element14
COMMUNITY

Business of Engineering
Startups on Startups

**SUCCESSFUL TECH ENTREPRENEURS SHARE THE
LESSONS LEARNED FROM STARTING A NEW BUSINESS**

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Welcome

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At element14 we're proud to support engineers and tech professionals at all levels. Many of our members use the Community as a testing ground for their products and designs, gaining valuable feedback and exposure from their fellow members before taking their products to market.

Through our Business of Engineering space, we've spoken to many startup leaders about the challenges and rewards of establishing a new tech enterprise. In this eBook, we've gathered some of their most valuable insights on a range of topics, from ideation and prototyping to funding, manufacturing, and distribution.

Whether you're dreaming of making the leap into the exciting world of startups or you're already on the road toward launching your product, we hope you find this eBook to be a valuable resource.

Dianne Kibbey
**Global Head of Community,
Creative and Social Media**

Startups on Startups

TAKING THE LEAP

Do your research. Before taking the leap into any new venture, it's crucial that you have a clear understanding of what you're building, what your vision is, and whether there's an actual demand for it in the market.

I built my first prototypes very quickly in my college dorm room and immediately took them out for testing with families. That way, I could understand whether the parents would actually buy my product, whether the kids would be interested in playing with it, and whether there was a legitimate gap in the market.

Spending a good while doing this at the beginning of your startup journey is vital. If you work on assumptions and pursue an idea that doesn't have proven value to your customers, there's a risk that you could end up going pretty far in the wrong direction and launching a product that flops—all because you didn't do your research.

Mark Pavlyukovskyy - **Piper**

> *Many of us have a great idea for a product or business that we dream about taking further. But how do you know that your idea is feasible— and when it is the right time to take the leap into making your startup aspirations into a reality?*

We felt there was a lack of innovation in our particular industry—there was a real sense that if we didn't do it, nobody else would. Launching our startup was the only way to get a product out there that wasn't available.

When it comes to making the leap, it's really helpful to have at least one co-founder on board from the start. It's much easier to lose interest or heart when you're working alone. You're also more likely to be taken seriously if you have multiple stakeholders involved in your project—it demonstrates that other people believe in what you're doing.

William Bainborough - **Doordeck**

Be persistent. You have to really believe in what you're doing. Unless you're very lucky, launching a startup is going to involve a lot of hard work for what often seems like very little reward—particularly in the early stages.

When things get tough, focus on the positives. You have the flexibility to work for yourself; you're creating something that you really care about and when the rewards do come, they're that much sweeter.

When I launched my startup, I was quite naive about how much work it would take to grow it from a hobby business into a sustainable Small & Medium Enterprises (SME). If I had been less naive, perhaps I wouldn't have had the confidence to pursue it. But, having gone through it and come out the other side, I would recommend it to anybody.

Aaron Shaw - **Pi Supply**

chapter 2 — CREATING YOUR PRODUCT

As a technical person, my inclination is always to create a design, build a prototype, do a couple of iterations, and then take it to market. The problem with that approach is that it's completely backwards.

The biggest wasted resource in our industry is entrepreneurs who are chasing problems nobody's willing to pay to have solved. Going out to market with your product as early as possible is the best way to find out whether people are willing to pay for it.

Conduct a 'smoke test' in which you pre-sell a product before it even exists. Actually take the customer's money to ensure that they're willing to pay, and then return it with the promise to be back in a year with the finished product.

Only after you've validated your product in this way should you move onto the next step of advanced prototyping, iterating, and, in an ideal world, making sure that you deliver a product that's better than the one you originally sold.

Joshua Montgomery - **Mycroft AI**

I highly recommend reading *The Mom Test* by Rob Fitzpatrick. It's a short book that covers everything on how to validate your business, which means going out to potential customers in the market you're trying to penetrate, but never mentioning that you're working on a business idea. Instead, spend time with them going through key points in their industry and try to gain a better understanding of what the real problems are.

Before attempting to launch as a business, the first challenge for any fledgling tech startup is to create a proof-of-concept model for their product or solution. From ideation to prototyping, how do you turn an innovative idea into something tangible?

