



Innovating to the Future

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Nuclear

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Exelon Overview



Generation	Energy Sales & Services	Transmission & Delivery
Exelon Generation	Constellation	BGE, ComEd, PEPCO, Atlantic City Electric, Delmarva Power, PECO
Generation Capacity: 35,500 MW	Competitive Load Served: 205 TWH (power) 1.6 TCF (natural gas) Competitive Energy Sales: Approximately 2.4 million Residential, public sector and business customers	Exelon's six utilities deliver electricity and natural gas to approximately 10 million customers covering 24,200 miles of service territory in Delaware, the District of Columbia, Illinois, Maryland, New Jersey and Pennsylvania

Exelon's family of companies represents every stage of the energy value chain

Exelon Generation by the Numbers

America's
leading provider of **Zero-
Carbon Nuclear** energy

Exelon Nuclear Capacity:
20,300 MW

More than
35,500 MW
of power generation
capacity

6,565 MW
natural gas



1,642
MW
hydro



66 MW
landfill gas



1,529 MW
wind



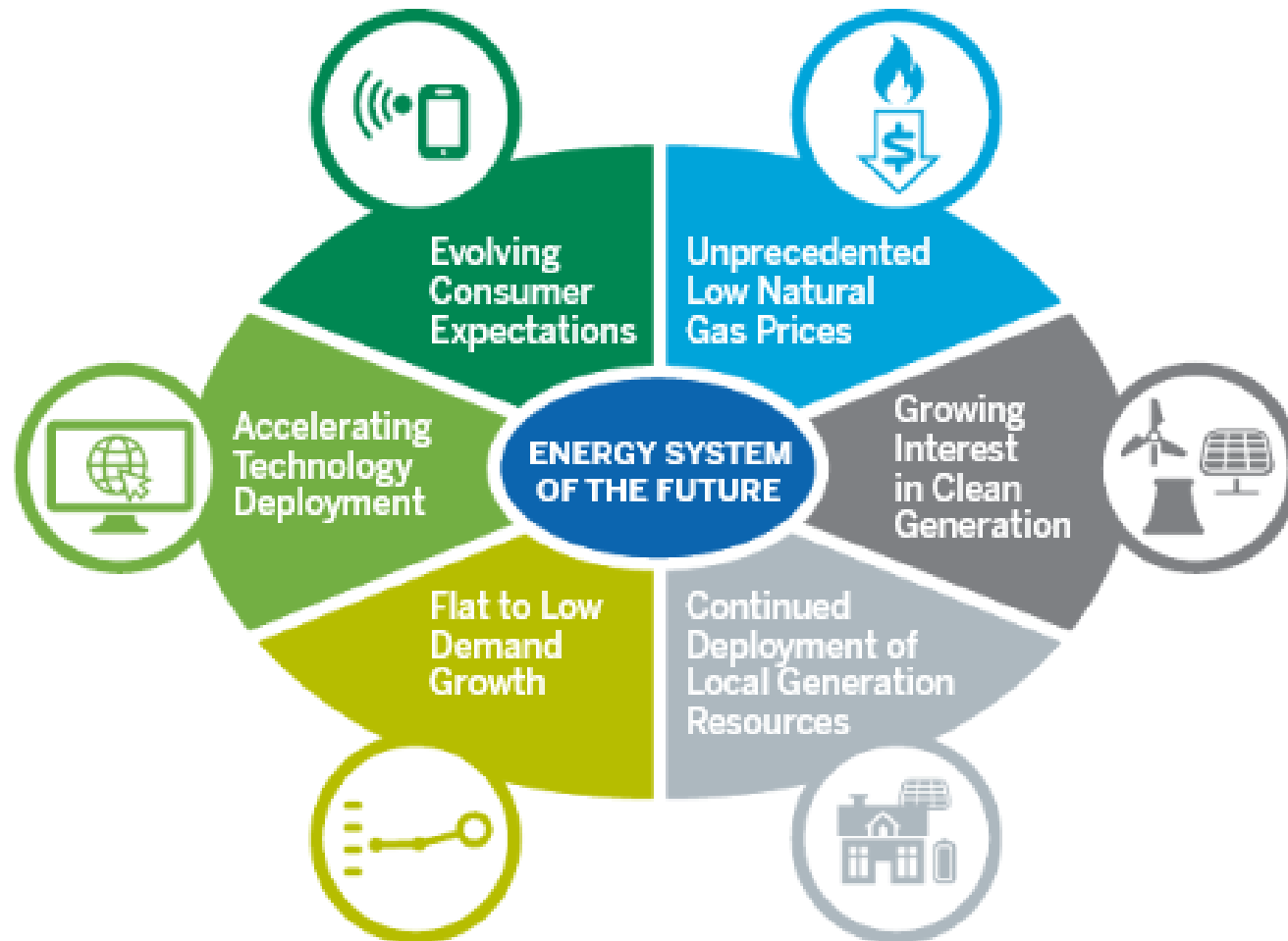
534 MW
solar



Exelon

Durable Trends Impacting Exelon (USA)

DURABLE INDUSTRY TRENDS



Innovation
is
critical
to remain
relevant

Driving A Culture Of Innovation

Many factors influence a corporate culture...

