

F R O S T & S U L L I V A N

# BEST PRACTICES

AWARDS

F R O S T & S U L L I V A N

2020 BEST PRACTICES AWARD

# PHILIPS

2020 GLOBAL INTEGRATED TELEHEALTH  
SOLUTION IN POINT-OF-CARE ULTRASOUND  
CUSTOMER VALUE LEADERSHIP AWARD

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healthcare systems, and health workers' shortages.

Before the coronavirus pandemic's sudden global strike, telehealth was an upcoming technology for the successful transition to value-based care. Today, COVID-19 accelerated telehealth as a top priority for all healthcare stakeholders as these converging technologies are critical to extending access to high-quality, affordable, contactless care.

### **Tele-ultrasound: Staying Connected**

Ultrasound is the second-most used imaging modality next to X-rays. Non-invasive and non-ionizing, ultrasound's clinical safety, portability, speed, and cost-effectiveness edge advanced imaging modalities like computed tomography and magnetic resonance.

Over the last couple of decades, ultrasound has become ubiquitous across the care continuum, from hospitals, clinics, and physician offices to nursing homes. Technology advances in ultrasound leveraging enhanced computing power, e.g., artificial intelligence and Big Data analytics, provide more in-depth insights for better treatments faster. Miniaturization, improved image quality, and increasingly sophisticated communication and informatics technologies further boosted its diagnostic capabilities, expanding its scope and diagnostic value beyond radiology, cardiology, and OB/GYN diagnostics. Ultrasound's fast-growing non-traditional clinical segments include urology, endocrinology, interventional guidance, primary care, and emergency medicine.

With the uprising of the COVID-19 pandemic, ultrasound is at the forefront in value-driven imaging of infected patients' lung tissue and other abnormalities. Lung damage can lead to cardiac strain, adding to COVID-19 patients' higher risk of cardiac complications. Nonetheless, transporting infected patients to ultrasound systems creates long workflows and leads to unnecessary exposure to the coronavirus of health providers and other patients. Also, sanitization procedures for cart-based, single-use ultrasound equipment present additional issues for timely diagnosis and intervention. Ultrasound machines must undergo time-consuming cleaning procedures for COVID-19, resulting in time lapses between scans; thus, impacting workflow efficiencies significantly and, most importantly, patient outcomes.

Easier to disinfect, portable and ultra-portable ultrasound systems provide a significant growth opportunity for original equipment manufacturers (OEMs) in the current and future COVID-19 environment. Reproducibility, accuracy, and faster interpretation are key focus areas for vendors to streamline workflows. Improved care quality and health outcomes, however, hinge on connectivity and collaboration as healthcare's digital transformation continues.

An increasing elderly population, patient backlogs due to COVID-19 combined with the gradual resumption of elective procedures, and rising healthcare costs reaching unprecedented heights exacerbate and existing care crisis. Frost & Sullivan's research concludes that tele-ultrasound is a forward-thinking, must-have solution globally. Improved medical care access, quality, and affordability are gaining unprecedented import and urgency through the COVID-19 pandemic's prism.

## *Customer Impact and Business Impact*

Amsterdam-based Royal Philips (Philips) is a health technology leader in diagnostic imaging, image-guided therapy, patient monitoring, and health informatics. The Dutch company transitioned from a century-old conglomerate titan into a dedicated health technology firm over the past decade.

Philips provides integrated, connected solutions and services spanning across the health continuum, care levels, and settings, capitalizing on core competencies and value-based healthcare trends to enable innovative delivery models for sustainable, high-quality, and affordable care. The company reports revenues of €19.5 billion in 2019, employs about 81,000 people worldwide and operates in over 100 countries.<sup>3</sup>

Philips' vision centers on sustainable health with the stated purpose of improving the lives of 3 billion people a year by 2030. The company announced enhancing the lives of 1.64 billion people in 2019, with 194 million of those living in underserved communities.<sup>4</sup>

### **Leading from the Front: The Innovator's Path**

Philips' continuous innovation strategies target long-term customer value. The company continually incorporates new and emerging technologies in its development cycle to deliver enabling solutions as it marches towards 2030 goals. Whether developed internally or through partnerships, optimizing the customer experience around both patients and healthcare providers (HCPs) worldwide is front and center.

### **On the Road to Tele-ultrasound: Converging Technologies**

Philips' journey towards virtually integrated care began over a decade ago, envisioning closing expertise gaps and breaking down geographical barriers along the way.

