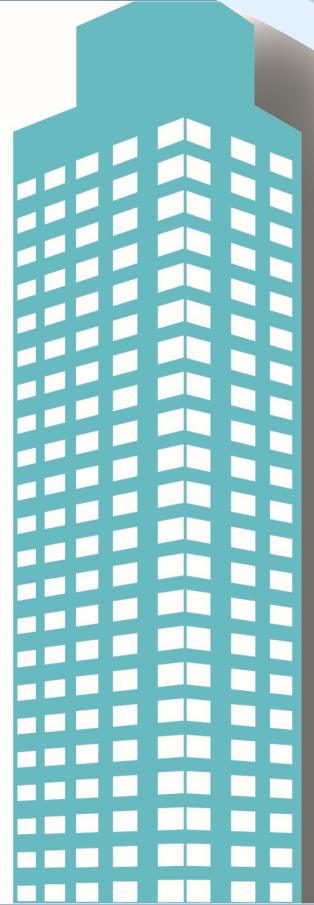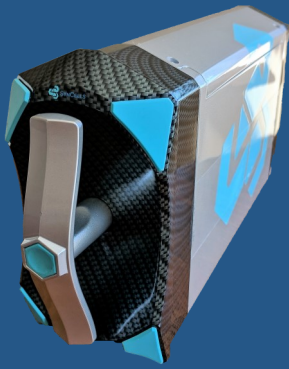# SynGrid™ Smart Building Platform

SynCells

Unified Smart Building
Application for Tenants and Property Managers

Statistics

- Gallup: Nearly $2B is lost annually in the US due to employee turnover; elevating the employee experience to retain top talent is now a workplace mandate.

- Gartner: Satisfied workers are 16 percent more productive and 18 percent more likely to stick around.

- CLC: Engaging employees can yield up to 87% retention.

- Nielson: 98% of Millennials and 97% of GenZers have smartphones; they spend on average 90 hours a month on them.

- Staffbase: 800% increase in readership from mobile push notifications; 35% of disengaged employee's salary is wasted; use of an employee app could reduce time wasted on redundant activities by 15%;

- ChargeSpot/TD Bank: energy saving from smart technologies account for 14% of benefit, productivity gains account for 75% [Nephin: consider the rule of threes—$3/SF = Energy, $30/SF = Rent, $300/SF = Salaries].

Introduction

Regardless of what technology a building may contain, for it to be considered smart it must allow all building users—tenants, visitors, property managers, etc.—to quickly and easily access and leverage the resources available, without having to hunt for the appropriate app, website, or tool. It must also motivate them to use the technology on a regular basis otherwise the investment is underutilized and therefore wasted.

In order for a smart building to function effectively we need a Smart Building Platform that hosts the services and functions required in a secure, scalable, flexible, holistic, and unified manner. The platform should support and manage the backend infrastructure such as energy systems, integrate third parties such as utilities for advanced services that save energy and money, and host the user interface which is delivered via an app that can be used on their smart phone and their PC. This document provides an overview of the app, the platform, and the reasons they're required.

Why Smart Building Apps and Integrated Services

Changing expectations: people work longer hours and use technology more in their personal and work lives than ever before; solutions need to be natively available on their primary tool, their smart phone, using interfaces that quickly deliver relevant info and resources to meet their needs.

More inviting, hospitable environment: competition for talent is higher than ever, employers and property management together can make the building more welcoming and interactive to boost worker morale and comfort.

Streamlined access: whether access to the building or tenant space, parking or bike rooms, it can be delivered through a single device – a smart phone. No more swipe cards, credentials or fobs to lose.

Insights + Notifications: engage tenants by making them aware of events, from ice-cream parties to construction impacts, not to mention emergency situations, directly through app push notifications and calendar views.

Efficiency: allow individual users to contribute to the energy profile of their space, and building, with dashboard info on their impact and possible rewards for participation.

WHAT FEATURES AND SERVICES CAN BE INCLUDED?

Informative	Control	Communications + Infrastructure
❖ Floor Plans	❖ Building Access Credentials	❖ Branded Solutions
❖ Wayfinding	❖ HVAC	❖ Push Notifications
❖ Visitor Management	❖ Lighting	❖ Mobile + Desktop Access
❖ Events & Building Calendar	❖ Audio-Visual Systems	❖ Personalized Location Based Services
❖ Building Services Directory	❖ Resource Scheduler	❖ Holistic Wireless Coverage (LTE+Wi-Fi; next gen tech)
❖ Concierge Services	❖ Personalized Temp Control	❖ EV Charging
❖ Curated Crowdsourced Updates	❖ Service, Housekeeping Requests	❖ Enterprise-Grade Security Practices - ISO/IEC 27017, 27018; FISMA, FIPS200
❖ Google Assistant + Alexa Support	❖ OpenADR, DER + Energy Storage Support	❖ Policy + Rules Engine
❖ Insights on ESG metrics	❖ One Platform, Infinite Integrations	❖ On-Premise + Cloud Architecture
	❖ Smart "as a Service" — all infrastructure and services managed under one umbrella	❖ Edge Computing Infrastructure

