Visualizing Opportunities in the Higher Education Ecosystem — Adding Speed and Personalization Through the Digital Dimension

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Gartner's ecosystem modeling framework helps education CIOs link components in different domains and tell stories about how that leverages the ecosystem to add value. We offer case examples to illustrate insights about digital's effect on speed and personalization.

Key Findings

- Adding the digital dimension to the education ecosystem creates a foundation for speed and personalization in interactions. This improves the student experience in a way that is not possible in an analog world.
- Digitally induced speed and personalization create a digital divide between organizations that are innovative enough to make the leap to digital and those that aren't. Organizations remaining in mainly analog mediums risk being laggards.

Recommendations

To execute a digital strategy in education, CIOs should:

- Build the foundation for speed and personalization by adopting a digital-first mentality, mapping out their analog domains and converting them into digital capabilities. Speed requires machine-readable data. Personalization requires the ability to digitally capture large volumes of personal data, analyze them and act on them through, for example, nudge technology.
- Create ecosystem opportunities by linking capabilities exemplified by, for example, the University of Texas System's TEx 2.0 course marketplace idea, edupreneurs' lean delivery and Udacity's interviewless hiring.
- Visualize and validate the business model opportunity in the ecosystem model, constantly course-correct, and create backup plans if key assumptions fail.

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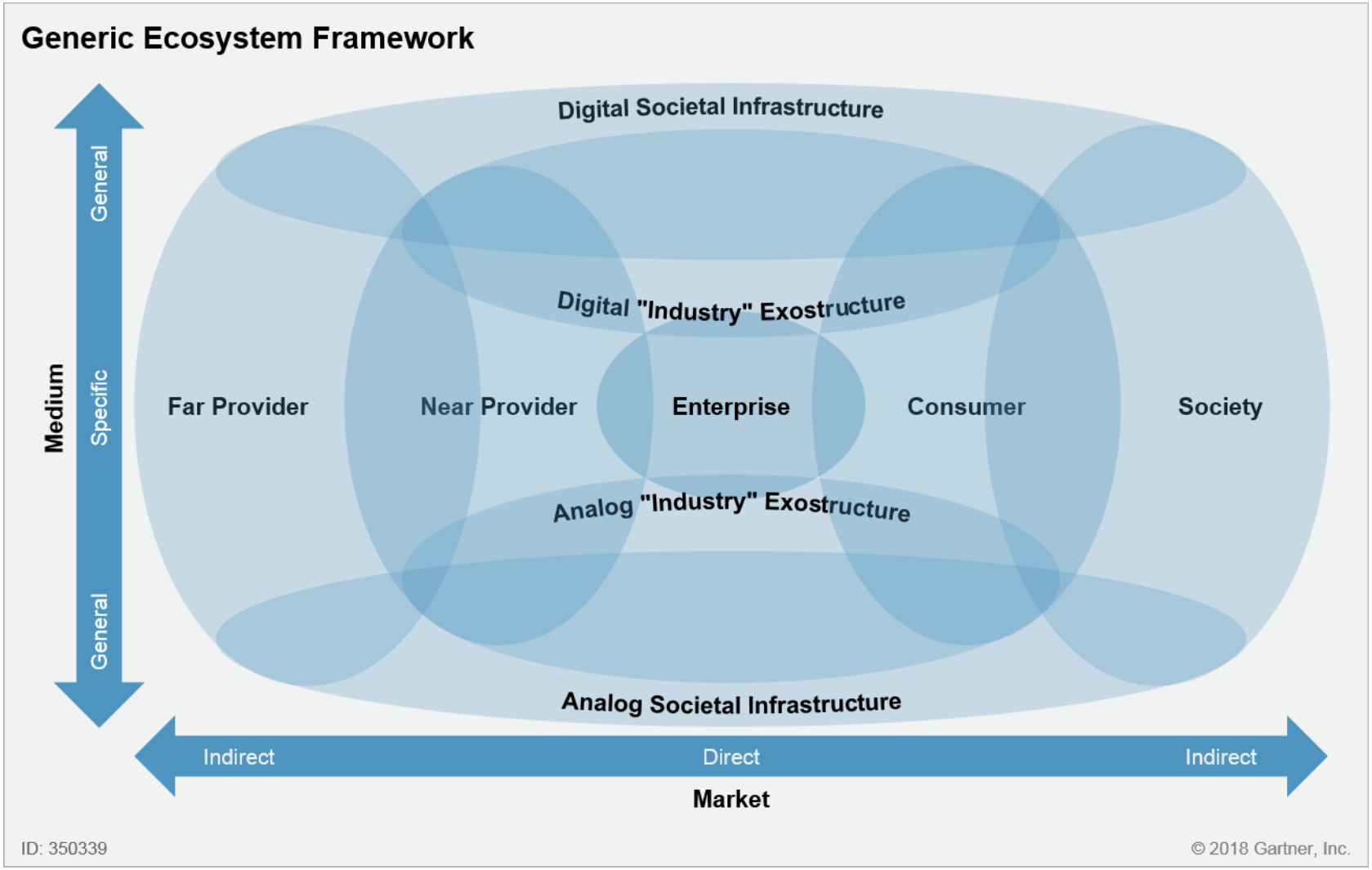
The Useful Ecosystem Concept

