



# DC RAINMAKER

THE YEAR IN REVIEW...2018 EDITION:

THE PAST, PRESENT & FUTURE OF DEVICES AND  
APPS IN A WEARABLES WORLD

# A BIT ABOUT THE SITE

- Started in Sept 2007 as a personal blog
- All about in-depth technology reviews...but also first looks and previews
- Reviews are the primary initial driver of traffic
- Over 4 Million page views/month, More than 3 Million uniques/month
- ~80K on Facebook, ~50K on Twitter, ~90K on YouTube
- Revenue based primarily on affiliate links
- No advertising from product segment I review

DC RAINMAKER

MY PROFILE | ABOUT ME | PRESS | CONTACT | ADVERTISE

Enter Keyword Search

HOME | BLOG | PRODUCT REVIEWS | 2018 BUYERS GUIDES | HOW-TO & TIPS | RACE REPORT | TRAVEL | PARIS BLOG | QUEUE

OCT. 3

12:25

Workout  
Great pop songs to keep your workout fresh.  
FOLLOWING  
2,328,037 FOLLOWERS  
PLAY  
Downloading songs...

Hurt Somebody  
Noah Kahan, Julia Michaels • Hurt S...

Spotify Now Available on Garmin: Everything you need to know

For the last two months I've been happily listening to music while I'm running. And finally, now you can too. It wasn't that I couldn't listen to music before that point. Certainly I had plenty of devices that supported music while running, including Garmin ones. But at the end of ...

OCTOBER 3, 2018 | BLOG | COMMENTS (12) | READ MORE

I'M DC RAINMAKER...

I swim, bike and run. Then, I come here and write about my adventures. It's as simple as that. Most of the time. If you're new around these parts, [here's the long version](#) of my story.

BECOME A DGR SUPPORTER!

# A BIT ABOUT THE READERS

- Biggest misconception: Not just endurance fitness geeks
- Fitness is primary driver: From starting a 5K to Olympians
- Editors of virtually all major sports and technology sites/magazines
- Staff, talent, and editors at many mainstream press papers/channels/shows
- Financial analyst community: Investors
- The people in this room: The sports tech industry
- Retailers, and distributors: The biggest and the smallest



# WHAT IS SPORTS TECH?

- Anything with a chipset inside that's used in sports/fitness
- My main areas of focus:
  - Wearables (of all sorts)
  - Cycling devices
  - Swimming devices
  - Action Cameras
  - Drones
- Wrist based devices
  - Activity Tracker Bands
  - Watches with a watch face
  - Small motion/HR sensors
- Upper arm devices
  - Largely heart rate sensors
  - Also muscle oxygen devices
- Chest devices
  - Heart Rate sensors (clothing and separate)
  - Motion capture sensors
- Lower body devices
  - Muscle Oxygen
  - Motion capture (running efficiency)

# JUST A NORMAL BIKE RIDE

- 3 Power Meters
- 3 GPS Bike Computers
- 3 HR sensors/straps
- 2 GPS Watches
- 2 Tire Pressure sensors
- Bike Lights
- Connected Helmet
- Electronic Gear Shifting
- Speed Sensor
- Action Camera
- Drone



# IN MEMORIAM FOR THOSE WE LOST

- 2018 To Date:

- Mio Wearables: Innovate or die
- TomTom Wearables: New hardware matters
- LVL: I think it's dead now
- Oakley Pace: Intel casualty
- New Balance Wearables: Intel casualty
- More running efficiency companies than I can count

- 2018 On Life Support:

- Mio Cyclo: Still holding on.
- Under Armour Wearables: Maybe buy some more companies?

- 2017 Lost Companies:

- Recon Jet: Welcome to Intel!
- Intel Wearables Division (the whole thing)
- BSX Insight: Got distracted
- Jawbone wearables: Profitability is hard
- CompuTrainer: No innovation
- Brim Brothers: Power meters is hard
- Adidas: Wearables are hard