I'm also a big believer in teamwork, so start talking to advisors, industry experts, and potential mentors as early as possible. Get feedback on your idea and find people with whom you can share your thoughts and ideas honestly and realistically. You should be having all of those discussions before you actually set out to start your business, not after.

Pauline Issard - **Trackener**

You don't necessarily need to have a working prototype in order to start marketing your product. During the early stages of our project, we created a demo video featuring an approximation of how the product would work once we had the opportunity to develop it.

We were very transparent with investors that we didn't have a finished product yet, but we made the video as realistic as possible so viewers could understand what our device would look like and what it would be capable of. It proved to be an excellent way to get people talking about our product and we ended up getting a lot of funding and validation out of it.

Michael Tougher - **Soundbops**

chapter 3 — DEVELOPING A BUSINESS MODEL

In my experience, the most effective business partners are the ones who can operate with a three-pronged approach.

You want one very technical co-founder who understands your product inside out. That person can head up prototyping, design, troubleshooting, and more.

Launching a successful startup involves balancing a wide variety of skills—from developing the product to business planning and marketing. In order to make your startup a success, you'll need to establish a business model and gather a core team around you at the early stage. But how do you find the right people and how do you convince them to join you on your ambitious venture?

Then you want to have one very sales-oriented co-founder—somebody with the experience to get your product in front of the right people: investors, suppliers, potential customers, etc.

Finally, you'll want a co-founder who understands business and marketing, somebody who can get your project noticed by a wider audience, conduct market research, and deliver insights.

Remember that everything grows from

your founding team. If you can establish the right balance from the start, you're going to be in a much stronger position as your business continues to grow.

Rodolfo Saccoman - **MATRIX Labs**

It's important to lay out what you're trying to do and why it's important. If you're able to attract people who share your vision, who share your mission, and who are trying to do the same thing you're doing, everything else comes into line.

Our first technical hire was a guy who already spent ten years working on a version of the technology that we needed him to develop with us. We were helping him achieve a goal that he already had. Other people joined us for different reasons. In every case, they shared the same vision, which is what motivates them to go out there every day and achieve.

Building a team also puts you in the position of being a leader, so make sure you're implementing all of the characteristics of good leadership— praise in public, criticize in private, support your people, make sure you're providing resources, not commands. Read some books on leadership, both business and military. Follow these rules of thumb and you'll be surprised how passionate and committed your team will become.

Joshua Montgomery - **Mycroft AI**

Running a startup can be a lonely experience, so get a co-founder early on. Being an engineer, most of the people I knew professionally were also technical-minded. What I quickly realised was I actually needed to find somebody who had skills that could complement my own: someone focused on the marketing and communications of running a business.

If you don't have the cashflow to build a full team from the outset, identify your weakest areas and outsource them whenever possible. It'll allow you to focus on the areas you're strongest at and you'll get a lot more done.

I didn't have a lot of money when I first launched my startup, but I started building up a network of advisors by approaching various business organisations. Through conversations, I was able to work with product developers and marketing agencies whose advice and support proved invaluable during the early stages of my startup journey.

Michael Tougher - **Soundbops**

chapter 4 THE FUNDING RUN

When kicking off any kind of funding run, expect a marathon, not a sprint. We started with a Kickstarter in March 2017 and it was December before we shipped our first batch of units. It won't happen overnight and it's likely to require a great deal of hard work and marketing to reach your target.

Crowdfunding can be a great way to not only raise capital, but also demonstrate your value to investors. Running a successful Kickstarter showed there was genuine interest in our product and we were able to calculate our margins correctly. The money we raised was able to sustain a team and we delivered a good product on schedule. If you can execute those points well, you're more likely to impress a potential investor.

Mark Pavlyukovskyy - **Piper**

There's no one answer to securing funding—it really depends on the

nature of your business and what opportunities become available. We went with a mix of investment routes in the end—a combination of venture capital and private funding.

The most important thing is to talk with a wide variety of people, make sure you're all on the same page and don't proceed unless you're confident that the chemistry is right. There's nothing wrong with saying no to an investment opportunity if you don't think it's going to work for you. It's far better to find your money elsewhere than to end up trapped in a situation that doesn't serve your best interests.

