

Engaging with Startups to Enhance Corporate Innovation

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When it comes to agility, startups have an edge over large corporations—whereas large corporations sit on resources which startups can only dream of. The combination of entrepreneurial activity with corporate ability seems like a perfect match, but can be elusive to achieve. This article examines how large corporations from the tech industry have begun to tap into entrepreneurial innovation from startups. Prominent examples are used to inductively derive a set of four models commonly used to engage with startups and to describe their characteristics, challenges, and rationales. While corporate equity is the key mechanism behind more established models, newer approaches replace equity with shared technology to connect both worlds with fewer organizational costs and greater speed and agility. This article presents a typology of corporate mechanisms to engage with startups that balance speed and agility against control and strategic direction, to map the ways companies can bridge the gap between themselves and the startup world. (Keywords: High Technology, Innovation, Partnerships, Venture Capital, Startups, Corporate Incubation, Spin-Offs, Corporate Venturing)

Large corporations and startup ventures are decidedly different organizations. Each side has what the other one lacks. The corporation has resources, scale, power, and the routines needed to run a proven business model efficiently. The startup has none of those, but typically has promising ideas, organizational agility, the willingness to take risk, and aspirations of rapid growth. Shouldn't great things happen if both sides combined their strengths?

Unfortunately, this is much easier said than done. Many past efforts of capitalizing on the complementarities between both worlds have not lived up to their expectations and were quietly abandoned. The gap between the corporate and

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startup ways of working poses real challenges to getting both sides together. Corporations are hard to approach for startups, cultural differences often lead to misunderstandings, and different organizational clock speeds take their toll along the way.

During the last few years, however, corporate efforts to reach out to the startup ecosystem seem to be on the increase. In its quest for speed and innovation, the tech industry, in particular, has produced a variety of ways of engaging with startups. Established models, such as corporate venture capital, are now complemented by newer models that seem to better bridge the gap between both worlds in some cases. This article intends to survey the field of corporate engagement with startups in the tech industry. It develops a framework for which engagement model should be applied for which purpose and identifies common implementation pitfalls.

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Background: The Startup Support Ecosystem

Producing disruptive innovation is often described as the only way to successfully compete in today's globalized economy. Examples such as Facebook or Tesla Motors have shaped the anticipation that it will be startups, not established corporations, who come up with the "next big thing" to create uncontested marketplace and disrupt entire industries. Astute observers such as Rita McGrath opine that achieving sustainable competitive advantage is no longer feasible in many fast-moving industries.¹ The best one can attain is a series of transient competitive advantages. Peter Diamandes and Singularity University claim that exponential technologies are impacting us faster than we realize, and that humans are not cognitively wired to comprehend exponential changes in the environment.² Eric Brynolfsson and Andrew McAfee use the metaphor of doubling the grains of rice on each of the 64 squares of the chessboard to make a similar claim.³ All these perspectives imply a need for large companies to move much faster, lest they be left behind in the changing landscape.

Recent years have seen a surge of entrepreneurial activity that seemed impossible in the aftermath of the dot-com bubble. Founders of tech ventures today are in a situation that allows them to bring their ideas to market at much lower cost than in the early 2000s.⁴ Moreover, an entire system of supporting institutions is ready to help steer a new venture through its early days. Angel investors and venture capitalists are back in business, as are startup incubators, co-working spaces, and government-funded support schemes.⁵ The U.S. National Venture Capital Association, for instance, reports a record \$22.7 billion in venture capital investments for the first half of 2014, which is the highest value since the first half of 2001.⁶ The National Business Incubator Association records 1,250 startup incubators in the U.S. and estimates 7,000 of them to exist worldwide (2012 figures).⁷ It seems the ecosystem is ready to support a growing number of startups in bringing their innovations to market.

In addition to these supporting institutions, founders nowadays have access to new methodologies and tools to shape their venture. The Lean Startup movement, for instance, aims to make starting a business an engineering-type activity of iterative experimenting and learning.⁸ Business schools worldwide teach entrepreneurship classes, offer startup clinics, and hold startup competitions. Not surprisingly, founding or working for a startup is clearly surpassing working for an investment bank in today's MBA students' career plans—reportedly, a record 18% of the Stanford MBA class of 2013 decided to do so. Research agencies, such as the National Science Foundation with its Innovation Corps program, increasingly encourage engineers and scientists to bring their basic research results to market through embracing the Lean Startup methodology.

Large companies have long sought ways to become more entrepreneurial. They have adopted (and often later abandoned) mechanisms like corporate venture capital, internal incubators, strategic alliances, and joint ventures. However, the growth and increasing viability of startup firms, and their attendant disruption, create a new imperative to develop more agile, rapid means for large companies to engage with the startup community.

Instead of viewing startups as simply agents of disruption, companies are trying to collaborate with startups to transform them into engines of corporate innovation. There are three consequences that flow from this changed situation. First, corporations must be able to screen, identify, work with, and monitor larger numbers of startups than before—the startup ecosystem is growing bigger and more dispersed globally. This translates into the faster decision making required by companies across many more possible relationships. Second, they must be aware of their value proposition towards a startup—how they can add value to startups that already have access to independent VCs, incubators, and other support institutions. Finally, they should be clear of what they want to get out of their engagement with startups—the corporation's strategic goals should determine the right model(s) of engagement they employ in working with startups.

The following sections present four different models that corporations can employ to engage with startups successfully. We summarize two more-established models, corporate venture capital and corporate incubators, before we look at two models that have surfaced only recently and appear to have their own strengths: outside-in and platform startup programs. We cover the rationale behind each of the models, their logic, and the common implementation challenges. What is new in our analysis is the emergence of lightweight governance models that let companies engage with more startups, and do so faster in order to keep pace with a dynamic, turbulent, and potentially disruptive environment. We also include observations on how to match which corporate model to which strategic objective for the large firm.

To gather these insights, we screened the startup support landscape for ways in which corporations from the tech industry engage with startups. Our process to construct a typology started by collecting publicly available information, which allowed us to identify the four different models. We relied on prior literature and our own prior research to characterize the two traditional models of working with

startups, whereas we set up a series of interviews to understand the two new models specifically.

A semi-structured interview guide was used in our conversations with executives, program managers, industry analysts, and startup CEOs (Exhibit 1 provides a detailed record of these activities). About half of the interviews were tape recorded, for the other cases we had to rely on written notes due to the interviewee's request not to be recorded. One interviewee per case company was asked to verify the final case write-up for correctness. Primary data was complemented through documentation provided to us by the interviewees and publicly available material, such as press reports or success stories. To identify emerging patterns and differences between the cases, we used tabular pattern matching and support by other visuals such as graphs illustrating the resource flows between corporation and startups.⁹ We stopped our data analysis when a strong fit between the data and our findings had been achieved and we were able to differentiate organization specifics from common challenges.

