Pacific Northwest
NATIONAL LABORATORY

PNNL Digital Transformation

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U.S. DEPARTMENT OF ENERGY BATTELLE

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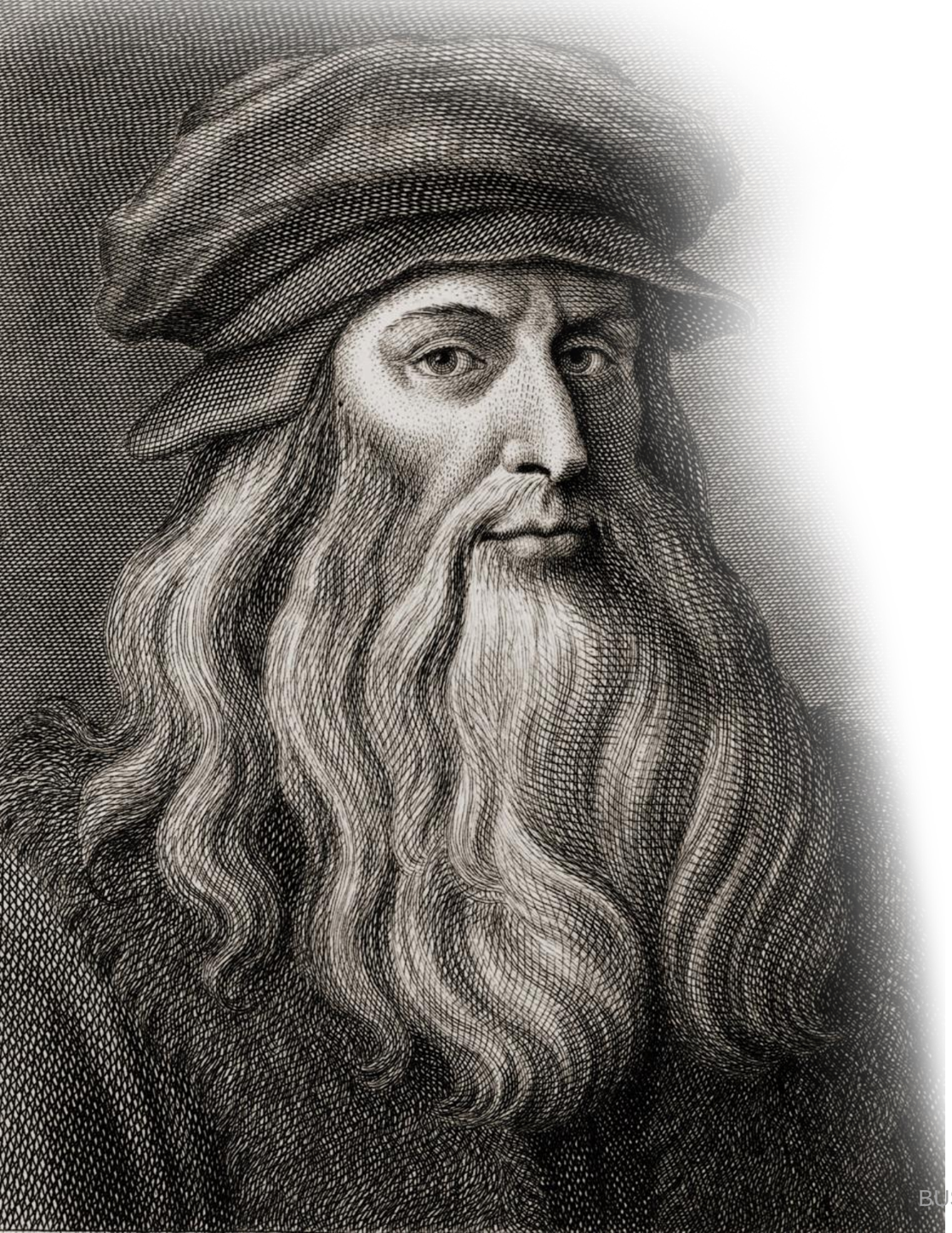
BUSINESS SENSITIVE



“…**simplicity** is the **ultimate genius**”

Leonardo Da Vinci

Maslow's Hierarchy of Needs

Maslow's Hierarchy of Needs

DIGITAL BUSINESS TRANSFORMATION

The continued digital transformation of PNNL's operations is the broadest imperative and is foundational to all others. Consolidating legacy systems into modern digital platforms will reduce viscosity in Laboratory operations and transform the employee experience.

DIGITAL RESEARCH ECOSYSTEM

Research Data Management

Sponsor expectations, staff needs, and the advent of AI/ML underscore the need to mature the Lab's research data management capabilities. PNNL must invest in building data management expertise, policies, and the DataHub digital platform.

Smart Labs (of the Future)

The future of laboratory science holds significant potential for transformation through automation & robotics, interconnected equipment, augmented interaction, enhanced safety systems, collaboration, and AI powered data insights and digital assistants.

AI for Research

The accelerating growth of AI capabilities is poised to become the most significant disruption in the history of computing—PNNL must address both the opportunities and the risks through a Lab-level focus on accelerating AI adoption Lab-wide.