The term "ecosystem" provides an easily understood analogy to illustrate that, while an organism (whether a business, government agency, or college or university) may operate as an individual entity, it functions within an environment and cannot be separated from it. The concept of a business ecosystem has existed at least since James Moore's 1993 Harvard Business Review article, "Predators and Prey: A New Ecology of Competition" (see Note 1). The title alone indicates that Moore borrowed a lot of his concepts and language from biology, a method that is fruitful even today. But the digitalization of business is rapidly adding a new dimension to the ecosystem — one that changes how companies compete, interact and communicate to gain a competitive edge and find new sustainable niches.

To help higher education CIOs navigate the full ecosystem, Gartner offers an ecosystem modeling framework. This can help the CIO and key stakeholders see the big picture, and identify relationships to understand what "value" is, how it is created and for whom. With that information, CIOs can act appropriately to model their own sustainable niches in the ecosystem.

This research focuses on higher-education-specific ecosystem examples of how adding the digital dimension provides speed and personalization. It is one of a set of five documents in our higher education ecosystem research set. The other notes in the series are listed below under the recommended research. For a higher-education-specific description of the ecosystem modeling framework (see Figure 1) used in this series, see "Setting the Foundation for a Higher Education Ecosystem Model."

Figure 1. Nine Interconnected Domains of the Generic Ecosystem Framework



Source: Gartner (June 2018)

In this research, note that the reference to and position of named organizations as "market actor" or "medium connector" are hypothetical and only intended to show a set of plausible scenarios. Each of these examples is based on publicly available material, such as websites and journal articles (see Evidence cross-references in each section).

We also want to remind you that "Essentially, all models are wrong, but some are useful." This was expressed by George Box, a renowned English statistician, in his book, "Empirical Model-Building and Response Surfaces."[1]

Speed and Personalization

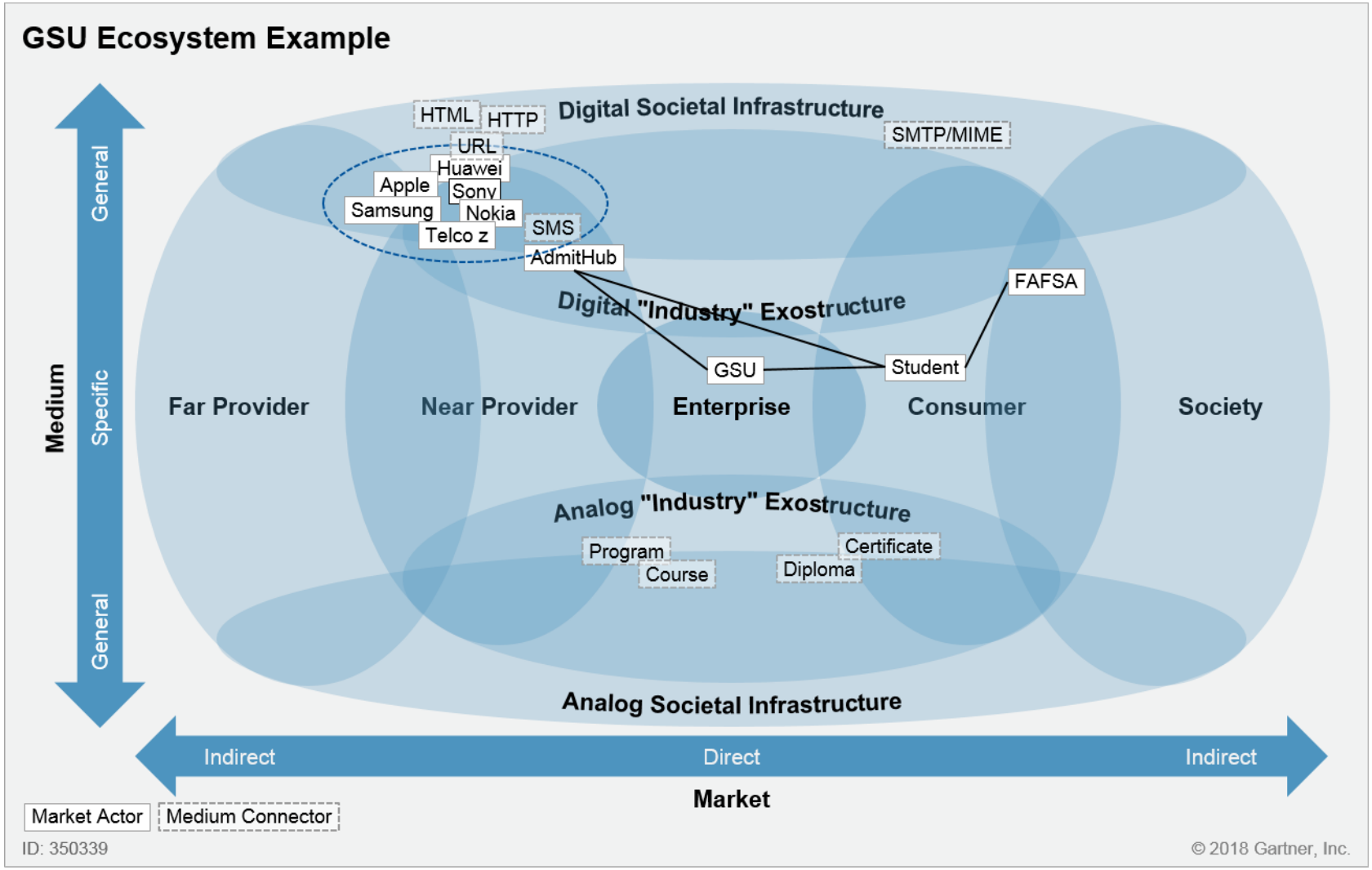
Adding the digital dimension to the education ecosystem creates a foundation for speed and personalization in interactions that is not possible in an analog world. Of course, the speed is partly induced by more mundane digital societal infrastructures, such as email and the web. In addition, these technologies seem to evolve into even faster ones, such as Instagram and Twitter, to satisfy a seemingly insatiable need for more speed.[2] More important, however, is the speed that comes from the innovative organization of information using new technology, such as blockchain, algorithms and even artificial intelligence (AI). Accompanying this speed is, fortunately, an even more important foundation for personalization: The more students learn through digital devices, the more effective they become in collecting personal data (ethically) and using it for personalized education. Below are four examples that illustrate not only the potential benefits of leveraging the digital education ecosystems, but also the perils of not thoroughly modeling the intended outcome and the capabilities needed to get there.

