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BUILDING A CONNECTED BUSINESS



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ABOUT BUILDING A CONNECTED BUSINESS



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Building a Connected Business explores the opportunities digital transformation holds for the electrical distribution industry. The outcomes and recommendations of this report can help NAED members better understand the concept of digital transformation and its impact on today's business landscape.

Market trends may determine the "why" behind the emergence of the digital era, but "how" to respond is more complex as companies look to operate in both the analog and digital worlds. Internal objectives, technology upgrades, and customer-facing dynamics are important considerations when formulating a digital transformation roadmap. Digitization for example, the conversion of analog information to digital information, is a critical component of a company's digital strategy. However, it is only one facet of the comprehensive, and often extensive, integration of digital technologies into the company's operations and business strategies.

Where does a company start? The *Building A Connected Business* report presents a business systems framework and timeline to help your company prioritize, plan, and implement various digital strategies. Critical capabilities and technologies to optimize processes and power growth are also outlined.

Other sections help electrical distributors navigate their role in the digital era by providing perspectives from across the channel, including suppliers, vendors, and contractor customers. Though much of the discussion involving customers centers on electrical contractors' experiences and responses, recommendations can also be applied to other customers as well.

Although technologies and digital data are important, the cornerstone of any digital transformation plan is a company's culture and the people who will help make the efforts a success. The report offers recommendations to identify change champions and the talent required to drive strategies and integration.

For the electrical distribution industry, the digital age is a catalyst for new processes, new ideas, and new business models. While electrical distribution has faced disruptive threats before and survived, the difference this time is the rate of change and the volume of new technologies being introduced simultaneously. Working together as an industry, digital transformation can provide a competitive edge to ensure the viability of the channel into the future.

"Digital transformation goes beyond technology to reflect a mindset of constant innovation, fast decision-making, and the integration of technology into all phases of an electrical distributor's business."

– NAED's Strategic Technology Committee

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- The numerous **NAED members** who gave interviews to provide their perspectives and insights

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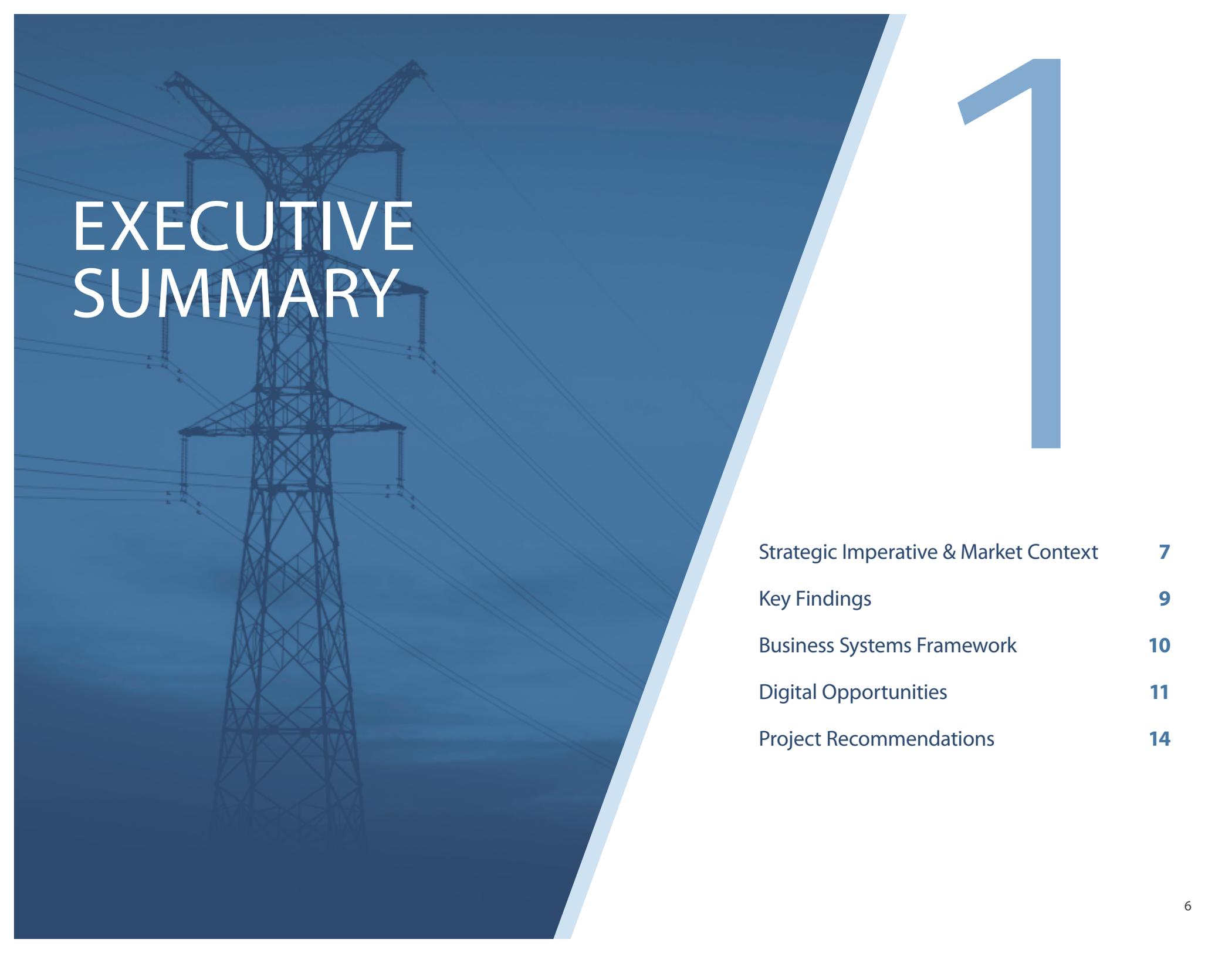
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STRATEGIC IMPERATIVE & MARKET CONTEXT

