Unlocking Innovation in Education through Meaningful Technology

A General Model for Ed-Tech

Cristian Mitreanu

Summary

Innovation in education is hard. It is hard because the *what* must stay relevant in an ever-changing world. It is hard because the *how* and the *when* directly affect the value of the *what*. And it is hard because education instances range widely from informal day-to-day interactions with the environment to complex activities, conventionally associated with what we call “formal education.”

Based on the understanding that the underlying technology is a key, inseparable component of the education process, the following presentation introduces a new worldview (an explanatory model) that helps those involved in education and educational technology get a clearer, more comprehensive view of how things work and what is ultimately meaningful and valuable.

The presentation is structured in four sections. It begins with the identification of the major challenges and trends in the education space. The second section is dedicated to illustrating the rationale behind the model. The third section reveals some of the major insights that emerge from the new worldview. And, finally, the presentation ends with a few thoughts for the ed-tech provider.

Semantics

Education…….. Process in which knowledge and skills are transferred to an individual (the student), with or without guidance. Its purpose is to better the student's life, however that is defined. Broadly, education instances range from basic life-enabling behavior of interaction with the environment[1] to standardized activities associated with formal education, which typically involves a certification as well.

Student…….. Individual who acquires knowledge, skills, and potentially certifications with the purpose of making life better. For simplicity, *student* is used here as a catch-all term, also covering the popular term *learner*. Additionally, in this explanatory model and the higher level of analysis, a younger student and his or her legal guardians are seen as one decision-making entity, also labeled *student*.

Instructor…….. Individual who provides or simply guides the transfer of knowledge and skills to the student. The term covers all other labels, including *teacher* and *faculty*. The instructor's status ranges from independent entity to agent of a larger organization (the school). This definition does not extend to technologies that perform similar tasks and functions – that is educational technology (ed-tech).

School…….. Platform that enables the process of education. Its purpose is to allow the student to focus on learning and the instructor to focus on teaching. Its forms range from a single, independent instructor to large, formal organizations that include collectives of instructors and supporting staff. All schools have an inseparable technological component, conventionally seen as a technological platform.

Administrator... Individual who supports the activities and functions performed by a school. The term covers all personnel, formally or informally associated with the school, but not involved in the education process. Under this definition, and at this level of analysis, school administrators as well as IT professionals fall under the same category.

Ed-Tech…….. Technology that enables the process of education by enabling the school and all stakeholders involved (students, instructors, and administrators). Short for "educational technology," the term could also take the form *edtech*. As with technology in general, the term has broad coverage, including organizational knowledge, facilities, products, and services.

[1] This is a basic behavior characterizing a living thing, as described in the 2007 RedefiningStrategy.com article "A Business-Relevant View of Human Nature" by Cristian Mitreanu.

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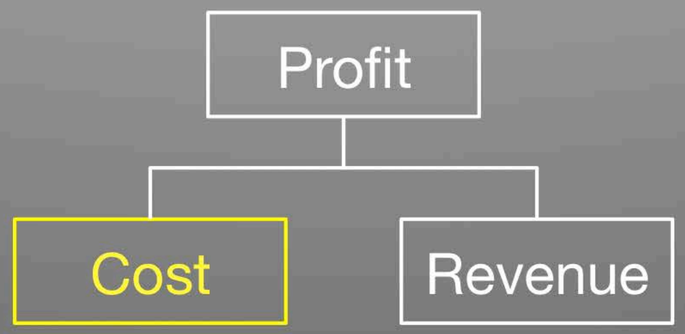
There are three key dimensions to a school's success.

1. Relevancy

"People don't want to buy a quarter-inch drill. They want a quarter-inch hole!" – Theodore Levitt[1]

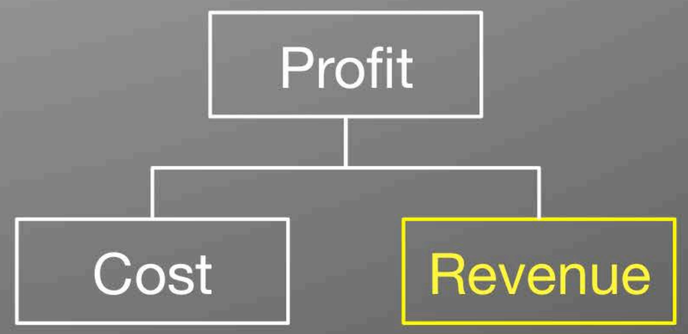
Offer meaningful knowledge, skills, and certifications that help the students advance their careers – all in a manner that best fits their lives.

2. Efficiency



Achieve operational efficiency by streamlining processes, while enabling students to focus on learning and instructors to focus on teaching.

3. Growth



Expand reach to more students within the existent as well as new markets. At the same time, increase student engagement and retention.

[1] This quote is widely attributed to Theodore Levitt, who authored the 1960 Harvard Business Review article "Marketing Myopia."

The student and, thus, *student-centricity* are essential.

Sound logic predicts it…

The proliferation of technology and, with it, the access to information accelerates the commoditization[1] (read "lower customer value") of the standardized knowledge-based services, including education. In response, schools have to increase the value of their offerings, adjusting them to better match the particularities of the student's life.

Thought leaders confirm it…

"Student-centric learning is the escape hatch from the temporal, lateral, physical, and hierarchical cells of standardization. The hardware exists. The software is emerging. Student-centric learning opens the door for students to learn in ways that match their intelligence types in the places and at the paces they prefer by combining content in customized sequences." – Clayton Christensen[2]

[1] The phenomenon of commoditization is detailed in the 2007 RedefiningStrategy.com article "A Business-Relevant View of Human Nature" by Cristian Mitreanu.
[2] From the 2010 book "Disrupting Class: How Disruptive Innovation Will Change the Way the World Learns" by Clayton M. Christensen, Michael B. Horn, and Curtis W. Johnson.

To be sure, student-centricity is customer-centricity.

- "One of the most popular business concepts today, *customer-centricity*, has a dirty little secret. It is the concept with one of the loosest definitions out there. Most researchers, and business executives alike, are content with the widespread and broad definition of customer-centricity as the capacity to understand and respond to the customer's needs." – Cristian Mitreanu[1]

- All businesses must be customer-centric – directly or indirectly. Indeed, a highly-commoditized product category allows companies to survive by simply mimicking their competitors. However, the fact that the product category exists means that some of the competitors are directly focused on the customer's needs – and those are typically the category leaders.

- In the business-to-consumer (B2C) space, the customer's needs tend to be apparent. In the business-to-business (B2B) space, however, the direct customer's needs are driven by the end-user's needs. As a result, the needs that drive the actions taken by the direct customers and, thus, the vendors are the needs of the end-user. In education, the end-user is the student.

[1] A presentation of various levels of customer-centricity can be found in the 2005 MarketingPower.com article "Next-Generation Customer-Centricity" by Cristian Mitreanu.

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A model provides deeper insight and comprehensive guidance in building meaningful ed-tech.

“I am interested in explanation, and don’t much care what it’s called, theory or otherwise. When I think about it, however, I see explanation along a continuum, from lists (categories), to typologies (comprehensive lists), to impressions of relationships among factors (not necessarily “variables”: that sounds too reified for many of the factors I work with), to causations between and patterns among these relationships, to fully explanatory models (which interweave all the factors in question).” – Henry Mintzberg[1]

[1] From the 2005 Oxford Handbook of Management Theory article “Developing Theory about the Development of Theory” by Henry Mintzberg.