In November 2015, the company launched Lumify, a smartphone- and tablet-enabled ultrasound, in the United States (US). That same year, the company started collaborating with Innovative Imaging Technologies, Inc.'s (IIT), launching an industry-first application (app)-based integrated tele-ultrasound solution by 2018. Powered by IIT's Reacts collaborative platform, Philips' (point-of-care) POC offering facilitates cost-efficient, real-time, and connected ultrasound examinations. The 2019 Direct Radiology acquisition 'sealed the deal,' expanding its POC ultrasound portfolio further, with strengthened teleradiology capabilities for global coverage.

*"The Lumify handheld Ultrasound has become instrumental to physicians around the world. The fight against Covid has made this even more clear. Our focus is to continue to increase further the performance of the Lumify and make it smart."*

*—Matthijs Groot Wassink, Point-Of-Care Ultrasound Leader, Philips*

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<sup>3</sup> <https://www.philips.com/a-w/about/company.html>

<sup>4</sup> <https://www.philips.com/a-w/about/news/archive/corpcorps/news/press/2020/philips-fourth-quarter-results-2019.html#:~:text=About%20Royal%20Philips&text=Philips%20generated%202019%20sales%20of,philips.com%2Fnewscenter>

The system is currently available in 100 countries, with the US, the European Union (EU), and, most recently, Japan (June 2020), as the largest regional markets.

### **App-based Platform: The Guiding Light behind Lumify's Success**

*"Lumify was designed for the point of care. Our customers and their needs were our guiding light, and provided the inspiration and drive to create the technology and capabilities needed to scale and evolve as technology advanced."*

*—Luke Baldwin Sr. Product Manager, POC Ultrasound Solutions*

Philips designed Lumify as an app-based platform under the knowledge and promise of technology's constant evolution as a core philosophy. As the devices hosting the software expanded, the POC system allowed scaling and evolving alongside those new technologies offering constant renewal and enhanced performance in an ever-changing world.

Lumify delivers high-resolution imaging on compatible smart devices for unmatched portability at lower overall costs. At 136 grams, the lightweight tool has a battery-free transducer with a detachable cable connecting to a smart device, e.g., tablet. Also, the detachable cable allows for easy replacement of damaged or outdated connections to keep up with ever-evolving technology changes.

Built for versatility and flexibility, the compact and durable solution facilitates ultrasound whenever and wherever. The solution enables staff newer to ultrasound to capture images accurately while educating at a distance, thus, extending ultrasound use to developing regions, training those on the ground, and leveraging physician expertise remotely for diagnostic interpretation and insight at the point of care.



*Courtesy of Philips*

### **Reacts on Lumify: Unleashing the Power of Telehealth**

The Reacts collaborative platform features cloud computing at its core. It incorporates unique cutting-edge interactive audio-video tools to enable remote virtual communication and guidance, education, training, and supervision in real-time. Reacts combined with the Lumify, a handheld ultrasound machine, allows users to share live-stream high-quality images with other physicians, regardless of geographic location, for a consult right from the patient's bedside.

The integrated tele-ultrasound solution supports multi-faceted and multi-disciplinary care teams' collaborative needs on the patient's behalf. The Reacts platform is available in more than 80 countries, connecting users from one part of the world to experts on another in one virtual room, all collaborating over the same patient in both clinical and educational settings.



High-quality images displayed on compatible Android and iOS (operating system) devices, such as smartphones, tablets, and computers, enable physicians to make fast, accurate, and timely care decisions for shallow and in-depth applications. Uses include soft tissue, cardiac, musculoskeletal, superficial, abdominal, FAST, OB/GYN, and lung examinations.

In 2020 Philips expanded Lumify's compatibility beyond Android devices, adding several compatible iOS devices. Additionally, the company expects to bolster its customer base in low-income countries as Android accounts for over 85% of end-users worldwide.

### ***Pre-pandemic: Extend Access to Quality Care in Low-resource Settings***

Before the COVID-19 pandemic, tele-ultrasound use cases focused on resource-limited settings, e.g., developing nations, as a longitudinal educational tool to help establish ultrasound programs globally, thus, driving use.

