IT and Digital

National Grid: *GridStack*

Summary for ITLT & TTF stakeholders

June 2021

nationalgrid

Executive summary: the GridStack narrative

Context

Our digital transformation (the shift from IT to DT op model) is picking up pace, but there are barriers that prevent us from achieving the full value of digital, e.g.,

- Silo-ed development, redundant tech, no re-use, reliance on vendors, risk averse bias
- Our current intake model served us in the past but does not meet needs of digital teams

What

To address this, we need to think differently about technology. **GridStack is the cohesive technology ecosystem that provides foundational capabilities to support autonomous delivery of digital products by product teams and allows us to scale digital**

- It consists of a set of 20+ "internal products" across 7 layers that serve product teams

Why

GridStack supports our Digital ambition in 3 broad ways

1. Digital foundations: Improve day-to-day developer experience by removing frictions
2. Modernization of big systems: Reduce large system lock-in risk and enable agile development of modern products
3. Strategic data domains: Liberate, share, and re-use data across product teams

There are clear value accretive outcomes for the business. **We estimate the incremental value potential to be $100-150m, but GridStack is a critical enabler to achieve the full value of digital and de-risk business outcomes**

- Speed to value: New products are faster to build with value at few weeks vs. months
- Reduced costs: Costly vendor Integrations to deal with Core System limits are reduced
- De-risk value delivery: We can achieve our full aspirations for Asset, Customer and Employee value delivery vs. "stuck in fixing mode"

How

GridStack to be built use case by use case with product mindset in multi-year journey

- Product teams' and IT programs' use cases define the capability architecture, which defines the solutions and tooling; all sequenced based on business value
- NG has selected two spokes to pilot: Customer and Electric

Proposal for phase 1 is to develop the full blueprint and an MVP of a set of internal products: GrindInit, GridCI, GridFunctions, GridDataAssets, and GridLake

Success in phase 1 is contingent on working in the DT operating model: multidisciplinary teams, federated resources/capabilities, tiered governance

Contents

Contents

GridStack is the tech ecosystem of our DT transition

Group operating model

How this translates to the IT/DT operating model

Structure & Accountabilities

- **Spokes** in the BUs accountable for outcomes
- **Hub** in Center to drive performance, scale, & expertise
- Tiered **governance** with decision-making at the right level

People & capabilities

- Step change in key digital **capabilities and ways of working**
- **Multidisciplinary** teaming in product teams, hub, and spokes
- **Federated** resourcing model of digital disciplines

Technology & processes

- **Product-led** approach to digital
- GridStack as **ecosystem** of data & digital foundations

Performance

- Outcome-focused **value tracking** of use cases
- **Funding model** tied to products

Recall: Digital strategy at National Grid focuses on our customers, our assets, and our employees

Digital is a new way of working

Technology innovation
Using digital technology to unlock new business value (e.g., 5G, video-streaming, geolocation, mobile apps, edge computing, blockchain, AI/ML)

Reimagination of our work
The invention of new operations and processes that bring energy to life safely, securely, and resiliently. For example, we can use digital technologies to roll out

Agile and lean delivery
The delivery of work by adopting a product vs. project mindset: smaller, autonomous digital teams vs. larger waterfall delivery mechanisms

NG Digital Strategy has 3 components:

Engage the customer in new ways
Use digital technology to improve customer relationships e.g. billing

Improve our asset health
Reimage operations around asset health (maintain, repair, and capital delivery)

Help our employees perform
Digitally enable employees to reduce frictions they face day-to-day

…but there are multiple barriers preventing us from achieving the full value of DT

Data efforts and digital products are developed in silos

Redundant tech and development across efforts

Tech standards are not fit for purpose and limit optimal solution design

Pockets of modern product, but scaling limitations due to outdated WoW

Funding supports project execution, but not iterative product development

Resulting in…

- Loss of efficiency and wasted efforts due to lack of re-usable component
- Incomplete decision making without single master data source

- Proliferation of ad-hoc development toolkits and environments
- Slow technology adoption due to lacking security processes

- Bottlenecks in product development
- Bias to risk averse technology decisions
- Constraining best practices due to onerous vendor management

- Reduced scale and increased maintenance workload
- Misaligned deliverables IT and business without cross-functional teams

- Missing support for iterative product development
- Lacking internal engineering or product management talent due to heavy reliance on outsourcing

Introducing GridStack

GridStack is **an ecosystem of applications, data & technologies** answering business needs and enabling the transition from IT to DT rapidly and at scale (conceptually a digital and data platform, or 'DDP')

GridStack provides foundational capabilities to support autonomous delivery of digital by product teams

- Tools and self-service
- Services and APIs
- Domain-oriented data and data products
- Operational & Core System data access
- Infrastructure (including self-service)
- Governance that empowers and accelerates

GridStack provides 3 main sources of "value economies" for Product Teams and Products:

- Speed: Shorter time to develop & release
- Scope: More functionality & business use cases become feasible in & across domains
- Scale: Easy to go from small to big: compute power, data, users

Backup | GridStack is a technology ecosystem consisting of 7 components that span the entire stack of capabilities

1

Digital products & services layer products:
Systematically modularize product and product components to enable re-use, faster/lower-cost development, and speed to scale
Provide Developers on Product Teams with consistent best-practice tools for development, release and maintenance

- GridDesign
- GridApp
- GridInit

2

Data & analytics layer products:
Systematically liberate data from legacy core systems
Systematize/ modularize D&A products services for Prod. Teams
Provide D&A developers on Product Teams with consistent best-practice tools

- GridInsights
- GridDataAssets
- GridLake

3

Core systems products:
Use layers above to reduce need for direct core system access
De-couple simplification and replacement of core systems from build of new "upstack" digital products

- GridCRM
- GridPlanning
- GridAssets

4

Infrastructure products:
Modernize infrastructure with flexible options for Product Teams
Allow easy adapt-and-configure of Infrastructure as Product needs evolve

- GridStream
- GridContainers
- GridDevices
- GridDB

5

Integration Products:
Connect different products and layers, allow for ease of inter-operability and speed of integration

- GridFunctions
- GridModels
- GridSpecs

6

Security Products:
Protect sensitive data & information; ensure high standards for privacy and compliance

- GridIdentity
- GridAccess
- GridVault

7

Org capability and ways of working:
Establish effective digital WoW and processes to optimize intake process, funding, federated org structure, and talent model

Note: Not all capabilities / products are shown above

7 principles guide the approach to build GridStack

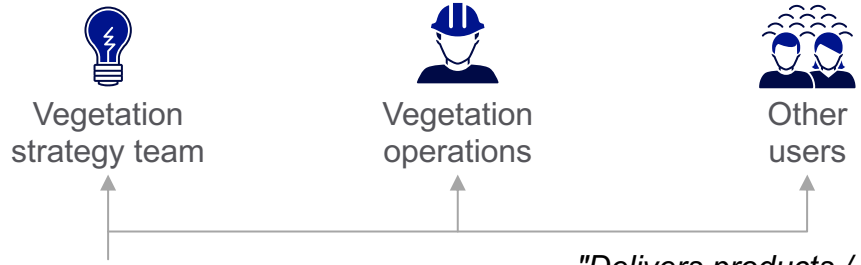
1. Apply a continuous value product mentality to the GridStack: a "suite of products for builders"
2. Sketch North Star capability architecture in phase 1, but build incrementally as tech and tools develop
3. Build selected GridStack products MVP in phase 1 in two spokes to prove value right away
4. Prioritize products use case first, capability architecture second, solution and tooling third
5. Use phase 1 to work in DT op model: multidisciplinary teams, tiered governance, federated resourcing
6. Develop our organizational capabilities, talent, and ways of working as we build GridStack
7. Initial funding to come from rate-case sanctioned projects, going forward from product team "taxing"

Backup | GridStack is customer-focused, like other products

Example: VMO product team

Business users are customers of the VMO Product

VMO End Users:



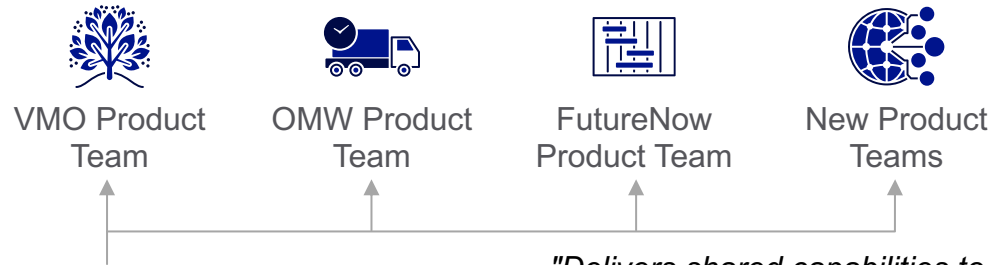
"Delivers products / applications / features"

VMO Product Team:

- VMO Product Owner
- Data Scientists
- Data Engineers
- UI/UX Experts
- Security / Compliance Experts
- Business SMEs

Product teams, like VMO, are the customer of the GridStack Team

GridStack End Users:

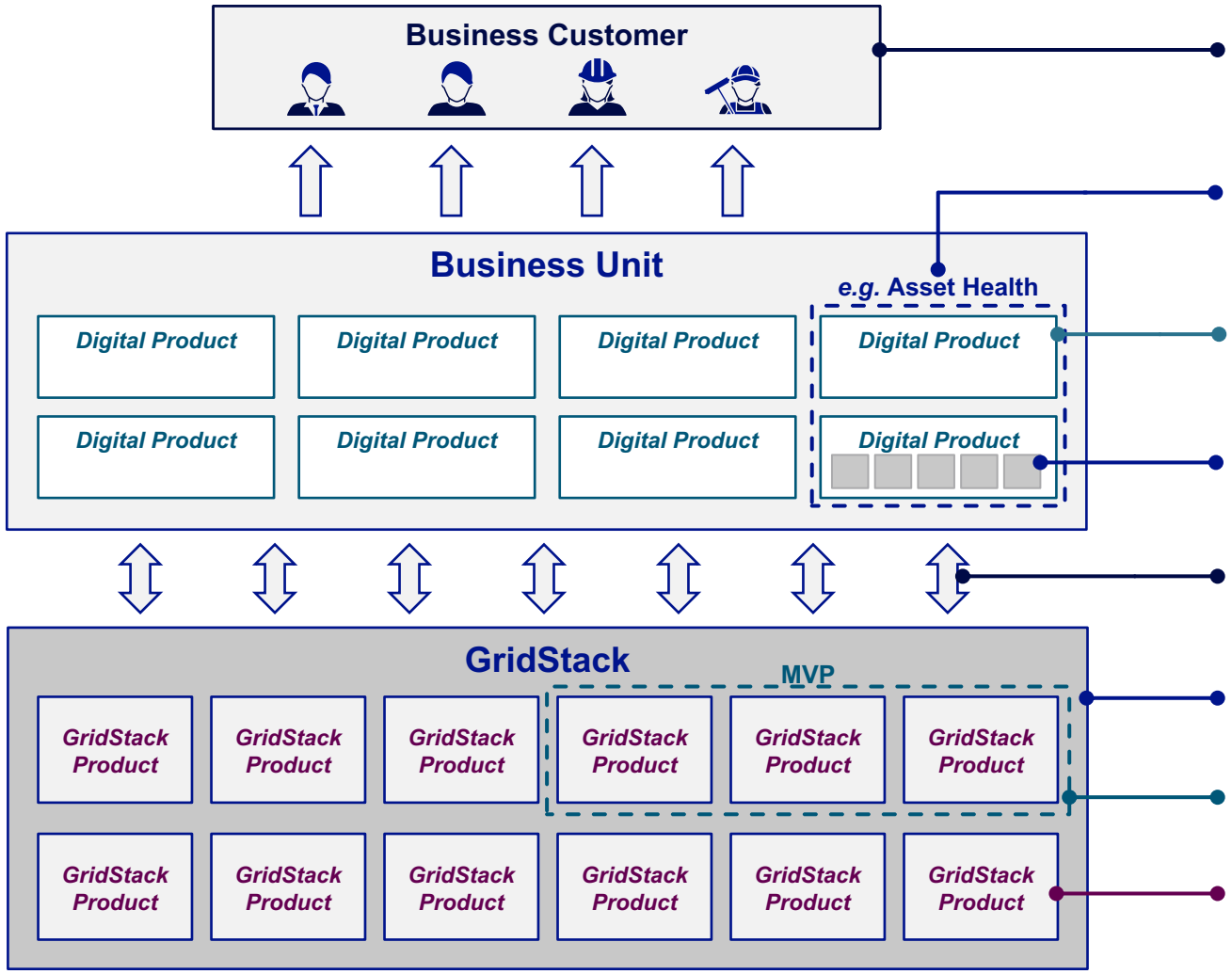


"Delivers shared capabilities to support development of products / applications / features"

GridStack Product Team:

- GridStack Product Owner
- GridStack Data Scientists
- GridStack Data Engineers
- GridStack Infrastructure / Cloud Engineer
- Security / Compliance Experts
- Other Technology SMEs

Backup | GridStack product teams have the digital product teams as customers



Business Customer
End users of National Grid Digital Products, such as Portfolio Managers, Project Managers, Engineers and Field Workers

Product Line
A digital or strategic initiative for which multiple digital products come together to serve a specific purpose

Digital Products
Various solutions designed to enhance business workflows and consumer experiences; this includes existing products (e.g. ConnectNow), in-flight products (e.g. On My Way, Futurenow) and planned products (e.g. ICU Out)