Process



Implementing Exelon's innovation methodology through frameworks & events

Technology



Utilizing technology to allow employees to connect & contribute to innovation across the company

Metrics & Assessment



Measuring the culture & capability of innovation, and tracking progress over time

Messaging & Communications



Communicating activity, progress & inspiration to innovate through creative mediums

Rewards & Recognition



Rewarding Exelon employees for their effort to innovate, and acknowledging success

Training



Equipping employees with the tools & knowledge they need to succeed in innovation

Assess Employees' Perspective Across Six Dimensions of Innovation

Part 1: Leadership

Is the vision clear and are leaders aligned?

Part 2: Organization

Is the way we organize for innovation effective?

Part 3: Learning

Does the company learn by capturing and harvesting insights?

Part 4: Process

Do the processes in the company encourage or deter innovation?

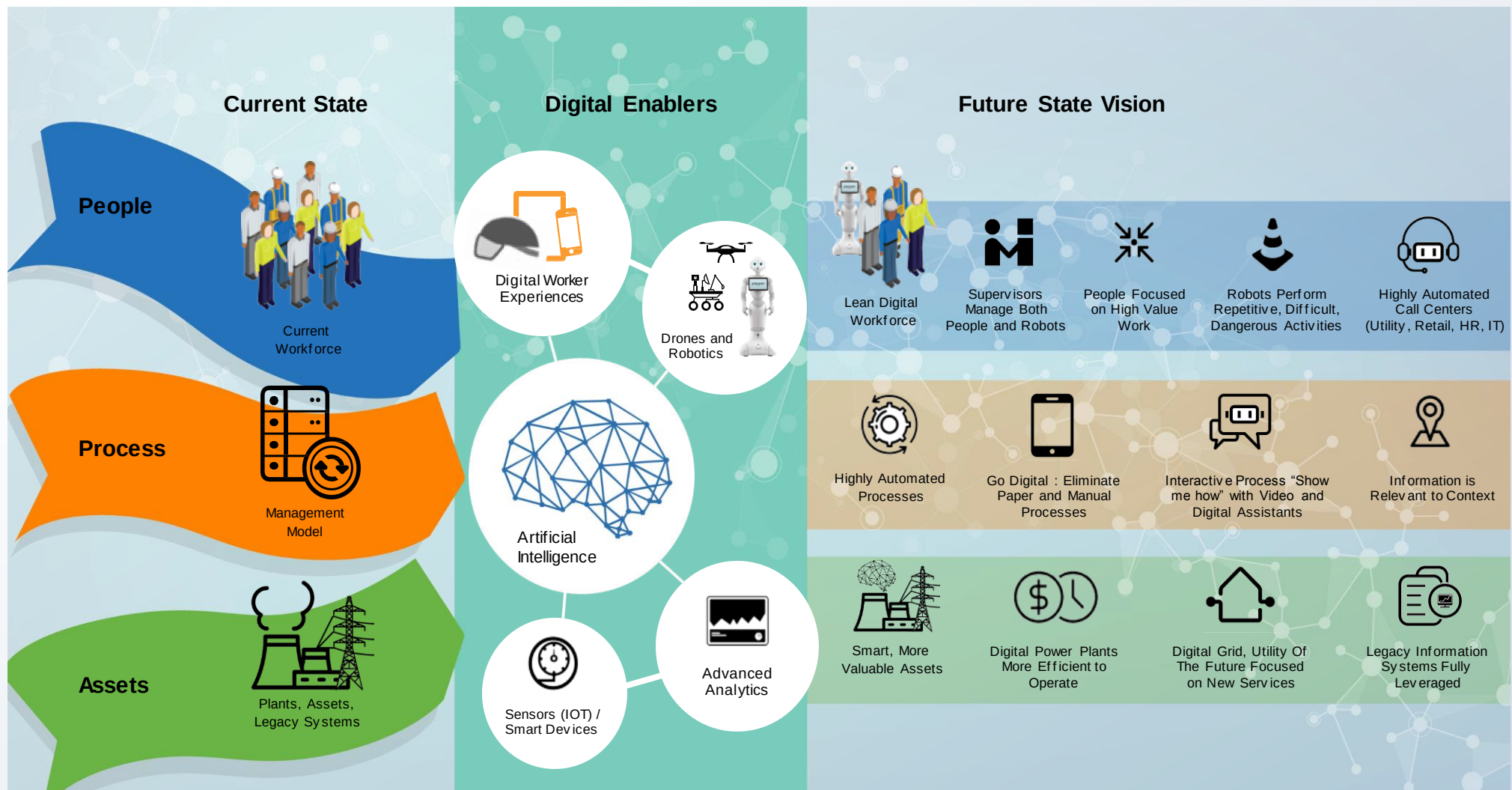
Part 5: Capabilities

Do we possess the necessary capabilities to innovate successfully?