Georgia State University Text Chatbot Impacts FAFSA

A simple yet effective use of ecosystem thinking is Georgia State University's (GSU's) use of conversational AI technology (provided by AdmitHub) to "nudge" students with personalized text messages (SMS) to reduce the "summer melt."[3] Using a widely available digital societal infrastructure comprising mobile phones and telecommunications providers — all capable of communicating text messages — GSU achieved tangible results. By sending just-right and just-in-time personal text messages and allowing for AI-based conversation, GSU reduced the summer melt by 21.4% compared with the control group. A telling data point was that the need for verification from the Free Application for Federal Student Aid (FAFSA) decreased by almost 17% compared with the control group. In total, more than 180,000 text messages were sent between the AI chatbot "Pounce" and the 3,114 prospective students in the test group. That's a service volume that would be prohibitively expensive to produce by analog means, let alone to the personalized degree needed and with 24/7 availability.

This simple ecosystem example, with such a deliberate connection of market actors and medium connectors in a component fashion, has the added benefit of promising resilience. As new medium connector standards, such as rich communication services (see "Prepare for Yet Another Messaging Option: Rich Communication Services"), become established, they can be added as just a new channel providing new features for institution-student communication. This is yet another benefit of modeling services in an ecosystem approach (see Figure 2).

Figure 2. GSU Used an Ecosystem of AI, Bots and SMS on Mobile Phones



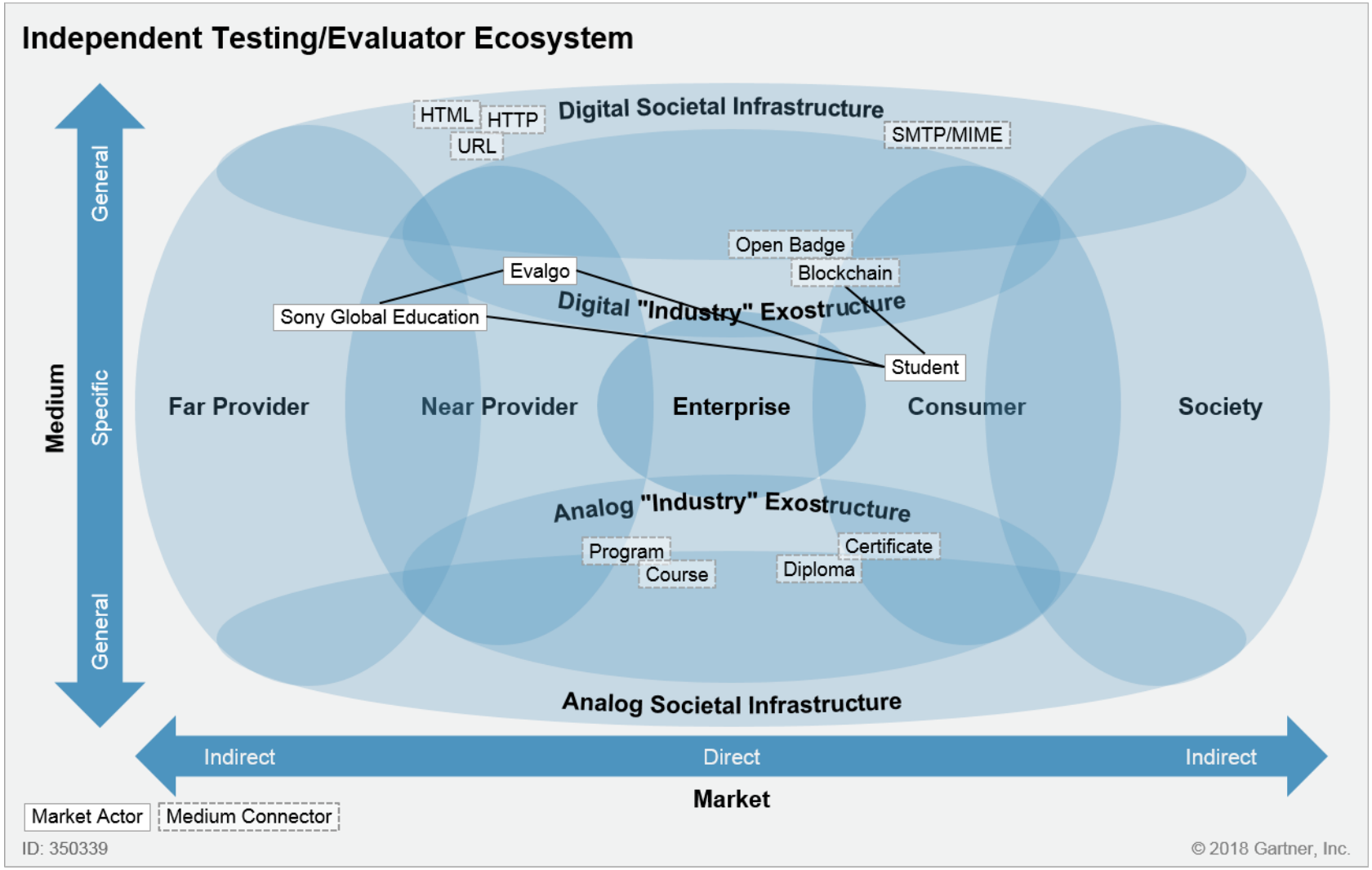
Source: Gartner (June 2018)

A Blockchain-Based "Evalgo" Scenario

