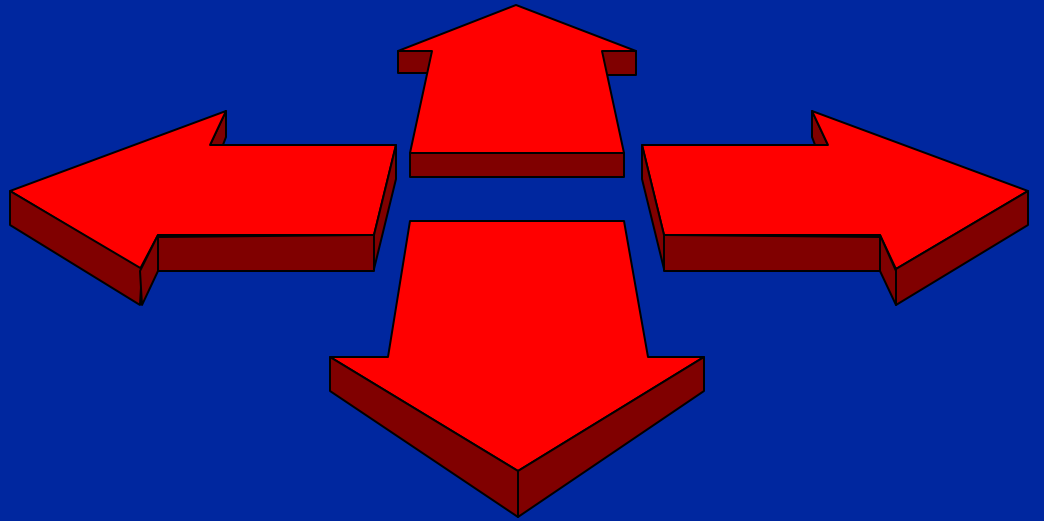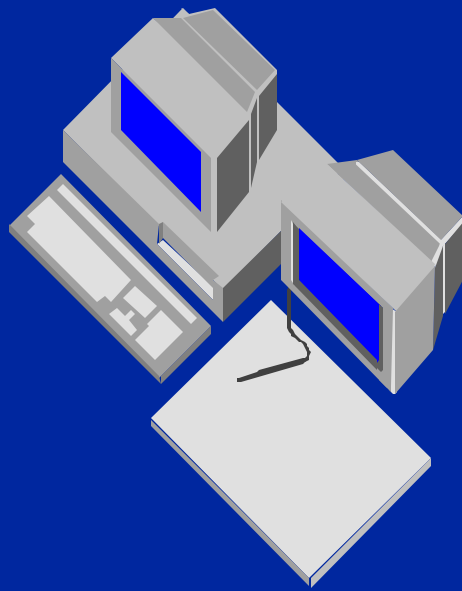# Windows™ Open Services Architecture (WOSA)

## Chris Williams

Product Manager, WOSA

Microsoft Corporation

WOSA Description

◆ **Open architecture that enables Windows and Windows NT work stations to connect to a wide rang services in a heterogeneous enviro**

Need For An Open Services Arch

- ◆ IS Managers want **choice, flexibility** and **sec** a heterogeneous environment

- ◆ Systems integrators need to integrate custon software packages

- ◆ Independant software vendors need a standa to connect applications with services