# THE IMPORTANCE OF BEING THERE



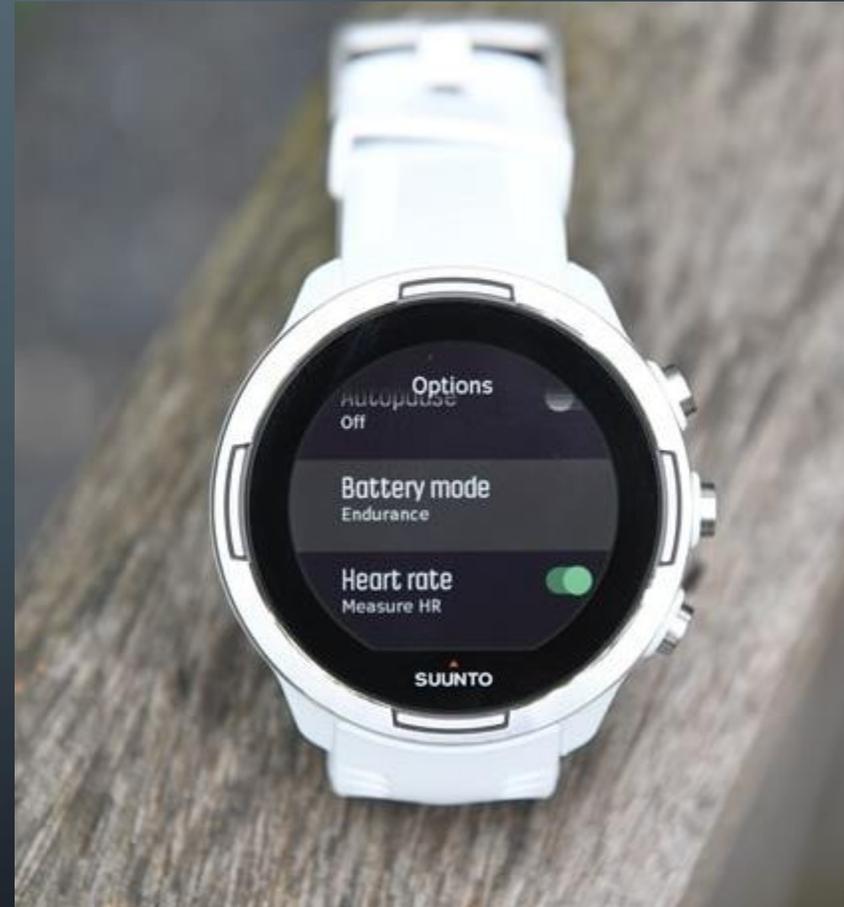
# SPORTS TECH 2018 TRENDS – PART 1

- Music becoming essential in wearables
- Contactless payments becoming normalized in wearables
- Wearables becoming medical devices
- Nobody cares about swimming devices (still)
- Bike GPS Mapping becoming popular
- Aero devices becoming talked about



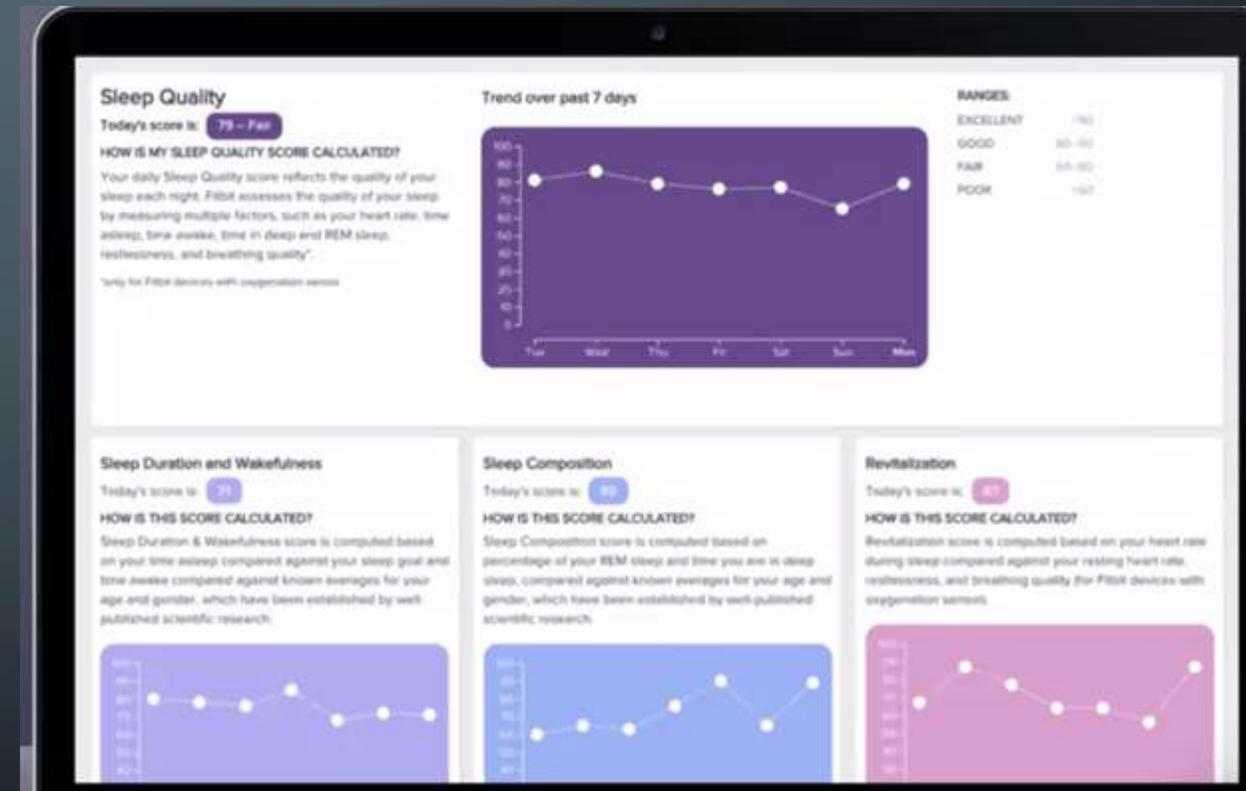
# SPORTS TECH 2018 TRENDS – PART 2

- Trainer apps becoming training apps
- Trainers becoming silent
- Running power both finding its way and getting lost
- Running efficiency metric companies fell off the map
- Cool advanced in GPS battery life – but at the expense of GPS Accuracy?
- Renewed focus on heart rate accuracy



# MOVING BEYOND DATA CAPTURE

- Last year these were common:
  - Stress metrics
  - Sleep quality
  - Fitness age metrics
  - Recovery metrics
  - Training Load metrics
  - Training Effect
  - VO2Max
- Now it's about leveraging that data for trending (finally!)