This case scenario extrapolates on intents expressed by Sony Global Education, and key capabilities identified in previous examples in this series of ecosystem case examples. Sony Global Education represents an interesting use case for blockchain, where it foresees that it will not be the final credential that is shared, but rather the detailed test results.[4] In this scenario, a test taker/ student can share the outcome of a test with one or several "evaluation organizations" (given the fictional name "Evalgo" in Figure 3), which will evaluate and score according to their respective methodologies. In a world of algorithmic education and AI, it is easy to envision the evolution of an ecosystem of independent testing and evaluator services. These services could build a brand of objectivity separate from the educating institution, and offer more flexible credentialing built on, for example, Open Badges (see "Analytics, Assessment and Adaptive Learning Will Prepare You for the Algorithmic Education Evolution"). This could be an emerging service equivalent to the practice of getting a "second opinion" in healthcare. For this to become reality, it will depend on the value relative to the cost, and it must be highly automated. A "five dollar, five minute" Open Badge definitely is not the same as a professor-evaluated grade, but it may be enough to break the monopoly of traditional education institutions creating evolutionary pressure to reinvent credentialing. (Also see the edupreneur example in "Visualizing Opportunities in the Higher Education Ecosystem — The Value Web.")

This particular scenario is an untested extrapolation. But Sony Global Education has tested some of its ideas by creating a new service for managing transcripts and scores through a digital platform. It also plans to store the transcripts of the participants from the 5th Global Math Challenge. Further developments include a demonstration of the "Next Generation of School ICT Environment" for the Ministry of Internal Affairs and Communications in Japan. Altogether, these are interesting developments showing the potential of blockchain as a powerful ecosystem medium connector.[5]

Figure 3. Envisioning an Independent Testing/Evaluator Ecosystem



Source: Gartner (June 2018)

