FROST & SULLIVAN

Healthcare Market Updates

Weekly Newsletter

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Wearables

Apple Unveils watchOS 5, Looks to Expand in Healthcare (1/2) – June 05, 2018

Applicable Product Categories: Wearables

Technologies	Wearable (Device + OS)	**Therapeutic Areas**	Lifestyle and chronic health conditions / Remote monitoring of Parkinson's patients
Applications	Smartwatch and Hearables for health and fitness	**Geographic Focus**	USA / Global
Segment Focus	Consumer Grade	**Topics (News type)**	Product Launch / Competitive Intelligence
Companies	Apple	**Others**	NA

ANALYST TAKE:

- **Synopsis:** Apple's WWDC 2018, keynote was dominated by software announcements for almost every Apple device. This also included Apple's watchOS 5 as the newest operating system for Apple Watch to be released later this year.

- **Competitive Intelligence:** Commoditization of clinical grade health/fitness wearables is expected to increase competition for leading participants such as, Apple, Gramin, Fitbit, Xiaomi, and Samsung. Moving forward, companies are expected to avoid commoditization, by moving beyond device play and focus on the application layer to address specific unmet applications and niche segments in the healthcare space.

Apple Unveils watchOS 5, Looks to Expand in Healthcare (2/2) – June 05, 2018

- **Value Proposition:** The watchOS 5 will add new health and fitness focused features such as getting automatic workout detection, walkie-talkie mode, and better notifications. Furthermore, keeping user-engagement in mind, the watchOS 5 will let one challenge his/her friends to competitions up to seven days in length.

- Frost and Sullivan foresees Apple's continued focus as a deeper push into the healthcare and fitness space with its growing array of healthcare focused solutions and products ecosystem. For example, Apple is also offering a hearing test feature with its AirPods and speech recognition tools for medical researchers to detect speech issues associated with conditions such as stroke. Moving forward, we expect to see more targeted health application development around the Apple Watch, to empower researchers to use the devices to remotely track patient's health conditions such as the upcoming Parkinson's disease tracking feature with the new ResearchKit API that will empower care providers to make periodic adjustments to treatment or medication, as necessary. With these differential value propositions and an evolving ecosystem of targeted healthcare offerings, Apple will be able to maintain its competitive position against other players in the commoditized consumer-wearable space. Frost & Sullivan believes in the long run, Apple's ResearchKit and CareKit will be more disruptive than the smart watch. Additionally, FDA's pre-certification pilot program (September 2017) designed to fast track digital therapeutics and health apps is expected to provide significant impetus to non-traditional participants (e.g., Apple, Google, Samsung and Fitbit) to finally enter the medical-grade arena.

- **Target End-User:** Healthcare consumers, Research and clinical trials sponsors, Insurance and wellness programs.

WEBLINK: https://cnb.cx/2JbI8Sm

Asus' VivoWatch BP aims to bring medical-grade blood pressure monitoring (1/2) – June 06, 2018

Applicable Product Categories: Wearables

Technologies	Wearable (Device), AI	**Therapeutic Areas**	Lifestyle and chronic health conditions
Applications	Self-health Management	**Geographic Focus**	Taiwan / Global
Segment Focus	Consumer/Clinical	**Topics (News type)**	Tech Innovation / Competitive Intelligence
Companies	Asus	**Others**	NA

ANALYST TAKE:

- **Synopsis:** Asus may have quietly withdrawn from the smartwatch game after the ZenWatch 3, but the company is back with a fresh wearable that promises to bring medical-grade blood pressure (BP) monitoring to the wrist. Asus reported that the new VivoWatch BP device is capable to deliver real time blood pressure measurement within 15 to 20 seconds. VivoWatch BP is also integrated with PPG and ECG sensors to enable multi-parameter monitoring essential for common chronic health conditions.

- **Industry Need:** Blood pressure is one of most critical health vitals monitored to facilitate early diagnosis of a patients deteriorating health condition. With increasing prevalence of chronic diseases and the geriatric population, the healthcare industry needs advanced blood pressure monitoring devices that are designed to promote self-health management practices and help to track patient's health status remotely.

Asus' VivoWatch BP aims to bring medical-grade blood pressure monitoring (2/2)– June 06, 2018

- **Value Proposition:** While VivoWatch BP does not appear to be a device that will replace any dedicated fitness trackers, it can automatically distinguish normal activity from exercise to enable more accurate tracking. With almost all blood pressure monitors comprising of an inflatable cuff, Asus claims that the VivoWatch BP is 70% smaller and 50% lighter than its competition. The VivoWatch BP is reported to come with a 28-day battery life, and to be priced at roughly $169.

