A Guide to the Wearable App Ecosystem

This special edition guide is filled with inspiration, insights, and ideas from top Silicon Valley mobile thought leaders.
Table of Contents

Introduction 4

Ready or Not, Here Comes The Wearable App Ecosystem 5

Wearable Tech in Sports: How and Why the Sports Industry is Winning in Wearables 9

Guide to Wearable Platforms

On-Device App Support 12

Independent Platforms

Pebble 12

Android

Google Glass 13
LG G Watch 14
Motorola Moto 360 15
Samsung Gear Live 15
Qualcomm Toq 16
Sony Smartband 17

Apple

iWatch 18
No On-Device App Support

- Bionyms's Nymi
- Fitbit
- Garmin Vivofit
- GOQii
- Jawbone Up
- Nike FuelBand
- Polar
- Ringly
Introduction

For years, wearable devices with internet connectivity were a novelty that attracted a lot of experimentation. No real attempt was made to create a consumer product with massive awareness until wearables were thrust into the limelight with the public release of Google Glass in 2014.

Today, almost every major name in consumer electronics and technology has some wearable initiative. Google continues to lead in this area, providing an extension to Android for wearables called Android Wear. This operating system appears on devices from Samsung, Motorola, and LG, just to name a few. Startups have also entered the wearable market. The most successful example of an indie smart watch is Pebble, a Kickstarter-funded product that has seen notable commercial success. Other startups such as Fitbit and Jawbone have created hardware that has seen adoption in the sports fitness category.

The emerging wearable space is exciting, and its history has yet to be written. Will big technology players like Apple dominate the space with an iWatch? Will startups like Pebble ultimately succeed in building significant market share that threatens incumbents like Facebook? These are all interesting questions we can't yet answer. We can, however, provide valuable analysis, and initiate a dialogue to help businesses stay up-to-date with the latest technology to make more informed decisions.

Sincerely,

Gregory Kennedy
Ready or Not, Here Comes The Wearable App Ecosystem

The popularity of apps is no longer limited to the smartphone. As the wearable smart device market grows, apps are proliferating everywhere.

The Pebble smartwatch, an indie Kickstarter project for hobbyists and popular with early adopters, already has 3,000 apps in their store.

Third-party app ecosystems are also emerging for Google Glass. Many of the most popular apps have been ported over to the Glass platform, including Yelp, FourSquare and Facebook. The Samsung Galaxy Watch, which sold over 500,000 units, supports apps through it’s own OS. And recently at Google IO, two new smartwatches were announced by LG and Motorola, which run Android apps.

The sheer popularity of apps is undeniable. Flurry recently reported that mobile web usage on smartphones, which was already small at 20%, actually declined in 2014 to 16%. With the
emergence of wearables, it’s going to be apps that link users to the internet, not the browser based world we’re all familiar with on the PC. This has big implications for business, not just media and advertising.

Apps Evolved Differently than the Web

The web, was built on a very simple system, that made it easy for anyone to make a website. And everyone did, from the Whitehouse all the way down to your corner deli. As the web grew in popularity, it took on an incredibly democratic tone. But utopian visions of internet hyper democracy were quickly crushed under a sea of spam emails, malware, phishing scams, copyright infringement, and a general lack of usability. Because there’s no single governing body that could impose any standards and create consistency across websites.

Having witnessed the wild wild west world of the web, the mobile internet was determined to evolve differently. Mobile operators gated the mobile internet around their own content. Devices like Sidekick, launched with apps built in and limited web browsing support. When the iOS and Android app ecosystems emerged, the platform operators put standards and policies in place to help prevent the chaos that still plagues the web today.

Prepare for the Wearable App Explosion

The popularity of apps created an entirely new and different ecosystem from the web, and end users love it. Why? Apps have a reputation for being easy to use, efficient and more secure, when compared to the web. It’s also important to note that content in the app ecosystem was given a much greater value than it was on the web, platform operators were able to get user’s to pay for music, movies, and games. This made it possible for developers to build pureplay app content companies, the best example being Angry Birds, who built a licensing empire off their successful smartphone game franchise. This never emerged on the web.