Continuum Computing

The convergence of Cloud, HPC, and Edge computing is a time-limited opportunity to expand our use of cloud, leading DOE in cloud HPC, driving partnerships with industry, and growing hybrid computing expertise focused on each mission area.

Software Engineering Automation

PNNL invests in scientific instruments to equip first-class laboratory spaces—and recognizes that doing so is necessary for attracting and retaining world-class talent. This imperative extends that to the digital tools required for software engineering and related disciplines.

Emerging Threats & Opportunities

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Changing Workforce Expectations

Context for Change

AI and Data Revolution

Aging Legacy Workhorse Systems

Digital Business Transformation Outcomes

Simplify Research Experience

Streamline complex tools and processes. Create easy, personalized experiences for PNNLers in getting work done.

Improve Efficiency and Consistency

Execute on improvements that achieve measurable efficiencies & consistency

Data-Driven Insights

Improve transparency to laboratory performance and enable data-driven decision making at every level

Engineered Compliance

“Bake in” compliance so that when our procedures and systems are appropriately leveraged, compliance happens

ADDRESS THE HEALTH OF THE AT-RISK BUSINESS SYSTEMS

PNNL Operating Model

Expert Delivery Lifecycles	**Capture Opportunity**	**Plan Work**	**Execute Work**	**Closeout Work**
Capability Management Lifecycles	**People**	**Assets**	**Facilities**	
Requirements Management Programs	**Assurance Management**			
	Business Management			
	Human Resource Management			
	Information Management			
	Operations Management			

PNNL Operating Model

Expert Delivery Lifecycles

Capture Opportunity
- Manage Sponsor Relationship
- Develop Opportunities
- Develop Partnership Strategies
- Create Proposals
- Approve Proposals
- Analyze Win Performance

Plan Work
- Initiate Plan
- Estimate Resource Needs
- Plan Work Activities
- Identify Training & Controls
- Authorize Plan

Execute Work
- Secure Resources
- Implement Risk Mitigations
- Perform Activities
- Manage Scope & Cost
- Deliver Results

Closeout Work
- Close Finances
- Return Work Location
- Release Staffing
- Disposition Equipment & Samples
- Document Performance
- Archive Data

Capability Management Lifecycles

People
- Define Workforce Needs
- Recruit
- Onboard, Develop & Train
- Manage Performance
- Reward & Retain
- Transition Out

Assets
- Define Assets
- Obtain Assets
- Manage Assets
- Dispose of Assets

Facilities
- Develop Facilities Strategy
- Define Facilities Plan
- Design & Build Facility
- Prepare Facility for Use
- Maintain & Operate Facility
- Manage Facilities Operations
- Disposition of Facility

Requirements Management Programs

- **Assurance Management**
- **Business Management**
- **Human Resource Management**
- **Information Management**
- **Operations Management**

Operating Model is the blueprint for our tools

Plan Work

1 Initiate Plan

- Document scope and work breakdown structure
- Identify technical and management approach
- Assess risk
- Develop project management plan
- Perform first-funded, low-risk, and long-lead activities

2 Estimate Resource Capability Needs

- Estimate people needs
- Estimate asset needs
- Estimate facility needs

3 Plan Work Activities

- Describe Activities
- Select Hazards
- Identify Spaces
- Select Workers

4 Identify Training & Controls

- Defined Controls for Hazards
- Engage Worker Safety & Health
- Verify Worker Eligibility
- Establish Permits

