DRIVING
TOWARD A DEGREE

THE EVOLUTION OF ACADEMIC ADVISING IN HIGHER EDUCATION

PART 2: THE SUPPLIER LANDSCAPE

2017



Tyton PARTNERS

BABSON Survey Research Group

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EXECUTIVE SUMMARY

Driving Toward a Degree: The Evolution of Academic Advising in Higher Education offers insights to help institutions make informed decisions toward redesigning their academic advising to improve overall student success and persistence.

Following our 2015 two-part series *Driving Toward a Degree: The Evolution of Planning and Advising in Higher Education* and 2016 publication *Driving Toward a Degree: Establishing a Baseline on Integrated Approaches to Planning and Advising*[1], this year's publication is also a two-part series that tracks the progress of academic advising and student success initiatives from the institutional and supplier perspectives.

PART 1: STATE OF THE ACADEMIC ADVISING FIELD

Drawing largely from Tyton Partners' 2017 primary research survey that reached over 2,200 administrators and advisors across nearly 1,400 institutions, Part 1 measures the extent and impact of various student success practices, products, and services related to academic advising. It introduces readers to contextually relevant benchmarks that enable institutions to gauge their progress and to identify what barriers are preventing improved student outcomes and institutional performance.

PART 2: SUPPLIER LANDSCAPE

Part 2 allows readers to gain insight into the present and future states of technologies for integrated academic advising according to the metrics of product sophistication, market reach, and product breadth. Since Tyton Partners began tracking the field several years ago, much progress has been made in the supplier ecosystem. We see the following key themes emerging from our conversations with more than 40 suppliers and countless rounds of feedback from administrators and thought leaders:

- Institutions are increasingly interested in using solutions to support their decision-making processes for student intervention and to help manage and measure performance of academic advising.
- More institutions are adopting third-party advising technology increasing, the size of commercial (i.e., external) spend 3-7% to $338M.
- In order to bridge the skills and perceptions gaps between employers, educators, and students, institutions are placing greater emphasis on the integration between academic and career planning products.
- Institutions are looking to downsize the number of products, but expand their scope of capabilities.
- Institutions in search of the technology product that does everything well have struggled to realize the promise of an integrated technology solution that dramatically improves academic advising.
- In order to overcome the persistent problem of student engagement, institutions are meeting students where they are with mobile solutions and using more student-centered messages to influence their behavior.

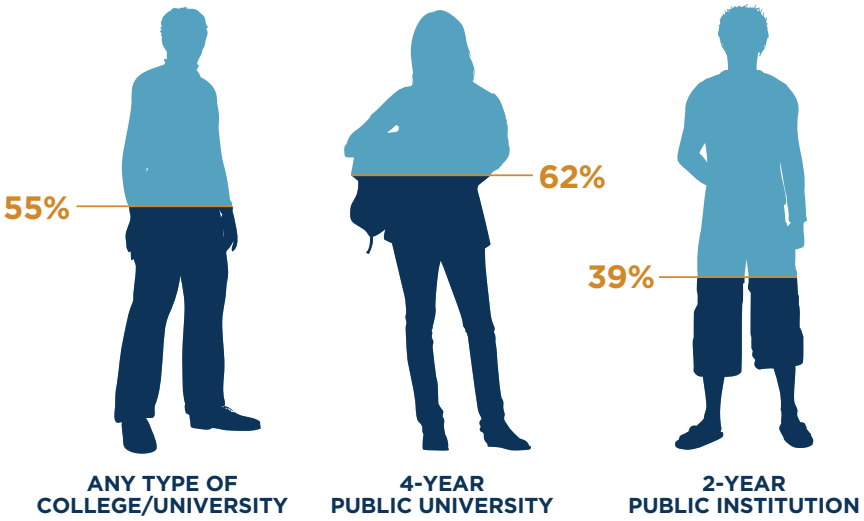
1. Also available at ***tytonpartners.com***.

THE PROBLEM

STUDENTS ARE NOT COMPLETING THEIR DEGREES...

- Among students who started in any type of college or university in Fall 2010, only 55% completed a degree or certificate within six years of entering a postsecondary institution.
- Students who entered a four-year public university earned a degree or certificate at a rate of 62% within six years.
- Students who started at a two-year public institution had an overall completion rate of 39%.[2]

POSTSECONDARY DEGREE, CERTIFICATE OR COMPLETION RATES

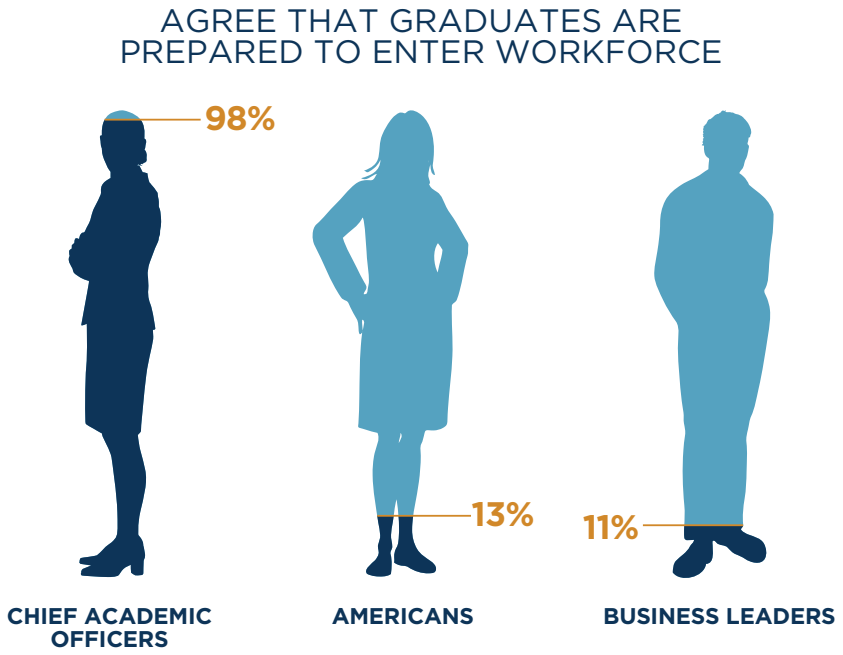


...AND THOSE WHO DO ARE NOT PREPARED

- Americans owe over $1.4 trillion in student loan debt, spread out among about 44 million borrowers.
- The average Class of 2016 graduate has $37,172 in student loan debt, up 6% from 2015.[3]
- Students who take out college loans but do not graduate are almost 3 times more likely to default than borrowers who complete.[4]

2. National Student Clearinghouse Research Center, *Signature 12 Supplement: Completing College: A National View of Student Attainment Rates by Race and Ethnicity – Fall 2010 Cohort*, April 2017.
3. Federal Reserve Bank of New York, *Quarterly Report on Household Debt and Credit*, Q4 2016.
4. Board of Governors of the Federal Reserve System, *Report on the Economic Well-Being of U.S. Households in 2016*, May 2017.

- The skills and perceptions gap between employers, educators, and students is evident.
  - 98% of Chief Academic Officers rate their institution as very/somewhat effective at preparing students for the world of work.
  - 13% of Americans strongly agree that college graduates in this country are well prepared for success in the workplace.
  - 11% of business leaders strongly agree that graduating students have the skills and competencies their businesses need.[5]