THREATENING & EMERGING TRENDS IMPACTING THE CURRENT BUSINESS LANDSCAPE

In the wake of disruptive and emerging trends, this study not only explores the opportunities that digital transformation holds for the industry, but also the ways to achieve a fully connected business. To accomplish this goal, a proposed framework and prescriptive timeline are included to guide one's thinking in developing a comprehensive strategy and organizational structure that fosters growth and success.

DISRUPTIVE TREND	TREND OVERVIEW	MARKET REQUIREMENTS
 <p>Digital Advancement</p>	<ul style="list-style-type: none"> Digital transformation is a primary catalyst for new business models such as direct selling from suppliers and online marketplaces. With the business-to-business (B2B) retail market estimated to be worth \$1.8 trillion* by 2020, electrical distributors will have to undertake significant business transformations to keep pace with the market changes. 	<ul style="list-style-type: none"> Targeted sales and marketing efforts are needed to help customers make more informed choices. Electrical distributors will need to offer new value propositions to keep up with the needs of the construction industry value chain.
 <p>Technology Evolution & New Ecosystems</p>	<ul style="list-style-type: none"> Advancements in control and monitoring features in building products have led to rise in demand for more innovative solutions. Increasing product innovations have resulted in the need for new supply chain ecosystems and sales approaches, diverting sales focus from initial cost reduction to operational efficiency gains. 	<ul style="list-style-type: none"> Acquiring new capabilities to respond to such technology changes are critical for distributors to maintain business profitability. Investing in training, certifications, and new hires are crucial to stay ahead of the curve.
 <p>Countering 'Direct-Sales' Approaches</p>	<ul style="list-style-type: none"> The direct-selling approach is helping manufacturers to leverage industry relationships and online engagement to cater to end customers. Digitization plays a key role in enabling this business model. 	<ul style="list-style-type: none"> To respond to such changing sales approaches, distributors will need to consider digitization of business offerings, further address customers' pain points, expand their interaction with an extended value chain, and maximize wins.
 <p>Impact of B2C Industry Evolution</p>	<ul style="list-style-type: none"> With the evolution of the business-to-consumer (B2C) industry, selling "customer experience" as part of the product and system sale is gaining importance. Increased transparency accompanies sales that are associated with online marketplaces, driving manufacturers to undertake product marketing campaigns for B2B products on social networking sites. 	<ul style="list-style-type: none"> Electrical distributors will need to promptly implement optimized eCommerce systems, advanced CRM tracking, and better warehouse automation systems to address these changes. Focusing on customer experiences, increased transparency around price itemization, product comparisons, and customizable fulfillment options are important additions.

