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Danaher Corporation: The Hach SL1000 Portable Parallel Water Analyzer

Early in April 2014, the Hach subsidiary of global science and technology leader Danaher Corporation (Danaher) was about to introduce an innovative handheld water quality testing device: the SL1000 Portable Parallel Analyzer (PPA). Development of the PPA had been guided by extensive market analysis and executed under Danaher's rigorous product development system. It had cleared a number of important hurdles including an earlier proposal review to determine whether to proceed with the significant investments required to develop the device and build a production line to produce it. There were, however, some critical decisions left regarding how best to bring the PPA to market, and responsibility for these decisions rested with Olaf Boettger, the Business Unit Director of Hach's Laboratory Solutions division.

The remaining decisions focused on two areas: the exact timing of the launch and how the PPA would be priced and promoted. As for timing, the device itself was ready for market—it could easily and reliably indicate the presence of selected chemicals where selection was made by inserting up to four of a suite of prepackaged chemical reagents, specifically designed for the PPA (the Hach-patented Chemkey™ cartridges). There were many good reasons to bring the innovation to market as soon as possible, not the least of which was to start generating a return on significant capital investments. But although five of the seven planned Chemkey cartridges were ready for production, the two that were experiencing challenges in development were vital to one desirable segment of customers. Furthermore, even though the device and cartridges functioned well and approval by the Environmental Protection Agency (EPA) for use in regulatory reporting contexts was expected, that approval had not yet been given.

As for pricing and promotion, the PPA had recently been subject to an intensive customer-focused review that included a broad set of constituents, both inside and outside the company. This review was emblematic of the way Danaher had been shifting its emphasis from a traditional strength in Lean manufacturing toward a combination of Lean and organic growth generation—customer-focused thinking was considered key to achieving above-market organic growth. It was clear the PPA provided a unique and desirable set of capabilities; however, there were alternatives in the market and, complicating the decision further, competing products sold by Hach. Also, a price decision had to be made for both the PPA device and the Chemkey cartridges. These prices would have to be set to balance a wide range of competing objectives, such as the tradeoff between market share (low prices) and profitability (high prices). The remaining promotion issues centered on the exact message to send to customers.

It was clear to Boettger, as he prepared for a meeting with key internal PPA decision makers, that the issues before him touched a wide range of stakeholders both within and outside the company. For example, the sales team at Hach had been hearing about the PPA for years and was excited by the prospect of discussing the device with customers, but was hesitant to do so without EPA approval. Similarly, the marketing team was

This field-based case was prepared by Marc Lipson, Robert F. Vandell Professor of Business Administration. It was written as a basis for class discussion rather than to illustrate effective or ineffective handling of an administrative situation.

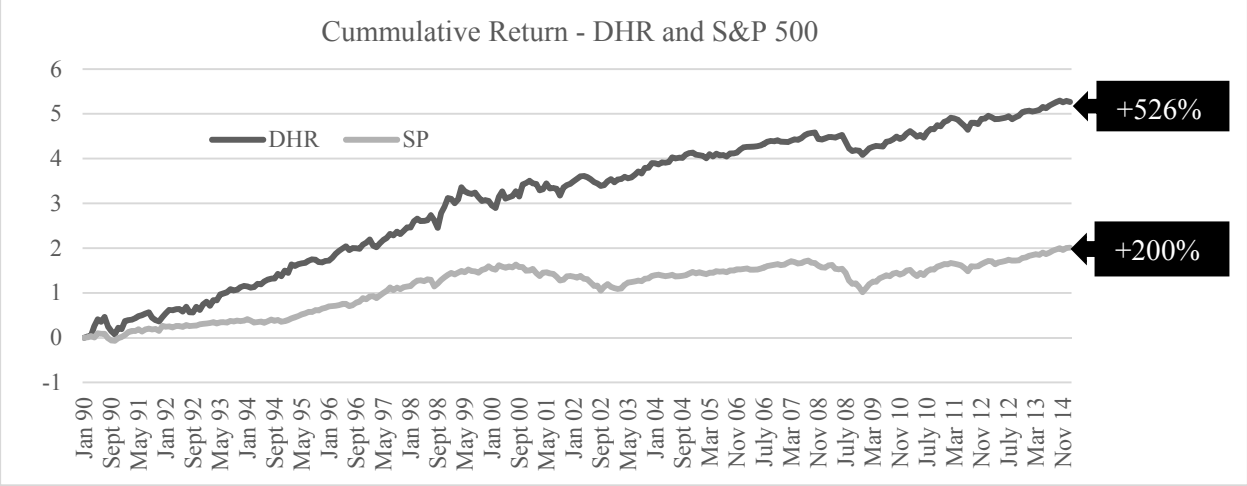
eager to launch and make a big impression at a major upcoming the trade show, but was hesitant to do so without the last Chemkey cartridges. The operations team was pushing to get started as it already had parts sitting in inventory and a manufacturing team trained and ready to go. Those responsible for financial analysis of the project were concerned about how the final pricing decisions would affect their assumptions regarding profitability and cannibalization of other Hach products. Boettger was looking forward to hearing the insights and opinions of his team.