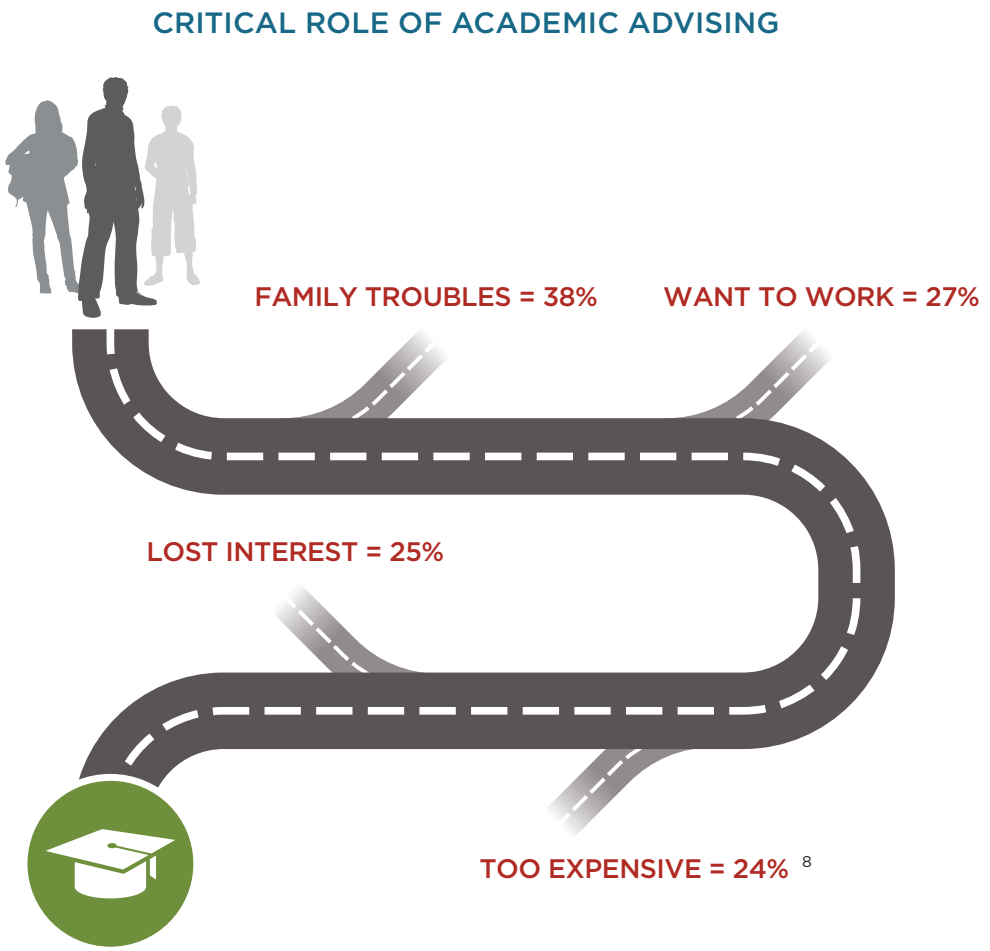
TOO MANY STUDENTS FLOUNDER THROUGH COLLEGE, TAKING MORE TIME THAN THEY PLANNED TO GRADUATE, AND GRADUATE WITH A DEGREE FOR A JOB FOR WHICH THEY ARE UNDERPREPARED.

5. Lumina Foundation/Gallup Poll, *The 2013 Inside Higher Ed Survey of College & University Chief Academic Officers Report*, 2013.

CRITICAL ROLE OF ACADEMIC ADVISING

Academic advising can help get students on the right track to graduate and can prevent students from slipping off track. Advising exerts a significant impact on student persistence through its positive association with student satisfaction with the college experience and effective educational and career planning and decision-making.[6]

Moreover, advising plays a central coordinating role in a holistic system of student support that involves many distinct functions and student-facing touch points on campus. Students are more likely to thrive, persist, and complete degrees in environments that provide clear and consistent information about institutional expectations and requirements.[7]



Hence, Tyton Partners' goal is to identify the gaps between the supply and demand sides of the academic advising market, and then to provide institutions with a guide for selecting and implementing student success strategies and technologies.

6. Adena D. *Young-Jones*, Tracie D. *Burt*, Stephanie Dixon, Melissa J. Hawthorne, Missouri State University, *Academic Advising: Does It Really Impact Student Success?*, 2013.
7. Jayne K. Drake, NACADA: The Global Community for Academic Advising, *The Role of Academic Advising in Student Retention and Persistence*, July 2011.
8. Federal Reserve Bank of New York, *Quarterly Report on Household Debt and Credit*, Q2 2015.

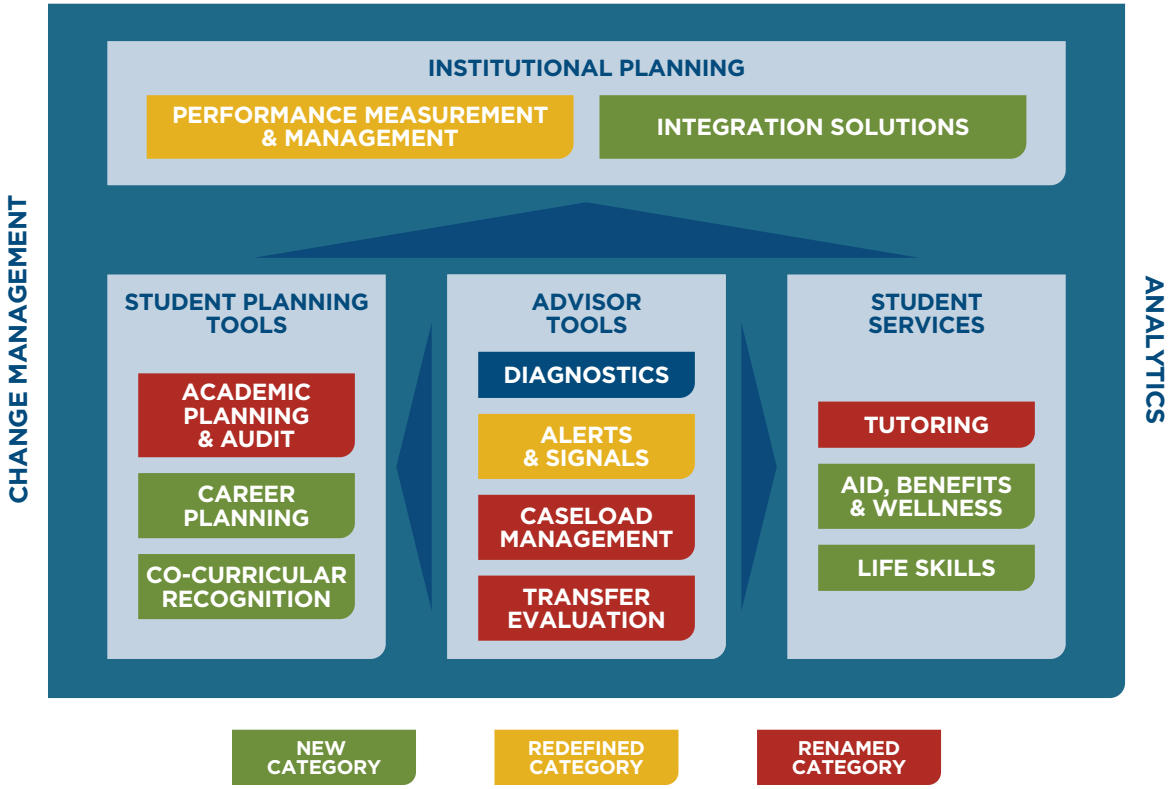
PART 2: THE SUPPLIER LANDSCAPE

HOW HAS THE ACADEMIC ADVISING SUPPLIER LANDSCAPE EVOLVED SINCE 2015?

Tyton Partners identified nearly 180 companies supporting institutions with student success offerings across twelve distinct product categories and four workflow areas. This is an increase from nine product categories in 2015.

Of these 180 companies, roughly 80% are point solutions that offer one or two more products designed to serve a specific function within the academic advising process. The remaining 20% of companies offer three or more products.

STUDENT SUCCESS TECHNOLOGIES ARE SEGMENTED INTO 12 DISTINCT PRODUCT CATEGORIES ACROSS FOUR WORKFLOW AREAS



* *For a detailed description of the product categories and the suppliers that participate across these categories, refer to exhibit B in the appendix.*

The market of offerings is evolving rapidly as companies look to meet institutional demand across several categories. However, this dynamic continues to be a work in progress. Tyton Partners identified four key themes present in today's market:

1. **Maximizing Performance**
   Institutions are increasingly interested in solutions to support their institution-wide decision-making processes. With mandates to earn greater return on their investments in interventions, institutional leaders are demanding products to help manage and measure performance. For example, these leaders are interested in learning whether their predictive models for student interventions are in line with what was intended or should have been achieved. In addition, institutions are under pressure to allocate scarce resources across various departments. They are therefore keen on the evaluation of an intervention or product to determine its effectiveness, and to weigh the benefits of those effects against competing investment decisions.

2. **Closing the Gap between Education and Employment**
   The skills and perceptions gaps between employers, educators, and students continue to widen. In response, suppliers are incorporating job market data into their academic planning products to connect degree completion to a career. However, the suppliers are one step ahead of institutions and it remains unseen how institutions and their students are taking full advantage of these connections.

3. **Consolidating Products but Increasing Capability**
   Institutions are looking to downsize the number of products, but expand their scope of capabilities. Integration functionality can ease the pain of managing multiple products, but ultimately institutions are looking for a holistic solution. Institutions are interested in ongoing relationships with suppliers who have solutions designed and implemented with an eye toward adaptability and scalability.

