



# PREPARING FOR THE CONNECTED CAMPUS:

## HOW AND WHY INSTITUTIONS ARE USING IOT

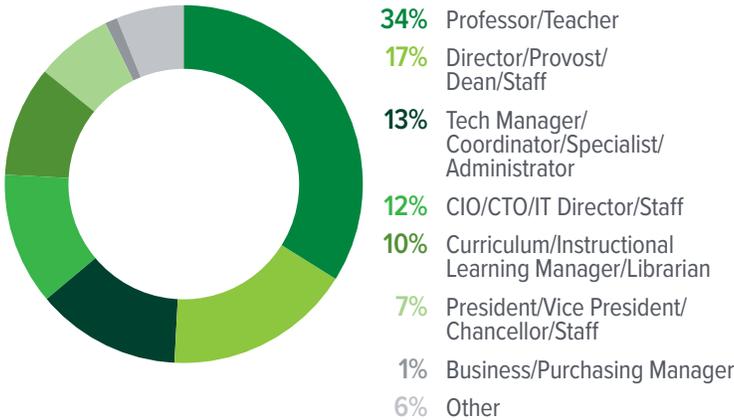
As the Internet of Things (IoT) becomes more popular on campuses across the country, leading colleges and universities are preparing for the increase in data coming from sensors, smart devices and other technologies, and the resulting demand on their networks. The "connected" or "smart" campus, as it has become known, leverages a combination of sensors, big data and analytics, and other IoT technologies for better decision-making in myriad ways.

In June 2017, the Center for Digital Education (CDE) surveyed 138 higher education officials to determine the status of connected campus projects. CDE also queried leaders about their understanding of terms like "connected" and "smart" and the perceived benefits of such projects. The questions targeted several areas, including education and engagement, safety and operational efficiencies.

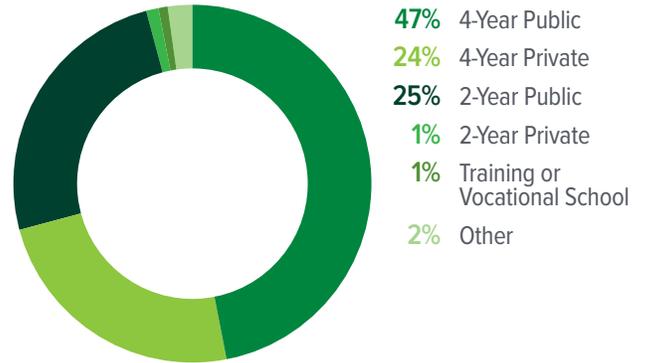
## RESPONDENT DEMOGRAPHICS

This report is based on a survey of 138 higher education officials. A third of respondents (34 percent) are professors or instructors. A quarter (25 percent) hold positions in information technology. The remainder have a mix of executive, administrative and staff positions.

### How would you describe your job function?



### For which type of institution do you work?



## MOST CAMPUSES ARE ALREADY CONNECTED — OR ON THEIR WAY

Most campuses (86 percent) are already connected or in the process of being connected, with a slight lag among private colleges compared to public institutions. Three-quarters of respondents (77 percent) said they are familiar with the concept of the connected or smart campus, and even more (86 percent) said the concept of the connected campus is the accepted or envisioned future.