Part 6: Culture

Is the company culture conducive to innovative thought and action?

Digitization to Enable Future State



Exelon Nuclear's Digital Transformation Strategy



Enable a more **productive workforce** through a systematic **transformation of manual processes** to improved digital models while providing the **cutting-edge tools**, technology foundation, and support structure needed to enable the **uninterrupted flow of information** to the workforce.

SOLUTIONS

DIGITAL PROCESS TRANSFORMATION



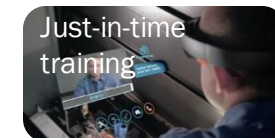
DATA-INFORMED DECISION MAKING



CUTTING-EDGE TOOLS



UNINTERRUPTED FLOW OF INFORMATION



BENEFITS

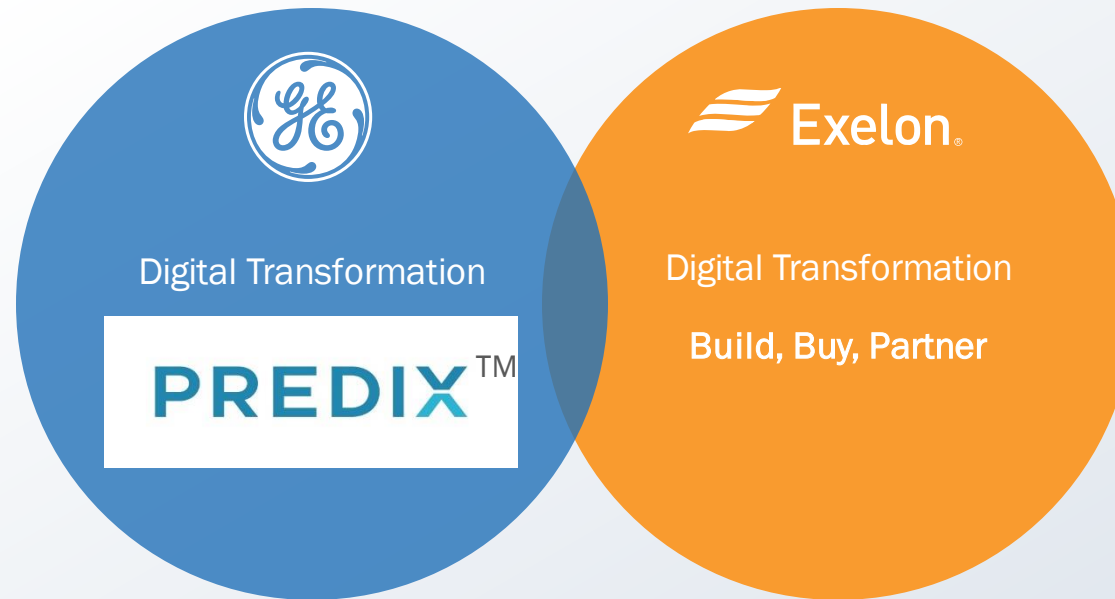
- Highly productive workforce
- Support centralization of functions

