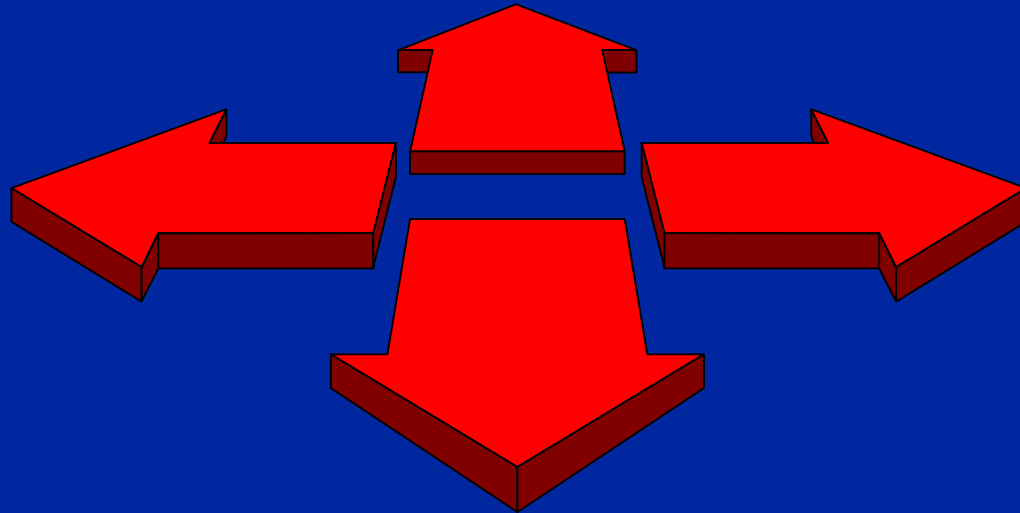


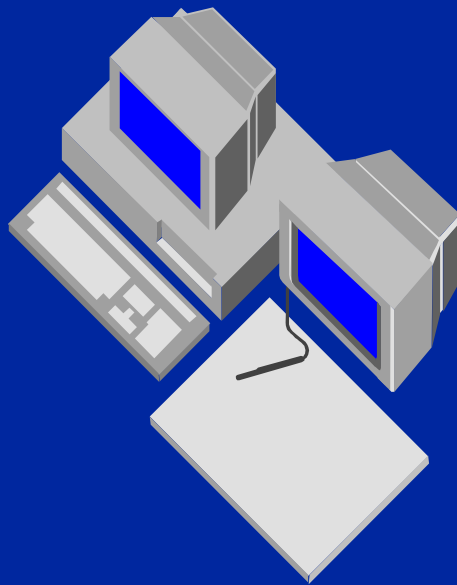
# Windows™ Open Services Architecture (WOSA)



**Chris Williams**  
Product Manager, WOSA  
Microsoft Corporation

# WOSA Description

**Open architecture that enables Windows and Windows NT work-stations to connect to a wide range of services in a heterogeneous environment**

