GC Media Event – Little Falls

March 18, 2019
Safe Harbor

This presentation contains forward-looking statements (including, without limitation, information and future guidance on the company’s goals, priorities, revenues, operating profit and operating margin, expected cash flow, growth opportunities, customer service and innovation plans, new product introductions, financial condition and considerations, earnings, share repurchases, dividends, ability to access capital markets, the continued strengths and expected growth of the markets the company sells into, operations, operating earnings, and tax rates) that involve risks and uncertainties that could cause results of Agilent to differ materially from management’s current expectations. The words “anticipate,” “plan,” “estimate,” “expect,” “intend,” “will,” “should” “forecast” “project” and similar expressions, as they relate to the company, are intended to identify forward-looking statements.

In addition, other risks that the company faces in running its operations include the ability to execute successfully through business cycles; the ability to successfully adapt its cost structures to continuing changes in business conditions; ongoing competitive, pricing and gross margin pressures; the risk that our strategic and cost-cutting initiatives will impair our ability to develop products and remain competitive and to operate effectively; the impact of geopolitical uncertainties on our markets and our ability to conduct business; the impact of currency exchange rates on our financial results; the ability to improve asset performance to adapt to changes in demand; the ability to successfully introduce new products at the right time, price and mix, and other risks detailed in the company’s filings with the Securities and Exchange Commission, including our quarterly report on Form 10-Q for the year ended January 31, 2018.

The company assumes no obligation to update the information in these presentations. These presentations and the Q&A that follows include non-GAAP measures. Non-GAAP measures exclude primarily the impacts of acquisition and integration costs, transformation initiatives, and non-cash intangibles amortization. We also exclude any tax benefits that are not directly related to ongoing operations and which are either isolated or is not expected to occur again with any regularity or predictability, including the impact of Tax Reform. Most of these excluded amounts pertain to events that have not yet occurred and are not currently possible to estimate with a reasonable degree of accuracy. Accordingly, no reconciliation to GAAP amounts has been provided.
What Our GC Customers Are Telling Us

Shanya Kane,
Vice President for Agilent’s Gas Phase Separations Division
### Little Falls Site
- Completed in 1992
- Primary Location (Owned)
- 55 acres; 354,000 Sq. Ft.
- ~ 670 Employees
- R&D, Manufacturing, Marketing, Field Sales and Service, NA Contact Center
- Division Headquarters for Consumables, Gas Chromatography, and Services
- Includes Center of Excellence (Product Showcase and Applications Demos)

### Newport Site
- Agilent Operated Since 1997
- Leased Site
- 37,500 Sq. Ft.
- 95 Employees
- Manufacturing LC Columns & Microarray Substrates
Agilent in the Delaware Valley

F&M moves to Avondale, PA
A place to grow, with doubling year-over-year sales
1961

HP moves to Little Falls
Move to Delaware to accommodate expanding business units
1992

HP spins off Agilent
Biggest IPO in Silicon Valley: $2.1B
1999

1958
F&M Scientific Corp is established
Premier manufacturer of gas chromatographs

1965
HP acquires F&M
HP enters the analytical instrument market

1997
HP opens Newport site
New home for liquid chromatography columns and microarray substrates manufacturing

2017
Agilent celebrates 25 years in Little Falls
R&D, Manufacturing, Marketing, Field Sales and Service, Contact Center
With more than 50 years of GC leadership in routine use, many people assumed there was nothing more to innovate in GC.

