

Starting a Biomedical Monitoring Company from Scratch

Dr. Steven F. LeBoeuf
Co-founder & President
Valencell, Inc.

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Outline

- 1) **Foundation** – Get this right from the start
- 2) **Winning grants** – Pair with leading partners
- 3) **Business plan** – Pick the right go-to-market
- 4) **Getting Venture Funding**
 - a) **Closing Series A** – Get a 1st paying customer
 - b) **Closing Series B** – Have a growing pipeline & scalability
- 5) **Consumer product launch** – Realize it never gets easier

1) Foundation

Get this right from the start

We all start off as entrepreneurs...



Epiphany – Austin City Limits 2004



Your founding team must be “A-players”



- At founding, your only palpable value is the limitless potential of great founders.
- A-players attract A-players... B-players attract C-players.
- Valencell found 6 A-players, but only 3 were willing to give up a paycheck.

Each founder may interpret risk very differently

Founder 1

“It’s a risk, but I REALLY want to make something big happen. So it’s worth it.”

Founder 2

“My job is starting to suck. This startup thing is much more fun and keeps me marketable.”

Founder 3

“My current paycheck’s nice... But I want to get outside my comfort zone and build up a new company from scratch.”

Ideally, each founder should agree on the exit

- Fast exit
- Build & grow
- Lifestyle

We came up with a list of business opportunities that spanned 3 disciplines...

- Energy storage (battery cells)
- Biometric sensors (biological cell activity & vital signs)
- Mobile technology (cellular communication technology)

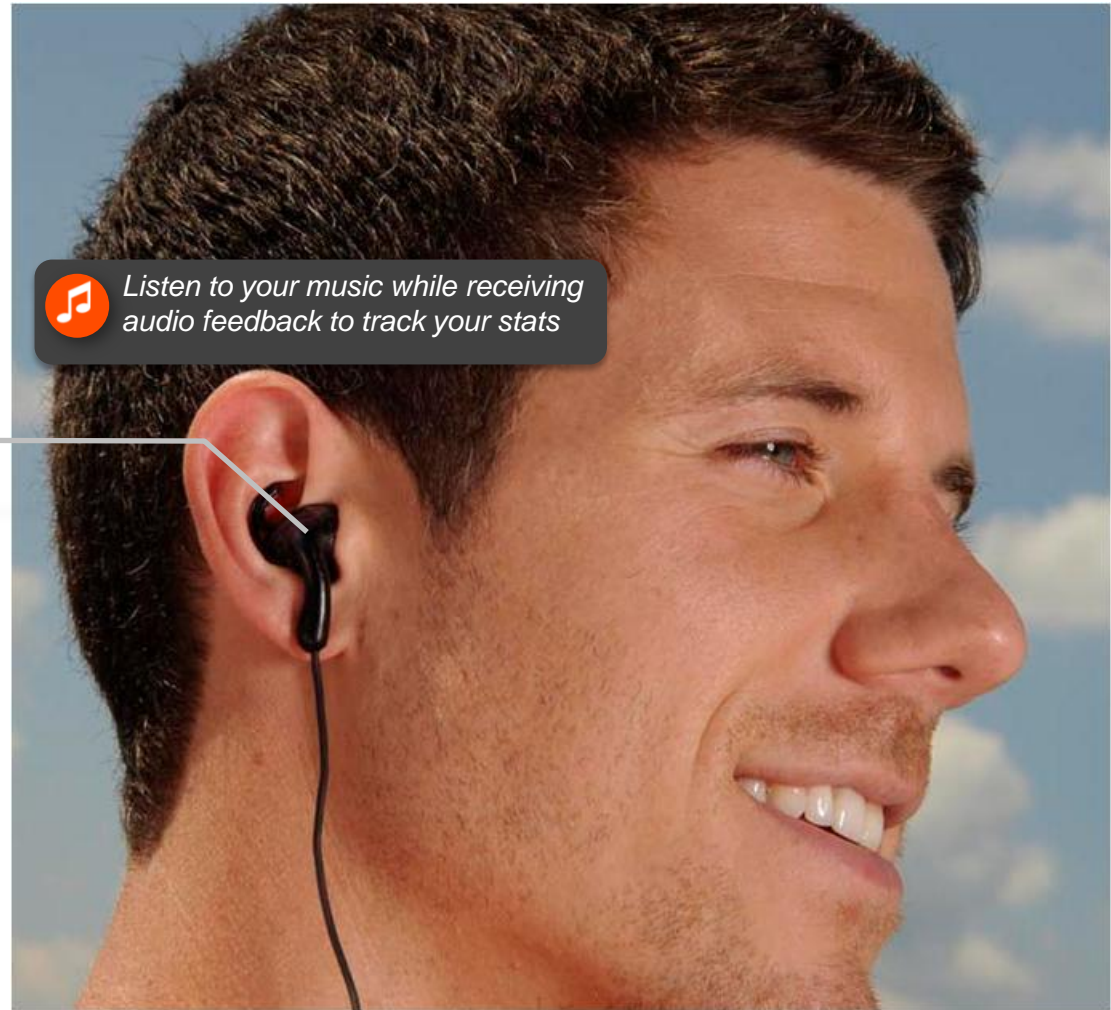
Valence (“ground state”) + **Cell** = **Valencell**

