NATIONAL INSTRUMENTS™ Alliance PROGRAM

汽车电子检测平台的实现

金玮

资深工程师

聚星仪器 VI SERVICE NETWORK

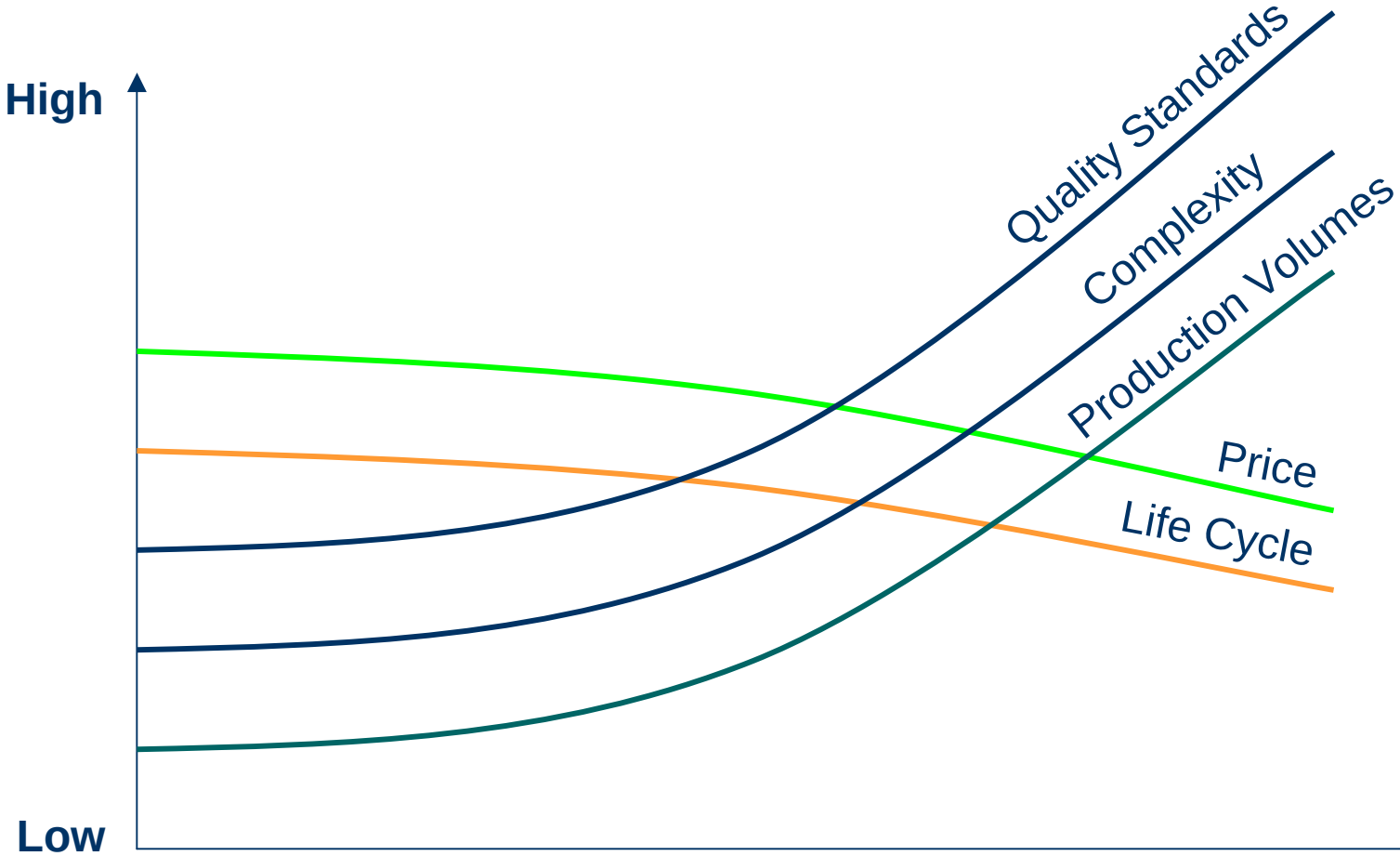
大纲

- 聚星公司
- 虚拟仪器平台应对现代工业挑战
- 聚星汽车电子检测套件
- 案例
- 服务的模式和多赢的局面

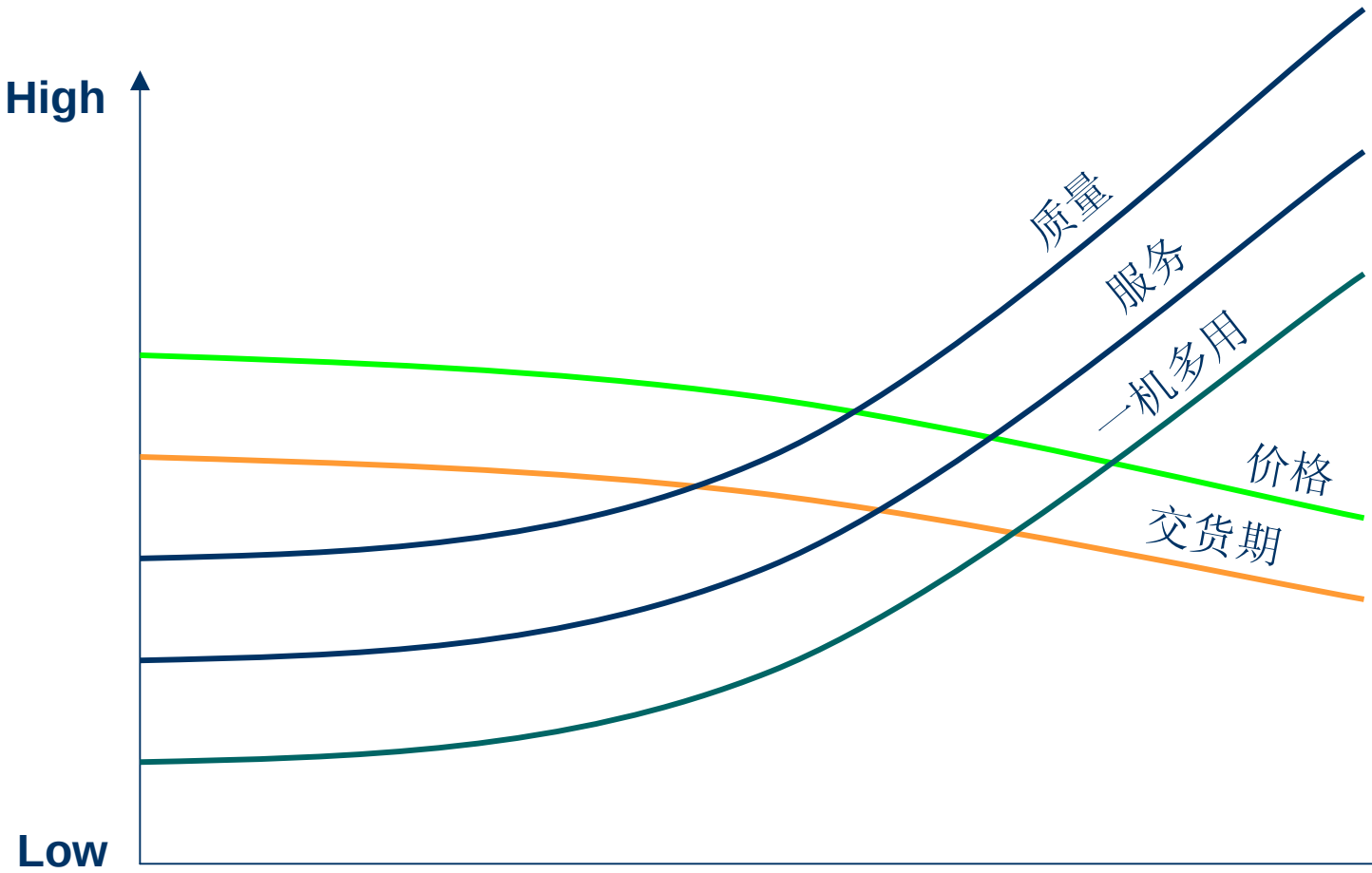
聚星仪器有限公司介绍

- National Instruments推荐的联盟商
- 提供虚拟仪器集成的全面服务
  - 个性化仪器，软件及功能模块，软件工程服务
  - LabVIEW和TestStand高级培训
- 去年集成NI产品排名三甲
- 2名曾任NI研发经理
- 中国仅有的二名获NI认证的LabVIEW开发工程师
- 6项美国专利、4项中国发明专利