Danaher Corporation and Danaher Business Systems

Danaher was a global *Fortune* 200 company that generated almost $20 billion in revenue in 2014 from a portfolio of operating companies that spanned five business segments: Test and Measurement, Environmental, Dental, Life Sciences and Diagnostics, and Industrial Technologies. As recently as 2005, Danaher was largely focused on a core set of manufacturing companies but had expanded its scope and reach, including moving the company profile toward science and technology and focusing on markets that had a higher potential for organic growth. Financial statements for Danaher are presented in **Exhibit 1** (income statement) and **Exhibit 2** (balance sheet). In the 2014 annual report, Danaher emphasized that 3.5% of the 4.2% growth in revenue had been achieved from core existing operations and that operating margins had improved by 65 basis points.[1] The company further emphasized the importance of innovation, pointing out the approximately $4 billion in revenue from products launched in the last three years and the approximately 6% of sales it invested in R&D each year.

Danaher's overall performance as a company was clear from a graph of its stock price relative to the S&P 500 since 1990 (**Figure 1**). Although the S&P 500 had provided about a 200% return over those 24-plus years, Danaher's stock (symbol DHR) had provided a 526% return—more than two and a half times as high as the return from an investment of similar risk.[2]

Figure 1: Cumulative return for Danaher (DHR) and the S&P 500 (SP) since 1990.



Data source: Center for Research in Securities Prices (CRSP).

[1] Danaher Corporation annual report, 2014.

[2] A common measure of risk is the beta of a stock. The beta of DHR relative to the S&P 500 Index since 1990 was close to 1.00, suggesting an investment in DHR was about as risky as an investment in the S&P 500 Index.

Both inside and outside Danaher, this performance was regularly attributed to Danaher's ability to develop outstanding operators and general managers who delivered results through application of its Danaher Business System (DBS). Analysts at Barclays specifically addressed the question of whether a company's business systems could drive stock performance and concluded that "it only does if it leads to higher growth, higher returns and/or less business model risk," and only if those systems are "not static but adaptive, changing as the world changes."[3] They then observed that Danaher likely could provide "all three drivers (growth, margin, lower risk)" and had "the most adaptive of the business systems out there."[4] Barclays was not alone. Around the same time, J.P. Morgan titled a portion of its report on Danaher, "There's no BS like DBS,"[5] and analysts at Goldman Sachs wrote, "While peak margins are a potential concern elsewhere in our coverage universe in the context of a low growth environment, we remain confident that DHR will continue to drive both top-line and operational improvements through DBS."[6] Danaher itself was quite clear on the matter—at the 2013 shareholder meeting one slide stated simply that "DBS is our sustainable competitive advantage."

Danaher described DBS as both a culture emphasizing continuous improvement as well as a set of tools or structures that drive performance. The tools and structures were organized as follows (**Table 1**):

Table 1. DBS tools and structure.

DBS Fundamentals	DBS Fundamentals tools were the foundation of DBS, rooted in Danaher core values. The eight DBS Fundamentals tools applied to every associate (Danaher employee) and function across all Danaher Operating Companies. When applied with discipline, these processes helped Danaher businesses expand capabilities, drive consistent execution, and sustain outstanding results.
DBS Growth	Danaher's approach to growth was organized into three areas—Dream, Develop and Deliver. Known collectively as the 3D framework, the DBS Growth tools were the key levers Danaher had to help its Operating Companies outperform the market. Dream—generate stronger ideas through deeper customer insights. Develop—improve returns from investment in research & development. Deliver—improve execution to increase and accelerate growth.
DBS Lean	DBS Lean tools helped Danaher maximize value for customers while minimizing waste. Lean tools were used to improve Safety, Quality, Delivery, and Cost in every function and area of Danaher's businesses.
DBS Leadership	DBS Leadership was a structure for associates to develop the knowledge, skills, and behaviors to be great Danaher leaders.

