



Philips HealthWorks Global Startup Program for Patient Monitoring

Accelerating big ideas in Patient Monitoring

Health systems across the globe are faced with a rising population with chronic conditions, clinician shortages, resource constraints and threats to security. At the same time, many are on the cusp of incorporating groundbreaking innovations like artificial intelligence, machine learning and predictive analytics – all with the potential to dramatically change the way healthcare is delivered.

It's an interesting paradox – and an opportunity.

Healthcare leaders must develop new ways to tackle complex, systemic problems while harnessing the promise of a new digital age.

Philips believes that finding a balance between these forces requires dynamic partnerships between large companies and entrepreneurial startups that share a vision for driving major change across the health continuum – from the moment a person enters the hospital to their transition home. That is why Philips HealthWorks created the Global Startup Program, a collaboration framework approach that connects innovators around the world with a trusted health tech brand, to develop breakthrough solutions together.

Through innovation and collaboration, Philips aims to

build a healthier and more sustainable future, with a goal to improve the lives of 2.5 billion people a year by 2030.

“The entire notion of what it means to be a patient is changing. The idea of a patient being in a hospital bed with bedside monitors no longer holds true. It's transitioning to local care settings with real-time monitors. Allowing providers to monitor along the continuum and deliver care outside of the hospital has a massive impact on the patient experience.”

- Alberto Prado, Head of Philips HealthWorks

Key trends shaping the future of healthcare technology

- Increasing consumer engagement in their own health
- Global resource restraints driving a shift to value-based care
- Aging populations and rise of chronic illness are shifting care to lower-cost settings and the home
- Digitization of healthcare, which provides opportunities for machine learning, AI and predictive modeling
- Threats to cybersecurity

Patient monitoring as a gateway to innovation

Patient monitoring is fertile ground for these exciting partnerships.

In today's high and low-acuity settings, the pressure is on to provide caregivers with fast, accurate information. They are looking to move beyond siloed "workstation" thinking, to developing "workflow" solutions that avoid unwanted outcomes, clinical variation and unnecessary cost. Yet patient data is growing exponentially. Hence, organizations are urgently seeking strategies to filter this information to inform their clinical decision-making, especially as current complex networking systems can become outdated and not speak to each other, and technical staff may not have visibility into the status of their devices – risking downtime and disruptive breaches.

A powerful patient monitoring solution has the capacity to confront all this. At its most basic, a patient monitoring system is designed to acquire patient data, aggregate it and display it in a format that is meaningful and actionable. It can capture a steady stream of patient data from monitors and other medical devices, then feed it securely to an Electronic Medical Record (EMR) for virtually gap-free patient records from admission to discharge – even during transport.

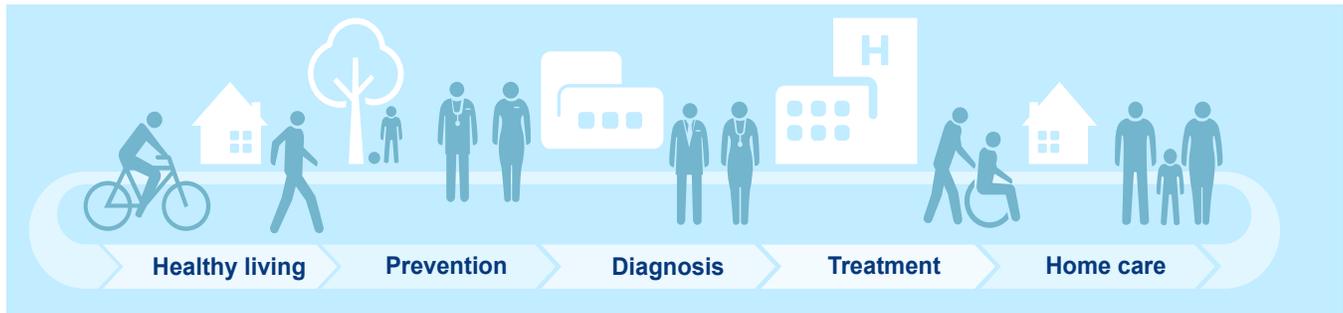
Patient monitoring solutions can also deliver vital signs, waveforms and alarms directly to caregivers on the move throughout the hospital and provide clinical decision support tools and advanced algorithms to help identify patient deterioration early. It can foster communication between networks and allow IT and biomed staff to remotely access the system to quickly diagnose issues, update software, manage inventory and performance. And it can all be presented with intuitive user interfaces that look and feel more like consumer electronic devices.