工业趋势的挑战



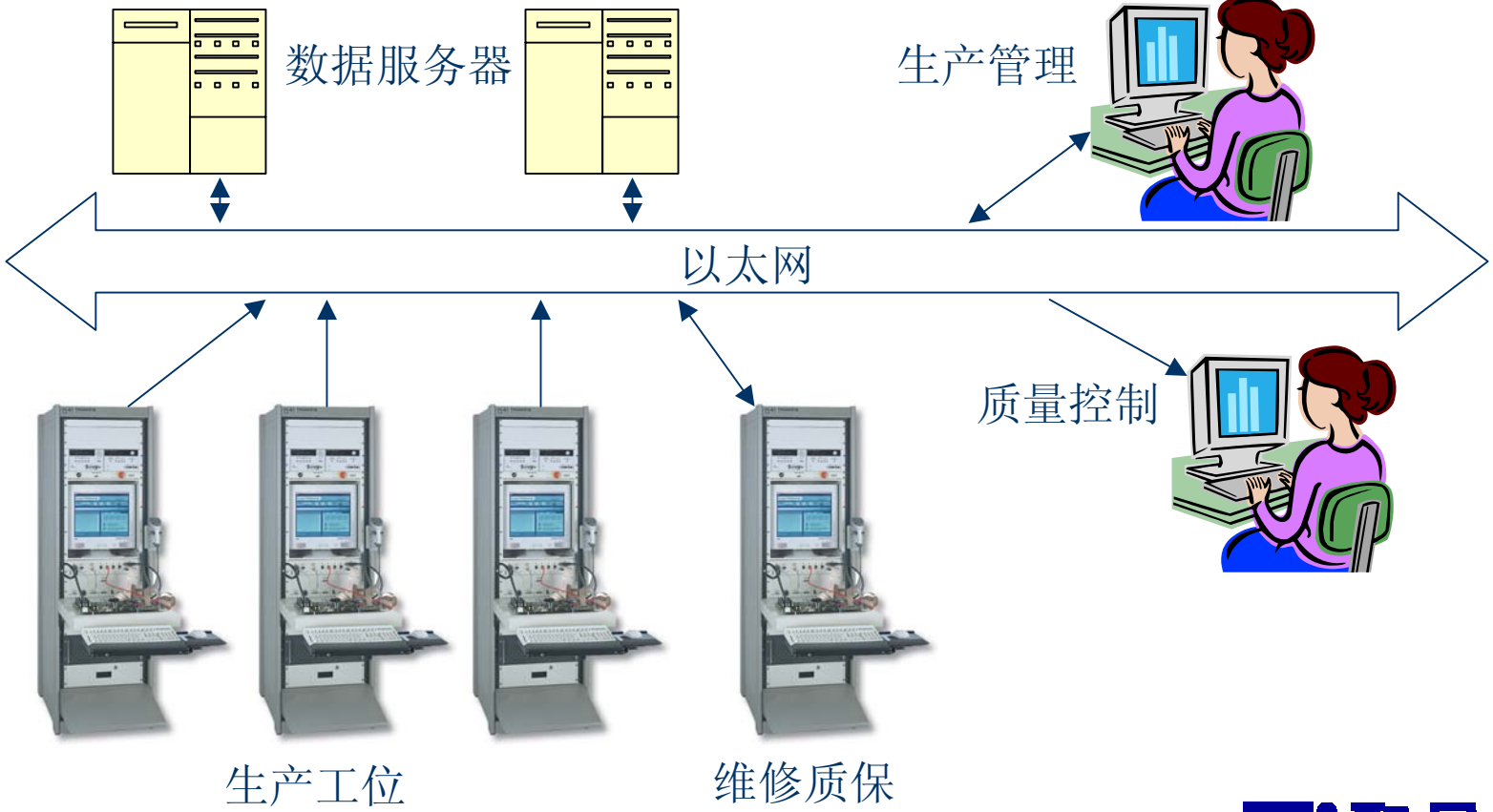
系统集成市场的挑战



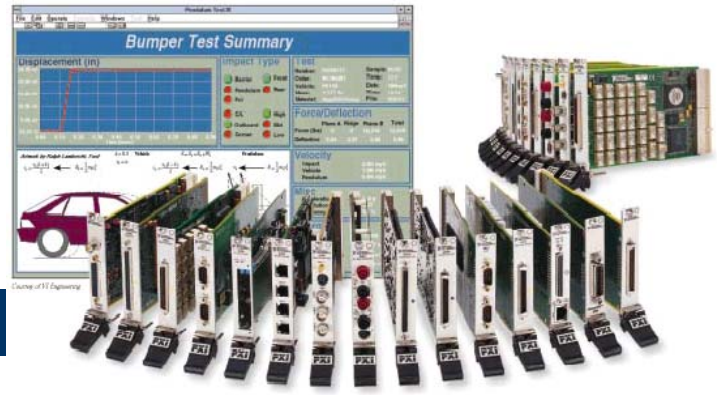
迎接挑战- 测试平台标准化

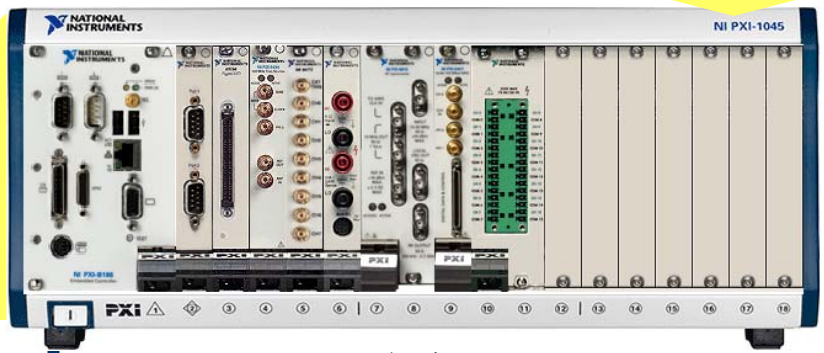
- 模块化硬件平台
  - 降低成本投入
  - 提高设备再利用率
  - 提高灵活可扩展能力
- 标准化软件平台
  - 提高系统质量
  - 简化系统维护
  - 缩短开发周期