# WHICH STANDARDS ACTUALLY STANDARDIZED?

- Most sports tech startup products will fail with adopting standards
- Almost there for cycling dynamics – plenty of interest from manufacturers (unclear on consumers)
- Single-sided power continues to be tricky from an implementation standpoint (why is this breaking?)
- While ANT+ FE-C is common-place, Bluetooth FTMS still challenging
- Added Running Dynamics: No 3<sup>rd</sup> party uses it

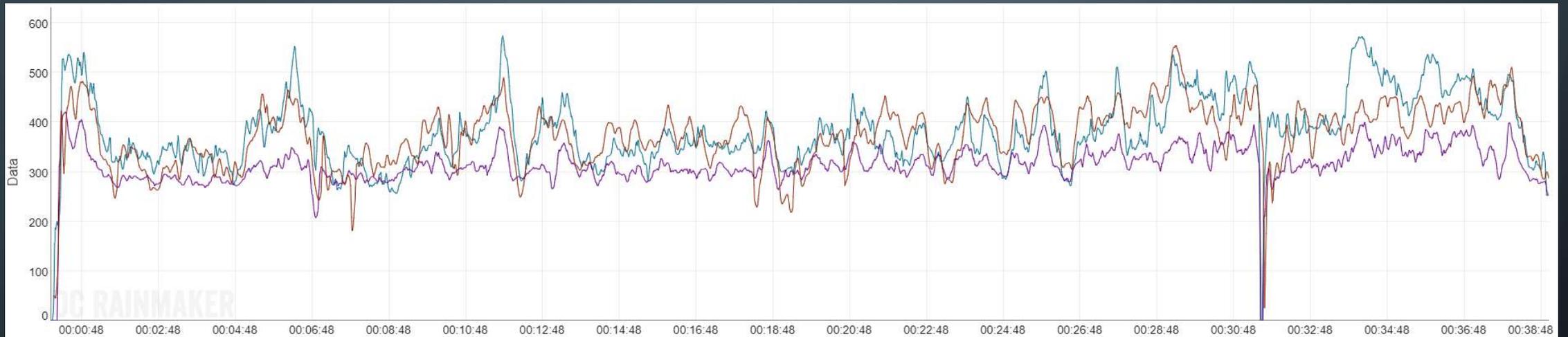


# RUNNING POWER: EXPANDING?

- New devices/sensors capturing it:
  - Stryd Running Power
  - Garmin Running Power
  - RunScribe Running Power
  - Polar Running Power
- Connect IQ downloads give some insight into usage, but still likely not even 1% of runners
- Some apps support it, but not every well
- Lack of standardization is a key driver to lack of adoption
  - Developer FIT fields have actually exaggerated this
  - No native ability to train by running power zones
  - No native ability to do longer term trends/charting
  - You don't get PR-related metrics.



# RUNNING POWER: FUNDAMENTAL DISAGREEMENT



- Every company says they've 'validated it'
- Until there's vague agreement, there will be little trust amongst coaches
- Until there's trust among coaches, there will be little push by coaches to use by athletes

# THE PAST YEAR: CYCLING DEVICES

- Low-end battles
  - Edge 130
  - Lezyne Mega-C/XL
  - Stages L10
  - Polar M460
- The larger mapping wars (slightly higher end)
  - Sigma ROX 12
  - Hammerhead Karoo
  - Stages L50
- Companies are also realizing mapping/nav is really hard
- Power meter advances cooling off
- Continued expansion of smart lighting products



# THE PAST YEAR: AERO GAINS

- Everyone's making aero devices
  - *Notio/Argon 18*
  - *PowerPod/VeloComp*
  - *AeroLab*
  - *Swiss Side*
  - *AeroTune*
  - *Red Is Faster*
  - *Garmin/Alphamantis*
  - *Velosense*



# TURBULENT AIR: PRODUCTIZATION

- The biggest challenges for aero won't be technical
- A cohesive platform is critical to success of any aero product
- Mobile-first strategy
  - And even that probably isn't going to work
- Teaching people \*how\* to aero test will be far more important than the underlying data
- Making sure data is standardized from the start: Device >> Head unit >> Apps



