가치를 기반으로 한 제품 구매 (Value-based Purchasing)의 중요도와 이점

Why to consider *Expertise*, *Quality* and *Integrity* through the **entire lifecycle** of measurement equipment?

Park In-Soon

Regional Channel Marketing Manager

Korea – South Asia Pacific Region

Agilent Technologies Singapore

Agilent Technologies

What do Customers Value?

400 Customers Surveyed

400 Agilent customers were surveyed online Across 4 industry segments and multiple roles:

- **Access to Agilent's Technical Expertise ranks #1**

- **Customers consistently rated these as most important:**
  - *Expertise,*
  - *Problem Resolution*
  - *Minimal Downtime*

Agilent Technologies

Agenda and objective for this discussion

Take a broader perspective in choosing measurement vendors

Entire solution lifecycle, across four stages

Potential costs and opportunities at each stage

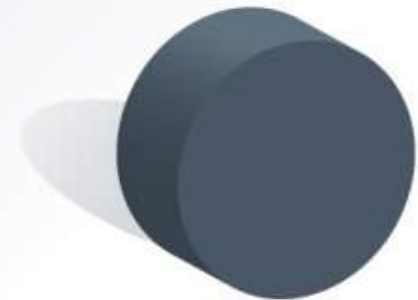Ensuring the best customer experience throughout

We welcome your inputs

Agilent Technologies

Comparing test equipment vendors & products
Line of sight

Product-by-product comparison

- Features

- Functions

- Performance

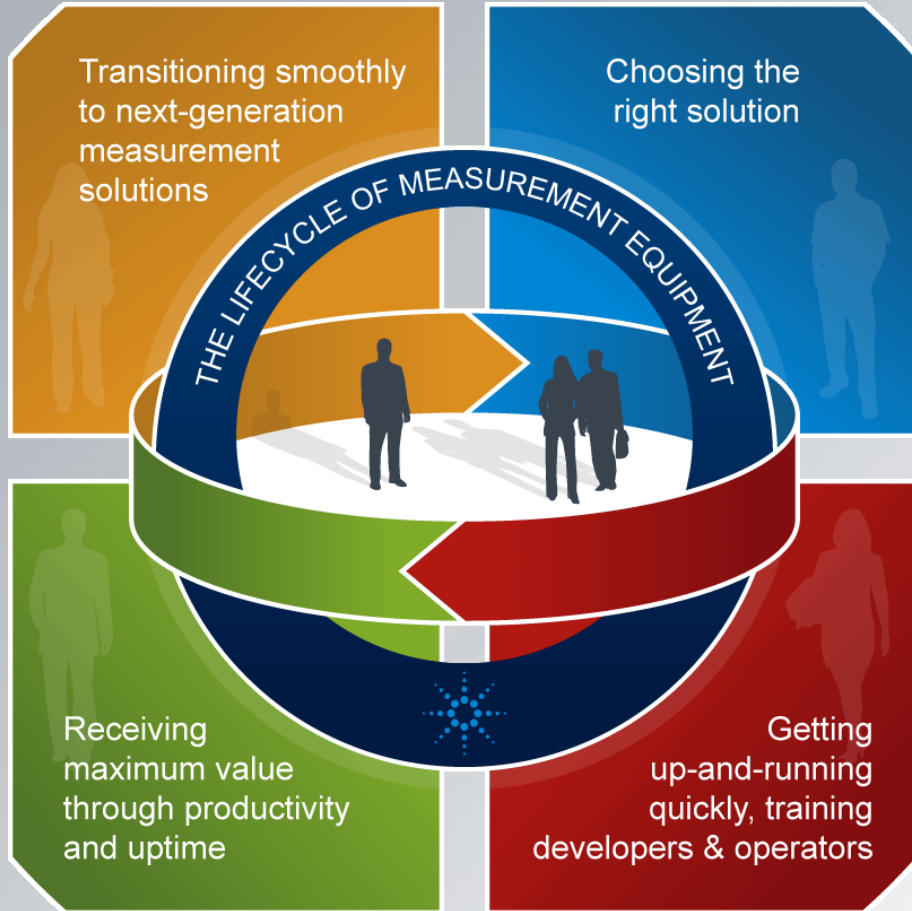# Comparing test equipment vendors & products
Line of sight

Complete lifecycle (purchase-to-disposal) comparison

- Right decision for immediate needs

- Right decision for the long run

Line of sight to the complete lifecycle

Transitioning smoothly to next-generation measurement solutions

Choosing the right solution

THE LIFECYCLE OF MEASUREMENT EQUIPMENT

Receiving maximum value through productivity and uptime

Getting up-and-running quickly, training developers & operators

A direct result of what you, our customers, have told us is most important

Agilent Technologies

Choosing the right solution
The best choice

- Long-term implications

- Crucial during this stage

  - Breadth of choice: broadest portfolio of products, services and financial solutions

  - Depth of expertise and resources: for choosing best equipment, then configuration, migration
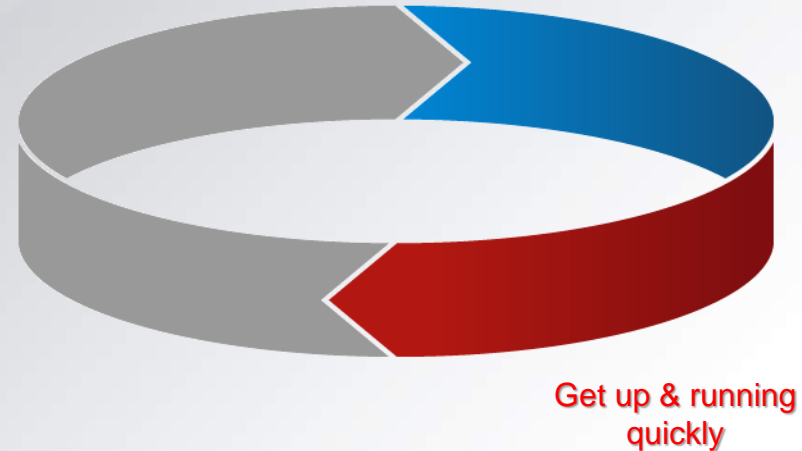
  - Partnership: sustained trust for lifecycle and beyond

Choose the right solution

Agilent Technologies
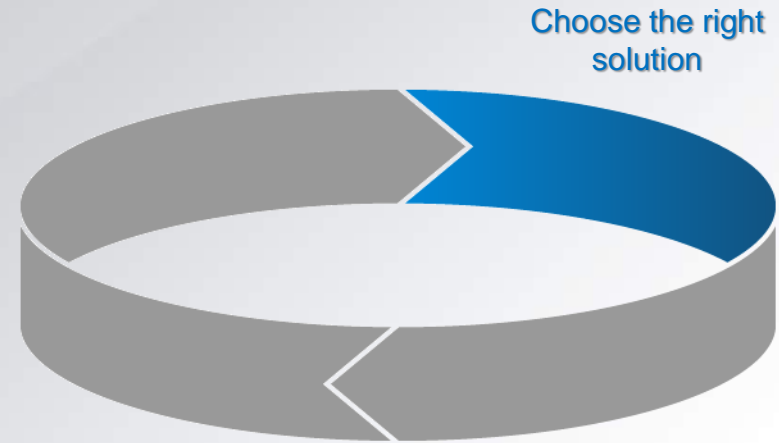
Getting up and running quickly
The fastest deployment