Source: Created by author based on company documents.

[3] December 13, 2013 Barclays analyst report on Danaher Corporation, 1.
[4] Barclays, 1.
[5] December 13, 2013 J.P. Morgan analyst report on Danaher Corporation, 1.
[6] December 12, 2013 Goldman Sachs analyst report on Danaher Corporation, 1.

Most important was to understand how DBS had evolved over time. The early emphasis at Danaher was on Lean manufacturing—a skill that was central to its success in its core markets at that time—and the DBS toolkit at that time was particularly well tuned for a business-to-business model. As Danaher grew into new markets and sought to excel at innovation and drive growth, the company needed to take the fundamental insights of the DBS tool set and adapt them to end users in order to embrace a business-to-customer understanding of its operations. This led to an expansion of DBS with, for example, added emphasis on Voice of Customer (VOC) analysis. An internally generated illustration of this transformation is reproduced in **Exhibit 3**. It shows the history of the company, the evolution of DBS from Lean to a combination of Growth, Lean, and Leadership (acknowledging that DBS had its roots in the famous Toyota Production System), and some acquisitions that illustrated the expansion into science- and technology-focused markets.

Danaher and Growth

The evolution in DBS toward an emphasis on customer tools was consistent with, and driven by, a shift in focus toward growth. When a company has built a set of skills that could generate positive results, the next step would be to find more opportunities to deploy those skills. Danaher was well known for using acquisitions as a vehicle for creating value—acquiring a company that fit the Danaher target portfolio and using DBS to improve performance, often by eliminating waste and taking out cost. More recently, Danaher has extended DBS to focus increasingly on growth and how it can drive market share gains by improving capabilities and processes in product and strategic marketing, digital and web marketing, sales effectiveness and execution, and product development.

In his letter to shareholders in 2014, President and CEO Thomas P. Joyce summarized the shift in a discussion of allocating internally generated resources. He noted that the company had to make "tough-minded decisions about where to invest" and that:[7]

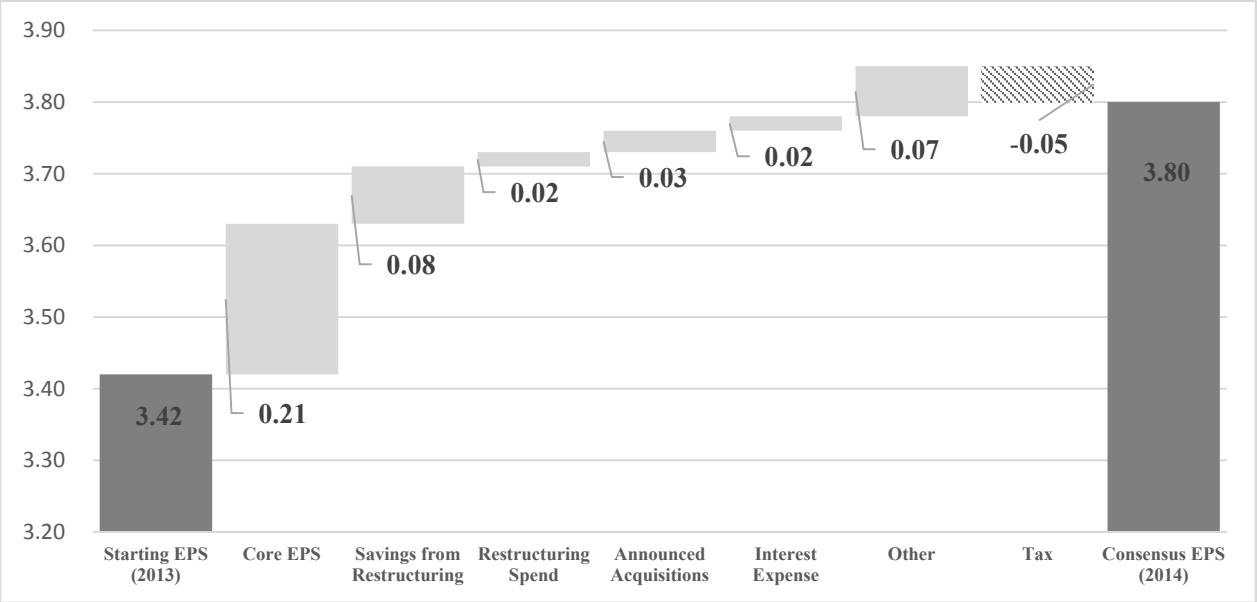
> For some of our businesses, the highest impact organic opportunities will be in new product innovation. Others will focus on digital investments. Still others will work to grow in the high growth markets. In every case, we will be thoughtful about creating the greatest value for our customers and, ultimately, seizing the best organic growth opportunities.