5 Authorize Plan

- Establish plan baseline
- Review and authorize plan
- Establish charge codes

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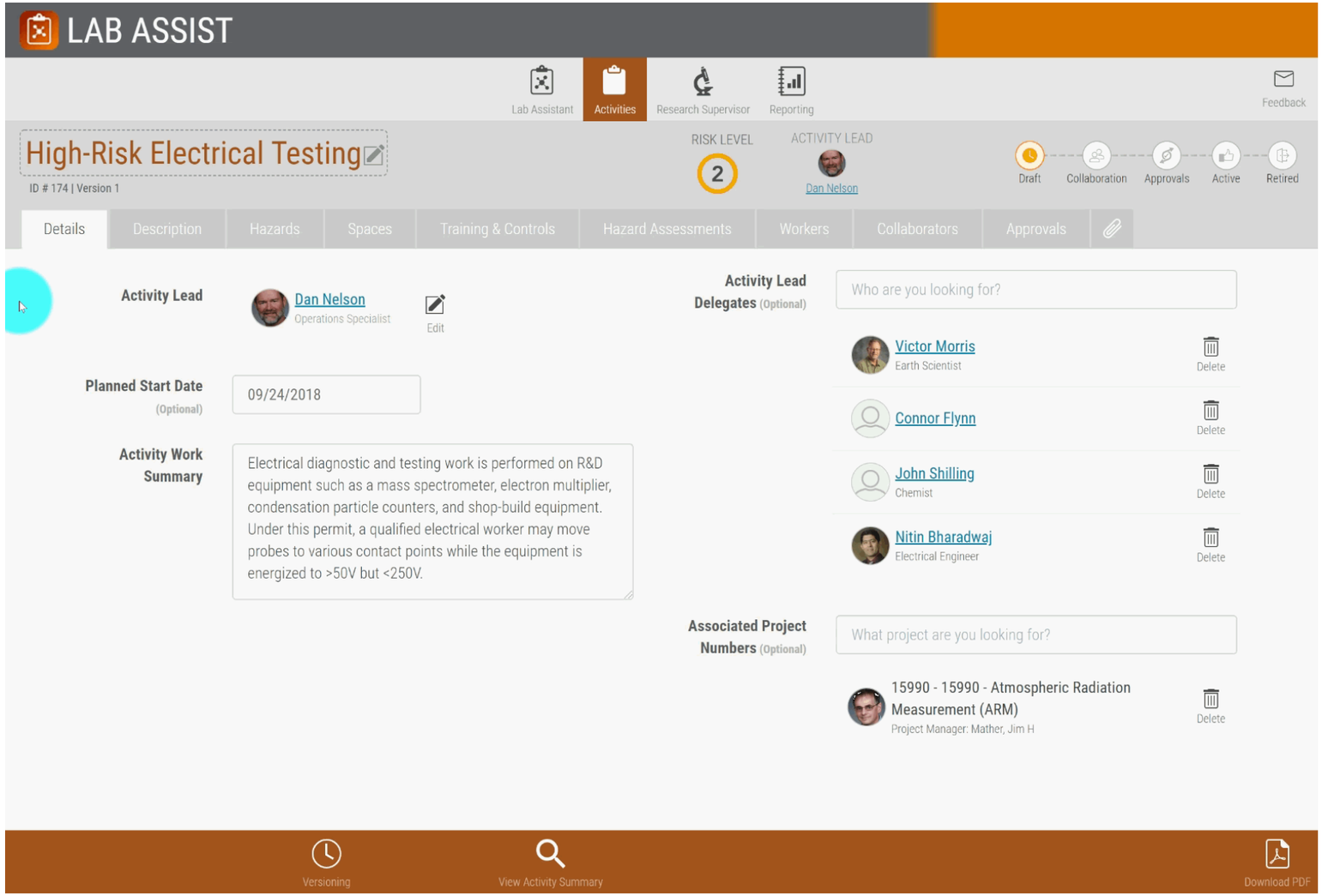

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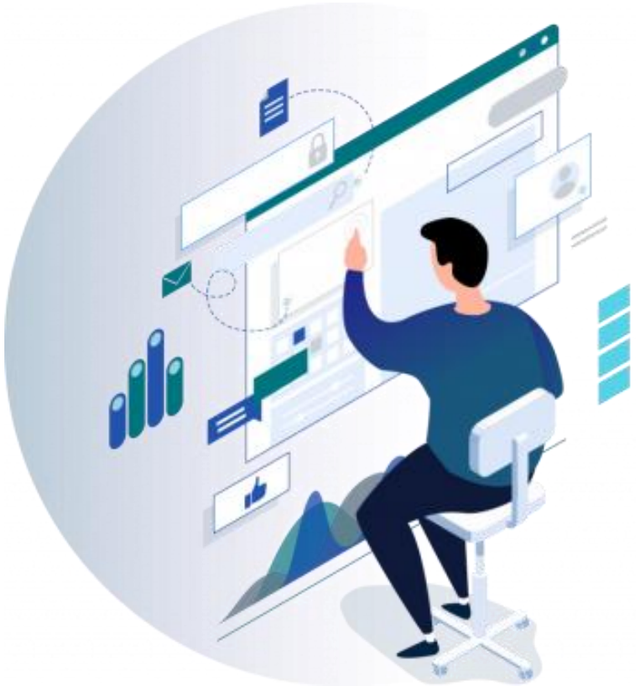