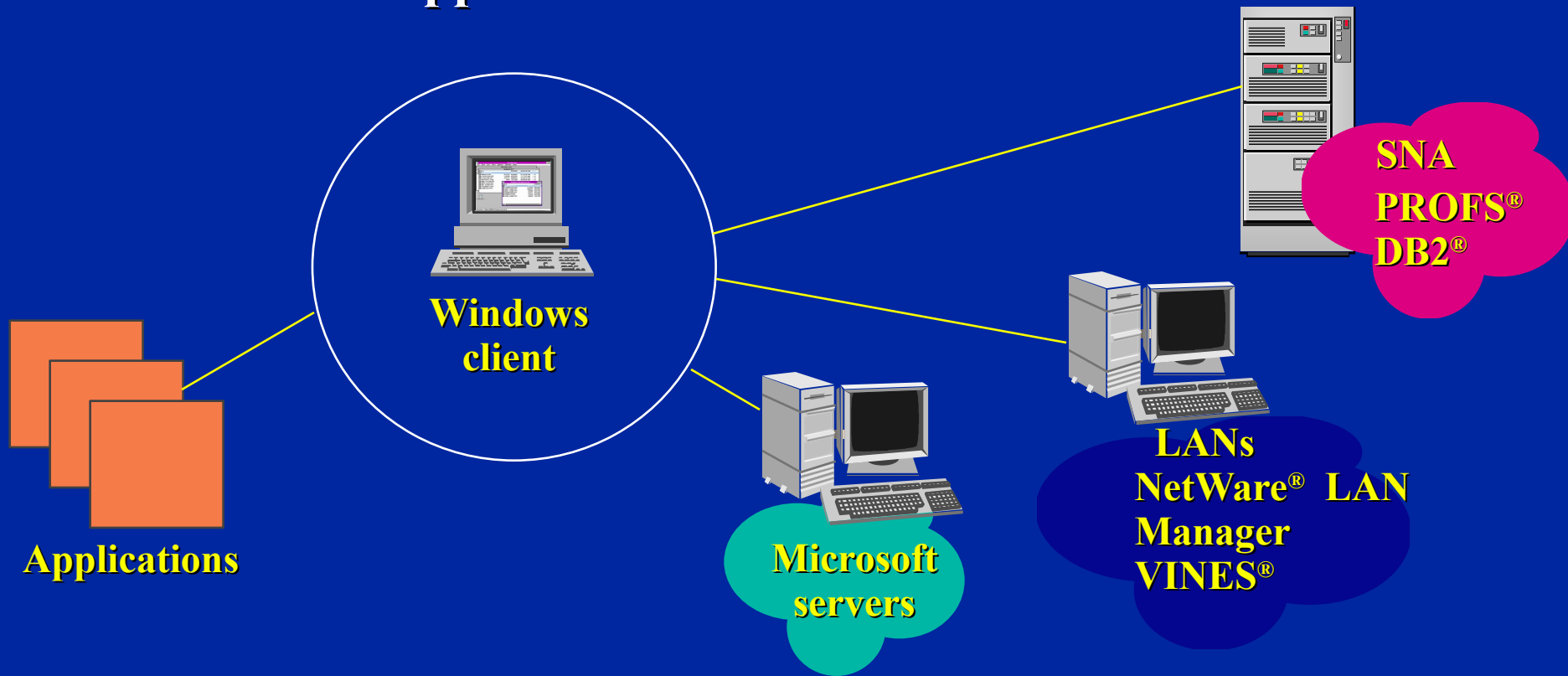


# Need For An Open Services Architecture

IS Managers want **choice**, **flexibility** and **security** in a heterogeneous environment

Systems integrators need to integrate custom software packages

Independant software vendors need a standard way to connect applications with services



# WOSA Services

## Common application services

**Data Access:** Open Database Connectivity (ODBC)

**Messaging:** Messaging API (MAPI)

**Licensing:** License Service API (LSAPI)

**Telephony:** Telephony API (TAPI)

## Communication services

**Windows Sockets API**

**Windows System Network Architecture (SNA) API**

**Windows Remote Procedure Call (RPC) API**

## Vertical market services

**WOSA extensions for Financial Services**

**WOSA extensions for Real-time Market Data**

**WOSA extensions for Controls, Engineering and Manufacturing**

# WOSA Objectives

**Make application development easier with a consistent set of interfaces**

**Provide an open interoperability architecture for everyone to work together**

**Establish consensus with Microsoft's Open Process**

**Establish Windows as the best-connected client platform**

# WOSA Architecture



# WOSA Meets Today's Requirements

## *Requirement*

## *Microsoft Response*

### **Choice**

Standardize programming interfaces

Standard API's and SPI's

Leverage investment toward future systems

Heterogeneous connectivity

### **Flexibility**

Leverage power of the PC

Insulate user and application from complexity of system

Windows PC becomes best-connected client platform

### **Security**

Preserve investment in existing systems

Seamless access

Security of industry standards and clear strategic direction

Exploit existing architectures

Microsoft and extensive ISV support

# WOSA Investment

## Standards groups

Supporting standards where they exist

For example: SAG, XAPIA, X/Open, ANSI, OSF, MMA, SPA

## Specification development

Microsoft Open Process: working with other vendors and customers to design the architecture