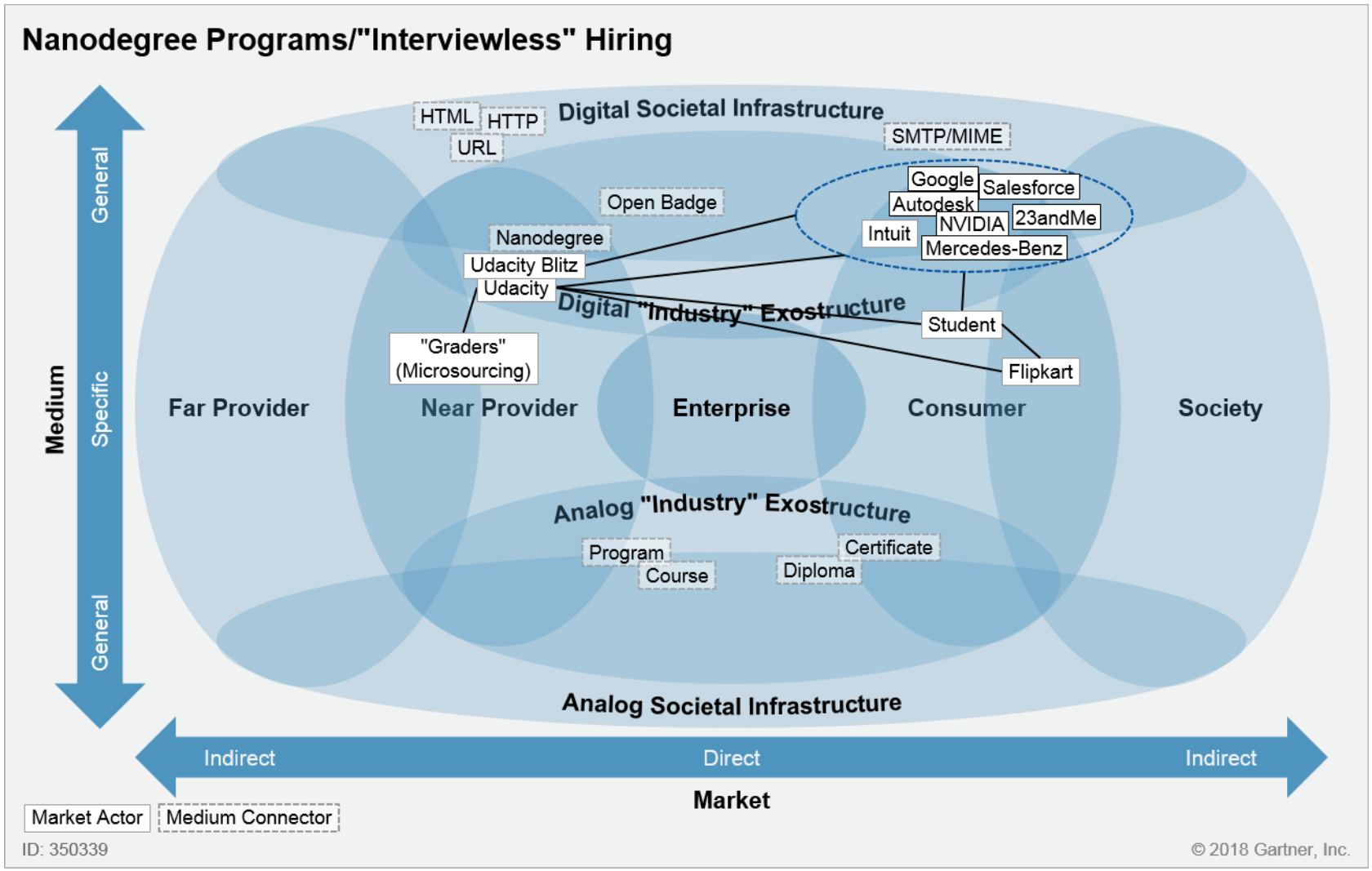
Udacity-Flipkart — Interviewless Hiring

Sebastian Thrun's ideas about the future of education have matured a lot since fall 2011 when his massive open online course (MOOC), "Intro to Artificial Intelligence," attracted 160,000 students. Since he took the "red pill,"[6] his company, Udacity, which was originally established to produce MOOCs, progressed to small private online courses (SPOCs). Now it is offering Nanodegree programs for "jobs of tomorrow," such as Self-Driving Car Engineer for $800 per term (the course comprises three three-month terms, totaling $2,400 for nine months of training). At one point, Udacity even offered several Nanodegree Plus programs (typically at $299 per month versus a normal cost of $199 per month) with a money-back guarantee if the student did not get a job within six months. The basic idea for enabling this low cost and employability was simple:

- Leverage the ecosystem to get an employer's "take" on the needed skills for employment.
- Use MOOC technology for courses.
- Enlist the same employers for real-life "Nanodegree projects" (Udacity Blitz).
- Microsource "graders" who are paid by the hour to grade projects.