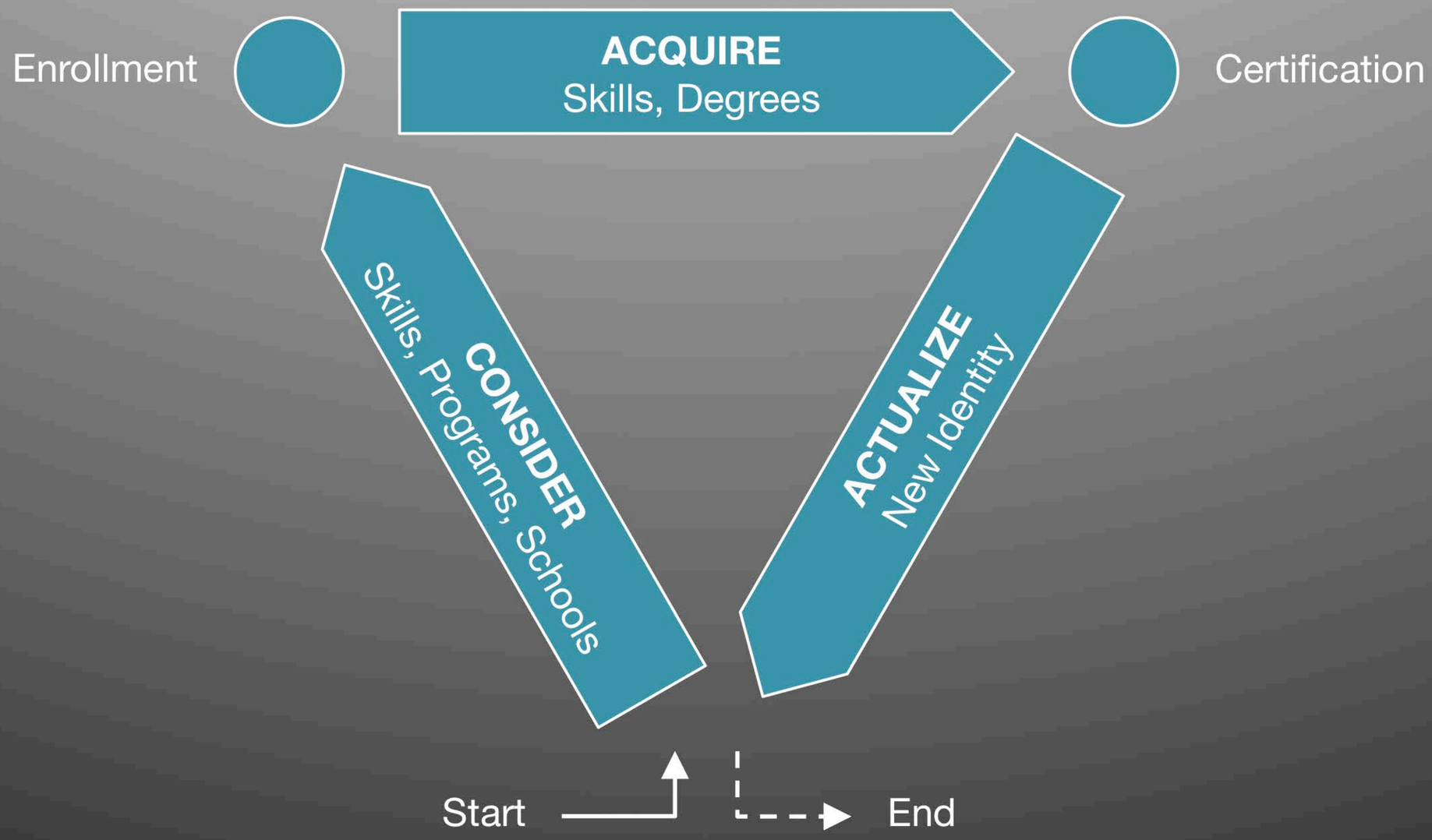
Focusing on the *jobs-to-be-done* increases the likelihood of developing viable, successful products.

"The fact that you're 18 to 35 years old with a college degree does not cause you to buy a product. It may be correlated with the decision, but it doesn't cause it. We developed this idea because we wanted to understand what causes us to buy a product, not what's correlated with it. We realized that the causal mechanism behind a purchase is, "Oh, I've got a job to be done." And it turns out that it's really effective in allowing a company to build products that people want to buy.

Looking at the market from the function of a product really originates from your competitors or your own employees deciding what you need. Whereas the jobs-to-be-done point of view causes you to crawl into the skin of your customer and go with her as she goes about her day, always asking the question as she does something: Why did she do it that way?" – Clayton Christensen[1]

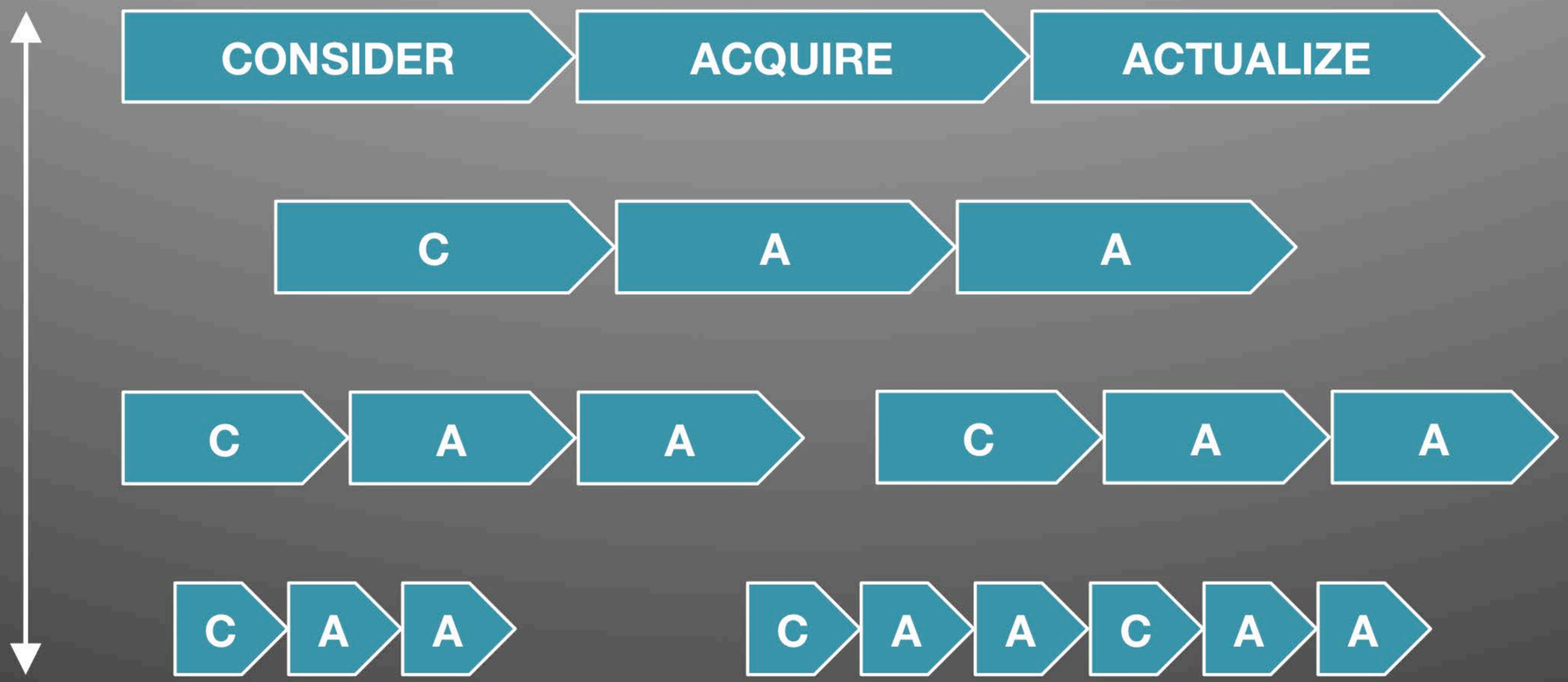
[1] From the 2011 Harvard Business School Working Knowledge article "Clay Christensen's Milkshake Marketing" by Carmen Nobel.

The Student's Development Cycle



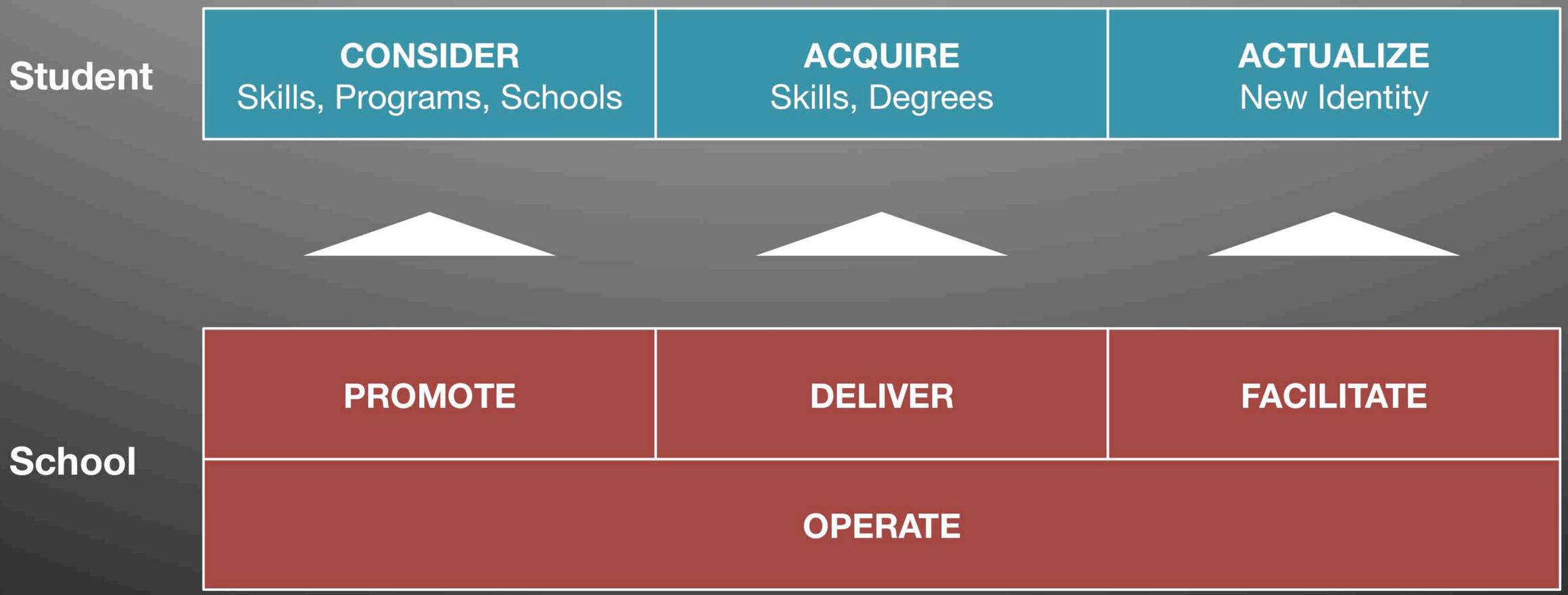
From the student's perspective, the process of education occurs in three basic stages, regardless of its nature and intended result (i.e., advancing on the formal education path, professional development), or its scope (i.e., one lesson, four-year degree).