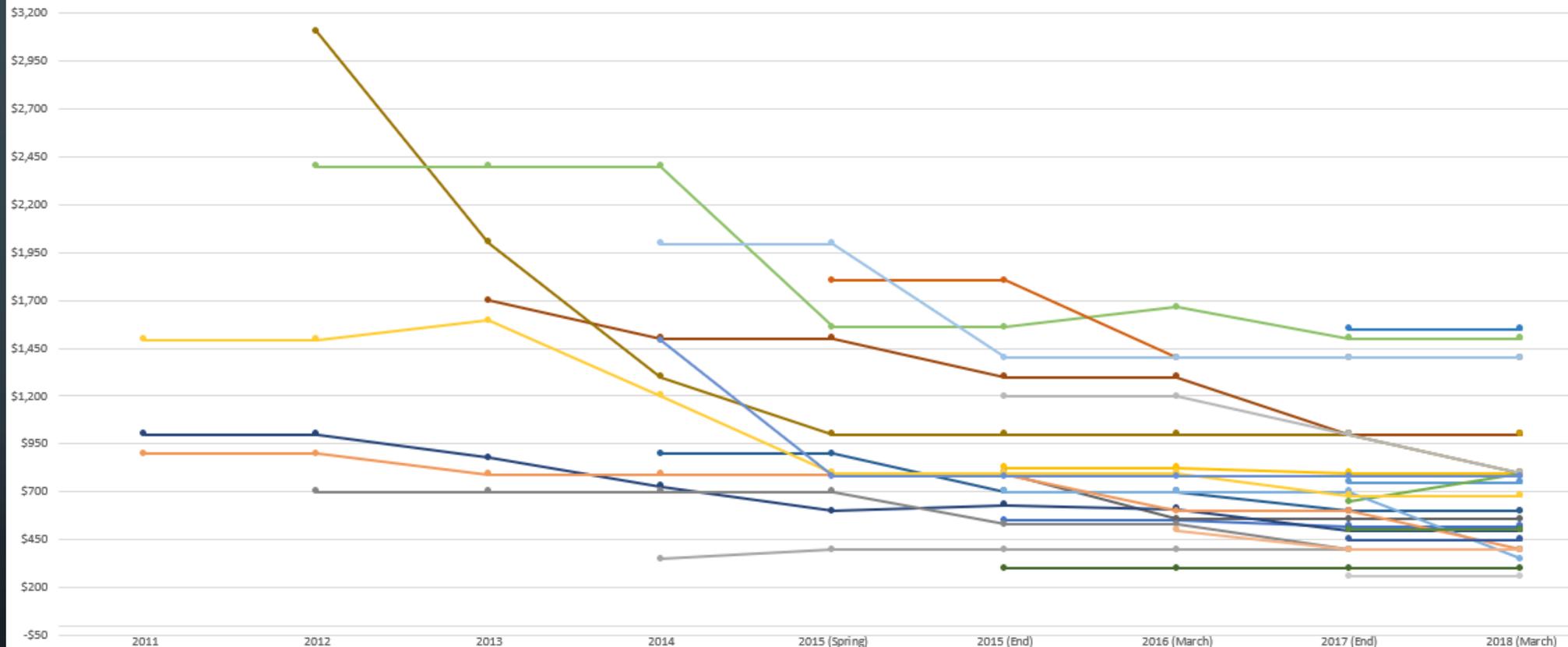
# THE PAST YEAR: POWER METERS

- No major new power meters this year except SRM EXAKT
  - Minor revs or rebrands don't exactly count
- No meaningful price drops
  - Or at least, not market driving (see WatTeam)
- Seeing companies like Favero and 4iiii becoming leaders in the accuracy/white papers/features space
- Some crowd-funded efforts, but don't see them as viable this year (IQ2)
  - Getting 95% of the way there is easy
  - Shipping non-accurate products doesn't count



# POWER METERS STABILIZATION

Power Meter Historical Pricing: 2011-2018



- |                        |                          |                             |                         |                             |
|------------------------|--------------------------|-----------------------------|-------------------------|-----------------------------|
| 4iiii Precision (Left) | 4iiii Precision (Dual)   | Easton/Race Face (Left)     | Favero bePRO/Assioma    | Favero bePRO/Assioma (Left) |
| FSA Powerbox           | Garmin Vector S (Left)   | Garmin Vector Full (Dual)   | Pioneer Power (Left)    | Pioneer Power               |
| Power2Max              | PowerPod                 | PowerTap Chaining           | PowerTap Hub series     | PowerTap Pedals Full (Dual) |
| Quarq                  | ROTOR LT/INpower (Left)  | ROTOR Power/2INpower (Dual) | Shimano                 | SRM                         |
| Stages Power (Left)    | Stages Power (Dual)      | Team Zwatt Crank Arm        | Team Zwatt Spider Based | Verve Infocrank             |
| WatTeam PowerBeat      | WatTeam PowerBeat Single |                             |                         |                             |