Windows client

Applications

Microsoft servers

L
Net
LA
VIN
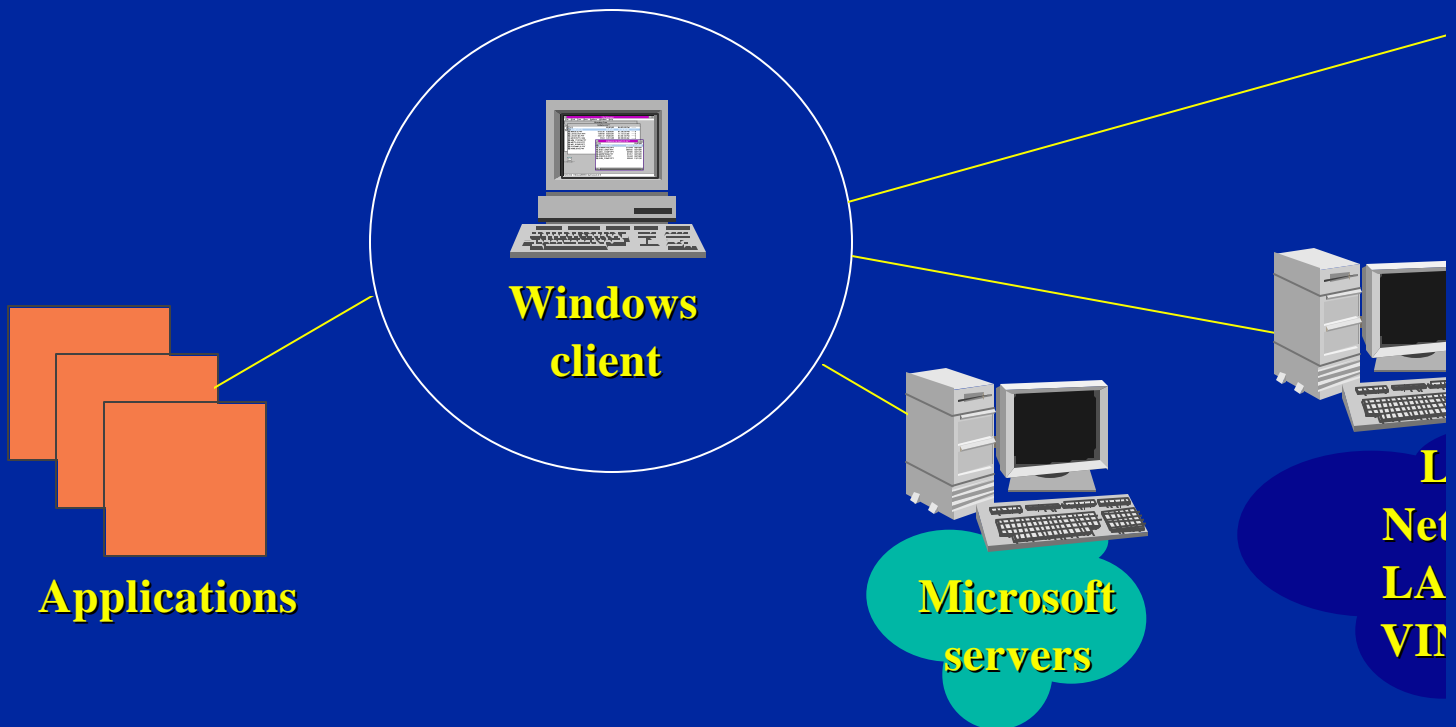
WOSA Services

- ◆ **Common application services**
  - ➢ Data Access: Open Database Connectivity (ODB
  - ➢ Messaging: Messaging API (MAPI)
  - ➢ Licensing: License Service API (LSAPI)
  - ➢ Telephony: Telephony API (TAPI)
- ◆ **Communication services**
  - ➢ Windows Sockets API
  - ➢ Windows System Network Architecture (SNA) A
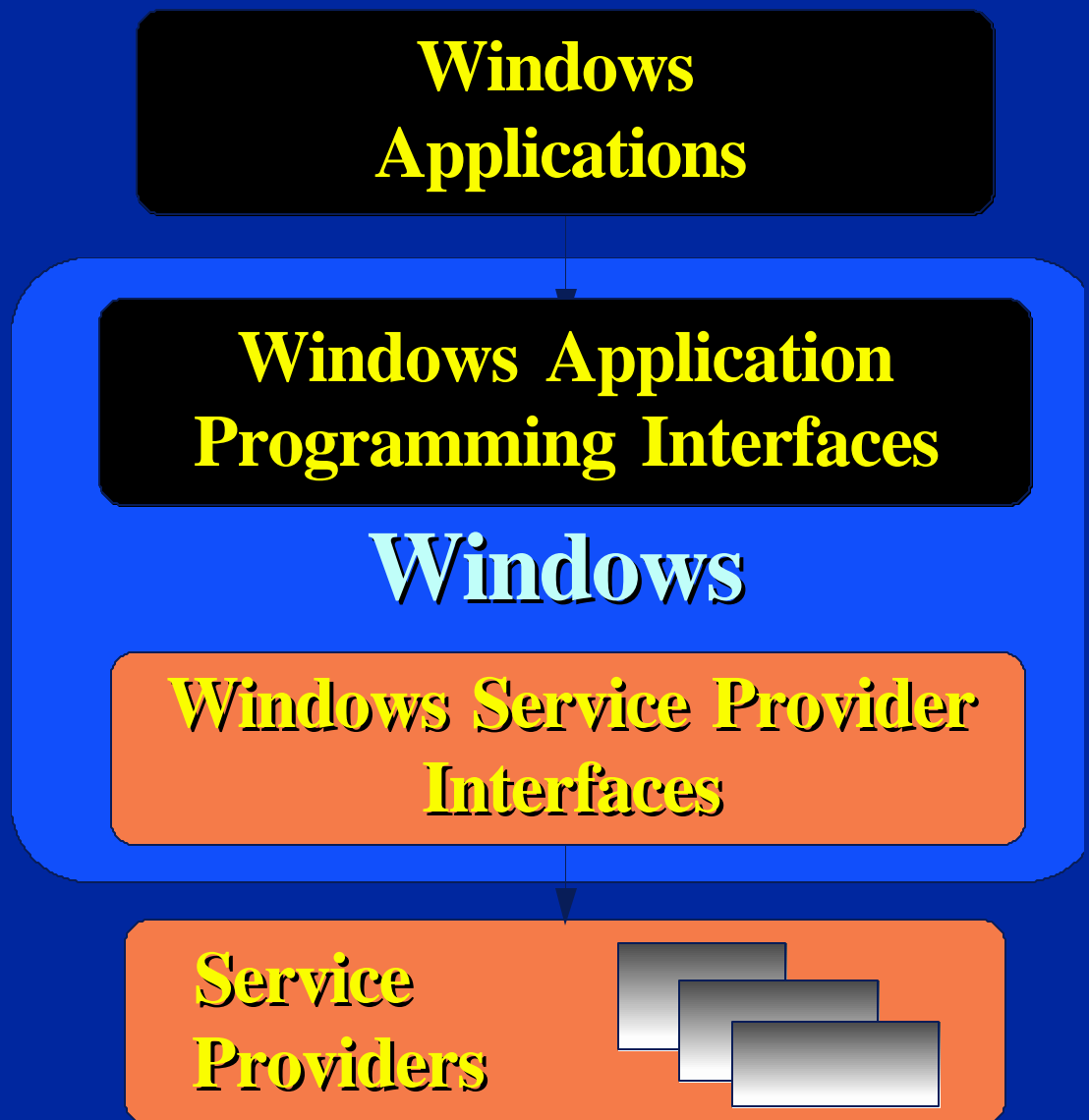 - ➢ Windows Remote Procedure Call (RPC) API
- ◆ **Vertical market services**
  - ➢ WOSA extensions for Financial Services
  - ➢ WOSA extensions for Real-time Market Data
  - ➢ WOSA extensions for Controls, Engineering and Manufacturing

WOSA Objectives

◆ **Make application development ea[s] with a consistent set of interfaces**

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

◆ **Establish consensus with Micros[oft] Open Process**

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

WOSA Architecture

Windows Applications

Windows Application Programming Interfaces

Windows

Windows Service Provider Interfaces

Service Providers

WOSA *Meets* Today Requirements

Requirement

Microsoft Re

◆ **Choice**

- Standardize programming interfaces
- Leverage investment toward future systems

■ Standard API's

■ Heterogeneous

◆ **Flexibility**

- Leverage power of the PC
- Insulate user and application from complexity of system

■ Windows PC b connected client p

■Seamless access

◆ **Security**

- Preserve investment in existing systems
- Security of industry standards and clear strategic direction

■ Exploit existing

■ Microsoft and e support

WOSA Investment

◆ **Standards groups**
  ➢ Supporting standards where they e
  ➢ For example: SAG, XAPIA, X/Open
    ANSI, OSF, MMA, SPA

◆ **Specification development**
  ➢ Microsoft Open Process: working v
    other vendors and customers to des
    architecture

◆ **Development support**
  ➢ Software development kits

Open Database Connect
(ODBC)

A standard way for applications to connect to databases

Benefits:

