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# 1990 Worldwide Developers Conference

WAN Networking Tools

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**Integrated Services**

**Digital Network**

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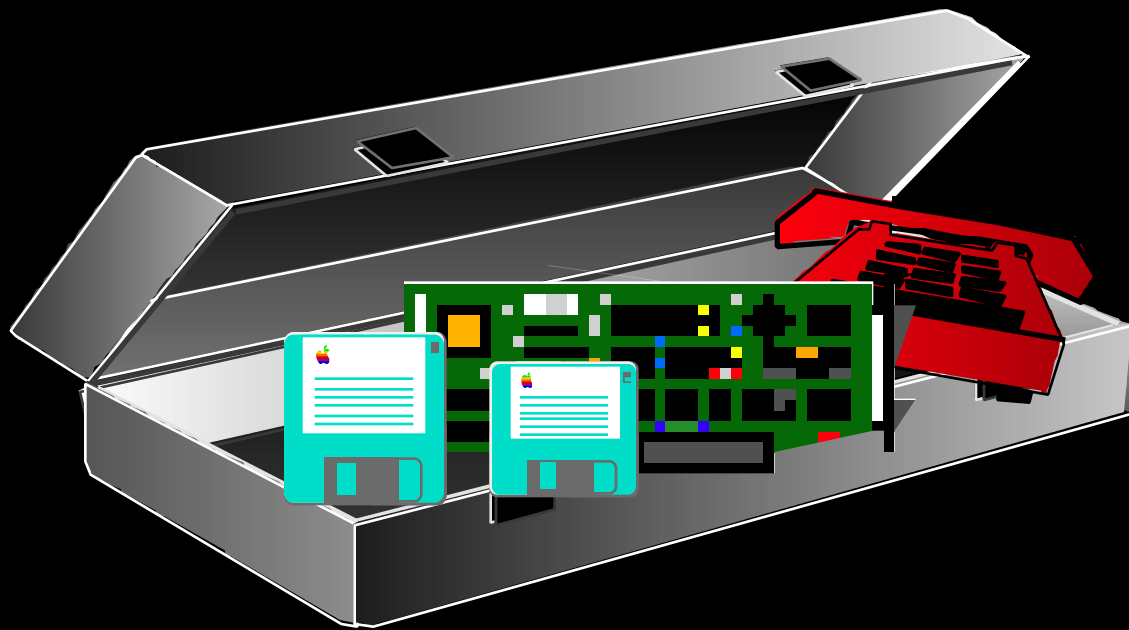
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**Tim Kreps**

Networking & Communications  
Evangelism

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# Apple's ISDN Developer Toolkit



# Apple's ISDN Developer Toolkit

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- Provide enabling platform
- Evangelize 3rd party developers
- Participate in market rollout