Feature
A distinctive attribute of a product, that provides the end user a specific capability e.g. a login feature that enables users to interact with the application

GridStack Customer
Digital Product Teams are the customers of GridStack products, whilst also contributing to the development of GridStack through an InnerSource model

GridStack
An ecosystem of applications, data & technologies answering business needs (conceptually a digital and data platform)

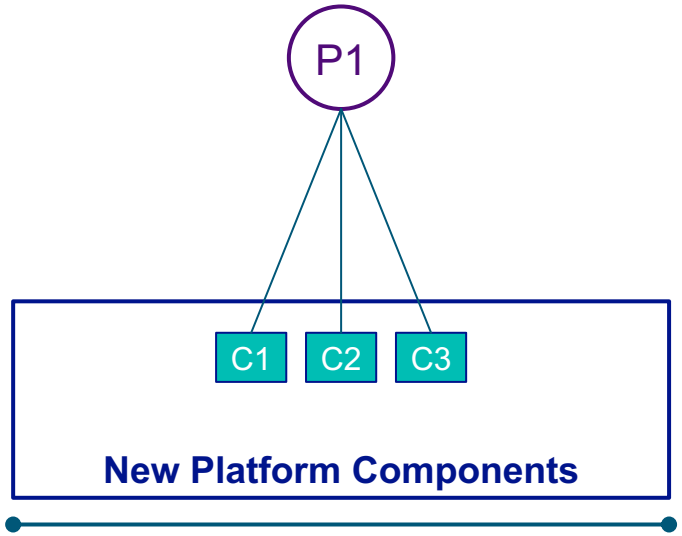
MVP (Minimum Viable Product)
A collection of select GridStack products with enough features to be used by early consumers for feedback, which would inform future development cycles

GridStack Products
Individual components of GridStack, each with specific user-facing capabilities; such as GridIdentity providing a standardized service for Single Sign On

Backup | How speed to value/reduced costs work in practice: new products benefit from platform economies of scale

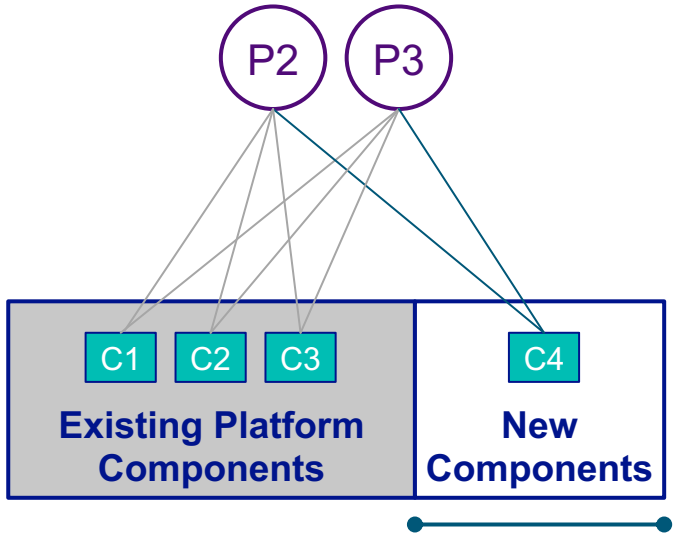
Illustrative example

Product 1 requires three components to be built



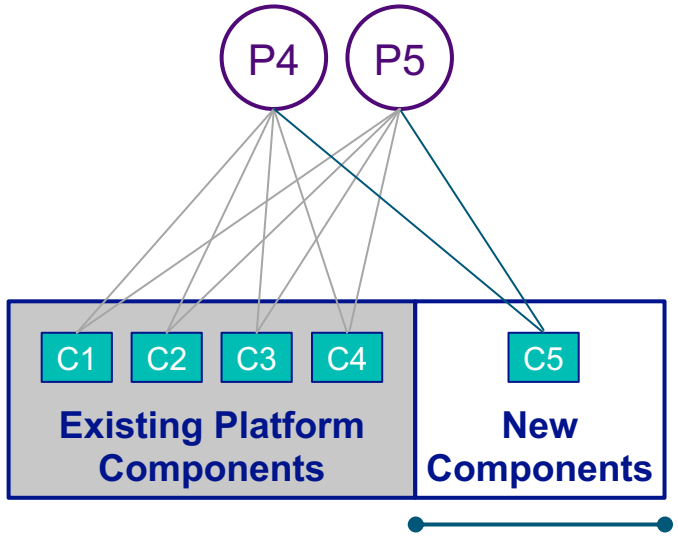
All new build for first product

Product 2 and 3 require only one new component, as they can reuse components from Product 1



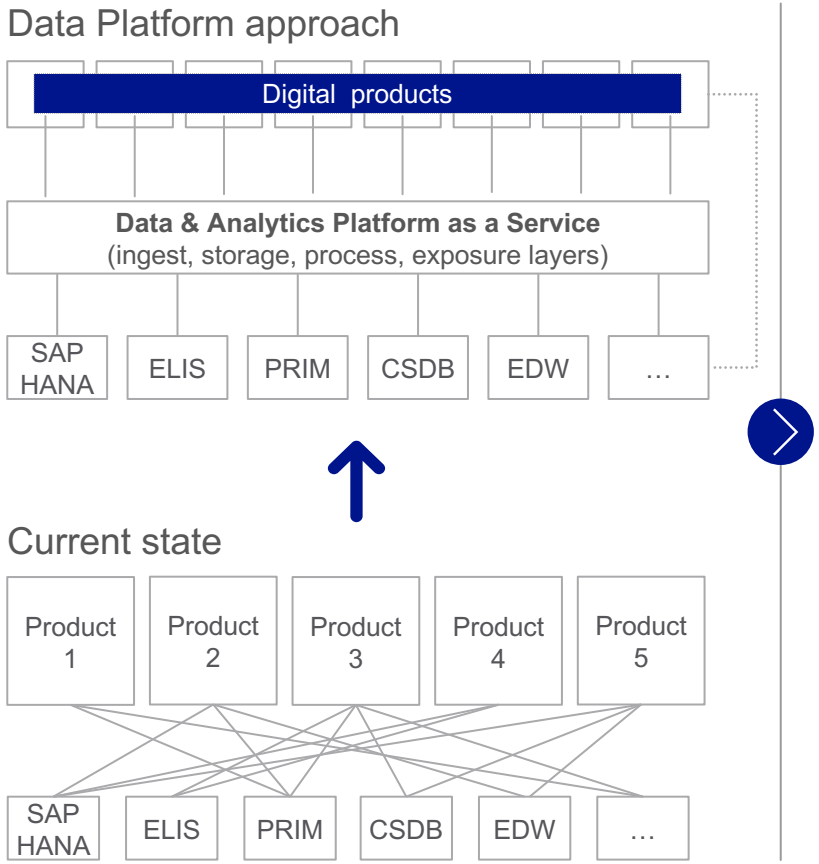
Only one new build is required

Product 4 and 5 require only one new component, as they can reuse components from Products 1-3



Only one new build is required

Backup | GridStack provides major benefits to all product teams



Time to value

- Reduced data-to-insight
- The more products are joining, the faster value can be achieved
- Re-usability brings down time-to-market
- Single point of contact to operationalize LH data requirements

Flexibility + Scalability

- Easy integration with products using standardized API
- Technical scalable platform can be extended to all future Grid data needs
- Elastic architecture enabling robust roll-out

Access

- Easy and quick access to all relevant data sources
- Orchestrated data security and privacy over access layer
- Change control and versioning: avoid breaking existing products with new releases

Efficiency

- Simple workflows to adopt data needs
- Reduction of duplicated data stores reduces infrastructure costs
- Better use of scarce resources (e.g., Data Scientists; Data Platform Architects; Data, Cloud, DevOps engineers)

Transparency

Metadata driven framework and catalogue improves transparency on

- Data lineage
- Availability
- Data quality
- Security
- Timeliness

"What you need to believe" for GridStack

1. **The digital transformation of the business does not have to depend on the completion of core IT transformation.** They can run in parallel, which introduces tremendous business agility and reduces IT risk
2. **Data can be liberated and owned by the business not IT**, which is critical to prioritizing and driving business use cases
3. **Differentiating engineering capabilities should be re-shored and built in-house**. Having engineers close to the front lines improves time to value
4. **New tools and services need to be deployed to the front line every quarter.** Not once every year or two, in order to respond to customer demands and improve overall resiliency
5. **If a current digital project will take several years to complete, it should be wrapped up immediately**. Even if the investment has been substantial because the digital experience it creates will be several years out of date from day one

GridStack creates incremental value of $100-$150m p.a. and is a critical enabler for another $300-400m

		Driver	Description	Top-Down est. (across NG)	Bottom-up est. (Electric)
Incremental value		**Speed to Value**	GridStack accelerates product run-rate benefits; helping digital products achieve scale quicker means GridStack unlocks the product's annual run-rate benefits more quickly.	**~$50m** of annual run-rate benefit	TBD
		**Reduced Cost**	By removing developer frictions and providing foundational platforms, GridStack allows digital products to be built more quickly, at lower cost, such as by reusing components across different products.	**~$50-100m** of annual run-rate benefit	TBD
Enablement value		**(De-risking) higher value delivery**	GridStack provides a foundation to comply to regulatory requirements, de-risking delivery and regulatory relationships. It also empowers engineers to design the-art-of-the-possible solutions to innovate in energy space	**~$300-400m** of future annual run-rate benefit enabled	TBD

Contents

GridStack provides product teams the superpowers they need to execute digital at scale: a "suite of services for builders" (1/2)

Product definitions are illustrative: GridStack capability architecture to be finalized in the MVP pilot phase

Layer	Initial Products	Outcome for product teams and businesses
1 Digital Services	**GridApp**	• Provide a framework for developing applications in a standard manner across the organization
	GridDesign	• Have shared digital experience through UI component libraries and a design language system
	GridInit	• Help products self-serve development environments and release on their own without support from multiple 3rd parties
	GridStatus	• Provide higher visibility into issues and downtimes by communicating the status of all products at any given time
	GridArtifact	• Enable teams to implement custom solutions and tools that can be shared internally with other teams and products
2 Data	**GridInsights**	• Products can interact with the various data sources through tailored data analytical capabilities and data science workbenches
	Grid DataAssets	• Provide re-usable data assets as products that can be consumed by multiple use cases in the organization
	GridLake	• Provide data processing and management capabilities to build GridDataAssets supporting products
3 Core Systems	**GridWrapper**	• Provide a data wrapper around core systems to wrap around core system functionality in reusable service calls and data caches
	GridReplicate	• Product capability suite that supports real time (typically CDC) replication from core systems to support

GridStack provides product teams the superpowers they need to execute digital at scale: a "suite of services for builders" (2/2)

Layer	Initial Products	Outcome for product teams and businesses
4 Infra-structure	**GridStream**	• Support continuous, real time data capture and event processing
	GridKube	• Enables the platform agnostic orchestration of self contained services
	GridDevices	• Centralize and simplify the management of devices across the organization
	GridDB	• Help product self serve databases as needed
	GridObjects	• Added storage flexibility with unstructured data storage support
5 Integration	**GridFunctions**	• Take an API-first strategy, so that products benefit from services built by each other and reduce external dependencies
	GridSpecs	• Defines a clear and efficient process for submitting, approving, and documenting new interfaces
	GridConfig	• Deliver an always up to date inventory of technology products and assets
6 Security	**GridVault**	• Enable safe secrets management to protect sensitive or restricted data across applications
	GridIdentity	• Provide a standardized identity service for authentication, login and SSO
	GridAccess	• Increase security of products through role based access control

Product definitions are illustrative: GridStack capability architecture to be finalized in the next phase of work

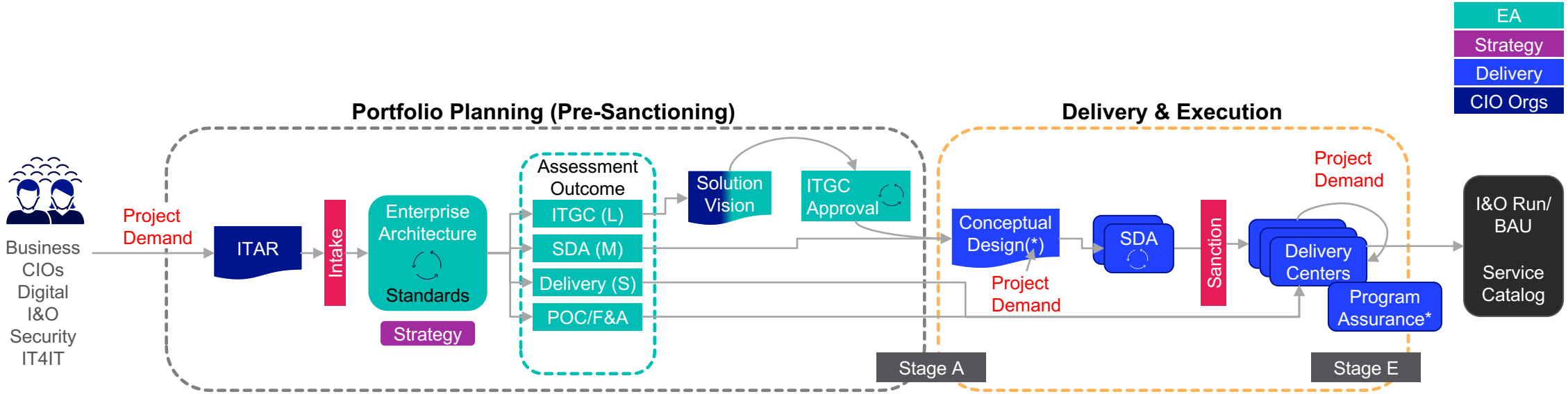
National Grid

Backup | Our BU product teams have roles that contribute and benefit from GridStack