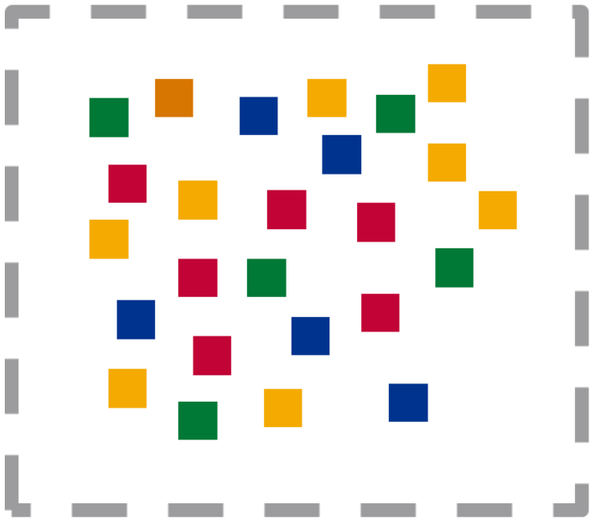
DIGITAL WORPLACE

BLUEPRINT

From Legacy Systems to Digital Platforms

Legacy Systems

Disparate & Silo'd



200+

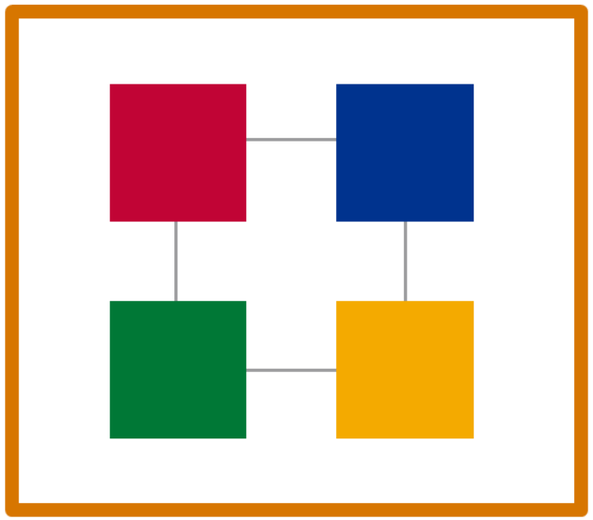
19

Mapping

Retain, Retire + Refresh

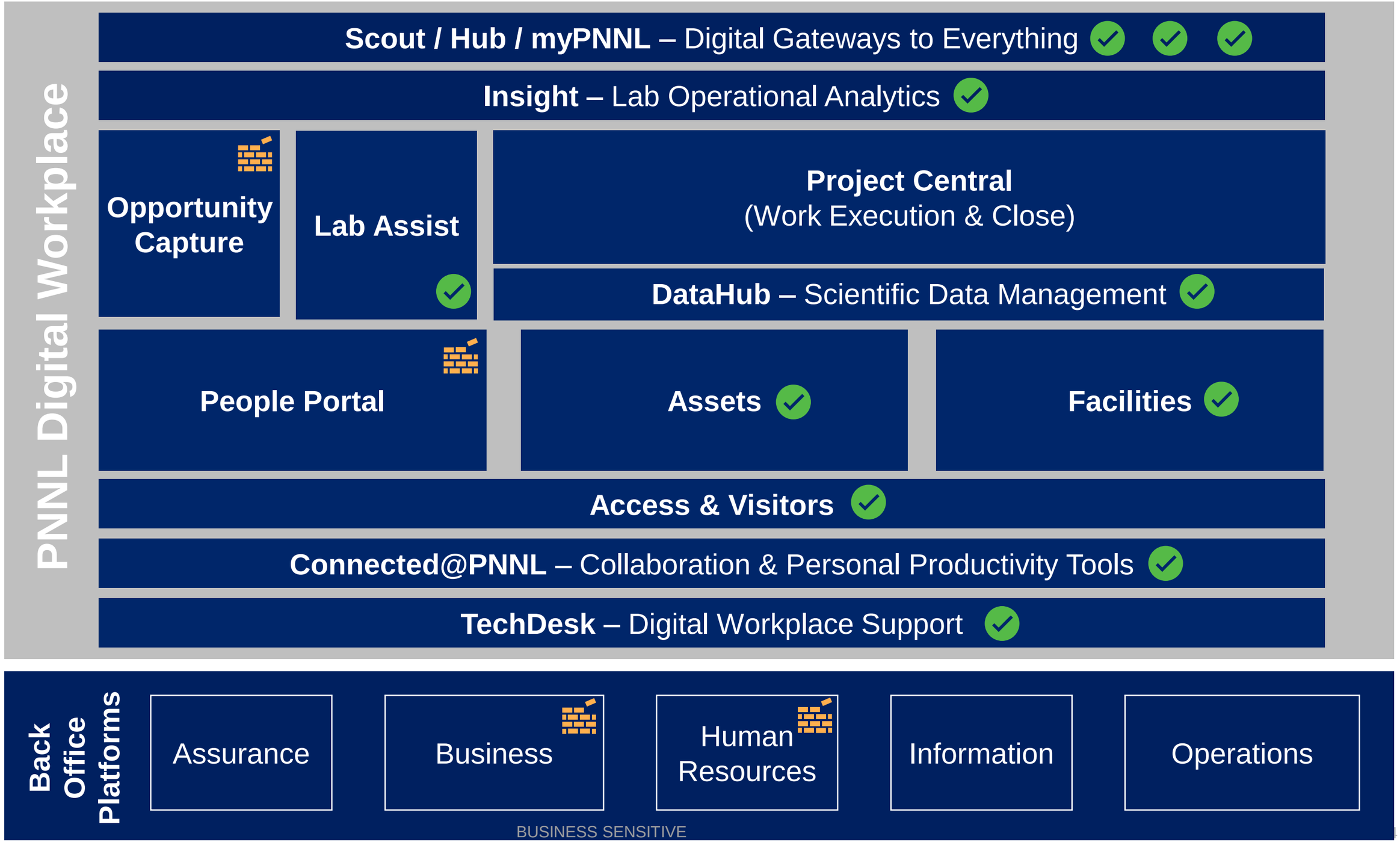
Digital Platforms

Tightly Integrated

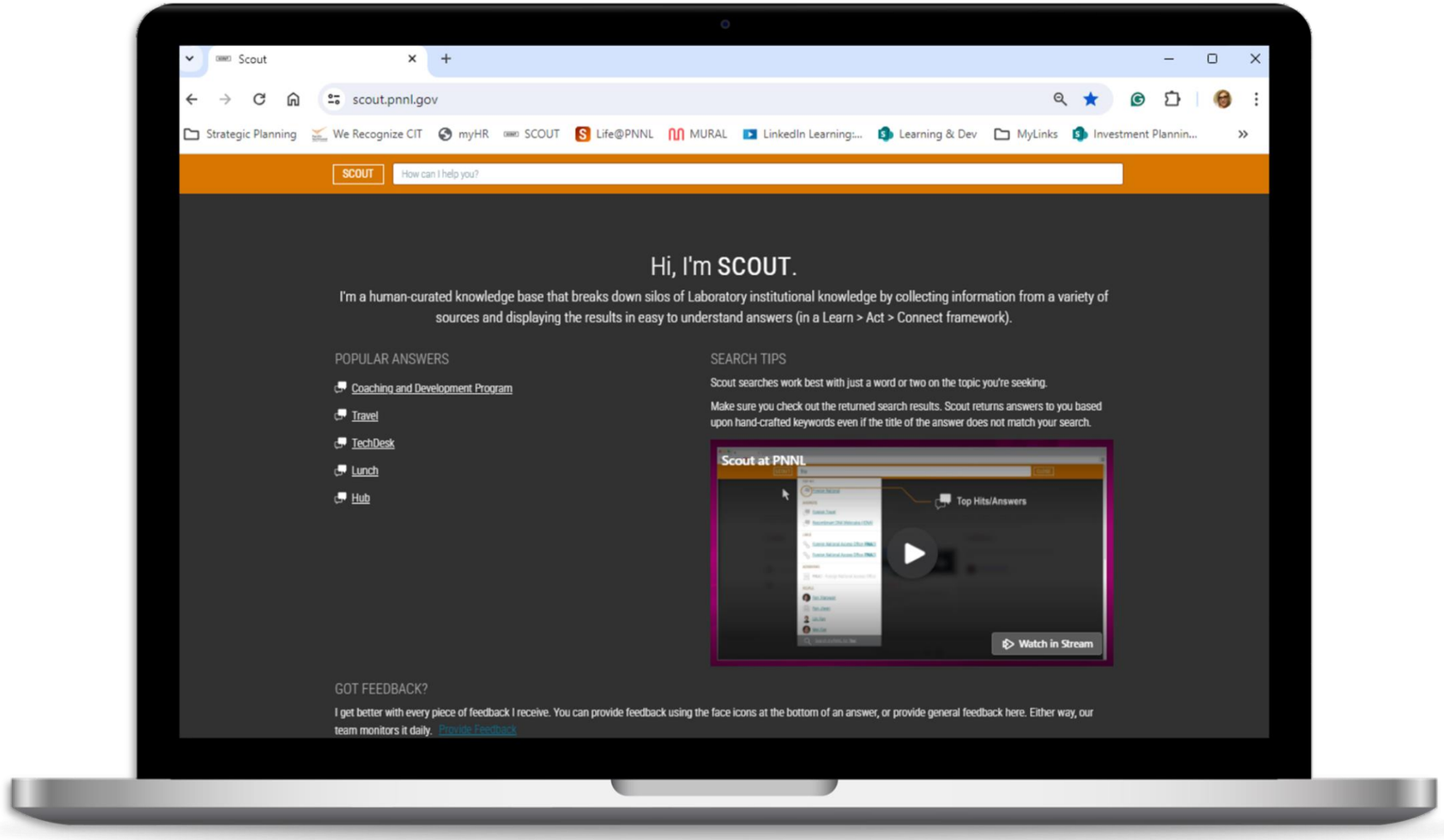


Today

Future



DEMO


Scout
scout.pnnl.gov
Strategic Planning
We Recognize CIT
myHR
SCOUT
Life@PNNL
MURAL
LinkedIn Learning:...
Learning & Dev
MyLinks
Investment Plannin...
SCOUT
How can I help you?
Hi, I'm SCOUT.
I'm a human-curated knowledge base that breaks down silos of Laboratory institutional knowledge by collecting information from a variety of sources and displaying the results in easy to understand answers (in a Learn > Act > Connect framework).
POPULAR ANSWERS
Coaching and Development Program
Travel
TechDesk
Lunch
Hub
SEARCH TIPS
Scout searches work best with just a word or two on the topic you're seeking.
Make sure you check out the returned search results. Scout returns answers to you based upon hand-crafted keywords even if the title of the answer does not match your search.
Scout at PNNL
Top Hits/Answers
Watch in Stream
GOT FEEDBACK?
I get better with every piece of feedback I receive. You can provide feedback using the face icons at the bottom of an answer, or provide general feedback here. Either way, our team monitors it daily. Provide Feedback

Scout

scout.pnnl.gov

Strategic Planning | We Recognize CIT | myHR | SCOUT | Life@PNNL | MURAL | LinkedIn Learning:... | Learning & Dev | MyLinks | Investment Plannin... | Investment Plannin...

SCOUT | How can I help you?

