WiNG

# IoT Startup State Of The Union 2016

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**IoT Startup State of The Union 2016--Wing Venture Capital** (//www.slideshare.net/MartinGiles5/iot-startup-state-of-the-union-2016wing-venture-capital) from **Martin Giles** (//www.slideshare.net/MartinGiles5)

At Wing, we spend a great deal of our time thinking about new technology waves and how they are going to affect the business landscape. The Internet of Things is one of them. Connecting billions of objects to the Internet—a process that we call "Instrumenting The Real World"—is going to have a transformative impact on the enterprise and on society, and we're still only in the very early stages of this change.

As part of our ongoing research into the Internet of Things, we spent the past few months digging into a large amount of data. Among other things, we looked at trends in the pre-funding environment for IoT; we analyzed data relating to exit activity; and we spoke with IoT pioneers to get their take on what's happening. We also built a database of 2335 accelerator and venture capital funding deals for IoT startups from the start of 2013 to the end of August 2016, drawn from helpful services like Mattermark, Pitchbook and Crunchbase. Once we'd gathered these data, we reviewed the individual deals, assigning each one to a high-level category (Industrial/Enterprise, Home, Wearables, Drones, Auto/Transport etc.) and then to sub-categories within them.

The slide deck here is an updated version of a presentation that I gave recently at the IoT Tech Expo in Santa Clara. It's the first time that we've unveiled some of the initial findings from our research work, and we'll be publishing more material on the Wing blog in coming weeks.

*If you would like to be notified when we put up new posts, please send an email to research@wing.vc*

My partner, Gaurav Garg, one of Wing's co-founders, draws an insightful parallel between the

Internet of Things and the spread of electricity to US households in the 1900s. As electrical power made its way into more and more homes, entrepreneurs set to work developing new products to take advantage of this phenomenon. But it took decades for some of the most innovative applications to appear. Many of these, from the television to the microwave, were simply impossible to conceive of in the early days of electricity. The Internet of Things is at the same stage today as electricity was in the early 1900s: we can see the potential of this new wave, but only a small fraction of things are currently connected to the internet and the pace of change has been slower than many would like. That's reflected in recent negative media headlines, which echo a view that the IoT has been overhyped and has under-delivered.

But it's easy to underestimate in the short term the magnitude of the change that lies ahead. When, as part of our research, we spoke to Tony Fadell, the founder of Nest, he said that betting against the IoT today would be like betting against the spread of electricity to households when the process began in the late 1800s. Our experience also tells us that entrepreneurs aren't swayed by headlines and hype cycles. Nevertheless, we wanted to see what the data would show about the state of the IoT startup ecosystem in 2016.

Here's some of the main findings from our work so far:

**Grassroots entrepreneurial activity still appears moderately healthy, though there are signs of a slowdown.**

GitHub is a pretty good temperature gauge of early project activity, and the number of GitHub code repositories that have IoT as a keyword is on track to more than double this year according to publicly available data. Successfully funded IoT-related projects on Kickstarter are also set to rise again in 2016, but the pace of growth is slowing. We found a similar slowdown in the growth of accelerator deals, but there was some positive anecdotal evidence too: Techstars, for instance, recently reported that its 2016 IoT program had received double the number of applications that its previous program had seen in 2014. It will be interesting to see if signs of an overall slowdown in grassroots activity become more pronounced in 2017.

**Industrial/Enterprise IoT accounts for the largest number of funding deals over the past few years, followed by Wearables.**

When we ranked various sectors by total number of funding deals over the past three-and-a-half

years, the Industrial/Enterprise category came out on top with almost 600 deals. We're entering what's been called the "Factory 4.0" era, in which a combination of sensors, software and backend cloud compute and storage is giving companies new insights into the performance of their physical assets. Quite a few deals in the manufacturing sub-category of Industrial/Enterprise IoT were of this nature. These startups can demonstrate swift "RoIoT"—or return on investment in IoT—to customers, who use the data and predictive analytics provided to minimize unplanned downtime and outages. On the Enterprise front, we saw a reasonable amount of activity in sub-categories such as building management services, healthcare and retailing.

**Ranked by average deal size in dollars, the Auto/Transport category comes out on top**

When we looked at where average deal dollars were largest, the leader was Auto/Transport with an average of almost $8M a deal. Yet it was almost at the bottom of our ranking of categories by total number of deals. This reflects the fact that the sector has traditionally been a hard one for startups to flourish in, not least because there are a relatively small number of customers and product replacement cycles are long. That's still true, but companies such as Tesla and Uber have inspired startups working on connected car and autonomous driving technologies, the two biggest sub-categories within the Auto/Transport field. This year has seen some big exits in the form of General Motors' acquisition of Cruise Automotive, a connected vehicles startup, and Uber's purchase of Otto, a driverless truck startup. Given the very early stage of both businesses, these deals look like strategic acquisitions of technology and teams, so replicating them won't be easy. But the prospect of a future in which fleets of autonomous vehicles roam our streets and highways is likely to drive more startup activity here.

**In the Drones category, hardware deals still dominate, but we also saw a lot of startups working on applications for aerial surveying and mapping, as well as inspection and monitoring**

While the Auto/Transport field is characterized by a small number of large incumbents, the Drone category is really open territory, at least in the non-military arena. So we took a look at what's being built there. The short answer is a great deal of hardware. But over our multi-year timeframe, we also saw a rise in the number of deals for startups undertaking some drone-level innovation to optimize enterprise services they are offering like aerial surveying and monitoring. The drone is the enabler of the service, while the real value lies in the software and analytics. Over time, hardware

will become commoditized and we'll see more firms pivot towards pure service offerings. One harbinger of this shift is 3D Robotics, an American startup that has reportedly raised over $150M of funding to build a consumer drone business. This year it pivoted towards offering drone-based services to enterprises after facing intense competition in consumer hardware from DJI, its main Chinese rival.

