Data Acquisition and Control with Visual Basic

Raymond Almgren

Software Marketing Manager

National Instruments

(512) 794-5401,
ray.almgren@natinst.com

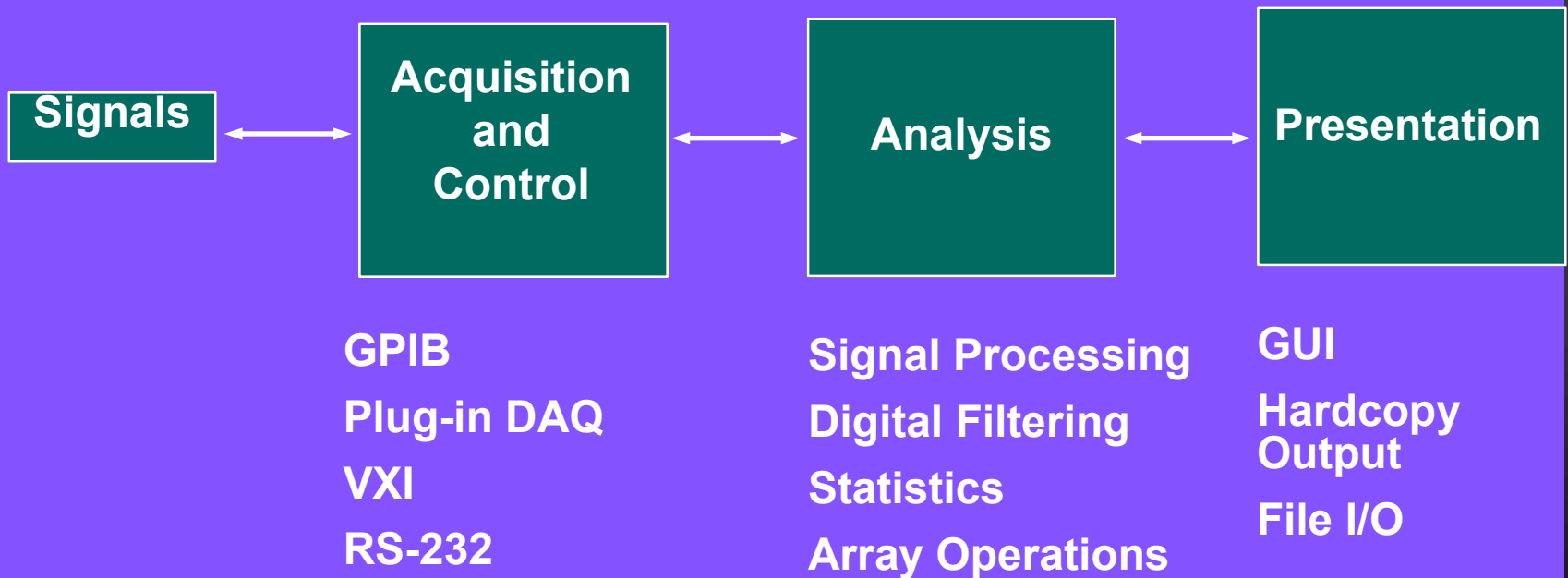**NIDEMO.ZIP**

What is Data Acquisition and Control?

Measuring and controlling real-world signals such as heart rate, water pressure, processor clock speed, and telecommunication transmissions

Adding plug-in cards to PCs for communcating with instruments or for creating virtual instruments with data acquisition boards
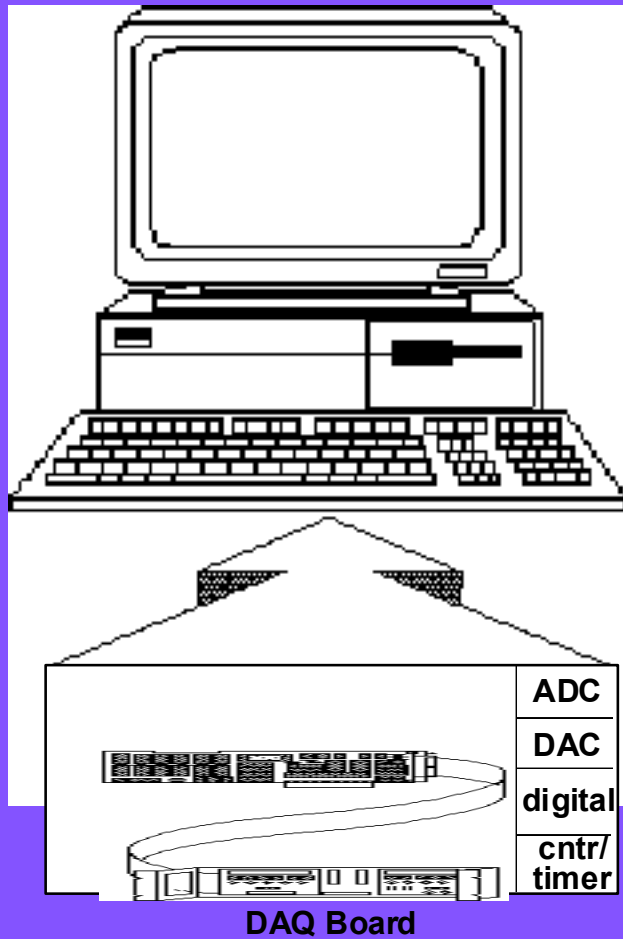
Writing programs to automate data acquistion and control
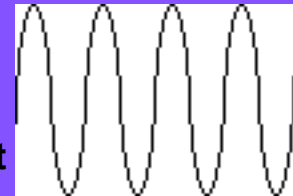
Acquisition, Analysis, and Presentation

