Dynamic Campus Planning:

Exploring the Potential to
Introduce Flexibility and Adaptability into
the Traditional Campus Master Planning Process

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INTRODUCTION

With the accelerating rate of change throughout the facilities management industry, facilities professionals can no longer be content to perform in ways they always have. The dynamic forces impacting the evolving needs of our leaders, faculty, and students demand that adjustments be made to remain relevant. Long-range campus master planning is among those practices that must be addressed.

In December 2022, researchers launched an effort to study the traditional master planning process and determine if a more dynamic, flexible, and "living" process should be considered. The team suggested:

> *The current model of the static decennial master planning process is outdated and, with the advent of IT technology, the need for continuous planning should be reconsidered. The rapid accelerated evolution in technology, career mobility, educational pedagogy, and other factors contribute to the challenges in remaining "on plan" years after the master plan was adopted.*

The proposed hypothesis for this research was that master planning can be flexible and adapt to the organization's evolving needs.

To explore the hypothesis, the research team conducted a multi-faceted, industry-wide review of findings. The team comprised a mix of institutional facilities professionals and

consulting, engineering, and design professionals. They conducted literature reviews of published works on the topic. They conducted multiple presentation and listening sessions at virtual and in-person conferences. They conducted a survey of APPA members to ascertain their feedback and recommendations on master planning.

Through the course of their research, the team found that a more flexible process was not only needed, but that consultants and facilities professionals alike had been considering how to adopt such a practice with limited guidance and standardization. It has been made clear that flexibility and agility in a new Dynamic Campus Planning effort is going to be a key to future success in long-range campus planning.

It was also very clear to the team that this research effort was a much bigger effort than could be accomplished by a single research initiative. Like other paradigm-shifting concepts such as preventive maintenance, lifecycle planning, and others required multiple teams to research and build upon each other to bring them to the level of clarity and understanding they are now. This is going to be a similar topic. Should other facilities professionals agree and feel this paradigm bears further research and development, they are encouraged to pick up the baton and explore the many facets of this topic.

The product of this effort is an analysis of the current campus master planning process, an evaluation of the various barriers to a flexible, dynamic implementation of that plan, and recommendations, both current industry tools and emerging trends, which can help

to introduce flexibility into plan delivery. The long-range planning process is far too vast and individualized for the team to be able to provide a checklist, formula, model, or other how-to guide to make this happen. Each facilities operation will need to understand how the principles shared in the report that follows fit within their operation and can be adapted to meet their needs.

The report that follows covers three sections:

Part 1 – Traditional Campus Master Planning Process. This section outlines the traditional master planning process for institutions. While individual variations on the process do exist, the section outlines the basic elements typically followed. It also includes strategic planning elements and feeder plans that have supported or complemented these master plans in previous efforts.

Part 2 – Barriers to Dynamic Campus Planning. With the traditional campus master planning process outlined, Part 2 identifies key areas that are particularly challenging when it comes to attempting to introduce flexibility and agility into the planning process. Failing to address these barriers to the dynamic process has the potential to result in stagnation, rework, and costly and time-consuming mistakes in implementation.

Part 3 – Recommendations on Pursuing Dynamic Campus Planning. The final part recommends opportunities to introduce agility into the planning process.

It consists of identifying current best practices in the industry that could help alleviate the barriers mentioned in Part 2. It also discusses new and emerging best practices that could contribute to understanding the dynamic planning process. It also discusses how various technologies have begun and will continue to play a role in the effort.

This research is just the beginning. It identifies key needs and opportunities. However, each individual institution will need to internalize and adapt its findings to its operations and determine what best practices meet its needs. As they do, the collective understanding of Dynamic Campus Planning will grow, and facilities professionals will be more equipped to adapt to the accelerating change before us.

PART 1 – TRADITIONAL CAMPUS MASTER PLANNING PROCESS

PLANNING INTEGRATION

A campus master plan process is traditionally bookended by a strategic plan and a capital plan. The campus master plan (herein referred to as a Campus Plan) identifies the physical assets required to support the Strategic and Educational Plans and the practical implementation of physical changes. Once developed, the Campus Master Plan is the basis for creating a Capital Plan, which outlines facility projects' financial and operational aspects.

The campus and facilities planning process varies based on goals and budget, with each plan having its own nuances. However, it typically includes a space and facilities needs assessment, an evaluation of the campus's physical framework, and a series of supplemental plans. These assessments help identify key projects, which are then prioritized and phased for implementation.

Strategic Plan

A strategic plan is the culmination of a collaborative process that charts out an institution's long-term goals, priorities, and strategies while aligning with its mission and vision. University leaders utilize this plan as a guiding document to make informed decisions and allocate resources effectively, fulfilling the institution's mission and vision.

Institutional/Academic Planning

A well-structured institutional and academic plan is essential for guiding a university's growth and long-term success. Educational plans for a university establish a strategic framework that defines the institution's long-term vision and goals for academic programs, student services, and overall educational excellence. They outline strategies for curriculum development, faculty recruitment, infrastructure expansion, and technology integration, enhancing the learning experience and aligning with evolving educational needs and trends. This plan, which is often created by each school or department, guides the university in providing high-quality education, fostering innovation, and adapting to changing demographics and industry demands, ensuring institutional sustainability and growth.

Capital Plan

A capital plan is a strategic document that outlines the institution's investments in physical infrastructure and facilities. It identifies, prioritizes, and allocates resources for construction, renovation, and maintenance projects to support academic, administrative, student life, and recreational needs. This plan considers condition assessments, technological advancements, and campus expansion requirements. By aligning with the university's overall mission and strategic objectives, a capital plan ensures that resources effectively contribute to creating a conducive teaching, learning, and research environment.

ESTABLISHING THE BASIS OF NEEDS

A comprehensive Campus Plan begins with a clear understanding of both current and future needs, ensuring that space and facilities align with institutional goals, programmatic requirements, and long-term growth strategies. This foundation is established through two key assessments: Space Needs Assessment and Facilities Condition Assessment.

Space Needs Assessment

A Space Needs Assessment is a comprehensive process that integrates schedule and space use data to determine efficiency in space utilization, integrates forecasted enrollment changes, and classroom, lab, office, and student life spaces optimized to align with academic goals and pedagogical requirements. Here's a step-by-step description of this assessment:

1. **Data Collection**: The process begins with gathering schedule data, which includes class timetables, course enrollments, and room assignments. Simultaneously, space use data is collected, which provides information about how each room or space is currently functioning. This data includes room capacities, capabilities, ownership, and scheduling availability.
2. **Space Utilization Analysis**: The data collected is analyzed to calculate space utilization rates for instructional spaces. Utilization rates measure how efficiently spaces are used relative to seat fill metrics/rates and weekly scheduled hours. This involves comparing scheduled hours, activities and enrollment in a space

with their available hours and seats. Rooms with low utilization rates may be identified as candidates for optimization or repurposing. Other spaces such as offices, research labs, and student life spaces use other means and metrics to calculate utilization. For instance, occupancy data, FTEs, and average ASF per office can be used to determine the required office space in relation to the existing space. While metrics around ASF per student for student life categories such as study/lounge, recreation, and assembly space can be used to determine the excess or deficit of those spaces on campus based on student enrollment. Research laboratory needs are calculated with expenditure and PI data.

3. **Enrollment and Space Projections**: By analyzing past enrollment trends and projecting growth scenarios, future space needs are determined. This process identifies the optimal number of classrooms and instructional labs needed to effectively meet students' future needs utilizing weekly schedule contact hours and seat fill targets. It also determines other student-focused space needs such as study/lounge, recreation, and assembly. Office needs can be projected by the number of staff and faculty required to support enrollment growth and pedogeological changes.
4. **Optimization of Classroom & Lab Spaces**: Space is analyzed to determine optimal requirements based on current teaching methods using schedule data. By calculating weekly schedule contact hours against the number of student contact hours in classrooms and labs, the necessary number of rooms is identified. Weekly scheduled room hours and seat-fill are then optimized to increase room usage and match course sizes with available rooms and

pedagogical needs.

5. **Space Needs Recommendations**: Based on the space utilization analysis, enrollment projections, and optimization efforts, the assessment generates recommendations for space needs and allocation. This includes identifying specific spaces that can be repurposed or renovated to better meet the institution's academic objectives or a high-level assessment of opportunities for repurposing or optimization based on space categories with surpluses.
6. **Stakeholder Engagement**: Throughout the process, it's essential to engage with key stakeholders, including students, faculty, administrators, and facilities management, to ensure that their input and needs are considered in the decision-making process.
7. **Report Generation**: A detailed report will be prepared, summarizing the space assessment findings. This report will include an executive summary, a breakdown of space utilization patterns, identified inefficiencies, recommendations for optimization, and a phased approach for implementation. It will provide insights into current space allocation and highlight opportunities for improvement.

In summary, a Space Needs Assessment combines schedule and space use data to evaluate space utilization, predict future enrollment changes, optimize classroom spaces, and provide recommendations for efficient space allocation. This process ensures educational facilities align with academic goals and support evolving pedagogical needs while optimizing resource utilization.

Facilities Condition Assessment

A Facility Condition Assessment (FCA) is a thorough evaluation and analysis of a facility's physical condition, performance, and functionality, typically conducted by professionals with expertise in facilities management, maintenance, architecture, and engineering. The primary purpose of an FCA is to provide a comprehensive understanding of the current performance state of a facility's infrastructure, systems, components, and operational cost. Examples of building systems include exterior skin, mechanical and plumbing systems, and examples of components are fenestration, air handling units, boilers, exhaust fans, and water pumps. FCAs also include site infrastructure such as parking lots, sidewalks, and stormwater and drainage systems. Key elements of a Facility Condition Assessment include:

1. **Data Gathering**: The assessment begins with collecting relevant information, including architectural and engineering drawings, use and maintenance records, equipment manuals, and historical data related to the facility's construction, maintenance, and repairs.
2. **Site Inspection**: Experienced assessors physically inspect the facility's interior and exterior to assess the condition of various components and systems. Site inspection includes building structures, roofing and envelope, walls, flooring and finishes, HVAC systems, electrical systems, plumbing, fire protection systems, and more.
3. **Documentation and Photography**: Detailed notes, photographs, and sometimes videos are taken during the inspection to document the condition of

each component. This visual documentation provides timely evidence of the facility's state.