标准化生产管理网络



标准化硬件平台





GPIB 总线

专用配套仪器

标准化软件平台

Production Monitor / Test Data Query

SQL Server

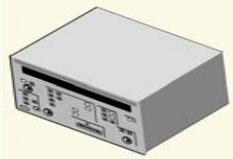
Tester GUI

Test Stand

Test & Measurement Automation Modules

LabVIEW

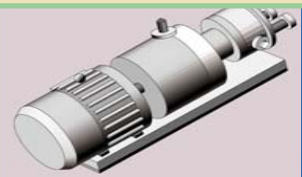
PXI



GPIB

Serial

DAQ

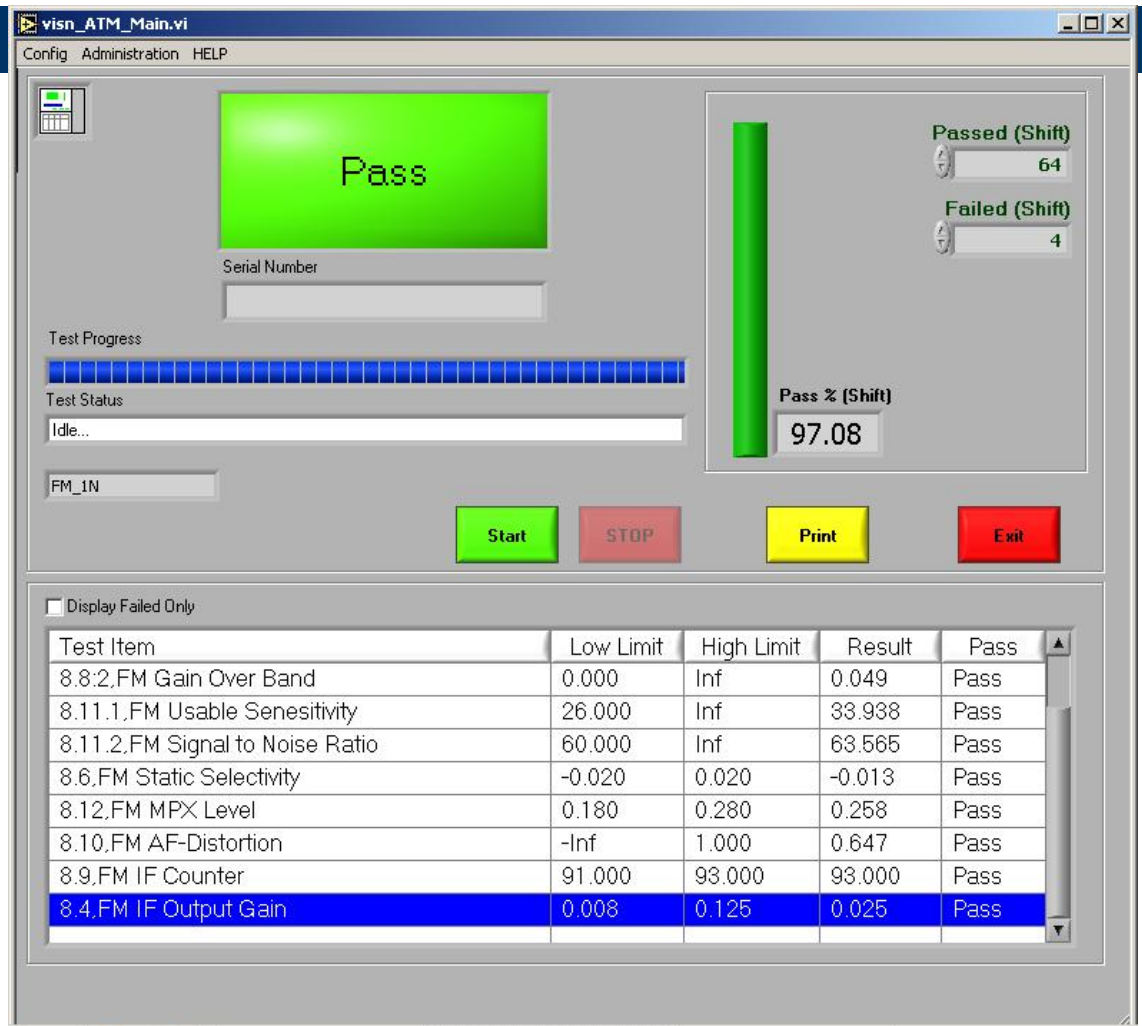


Motion

Vision

FieldPoint

标准化操作员界面



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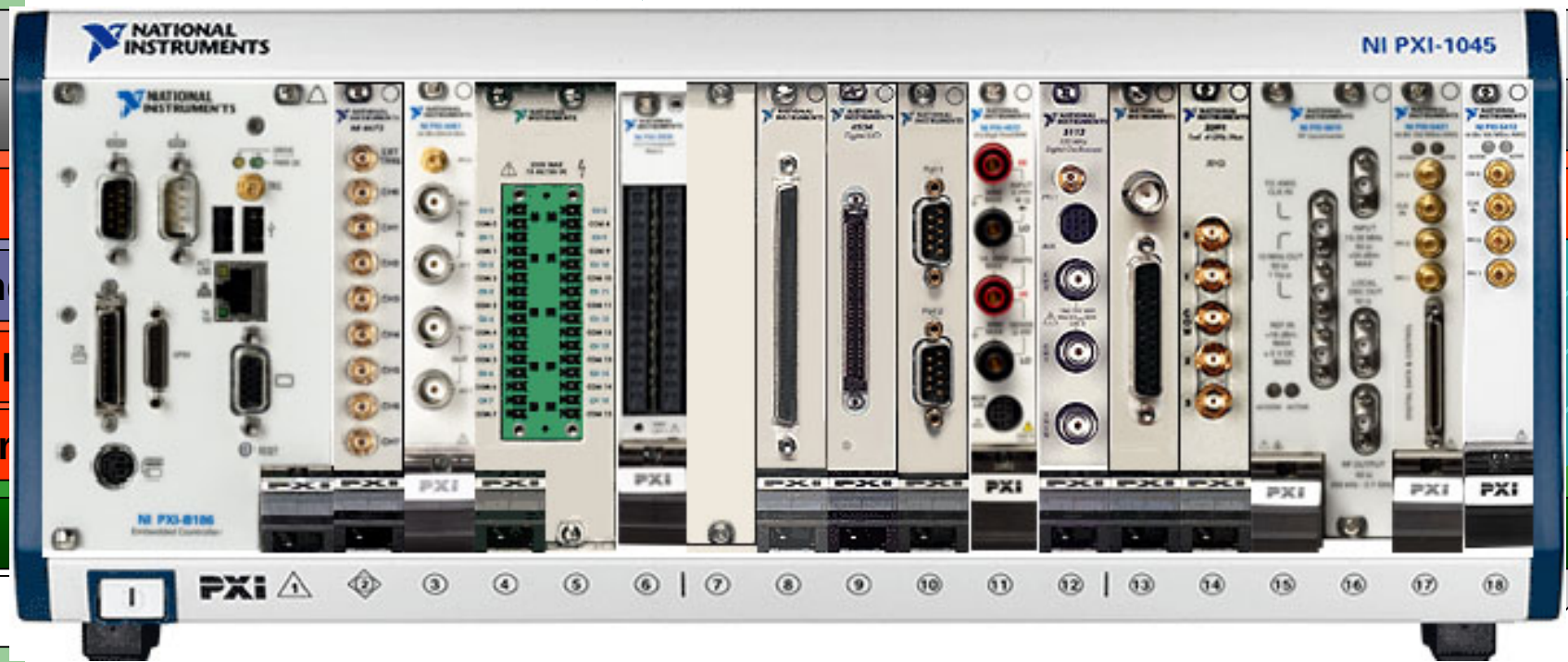
VI SERVICE NETWORK