Founder's Razor: When many product ideas look great, pick the one that each founder REALLY wants to buy...



In Valencell's case, we actually didn't give up the other great ideas... We integrated many of them into the top idea that we really wanted to buy.

PerformTek Biometrics: One sensor replaces multiple devices *(audio earbud prototype shown below)*



Listen to your music while receiving audio feedback to track your stats



We developed a vision statement (2007)...

“Valencell’s vision is to make healthy lifestyles:

- easier
- more effective, &
- more affordable

through seamless mobile technology.”

*Note: This vision statement is now outdated (we have a new one focused on our licensing business), but it’s what we started with and remains similar to what we have today...

Filing patents can be critical to funding, but the lawyers will rape you – start with provisionals



Feel... so... dirty!

Things you can do for cheap:

- File provisional patents
- Do a “white space” analysis
- Develop a patent strategy
- Try to quantify the value of a patent



2) Winning grants

Pair with leading partners

SBIR grants are a good way to fund validation testing – start applying early, hurry, & wait...



- These days, chances of winning a Phase 1 SBIR is ~10-15%.
- And it takes 6 months to hear back... if the government doesn't shut down, that is.
- But for biomedical tech, you need the money, and so you've gotta write them... a bunch of them.
- And if you win a Phase 1, your chances of winning a Phase 2 is 30-40%!

When applying for SBIR grants, pair-up with leading partners in academia, industry, or both

- Valencell has applied for 10 grants to date.
- We won 7 out of 10 (a very, very high win rate).
- Of the 7 that we won, we had strong partners – either NCSU or Duke.
- Of the 3 we lost, for 2 we did not have any partners at all.
- We won more than \$3M in grants.
- Lesson – pair-up with leading institutions to win grants.
- Friendly advice – volunteer to be a reviewer for the NSF, NIH, or other granting institution.

“Blue money” ain’t green...

- Government grants and contracts are great for funding prototyping and technology validation.
- But technical research and/or development are essentially all the money can be used for.
- To file patents, fund marketing research, and fund business development, you’re on your own.
- Consider starting your business in a U.S. state that will match your SBIR award with flexible cash (“matching funds”).



3) Business plan

Pick the right go-to-market

Investors no-longer fund ideas...