*Features in green cells above are unique to SynCells

Value + Cost Savings: through integration of services, from holistic building wireless networking to a unified smart building app, owners and tenants can realize cost savings through single-vendor installation and support services, system scale, rationalized infrastructure, and tighter management of resources. Increase revenue and utilization of shared building spaces by making tenants aware of the amenities and providing the tools to leverage. A solution that actually pays for itself.

Facilities + Facilitation: property ownership & management stand at the nexus of tenant costs and worker satisfaction. Tenants are landlocked within their rentable space and opportunities they can provide; however, property management can provide shared resources for all tenants to boost worker satisfaction, which reduces costs for tenants and improves productivity. Providing tools such as a building-sponsored unified app, support of ESG goals, holistic network coverage, and access to information allows a worker to feel engaged within their broader environment and not cocooned within their office, while at the same time improving the reputation of the property, WELL score, and lease value.

WHAT MAKES SYNGRID UNIQUE?

Energy + Sustainability: based on SynCells' patented capabilities, SynGrid is the only platform that offers the ability to extend real-time demand response and ESG insights to the end-user, and through a network effect, enhance the functionality through our virtual grid technology. Our policy engine can be programmed with many operational constraints or goals, or allow the AI engine to learn and optimize the environment. We make the smart building intelligent.

Employee App   Business Outcomes

Increase employee engagement	Facilitate smooth changes	Enable middle management	Reduce wasted time

Reduce turnover by

25-65%

Cut cost of social media efforts by

90%

Reduce revenue loss due to change-related stress by

41.2%

Reduce risk to save on annual illness and injury costs by

31%

Grow revenue with increased NPS by

7%

Boost productivity

5%

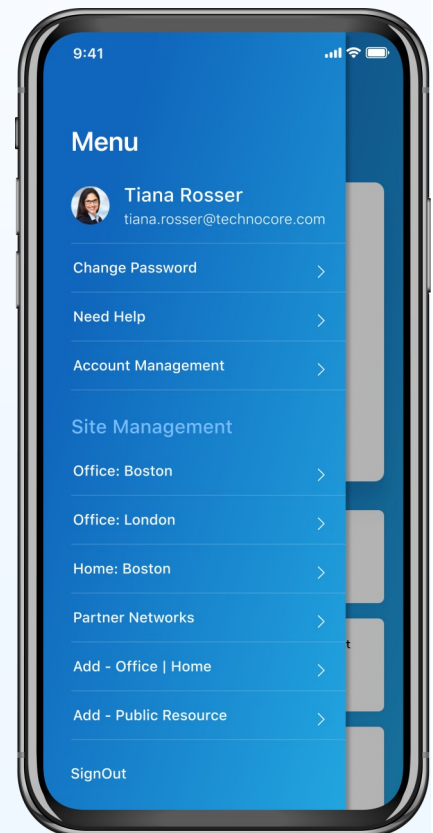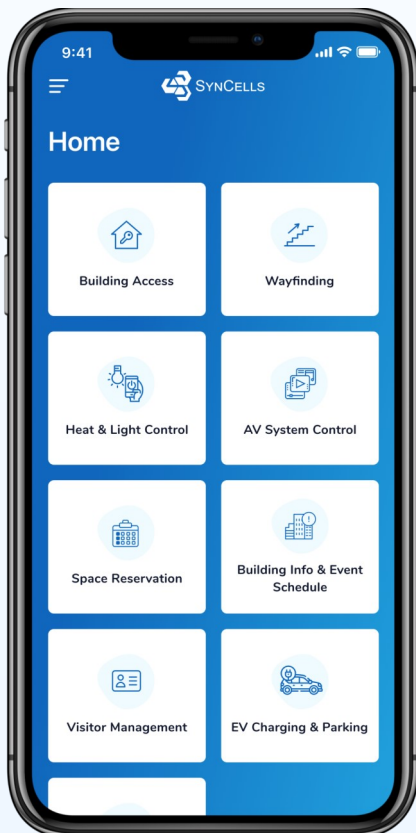per fifteen percent reduction in wasted time

Increase revenue per employee

Structure: SynGrid is built on the lessons learned from decades of IT, virtualization, data center, security, and cloud experiences, coupled with the opportunities provided by IoT systems, and strengthened by cybersecurity industry best-practices. While the average user will never be aware of such features, they will appreciate the clear, easy to use app to manage their environment, not just in the office but at home and many other places as part of a Smart City. That universal functionality leads to greater comfort in using the app, which increases utilization and impact opportunity, therefore maximizing ROI.