EXHIBIT 1. List of Interviews Conducted

Title/ Position	Startup Program Type	Topic of Conversation	Interview Location	Company HQ Location	Date	Duration
Developer Evangelist	Platform	SAP Startup Focus	Palo Alto, CA	Europe	2014-02-19	1 hour
Global Startup Program Lead	Platform	SAP Startup Focus	Palo Alto, CA	Europe	2014-02-19	1 hour
VP Corporate Platform Strategy	Platform	SAP's platform strategy	Palo Alto, CA	Europe	2014-02-19	45 minutes
CEO of Big Data Startup	Platform	Startup perspective on SAP and Microsoft programs	Palo Alto, CA	India	2014-02-28	45 minutes
Tech Industry Analyst and Blogger	Platform, Outside-In	Startup initiatives in software industry	phone	U.S. East Coast	2014-02-29	30 minutes
CEOs of Three Startups (outreach event)	Platform	Startup perspective on engaging with corporations	San Francisco, CA	U.S. West Coast	2014-03-04	3 × 10 minutes
Director Sales North America	Outside-in	Startup initiatives in telecom industry	Berkeley, CA	Europe	2014-03-18	45 minutes
Former Head Startup Program	Outside-in	Success factors of startup programs	San Francisco, CA	Europe	2014-04-03	45 minutes
Director of Startup Program	Outside-in	AT&T Foundry	Palo Alto, CA	U.S. South	2014-04-10	1 hour
Global Startup Program Lead	Platform	PayPal Startup Blueprint	phone	U.S. West Coast	2014-04-15	45 minutes
General Manager of Startup Center	Outside-in	Siemens TTB	Berkeley, CA	Europe	2014-09-04	45 minutes
Co-Head Corporate Incubator	Incubation	Bosch Startup	Phone	Europe	2014-09-25	1 hour

Traditional Models of Engaging with Startups: Influence through Equity

Corporate Venture Capital

An obvious means for a company to engage in entrepreneurial activity is to finance it. Equity stakes in promising external startups allow a corporation to keep an eye on interesting technologies and markets, influence the decisions of their portfolio companies, and potentially profit financially. Sometimes, instead of exiting, large corporations use their preferential insights gained as (co-)investors to fully acquire a particularly promising startup. A recent example of this mode of internalizing innovation is Google Ventures' investment in Nest, which it eventually sold to its own parent in the course of the \$3.2 billion takeover of Nest through Google. Another example is Intel's acquisition of perceptual computing startups Olaworks, Indisys, and Omek, in which Intel Capital had previously been an investor.

The idea of corporate venture capital has been around since the 1960s, with several ups and downs since then.¹⁰ Its most common implementation is in the form of a separate corporate venture entity that is exclusively funded by the sponsoring corporation. This setup is seen to provide the flexibility, speed, and freedom required by its management team to successfully operate in the fast-moving venture capital world. At the same time, however, the mission of corporate venture capital (CVC) entities is more complex than that of their independent peers in several ways. Corporate VCs not only pursue financial performance, but should also support their corporate parent's strategic goals (e.g., by backing startups making complementary products and services). Additionally, they should identify and encourage mutual collaboration in R&D and operations where this seems useful for either one or both of the parties involved.¹¹

The ties to the large company make corporate venture investments a double-edged sword for young entrepreneurs. While the large firm's capital is always welcome, and its technical and market insights can smooth the path to success, being bound to a big player in the industry might limit the startup's freedom to pivot and to collaborate with or exit to competitors of that large corporation. It is not always clear if the corporate investor has a hidden agenda that contradicts the startup's goals, and corporate agendas can change over time as well. On the positive side, however, corporate backing might lead to increased credibility for the startup on the market or provide access to experts and specialized equipment of the corporation, such as testing facilities. It is hence not surprising that corporate venture capital funding has been shown to have a positive effect on those startups that require specialized complementary assets and/or operate in particularly uncertain environments.¹² Consequently, some corporate venture funds position themselves as being fully independent from their parent (e.g., SAP Ventures or Google Ventures), whereas others, such as GE Ventures, stress their corporate ties and highlight the collaboration potential in common areas of interest.¹³

Corporate venture capital is an important market force today, providing about 10.5% of 2013 overall venture capital and being involved in 16.9% of all deals, according to the U.S. National Venture Capital Association.¹⁴ However,

its potential is limited by the aforementioned boundary conditions under which it makes sense for startups to accept corporate investors. In addition, shareholders of the corporation might oppose a venture arm that invests corporate money broadly for the sake of purely financial returns. Shareholders prefer to invest their wealth and diversify their portfolio based on their own policies and have ample opportunity to do so. Therefore, corporate venture capital investments always need to be linked to the corporation's strategy or provide clear operational benefits to be accepted by shareholders.¹⁵ Finally, CVC processes take time—in scanning potential investment candidates, in due diligence prior to making an investment, in the monitoring costs of the many board meetings of the startup, and in discussing possible exits for the venture.

Corporate Incubation (Inside-Out)

Not all smart ideas and promising technologies are found out in the wild—in some cases, they are born in the corporate environment, but do not fit with the current core business or business model. To profit from such cases of “misfit” internal innovation, corporate incubators have emerged as a means to bring them to market as new companies.¹⁶ Much like independent incubators, corporate incubators provide the nascent venture with funding, co-location, expertise, and contacts.¹⁷ The intention is to provide the founding team with a startup-like environment in which radical innovation can grow better than in the slow and bureaucratic parent organization. If successful, the grown-up spin-off will be able to conquer new markets independently or be re-integrated as a separate division.

Startup incubators, in general, have been linked with positive effects on startup growth and early survival due to the access to resources and services that they provide.¹⁸ This seems particularly true for corporate incubators, given the technological proximity of incubated startups and the corporation's core business. Many resources, including expensive equipment and customer access, can potentially be shared. On the downside there is a risk of overprotection through corporate backing, which might increase the likelihood (and sunk costs) of later failure. Further, close ties to the mother corporation might prevent incubator-bound startups from pursuing partnerships with their parent's competitors or from developing competing products that might disrupt the corporate backer.

Despite the mixed arguments and unclear evidence, corporate incubation has become an established means to commercialize corporate innovation. Chesbrough described the “inside out” process in open innovation to incorporate incubation and spinoffs, along with outlicensing.¹⁹ An early example is Xerox's PARC research facility, which opened in 1970 and spun off successful companies such as 3Com and Adobe. The Lucent New Ventures group is a similarly successful example. Established in 1997 to commercialize non-core inventions from its Bell Labs, the hidden gem was sold by Lucent in early 2002 in an attempt to fill its urgent need for cash.²⁰ IBM has kept its first-of-a-kind (FOAK) program in use since 1995 and incubates promising research results in close collaboration with potential customers, or even at the customer site.²¹ The outcome is not necessarily a new legal entity, but is often re-integrated into IBM's existing business.

Very recently, in mid-2014, Bosch launched its “Startup Platform” corporate incubator and shared its rationale with us. The incubator is designed to take up those ideas from corporate research or other parts of the organization that would drop out of the standard innovation process due to lack of relevance for Bosch’s established business. To pursue a promising idea, the originating team transfers to the incubator where it receives complementary services, coaching, and funding. It can also reach out to get support from established Bosch units and specialists as needed. The incubator is intended to facilitate early market exposure and pivoting for the startup and to shield it from corporate complexity.

To achieve these goals, it resides away from existing Bosch premises (adjacent to a design house and an experimental brewery) and is one of few Bosch subsidiaries in the status of a “basic rules company.” As such, the startups are not obliged to follow Bosch’s several hundred corporate procedural directives, but are bound to only about a dozen basic guidelines governing values and compliance. While Bosch is very open to the outside world and even invites external startups to the incubator to share experiences and methodology know-how, the corporate startups are closed to external investors. After a startup successfully spends its early days in the incubator and gets traction on the market, the goal is to integrate it back into an existing business unit or create a new unit inside the company to commercialize it. Spinning it off or selling it to another corporation is a secondary option for “real” misfits, but in general the idea is to drive corporate innovation by re-integrating startups once they have their products and business model ready to be scaled up.

New Models of Engaging with Startups: Influence through Technology and Market Access

Recent years have seen the rise of new ways in which large corporations engage with startups. These new models, which are often termed “startup programs,” are different from previous models in that corporate ownership is not typically involved. In addition, the programs are tailored to allow the corporation to engage with a larger number of startups, at the expense of a limited scope and more standardized approach for any single engagement. The programs are designed to act as complements to existing startup support ecosystem offerings and do not provide an incubator-like level of services. The result is a more lightweight governance process that lets corporations move faster in working with startup firms.