“Patient safety continues to be a top concern for the healthcare industry... Patient monitoring technology can provide clinicians with smarter alarms and virtually gap-free data to lower the chances of preventable adverse events while helping them to improve patient outcomes.”

— Peter Ziese, PhD, MD, Business Leader, Philips Patient Monitoring & Analytics

Philips has strengths across the continuum



Pairing innovators with industry leaders: Philips areas of strength

As wearables, telehealth and patient engagement gain traction, the patient monitoring market is expected to be worth more than \$350 billion by 2025.¹ Philips HealthWorks hopes to harness this opportunity by tapping into the entrepreneurial spirit of startups and pairing them with Philips, a health tech leader with a proven track record of breakthrough innovations.

Philips has demonstrated 100+ years of experience in healthcare. With a global footprint and presence in thousands of hospitals worldwide, our patient monitoring solutions monitor more than 275 million people every year.

Some of our most noteworthy contributions in Patient Monitoring solutions include:

Clinical decision support.

Philips premium technologies are powered by smart capabilities designed to reveal top-quality measurements, especially in the ICU, alarm fatigue and data overload. Philips environmental and process assessments, coupled with technology, aims to reduce alarm fatigue.

Feet on the ground, as clinical technology experts.

With our analytic and service capabilities, we are poised to help customers intelligently filter the data buried in their ecosystems so they can customize their systems to facilitate decision-making.

Focus on early detection of deterioration.

Our adaptive intelligence - driven support with predictive analytics in the general ward and in critical care aims to identify early detection of deterioration. With early warning scoring capabilities, our technology can help clinicians to identify deterioration to enable appropriate, timely interventions.

Leadership in telehealth technology.

Our critical care program is driven by Philips eICU Research Institute, a platform built from a repository of anonymous critical and acute care data from 400+ ICUs.² The database is used for benchmarking analytics and informs clinical decision support tools.

AI as encompassing big data, machine learning and predictive analytics.

Philips has been active in advanced data science, data analytics and AI to improve solutions for health management and healthcare, with data science and AI teams creating solutions since early 2000.

"In thinking about the design for care that keeps people healthy, rather than only treating someone who is sick, we will build a healthcare system that is connected, aware and adaptive to patient needs. It allows for continuous monitoring of patients anywhere, so that care is provided wherever and whenever it's needed."

— Jeroen Tas, Chief Strategy & Innovation Officer,
Royal Philips



Industry trends

By all accounts, we are at an inflection point, as powerful trends are shaping the field.

- **New AI capabilities:** AI, related to data analytics, is at an apex in terms of current market interests, yet, in reality, AI is still emerging on an integrated and extensive market scale.
- **Regulatory changes:** In the United States, the value of patient monitoring is recognized at the federal level. Centers for Medicare and Medicaid Services have called for expansion of reimbursement for remote care, seeking to “make sure home health agencies can leverage innovation to provide state-of-the-art care.”³
- **Transforming business models:** There is a need for technology providers to take a solutions-focused approach. Instead of being a B2B provider of products, the industry is transitioning to become service providers through strategic partnerships.
- **The demand for benchmarking:** International benchmarking of performance is an increasingly sought-after capability. Health systems are also looking for opportunities to work with international groups to do collaborative research, and to help them pull together robust clinical data elements.
- **Education:** For future clinicians to use telemedicine effectively, a growing number of medical schools and teaching hospitals are including telehealth in the classroom setting. Students learn how to monitor the flow of real-time data from a patient’s wearable device, for example.
- **The need for security:** Cybersecurity continues to be critical, especially as patient data flows beyond the hospital and into the home. The shift of healthcare and patient data from multiple physical devices into the cloud also brings a host of software and security challenges.
- **User-centric design.** With monitoring technology increasingly being placed in the hands of the patient, design and well-tested, well-researched ideas are more important than ever.
- **The Internet of Medical Things.** IoMT is creating an expansive opportunity across the continuum of care to learn about, optimize, predict, intervene and experience healthcare in new ways. It is expected to grow at a 26% CAGR to more than \$70 billion by 2021.⁴
- **From bedside to webside:** Predictive analytics is enabling preventive health management on the population level, and the growing importance of care beyond the hospital increases demand for population health solutions. Remote monitoring technologies are continuing to play a critical role in home monitoring, potentially preventing readmissions.