### Would you classify your campus as a connected or smart campus?



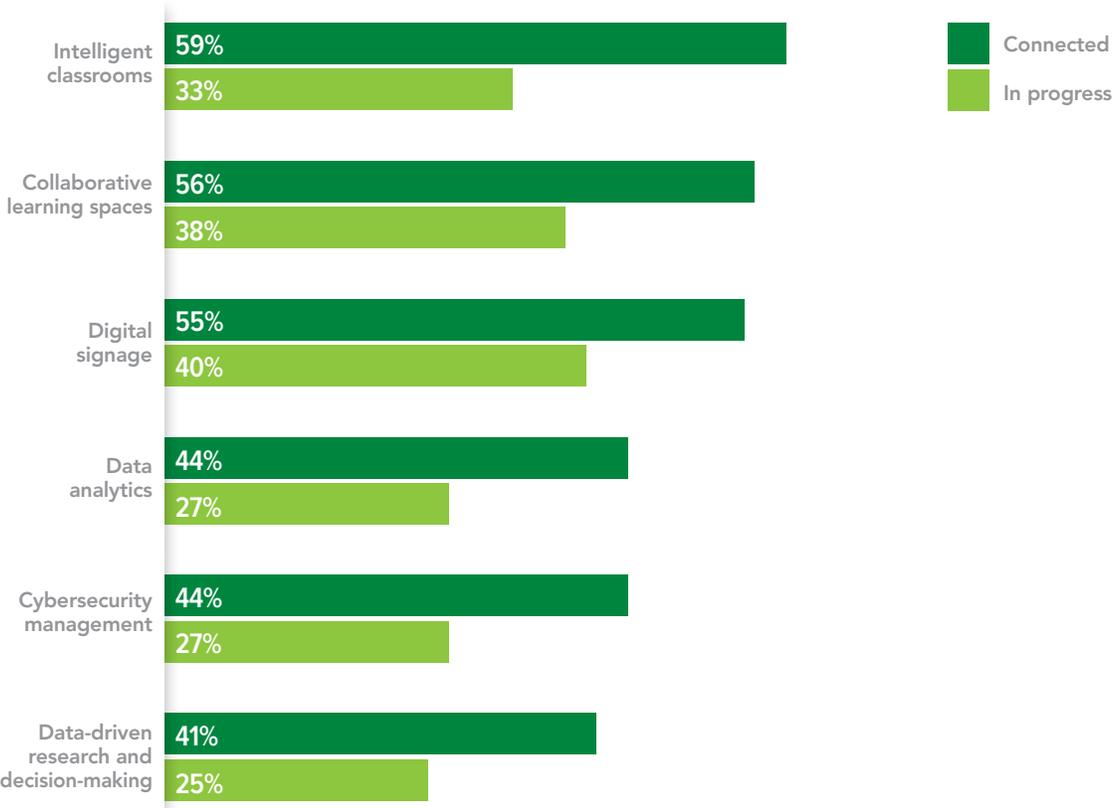
The term “connected campus” holds multiple meanings for respondents. For some, it may refer to having ubiquitous Wi-Fi. For others, the meaning could encompass use of the IoT and smart technologies. Variations in how this concept is understood could lead to “grade” inflation among respondents who consider their institutions to be further along than they really are. However, there is a clear trend among respondents towards instituting smart campus features.

### SMART TECHNOLOGIES IN USE

Among campuses that are already connected, three forms of smart technology dominate: intelligent classrooms (59 percent), collaborative learning spaces (56 percent) and digital signage (55 percent). At institutions that still consider their connected campus a work in progress, digital signage prevails, as noted by 40 percent of respondents. This is followed closely by collaborative learning spaces (38 percent).

Why does digital signage emerge at the top of that second list? It’s low-hanging fruit: connected technology that’s relatively inexpensive and simple to deploy. Plus, there’s a major business case for improved safety, which has become an imperative for every campus. While institutions use their digital signage for various purposes — including directing students, delivering weather and news updates, providing entertainment and posting menus — one of the primary purposes is to communicate during an emergency. The same is true for smart lighting, which automatically brightens in the presence of people to improve safety. Smart lighting also self-reports maintenance needs and, due to its energy-efficient nature, plays well into campus sustainability initiatives.