Imran Shafqat - **ThingTrax**

Having run multiple crowdfunding campaigns, we've found that they're not always the most reliable gauge of a product's market value. Sometimes a product will perform strongly on

Kickstarter, but sell slowly when released to the public. Other campaigns might struggle on Kickstarter but really take off on wide release.

It's also important to remember that you'll typically end up paying a significant percentage of your earnings to the crowdfunding platform and through credit card

> *Any business needs cash flow to become sustainable—and until your product becomes a global bestseller, you're likely to rely on funding and investment to cover your overheads. From courting investors to crowd-funding, what are the most effective ways to put your startup on a secure financial footing?*

processes. When you're running a small business, these extra costs can be the difference between ending up in profit or losing money, so make sure you take them into account from the start.

Outside Kickstarter, one of the most valuable things you can do as a tech startup is to look into whether your government offers any kind of tax credits to SMEs that spend money on research and development. We were able to get 25-30% of our entire R&D spend back as a lump sum tax credit. There are companies that specialise in these claims, and they're well worth speaking to.

Aaron Shaw - **Pi Supply**

chapter 5 FINDING PARTNERS

A lot of commercial partnerships just come down to networking—getting your face out there at various industry events, from product showcases and mixing events to accelerator programs and Hackathons. The tech community is very friendly, so if you put yourself out there you'll likely make some valuable connections.

We also put a lot of time aside for active outreach. The key is perseverance and finding the right person in a company to talk to. Building these partnerships often takes a lot longer than you might think; a small startup team can afford to be more agile and less process-driven than a major company, so consider that when planning your own timelines.

Aaron Shaw - **Pi Supply**

Crowdfunding platforms such as Kickstarter can be a great way to open the door to larger commercial partnerships. Once you put yourself out there and demonstrate that customers are willing to put down money to support your product, you'll often find a few large distributors and investors will contact you directly.

Look around your industry for different competitions and awards that you can enter and win. Often they are run or sponsored by major suppliers and distributors, so it's a useful opportunity to get your product in front of people and make connections.

Michael Tougher - **Soundbops**

> *Commercial partnerships can be a vital way of promoting your startup and making connections. Identifying potential partners and convincing them to get on board with your business can be the key to setting yourself on the path towards long term success.*

Commercial partnerships are great, but it's important to approach them with caution. It's very easy to get dragged into big companies that don't necessarily have the same vision as you. You have to be really specific in explaining how you want the relationship to work and laying the groundwork.

Be aware that larger companies can take a long time to make decisions and can have a direct impact on your own productivity. An account manager at a major corporation isn't necessarily aware that your company may die if they don't answer an email in the first month or take six months to make a decision.

The best way to avoid falling victim to this is to make sure when talking to potential partners that they're just as eager to do something as you are, and that they have a realistic understanding of the timeframes. It sounds counter-intuitive to tell a big company what to do, but if you don't do that then everything seems to drag out in time and nothing gets done.

Sigbjørn Groven - **Futurehome**

chapter 6 DESIGN & MANUFACTURE

> *You've finished your prototype and established your business case—now you need to create an initial run of your product to get it into the hands of early adopters. The design and manufacturing stage brings its own unique set of challenges and opportunities for a fledgling startup...*

The only way we managed to get around it was to knock on the door of practically every small electronics manufacturer in the country until we found a couple of guys who were prepared to work with us for an affordable fee. There's no shortcut—you just have to be prepared to do the legwork, explain your purpose clearly, and hope for some goodwill.

William Bainborough - **Doordeck**

Every hardware prototype costs money, so there is always going to be an upper limit on how much you can realistically produce. You have to be as efficient as possible—don't try to do everything. Whenever you can, avoid custom-designing a component where off-the-shelf would work just as well. It will save you a huge amount of time and money. Many hardware startups get caught up in the desire to design a totally bespoke product from top to bottom, but ultimately what matters is that your product works, not how it looks.

Find experts who can advise you—people who've worked with manufacturers or taken products to market in the past, etc. Never be afraid to ask for help. Often it takes an outsider's perspective to spot occasions when you might be going off-track or focusing on the wrong things.