4. **Component and System Assessment**: Assessors use established industry standards and criteria to evaluate the condition of each component and system. This can be accomplished through a periodic condition assessment or a lifecycle projection with a condition assessment on assets reaching the end of useful life. Assessment criteria may involve rating systems or software designed for condition assessments, which assign scores or grades based on the severity of defects, wear and tear, or damage. Whatever the method, a condition assessment of facilities components and systems is an important part of the master planning process.
5. **Utilities:** Utility assessment involves a comprehensive analysis of critical systems, including industrial and domestic water, sewer, gas, electrical, telecommunications, and central plant facilities. The process aims to coordinate these systems seamlessly with a new campus plan. This coordination is achieved by creating updated maps that depict the existing utility infrastructure and its capacity. These maps help in determining the suitability and available capacity of utility systems to accommodate new buildings and developments within the campus. This approach not only ensures efficient utility services for the new planned construction but also considers redundancy and alternates feeds to prevent conflicts and interruptions in the existing infrastructure, enhancing the overall sustainability and functionality of the campus.
6. **Code and Accessibility Compliance**: Specialists ensure that all aspects of the

campus or facility comply with applicable code accessibility requirements, often as part of an FCA. They assess accessibility features, such as ramps, elevators, and pathways, to guarantee that individuals with disabilities have equitable access to all areas. There are many aspects of code compliance that can be included but are frequently excluded due to grandfathering or the expertise and liability of the inspectors.

7. **Prioritization**: Once the condition of each component and system is assessed, items are prioritized based on their criticality, safety concerns, cost, and impact on the facility's functionality. Prioritization helps identify which issues need immediate attention and which can be addressed over time.
8. **Cost Estimation**: Based on their findings, assessors provide cost estimates for necessary repairs, replacements, and maintenance activities. These estimates help facility managers and owners plan budgets and resource allocations.
9. **Report Generation**: A detailed report is prepared, summarizing the assessment findings. This report typically includes an executive summary, a breakdown of identified issues, their prioritization, cost estimates, recommended actions, and a timeline for addressing the deficiencies.

In summary, a Facility Condition Assessment is a comprehensive evaluation process that provides critical insights into a facility's infrastructure. It supports informed decision-making, budget planning, and maintenance strategies to ensure the facility remains safe, functional, and efficient over time.

DEFINING THE PHYSICAL FRAMEWORK

The Physical Framework of a Campus Plan establishes the spatial organization, infrastructure, and functional relationships that guide future development. This framework is informed by site assessments and supplemental plans that address campus-wide needs and long-term institutional goals.

Site Assessments

Site assessments are critical to a comprehensive Campus Plan, as they analyze a wide range of factors that directly impact the functionality, accessibility, and aesthetics of the campus or facility. These assessments are multi-faceted, covering Mobility (including vehicular, bike, pedestrian, and ADA considerations), Programmatic Zones, and Landscape & Open Space.

1. **Mobility Assessment:**
    a. *Vehicular Mobility*: This aspect evaluates the ease of vehicular access within the campus or facility. It includes analyzing traffic flow, parking availability, and the efficiency of road networks. One goal is to ensure people can navigate and park while minimizing congestion and ensuring safety. Additionally, many institutions work to reduce parking on campus to reach carbon goals and to utilize land for buildings or open space. Parking studies are often part of the vehicular assessment to understand the amount required to reach specific goals.
    b. *Micro-Mobility*: Assessing micro-mobility includes evaluating infrastructure for bicycles, skateboards, scooters, wheelchairs, and other personal

mobility devices. This involves reviewing bike lanes, designated scooter paths, parking, storage facilities, and charging stations. Enhancing micro-mobility options can reduce vehicular traffic, lower environmental impact, and promote a more active and accessible campus environment.

c. *Pedestrian Mobility*: Pedestrian assessments focus on walkability and safety. Factors like sidewalks, crosswalks, ramps, and pedestrian pathways are scrutinized to ensure that people can move about the area comfortably and securely.

d. *Transit & Ride Share*: Transit and ride-share assessments evaluate existing public transit options, campus shuttle systems, and ride-share services to improve accessibility and reduce congestion. These assessments identify opportunities for enhanced transit connectivity, designated pick-up/drop-off zones, and partnerships with mobility providers to create an efficient, sustainable, and multimodal transportation network.

2. **Programmatic Zones**: This assessment involves determining the appropriate allocation of space for various activities and functions within the campus or facility. Different areas may be designated for classrooms, administrative offices, student life, recreational spaces, and more. Ensuring efficient and logical zoning helps optimize the use of space. Programmatic zones are also critical for long-term planning, as they accommodate potential growth and changes in the institution's needs. This flexibility ensures that the campus or facility can adapt to evolving requirements.

3. **Landscape & Open Space**: The assessment of landscape and open space focuses on the aesthetics and environmental aspects of the campus or facility. It involves evaluating green spaces, gardens, courtyards, streets and pathways and recreational areas. These open spaces provide opportunities for relaxation, socialization, and interaction with nature. Sustainable landscaping practices may also be considered, including water conservation, rainwater and stormwater management, native plant use, bio-retention, and strategies for reducing heat islands, which can have a positive impact on the environment and energy efficiency.

Incorporating these site assessments into the Campus Plan ensures that the resulting design is not only functional but also sustainable, accessible, and aesthetically pleasing. It considers the diverse needs of the campus, institution, and neighboring community while promoting a cohesive and well-organized environment that can adapt to future changes and improvements.

By addressing mobility, programmatic zoning, and the landscape, the plan provides a holistic framework for the development and management of the campus or facility.

Sub-Plans Supporting the Campus Plan

Developing a Campus Plan is a complex undertaking that often necessitates the involvement of many consultants to ensure the plan addresses many specific needs and requirements. Here are some key areas where specialized planning efforts are typically

required:

1. **Transportation Plan**: Transportation plans focus on efficiently moving people and vehicles within and around the campus or facility. They assess existing transportation infrastructure, traffic patterns, and parking facilities while proposing improvements to optimize mobility and reduce congestion.
2. **Wayfinding and Signage Plan**: Wayfinding experts design a comprehensive signage and navigation system to help visitors and occupants easily navigate the campus or facility. This includes the placement of directional signs, maps, and informational signage to enhance user experience and safety.
3. **Housing Plan**: Housing master plans focus on developing and managing on-campus housing facilities. They assess current housing availability, propose new construction or renovations, market-rate analysis, and consider the needs of various student or staff demographics, such as affordability. They also work on projecting housing needs and determining the amount and type needed to support housing goals.
4. **Landscape Plan**: Landscape plans enhance the visual appeal and sustainability of outdoor areas. These plans focus on designing campus open spaces and recreational areas, often incorporating native plants and sustainable landscaping practices. Coordinating wayfinding, signage, consistent site furnishings, lighting standards, and entrances are important components of the exterior campus space and landscape plan.
5. **Utility Plan:** The Utility Plan analyzes water, sewer, gas, electrical, telecommunications, and central plant systems, mapping existing infrastructure

and capacity. It ensures seamless integration with future development, prevents conflicts, and incorporates redundancy for reliability. Prioritizing sustainability, the plan supports campus growth while maintaining long-term efficiency, resilience, and operational effectiveness.

6. **Technology Plan**: Technology plans focus on integrating the latest technological advancements into the campus or facility. They assess the need for Wi-Fi connectivity, security systems, smart building solutions, and IT infrastructure to support modern learning or work environments.
7. **Campus Security Plan:** A campus security plan is a comprehensive strategy to ensure students, faculty, and staff safety and well-being on a university or college campus. It typically includes surveillance systems, emergency response protocols, access control, and community engagement to prevent and respond to potential threats.
8. **Sustainability Plans**: Sustainability plans play a crucial role in an institution's environmental commitment, benefiting not just the campus but also the wider community, state, and nation. These plans include Climate Action and Electrification Studies, working in tandem to curtail carbon emissions, address climate change, and foster lasting sustainability. By adhering to these plans, institutions support state and national sustainability goals, inspiring others to adopt eco-friendly practices.
    a. Climate Action Plans map out strategies for reducing carbon footprints, embracing on-site, off-site, and renewables supported with energy credits, boosting energy efficiency, and managing waste.

b. Electrification Studies drive the shift from fossil fuels to cleaner electricity in areas like transportation and heating.
c. These plans also promote sustainable construction processes, water conservation, resiliency, and sustainable transit, emphasizing community engagement and education.

Each of these planning efforts requires a deep understanding of its respective field and collaboration with other specialists to ensure a cohesive and integrated Campus Plan. By involving experts in these areas, institutions can create a well-rounded plan that not only meets immediate needs but also aligns with long-term goals, sustainability objectives, and the comfort and convenience of the people who will use the facilities. The Campus Planning process is illustrated in Figure 1 below.