Scalability, Availability: SynGrid is designed using a hybrid architecture, using cloud and on-premise resources. Unlike other solutions, this provides better performance and flexibility, along with peace of mind for owners knowing their investment is protected and accessible at all times. That architecture can also be used to support the IT infrastructure needs to operate the building, and provide a value-added service by supporting Edge Computing services for tenants.

Smart Partner: developers, property managers, and many others do not have the resources or expertise to manage advanced technology, security, or energy systems. That's why SynCells, using SynGrid services, can support all the technology needs for the building, property portfolio, and tenants so there's a trusted partner who can immediately offer support and resolve issues no matter the system or service involved. This is Smart as a Service.

USER INTERFACE OVERVIEW

- Users can use the smart building app to control systems on their floor or in their office, plus common areas (AV, lighting, etc.) if desired. It can also work with SynCells smart HVAC dampers to provide granular control of personal space temperature, possibly eliminating the biggest complaint in commercial building management.

- The app can integrate physical access control credentials to simplify building and unit entry with enhanced security, no more lost credentials or fobs, quick provisioning and deprovisioning.

- Admin interface can provide a dashboard for tenant monitoring of energy consumption to support Environmental, Social and Governance (ESG) criteria.

- App provides a direct notification medium for owners, managers to communicate with tenants and staff, for energy management and beyond – use to reinforce safety, security, brand message.

- The app can provided a policy driven issue reporting tool, so reports of an issue in a common building area vs. a tenant space get routed to the appropriate party.

- All-purpose app provides consistency and familiarity - makes it easier for users to interact with all systems and services in the building, not just their office, and optionally their home, providing a holistic system management platform.

- Unique, patented functions including ability to engage Demand Response programs at tenant user level, not just the property management level, provide an opportunity to reduce operational expenses and energy consumption for all parties, individually or as a group. Finally a smart building solution that can pay for itself.

SCREEN SAMPLES

Next Generation Smart Platforms

Functional Options — **System Integrations** — **Communication Methods** — **SynGrid Cloud Platform**

Functional Options:
- HVAC
- Lighting
- Space Reservations
- Vehicle Charging, Parking
- Accounting, Billing
- Service, Maintenance Requests

System Integrations:
- SynGrid Nano-Grid
- BMS/BAS Tie-In
- Compute & Processing
- Renewable Power
- Managed Network + Security
- IoT Support
- **User App**

Communication Methods:
- Satellite
- Cellular
- Wired Network
- Diverse Network Connectivity (Internet)

SynGrid Cloud Platform:
- Smart Site Instance
- Smart Site Instance
- Smart Site Instance #x
- SynGrid Hypervisor (Virtualization Layer)
- Shared Storage
- HA Database
- SynGrid Manager
- SynGrid Data Center 1
- SynGrid Data Center X