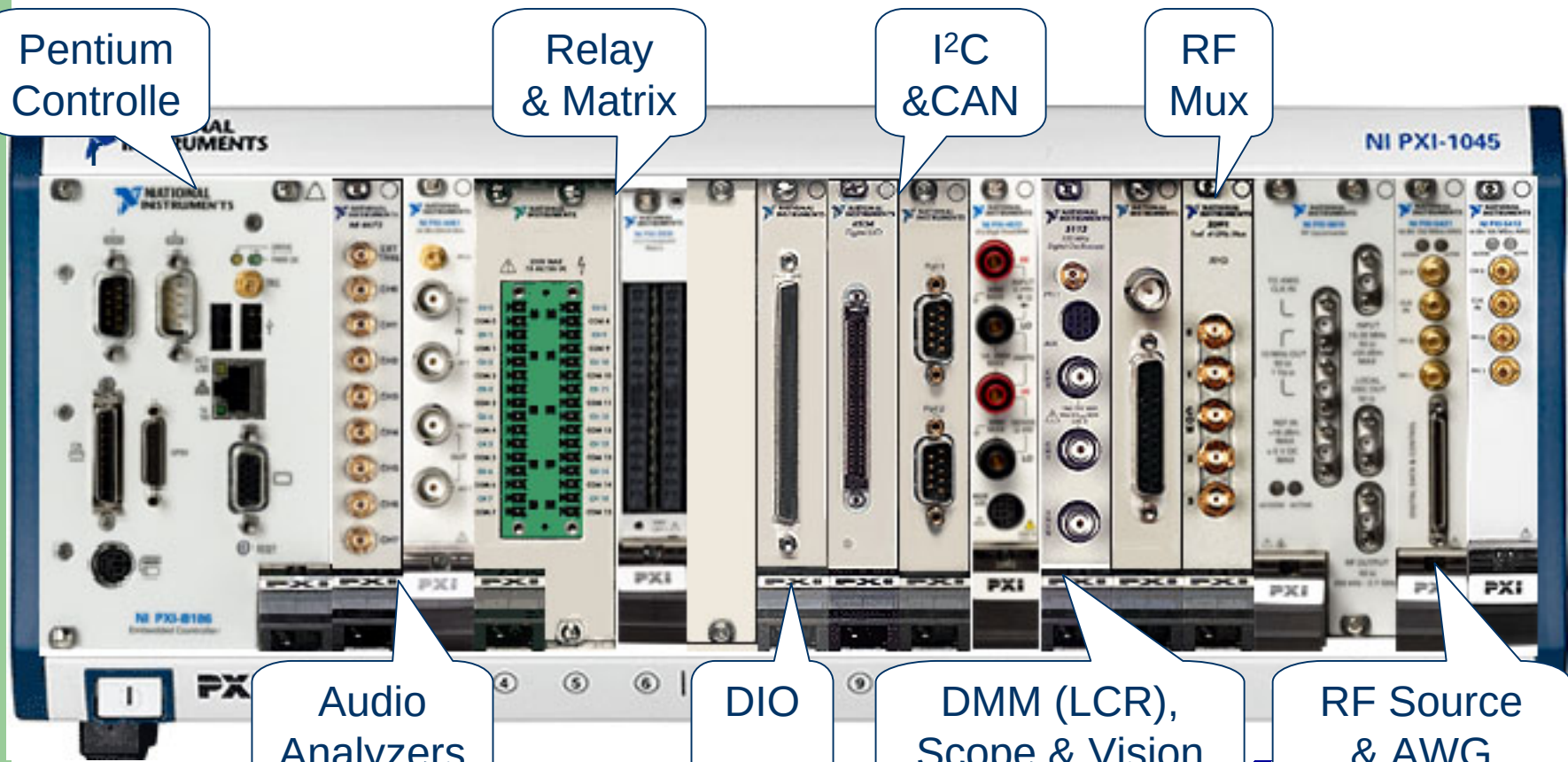
汽车电子测试平台



I/O I/O I/O I/O I/O I/O

CAN, MOST,
IDB-1394

PXI Platform for Automotive



Role of Test Management Software

Components of a Test System:

Operations different for each product tested:

- UUT & fixture control
- Configuring instruments
- Data acquisition
- Measurements
- Analyzing results
- Test strategies

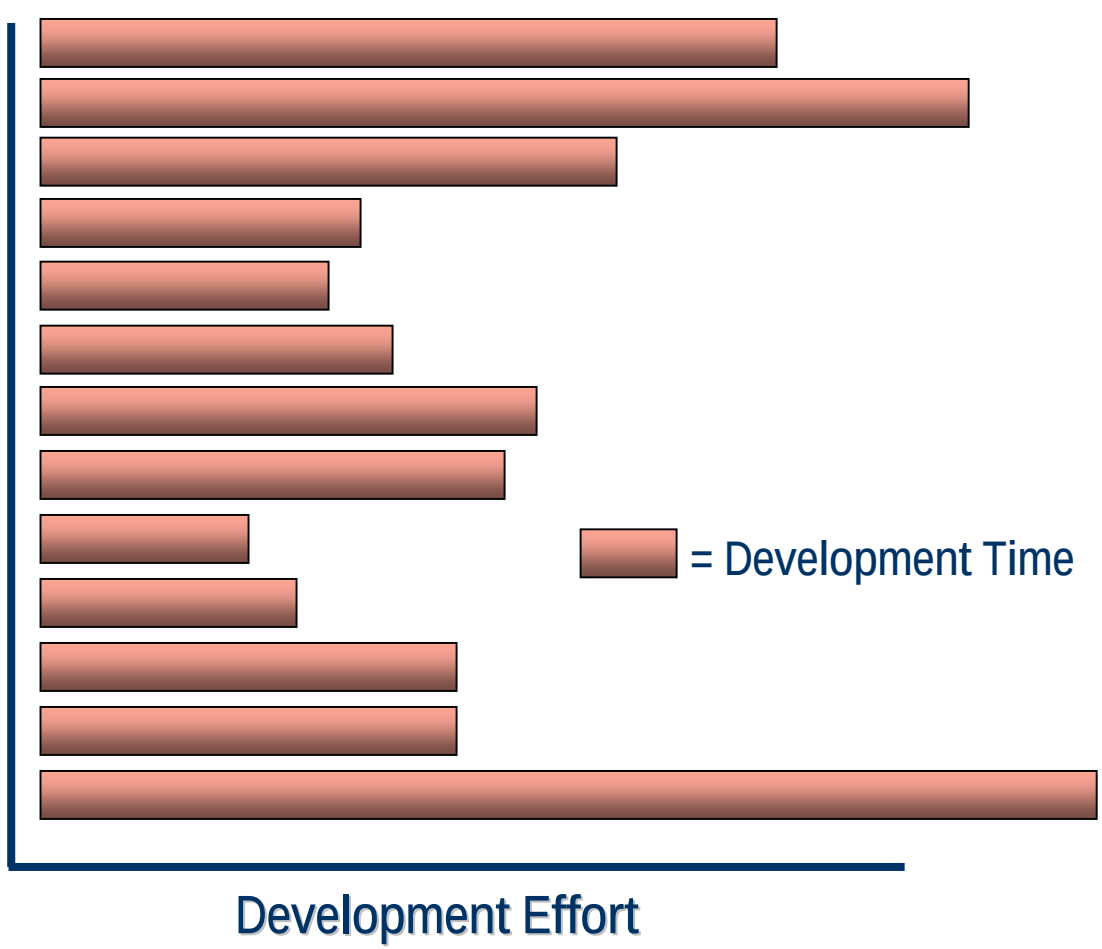
Operations repeated for each product tested:

- Operator interfaces
- User management
- Unit Under Test (UUT) tracking
- Test flow control
- Archiving results
- Test reports

Test Management Software

Build versus Buy Development Costs

- Custom operator interface
- Execution engine
- Interface to test languages
- Result evaluation
- User management
- Reports (XML,HTML,ASCII)
- Database integration
- Switch integration
- Serial number scanning
- Sequence loading
- Test limit loading
- Revision control
- Development environment



TestStand Reduces Development Costs

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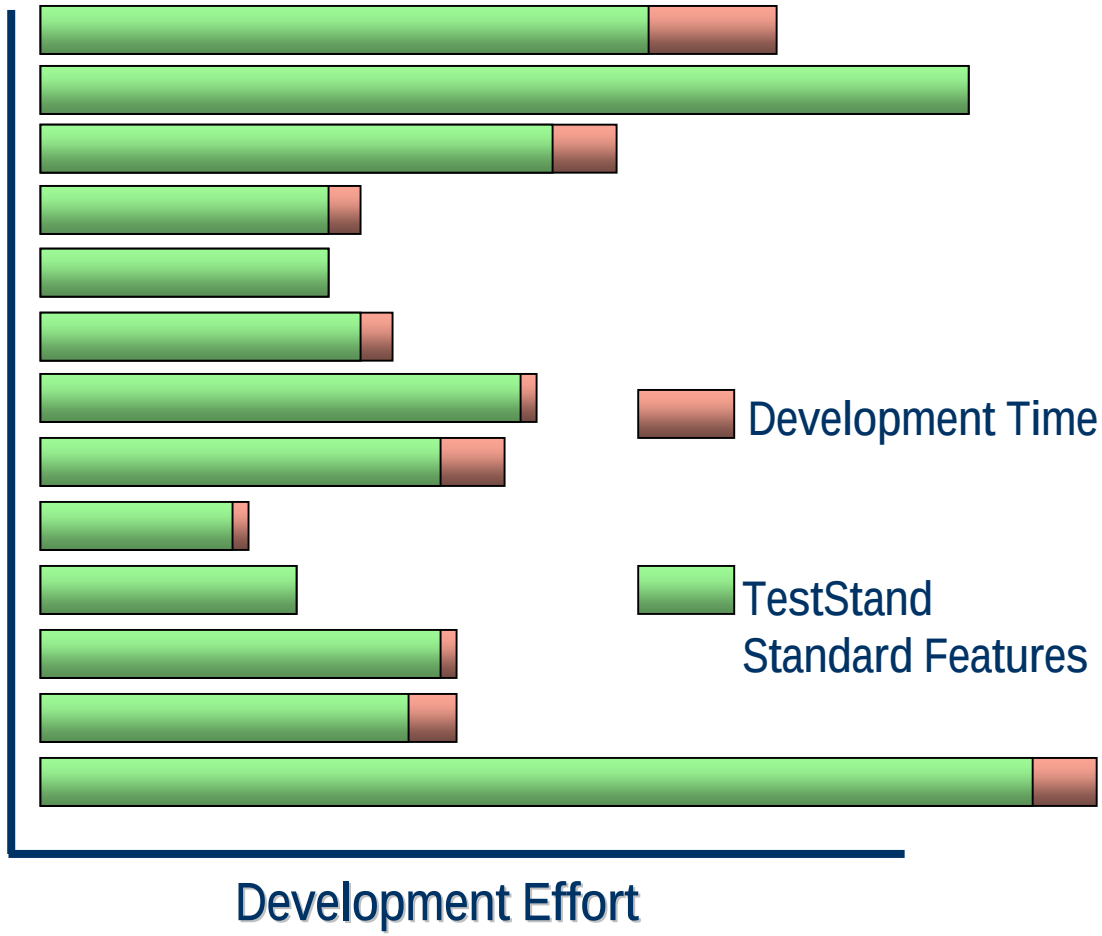