**In 2016 four IoT categories are likely to see fewer deals than the prior year, while four others will see an increase over 2015**

The number of deals in all of the high-level categories that we tracked rose every year from 2013 to 2015. This year will break that trend. Four of the categories—Industrial/Enterprise, Wearables, Home, and Robotics—will see a decline in deal activity in 2016. Meanwhile, four others—Drones, Infrastructure (which covers startups developing building blocks for the IoT, such as low-power wireless connectivity), Health and Auto/Transport—will grow again. The first group has seen many more deals than the second one over the past few years, so perhaps this run up and a general cooling in the investment climate explains why activity is now dipping in these categories. Of course, each area is also driven by its specific dynamics, which we plan to examine in more detail in future work.

**In terms of funding activity, the number of IoT startup deals in the sub-$2M range will decline in 2016, while the number of those in the $2M-to-$20M range and the $20M+ range will increase**

The decline in the sub-$2M range could be happening for a number of reasons. Perhaps some investors have been spooked by the negative press headlines that I referred to earlier, or perhaps this is a symptom of a general slowdown in very early stage funding activity. Another plausible explanation is that good young IoT startups are now raising bigger early rounds from investors. Meanwhile the number of larger deals is expanding, which is an encouraging sign that at least some of the startups founded over the past few years have developed business models that are inspiring follow-on financings. The growth in deals above $20M is especially notable: there are likely to be five times more of these this year than in 2013.

**The number of large M&A exits involving IoT businesses is set to expand again in 2016**

We studied data from Pitchbook on exit activity in various IoT-related categories, and this showed

that the number of M&A deals over $200M is set to increase again in 2016. Size isn't necessarily a guarantee of success: while some M&A exits are excellent outcomes, others fail to return invested capital. Nevertheless, the increase in large deals is a sign that incumbent firms who see the Internet of Things as an opportunity are willing to commit significant sums of money to acquisitions. This year has already seen some billion-dollar-plus M&A exits. Sensus, a smart meter company, was bought by Xylem for $1.7Bn, and Jasper, an IoT connectivity management platform, was acquired by Cisco for $1.4Bn. (Gaurav was involved with Jasper from the very beginning and has written about his experience with the firm here (http://wing.vc/blog/jasper-an-incredible-journey) and here (http://wing.vc/perspectives/war-stories/jasper-wireless).)

**There's been a proliferation of IoT platforms and this outbreak of 'Platformitis' is likely to lead to a shakeout over time.**

We found a large number of deals for startups either overtly pitching themselves as platforms, or positioning themselves in their marketing as platforms without specifically using the term. The total came to 707, or almost a third of our entire data set! There's certainly a need for platforms to help customers cope with the complexity of competing IoT standards and protocols. The largest number of platform deals were in the Industrial/Enterprise category, which is understandable given that customers there are looking to connect a wide variety of devices at scale. The second largest category was the home. There's a clear value proposition here too: people want the smart devices in their homes to work together seamlessly. But the very large number of IoT startups aspiring to platform status means there's likely to be a shakeout over time. This could be most pronounced in the home where, in addition to competing with one another, startups also face competition from Google, Amazon and others with big platform ambitions of their own.

**There have been relatively few deals for IoT-focused security startups**

In our overall database of over 2300 deals, we found just 45 that were for IoT security startups. That is a surprisingly low number given all of the risks associated with connecting billions of new devices to the internet—risks that have been highlighted yet again by recent events, such as the use of IP cameras and other connected objects like home routers to launch a massive Distributed Denial of Service attack against Dyn, a domain name service provider, and another case in which hackers were able to take control of a Tesla Model S from 12 miles away. There is a graphic in our slides that compares the 45 deals we found with data from Pitchbook showing there were 1277 funding

deals for cybersecurity firms in general over the same period we covered. Some of these other firms will develop IoT offerings, too, and they will take the lead in certain circumstances. But there will be plenty of distinctive cases that will require specific IoT-related security innovations, and we expect to see more IoT-focused startups emerge in this field over the next couple of years.

Our work also highlighted other areas of potential for startups. One of these is to help companies make sense of the data tsunami that is going to be produced by these billions of new connected devices. This will create opportunities for a new generation of "Data-First applications", which my partner Peter Wagner, Wing's other co-founder, has written about here (http://wing.vc/blog/why-data-first-applications-will-come-to-rule-enterprise-software) .

Looking ahead, we expect to see IoT startups reinventing entire industries, something that's already beginning to happen in areas such as insurance, where young companies are taking advantage of connected vehicle technologies to offer pay-per-mile coverage rather than traditional flat-rate plans. What happens when you alter the basic economics of a multibillion dollar industry that affects everybody? And what happens when we fully instrument the real world using a combination of smart sensors and software? How will it affect how we travel and how we work?

We don't yet have the answers to these questions, but there are plenty of smart entrepreneurs out there thinking about them, and we look forward to reporting on their work in future IoT Startup State of The Union presentations.

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http://wing.vc/blog/iot-startup-state-of-the-union-2016
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