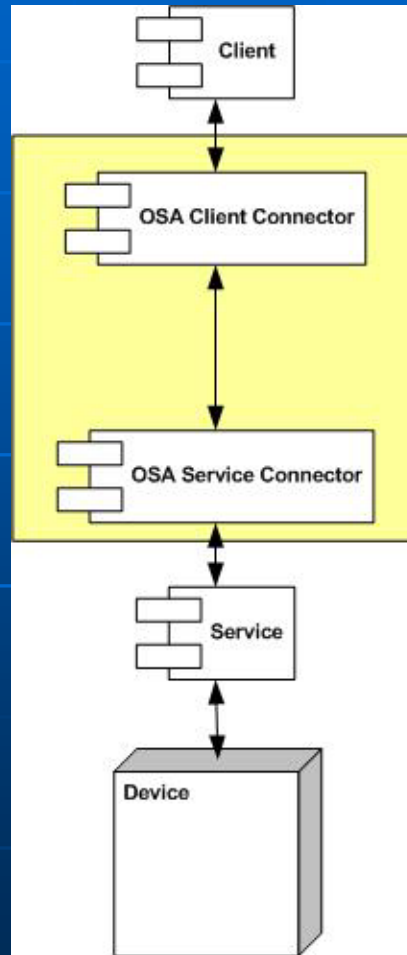
UPnP Issues

- Designed for Small Networks
- Security Not Addressed
- Question of Extensibility (flexibility)
- Ability to Keep Connection Alive
-

JXTA Issues

- Large Code Base
- Address not TCP/IP Based
- Non-deterministic Communications
- Applications are Hard to Build etc.

Basic Component diagram



Data Center Architecture

- An Supports Web Services & Grid Computing (Realm Server)
- Extensible Neural Network
- Supports JavaScript AJAX Browsers
- Supports Application Oriented Network - Readers & Routers (AON)
- Supports Wireless VPN & Mesh Net
- Supports Resource Description Framework (RDF) – Web Metadata

M Language

- Adaptable to Existing Standards
- Harmonize Vocabularies (ISO 19762)
- Normalization of Schemas (Less)
- Data 3D & Modeling (Semantic Web)
- Not a Complex Ontology

RDF

Grand Organized Directorate

- Resource - Supports a URI
- Property- Supports Name Property
- Statement- Resource-Property-Value
(Subject, Predicate, Object)

MIT Data Center's Role

- Work Standards Bodies (Verticals)
- Leverage Existing Standards
- Provide Expertise to Practical Issues
- Provide Universal Translate Ontology
- Provide Conformance
- Provide Performance
- Provide Lab & RA Support

MIT Data Center Vision

- Low or No Cost of Entry (W3C)
- Real Time Communication & Interaction of:
 - People, Objects, Devices
- Control, Ownership, Personalization and Security of “all” data Globally

Vision

- A world where...
 - ...bits and atoms are merged
 - ...physical objects communicate in real time all the time
 - ...the Internet extends into everyday products
 - ...everything is connected