- Improved asset management
- Reduced maintenance costs

- Reduced human error
- Improved safety

- Greater knowledge capture / retention
- Improved employee engagement

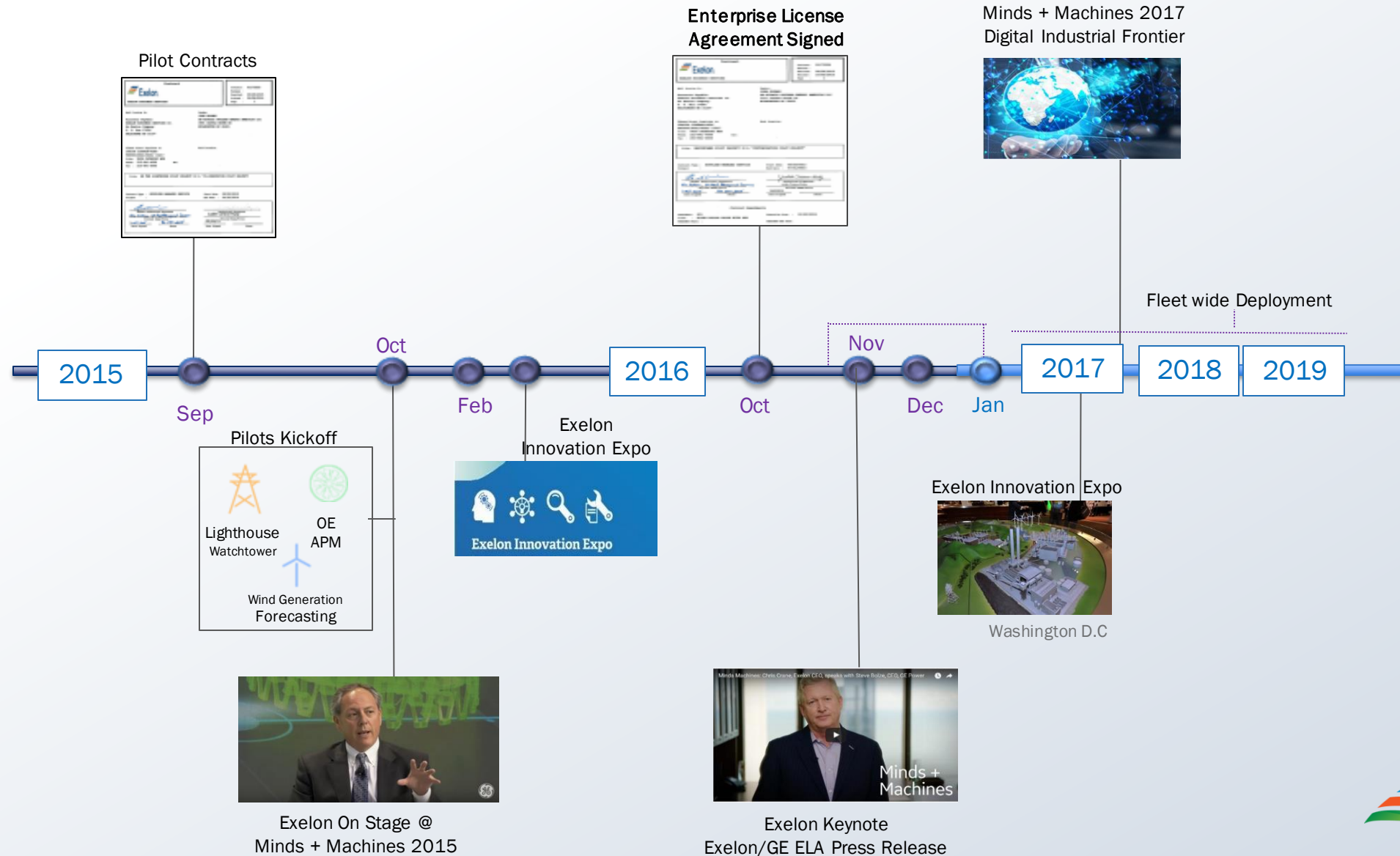
Accelerating Innovation via Partnerships



SHARED VISIONS

- **Long history** of collaboration
- Similar **challenges**
- **Industrial** expertise
- **Co-Innovate** solutions & outcomes
- Leverage scale **transform industry**

Predix Journey – Digital Innovation Platform



Lighthouse – Overview



What

- Analytical model(s) to predict performance challenges and provide greater visibility into current nuclear plant operations for data-driven decision making across the fleet
- Identify symptomatic indicators & organizational behaviors correlated with potential event risks
- Provide insight into driving factors to aid in mitigation strategies

Lighthouse Value Proposition

- **Enabling proactive risk reduction actions** ----Identify the key performance indicators across 14 functional areas that are highly significant in **predicting adverse outcomes** in advance





Digital Plant Viewer



“I used an iPad while in the field on one job to look up info on the Digital Plant Viewer and relay a pic and give direction to another job that was a Priority 1. Was able to keep both jobs moving with no delays.” – Maintenance Outage Lead

Challenges to Innovation in Nuclear



Team Creation

Team built from scratch with various skill sets



Guidance

Lack of process in place to guide team through innovation lifecycle



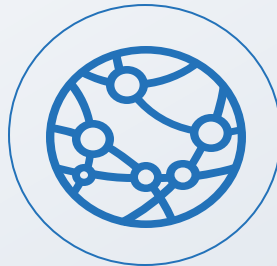
Innovation Journey

Innovation viewed as deploying point solutions



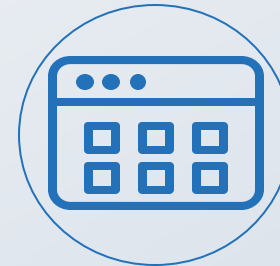
Vendor Approval

Supply/legal process for onboarding new vendors is time consuming



Application Deployment

Vetting new applications in secure environments is time consuming



Application Support

New application development not built into IT support model

Innovation



Team Creation

Talents and interests assessed with responsibilities assigned as appropriate



Guidance

Foundation for success implemented including Operational plan, team building, group learning



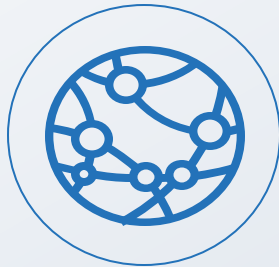
Innovation Journey

Cross-functional area support and improved articulation of innovation vision



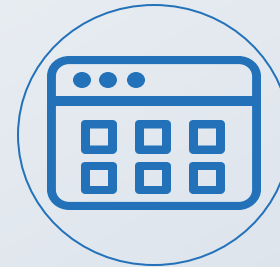
Vendor Approval

Internal escalation options enabled and optimized processes



Application Deployment

Utilize vendor cloud space and streamline vetting processes with IT



Application Support

IT built team to support needs while still leveraging several vendors

BRIAN

FIRST LINE SUPERVISOR

As a First Line Supervisor (FLS), Brian is responsible for overseeing the work of multiple craft workers in the field. In the past, Brian would be pulled into multiple directions throughout the day.