Role in product team	Interaction as contributor to GridStack		Interaction as customer of GridStack	
Designer	GridDesign	Create new icons not currently found in DLS	GridDesign	Build new experience using existing DLS components
FE Engineer	GridApp	Add new component library for device location tracking applications	GridApp	Build app to interact with new IoT sensors
FE/BE Engineer	GridFunctions	Create new API to fetch data from Snowflake	GridFunctions	Create new API to fetch data from Snowflake
BE Engineer	GridStream	Support event streaming by setting up Kafka as a service	GridLake	Deploy new Azure SQL Database to capture metadata
Data Scientist	GridInsights	Build am event publish-subscribe message system on top of Kafka	GridInsights	Build model using existing Snowflake instance

Contents

Our current centralized intake process has served a purpose, but does not meet the needs of product teams long-term



Intake

- No multidisciplinary teams to assess intake and delivery outcomes
- Missed opportunities for re-use

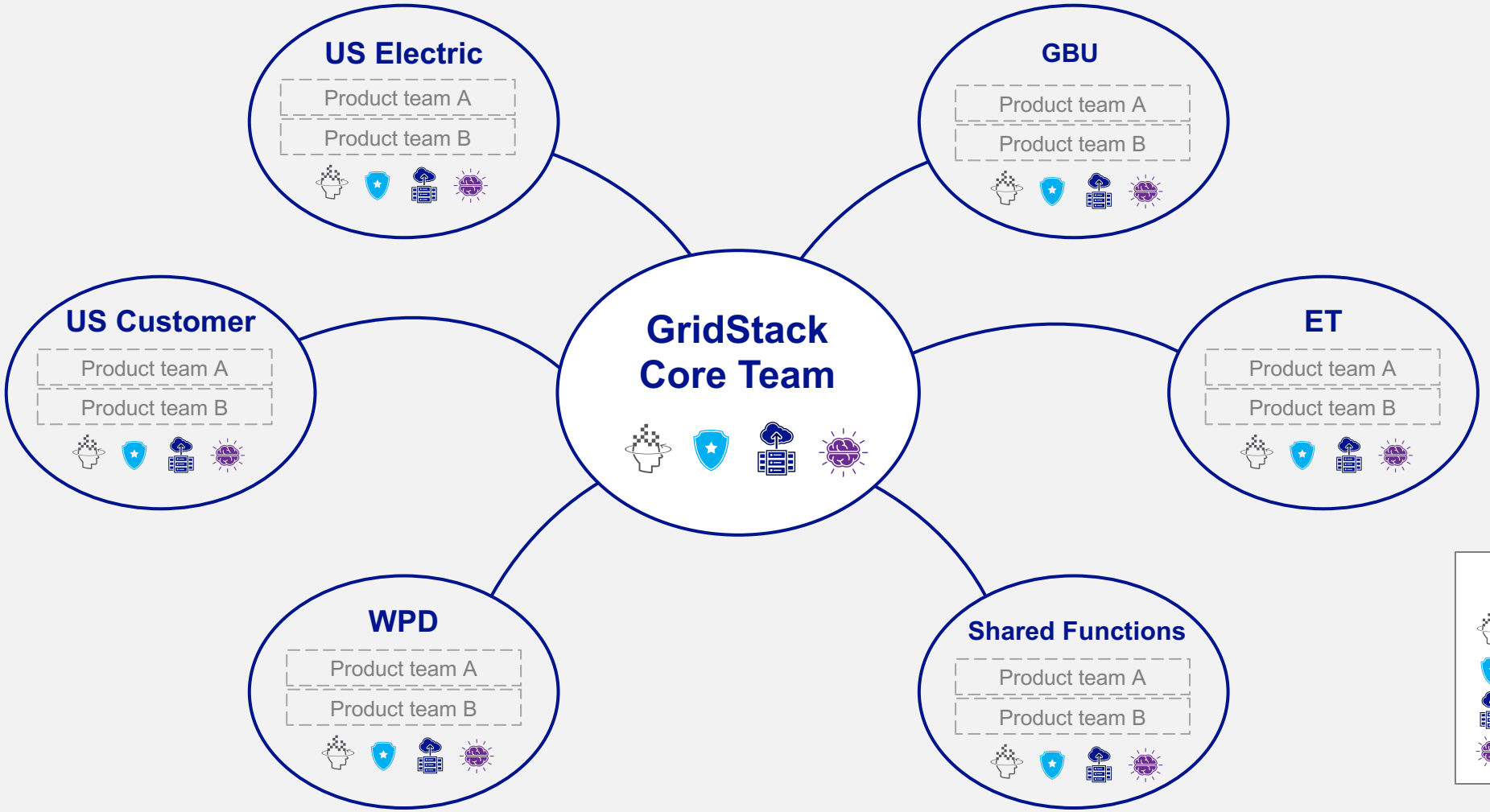
Portfolio planning

- Portfolio reviews are part of FY planning and not revisited
- Model resource-intensive and not scalable with growing demand

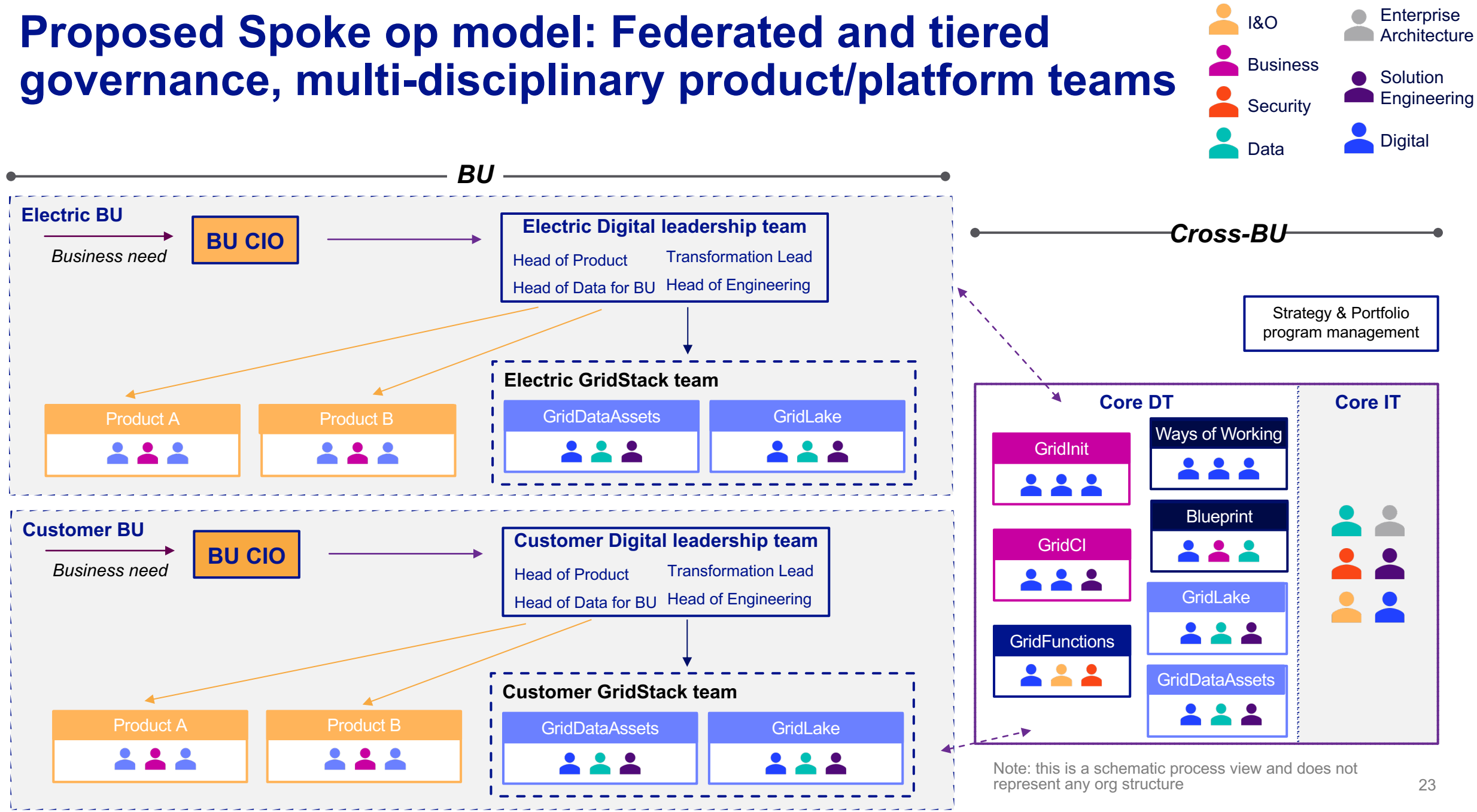
Delivery

- Delivery centralized IT and moved away from the BUs / spokes
- No cross-functional linkage or integrated planning
- Project-led approach to delivery

Hub-and-Spoke operating model federates intake process and GridStack teams for closer alignment with the business

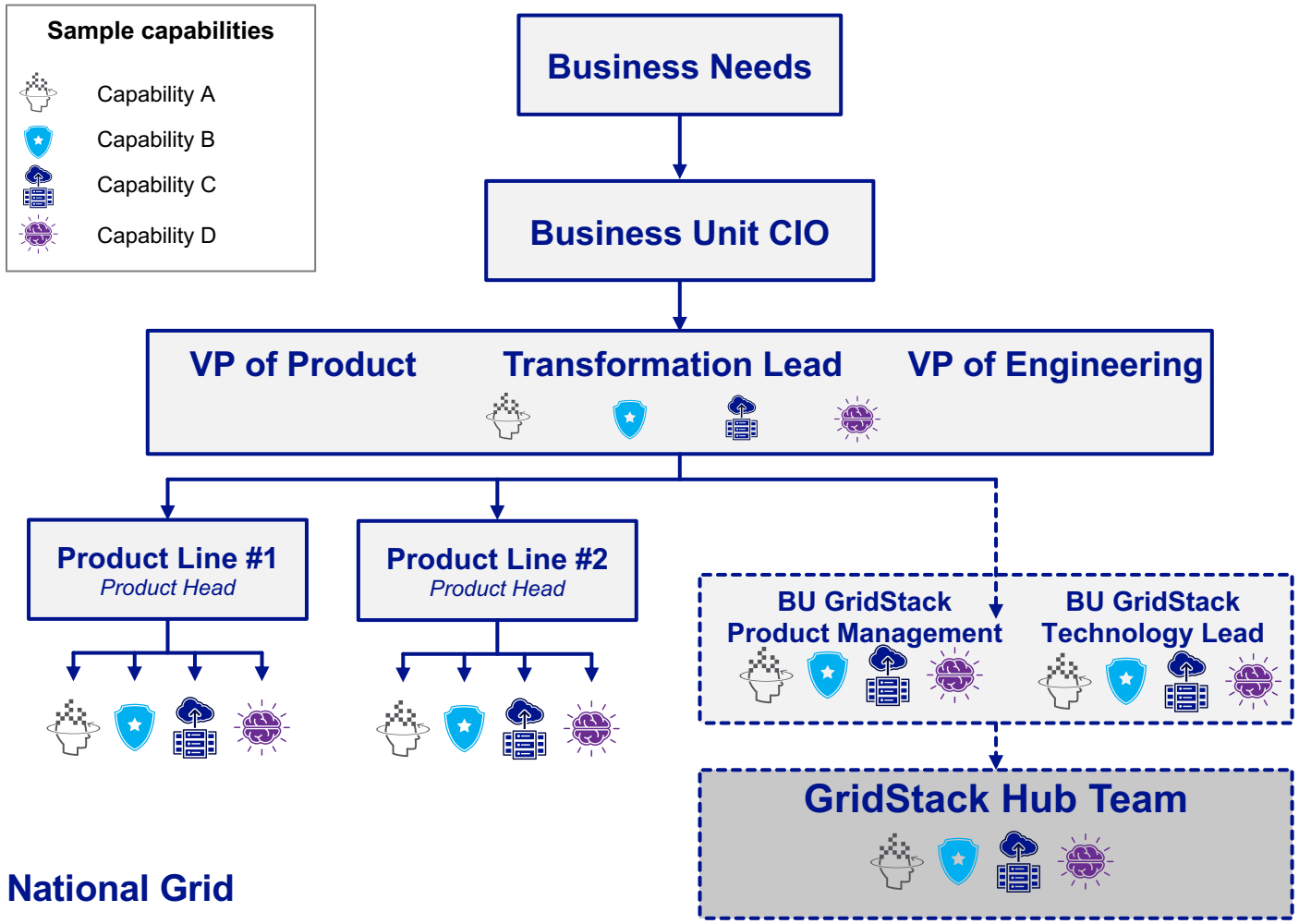


Proposed Spoke op model: Federated and tiered governance, multi-disciplinary product/platform teams



Note: this is a schematic process view and does not represent any org structure

Backup | Proposed accountabilities in federated intake process



Role	Accountabilities
Business Unit CIO	Manages IT and digital demand from the business
Transformation Lead	Leads the spoke digital leadership team in support of CIO
VPs of Product & Engineering	Support CIOs and transformation leads to manage and prioritize the digital intake within the spoke
Spoke GridStack Teams	Deliver "products" for the BU digital product teams, accountable to spoke digital leadership team
Hub GridStack Team	Support of spoke GridStack teams where they cannot solve requests Maintain overall coordination / standards / policies