## Development support

Software development kits



# Open Database Connectivity (ODBC)

A standard way for applications to connect to databases

**Benefits:**

**Choice:** Access any ODBC compatible database from any vendor

**Flexibility:** Scale to new data sources without redesign

**Security:** Based on industry standard SQL Access Group Call Level Interface

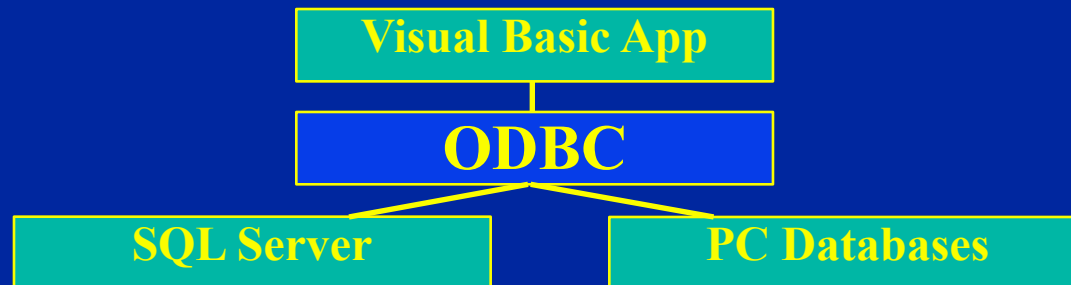
# Customer Example

Large US Manufacturer with existing Quality Control application

**Need:** Replicate application at vendor and smaller sites without SQL

**Solution:** Implement ODBC to create backend flexibility

**Benefit:** Application can use any backend at any site



# **VB Access**

**VB 3.0 Professional includes:**

**ODBC Support**

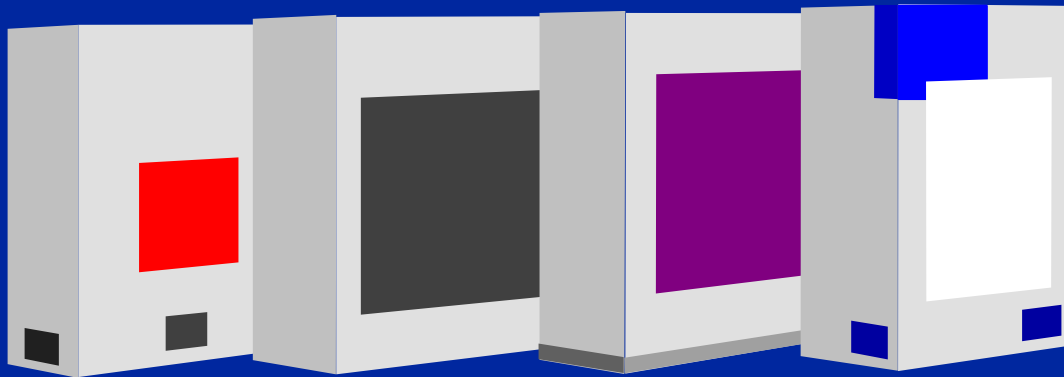
**Access database engine**

**Variety of data-aware controls**

**Third-party controls by Coromandel, Q+E**

**Access the ODBC APIs directly**

# ODBC Demo



# **ODBC Supporters**

## **(partial list)**

- Apple
- Andyne
- Brio
- Bull HN
- Cincom Systems
- CCA
- Coromandel
- DEC
- Easel
- Fairfield Software
- Fulcrum Technologies
- Gupta
- Hewlett-Packard
- Information Builders
- Informix
- Ingres
- IQ Software
- Lotus
- mdbs
- MicroDecisionware
- Microsoft
- Microrim
- Must Software
- NCR
- Neon Systems
- Novell
- Oracle
- Page Ahead
- Pioneer
- Powersoft
- Progress
- Raima
- Retix
- Rochester Software
- Seimens
- Software AG
- Sybase
- Tandem
- Uniface
- Unify
- Vertisoft Research
- Watcom