- Based on Frost & Sullivan's research, despite prevalent applications, innovation around BP monitors has been limited in the past few decades. So far BP monitoring devices that comprise an inflatable cuff have been the gold standard for both point-of-care and home-based BP monitoring. However, as the industry move towards preventive care concepts, healthcare industry needs more easy to use critical vital monitors that can seamlessly integrate into users' daily life. Additionally, Frost & Sullivan anticipates increased competition in the clinical-grade BP monitoring wearable segment during this year. Even the BP monitoring device giant Omron is expected to release its smartwatch-style monitor, the Omron HeartGuide later this year. However, the future success of both the VivoWatch BP and the Omron HeartGuide depends on their ability to receive FDA approval.

- **Target End-User:** Healthcare consumers, homecare/ remote care settings, research and clinical trials sponsors, insurance and wellness programs.

WEBLINK: https://bit.ly/2sNW2yZ

Sonion and Valencell Partner to Make Biometrics Universal in Hearables and Hearing Health Markets (1/2) – June 07, 2018

Applicable Product Categories: Wearables

Technologies	Wearable (Biosensors + Device)	**Therapeutic Areas**	Lifestyle and Chronic Health conditions
Applications	Health Hearable	**Geographic Focus**	Denmark/ Global
Segment Focus	Consumer/Clinical	**Topics (News type)**	Tech Partnership/ Competitive Intelligence
Companies	Valencell and Sonion a/s	**Others**	NA

ANALYST TAKE:

- **Synopsis:** The strategic alliance between Valencell and Sonion will focus to expand the boundaries for use of biometric sensors in the ear aids/ hearable device space. As part of this deal, Sonion will optimize Valencell's advanced biometric sensor modules for hearables and wearables.

- **Industry Need:** With increasing commoditization in the consumer wearable and fitness band devices, industry experts view hearables as the next growth segment. Research suggests that in-ear hearable devices allow for more accurate measurements than wrist trackers, for body vitals such as heart rate, body temperature, blood pressure, pulse oximetry, ECG, and electro-encephalogram (EEG) signals among others. Hence, the consumer hearables segment and the hearing health market are expected to grow at 48% and 22% CAGR, respectively through 2022.

Sonion and Valencell Partner to Make Biometrics Universal in Hearables and Hearing Health Markets (2/2) – June 07, 2018

- **Value Proposition:** The partnership will focus on designing, developing, and making biometric sensing ear modules for the medical, hearing health, consumer and professional communications markets. As part of this strategic deal, Valencell will provide the industry's most advanced biometric sensor modules for hearables and wearables, which Sonion will optimize for size, power consumption and cost, for in-ear and on-ear applications. In addition, as part of the partnership, Sonion has made a strategic investment of an undisclosed amount in Valencell, making Sonion a significant shareholder in Valencell Inc. Apart from this deal, there are multiple Valencell biosensors powered hearables in the current market such as Bose SoundSport Pulse, Jabra Elite Sport, Jabra Sport Pulse Special Edition, and the FIIL Carat Pro.

- Given both Sonics' and Valencell's leadership positions in the hearing instruments and wearable biometric sensor technologies respectively, Frost & Sullivan views this partnership as a critical milestone to further drive innovation in the health hearable devices space. The partnership is a reflection of the ongoing convergence between the consumer device (wearables/hearables) technologies and health/medical devices, particularly as hearing aids get smarter and hearables get more capabilities. This in turn has been attracting multiple commercial electronics companies (more specifically headphone manufacturers) to monetize the potential of bionics, or creating in-ear buds that measure biometrics with targeted healthcare use cases (e.g., Jabra Elite Sport, Google Glass, Apple AirPods, iRiver On, Huawei Honor, and Vi among others). Furthermore, human ears have been proven to be a great source of critical health vitals such as heart rate, blood pressure, and other medical and fitness related functions. More importantly, like mobile phones today, earphones/hearing aids have become an integral part of everyday life. This in turn makes hearables more seamless to engage average users when compared against others wearables to continuously monitor critical health vitals.

- **Target End-User:** Wearable/Hearable device OEMs

WEBLINK: https://bit.ly/2kTqmVg

Mobile Phones/ mHealth

Apple opens Health Records API to developers — June 4, 2018 (1/2)

Applicable Product Categories: Mobile Phones

Technologies	Software Solutions, Health Records	**Therapeutic Areas**	All
Applications	Improved access of patient health data for enhanced healthcare	**Geographic Focus**	Global
Segment Focus	Medical Grade	**Topics (News type)**	Product Launch/ Care Delivery Innovation/ Competitive Intelligence
Companies	Apple	**Others**	NA

ANALYST TAKE:

- **Synopsis:** Apple announced that it has opened its Health Records application programming interface (API) to developers so they could leverage user health data, if they consent, to build apps to better manage medications, nutrition plans and diagnosed diseases.
- **Industry Need:** There have been increasing calls across quarters to enable greater healthcare data interoperability and greater sharing of data generated through connected medical devices, apps, and hospital health records, to enable AI and data analytics enabled solutions further enhance healthcare. Several leading med-tech companies, for example in the Patient Safety Movement Foundation (PSMF), have increasingly pledged to share their device data to promote patient safety, enhance care quality and outcomes. However, the absence of an appropriate regulatory framework, lack of compelling use cases on benefits of data sharing, as well as continued ethical, privacy and data security concerns have limited the ability of companies to achieve great progress in the field.