With the emergence of wearables, it’s going to be apps that link users to the internet, not the browser based world we’re all familiar with on the PC.
Wearable apps, will extend these trends across a wide variety of devices, and the smartphone will remain as the hub. New features, data and access from wearable devices will enable new types of exciting apps to emerge.

Google Glass has shown real promise in the Business to Business arena, with a variety of medical, cooking and security applications being tested. In Dubai police are testing Glass apps for traffic enforcement. On the consumer side, the smartwatch has found a core market with hobbliest and tech enthusiasts, with 1,000s of apps having been developed specifically for them. Most are games and entertainment apps. FitBit, Nike FuelBand and Jawbone Up lead the fitness tracking segment and while none of these devices currently support third party apps directly on the device. They do support app integration on the smartphone and those ecosystems are growing fast, with over 50 apps interfacing with those devices.

**Big Opportunities and Big Challenges**

As the volume of wearables sold increases, big opportunities will emerge for app developers just like they did on the smartphone. The mobile app space saw some amazing success stories like What’sApp and Instagram for example. Challenges do remain; battery life, interface design, and of course wearable app distribution.
I’m confident the opportunity for wearable app developers, in next three to five years, will be as big or bigger than the smartphone. The most interesting opportunities will be the ones where developers take advantage of the unique features and extend the best of the smartphone experience to wearable devices.
Wearable Tech in Sports: How and Why the Sports Industry is Winning in Wearables

Wearable technologies have become the new ‘must have’ for just about every industry. From immediate notifications to immersive augmented reality experiences. Wearables enable users and businesses to be smarter, more agile, and more efficient. With the proliferation of wearable devices and apps in health and fitness, and the early adoption of Google Glass by some football teams, the sports industry is well positioned to take the lead in utilizing wearables as a key part of marketing and business operations.

How Are Wearables Used In Sports?

The sports industry is known for being adventurous when it comes to new technology, and wearables have been a prime example. From the leisure runner who started using the Nike+ Running App to the use of portable compression devices by companies like HyperIce, wearable technology has been making its mark for a while. Even stadiums, like Citi Field in New
York City, started getting in on the action by debuting iBeacon technology. This app, a prototype in conjunction with the MLB, alerts users of promotions and even landmarks within the stadium, acting as fans’ personal tour guide.

Wearables, however, go beyond the basic hosting duties and provide athletes, coaches, and owners with data—the most valuable asset in any industry. Those seeking that competitive edge, both on and off the field, are likely to be the ones who take wearables to a whole new level. Companies like MC10 and Catapult Sports have been working with seasoned pros for years now, trying to decipher the body’s reaction to hits, landings, and explosions. Even putting sensors in mouthguards isn’t off-limits as these firms intertwine with athletes to do what they do best: find the winning strategy.

**Why Are Wearables Taking Over Sports?**

Real-time content with Google Glass is revolutionizing the way that fans watch sports. Teams like the Minnesota Vikings and Yale Football have used Google Glass to give fans a first person view of on-field action. By allowing fans to get in the game, so to speak, viewers are able to engage on another level. Having access to stats, player data, and instant replays makes the fan experience much more memorable, exciting, and profitable to athletic associations.

The biggest reason wearables are revolutionizing sports is the way that they utilize big data, much like the way big businesses do. With the NFL adding tracking sensors to the shoulder pads of each and every player starting this fall, coaches will be able to build on training regimens in a more unique way. And with that customizable training comes better performance, more effective, efficient coaching staff, and potentially more money in the long run. In a world where winning is directly correlated to profits, it’s easy to imagine how this investment could produce an incredible return.
What The Future Holds for Wearables in Sports

We’re at the very tip of the iceberg for wearables in sports. The possibilities bring smarter stadiums, such as Levi’s in Santa Clara and ESC in Sacramento, both of which could debut the use of cashless mobile payments. We could even see sports teams leveraging augmented reality to create custom Heads Up Displays, or HUDs, showcasing stats, live feeds, and instant replays—all from the comfort of Row G, seat 114.