# Messaging API (MAPI)

A messaging architecture that allows applications to connect with services

**Choice:** Select “Best of Breed” messaging components

**Flexibility:** Simultaneously access multiple messaging services

**Security:** Compatibility with future products

# Customer Example

**Large corporation with multiple mail systems installed**

**Need:** Reduce training, support costs associated with multiple user interfaces

**Solution:** Choose a single Windows messaging interface for all services

**Benefit:** Provided features users wanted; improved application integration

# **VB Access**

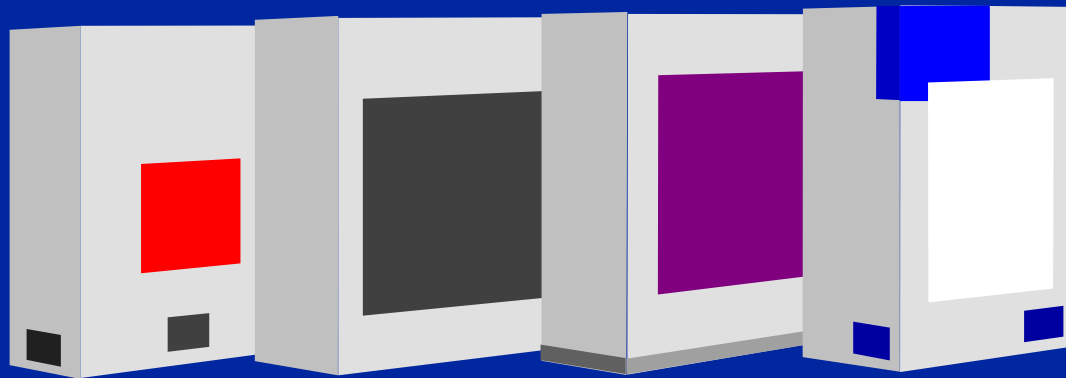
**VB 3.0 Professional includes a custom control for Simple MAPI**