Pauline Issard - **Trackener**

When we were originally starting out, we were 80% focused on hardware and 20% on software. Nowadays we've reversed that. When looking for companies to manufacture our prototypes, we were being quoted for six figure sums at one point, which was far beyond what our budgets at the time would allow.

By the time you reach the design and manufacturing stage, the likelihood is that you'll be very close to your own product. Try to take a step back and look at the manufacture brief from the perspective of somebody who has no idea what the product does or what it should look like, because they haven't spent months working on it.

We work with a lot of manufacturers that are based overseas, and one issue we've had to deal with is compensating for different ways of working. Something that seems common sense or second nature to you might be missed unless you're very specific in your instructions.

Also bear in mind that no matter how much theoretical testing you do, you won't end up with a prototype that works flawlessly. In fact, that's very unlikely in the case of your first few prototypes, so be prepared for various outcomes.

Aaron Shaw - **Pi Supply**

chapter 7 ACCELERATOR PROGRAMS

Accelerator programs are essentially advice networks. Listen to them. The mentors involved want to help you, so get used to handling feedback and try to take it on board. Be prepared to make many contacts in a short period of time, and be sure to follow up with them to avoid missing an opportunity.

The biggest challenge when joining an accelerator program is balancing

the delivery of your minimum viable product against the schedule of the program itself. We enrolled in an intensive program last year, and while we would have liked to take part in everything they had to offer, we ultimately had to pick-and-choose, balancing the potential benefits of an event or workshop against our other commitments. Set a schedule and do your best to maintain it if you want to

get the most out of the experience.

Imran Shafqat - **ThingTrax**

Accelerator programs are all about getting access to the right people—whether they be mentors, industry experts, potential investors, or customers. Finding a program that's tailored to your market is really important. They can be intense experiences, often cramming a lot of

> *Accelerator programs can provide a valuable resource for startups looking to make connections and take their business idea to the next level. But when is the right time to jump on board, and with so many on the market, how do you identify the right program for you?*

activity into a short period of time. It's a good way to challenge yourself and improve your productivity.

However, it's important to be realistic. Many people think if they get accepted into a high-profile accelerator program, they'll come out of it with funding, which is not always the case. The value they bring comes from helping you to progress your business. Potential investors want to see your business is moving in the right direction and you're likely to succeed. An accelerator program helps with your credibility, but it won't necessarily win you a lucrative

partnership in and of itself.

Pauline Issard - **Trackener**

Reaching the stage where your startup is accepted into an accelerator program is a significant progression in your startup timeline, but it isn't a silver bullet. We were selected from over 400 companies to participate in an accelerator, which gave us a lot of credibility within the industry. As a result, we were able to do a lot more networking and get in front of a lot more people.

As it turned out, we didn't secure the funding we had hoped from our participation in the accelerator, which was a disappointment. However, as a direct result of the exposure and networking opportunities that came from it, we ended up making some extremely valuable connections that paid off in the long run. While we didn't get exactly what we intended out of it, in a broader sense, we got a lot more.

William Bainborough - **Doordeck**

chapter 8 OVERCOMING CHALLENGES

> *No business enjoys a totally smooth journey to success. In this chapter, we ask the startup leaders about the biggest challenges they faced in their first year and how they overcame them.*

One of the key challenges for us was time and resource management. Everything seemed to come back to not enough time and money. Sometimes you just have to take a risk. We couldn't afford to conduct extensive market research, so we put all our eggs in one basket and created something for a single client. We were working closely with them, but we couldn't be sure we were creating something any other factories would even want. The day we got our second customer on board was a huge turning point that validated for us that we were doing the right thing.

Imran Shafqat - **ThingTrax**

One of the first major challenges you'll probably face is getting used to hearing the word *no*. A lot of people are going to rip your product apart or fail to understand what you're trying to do. It's important to develop thick skin without becoming arrogant. Listen to the feedback and take everything on board. Then remove the good bits and apply the rest to improving your product.