We differentiate two types of these startup programs: one serves to achieve outside-in innovation, making existing startups’ technology accessible and useful for the sponsoring corporation; the other one serves the inside-out open innovation to promote and establish the use of the corporation’s technical platform by other businesses.

Outside-In Startup Programs

In this model, the focus is on making interesting startup products or technologies available to the sponsoring organization by enabling multiple startups to elaborate and deliver on their ideas. The corporation profits from a head start over its competitors and can extend its existing business into “hot” areas by profiting from

external innovation. The format allows the corporation to pursue multiple interesting approaches in parallel via each of the many startup companies it incubates, which leads to faster mutual learning and a more thorough exploration for the sponsoring corporation than it could hope to do if it relied only on its own resources.

AT&T Foundry

The logic behind outside-in programs is best explained by examining a prominent example, the AT&T Foundry. This program was launched by U.S. telecom giant AT&T in 2011 and today comprises five co-working locations (four in the U.S. and one in Israel). The Foundry acts as a proxy that interfaces between the complexity of AT&T's regular organization of 250,000 staff and the dynamic startup world. According to one of the creators of the program, the Foundry's mission can best be described as "making things happen that would otherwise not happen."

The working mode of the Foundry is designed to be as close to the startup way of doing things as possible, as manifest in a number of characteristics. Potentially interesting startups—which are identified through the Foundry's network or through a response to a call for proposals in a certain problem area—get the chance to pitch their idea at a Foundry event. In roughly 10% of cases, this pitch results in a joint project with the Foundry and its scope and goal are recorded in a two-page project document. Each Foundry hosts an attorney or contracting team experienced in working in the fast-paced environment to take care of contracts and paperwork quickly.

The Foundry model is built for speed. Each project is given a fixed deadline of 12 weeks. AT&T does not take equity at this stage, nor does it claim any IP from the startup. To meet this deadline, a joint team of Foundry employees, additional AT&T experts, and startup founders gets together to work towards the common goal and deliver a useable proof-of-concept prototype that can be presented to a regular AT&T business unit. The Foundry's facilities, each of which hosts about 10 of these projects at a time, provide the infrastructure to try things out and to facilitate joint problem-solving without much distraction or overhead. A coach is assigned to every project to facilitate the process applying a design thinking approach. Only after the 12-week period is over and the result is demonstrated to AT&T executives, does the startup's role change into that of a regular technology supplier of the receiving business unit.

The Foundry is not limited to specific areas but acts in an opportunity-driven way. When, for instance, a startup named SundaySky attended a pitch session to present its technology of inserting personalized coupons into video streams, the idea came up to employ the same technology for a personalized video bill for AT&T wireless customers. Then, 12 weeks later, a joint prototype could be presented and used to convince AT&T executives of its potential. Customers now have access to a personalized audio and video explanation of their individual telephone bill, which provides value to them (85% of pilot customers found it useful) and reduces support costs on AT&T's side. Note that the startup can still pursue its initial intended market, now buttressed by a key reference customer, AT&T.

Another example is that of Intucell, a 4-person startup that claimed it knew how to massively improve reliability and speed in AT&T's wireless network—only

that it did not own the equipment to prove that point. A Foundry project later, the technology had been proven and is implemented in all of AT&T's networks today. Speed and reliability went up 10%, while tower overloading was reduced by 30%.

In both of these examples, a few months were needed by regular AT&T units and the startups to fully flesh out the final product from the Foundry prototype and bring it to market. This time span, however, is much faster than AT&T's usual innovation cycle.

Siemens TTB

The Siemens Technology to Business (TTB) center is a long-running corporate outside-in open innovation program and thus an interesting case to study. The mission of TTB is described as identifying early radical technologies that originate outside the Siemens universe and providing them with a route to commercialization through Siemens. Its first center in Berkeley, CA, opened in 1999; Shanghai followed in 2005 and Munich in 2012. In the 15 years of its existence, the center's way of engaging with entrepreneurial activity has undergone three iterations that reflect the changing world of startup support particularly well. The pattern is one toward faster decision making, with more lightweight governance of the interaction with the startup company.

The first generation model, which is still in use today, foresees a direct intake of the interesting technology: Siemens licenses the technology and hires its inventor(s) to develop it to maturity inside the corporation. It was later accompanied by a second model that TTB used in its work with research institutions (e.g., universities) to get access to interesting technologies. To incubate those, TTB provided seed funding to allow the technology to mature in a newly founded startup; additional funding was added in subsequent investment rounds to keep control. This model has been discontinued after five years due to the high capital lockup and risk involved, as well as the slow speed it required.

The most dominant model of the past five years, however, has been that of a non-equity partnership with startups. This third-generation model was enabled by the increased entrepreneurial activity in the context of universities and other research institutions, which more and more see commercialization as an important part of their work. The available startup support ecosystem helps such spin-offs grow and develop research results further, so that most interesting technologies today come out of universities in the form of a startup. For Siemens, there is no more need to engage in early-stage incubation—or, as our contact at TTB puts it: “There are a lot of people or organizations who know how to build a new company really, really well—we don't need to reproduce that.”

The central element of a partnership is the “joint development agreement” (JDA) which TTB signs with the startup. Compared to the AT&T Foundry's project document, a JDA is much more detailed and case-specific as it is used to agree on activities, milestones, IP handling, and financials upfront. It also governs the future exploitation of the joint development, for instance by segmenting future markets or regions and assigning them to either party. A typical project at Siemens TTB today runs between three and 18 months before it is handed over to the business unit for commercialization. These numbers have come down considerably when compared

to TTB's second generation model of seed funding new startups, when projects ran up to four years and cost two to four times more than today due to the equity required in the earlier model. The startups that TTB works with today are in a later stage of their development and usually do not require as much cash as the ones it helped fund in its early years. What counts for them, aside from the cash from the JDA, is to get the Siemens brand name as a go-to market partner or a pilot customer, access to specialized Siemens engineers, and access to new customers and markets. In contrast to the AT&T model, the joint TTB project is not co-located, but regular visits to the other side are very common and a defined stage-gate process ensures regular alignment over the project's duration.

Siemens TTB globally screens about 1,200 potential project pipeline ideas per year, goes into a detailed evaluation for 80 of them, and starts a project with about 16. The Siemens TTB location in Berkeley alone has run 72 projects since 1999, resulting in 13 new products or entire product lines on the market so far, with a few more in the pipeline. The business impact resulting from those products is noticeable even for a giant corporation like Siemens, but confidentiality does not permit us to report it here. TTB is also proud of the three industry awards that it received for TTB-enabled innovations—as they illustrate, its mission to bring radical technology to market was successful.

Connecting to the Core Business

Given their position as the interface to the startup world, the corporate units running outside-in startup programs need to bridge the gap to the corporate world. Their job does not end with a successful prototype or proof-of-concept ready to be transferred to a regular business unit for market launch. Rather, they need to push this external innovation internally to make sure its market launch will eventually happen and the project's results don't go by the wayside. The organizational interface with the core business is hence a highly critical point in an outside-in program.

At AT&T, for instance, the process occasionally stutters when the opportunity-driven Foundry has completed a project that the budget-driven business unit had not planned in its annual budget, and is thus not ready to take over and drive further. To achieve continuity here, the Foundry team tries to involve representatives from the receiving AT&T unit in different ways and get their buy-in as early as possible. Ideally, the receiving business unit gets involved before the actual start by choosing the initial topic of a startup pitch session, delegates some employees to participate in the Foundry project, and provides high-level management sponsorship for the project. These measures help mitigate, but not fully solve, the issues involved with handing over a project from startup program to regular business.