Contents

We propose piloting GridStack in the US Customer and US Electric spokes with 12-week MVP sprints

Goals of building the MVP

Build output quickly, allowing product and DT/IT teams to feel how GridStack works in practice

Create a North Star, which helps ensure a clear vision for the business to strive towards

Test the governance and operating model, adopting an agile approach and iterating based on what works, and what doesn't

Immediately remove frictions, helping current digital products in-flight to unlock full value

Customer and EBU selected as pilots

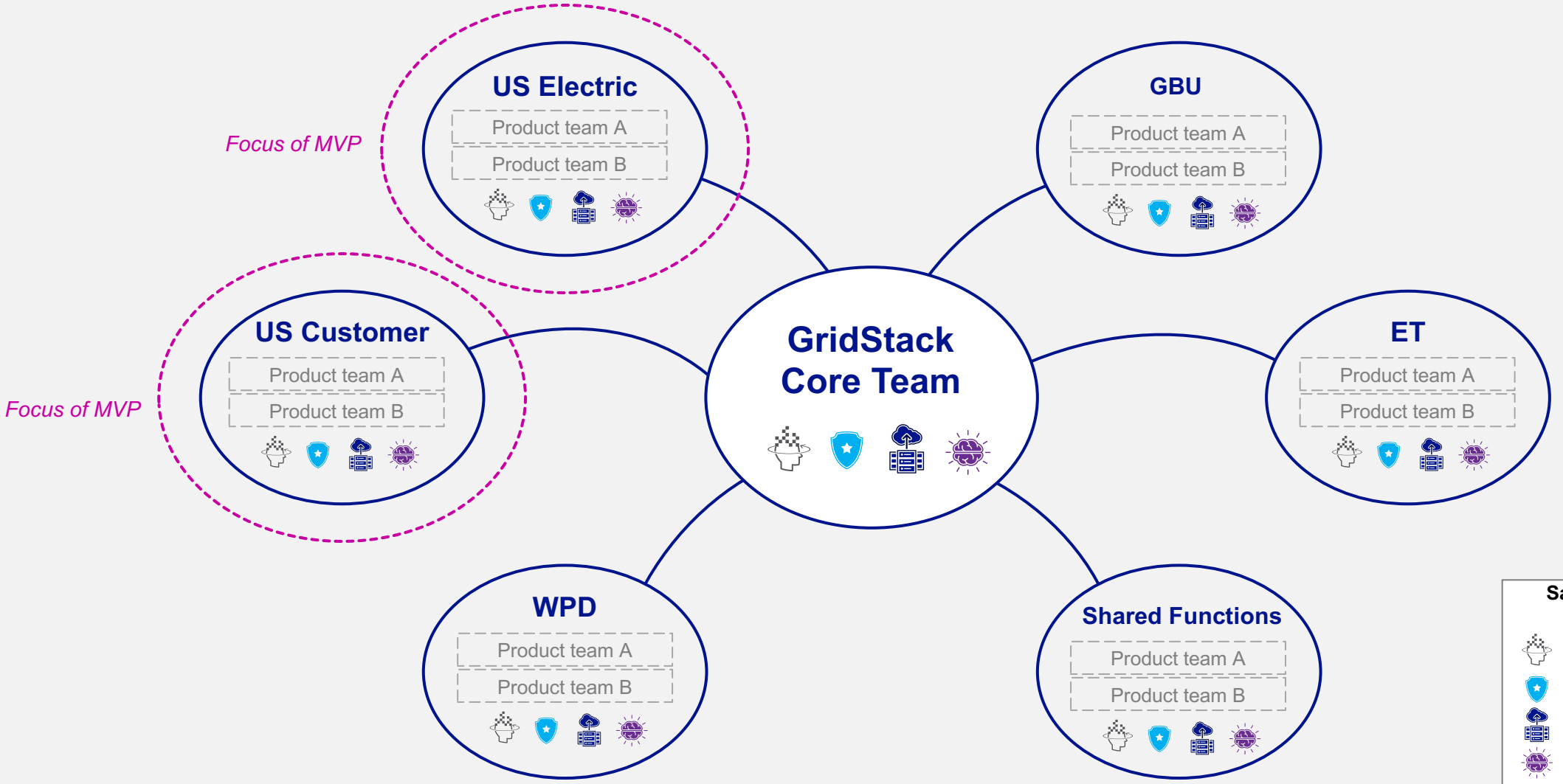
High end-value and productivity unlocked from in-flight and future products, examples

- End-value: Updating refresh of routing for On-My-Way from daily to real-time provides high value
- Productivity: Instituting CI/CD tools and process with automated testing is provides high value
- Future value: Instituting stream processing for AMI unlocks high value across all future IoT products

Quickest Speed to Market, with high tech feasibility and independence from Core Dependencies, example

- Instituting stream processing is highly feasible and does not rely on new Core System changes or integrations

MVP will focus on particular GridStack capabilities mapped to roadmaps of Electric and Customer products



GridStack MVP starts paying down technical debt while also creating reusable components and unleashing data

Digital foundations

GridStack provides the **digital foundations** to leverage common tools and components that teams are currently missing

- E.g., self-service tools to design, develop and launch new features/ products

This allows for **faster, cheaper and better builds**; examples:

- Push- of-a-button deployments of new features
- Automated testing to catch bugs before they happen!
- Re-using an iOS application framework from a previous digital product for iPad app

Modernize Big Systems

GridStack will iteratively **modernize our legacy system,** driven by use-cases and business value from the digital products that benefit

- Current systems are hard to integrate and limit data usage

This will **reduce costs and increase speed of delivery**; examples:

- Remove dependencies on STORMS/CRI/CSS, by replacing fully with new systems of record for better scalability and real-time functionality

Strategic data domains

GridStack will focus on the tools and services that allow product teams to innovate by consuming the customer, asset, and employee **data they need, when they need it, how they want it,**

This will **unlock creative business use cases** driven by a North Star vision; examples

- Using customer data to proactively predict outages
- Digital twins for assets linked to regulatory submissions

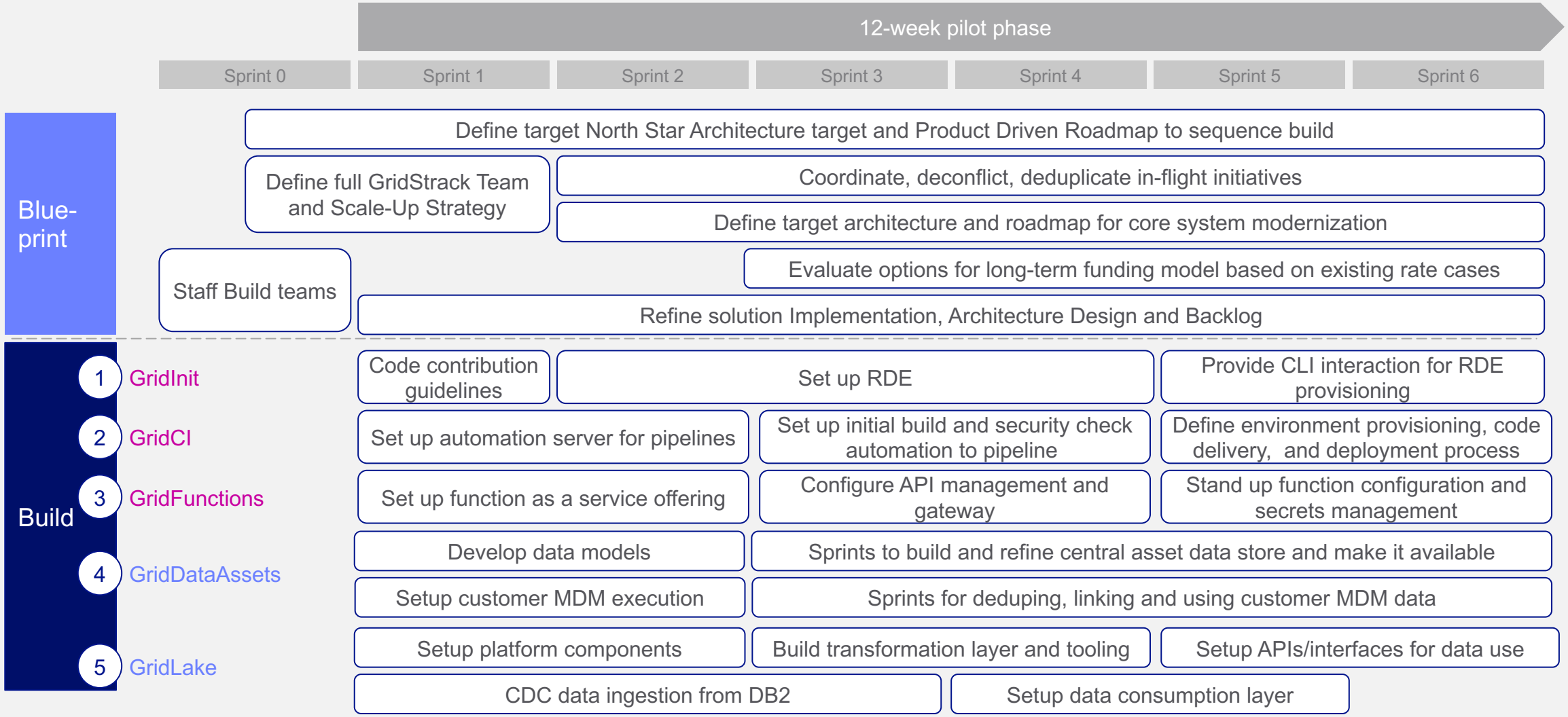
GridStack will unlock value and accelerate digital in 3 areas

Area	What GridStack makes possible	What MVP builds will give *Electric*
Digital foundations	• Our teams deliver Products faster, cheaper and better – enabled by modern tools, automation, common components and services • Product release is a "single-button push" • We lead and shape, rather than chase, the future	• Teams in Electric (VMO, iCUOut, FutureNow, On My Way, Electric products in AMI) will be able to release new builds in hours (vs days/weeks) • New teams will have a pre-packaged Development Environment that can be spun up in minutes for immediate productivity • Speed of delivery moves from months to days
Modernize big systems	• Teams never spend time or resources on "legacy system access" or "core system integration". • Access to/from big systems is easy, fast, and safe	• Teams will be able to access a thin slice of core systems (e.g., STORMS) without requiring direct integration to reduce vendor dependencies (e.g., CGI) • Simplified interface for teams to access a thin slice of underlying core asset systems and decrease 3rd party dependency (e.g. IBM Maximo)
Strategic data domains	• Our ability to innovate and derive value from data is limited only by imagination, not by the data itself • Everything "knowable" about our Assets, our Customers, and our business is consistently available at high quality and useability	• A thin slice of ”Asset 360" data-set with API access to support FN, VMO, AMI, iCUOut, ADMS products

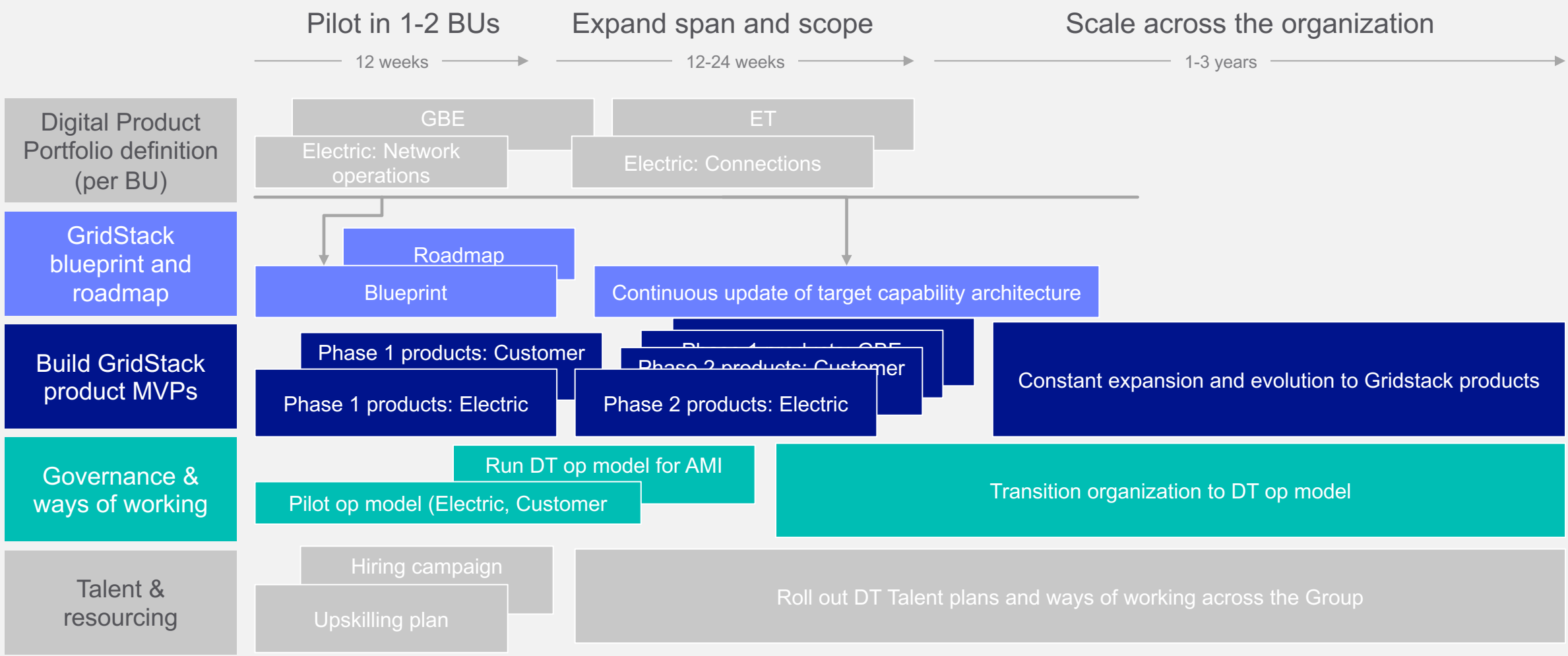
GridStack will unlock value and accelerate digital in 3 areas