Crucial during this stage

- On-time arrival

- At-the-ready expertise for setup

- Fast problem resolution

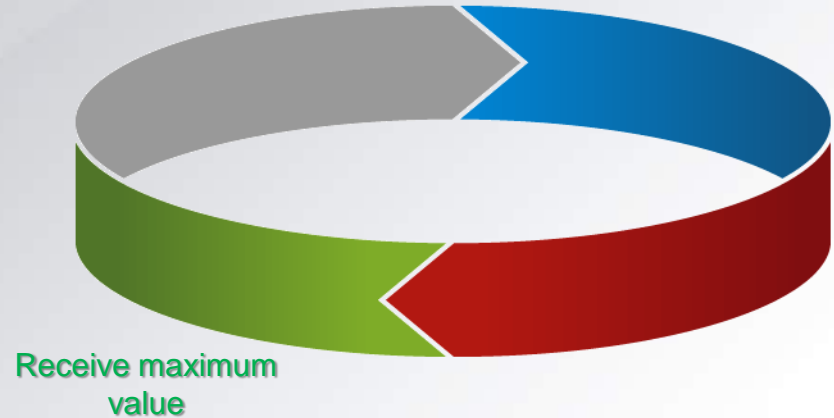- Effective training for developers and operators

Get up & running quickly

Agilent Technologies

Maximizing value from investment made
The most value, the best results

Crucial during this stage

- Minimal downtime

  - Reliable and long-lasting products

- Top-notch expertise

  - People

  - Tools

  - Product design

- Confidence in results and measurements

Receive maximum value

Upgrading or replacing
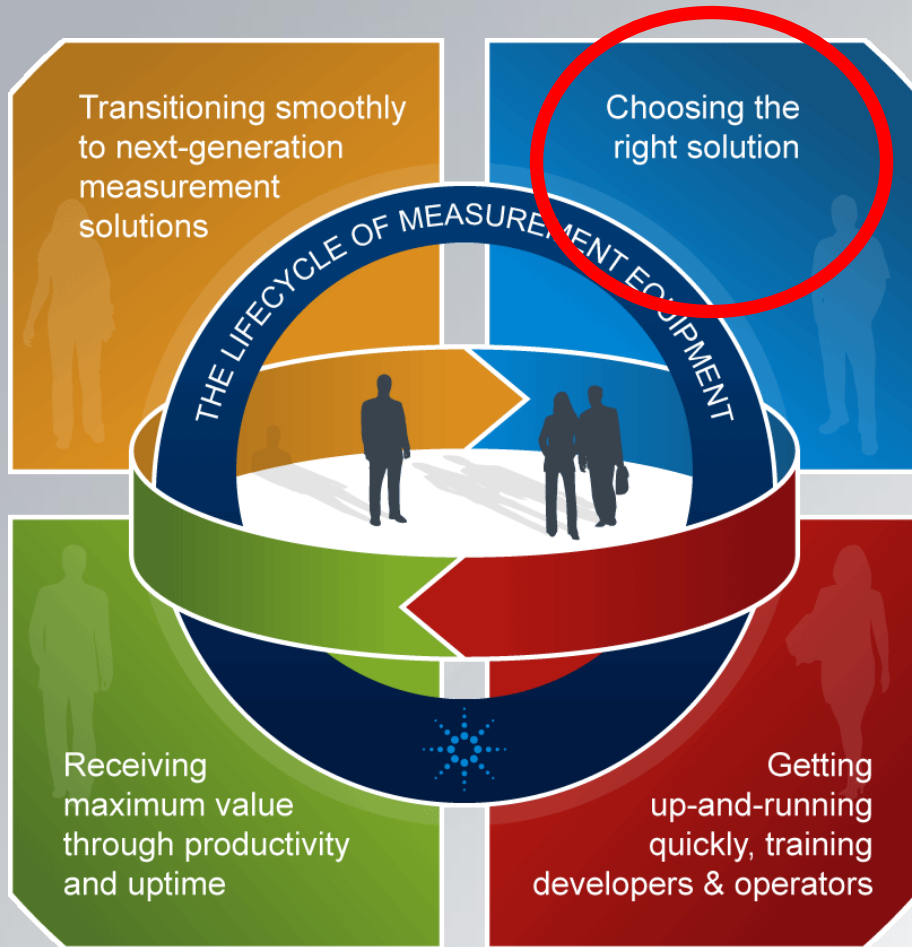## The smoothest transition

Crucial during this stage

- Clear path to new technology

- Preservation of existing code

- Technical expertise

- Generous End-of-Life and End-of-Support support policies

Transition smoothly

Agilent Technologies

Line of sight to the complete lifecycle

A direct result of what you, our customers, have told us is most important

Agilent Technologies

Broadest portfolio
The best choice

- Products

- Services

- Financial solutions

Agilent Technologies

Expertise for choosing the right solution
The best choice

- Award-winning website

- Proven local technical expertise

- Mapping to your unique application

Agilent Technologies

Expertise for configuring & migrating
The best choice

Application engineering expertise for configuring the solution and migrating to new technologies
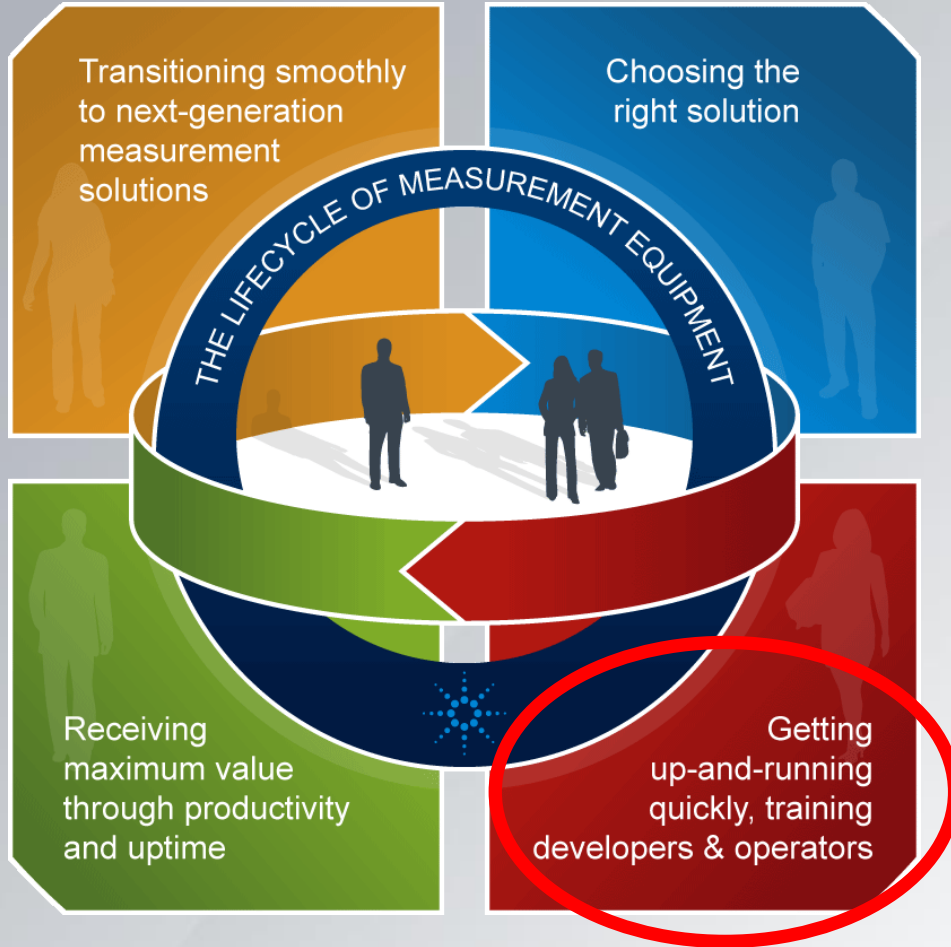
Agilent Technologies