Every individual is simultaneously engaged in various processes of education, at different stages.

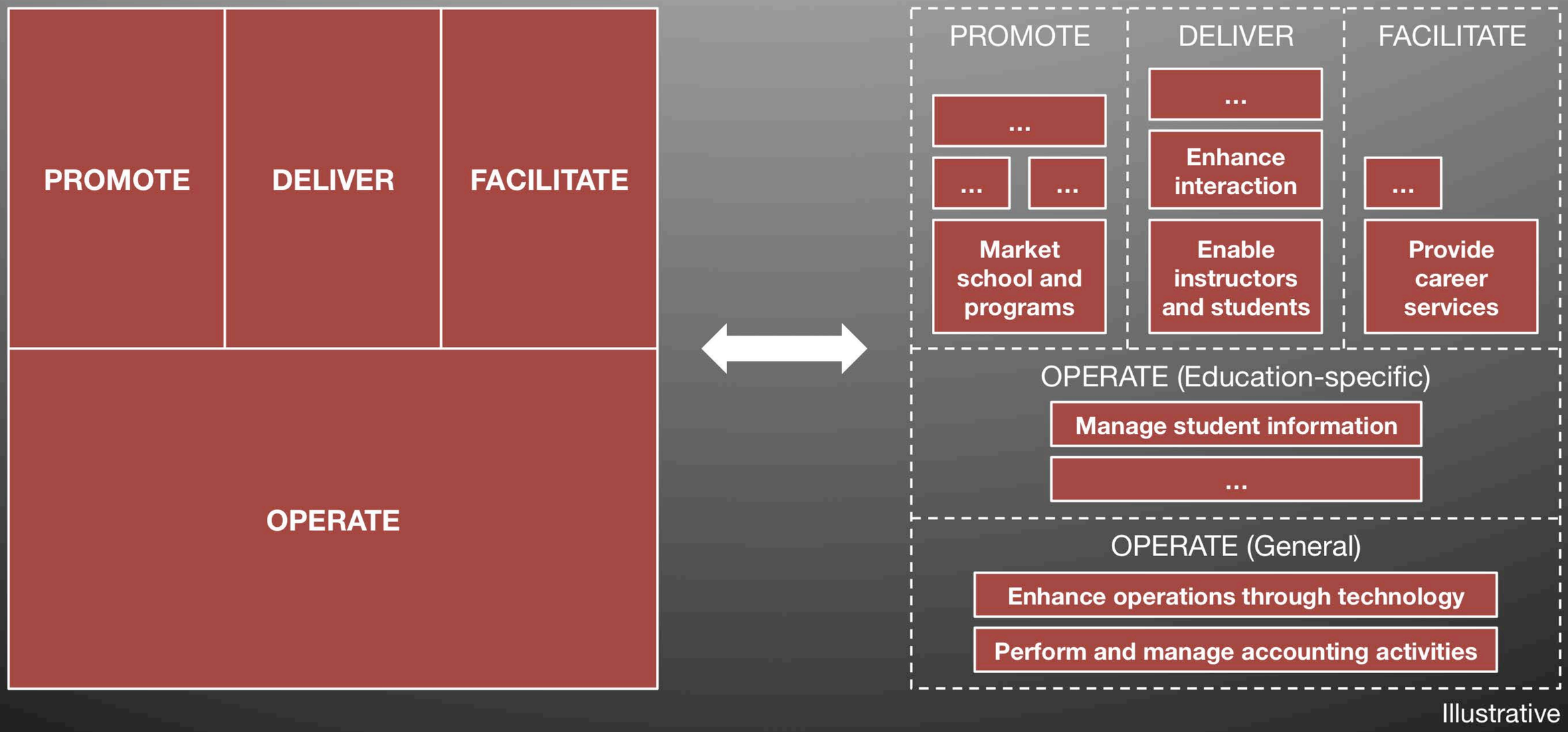


Rooted in basic human behavior, the basic stages of the education process hold true for all individuals, including those who require adult supervision. In those instances, the child and the guardian should be seen as a single decision-making entity.

The school's behavior must fit the student's behavior for a mutual engagement to ensue.

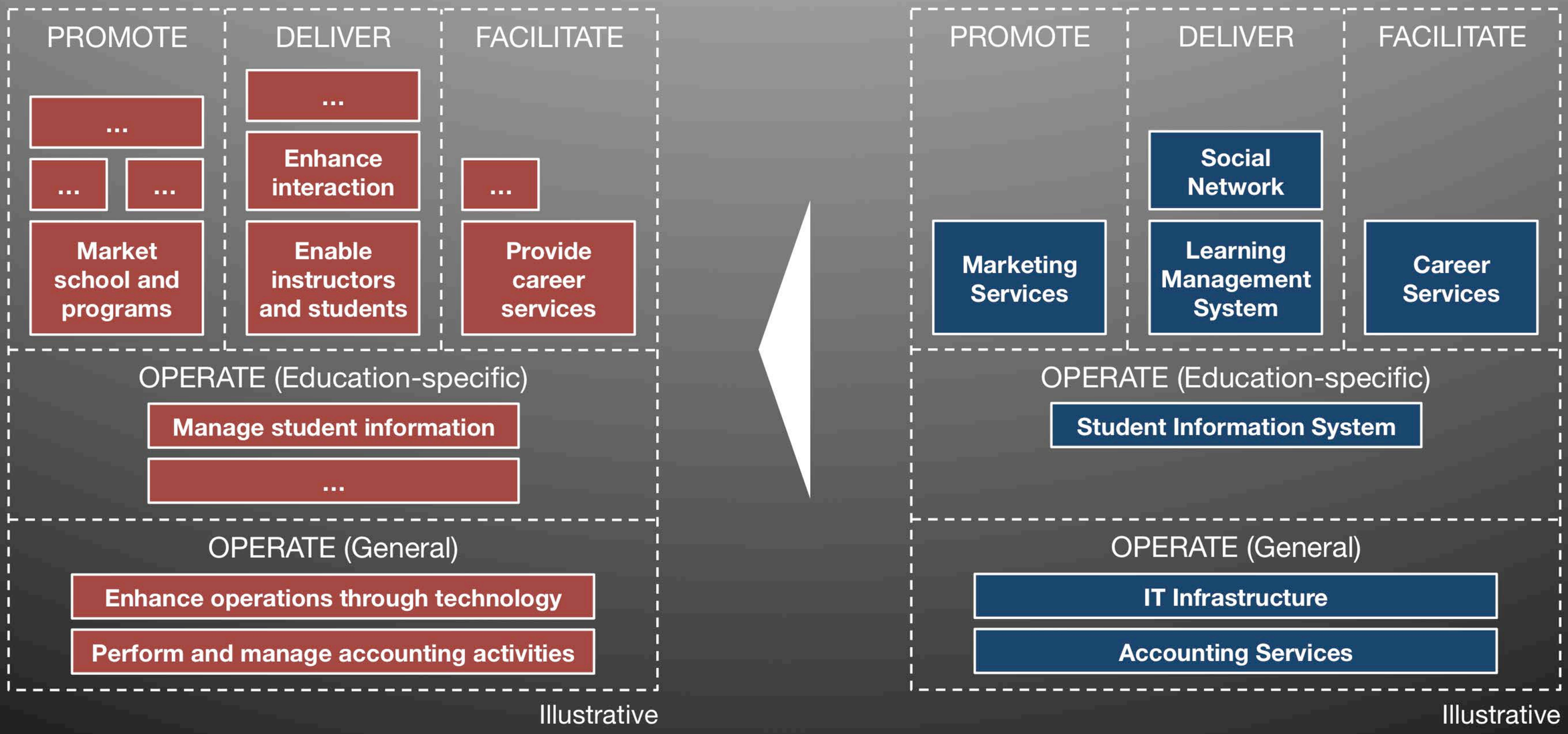


The school's jobs-to-be-done can be analyzed at various levels of detail.