Between his pre-job briefings, regular meetings, ongoing verifications and countless administrative tasks, Brian rarely had much time to spend in the field and plan for the week ahead.

ABOUT BRIAN

GOALS

Ensuring his workers have the information they need to perform their jobs safely and effectively

Motivating his workforce to ensure high-quality output, compliance to the management model and timely work execution

Developing his workers through knowledge management and access to learning materials

MOTIVATIONS

Serving as a knowledgeable resource for multiple workers

Understanding the intricacies of the plant environment and its people

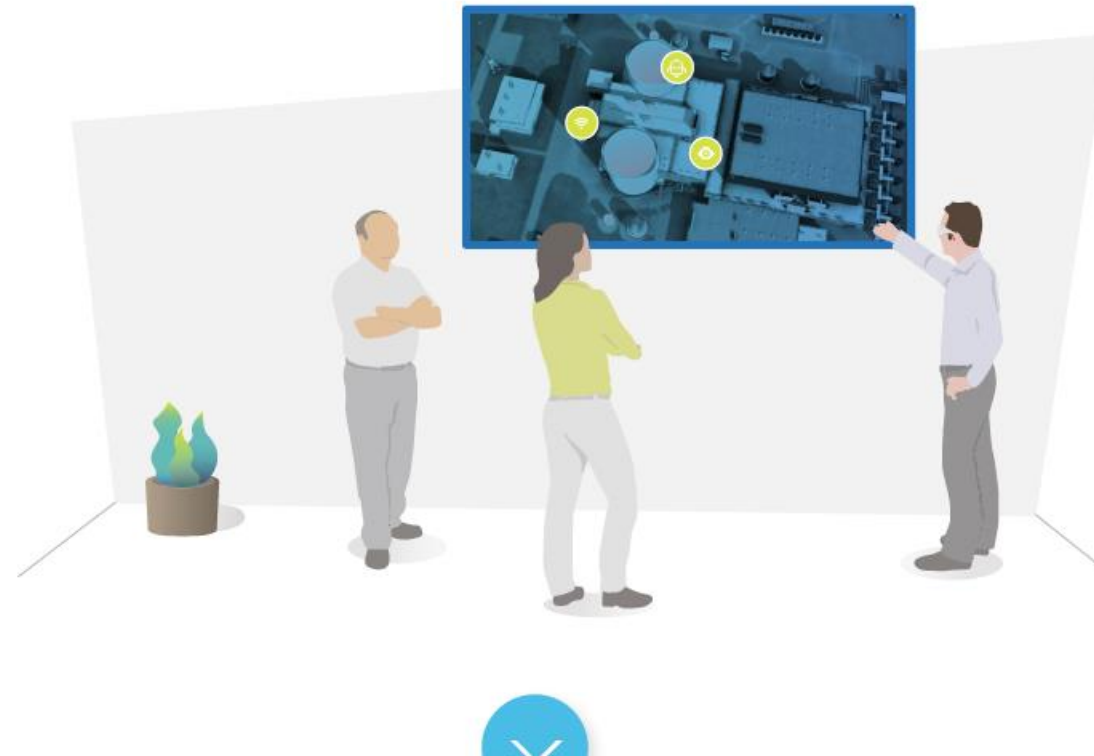
Being responsible for the safety and reliability of work executed in the field

WHAT IF

Brian could get his teams deployed faster,
making more time for him to plan ahead rather
than react to immediate needs?