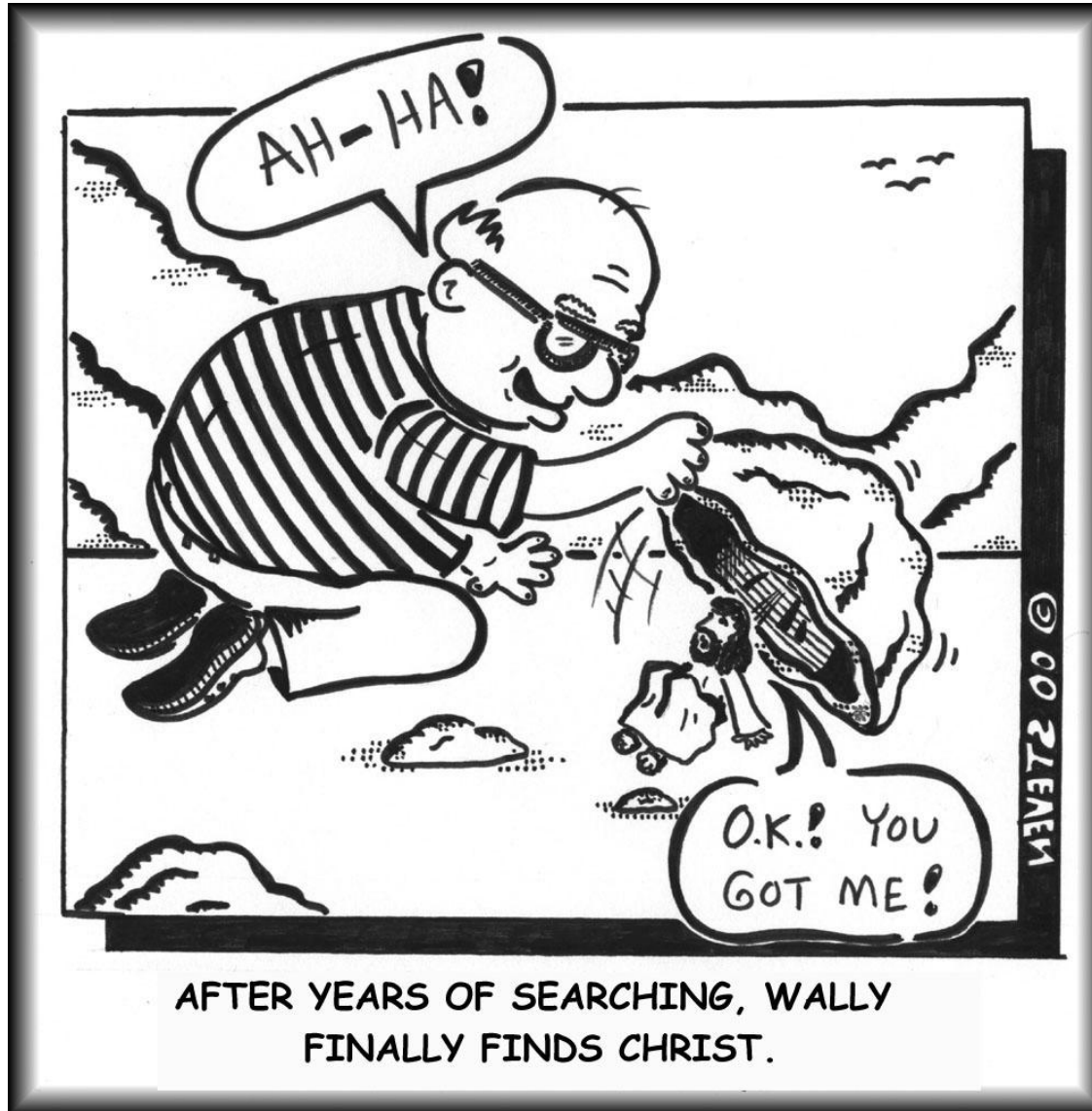
Chances are, you'll need (at least) a prototype and a plan to attract venture capital.

If you're a biomedical tech company, don't waste your time writing a formal business plan

- For a new-tech startup writing a full business plan requires a lot of work (and cash) for very little value.
- There's approximately zero chance your business plan will turn out to be true.
- Small edits to a full business plan can take hours to correct.
- Start with a storyboard – a slide deck – of your business plan as it is now; it should evolve and shape-up better and better each month.
- Focus on the go-to-market strategy

*Note – If you're a “technology startup” in the liberal sense of the term (as defined by many west coast VCs), you can sometimes write a full business plan right away. But for a biomedical startup, forget about it.

A good way to discover your go-to-market model is by finding your first customers...