   Evidence of this consolidation appears in the mergers and acquisitions activity we have tracked since 2015 – see exhibit P. For example, Civitas Learning acquired College Scheduler in 2016. The integration of the schedule planning solution into Civitas' Student Insights Platform extends the company's current advising abilities to include class scheduling and registration.

   Moreover, Hobsons acquired the Predictive Analytics Reporting (PAR) Framework in 2016. PAR measures the impact of student success interventions, benchmarks an institutions' academic success in comparison to peer institutions, and predicts which students are going to be at-risk. The acquisition of PAR followed Hobsons' 2015 acquisition of Starfish Retention Solutions and its Enterprise Success Platform.

4. **Fully Integrated Solutions Are in High Demand but Have Not Yet Met Expectations**

   Institutions in search of the technology product that does everything well have struggled to realize the promise of an integrated technology solution that dramatically improves academic advising. This contradicts the advertised benefits of integrated functionality (i.e., it eases the pain of managing multiple products). These negative views have been influenced by these institutions' experiences with the specific products that they have adopted. Institutions using fully integrated solutions are less likely to report satisfaction with their products.

HOW SHOULD INSTITUTIONS EVALUATE SUPPLIERS IN THE ACADEMIC ADVISING MARKET?

Because of the increasing demand for integrated solutions, Tyton Partners continues to analyze the supply side of the market in terms of product sophistication, market reach, and product breadth.

- **Product sophistication** analyzes individual product sophistication through feature set functionality. It is important to note that simply because a product is more sophisticated does not necessarily mean it is a better fit for a particular institution and its specific needs.
- **Market reach** measures the level of penetration by each product category. (e.g., How many institutions are being supported by a third-party degree planner provider?)
- **Product breadth** determines the pairing of products across the spectrum of advising workflow areas.

PRODUCT SOPHISTICATION

The value of sophistication is in the eye of the beholder. For some institutions, significant gains can be made from widespread use of tools that accomplish seemingly simple tasks. For other institutions – particularly those at the upper end of first-year retention and overall persistence rates – more sophisticated products may be warranted. Despite this diversity of needs, we observe that suppliers have worked to increase the level of sophistication of their products.

Tyton Partners reviewed individual products from a feature-set perspective across the twelve different product categories in order to measure the maturity level of each category. We separated products into three groups based on the sophistication of their feature sets, with 3.0 corresponding to the greatest number of advanced features. It is important to note that products in higher feature set categories are not necessarily better at serving institutional or student needs; they simply claim to offer a greater number of advanced features. For a detailed view of advanced features, see appendix exhibits C-N.

LEVEL OF MATURITY	PRODUCT CATEGORY	ESTIMATED NUMBER OF PRODUCTS	FEATURE SET 1.0	FEATURE SET 2.0	FEATURE SET 3.0
ESTABLISHED	ACADEMIC PLANNING & AUDIT	20	7%	33%	60%
	DIAGNOSTICS	29	6%	44%	50%
	ALERTS & SIGNALS	45	26%	43%	30%
	TUTORING	24	26%	35%	39%
EMERGING	CASELOAD MANAGEMENT	40	46%	25%	29%
	CAREER PLANNING	16	27%	27%	45%
	LIFE SKILLS	17	45%	36%	18%
	TRANSFER EVALUATION	10	0%	20%	80%
	AID, BENEFITS & WELLNESS	14	60%	40%	0%
EARLY STAGE	PERFORMANCE MEASUREMENT & MANAGEMENT	28	36%	50%	14%
	INTEGRATION SOLUTIONS	6	50%	25%	25%
	CO-CURRICULAR RECOGNITION	6	20%	80%	0%

ESTABLISHED

Established products have feature sets that are well defined and evolved. The markets for these products are typically more commoditized to the point where purchasing decisions are made primarily based on defined feature lists, price, and ease of implementation. Product categories in this bucket include Academic Planning & Audit, Diagnostics, Alerts & Signals, and Tutoring.

Academic Planning & Audit

This is the most evolved category by feature set. Those in feature set 3.0 have integrated with a career planning tool and map career interests to the degree plan. Moreover, they are delivered through a student-facing mobile solution and allow role-based student and advisor access.

Diagnostics

The most evolved products in this category provide advisors multiple risk factors for each student, including projected academic performance, and a retention or risk score, as well as detailed action plans for success.

Alerts & Signals

In addition to analytics involving commonly used inputs (GPA, major-status, full/part time status), the most evolved products explicitly signal or "nudge" students across a variety of channels (email, text, social media sites, and institutional communication portals), and provide detailed reporting that connects alerts or signals to actions taken that impact student outcomes.

Tutoring

Virtual tutoring enabled by interactive question and answer inventories with automatic responses to a broad array of questions is the most cutting-edge evolution in this category. Also, course-specific information is driving evolution as more resources such as notes, study guides, and student ratings become available for particular courses.

EMERGING

Emerging products continue to evolve as providers add unique features and new players enter the market. Because products in this category are fairly differentiated from one vendor to the next, purchase decisions are more complex, with decisions primarily based on overall value propositions, ease of system integration, ease of implementation, and price. Product categories in this bucket include Caseload Management, Career Planning, Transfer Evaluation, Life Skills, and Aid, Benefits & Wellness.

Caseload Management

Two main features separate the evolved products from the others in this category: (1) two-way integration with Diagnostics and Performance Measurement & Management tools to guide and assess effectiveness of advisor interventions; and (2) seamless information sharing across an expanded set of roles and departments, including financial aid, mental health, etc.

Career Planning

This category has evolved and matured most quickly over the last two to three years. Many products in this category are taking inventory of skillsets and comparing those skills with specific job requirements, as well as using salary and jobs data to predict potential earnings. What separates products in this category is their integration with Academic Planning & Audit products to map career interests to degree plans and their delivery through a mobile application.

Transfer Evaluation

The most evolved and useful feature for students in this category is the specific school search that includes the ability to optimize credits and tuition costs across several institutions. Most of the suppliers in this category offer this and other advanced features. However, it is the lag in institutional adoption which leads us to continue to label this category as emerging.

Aid, Benefits & Wellness

The three most evolved product features for this category include: (1) student access to benefits via easy-to-use comprehensive mobile applications; (2) personalized support offered via referrals to both on-site and online resources, with specialized expertise; and (3) benefits offered are comprehensive in scope, and tailored to an institution's regional support network.

Life Skills

Holistic support to the student from enrollment to job placement is key to the evolution of this category. Student support services in this category include virtual and on-site success coaching, peer mentoring, and college success courses/seminars and orientation.

EARLY STAGE

Early stage products are rapidly evolving. New suppliers continue to enter the market with unique offerings. Purchase decisions in this category are based primarily on awareness and willingness to innovate or adopt a product with limited evidence of efficacy. Product categories in this bucket include Performance Measurement & Management, Integration Solutions, and Co-curricular Recognition.

Performance Measurement & Management

Collection and customization of student indicators from multiple systems (LMS, SIS, other systems) is more common. What is less common is enabling a return on investment analysis of student success initiatives to understand highest value interventions for an institution, as well as a course-capacity analysis of critical "gateway" courses via scheduling optimization applications.

Integration Solutions

Products in this category commonly facilitate secure information exchange between internal academic and student support services and data systems. Challenges remain in offering central repositories of integrated data from multiple internal as well as external sources.