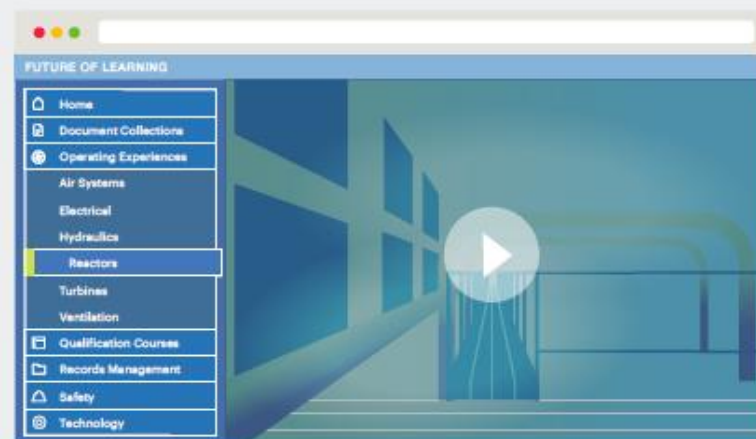
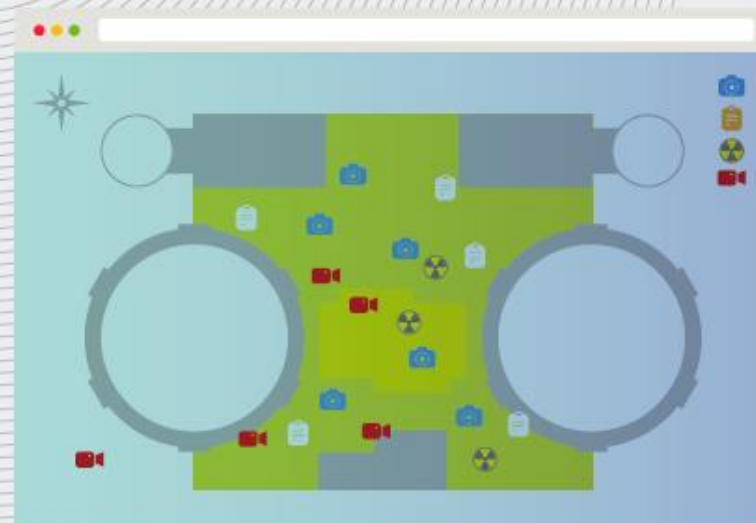
1. EXPEDITING THE PRE-JOB BRIEF

Brian begins his day by briefing one of his crews with Digital Plant Experience and ensures they have the necessary knowledge and information to get to their work location safely and minimize dose.



2. REINFORCING WORKER UNDERSTANDING

Brian accesses floor plans, photos, videos and dose rates in Digital Plant Viewer. In addition, he refers to Future of Learning video tutorials, and asset performance in Watchtower/APM.



3. BRIEFING WORKERS IN THE FIELD

After briefing the first crew, Brian connects with more workers in the field for real-time remote briefings. He connects through Vision, and shares vital information with workers equipped with connected mobile devices.