We expect our next generation of patient monitoring to deliver filtered, relevant clinical insights to optimize workflows for efficient, accurate patient progression and to expand the indication of a patient's status to reflect successful progression along a care pathway. From our clinical data sources and experience in acute care, Philips believes that we have a critical foundation to deliver these capabilities.

Our patient monitoring solutions will extend further to areas beyond high acuity areas, in response to health systems' need to move from fighting fires to managing embers.

We are strengthening our ability to provide solutions for hospitals and health systems by focusing on long-term strategic partnerships that look at creative ways to customers stay ahead of curve.



“As patient monitoring evolves from siloed devices to highly-integrated clinical IT systems, the combination of improved diagnostics, simpler cyber security strategies and new operationally based business models through remote enablement will continue to reshape the modern patient monitoring system as we know it.”

— James Caffrey, Leader of Strategic Projects & Ventures, Philips Connected Care Informatics

Philips is shifting

From: An ICU-centric model

To: More uncharted territory in general wards, and into create continuous health tracking

From: Monitoring playing a reactive role in the care process

To: A proactive role, with AI and computer science

From: A data focus

To: Contextualized actionable insights

From: Monitoring mostly inside the hospital

To: Seamless connections linking patient data captured externally back to clinicians

From: A focus on monitoring body signs

To: Meaningful integrated data

Philips HealthWorks Patient Monitoring cohort: areas of focus

At HealthWorks we know that to address some of the biggest healthcare challenges it takes partnering, knowledge, and access. Therefore, we have built proprietary methodologies that are designed to create a roadmap for collaboration between a startup and Philips.

During the intensive 12-week Patient Monitoring and Patient Care Analytics Global Startup Program, Philips HealthWorks will simultaneously engage with startups spread across the world, with the aim of validating their propositions, helping to build, test and scale their ideas, and exploring possible collaborations. In addition to benefitting from Philips' know-how and experience in the professional healthcare domain, the selected startups will have access to expertise in the company's innovation ecosystem, which comprises hospital, academic, industry and financial partners.

The 2019 Global Startup Program prioritizes three key areas for collaboration with startups:

- **Patient Data Acquisition → New Measurement**
Techniques for inpatient and ambulatory monitoring including wearables (in and out of the hospital), with potential focus on sleep, pain and the elderly
- **Patient Data Aggregation → Process Optimization and Communication** for better workflow
- **Patient Data Action and Distribution → Pattern Recognition and AI** (algorithms and adaptive intelligence for operational improvements including optimizing resources at an enterprise level)

Additionally, one of the key organizing principle of the Program is how we help customers achieve their Quadruple Aim goals: achieving better health outcomes, lowering the cost of care and improving the staff and patient experience.

The 2019 Philips HealthWorks Global Startup Program will run simultaneously from three of our innovation hubs, located in Cambridge (US), Eindhoven (Netherlands), and Shanghai (China).

Quadruple aim



Improved patient experience

Improving the patient experience of care (including quality and satisfaction)



Better health outcomes

Improving the health of individuals and populations



Improved staff experience

Improving the work life of health professionals



Lower cost of care

Reducing the per capita cost of health care

Imperatives for startup partnerships

Thousands of startups eager to embrace open innovation have applied to become one of the handful of companies to go through Philips Startup Program. As part of the application process, Philips HealthWorks carefully evaluates proposals to make sure the right conditions are met, including:

- High-quality data to support that the innovation works as it is intended to
- Demonstrated customer traction
- Use of algorithms/measurements that align with Philips rigorous standards
- Applicability in global markets
- Integration with Philips existing solutions, and interoperable with others as well
- Can meet rigorous privacy and data security standards

Philips is eager to make Philips leadership available to small businesses and project teams the world over, to support the acceleration and go-to-market of breakthrough patient monitoring solutions. Together we may just be able to solve some of the challenges facing healthcare today and in doing so, impact the lives of billions of people. Please visit ventures.philips.com to learn more.





Resources

1. <https://www.prnewswire.com/news-releases/frost--sullivan-reveals-five-patient-monitoring-solutions-to-accelerate-universal-health-coverage-300825514.html>
2. <https://www.usa.philips.com/healthcare/solutions/enterprise-telehealth/eri>
3. <https://www.cms.gov/newsroom/press-releases/cms-proposes-historic-changes-modernize-medicare-and-restore-doctor-patient-relationship>
4. Frost & Sullivan; Internet of Medical Things, Forecast to 2021; 2017