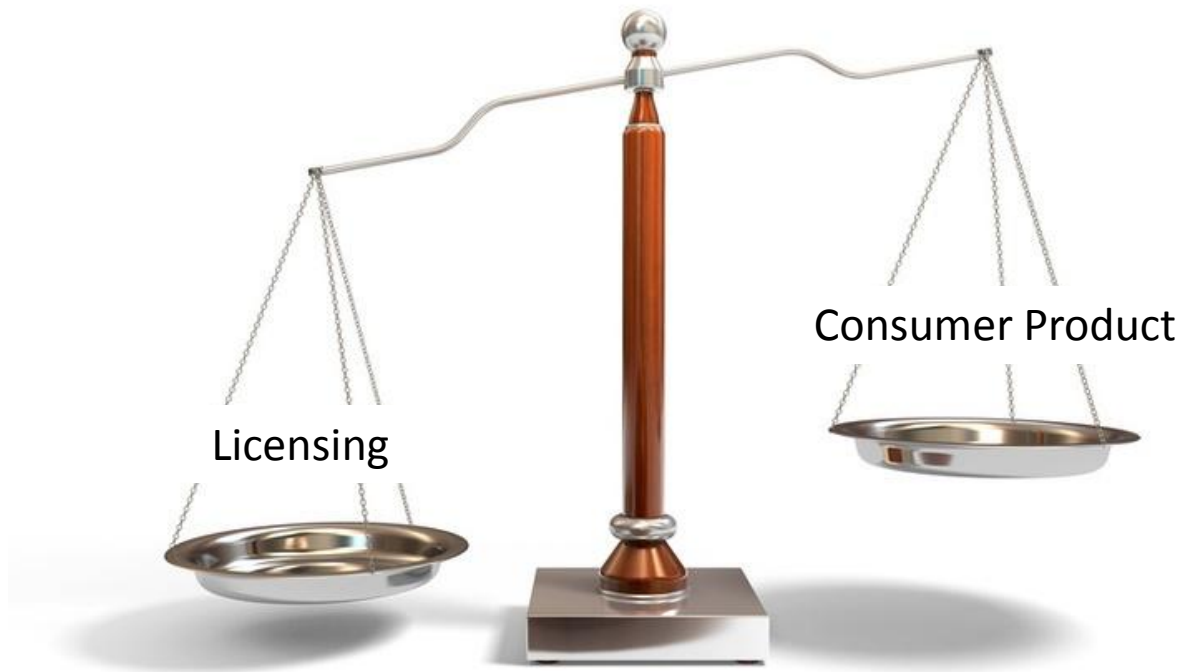


AFTER YEARS OF SEARCHING, WALLY
FINALLY FINDS CHRIST.

Valencell decided to focus 1st on consumer sports & fitness

- NPD market research showed that 58% of U.S. headphone owners (about 80 million Americans) listen to headphones while exercising
- ABI Research predicted that the wearable wireless fitness devices will reach >\$6B by 2016, with 170 million monitors in the market by 2017.
- In contrast, the mobile health market was struggling at the time.
- The marketplace was pulling us towards fitness.
- FDA approvals were not a limiting factor – The 510K approval process was quite straightforward and cost-effective.
- Literally, the choice to focus on consumer sports & fitness was entirely due to existing market size, growth, and momentum.

After a bit of trial-and-error, Valencell picked a licensing approach for multiple reasons...



If you're an engineer then, no matter what your go-to-market plan may be, VCs will assume it sucks...



Chances are, you'll need someone with a proven business background to vouch for your go-to-market plan.



4a) Closing Series A

Get the 1st paying customer

We started with venture forums but quickly learned that “venture forum” really means “consultant forum”



Lesson learned: Watch out for cash-only BD consultants!



*"From the violent nature of the multiple stab wounds,
I'd say the victim was probably a consultant."*

- 1) Never pay for someone's rolodex... Just use linkedin or somethin' like that.
- 2) Try to find folks who are willing to work "on the come" + expenses for big potential rewards.
- 3) When surveying for consultants, ask yourself, "Would I every hire this person as an employee?" If the answer is yes, then keep talkin'.
- 4) In the end, Valencell found a few outstanding advisors/consultants who worked for stock options.

Valencell started speaking with venture capitalists in 2008, but got mixed messages...

- Nobody understood the idea – but it was our fault, as we weren't able to communicate the vision or build confidence in our go-to-market strategy.
- A few VCs gave us the run-around, trying to pair us up with their favorite MBA-of-the-month or EIR (entrepreneur-in-residence).
- One leading VC firm told us – “Great idea! But music is much bigger than mobile health and fitness...”
- This same venture firm has now spent nearly \$100M on health and fitness investments!
- Lacking a product and investors, we decided to focus on finding customers to help us fund NRE (non-recurring engineering).

When looking to find NRE from corporate interests, a good strategy is to fake it before you make it...



Without a product or 1st customer, you may have to “sell the alpha” prototype to move forward...

Leverage your engineering experience and creativity towards achieving business goals

- Winning-over stakeholders – you can relate to product engineers because you understand their motivations; you can energize them better than business folks can.
- Grabbing decision makers – apply your engineering creativity & problem-solving skills towards unconventional “grabs”.
- Valencell achieved this by winning-over a “big-mobile” product engineer (our 1st stakeholder) and then working together to “grab” key decision makers in the company with a very early prototype.
- The result – our customers helped explain our vision and made the go-to-market understandable & believable to venture capitalists.

With the help of customer stakeholders, we created this pitch and won an NRE deal in 2009...