Siemens TTB seeks a more formal commitment with internal stakeholders, but essentially uses the same mechanisms. With a subset of the corporation's nine divisions, TTB has signed a multi-year master contract which details technology search fields, budgets, the number of projects and transfers aimed for, and much more. A two-level relationship with each of the divisions safeguards the contractual goals. On the top level, a board of innovators consisting of high-level division representatives (e.g., its CTO and sometimes even CEO) comes together with TTB heads and technology scouts twice a year to review project pipeline topics and track the

progress of the ones currently running. At the operational level, a dedicated contact person at each division and at TTB's side is appointed to ensure that a TTB request ends up with the right contact within the division. At the project start, each project must have project partners within the business units of divisions assigned. After handover of a project, which the receiving business unit acknowledges and commits to market launch formally, TTB stays involved as a coach and supporter—one of the metrics tracked by TTB is revenue generation on the market from its projects. Overall, at least 50% of Siemens TTB's staff time is directed internally towards the business units (the other half is spent with the startups), which illustrates the importance of interfacing internally inside large companies to make sure promising startup projects don't fall into the gap between the two.

Managing Intellectual Property

When corporation and startup work together to advance a technology, the issue of managing intellectual property comes into play. The two programs portrayed here have developed different approaches, which might be explainable by the type of technologies involved. In AT&T's case, projects are often centered on adapting a startup's technology to AT&T's systems and infrastructure. These systems are exposed through technical or programming interfaces, and changes are required at both sides to allow the systems to talk to each other. As each party works on its own side of the interface, intellectual property is naturally separated as the division of tasks is clear.²² The interface is adapted on the go when needed, which is a benefit of co-locating the joint project team in the Foundry. The technical interface as a line of separation does not always hold, however, and more openness in exposing the core technology behind it is sometimes required. Signing a reciprocal non-disclosure agreement is hence mandatory for everyone involved, and the Foundry's on-site legal team is available to counsel both sides about IP matters when needed. Overall, IP troubles have not emerged in the history of the Foundry so far.

At Siemens, radically new products are the goal of startup cooperation in its TTB center and technical interfaces as a natural divide often do not exist. Therefore, Siemens TTB strives to sort out all IP-related issues in the joint development agreement which is signed by both parties before the project starts. Experience in designing and negotiating these contracts has accumulated at TTB over the years, and its capabilities in this field are seen as a core competency of the unit within Siemens.

The Startup Perspective

Startup firms worry that companies will steal their ideas, or take forever to make critical decisions that are necessary for the startup to succeed. For startups, engaging with a large corporation is greatly simplified if a startup program is in place. With the program, the corporation establishes an interface that is designed to work with nascent companies and to meet them halfway on these concerns. It forgoes many of the "joys" usually encountered in relationships with large corporations, such as lengthy vendor qualification processes or strict certification requirements. The startup gets access to corporate resources not available elsewhere in

the support ecosystem (e.g., expertise or equipment, as well as market access and industry expertise) and can add a well-known brand name to its list of customer references after completion of the joint project. The project-based approach helps limit the risk of dependency and does not influence the future course of the startup the way a corporate venture capital investment would. These characteristics address some of the fears that prevent startups from collaborating openly, although our contacts reported some occasions where fears still arose.

Corporate Accelerator Programs

A recent subdivision of outside-in innovation programs are so-called corporate accelerator programs. The term is used differently in different contexts, but in the corporate world usually denotes a time-limited program that startups can apply for if their product falls into a certain category. The program is not constantly run, but aims to assemble a set of promising startups at a certain point in time. Mimicking independent accelerators, such as the Y-Combinator in Mountain View, a cohort of startups is selected from the applications and receives support, funding, coaching, and co-location. In 2014, Intel began offering such a program for startups in the wearable technologies field. The challenge runs over several rounds (semi-finals, finals) and the 10 finalists are promised to receive \$50,000, business coaching, technical support with Intel's new Edison platform, and "intensive incubation and education" for a three-month period before the final winner is determined. A virtualized accelerator model is used to track and manage the huge number of participants in this program: 400 teams from 27 countries applied.

Nike, in its recently terminate foray into electronic gadgets, ran the similarly organized Nike+ Accelerator program in 2013. Ten applying startups were chosen to reside in its Portland headquarter for a 90-day period. Equipped with \$20,000 in funding from the cooperating TechStars incubator as well as coaching and support by both companies, the goal was to produce truly innovative apps for the new range of Nike+ gadgets. Nike, since then, announced its withdrawal from sports hardware and there was no new edition of the accelerator in 2014. However, the company continues to reach out to startups that want to develop apps based on its new NikeFuel software platform—potentially, a platform startup program is under way.

Inside-Out Platform Startup Programs

Outside-in startup programs try to harness a new technology for the corporation and put the startup into the role of a supplier. The platform model reverses this logic: the goal is to get startups to build their products using corporation-supplied technology to expand the market for the corporation, an inside-out innovation approach. Platforms have become a dominant model of innovation nowadays. Platform innovation occurs when an ecosystem of companies produces complementary innovations and thereby strengthens the common platform.²³ Ideally, a large corporation can position itself as a platform leader and take profit from every innovation that is sold on the platform—think of the app economy, which was enabled by the Apple iOS and Google Android operating systems and gives the two corporations

a 30% revenue share of every sale. Two recent examples illustrate how startups are used to establish such platforms.

SAP Startup Focus

In the case of software vendor SAP, establishing a new platform can be studied first hand. Its traditional business as a market leader in the enterprise software space is to produce software solutions that help large companies run their business. However, when the company released its new product HANA in late 2010, something was different. This product was a mere database, yet built on a revolutionary in-memory technology that could process enormous amounts of data at incredible speed. Not only did SAP's bold claims of HANA's miracle performance raise skepticism in the industry, SAP also needed others that would use HANA to build useful products that exploited its speed. As its co-founder Hasso Plattner and then-CTO Vishal Sikka announced many times, SAP wanted to become a platform company.

Against this backdrop SAP decided to launch Startup Focus in 2012, a startup program that would help prove two points: the readiness of the technology for non-SAP developers and SAP's commitment to be a platform provider. It was both strategic and marketing considerations that led SAP to entice ten startups to present HANA-based versions of their products at the spring edition of its Sapphire customer conference in 2012. Driven by the goal to bring the number of early platform adopters up to 100 for the fall edition of the same conference, SAP realized that a standardized approach was needed to achieve the required scale within the required time. With more than 1,500 startups in the Startup Focus program by mid-2014, this goal was clearly achieved.

The program is structured along three phases: outreach and engagement—getting startups interested in the program; training and enablement—supporting them to realize their product; and market enablement—supporting them to market their product (and with it the HANA platform). Dedicated teams within SAP take care of organizing outreach events and prototyping workshops in the first phase, help with technology issues in the second phase, and identify potential customers among SAP's existing customer base in the third phase. As several startups revealed to us, this sales support is as important to them as the actual technology that SAP provides. A startup CEO who was targeting the oil & gas industry, for instance, said SAP was “extremely helpful and responsive” in providing him with contacts and a demo opportunity for that particular industry.

SAP is very clear about its rationale for working with startups: it is their speed of producing innovation and getting things done that makes them attractive partners. In the big corporation field, it took SAP 18 months to negotiate its first HANA platform deal with SAS, another large software vendor. In the same 2012–2013 timeframe, almost 1,000 startups were added to the program. SAP is not picky in admitting newly applying startups to its program, as the cost and thus risk for SAP in any individual startup's failure is very low. An incremental startup only brings a slight increase in support interactions, as well as costs for its free developer license and time-limited access to a development system in the Amazon AWS cloud.