Lastly, and probably most important to the longevity of sports, we could see an extreme increase in player safety. The ability to track an athlete’s reaction to injuries both can trigger a more effective rehab and a better regulation of player safety. Even normal wear and tear on a body can be observed to decrease recovery time and emphasize preventative measures.

Wearables are already changing the world as we know it, and watching the way it revolutionizes the sports world will be exciting for everyone, super fan or not.
Smart devices in this category are ones that support the applications that run on the device. They all also include integration with a smartphone app which acts as the hub for additional functionality.

On-Device App Support

Independent Platforms

Pebble

“Tiny moments of awesome,” is how Pebble describes its UX and platform power to developers. With options including colorful rubber, leather, and even steel bands, this smartwatch is attempting to reach the fashion-conscious and time-crunched crowd. Encouraging developers to think of Pebble as notification-rich, this device is prime for users looking to keep track of busy schedules without having to dig through pockets and purses for phones or planners.

Pebble highlights the way it feels like a virtual event planner that you can interact with, so to speak. Having said that, product strengths and marketing strategy could be realigned for a more efficient reach. It seems
like a valuable and affordable tool for everyone from college students to upper level execs, but the UX stops at the product itself.

This doesn’t necessarily mean Pebble isn’t hard at work, in fact it’s quite the opposite. With the majority of their focus solely on developing a quality product from the backend including open SDK, Ink Paper Design, water resistancy, and even optional Gorilla Glass, their product line is creating quite the foundation.

Android

Google Glass:
Inviting consumers to “become an explorer,” Google Glass is promising an interesting push into mainstream wearables. Showcasing designer frames from DVF and Maui Jim, it seems that joining the general population might be tougher than originally expected. Nonetheless, this ubiquitous computer offers more than meets the eye.

Google Glass is aiming to provide an enhanced, universal experience for users by coordinating with tablets and smartphones. The hope is that as consumers catch on it will be more of a feature of your smartphone rather than another ‘must-have’ to lug around. And, eventually, this component has real potential to provide users with a sense of being unplugged, as opposed to current impressions.
With that marketing strategy comes a little backlash because non-users perceive the device as nonessential. But as we see the impact it could have on things like sporting events, that perception is likely to fade. Just a few years ago the idea of strapping a camera on your head to record your adventures was ridiculous, and now GoPros are everywhere. It’s simply a matter of utilizing this Early Adopter stage to find the best apps for future consumers.

**LG G Watch:**

The LG G smart watch, an aesthetics-focused wearable with an Android Wear OS, was created to be “always with you, always on.” And with its optional replacement straps, lightweight feel, and colorful LED display, this piece definitely delivers for the style-conscious early adopters. But with the same basic fundamentals as most smart watches, it doesn’t quite stand out from the crowd.

This first-generation product with a price point of $230 offers little in the way of battery life (averaging one to two days, max). Plus, the small handful of apps that are actually available for Android Wear makes it less appealing since users generally have to rely on those that are compatible. Read: those that will “do for now”. But with Android SDK open to all developers, this wearable is primed for the next big thing in app ideas. Just like most other smart watches.

**Google Glass adoption will climb sharply to 21 million units sold in annual sales by year-end 2018.** At $500 per unit, that’s a $10.5 billion annual market opportunity.
Motorola Moto 360

Keeping consumers plugged in, on time, and in control with the flick of the wrist, Moto 360 looks like the next big thing in wearable tech. Although its release date has yet to be officially set, consumers and techies are speculating a sleeker, more battery conscious smartwatch to enter the market. Or, as Motorola puts it, one that does all of the above yet “still looks and feels like a watch.”

In fact, that might be the most exciting part of the product: the aesthetics. With the increasing number of smartwatches, it’s no wonder consumers are excited about something that looks (and feels) less plugged in. Speculation surrounding its potential OLED display suggests upwards of 40% more battery life, plus a sleepmode that works as a digital timepiece. But don’t those two contradict each other?