# THE PAST YEAR: TRAINERS

- Tons of new options this year, reestablishment of the new baseline
- Sub-\$600 range
  - Wheel on (for now)
  - Accuracy at +/- 5% (for now)
  - Everyone is mostly the same
- Sub-\$900 range
  - Accuracy at +/- 2.5%
  - Quiet/Silent
  - Direct drive (no cassette included though)
- \$1,000+
  - A dangerous place to be in right now
  - Grades of 20%+
  - Accuracy at under +/- 1%
  - 'Something special'



# THE PAST YEAR: INDOOR TRAINER BIKES

- Plenty of options over last year:
  - WattBike Atom
  - Tacx Neo Smart Bike
  - Bkool Smart Bike
  - Elite Fouripista
- Baselines for successful bike:
  - Click for shift
  - Small display for gears
  - USB ports for charging
  - Adjustability



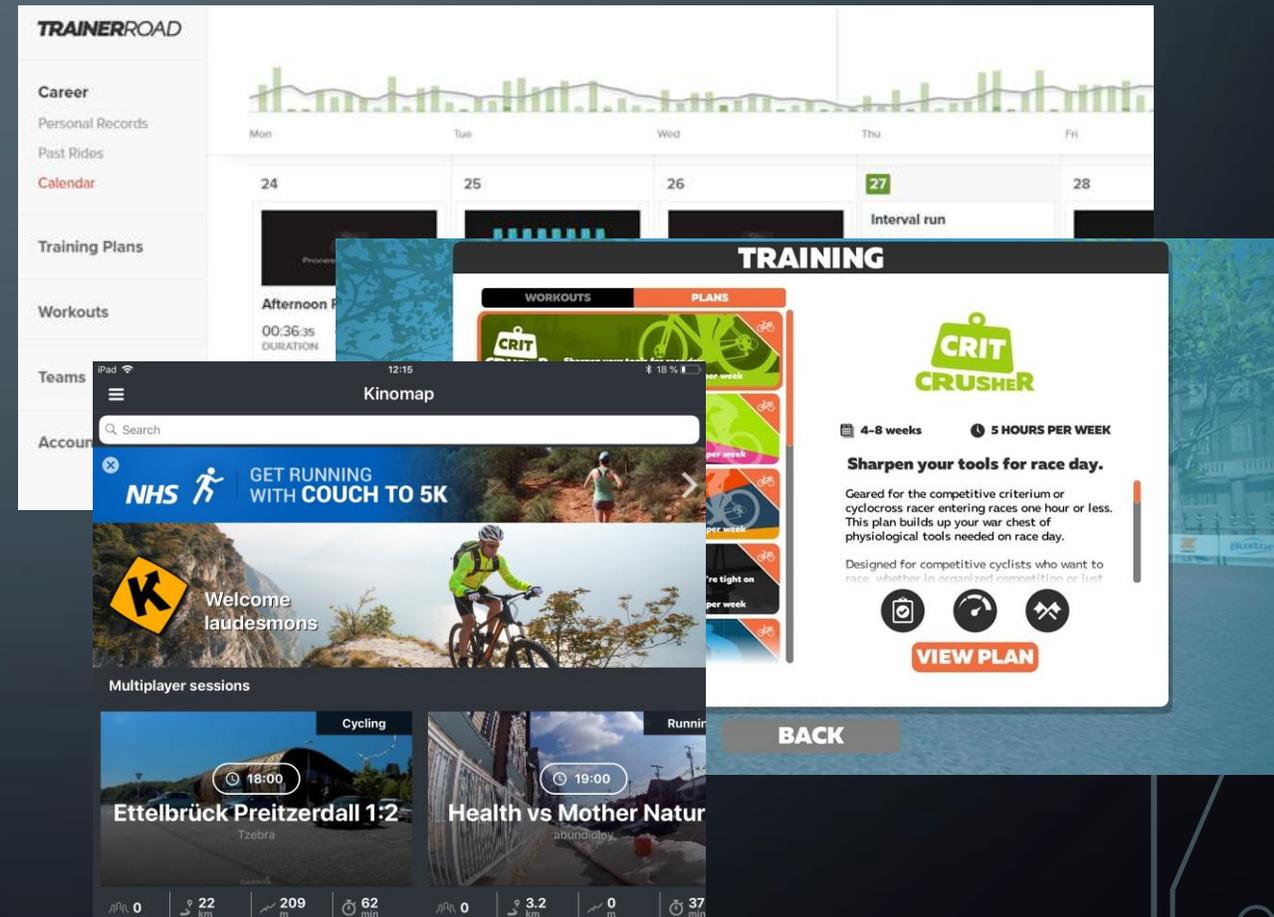
# THE PAST YEAR: TRAINER ACCESSORIES

- People want to move:
  - Wahoo CLIMB
  - Kinetic Rock & Roll Series Updates
  - Kinetic R1
  - CycleOps 'Thing'
  - Tacx Neo Series
- Motion is moving from hobbyist to 1%'er category



# THE PAST YEAR: TRAINERS APPS

- We're not just controlling the trainer anymore
- Shift to holistic training programs
  - TrainerRoad
  - The SufferFest
  - Kinomap
  - Zwift
- Also, becoming more like training log platforms
- Competition is heating up, but also thinning the crowds