Co-curricular Recognition

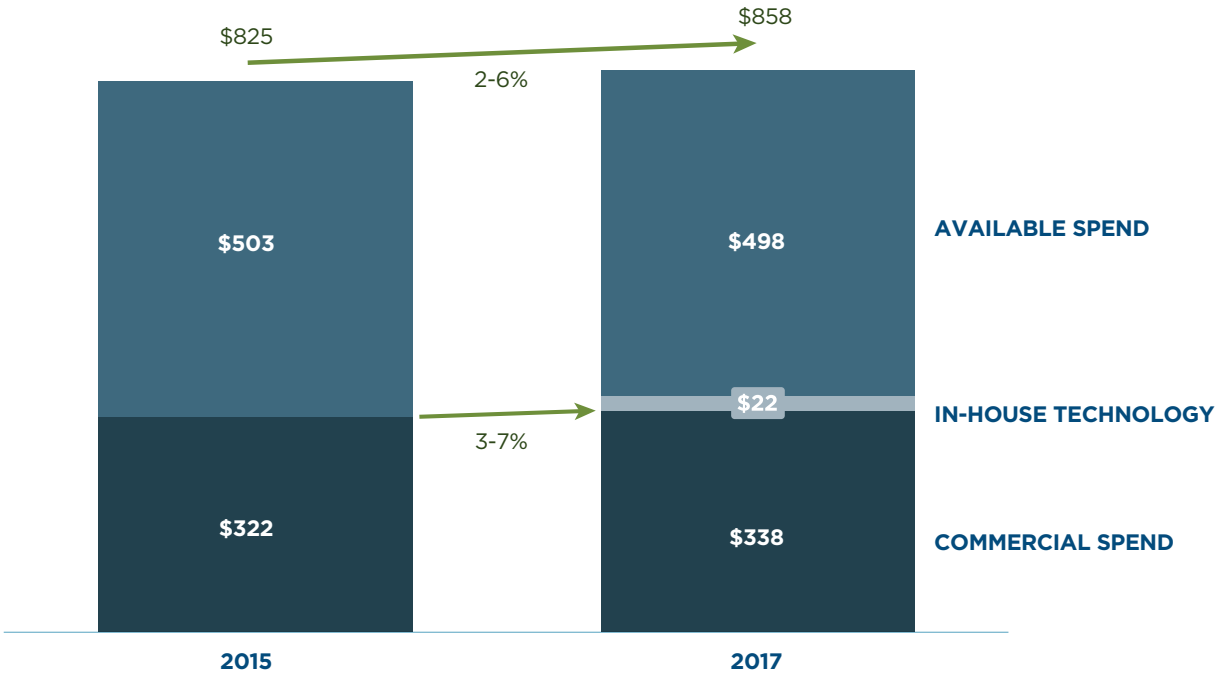
This is the least evolved category by feature set. Portfolios displaying specific credentials or badges earned through co-curricular learning are more common. There are a number of experimental projects underway that involve re-envisioning the transcript but connecting these efforts to advising and student supports are very early stage.

MARKET REACH

Tyton Partners estimates the total market for academic advising services has grown 2-6% since 2015, from roughly $825M to $858M in 2017. The market size is segmented between the amount institutions spend on student support services staff and related technology support (i.e., available spend), and the amount institutions spend on third party suppliers (i.e., commercial spend). Available spend also includes the amount institutions spend on software applications developed in-house (i.e., in-house technology). Growth in the overall market is split between growth in available spend and growth in commercial spend.

STUDENT SUCCESS PRODUCT MARKETING SIZING

Academic Advising Technology & Service Market:
Available vs. Commercial Spend (in millions)



We estimate that the two largest product categories by commercial spend are Academic Planning & Audit and Caseload Management, which consist of roughly one-third and one-fourth of the commercial spend, respectively.

PRODUCT BREADTH

Tyton Partners identified the product categories that were most often used together at an institution. Academic Planning & Audit is the core product that is most frequently used with other product categories, followed by Alerts & Signals. While these pairings do not indicate whether these products are integrated, they do offer a view of how institutions are holistically tackling the problems of low completion, retention, or persistence rates with the products available to them. Companies that are working to compete on the basis of product breadth are connecting the categories highlighted in green below.

	Academic Planning & Audit	Diagnostics	Performance Measurement & Management	Alerts & Signals	Caseload Management	Transfer Evaluation	Career Planning	Resource Connection*
Diagnostics	14%	X	X	X	X	X	X	X
Performance Measurement & Management	7%	5%	X	X	X	X	X	X
Alerts & Signals	30%	14%	6%	X	X	X	X	X
Caseload Management	23%	9%	5%	15%	X	X	X	X
Transfer Evaluation	22%	6%	4%	11%	11%	X	X	X
Career Planning	12%	7%	5%	10%	7%	7%	X	X
Resource Connection*	19%	8%	5%	16%	11%	9%	8%	X
Integration Solutions	25%	10%	6%	17%	12%	12%	8%	11%

0% - 9% **10% - 19%** **20% OR MORE**

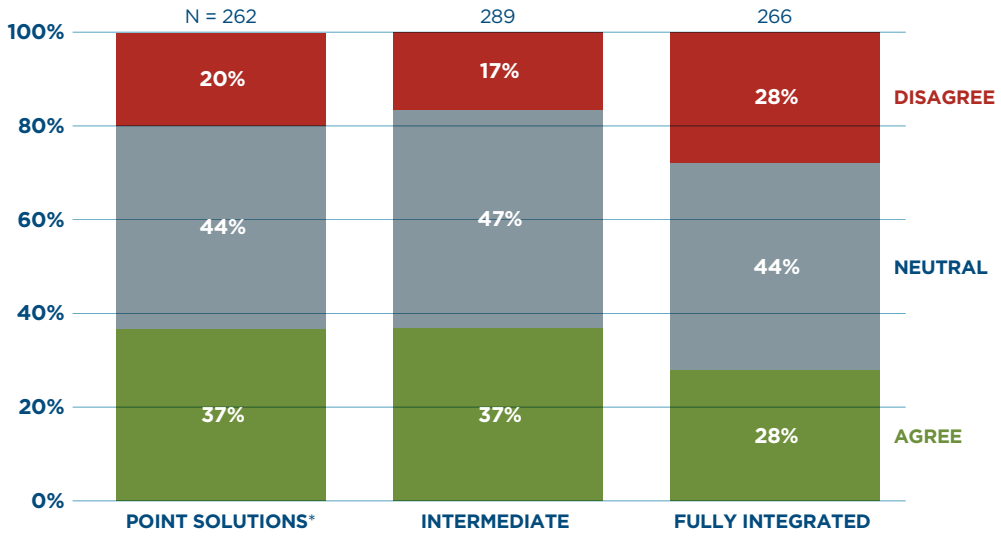
* *Of note, we combined the Student Services categories of Tutoring, Life Skills, and Aids, Benefits & Wellness as well as the Co-curricular Recognition category under Resource Connection.*

THE UPS AND DOWNS OF INTEGRATED SOLUTIONS

As mentioned earlier and despite institutions' desire for integration, institutions using fully integrated solutions are less likely to report overall success with their academic advising functions.

ADVISING SUCCESS BY LEVEL OF PRODUCT INTEGRATION

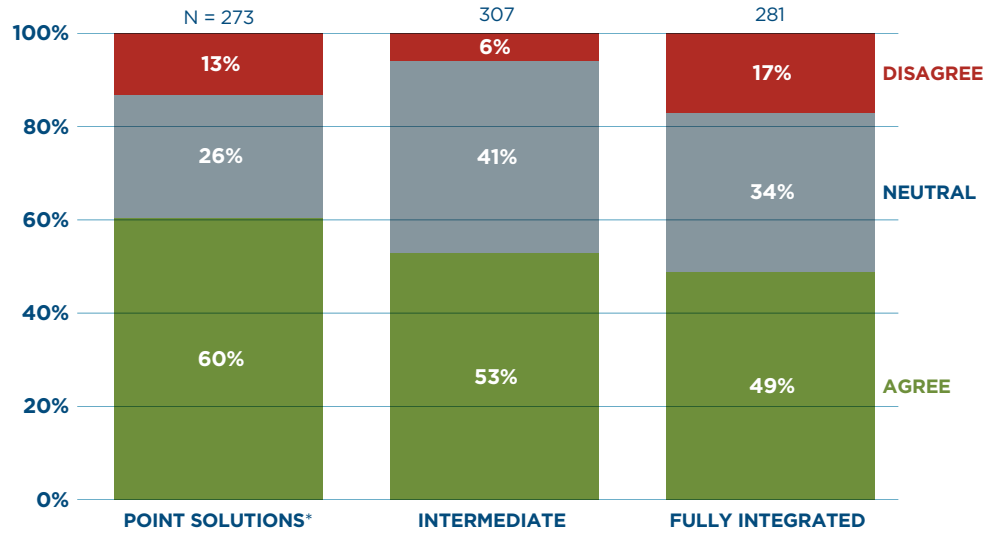
Overall, my institution successfully achieves an ideal advising situation
n = 817



Moreover, institutions using fully integrated technology solutions are more likely to disagree with the statement that technology enhances their advising function. This contradicts the advertised benefits of using integrated tools (i.e., they are touted as a one-stop shop for advising).