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VISN Test Framework

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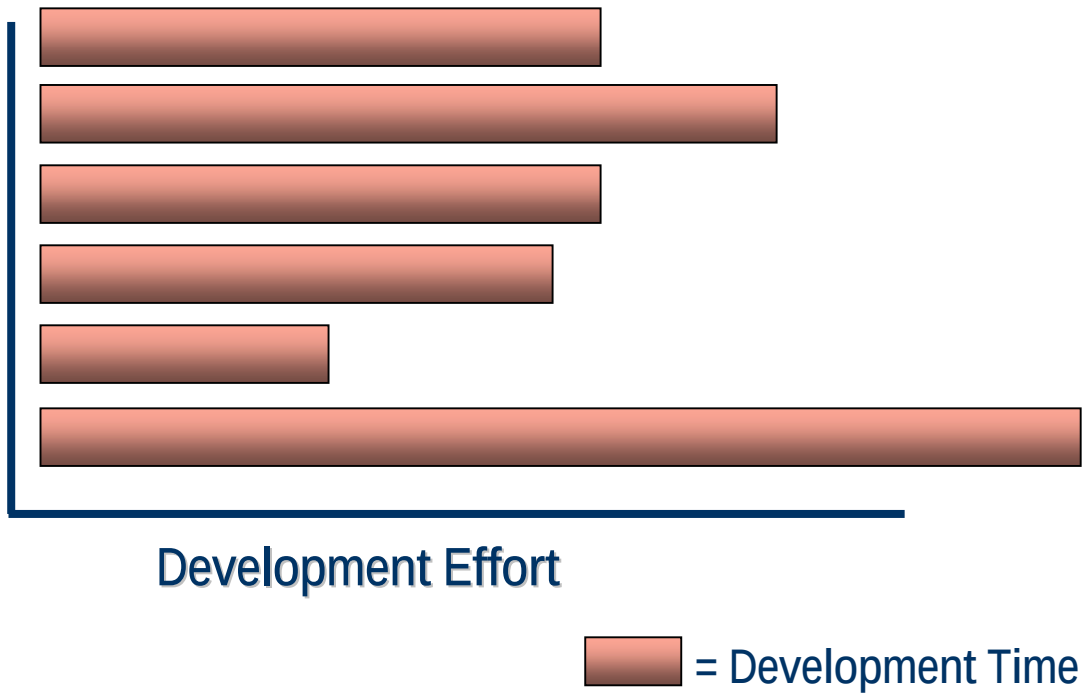

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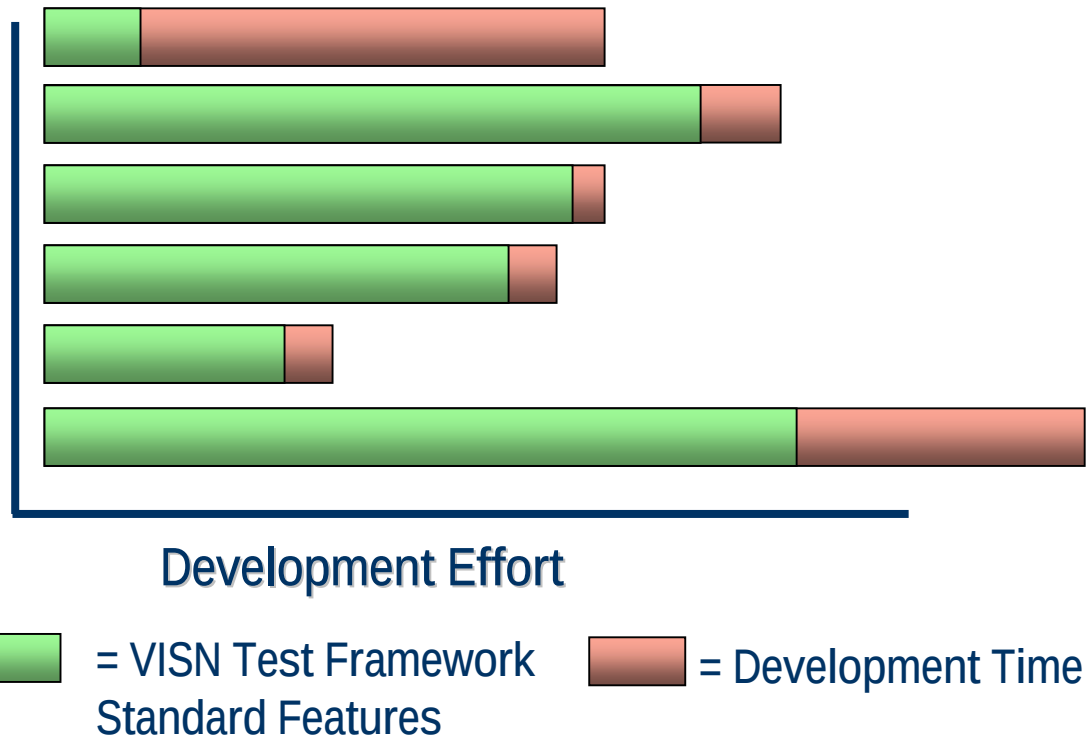
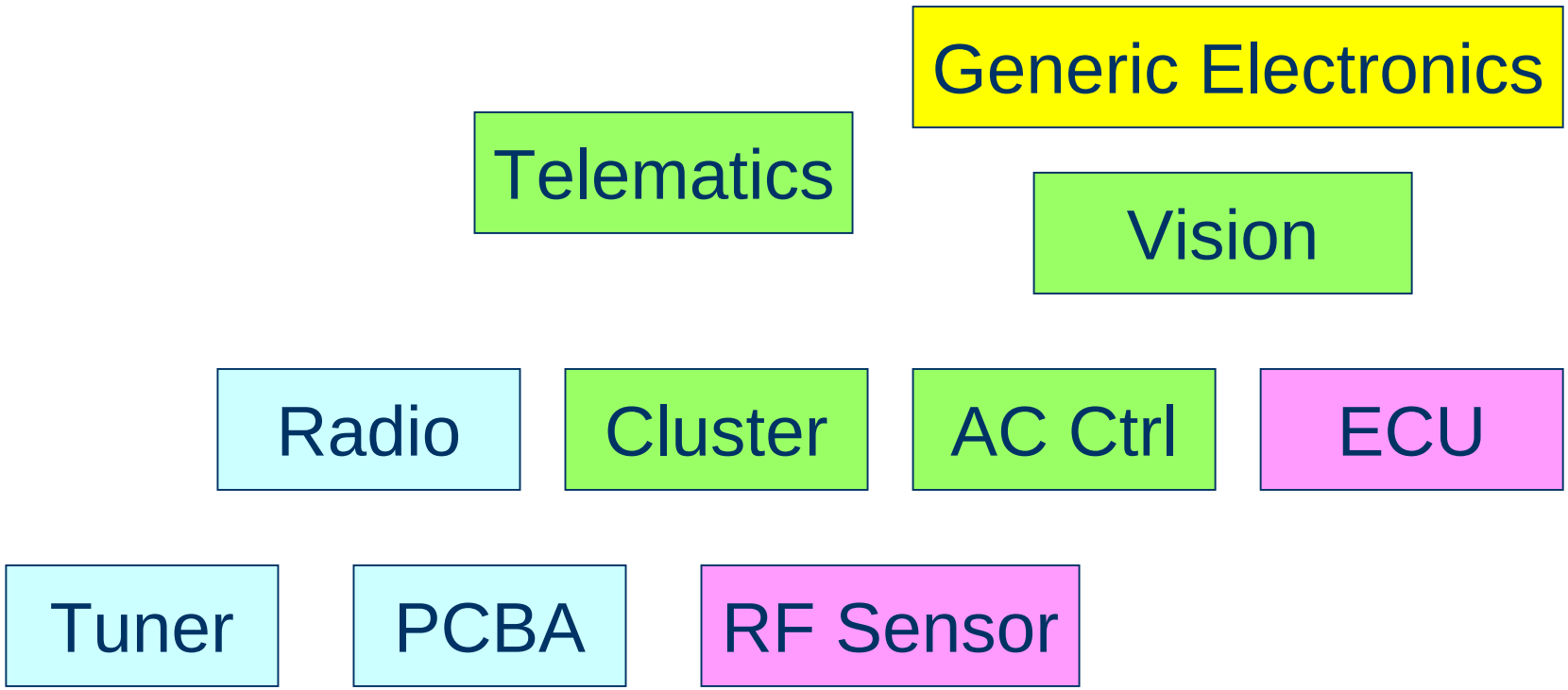