Agilent does not rest on its laurels.
Leading Innovation in GC for Over 50 Years

7890 GC
- Multi-Mode Inlet
- Low Thermal Mass Technology
- 7000 GC Triple Quad
- 7200 GC QTOF
- 7890B GC 5977A MSD
- Large Valve Oven
- 8355 Chemiluminescence Detector

2010s
- 7890B GC
- 5977A MSD
- 7697A HS
- Inert Flow Path
- Retention Time Locking
- 2nd Gen Linear Electron Capture Detector

2000s
- 5840 GC
- AutoInjection
- Hyperbolic Gold Quad
- Microprocessor Control

1990s
- 5970 MSD
- Fused Silica Capillary Column
- Large Valve Oven
- AutoInjection
- Microprocessor Control
- 5880 GC

1980s
- 5890 GC
- Large Valve Oven
- AutoInjection
- Microprocessor Control

1970s
- 5880 GC
- Large Valve Oven
- AutoInjection
- Microprocessor Control

1960s
- 5840 GC
- Large Valve Oven
- AutoInjection
- Microprocessor Control

Intuvo 9000 GC System

The Agilent 8860 GC System

The Agilent 8890 GC System

The Agilent 8860 GC System

March 21, 2019
A Continued, Sustained Dialogue with Customers Drives Innovation

For the development of Intuvo, instead of leading with innovation, we first focused on understanding the changing GC environment and user demographics, as well as user pain points.

6 year development process – much of that in-bound marketing

12 thought leaders

Collaboration and consultation with 100s of key customers (GC operators, lab managers, GC scientists/technologists and enterprise customers)

Based on these learnings, Intuvo has gone on to transform the way GC is performed.
Lab Managers Shared their Challenges and Aspirations

58% cited improving efficiency as their No. 1 business objective

73% recognize downtime as their biggest challenge

52% rank developing staff as their No. 1 personal goal

Survey conducted globally in 2017
The Smart Connected Lab is The Future

Heralding ‘Industry 4.0’ – the 4th Industrial Revolution

1st 2nd 3rd 4th

Steam power and mechanization
Mass production
Computer and automation
Digitally enabled IoT ecosystems

Value greater than sum of its parts
Supporting the transformation of our customers’ businesses…

- Understanding their current and future objectives and their ongoing definitions of success
- Easing their operations by appreciating their business models (purchase, delivery, performance and support)

...And delivering on ALL these parameters
“To strengthen the relationship further, both companies agreed on a number of strategic initiatives, including the Advanced Technology Group, created to collaborate on new technologies.

By working in partnership with Agilent’s R&D team, SGS can shape, not only the development of the technology that customers and their clients will require in the labs of the future but also the creation of additional revenue-generating services.”
Supporting Customers to Achieve Their Vision for the Lab of the Future

Through the Lens of Gas Chromatography

Eric Denoyer, Director of Marketing for Agilent’s Gas Phase Separations Division
Continuously Improving GC User Outcomes

Better Outcomes

Warning lights    Maintenance Minders    Driver Lane Assist    Autonomous Self Driving?

80-90s    2000s    2016    Today
Continuously Improving GC User Outcomes

Warning lights | Maintenance Minders | Driver Lane Assist | Autonomous Self Driving?

80-90s
Integrators
Computer & RS232
Chromatography Data System

2000s
EMF Maintenance Minders
Retention Time Locking
Parts Finder

2016
On-Board Dual Core processors
Automated Diagnostics
Browser interface

Today
Next Generation Smart Connected GC Systems
GCs that grow smarter

Better Outcomes
Ease of Use
Efficiency
Skill Required

March 21, 2019
Smart Connected GCs Can Improve Outcomes

- 58% cited improving efficiency as their No. 1 business objective
- 73% recognize downtime as their biggest challenge
- 52% rank developing staff as their No. 1 personal goal

Survey conducted globally in 2017
How a Smart Connected GC Can Help Driving Lab Efficiency

- Reduce unplanned downtime
  - Lowering operating costs
  - Decreasing business uncertainty
- Assures delivery on commitments
  - Building trust with customers
- Enables optimum HR deployment and development
A Wealth of Information for Training and Development
Built into the Instrument Itself

GC Columns and Oven

GC columns are located inside a temperature-controlled oven. Generally, one end of the column is attached to the inlet, while the other end is attached to the detector.

Columns vary in length, diameter, and internal coating. Each column is designed for use with different compounds.