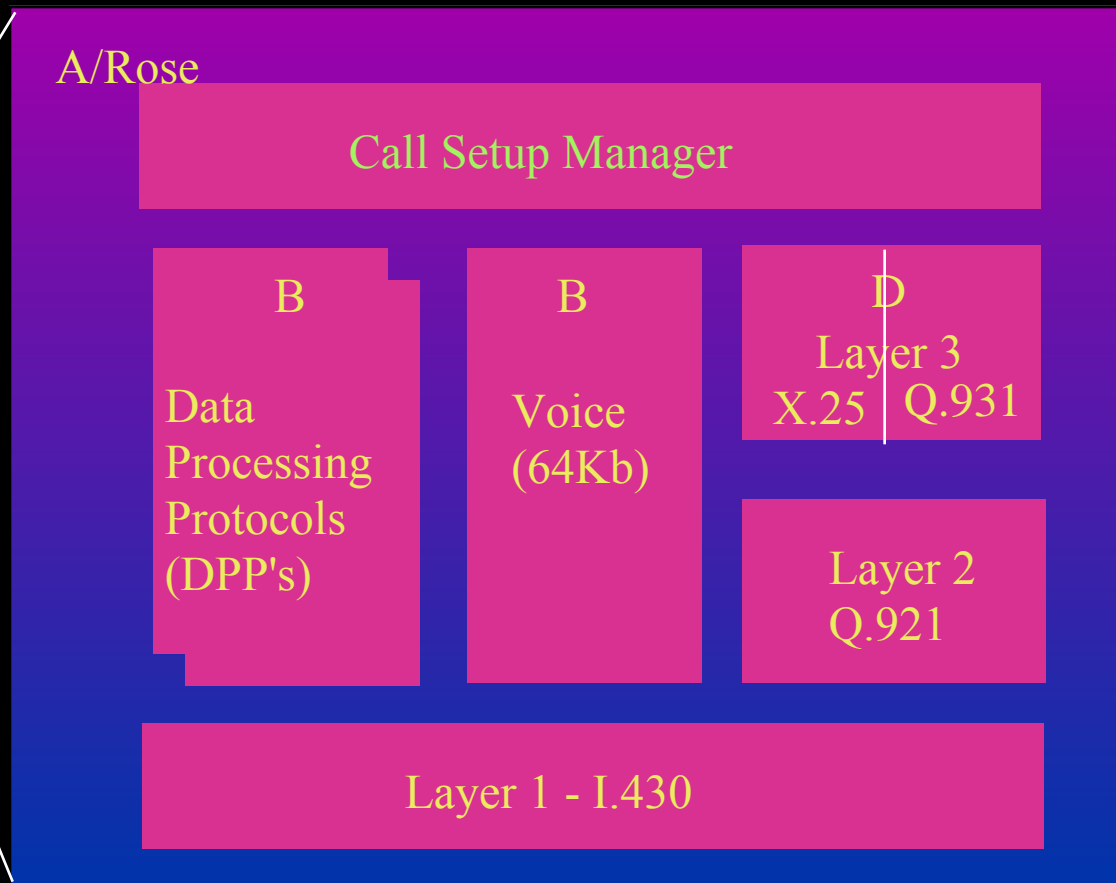
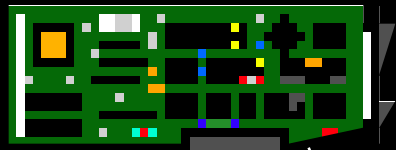
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**Russ Winsper**

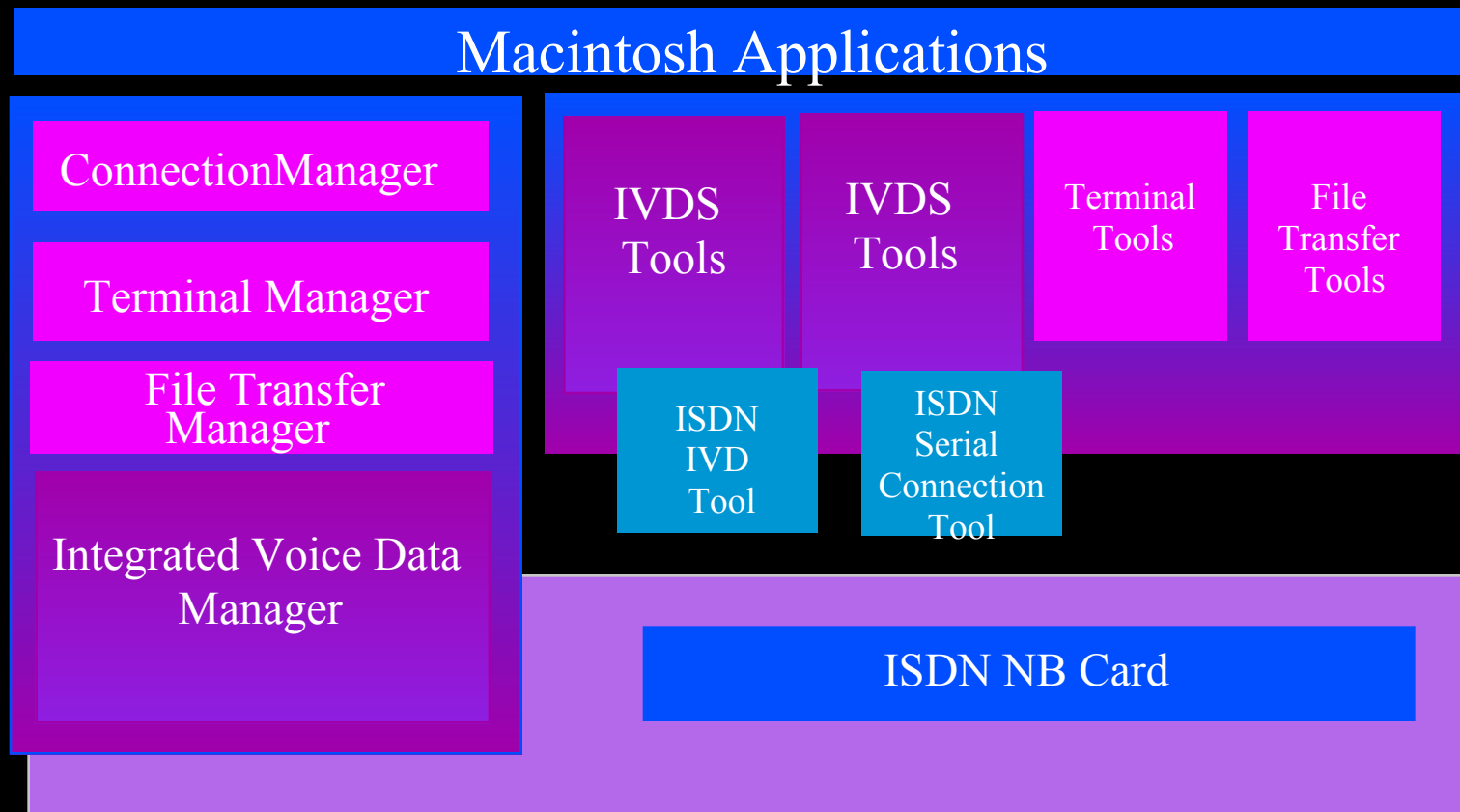
Comm. Product Development  
Manager ISDN Development