STD Rate, DR Notification, Real-Time Pricing

- **Utility, 3rd Parties**
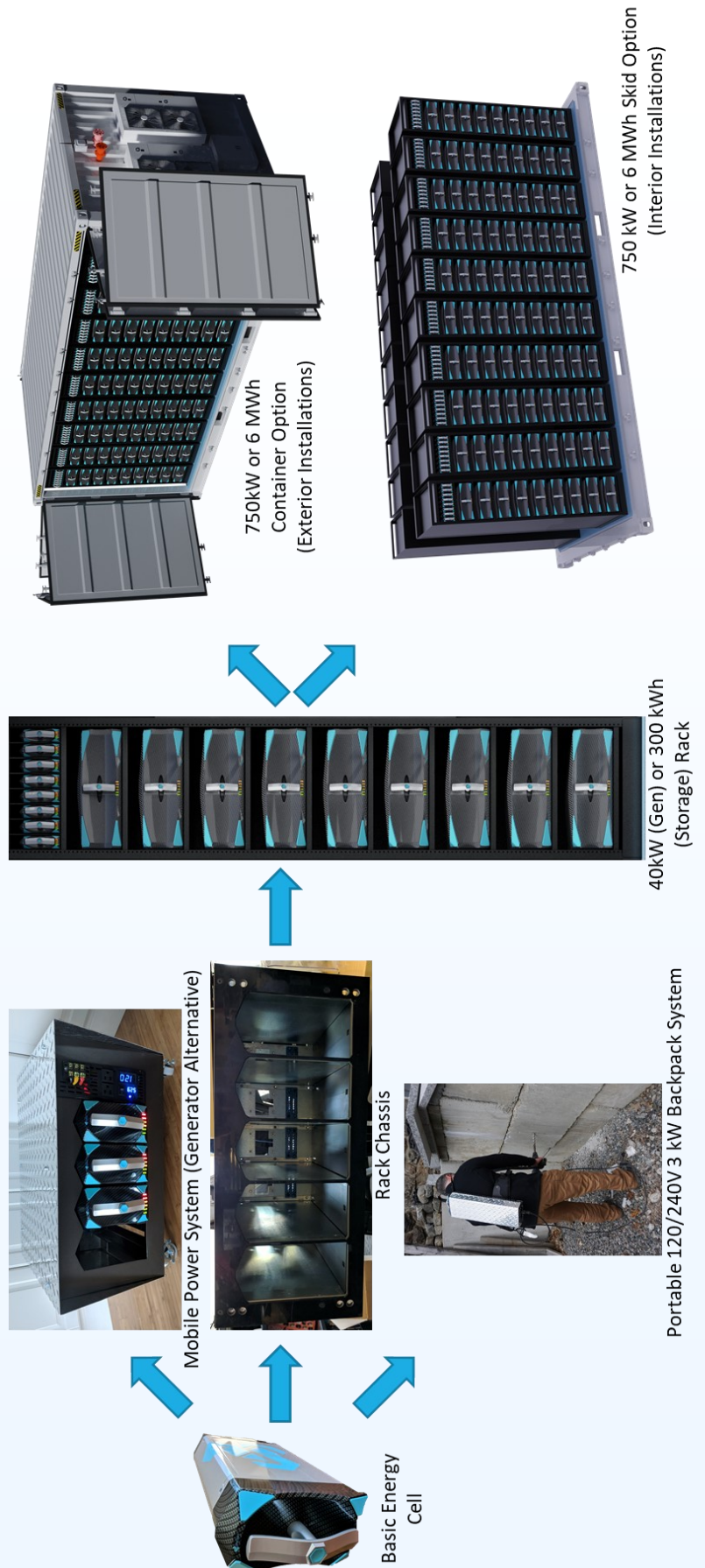- **SynGrid Operations Center, Support**

SYNGRID ARCHITECTURE

- Cloud and On-Premise solution for improved performance, business and data assurance.

- Enterprise grade platform designed for interoperability based on IT (OSI model) standards – not a consumer hub with integrations controlled by a vendor ecosystem.

- Dashboards, analytics for system administrators, API integrations with EMS, BMS; secure network integrations for 3rd parties such as utility companies and maintenance contractors to allow proactive response.

- Enterprise and carrier class data architecture and management interfaces, highly structured system architecture allowing changes to be quickly deployed at scale, and systems to be recovered/restored should failure occur.

- Enterprise grade dashboard and directory of systems for ease of management, group control, digital twins.

- Expandable platform that can support building-centric edge computing capabilities as a value add service for all tenants in the building, provide support for leading distributed cloud services from Azure, AWS, Google.

- Leverage for base-building + tenant smart device controls; allow individual users to leverage for their homes using a residential gateway.

- Integrate communications systems and services for whole-building energy + technology management delivered "as a Service".

Next Generation Smart Platforms

Energy Cloud meets SynCells NanoGrid

- The Energy Cloud concept is an evolution of energy systems and the electricity market, coupled with cloud computing practices and intelligent systems.

- SynGrid is SynCells' logical embodiment of the Energy Cloud concept, using software and cloud techniques to achieve our objective.

- SynCells also offers a unique physical platform, based on patented designs and technologies, using Smart Energy Cells as the building blocks for a Distributed Energy Resource (DER) we refer to as NanoGrid.

- Unlike a microgrid, the SynCells NanoGrid is a highly flexible, scalable, resilient, swappable, efficient platform that can support stationary power needs for a house or large industrial plant, along with mobile and portable applications such as vehicles, and power tools.

- Using Combined Heat & Power techniques, the NanoGrid can achieve approx. 90% energy efficiency using a variety of fuels, from natural gas to syngas, and eventually renewables fuels through our modular fuel cells.

- Our storage cells can harness renewable energy sources, provide backup power alternatives, support peak loads for the NanoGrid, and enable On-Grid and Off-Grid opportunities. Owing to our patented design, our energy density is unrivaled, as is our safety.

- Using the same hyper-efficient design principles, we can also offer integrated IT modules, supporting edge computing systems and increasing the power density for PoE switches, allowing new opportunities for powering LED lighting and other systems for reduced cost.

750kW or 6 MWh Container Option (Exterior Installations)

750 kW or 6 MWh Skid Option (Interior Installations)

40kW (Gen) or 300 kWh (Storage) Rack

Mobile Power System (Generator Alternative)

Rack Chassis

Portable 120/240V 3 kW Backpack System

Basic Energy Cell

Next Generation

Smart Platforms

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V1.2