VISN Test Framework Roadmap



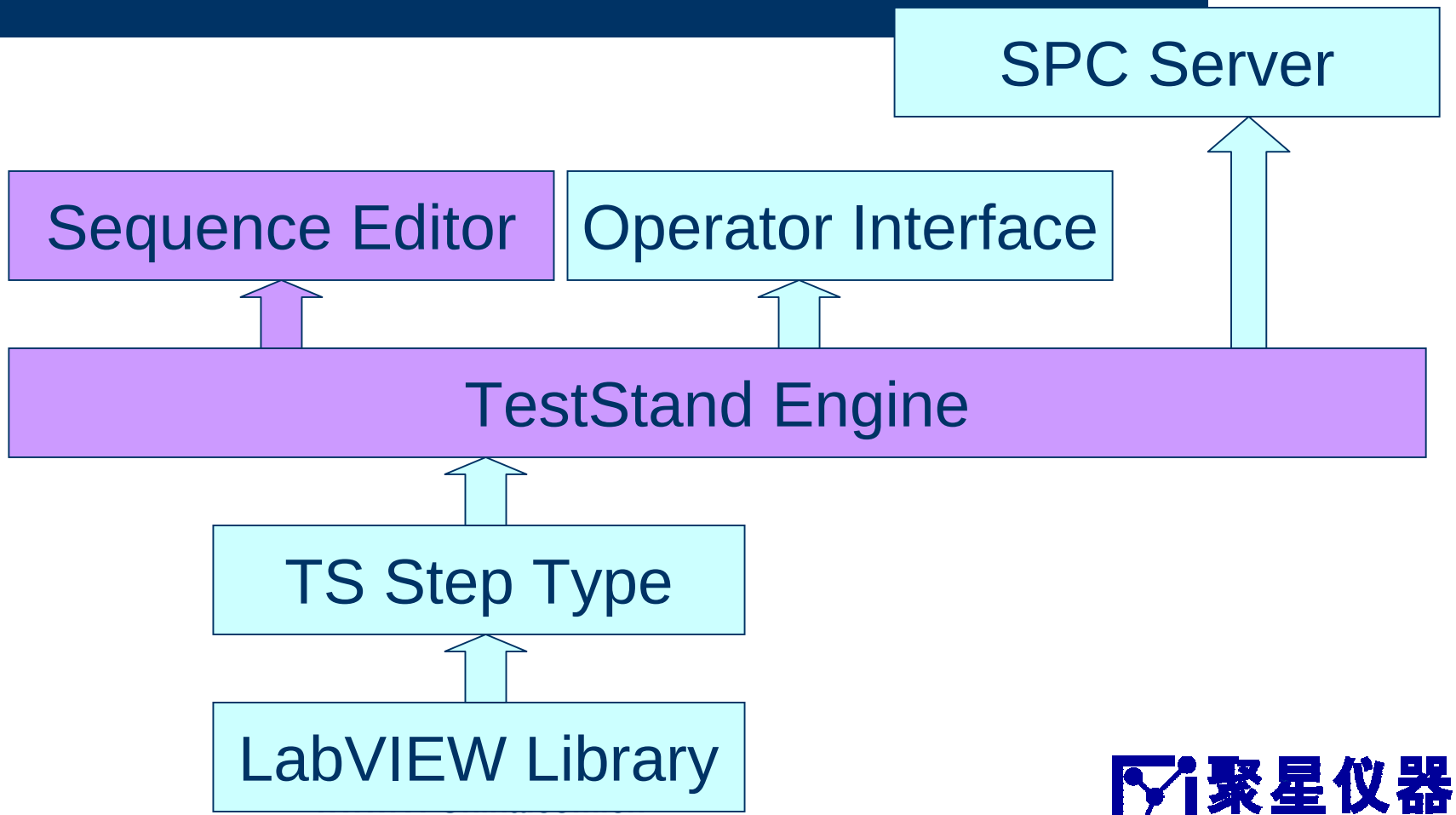
VISN Radio Test Framework

- Installation
- Components
- Test Sequence Configuration
- Customize for New Hardware

Installation

- LabVIEW >> User Library
  - Radio Test, Radio Control, Radio Source Control, Audio Analysis
- TestStand >> Customized Step Type
  - Test Step, Step Setup
  - Limit Loader, Test Report
- Operator Interface for TestStand
- SPC Server for SQL DB

Software Architecture



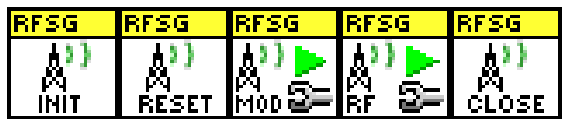
Components

- SPC Server
  - SQL based, generic for all tests
- Operator Interface
  - Generic for all sequential tests
- TestStand Step Types
- LabVIEW Library