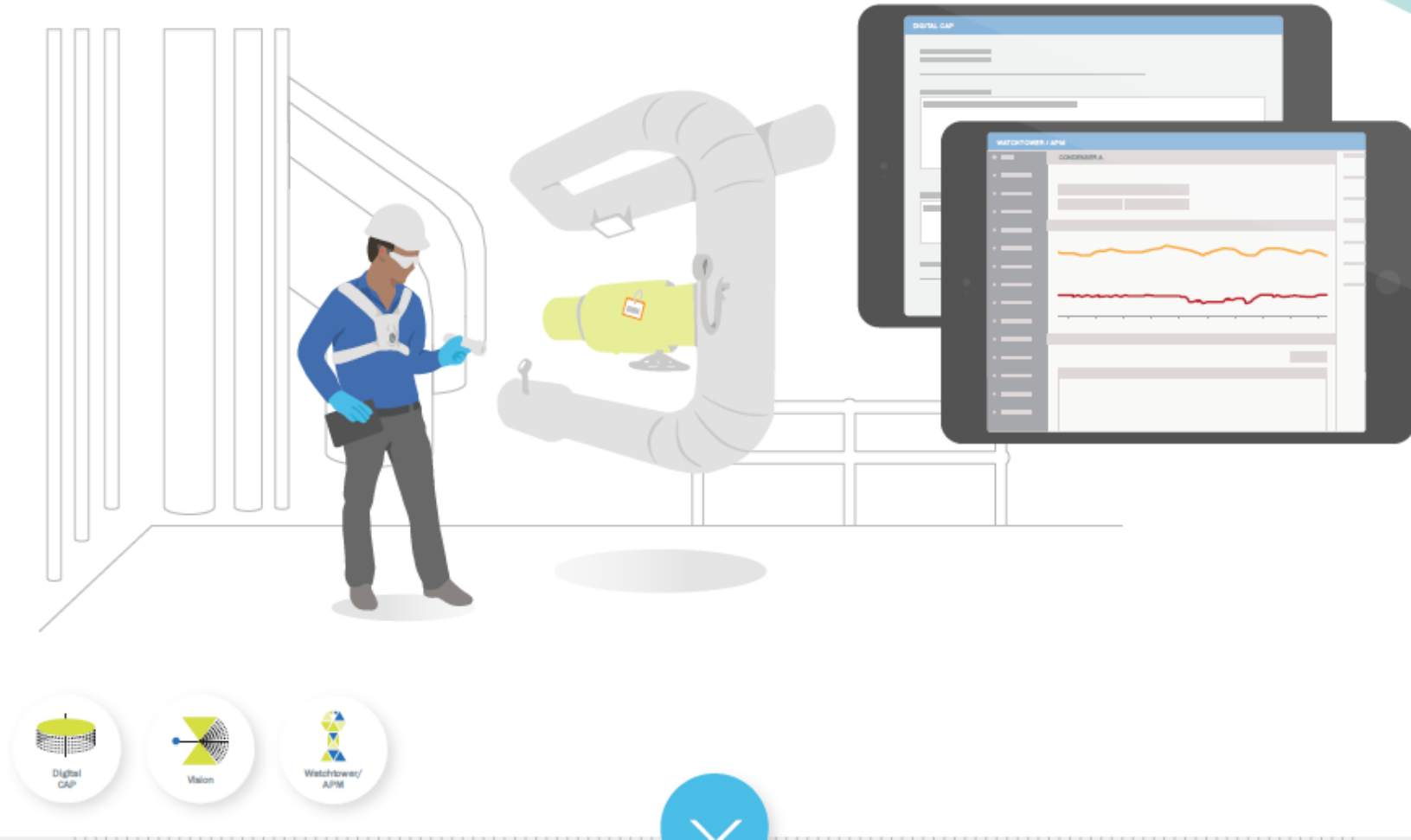
4. ENABLING PRODUCTIVITY IN THE FIELD

The worker arrives at the plant equipment indicated by the work package on his eWP iPad. Scanning the attached barcode or using RFID chips let him know he is on the correct system, mitigating human performance errors. In some cases, the peer checker or verifier can verify the work via video call.



5. ADAPTING TO ISSUES IN THE FIELD

As a worker prepares to execute the work, he notices an emergent issue with a piece of equipment. For guidance, he video-calls Brian to share what he's seeing and ask questions. He uses Watchtower/APM to view current system parameters and Digital CAP to search for existing IRs. If none found, he creates an IR in the field. He uses the camera on his mobile device to attach a photograph.

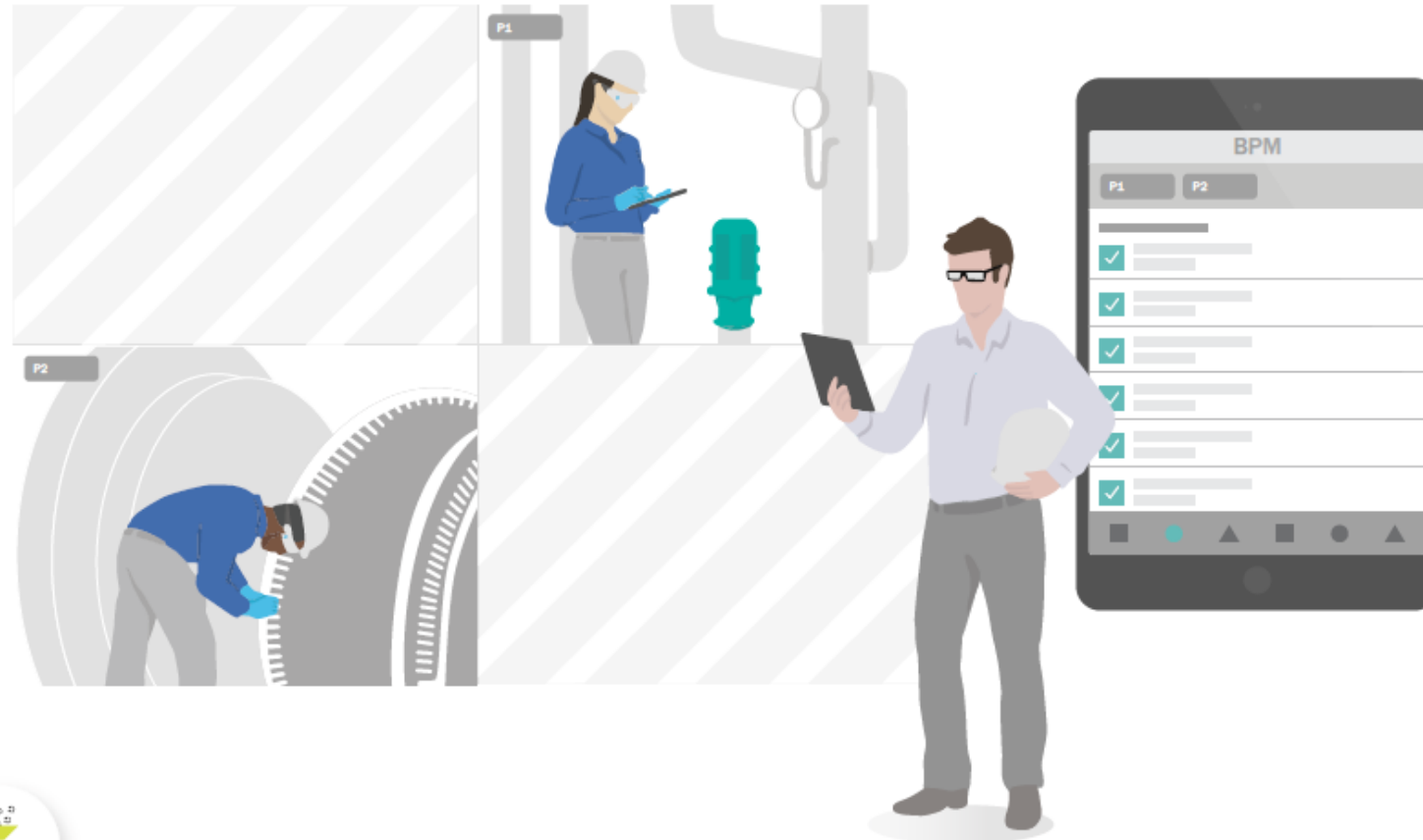


6. Multiple solutions allow workers to safely and effectively share what they're seeing in the field with their First Line Supervisors.