➢ **Choice:** Access any ODBC compat database from any vendor

➢ **Flexibility:** Scale to new data source without redesign

➢ **Security:** Based on industry standa Access Group Call Level Interface

Customer Example

**Large US Manufacturer with exis**
Quality Control application

➢ **Need:** Replicate application at vend
smaller sites without SQL

➢ **Solution:** Implement ODBC to crea
backend flexibility

➢ **Benefit:** Application can use any ba
at any site

Visual Basic App

ODBC

SQL Server		PC Databases
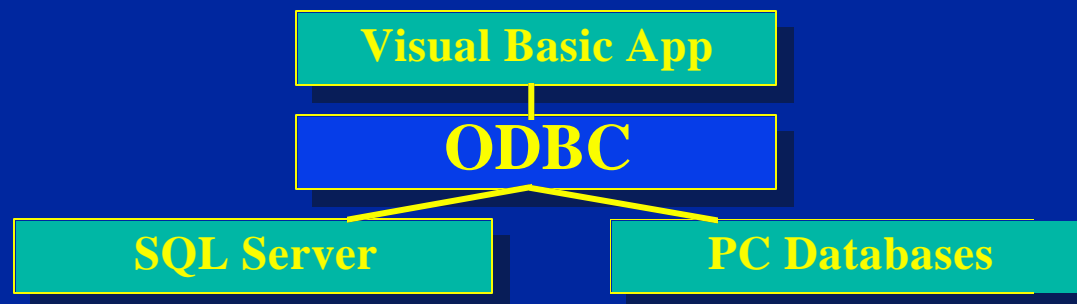
VB Access

◆ **VB 3.0 Professional includes:**
  ➢ **ODBC Support**
  ➢ **Access database engine**
  ➢ **Variety of data-aware controls**

◆ **Third-party controls by Coroman Q+E**

◆ **Access the ODBC APIs directly**

ODBC Demo
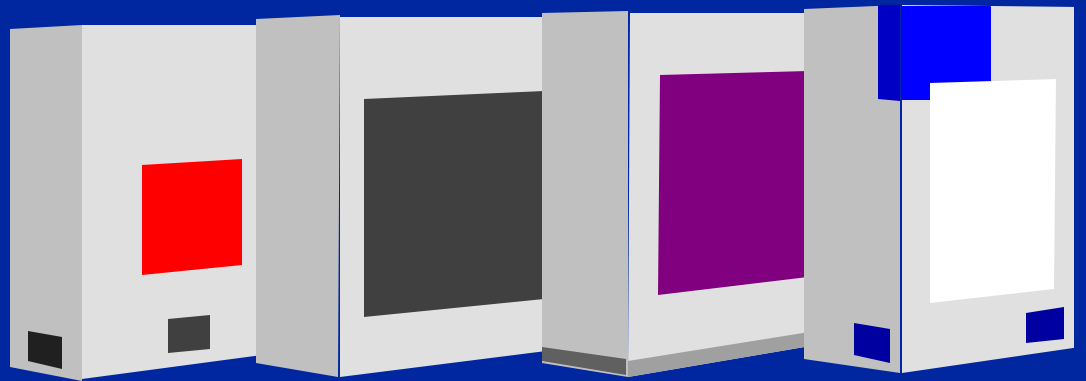
ODBC Supporters
(partial list)

- Apple
- Bull HN
- Coromandel
- Faifield Software
- Hewlett-Packard
- Ingres
- mdbs
- Microrim
- Neon Systems
- Page Ahead
- Progress
- Rochester Software
- Sybase
- Unify

- Andyne
- Cincom Systems
- DEC
- Fulcrum Technologies
- Information Builders
- IQ Software
- MicroDecisionware
- Must Software
- Novell
- Pioneer
- Raima
- Seimens
- Tandem
- Vertisoft Research

- Brio
- CCA
- Easel
- Gupta
- Inform
- Lotus
- Micro
- NCR
- Oracl
- Power
- Retix
- Softw
- Unifa
- Watc

Messaging API (MAP

**A messaging architecture that all
applications to connect with servi**

- ➢ **Choice:** Select "Best of Breed" mess
components

- ➢ **Flexibility:** Simultaneously access n
messaging services

- ➢ **Security:** Compatibility with future
products

Customer Example

Large corporation with multipl systems installed

- ➢ **Need:** Reduce training, support c associated with multiple user inte
- ➢ **Solution:** Choose a single Windov messaging interface for all servic
- ➢ **Benefit:** Provided features users wanted; improved application integration