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# ISDN



# IVD Manager







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**Joe Hingston**

Comm. Product Development  
Hardware Engineer

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# ISDN Card Features

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- MCP based
  - 68000 running at 10 MHz
  - 512K bytes of DRAM
  - A/ROSE operating system
  - 64K bytes of ROM
  - Standard NuBus interface

## ISDN Card Features (2)

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- CCITT I.430 compatible
  - 2 64kb/s channels
  - 1 16kb/s channel
  - A-law/U-law selectable
  - Tested with DMS-100 and 5ESS

## ISDN Card Features (3)

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- Works with Macintosh turned off
  - Can place and receive calls
  - Can wake up Mac for incoming calls
  - Slightly modified NuBus I/F
- Interface for a standard DTMF telephone
- Local record/playback of voice messages



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**Tom Everman**

Comm. Product Development  
ISDN Software Team Leader

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# MacISDN™ Software Features

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- North American BRI implementations
  - AT&T
  - Northern Telecom
- Simultaneous voice and data connections
- Voice and data features

# MacISDN Data Features

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- B-channel data transfer
- Standard tool box interface
- Standard and proprietary protocol development support

# MacISDN Voice Features

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- Analog telephone connection
- External power capabilities
- Voice call control via CTB/IVD
- Supplementary voice services





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**Steve Herrington**

Comm. Product Development  
IVD Software Team Leader

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# Macintosh Communications Toolbox ISDN Integrated Voice/Data Tools