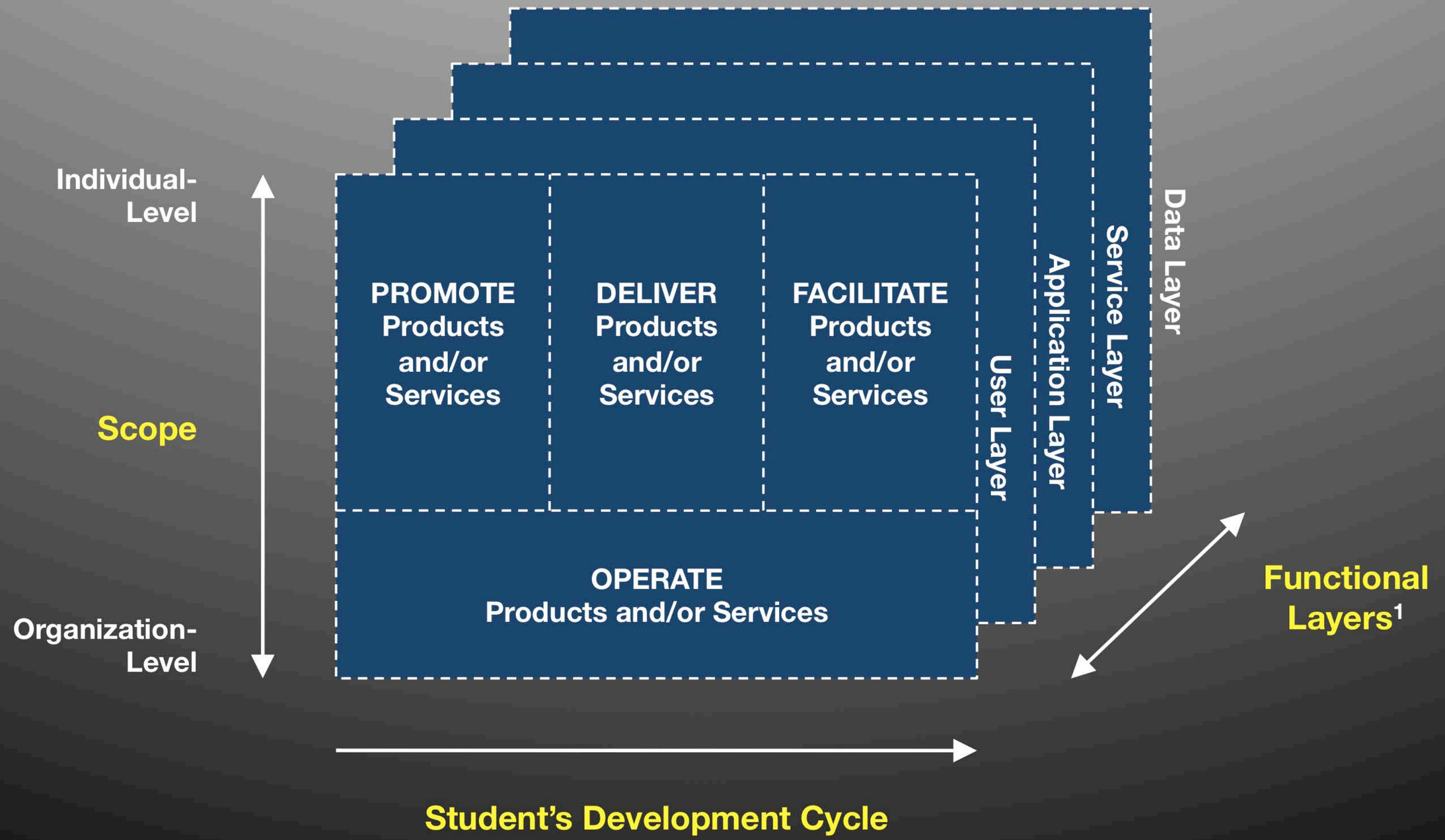


Illustrative

Meaningful high-tech products and services enable and empower by addressing jobs-to-be-done.



From the school's perspective, a holistic representation of its own ed-tech has three dimensions.



[1] The suggested functional layers are partially based on the ideas presented in the 2009 book "Web 2.0 Architectures" by James Governor, Dion Hinchcliffe, and Duane Nickull.

The architecture[1] aims to cover all ed-tech instances, from software to services to full outsourcing scenarios.

User Layer…….. This is the point of contact, where users (students, instructors, and administrators) engage with the ed-tech. The primary concern here is the functionality and user interface of the ed-tech products and/or services.

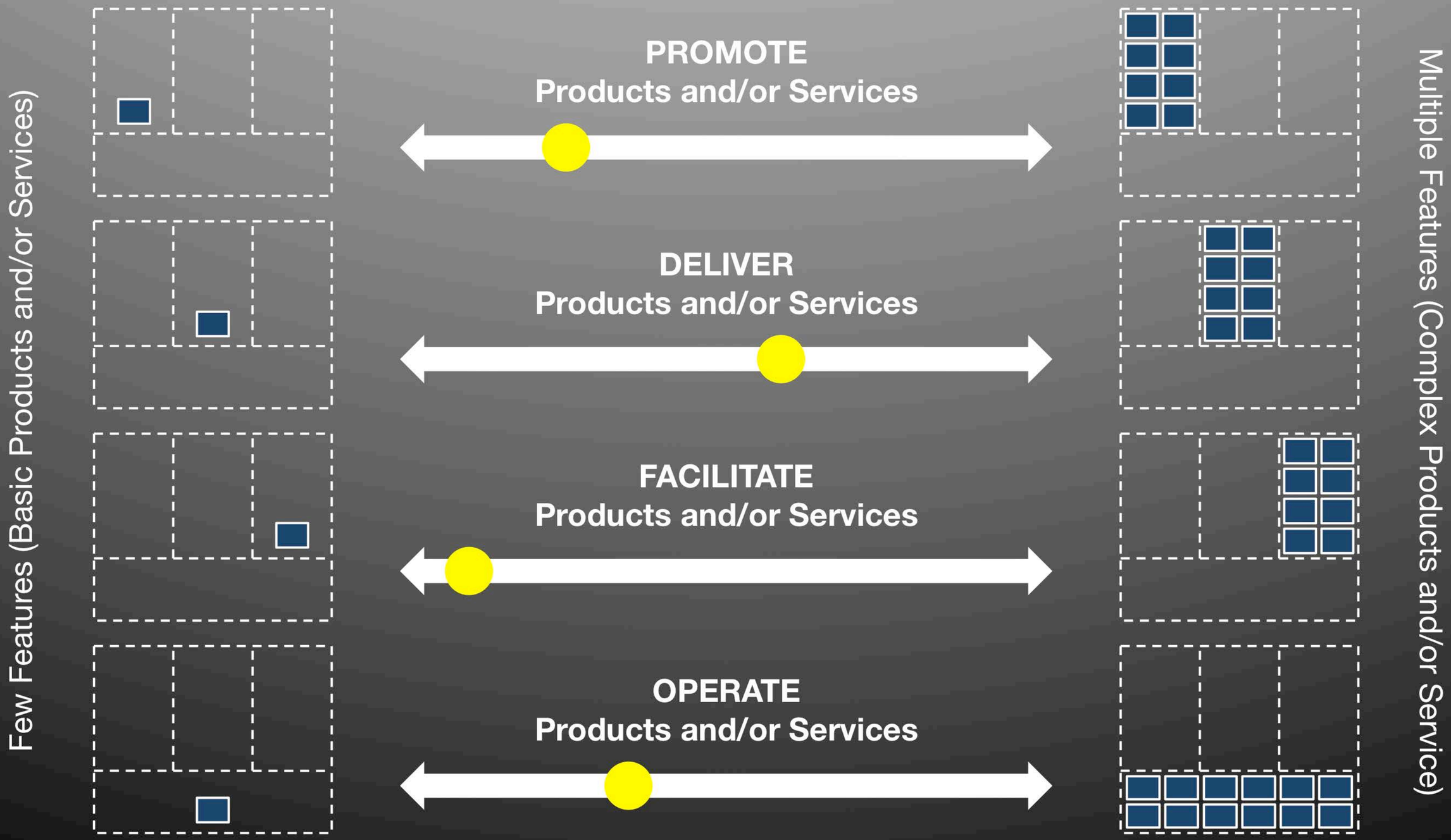
Application Layer….. This component's role is to generate the functionality accessible to the user in the User Layer. This is where various underlying services and data are aggregated and processed through engines and algorithms. The "secret sauce" is typically found here.