Valencell's Healthset® sensor technology turns cell phones into “health phones”

Healthset® technology enables mobile health & fitness monitoring via a biometric sensor small enough to fit inside audio earbuds

*Note: Our brand is no longer “Healthset”, and our pitch is completely overhauled, but in 2008 this totally hit the spot with our big mobile phone customer.

The NRE deal resulted in Valencell raising \$1M in Series A funding – Dec 2009

- It wasn't grants – Investors see little value in SBIR grant funding, unless there's clinical validation associated with the grant.
- It wasn't the technology – Our technology worked well in a lab environment, but not in the field, and investors never even tried it.
- Patents helped – This was a big “check box” in their investment criteria list.
- The founding team was critical, but not enough to seal the deal – None of the founders had any startup experience before.
- Money from a big customer was the validation that ultimately mattered.

Starting off with great foundational investors is very important for a startup

TDF)))

+

true ventures

- East coast
 - Strong telecommunications experience
 - Many successful exits
 - Early stage focus
 - Strong B2B portfolio
 - Experience with licensing strategy
- West coast
 - Mobile health and fitness expertise
 - Strong consumer bent
 - Newer firm, focused on founders
 - Broad reach of investment partners on both the east and west coast

Key lessons learned in closing Series A

- 1) Have a strong founding team in place – and know that your Series A investors will become part of your founding team!
- 2) Have solid commercial traction – find a customer to pay for something, even if it's just NRE.
- 3) Be prepared to hit the ground running with a believable plan, backed by numbers and trusted sources.
- 4) The 1st million is indeed the hardest million to raise... Series A took 3 times as long to raise as did Series B.



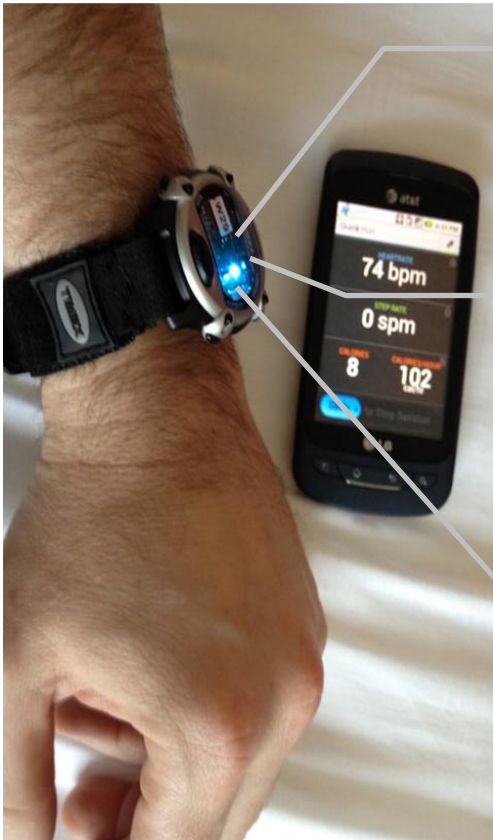
4b) Closing Series B

Have a growing pipeline

We closed a \$5.5M venture round led by Best Buy Capital mostly because of the growing pipeline

- Fueled by fresh capital, Valencell began tech transition to our 1st customer and then began scaling to multiple companies.
- Alpha player – We even converted a potential competitor to a licensee!
- Serious hurdle – The momentum was still tremendous, but the technology was taking longer and more money to integrate into products than originally thought.
- New market dynamics – Customers were asking for new form-factors, such as armbands and wristbands; fortunately, we were prepared.
- The solution – Valencell had to develop a scalable, “black-box” licensing package and take more leadership in manufacturing; additionally the company had to develop a CM infrastructure.

Scalable licensing package: PerformTek comprises 3 parts for a turn-key biometric monitoring solution