Elements of Virtual Instrumentation

| Signals | ⟷ | **Acquisition and Control** | ⟷ | **Analysis** | ⟷ | **Presentation** |

GPIB

Plug-in DAQ

VXI

RS-232

Signal Processing

Digital Filtering

Statistics

Array Operations

GUI

Hardcopy Output

File I/O

Plug-In Data Acquisition Boards

Analog Input/Output

Digital Input/Output

Timing Input/Output

ADC

DAC

digital

cntr/timer

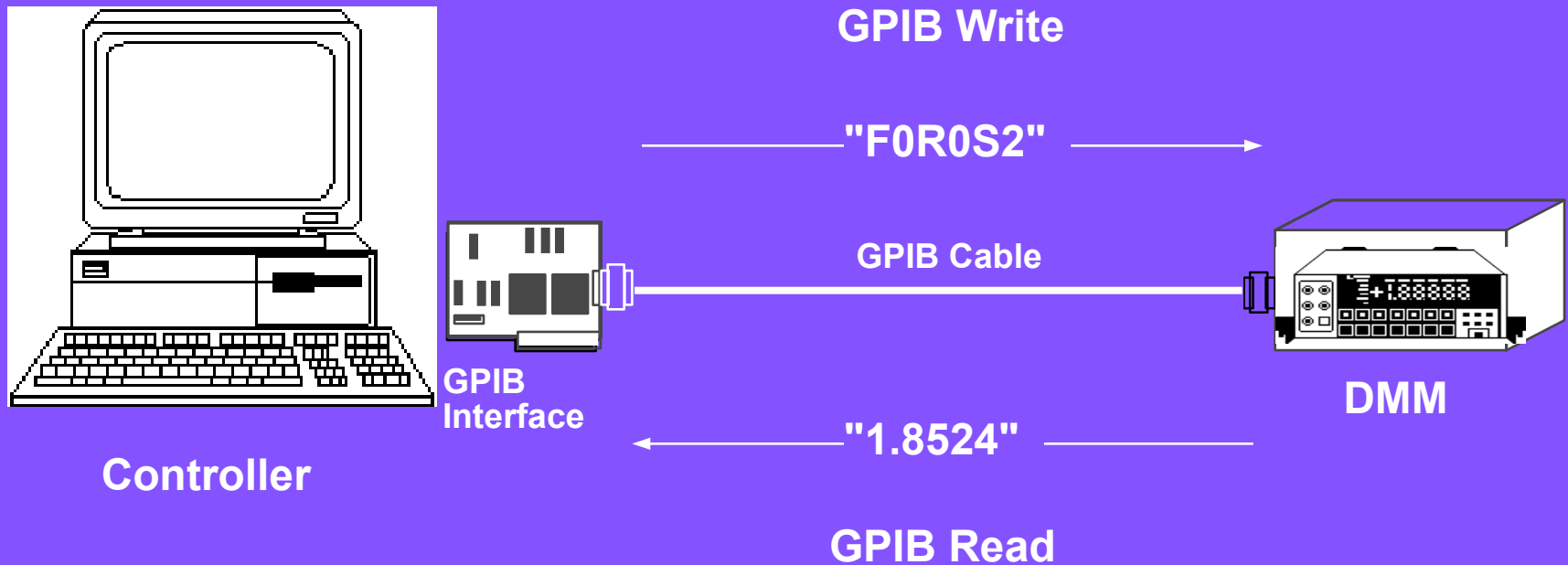DAQ Board

Advantages of Plug-In Data Acquisition Boards

Flexible

Cost-effective

Range of performance options

Wide range of software tools

Leverage off of PC technology

GPIB Communication

GPIB Write

"F0R0S2"

GPIB Cable

GPIB Interface

Controller

"1.8524"

GPIB Read

DMM

GPIB Programming Example

GPIB Interface is Board 0

" *RST;VDC;RANGE2;TRG;VAL?"

FLUKE 45

4.9999

"4.9999"

DMM at address 6

```
DIM READING AS STRING*30
CALL SendIFC (0)
CALL DevClear (0, 6)
CALL Send (0, 6, "*RST;VDC;RANGE2;TRG;VAL?"NLend)
CALL Receive (0, 6, Reading$, STOPend)
PRINT Reading$
```

Why Visual Basic?

Historical use of Basic by engineers

Science and Engineering follows general computer market

GUI tools help to create virtual instruments

Enhancing VB for Data Acquisition & Control

Standard DLLs for device I/O
- **GPIB**
- **Data Acquisition**
- **VXI**

Virtual device drivers for high performance
- **VDMAD.386**
- **VISRD.386**

VBXs for processing acquisition events

Libraries for data acquisition and presentation