Service Layer…….. This layer, named more after 'web services' and less after the commercial denomination, consists of generic services that enable the client applications to interact with the Data Layer. These standardized services are typically provided by third-party vendors – branded or as white-label services.

Data Layer…….. This is the functional component that plays the role of a repository for data and information. Examples include database servers, mainframes, and even paper filing systems.

[1] The suggested functional layers are partially based on the ideas presented in the 2009 book "Web 2.0 Architectures" by James Governor, Dion Hinchcliffe, and Duane Nickull.

From the ed-tech provider's perspective, offerings range from *point solutions* to *end-to-end solutions*[1].



[1] Due to the space constraints and the nature of the business, this presentation will focus on the ed-tech providers with a presence in the User Layer.

For the ed-tech providers primarily targeting students, an environment-based view brings additional value.

Jobs-to-be-Done

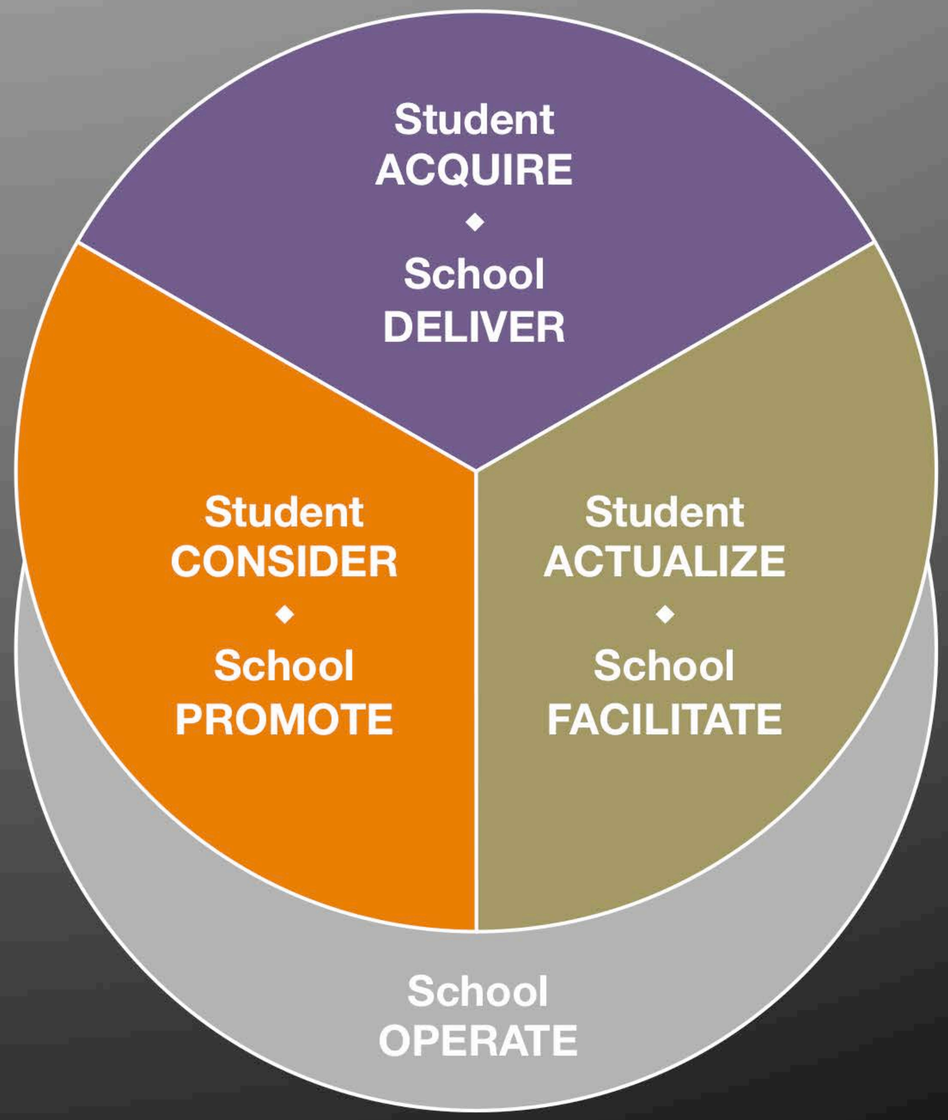
Student

CONSIDER	ACQUIRE	ACTUALIZE

School

PROMOTE	DELIVER	FACILITATE
OPERATE		

Environments



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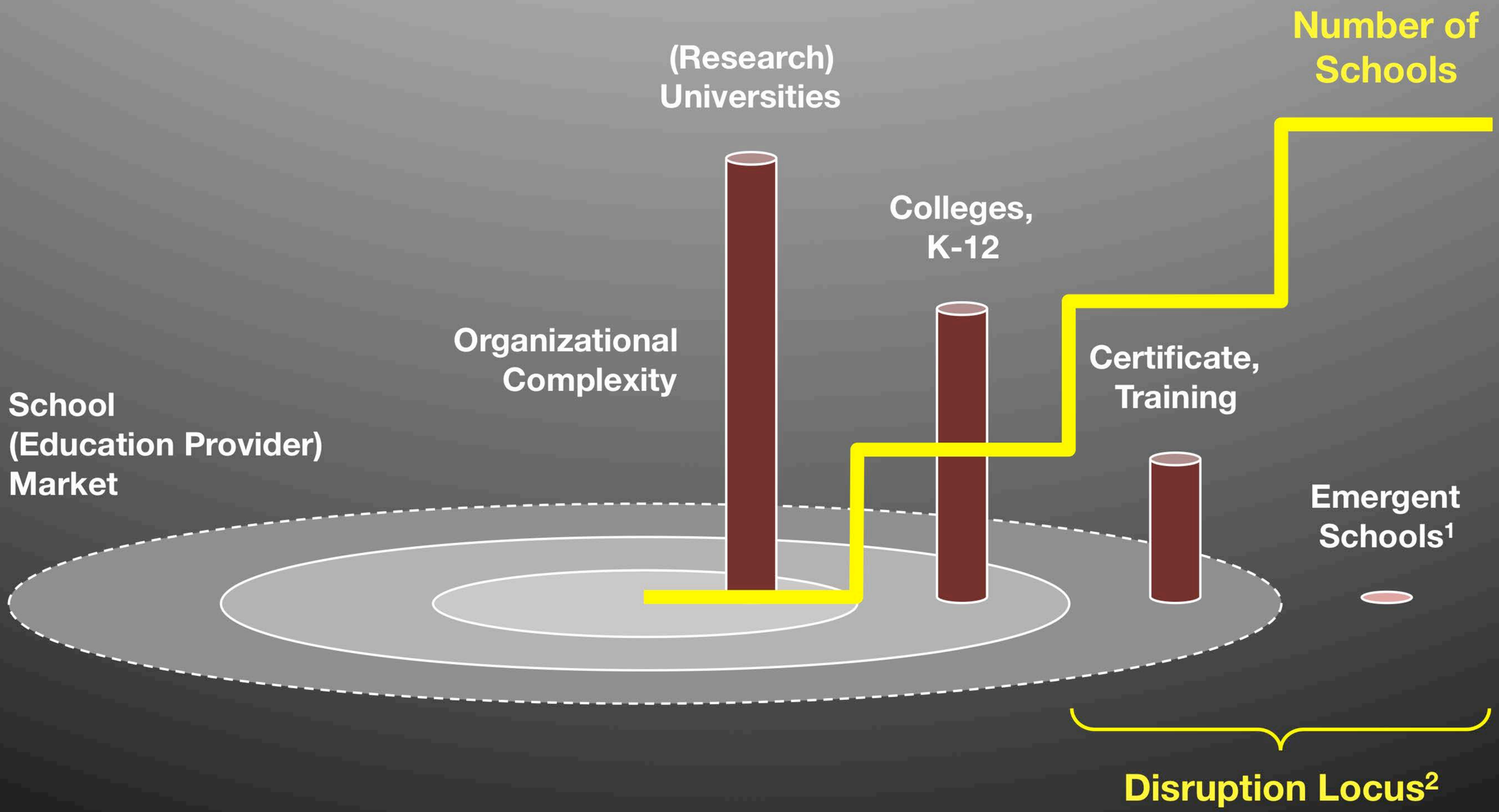
1. A broader perspective of the education and, thus, ed-tech space reveals more opportunities and threats.