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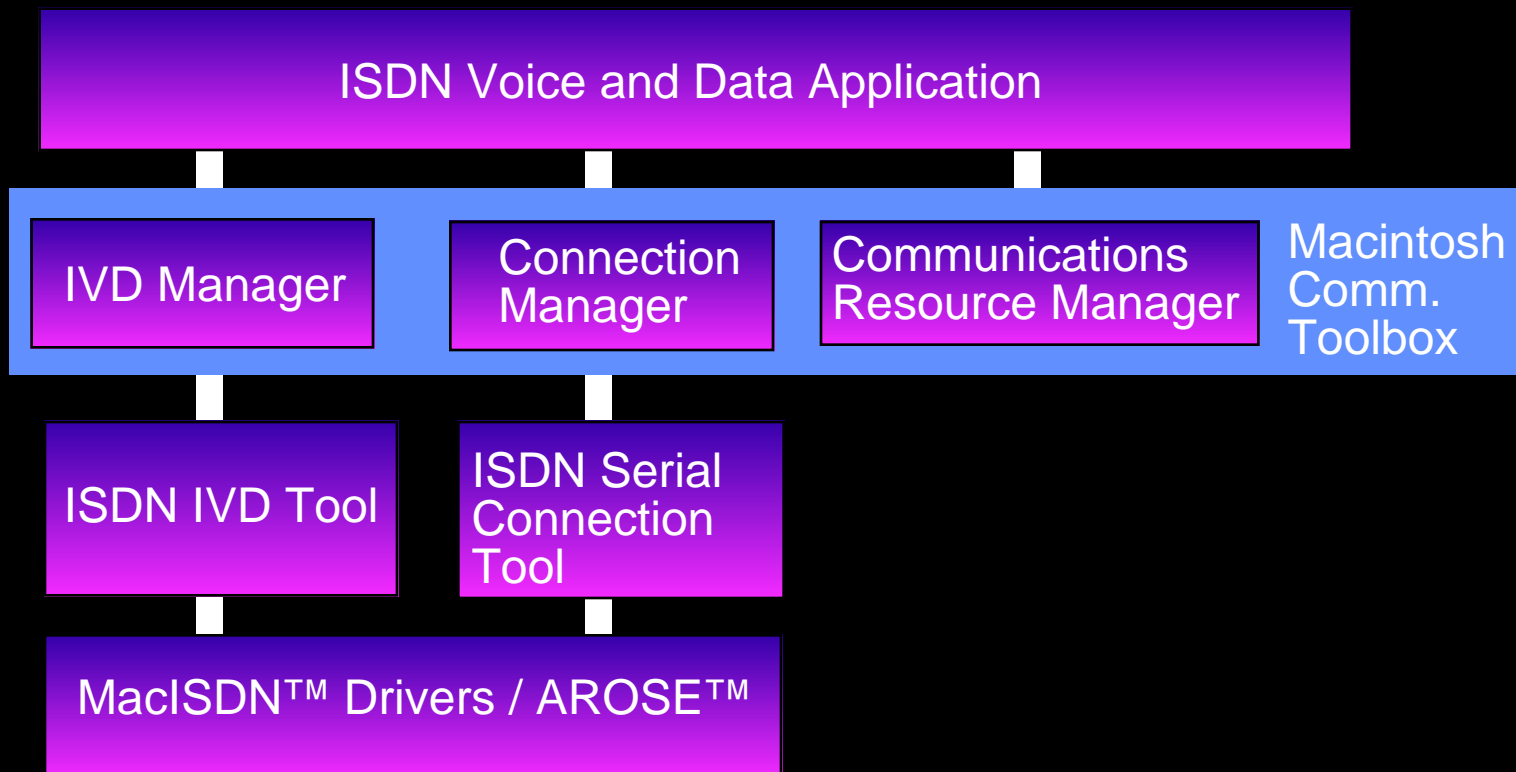
- IVD Manager
  - ISDN voice features application programming interface
  - Manages IVD Tools

# Macintosh Communications Toolbox ISDN Integrated Voice/Data Tools (*cont.*)

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- ISDN IVD Tool
  - ISDN Channel management
  - ISDN voice features driver
- ISDN Serial Connection Tool
  - Connection Tool
  - B channel 64kbit clear serial data

# ISDN Integrated Voice/Data Architecture



# IVD Manager Voice Features

## Device Control

- Ring
- Display
- Hook Switch
- Volume

## Basic Call Control

- Setup
- Accept
- Reject
- Deflect
- Dial
- Connect

## Directory Number Resources

- Addressing
- Configuration

## Call State Management

- Call resources
- Call progress

# IVD Manager Voice Features *cont.*

Big Four  
Transfer  
Conference  
Hold  
Drop

Supplementary Features  
Forward  
Callback  
Do not disturb  
Call pickup  
Park

# ISDN IVD Tool

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- Maps IVD calls and states onto ISDN
- Controls ISDN BRI voice channel
- Controls NB BRI card features

## ISDN IVD Tool (*cont.*)

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- Accessed through Communications  
Toolbox Communications  
Resource Manager
- High level interface  
through IVD Manager



# ISDN Serial Connection Tool

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- Standard Communications Toolbox  
Connection Manager interface
- Communications Toolbox  
Communications Resource  
Manager support
- ISDN B Channel 64kbit clear
- Transparent to applications currently  
using serial Connection Tools

# ISDN IVD Development Environment

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- Provided:
  - MPW “C” IVD include files
  - MPW Pascal IVD include files
  - IVD Libraries
  - Sample IVD desktop telephone application
  - MacISDN
  - ISDN IVD<sub>TM</sub> Installer

# ISDN IVD Development Environment (*cont.*)

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- Requires:
  - Communications Toolbox 1.0 developer kit
  - MPW 3.0
  - System 6.03 or later



The power to be your best