# THE PAST YEAR: ACTION CAMS

- 360 action cams sorta fizzled
  - Still used in edge cases, potential for Rylo like scenarios
  - Workflow still just too messy/hard/time consuming
- GoPro with Hero 7 figured out what people really want
- Drones almost viable for sport tracking
  - Skydio R1
  - DJI Mavic 2
  - Not perfect yet: Flight time vs lock performance



# THE CHALLENGES OF BAD STUDIES – PART 1

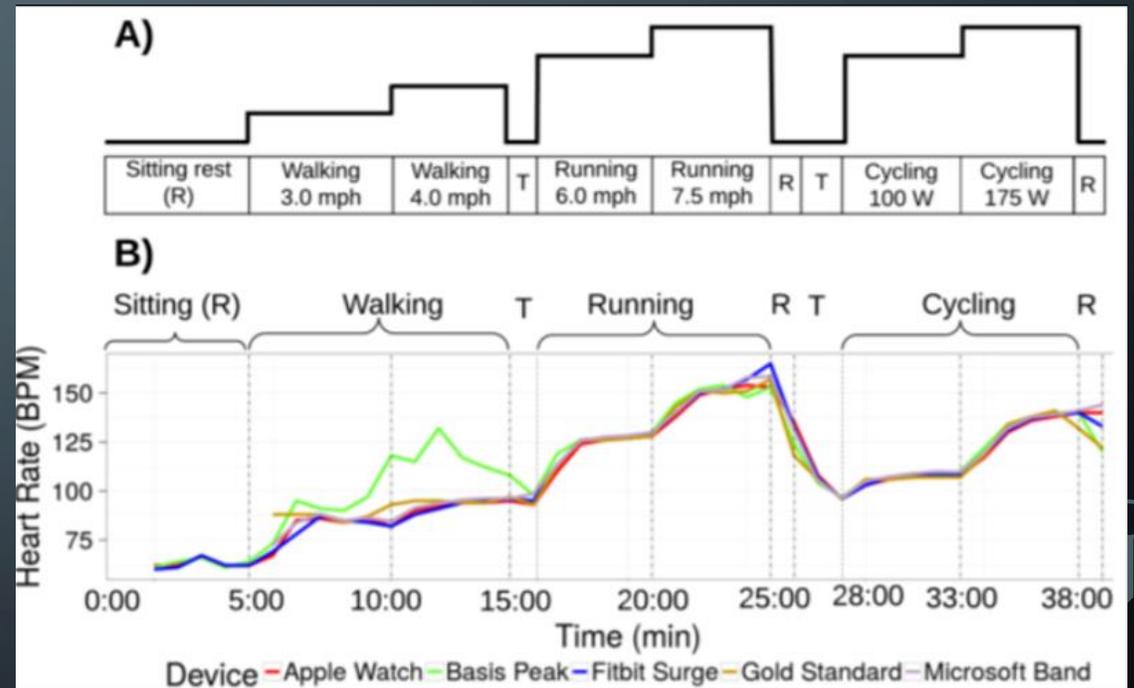
- Major studies get mainstream media attention – scares people away
- A prestigious institution can still screw up a basic study
- Placed watches next to each other
  - Impacts steps (which impacts distance)
  - Impacts heart rate (which impacts calories, stress, and many other metrics)



(Photo Credit: Paul Sakuma/Stanford)

# THE CHALLENGES OF BAD STUDIES – PART 2

- Use proper data methods to get data
- When looking at HR/Step/Etc data, all data must be used, not a portion of it
  - “...consequently, in the 5 minute protocol for each activity, we used the energy expenditure and heart rate for the final minute of the protocol (to ensure that a “steady state” rather than transient measurement was obtained).”
- Use the end user data, not ‘behind the scenes’ methods
  - PulseOn data libraries skipped the FirstBeat processed calorie data
- Going to be huge challenge for industry as they get into medial realm
- Doctors are not usually tech geeks





**MOVING TO THE FUTURE:  
WHAT'S NEXT?**

# MUSIC SERVICES ARE KEY TO PEOPLES HEARTS

- Plenty of providers:
  - Spotify
  - Apple Music
  - Google Music
  - Pandora
  - iHeartRadio
  - Deezer
  - Cats & Dogs
- Most people are intensely loyal to a single provider
- Most people are also intensely loyal to a single watch brand



# MUSIC SERVICES ARE KEY TO PEOPLES HEARTS

 **Pascal**  
October 3, 2018 at 6:03 pm (Edit)

Is Apple music also supported?

 **Basile**  
October 3, 2018 at 6:26 pm (Edit) Reply #17

Cool.

Do you have anything to share on **Google play music integration plans**? Would **definitely be the trigger** to finally update my dying fenix 2 :)

 **Alex C** 18 hours ago 0 subscribers

This is great news. Would love to see support for YT Music too

👍 2 🗨️ ❤️ REPLY 📧

 **DignifiedWaffle** 14 hours ago 0 subscribers

Now that Spotify is sorted I guess its time to start nagging about Google Play Music.