* Frost & Sullivan, Top Global Mega Trends to 2025 and Implications to Business, Society, and Cultures

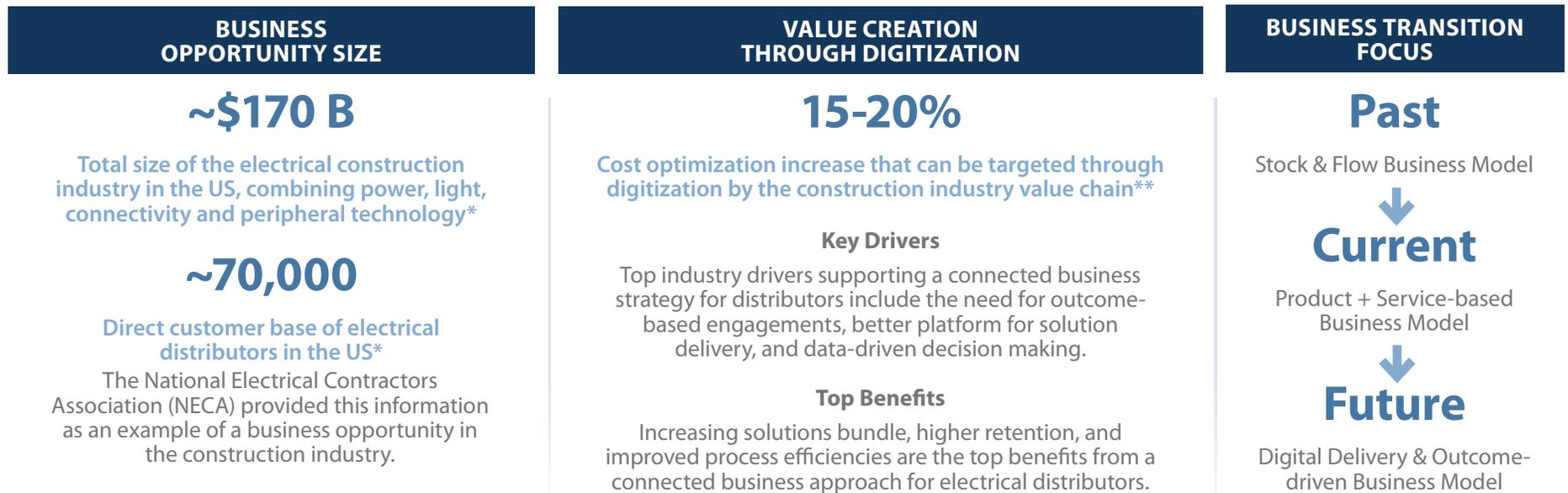
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STRATEGIC IMPERATIVE & MARKET CONTEXT

THE INDUSTRY & THE DIGITAL ENVIRONMENT

Although NAED's distributor members serve a variety of customers, construction is typically the largest segment for many companies. According to the latest NAED PAR Report[®], 53% of sales for a typical distributor are from commercial and residential construction.*

While the construction industry faces its own challenges moving forward, it also reflects the changing customer mindset as focus shifts from the "stock and flow" business model to one that provides information and results quickly and efficiently. There is significant opportunity for distributors to provide end-to-end solutions, address pain points, and optimize processes for these customers.



CAPABILITY & INVESTMENT GAPS:

In interviews with distributors, contractors and NECA leadership, an investment gap appeared between distributors and their customers. While even national distributors estimate only spending about 10% of revenue on digital capabilities and development, with local and regional firms spending less, construction companies are likely to spend around 15% of revenue in these areas.