Easy-to-use, Lumify guides HCPs newer to ultrasound use to capture accurate images while gaining education and training at a distance. Developing the skills at ground level through expert remote clinicians extends access to ultrasound for improved diagnostics and health outcomes in underdeveloped regions. Highland Hospital's (Oakland, California) partnership with Peruvian Hospital Nacional Dos de Mayo best highlights the original intent. Reported results from this collaboration include helping a clinician in Peru to get the right diagnosis on a patient suffering cardiogenic shock, not sepsis due to pneumonia as initially suspected, and prescribing the appropriate intervention to manage the patient.<sup>5</sup>

### ***Post-pandemic: Contactless Collaboration Expands Remote Use Applications***

In March 2020, Philips' ultrasound portfolio, including Lumify and the CX50 xMatrix System, received industry-first 510(k) clearance from the US Food and Drug Administration (FDA) to manage coronavirus-related lung and cardiac complications, joining Australia, Brazil, Canada, the EU, and New Zealand.

With the outbreak, user interest increased. Philips developed and launched the B-lines Quantification Tool and a 12 point lung exam protocol for the Lumify device. It is the first handheld device to perform auto counting and B-Line detecting for lung ultrasound. The quick workflow tool evaluates the lungs in patients with COVID symptoms and beyond and generates a report based on the findings.

Lumify's ultrasound imaging capabilities, connectivity, and ease of disinfection offer a uniquely safe solution, reliably available for first-time-right diagnosis and symptom tracking. It enables a single clinician to scan patients at the bedside and send images via the cloud-based platform to qualified physicians for remote interpretation and diagnosis, minimizing frontline care providers' coronavirus exposure. Additionally, hospital systems can conserve personal protection equipment between users by having one dedicated scanner while conferring with experts outside the room rather than having two people in the room. More importantly, this characteristic reduces usage time-lapses for prompt diagnosis.

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<sup>5</sup> <https://www.usa.philips.com/healthcare/sites/lumify/news/articles/education-across-borders-with-lumify-reacts>

"With our COVID patients in the ICU, we have extensively used the Lumify systems for assessment of the heart and lung function as well as for procedural guidance," said Dr. Yanick Beaulieu, medical officer for Philips Precision Diagnosis and a cardiologist-intensivist at Montreal's Sacre-Coeur Hospital. "With the integrated Reacts tele-ultrasound capabilities, we were able to reduce the use of PPE significantly, continue to provide clinical training and supervision to our residents and maintain very efficient, high-quality care to those very sick patients."



Lumify's two- to five-hour continuous imaging capabilities eliminate multiple re-charging sessions, a valuable feature inside ICU, and CCU, and COVID-19 hospital units. As the pandemic is part of our lives for the foreseeable future, Philips is steadfast in providing new tools to aid frontline care providers fighting against the deadly virus.

Moreover, the company successfully piloted its POC ultrasound solution in assisting with diagnosing and treating patients with cardiovascular diseases, particularly coronary artery disease, during image-guided therapy procedures.

Frost & Sullivan believes that Lumify can become a mainstream tool under the current global healthcare landscape, reaching underserved communities and with the features needed to help save lives and alleviate overburdened health systems across specialties.

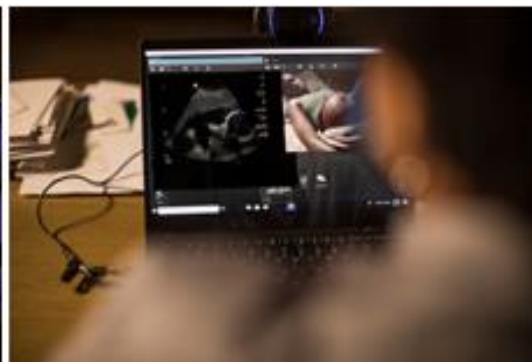
The tele-ultrasound solution is proving valuable in non-traditional settings as well. Philips has 142 inked deals with the German armed forces. Other organizations requesting Lumify include the US armed forces, disaster relief organizations, helicopters, and sports clubs, e.g., PSV Eindhoven soccer club in the Netherlands.

### Lumify Powered by Reacts

**Midwife - Remote Location**



**Obstetrician - Remote Location**



*Courtesy of Philips*



### Quick Highlights on the CX50 xMatrix System

Carried as a laptop system or combined with a small, lightweight, and highly maneuverable cart, the real-time POC ultrasound imaging system offers heightened value for use in intensive care and critical care units (ICU and CCU). With high-quality scans performed at the patient's bedside, the CX50 eliminates wait times, streamlines ICU and CCU workflows, and improves care quality and patient outcomes.

The system is currently available in the US and EU, with plans to soon expand its availability worldwide.

CX50 Critical



*Courtesy of Philips*

### Ultrasound without Borders

Cost, training, and access are the usual suspects hindering POC ultrasound adoption.