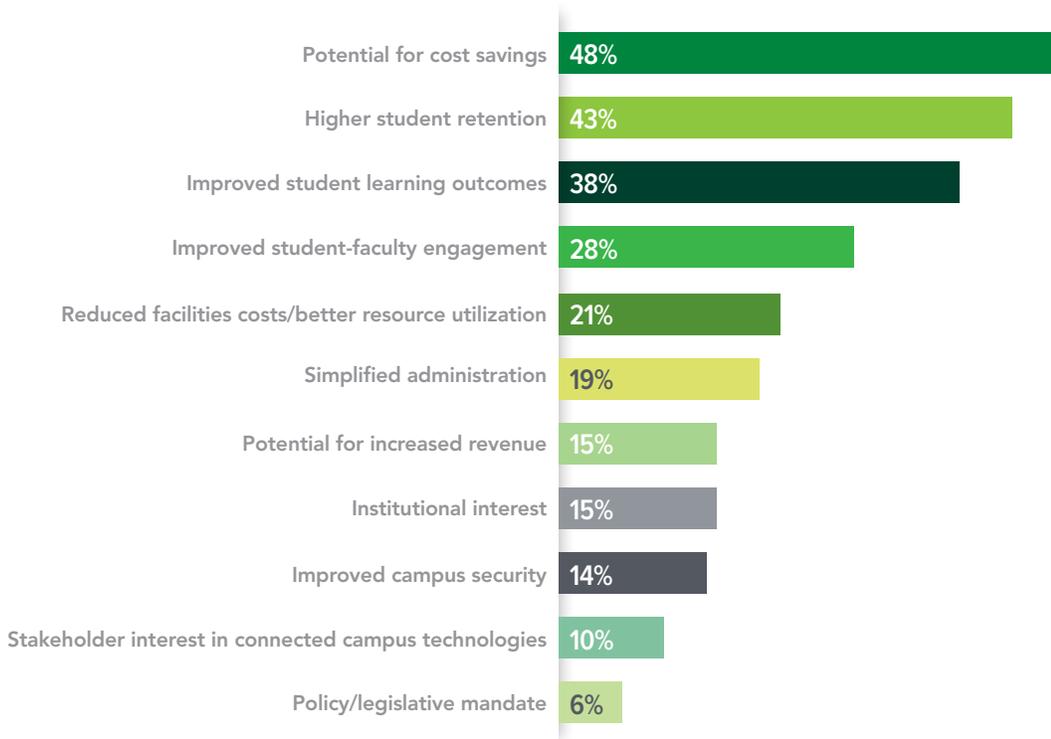
#### Which smart technologies have been or are being implemented at your institution?



## WHAT'S DRIVING THE CONNECTED CAMPUS

Lowering costs and improving the student experience are the underlying drivers for adopting smart technologies and expanding connected campus initiatives. Nearly half of respondents (48 percent) noted the potential for cost savings tied to the IoT; 43 percent cited higher student retention; 38 percent referenced better student learning; and more than a quarter (28 percent) mentioned improved student-faculty engagement.

### What are the top drivers for adopting/expanding connected campus technologies?



## REAL AND PERCEIVED BENEFITS

Higher education leaders expect many benefits from the IoT, including better access to innovative teaching resources, increased student engagement and greater capacity for data analytics.

However, due to the newness of the technology, fewer respondents have actually experienced these benefits. For example, 43 percent of respondents expect the IoT to reduce costs, but only 21 percent have actually realized cost savings. Similarly, while 54 percent of respondents anticipate increased capacity for data analytics, only 27 percent have achieved this.

As a crucial element in the IoT, data analytics called for additional exploration. Two-thirds of survey participants (64 percent) said the biggest perceived benefit is to use it for decision-making. Institutions also expect time savings from improved data management (30 percent) and streamlined records management (28 percent).

While respondents asserted that students will benefit most from a connected campus (referenced by 83 percent), they said administration and faculty will too (70 percent and 67 percent, respectively). In fact, the innovations introduced by connected campus classrooms are strong recruiting tools to attract the best faculty, who in turn know how to create more engaging experiences for students.

Those who benefit also make up the essential group of stakeholders for connected campus initiatives. Almost 9 in 10 respondents (89 percent) said engagement and education of stakeholders was vital for success.

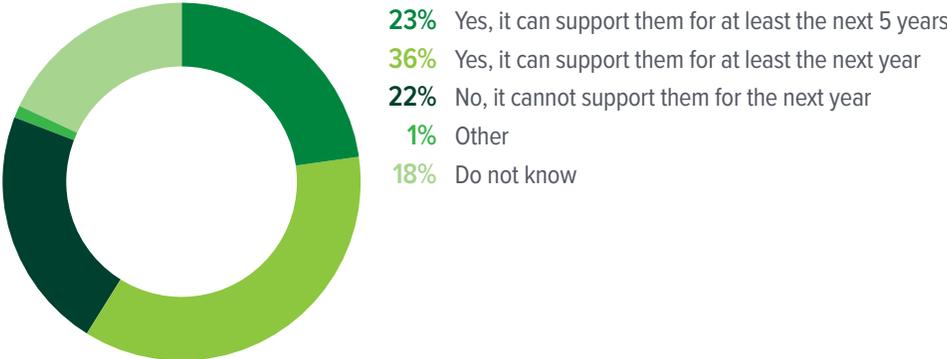
### PREPARING FOR THE IOT

For smart technologies to take hold within classrooms, residential halls, student centers and elsewhere on campus, they require reliable and high-performing infrastructure. Yet, less than a quarter of respondents (23 percent) believe their current computing infrastructure is ready to sustain connected campus activities for the next five years. A solid third (36 percent) believe their infrastructure will hold up for the next year, but not beyond that. Twenty-two percent acknowledge the infrastructure available today is inadequate.