Along with the impressive number of startups has come an increase in industry reach: SAP claims 60% of the startups work in fields in which the company was not present before, such as genome research, sports analytics, and targeted advertising. Currently, however, SAP is shifting its attention from adding more and more startups to getting more business value out of the existing startups.

Startup Blueprint

An even more standardized and networked approach is in use at PayPal, which launched its Startup Blueprint program in late 2013. As an established e-payment platform on the web, PayPal is determined to expand its platform position into the thriving app economy and mobile payment space. As part of these efforts, PayPal's developer relations unit was already attending 150 startup events per year all over the globe when it announced the Startup Blueprint program. This program was designed to reach out to an even larger number of startups by introducing an open nomination process with (currently) 80 partner institutions from the U.S. and Europe. These partners—incubators, accelerators, and venture capital firms—act as a filter in that they only invite startups from their portfolio. Thus, only pre-screened startups have access to the benefits that Startup Blueprint provides; about 1,000 of them were added to the program in its first year.

PayPal fills a central need in many startups' early days: collecting money from customers in a safe and reliable way. PayPal makes this an easy task by providing the required programming interfaces and a direct 1:1 contact in its technical support team to clarify any issues. It also provides mentors (startup advisers) who help participating startups design the right payment options for their business model, which is often based on a freemium logic. Most prominently, however, a free transaction volume is granted, which translates into \$1.5 million of processed revenue before any PayPal fees are due. Similar to SAP, PayPal connects to many startups and then profits from the successful ones later on. PayPal's most successful program member in that respect is probably Uber. The hyped taxi app company processes 100% of its transactions to this day through PayPal's platform.

PayPal assures that there is no contractual or technical lock-in to its platform for program members. However, a practical lock-in effect often results—which fast-growing startup would risk replacing its payment provider without a compelling reason?

From Free to Freemium: Attracting and Retaining Startups

The aspect of using (initially) free offerings to attract a large number of startups is a central characteristic of all inside-out platform programs. Microsoft, which launched its BizSpark initiative in 2008, has successfully used free software licenses and access to its cloud offerings to lure more than 100,000 startups into its ecosystem. Not unlike consumers, cash-starved startups are very good in getting the most out of these "freebies" because nobody prevents them from multi-homing (i.e., working with several competing partners at the same time). One founder that we spoke to reported that his company's software was designed to

run on both SAP HANA and Microsoft SQL Server databases. If lightning fast calculations were not a must, he was inclined to sell a Microsoft-based solution. Why? Because Microsoft's no-charge policy would include a one-year free license for the startup's first customers, which is an important selling point as it mitigates the risk of using a startup solution for that customer.

As this illustrates, the world of platform startup programs might be a new battleground for fierce competition among corporations to attract startups with free offerings. This is a potentially dangerous development since, even though the programs are designed for large-scale participation, every member startup means some incremental costs. At some point, the programs need to capture value for the sponsoring corporation, and not every switch from free to fee is as straightforward as it is for PayPal. Similar issues with the "freemium" model in the consumer space seem to creep into the business-to-business space—an interesting development.²⁴

An Issue of Speed and Scale: Monitoring the Masses

To entice startups, the sponsoring corporations promise tutoring, tech support, and assistance in sales (e.g., tradeshow demos or sessions with potential customers). To be able to deliver on these promises, corporations need to maintain accurate data on all their member startups. Several approaches to keep track exist. SAP, for instance, regularly calls startups to inquire about their status. Microsoft requires its program members to report back annually to renew their membership, and it automates many of its offerings through forums and self-service tools. In addition, it launched BizSpark Plus in 2012, a program that provides additional benefits to those startups who are associated to a partner incubator or accelerator. This approach is comparable to what PayPal does to admit Startup Blueprint participants. For PayPal, monitoring the wellbeing of startups is much easier due to its nature as a payment platform. Although no details were disclosed to us, we were told of sophisticated monitoring dashboards that exist for that purpose.

Orchestrating Internally

For platform startup programs, another challenge—to be able to deliver on the promises made—is of an internal nature. Within the corporation, many units are involved: the development department needs to provide documentation; the support team must be ready to handle support requests; the sales force should know the startups' products and be incentivized to approach prospective customers; and the marketing team needs to include startups in their events and other marketing efforts. As important as it is for startup program managers to be networked externally to reach out to interesting startups, as important is it to be well-networked across these disparate functions within the corporation. A standardized approach for all startups helps align the organization on what needs to be done, as it only has to be set up and communicated once. In all the programs we studied, the startup program office would have a few members from each internal function who would act as first responders in communications with startups, and would reach out to their in-house peers where required.

Discussion and Implications

Our study shows that companies are evolving more lightweight models to engage with startups in an attempt to accelerate their decision making and their ability to attract, support, and retain startups in large quantities. These co-exist with more traditional models, and there are different rationales behind the different models that corporations implement for engaging with startups. The primary question a corporation needs to answer is which goals it wants to achieve through its engagement. Does it want to insource entrepreneurial creativity (outside-in innovation) or utilize startup agility to push its own innovations to the market (inside-out innovation)? Is it keen on the insight, control, and upside potential provided by an equity stake or is diversification of risk a key requirement? Exhibit 2 illustrates the goals behind the four models along these two dimensions.

EXHIBIT 2. Typology of Corporate Engagement Models with Startups and Their Key Goals

		Direction of Innovation Flow	
		Outside-In	Inside-Out
Equity Involvement	Yes	<p>Corporate Venturing Participate in the success of external innovation and gain strategic insights into non-core markets.</p>	<p>Corporate Incubation Provide a viable path to market for promising corporate non-core innovations.</p>
	No	<p>Startup Program (Outside-In) Insource external innovation to stimulate and generate corporate innovation.</p>	<p>Startup Program (Platform) Spur complementary external innovation to push an existing corporate innovation (the platform).</p>

Rooted in our case analysis, the following sections provide two important building blocks to operationalize our findings into a startup engagement strategy for corporate executives who seek to tap into entrepreneurial innovation. First, we present an archetypical representation of the four models identified and further elaborate on their differences and consequences to allow their use as implementation templates. Second, we highlight typical pitfalls in the implementation of those models and sharpen the awareness of the special procedures needed when working with startups. We conclude that there is no single best model for engagement; rather, each model has its virtues and challenges. Companies must select the model that best fits their strategic objectives for engaging with startup firms.

A Model for Every Purpose

Exhibit 3 provides a tabular overview of the four models. These four archetypes might not capture every model found in the wild,²⁵ however, Exhibit 3 presents a good starting point to analyze or design a corporation’s engagement with startups.