Partnership based on years of trust
The best choice

- Corporate foundation of integrity

- Conservative performance measurement

- Commitment to long-term support

  - Long product lives

  - Seamless product rolls and extensions

  - Superior technical support

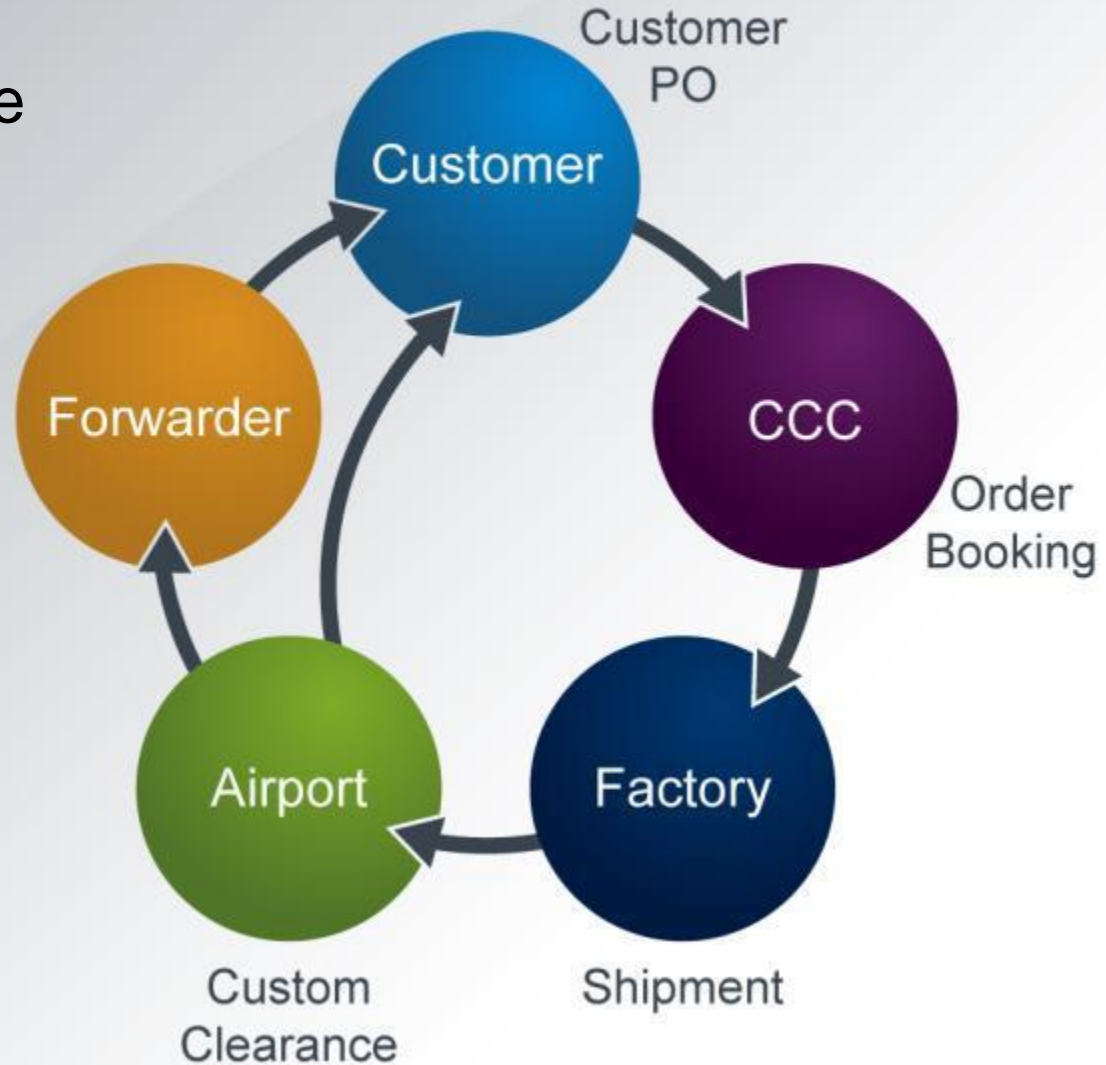 - Access to industry-recognized experts

Agilent Technologies

Line of sight to the complete lifecycle

Transitioning smoothly to next-generation measurement solutions

Choosing the right solution

THE LIFECYCLE OF MEASUREMENT EQUIPMENT

Receiving maximum value through productivity and uptime

Getting up-and-running quickly, training developers & operators

A direct result of what you, our customers, have told us is most important

Agilent Technologies

On-time arrival of product at your doorstep
The fastest deployment

- Delivery to your schedule

- Result of process reengineering

- Tight coordination among

  - Divisions

  - Supply chain

  - Customer fulfillment

  - Sales teams

Customer PO

Customer

CCC

Order Booking

Forwarder

Factory

Shipment

Airport

Custom Clearance

Agilent Technologies

At-the-ready expertise for going online fast
The fastest deployment

- More industry experts than our competitors

- Largest library of free application content

Agilent Technologies

Fast response for fast recovery
The fastest deployment

- Commitment to contain within six business days (98% track record)

- Tracked centrally, consolidated, and deployed, to prevent reoccurrence

- One worldwide tool and supporting team, with one assigned case owner

- Questions answered by industry experts

- Sponsorship by Agilent senior management
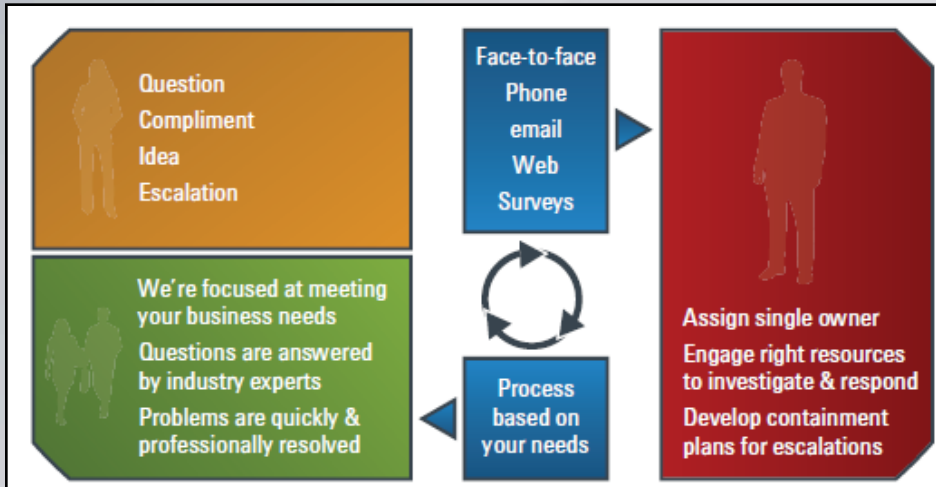
For more information on responsiveness, visit:
www.agilent.com/find/contactus