Current Capability Gaps

- Product focus, lack of systems knowledge
- Unable to provide visibility into customer requirements and demand projections
- Inability to offer continued support to contractors after delivering products forces suppliers to intervene and address the gaps
- Restricted customer reach due to limitations of eCommerce and online selling tools

* 2019 NAED PAR Report[®]

** Interview with National Electrical Contractors Association (NECA) for this project

** Frost & Sullivan & Continental Automated Buildings Association Research, Intelligent Buildings Design & Implementation, 2018

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KEY FINDINGS

Incorporating Value-Driven Outcomes

- Strong value orientation defines each opportunity, benefiting the organization, employees, and customers.
- Customer and employee retention, enhanced profitability, and sales optimization are common themes underlying these opportunities, as agreed to by the project's Change Champions.

Mitigating Restraints

- A skeptical approach to change management or lack of champions, reliable resources, and enriched data can quickly halt any of the opportunity implementation processes.
- It is critical that mitigation plans be put in place at an organizational level to overcome these impediments prior to addressing any initiatives or opportunities.

Addressing the Prerequisites

- Addressing prerequisites and externalities related to any new projects are critical before diving into opportunities. Examples include eCommerce, Building Information Modeling (BIM) and Construction Project & Materials Management (CPMM) that will rely heavily on data enrichment from other parts of the value chain.
- Current initiatives being pursued to address many opportunities are inadequate and proving to be cost-prohibitive for most members.

Expanding the Scope of Collaboration

- The interdependency and complexity of the value chain calls for utilizing the influence of other industry associations such as the National Electrical Contractors Association (NECA) and the National Electrical Manufacturers Association (NEMA).
- A cross-industry collaborative effort is needed among these organizations to address common challenges and implement opportunities more effectively.

Committing to Timeframe

- Implementation commitments can take anywhere from a few weeks to two years, factoring in internal assessments, vetting, and vendor set-up time.
- Sticking to the roll-out schedule is absolutely critical for opportunities to yield maximum value from their implementation.

Leveraging NAED's Position

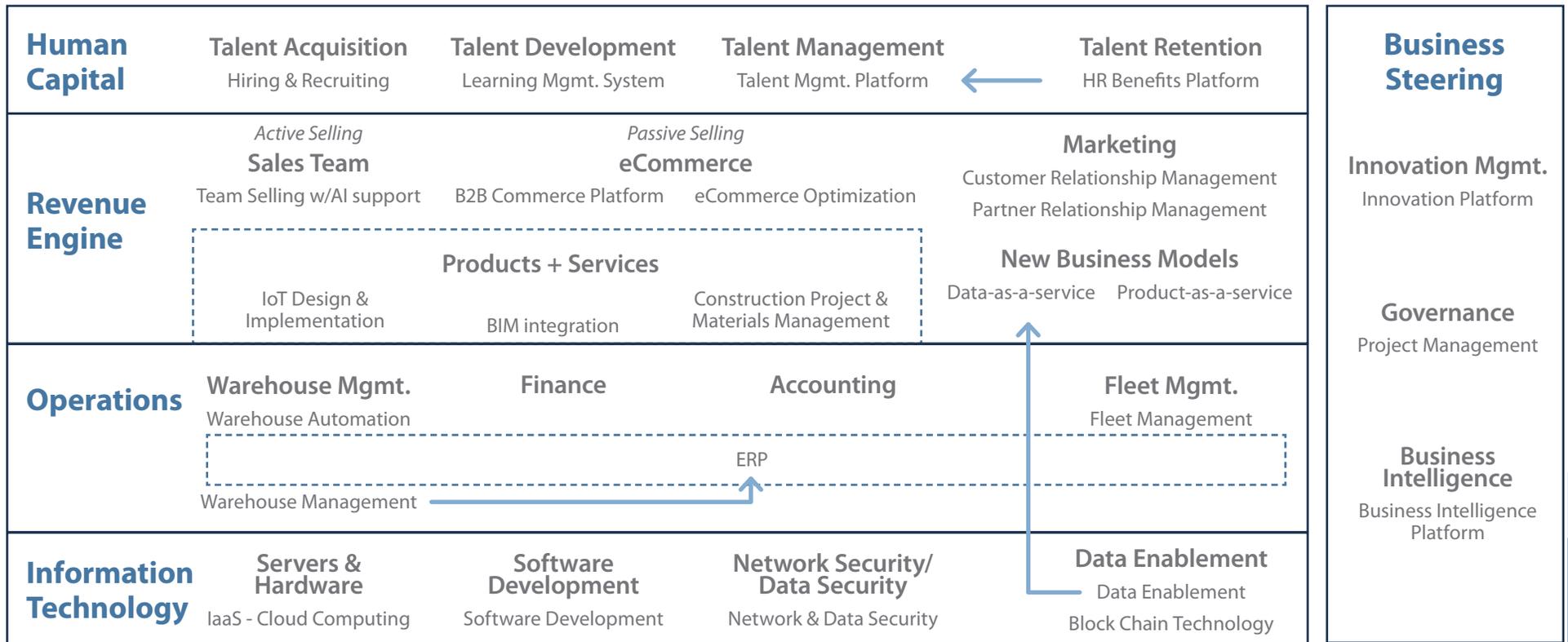
- Certain opportunities may involve NAED facilitating a consortium-led implementation process.
- Reviewing the best ways to leverage NAED's position, exploring the feasibility of NAED's involvement, and using supplementary alternatives to bridge the gaps are important considerations for the implementation process.