While the focus on organic growth was not a new concept on its own for Danaher, the combination of deploying more of the DBS tools and mindset to the growth agenda together with a diversified science and technology portfolio of businesses that had a higher growth profile was something Danaher leaders hoped would result in above-market organic growth over time.

When it came to how the emphasis on growth was shaping the future of Danaher, a good illustration was the expectations at the end of 2013 for 2014 earnings per share (EPS). The analysis in **Figure 2** was from a Credit Suisse analyst report which, in turn, used information provided by Danaher.[8] It was a typical analysis that walked the reader from current results—the 2013 earings-per-share (EPS) level which, while not officially reported at the time, had fairly clear guidance from the company—to a forecast for the next year (the anticipated 2014 EPS level).

[7] Danaher Corporation annual report, 2014.
[8] Credit Suisse analyst report, December 12, 2013.

Figure 2. Credit Suisse walk to EPS (U.S. dollars).



Data source: Credit Suisse equity research report December 12, 2013.

The major adjustment, an increase of $0.21, was from an assumed 3% core growth at a 40% operating margin. Previous expenditures on restructuring would generate improvements leading to an additional $0.08 EPS gain. While Danaher would continue to spend on restructuring, the amount of that spending would be reduced relative to 2013, adding another $0.02 in EPS gain. Announced acquisitions would bring in another $0.03, restructuring of debt (less debt and lower interest rates) would save $0.02, and other activities would lead to a further increase in EPS of $0.07. Finally, a reduction in R&D tax credits relative to 2013 would lead to a $0.05 higher per-share tax expenditure.

The key conclusion from the walk was that the expected 11% growth in EPS was very much driven by organic growth in core businesses. More than anything, this illustrated how Danaher had repositioned the company. In 2005, high-growth markets such as China, India, and Russia accounted for about 10% of annual revenue—by the end of 2013 these markets accounted for about 26% of annual revenue.[9] Acquisitions were still an important part of the Danaher strategy, but in this analysis it is clear that "Leaning out" an acquisition was only the first step in gaining value—the second step was understanding customers well enough to generate organic growth by identifying needs and successfully addressing them.

Hach and the PPA Market

A perfect example of the evolving nature of Danaher and DBS in 2014 was the PPA device that was developed by the Hach operating company. Hach was in the Environmental reporting group and leveraged its expertise related to water quality.

The PPA would be used by technicians testing water quality. The target customers were municipal drinking water facilities. Water quality needed to be tested numerous times and at numerous locations. A variety of tests might be needed. These facilities were usually managed by a local government, but it was also common for the

[9] Danaher presentation at 2013 shareholders' meeting.

municipalities to contract with large national or multinational private water companies to produce and distribute water. There were also water wholesalers that acted as a consortium of smaller municipalities. They would treat water and sell it to the affiliated municipalities that would test water quality and distribute it to consumers. Thus, in addition to directly engaging with the municipal facilities, Hach could approach the market through the private water companies or wholesalers. This meant there were quite a few very large players in the market: the larger municipalities, private water companies, and wholesalers.[10]

There were two common methods used for drinking water disinfection, chlorination (which used free chlorine) or chloramination (which used a combination of monochloramine and free ammonia). Chlorination systems needed to measure only free chlorine to ensure quality and optimally manage the process. Chloramination offered advantages and disadvantages relative to free chlorine systems. The advantage was a more stable, longer-lasting disinfectant that did not react readily to make harmful disinfection by-products. The disadvantage was a more complicated, and in some ways difficult to manage, chemical process that must be carefully controlled. The chloramination process ensured quality by measuring only total chlorine, but to optimally manage the process one needed to monitor four parameters: total chlorine, monochloramine, free ammonia, and nitrite. The PPA would be very attractive to those customers using chloramination as it could measure those four parameters quickly and accurately.

Technicians had been using essentially the same process for the last quarter century: collect a sample of water, add a selected chemical (reagent) that would react with whatever they were trying to measure (analyte), and observe the resulting chemical reaction to determine the extent of the analyte in the water. By 2014, these technicians were part of a work force with many years of experience. They also had preferences for accurate, easy-to-use measurement systems. It was often the case that the technicians were the ones who might bring to the attention of decision makers the availability of new technologies that might be adopted (the decision makers were those who would authorize the expenditure for new equipment).