1) Sensor module

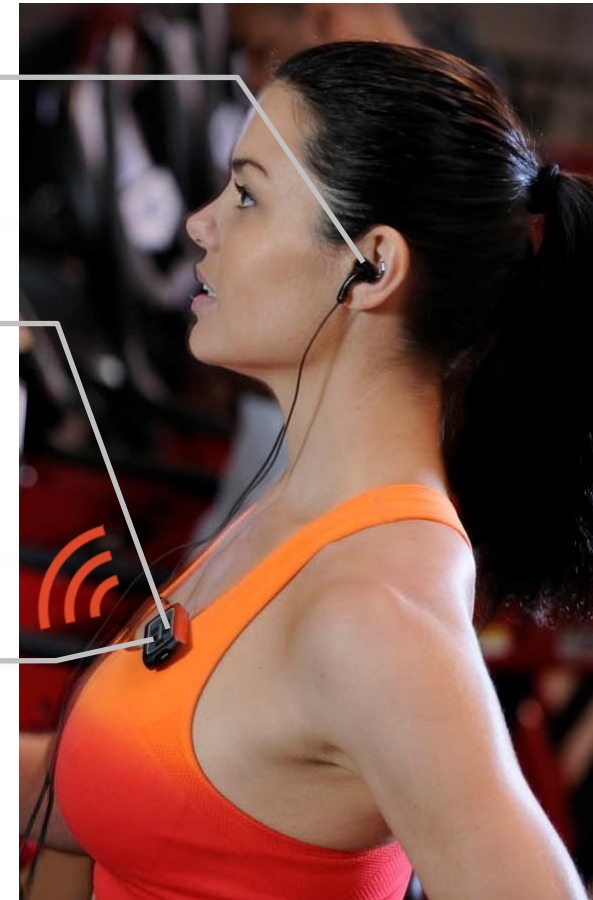
The optomechanical sensor module collects optical signals from the body.

2) Biometric DSP chip

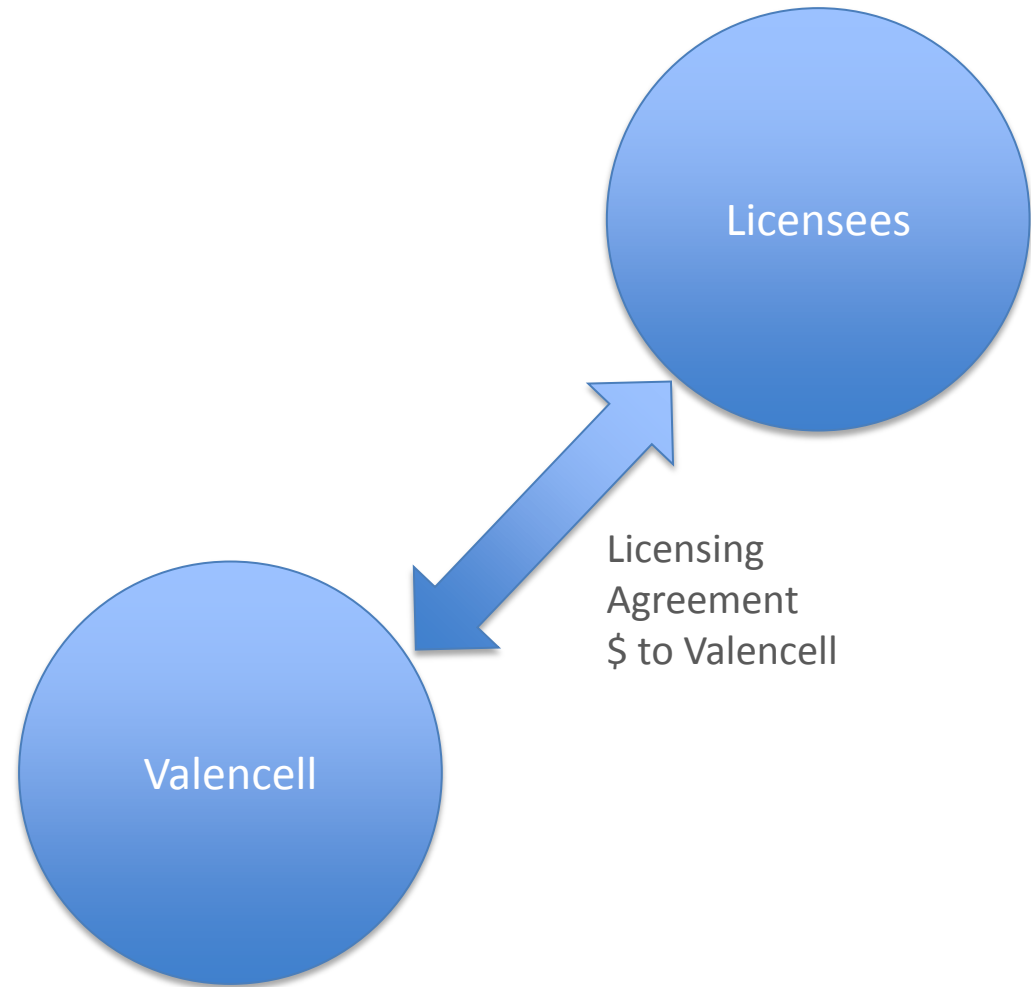
The DSP chip accurately extracts biometrics from the optical signals and sends this data to a separate wireless chipset (Bluetooth, ANT+, Wi-Fi, etc.).