The purpose of the column and the oven is to separate the injected sample into individual compounds as it travels through the column. To aid this process, the GC oven can be programmed to speed the sample flow through the column.

The Agilent 8890 GC can accommodate up to six columns, identified as Column A through Column E.

The 8890 will have six Smart ID Key slots on the front of the instrument. These keys hold configuration information about the columns on the system. The Column Smart ID keys will define column information that could be transferred between GCs. After inserting a Smart ID key, you will be prompted to upload which number column (1-6) the key corresponds to. After setting the column number, set the inlet and outlet connections. The GC will then hack this column's configuration as long as the Smart ID Key remains installed.

After removing a Smart ID Key, the GC will provide a confirmation message to confirm that the key was removed. Once removed, if confirmed, the corresponding column can be either deconfigured, or left configured and unlocked.
What Makes a GC Smart & Connected?
Enabling Better Outcomes

Real Time Autonomous Monitoring
- Embedded sensors and dual core processors
- Self-aware – real time system status & configuration

Smart Algorithms
- Diagnostics and troubleshooting
- Health report

Think Like an Expert
- Draw conclusions; evidence-based recommendations
- Objective judgement of system readiness

Remote Mobile Connectivity
- Untethers staff from the lab to pursue high value activities
GC: Know Thyself  
*Aeschylus, Plato, Socrates*

**Self-Aware**
- Automatic recognition of inlets, detectors & EPC flow controllers

**Auto Configuration**
- Automatic inputs for setpoints and method parameters
- Reduces level of expertise to get up and running with fewer mistakes

**Diagnostic Tests**
- Faster troubleshooting & problem resolution

Referring to their Intuvo 9000 GCMS system for pesticides analysis: “At the 2018 European Pesticide Residue Workshop (EPRW) we presented a poster demonstrating a 67 percent drop in downtime…”

Designed-In Smart Consumables
Assuring Optimum Efficiency

Column Smart Keys
- Informs system of chemistry, configuration
- Tracks number of injections & temperature exposure
- Assures appropriate column being used, and facilitates setup

Gas Clean Filter with Smart Sensor
- Automatically senses when filter reaches capacity
- Alerts user through central user interface
- Assures system operating at its best
Automatic Leak Test
Smart 6th Generation EPC System

Front Inlet: Leak & Restriction Test

- Performs hands-free automatic leak testing behind the scenes
  - Automatic smart valve in EPC
  - Avoids samples run when system is not optimum; avoids sample re-run
  - Helps save expensive Helium

- State: Result
  - Total Flow Target: 4.000 +/- 2.000 mL/min
  - Total Flow Actual: 4.392 mL/min
  - Leak Rate: 0.392 mL/min

Close Test will update the tests info in the System Health Report

Test Complete  Close Test
How Expensive is a Leak?  
More Than You Might Think, Especially for a Global Enterprise…

<table>
<thead>
<tr>
<th>US$</th>
<th>Annual Cost Without He Conservation Module</th>
<th>Annual Cost With He Conservation Module</th>
<th>Reduction in Carrier Gas Cost</th>
<th>Annual Cost of 2 mL/min He leak ($300/cylinder)</th>
<th>Increase in Annual He Costs Without He Conservation</th>
<th>Increase in Annual Costs With He Conservation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTM D4815 Ethanol in Gasoline</td>
<td>$1,537</td>
<td>$356</td>
<td>77%</td>
<td>$1,123</td>
<td>1.7X</td>
<td>4.2X</td>
</tr>
<tr>
<td>ASTM D7405 Impurities in Monocyclic Aromatics</td>
<td>$3,774</td>
<td>$87</td>
<td>98%</td>
<td>$1,123</td>
<td>1.3X</td>
<td>13.9X</td>
</tr>
</tbody>
</table>

10 GCs $11,230  
200 GCs $224,600  
5000 GCs $5,615,000

The Golden Chromatogram Syndrome

Blank

QC Standard
Chromatographic Evaluation
Automatically and objectively assures system is ready for operation