Click here for technical support , visit:
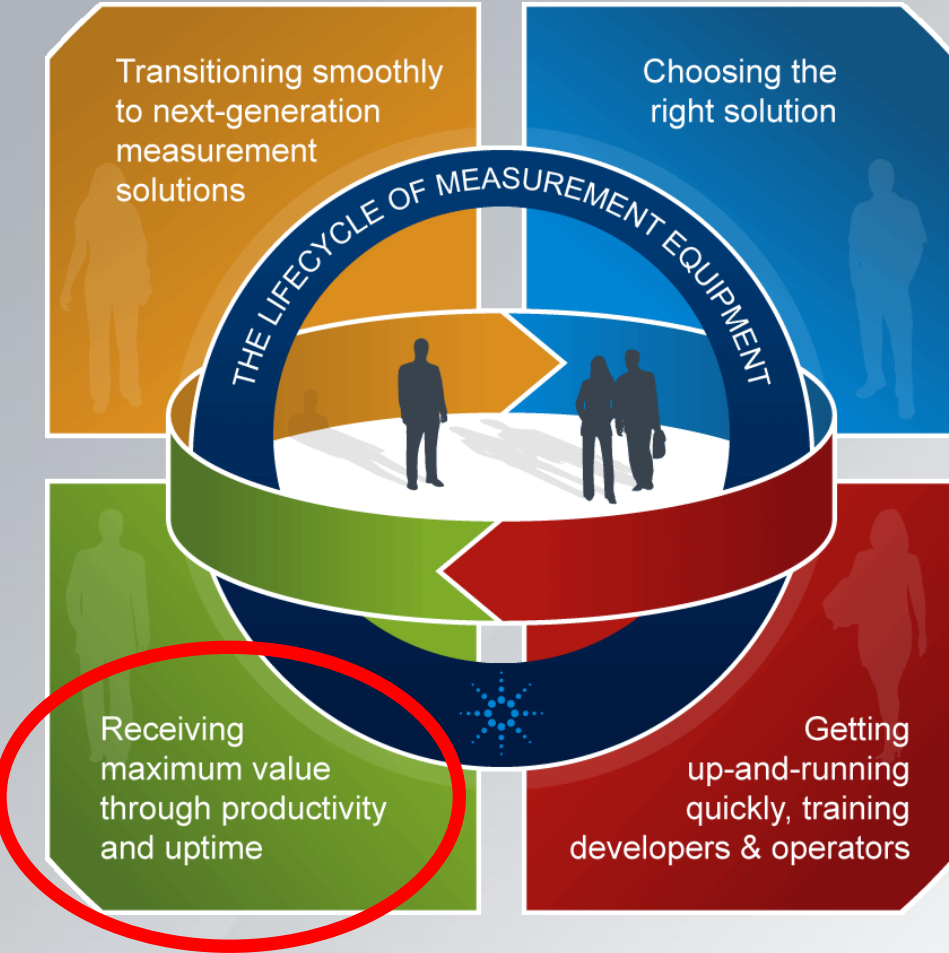www.agilent.com/find/techsupport

Agilent Technologies

Effective training for developers/operators
The fastest deployment

- Tailored courses and curricula

- Globally at your site or Agilent

- Novel learning opportunities

- Services training

- Application notes

Agilent Technologies

Line of sight to the complete lifecycle

Transitioning smoothly to next-generation measurement solutions

Choosing the right solution

THE LIFECYCLE OF MEASUREMENT EQUIPMENT

Receiving maximum value through productivity and uptime

Getting up-and-running quickly, training developers & operators

A direct result of what you, our customers, have told us is most important

Agilent Technologies

Minimal downtime: reliability & longevity
The most value, the best results

- From start of product lifecycle throughout supply chain

- Skilled Quality and Reliability professionals

- Design ruggedization processes

- Comprehensive techniques and processes
- System and Subsystem Reliability Modeling
- Failure Modes and Effects Analysis (FMEA)
- High Temp Operating Life Testing (HTOL)
- Component Selection and Risk Analysis
- Highly Accelerated Life Testing (HALT)
- Environmental Stress Screening

- Component Stress De-rating
- Reliability Growth Modeling
- Physics of Failure Analysis
- Margin and Abuse testing
- Design of Experiments
- Step-stress Testing
- Thermal Imaging
- Weibull Analysis
- Peer Reviews

Agilent Technologies

Minimal downtime: reliability & longevity
Important Terms & Definitions

HALT/Step-Stress Testing: Highly Accelerated Life Testing and Step-Stress Testing are methods to uncover weaknesses in design and material during the product development phase.

Component selection and Risk Analysis: Procedure to identify high risk parts (e.g. non-preferred suppliers) and track progress made toward minimizing their use during the NPI cycle.

Peer Reviews: Process where a design engineer reviews his/her design (e.g. a microcircuit or PCA) with a group of expert engineers to ask probing questions, get second opinions and improve the robustness of the design.

Margin and Abuse Testing: Environmental Testing of proto/pilot units at the extreme limits of the specs (or sometime beyond) to uncover weaknesses and limits of the design. Often times two stresses are applied simultaneously.

Thermal Imaging: Use of Infrared camera technology to locate hot spots on PCA's, then verified with thermocouples, and then design changes are taken to reduce component temperature/junction temperature.

Accelerated Life Testing and High Temperature Operating Life: Subject assembly or component to elevated stress levels (typically temperature) to accelerate the age of the Device Under Test (DUT) so that expected operating life of the item can be calculated; design changes may be taken in increase operating life.

Physics of Failure (PoF): Analytical techniques (e.g. electron microscope) employed to determine the root cause of a failure so that effective corrective action can be taken.

FMEA: Failure Modes, Effects and Analysis – formal procedure to itemize list of expected failure modes, score them and ultimately prioritize them for expenditure of resources (basically a fancy formal prioritization process).

Design of Experiments (DOE): Advanced statistical methods to efficiently conduct engineering experiments to quantify the impact of multiple variables on some attribute of interest (e.g. how does temperature, dwell time and force affect the strength of a wire bond).

Reliability Growth Modeling: Mathematical methodology to calculate the improvement of reliability of a product during the course of an NPI, and to predict the eventual reliability of the product once it is in the field.

Weibull Analysis (pronounced Wy-bull): Statistical methods to calculate reliability metrics based on a set of field failure data.

Environmental Stress Screening (ESS): Reliability procedures for creating a battery of environmental stress tests and then applying them to production units with the objective of detecting defective units before they get shipped to a customer.