But even this approach was taken to extremes when India's e-commerce giant Flipkart partnered with Udacity for "interviewless" hiring. By just looking at the job candidates' Nanodegree projects and the corresponding Udacity profile, Flipkart wanted to speed up its recruitment and get a head start on the competition. It is probably not too far-fetched to suppose that the Udacity profile is a result of an algorithm composed of many data points collected during the course. This is because the "AI professor" (early in the days of MOOC hype) stated that a better predictor of employability than the final test score is probably the student's social interaction during a MOOC. Altogether, this is a great example of both increased speed and personalization induced by the digital dimension (see Figure 4).[7]

Figure 4. Nanodegree Programs and "Interviewless" Hiring



Source: Gartner (June 2018)

The reason why Udacity backed out of its money-back guarantee is unclear[8] and includes factors such as:

- It simply does not have to do it to attract students (Udacity is profitable).
- Matching talent with jobs is still hard, especially when you do not control the student's efforts.
- It is a minor "product" that complicates the overall business model.

However, the close interaction with employers still prevails, with many courses being "in collaboration" with companies that have an interest in the skills Udacity develops. This collaboration sometimes expands into specific partnerships, as exemplified by the "Lyft Perception Challenge." As expressed in a Udacity blog, "Lyft recognizes that conventional recruiting strategies no longer suffice. What is needed is a future-facing hiring model as transformative as the field they're hiring for."[9] Both Udacity and employers are looking for new ways to match talent in the education ecosystem.

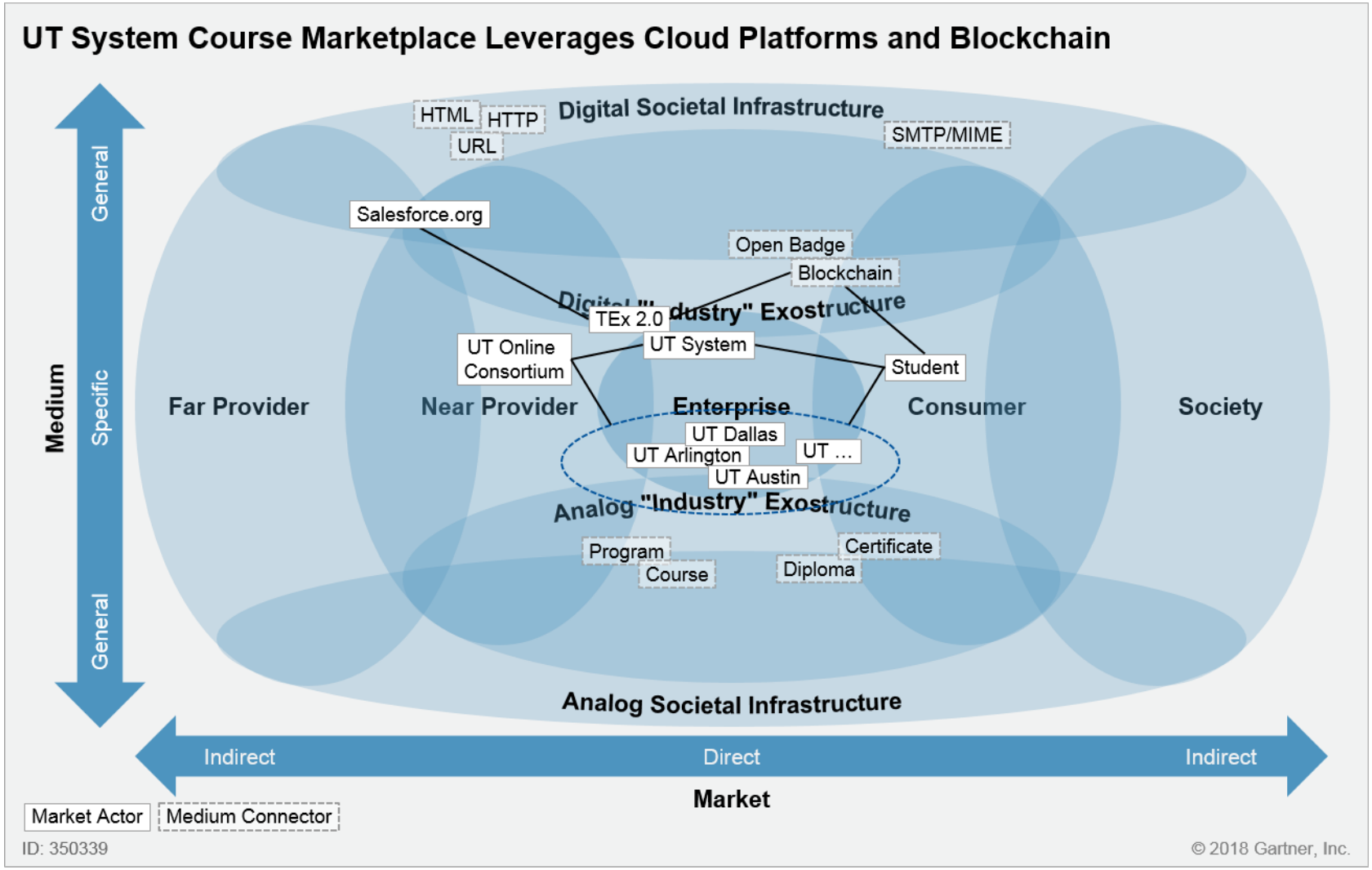
One thing is clear: Even for an education organization, it is crucial to constantly think about its sustainability, stay relevant and course-correct by modeling its business model in the education ecosystem.