- Reduces dependence on operator judgement to achieve expected results
  - Blank evaluation
    - Assures baseline is clean
  - Detector evaluation
    - Assures standard is as expected and detector response is at specification
- Improved method quality control and streamlines support and service
Lunchtime conversation: How’s it going in the lab?...
Smart Functions + Remote Mobile Connectivity
Access Lab When out of Lab or Offsite

Mobile + Diagnostics = a powerful combination

- Health report of configuration, history & diagnostic tests
- A huge body of information to help troubleshooting
- Transmitted digitally to a remote expert
- Can better inform a service engineer to identify the problem and arrive on site with necessary parts to fix the problem the first time
- Improves efficiency
Smart Functions + Remote Mobile Connectivity
Saves Considerable Time & Cost: Boosts Efficiency
Smart Functions + Remote Mobile Connectivity
Saves Considerable Time & Cost: Boosts Efficiency

Primary Center of Excellence
Offshore Oil Drilling Platform
Onshore Oil Drilling Field
Large Enterprise Fleets

Lab Manager Concerns

- Support
- Optimal geographical deployment
- Duplication
- Underutilization
- Consumables and spare parts costs and deployment
- Fleet readiness
Smart Connected Instruments + CrossLab Connect Services
Optimizing Asset Utilization & Fleet Management

Instrument Service Mode

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas Power</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Value</td>
</tr>
<tr>
<td>Helium Usage</td>
<td>6687.76 L</td>
</tr>
<tr>
<td>Hydrogen Usage</td>
<td>5122.18 L</td>
</tr>
<tr>
<td>Nitrogen Usage</td>
<td>4306.32 L</td>
</tr>
<tr>
<td>Air Usage</td>
<td>46861.63 L</td>
</tr>
<tr>
<td>Other Gas Usage</td>
<td>20233.43 L</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>493.07 kW-Hr</td>
</tr>
</tbody>
</table>

Asset utilization metrics

- Injections Methods
- No. service calls
- Service costs
- % utilization
- Age, vintage
- Uptime

CrossLab Connect Asset Monitoring Service

= Resource Optimization

Greater uptime
Consistent results
Improved Productivity

Optimized CapEx & OpEx
Technology Refresh

March 21, 2019
CrossLab Connect Services Enable Efficiency Gains
Three Global Engagements Demonstrate Significantly Improved Outcomes

Evaluated asset utilization and vintage to shift workload towards efficient instrumentation resulting in a 9% reduction of carrier gas consumption and a 35% increase in sample throughput.

Moved from calendar-based to usage-based maintenance service contracts for instruments. Resulted in 10% annual savings in service contracts over three years.

Provided insight to address a series of instrument failures and informed fleet right-sizing decisions which increased sample throughput by 41%.
Driving a More Efficient Digital Lab of the Future
Through the Lens of GC Examples

Smart Connected Instruments & Software

Drive lab efficiency

Smart Connected Consumables

Reduce unplanned downtime

Smart Connected Services

Better deploy & develop human resources

Lab Manager Goals

March 21, 2019
Agilent Supporting Labs to Advance Science and Improve Efficiency

The Transforming Analytical Lab

Supporting the transformation of our customers’ businesses...

- Understanding their current and future objectives and their ongoing definitions of success
- Easing their operations by appreciating their business models (purchase, delivery, performance and support)

...And delivering on ALL these parameters
Data Centric Software Systems
Enabling the Laboratory of the Future

Shawn Anderson,
Senior Director of Marketing for Agilent’s
Software & Informatics Division
Topics

1. Lab informatics today and tomorrow
2. How the cloud delivers value to the lab
3. OpenLab cloud capabilities
Customer Expectations are Changing
Informatics Systems Play an Even More Critical Role

- The lab exists to **answer questions** critical to the enterprise
- Workflow centric solutions **guide laboratories** in completing tasks
- **Driving efficient** operations
- **Enabling** non-specialist users
- **Recording** compliance and data integrity
- **Delivering** information security
The Current State of Laboratory Informatics
Were Not Designed or Optimized for Current Lab Expectations