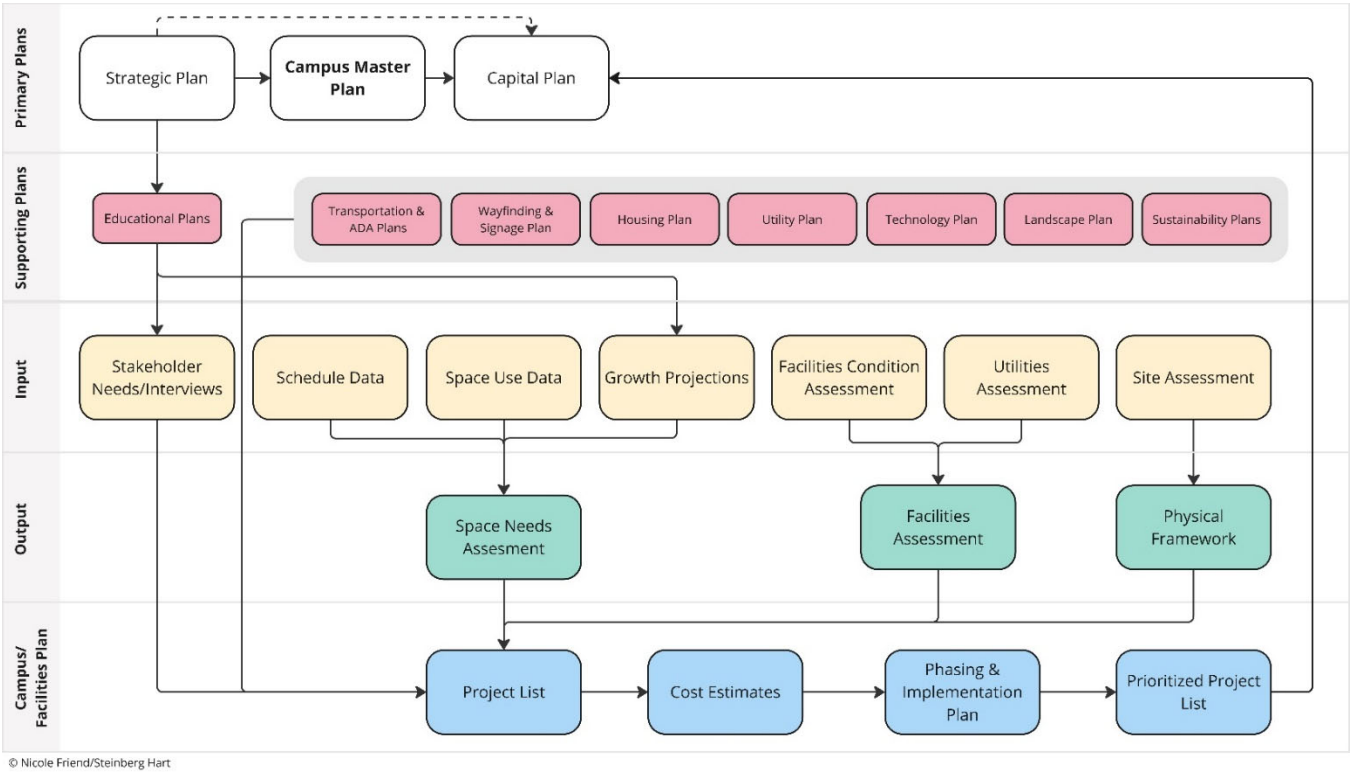


Figure 1
Traditional Campus Master Planning Process

PRIMARY OBJECTIVES OF THE CAMPUS PLAN

The ultimate outcome of the Campus Plan is the creation of a project list, cost estimation, and a phasing and implementation plan, all of which are integral components supporting the development of the Capital Plan. Key elements include:

1. **Project List**: The project list is a comprehensive catalog of all the construction, demolition, renovation, and improvement projects required to meet the identified building needs and align with the established physical framework. It includes detailed descriptions of each project, specifying the scope and schedule, objectives, and anticipated outcomes. Project may encompass various aspects such as constructing new buildings, renovating existing structures, upgrading infrastructure, enhancing accessibility, and implementing sustainability initiatives. Each project is carefully evaluated to determine its priority and relevance to the institution's strategic goals.
2. **Cost Estimation**: Cost estimation involves a high-level assessment of the financial requirements for each project on the list.
3. **Phasing and Implementation Plan**: The phasing and implementation plan outlines the sequence in which projects will be executed and their corresponding timelines. It considers factors such as project dependencies, resource availability, and the institution's strategic priorities.

Supporting the Capital Plan: The project list, cost estimation, and phasing and implementation plan collectively support the development of the Capital Plan. The Capital Plan is a comprehensive financial and strategic document that outlines how the institution will fund, prioritize, and execute its infrastructure projects over a defined period, often several years or even a decade. The Capital Plan provides a strategic framework for allocating financial resources, securing funding through various means (e.g., bonds, grants, donations), and ensuring that projects align with the institution's mission, goals, and priorities.

PART 2 – BARRIERS TO DYNAMIC CAMPUS PLANNING

Now that we have sufficiently established the typical elements of a traditional master planning process, we will explore the barriers that make it more challenging to adapt to the needs of the campus community as well as the need and opportunity to introduce flexibility into the planning efforts.

THE NEED FOR FLEXIBILITY

The examination of the current Campus Planning process highlights the significant planning efforts that benefit various campus stakeholders. However, many areas do not lend themselves sufficiently to flexibility in this new environment.

Throughout this document, we will delve into the various elements of a Campus Plan and explore ways in which they can be more dynamic or “living”. We intend to demonstrate that dynamic Campus Planning can be a living process that is renewed and refreshed continually as part of the operations of the organization that never sunsets, never expires, and never approaches that evaluative horizon. This new living process can save time and cost by avoiding expensive revisions, distracting projects of opportunity, and work not aligned with the institutional strategy.

As stated in the APPA Body of Knowledge chapter on Campus Master Planning:

> *Note that the useful duration of a campus master plan may span several sequential presidencies and strategic plan updates. Also, note that planned*

> *enrollment growth often triggers the need for a new or updated campus master plan. However,* ***colleges and universities should also consider revising the campus master plan to accommodate demographic changes in long-term enrollment trends and, particularly, changes in the proportion of face-to-face instruction*** [emphasis added] (Dalton, n.d.).

Flexibility in long-term Campus Planning is not only desired, but critical for success in any planning effort. In April 2024, a survey of APPA members revealed key insights into the trends and challenges with the current master planning process (Dynamic Campus Planning Research Team, 2024). Participants included representatives from every APPA region and Carnegie class of institution.

- 87.5% of survey participants reported having a master plan.
- 25% of plans are beyond the term of the plan.
- 60% of plans were developed before the COVID-19 pandemic.
- More than 30% of respondents feel their plan is not aligned with the current institutional strategy.
- More than 34% of respondents do not consider their current efforts to be following the plan as published (i.e., they are not on plan).
- For those within the plan term, more than 34% are planning to revise before the plan term is reached.

The top five challenges reported by survey participants that risk pulling them off plan are:

1. Leadership Change

2. Financial Challenges
3. Evolution in Strategy
4. Projects of Opportunity
5. Situational Changes

As changes in every corner of the industry continue to accelerate, adaptability is going to be the cornerstone strategy for success.

THE OPPORTUNITY FOR FLEXIBILITY

An analysis of existing campus master planning processes, discussions with industry leaders, and research has highlighted three key areas ripe for flexible and dynamic planning. When addressed with a dynamic approach, these areas can effectively support ongoing planning efforts, meeting the demands of this new era that requires greater institutional flexibility. Those areas include Prioritization & Strategy, Facilities Assessment, Space Needs Assessment, and Information Technology.

Prioritization & Strategy

The vision and mission of an institution is key to any planning effort. Without the mission, vision, and strategic direction known and adequately articulated, any planning effort, whether that be static or dynamic, is subject to the prey of projects of opportunity.

With the average tenure of institutional executives shrinking, the mobility of senior and middle managers, and the accelerating changes in society, institutional mission and

strategy must, of necessity, evolve with their leadership. A 12-year master plan effort (2 years planning and 10 years delivery) could see two or three chief executives, multiple board members, and even more members of the senior staff. Each change in leadership may bring a new vision, new mission, and new strategy.

The solution is then to embark on and diligently follow a strategic plan for the institution. A strategic plan process brings many voices to the table. It evaluates the institution's vision and mission and sets visionary and actionable goals. Each goal is outlined with clear steps, strategies, and milestones. A successful strategic plan sets metrics and measures success, is data-driven, and rarely veers off course.

Changes made in a strategic plan will cascade throughout the entire planning process and therefore metrics and goals will also change. This provides the primary reason to adopt the more agile process presented herein.

Facilities Assessment

The facilities assessments are arguably the most standardized portion of the planning effort. With long-standing practices like Facility Condition Assessment and various indices and metrics that operations have used for some time, this is an area where planners can get complacent.

Two key areas roll up to the facilities assessment that foster rigidity. The first is the Facility Condition Assessment (FCA). Tried and true, the FCA has been a staple of

campus operations for decades. However, as the campus's needs accelerate in their evolution, the quinquennial or decennial condition assessment is no longer sufficient to keep up. Technology is advancing and can provide real-time data concerning the condition and performance of systems. Having this data offers its own set of impacts on the assessment process.

These are individual, institutional strategic decisions to be made on when these assets should be replaced. However, they should be made with current contextual support rather than referencing a static study completed years prior.

Similar to the facilities condition assessment, another element contributing to the challenges of the facilities assessment is the utilities assessment. The tendency is to either design for what is presently envisioned or overdesign for possible, undetermined future growth. As buildings are conceived in the planning process and take years before they come to the design table, technologies, pedagogies, student needs, and strategic goals will very likely change. The new facility may require more power. Central plants may not have the capacity to compete with new studies on needed degree-day calculations. Regulatory authorities may have enacted new legislation that fundamentally alters a project’s viability.