Area	What GridStack makes possible	What MVP builds will give *Customer*
Digital foundations	• Our teams deliver Products faster, cheaper and better – enabled by modern tools, automation, common components and services • Product release is a "single-button push" • We lead and shape, rather than chase, the future	• Teams in Customer (UWP, MBA, Smart Target, AMI) will be able to release new builds in hours (vs days/weeks) • New teams will have a pre-packaged Development Environment that can be spun up in minutes for immediate productivity • Speed of delivery moves from months to days
Modernize big systems	• Teams never spend time or resources on "legacy system access" or "core system integration". • Access to/from big systems is easy, fast, and safe	• Teams will be able to access a thin slice of 1-2 core systems (CRISS/CSS) without requiring direct integration to support UWP, MBA, Smart Target, AMI
Strategic data domains	• Our ability to innovate and derive value from data is limited only by imagination, not by the data itself • Everything "knowable" about our Assets, our Customers, and our business is consistently available at high quality and useability	• A thin slice of "Customer 360" to accelerate rate-case data-set goals with API access and cleaned/rationalized data for a set of customers is available for use across multiple Product teams: UWP, MBA, Smart Target, AMI

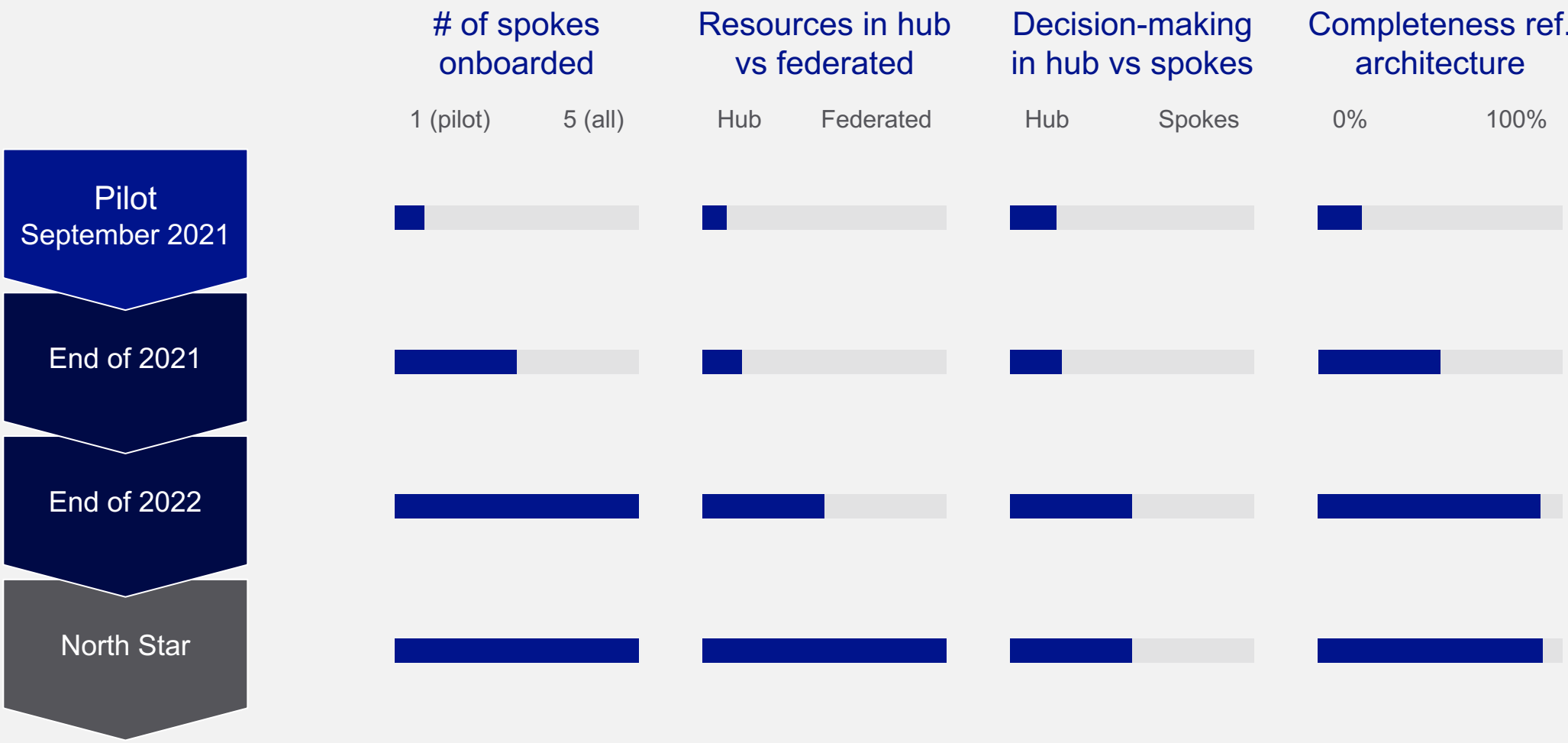
12-week sprint for MVP Build and Full Blueprint



Illustrative | Building GridStack is a 2–3-year journey, as the organization transitions from IT to DT



Illustrative | GridStack powers the journey from IT to DT



National Grid

Electric | Digital strategy cannot scale with current approach

Products *(selection)*	Business outcomes		What stops us from scaling today?
On My Way *Deep dive on next page*	• Mobile Digital Solution for field force that streamlines job assignments, provides digitized forms to reduce missing data, allows supervisors to sign off on work and updates data to STORMS		• Custom integration to consume STORMS required • Delays in deployments caused by constant system downtimes and outages • Scattered & repeated efforts to build similar solutions
FutureNow	• Generates a constrained portfolio-level workplan by combining latest project estimates and work priorities, based on predictive models; allows portfolio and project managers to plan effectively		• No easy way to integrate with core systems • Lack of ability to develop advanced data models • Systems managed by 3rd parties with limited transparency
VMO	• Allows a data-driven vegetation management optimization at lower cost, by using AI tools to model growth rate of vegetation to predict trim cycle at a granular level		• Need to increase involvement of app & data eng. • Complex enterprise multi-cloud integration design • Delays in development kickstart caused by multi-week setup and access process
Predictament	• Creates a prioritized list of maintenance work based on asset health and criticality using predictive modelling; allow AMs to make decisions quickly and accurately for maintenance work		• Requires integration with high-quality and accessible asset data; potentially a single asset register • Need capabilities to develop predictive models to predict likelihood and impact of asset failures

Components of NG digital strategy

Help our employees perform | Engage the customer in new ways | Improve our asset health

Electric | Further use cases of OMW product line

Use cases	Business outcomes	
On My Way	• Mobile Digital Solution for field force that streamlines job assignments, provides digitized forms to reduce missing data, allows supervisors to sign off on work and automatically updates data to STORMS	
Future use cases to build on OMW	• Real-time route & task optimization for field force, powered by real-time data/analytics	
	• Traceability of technicians in the field to improve safety and optimize work performance	
	• Hands-on-tool-time measurement and optimization per job type per worker to identify potential for improvement & provide feedback	
	• Tighter planned service call time window for customers to provide more predictability	
	• History of outages and customer issues in customer 360 in order to improve customer service during service calls and in follow-up	
	• Skill-to-task matching optimization to reduce asset liability and/or limit overqualified staff for tasks	
	• Predictive maintenance: record of last time assets were checked to optimize planning, and predictive models for outage probability that feed into field force deployment optimizer	
Expanding to other BUs	• Extending Field Force optimization capability (all of the above use cases) across the Group (to US Gas, ET, and WPD) by modularizing and re-using core elements of OMS	

What stops us from scaling today?

1. No easy way to integrate with core system (e.g., custom integrations to consume STORMS whenever new data needs to be extracted required)
2. Systems managed by 3rd parties have limited transparency causing delay in development due to need for SOWs to be signed for any new feature-based changes
3. Limited ability to deliver the optimal OMW solution due to support for containers in the organization resulting in less flexibility on build options
4. No consistency in Employee data model to maintain the right list of techs and their associated skills over time
5. No systematic or automated way of checking/maintaining data quality once it's out of the core systems
6. No SSO or other clear security wrapper
7. No interoperability across data or applications in Asset and Customer domain
8. No CI/CD to enable ongoing deployment of new features that drive the new outcomes

Electric | GridStack products to address these frictions

Frictions	GS product	Supporting capabilities	Where would we start
1. No easy way to integrate with core system	**GridFunctions**	• Function as a Service • API Management • API Gateway	• Enable functions as service for 1-2 products, extensible to others • Enable internal / external services to call functions • Deploy functions that access core systems that can be reused across teams
2. Systems managed by 3rd parties have limited transparency	**GridSpecs**	• API specifications • Data model definitions	• Stand up repository with API specification • Document existing 3rd party integrations
3. Limited ability to deliver the optimal OMW solution	**GridApp** **GridContainers** **GridKube**	• React App Scaffolding / Generators	• Configure scaffolding for new apps • Define application state solution • Establish linting rules and bundling
4. No consistency in Employee (or other) data model to maintain the right list of techs and associated skills over time	**GridIdentity** **GridDataAssets**		• Build user data models • Consolidate user data sources • Integrate with Azure AD
5. No systematic or automated way of checking / maintaining data quality once it's out of the core systems	**GridLake**	• CDC ingestion setup (for DB2) • Data Lake Zones • Centralized storage of 'raw' data	• Stand up master data management • Implement Change Data Capture
6. No SSO or other clear security wrapper	**GridIdentity**	• Access policies, data models, SSO	• Define access policies • Azure AD OAuth / SAML implementation
7. No interoperability across data or applications in Asset and Customer domain, they work in silos today	**GridDataAssets**	• Canonical Customer Domain Model • Canonical Asset Man Domain Model	• Define and build Customer and Asset data domains
8. No CI/CD to enable ongoing deployment of new features that drive the new outcomes	**GidInit**	• Opinionated local development environment setup • InnerSource contribution guidelines • CLI for GridStack	• Define environment provisioning strategy • Provide Jenkins instance for automated deployments, • Define opinionated branching strategy /contribution guidelines • Build logging support

Product definitions are illustrative: GridStack capability architecture to be finalized in the next phase of work

Customer | Digital strategy cannot scale with current approach

Products (selection)	Business outcomes	What stops us from scaling today?
ICUOut	• Customers receive proactive warnings for outage communication in real time, built upon linking customer profile data with customer service data, asset and outage data sets	• The integration of outage data with customer data • Omni-channel platforms that action data effectively in real time
SmartTarget	• Increase the amount of cash recovered from customer arrears through proactive communication - $40-80m+ opportunity	• Complexity in reaching customers • Analytics to identify payment propensity
MBA/UWP	• Customers can access their electric and gas consumption with bill explainability in a single bill through a consolidated web portal that also shows real time consumption (w/AMI)	• Siloed customer data across systems • No integrated customer profile • Billing complexity logic/integration • Billing explainability/rules engine
CRM [360 View]	• Customer service representatives have a single tool to view and interact with the customer instead reducing the time and cost to serve the customer	• Disparate source of data across systems • Varying quality and data integrity
AMI: Billing and Customer Service Enhancements	• Customers receive proactive personalized energy management recommendations tailored to each household can be sent to the best customer engagement channel (e.g., mobile) at the right time	• Missing analytical to segment and recommend to customers • Missing linkage between customer and usage data to support analytics • Missing communication platforms

Components of NG digital strategy

Help our employees perform | Engage the customer in new ways | Improve our asset health

Customer | MBA product line has many further use cases

Use cases	Business outcomes
MBA	• Offer a unified experience for 10 pilot customers across CSS and CRIS manually loading data from CRIS for limited feature set
Future use cases to build on MBA	• Expand capabilities so that all CSS and CRIS accounts are accessible through MBA
	• Improve user experience by delivering a more responsive user interface with less idle time due to backend data loading
	• Ensure a seamless experience such that when a user takes action on one portal it's reflected on the other through integration with UWP
	• Enable users to gain deeper insights into their usage and cost data with more accurate comparisons across multiple accounts
	• Enable users to self-serve data they need such as viewing credit history or submitting their own meter reads for better insights into their consumption and more accurate billing
	• Allow customers to view rate and meter information by pulling data from CRIS and CSS and provide a rate calculator to help determine which rate they should be on
	• Integrating with GBC so customers on MBA can easily access this and set up data sharing preferences
	• Obtain a deeper view into customer profile and enable predictive targeting with ability to capture, store, and query metadata on customer interests

What stops us from scaling today?