The Lumify Handheld Ultrasound is the highest imaging device in its segment. Philips offers it through purchase, about \$6,000, or financing (only in the US), including the imaging hardware and Lumify application with a best-of-class warranty. At this time, the company also provides two Reacts licenses per transducer, allowing purchasers to share the system's attributes with a colleague. Facilities worldwide can afford Lumify and experience the value of ultrasound at the point of care. Nonetheless, the system's education and training component will fuel global adoption and expand use into new areas long after the pandemic.

### Conclusion

Ultrasound procedures continue to grow with expanding applications. Akin to healthcare's digital transformation, point-of-care (POC) ultrasound solutions are fast emerging as access tools fitting into the larger telehealth picture. Nonetheless, improving care quality and outcomes rely on integrated collaborative solutions, saving time, money, and hassle as the market evolves into its future.

Royal Philips (Philips) tele-ultrasound solution, Lumify, is setting a new standard of sophisticated imaging for POC handheld systems. The integrated solution leverages the Reacts collaborative platform and expanded tele-ultrasound capabilities to facilitate cost-efficient, real-time, and connected virtual ultrasound examinations worldwide for effective and efficient definitive diagnostics. Lumify with Reacts empowers unprecedented connection and collaboration between healthcare providers and experts regardless of geographic location, enabling high-quality care in developing regions. Furthermore, in light of the existing care crisis exacerbated by the COVID-19 pandemic, Lumify's expanded remote clinical collaboration offering is gaining import across applications and use cases.

Notably, Philips' vision to support guidance, education, training, and supervision in real-time through cutting-edge interactive audio-video tools will drive long-term growth. Lumify bridges expertise gaps and geographical barriers while functioning as a longitudinal training tool to help establish ultrasound programs worldwide and expand access to high-quality, affordable medical care.

For its strong overall performance, Royal Philips is recognized with Frost & Sullivan's 2020 Global Customer Value Leadership Award in integrated telehealth solutions in the point-of-care ultrasound market.

## Significance of Customer Value Leadership

Ultimately, growth in any organization depends on customers purchasing from a company and then making the decision to return time and again. Satisfying customers is the cornerstone of any successful growth strategy. To achieve this, an organization must be best in class in 3 key areas: understanding demand, nurturing the brand, and differentiating from the competition.



## Understanding Customer Value Leadership

Customer Value Leadership is defined and measured by 2 macro-level categories: Customer Impact and Business Impact. These two sides work together to make customers feel valued and confident in their products' quality and performance. This dual satisfaction translates into repeat purchases and a lifetime of customer value.

## *Key Benchmarking Criteria*

For the Customer Value Leadership Award, Frost & Sullivan analysts independently evaluated Customer Impact and Business Impact according to the criteria identified below.

### *Customer Impact*

#### **Criterion 1: Price/Performance Value**

Requirement: Products or services offer the best value for the price, compared to similar offerings in the market.

#### **Criterion 2: Customer Purchase Experience**

Requirement: Customers feel they are buying the most optimal solution that addresses both their unique needs and their unique constraints.

#### **Criterion 3: Customer Ownership Experience**

Requirement: Customers are proud to own the company's product or service and have a positive experience throughout the life of the product or service.

#### **Criterion 4: Customer Service Experience**

Requirement: Customer service is accessible, fast, stress-free, and of high quality.

#### **Criterion 5: Brand Equity**

Requirement: Customers have a positive view of the brand and exhibit high brand loyalty.

### *Business Impact*

#### **Criterion 1: Financial Performance**

Requirement: Overall financial performance is strong in terms of revenues, revenue growth, operating margin, and other key financial metrics.

#### **Criterion 2: Customer Acquisition**

Requirement: Customer-facing processes support the efficient and consistent acquisition of new customers, even as it enhances retention of current customers.

#### **Criterion 3: Operational Efficiency**

Requirement: Staff is able to perform assigned tasks productively, quickly, and to a high quality standard.

#### **Criterion 4: Growth Potential**

Requirements: Customer focus strengthens brand, reinforces customer loyalty, and enhances growth potential.

#### **Criterion 5: Human Capital**

Requirement: Company culture is characterized by a strong commitment to quality and customers, which in turn enhances employee morale and retention.

## Best Practices Recognition: 10 Steps to Researching, Identifying, and Recognizing Best Practices

Frost & Sullivan analysts follow a 10-step process to evaluate Award candidates and assess their fit with select best practice criteria. The reputation and integrity of the Awards are based on close adherence to this process.