Dealing with limited money and time is also hard. It is best to

keep your team small and make sure each member is adding measurable value. It's great having somebody on the team who's fun to work with, but if their output isn't significant, they have no place on your team.

Keep your cash flow minimal, talk to everybody about the product and listen to feedback, particularly when it comes from people who are putting money on the table. Finally, stay focused, believe in what you're doing, and make sure you love the product. All of those things absolutely come across when you're talking to customers and investors.

William Bainborough - **Doordeck**

The biggest challenge we faced was proving the product's potential with limited funds and resources. We didn't have the data to prove our algorithm would work, and we didn't have the hardware ready to test it. You'll have to get used to being creative and find ways around those roadblocks.

We overcame them by speaking to other people who could offer feedback and share ideas about what to do and what pitfalls to avoid. Going out in the field and meeting key people in the industry helped us convince others to believe in our project and move it forward. It boils down to hard work. Try, fail, and try again.

Pauline Issard - **Trackener**

chapter **9** LEARNING FROM FAILURE

Running a startup is like sailing a boat filled with small holes that could sink the ship at any moment. You just have to keep plugging those holes and move forward in order to stay afloat.

In 2016, we suffered a huge setback that brought us to the brink of bankruptcy. We were able to survive through sheer determination and persistence to find solutions to those problems. We could have given up, but we kept pushing through it and ultimately we turned it around.

Often the technical setbacks don't throw you off as much as the financial ones. Something as simple as a miscommunication can be disastrous. You may overestimate demand when ordering your products or miss an important deadline. Sometimes you might just have a bad financial month. Pay attention to details, focus on finding solutions, and you should be able to overcome most hurdles.

Sigbjørn Groven - **Futurehome**

Don't underestimate the importance of understanding trademark

protection, basic legal agreements, and terms of business between companies you work with. We faced a number of setbacks due to a massive trademark dispute which took us several years and a significant amount of money to deal with. If you're careful and do your research up front, you can avoid these issues. Many trademark lawyers are willing to provide a free initial consultation for new customers. Make use of that free advice.

There's a tendency with small companies and startups to get intimidated by lengthy legal agreements and contracts. They might look a bit too bureaucratic—it feels like putting a roadblock in front of developing your products and getting them out of the door. But the contract is essentially a reference manual for what has been agreed upon between yourself and a third party at the outset of any business venture. A lot of people see a formal legal agreement as a sign of a lack of trust in a partner, but it's actually a product of that trust. If we had addressed those issues earlier, we would have saved a lot of time and

money and shipped our product sooner.

Aaron Shaw - **Pi Supply**

My approach to dealing with setbacks is, when something goes wrong, I try to deal with it as quickly as possible. Either ditch the idea or project and move on to something else, or just run at the problem headfirst, get the worst part out of the way, and do your best to fix it.

Problems aren't necessarily a bad thing. Whether it's people promising to put money on the table and then not following through, losing a customer, or hitting a major technical roadblock. When something goes wrong, there's always something you can learn from it—even if it's just what not to do next time. If you never fail, you'll never experience some of the most important lessons of how to run a business.

William Bainborough - **Doordeck**

At some point, your business is likely to suffer a setback. Whether it's a temporary stumbling block or a major blow that forces you to rethink your entire business model, there are always valuable lessons to be learned from failure...
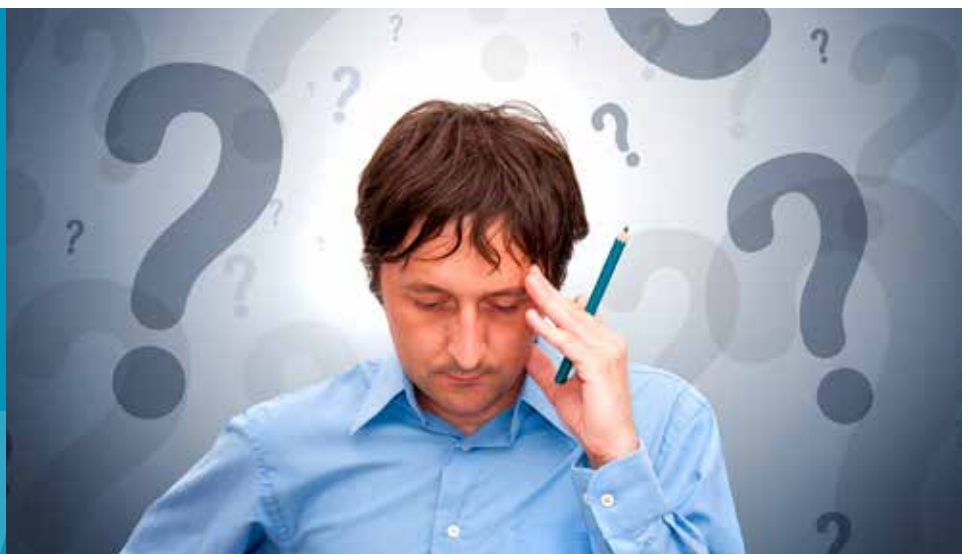
chapter 10 GOING TO MARKET