Every municipal water facility needed to ensure adequate disinfectant throughout the distribution system. As noted above, this was ensured by testing for minimum levels of either free chlorine or total chlorine in treated water. These two tests are mandated by the EPA, which must also approve the testing method used for these required reports. The PPA (along with Chemkey cartridges) represented a new method of testing and, therefore, the EPA needed to approve the PPA tests for free chlorine and total chlorine. While municipalities could still use the device for process control, without EPA approval for regulatory reporting purposes, demand would be limited.

The PPA was simple to use. The technician selected a desired set of tests by plugging in up to four Chemkey cartridges (selected prepackaged reagents), the device was placed into a sample of water, the device conducted the four selected tests as well as executing some other standard measurements, and the results were stored electronically for later retrieval. This provided some clear advantages over the traditional technology, most importantly that multiple tests could be conducted in parallel, offering significant time savings. The ease of use of the PPA and its high degree of standardization also allowed municipalities to use less highly trained technicians—an advantage as the current population of technicians retired and highly trained replacements were more difficult to find. A picture of the device is presented in **Exhibit 4**.

[10] There are at least 155,000 drinking water systems in the United States alone (http://www.epa.gov/dwreginfo/information-about-public-water-systems), and the water analysis, automation, meter, and control market was estimated to be worth $16.3 billion in 2016 (Global Water Intelligence 2016 report).

Development of the PPA

The PPA was developed over five years with extraordinary attention to customers every step of the way. **Exhibit 5** presents internal documents that show some of the DBS tools that were used in the development of the PPA, a description of the tool, and statement as to how the tool was used for PPA. Of particular importance were insights generated about the unique characteristics of the chloramination market that drove the decision to have the PPA process four tests in parallel.

Another example of how the DBS process benefited the PPA was an important late-stage change brought about by customer input. The PPA was essentially complete, and prototypes were shared with a sample of customers. Although the unit functioned as expected, the surprising insight was that the customers did not like the data management system in the device. A technician would typically go from 5 to 10 sites a day to test a water system, and this would happen regularly, possibly at daily or weekly intervals. Initially all the data from these tests would download from the device perfectly well, but with no organization other than time and date. The PPA data system was changed to allow the technicians to input their route and the downloaded data would therefore already be organized in a more understandable manner. This became an important new feature of the device.

To further appreciate the state of the PPA development as of April 2014, one should understand the tollgate process used by Danaher companies. At various points in the development process, the product was carefully evaluated before moving on to the next stage. Danaher's tollgate-driven development process resembled the stage-gate process used by many other industries and companies globally. A critical tollgate for the PPA was the decision in 2010 to proceed with development of the device after VOC data indicated there could be strong demand for such a device. This was a big step because the investment level was relatively large for two reasons. First, two research teams were needed for the device—one focused on the device (the design of the PPA itself), and another focused on the chemicals (the reagents and related chemical reaction issues associated with the Chemkey cartridges). Second, manufacturing of the PPA would require substantial investment in a new production line.

The tollgate process was important as it reduced the business risk associated with product innovations. The PPA had started as an innovation in response to customer needs, had proceeded through steps that ensured the product was exceptional at delivering on its performance promise, had met hurdles intended to evaluate the economic profitability of the product, and was continually improved along the way.

The PPA Launch

Commercialization of the PPA was complicated in part because Hach was a water-quality leader and therefore had existing offerings in this space. In particular, Hach had two much simpler devices (the DR 900 and HQ40d) that used premeasured packets of reagents marketed as Powder Pillows instead of Chemkey cartridges. The prices of the Hach devices and those of competing devices, along with the prices of a sample of the premeasured packets, are shown in **Exhibit 6**.

As for devices comparable to the PPA, there was only the Sensicore device produced by a subsidiary of a large (*Fortune* 100) conglomerate. The price of a Sensicore was about $3,000. The Sensicore consumable structure was different than the Chemkey cartridges as its consumable was multiuse. The chips inserted into the device ranged in price from $250 to $500 for 50–100 uses. Price per test, therefore, ranged from $0.20 to $1.00; however, the chip expired 60 days after the first use, so tests not used within that timeframe were wasted.