1. UDM was designed for UWP and does not fit MBA specific needs and require additional support
2. Dependencies of CRIS on UWP release due to a data sync process is blocking MBA development at scale
3. Existing MuleSoft API gaps across UWP and MBA that do not allow for reuse and requires additional development
4. Data access from core systems is slow and poorly documented resulting in API timeouts and long data load times
5. No supported repository for storing customer metadata information to drive learning through analytics
6. Data sits across multiple systems with poor documentation and discoverability
7. Missing aggregate customer 360 data needed to support analytics
8. No holistic analytics suite to enable products to perform advanced analytics on customer data

Components of NG digital strategy

Help our employees perform | Engage the customer in new ways | Improve our asset health

Customer | GridStack products to address these frictions

Frictions	GS product	Supporting capabilities	Where to start
1. UDM was designed for UWP and does not fit MBA specific needs and require additional support	• **GridInsights** • **GridDataAssets** • **GridLake**	• Master data management • Customer profile • Customer billing transactions	• Prioritize customer attributes to support the high priority use cases in the MDM implementation • Adopt an agile approach to implement the MDM solution with customer data as starting point • De-dupe & link customers from CRIS & CSS • Integrate master and transaction data for customer
2. Dependencies of CRIS on UWP release due to a data sync process			
3. Existing MuleSoft API gaps across UWP and MBA that do not allow for reuse and requires additional development	• **GridFunctions**	• Functions as a Service • Reusable functions and APIs	• Build platform to enable teams to develop functions that integrate with existing core systems • Set up access control to allow for other teams to reuse existing functionality
4. Data access from core systems is slow	• **GridLake** • **GridReplicate**	• Change data capture	• Replicate data in customer billing systems from CSS/CRIS to avoid adhoc interactions on mainframe
5. No supported repository for storing customer metadata information	• **GridLake** • **GridInsights**	• Metadata tools	• Setup a metadata management and cataloging solution to support customer master and trans. data
6. Data sits across multiple systems with poor documentation and discoverability	• **GridSpecs**	• Specification guidelines • Central repository • Metadata tools	• Have clear specification guidelines for data and APIs that are centrally stored and globally accessible • Use metadata repository to make data discoverable
7. Missing aggregate customer 360 data needed to support analytics	• **GridLake**	• Master data management	• Integrate additional data within the customer profile including customer interactions and non billing data
8. No holistic analytics suite to enable products to perform advanced analytics on customer data	• **GridInsights**	• Customer segmentation • Customer propensity model	• Setup the right data analytics workbench and tooling • Development of customer segmentation from integrated data

AMI | Digital approach dependent on new capabilities

Products (selection)	Business outcomes	What stops us from scaling today?
Advanced Metering Infrastructure (AMI)	• Shift Customer Peak Usage to reduce peak load and Critical Peak Pricing (CPP) by 13% • Shift Customer Usage Patterns to reduce overall energy cost by 6% • Specialized time-of-use rates for electric vehicles to shift 40% of charging to Off-Peak • Reduce time to Outage Notification by 2 minutes • Reductions in Bad Debt Write-Offs by $4.5M annually as a result of reduced revenue theft • Predictive outage pattern management using metrics (frequency, voltage, faults) to isolate and stop an outage at its source • Load Disaggregation and Analytics apps using ML for improved usage pattern awareness	1. Missing key underlying services internally that are necessary to achieve outcomes - GridLake, GridStream, GridApp, GridFunctions 2. While L+G has existing API integrations for COTS such as Oracle or other customer billing systems, APIs to connect to CSS do not yet exist and must be agreed upon 3. New Revelo meters do not have committed dates; dependent on regulatory approval timeframes 4. GIS systems are not accurate at the "premise" level, meaning sometimes data is not received until 3 months later

AMI | GridStack products to address these frictions

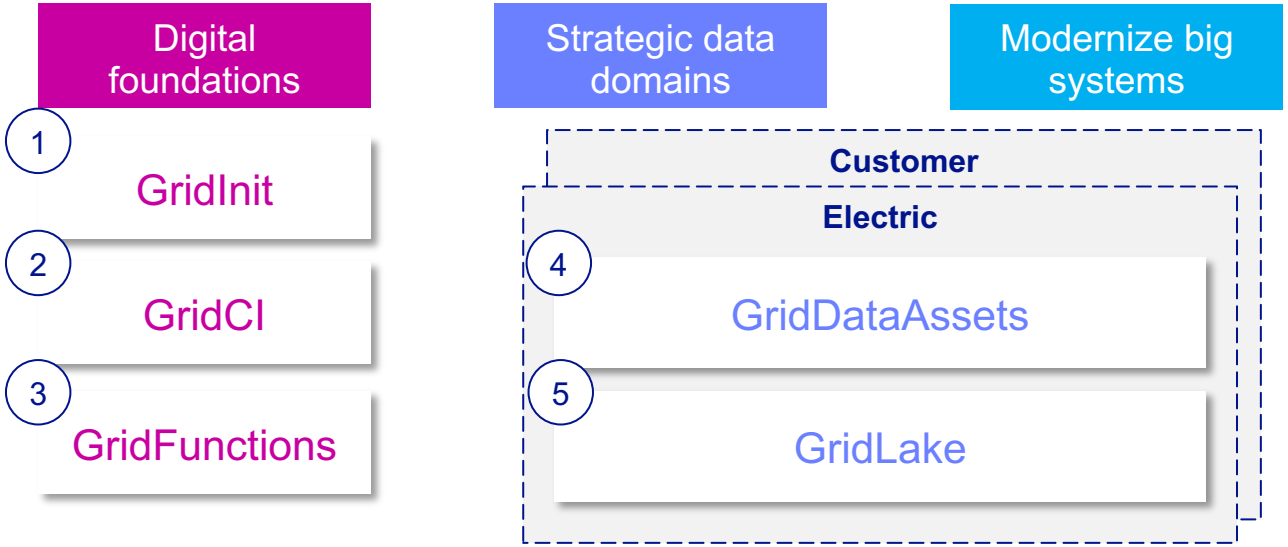
Frictions	GS product	Supporting capabilities	Where would we start
1. Missing key underlying services internally at NG that are necessary to achieve outcomes	• **GridApp** • **GridInit**	• Remote Development Environment • App Scaffolding	• **GridInit: Developer Toolchain services for standing up other key GridStack capabilities** • GridApp: Stand up key capabilities and setup mobile / web app to be used in-home for AMI device setup, connection to Wi-Fi network, and load disaggregation
2. While L+G has existing API integrations for COTS billing systems, APIs to connect to CSS do not exist and must be agreed upon	• **GridSpecs** • **GridFunctions** • **GridStream** • **GridLake**	• API Specifications • Function as a Service • Event Broker • Data Orchestration	• GridSpecs: Define modern API interfaces for usage for L+G • GridFunctions & GridStream: Consider what existing L+G APIs can be adapted / used “out of the box” and connected to CSS • GridLake: Unlock core data in CSS and send downstream via GridStream for usage in GridLake
3. New Revelo meters do not have committed dates; dependent on regulatory approval timeframes	• **N/A**	• N/A	• Test non-meter systems (GridStack) using existing meters
4. GIS systems are not accurate at the "premise" level, meaning sometimes data is not received until 3 months later	• **GridDataAssets** • **GridInsights**	• Asset Data Domain • Data Science Workbench • Advanced Data modeling	• GridLake: Set up core data domains for usage and enhancement as a part of AMI • GridInsights: Leverage enhanced AMI data for improved insights to drive key outcomes such as setting pricing (see previous page)

Moving forward: Rapid MVP build and Full Blueprint

Rapid MVP build: criteria for selection of GridStack products to *build starting now*

- **Can we technically build the product today?** (right capabilities available)
- **Can we build it within boundaries of existing policies?** (no governance /review board stopping us)
- **Can we show business value in 12 weeks?** (tangible outcomes for the product teams
- **Will it deliver value for an Electric and/or Customer Product Team** now and be extensible for broader use in future**?**

5 products in focus to build first MVPs



Full Blueprint: Define *tech capabilities* for full GridStack product suite future state

- Build on existing work wherever pragmatic to do so
- Augment, harmonize, unify where needed

Cross-functional and dedicated effort to build detailed Blueprint so we can expand from the first MVPs

GridStack Blueprint (capability architecture)

Backup | MVP delivers tangible outcomes for product teams (I)

	Product	MVP Tech Capabilities	Outcomes for Product teams (users)	Value driver[1]		
				Speed to Value	Reduced Cost	Higher Value
1	GridInit	• Opinionated local development environment setup • InnerSource contribution guidelines • CLI for GridStack	• Teams can rely on a common world-class development environment for consistency & quality • Teams have consistent norms and tools for optimal collaboration, communication, productivity • Teams can onboard new members quickly and make them productive immediately	X X	X X	X X
2	GridCI	• Environment Management / Deployment Strategy • Prebuilt CI/CD Pipelines	• Teams can use a "plug and play" CI/CD pipeline that automates jobs and reduces manual work • Teams can ensure proper security, versioning, testing every time for every Product		X	 X
3	GridFunctions	• Function as a Service support • Access control (internal / external)	• Teams can build Products without waiting to resolve Core systems issues, Vendor bottlenecks • Teams have a foundation for modern composable data sourcing (e.g. via methods such as GraphQL) • Teams can access Core systems functionality in consistent ways and integrate in new Products	X X	X X X	 X

1. Value drivers of GridStack products are categorized between speed (faster product delivery), costs (cheaper delivery of future products through economies of scope and scale), and de-risked delivery of digital products

Backup | MVP delivers tangible outcomes for product teams (II)

	Product	MVP Tech Capabilities	Outcomes for Product teams (users)	Value driver[1]		
				Speed to Value	Reduced Cost	De-risk Full Value
4a	GridData-Assets *Electric*	• Conceptual ent. data model • Central asset domain data models • Asset data product v1 (populated data for use case subset of the full asset domain)	• Teams can use asset data at scale starting from FN and expanding to AMI, iCUOut and Mobile use cases	X	X	X
			• Teams have common data lexicon that is easily accessible and consistent across all their work	X		X
			• Teams have unified data model for asset data	X	X	X
			• Teams have access to unified asset data	X	X	
5a	GridLake *Electric*	• Storage layer for asset data in Snowflake • Transformation layer to support • Data consumption layer for asset data model (API, message)	• Teams can build for multi-modal consumption access and use of asset data	X	X	
			• Teams have a "one stop shop" for harmonized asset data to use across Products.		X	X
			• Teams can focus on realizing the 'network construct and maintain vision' for EBU	X	X	X

1. Value drivers of GridStack products are categorized between speed (faster product delivery), costs (cheaper delivery of future products through economies of scope and scale), and de-risked delivery of digital products

Backup | MVP delivers tangible outcomes for product teams (III)

	Product	MVP Tech Capabilities	Outcomes for Product teams (users)	Value driver[1]		
				Speed to Value	Reduced Cost	De-risk Full Value
4b	GridData-Assets *Customer*	• Master data management (for Customer Domain)	• Teams needing customer data can access Central customer profile	X	X	
			• Dependencies on legacy systems reduced for Teams, reducing time, cost and risk	X	X	X
			• Teams are able to rely on a single Data Model without duplicate/competing models (e.g. UDM)		X	
			• Teams can build analytics at scale for Customer that cannot be built today, e.g personalized targeting through SmartTarget	X		X
5b	GridLake *Customer*	• CDC ingestion setup (for DB2) • Raw data storage zones • Centralized storage of 'raw' data • Data available to GridInsights	• Teams have single shared data consumption layer that is consistent and available	X	X	
			• Teams can accelerate implementation of multiple needs, including MBA account history, MDM – weeks, not months, to value	X		X

1. Value drivers of GridStack products are categorized between speed (faster product delivery), costs (cheaper delivery of future products through economies of scope and scale), and de-risked delivery of digital products

Backup | Blueprint workstream to create North Star and implementation plans

Activities

Define target North Star Architecture and Product Driven Roadmap to sequence build

- Gather frictions felt during product builds and synthesize with ethnographic research
- Review the portfolio of ongoing initiatives within digital product teams
- Identify existing products for intake that are DDP candidates (e.g., Azure 2.0, Jenkins,)
- Map existing, in-flight, planned capabilities against North Star L2
- Achieve North Star vision L2 and L3 signoff
- Conduct tooling gap analysis (selection recommendations) for priority capabilities
- Define the 24-month capability roadmap
- Define architectural digital & data patterns (e.g., CI/CD, GitFlow, Lake Zones)