**Access the Simple MAPI API directly by declaration**

**Coming: VB Control (used by VB, VBA) for CMC**



# MAPI Demo



# **MAPI Supporters**

## **(partial list)**

**AT&T**

**Action Plus Software**

**Archive Software**

**Banyan**

**Beyond**

**Calera Recognition**

**Capella Systems**

**Chronos Software**

**Claris**

**CompuServe**

**Connect Software**

**DEC**

**Dun & Bradstreet**

**Delrina Technology**

**ExMachina**

**Franklin Quest**

**GlobalStream**

**Hewlett-Packard**

**ISICAD**

**JetForm**

**Keyfile**

**Keyword**

**LABTECH's Vision**

**Lenel Systems Intl**

**Microcom**

**Novell**

**NUKO Info Systems**

**PenKnowledge**

**Pilot Software**

**Polaris**

**Powercore**

**Prometheus**

**Raindrop Software**

**Shapeware**

**SkyTel**

**SoftSwitch**

**Software Publishing**

**Symantec**

**Ventana**

**WordStar**

**WordPerfect**

**XTree Company**

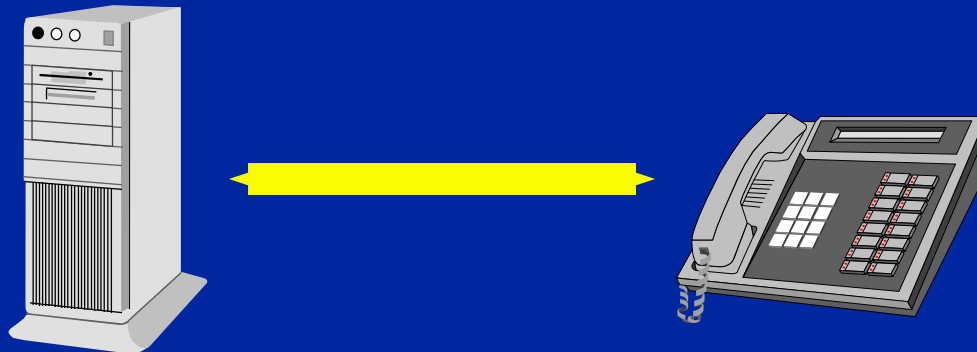
# Windows Telephony API

A standard way to integrate the PC and the telephone

**Choice:** Wide range of application choices

**Flexibility:** Permits integration of multi-vendor hardware and software

**Security:** Protects software investment and provides future compatibility



# Customer Example

Order entry group for a sports apparel manufacturer

**Need:** Provide more complete, responsive assistance to customers

**Solution:** Use TAPI to integrate order entry systems with phones

**Benefit:** Inbound calls bring up the appropriate customer data; outbound calls are autodialed with a mouse click

# **VB Access**

**TAPI uses callback functions and dynamic variable-sized data structures not supported in VB**

**Can use 3rd-party product that supports callbacks (i.e. SpyWorks)**

**MS working on a custom control for future release**

# **TAPI Supporters**

## **(partial list)**

### **Telecom Mfgers:**

**Alcatel  
AT&T  
Ericsson  
Fujitsu  
InteCom  
Mitel  
NEC  
Northern Telecom  
ROLM  
Siemens  
Toshiba**

### **Telecom Industry:**

**Bell Atlantic  
Dialogic  
Centigram  
Natural Microsystems  
Octel  
US West  
VMX**

### **Computer Industry:**

**Acer  
Analog Devices  
Compaq  
Delrina  
Intel  
Lotus  
Microsoft  
Motorola  
National Semiconductor**

# License Service API

A standard way for applications to connect with license metering systems

**Choice:** Allows applications to work with any LSAPI licensing server

**Flexibility:** LSAPI doesn't require applications to follow a particular licensing policy

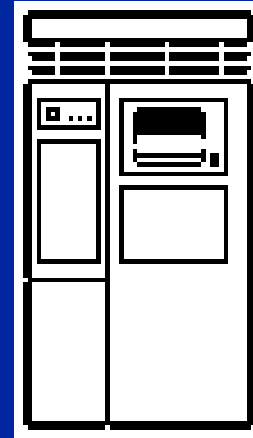
**Security:** Works with existing licensing servers as well as future products