Agilent Technologies

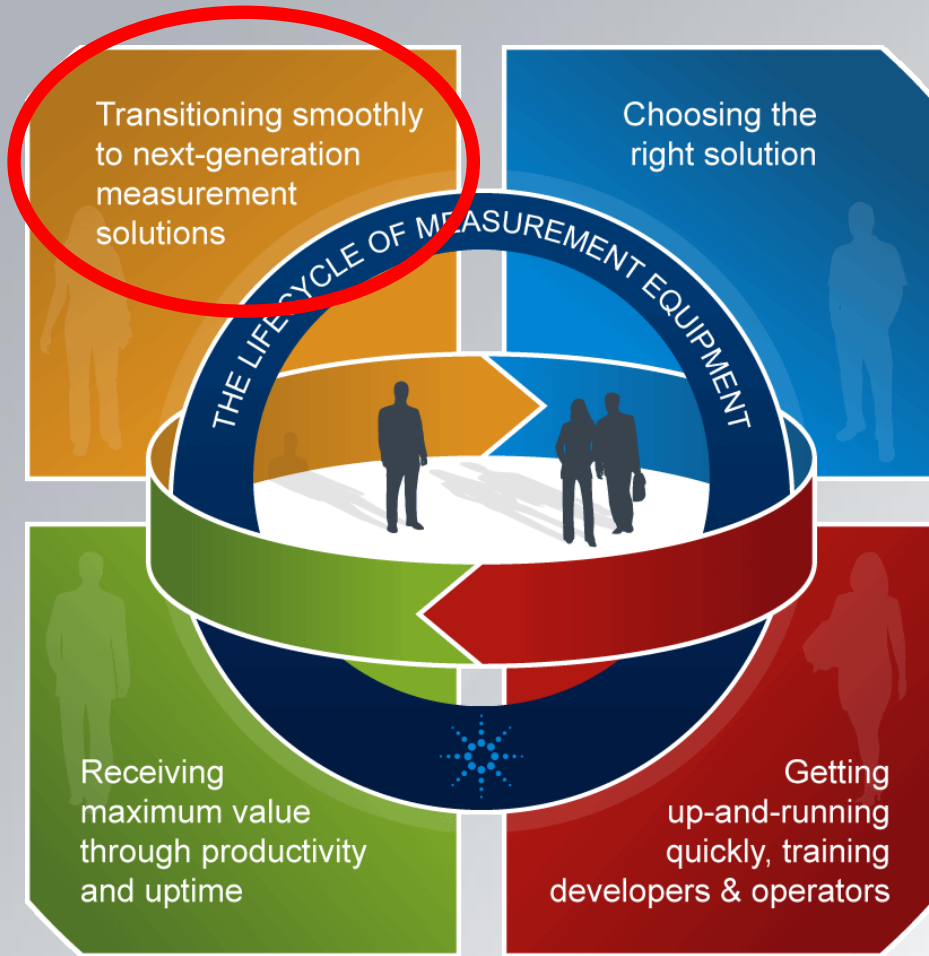# Expertise in people, tools & product design

The most value, the best results

- Full suite of application consulting

- Experience to handle any test and measurement issue

- 200 application specialists worldwide

- Largest free library of application notes and more

- Expertise as reflected in products themselves

Agilent Technologies

Line of sight to the complete lifecycle

A direct result of what you, our customers, have told us is most important

Agilent Technologies

Clear migration path and code compatibility
Avoiding obstacles for the smoothest transition

Take advantage of new technology

Beware of migration costs

- Reviewing/modifying Test Programming Code

- Ensuring adequate test coverage

- Migration downtime

Migration expertise

- Delivering migration management services

Instrument code compatibility

- Ensuring plug-and-play where possible

- Where not, emulation code

Agilent Technologies

Generous EOL/EOS HW support policy
The smoothest transition

End-of-Life (EOL): communications and flexibility

•6 months before ending sales,
with direct / planned replacement

•1 year before ending replacement options
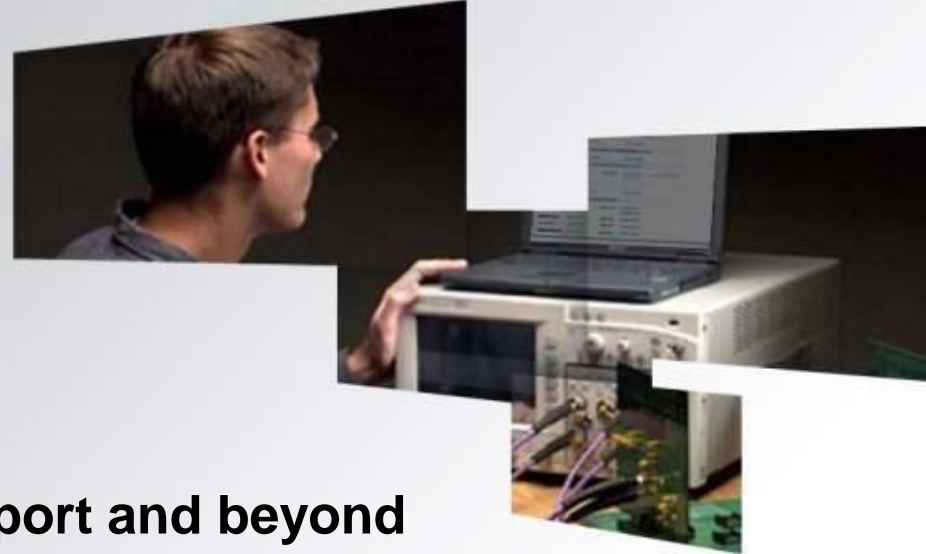
End-of-Support (EOS): extended support and beyond

•Minimum 5-year support period after discontinuance

•Beyond: possibility of calibration
and repairs

Agilent Technologies

Where expertise counts?

The diagram shows "THE LIFECYCLE OF MEASUREMENT EQUIPMENT" with four quadrants:

- **Transitioning smoothly to next-generation measurement solutions**
- **Choosing the right solution**
- **Receiving maximum value through productivity and uptime**
- **Getting up-and-running quickly, training developers & operators**

Throughout the entire product lifecycle

Agilent Technologies

Comprehensive view of the complete solution
Line of sight

Agilent Technologies

Summary

Agilent delivers *Expertise*, *Quality* and *Integrity* through

the entire lifecycle of measurement equipment!

- *Training*
- *Tech refresh*
- *Asset management*
- *Code compatibility*
- *Upgrades and enhancements*
- *Trade-up/trade-in*
- *Sell-off*
- *Highest industry resale value*
- *Lease and financing plans*

- *Resident professional program*
- *Education and training*
- *Application consulting*
- *Calibration and repair*
- *On-site system support*
- *Tailored support solutions*
- *Preventative maintenance*
- *Longevity and breadth of services*

Transitioning smoothly to next-generation measurement solutions

Choosing the right solution

THE LIFECYCLE OF MEASUREMENT EQUIPMENT

- *Pre-sales advice and consulting*
- *Product demonstrations*
- *Seminars*
- *Upfront service options*
- *Requirement specs assistance*
- *Solutions planning and design*
- *CertiPrime remanufactured equipment*
- *Financing plans*

- *Productivity assistance*
- *Education and training*
- *Application engineering and services*
- *Expert factory resources*
- *Enhanced web support systems*

Receiving maximum value through productivity and uptime

Getting up-and-running quickly, training developers & operators

Agilent Technologies

Value-Based Purchasing Exhibits

Reliable, Long Lasting Products	• Agilent designs & builds into our products industry leading reliable technology for years of trouble-free operation
Application Expertise & Training	• Bringing you the most established and proven local technical expertise in the T&M industry to help you choose the right solution for your unique application
Responsiveness	• Agilent's customer escalation system & process ensures your issue is contained within 7 business days
Self-Maintainer Services	• Agilent provides exceptional support, services and tools for self-maintainers - here's how Agilent can help
Support Life Policies	• Agilent provides 6 months notice of the end of sale date for products where a replacement is available and 1 yr notice if no replacement is planned; We provide 5 years of guaranteed support once a product is removed from our price list.
Instrument Security	• Agilent is committed to delivering business solutions to our Aerospace & Defense customers and helping you meet the non-product related requirements of the Dept of Defense and your end customers
Total Cost of Ownership	• Agilent's Total Cost of Ownership model provides transparency when considering the value of purchasing from us - you'll find we are the clear leader in providing you with the highest total value
70 Yr History Built on Trust	• Agilent is a measurement partner you can trust and one that will always be there for you
Customer Data Privacy	• Customers are Agilent's most valuable assets and we take every precaution to protect your privacy. Your information is not shared without notifying you or obtaining your consent and we give you the choice to opt-in or out.
Lifecycle Management	• Agilent provides a comprehensive suite of lifecycle services to minimize the cost of technology migration

|	
InfoLine Asset Management	• InfoLine provides convenient 24x7 online access to the resources and information critical to your operation's success (historical & technical info, service orders & notes, CAL & repair pricing, and more)
Environmental Sustainability	• Agilent's commitment to the environment is part of our corporate legacy and embraced by senior management world-wide - we are recognized as one of the Global Most Sustainable Corporations in the world
Business Management System	• Agilent's extensive Business Management System encompasses a customer focused quality policy, a single world-wide ISO9001 certificate, several ISO registrations (9001:2008, 17025, 14001), and an internal team of certified auditors.
Financing	...ers the broadest range of financial and purchasing ...fit your budget and desired financial structure
	...mmitted to ensuring your shipment arrives when ...d by seamlessly collaborating across our entire
	...success with access to over 200 application ...rting over 165 measurement standards world-
	...rvice provides higher uptime with like-new ...measurements you can count on
	...rld-class local language customer business ...tacts & support across the globe
Technology Refresh	• Ensure transitioning to new technologies is of minimal impact