Space Needs Assessment

As the institutional strategy evolves and the facilities assessment adapts, the space strategy will undoubtedly need to be adjusted. Before proposing new space or buildings,

a plan must examine opportunities within existing space. This includes three main areas: how you use the space, schedule the space, and what space needs will be required to accommodate growth.

Changes in space strategy can have a domino effect. Finding a home for a new department may necessitate the relocation of another. This would, in turn, create its own space challenges and require other dominos to be lined up to accommodate them. As spaces are renovated or constructed to accommodate space needs, the branching dominos will create their own branches until the institution reconciles all the movement and achieves equilibrium.

Information Technology

While information is typically available electronically today it is not yet shared well. There are many impediments to this data sharing. Because data is siloed and not trusted, interoperability and data sharing are typically not yet available. The impediments to this are chiefly a lack of adequate cybersecurity and a lack of beneficial metadata. Institutions need to resolve these basic issues prior to developing IT business plans that allow for broadly sharing information and reducing duplicative and wasteful data collection.

PART 3 – RECOMMENDATIONS ON PURSUING DYNAMIC CAMPUS PLANNING

The document thus far has identified the current plans in place for Campus Planning and identified issues with the approaches. This section will suggest improvements that can be made to move your organization to a Dynamic Campus Planning strategy.

One creates campus master plans to align academic needs with the assets and resources available today and projected into the future. While campus master plans traditionally have been designed to be renewed on a ten-year cycle, this has proven not to be agile enough to respond to immediate needs nor far-reaching enough to consider the remaining service life of assets fully. The risk of continuing with the current approach becomes constraining and costly. The metric for success will be a reduction in the total cost of ownership. This new approach of Dynamic Campus Planning seeks to encourage a more agile and responsive yet holistic approach.

There are numerous compelling reasons to incorporate flexibility elements into today's master plan. History shows that projects can simply gather dust on a shelf if not adaptable to current circumstances or cannot be adjusted when needed. A plan's ability to respond effectively and efficiently to a constantly changing environment is a distinguishing feature of this document. When campus population changes occur, we must be able to address the needs without delay. Similarly, we must be prepared to pivot in response to sudden increases in funding or unforeseen challenges like a

national pandemic. This flexible approach will also allow us to maintain the highest quality of service for our customers while minimizing disruptions, managing costs effectively, and it will provide a valuable outlook for stakeholders.

FRAMEWORK FOR FLEXIBLE ELEMENTS

The following table summarizes the issues, concerns, and potential strategies for making the campus planning process more flexible and responsive.

Opportunities for Flexibility	Why is this a concern?	What are potential strategies to make it more flexible?
Space Needs Assessment		
Space Utilization	Perhaps one of the most dynamic elements of the current master planning process is the understanding of how space is utilized.	Using APIs to link schedule data (updated every semester) with room data (updates dependent on the facilities team) to determine utilization in real time.
Growth Projections	Growth projections directly relate to future space needs. Projections come from educational and strategic plans.	Develop a process with institutional senior leadership to provide frequent updates to projections on staffing needs, faculty/department changes, and student growth targets.
Optimization / Space needs	Optimization analysis and space needs are based on growth projections and space utilization, which change yearly.	Combine frequent updates on projections with real-time space utilization data to identify space gaps and determine overall space needs.
Facilities Assessment		
Asset/system prioritization	Similar to assessment criteria, prioritization also needs some element of static otherwise it will be impossible to truly prioritize if it is shifting too often. That said, as the campus needs shift, so should the priorities. Not often, but it may require more regular review than the current master planning process affords.	Understand what assets and systems cannot be flexible with priority (i.e., life-safety) and which can have some flexibility. Establish a process to complete risk assessments when changes in strategy occur.
Periodic Condition Assessment	The periodic, whether it be quinquennial or decennial, process for assessing the condition of assets is outdated. As assets age and condition evolves, they require more real time condition monitoring and assessment in order to be truly beneficial to the community it serves.	Current industry best practices, such as asset health monitoring or lifecycle costing, exist that provide flexibility into recapitalization planning. Utilizing one of these other proven strategies can help to ensure this element of long-range planning remains agile.
Data gathered during periodic condition assessments	The data gathered during a traditional FCA can be out of date as early as the next day. An asset can be rated as acceptable during the assessment but have a catastrophic failure the next day. That is true of many assets and concepts. Finding a way to make that data more dynamic and flexible to current conditions would be optimal.	Incorporating elements of Reliability Centered Maintenance, Lifecycle planning, and Total Cost of Ownership into a real time Asset Health Index strategy can help to keep the data fresh and relevant.

Asset cost estimates	Using only first cost estimates for assets provides a severely restricted view of the impact of those assets on the portfolio.	Expanding the costing vision to include the total cost of ownership (TCO) of all assets (existing and proposed) provides a far more realistic fiscal view of the organization for future planning purposes.
Utility / Infrastructure assessments	Critical to the overall facilities assessment, opportunities for growth and agility are largely dependent upon whether the utility delivery systems are sourced by a campus district network or by a municipal source.	Ensuring sufficient agility with campus utilities requires a clear understanding of the network's mapping, capacity, usage, and opportunities. Data-driven analytics using technologies such as LiDAR, drone imaging, and AI can further ensure redundancy and reliability making growth and agility more attainable.
Prioritization		
Priorities	It is critical to update and track projects and priorities and to re-prioritize projects following the master plan to accommodate unforeseen changes.	Develop a process with institutional senior leadership to provide frequent updates on priorities.
Academic / Strategic Plans	Campus Plans are often built based on the academic or strategic plan in place at the time of development. When leadership changes and strategies shift, the Campus Plan can be affected.	Develop a process with leadership to clearly understand the strategic priorities and how the plan aligns. Develop relationships to establish continuous flow of information between strategic planners and campus planners

Table 1
Framework for Flexible Elements

While we have addressed significant aspects of the planning process other tactical plans that will need to be adjusted to introduce flexibility and accommodate the above strategic initiatives may include:

- Site Assessments
- Transportation Plan
- Accessibility Compliance Plan
- Wayfinding and Signage Plan
- Housing Plan
- Sustainability Plan
- Technology Plan
- Security Plan

IMPLEMENTING FLEXIBILITY

Implementing flexibility in the areas identified in the previous section: Prioritization & Strategy, Facilities Assessment, and Space Needs Assessment is only one piece of the puzzle. All three of these areas should be intrinsically linked to one another, creating a dynamic relationship. Each area should have its own process in which data and information is updated frequently, projects are checked against priorities, and cost estimates are created. (see Figure 2).

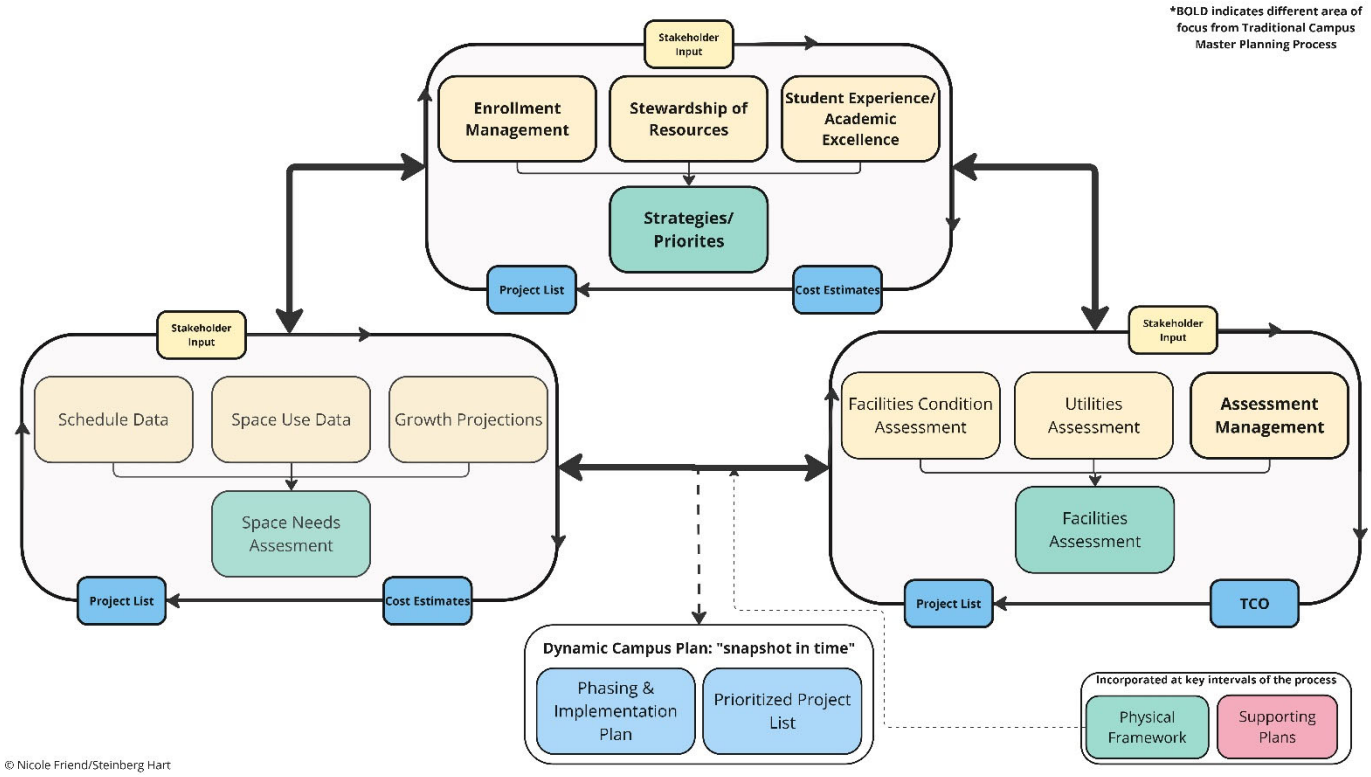


Figure 2:
Integrated Flexible Planning Process

Prioritization & Strategy

Specific to educational institutions, some elements that drive strategic initiatives are enrollment management, stewardship of resources, student experience, and academic excellence (see Figure 3). An institution is not likely to only pursue

one of these strategies at a time and will shift focus from one to another in response to internal and external environmental factors. As outlined in the current process, there is a direct link from a strategic plan to a Campus Plan.