The pricing decision—for the PPA and the Chemkey cartridges—had to be made with acknowledgement of both the competitive landscape and the possibility of cannibalization of Hach's own business. As Boettger summarized the situation at the time of the launch, "Even though we had considerable Voice of Customer materials with more than 9,000 customer touch points, I felt that we didn't really have a good commercialization strategy for the launch."[11] The core challenge was to help customers justify the upfront cost (investment) associated with owning a device. For the meeting with his team, Boettger had a list of questions.

1. Delaying launch: If Hach were going to launch and promote the PPA at the American Water Works Association (AWWA) annual conference and exposition (the largest relevant trade show in the United States) in June, it had to commit to that launch date in April. There were two reasons to delay. Of the four Chemkey cartridges needed to optimally manage a chloramination disinfection process, only two (total chlorine and monochloramine) were ready. The remaining two (free ammonia and nitrite) were not fully developed. Three other Chemkey cartridges (not used in the chloramination process) for the PPA were ready. There was also the question of EPA approval. This approval was expected but not yet obtained. Thus, the question was whether to delay launch until all seven tests were ready and EPA approval was obtained.
2. Pricing the PPA and Chemkey cartridges: Pricing was a key decision. A lower price point for the PPA would generate increased demand for the Chemkey cartridges, essentially locking in a revenue stream as the Chemkey cartridge was consumable. Revenue from consumables was anticipated to be an important source of growth at Danaher.[12] Of course, the two decisions were interrelated since the PPA could only be used with Chemkey cartridges. While there was an emerging consensus to price the PPA device close to the price of the Sensicore device, there was a very wide range of opinions on pricing the cartridges. The sales team advocated for prices very close to competitor prices to ensure adoption of the PPA technology. The marketing team proposed prices about one and a half times the market price given the advantages of the device. The finance team noted that Hach had made very substantial investments in development and production facilities and argued that pricing about three times the market would be appropriate to ensure a reasonably quick return on those investments. There was also discussion regarding the possibility of approaching the pricing decision differently for the two most common cartridges (those testing for free chlorine and total chlorine that were needed for regulatory reporting) and the remaining cartridges.
3. Messaging to customers: The PPA would clearly save technicians time. For a typical site visit to evaluate four water characteristics, the PPA would reduce the measurement time from 30 minutes to just 8 minutes. The Chemkey cartridges would allow a higher degree of standardization of reagent additions and therefore increase the reliability of the tests—a point that needed emphasizing while at the same time not disparaging current Hach products addressing this market. The device would store data for later analysis. The device simplified testing substantially. What was the exact message that needed to be communicated to potential customers? What were the critical capabilities and how would these be marketed?

Some decisions related to the launch had already been made. For example, the decision was made fairly early to engage critical customers in the development process. This could be risky because anticipation of a product innovation might hurt short-term sales of competing internal products; however, customer involvement was too important in this case. In fact, there was a strong sense that the PPA product-development process had pushed DBS to move even more clearly toward a customer focus. For example, the PPA launch

[11] Case writer conversation with Boettger.

[12] At the 2013 meeting of shareholders, Danaher estimated that consumables added substantially to recurring revenues and these revenues would account for greater than 40% of total revenue. For the Hach operating company, the estimate was that consumables would bring in two to three times the revenue of device sales with a useful life of from 8 to 10 years.

made use of Design Thinking, a new set of tools for understanding the customer experience, which was based in part on the concepts developed by Darden School of Business Professor Jeanne Liedtka. Another decision already made was to launch the product in the U.S. market alone rather than a coordinated global launch.

It was clear to Boettger that the PPA had been well positioned for success thanks to the DBS process and some of the refinements and extensions of DBS that had been employed for the PPA development. With thoughtful resolution of these final questions, he was confident the PPA was going to be a clear winner for Danaher and one that contributed strongly to Danaher's growth objectives.

Exhibit 1

Danaher Corporation:
The Hach SL1000 Portable Parallel Water Analyzer

Income Statement
(in millions of dollars for 12 months ending December 31 of year indicated)

	2014	2013	2012
Revenue	19,914	19,118	18,260
Cost of Revenue, Total	9,471	9,160	8,846
Gross Profit	10,443	9,958	9,414
Selling/General/Admin. Expenses, Total	5,697	5,433	5,181
Research & Development	1,314	1,250	1,138
Unusual Income (Expense)	157	431	70
Operating Income	3,588	3,706	3,165
Interest, Net	106	140	154
Income before Tax	3,482	3,566	3,011
Income Taxes	883	871	712
Net Income	2,598	2,695	2,299

Source: Company filings.