VB Access

◆ **VB 3.0 Professional includes a cus[tom] control for Simple MAPI**

◆ **Access the Simple MAPI API dir[ectly] by declaration**

◆ **Coming: VB Control (used by VF[,] VBA) for CMC**
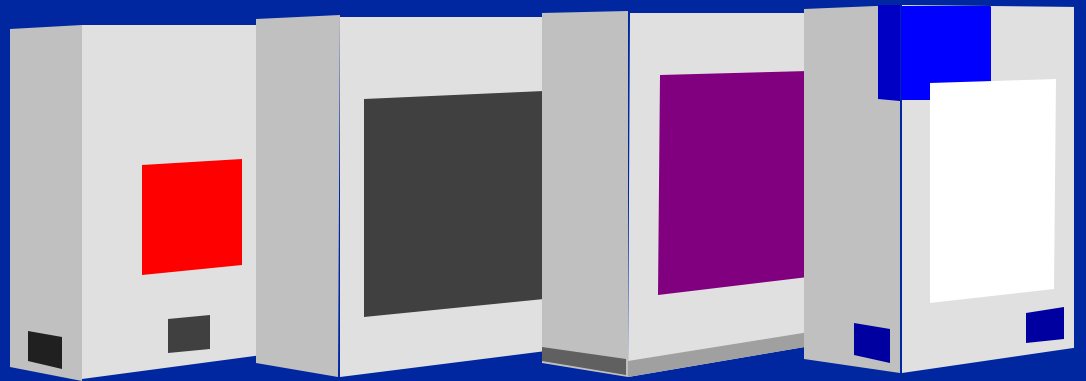
MAPI Supporters
(partial list)

- 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

- Pilc
- Pol
- Pov
- Pro
- Rai
- Sha
- Sky
- Sof
- Sof
- Syn
- Ver
- Wo
- Wo
- XT

Windows Telephony A

A standard way to integrate the I the telephone

➢ **Choice:** Wide range of application

➢ **Flexibility:** Permits integration of n vendor hardware and software

➢ **Security:** Protects software investm provides future compatibility
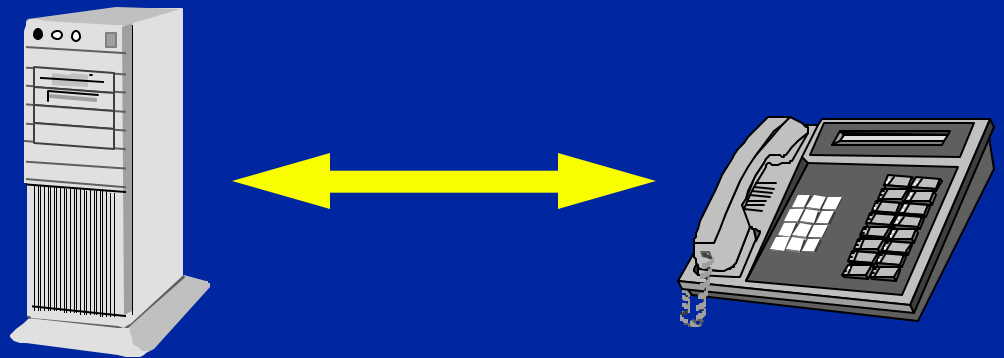
Customer Example

**Order entry group for a sports a[p]
manufacturer**

➢ **Need:** Provide more complete, resp
   assistance to customers

➢ **Solution:** Use TAPI to integrate ord
   entry systems with phones

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

VB Access

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

◆ **Can use 3rd-party product that supports callbacks (i.e. SpyWork**

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

TAPI Supporters
(partial list)

Telecom Mfgers:	Telecom Industry:	Computer
Alcatel	Bell Atlantic	Acer
AT&T	Dialogic	Analog De
Ericsson	Centigram	Compaq
Fujitsu	Natural Microsystems	Delrina
InteCom	Octel	Intel
Mitel	US West	Lotus
NEC	VMX	Microsoft
Northern Telecom		Motorola
ROLM		National S
Siemens		
Toshiba		

License Service API

A standard way for applications to connect with license metering sys

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

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

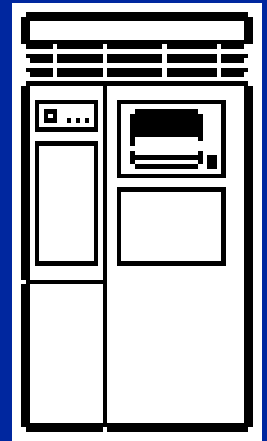➢ **Security:** Works with existing licen servers as well as future products