For example, a strategic goal might be to become a Tier 1 research institution. While there are multiple pathways to achieve this, having the right facilities is crucial beyond educational and research planning. In the competitive landscape of research, attracting and retaining principal investigators (PIs) requires state-of-the-art facilities. These facilities are directly tied to supporting this strategic goal, illustrating the link between strategic objectives and campus infrastructure.

A capital plan takes the prioritized projects from the master plan and assigns budgets, timelines, and responsible parties to each one. It also explores financing options, including fundraising, grants, and debt financing, to ensure the necessary resources are available.

The current campus plan process takes the goals from the strategic plans, helps translate them into physical responses (new buildings, renovations to classrooms, better infrastructure, etc.), and then works with campus leadership to prioritize projects based on data and information uncovered in the process and the strategic goals. The plan then establishes a cost for projects used for capital planning. The challenge with this process is that it does not consider potential changes in leadership, external forces, and institutional goals. In the rapidly changing climate of education, priorities are likely to

shift. Institutions that closely interweave strategic planning, Campus Planning, and capital planning are likely to see more success implementing priority projects, closer alignment with institutional vision and mission, and longevity in all planning efforts (see Figure 3).

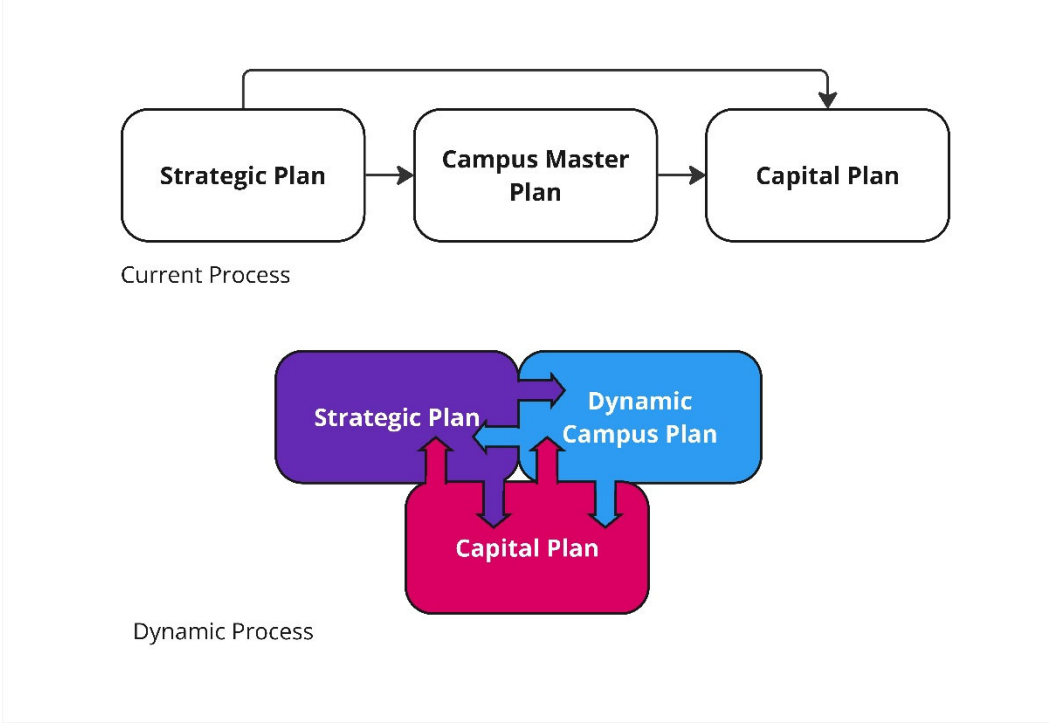


Figure 3:
Planning Relationships

When strategic priorities are linked to Campus Plan projects and capital planning, any change to either the strategic direction, funding, or the physical plant can be evaluated and acted upon with greater understanding of impact to the institution. Additionally, these intrinsic links aid in measuring success of each of the planning efforts, creating metrics and goals that direct relationships to one another.

Facilities Assessment

There have been many attempts at innovation throughout the years to make facilities

assessments more agile and dynamic. As alternatives to the facilities condition assessment, some operations have introduced life cycle planning and management principles to improve the way the assessment can be more strategic (Christensen & Christensen, 2018).

Another opportunity to introduce flexibility into the facilities assessment process as a new emerging best practice is the concept of an Asset Health Index (AHI). "An Asset Health Index (AHI) is an asset score which is designed, in some way, to reflect or characterize asset condition and thus likely asset performance in terms of the asset's role" (Heywood & McGrail, 2006).

Organizations today are primarily focused on making decisions based on the first cost of their assets. This approach does not consider possibly as much as 80% of the costs associated with an asset over its life. By adopting a total cost of ownership approach, resource needs will be far more visible, budgeting will be more encompassing and accurate, and opportunities for flexibility with annual budgets will be more discernible. When a total cost of ownership approach is applied to the entire portfolio, the risks associated with possible underfunding can be projected, thus identifying more significant long-term impacts.

A Total Cost of Ownership (TCO) approach will incorporate the remaining service life based on annual assessments of the existing assets. Value engineering (VE) should also be employed to seek alternative lower-cost approaches to accomplishing similar

functions and outcomes. TCO is not only used in initial decision-making estimates but also ensures that all costs associated with an asset are captured. This not only ensures continuous improvement in estimates but also ensures all costs are considered for the life of the asset to support far better decision making.

Incorporating elements of Reliability Centered Maintenance, Lifecycle planning, Total Cost of Ownership, and other key facilities metrics into the AHI can provide real time analysis of the comparative health of an asset whether that be an individual component, a system, a facility, or a campus.

Space Needs Assessment

Space data is arguably the most dynamic of the three areas identified. Schedule data changes every semester, affecting the overall use and utilization rates of the spaces such as classrooms and labs. Enrollment and growth projections are also equally dynamic, changing each year as institutional priorities and external factors affect these numbers.

Ensuring that space inventory and schedule data are updated frequently is critical to the flexibility of space needs assessments. Typically, space utilization analysis is completed with a Campus Plan either every 5 or 10 years. However, with the constant chance of scheduling conflicts, changes to courses offered, and the possibility of updates to facilities, institutions would benefit from more agile space utilization planning.

Another key aspect to flexible space needs assessment is to establish a collaborative process with institutional senior leadership to regularly update projections on staffing needs, faculty and department changes, and student growth targets.

TECHNOLOGY AND THE USE OF AI

Success of a flexible and agile approach to Dynamic Campus Planning requires a foundation of high-quality data and viable and integrated technologies for efficient data exchange and analyses. Having a strong (ideally ISO 55000-based) asset management strategy as well as three-dimensional asset data will ensure agility and help prepare you for future technologies. Thus, there needs to be an increasing focus on enabling technology for strategic Campus Planning, especially in preparation for Artificial Intelligence (AI).

AI is not something of the future, some forms of it have been with us for some time, for example smart buildings are a form of AI. Any time an action is taken without direct user action should be considered rudimentary AI. The fear of missing out has professionals scrambling to make sense of what they are hearing. It is important to remember that technology-driven strategies can, and do, change rapidly. When considering Campus Plans that span decades, technologies are important considerations, but the strategy cannot be centered on any singular technology vendor package or concept. The rate of change is just too rapid. Basing your strategy on open standards will provide one with the best long-term technology protection.

In his book *Good to Great*, Jim Collins refers to technology as an accelerator of strategy, not the strategy itself. Identifying ways in which technology, including AI, can support the Campus Plan and long-term strategy will be far more valuable than attempting to plan for a specific technology. While there are exceptions, it is important to remain flexible and agile when it comes to technology. Planning a new campus for just quantum computing, for example, of necessity will be focused on a single technology. However, even in that limited example, flexibility and adaptability are even more paramount as quantum technology shifts to inform new research strategies.

By embracing technologies in portfolio planning, campuses can aim to deliver data-driven insights and recommendations to their executives and key decision makers, enabling them to make strategic and informed decisions about their institutional buildings. Technologies can collect data faster, or even in real time via IoT sensors, and more comprehensively to enable predictive analytics. The use of higher quality and current data can significantly enhance the planning and design process. Here are some ways technologies and AI can be leveraged:

1. Data Analysis: AI algorithms can analyze large volumes of campus-related data collected, aggregated, and synthesized via tech platforms, such as student enrollment trends, transportation patterns, energy usage, and facility utilization rates. This analysis can provide valuable insights to inform decisions related to campus layout, building design, and infrastructure investment.
2. Predictive Modeling: New predictive analytics technologies and AI can help forecast future changes and trends in campus needs, such as projected student populations, faculty requirements, and facility demands. This predictive modeling

can assist in long-term planning to ensure campuses are designed to accommodate growth and changing needs.