# Licensing Example



License request

License grant



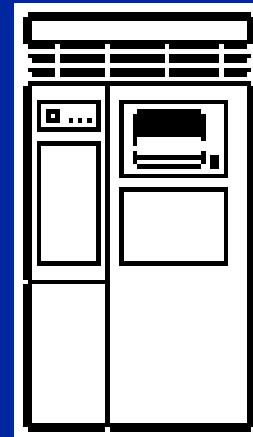
License is  
allocated

Application transparently  
requests permission to run

Server finds a valid license  
and grants permission



License release



License is  
deallocated

Application transparently releases  
the license when it is done

The license is made  
available to others



# **VB Access**

**LSAPI SDK not yet available**

**MS working on a custom control**

# **License Service API**

## **(partial list)**

**Apple Computer, Inc.**

**Banyan Systems, Inc.**

**Brightwork Development**

**CompuServe, Inc.**

**Digital Equipment Corporation**

**Funk Software, Inc.**

**Hewlett-Packard Company**

**Highland Software, Inc.**

**InterWorks, Inc.**

**Lotus Development  
Corporation**

**Microcomputer Managers  
Association**

**Microsoft Corporation**

**Novell, Inc.**

**Oracle Corporation**

**Open Software Foundation**

**Symantec**

**Software Publishers  
Association**

**Tangram Systems**

**WordPerfect Corporation**

# Windows Sockets API

A standard way for applications to communicate with the network

**Choice:** Makes it easier to integrate both Windows and UNIX applications across a network

**Flexibility:** Supports both connection-oriented and connectionless protocols

**Security:** Based on de facto network API standard, Berkeley Sockets

# **Case Study: NT SQL Server**

**Originally implemented with TCP/IP sockets**

**Conversion to utilize IPX/SPX sockets was quick and painless: two weeks**

**On-the-wire compatibility with existing Netware and TCP/IP SQL clients**

**Well positioned to adopt additional transports in the future**

**Result: world-class performance, single transport model, full interoperability with existing clients**

# **Windows Sockets Supporters**

## **(partial list)**

**3Com Corporation**

**AGE Logic Inc.**

**Beame & Whiteside Software**

**Digital Equipment Corporation**

**District Corporation**

**Frontier Technologies Group**

**FTP Software**

**Hewlett-Packard Company**

**Hughes LAN Systems**

**IBM**

**Ingres, an Ask company**

**JSB Corporation**

**Microsoft Corporation**

**Net Manage Inc.**

**Network Research  
Corporation**

**Novell, Inc.**

**Sun Microsystems, Inc.**

**Ungermann-Bass**

**Walker, Richard & Quinn**

**Wollongong Group**

# Windows SNA

A standard way to connect with host-based Systems Network Architecture (SNA) services in Windows

**Choice:** Common API for Windows and Windows NT (16-bit and 32-bit)

**Flexibility:** Single interface integrates products from multiple vendors

**Security:** Includes full support for the key SNA categories

# **Windows SNA Supporters**

## **(partial list)**

**Attachmate**

**Andrew Corporation**

**Computer Logics**

**Data Connection**

**Digital Communications  
Associates**

**Easel**

**Eicon Technology**

**FutureSoft**

**IBM**

**ICOT**

**International Computers Ltd.**

**Microsoft Corporation**

**Multisoft**

**NCR**

**Network Software Associates**

**Novell**

**Olivetti**

**Siemens-Nixdorf**

**Systems Strategy**

**Wall Data, Inc.**

# Windows RPC API

A standard way for building distributed applications using Remote Procedure Calls (RPC) in Windows

**Security:** Compatible with Open Software Foundation's (OSF) Distributed Computing Environment (DCE) RPC protocol



# WOSA

## Extensions For Financial Services

A general architecture and standard interfaces that provide access to:

Specialized peripherals

Communications

Financial transaction messaging

Network and system management

<b>BOB JONES</b>		<b>2048</b>
DATE _____		
PAY TO THE ORDER OF _____		\$ _____
		_____ DOLLARS
<b>FIRST NATIONAL BANK</b>		
_____		
⑆00 2100 55⑆ 770⑆ 954075⑆ 2121		

# **WOSA Extensions For Financial Services Supporters**

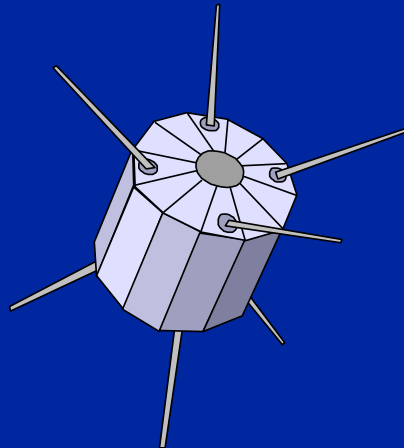
## **Banking Systems Vendor Council**

**Andersen Consulting  
Atalla/Tandem  
Digital Equipment Corp.  
EDS  
ICL-Fujitsu**

**Microsoft Corporation  
NCR  
Olivetti  
Siemens Nixdorf  
Unisys Corporation**

# **WOSA Extensions For Real-Time Market Data**

**Interfaces defined to allow any Windows  
applications to access real-time  
market data from any provider**



# **VB Access**

**Use pure OLE automation**

**Use a timer control and call the WOSA/XRT  
Object's "DataItem" methods on each tick  
to get the latest data**

**Write a custom VBX**

**This would fire events into VB code when RT  
data changes**

**Future: OLE Controls that are  
WOSA/XRT objects**

# **WOSA Extensions For Real-Time Market Data Supporters**

## **Windows Open Market Data Council**

**Andersen Consulting  
A-T Financial  
ARTS  
Digital Equipment Corp  
FD Consulting  
ILX  
Knight-Ridder  
Market Vision  
Microsoft Corporation**