The day we launched our product, we started working on fixing things. From then until now, we've constantly been working to add features and make it better. Not every startup will have a formal product launch. If you do, it's important to see it as a single step in the process, not an endpoint.

Due to the nature of our product, it always needs to be up and running. We release a new set of features every month, which we email to our customers. Not only does it keep our product updated, it also keeps the conversation going and helps ourselves and our customers stay alert to any issues. Because we're always working on improving our product, the excitement many companies associate with a product launch is always present for us.

Imran Shafqat - **ThingTrax**

Our first major launch was wildly successful, but we took a long time preparing for it because we knew we had a really good product from the start. It wasn't just a case of getting the product ready for market. We put a lot of time into the graphics, the packaging, the marketing, creating promo videos—everything we could do to ensure we had every advantage when our product hit the market.

It was planned to such an extent that we had a timeline for how we would roll out the Kickstarter and what we were going to do every day leading up to and after the launch of the product. It helped us focus on what we needed to do and when to get the right information out there to make our product launch a success.

> *Launching your product onto the market can be the most exciting and nerve-wracking moment in the startup life cycle. We ask the startups to share their memories of their first major product launch.*

Timing is key. It's the difference between launching a product and getting a good short-term publicity boost, vs something snowballing and going viral. You need a lot of traction and a good plan. The outcome of that product launch was fantastic for us. We exceeded our goal 12 times over.

Aaron Shaw - **Pi Supply**

We held a launch party for our first major product in our office. It wasn't just a celebration, it was also a showcase. We were able to promote our first run of products and deliver a presentation that connected well with our customers.

It was a really cool moment to see so many interested people—from investors and customers to friends and supporters—showing up on a Thursday evening to see what we were up to. The outcome was a success, but we had to put in a lot of work behind the scenes to make sure everything ran smoothly.

Sigbjørn Groven - **Futurehome**

chapter 11 SUSTAINING MOMENTUM

We've been working with more or less the same product for several years now. Our focus has largely been on incremental improvements. When you don't have a new product coming down the line every few months, it's important to do new things to stay in the public eye. We're always looking at new partnership opportunities. We're very in touch with the media, our customers, and people who follow us online.

Never become complacent and always have something on the horizon that you have to stretch yourself to achieve. Customers need to see that you're constantly improving your products and not simply resting on your laurels.

Sigbjørn Groven - **Futurehome**

One of the biggest investments we made was having a full-time marketing and PR manager on board. I was criticised by some investors who saw it as an unnecessary expense, but it's vital to maintain a strong digital presence and to know that your image and the way your business communicates to the outside world is spot on.

We create a lot of good content and maintain an online presence via blogs, social media, working with bigger companies on joint initiatives, and going to shows and events. Beyond that, we really listen to our customers and as a company we pay close attention to making sure the entire team is motivated and involved with every part of the business. A team of six

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can do the work of twenty if everybody is engaged.

William Bainborough - **Doordeck**

We've had a lot of success with less traditional means of advertising, such as content creation. Our product is defined in a major way by the quality of the content that surrounds it. If you have a product without any useful guides, where the software isn't particularly great or the information surrounding it isn't easily accessible, then it's never going to achieve its full potential.