TECHNOLOGY EFFECTIVENESS BY LEVEL OF PRODUCT INTEGRATION

Technology effectively enhances our academic advising function
n = 861

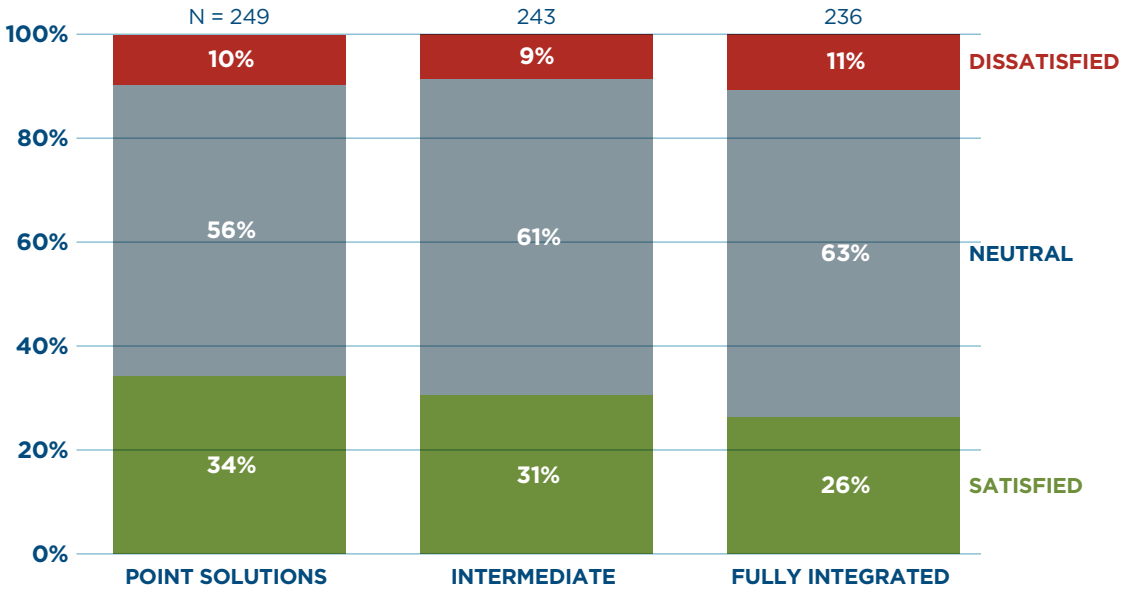


* *Percentages may not add to 100% in all charts due to rounding.*

These negative views have likely been influenced by these institutions' experiences with the specific products they have adopted (i.e., institutions using partially or fully integrated solutions are less likely to report satisfaction with their products).

PRODUCT SATISFACTION BY LEVEL OF PRODUCT INTEGRATION

How satisfied are you with the product you are most familiar with?
n = 728



Tyton Partners' hypothesis is that integrated solutions on the whole are not yet robust or customizable enough to fulfill all institutions' needs. Institutions that pick and choose from a menu of point solutions are better able to customize and subsequently are more satisfied.

WHERE IS THE MARKET FOR ACADEMIC ADVISING PRODUCTS & SERVICES HEADING?

Moving forward, Tyton Partners also identified five functionality areas that are emerging to influence academic advising, institutional academic planning, and student success broadly:

1. **Fully Integrated Solutions**
   In spite of the shortcomings mentioned earlier, the needle is moving in the direction of fully integrated solutions as institutions come to understand the benefits and suppliers develop more robust solutions.

   Education Advisory Board (EAB) recently introduced the Student Success Management System (SSMS), an enterprise level solution designed to integrate the network of coordinate care designed to assist students. EAB is positioning the SSMS as the Learning Management System (LMS) or Student Information System (SIS) of student success.

Similarly, Civitas' Student Success Platform incorporates a broader set of student data from several solutions into a fully-integrated platform, and enables reporting and impact measurement of advising initiatives. And as mentioned earlier, the recent acquisitions of Starfish Retention and the PAR Framework enable Hobsons to provide institutions scalable and measurable student interventions.

2. **Influencing Student Behavior**
   Institutions are eager to understand what interventions and practices influence student behavior. While many technologies exist to identify at-risk students, Motimatic provides technology that tries to reduce the chances of students becoming at-risk by promoting positive behavior. Through the application of consumer digital marketing techniques and technology, Motimatic automatically delivers explicit and implicit messages of encouragement to targeted students on their favorite apps and websites. Based on nudge theory in behavioral science, these messages offer positive reinforcement, providing direct and indirect suggestions to try to influence the decision-making of students for the better.

3. **Emphasis on User Experience**
   Providers are increasingly offering mobile solutions with seamless messaging capabilities. These mobile apps are student-centered and designed to actively provide students with the advising support they need, where they need it—on their smartphones or tablets. According to a report published by Pearson, 86% of college students regularly use a smartphone, and 51% report that they regularly use a tablet. Beyond usage, mobile devices are seen as a fundamental part of colleges students' lives. Gallup reports 51% of 18-to-29-year-olds say they cannot imagine life without their smartphone. Blackboard Planner and Campus Labs Engage distinguish themselves as mobile apps with their range of functionality and user interface design.

4. **Institutional Efficiency**
   Because of increasing performance-based funding requirements and flat or declining enrollments, institutions are under pressure to earn greater returns on their investments in products and services. Thus, the rapid growth of providers like EduNav, which offers and optimizes real-time educational planning for students and institutions. The EduNav SmartPlan calculates the smartest path for students, routing and re-routing in real time according to institutional requirements, changes in course availability, personal constraints, and other factors. EduNav Optimize aggregates all SmartPlans generated by students to forecast demand for courses by term, showing administrators how many seats are required in each course to meet the expected demand of enrolled students.

   AcademyOne's CourseAtlas provides a number of solutions, most notably a transfer portal to give students access to equivalency and transfer agreement information. For institutions, it also simplifies the upload and organization of equivalencies sourced from multiple student information management systems.

   HelioCampus transforms the data of institutions from across departments, campuses, and systems into an intuitive, insightful, and comprehensive set of reporting models and dashboards. It also helps with data interpretation, trend identification, and change management.

eLumen offers a platform that allows schools to design courses that are aligned to student skills, measure student performance, and engage both students and faculty in the results. It focuses on learning outcomes data to drive critical decisions around basic skills, student services, and program offerings.

5. **In-house Development**
   Some institutions have developed custom tools in-house to meet their academic advising needs. While not in widespread use, these in-house solutions are in use at 1 to 3% of institutions, depending on the advising function being considered. This is not a new trend but increasingly, institutions are becoming more sophisticated with their own IT and analytics capabilities. IT, institutional effectiveness, and institutional research departments are collaborating more and using off-the-shelf utilities to build their own solutions.

   Purdue University is among the ~2% of institutions that use in-house solutions to support academic planning functions. Purdue's Forecast tool incorporates traditional academic data with data on student behaviors that correlate with academic success (e.g., use of university resources like the gym and library or time on campus as approximated by use of the wireless network) to build a holistic model of student performance. It uses that model to generate targeted recommendations for students toward improving their academic performance by aligning their behaviors with those typical of successful graduates.

   The University of New Mexico's Institute of Design & Innovation has implemented a suite of new analytics tools that enables advisors, faculty, and administrators to track student success. These tools include online degree roadmaps for every undergraduate program at UNM. The degree roadmaps site has received over two million hits in the last two years, and has contributed to more than a 7% increase in six-year graduation rates and all-time records in four-year graduation rates each of the past two years.

   The University of Texas System is developing TEx, short for Total Education Experience, in partnership with Salesforce. TEx is a learning relationship management (LRM) platform offering personalized learning, a marketplace of courses and programs, and an academic record built on block-chain technology.[9] The University of Texas System's Institute for Transformational Learning, known as UTx, is leading the development effort. Version 1.0 of the TEx app was launched in August 2015. Development of TEx 2.0 has begun and will support programming initiatives in 2017 – with availability for broader use by Fall 2018.

9. Carl Straumsheim, Inside Higher Ed, *A Force in the Software Market*, October 2016.

WHO IS TYTON PARTNERS?



Tyton Partners is the leading provider of investment banking and strategy consulting services to the education sector and leverages its deep transactional and advisory experience to support a range of clients including companies, foundations, institutions, and investors.

In higher education, Tyton Partners' consulting practice offers a unique spectrum of services that supports institutions and companies to develop and implement strategies for revenue diversification and growth, student persistence and success, and innovations in teaching & learning technology.

For more information about Tyton Partners, visit ***tytonpartners.com*** or follow us at ***@tytonpartners***.

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We also would like to thank the more than 40 suppliers and institutions that we interviewed for these publications. We greatly appreciate the input of all our interviewees and the 2,200 survey respondents, as well as their overall contribution to advancing the field's knowledge of student success in higher education.

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Tyton Partners supports the work of both institutions and vendors in the education market. Any mention of particular vendors or institutions in this report serve to illustrate our observations on the evolution of this market. They do not represent an endorsement in any way. Finally, any errors, omissions, or inconsistencies in this publication are the responsibility of Tyton Partners alone.