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POPULAR ANSWERS

- Coaching and Development Program
- Maps
- Hub
- Lunch
- TechDesk

SEARCH TIPS

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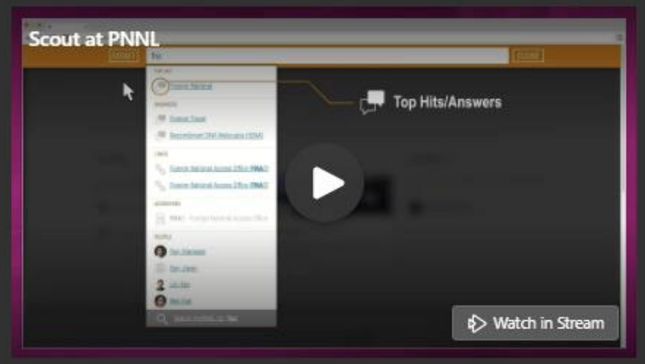
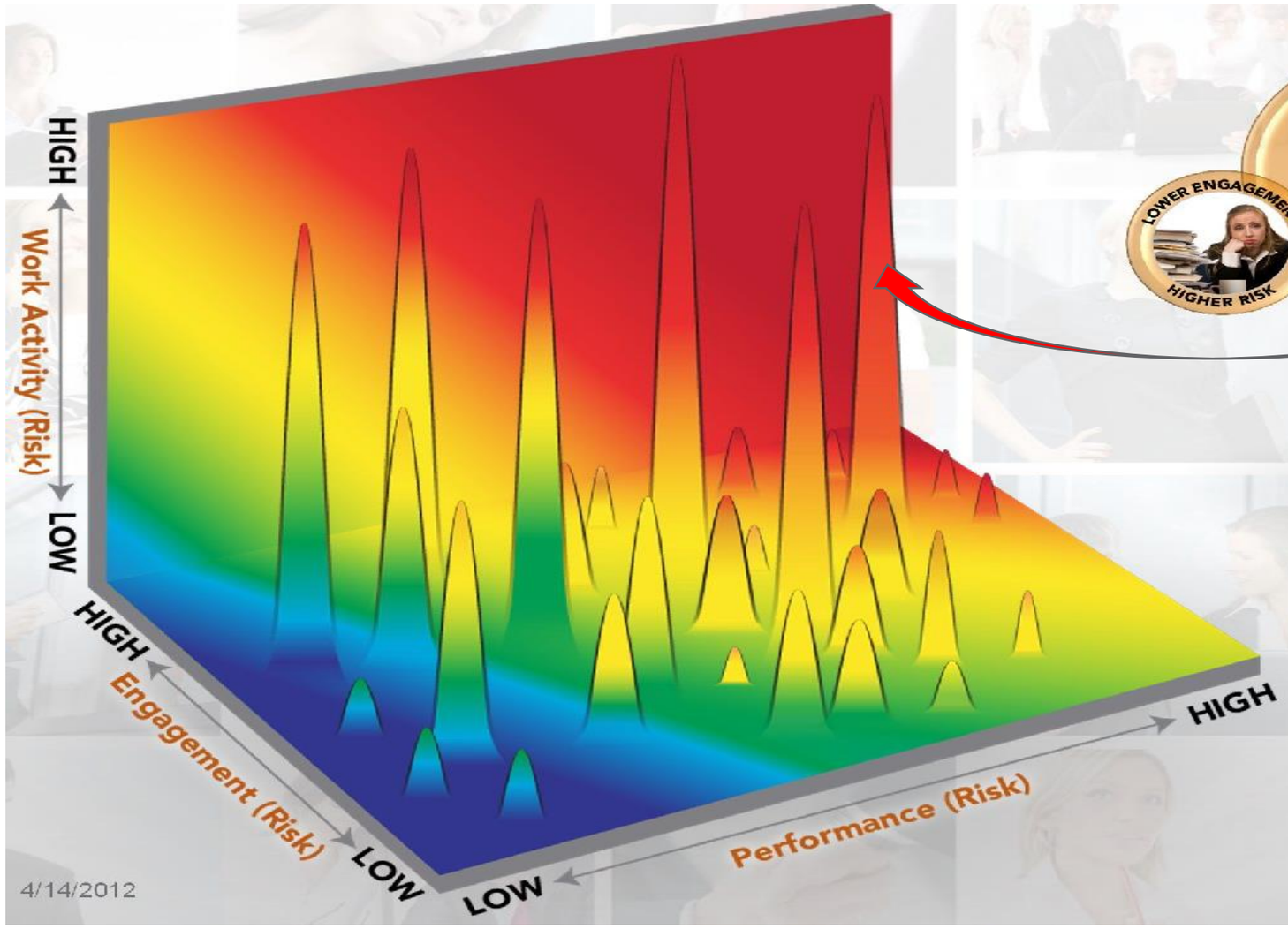