University of Texas System — TEx 2.0 a Grand Vision for Creating a Marketplace

This case example shows an attempt to build a systemwide platform-driven ecosystem with many innovative ideas, such as supporting competency-based education (CBE) and a course marketplace, but ultimately it proved to be a failed approach.

The University of Texas System (UT System), through its Institute for Transformational Learning (ITL), aimed to build a learning relationship management (LRM) platform called Total Educational Experience (TEx) to support its CBE efforts. TEx 2.0 looked to leverage the Salesforce cloud platform through a deal with Salesforce's philanthropic arm, Salesforce.org. TEx 2.0 also was designed to use blockchain to create a distributed digital ledger for credentials such as Open Badges and other e-credentials using Chainscript. In addition, TEx 2.0 was designed to pave the way for more personalized learning. It was intended to capture students' learning data and forge more relationships with faculty members and coaches to help students design personal learning pathways. In addition, UT System planned to combine the TEx features with the UT Online Consortium (a clearinghouse of the online courses and programs offered by its campuses) to create a marketplace for courses and programs. This marketplace focuses first on the university and the state, but a market outside of traditional higher education is conceivable, and TEx 2.0 was designed to be ecosystem-ready (see Figure 5).[10]

Figure 5. Leveraging Cloud Platforms and Blockchain for the UT System Course Marketplace



Source: Gartner (June 2018)

TEx 2.0 was due to launch in fall 2017, but, by then, ITL — the main driver behind the ambitious plan — was under heavy scrutiny. ITL was launched in 2012 with a $100 million budget to deliver, among other things, innovative learning programs and products. However, by 2017, it had generated only $1 million in revenue. At the time of this writing, it is unclear what pieces can be salvaged, but work is underway to transfer activities to the various UT System universities.

There were many reasons why this vision did not materialize as planned, including a lack of understanding of the complexities of an ecosystem, which can exist only as long as it is of mutual benefit to all involved parties. However, among these reasons, one comment recurred as the decision to close down ITL unfolded: the lack of a sustainable business model. Or, in the words of Steve Leslie, a UT System vice chancellor, "There was not the foundation of a business plan."[11]

The perils of this centralized platform approach (especially in higher education) show that it is important to consider the benefits of all actors in the ecosystem, and understand what drives positive change in a fully functioning ecosystem. Ecosystems are complex, and change through evolution rather than revolution is the norm. This makes it important to model a sustainable funding model (business model) at the outset to increase the chances of success.

Reflections and Recommendations About the Speed and Personalization Examples

These examples show that adding the digital dimension to the education ecosystem creates a lot of opportunity if you can master the modeling of a sustainable ecosystem business model. The immediate risk is that both digitally induced speed and personalization can create a digital divide between organizations that are innovative enough to make the leap to digital, and those remaining in a mainly analog medium. However, there are many other ways of attaining and leveraging digital capabilities, and no organization has fully mastered them (see "2018 CIO Agenda: A Higher Education Perspective").

For example, creating a cloud-based LRM platform (such as the envisioned TEx 2.0) that supports new education models (such as CBE) is potentially a good way for a university system or consortium to build digital capabilities. Even if it did not materialize as planned for UT System, other universities such as SNHU have successfully created platforms and partnerships that allowed for revenue diversification. This includes a keen sense of how to work with different business models within an education ecosystem (for example, see College for America's partnership with Anthem Blue Cross and Blue Shield,[12] and the development of the platform Motivis[13]).

One key flaw of the TEx 2.0 vision is that it was a "walled garden" (that is, a closed ecosystem for UT System only), despite being built with open, ecosystem-friendly components. It's easy to see how combining the UT System and Udacity approaches would create a better, more open education ecosystem for students, resulting in more opportunities for meaningful education, leading to employment and ROI for both students and the university. In ecosystem thinking, openness is better, but it also requires active iterative modeling of interactions to create sustainable ecosystem business models, as well as course corrections as the ecosystem evolves with new market actors and medium connectors.

It is clear that higher education institutions have many opportunities to innovate. New startups such as Wade & Wendy, a chatbot AI-aided recruitment platform,[14] could be combined with GSU's chatbot Pounce to create a richer ecosystem, helping employers and employees find better jobs and better upskilling opportunities. However, the catch is that the information must be digital first.