EXHIBIT 3. Types of Corporate Engagement with Startups and Their Characteristics

	Corporate Venturing	Corporate Incubation (Inside-Out)	Startup Program (Outside-In)	Startup Program (Platform)
Main Goal(s)	<ul style="list-style-type: none"> 1 Financial returns 2 Insights and influence 	<ul style="list-style-type: none"> 1 Commercialization of non-core technologies 2 Financial returns 	<ul style="list-style-type: none"> 1 Product innovations 2 First-mover advantage 	<ul style="list-style-type: none"> 1 Platform establishment 2 Future customers
Equity Involvement	always	typically	rare	rare
Scale (no. of startups)	low	low	medium	high
Integration with Core Business	low	medium	high	medium
Closeness to Core Business	medium	high	high	low
Completeness of Startup Support	medium	high	medium	low
Value Capture	equity stake	equity stake	product sales	platform usage fees
Organizational Anchoring	separate venture capital arm, board level	separate incubation unit, R&D	separate innovation unit, R&D	separate program office, business development
Time Horizon of Involvement	long term	long term	short term	mid term
Exclusivity	no	yes	no	no
Admission of New Startups	due diligence	corporate only	open	very open
Examples (year founded)	<ul style="list-style-type: none"> ▪ Intel Capital (1991) ▪ SAP Ventures (1997) ▪ Google Ventures (2009) 	<ul style="list-style-type: none"> ▪ Xerox PARC (1970) ▪ IBM FOAK (1995) ▪ Bosch Startup (2014) 	<ul style="list-style-type: none"> ▪ Siemens TTB (1999) ▪ AT&T Foundry (2011) ▪ Intel Wearables Accelerator (2014) 	<ul style="list-style-type: none"> ▪ Microsoft BizSpark (2008) ▪ SAP Startup Focus (2012) ▪ PayPal Startup Blueprint (2013)

The Equity Divide

The two more traditional models discussed here involve ownership, whereas the two newer models do not. Corporate venture capital, the first equity-based option, buys influence in interesting startups external to the corporation. The second one, corporate incubation, creates new startups as spin-offs from one's own internal "misfit" ideas or technologies. Both types of engagement bring along organizational costs in addition to the nominal amount of the investment itself. Applying a transaction cost logic,²⁶ these additional costs of equity could be summarized as: search and information costs (including the due diligence preceding the investment decision); bargaining costs (including negotiations with founders and further investors); and monitoring and enforcement costs (such as regular board meetings and governance activities).

The reasons a corporation would be willing to incur these costs and efforts are different for the two models. In the case of corporate venture capital, these costs might be justified if the target startup is particularly instrumental in pursuing long-term goals that are directly relevant to the corporation's strategy. With an equity stake and a board seat, the corporate venture arm has access to first-hand insights and gets a say in the future direction of the venture. With the Nest deal, for instance, Google Ventures might have intended to get a foot into the nascent Internet of Things market. Hardware plays a key enabling role in this market, but producing hardware is outside of Google's core competencies. The Internet of Things, however, is also predicted to produce unprecedented amounts of data, the mining of which is clearly of strategic importance for Google. Equipped with insights and a better understanding of the market thanks to its venture arm's investment, Google might have come to the conclusion that hardware, such as produced by Nest, was the best means to get access to this promising new data pool.

In case of corporate incubation, the reasons to place equity might well be strategic, but is also supported by financial motives. Here, the corporation's R&D department has already come up with a technology or idea that, for whatever reasons, does not fit the current core business. The costs it took to accomplish this invention have already been incurred, and a chance to generate future revenues instead of writing off R&D spending might be more than welcome. The options here are to sell the intellectual property to another corporation²⁷ or to invest some additional money to bring it into a marketable stage in a spin-off in the corporate incubator. Strategic considerations, such as the potential to take the new venture back in as a new business unit in the future, are what drives this choice.

In the two non-equity models, the overall aim is to help the corporation move faster in order to respond to opportunities emerging in its environment. Startup companies here are less important individually to the company, but collectively act to shift the corporation's market position. Increasing the number of programs available for the corporation (outside-in programs) create more options for the corporation to consider. Startups that populate the corporation's technical platform (via platform programs) make the overall platform more capable and more attractive to the corporation's customers. These programs, if successful, will result in financial returns as well, but they are primarily set up for R&D and business development purposes, respectively. In the outside-in program case, key performance indicators (KPIs)

measured include the numbers of projects successfully transferred to the core business and those subsequently taken to the market. At AT&T, we learned that even the rate of failed Foundry projects is informally monitored and should not be too low, as this would indicate that not enough risk is taken. In the platform case, typical KPIs measure the number of startups in the program or those live on the platform, with an increasing focus over time on measuring the actual revenues induced by the programs.

Scale and Standardization in the Non-Equity Models

As we reasoned above, equity means evaluating each opportunity individually to gauge its strategic and financial potential. Equity is usually not involved in the two non-equity startup program models, and this is what allows them to proceed faster and to scale much more quickly than the equity-based ones. Not only is less due diligence required at the corporate end, having a large corporation as an investor is also a thought that not every founder feels comfortable with. SAP, despite its venture arm running a special fund to promote HANA startups, is only invested in two of its 1,500 startups in the Startup Focus program; PayPal and AT&T are not invested in any of their startups, while Siemens TTB occasionally brings Siemens Ventures into the game if it feels a startup has extraordinary upside potential due to the joint project. Without corporate equity, more startups might be convinced to collaborate and they do not need to be screened as thoroughly (and as slowly) as equity ventures. The reduced investment and effort per startup allows the large company to work with more of them at the same time. The non-equity startup programs are thus based on a different philosophy than the equity-based models. Refusing to take equity also allows the platform owner to act neutrally towards all the startups in the ecosystem, whereas taking equity stakes of some startups but not others creates the perception that the corporation is picking winners and losers, rather than letting the ecosystem itself decide those outcomes.

In the two new models, organizational costs are reduced by developing standardized approaches of working with startups. Outside-in startup programs scale less quickly than platform-based ones, as every collaboration with a startup still requires corporate manpower and often a joint space for the duration of the project. This is in line with the goal of achieving an outside-in technology transfer and associated knowledge flow. Standardization is found in the process (both working with startups and with the internal organization) and the typically time-limited approach of each project. Platform models, in contrast, try to standardize or even automatize huge parts of the entire collaboration. Given that many of them operate in the virtual space of software, internet, and cloud computing technology, that level of automation is easy to achieve.

Inside-out models of innovation can be valuable outside of the IT sector as well. In 2014, battery manufacturer Panasonic announced the LiEDO platform, which allows start-ups and other partners to develop energy services on top of Panasonic's networked energy storage systems. In the pharmaceutical industry, firms are opening up their library of assays to other firms to help identify promising new compounds. Both the National Institutes of Health in the U.S., and the National Health Service in the UK, have instituted programs to expand the number of researchers

examining the properties of particular compounds. In a few cases, firms are outlicensing abandoned programs to smaller specialty pharma companies or patient-oriented foundations to recover the compound and take it to market.²⁸ However, regulation by the FDA reduces the number of startup firms that can enter the industry and carry compounds to market, in comparison to the IT sector.

Models Are Not Mutually Exclusive

Finally, in looking at the different possibilities to engage with startups, it is important to realize that the models that we found are not mutually exclusive. As they serve different goals, there is no contradiction if a corporation implements several of them in parallel to get access to different kinds of entrepreneurial innovation. AT&T, for instance, does not only ensure an outside-in flow of technology with its Foundry program, but also runs the AT&T Developer program, which invites startups to develop apps that use AT&T's mobile network and services. Likewise, the venture funds of SAP and Microsoft are among the most active corporate investors in tech startups today. However, they are organizationally separate entities from their platform startup programs, as both companies highlight. The goals behind the two models—and thus the type of startups targeted—are just too different.

Critical Factors in Working with Startups

The four models not only differ in their scope, scale, and goals, but also in their managerial challenges. Exhibit 4 summarizes the key success factors specific to each model. More importantly, however, a number of key challenges in bridging the gap between large corporations and the startup world are the same for all of the models. Measures to overcome those, as revealed in our case studies, should receive special attention in devising any corporate startup engagement strategy.

EXHIBIT 4. Success Factors Specific to the Four Models of Engaging with Startups

Corporate Venturing

- Clarity about strategic mission (purely financial or strategic).
- Clear positioning (independent or parent-bound) toward the startup world.