Licensing Example

License request →

License grant ←

Application transparently requests permission to run

Server finds a valid li[cense] and grants permissio[n]

License release →

Application transparently releases the license when it is done
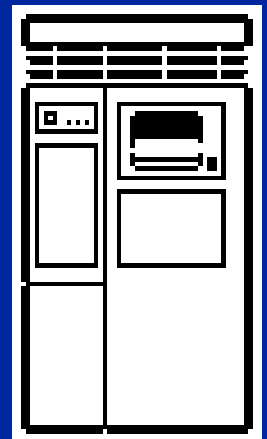
The license is mad[e] available to others

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
- Microcompute Association
- Microsoft Co
- Novell, Inc.
- Oracle Corpo
- Open Software Foundation
- Symantec
- Software Publ Association
- Tangram Syst
- WordPerfect

Windows Sockets AP

A standard way for for applicatio communicate with the network

- ➢ **Choice:** Makes it easier to integrate Windows and UNIX applications a network

- ➢ **Flexibility:** Supports both connectio oriented and connectionless protoco

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

Case Study: NT SQL Se

◆ Originally implemented with TCP/IP

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

◆ On-the-wire compatibility with existin
   Netware and TCP/IP SQL clients

◆ Well positioned to adopt additional tr
   in the future

◆ Result: world-class performance, sing
   transport model, full interoperability
   existing clients

Windows Sockets Suppc

(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 Corpor
- Microsoft C
- Net Manage
- Network Re
  Corporation
- Novell, Inc.
- Sun Microsy
- Ungermann-
- Walker, Ric
- Wollongong

Windows SNA

A standard way to connect with h
based Systems Network Architect
(SNA) services in Windows

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

➢ **Flexibility:** Single interface integrat
products from multiple vendors

➢ **Security:** Includes full support for t
SNA categories

Windows SNA Suppor

(partial list)

- Attachmate
- Andrew Corporation
- Computer Logics
- Data Connection
- Digital Communications Associates
- Easel
- Eicon Technology
- FutureSoft
- IBM
- ICOT

- International Co
- Microsoft Corpo
- Multisoft
- NCR
- Network Softwar
- Novell
- Olivetti
- Siemens-Nixdorf
- Systems Strategy
- Wall Data, Inc.

Windows RPC API

A standard way for building distr
applications using Remote Proce
Calls (RPC) in Windows

➢ **Security:** Compatible with Open So
Foundation's (OSF) Distributed
Computing Environment (DCE) RI
protocol

WOSA
Extensions For Financial Se

A general architecture and standar
interfaces that provide access to:

- ◆ Specialized peripherals

- ◆ Communications

- ◆ Financial transaction messagin

- ◆ Network and system manageme

BOB JONES   2048

DATE_____

PAY TO THE ORDER OF _____ |$[   ]

_____ DOLLARS

FIRST NATIONAL BANK

⑈OO 2IOO 66⑈ 77O⑈⑈ 964O76⑈ 2I2I

WOSA Extensions For Financial Services

Supporters

Banking Systems Vendor Council

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

- Microsoft Co
- NCR
- Olivetti
- Siemens Nix
- Unisys Corp

WOSA Extensions
For Real-Time Market I

◆ **Interfaces defined to allow any**
Windows applications to access
time market data from any prov
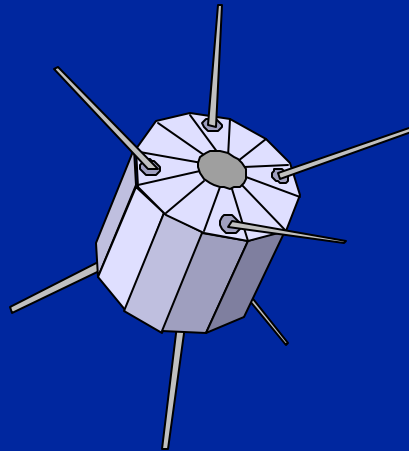
VB Access

- ◆ **Use pure OLE automation**
  - ➢ Use a timer control and call the WOSA/XRT Object's "DataItem" on each tick to get the latest data

- ◆ **Write a custom VBX**
  - ➢ This would fire events into VB code RT data changes