STEP	OBJECTIVE	KEY ACTIVITIES	OUTPUT
1 <b>Monitor, target, and screen</b>	Identify Award recipient candidates from around the globe	<ul style="list-style-type: none"> <li>Conduct in-depth industry research</li> <li>Identify emerging sectors</li> <li>Scan multiple geographies</li> </ul>	Pipeline of candidates who potentially meet all best-practice criteria
2 <b>Perform 360-degree research</b>	Perform comprehensive, 360-degree research on all candidates in the pipeline	<ul style="list-style-type: none"> <li>Interview thought leaders and industry practitioners</li> <li>Assess candidates' fit with best-practice criteria</li> <li>Rank all candidates</li> </ul>	Matrix positioning of all candidates' performance relative to one another
3 <b>Invite thought leadership in best practices</b>	Perform in-depth examination of all candidates	<ul style="list-style-type: none"> <li>Confirm best-practice criteria</li> <li>Examine eligibility of all candidates</li> <li>Identify any information gaps</li> </ul>	Detailed profiles of all ranked candidates
4 <b>Initiate research director review</b>	Conduct an unbiased evaluation of all candidate profiles	<ul style="list-style-type: none"> <li>Brainstorm ranking options</li> <li>Invite multiple perspectives on candidates' performance</li> <li>Update candidate profiles</li> </ul>	Final prioritization of all eligible candidates and companion best-practice positioning paper
5 <b>Assemble panel of industry experts</b>	Present findings to an expert panel of industry thought leaders	<ul style="list-style-type: none"> <li>Share findings</li> <li>Strengthen cases for candidate eligibility</li> <li>Prioritize candidates</li> </ul>	Refined list of prioritized Award candidates
6 <b>Conduct global industry review</b>	Build consensus on Award candidates' eligibility	<ul style="list-style-type: none"> <li>Hold global team meeting to review all candidates</li> <li>Pressure-test fit with criteria</li> <li>Confirm inclusion of all eligible candidates</li> </ul>	Final list of eligible Award candidates, representing success stories worldwide
7 <b>Perform quality check</b>	Develop official Award consideration materials	<ul style="list-style-type: none"> <li>Perform final performance benchmarking activities</li> <li>Write nominations</li> <li>Perform quality review</li> </ul>	High-quality, accurate, and creative presentation of nominees' successes
8 <b>Reconnect with panel of industry experts</b>	Finalize the selection of the best-practice Award recipient	<ul style="list-style-type: none"> <li>Review analysis with panel</li> <li>Build consensus</li> <li>Select recipient</li> </ul>	Decision on which company performs best against all best-practice criteria
9 <b>Communicate recognition</b>	Inform Award recipient of Award recognition	<ul style="list-style-type: none"> <li>Announce Award to the CEO</li> <li>Inspire the organization for continued success</li> <li>Celebrate the recipient's performance</li> </ul>	Announcement of Award and plan for how recipient can use the Award to enhance the brand
10 <b>Take strategic action</b>	Upon licensing, company is able to share Award news with stakeholders and customers	<ul style="list-style-type: none"> <li>Coordinate media outreach</li> <li>Design a marketing plan</li> <li>Assess Award's role in future strategic planning</li> </ul>	Widespread awareness of recipient's Award status among investors, media personnel, and employees

## The Intersection between 360-Degree Research and Best Practices Awards

### *Research Methodology*

Frost & Sullivan's 360-degree research methodology represents the analytical rigor of our research process. It offers a 360-degree-view of industry challenges, trends, and issues by integrating all 7 of Frost & Sullivan's research methodologies. Too often companies make important growth decisions based on a narrow understanding of their environment, leading to errors of both omission and commission. Successful growth strategies are founded on a thorough understanding of market, technical, economic, financial, customer, best practices, and demographic analyses. The integration of these research disciplines into the 360-degree research methodology provides an evaluation platform for benchmarking industry participants and for identifying those performing at best-in-class levels.

### 360-DEGREE RESEARCH: SEEING ORDER IN THE CHAOS



## About Frost & Sullivan

Frost & Sullivan, the Growth Partnership Company, enables clients to accelerate growth and achieve best-in-class positions in growth, innovation and leadership. The company's Growth Partnership Service provides the CEO and the CEO's Growth Team with disciplined research and best practice models to drive the generation, evaluation and implementation of powerful growth strategies. Frost & Sullivan leverages more than 50 years of experience in partnering with Global 1000 companies, emerging businesses, and the investment community from 45 offices on six continents. To join our Growth Partnership, please visit <http://www.frost.com>.