The biggest worry is how often will consumers have to charge these so-called watches? And that’s what makes the price-point reveal equally as exciting. Motorola remains mum for now, but it’ll be interesting to see what direction they decide to take Moto 360, and what kind of audience will be receptive. With the rollout comes exciting looks into how this conspicuous wearable will utilize Android’s app store to really make it a smartwatch.

Samsung Gear Live

Possibly one of the most versatile smart watches to date, the Samsung Gear Live is the fifth edition of the original that was unveiled in September 2013. It runs on Android Wear, a modified version of Android designed specifically for smartwatches and other wearables.
After modifications based on user experience, aesthetics, and company goals, this wearable is poised to be the most consumer-friendly. And by continuing to offer each version based on customer preferences and price points, Samsung is setting the bar high for smart watch competitors.

**Qualcomm Toq:**

Not to be outdone in the Mirasol display game, Qualcomm released Toq in September 2013 to mixed reviews. Rob Chandhok, Qualcomm president, says the firm is “not a consumer electronics company...a success to us is our partners building watches on our technology,” suggesting this wearable was built to showcase possibilities rather than capabilities.

The price point suggests the same at $350 for a basic white or black watch with fixed band. However, much like the Pebble, this piece is built for accessible notifications and the ability to keep users available without having to dig for their phones. It even offers the opportunity to answer SMS from a list of short, specific responses. Always active, this watch requires a mere glance at the wrist and the user is in the know. And with battery life lasting upwards of a week thanks to its sleek, wireless charger, this wearable makes the perfect tool for swamped executives.

Because Toq was intended to simply lay the groundwork for future smartwatch development, it only released the SDK to third party apps.
in March 2014. And although it’s not the most in-demand smartwatch, this new availability suggests Qualcomm wants to use apps as the selling point rather than the piece itself. With the door open to a virtual playground of possibilities, ingenuitive developers should utilize Toq to launch unique yet functional apps.

**Sony Smartband**

In an effort to avoid pigeonholing itself, Sony released a fitness tracker wristband that isn’t about fitness at all. The Sony Smartband is a “life logging” wearable that keeps track of communication, motion, and entertainment of each user.

Like an activity journal, this small yet powerful band is one of the few wearables that actually presents itself as a necessity rather than an accessory. Encouraging customers to set activity goals and monitor progress without the pressure of needing to reach a certain heart rate, the Sony Smartband brings a breath of fresh air to basic fitness trackers and opens itself up to a broader target audience. It also showcases an alarm set to go off based on sleep cycles and “life bookmarks” to capture moments you want to live in and look back on, allowing users to be fully engaged during those valuable moments.

The Sony Smartband is lacking in the third-party app department, which might be disappointing for customers, but sets up developers with a great opportunity to capitalize on. Being a wearable that isn’t relying on apps to make its sales, this should be encouraging to developers who want to utilize straightforward ideas on an empowering platform.
Apple

iWatch

The long-awaited Apple wearable, potentially named an iWatch, is speculated to be one of the most user-driven smart watches on the market. The combination of form and functionality is to be expected, and just like their other line, this piece is supposed to be all about the details.

The clean, minimalist design that Apple normally takes would present the watch as a band, thanks to a slap bracelet-esque patent leak. And being an Apple product--specifically a wearable--you can bet the glass casing will range from Gorilla Glass to Corning’s new Willow Glass (an OLED-gereed substitute). The word “range” indeed suggests that that there will be different price points based on user needs, offering various bands, sizes, and luxury-like alternatives.

Regardless of its build, the real conflict comes in how Apple would set itself apart from the others in the seemingly unnecessary smart watch industry. As we move through this early adopter stage, it’s going to take significant app integration to make this product line vital in a sea of competitors. There are, however, a few interesting rumors suggesting that Apple has already thought that through, with the hiring of health and sensor experts, as well as the alleged meetings seeking FDA approval for health-related mobile apps. Either way, it will be interesting to see how third-party developers utilize iOS 8 to take wearables to the next level.