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Dr. Seaman has been conducting research on the impact of technology on higher education and K-12 for over a decade. His most recent work includes annual survey reports on the state of online learning in US higher education, reports on open educational resource awareness and adoption in both US K-12 and higher education, and international surveys on online and distance education.

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Nicholas joined Tyton Partners in 2016 as a principal in the strategy consulting practice. Before joining Tyton, Nicholas served in roles in the education and impact investing markets tackling problems in innovation, optimization, and due diligence. Nicholas earned his BA from Johns Hopkins University, MBA from Columbia Business School, and MIA from Columbia University's School of International & Public Affairs.

KATHRYN MARTIN, *Associate*

Kathryn joined Tyton Partners as an associate through Education Pioneers, a program that matches talented early-career professionals to positions with leading education organizations. Prior to joining Tyton, Kathryn taught high school science at the Paideia School, an independent K-12 school in Atlanta, GA. Kathryn holds a BA in psychology from Ithaca College and a PhD in neuroscience from Emory University.

APPENDIX

EXHIBIT A: MARKET TAXONOMY BY LEADING SUPPLIERS

NOTABLE PROVIDERS ACROSS THE 12 PRODUCT CATEGORIES; 45 COMPANIES OFFER PRODUCTS ACROSS THREE OR MORE CATEGORIES



EXHIBIT B: PRODUCT CATEGORIES AND DESCRIPTIONS

PRODUCT CATEGORIES AND DESCRIPTIONS

WORKFLOW CATEGORY	PRODUCT CATEGORY	DESCRIPTION
INSTITUTIONAL PLANNING	Performance Measurement & Management	• Systems that collect student data and provide institutional reporting • Data elements may include demographic, academic, sentiment, non-cognitive and other types of data impact and inform resource allocation
	Integration Solutions	• Tools that allow for interoperability between existing campus systems (e.g., LMS, SIS) to support a cohesive user experience • Features may include secure information exchange, real-time data transfer, cloud-based functionality, and centralized repositories of integrated data
STUDENT PLANNING TOOLS	Academic Planning & Audit	• Tools that maintain institutional degree requirements and allow tracking and auditing of progress toward completion • Primary function is to support course planning and creation of roadmaps to graduation, and some tools align these roadmaps to students' career interests • Features may include indicators that show when a student veers off course, embedded course registration functions, and course recommendations
	Career Planning	• Solutions that recommend career pathways based on student interests and labor market demands; may enable alignment with degree plans to ensure academic efforts are targeted towards specific career goals
	Co-curricular Recognition	• Learning portfolios, profiles, or other solutions that recognize non-academic learning in a rich format via badges or credentials • Some solutions translate co-curricular learning to specific skills and competencies to facilitate workforce application; mapping to academic credit is ideal, though very few providers can executive against this to-date
ADVISOR TOOLS	Diagnostics	• Assessments that measure a student's risk profile, often by evaluating the student's non-cognitive skill set or personality traits (e.g., student's motivation level, parents' education level) in addition to demographic criteria and academic performance • Diagnostic assessments can take place prior to a student enrolling or during the academic year
	Alerts & Signals	• Platforms that aim to influence student behavior via 1) alerts that flag at-risk students and notify them to action or 2) "signals" that provide subtle nudges to influence student behavior change • Alerts can be data-driven (e.g., through an LMS), manual (e.g., faculty-generated), or both; some tools can target alerts and signals to specific student sub-populations • Alerts transmit relevant information to the appropriate parties for intervention
	Caseload Management	• Tools that support student intervention processes by facilitating the allocation of tutoring and advising resources • Products support scheduling, communication between stakeholders, case management, and matching of students to specific tutors and advisors
	Transfer Evaluation	• Platforms that manage course and degree equivalency between institutions to help students maximize credit transfer and minimize time to degree completion • Tools give students access to degree requirements, articulation agreements, and transfer planning and support

WORKFLOW CATEGORY	PRODUCT CATEGORY	DESCRIPTION
STUDENT SERVICES	Tutoring	• Products and services that provide students with academic support, including online tutoring services
	Aid, Benefits & Wellness	• Platforms or tools that connect students to non-academic resources, such as financial aid, health and wellness related support, and other benefits • May include one-on-one coaching or aggregate benefits across several platforms
	Life Skills	• Personalized student support services that provide non-academic coaching (e.g., executive functioning assistance, counseling in relationships, financial aid, mental health, and work study) • Facilitation of relationships with professionals or alumni who provide guidance on long-term planning; guidance may be general or specific to a career path of choice

EXHIBIT C-N: FEATURE SETS

PERFORMANCE MEASUREMENT & MANAGEMENT

FEATURE SET 1.0	FEATURE SET 2.0	FEATURE SET 3.0
Breadth of Data Captured • Collects student indicators from one source: LMS, SIS, other system • Data collection based solely on systems (e.g., does not allow for manual inputs) • Data collection is not customizable for different institutions **Interoperability** • Partial interoperability with other student data systems is limited (i.e., relies on LMS or SIS) **Analytics Outcomes (Descriptive)** • Administrator dashboard display of key institutional metrics such as retention and completion	**Breadth of Data Captured** • Collects student indicators from multiple systems (LMS, SIS, other systems) • System allows for manual inputs • Indicators collected can be customized for each institution **Interoperability** • Full interoperability with other student data systems (LMS, SIS, other systems) • Easy to generate and share reports across cohorts **Analytics Outcomes (+ Diagnostic and Predictive)** • Impact and comparative analysis of student success initiatives, such as student support, on key metrics	**Breadth of Data Captured** • Collects student data from multiple systems • Captures a wide breadth of student data types (demographic, learner analytics, sentiment analysis, non-cognitive, manual faculty/staff inputs) to cast a wide range of indicators • Allows for benchmarking of data against peer institutions **Interoperability** • Full interoperability with other student data systems (LMS, SIS, other systems) • Easy to generate and share reports across cohorts **Analytics Outcomes (+ Prescriptive)** • Administrator dashboard display of key institutional metrics includes not only retention and completion but also student engagement • Return on investment analysis of student success initiatives to understand greatest value interventions to institution • Course-capacity analysis of critical "gateway" classes via scheduling/ optimization application • Enables benchmarking of impact against peer institutions • Auto-generation of easy-to-read reports

INTEGRATION SOLUTIONS

FEATURE SET 1.0	FEATURE SET 2.0	FEATURE SET 3.0
Integration Framework • Facilitates secure information exchange between internal academic and student support services and data systems	**Integration Framework** • Facilitates secure information exchange between internal and external academic and student support services and data systems • Cloud-based, i.e., the ability to host the framework from a remote location that can be used anywhere via Internet access and identification, authentication, and authorization **Data Warehousing** • Offer central repositories of integrated data from one or more internal disparate sources	**Integration Framework** • Facilitates secure, real-time information exchange between internal and external academic and student support services and data systems • Cloud-based, i.e., the ability to host the framework from a remote location that can be used anywhere via Internet access and identification, authentication, and authorization **Data Warehousing** • Offer central repositories of integrated data from one or more internal and external disparate sources

ACADEMIC PLANNING & AUDIT

FEATURE SET 1.0	FEATURE SET 2.0	FEATURE SET 3.0
Breadth of Capabilities • Limited student planning tools that do not break out degree requirements • Does not adapt for nontraditional students such as part-time students, etc. • No mechanism for alerting advisors of off-track students **Interoperability** • Stand-alone product, not linked to SIS or other student data systems • Not linked to course registration system **User Experience** • Unfriendly user interface • Designed only for students or advisors; does not facilitate communication between the two	**Breadth of Capabilities** • Web-based, self-service access to planning tools with point-and-click degree requirements for students to track progress toward degrees • Degree plans adaptable based on multiple programs, etc. • Offers progress report updates and push notifications • Students can compare performance to peers **Interoperability** • Linked to intervention tools and decision-making materials • Linked to course registration system **User Experience** • Friendly user interface; easy-to-read software for counselors and students	**Breadth of Capabilities** • Robust suite of planning tools; allows modeling of what-if degree scenarios, creation of multiple plans, recommendation engine, and automated course plans • Degree plans highly customizable • Proactively issues alerts when a student veers off track **Interoperability** • Fully integratable • Integrates with career planning tool and maps career interests to degree plan • Tracks logic of decisions made **User Experience** • Delivered through a mobile solution • Allows role-based student and advisor access and facilitates and records actions between the two