Startup Program (Outside-In)

- Procedures in place to ensure intake of program-created innovations at parent.
- Precautions taken to handle IP issues of co-developed innovations.

Corporate Incubation

- Autonomy from corporate guidelines, influence, and standard procedures.
- Authority to access corporate resources when needed.

Startup Program (Platform)

- Clarity about revenue model of the program (avoid freemium trap).
- Capability to handle large numbers of collaborating startups simultaneously.

Buffering the Startup from the Bureaucracy

In all the cases we studied, a separate unit was in charge of interacting with the startups. It acts as a buffer that mediates between the fast-paced startup world

and the slower complexity of the corporate world. Since corporate inertia and slow decision making are things that many startups are afraid of, this is a key ingredient to successfully engage with startups. Being “easy to work with” is a goal mentioned by most of the corporate representatives we talked to and, apart from having the required independence and mandate from the corporate parent, staffing seems a key means to that end. AT&T, for instance, staffs its Foundry with “builders” and “doers” who bring a getting-things-done mentality similar to a startup. SAP says prior experience as a founder or early startup employee is a key characteristic that is sought after when staffing their Startup Focus team. About 80% of the team have this background and thus bring intimate knowledge and understanding of the startup world. A startup CEO that we interviewed brought up the “refreshing change” in his interactions with SAP as a startup compared to what he was used to from his previous experiences with the company.

Walking the Walk

Even with an interface unit in place, power is not balanced evenly in the relationship between a large corporation and a startup. It is clearly distributed to the former. Startups are well aware of this fact and might thus prefer partnering with independent or state-run institutions over large corporations. To not miss out on the most promising candidates, large corporations have to put big efforts into convincing startups that it will not misuse its power and be a fair partner. Computerworld, for instance, quotes a SAP Startup Focus representative as saying: “This is as much SAP pitching to the startup community as startups pitching to SAP.” His pitch then addresses potential fears: “SAP doesn’t ask for money, SAP doesn’t ask for IP. It’s your code, but we’re going to support you.” Credibility is key in the world of well-networked startups and a corporation’s reputation can be ruined quickly.

A strong aspect in this game is intellectual property, which often is the startup’s key asset. However, IP can be hard to protect and the founders have other things to worry about in the first place. It might thus be tempting for a large corporation to take inspiration from a partner startup’s idea and build a fully owned corporate version of it. Although “a large company could not afford to do that,” as our contact at Siemens TTB argued, there are examples of this misbehavior in the wild. Amazon, in particular, has received media coverage for allegedly copying product ideas from startups that use its AWS computing infrastructure and thus allow Amazon to monitor their traffic volume and, thereby, success. There are, indeed, striking parallels between Zencoder’s video transcoding service and Amazon’s Elastic Transcoder; between Netflix and Amazon’s Prime Instant Video; or between Dropbox and Amazon’s recently launched Zocalo service. Several startup founders have mentioned Amazon’s bad reputation to us. Currently, however, it seems as if the ease of use of Amazon’s offering, backed by its AWS Activate platform startup program, makes a convincing deal nonetheless for most startups. This might change with increasing competition in the infrastructure-as-a-service space, which should give tech startups more choice as to who provides their IT infrastructure.

Facebook is another example mentioned several times for not playing nice with startups in the long run. Its infamous break-up with social game company Zynga has given it a bad reputation of what can happen if a startup becomes too

successful. Re-negotiating the contracts, Facebook allegedly expected Zynga to even yield a share of the revenue to Facebook that it earned outside the Facebook platform. The billions it delivered with its games on the Facebook platform and the fact that it contributed a lot to Facebook's prevalence were not enough. Other formerly hopeful startups on the Facebook platform, such as video messaging service Viddy, have publicly complained about Facebook changing the rules of the game arbitrarily and purposefully diverting traffic away from their offerings. Such instances are closely followed in the startup community and might undermine all corporate efforts to engage with startups in the long run.

Integrating with the Startup Support Ecosystem

As we highlighted earlier, startups today have access to a plethora of support offerings provided to them by a multitude of for-profit and non-profit organizations. Any corporate model to engage with startups needs to be very clear about what its unique value proposition is to the accepting startup. Corporations need to highlight the benefits of access to resources only they can provide and stress the ease of working with them. Success stories of prior startups who made their way thanks to the corporate program are a frequent means of proving those points. In essence, startups must be seen as a new group of customers that require their own value proposition and marketing. Obviously, the corporation should also be able to deliver on its promises in order not to lose its reputation.

A key point in finding a place in the support ecosystems for corporate programs is openness with the other players in that ecosystem. They should not be seen as competitors for promising startups. Rather, independent venture capital firms and incubators are an important means to reach out to promising startups in the first place and might be able to better provide non-technology coaching to them as well. As the cases of Microsoft and PayPal showed, independent incubators can also act as filters to reduce screening efforts; independent and corporate venture funds often co-invest and thereby reduce due diligence costs. Some new incubators offer to mediate between corporations and startups, such as RocketSpace in San Francisco with its RocketX program. For corporations, collaboration with the remaining startup support ecosystem provides benefits that are mutual and reinforcing.

Concluding Thoughts

On their websites, many large corporations' engagements with the startup world are presented as an almost altruistic activity. As our study shows, however, there are very specific motives and tangible benefits behind any of those moves. Four different models of engaging with startups allow large corporations to tap into the speed, innovativeness, and growth potential of entrepreneurial activity.

Complementing traditional equity-based approaches, two new models were presented here. These two variants of startup programs (outside-in and inside-out/platform) implement standardized practices of working with a large number of startups at the same time. They are enabled by the larger startup support ecosystem available today, which provides the missing pieces that help a new venture grow. Startups

today can realize their business idea by combining various building blocks provided to them by supporting organizations. They get their funding from one source, coaching from another, reside in a general co-working space from a third, and shop around for further useful offerings. If corporations understand this logic and clearly emphasize which unique building blocks they can contribute, this can be a win-win situation for all parties involved. A similar idea, the networked incubator, has been around since before the bust of the dot-com bubble.²⁹ It is coming back to life now, but without necessarily requiring the central role of a coordinating incubator.

Equity-based models are not obsolete either. While equity is an obstacle for some startups and thus does not allow large-scale programs, it has its benefits. Aside from financial performance, investing in a new venture is a way to gain deep insights into new technologies or strategic markets for which the corporation is not able to provide a convincing support offering. It is also a good means to hatch and control corporate spin-offs that profit from close collaboration in the present and might become of strategic importance in the future. Being aware of all the options and deciding about the right way to engage with startups is decisive for program success, and running multiple models in parallel is not a contradiction. Executives in charge of corporate innovation are well advised to review their ways of working with startups and take them to the next level. Once collaboration is established, startups can be an important source of innovation and growth for large corporations.

Although each of the four models identified provides its specific mechanisms to capture value for the sponsoring corporation, it is clear that they take time to realize their benefits. A newly introduced program might take several years in which it only produces costs and not much revenue. Often, a large corporation's expectations are too impatient: even fast-growing startups need years to grow big enough to show impact in corporate income statements. Corporate incubators, for instance, are said to need five to seven years before they provide tangible returns.³⁰ We are aware of several cases of discontinued programs where the time required for growth has not been granted, either due to new leadership or strategy changes. We hope that with this framework, a company's expectations will be better aligned with its choice of engagement, leading to fewer such events in future.