Define full DDP Team and Scale-Up Strategy

Create Solution Implementation Architecture Design and Backlog Definition

- Build Workstream Backlog from portfolio reviews

Define target architecture and roadmap for Core System Modernization

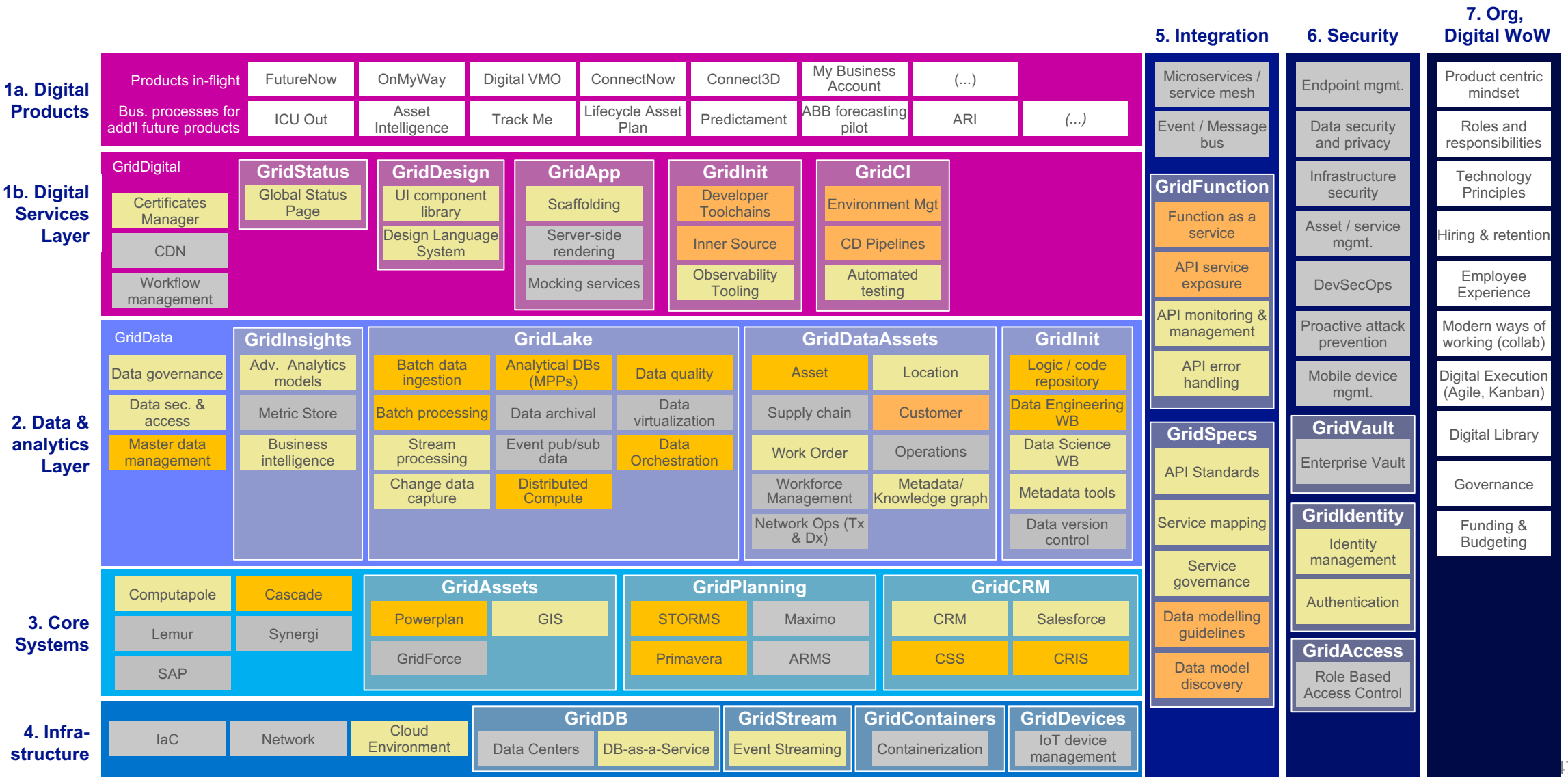
- Design foundational solution for customer data liberation from CRIS & CSS
- Create a phased roadmap for long term core & legacy evolution (for Customer Domain)

Evaluate and identify Ongoing Electric / Customer Rate Case Items for Gridstack and develop coordinated value tracking mechanisms

Outcomes

- Blueprint of capability architecture
- Integrated implementation plan
- Funding & governance mechanisms approved
- Technical and business stakeholder aligned on North Star capability reference architecture & selected tools
- Teams working on related initiatives onboarded to program

Backup | Blueprint capability architecture sketched during MVP



Contents

Required resourcing for the GridStack MVP pilot

Electric Digital leadership team
- VP Product
- Transformation Lead
- Head of data for BU
- VP Engineering

4a GridDataAssets - Electric
- Product Manager
- Data architect (2)
- Data engineers (3)

5a GridLake - Electric
- Product manager
- Platform engineer
- Data engineer (2)

Customer Digital leadership team
- VP Product
- Transformation Lead
- Head of data for BU
- VP Engineering

4b GridDataAssets – Customer
- Product Manager
- Vendor architects / engineers
- Data architect
- Data engineers (2)
- Data analysts (2)

5b GridLake - Customer
- Product manager
- Database (DB2) specialists
- Data engineers (3)
- Data analyst
- Software engineer
- Solution architect

GridStack hub leadership team
- Digital Engineering Sr advisor
- Data Engineering lead
- Digital Engineering Lead

1 GridInit
- Product manager
- Lead software engineer
- Software engineer (4)

2 GridCI
- Product manager
- Lead software engineer
- DevOps engineer (3)
- Software engineer (2)

3 GridFunctions
- Product manager
- Lead software engineer
- DevOps engineer (2)
- Software engineer (3)
- Network engineer (2)

Blueprint
- Platform product manager
- Platform Prod. Architect (5-7)
- Business SMEs
- Solutions architect (2) (Dig.)
- Solutions architect (2) (Data)
- Solutions architect (2) (Mod..)

Ways of Working
- Manager
- Enablement Coach
- Business analyst (2)

I&O
Business
Security
Data
Ent. Architecture
Sol. Engineering
Digital

National Grid

Required resourcing for the MVP phase

	GridInit	GridCI	Grid Functions	Grid DataAssets - Electric	Grid DataAssets - Customer	GridLake - Electric	GridLake - Customer	Blueprint	Leadership
Product Manager	100%	100%	100%	100%	100%	100%	100%		• **GridStack Digital Eng. Sr Advisor**: 100% • **GridStack Digital Eng. Lead: 100%** • **Gridstack Data Eng. Lead:** xx • **Electric Digital Leadership Team** - VP Product: xx - VP Engineering: • **Customer Digital Leadership Team** - VP Product: xx - VP Engineering: xx
Data Architect				200%	100%				
Data Engineer				300%	200%	200%	300%		
Vendor Architect / Engineer					100%				
Data Analyst					200%		100%		
Platform engineer						100%			
Database (DB2) specialist									
Software engineer	400%	200%	300%				100%		
Solut. architect (data)							100%	200%	
Solut. architect (digital)								200%	
Solut. architect (modern.)								200%	
Lead software engineer	100%	100%	100%						
DevOps engineer		300%	200%						
Network engineer			200%						
Platform product manager								100%	
Platform Product Architect								700%	
Business SMEs								200%	

Next steps

- ❑ Confirm scope of the GridStack MVP sprints with Customer & Electric Transformation Leads and CIOs
- ❑ Assign ITLT/TTF sponsorship of GridStack product and service ecosystem
- ❑ Resource GridStack teams both internally and with strategic partners
- ❑ Prepare for kickoffs in 1-2 weeks

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GridStack is *the* enabler of our Digital Ambition

Digital Ambition	Digital Product teams *What our product teams bring to the business in a North Star digital vision (examples)*	GridStack *How GridStack enables the business teams (selected examples)*
Digitally Engaged and Enabled Customer	• **Single digital portals** to allow customers to - See live usage, billing, and service data; - Track connection applications real-time; - Receive personalized decarbonization product offering	• Development of differential capabilities for personalization for SmartTarget initiatives with **flexible integrations to core system** • Share data across products and build **one central database**, e.g. one billing portal for Nucleus and AMI
Intelligent Optimized Asset Health Management	• Using aerial/satellite imagery & **Artificial Intelligence to optimize** vegetation management • **Digital Twins** to plan for predictive maintenance, • Link asset health data to regulatory submissions	• **Decoupling product business logic from core systems** to develop of innovative solutions across entire digital roadmap • **Unlock automation** provided by modern systems to ensure success of planned products e.g. Project Close Analyzer
Digitally Enabled and Empowered Employee	• User friendly **mobile digital solution** for the field force • **Task optimization**, linked to asset/customer data • **Personalized training offer**, linked to performance	• Unlock value faster through **fast test-learn development cycles** for products in development such as OMW, FN, and VMO • Reduce OMW **dependencies on third party software** and required customizations e.g. STORMS, IMF+, ARMS

Platform Product Manager

Overview of Key Responsibilities and Background & Competencies

Key Responsibilities

- Lead cross-functional teams to build and launch innovative, disruptive new digital platform products
- Ensure the use of product management best practices in the development and delivery of digital solutions
- Promote an MVP-centric approach to product though tightly-scoped requirement and builds validated by customer feedback
- Act as the voice of the customer and ensure a customer-centric approach to product development
- Provide a vision for the overall platform build strategy
- Act as a central point of contact in strategic partner and client discussions
- Create and manage team workplans, including staffing and budgets

Background & Competencies

- A proven track record of building and launching delightful products through a customer-centric, iterative approach
- Experience building and managing cross-functional teams
- Excellent 360 degree stakeholder management skills (previous consulting or client services experience is a plus)
- A solid understanding of digital business models and how a good product strategy can support business goals
- Mastery of key product management concepts, including a deep technical understanding of how software works, how to structure a good sprint process, and how to take a product from concept through launch
- The ability to make decisions quickly in a fast-paced work environment
- Excellent written and verbal communication skills

Product Manager

Overview of Key Responsibilities and Background & Competencies

Key Responsibilities

- Own end-to-end product cycle for a discrete user-facing product
- Collaborate with multidisciplinary teams to scope, design, concept test and deliver innovative solutions
- Assist with the development of business cases and operating plans
- Clarify requirements and delivery expectations with business stakeholders
- Own the creation and prioritisation of the product backlog for specific digital products
- Distil the product down to what is desirable, viable, and feasible to deliver rapid and regular business value for the client
- Monitor and report on product KPIs
- Develop materials to communicate progress to stakeholders
- Practice & promote new, agile ways of working

Background & Competencies

- Demonstrated experience delivering products and services with proven business impact that customers will love
- Excellent leadership skills and experience collaborating with cross-functional teams
- Experience working in an agile environment and running multi disciplinary scrum teams
- Extensive technological domain knowledge to understand integration of digital products with technology systems
- Experience with analytical tools to gather insights into product adoption and tracking product KPIs
- Ability to communicate effectively, including between business and digital team members
- Proven ability to navigate complexity of interactions between P&T, IT and Business stakeholders

Data Architect

Overview of Key Responsibilities and Background & Competencies

Key Responsibilities

- Design, develop, and support conceptual / logical / physical data models for analytics solutions
- Design data models to support digital products in use case teams
- Drive the adoption of best practices for data architecture, data standards and data security guidelines across the organization
- Assist in the development and implementation of data collection systems as necessary
- Provide mentoring on data architecture design and requirements to development and business teams
- Communicate value of standardize data models and solutions to the broader organization
- Review the solution requirements and architecture to ensure selection of appropriate technology, efficient use of resources and integration of multiple systems and technology

Background & Competencies

- Experience building different data models like normalized, de-normalized, star, data vault 2.0 models
- Worked with transactional, temporal, time series, structured and unstructured data
- Experience using relational & columnar large-scale databases
- Experience with data quality management and data architecture standardization
- Understanding and knowledge of noSQL databases and graph databases to structure data
- Understanding of data security and data access controls and design aspects
- Understanding of ETL development with data integration to support data marts, extracts and reporting
- Familiarity with the principles and practices involved in development and maintenance of software solutions and architectures and in service delivery

Data Engineer

Overview of Key Responsibilities and Background & Competencies

Key Responsibilities

- Extract data from core systems to solve analytical problems; ensure development teams have the required data
- Process large, medium and small scale complex data sets efficiently with the lowest compute cost
- Define and implement data pipelines to support central data assets and digital products
- Provide technical guidance related to data architecture, data models and meta data management to data architects
- Work closely with database teams on topics related to data requirements, cleanliness, accuracy etc.
- Interact with the business divisions to understand all data requirements to develop business insights for CRM and translates them into data structures and data model requirements to IT
- Track analytics impact on business

Background & Competencies

- Experience processing large datasets of structured and unstructured data
- Expertise in SQL processing
- Experience in a commonly used data processing language and frameworks (e.g. Python, Spark, Java, Scala, Go)
- Expertise in MPP databases, with 2-3 years experience in one of the main platforms (Snowflake - preferred, Redshift, Synapse)
- Expertise in Cloud platforms, preferably Azure
- Experience in developing applications in high volume data staging/ETL environments
- Background in software engineering development including collaboration (source control) and agile

Vendor Architect / Engineer

Overview of Key Responsibilities and Background & Competencies

Key Responsibilities

- Develop and test first functioning prototypes of digital products
- Build front-/back-end engineering of stable, smoothly functioning digital products
- Proactively take on challenging problems and effectively collaborate with people inside and outside the digital unit
- Take the lead in discussing technical solutions and product ideas in design reviews, pair programming, and code reviews
- Use agile engineering practices and various software and web development technologies to rapidly develop creative and efficient solutions that enhance the client customer and employee experience
- Communicate with the business about Agile processes to set and manage expectations about delivery methods and timelines

Background & Competencies

- Software development experience, with knowledge of Agile software development, ideally experience with design/UX driven environments
- Proficiency in 3+ of: Java, REST API services, iOS, Python, Android native applications, SQL, NoSQL, Cocoa/ CocoaTouch, Swift and Objective-C, XCode, UIKit, Core AnimationFluency
- Experience with pair programming, continuous integration, test-driven development & incremental design
- Familiarity with Model View Controller (MVC) design patterns, Object-Oriented Programming (OOP) and development best practices