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BUSINESS SYSTEMS FRAMEWORK

The Frost & Sullivan framework identifies business systems within an organization to understand where a technology investment can provide incremental value. The chart below consists of digital opportunities initially provided by NAED. Additional refinements and suggestions were supplemented by Frost & Sullivan.

This list is not intended to be exhaustive because new digital opportunities for each business system evolve each day. Opportunities may be achieved through a combination of third-party solutions and self-developed capabilities. While some opportunities are specific to the electrical distribution channel, others mirror a technology or process that is used by other industries.



(Arrows indicate capabilities that will be included in a related opportunity profile.)

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DIGITAL OPPORTUNITIES REVIEW

A major milestone of this report was completing digital opportunity profiles that align with the list of framework topics on the previous page. To ensure accuracy, information was validated with key vendors who operate in those various domains. While each topic is unique in nature, each profile follows the general outline listed below.

- 
DESCRIPTION, STATISTICS, ARCHITECTURE
- 
KEY BENEFITS
- 
FEATURES & FUNCTIONS
- 
CAPABILITY REQUIREMENTS
- 
COST IMPLICATIONS & IMPLEMENTATION REQUIREMENTS
- 
TOP VENDOR BIOGRAPHIES

5 Digital Opportunities DATA-AS-A-SERVICE (DAAS) PLATFORM ARCHITECTURE

There are six key elements that distributors need to take into consideration when using data sets to generate actionable insights.

- DATA GATHERING:** Data providers identify the cleanest practices and processes to collect or generate in.
- DATA COMBINATION:** Aggregating data with a dedicated purpose, which is then analyzed and summarized in a clear format to generate actionable insights.
- DATA ASSOCIATION:** A statistical analysis is conducted for data correlations between.
- STATISTICAL IMPLICATION:** A consistent method for determining risk tolerance related to and levels of assurance in data sets to make intelligent, data.
- DATA VISUALIZATION:** Visually generate insights by analyzing data from various systems.
- INFORMATION GATHERING:** Implement digital platforms and tools to begin data collection and to develop benchmarks and current status.

5 Digital Opportunities BUILDING A CONNECTED BUSINESS

Digital transformation does not happen overnight. It is a continual evolution process that becomes more robust and valuable over time. The journey starts with investing in digital systems which enables data capture. Once an organization has data, it can begin to evolve capabilities more efficiently, and ultimately create new value.

CREATE VALUE: Mature Digitization (Transform Capabilities and Outcomes) → System Interoperability → Optimize Discreet Functions → Establish Digital Systems.

EXTRACT VALUE: Information Gathering → Interconnect Systems → Efficiencies → Transformation (Transform Capabilities).

5 Digital Opportunities ENTERPRISE RESOURCE PLANNING PLATFORM ARCHITECTURE

Most ERP platforms are modular: organizations can select the functions needed and build a custom platform. Each department can benefit from departments and functions involved, the more comprehensive the business information.