[1] The category “emergent schools” refers to formal or informal, permanent or temporary organizations that enable education instances with a very narrow scope, short life span, and reduced need for formalization. TED-Ed, a platform that allows any individual to organize a lesson around a video presentation, provides a great example in this respect.

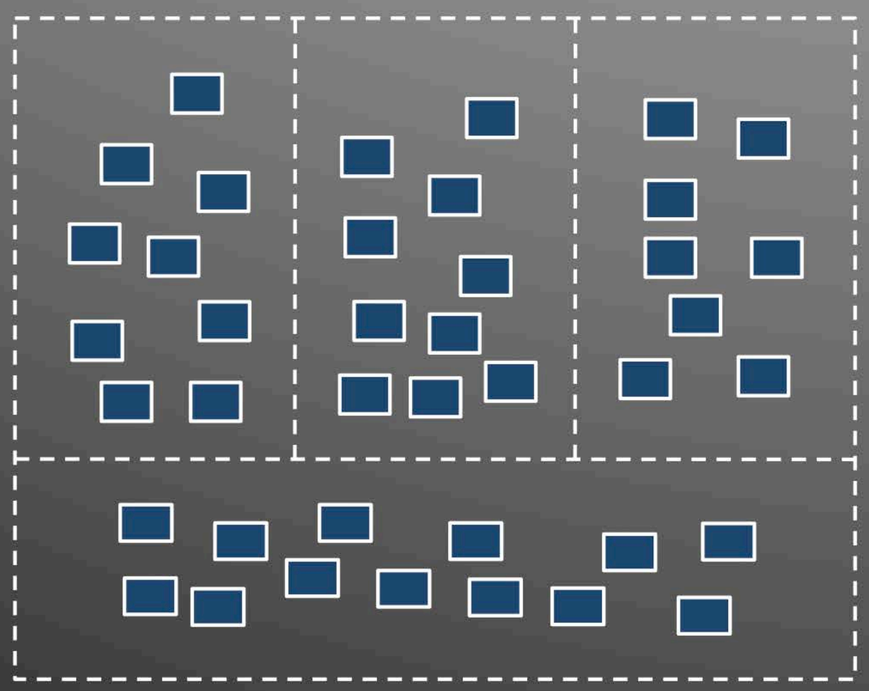
[2] Disruption occurs at the edges of the market and it is driven by “low-end” customers as well as new customers. Because their needs are overshot by the mainstream offerings, they adopt new and simpler solutions that better serves their needs at an accelerated rate. Eventually, these simpler solutions become the dominant offerings in the market.

2. A dynamic view of the field points to meaningful ed-tech offering structures and go-to-market approaches.

[1] The category “emergent schools” refers to formal or informal, permanent or temporary organizations that enable education instances with a very narrow scope, short life span, and reduced need for formalization. TED-Ed, a platform that allows any individual to organize a lesson around a video presentation, provides a great example in this respect.

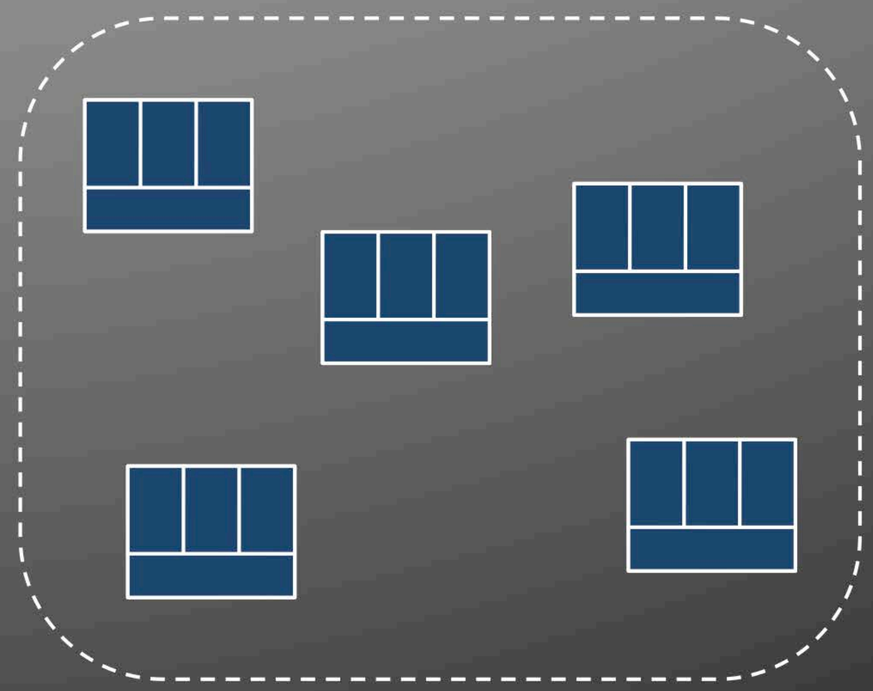
3. Technology will eventually create viable alternative organizational structures for the larger schools.

School as
One Organization



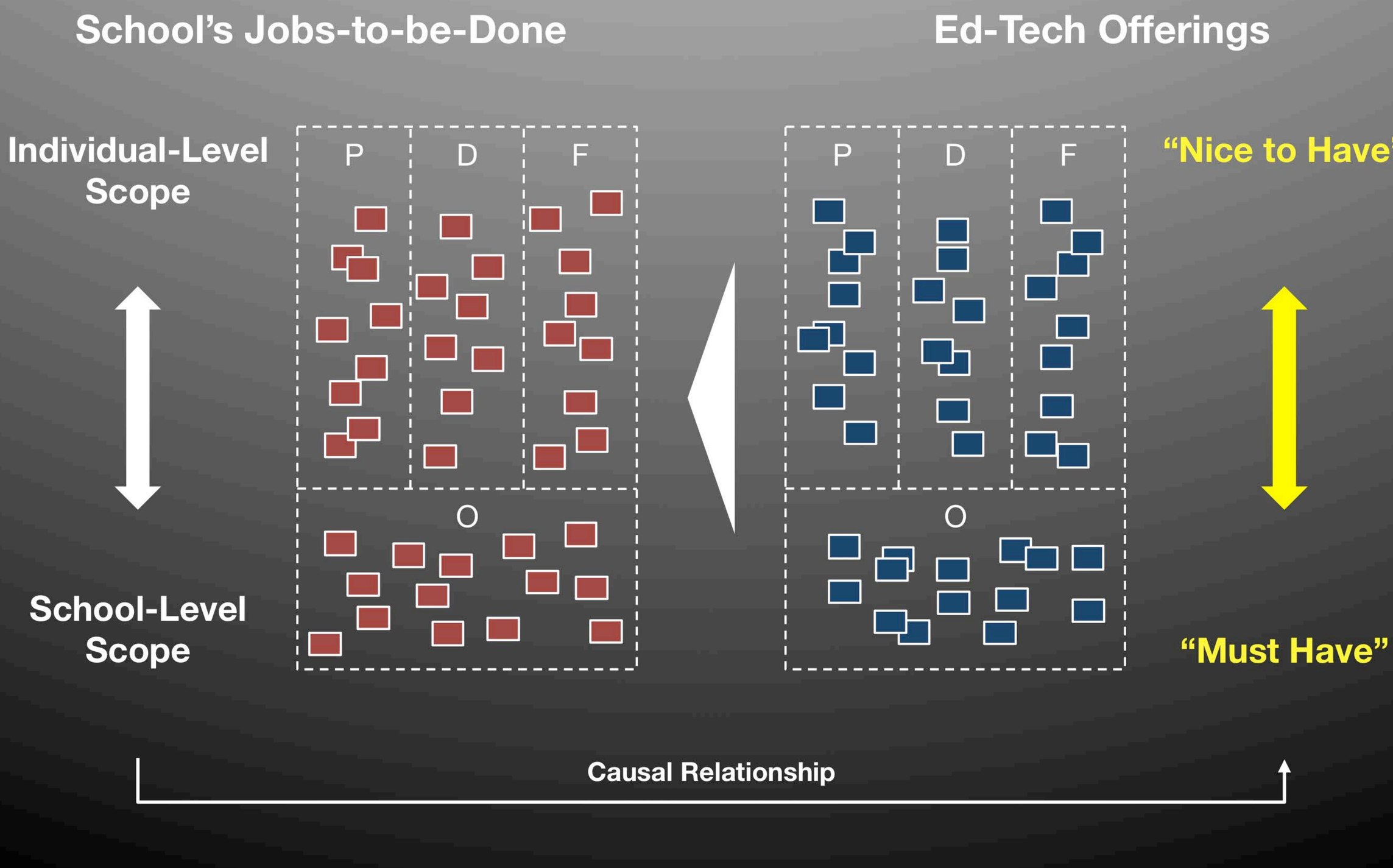
A common ed-tech platform – a system of loosely-connected point solutions – supports the entire organization, including instructors.