![iWatch Concept Image](image-url)
No On-Device App Support

Bionym's Nymi

A unique take on wrist wearables, Bionym's Nymi takes on biometric authentication for a true glimpse into the future. By using individuals' unique electrocardiogram (ECG) signals, this device literally relies on your heartbeat for email entry and user verification, among other things. And although it may sound ambitious, its greatest strength could lie in being one step ahead of smart watches.

Nymi's approach is unique in that it takes on an intuitive role. Storing basic information like favorite drinks, songs, and to-go meals, for example, allow users to get in and out of cafes and restaurants with the simple flick of a wrist. Or request their favorite song from a DJ without having to fight their way through the crowd. Payment is taken care of during the same scan process, essentially voiding the need for back and forth between

Smart devices in this category are not supported by an operating system embedded in the device. They all include integration with a smartphone app which acts as the hub for additional functionality.
customer and merchant. And of course, the heart-rate monitoring for fitness apps can be expected to be top notch.

As far as developers go, Nymi’s SDK encourages apps based on identity, motion, ECG, and proximity of the user, highlighting both vibration and LED as the notifications. And while smart watches seem to be almost restricting in terms of developer capabilities, Nymi’s loose structure allows for a lot of creativity based on simplifying the overall user experience. Slated to begin shipment in mid-2014, the price points of $79 (for pre-orders) to $99 suggest this wearable might move quickly into the early majority category of consumers.

Fitbit

Fitbit, one of the first activity trackers on the market, has built a solid name for itself and a solid foundation for its product line. Boasting three devices ranging in price from $60-100, this wearable’s most basic model tracks activity, synchs it to your Bluetooth Low Energy Device of choice, and offers free online tools to further individual activity progress. And as the prices goes up, so do the capabilities and display types (from LED to OLED).

Although we’re seeing smart watches take over activity tracking capabilities, the simplicity and straightforwardness of Fitbits make them feel like less of a hassle for fitness enthusiasts. Or sleep enthusiasts, who can take advantage of sleep efficiency and the vibrating alarm clock. All

In 2013, Fitbits, Jawbone UPs, and Nike FuelBands accounted for 97 percent of all smartphone-enabled activity trackers sold at brick-and-mortar stores or through big e-commerce.
this paired with Fitbit’s 3rd party API and capabilities to connect with various products and their applications make Fitbit a more seasoned, even more essential wearable.

Combine that with the firm’s numerous awards, including the 2009 CES Design and Implementation award, as well as its milestone badges for goal-setters, this wearable is not only proven, it’s trusted. And though it may seem limiting in its options for developers, the most success comes from those that don’t focus on the product, but rather, consider it as they conceptualize apps.

Garmin Vivofit

Designed to be a “fitness band that knows your potential,” Garmin’s Vivofit is built on the same fundamentals as its competitors. With calorie tracker, sleep monitoring, and wireless syncing capabilities, it meets basic expectations with an added one year battery life. Unfortunately, some of those basics require additional effort, like the chest-strap required to check your heart rate, or the roundabout way in which you sync your device, and the LED display that makes sunny weather workouts a bit of a chore.

The Vivofit, however, offers a unique calorie guidance within its platform to help users achieve goals during mealtime, too. Based on your measurements, age, and activity level, it recommends a caloric intake.
that you can tweak to successfully drop (or gain) weight. And naturally this device is one of the most accurate in distance tracking capabilities, working indoors and with your size and even stride to be the most meticulous device for tracking steps, among other things.

While it’s yet to be seen whether or not the Vivofit will integrate with 3rd party apps, it’s safe to say developers should consider the very specific, very limited benefits of this wearable during consideration.

**GOQii**

Designed around the idea of habits and focus for goal setting, the GOQii app integrates an actual fitness coach with a fitness wristband tracker, providing the ultimate in wearable user experience. And although it’s only currently available in India, this device launch has the potential to give us a glimpse into the future of consumer needs from wearables.