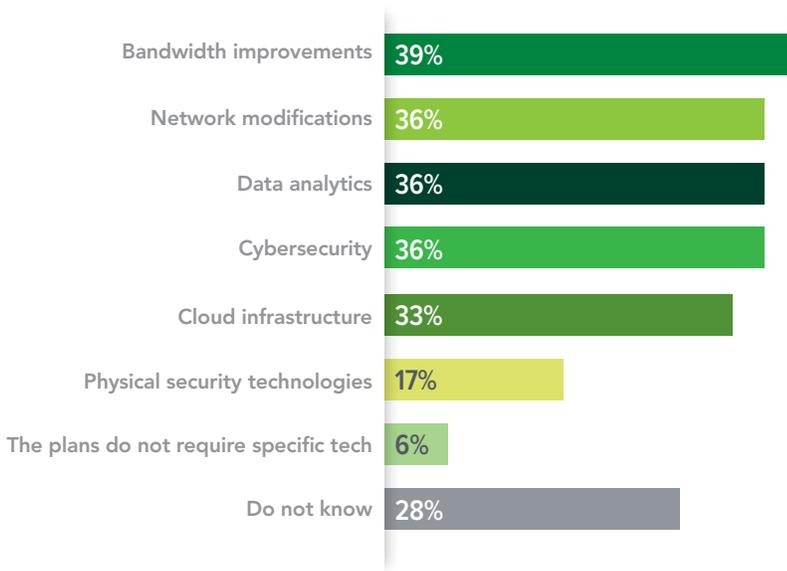
Where are the greatest areas for investment? Nearly four in 10 institutions (39 percent) will need improvements to bandwidth to sustain connected campus projects. Almost as many (36 percent) will need network refreshes, better data analytics and improved cybersecurity. A third (33 percent) expect to increase spending on cloud infrastructure. Almost three in 10 (28 percent) don't know what technologies will be required to sustain connected campus innovation. It doesn't mean they're uninvolved or uninterested. More likely, the individuals in this latter group work within a single department, college or business unit and run "shadow IT" operations. While they may lack visibility into the broader institutional needs regarding infrastructure, they're still well-positioned to implement connected campus solutions that deliver the services their stakeholders require.

Much of this expected provisioning overlaps with critical areas for investment on campus independent of connected technologies. For example, 24 percent of institutions identified cybersecurity and physical security as high-need areas across the board. Nineteen percent said the same about data analytics for decision-making, and 17 percent referenced network infrastructure.

#### Do you think your current infrastructure can handle emerging technologies that support a smart campus?



### Do connected campus procurement plans require any of the following technologies?



### GETTING SMART ABOUT THE CONNECTED CAMPUS

The IoT already has a presence on college and university campuses. Institutions that find ways to tap into new sources of data and improved data analytics — and build a robust infrastructure foundation for doing so — will differentiate themselves in ways that matter to students, faculty, administrators, researchers and other campus stakeholders.

After all, the idea of the connected campus is attractive. The IoT is expected to help engage and educate students more effectively, reduce operating costs and heighten campus security. Institutions can only gain these advantages, however, if they put the groundwork in place soon to support smart technologies.

Produced by:



The Center for Digital Education is a national research and advisory institute specializing in K-12 and higher education technology trends, policy and funding. The Center provides education and industry leaders with decision support and actionable insight to help effectively incorporate new technologies in the 21<sup>st</sup> century.

The Center is a division of e.Republic, the nation's only media and research company focused exclusively on state and local government and education.

[www.centerdigitaled.com](http://www.centerdigitaled.com)

For:



CenturyLink (NYSE: CTL) is a global communications and IT services company focused on connecting its customers to the power of the digital world. CenturyLink offers network and data systems management, big data analytics, managed security services, hosting, cloud, and IT consulting services. The company provides broadband, voice, video, advanced data and managed network services over a robust 265,000-route-mile U.S. fiber network and a 360,000-route-mile international transport network.

For more information, visit: [CenturyLink.com/highered](http://CenturyLink.com/highered)