School as
Portfolio of Micro-Schools

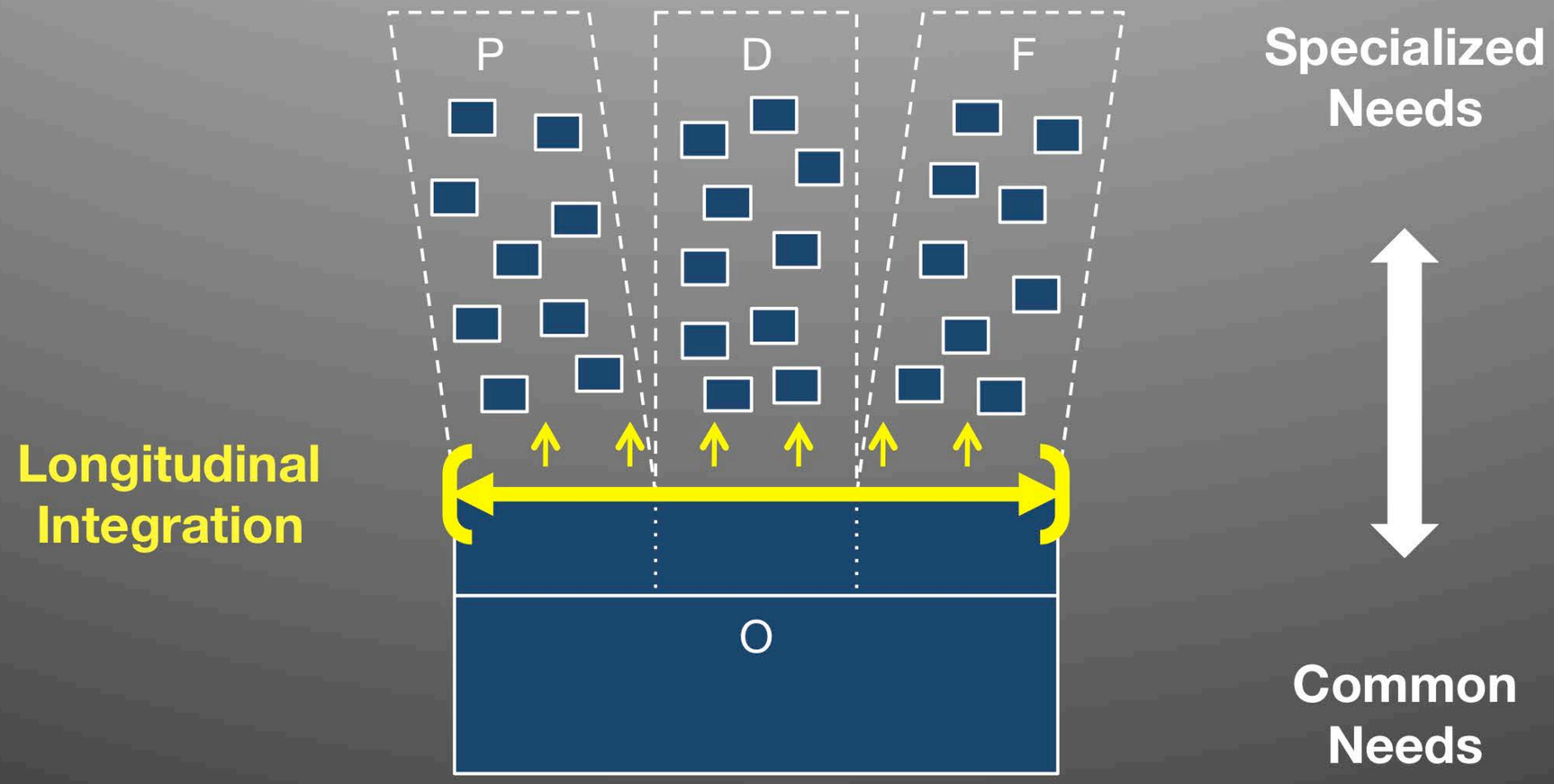


Independent ed-tech platforms – small end-to-end solutions – support independently-operating instructors, affiliated to the school.

4. The need for effectiveness and efficiency creates a hierarchy of importance of the ed-tech offerings.



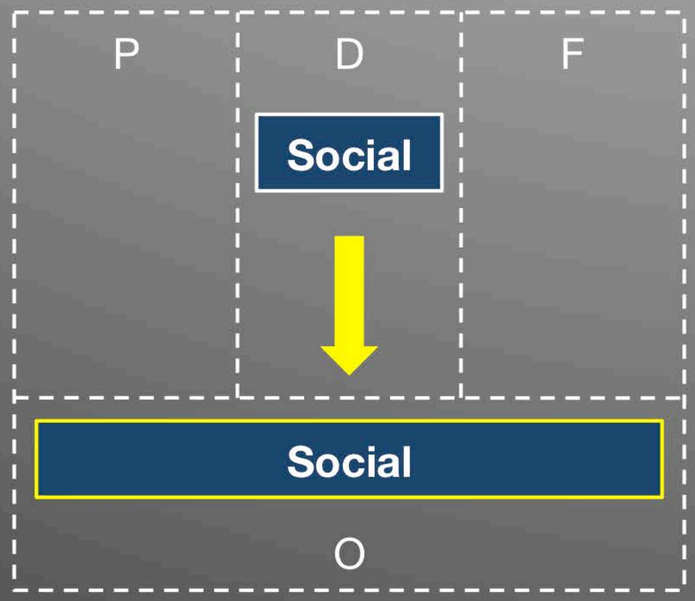
5. Ed-tech integration along the student's development cycle constantly creates opportunities and threats.



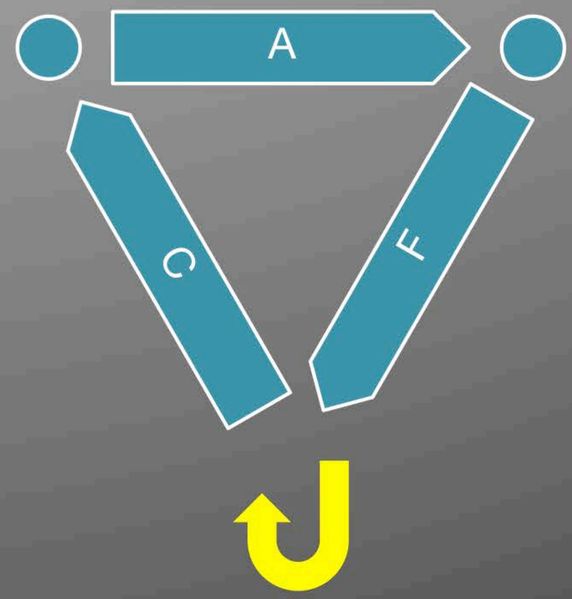
Point solutions are constantly at risk of being rendered irrelevant, as their functionality is gradually assimilated into the underlying longitudinally-integrated products or services. For the integrator, solutions that span the student's life cycle create platforms for other offerings, while reducing the risk of being assimilated into the supporting platforms.

6. The broader community and the enabling technology become increasingly key to a school's success.

School's "Social" Tech



Student's Development Cycle



A "social networking" tool and capability that underlies the student's life cycle, rather than simply complement the classroom activity, enables a school to expand its broader community, increase the rate of returning-vs-new students, and offer a platform for a better personalized student experience.

"Social networks will augment and then replace the classroom as the dominant organizing unit of learning. Although many students will matriculate at their own rate, they will do most of their learning as part of a virtual community." – Tom Vander Ark[1]

[1] From the 2011 book "Getting Smart: How Digital Learning is Changing the World" by Tom Vander Ark and Bob Wise.