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

WOSA Extensions
For Real-Time Market I
Supporters

Windows Open Market Data Co

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

- Quotron
- Reuters
- S&P Com$
- Siemens Ni
- Townsend
- Teknekron
- Telerate
- Track Data

# WOSA Extensions For Controls, Engineering and Manufacturing

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

WOSA Extensions Fo Controls, Engineering Manufacturing

Windows Controls, Engineering an Manufacturing (CEM) Systems Co

- American Advantech Corporation
- Bio-RAD
- Bioscan
- Cambridge
- Scientific Computing, Inc.
- Control Technology
- Data Translation
- Digital
- Equipment Corporation
- Dynapro Systems, Inc.
- Hewlett-Packard Company

- Hopkins Co
- ICOM
- Iconics
- Industrial S
- Intellution, I
- Intuitive Te
- Microsoft C
- National Ins
- RadiSys
- Strawberry
- Ziatech

WOSA Timescale

Supporters   **Products**

Specifications   **Implem**
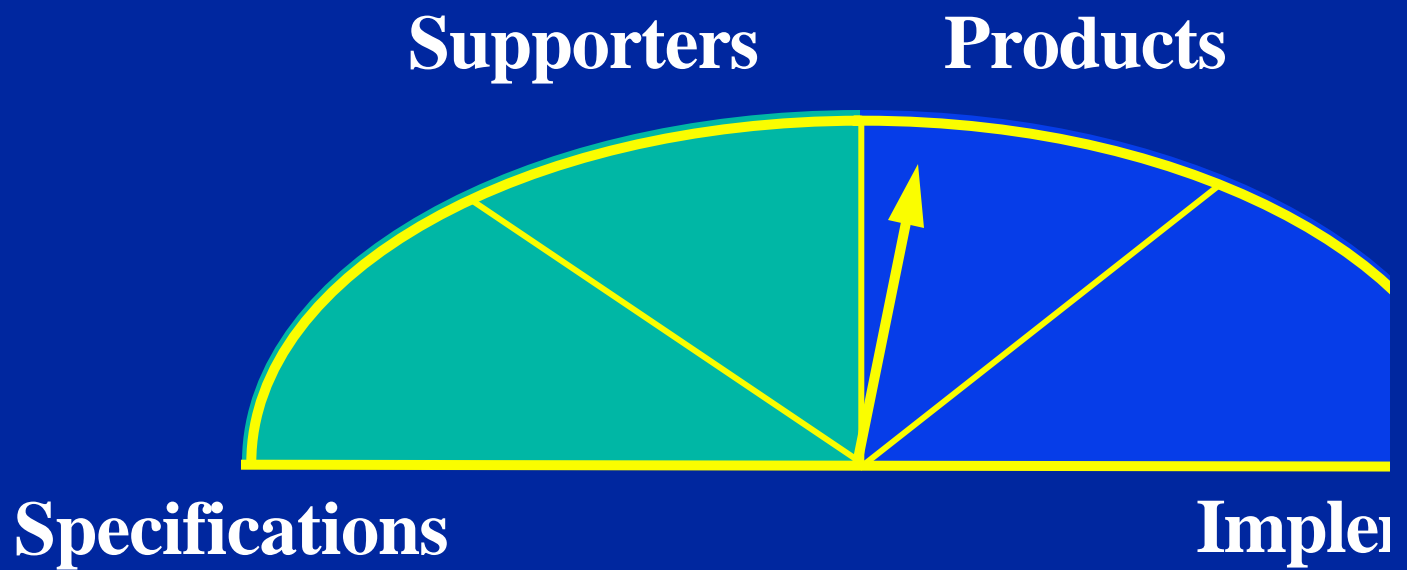
WOSA Next Steps

◆ **Foster implementations around curre[nt] services**

  ➢ **Data Access, Messaging, Telephony, Soft[ware] Licensing**

  ➢ **Communications**

  ➢ **Vertical market extensions**

◆ **Conduct "open process" around possi[ble] future services**

  ➢ **Directory Services**

  ➢ **Distributed Security**

  ➢ **Systems Management**

  ➢ **Other Vertical Markets**

Summary

- ◆ **WOSA is a collection of system-le building blocks**

- ◆ **Connects to heterogeneous servic**

- ◆ **Provides Choice, Flexibility and Security in application design and**