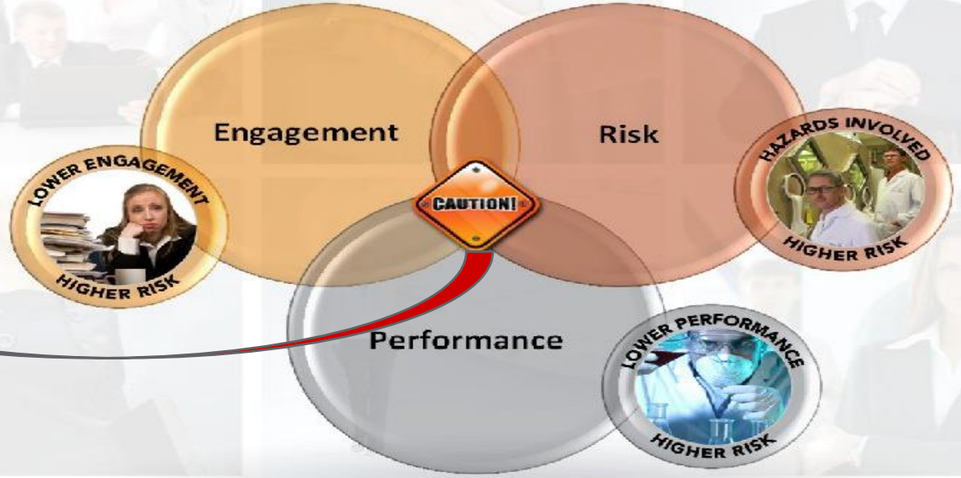
GOT FEEDBACK?

I get better with every piece of feedback I receive. You can provide feedback using the face icons at the bottom of an answer, or provide general feedback here. Either way, our team monitors it daily. Provide Feedback

Predicting a “Bad Day” (circa 2012)

Model prediction lies at the convergence of risks





Manual Integration of Risks

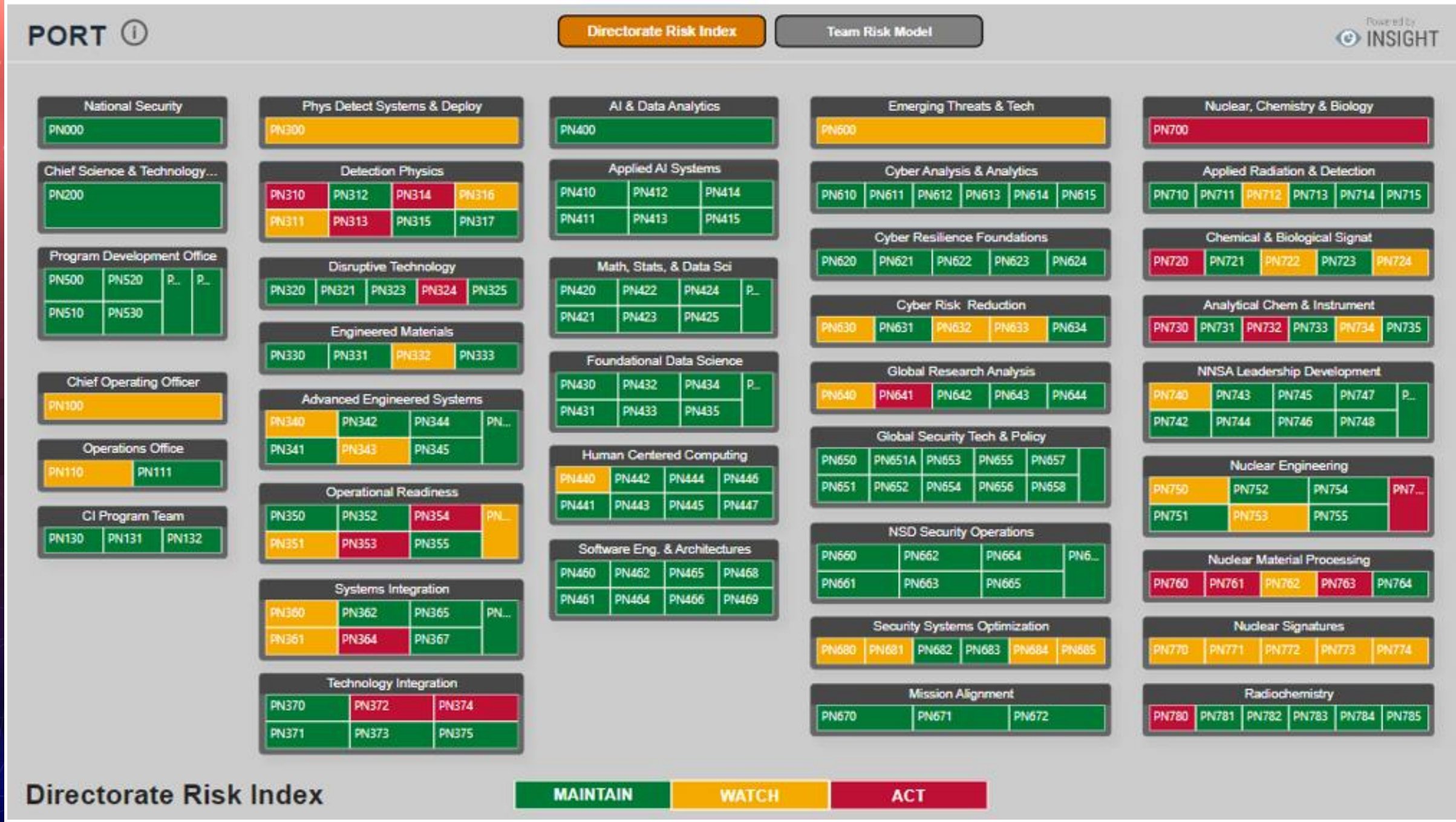
PNNL Operational Risks and Trends (PORT)