3) Application interface (API)

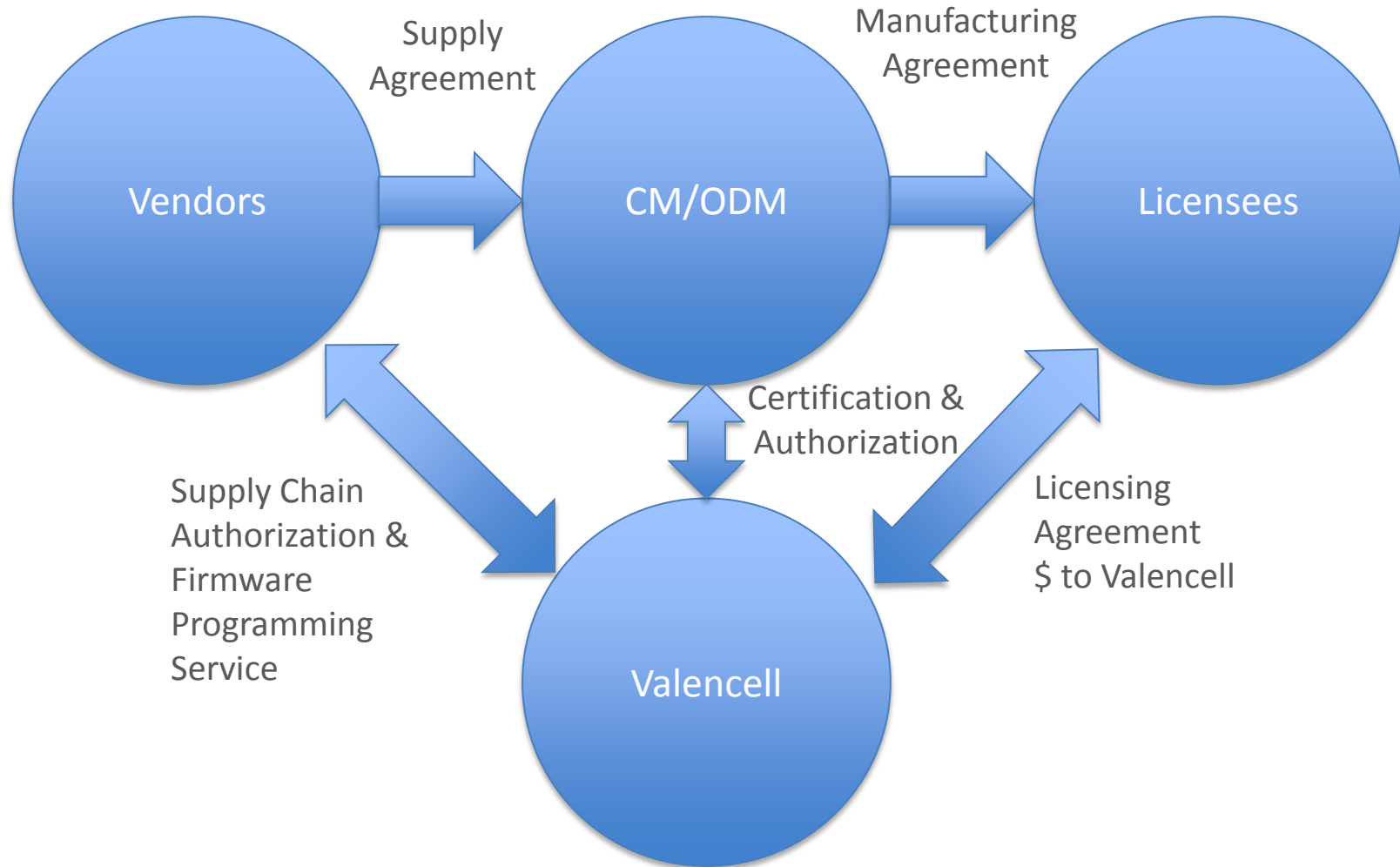
The application programming interface (API) enables communication between the biometric DSP chip, mobile apps, and the cloud; an SDK (software development kit) is available on Android & iOS platforms.