CAREER PLANNING

FEATURE SET 1.0	FEATURE SET 2.0	FEATURE SET 3.0
Breadth of Inputs • Takes inventory of skillsets and compares to specific jobs	**Breadth of Inputs** • Takes inventory of skillsets and compares to specific jobs • Uses salary and jobs data to predict potential earnings **Job Connection Support** • Provides links to specific jobs/ internships within a student's area of interest **Usability and Integration** • Intuitive user experience	**Breadth of Inputs** • Takes inventory of skillsets and compares to specific jobs • Uses salary and jobs data to predict potential earnings **Job Connection Support** • Provides links to specific jobs/ internships within a student's area of interest **Usability and Integration** • Delivered through a mobile application • Integrates with Academic Planning & Audit tool to map career interests to degree plan • Incorporation into orientation programming

CO-CURRICULAR RECOGNITION

FEATURE SET 1.0	FEATURE SET 2.0	FEATURE SET 3.0
Evaluation Capabilities • Co-curricular learning still regarded as separate and secondary to courses completed for academic credit **User Experience** • Enables richer display of student activities and other co-curricular learning than traditional resume **Integration** • Limited interoperability	**Evaluation Capabilities** • Portfolio or profile displays specific credentials or badges recognizing competencies or skill sets gained through co-curricular learning **User Experience** • Offers intuitive/easy-to-use student interface **Integration** • Integration with LMS, SIS, or other campus systems	**Evaluation Capabilities** • Maps co-curricular learning to credits that enable a student to graduate more quickly **User Experience** • Delivered through mobile application **Integration** • Integration with major job search interfaces such as LinkedIn in addition to campus systems • Tracking of co-curricular credential "reach" (i.e. via social media) or impact

DIAGNOSTICS

FEATURE SET 1.0	FEATURE SET 2.0	FEATURE SET 3.0
Breadth of Inputs • Factors in static indicators (parents' education level, high school record, standardized test scores) • Incorporates only data at that institution • Diagnostics assessed at a single point in time–such as at the beginning of college **Output and Intervention** • Provides a risk factor for each student, but does not provide an action plan for student success • Provides institutional-level reporting, but not student-facing results	**Breadth of Inputs** • Factors in static and dynamic indicators (e.g., family economics, mental health of student) • Incorporates data from a small number of institutions • Diagnostics assessed at multiple points throughout student life cycle • Uses a wide range of non-cognitive factors (e.g., academic engagement, campus engagement, resiliency) • Includes personality data points **Output and Intervention** • Provides action plan for student success	**Breadth of Inputs** • Incorporates data from a large number of institutions increasing predictive power • Diagnostics based on predictive model of student success • Provides multiple risk factors for each student, including projected academic performance, and retention score, as well as detailed action plans for success **Output and Intervention** • Provides student-facing recommendations

ALERTS & SIGNALS

FEATURE SET 1.0	FEATURE SET 2.0	FEATURE SET 3.0
Breadth of Inputs • Pulls from single source of data (e.g., LMS) • Indicators constant across institutions **Alert/Signal Generation** • Manual generation of alerts by faculty/staff or students • Alerts not customizable based on user groups or selection **Communication** • Alerts occur late in student life cycle • Broad-based signals appear in student portal • Alerts do not guide intervention strategy • System does not facilitate communication between stakeholders **Reporting** • Reporting is limited to student engagement	**Breadth of Inputs** • Alerts based on data from multiple sources (LMS, SIS, other systems) • Alerts are customizable by institution **Alert/Signal Generation** • Enables mix of manually generated alerts and automated alerts/signals • Alerts/signals customizable based on specific user groups or criteria **Communication** • Alerts occur early in the throughout semester • Signals appear in student portal and are targeted based on student characteristics • Alerts guide intervention strategies, including who should intervene **Reporting** • Generates student alert reporting, including student engagement and impact on student outcomes	**Breadth of Inputs** • Mobile app enables "sentiment" data that can drive alerts/signals • Alerts based on institutional priorities **Alert/Signal Generation** • Predictive analytics identify at-risk students based on diagnostics/ risk scores in addition to enabling manual alerts • In addition to alert/signal targeting capabilities, system ranks students on a priority scale (supports interventions) **Communication** • Alerts occur throughout semester and are tailored based on timing and type of alert • Signals appear in non-student system such as internet search or social media • Multiple student messaging functionality (text, app-based, etc.) • Facilitates communication between faculty and advisors **Reporting** • Reporting connects to student outcomes and informs institutional decision making

CASELOAD MANAGEMENT

FEATURE SET 1.0	FEATURE SET 2.0	FEATURE SET 3.0
Scheduling • Limited scheduling tools for students and advisors **Communication** • Minimal automated student outreach • Does not facilitate communication among various players in student intervention process • Does not allow for communication to student through multiple channels (text, email, etc.) **Case Management** • Connects students to the appropriate staff resource, but no capabilities to manage intervention after initial outreach **Interoperability** • Stand-alone product, not linked to SIS or other student data systems **User Experience** • No role-based access for information sharing among stakeholders	**Scheduling** • Scheduling tools for students and advisors **Communication** • Student outreach is automated • Gives students preemptive behavioral nudges • Offers scheduling tools and catalogs student interactions between staff, faculty, advisor, tutor, etc. **Case Management** • Offers case management tools and tracks interventions • Ranks advisor actions based on diagnostic • Tracks and records notes, communications, and appointments **Interoperability** • Linked to SIS and other student data systems **User Experience** • Role-based access for students and advisors and seamless information sharing between these two roles	**Scheduling** • Appointment scheduling for students and advisors offers calendar integration with native mobile or computer applications • Appointment reminders to students **Communication** • Mobile communication • Connects students with appropriate advisor or tutor **Case Management** • Offers case management tools and tracks interventions • Ranks advisor actions based on diagnostic • Tracks and records notes, communications, and appointments **Interoperability** • Two-way integration with performance management application utilizes other applications (i.e. diagnostics) to guide advisor behavior and informs impact of advising efforts **User Experience** • Seamless information sharing across an expanded set of roles/departments, including financial aid, tutoring, etc.

TRANSFER EVALUATION

FEATURE SET 1.0	FEATURE SET 2.0	FEATURE SET 3.0
Breadth of Capabilities • Provides links to common transfer resources and additional transfer tips • Some self-service tools allow students to manage credentials • Initiate withdrawals and transfers **Network Reach** • Does not leverage a network of institutions **User Experience** • Designed only for the student to obtain (active) or receive (passive) information on transferring	**Breadth of Capabilities** • Specific school search with ability to contact schools • Limited recruiting capabilities • Enables ability to send and receive transcripts **Network Reach** • Regional network of institutions **User Experience** • Designed for the student and the institution	**Breadth of Capabilities** • Specific school search including ability to optimize credits and tuition costs across several institutions • Self-service tools allow students to create own transfer plan and manage own credentials • Access transfer scholarships and other common resources • Request information from schools on admissions, visits, etc. **Network Reach** • National network of institutions **User Experience** • Friendly user interface for both students and institutions

TUTORING

FEATURE SET 1.0	FEATURE SET 2.0	FEATURE SET 3.0
Tutoring • In-person • One-to-many • Limited number of sessions available for each student • Limited window of available sessions (e.g., Mon–Wed 9–2) • Limited number of subjects available (e.g., math) **Interactive Question and Answer** • Non-interactive (question submission and answer format) **Other Resources** • Resources, such as notes and study materials, for limited breadth of specific courses	**Tutoring** • Report cards for students • Scheduled sessions • Dashboards to inform administrators at institutional level (# of sessions, hours, etc.) **Interactive Question and Answer** • Question/answer forum monitored by experienced tutors with quick response rates **Other Resources** • Resources, such as notes and study materials, for wide array of specific courses • Student advice and ratings on specific courses	**Tutoring** • Online tutoring resources • 24/7 instant access, with range of session-lengths available • Interactive (e.g., whiteboards) • One-to-one/personalized • Access to wide variety of subjects • Customized to the institution and specific courses • System communicates with other key stakeholders (e.g., mentors) • Report cards for students and administrators • Linked to alert system **Interactive Question and Answer** • Interactive question and answer inventory with automatic responses to a broad array of questions • Integrates variety of resources such as textbooks, notes, and study materials **Other Resources** • Resources, such as notes and study materials for specific courses at specific institutions • Student advice and ratings on specific courses