Agilent Technologies
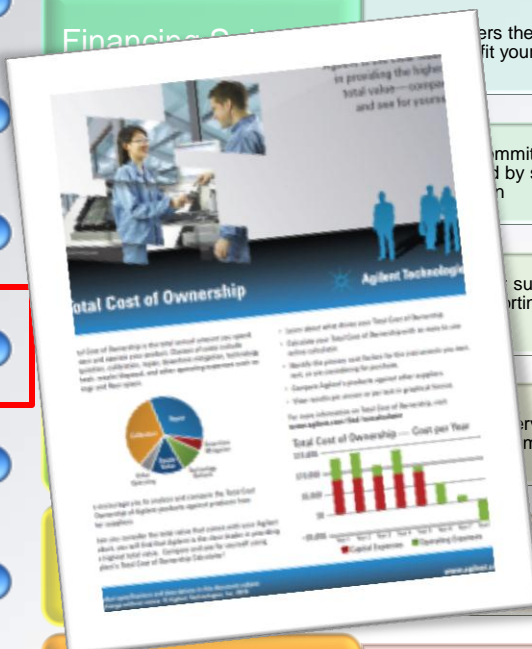
TCO(Total Cost of Ownership): 총소유비용

- 1997년 미국의 대표적인 컨설팅 회사인 가트너 그룹 (Gartner Group)에서 발표
- 기업에서 사용하는 정보화 비용에 투자 효과를 고려하는 개념
- 즉, 회사에서 전산 시스템을 도입할 때 단순히 초기 투자 비용만이 아니라 **도입 후의 운영이나 유지 보수 비용까지 고려하는 것**

- 한 대의 컴퓨터를 이용하는 데 드는 전체 비용
- 하드웨어, 소프트웨어, 업그레이드 비용, 상근 직원 및 훈련과 기술지원을 담당하는 상담 직원 급료 등을 포함

Agilent Technologies

Total Cost of Ownership(TCO)

Leader in highest total value

Understand total cost contributors

- Acquisition

- Calibration

- Repair

- Downtime mitigation

- Technology refresh

- Resale/disposal

- Operating expense

Quantify TCO

- Calculate for current assets, rentals, equipment being considered

- Compare Agilent with other suppliers

- View results per annum or per test

Agilent Technologies

Determinants of value
The most value, the best results

Minimal downtime, maximum contribution

Minimal cost

- Lower capital expense through amortization over long lifetime

- Lower maintenance cost through expertise for calibration

- Shorter downtime through reliable products

- Lower migration cost through code compatibility and expertise

TCO Operating Expenses (per year)

Preventive Maintenance

Product Migration

Downtime Mitigation

Corrective Maintenance

Operating Expenses

Capital Expenses (Acquisition)

Total Expenses

Agilent Technologies
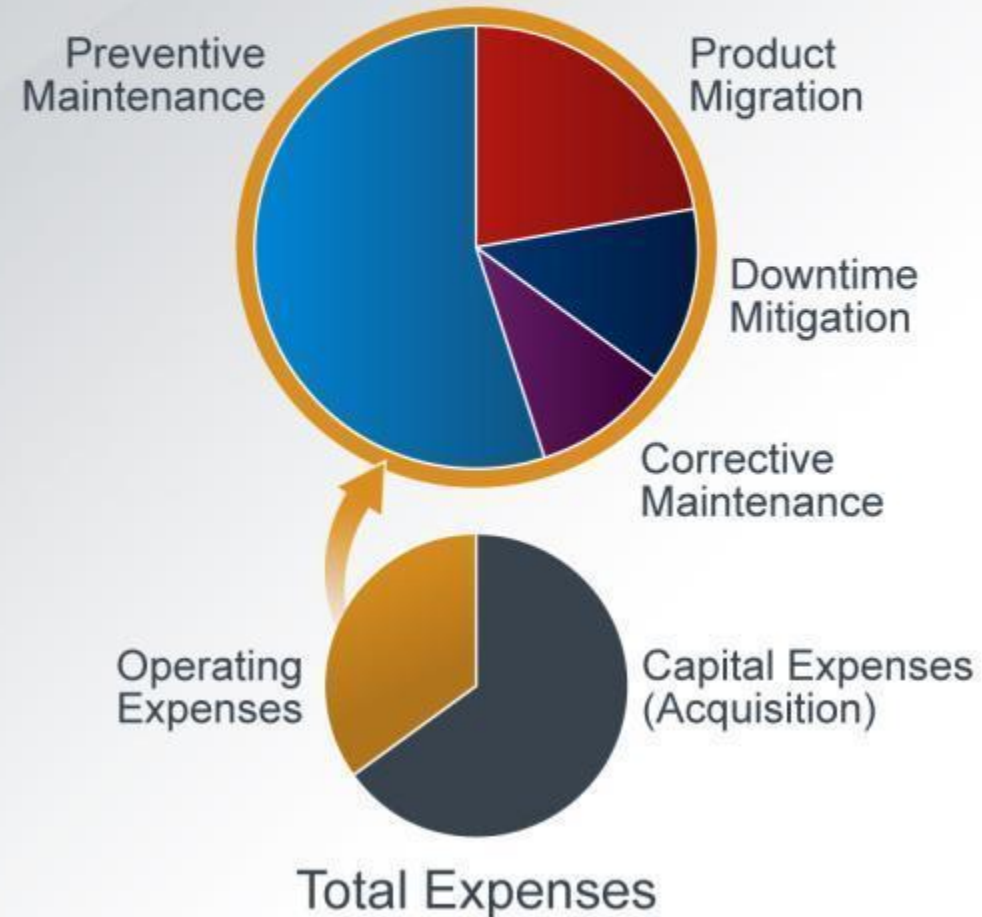
Why Total Cost of Ownership Is Important

Operating & Support costs typically exceed Procurement and Development costs!