Data Analyst

Overview of Key Responsibilities and Background & Competencies

Key Responsibilities

- Identify, develop, manage, and execute analyses to uncover areas of opportunity and present business recommendations
- Create and maintain the logic and processes to support trustworthy and efficient consumption of business data
- Develop and implement databases, data collection systems, data analytics and other strategies that optimize statistical efficiency and quality
- Investigate data sources across enterprise and expand existing search data infrastructure, identifying opportunities to expand modelling and customer obsession efforts
- Identify opportunities for developing new data sources and provide technical leadership around making those data sources high quality and broadly available
- Ability to build a larger business narrative around data and communicate the insights derived to a broader array of business stakeholders

Background & Competencies

- Strong analytical skills with the ability to collect, organize, analyze, and disseminate significant amounts of information with attention to detail and accuracy
- 2+ years of professional experience in advanced business analytics using SQL, Python, R or commercial analytical tools like SAS, Mathematica, etc
- Knowledge and hands on experience in Python, Statistics and Modelling
- Experience in designing and building dashboards, reports and exploratory visualization and EDA
- Experience in advanced business/customer analytics
- Comfortable giving definition to ambiguous problems, can do this independently with limited guidance
- Verbal/written communication & data presentation skills, including experience to effectively communicate with both business and technical teams

Platform Engineer

Overview of Key Responsibilities and Background & Competencies

Key Responsibilities

- Build and maintain high quality infrastructure to support stability and scalability of internal products
- Contribute to a future-ready, high quality, and performant code base
- Proactively take on challenging problems and effectively collaborate with people inside and outside the digital unit
- Take the lead in discussing technical solutions and product ideas in sprint planning, pair programming, and code reviews
- Use agile engineering practices to rapidly develop creative and efficient solutions that enhance the experience for product and development teams
- Communicate with the business about Agile processes to set and manage expectations about delivery methods and timelines

Background & Competencies

- Demonstrated experience working with cloud infrastructure, DevOps, and networks
- Experience working with container based deployments and orchestration
- Experience working with and supporting service-based architectures and/or micro services
- Experience with enterprise internal platform systems and services
- Experience with automation scripts using languages such as Python or Bash
- Experience with code development for infrastructure
- Experience with pair programming, test-driven development & incremental design
- Experience working with distributed systems and / or supporting mobile systems is a strong plus
- Software development experience, with knowledge of Agile software development

Database (DB2) Specialist

Overview of Key Responsibilities and Background & Competencies

Key Responsibilities

- Manage and administer the operation of the data database for the purpose of supporting the
- Fulfil needs of application teams using the database and monitor user access
- Monitor performance and manage parameters in order to ensure the optimal operation of systems
- Support the data extraction processes to free data outside of the database
- Maintain data standards, including adherence to the Data Protection Act
- Write database documentation, including data standards, procedures and definitions for the data dictionary
- Control access permissions and privileges
- Develop, manage and test back-up and recovery plans
- Manage the security and disaster recovery aspects of a database

Background & Competencies

- Existing knowledge of relational database management systems (preferably DB2) and database partitioning feature (DPF)
- Experience in supporting DB2 databases for application development team
- Experience in providing technical support and maintenance to ensure integrity, availability and performance of database systems (DB2 preferably)
- Experience in maintaining database security and disaster recovery procedures
- Ability to monitor databases regularly to check for any errors such as existing locks and failed updates
- Deep knowledge of DB2 best practices, experience in configuring DB2 to security standards is preferred
- Experience using Linux or Bash scripting

Software Engineer

Overview of Key Responsibilities and Background & Competencies

Key Responsibilities

- Create responsive web services and APIs for consumption by mobile and web platforms
- Contribute to a future-ready, high quality, and performant code base
- Proactively take on challenging problems and effectively collaborate with people inside and outside the digital unit
- Take the lead in discussing technical solutions and product ideas in design reviews, pair programming, and code reviews
- Use agile engineering practices and various software and web development technologies to rapidly develop creative and efficient solutions that enhance the client customer and employee experience
- Communicate with the business about Agile processes to set and manage expectations about delivery methods and timelines

Background & Competencies

- Experience in JavaScript, Java, C/C++, C#, Objective-C, Python, or Go
- Experience in web / mobile applications, API development, cloud technologies, or distributed systems
- Experience designing and developing service-based architectures and/or micro services
- Experience designing data persistence and caching concepts using both SQL and NoSQL DBMS (e.g.: MySQL, MongoDB, Cassandra, Redis, etc.)
- Experience with pair programming, continuous integration, test-driven development & incremental design
- Experience with Agile practices, and ideally experience with design/UX driven environments
- Enough DevOps experience to setup, configure and maintain a dev/build environment

Solution Architect

Overview of Key Responsibilities and Background & Competencies

Key Responsibilities

- Design robust and scalable solutions that supports the immediate needs of a product or platform components
- Select the best technology solutions, patterns for implementation, programming frameworks and libraries, to support the building of a solution
- Support enterprise architects and other hub teams with recommendations for implementing solutions
- Establish implementation of standards and guidelines that guide the design of technology solutions including architecting and implementing solutions
- Provide a principled way for non-compliance to occur if there is a true need, and to bring that non-compliance back into compliance
- Lead and promote the benefits of a defined and well thought through architecture across IS and the business
- Track industry trends and maintain knowledge of new technologies to better serve the enterprise's architecture needs

Background & Competencies

- Experience in designing and delivery of end to end digital and data solutions
- Ability to develop implementation level of detail solutions including architecture, functional implementation and evaluation of alternative solutions
- At least 5+ years of hands-on software or data engineering experience in a commercial enterprise
- Deep expertise in Azure cloud environment
- Excellent communication skills and ability to understand business requirements to devise robust and scalable technology for tomorrow
- Excellent problem solving skills and understanding of the latest technology trends
- Deep understanding of the SDLC and engineering and enterprise design patterns and/or strong ETL and data integration experience

Lead Software Engineer

Overview of Key Responsibilities and Background & Competencies

Key Responsibilities

- Lead engineering team within a given product and manage the end-to-end technology execution
- Define and manage the technology landscape and blueprint for entire solution stack
- Ensure consistent best practices, processes, and procedures for software development, quality assurance, and maintenance
- Identify technical risks and opportunities for each product
- Actively engage in sprint planning, delivery and managing the releases
- Provide hands-on technology leadership to the engineering team
- Coordinate with Product Development team to align engineering, and business priorities

Background & Competencies

- Extensive experience developing solution architecture and leading engineering teams for digital product development and complex (enterprise) system integration projects
- Proven ability to set technical vision and build the technical product roadmap, and drive continuous product improvement
- Experience in establishing product sustainability (e.g. disaster recovery, business continuity plan etc.)
- Experience with building service based architecture including use of micro services frameworks
- Strong knowledge of DevOps and cloud infrastructure services (Azure preferred)
- A consistent record of rolling out digital products following Agile methodologies
- Excellent social, writing and verbal communication skills

DevOps Engineer

Overview of Key Responsibilities and Background & Competencies

Key Responsibilities

- Build and maintain high quality infrastructure to support stability and scalability of internal products
- Contribute to a future-ready, high quality, and performant code base
- Proactively take on challenging problems and effectively collaborate with people inside and outside the digital unit
- Take the lead in discussing technical solutions and product ideas in sprint planning, pair programming, and code reviews
- Use agile engineering practices to rapidly develop creative and efficient solutions that enhance the experience for product and development teams
- Communicate with the business about Agile processes to set and manage expectations about delivery methods and timelines

Background & Competencies

- Demonstrated experience working with cloud infrastructure and DevOps
- Experience working with container based deployments and orchestration
- Experience working with and supporting service-based architectures and/or micro services
- Experience with configuration management tools like Chef, or Ansible
- Experience with automation scripts using languages such as Python or Bash
- Experience with code development for infrastructure
- Experience with pair programming, test-driven development & incremental design
- Experience working with distributed systems and / or supporting mobile systems is a strong plus
- Software development experience, with knowledge of Agile software development

Network Engineer

Overview of Key Responsibilities and Background & Competencies

Key Responsibilities

- Configure, develop, and administer cloud-based enterprise networks and assets
- Contribute to a future-ready, high quality, and performant code base
- Proactively take on challenging problems and effectively collaborate with people inside and outside the digital unit
- Analyse and improve network monitoring and observability
- Take the lead in discussing technical solutions and product ideas during sprint planning, pair programming, and code reviews
- Use agile engineering practices to rapidly develop creative and efficient solutions that enhance the enterprise networks
- Communicate with the business about Agile processes to set and manage expectations about delivery methods and timelines

Background & Competencies

- Demonstrated experience scaling and maintaining enterprise networks in mission-critical production environments
- Experience administering multi site enterprise networks, remote access VPN’s, and SD-WAN’s
- Experience with DNS management
- Experience working with Single Sign On (LDAP, SAML, Kerberos)
- Experience with automation scripts using languages such as Python or Bash
- Experience with SaaS based Logging and Analytics platforms such as Splunk, Datadog or Elastic
- Experience with pair programming, test-driven development & incremental design
- Experience working with Cisco or Palo Alto Networks is a strong plus
- Software development experience, with knowledge of Agile software development

National Grid

Platform Product Architect

Overview of Key Responsibilities and Background & Competencies

Key Responsibilities

- Work with business stakeholders and solution architects to create a technical roadmap for a platform and infrastructure team
- Identify opportunities based on user needs, technical capabilities and business impact
- Employ user feedback and product metrics to drive system designs and product prioritization
- Drive prioritization consensus across business teams and serve as an effective liaison between stakeholders and engineering
- Clearly and effectively communicate launches, roadmap status, and platform performance across the organization
- Scope technical requirements and write product use cases

Background & Competencies

- Experience in product management, consulting, or engineering
- Experience working with API specifications and collaborating in technical decisions with technical leads
- Experience with agile software development methodology
- Experience working with internal technical products or tools
- Experience working with modern enterprise architectures and best practices
- Ability to communicate effectively, including between business and digital team members

Manager (Ways of Working)

Overview of Key Responsibilities and Background & Competencies

Key Responsibilities

- Drive the Ways of Working workstream by planning and designing optimal Ways of Working for the GridStack flow
- Ensure Business Analysts and Enablement Coach are focused on the highest value activities
- Understand and investigate current pain points in the development process
- Devise approach to streamline development process
- Support effort to bring the right talent into the team across employees, vendors
- Train and support new and existing team members in new ways of working
- Document and codify best practice around process and ways of working
- Support transition of teams to NG ownership
- Provide framework to escalate issues or conflict on data teams to ensure quick solutions without delays
- Establish governance mechanisms

Background & Competencies

- Proven experience supporting individuals, teams, organization on enablement journey
- Experience as a team leader
- Experience working across different Agile and digital methodologies
- Knowledge of technical teams and necessary skill-sets on the team
- Expert on design-thinking, customer centricity, growth mindset
- Previously led team-level trainings and discussion facilitation
- Knowledge of business process and functions (finance, HR, procurement, operations etc.)
- Strong analytical ability
- Excellent communication skills
- Outstanding organizational and leadership skills
- Problem-solving aptitude

Enablement Coach

Overview of Key Responsibilities and Background & Competencies

Key Responsibilities

- Facilitate digital practices, lead ceremonies, solve bottlenecks, and drive rapid ramp-up activities
- Train and enable team to operate in a digital / agile way of working
- Act as change agent to ensure an understanding of design thinking, product mindset, other topics
- Provide guidance on methodology
- Ensure team is aligned and delivering on team outcomes
- Enable team to resolve issues and raise obstacles
- Push team members to take real ownership and accountability
- Ensure close coordination and alignment across teams

Background & Competencies

- 5+ years' experience coaching and enabling teams
- Deep understanding of different methodologies and enablement styles
- Strong overall communication skills with confidence to engage leaders in difficult discussions
- Adaptability and flexibility based on needs of the team
- General business process knowledge

Business Analyst

Overview of Key Responsibilities and Background & Competencies

Key Responsibilities

- Communicate with internal colleagues to understand the needs of each GridStack team and GridStack as a whole
- Identify recommendations to improve functioning of the team
- Help to put in place new processes including dependency management, governance, and other operating model elements
- Codify learnings and approach to build out methodology playbook
- Drive alignment across stakeholders
- Communicate the recommendations across GridStack Teams and help to address any uncertainty and concern
- Produce written documentation to support Ways of Working workstream and present to stakeholders when necessary
- Support staff and teams in making changes based on WoW, including helping to resolve any issues

Background & Competencies

- 3+ years experience enabling teams and building out standardized materials
- Excellent communication skills, with the ability to talk and present to a range of audiences, sometimes acting as a translator between parties
- Ability to capture and frame complex concepts through documentation and slides
- Excellent analytical skills and an informed, evidence-based approach
- A good basic understanding of technical roles, skillsets required to complete work

Business SMEs

Overview of Key Responsibilities and Background & Competencies

Key Responsibilities

- Provide subject matter expertise (e.g. electric, customer)
- Help to identify areas where technical solutions would improve business performance
- Help to shape product features and software requirements
- Act as a link between product development teams and business to ensure that product development is addressing the most important business use-cases
- Help to disseminate information on products and how to use them to business end-users

Background & Competencies

- Demonstrable credentials as a leading Subject Matter Expert for the relevant National Grid Domain
- 5+ years of experience working in the relevant area of expertise
- Advanced knowledge of business operations and project management
- Advanced ability to suggest technical solutions for cross-functional projects
- Basic knowledge of systems and software engineering to optimally integrate subject expertise in software solution designs
- Strong written and verbal communication skills to interface with team