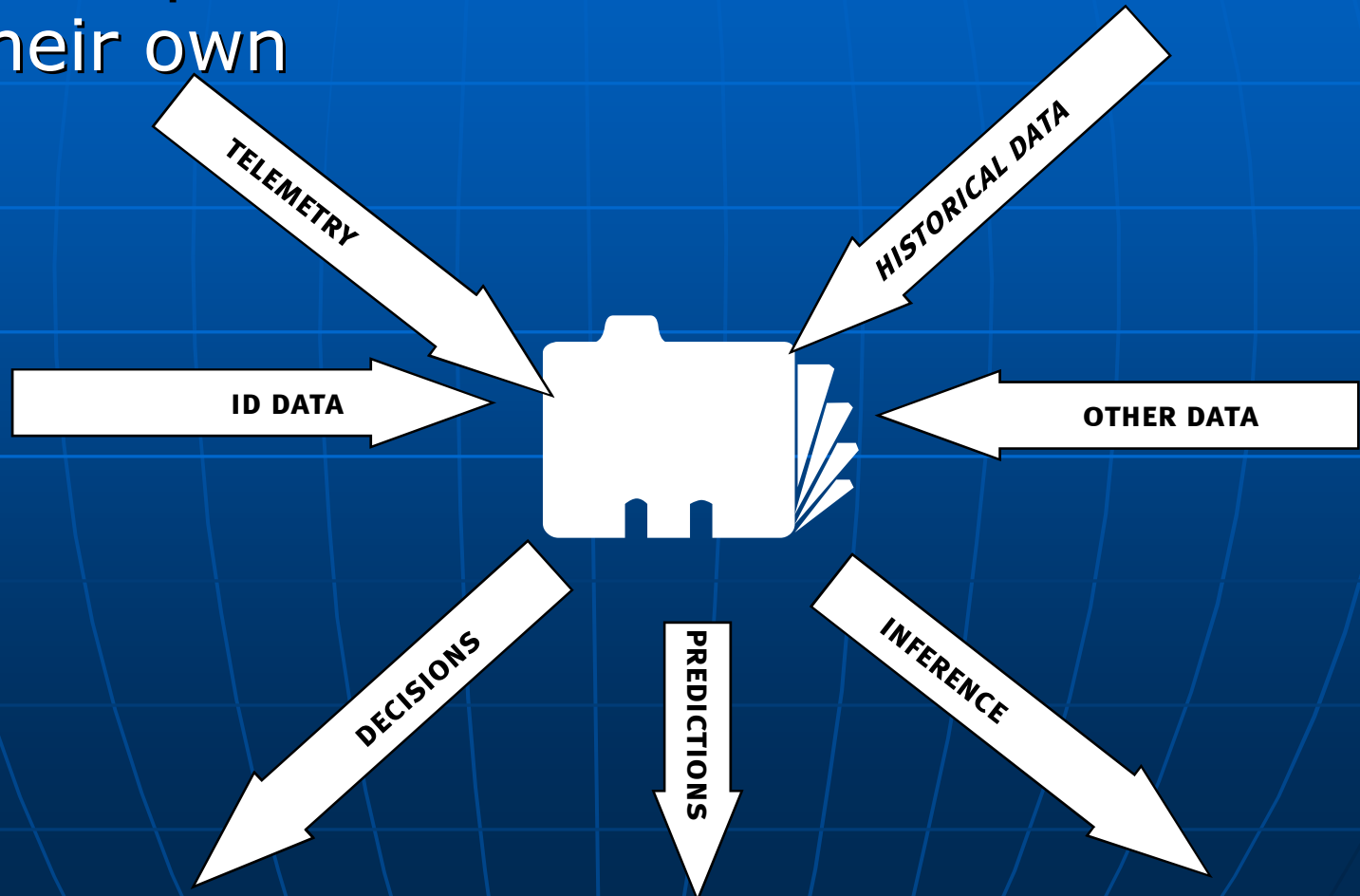
The Scenario of the Future

Example Applications

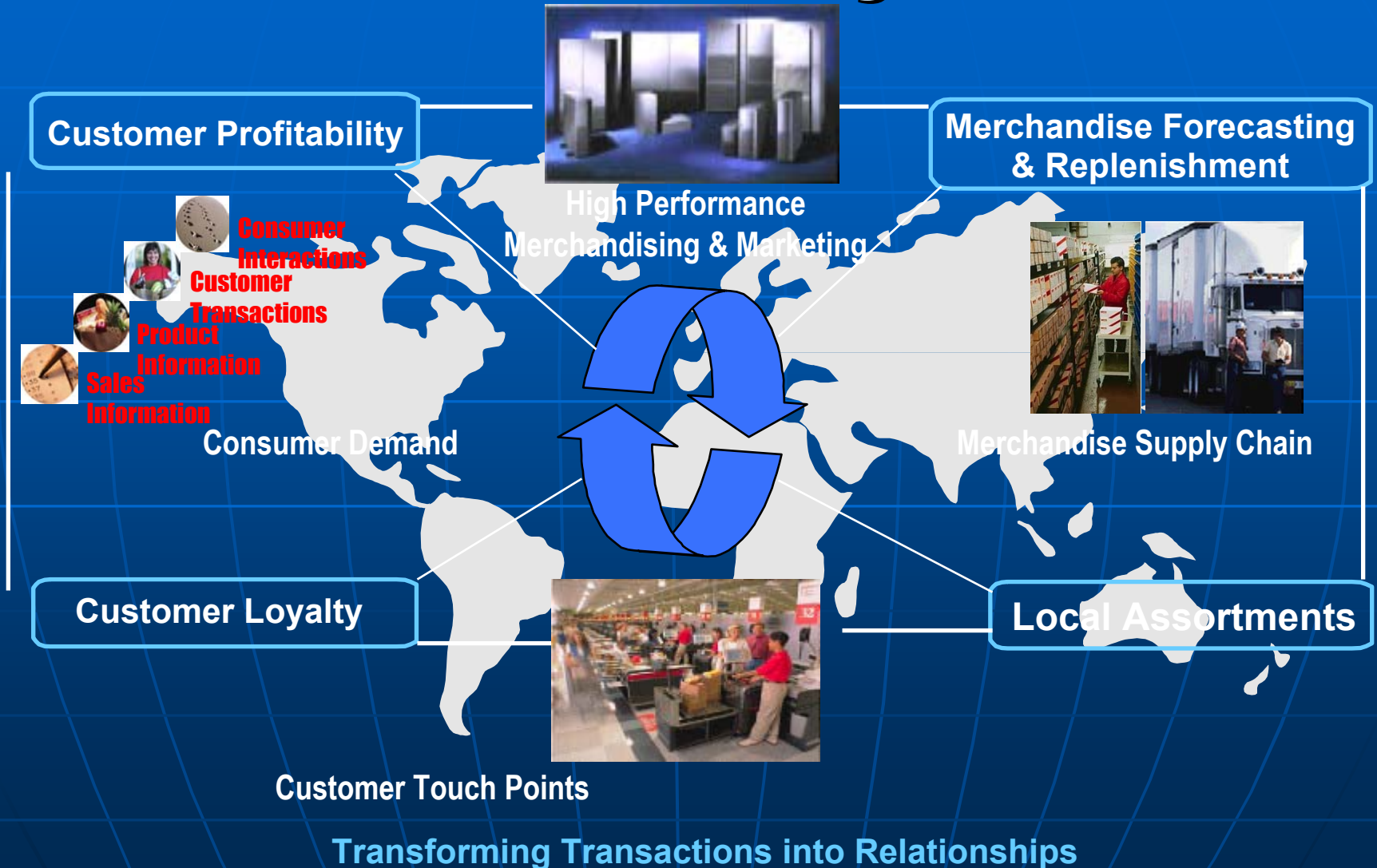
- What can you do with this technology ?
 - Supply chain benefits
 - Reduce out of stocks, reduce inventory, speed up delivery, check freshness, track and trace, produce to demand, identify sources of diversion, identify counterfeiting, theft prediction, faster recalls
 - Consumer benefits
 - Direct order from home, smart appliances, (e.g. microwave, washing machine, refrigerator), smart healthcare, assisted living
 - New and less expected benefits
 - Customized products, smart recycling, checkout-less stores