LabVIEW Library

- Radio Control
  - Power, Tuning, CD, Sound, Generic RD/WR

- Radio Source
  - AM, FM, Stereo, RDS
  - NI-5671, VP-8131/8194

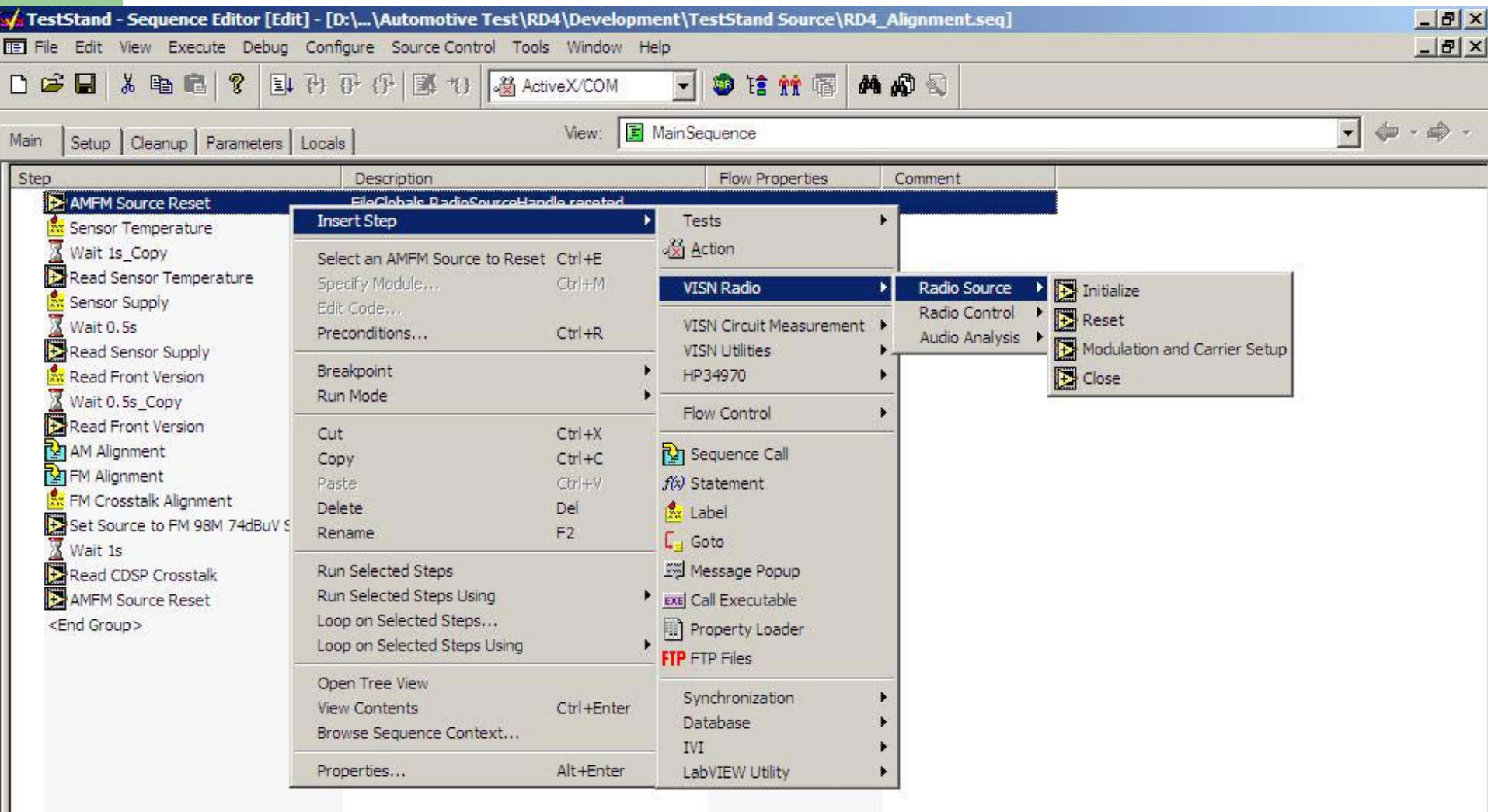


- Audio Analyzer
  - Filter, Frequency, Amplitude, SINAD, THD
  - NI-447x, 446x

Radio Test Capability

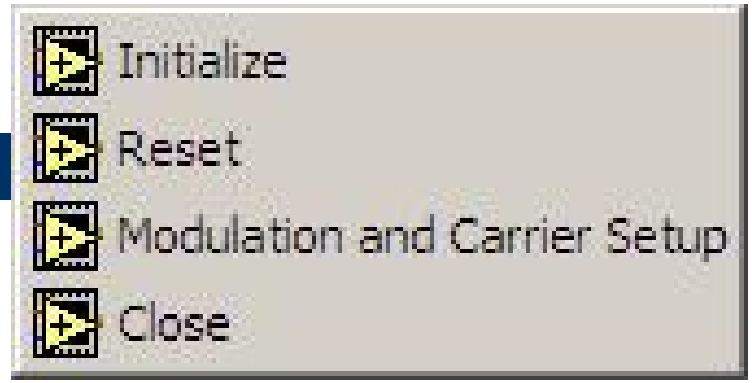
- AM / FM
  - Noise limit sensitivity
  - IF / image suppression
  - Selectivity and blocking
  - Inter-modulation
  - AGC
  - SNR
  - Distortion
- FM / FM Stereo
  - Merit Sensitivity
  - AM suppression
  - Channel equality
  - Pilot / sub-carrier suppression
- CD
  - Output level
  - SNR
  - Channel separation
  - THD
  - Frequency response
  - Dynamic range
- Sound
  - Balance / Fader / Bass / Tremble
  - Auto loudness
  - Output level
  - Telephone mute

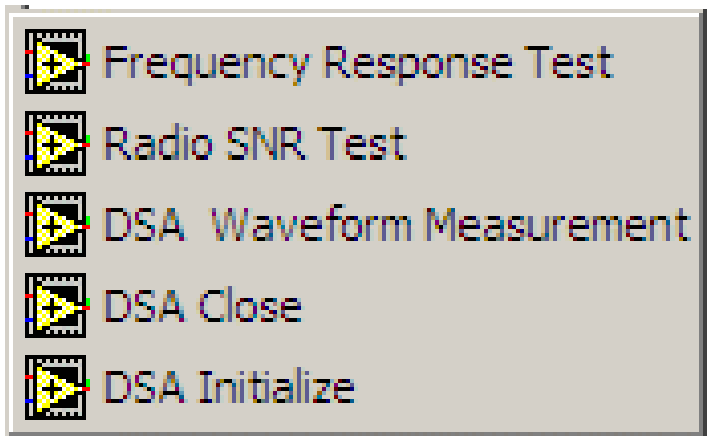
TestStand Step Type



Radio Test Steps

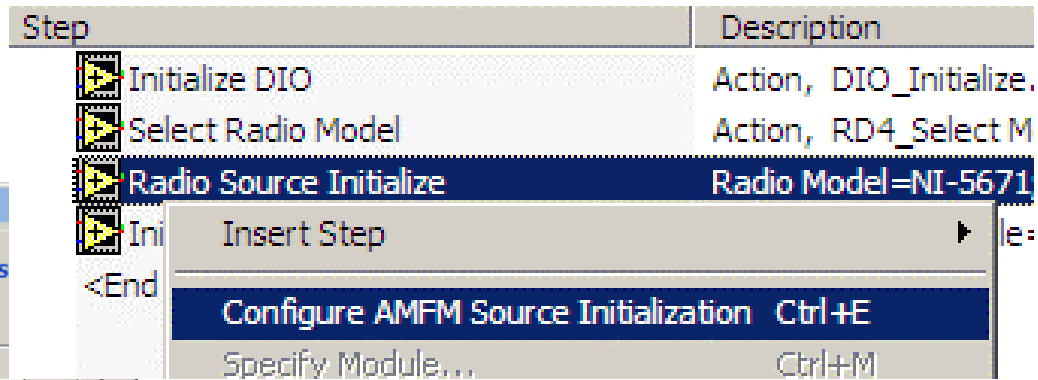
- Radio Source
- Radio Control
- Audio Analysis