3. Traffic and Mobility Planning: AI can be used to simulate and optimize traffic flows within a campus, considering variables like student movement, parking usage, and bus routes. This enables planners to identify areas of congestion and design more efficient university transportation systems.
4. Energy Efficiency: AI algorithms can analyze the energy usage of campus buildings and identify opportunities for optimization and efficiency improvements. This can lead to the design and implementation of smart building systems and the reduction of energy consumption and costs.
5. Space Utilization: Innovative space and occupancy management spatial analyses tools track and analyze space utilization within campus classroom and residential buildings by monitoring occupancy levels, movement patterns, and usage data. While student and staff privacy issues must be considered, this information can guide decisions on space allocation, adaptive reuse, and facility utilization optimization, resulting in more efficient campus layouts.
6. Sustainability Planning: Carbon usage trackers supported by AI can assist in developing sustainable campus practices by analyzing environmental data and suggesting solutions for renewable energy generation, waste management, water conservation, and green infrastructure implementation.
7. Stakeholder Engagement: AI-powered tools can facilitate collaboration and engagement with campus stakeholders, such as students, faculty, and administrators. Virtual reality and augmented reality technologies, for example,

can provide realistic visualizations of proposed design concepts, allowing stakeholders to provide feedback and influence the planning process.

A multi-disciplinary approach that combines a coherent and integrated data strategy with AI capabilities and the insights and knowledge of Campus Planners, architects, and other professionals is key to successful campus master planning. Facility Managers must become involved in strategic data discussions at the campus level.

- Sustainable and Green Building Strategies: AI can be employed to support the development of sustainable campus strategies. This includes utilizing AI algorithms to assess energy consumption, identify energy-saving opportunities, and recommend sustainability initiatives to reduce environmental impact across the portfolio.
- Intelligent Automation: AI technologies, such as Robotic Process Automation (RPA) and Natural Language Processing (NLP), can be used to automate repetitive tasks and streamline master planning workflows. Intelligent automation enables data extraction, report generation, and standardized processes, reducing manual efforts and increasing operational efficiency in asset management.
- Asset Performance Monitoring: AI-powered sensors and IoT devices are used to collect real-time data on building performance, classroom utilization rates, energy consumption, and equipment status. AI platforms can analyze real-time data to identify anomalies, predict equipment failures, optimize energy usage, and improve overall asset performance. This proactive approach ensures timely maintenance and reduces downtime.

- Data-driven Decision Making: While there are many data-driven approaches with human algorithms, software, and a variety of technology apps actively in use today for dynamic planning, AI-driven platforms and tools can expedite the analysis of vast amounts of structured and unstructured data. AI algorithms help in extracting key insights and patterns from campus data, enabling informed master planning decision-making. This data-driven approach enhances planning efficiency, strategic planning risk mitigation, and scenario planning or alternative investment strategies.

AI is primarily implemented when vast amounts of data are to be analyzed to support enlightened decision making. For AI to access data, good IT practices must be employed so that the AI tools can access all the relevant data in your possession. Hence cybersecurity and metadata must be in place to ensure only people with the proper credentials have access to the data; while also ensuring all those in need of the plans have access and you understand what data you are including in your decisions.

ALIGNMENT WITH STAKEHOLDERS AND CAMPUS STRATEGY

A Campus Plan is a strategic framework that aligns an institution's physical infrastructure with its mission, vision, and long-term goals. It encompasses a wide range of spaces, including academic and support facilities, open areas, housing, and transportation. By fostering a vibrant environment for students, faculty, staff, visitors, and the surrounding community, the plan enhances the student experience and transforms lives. Serving as a guide for how these physical spaces support academic

and research objectives, the Campus Plan ensures that facilities remain adaptable to future needs. It articulates the university's strategic vision, directing physical development to align short-term initiatives with long-term aspirations.

Crucially, the campus plan must be integrated with the institution's strategic plan, reflecting the leadership's vision. It outlines both short and long-term goals, highlighting strengths and opportunities for enhancing services to the campus community. Covering all aspects of campus life, from academic and recreational areas to residential spaces and infrastructure, the plan incorporates data to optimize space usage and longevity.

Engagement with a diverse range of stakeholders, including students, faculty, staff, parents, alumni, community members, government officials, developers, potential donors, and board members, is essential. Their involvement from the outset fosters community buy-in and ensures a variety of perspectives are considered.

Ultimately, the Campus Plan is guided by key initiatives that support strategic growth, creating a vision for a thriving environment conducive to living, working, and learning, while responding to current needs and future enrollment projections.

NEED FOR CONTINUOUS PLANNING

There are many conclusions that can be drawn from these findings. Throughout the research effort, some findings were surprising while others were expected. There is one element that was abundantly clear by all the researchers, contributors, and others who

provided information. Our environments are evolving too rapidly to be able to hold to the traditional 10-year master planning process. But what is the answer?

Many campuses have already seen the need for more frequent updates to their master planning efforts. As referenced prior in the APPA Body of Knowledge, they have incorporated “refresh” planning scenarios into their master planning cycle. Rather than waiting for the full term of the plan to verify if the plan is still relevant, they will plan to do one or more mid-term refreshes along the way.

The commonplace of this practice further suggests the need for flexibility in dynamic planning. Building upon the successful establishment of refresh plans and incorporating other dynamic elements as discussed in these findings, Campus Plan has one more tool in their box for introducing flexibility into their efforts.

Part 3 offered suggestions on how to introduce agility and flexibility into long-term planning efforts. There is no one-size-fits-all solution that rises to the surface; no silver bullet. However, there was one thread that wove into every corner of the findings. Dynamic Campus Planning requires continuous planning. The elements of agility mentioned in Part 3 can prove invaluable adapting to the needs of the institution. Facilities professionals will require constant vigilance to be able to meet the needs of their constituents.

There are three main areas required for continuous planning:

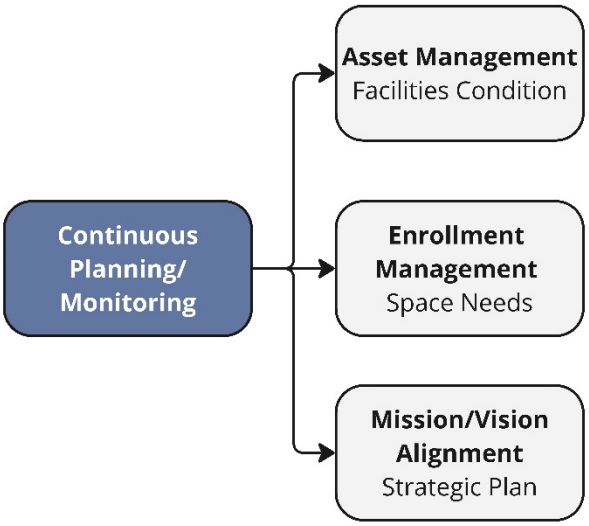


Figure 4:
Continuous Planning / Monitoring

It will require constant, real-time data. Annual, quarterly, or even monthly reporting of asset condition, institutional strategy, space challenges, or customer needs may find itself behind the curve. Finding ways to access real-time information and leading indicators of data, coupled with advanced business intelligence and AI analytics, can lead to insights that can remain relevant and valuable.

Real-time analytics and insights can help facilities professionals respond to needs, rather than react to them. As President Dwight Eisenhower once said, "...plans are useless, but planning is indispensable." Needs arise unexpectedly, whether that comes from the failure of a critical asset or a project of opportunity. There is a considerable difference between responding and reacting. Gathering data and analytics to understand the situation before you will be fraught with bias and analyzed specific to that lens. Delays in arriving at a solution or implementing a response can exacerbate a

situation and increase costs. Decisions and insights need to be developed quickly. Continuous planning can ensure the data is readily available when called upon.

As data is a vital component to dynamic, continuous planning, there is one element that is even more critical: people. It has been said that “Facilities Management is people management, and we bring the buildings along for laughs.” Without people, all the technology, data, and AI analytics are limited. People understand someone’s emotional and mental wellbeing in ways that data cannot. Dynamic, continuous planning must, therefore, be data informed and people driven.

Continuous planning and data management will ensure that, as the unexpected arises, bias is kept in check and responses are handled in a way that is holistic, strategic, and aligned with the institutional mission. While things may not always go according to plan, responses can remain flexible and dynamic without compromising the overall campus plan.

Facilities planning and management are oftentimes fragmented and siloed. Designers design based on the specifications of the program. Contractors build based on what is in the contract documents. Operations maintains the buildings in front of them. Only in the most mature of operations do all three operate as one cohesive team.

CONCLUSION

Throughout the research effort, dynamic Campus Planning has been compared to a physics theory, the Unified Field Theory. The Unified Field Theory attempts to describe and connect fundamental forces and elemental particles into one predictive equation. While theoretical, most scientists believe that it is only a matter of time before this theory is proven. While a monumental task, the theoretical and practical connections to dynamic Campus Planning are clear and logical. Continuous, dynamic Campus Planning has that same potential.

As an exploratory study, this project is intended to begin a broader discussion and lay a foundation for expanding the possibility of a more dynamic Campus Planning process that considers more than projects and initiatives poignant at the moment of the plan's inception. These considerations include long and short-term campus plans, educational plans, enrollment and housing projections, student life assessments, sustainability plans, transportation plans, technology and security plans, capital plans, space needs, facility condition assessments, and deferred maintenance plans. To be prescriptive in any capacity diminishes a core underlying principle of the research – that each facility, university, and system is unique and hence requires a plan uniquely structured to the facility or facilities in question.

Only when design considers the experience and data of operations; contractors are driven to build something in the most maintainable way; and operators are well-versed in the design-intent of a facility can the true potential of dynamic Campus Planning be

achieved. When this ambitious goal is achieved, a mature operation empowers their people and equips them with sufficient data to, in near real time, respond to any challenge, from critical asset failures to unexpected strategic needs with agility and professionalism.

SUMMARY OF APPA MEMBER ENGAGEMENT

KEY FINDINGS FROM MEETINGS WITH APPA MEMBERS

Key Strengths of a more Flexible Process

- Flexibility and future adaptation
- Intentional timeframe for refreshing the plan

Potential Internal Challenges and External Barriers Needed to Overcome

- Pushback from CFO and future budget planning
  - How can we sharpen our cost projections?
- Challenging to obtain budgets. Financial team needs time to get budgets approved and work through the political process.
- COVID has called into question what is needed.
- Long processes to get approval for buildings and other major capital projects.
- State requirements for master plans.
- Some townships require multi-year land-use plans.