33%

65%

■ Development Cost
■ Procurement Cost
■ Operating and Support Cost

← System Life Cycle →

Source: US Navy

Agilent Technologies
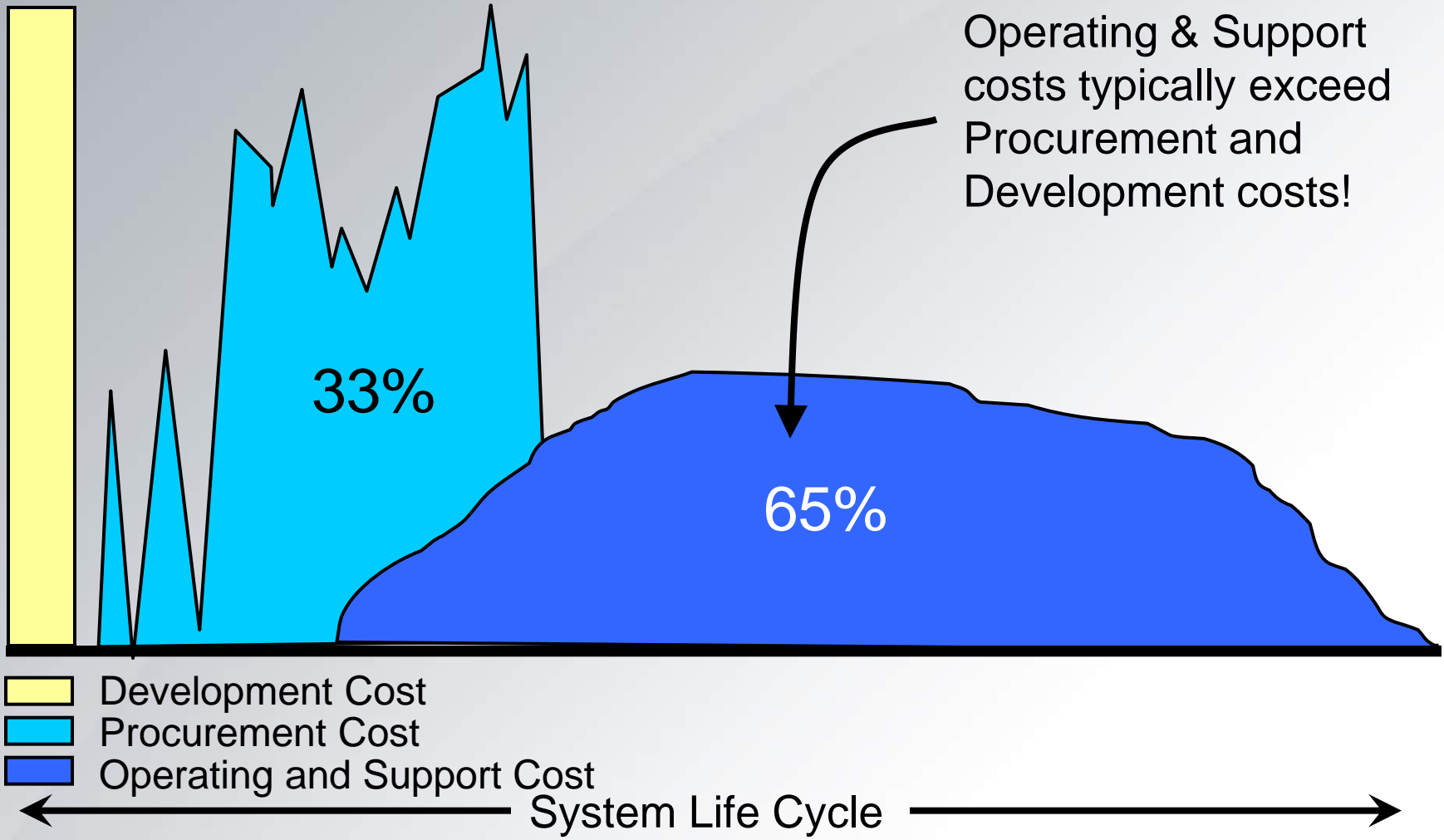
Total Cost of Ownership (Continued)

Leader in highest total value
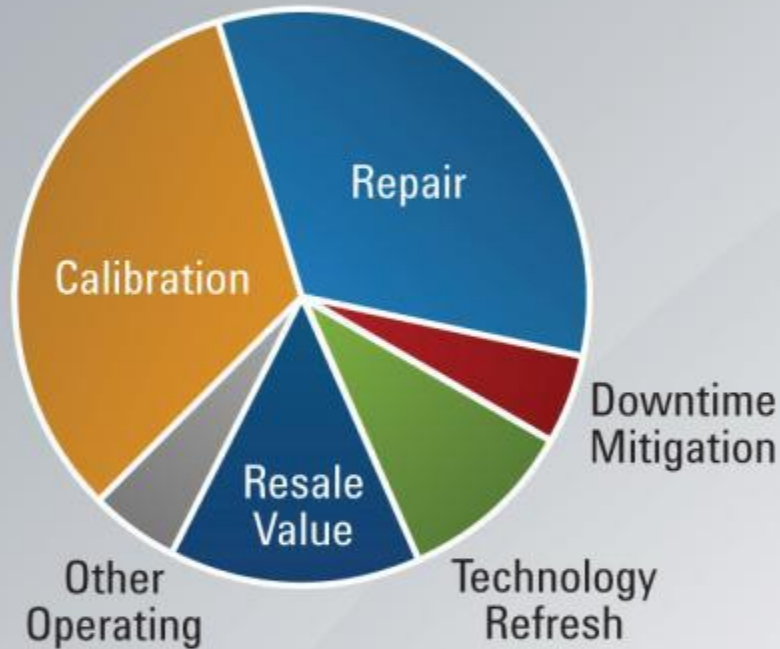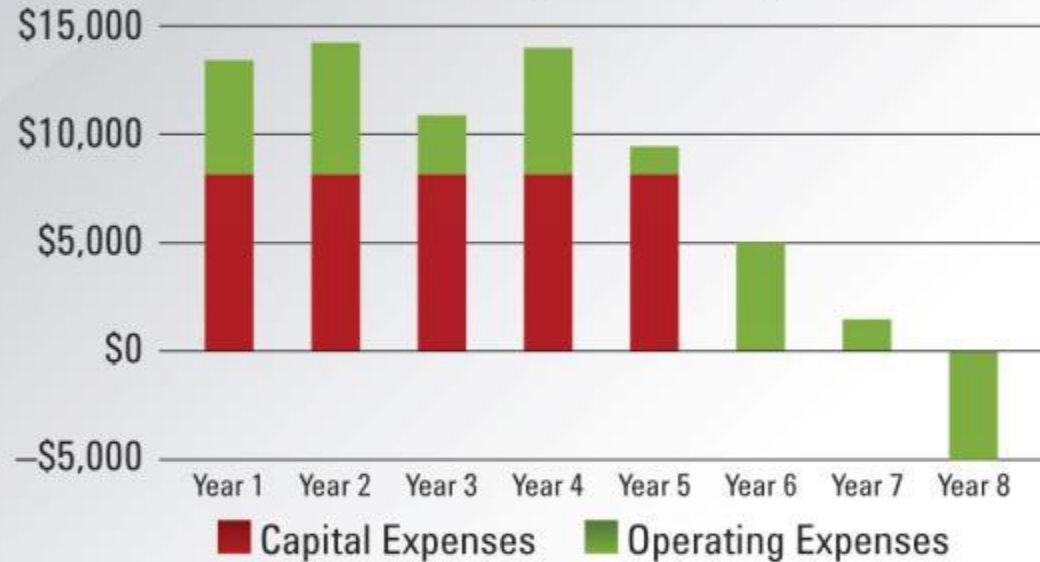
Case #1 – Migration from Agilent 8566 to Agilent PXA

For an equipment in a customer installed base, which do you think will be the main contribution to the Total cost?
- Capital Expense?
- Operating cost? Metrology? Maintenance?