Apple opens Health Records API to developers — June 4, 2018 (2/2)

- **Value Proposition:**
  - The *Health Records* feature allows patients to access medical information from various institutions organized into one view on their iPhone. Consumers, who choose to make their encrypted data available to third-party apps, will now be able to share their medical records from multiple hospitals with their trusted apps, helping them improve their overall health.
  - Specifically apps on solutions like medication tracking, disease management, nutrition planning and medical research are expected to benefit from the increased access to patient data.
  - The announcement is a follow-up to the introduction of a health records offering, which Apple unveiled in January, letting consumers turn their iPhone into a storage bank of medical information, including medication and lab tests. That's all part of the Apple HealthKit.
  - The announcement noted that data shared is transferred directly from HealthKit to third party applications without touching Apple's servers. This represents a move towards breaking down the traditional silos of medical record systems between which interoperability and data sharing has been an ongoing challenge.
  - Frost & Sullivan believes that while many healthcare facilities today offer a proprietary web portal for patients to view their EHRs, those portals often don't allow users to share their information with other caregivers. Additionally, as healthcare providers also use EHR platforms from different technology vendors, data-sharing can sometimes be stymied by incompatibilities. The opening up of data silos by Apple is a part of a multi-step strategy, after initially enabling patients with easy control of their health related data in its Health Records thereby enabling an effective and actionable repository of patient health information. Now, with enhanced interoperability of patient data, the company is very well positioned to work as an intermediary between medical researchers, developers as well as pharma and med-tech companies which require health data for specific actionable development of their respective solutions. While, this promises to streamline healthcare outcomes, it comes with added risks of data fraud, patient health information (PHI) compromises and misuse. Additionally, while its good for the patient to know all the aspects of his own health, it also means more data to be sifted through by the clinician. The next challenge for Apple is going to be its ability to make that data more intuitive and meaningful for the clinician.
- **Target End-User:** Healthcare consumers, patients, mHealth app developers

WEBLINK: https://apple.co/2syQ7yp

Apple announced feature to counter smartphone addiction — June 4, 2018 (1/2)

Applicable Product Categories: Mobile Phones

Technologies	mHealth Apps, iOS, Software Solutions	**Therapeutic Areas**	Home health, mental health
Applications	Newer features on the iOS to limit smartphone addiction and test vision	**Geographic Focus**	United States
Segment Focus	Consumer Grade	**Topics (News type)**	Competitive Intelligence, tech Innovation
Companies	Apple	**Others**	Google

ANALYST TAKE:

- **Synopsis:** Apple, as part of its new iOS 12 software launched at WWDC 2018, has unveiled a new feature, called the Screen Time tool, to help users monitor their smartphone use, as part of plans to improve digital well-being.
- **Industry Need:**
  - After Google announced its own Digital Wellbeing feature, to help users monitor and in effect reduce smartphone usage with the upcoming Android P operating system, Apple followed with similar features announced as part of the latest iOS 12. This comes amidst increasing calls from shareholders of Apple for the company to do more to fight smartphone addiction.

Apple announced feature to counter smartphone addiction and availability of vision tests on iPhone X — June 4, 2018 (2/2)

- **Value Proposition:**
  - As part of its new iOS 12 software that powers the iPhone and iPad, a new feature called Screen Time will send users weekly reports on how they are using their device to show them what is distracting them.
  - The feature will also send parents reports from their children's phones and set time limits on app usage. iOS 12 will also include new Do Not Disturb features, including a new bedtime mode that will enable users to darken their screen and hide notifications until the morning.
  - Frost & Sullivan believes that these announcements are in line with the expectations from various stakeholders who have been raising concerns on the increasing smartphone addiction among users, especially among the lower age groups. These features would add to the phone's appeal and add to Apple's branding as a responsible brand, cognizant of the user's requirements.