From this follows one simple recommendation: CIOs must create a digital-first mentality; otherwise, none of the speed and personalization is possible, leaving your institution at a serious competitive disadvantage. That means that, even before knowing what the innovation will be, mapping out and converting analog domains into digital are key steps.

Gartner Recommended Reading

Some documents may not be available as part of your current Gartner subscription.

"Creating Competitive Advantage by Mastering Higher Education Ecosystem Models"

"Setting the Foundation for a Higher Education Ecosystem Model"

"Visualizing Opportunities in the Higher Education Ecosystem — The Traditional Value Chain"

"Visualizing Opportunities in the Higher Education Ecosystem — The Value Web"

"Toolkit: Visual Business Ecosystem Modeling With Higher Education Examples"

Evidence

[1] See G. Box. "Empirical Model-Building and Response Surfaces." Wiley. 1987.

[2] See J. Gleick. "Faster: The Acceleration of Just About Everything." Vintage. 2000.

See G. West. "Scale: The Universal Laws of Life, Growth, and Death in Organisms, Cities, and Companies." Penguin. 2018.

[3] "Students who accept offers of admission into a college or university don't always show up for fall enrollment — a phenomenon known as 'summer melt.'" From "Using AI Chatbots to Freeze 'Summer Melt' in Higher Ed," Campus Technology.

[4] See "Sony Global Education Develops Technology Using Blockchain for Open Sharing of Academic Proficiency and Progress Records," Global Brands Magazine; and "Sony Taps Blockchain to Develop System for Data Sharing and Authentication in Education," CCN.

[5] See Creating a Trusted Experience With Blockchain, "Sony Global Education's Educational Blockchain Website Launch," and "Global Math Challenge 5 by the Numbers," Sony Global Education.

[6] "I can't teach at Stanford again," [Sebastian Thrun] said definitively. "I feel like there's a red pill and a blue pill. And you can take the blue pill and go back to your classroom and lecture your students.

But I've taken the red pill. I've seen Wonderland." From "Udacity's Sebastian Thrun, Godfather of Free Online Education, Changes Course," Fast Company.

[7] See "Flipkart and Udacity Want a World Without Job Interviews," VentureBeat; and "Sebastian Thrun on the Future of Learning," MIT Technology Review.

[8] See "Udacity U-Turns on Money-Back Guarantee," Inside Higher Ed.

[9] See "Lyft and Udacity Partner for a Self-Driving Hiring Challenge: A New Approach to Finding Talent," Udacity.

[10] See "A Force in the Software Market," Inside Higher Ed; "UT System Partners With Tech Industry Leader to Develop Next-Generation Learning Platform," The University of Texas System; and "Salesforce Partners With Institute for Transformational Learning at University of Texas to Build TEx 2.0 — Total Education eXperience," Salesforce.org.

[11] See "Lessons Learned From a $75 Million Failed Experiment," Inside Higher Ed; "'Costly and Unsustainable:' After Spending $75 Million, a Troubled UT System Technology Institute Shuts Its Doors," The Texas Tribune; and "The High Cost of Failed Innovation," Inside Higher Ed.

[12] See "Anthem Blue Cross and Blue Shield Announces a New National Partnership to Provide a Free College Degree for Any Eligible Employee," Anthem Blue Cross and Blue Shield; Workforce Partnerships, SNHU; and "A Message From President LeBlanc," SNHU.

[13] See Motivis Learning and "Motivis Learning Debuts Learning Relationship Management System," Campus Technology.

[14] See Wade & Wendy. Wade helps with employee career development, and Wendy helps recruiters find talent. Both bots share information.

Note 1 Business Ecosystem

The business ecosystem concept first appeared in James F. Moore's May/June 1993 Harvard Business Review article, "Predators and Prey: A New Ecology of Competition." Moore defined business ecosystem in his book, "The Death of Competition: Leadership & Strategy in the Age of Business Ecosystems" (Harper Business, 1996), as:

"An economic community supported by a foundation of interacting organizations and individuals — the organisms of the business world. The economic community produces goods and services of value to customers, who are themselves members of the ecosystem. The member organisms also include suppliers, lead producers, competitors, and other stakeholders. Over time, they coevolve their capabilities and roles, and tend to align themselves with the directions set by one or more central companies. Those companies holding leadership roles may change over time, but the function of ecosystem leader is valued by the community because it enables members to move toward shared visions to align their investments, and to find mutually supportive roles."

Governments are often key members of the business ecosystem, at least in developed countries. Sometimes they are even "ecosystem leaders" by financial strength and regulation rights.

More on This Topic

This is part of an in-depth collection of research. See the collection:

- The Future of Your Business Ecosystem in the Age of Digital Business: A Gartner Trend Insight Report

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