AID, BENEFITS & WELLNESS

FEATURE SET 1.0	FEATURE SET 2.0	FEATURE SET 3.0
Avenues for Access • Provider offers online portal, and institution may provide link to services • No personalized support offered **Range of Benefits** • Benefits offered are narrow in scope; may cover financial aid support, low-cost healthcare, or access public benefits **Financial Aid Support** • Financial-aid packages available for students, but perhaps only for institution's preferred lender • Enables search for scholarships and other financial aid opportunities	**Avenues for Access** • Comprehensive on-site access available to students • Easy-to-use online portal • General personalized support offered either on-site or online **Range of Benefits** • Benefits offered are comprehensive in scope; may cover financial aid support, low-cost healthcare, or access public benefits **Financial Aid Support** • Displays financial-aid package options for students across several lenders to enable comparison	**Avenues for Access** • Comprehensive on-site access available to students via on-campus location • Students can access benefits via easy-to-use comprehensive mobile application • Personalized support offered via both on-site and online, with specialized expertise **Range of Benefits** • Benefits offered are comprehensive in scope, and tailored to institution's regional support network **Financial Aid Support** • Offers one-on-one financial coaching for students

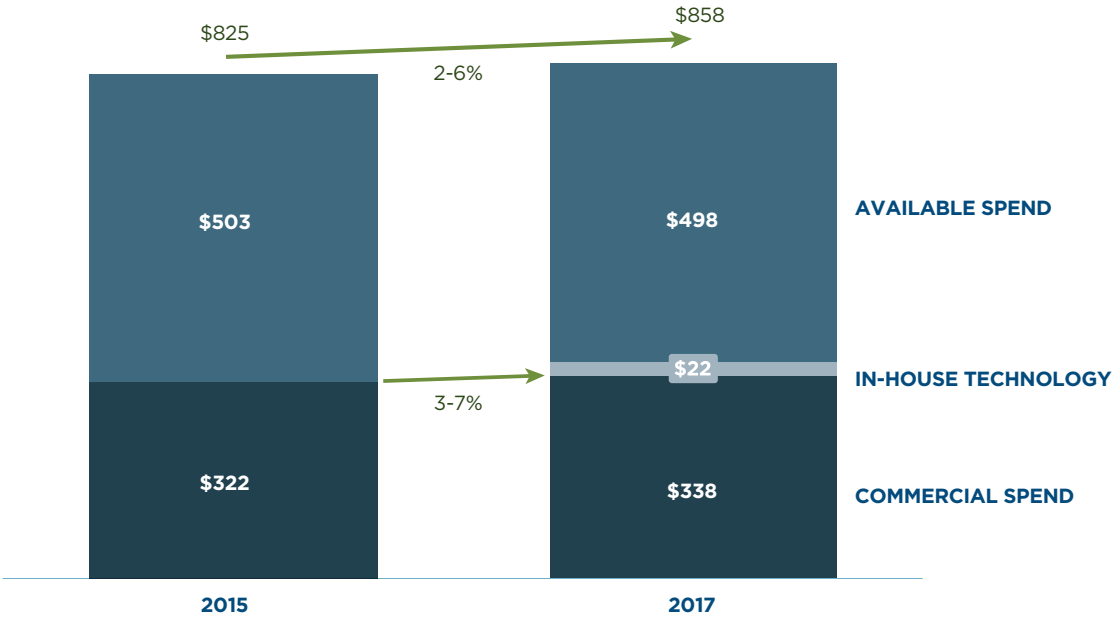
LIFE SKILLS

FEATURE SET 1.0	FEATURE SET 2.0	FEATURE SET 3.0
Breadth of Support • Limited schedule and diversity of counselors or mentors • Lack of complete student issue offerings • Reactive communication **Technology Enablement** • Available only by appointment, in person • Limited forms of communication **Integration with Academic Advising** • Not connected to alert system or other student data systems	**Breadth of Support** • Proactive communication from counselors or mentors **Technology Enablement** • Online and in person • Supports private or group conversations **Integration with Academic Advising** • Communicates with other advisors and counselors	**Breadth of Support** • Holistic student coverage approach (from entry to career) • Proactive communication from counselors or mentors **Technology Enablement** • On demand, available 24/7 • Multiple forms of communication (mobile, phone) **Integration with Academic Advising** • Can be linked to alert system and other student data systems

EXHIBIT O: MARKET SIZE METHODOLOGY

STUDENT SUCCESS PRODUCT MARKETING SIZING

Academic Advising Technology & Service Market:
Available vs. Commercial Spend (in millions)



AVAILABLE SPEND

The available spend consists of dollars dedicated to the in-house development of academic advising technologies and services. To calculate available spend, Tyton Partners first started with total Information Technology (IT) spend per institution (which includes spending on staff), and then estimated the portion of that total spend dedicated toward education technology. Next, we subtracted the spend dedicated to LMS, lecture capture, and ePortfolio to arrive at the remainder, which we assumed to be the available spend dedicated to advising.

COMMERCIAL SPEND

The commercial spend consists of dollars institutions spend on third party suppliers for student success and persistence technologies. Using publicly available pricing data and data from our primary research survey, we were able to deduce the rates of limited and widespread technology adoption for institutions based on their number of students enrolled as well as the dollar values of those adoptions.

IN-HOUSE TECHNOLOGY

We separately estimated the amount institutions spend on in-house development of advising technology (i.e., in-house technology) using data from our primary research survey. Respondents indicated whether or not they used technology developed in-house and we multiplied those rates of in-house adoption by average spend on academic advising technology per institution.

RESOURCES

- Integrated Postsecondary Education Data System (IPEDS)/National Center for Education Statistics (NCES)
- 2016 EDUCAUSE Core Data Service (CDS) Benchmarking Report
- 2016 Campus Computing Survey
- College and University Professional Association for Human Resources: 2015-16 Professionals in Higher Education Salary Survey Report
- Tyton Partners' 2017 Academic Advising Primary Research Survey
- Various Publicly Available Price Quotations from Institutions and Suppliers

EXHIBIT P: RECENT MERGERS AND ACQUISITIONS TRANSACTIONS

RECENT MERGERS & ACQUISITIONS TRANSACTIONS IN THE STUDENT SUCCESS SPACE

COMPANY	TARGET	DATE	PRESS RELEASE
Strada Education Network	InsideTrack	2017	*insidetrack.com/insidetrack-joins-strada-education-network*
Blackbaud	AcademicWorks	2017	*blackbaud.com/better-together*
Taskstream	Tk20	2017	*taskstream.com/taskstream-tk20*
Hobsons EMS	Barker Educational Services Team	2016	*prweb.com/releases/2016/09/prweb13715094.htm*
H.I.G. Capital	Symplicity	2016	*higcapital.com/news/release/930*
Workday	Zaption	2016	*venturebeat.com/2016/06/30/workday-acquires-online-learning-company-zaption-will-shut-it-down-on-september-30*
Chegg	Imagine Easy Solutions	2016	*investor.chegg.com/press-releases/press-release-details/2016/Chegg-Acquires-Imagine-Easy-Solutions-A-Market-Leader-Of-Online-Writing-Tools/default.aspx*
Barnes & Noble Education	LoudCloud Systems	2016	*investor.bned.com/releasedetail.cfm?ReleaseID=959515*
Civitas Learning	College Scheduler	2016	*civitaslearning.com/press/civitas-learning-acquires-college-scheduler-leader-schedule-planning-solutions*
Hobsons	Predictive Analytics Reporting (PAR) Framework	2016	*www.hobsons.com/resources/entry/hobsons-acquires-par-framework-to-improve-student-retention-and-educational*
TPG Capital, Leonard Green & Partners	Ellucian	2015	*ellucian.com/News/TPG-Capital-and-Leonard-Green-Partners-Agree-to-Acquire-Majority-Stake-in-Ellucian*
Jenzabar	RJM Systems	2015	*jenzabar.com/blog/2015/08/11/press-release-jenzabar-acquires-rjm-systems-inc*
Civitas Learning	BlikBook	2015	*civitaslearning.com/press/civitas-learning-acquires-uk-based-blikbook-to-begin-work-with-european-higher-education-pioneers*
TargetX	Uversity	2015	*http://www.targetx.com/news/targetx-acquires-san-francisco-based-uversity-leading-mobile-and-enrollment-analytics-company-in-higher-education*
Blackboard	X-Ray Analytics	2015	*blackboard.com/news-and-events/press-releases/2015/blackboard-brings-improved-learning-analytics-capabilities.aspx*
Ellucian	Helix	2015	*ellucian.com/News/Ellucian-Draws-More-Than-8-800-Attendees-at-Ellucian-Live-2015-in-New-Orleans*
Hobsons	Starfish	2015	*starfishsolutions.com/2015/02/hobsons-acquires-starfish-retention-solutions-help-even-students-succeed*

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