Lifetime Total Cost of Ownership

	PXA	8566
Capital Expenses	29951	0
Operating Expenses	105462	256691
Metrology	78177	170784
Contracted Repair	17502	77560
Downtime Mitigation	2748	6000
Technology Refresh	5000	0
Training & Education	0	0
Energy	720	1032
Floorspace	115	115
Consumables	800	800
cables	400	400

Lifetime Total Cost of Ownership

PXA: Capital Expenses $29,951; Operating Expenses $105,462
8566: Operating Expenses $256,691

Lifetime TCO by Category of Operating Cost

	Metrology	Repair	Downtime	TechRefresh	Training	SubOther
Default	$78,177	$17,502	$2,748	$5,000	$0	$2,035
Default	$170,784	$77,560	$6,000	$0	$0	$2,347

Agilent Technologies
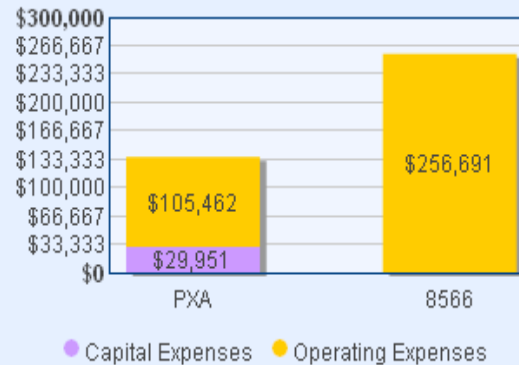
Case #2 – Compare Agilent EXA to ABC model

Lifetime Total Cost of Ownership

	EXA	ABC
Capital Expenses	10,378	23,900
Operating Expenses	24,209	81,635
Metrology	10,513	62,120
Per Incident Repair	3,901	9,720
Downtime Mitigation	0	0
Technology Refresh	0	0
Training & Education	8,000	8,000
Energy	480	480
Floorspace	115	115
Consumables	800	800
Other Costs (type to customize)	400	400

Lifetime Total Cost of Ownership

Lifetime TCO by Category of Operating Cost

Agilent Technologies
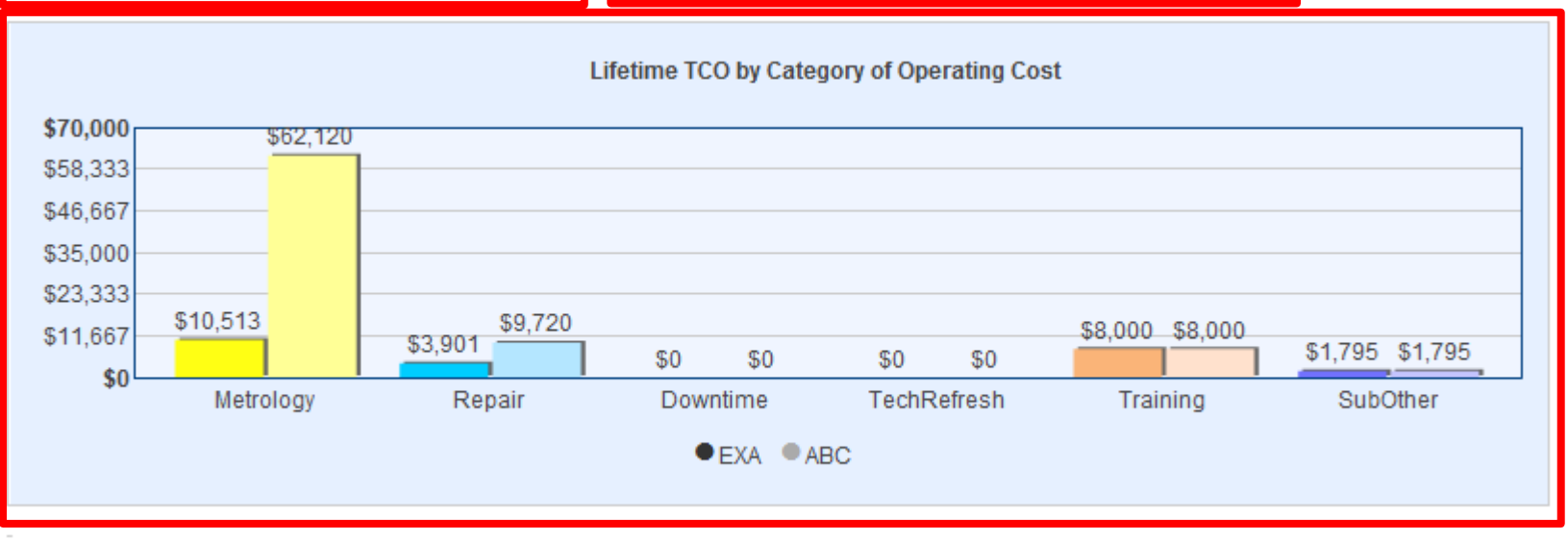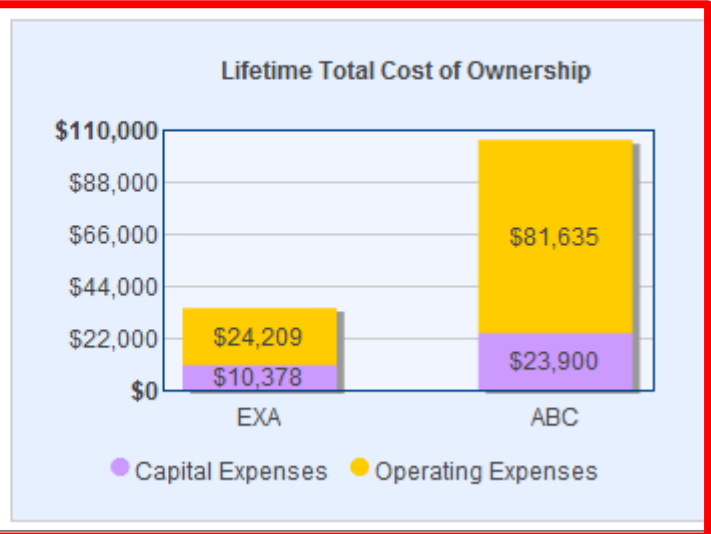
Agilent Advantage   # Why Buy Agilent

• **Highlights the Agilent Quality Policy**
• **Differentiates Agilent's Quality & Customer Experience**
• **Provides Agilent Quality Policy proof points**

http://www.agilent.com/find/the_agilent_advantage

• **Highlights Agilent's value beyond the product**
• **Differentiates Agilent beyond specs & features**
• **Provides 1-pagers on 21 value-added factors**

http://www.agilent.com/find/whybuy

Agilent Technologies

Value-based Purchasing Benefits

Value Purchasing is an approach to customers that focuses on how they can get more values for the customer's business through vendor's expertise, not just value from the use of the products

Value Purchasing benefits the customer in these ways:

- Enables customers to make the best choice of a vendor and solution more broadly, by examining the complete lifecycle (purchase-to-disposal)

- Refocuses scoping and needs of solutions for both the immediate and long-run

Agilent Technologies

Backup slides

Agilent Technologies

Helping you stay secure, informed, in control, and in compliance

Agilent customer data privacy

- Respecting and protecting privacy of data you provide

Agilent Instrument Service Notes

- Delivering up-to-date technical info on changes to products

InfoLine

- Providing window into Agilent's Repair and Calibration Services

Compliance

- Helping you comply with US Dept. of Defense Instrument Security program

Agilent Technologies

Fostering precision and quality, for you and Agilent

- Business Management System

- Backing our commitment to quality through extensive ISO certification

- A single ISO9001 Certificate world-wide

Agilent Technologies