7. There are significant integration and consulting opportunities at the higher-end of the ed-tech market.

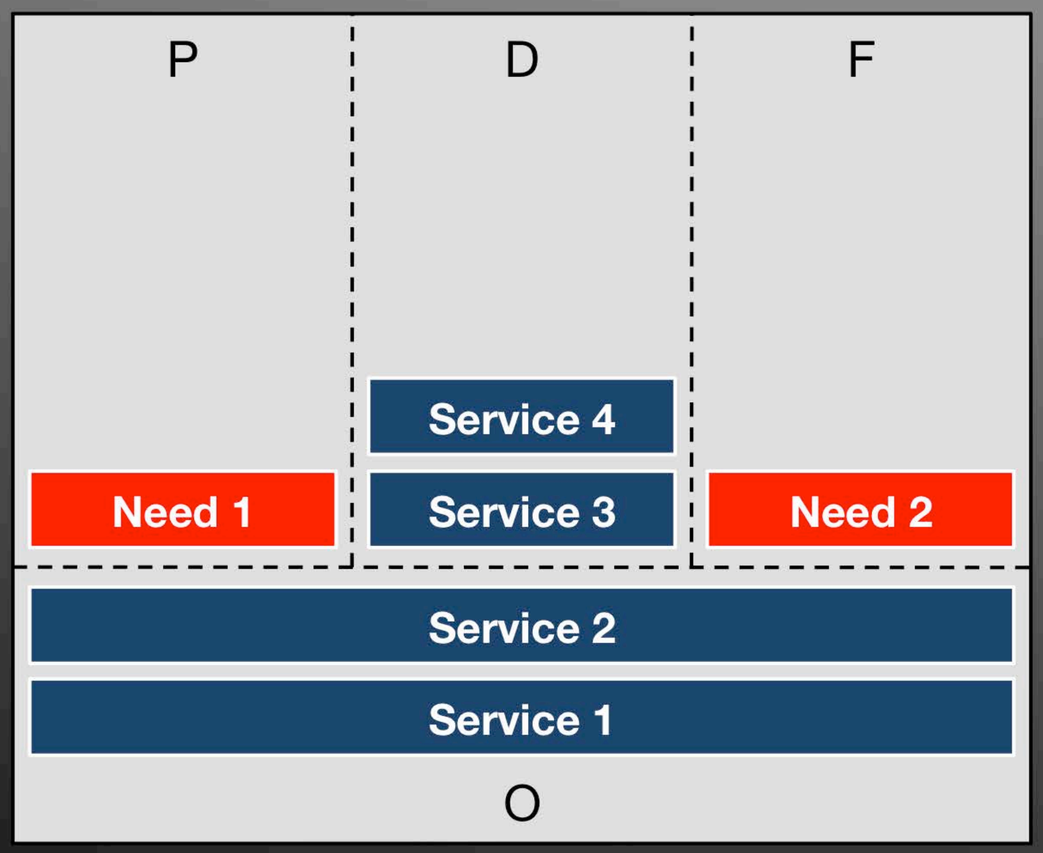
"In 2002 Palmisano succeeded a legendary leader in Lou Gerstner, who saved IBM from being broken up and put it on a viable course. Whereas Gerstner famously declared "the last thing IBM needs is a vision," Palmisano had a clear vision for the company. He saw its unique strength as offering complete solutions tailored to customers' needs – something no other company could match. To concentrate on customer solutions, Palmisano spun off personal computers and disk drives and acquired PriceWaterhouseCoopers' consulting business.

Executing this strategy required seamless integration of IBM's product capabilities with its geographic reach. This meant abandoning IBM's existing organization, in which product silos and geographic entities operated independently and frequently were more competitive than collaborative. Palmisano reorganized IBM into a "globally integrated enterprise" focused on worldwide collaboration. He cajoled, pushed, and pulled the company into a client-centric, agile structure able to customize delivery of IBM's software assets, hardware assets, and intellectual property." – Bill George[1]

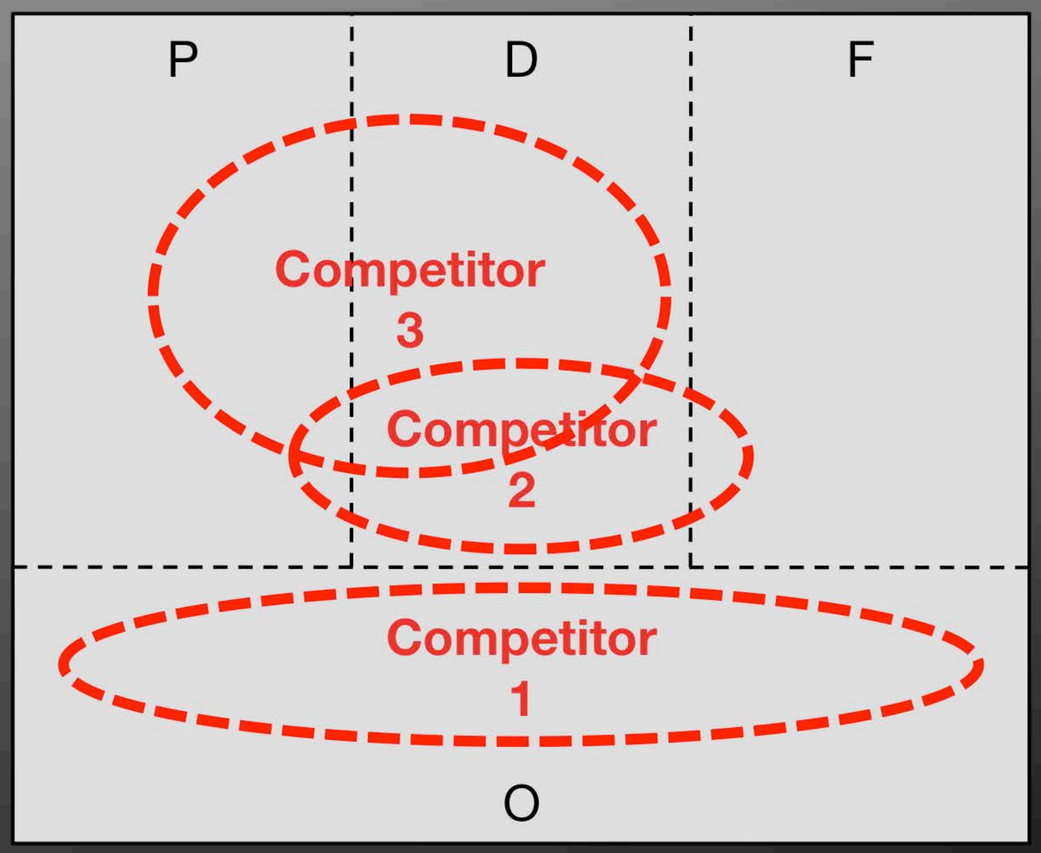
[1] From the 2012 Harvard Business Review blog post "How IBM's Sam Palmisano Redefined the Global Corporation" by Bill George.

8. Visualization enhances processes such as sales, product development, and competitive analysis.

Needs Assessment [Sales]



Competitive Analysis [Planning]



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What is the current worldview or model that underlies your company's behavior and decisions?

"The story is a familiar one: a company that was a superstar only yesterday finds itself stagnating and frustrated, in trouble and, often, in a seemingly unmanageable crisis. […]

The root cause of nearly every one of these crises is not that things are being done poorly. It is not even that the wrong things are being done. Indeed, in most cases, the right things are being done – but fruitlessly. What accounts for this apparent paradox? The assumptions on which the organization has been built and is being run no longer fit reality. These are the assumptions that shape any organization's behavior, dictate its decisions about what to do and what not to do, and define what the organization considers meaningful results. These assumptions are about markets. They are about identifying customers and competitors, their values and behavior. They are about technology and its dynamics, about a company's strengths and weaknesses. These assumptions are about what a company gets paid for. They are what I call a company's *theory of the business*." – Peter Drucker[1]

[1] From the 1994 Harvard Business Review article "The Theory of the Business" by Peter Drucker.

If you are just about to enter the ed-tech space, you have to decide – *lean* or *fat*?

"Spending a little or spending a lot is a means, not an end. Choose the right strategy to win the market or you may end up going straight to purgatory.

As you listen to the virtues of the lean start-up – lightweight sales, light engineering, and so on – keep the following in mind:

- If you are a high-tech start-up, your value is in your intellectual property. Don't stare at your spreadsheets so long that you get confused about that.
- You cannot save your way to winning the market.
- The best companies can raise money even in this market. If you are one of those, you should consider raising enough to wipe out your competition.

Thin is in, but sometimes you gotta eat." – Ben Horowitz[1]

[1] From the 2010 Wall Street Journal AllThingsD blog post "The Case for the Fat Start-Up" by Ben Horowitz.

There is money to be made...

U.S. and Global Education Spending[1]

		Market Size ($ Billion)	eLearning Expenditure ($ Billion)	eLearning as % of Market Size
U.S.	Total	1,332	59.8	4.5%
	Post-Secondary	432	24.4	5.6%
	K-12	625	2.9	0.5%
Global	Total	3,925	62.5	1.6%
	Post-Secondary	1,311	31.3	2.4%
	K-12	1,878	9.4	0.5%

[1] From the 2011 Executive Office of the President of the United States report “Unleashing the Potential of Educational Technology” by the Council of Economic Advisers.

Good Luck!

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