Anticipated Objections, Challenges, and Other Barriers on Campus

- Revisit plans at the time of senior leadership changes.
- Plans and major updates on longer frequencies (i.e., 10 years) with more frequent minor refresh updates.
- Would need to have intentional vagueness.
- Would need to educate people on the power of a master plan.

Other Feedback Received:

- There must be buy-in from senior leadership of the institution.
- There must be a tie-in to the strategic plan of the institution.
- There must be a tie-in to the campus recapitalization plan.
- The master plan cannot have infinite flexibility. There needs to be a “static” period in which there is time to secure funding, design, and deliver the projects.
- There need to be some “anchor projects” that guide the other aspects of the plan.
- Flexibility can be found in the details such as technology, utilization, function, etc.
- Regulatory requirements such as having a master plan, land use, and legislation will need to be considered as part of any framework.

2024 MEMBERSHIP SURVEY RESULTS

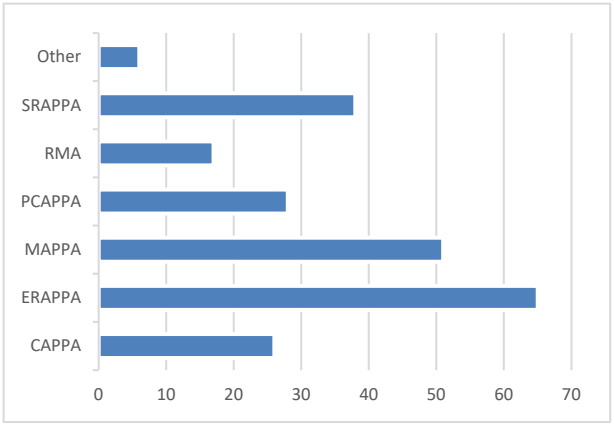
Number of Survey Responses 231

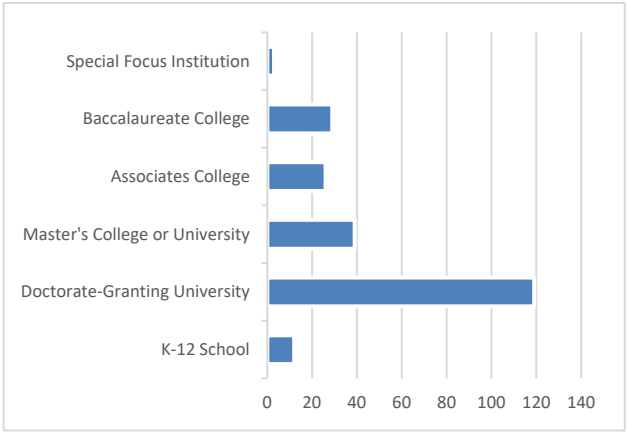
By APPA Region

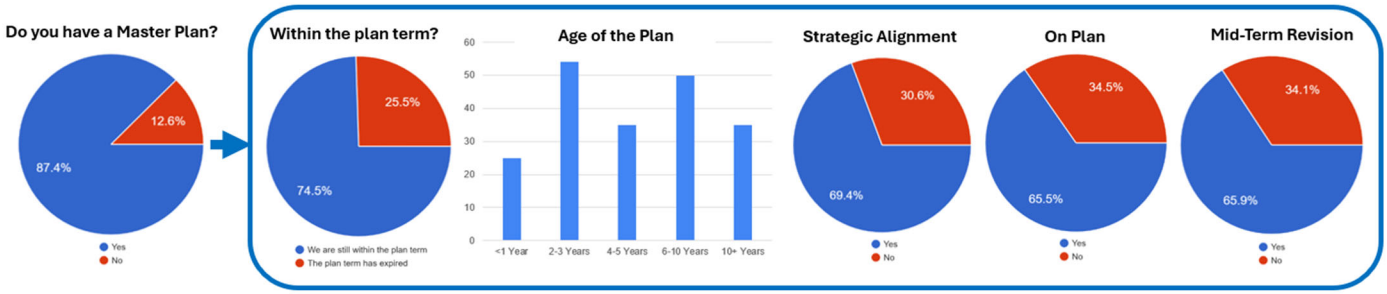
- ERAPPA 65
- MAPPA 51
- SRAPPA 38
- PCAPPA 28
- CAPPA 26
- RMA 17
- Other 6

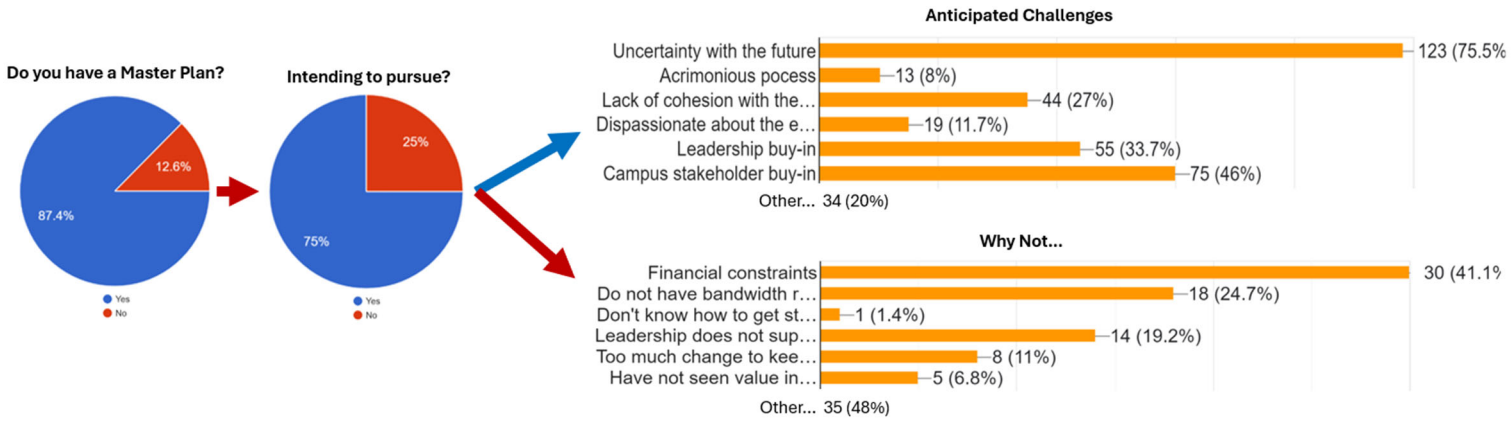
By Carnegie Classification

- Doctorate-Granting University 119
- Master's College or University 39
- Baccalaureate College 29
- Associates College 26
- K-12 School 12
- Special Focus Institution 3