Exhibit 2

Danaher Corporation:
The Hach SL1000 Portable Parallel Water Analyzer

Balance Sheet
(in millions of dollars as of December 31 of year indicated)

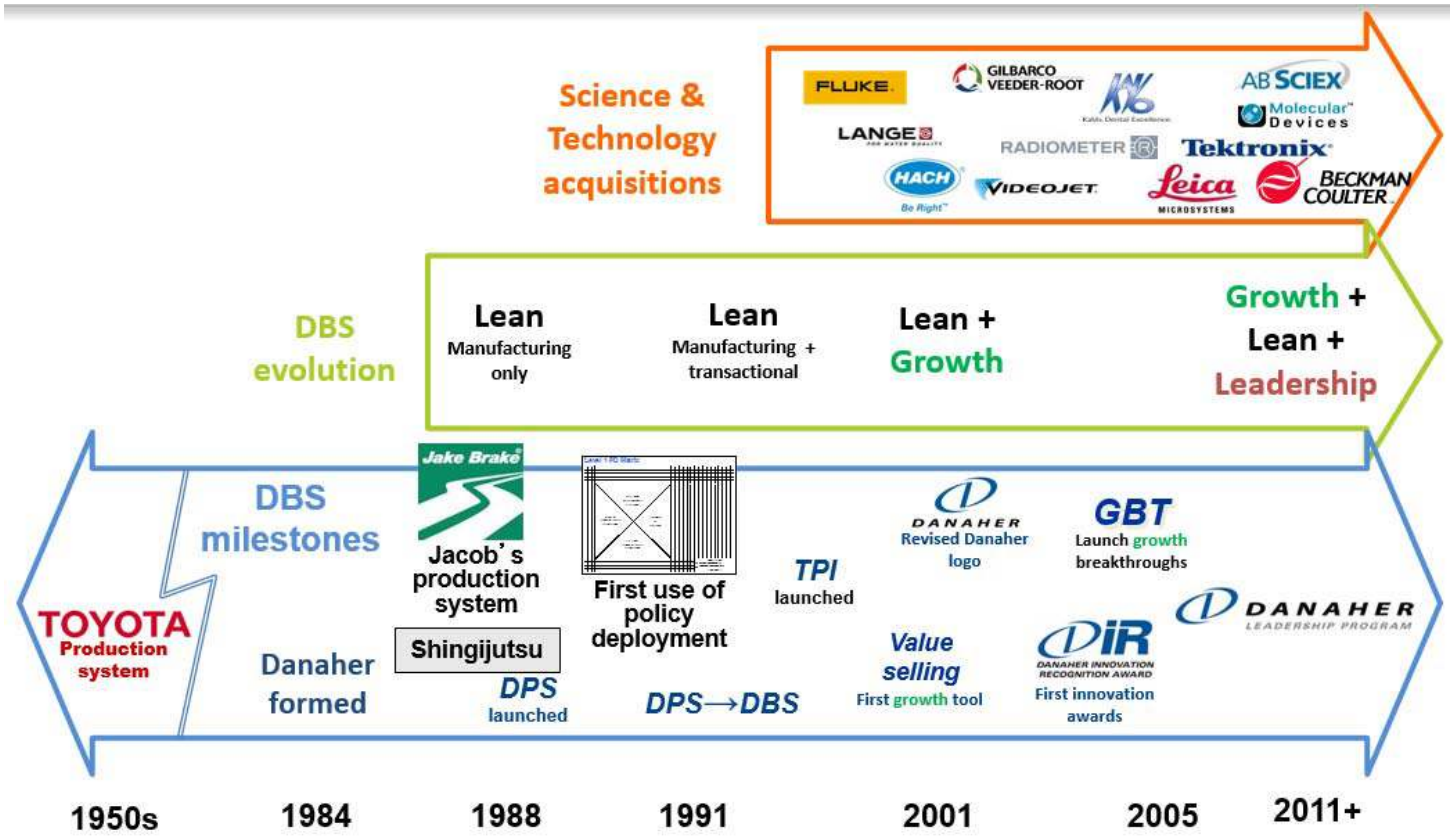
	2014	2013	2012
Cash and Short-Term Investments	3,006	3,115	1,679
Accounts Receivable	3,634	3,452	3,267
Inventory	1,832	1,784	1,813
Prepaid Expenses	960	763	828
Total Current Assets	9,431	9,114	7,588
Property, Plant, and Equipment, Net	2,203	2,211	2,141
Other Assets	1,024	1,061	1,406
Goodwill, Net	16,964	16,038	15,462
Intangibles, Net	7,369	6,248	6,344
Total Assets	36,992	34,672	32,941
Current Portion of Long-Term Debt	72	62	56
Accounts Payable	1,875	1,778	1,546
Accrued Expenses and Other Liabilities	3,450	2,687	2,604
Total Current Liabilities	5,396	4,527	4,206
Other Liabilities	4,744	4,257	4,363
Long-Term Debt	3,402	3,437	5,288
Total Liabilities	13,542	12,221	13,857
Common Stock and Paid-In Capital	4,489	4,166	3,696
Retained Earnings	20,323	18,005	15,380
Accumulated Other Income (Loss)	(1,434)	215	(59)
Minority Interest	72	66	67
Total Equity	23,450	22,451	19,084
Total Liabilities and Shareholders' Equity	36,992	34,672	32,941