Before Series A & B, Valencell had an oversimplified view of how to launch products with licensees



Valencell had to put together a scalable infrastructure for quicker time-to-market

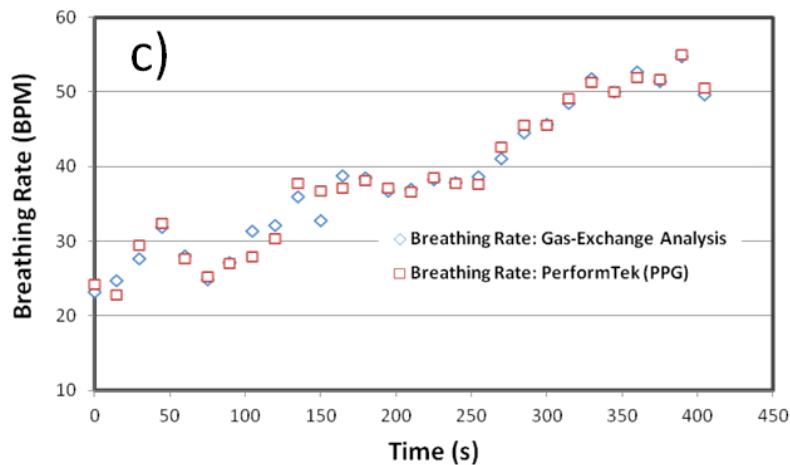


*Note: If you're hoping to commercialize a new biomedical technology in consumer markets, you'll need to study this slide and thank Valencell again and again for it.

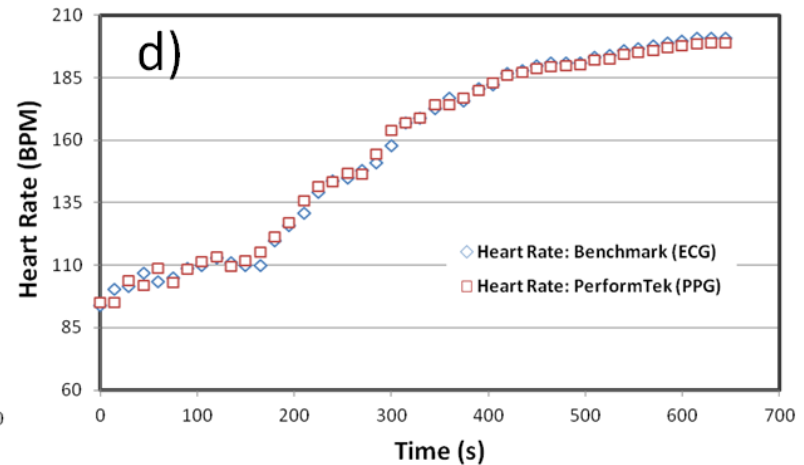
The focus on productization had its costs on R&D... Some next-gen metrics were delayed



PerformTek Breathing Rate vs. Benchmark Breathing Rate



PerformTek Heart Rate vs. Benchmark Heart Rate



Managing investors is not an exact science...

$$\Delta \chi \Delta \rho \geq \frac{\hbar}{2}$$

Major lesson learned – Make sure your investors understand what you're doing at each step. If they can't explain to you your product and execution plan, there's a major problem.



5) Consumer product launch

Realize it never gets easier



Once the product launches, it only gets harder...

- **Sales numbers** – Once the product launches, you live and die by numbers; as a licensing company, you can't control the marketing and sales, but your life depends on it.
- **Cash** – If you are losing cash, then why are you spending it? If you're building cash, then why aren't you spending it?
- **Production limitations** – Demand outweighing supply is NOT a good problem to have. It's a terrible problem to have. If you can't supply the market with enough product, you give business to your competitors.
- **Competition** – You better hope you have a good barrier to entry!
- **BD never stops** – You need to stay connected to your licensees so that you know what they need next.
- **Support** – Your customers will need technical support throughout the product life cycle, and they'll be pissed if you can't deliver.

Overall key insights learned...

- There's no secret formula – if there were, everyone would do it.
- The most important thing is to start with a solid foundation – outstanding founders, advisors, validation partners, customers, and investors.
- There's a good chance you'll need some kind of paying customer, even if just NRE, before you can raise money at a reasonable valuation.
- Use your engineering creativity for more than just engineering – apply it to business development.
- Know that each stage gets harder, and you'll have to learn and adapt quickly or else lose your company.

Thanks much!