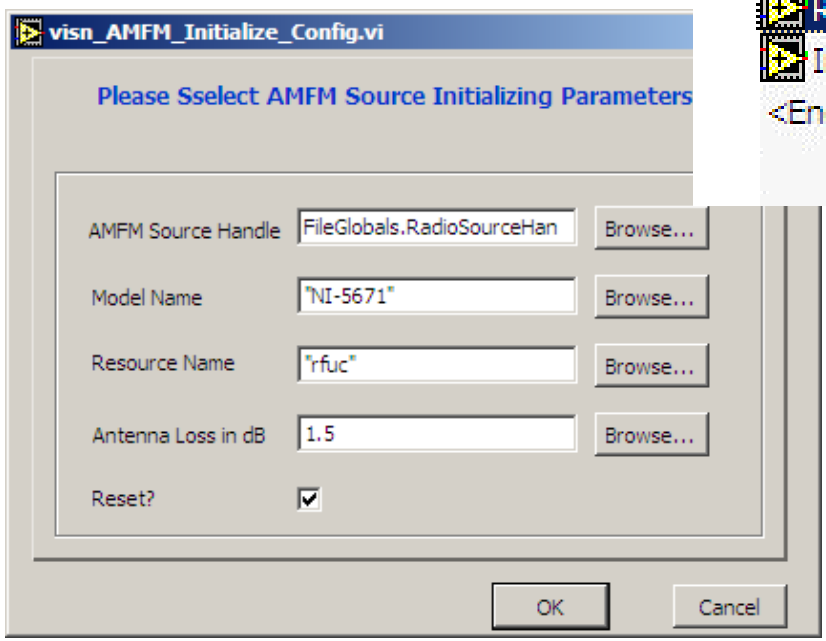




Configure Steps 1

- Step Configuration





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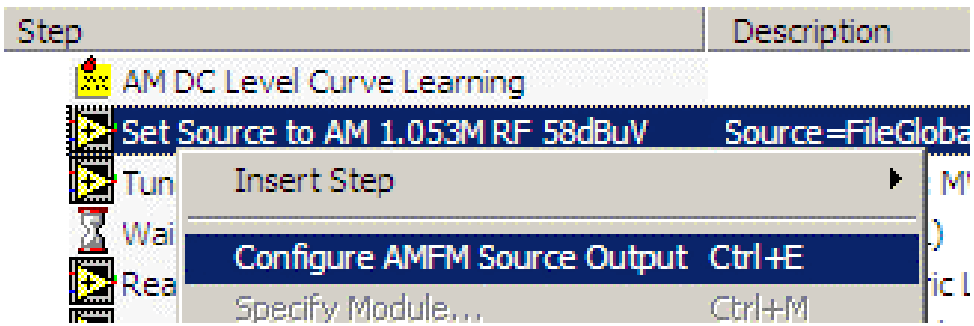
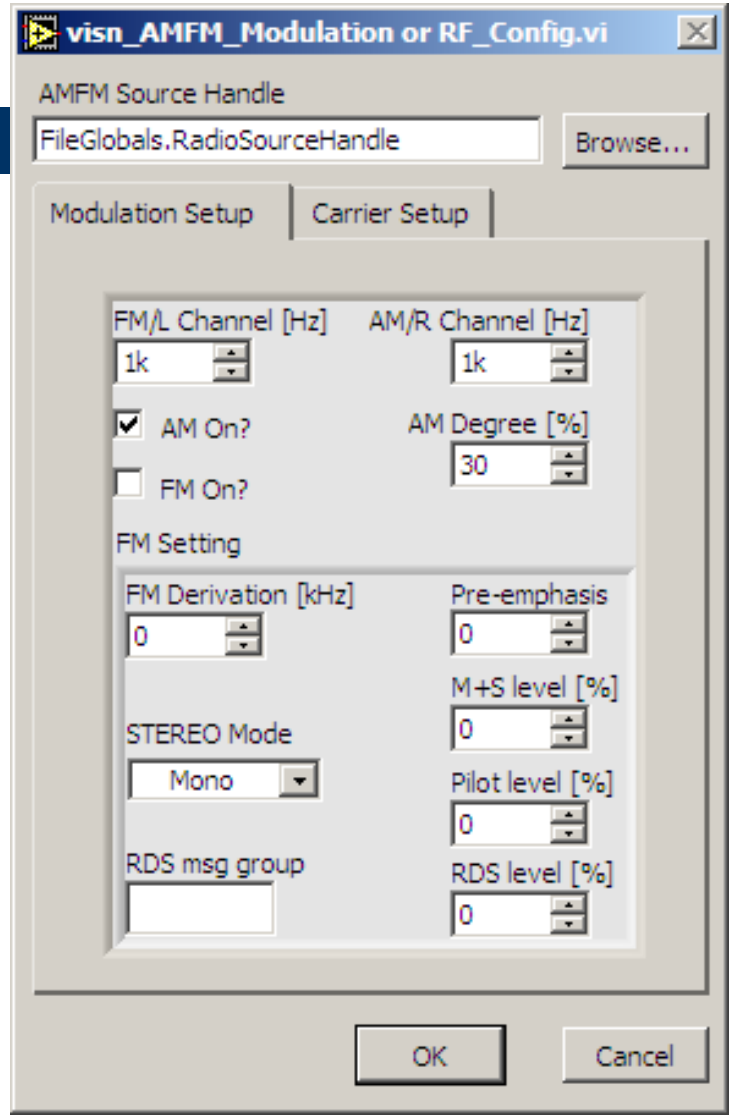
Configure Steps 2

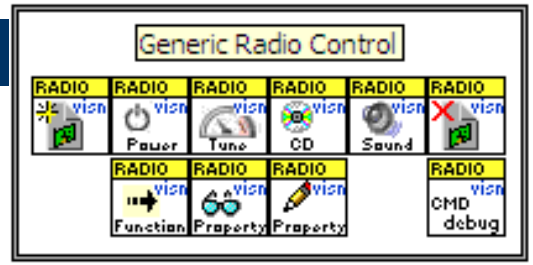
- Step Configure

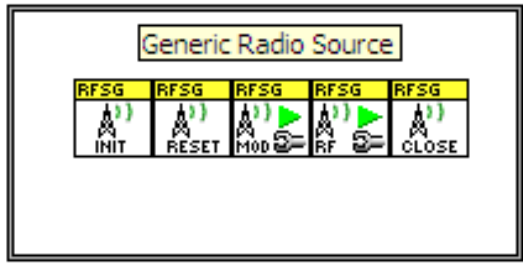


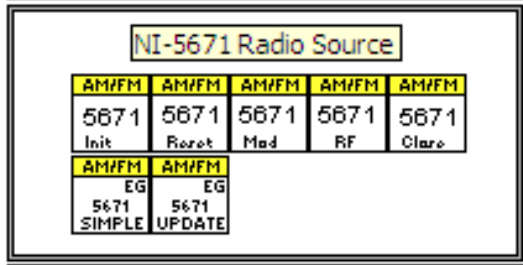


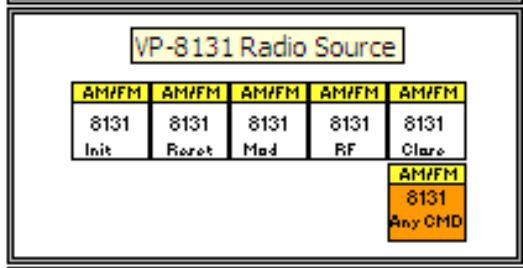
Adopt New Hardware

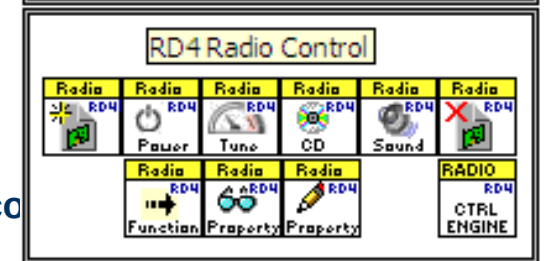
- Build Radio or Radio Source VIs
- Following Naming Guidelines
- Auto Adopt in TS

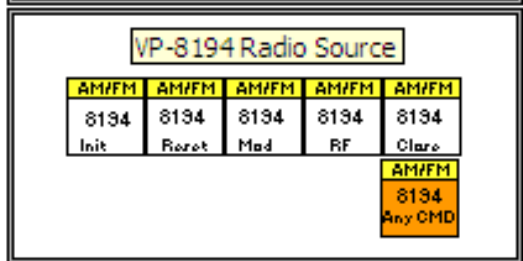












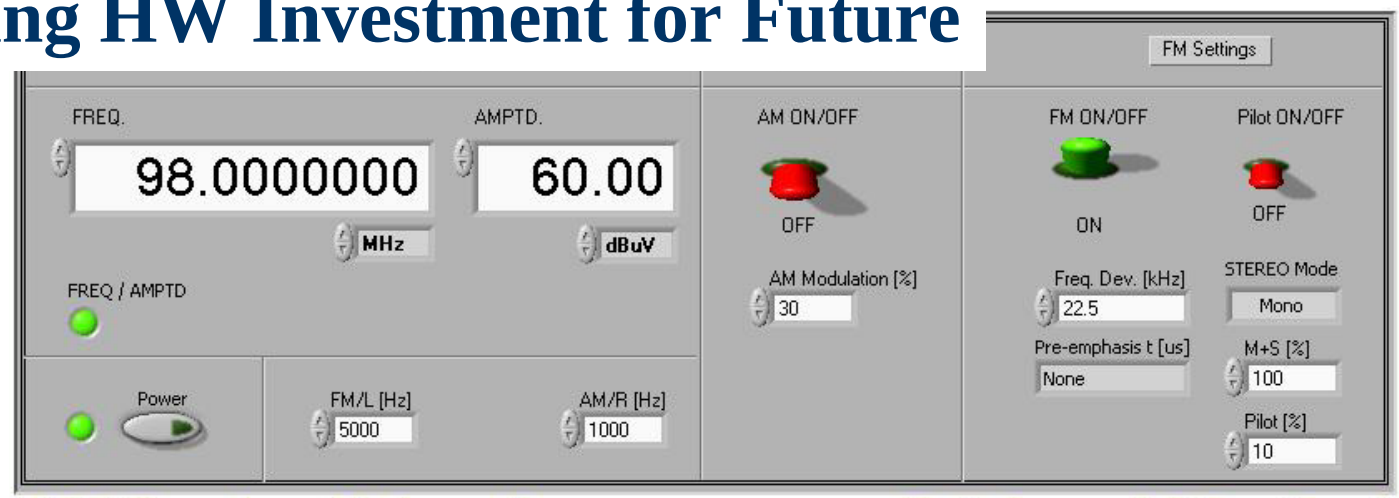
Success Story

- Tuner Alignment and Test
  - 20+ systems for massive production and QA
  - PHILIPS TEA6845 / 6846 / 6848 tuners
- Radio Online and QA Functional Test
  - TL972 Standard
  - CAN Volcano and KWP2000 protocol
- Cluster Functional and Durability Test
  - CAN, Vision, Voltage and Current
- Future: Telematics, GPS, RF Sensor …

Based on
Wireless Test Toolset

Stereo Radio RF Source

- Receiver / Radio / Tuner Test
- NI 5671
- AM, SSB, FM Mono, FM Stereo, RDS
- Protecting HW Investment for Future



VI Service Network
Software is the instrument
Service is the solution

Radio Source Soft Front Panel

多方合作框架


最终用户
系统集成伙伴
VI Service Network
上海聚星仪器有限公司
National Instruments

部分用户

Valeo 法雷奥

SIEMENS VDO Automotive

NOKIA CONNECTING PEOPLE

Visteon

SHARP ..... be sharp

中国普天 CHINA PUTIAN

信威通信

ALCATEL 上海贝尔

PANSINO

大唐电信

通用电气公司

BYD 比亚迪股份有限公司

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