Traditional Informatics

Stratified layers of products with limited interconnectivity, resulting in:

- Inefficiency
- Errors
- ‘Dark data’
- Manual actions
- People driven decisions
- Limited redundancy
- Heavy infrastructure requirements
- Iterative & unidirectional workflows
- Siloed data
We are Heading Towards a New Paradigm
Putting Data at the Center to Facilitate Decision Making

Digital ecosystems enable organizations to:

- Increase efficiency
- Enable automated processes
- Guide decision making
- Scale simply
- Collaborate
Implementing a Data Centric Paradigm Requires New Technology

Cloud
- Implement and upgrade faster
- Scale easily
- Recover simply
- Consolidate data

Our First Two Steps

UX
- Align workflow with interface and User Experience
- Access critical information on demand
- Understand your operations constantly

...and delivers new capabilities across all laboratory functions
Cloud Enabled Informatics Delivers New Values to the Laboratory

Enable Self-Service
Tools to self-service and maintain systems in the lab

Enable Analytics
Gain new insights for your lab

Realize Mobility
Flexibility to work from where you are and enable remote services

Access Expertise
Troubleshoot and train remotely

Collaborate
Access, collect, analyze and store your most valuable asset – data
Value is Also Realized Outside the Lab

- **Optimize Cost**: Pay for the capability you need, when you need it. Extract value from your assets rapidly.
- **Deliver Security**: Don’t worry about keeping up with details of security and technology.
- **Focus IT**: Spend time on the most important business goals.
- **Manage Data**: Simplify storage, archival, disaster recovery, and auditing.
Our Market Research has Uncovered Four Distinct Groups of Labs

- Global Enterprise
- Process Driven
- Expertise Driven
- Small to Medium Scale
One Example

Global Enterprise

**Top Cloud Values**

- **Optimize Cost**: Pay for the capability you need, when you need it. Extract value from your assets rapidly.
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**Considerations**

- Cloud is often driven top-down
- Optimization of IT spend is a big consideration
- Laboratories are frequently lagging
- Backup, disaster recovery, high-availability are key motivators

**IT Sophistication**
- High

**User Capability**
- High

**Lab Size**
- Large

**Geography**
- Global (not critical)
Global Enterprise

One Example

Top Cloud Values

- **Optimize Cost**: Pay for the capability you need, when you need it. Extract value from your assets rapidly.
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**Considerations**
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Different Labs Often Require Different Solutions

- Global Enterprise
- Process Driven
- Expertise Driven
- Small to Medium Scale
Agilent Provides Choices for Deploying in the Cloud

OpenLab CDS* in the cloud
Global Enterprise customers have deployed CDS in the cloud to centralize system management and data, increase efficiency, and reduce operating cost.

This solution lowers cost in a number of ways but one of its other benefits has been the improved communication between groups.

Global Consumer Products Lab IT

OpenLab CDS Cloud Storage
A simpler first step for the other three customer types: Quick connection to Amazon S3 file storage*

*Requires an Amazon AWS account and existing S3 storage/bucket locations.
Informatics Will Enable Wise Laboratory Practice
Systems Connecting the Dots to Answer Enterprise Questions

1. Lab informatics must deliver new insights

2. The value of cloud depends on the lab and situation

3. OpenLab is in the cloud today and will continue to evolve

Actual screen capture of OpenLab Sample Scheduler
ACG Services: Providing Insight to Affect Customer Outcomes

Kristin Giffin,
Vice President and General Manager for Agilent’s Services and Support Division
Agilent CrossLab Provides Various Products and Services to Address Key Issues

Providing Trusted Answers to Deliver Scientific, Operational and Economic Value
We Recognize Our Customers Face Key Challenges in Their Laboratories

Customers’ #1 concern is **minimizing unplanned instrument downtime**; they need to know instruments are being properly maintained to ensure highest uptime.

Customers are looking to **increase the workloads on their instruments** to get more return from their investment.