We've produced some successful how-to guides and tutorials around our products. The best thing about working on a tech enterprise is that if it's employed in a cool project either by yourself or a third party, it can be shared widely in its own rights over and above the product you're marketing.

Beyond that, we're focused on providing a really good service and reliable customer support. We try to have our technical guys be as helpful and accessible as possible. Finding ways to offer a more personal service can have a significant impact.

Aaron Shaw - **Pi Supply**

> *You've survived your first product launch. What happens next? Sustaining momentum and building on initial success is a key element in ensuring the long-term survival of your startup. What should your key priorities be at this pivotal moment?*

chapter 12 — ADVICE FROM STARTUPS TO STARTUPS

Find a mentor. Find two mentors. Call them regularly and use their experience as a resource to help you build a company. There's nothing more important to starting a new enterprise than mentorship.

Joshua Montgomery - **Mycroft AI**

Put yourself out there. Test your assumptions as early as possible. Are you solving a real problem? Will people want to buy it? How much will they want to buy it for? It's easy to put up a landing page and do some Facebook advertising to gauge interest. I wish we'd done a lot more of that early on, it would have really helped with the decision-making process.

Michael Tougher - **Soundbops**

> *To conclude our guide to launching a new tech enterprise, we ask the contributing startups to share the most valuable piece of advice they've learned on their journey so far. We hope you find their insights useful.*

One thing I hear all the time from potential founders is, "I really want to build this thing, but I can't tell you about it," as though they're sitting on a major secret. That is a huge mistake because it's not about the idea, it's about the execution. If your idea is good, your goal should be to convince people that it's good, not hide it away.

Eventually, the job of a founding CEO boils down to selling the vision to employees, investors, and customers. Starting out with an attitude that you have something to hide isn't going to help with that.

Mark Pavlyukovskyy - **Piper**

Launch early, even if it's too soon. Don't get hung up on perfection. Even if you have a minimum viable product that has a lot of bugs or is imperfect, you have to launch it to see if the interest is there and find the product's market fit. For example, before we launched, we assumed direct sales to customers would be our strongest channel. As it turned out, we got much better uptake from installers. Don't give up if you don't find your market the first time. It might still be out there.

William Bainborough - **Doordeck**

The startup world can be very demanding, so take some time out for yourself occasionally. A lot of people in my startup circle find that when business is going great, their personal lives suffer. Make sure you're conscious of nurturing both.

Imran Shafqat - **ThingTrax**

Get out of the office! Go and talk to your customers, do some testing, even if your hardware doesn't really work yet. Never wait to contact

somebody who you think might be able to help you. Never wait to try something, even if you're afraid it might be a massive failure. There's a great quote I heard somewhere, "If you're not ashamed of your product when you launch it, then you launched too late."

Pauline Issard - **Trackener**

You don't have to take every opportunity that comes your way. It doesn't fit with your objectives, turn it down. Don't be afraid to ask questions. If you don't ask, you're never going to get what you're looking for.

Aaron Shaw - **Pi Supply**

Path to Prototype:
A Roadmap for Makers

∧VNET®
Reach Further™

Getting from idea to prototype can be a challenge.

Path to Prototype is a free guide in board game form that makes the process fun. Move around the board by completing to-do cards, learning definitions, reading stories of taking a hardware product from idea to prototype and successfully bringing it to market. By the time you've completed the guide, you'll have a prototype and much of the business development for your startup completed.

To request your **FREE** copy of the Path to Prototype guide, visit avnet.com/wps/portal/us/resources/startup-resources/path-to-prototype/

DOORDECK

Doordeck is a cloud-based access control platform, allowing users to get into their office with the one keycard they're already carrying: their smartphone. Championed by Cisco and based in their IDEALondon post-accelerator, Doordeck is unique in how the product can be deployed with no downtime, no new hardware, and all in under an hour.

futurehome

Futurehome develops app-based smart home solutions that allow the user to control, automate, and monitor their household devices from anywhere in the world. Their innovative Smarthub is compatible with smart devices ranging from heating and lighting to alarms and electronic locks—all controlled through one simple, user-friendly app.