Notes

1. Rita McGrath, *The End of Competitive Advantage* (Boston, MA: Harvard Business Review Press, 2013).
2. See <<http://singularityu.org/executive-program/>> for an overview of exponential technologies and their impact on firms and industries.
3. Eric Brynjolfsson and Andrew McAfee, *The Second Machine Age* (New York, NY: W.W. Norton, 2014).
4. Miller and Bound attribute these "new economics of startups" to considerably lower costs of technology (think of storage costs or cloud platforms), easier access to customers (think of Google or Facebook Ads), and easier routes to revenue (think of app stores or PayPal payments). Paul Miller and Kirsten Bound, "The Startup Factories: The Rise of Accelerator Programs to Support New Technology Ventures," NESTA, London, UK, 2011.
5. Similar startup support schemes, such as networked incubators, brought up interesting research questions during the dot-com boom. The burst of the bubble ceased many of these efforts in the research community temporarily. See, for instance, Morten T. Hansen, Henry W. Chesbrough, Nitin Nohria, and Donald N. Sull, "Networked Incubators. Hothouses of the New Economy," *Harvard Business Review*, 78/5 (September/October 2000): 74-84.

6. PwC/NVCA MoneyTree™ Report based on data from Thomson Reuters. Available online at <www.nvca.org/index.php?option=com_docman&task=doc_download&gid=1070>.
7. National Business Incubator Association resource library. Available online at <www.nbia.org/resource_library/faq/#3>.
8. Lean Startup, put forward by startup guru Eric Ries in 2011, has quickly become the bible of tech startups in Silicon Valley, and many other locales as well. Its guiding principles—such as the minimum viable product, pivoting, and the build-measure-learn cycle—are taught in entrepreneurship classes in Berkeley and Harvard. For more details, see Eric Ries, *The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses* (New York, NY: Random House, 2011). A complementary perspective on customer development can be found in Steve Blank and Bob Dorf, *The Startup Owner's Manual: The Step-By-Step Guide for Building a Great Company* (Pescadero, CA: K & S Ranch, 2012).
9. Our inductive research approach followed the case study methodology proposed by Eisenhardt to achieve generalizable results from a comparison of multiple cases. Kathleen M. Eisenhardt, "Building Theories from Case Study Research," *The Academy of Management Review*, 14/4 (1989): 532-550. Pattern matching and its application for cross-case analysis are described in M.B. Miles and A.M. Huberman, *Qualitative Data Analysis* (Thousand Oaks, CA: Sage Publications, 1994).
10. A good outline of the history of corporate venture capital is available in Paul A. Gompers, "Corporations and the Financing of Innovation: The Corporate Venturing Experience," *Economic Review* (Federal Reserve Bank of Atlanta), Q4 (2002): 1-17.
11. A more detailed description of these investment strategies and goals is given in Henry W. Chesbrough, "Making Sense of Corporate Venture Capital," *Harvard Business Review*, 80/3 (March 2002): 90-99.
12. Park and Steensma come to this conclusion after analyzing the long-term performance of 508 new ventures in the computer, semiconductor, and wireless sectors that received VC funding between 1990 and 2003. Haemin D. Park and H. Kevin Steensma, "When Does Corporate Venture Capital Add Value for New Ventures?" *Strategic Management Journal*, 33/1 (January 2012): 1-22.
13. Regularly, GE starts themed initiatives in which applying startups can receive funding and the chance to collaborate with GE—such as GE StartUp Health in healthcare or GE Ecomagination in sustainability. An in-depth Haas case study is available on the latter initiative. Henry W. Chesbrough, "GE's Ecomagination Challenge: An Experiment in Open Innovation," *California Management Review*, 54/3 (Spring 2012): 140-154.
14. Thomson Reuters, "National Venture Capital Association: Yearbook 2014," NVCA, Arlington, Virginia, 2014.
15. Henry W. Chesbrough (2002), op. cit.
16. There are cases of corporate incubation in which external startups reside in corporate incubators and receive a similar level of support as described here. Oftentimes, this hatching is combined with corporate investment into the startup, highlighting its high strategic importance for the sponsoring corporation. We purposefully do not discuss these combinations of corporate venture capital and corporate incubation here for reasons of simplicity and clarity.
17. Gassmann and Becker study the resource flow between startup and parent incubator in detail. They differentiate intangible (branding, advice) and tangible (tangible knowledge, physical benefits, financial support) resources flowing from the incubator to the startup. Oliver Gassmann and Barbara Becker, "Towards a Resource-Based View of Corporate Incubators," *International Journal of Innovation Management*, 10/1 (March 2006): 19-45.
18. A thorough analysis of related studies and effects of incubation is available in Nicola J. Dee, Finbarr Livesey, David Gill, and Tim Minshall, "Incubation for Growth: A Review of the Impact of Business Incubation on New Ventures with High Growth Potential," NESTA, London, UK, 2011.
19. See Henry Chesbrough, *Open Innovation: The New Imperative for Creating and Profiting from Technology* (Boston, MA: Harvard Business School Press, 2003). The "outside in" and "inside out" processes in open innovation are described in the Introduction in the book.
20. For details on Xerox's experience, see Henry Chesbrough, "Graceful Exits and Foregone Opportunities: Xerox's Management of its Technology Spinoff Organizations," *Business History Review*, 76/4 (Winter 2002): 803-838. A previous article details the operating model of the Lucent New Venture internal venture capital group and its early successes. Henry W. Chesbrough, "Designing Corporate Ventures in the Shadow of Private Venture Capital," *California Management Review*, 42/3 (Spring 2000): 31-49.
21. A detailed account of IBM's FOAK program is provided in Mary J. Frederich and Peter Andrews, "Driving Innovation into the Marketplace: IBM's First-of-a-Kind Program," *Research Technology Management*, 51/6 (November/December 2008): 7-12.

22. The natural division of development project tasks as found here is a good example for task partitioning, which von Hippel nicely describes. While partitioning development work along technical interfaces ensures a clear separation of tasks and responsibilities, constant alignment is ensured due to the co-location of both sides at the same AT&T Foundry location. Eric von Hippel, "Task Partitioning: An Innovation Process Variable," *Research Policy*, 19/5 (October 1990): 407-418.
23. Gawer and Cusumano provide a summary of their decade-long research on industry platforms in a recent article. Annabelle Gawer and Michael A. Cusumano, "Industry Platforms and Ecosystem Innovation," *Journal of Product Innovation Management*, 31/3 (May 2014): 417-433.
24. Pauwels and Weiss take a look at the complex trade-offs and marketing efforts involved in moving from free to fee. Koen Pauwels and Allen Weiss, "Moving from Free to Fee: How Online Firms Market to Change Their Business Model Successfully," *Journal of Marketing*, 72/3 (May 2008): 14-31.
25. In a parallel effort to ours, Silicon Valley VC Evangelos Simoudis has recently proposed four models that map on our corporate incubation and outside-in startup program categories. For an alternative look at these models, we recommend his 2014-08-13 blog post, <<http://corporate-innovation.co/2014/08/13/using-corporate-incubators-and-accelerators-to-drive-disruptive-innovation>>.
26. The elements here are taken from Carl J. Dahlman, "The Problem of Externality," *Journal of Law and Economics*, 22/1 (April 1979): 141-162.
27. This common practice to monetize abandoned compounds in the pharmaceutical industry was the topic of a recent *CMR* article. Henry W. Chesbrough and Eric L. Chen, "Recovering Abandoned Compounds Through Expanded External IP Licensing," *California Management Review*, 55/4 (Summer 2013): 83-102.
28. *Ibid.*; Henry Chesbrough and Eric Chen, "Using Inside-Out Open Innovation to Recover Abandoned Pharmaceutical Compounds," *Journal of Innovation Management* (forthcoming 2015).
29. See Hansen et al. (2000), *op. cit.*
30. See Gassmann and Becker (2006), *op. cit.*