Source: Company filings.

Exhibit 3

Danaher Corporation:
The Hach SL1000 Portable Parallel Water Analyzer

Evolution of DBS at Danaher



Source: Company document, used with permission.

Exhibit 4

Danaher Corporation:
The Hach SL1000 Portable Parallel Water Analyzer

The PPA

Source: Company document, used with permission.

Exhibit 5

Danaher Corporation:
The Hach SL1000 Portable Parallel Water Analyzer

DBS Tools and the PPA

DBS Tool	Description	How It Was Used for PPA
Voice of the Customer (VOC)	VOC was a method all associates could use to gather, analyze, interpret, and act on the spoken and unspoken needs of customers.	Ensured that a) All customer pain points were known b) Danaher understood the relevant processes for drinking water customers c) Danaher understood customer preferences regarding needs, price, and performance.
Customer Segmentation	This tool used VOC to identify customer needs and behaviors and provided a process for using this insight to establish unique and differentiated segments.	The segmentation work helped to focus product development and the initial launch at chloramination customers in the drinking water segment.
Product Planning Group (PPG)	The PPG helped an Operating Company coordinate execution of product development projects and determine how to allocate resources. Its objective was to increase organic growth in value-enhancing ways by driving better and faster development of the right products.	The PPG helped compare all potential innovation projects related to water quality in order to balance the risk-reward profile of those products. Once the commitment to the PPA had been made, the monthly PPG meetings ensured that the PPA project stayed on track.
Transformative Marketing	This collection of tools developed market visibility, messaging, positioning, and campaign needed to drive customer adoption and use.	This tool was important in determining customer value and messaging—creating one agreed benefit across all customer touch points. The tool also assisted in the creation of campaigns and creative work needed to launch and drive customer adoption.
Funnel Management	The Danaher Funnel Management System helped accelerate growth by proactively managing and driving opportunities through the sales funnel.	This tool has guided the team to a much earlier start in generating demand.

Source: Company document, used with permission.

Exhibit 6

Danaher Corporation:
The Hach SL1000 Portable Parallel Water Analyzer

Hach and Competitor Pricing Data (in U.S. Dollars)

Water Testing Devices (Instrument)

For Hach DR 900 Technology

Instrument	List Price
Hach DR 900	1,300
Aquatech D200	1,150
Jensen PortaTest100	1,000
DBC FlexKitA	995

For Hach HQ40d Technology

Instrument	List Price
Hach HQ40d	1,050
Jensen MultiTest 400	1,300
DBC FlexKitB	700
Carlton QuickTest	1,200

Pre-Packaged Testing Reagents (Consumables) for All Devices

For Testing of Total Chlorine

Manufacturer	List Price per Pack	Units in Pack	Price per Unit
Hach (Powder Pillows)	20.65	100	0.21
Aquatech (TrueTest Powder Pack)	21.60	100	0.22
Jensen (Test Pack)	19.99	100	0.20

For Testing of Free Ammonia and Monochloramine

Manufacturer	List Price per Pack	Units in Pack	Price per Unit
Hach (Powder Pillows)	98.89	100	0.99
Aquatech (TrueTest Powder Pack)	79.35	100	0.79

For Testing of Nitrite

Manufacturer	List Price per Pack	Units in Pack	Price per Unit
Hach (Powder Pillows)	37.39	100	0.37
Aquatech (TrueTest Powder Pack)	32.74	100	0.33
Jensen (Test Pack)	27.00	100	0.27

Sources: Danaher Company and case writer estimates.