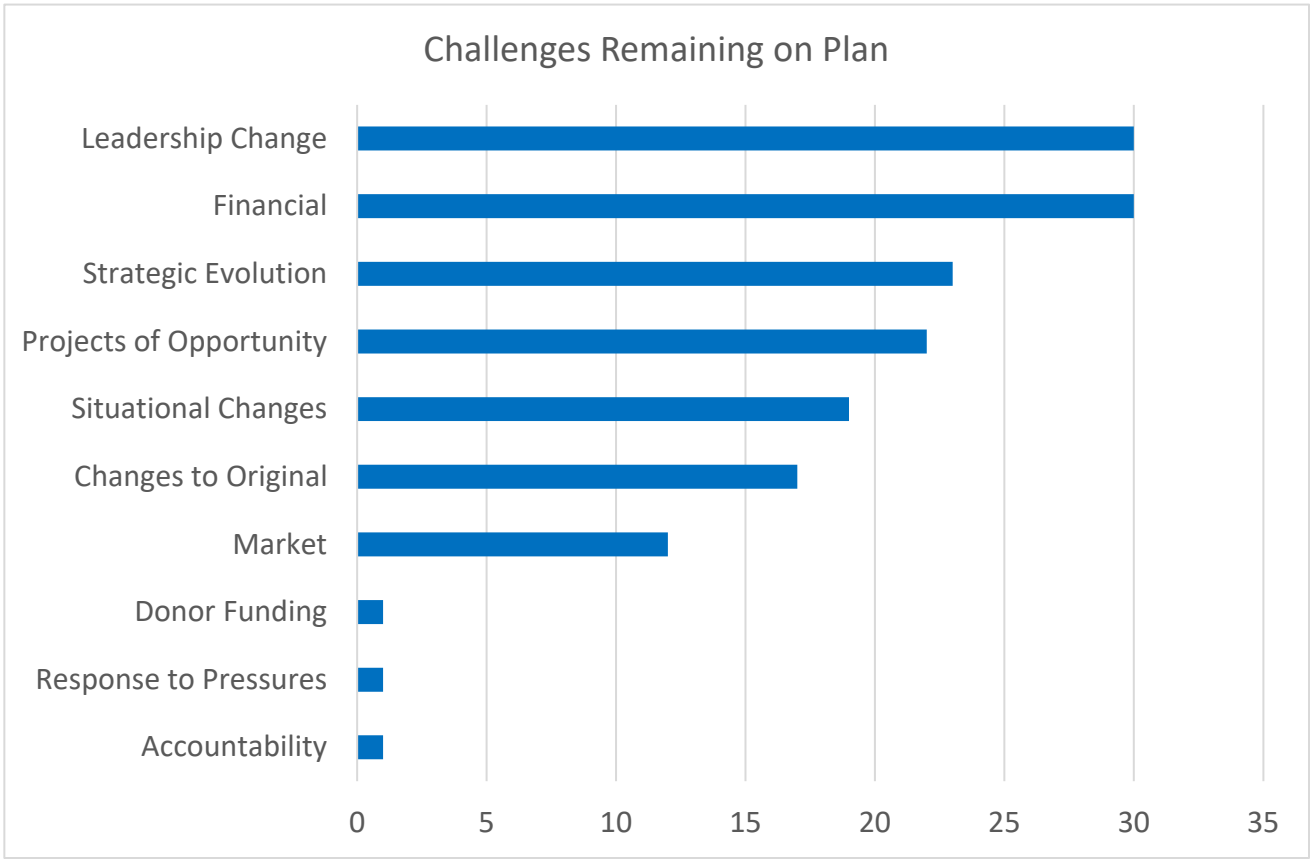


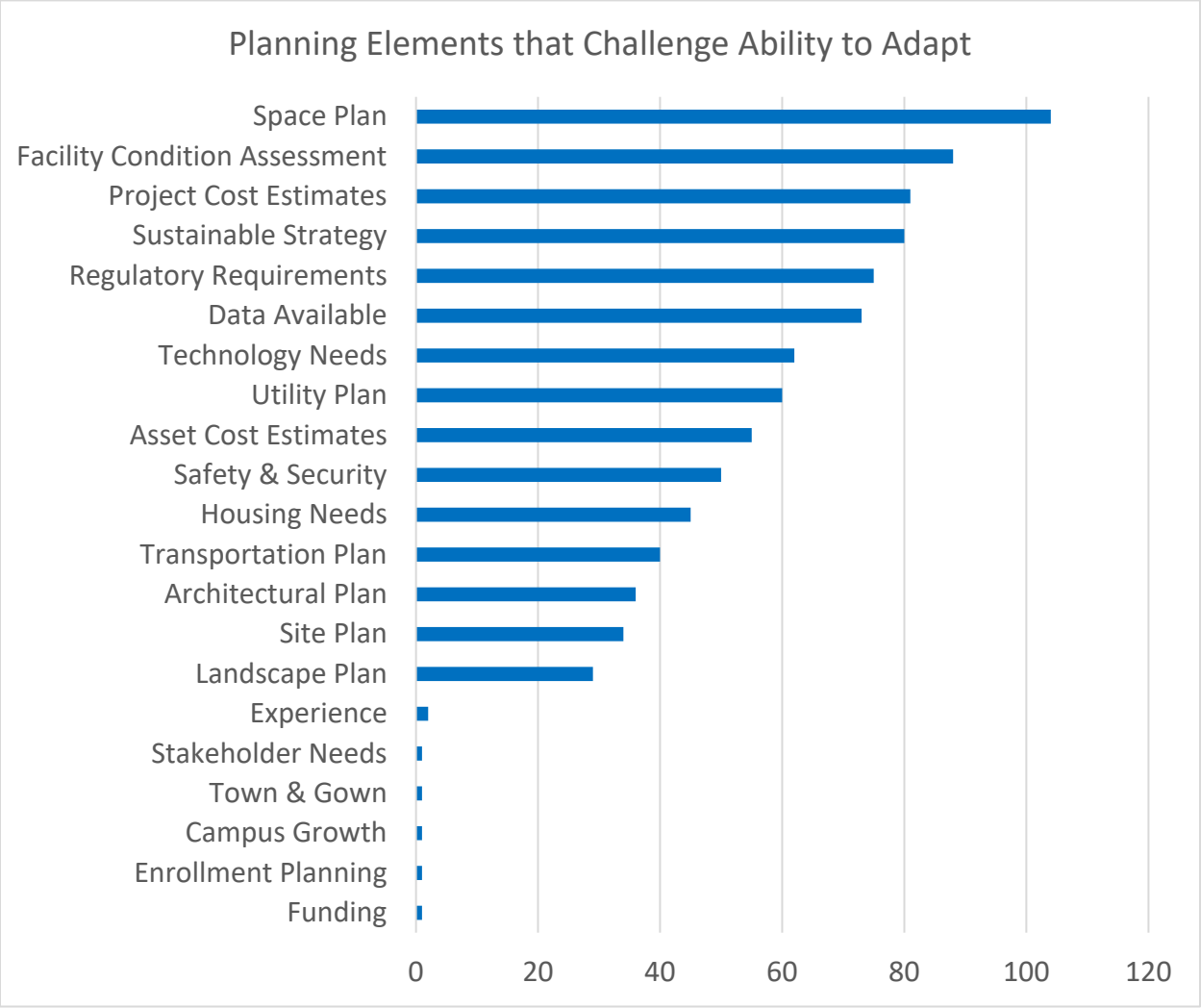







Why Develop, Renew, or Maintain a Master Plan?
Decision-Making
Leadership Requirement
Board Mandate
Typically Not Used
Resource Justification
Strategic Planning
Sustainability
Seek Funding
Industry Recommendation
Asset Planning
Accreditation
0
20
40
60
80
100
120
140
160


Challenges Remaining on Plan
Leadership Change
Financial
Strategic Evolution
Projects of Opportunity
Situational Changes
Changes to Original
Market
Donor Funding
Response to Pressures
Accountability
0
5
10
15
20
25
30
35


Planning Elements that Challenge Ability to Adapt
Space Plan
Facility Condition Assessment
Project Cost Estimates
Sustainable Strategy
Regulatory Requirements
Data Available
Technology Needs
Utility Plan
Asset Cost Estimates
Safety & Security
Housing Needs
Transportation Plan
Architectural Plan
Site Plan
Landscape Plan
Experience
Stakeholder Needs
Town & Gown
Campus Growth
Enrollment Planning
Funding
0
20
40
60
80
100
120

Common Themes from Comments Received during the Survey

1. **Political Will and Leadership Commitment**: The success of a master plan depends heavily on the support and commitment from leadership to implement and follow through with the plan's objectives.
2. **Frequency and Adaptability**: There's a consensus that master plans should be updated more frequently, ideally every 5 years, to remain relevant and adaptable to changing circumstances.
3. **Community Engagement and Inclusion**: Successful master plans involve the entire campus community to ensure diverse perspectives and buy-in.
4. **Realistic and Sustainable Goals**: Master plans should focus on realistic and sustainable goals, including efficient space utilization and financial/environmental sustainability.
5. **Data-Driven Decision Making**: Utilizing data, such as space utilization analysis and enrollment projections, is crucial for informed decision-making in master planning.
6. **Challenges with Implementation**: Challenges in implementing master plans include leadership adherence, funding issues, and competing priorities.
7. **Flexibility and Adaptability**: There's a need for master plans to be fluid and adaptable to changing circumstances, incorporating a "living" approach.
8. **Communication and Collaboration**: Continuous communication and collaboration across campus departments are essential for successful master planning.
9. **Financial Considerations**: Developing feasible financial plans and securing funding for construction and maintenance are key components of master planning.
10. **Mandates and Regulations**: Compliance with state mandates and regulations regarding master planning adds complexity and financial burden to the process.
11. **Focus on Specific Areas**: There's a shift towards developing plans focused on specific areas or precincts rather than campus-wide master planning.
12. **Reflection and Refocusing**: Master planning is seen as an opportunity to reflect on past efforts and refocus on future targets and objectives.

BIBLIOGRAPHY

Alexander, L., & Drumm, K. (2016). A Master Facilities Planning Process That Focuses. *Planning for Higher Education Journal*(Oct-Dec 2016).

Bowman, K. D. (2017). The Erosion of Presidential Tenure: Are University Presidents Leaving Too Soon? *Public Purpose*(Summer 2017), 6-9.

Caruthers, J., & Layzell, D. (1999). Campus Master Planning and Capital Budgeting. *New Directions for Higher Education*(Fall, 1999), 73-81.

Christensen, C. (2022). The Living Facilities Master Plan: Is It Possible? *Facilities Manager*(Jul/Aug 2022).

Christensen, C., & Wang, J. (2022). APPA Virtual Facilities Summit. *APPA.*

Christensen, C., & Wang, J. (2022). ERAPPA Annual Meeting. Verona, NY.

Christensen, D., & Christensen, C. (2018). *Building Total Enterprise Asset Management Solutions.* New York, NY.

Dalton, L. C. (n.d.). *APPA*. Retrieved August 9, 2024, from Body of Knowledge - Campus Master Planning: https://www.appa.org/bok/campus-master-planning-3/

Dublin City University. (n.d.). *Strategic Planning*. Retrieved from Dublin City University: https://www.dcu.ie/president/strategic-planning#:~:text=The%20purpose%20of%20Strategic%20Planning,our%20university%2C%20at%20all%20levels.

Dynamic Campus Planning Research Team. (2024, April). APPA Membership Survey on Master Planning.

Haria, H. (2009). Mastering the Plan. *American School Board Journal*(Oct 2009), 37-38.

Heywood, R., & McGrail, T. (2006). Generating Asset Health Indices Which Are Useful and Auditable.

ISO. (2014). ISO 55000: Asset Management.

Kalina, D. (2006). Preparing a Facilities Master Plan. *Techniques*(Oct 2006), 28-30.

Rudden, M. S. (2008). Ten Reasons Why Colleges and Universities Undertake Campus Master Planning. *Society for College and University Planning* | *Planning for Higher Education*, 33-41.

Smith, D. K. (n.d.). *Owners Must Understand Their Assets Total Cost of Ownership.* Retrieved from TCO-SAM: https://tco-sam.com/services/information/

Strata Decision. (2019, August 20). Retrieved August 9, 2024, from What is Dynamic Planning and Why Do It?: https://www.stratadecision.com/blog/what-is-dynamic-planning-and-why-do-it/#:~:text=Dynamic%20Planning%20is%20a%20process,to%20ever-changing%20market%20conditions.