Opting into a plan subscribes each GOQii owner to their very own fitness coach who has the ability to track the user’s activity, heart rate, and sleep cycles to effectively customize a healthy fitness regimen. The device’s ecosystem isn’t reliant on the device at all, but rather the interaction and personalization of the client-coach relationship. Hoping to open up to 3rd party developers in the future, GOQii is focusing its energy on the expertise this device brings its users.
**Jawbone Up**

Capitalizing on the success of simplicity, Jawbone Up and Up24 are part of a product line of fitness trackers that forgo a display for a more comfortable, inconspicuous wearable. Ranging in price from $130-150, users have the option to manually sync or stay connected via Bluetooth, respectively. This displays Jawbone’s ability to know its audience and apply that knowledge to giving customers a straightforward, valuable fitness tool.

The recent addition of Android as an OS option echoes this firm’s bottom up marketing strategy by increasing its reach and opening the door for more 3rd party developing with its API and SDK (for iOS only). It also allows developers the opportunity to utilize the app’s strong foundation of positive reviews in order to create valuable add-ons.

**Nike FuelBand**

Currently on its second edition, the Nike FuelBand SE has taken a lot into account to enhance its overall user experience. Using Bluetooth Low Energy, this fitness band manages to get up to eight days of battery life while staying true to its modest yet popular design. And although a majority of its UX requires a companion app, Nike+, the FuelBand utilizes its small space with an LED dot display for essential notifications.
Nike+ received some updates, too, in the form of reorganization and the ability to group your friends into competitor categories, adding to the social and marketable aspect of the FuelBand. It also allows you to customize the fitness band’s settings from your device, as well as browse and initiate new workout sessions.

Capping that off, the platform just opened its Fuel Lab in San Francisco, a facility focused on integrating 3rd party developers and other companies in an effort to sync data between partnering apps. Nike+ hopes this streamlined approach will enhance the UX and solidify Nike’s presence in the wearables market. Nike recently discontinued the Fuel Band product, but the Fuel Platform initiative is still going strong.

**Polar**
Consumers looking for more options in the waterproof category will appreciate the Polar Loop, a fitness band perfect for swimmers and fitness enthusiasts in general. With notifications to let users know how long they’ve been sitting, as well as optional heart rate monitor (taking the price from $110 to upwards of $190), this device takes a strong approach towards motivating.

The goal is to let customers know when they’ve been too sedentary by pulling data from the band and comparing it to other users on their tracking platform, Polar Flow. Integrating the community gives competitive users an enhanced sense of activity awareness, which has been well-received by consumers overall.

Not only that, Polar Flow allows users to set daily activity goals and receive advice snippets, serving as a gentle reminder for consumers to get moving. The downside, however, is that it’s not currently open to 3rd party apps, suggesting the technology and platform might not be ready for integration just yet.

**Ringly**
Dedicated to keeping fashion-forward women “effortlessly connected,” Ringly offers wearable solutions in the form of classic jewelry. By sending custom notifications to the user’s ring via vibration or light, women are
signaled to check the companion app on their mobile device, offering them an opportunity to address or dismiss the alert.

Currently, the company is offering four ring styles for pre-sale, beginning at $145 each for an 18K gold ring adorned with precious and semi-precious gems. And although it isn’t open to third-party developers yet, it should be really interesting to see how this niche market affects the acceptance of wearables.
About TapSense

TapSense is the leading independent mobile advertising exchange, and has been featured in publications including Forbes, Bloomberg, TechCrunch, VentureBeat, GigaOM, CMO.com, MediaPost, Entrepreneur and AdExchanger. Founded in 2011 and based in San Francisco, California, investors include top Silicon Valley venture firms, Ron Conway’s SV Angel and Maynard Webb, a board member of Salesforce and Yahoo.

TapSense was named one of the 2014 AlwaysOn Global 100 Companies to Watch, and is a member of the Mobile Marketing Association.

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