**Quotron  
Reuters  
S&P ComStock  
Siemens Nixdorf  
Townsend Analytics  
Teknekron  
Telerate  
Track Data**

# **WOSA Extensions For Controls, Engineering and Manufacturing**

**Reduce the time and cost involved in  
developing solutions for the  
manufacturing industry**

# **WOSA Extensions For Controls, Engineering and Manufacturing**

## **Windows Controls, Engineering and Manufacturing (CEM) Systems Council**

**American Advantech Corporation**

**Bio-RAD**

**Bioscan**

**Cambridge**

**Scientific Computing, Inc.**

**Control Technology**

**Data Translation**

**Digital**

**Equipment Corporation**

**Dynapro Systems, Inc.**

**Hewlett-Packard Company**

**Hopkins Computing**

**ICOM**

**Iconics**

**Industrial Systems, Inc.**

**Intellution, Inc.**

**Intuitive Technology**

**Microsoft Corporation**

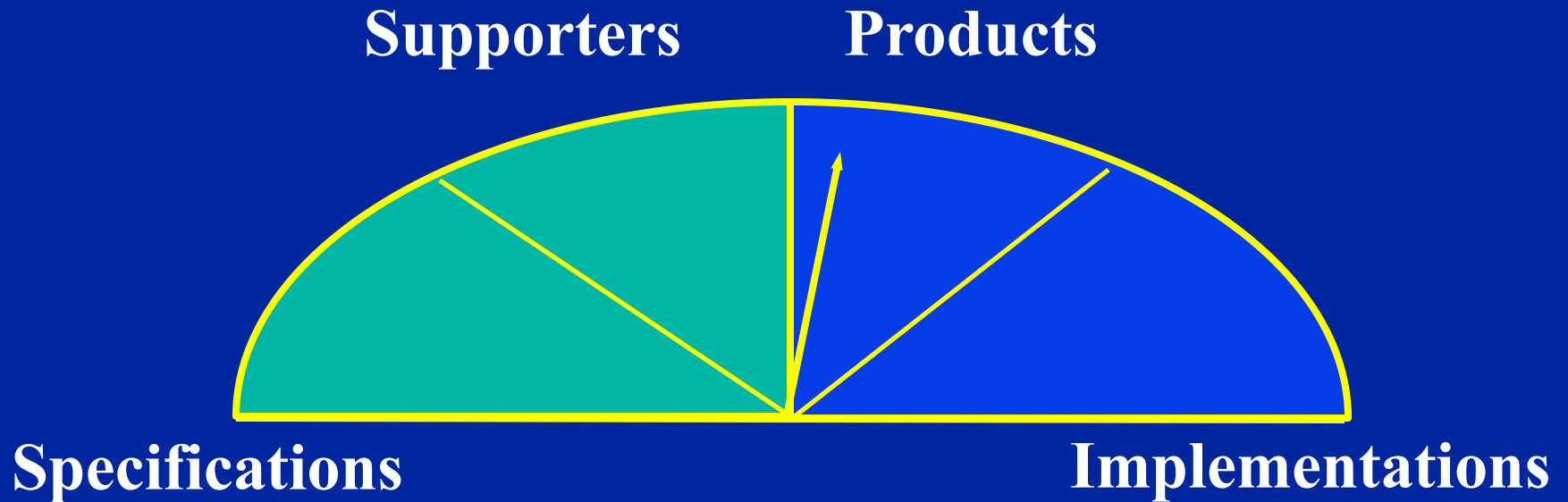
**National Instruments**

**RadiSys**

**Strawberry Tree**

**Ziatech**

# WOSA Timescale





# **WOSA Next Steps**

**Foster implementations around current services**

**Data Access, Messaging, Telephony, Software  
Licensing**

**Communications**

**Vertical market extensions**

**Conduct “open process” around possible future  
services**

**Directory Services**

**Distributed Security**

**Systems Management**

**Other Vertical Markets**

# Summary

**WOSA is a collection of system-level building blocks**

**Connects to heterogeneous services**

**Provides Choice, Flexibility and Security in application design and usage**