FINANCE & ACCOUNTING <ul style="list-style-type: none"> General Ledger Accounts Payable Accounts Receivable Card and Collections Cost Management Fixed Asset Management Financial Planning Consolidations and Eliminations Tax Center Corporate Governance 	SUPPLY CHAIN MGMT <ul style="list-style-type: none"> Purchase Management Distributions Requirements Planning Inventory Management Shipping and Receiving
CUSTOMER RELATIONSHIP MANAGEMENT <ul style="list-style-type: none"> Contact Management Lead and Opportunity Case Management Marketing Management Market Site Customer Support 	PLANNING AND SCHEDULING <ul style="list-style-type: none"> Forecasting and Scheduling Scheduling and Resource Allocation Advanced Planning and Scheduling
SALES & MARKETING <ul style="list-style-type: none"> Emission and Quotes Order Management CRM/CRM Management Price of Sale EC/Commerce Mobile Sales Assist 	
HUMAN RESOURCES <ul style="list-style-type: none"> Core HR Payroll Recruitment HR Analytics Talent Management Employee Center 	

5 Digital Opportunities IOT DESIGN AND IMPLEMENTATION PLATFORM ARCHITECTURE

ARCHITECTURE

Key Layers	Dashboards/Custom Apps/Use Cases/Third Party IoT Platform	
Edge & Devices	IoT Devices, Smart Sensorized Assets, Connected Objects	Sense, filter, process data
Connectivity	IoT Gateways, Device Connectivity, Edge to Cloud Connectivity	Send data to network servers and user interface platform
IoT & Cloud	Application Services, Data Management, Integration	Manage the platform for analysts and insight: advanced data from analytics derive meaningful insights

5 Digital Opportunities BUILDING INFORMATION MODELING PLATFORM BIM TECHNOLOGY EVOLUTION TO DATE

- 3D DECON:** Design clash management (without time estimation), Existing condition model, with animations, rendering, and walkthrough, Safety and logistic models, BIM-driven prefabrication, Laser-accurate BIM-driven layout.
- 4D COSTUME:** Project phasing (simulations) (inclusion of timeline), Lean scheduling (just-in-time deliverable and detailed simulation of installation), Visual validation for time and resource budget estimation.
- 5D ESTIMATE:** Product-level data integration, product data synchronization with CAD tools for marketing and representation of supplier products, Real-time cost planning and structural modeling, Quantity extraction to support detailed cost estimate, Clash engineering (check of geometry, quantities, quantity extraction), Trade verification from fabrication models (structural steel, mechanical, plumbing, electrical), Prefabrication solutions.
- 6D SUSTAINABILITY:** Conceptual energy analysis, Detailed energy analysis, Sustainable element tracking.
- 7D MAINTENANCE:** Life cycle BIM strategies, Life cycle BIM, BIM maintenance, Plans and technical support, BIM-based data exchange for building operations and maintenance with facilities management system.

• Early iterations of BIM were confined to design and spec generation.
 • Subsequent evolution in the technology has extended usability and relevance to a wide cross-section of players in the construction value chain.
 • This includes offering value-based selling capabilities for distributors through product level data integration starting with 5D BIM.

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DIGITAL OPPORTUNITY: TIME HORIZON PRIORITIZATION

TIMELINE & PLANNING

Every organization, large or small, will be at various levels of digital maturity within each business system. Individual assessments are necessary to identify where to focus resources. A suggested timeline, presented in this report as horizons, can be used to prioritize initiatives and solidify strategies.

IMMEDIATE HORIZON	HORIZON 1 1-2YRS	HORIZON 2 2-4YRS	HORIZON 3 4-6YRS	CONSORTIUM
<ul style="list-style-type: none"> • ERP Optimization • CRM Optimization • BI Optimization • Network/Data Security • Warehouse Management • Fleet Management 	<ul style="list-style-type: none"> • Hiring Platform [+] • Learning Management System [+] • Talent Management [+] • Team Selling w/AI Support • eCommerce Optimization • Project Management • Software Development • Platform/Data-as-a-Service • Construction Project & Materials Management 	<ul style="list-style-type: none"> • IoT Design and Implementation • BIM Integration • Innovation Management • IaaS – Cloud Computing • B2B Marketplace 	<ul style="list-style-type: none"> • Product-as-a-Service • Warehouse Automation 	<ul style="list-style-type: none"> • Innovation Management • Software Development • B2B Marketplace <p>Note that opportunities in a consortium solution may be advantageous across the industry, but these opportunities could also be pursued by an individual organization.</p>