Deliver timely, actionable data to inform operational decision-making, preventing realized risks

Updates to “Bad Day” Analysis

- Operating Model
- Line Manager Model
- Lab Assist
- PNNL Workplace Survey
- PowerBI and data modernization
- Safe Conduct of Research
- Standardized of Risk Assessments
- M&O Program Critical Controls
- Integrated Capability Management
- Operational Control Limits

Digital platform provides more efficient and sustainable performance analysis and reporting


PORT
Directorate Risk Index
Team Risk Model
Powered by INSIGHT
National Security
PN000
Chief Science & Technology...
PN200
Program Development Office
PN500 PN520 P... P...
PN510 PN530
Chief Operating Officer
PN100
Operations Office
PN110 PN111
CI Program Team
PN130 PN131 PN132
Phys Detect Systems & Deploy
PN300
Detection Physics
PN310 PN312 PN314 PN316
PN311 PN313 PN315 PN317
Disruptive Technology
PN320 PN321 PN323 PN324 PN325
Engineered Materials
PN330 PN331 PN332 PN333
Advanced Engineered Systems
PN340 PN342 PN344 PN...
PN341 PN343 PN345
Operational Readiness
PN350 PN352 PN354 PN...
PN351 PN353 PN355
Systems Integration
PN360 PN362 PN365 PN...
PN361 PN364 PN367
Technology Integration
PN370 PN372 PN374
PN371 PN373 PN375
AI & Data Analytics
PN400
Applied AI Systems
PN410 PN412 PN414
PN411 PN413 PN415
Math, Stats, & Data Sci
PN420 PN422 PN424 P...
PN421 PN423 PN425
Foundational Data Science
PN430 PN432 PN434 P...
PN431 PN433 PN435
Human Centered Computing
PN440 PN442 PN444 PN446
PN441 PN443 PN445 PN447
Software Eng. & Architectures
PN460 PN462 PN465 PN468
PN461 PN464 PN466 PN469
Emerging Threats & Tech
PN600
Cyber Analysis & Analytics
PN610 PN611 PN612 PN613 PN614 PN615
Cyber Resilience Foundations
PN620 PN621 PN622 PN623 PN624
Cyber Risk Reduction
PN630 PN631 PN632 PN633 PN634
Global Research Analysis
PN640 PN641 PN642 PN643 PN644
Global Security Tech & Policy
PN650 PN651A PN653 PN655 PN657
PN651 PN652 PN654 PN656 PN658
NSD Security Operations
PN660 PN662 PN664 PN6...
PN661 PN663 PN665
Security Systems Optimization
PN680 PN681 PN682 PN683 PN684 PN685
Mission Alignment
PN670 PN671 PN672
Nuclear, Chemistry & Biology
PN700
Applied Radiation & Detection
PN710 PN711 PN712 PN713 PN714 PN715
Chemical & Biological Signat
PN720 PN721 PN722 PN723 PN724
Analytical Chem & Instrument
PN730 PN731 PN732 PN733 PN734 PN735
NNSA Leadership Development
PN740 PN743 PN745 PN747 P...
PN742 PN744 PN746 PN748
Nuclear Engineering
PN750 PN752 PN754 PN7...
PN751 PN753 PN755
Nuclear Material Processing
PN760 PN761 PN762 PN763 PN764
Nuclear Signatures
PN770 PN771 PN772 PN773 PN774
Radiochemistry
PN780 PN781 PN782 PN783 PN784 PN785
Directorate Risk Index
MAINTAIN
WATCH
ACT


PORT
Directorate Risk Index
Team Risk Model
INSIGHT
National Security
Phys Detect Systems & Deploy
AI & Data Analytics
Emerging Threats & Tech
Nuclear, Chemistry & Biology
Chief Science & Technology
Detection Physics
Applied AI Systems
Cyber Analysis & Analytics
Applied Radiation & Detection
Program Development Office
Disruptive Technology
Math, Stats, & Data Sci
Cyber Resilience Foundations
Chemical & Biological Signal
Chief Operating Officer
Engineered Materials
Operations Office
Advanced Engineered Systems
CI Program Team
Operational Readiness
Systems Integration
Technology Integration
PORT
Directorate Risk Index
Team Risk Model
INSIGHT
Risk Index is determined by primary risk sources and risk amplifiers
Team Risk Index
92%
0%
90%
100%
Work Planning & Control
93%
Team Operational Culture
38%
Team Engagement
0%
LTE Team Size
0%
Team Risk Index Details
Actual
Weight
WFC
Hazards
Team Size
Op Culture
Team Eng
New Hires
Staff Left
Hazards
77%
FTE Team Size
64%
New Hires
0%
Staff Left Dept
85%
Team Risk Model
MAINTAIN
WATCH
ACT
NOT IN MODEL
Directorate Risk Index
MAINTAIN
WATCH
ACT

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Thank you