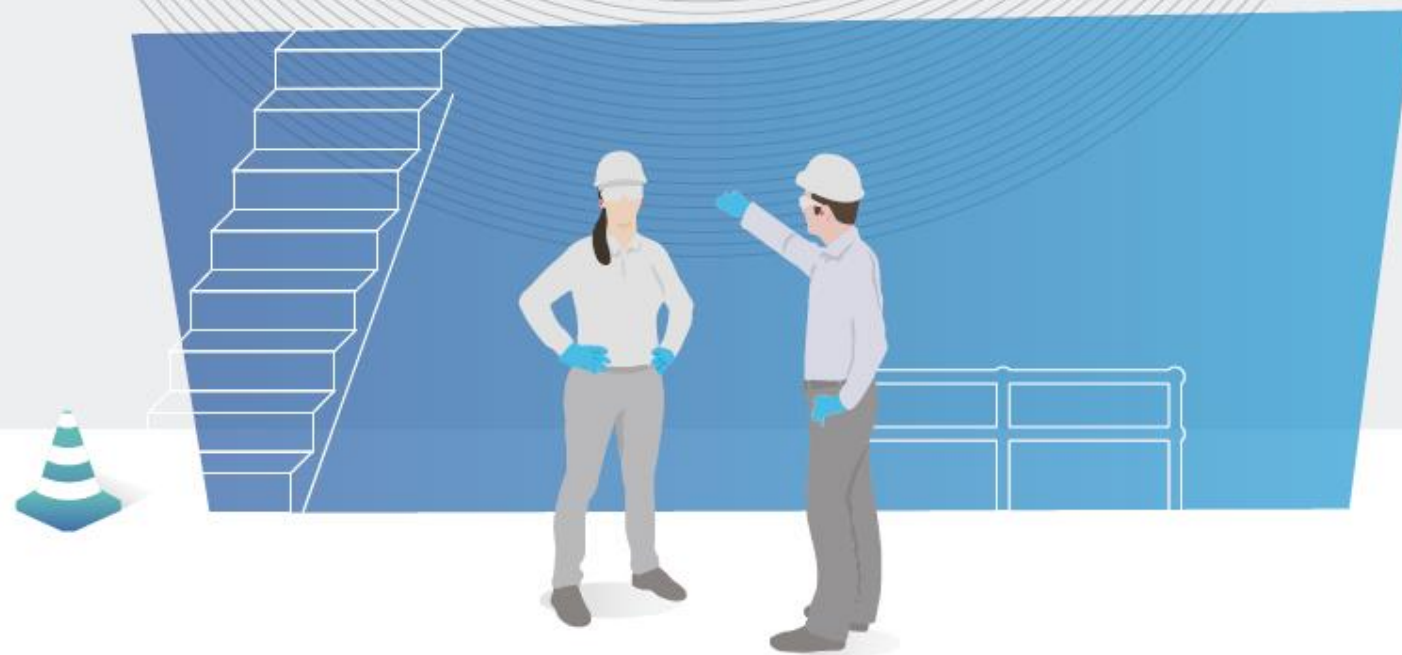
7. STREAMLINING BUSINESS PROCESSES

With BPM and eWP, Brian can remotely monitor the work status of multiple teams in the field. These solutions also enable individuals in all site departments to have real-time visibility into work status. When ready, Brian approves the completed work packages, which automatically update Passport and P6. Completed work assignments are then routed automatically to Records Management, making them readily available electronically.



8. PLANNING AHEAD

With his teams working more effectively, Brian spends more of his time on proactive tasks like preparing for the work ahead and developing his people.



These innovative solutions will generate multiple benefits for Exelon and its people, resulting in a world-class workforce and profitable energy generation.

ORGANIZATIONAL BENEFITS

- Increased efficiency and number of pre-job briefings
- Reduced time between job preparation and execution
- Increased worker efficiency through the enablement of single person tasks
- Improved safety, risk assessment, and maintenance planning
- Reduced human performance errors
- Increased wrench time/less idle time spent in shop

EMPLOYEE BENEFITS

- Decreased time spent on pre-job briefings and administrative tasks
- Increased time engaging and motivating the workforce
- Improved work/life balance and morale
- Improved ability to anticipate work schedules and solve resourcing challenges
- Increased sense of productivity
- Increased sense of trust in workers' execution of tasks



Closing Thoughts

- Executive support
- Vision and Strategy
- Connect with the workers
- Leverage key partnerships
- Articulate the business case
- Accelerate

Questions?