👍 1 🗨️ ❤️ REPLY 📧

 **Petr Stránský** @PetStransky · 19h

Replying to @dcrainmakerblog

And what about Google Music? Will also be support

🗨️ 1 ↻️ ❤️ 📧

 **Christof Damian** @cdamian · 8h

Replying to @dcrainmakerblog

Hey @GooglePlayMusic, how about this? I really don't want to switch to Spotify.

🗨️ ↻️ ❤️ 📧

 **Nick Radov** Pandora why don't you have your service working Garmin devices yet?

Like · Reply · Message · 15h

↑ **eagerprocrastination** 1 point · 3 hours ago

↓ Doesn't have Spotify or Google music offline, which are the top two music services. My point was that spending \$800+ for offline music isn't necessary.

🗨️ Reply Share Report Save Give gold

# MUSIC WEARABLES GOING FORWARD

- Price-points for music will continue to decrease
  - Fitbit Versa at \$199
- Who will be first mainstream band with music?
- Which non-Google/Apple watch will be first to have those platforms on them?
- Do non-music enabled high-end wearables stand a chance?
- Is music above a certain price-point considered dial-tone?



# WEARABLES AS MEDICAL DEVICES

- June 2018: Garmin Fenix 5X Plus with Pulse Ox\*
- August 2018: Fitbit Charge 3 with SpO2\*\*
- August 2018: Garmin Vivosmart 4 with SpO2\*\*\*
- Sept 2018: Apple Watch Series 4 with EKG\*\*\*\*
- \*\*\*\* So Many Asterisks



# WEARABLES AS MEDICAL DEVICES

- Medical device status will likely be oft misconstrued for both marketing and selling at retail
- It'll become the war of media/PR 'this saved my life' pieces
- The quality bar for medical certification is actually lower than people realize in certain categories



# GOING FORWARD: INDOOR TRAINING

- How you 'feel' matters
- Every trainer company person should ride Peloton at least once – ideally in-person
- But don't mix up the Peloton market with the indoor trainer market
  - Akin to mixing up motorcycle market with moped market
- Increased engagement to minimize impact of solo garage workouts
- User interface matters more than ever before



# GOING FORWARD: CYCLING

- The majority of cycling tech innovation in 2019 will be in indoor training
  - Pushing boundaries of trainers
  - Expanding connected accessories
- I see limited power meter innovation in 2019
- There's still room for advancement in connected safety products though
- And of course, lots of aero, so much aero



# GOING FORWARD: STANDARDS

- I'm excited about seeing standardized pickup of advanced pedaling metrics (cycling dynamics/etc)
- Looking forward to aero standardizing first, then productizing (unlike running power)
- Will there be standards around SpO2 data capture/recording?
- Will we see methods to mark data as from a certified medical device or not?
  - All data today is treated equally



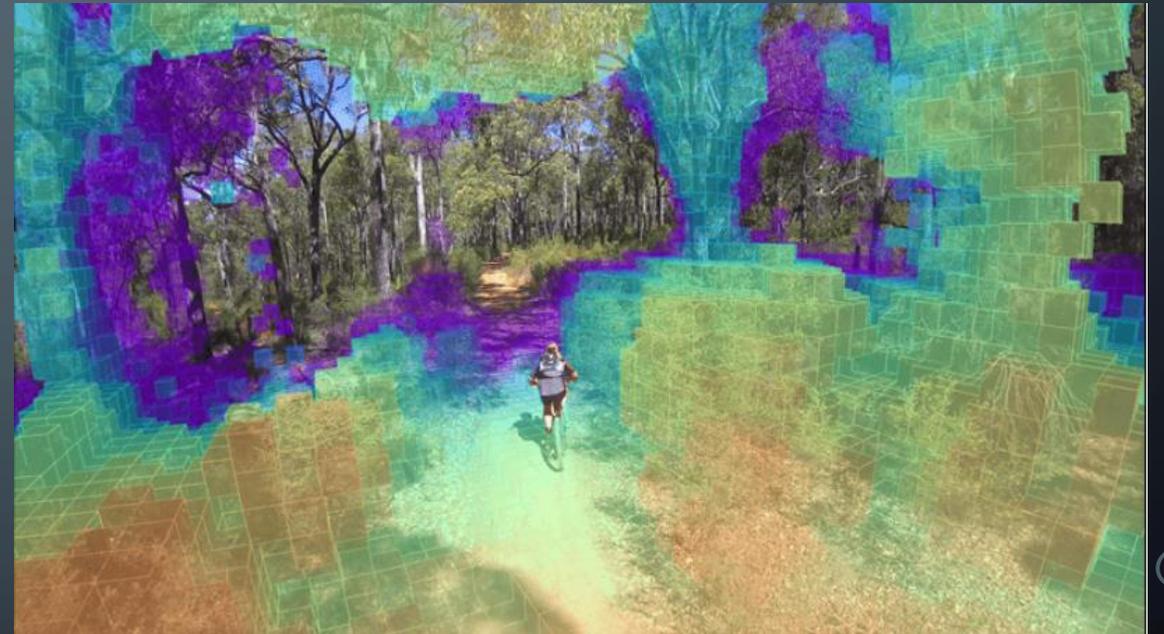
# GOING FORWARD: TRAINING PLATFORMS

- People want platforms to become smarter about dealing with day to day realities
- People want coach-level details from \$15/month plans
- Maybe algorithms aren't the solution for everything today
- Why can't training platforms leverage real human coaches for minor schedule tweaks?