[+] Optional importance for local/regional distributors depending on size/scale

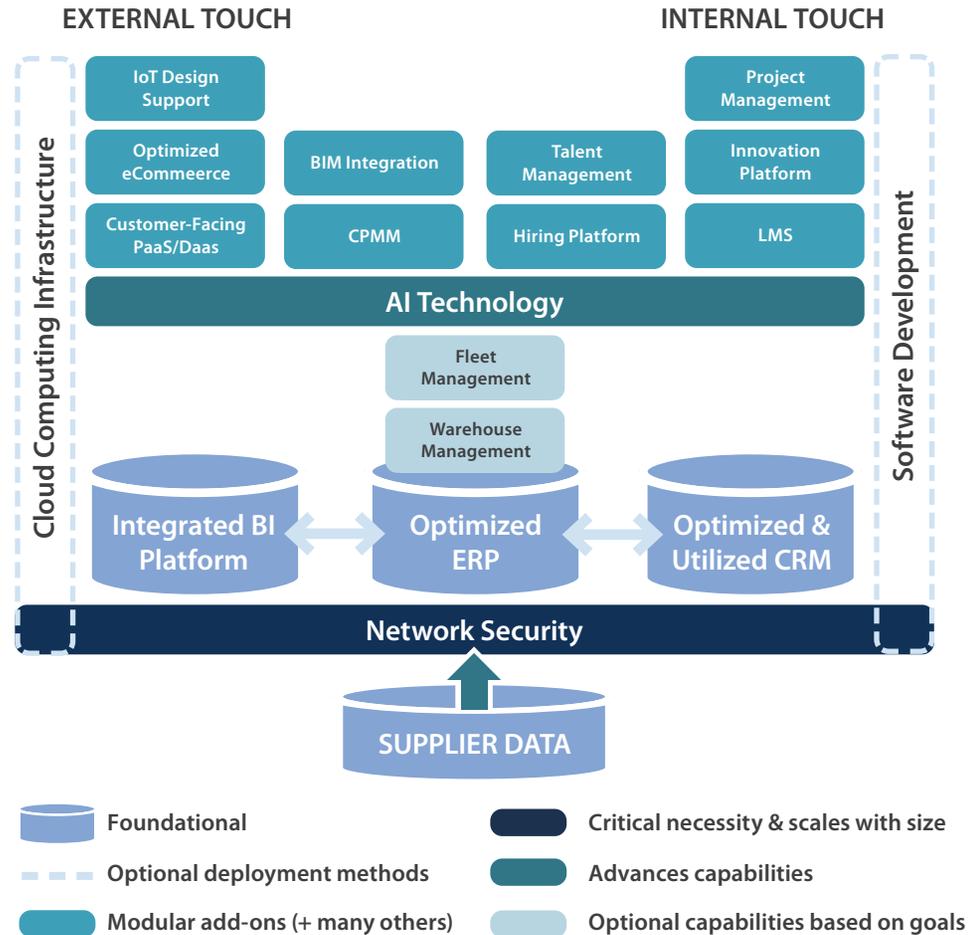
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DIGITAL OPPORTUNITY: SOLUTION ARCHITECTURE

TECHNOLOGY TO IMPLEMENT OPPORTUNITIES

The technology stack of a fully connected business is built on a solid foundation. For a distributor, that foundation is enterprise resource planning software (ERP), customer relationship management software (CRM), and business intelligence software (BI). Linking these systems together, along with inputs of supplier data, will enable the organization to extract value at a high level of efficiency.

Once foundational systems are optimized and interoperable, an organization should pursue value-creating capabilities, both internally and externally, by using the data to implement Artificial Intelligence (AI), eCommerce optimization, and customer-facing platforms such as the Construction Project & Materials Management (CPMM) platform. Additional capabilities can continue to be layered on as each new function is integrated into the organization.