MATRIX Labs

At Matrix Labs we envision everyday life and work simplified by touchless technology. We think data is fun and indispensable. We empower global creativity with scalable, versatile, and daring technologies and products for today's world. The things we build transcend industries and regions.

mycroft·ai

Mycroft is envisioned as an AI that runs anywhere and interacts exactly like a person. Our vision is a future where the AIs that inhabit these devices that we use every day belong to the users, they represent the users, and they respect the users' privacy and data independence.

Pi Supply
The Maker Emporium

Pi Supply is a creator of innovative accessories for the Raspberry Pi mini-computer and a retailer of other maker products from around the globe.

We manufacture a range of our own Raspberry Pi add-on kits and HATs, from a high-end audio streaming board called JustBoom to ePaper HATs, which are sold through our Maker Shop and resellers all over the world.

Piper's mission is to inspire kids to unlock their innate creative potential and become the next generation of inventors. Piper impacts kids globally by growing their confidence around being creators of technology. Piper creates inspiring and thought-provoking solutions that empower the creators of tomorrow to build, explore, and invent the future.
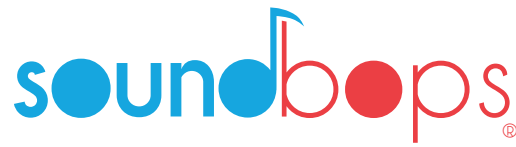
Soundbops' goal is to enable all children to play, learn, and love music. We make innovative musical instruments designed specifically for children. Our first product is music building blocks that enable children as young as three to play instantly!

ThingTrax provides an end-to-end industrial IoT solution featuring easy-to-setup devices and simple-to-use web and mobile software.

Billed as the Chromecast for manufacturing machines, ThingTrax provides operators with the ability to monitor Overall Equipment Efficiency, Overall Labour Efficiency, and Predictive Maintenance which are crucial KPIs for every manufacturer.

Trackener aims to revolutionise equine care with data and technology. Thanks to Trackener Life devices worn by the horses 24/7, horse owners and carers can get unprecedented insights from the mobile app about their horses' lives and exercise sessions, plus real-time alerts in case of critical problems.

HOW WE HELP STARTUPS

If you have an idea you'd like to develop or a product you want to take to market, our team members have decades of experience helping individuals through every step in their entrepreneurial journey.

From concept to design, prototype to production, element14's design and manufacturing services can support every aspect of your electronic and embedded design processes. Whether you plan on customizing existing platforms or designing from scratch, our experts have a proven track record in optimizing cost, building robust products, and accelerating time to market for our associates.

Hari Kalyanaraman, Global Head of Emerging Businesses at Newark element14, explains the value that element14 can provide to a burgeoning startup company:

Why does element14 find value in supporting startup companies?

Hari: element14 continues to drive innovation through products, services, and our Community of makers, hackers, entrepreneurs and tinkerers. Some of the most creative technology solutions come from start-ups. Our passion for new ideas and our end-to-end solution development and distribution capabilities are a great fit with start-ups as they look to bring their products to life and into the market.

Why is element14 uniquely suited to assist a startup from its early stages all the way through the production process?

Hari: Historically we've had the ability to provide components to startups looking to design hardware solutions. Over the years we have been developing our service capabilities to augment this. At the ideation stage, start-ups can leverage our online communities to research products and technologies, brainstorm ideas with peers and demonstrate proof of concept with existing off the shelf reference platforms. They can access a broad range of components and dev kits backed by technical support. Our engineering teams can help with design, prototyping, compliance certification and ultimately production. In select cases, element14 can help bring the solution to market through our global distribution channels. We are uniquely positioned as a one-stop shop for a start-up's product development needs.

How would a startup benefit from a working relationship with element14?

Hari: Startups are constantly juggling resources. A small, lean team has to concurrently manage product development, sales and fundraising among other activities. By being a flexible and reliable one-stop shop, element14 helps start-ups accelerate their product development and reduce time to market.

For more information regarding how element14 can support your startup initiative, visit us at www.element14.com/startups

Hari Kalyanaraman

Global Head of
Emerging Businesses

The **End**