# YOUR BIGGEST OPPORTUNITIES

- Make users say 'Holy Crap'
  - Sometimes, the wrong target market will think your device is stupid
  - See: Quarq TyreWiz
- Focus on engaging users where they are
  - Happy users buy products, upset ones tank your products
- Remember you're measured against tech company standards
- Oh, as always...just make cool shit.

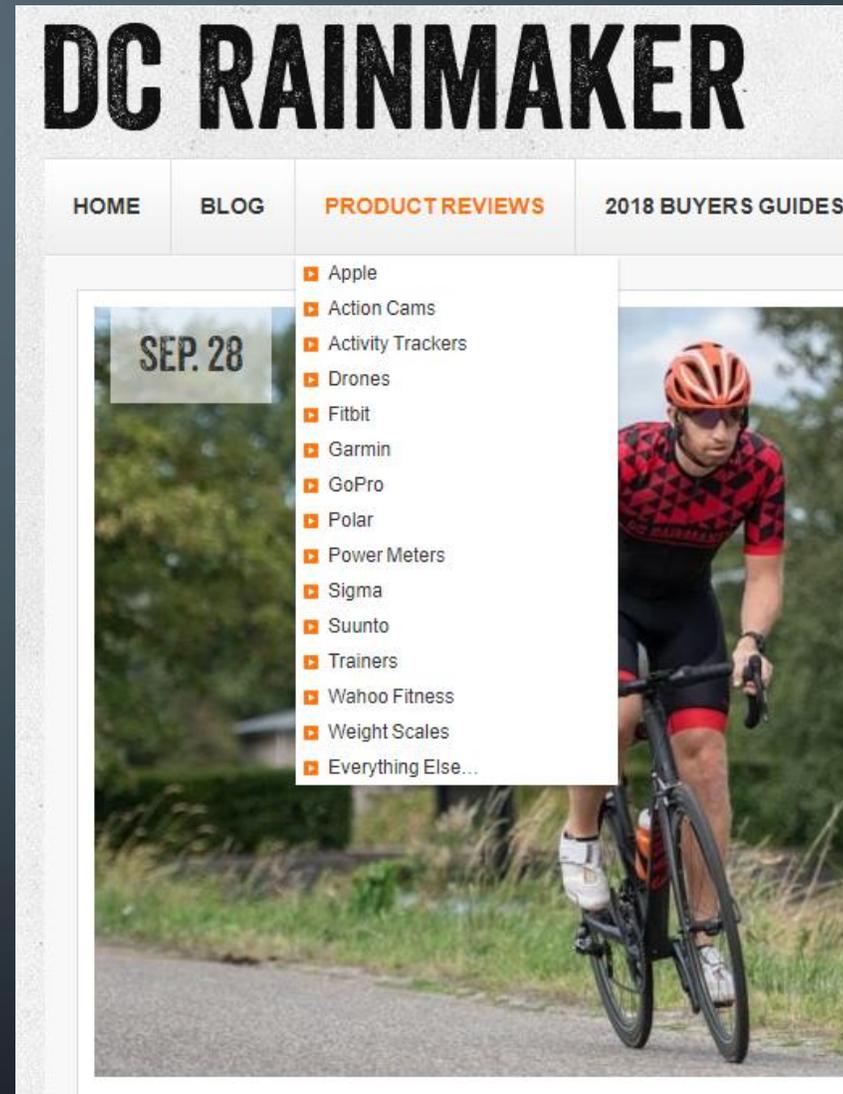


The image features a dark blue background with white, stylized circuit board traces in the corners. These traces consist of lines and small circles, resembling electronic components or connections. The main focus is the title text in the center.

# HOW I DO REVIEWS

# TYPES OF POSTS

- 'First Look' posts & Initial Hands-On posts
  - Typically trade-show driven posts (not reviews)
  - Last-minute posts, 1-3 days pre-launch (not reviews)
  - Designed to explain product, usually based on pre-release hardware/software
- In-Depth Reviews
  - Full in-depth review with final product/software



# WAYS TO ENGAGE WITH ME

- **Method 1:** NDA discussions/product access, far in advance of product release, private beta feedback.
- **Method 2:** Product launch timed review. Pre-availability product usually under NDA until public announcement.
- **Method 3:** Post-release review (already in market product). Usually less time sensitive.



The background is a dark blue gradient. In the corners, there are white line-art graphics resembling circuit traces or a network diagram, with lines connecting to small circles.

**THANKS!**  
**(I'M HERE TILL FRIDAY MORNING)**

**Contact info:**

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