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PROJECT RECOMMENDATIONS



Concentrate on immediate and H1 horizons. This is critical to ensure the foundation is in place to pursue H2 and H3+Beyond opportunities.

- Resource commitment to ERP, CRM, and BI optimization and interoperability.
- Connected, digital improvements to fleet and warehouse management.
- Unless these fundamental opportunities are addressed, prospects for pursuing other digital opportunities can be limited.



Distributors need to create and offer customer-facing tools and platforms to make workflow more seamless for the contractor — they will become the standard of entry to compete in the future.

- Inventory management or CPMM (Construction Project & Materials Management) are ideal software solutions to aid customers and gather data about behaviors.
- Distributors need to simplify billing reconciliation and change orders.
- For distributors, increase transparency of the supply chain to customers.



Secure IT infrastructure and network. This is a key investment priority for digital transformation.

- Almost all digital opportunities are dependent on a solid IT infrastructure including proactive enterprise security.
- Given the intrinsic links between digital platforms and data, these critical investments can help businesses avoid liabilities, loss of customer confidence, and downtimes.



Ready the organization for transformation. The first step in the digital transformation journey is to ensure key stakeholders, employees, and partners are onboard with the vision.

- Culture change and mindset transformation are key. You will need change management champions.
- Financial commitment and skilled employees to support new capabilities are essential to keep implementation processes on track and pivot where necessary.



Association-level collaboration could improve data sharing and transparency across the supply chain, however, challenges impede the effort for data standardization. Finding a middle path to speed up this initiative is critical. NAED, NEMA, and IDEA continue to work together concerning product data standards.

- Streamline the “ask” of suppliers, so that they can comply with one request rather than attempting to accommodate disparate requests.
- Recommend that associations identify gaps in data aggregation initiatives of other agencies and take proactive steps to address these gaps.
- Engage a third-party data cleansing and warehousing provider to help members ready themselves for opportunities such as eCommerce optimization.
- Share product performance data to improve demand planning, as well as creating new strategies for end users and other market participants, such as insurers.

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PROJECT RECOMMENDATIONS



Labor shortages in construction will be exacerbated due to growing demand of technology and needed re-skilling.

- Distributors should use technology such as AI to help resolve contractor labor issues. One solution is a digital platform to perform blueprint takeoffs for small- and medium-size contractors. This service saves the contractor valuable labor, and gets the distributor involved earlier in the project. Furthermore, this type of involvement would enable better value engineering and could help secure the business for the distributor regardless of winning EC bid, due to familiarity with the job.
- Determine strategies for value-add services such as pre-fabrication for contractors.
- Shipping/advanced delivery notifications built on the back of Warehouse Management System (WMS) and Fleet Management Systems (FMS) allow contractors to use time more efficiently on the job site.



To increase customer satisfaction, implement upstream development collaboration to create more targeted products and digital platforms.

- Modular product design and pre-fabrication enable better project fulfillment, which lowers job-site costs and improves product/system appeal.
- Reduced system integration challenges with the adoption of open protocols to increase supplier preference among customers and ease the complexity of training.
- Digital platforms managed by distributors can improve service levels to building owner/operators and improve product feedback to suppliers.
- Distributors can facilitate product compliance to local electrical codes, proactively involving the distributor in the bid-and-spec stage of the project.



Explore a consortium-led approach to offer additional capabilities to industry members with shared resources. Facilitate establishment among leaders of both enterprise and local/regional members. Indicated areas of interest are:

- Innovation Management: NAED should continue to explore joint innovation councils with NEMA and NECA, determine member commitments, carry out points of contact (POCs), set goals and intended outcomes.
- Product/Solution Selling: Suppliers and distributors can combine resources to develop an up-skilling curriculum that will better enable sales individuals to provide in-depth product awareness and consultative approaches to solution engineering.
- B2B Market Place: Explore concept ideation and explore marketplace dynamics, infrastructure and partner requirements, funding, and member commitments.
- Software Development: NAED should evaluate joint software development needs and appoint vendor/lab, timelines.