- **Target End-User:** Home health-care, parents, individuals and children

WEBLINK: https://bit.ly/2kUqhki

Smart Home Devices & Appliances

Smart system keeping dementia sufferers safe in their own homes (1/2) – June 06, 2018

Applicable Product Categories: Smart Home Devices

Technologies	Sensors	**Therapeutic Areas**	Elderly, Dementia
Applications	IoMT	**Geographic Focus**	Canada
Segment Focus	Consumer	**Topics (News type)**	Tech Innovation
Companies	Bruyère Research Institute, Ottawa	**Others**	NA

ANALYST TAKE:

- **Synopsis:** As part of a research project called ‘Smart Home: Wandering Solutions in Dementia’, dementia patients’ homes are being outfitted with sensors connected to alarm systems, to ensure they do not wander away, especially at nights, or when caregivers are not available.
- **Industry Need:** Some estimates indicate between 5 to 7% of adults aged 60 and above have dementia, and those aged above 85 years have a much higher prevalence. Dementia patients have a tendency to get lost, unable to remember how to get back home – the Alzheimer Society of Canada, one in six people with dementia wanders away from caregivers, and gets lost at some point. Solutions such as PERS (personal emergency response systems) works only when the owner remembers to use it, which may not necessarily be the case with dementia patients. Hence, alarm systems that alert caregivers before dementia patients wander are more beneficial.

Smart system keeping dementia sufferers safe in their own homes (2/2) – June 06, 2018

- **Value Proposition:** Using sensors throughout the home, the system can track the presence of the dementia patient inside the home, and can set off alarms if they attempt to leave home. The sensors and actions can all be customized to suit individual needs.
    - Bed pressure sensor - if patient returns back to bed, there is no action
    - Motion sensors in stairway – motion sensed to detect location and direction.
    - Front door sensor – if activated, the caregiver's recorded response can be played, asking the patient to stay back home. This 'gentle persuasion' is known to work better for dementia patients (the voice of a loved one or a familiar caregiver). If door is still opened, an alarm goes off to alert caregiver.
    - Customization includes activating lights or caregiver mobile phone notifications.

    The cost of the system if about CA$1,000, and families keep these for three months. At the end, the performance is evaluated. The institute is in preliminary talks with telecom and home alarm industries to commercialize the technology.

Frost & Sullivan believes the technology to have significant potential, and can experience higher adoption, as long as a cheap subscription based model is employed. At a $1,000 price point, existing home alarm system companies could be interested, if long-term (years instead of months) subscription contracts are made possible. We believe that the smart home concept's value lies in bringing disparate technology applications together, to serve the residents better – in this sense, gradual integration of this technology with remote patient monitoring solutions (for chronic disease management, for example), can also help. If an integrated solution is made available, higher price points could be charged, even in subscription models.

- **Target End-User:** Caregivers of elderly, dementia suffering patients.

WEBLINK: https://bit.ly/2sBAeHI

Can this startup help big tech scale the smart home? (1/2) – June 05, 2018

Applicable Product Categories: Smart Homes

Technologies	Smart Home Platform	**Therapeutic Areas**	NA
Applications	NA	**Geographic Focus**	United States
Segment Focus	Consumer	**Topics (News type)**	Tech Innovation, Business Model
Companies	Axius	**Others**	NA

ANALYST TAKE:

- **Synopsis:** Axius, a one-year old Silicon Valley startup, leverages AI to help people setup, monitor and troubleshoot their smart home systems.
- **Industry Need:** With several different companies from different industries manufacturing smart home devices and appliances and software, without any standards or guidelines makes it a challenge for a regular smart home user to make all these devices and systems work together, to achieve the full potential of a smart home – a home that is customized to their needs and can be setup to perform tasks as they require, and such that these actions can be changed with time. However, the regular smart home resident is not an expert with the devices, let alone the underlying software that connects and makes things work. There is a clear need for “How do I make this appliance speak to other device and update me on my smartphone?” In essence – a troubleshooting service, similar to what Best Buy is beginning to offer (covered in Issue 4 of this newsletter) specially for healthcare.

Can this startup help big tech scale the smart home? (2/2) – June 05, 2018

- **Value Proposition:** Axius offers a router and a software platform for smart home users, that helps them setup and manage their ‘smart devices’, and also to monitor them. It also uses artificial intelligence to help residents understand what they can do with the connected devices and make it happen automatically. Additionally, a technician acts as the ‘IT manager’ to provide ideas, and also to help troubleshoot whenever the need arises. These services are available on as subscription plan.
  Frost & Sullivan agrees with Axius’s thinking, that these services can help improve the adoption of smart home devices, and increase penetration. The lack of technical know-how on how to make devices work together for the benefit of the consumer is a significant barrier. But beyond the current offering, we believe that such a service could also serve as a source for ideas and best practices (or “skills”) on making the best possible use of these devices – something that is prevalent in the tech community. The technician could promote such ideas to their customers, after having learned about them from other technicians, resulting in a win-win – for the company and the customers, and the overall smart home community in general. We also believe that the resultant increase in adoption of smart home technology, will also result in integration with health and wellness services, making it even more valuable for everyone.

- **Target End-User:** Smart home users.

WEBLINK: https://bit.ly/2xWe9Zm