They want to ensure the instrument is functioning at its best to ensure the **most accurate results**. Well maintained instruments are high performing instruments.
We support GC Customers Throughout Their Workflow

As a world leader in GC and GC/MS systems, we offer all the necessary components for GC analysis with flexible, modular systems for a wide range of uses.

We have millions of touch points with customers every year so our expertise and experience with these products is unmatched.

We bring this experience into our product design working hand in hand with our GC teams to provide unified, integrated Services and Support.

By providing sustained support, and indeed engaging in a dialogue with our GC customers throughout the lifecycle of their GC instrumentation, we ensure that we are able to innovate with their real-life concerns at the front of our minds.
Smart Alerts: GC/GCMS

From a deep seated understanding of our GC/GCMS customers (including early Voice of Customer research) we have been able to turn this into tangible action; the development of Smart Alerts for our GC systems, which specifically address concerns around preventative maintenance.

A new, usage-based approach to instrument maintenance is needed

“The biggest help for us would be a software tool that helps us schedule based on instrument condition/use rather than the schedule-based model.”

“Approximately 30% of our instruments are heavy use, and those are the ones we would like real-time data to determine the PM schedule.”

US lab

An email-based notification model is preferred

“An email notification would be the most helpful. With an open access model with 20 users, the users won’t always act when an instrument alert comes up.”

“I’d like to receive an e-mail 1-2 weeks in advance notifying me PM is due.”

US lab
From a deep seated understanding of our GC/GCMS customers (including early Voice of Customer research) we have been able to turn this into tangible action; the development of Smart Alerts for our GC systems, which specifically address concerns around preventative maintenance.

Offering multiple solutions for different customer situations

“Our company does not allow remote extra-network connections.”

European lab

“We are interested in a standalone solution.”

Japanese lab
From a deep seated understanding of our GC/GCMS customers (including early Voice of Customer research) we have been able to turn this into tangible action; the development of Smart Alerts for our GC systems, which specifically address concerns around preventative maintenance.

- Security/on premise solution
- Delivers technical insights and recommendations based on testing
- Potential for a continuum of connectedness
- User experience – customer installable, user interface
- Simplified, seamless transaction access to Agilent (consumables, maintenance, etc.)
- Enables customers to leverage usage data in new and valuable ways
But What Exactly is Agilent ‘Smart Alerts’?

‘Smart Alerts’ easily installs on any PC in the lab. It monitors instrument usage (or ‘health’), and provides recommendations on instrument maintenance based on actual usage (sample volume and applications) and insights provided by Agilent. It notifies laboratory personnel when to consider replacing key instrument consumables and when to perform preventive maintenance. Labs get one consolidated email for instruments across your lab.

- Unscheduled downtime is reduced
- Efficiency is promoted with easy access to information which offloads tedious tasks for Lab Managers
- The result is that GC labs can perform at unprecedented levels of throughput
Making ‘Smart Alerts’ Available Across the GC Franchise

• Feedback on the application for Intuvo has been positive so far; an environmental lab in Shanghai, China has spent the most time with the application:
  - “Smart Alerts is making the proactive and timely provision of the maintenance information and instrument status reports we require.”

• Significant growth is expected with the new version:
  - “I’m waiting for the 7890 release to increase my usage” US chemical customer
Constantly Improving the Customer Experience

- The Agilent team listens to our customer’s needs and develops innovative solutions that fit their workflow
- Our solutions will get even smarter over time
- We are very focused on innovating our business processes and expanding our digital offerings as well as working on world class instruments
  - Digital interactions
  - Flexible spend programs
  - End to end customer experience
  - Agilent University for education
- The Services team will meet our customers needs by providing insights that lead to improved outcomes

“There is a dramatic difference in the level of quality through the ordering, installation scheduling, follow-through, etc. above your competitors. It does NOT go un-noticed.”

“The online has really streamlined a lot of things for us. We did not have to email back and forth.”

“It's online and automated. It is better than most vendors.”