Technology

- ...computers that can make decisions on their own



Global Technology for Our Home & Neighborhood



Consumer Benefits Inside the Home

- Multiple Points of Access
- Open Dialog with Surroundings

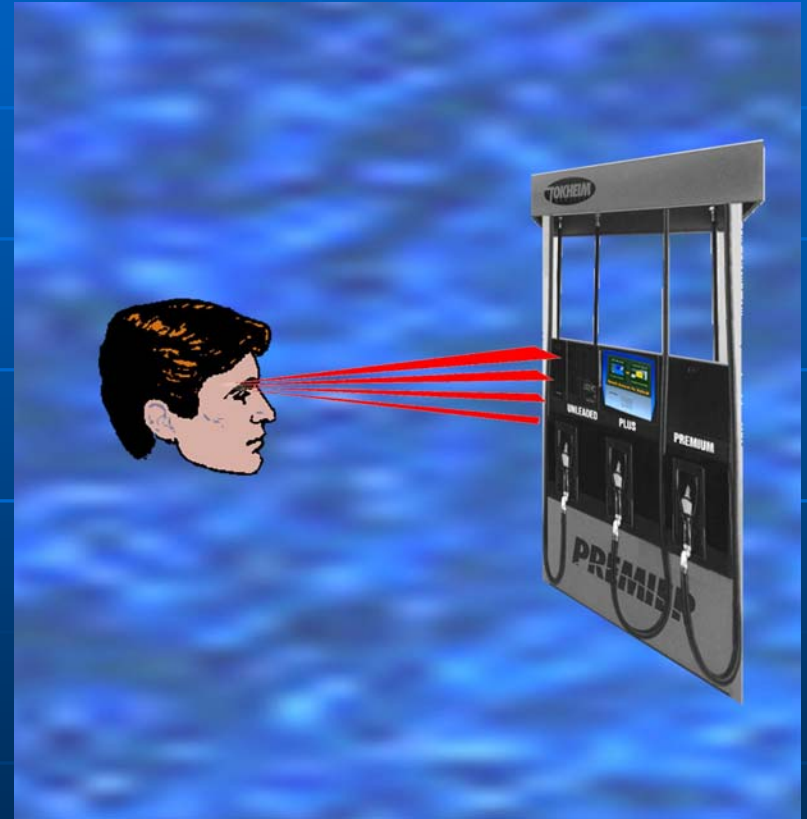


Authorization Technology

- ❖ Iris Scan, Finger Scan, Hand Geometry, Voice Verification, and Dynamic Signature Verification
- ❖ Iris Scan System only Unobtrusive Biometric ID Method

Benefits:

- ❖ Secure Credit Transactions
- ❖ Minimize Drive-Offs
- ❖ ID Regular Customers



Marketing in the New Millennium

- Localized marketing becomes personalized in the new millennium
- A knowledge base is the catalyst that facilitates personalized marketing
- “And/or” philosophy

A Semantic World

- New products
- New methods of delivery
- New rewards
- New Application of technology
- Don't compete... change the rules