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SELF-GUIDED KNOWLEDGE-DRIVEN INNOVATIVE LEARNING (SKIL)

Helping Technical Leads Learn Project Management

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00340 - Modernization Programs & SPP

10410 - Project & Product Delivery Systems

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BOTTOM LINE UP FRONT

- **Learning strategies must adapt to changes in the workforce.**
 - No longer have the long term career employees.
- **Organization of learning resources is critical for efficient learning.**
 - Everyone learns from the same resources.
 - Easier to find the information you seek.
- **Target training to specific needs of learner.**
 - Development of individualized curriculums for today and tomorrow (career development).
- **Leverage generative AI in training development.**
 - Development of a process to aid in training material development for multiple uses.

TEAM PROCESS



Asked by Leadership to Identify PM Training Needs for PRT Leads

Identified PM Knowledge Gaps for PRT Leads

• Investigate Training Offerings / Customer Discovery / Pain Points

Explored Opportunities to Address Identified PM Knowledge Gaps

Develop Conceptual Skill-Based Architecture

• Centralize / Modularize / Individualize

Skill-Based PM Training Material Development (Incorporating GenAI)

• Work Package Agreements / Anomaly Resolution

TEAM PROCESS



DO PRT LEADS HAVE SUFFICIENT PM TRAINING?

ASK: Identify the gaps in PM training for PRT Leads.

- Management stated PRT Leads are lacking in PM skills.

INVESTIGATION: What PM skills are being taught to PRT Leads?

- Review and document the PM skills being taught to PRT Leads.

CUSTOMER DISCOVERY: Interview subject matter experts on PM gaps for PRT Leads.

- Not all PRT Leads have sufficient PM skills and/or knowledge.

A PRT Lead oversees the entire process of bringing a product from concept to market and managing the team responsible for design, development, manufacturing, and delivery.



INVESTIGATION: WHAT DID WE FIND?

Training for PRT Leads

- No required PM training for the PRT Lead (or other technical leads) role.
 - Some PRT Lead courses briefly touch on PM.
- Approximately 500 hours of required training (*e.g., role, corporate, program*) over 5 years.
- Approximately 500 hours of additional “recommended” training.
 - PRT Lead specific role; Comprises engineering and professional skill development courses.
- Duplicate topics across training courses.
 - For example: The “*What is NSE?*” topic is in almost every PRT course reviewed.
 - Duplicate topics may not teach the same information.

Interviewed 39 programmatic and technical staff (PRT Leads) in ND

- ≈130 knowledge gaps were found for PRT Leads in the areas of:
 - Schedule, Cost, Earned Value, Procurement, Change Management, Reporting, Risk, Information Management



DIVING DEEPER: PAIN POINTS FOR LEARNERS

Workforce Evolution

- Sandia's workforce has evolved to a "green" workforce, with a third having 5 or fewer years of service.

Job Commitment

- A job-hopping culture and post-and-bid promotion system can lead to a lack of time in a position.
 - Individuals may not stay in a job role long enough to receive all their training.

Deployment Issues

- The one-size-fits-all training model may not be aligned with specific job functions or individual needs.
- Some training is only offered a few times a year in classroom based instruction.
 - Availability of learning resources.

Centralization Challenges

- Fractured centralization and compartmentalization of training processes, tools, and resources.

Time Constraints

- More time spent in training means less time executing work.

Compliance

- Take training even though you may know the content.

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TARGETED TRAINING

How can we address two of the core pain points?

- (1) Too much training, (2) Difficult to find and/or take the training needed.

Would individualized curriculums for every employee soothe the pain points?

- Targeted training will cost less and maximize work execution to get to FPU faster.
- Targeted training provides you with what you need to know now to address *your* needs.

Our Actions

- The team worked to create a demo to show proof-of-concept.
- Went on a roadshow around Sandia and presented our findings along with our demo.
 - Presented to approximately 450 staff, management, and leadership.
 - Overwhelming positive feedback. *"Why are we not doing this already?"* – Executive Leadership Individual
 - Processed feedback to plan next steps.

CONCEPTUAL EXAMPLE OF BUILDING YOUR OWN JOURNEY

Demo of prototype example demonstrating the creation of an individualized curriculum.

The screenshot displays the AEMS (ARAS ENGINEERING) web application interface. The main navigation bar includes 'INSIDE', 'Directory', 'Policy', and 'News'. The 'AEMS - QUALITY' section is active, with sub-links for 'Home', 'Document Management', and 'Change Management'.

Choose your path

Buttons: Change Management, Procurement, Cost, Reporting, Confirm.

Schedule

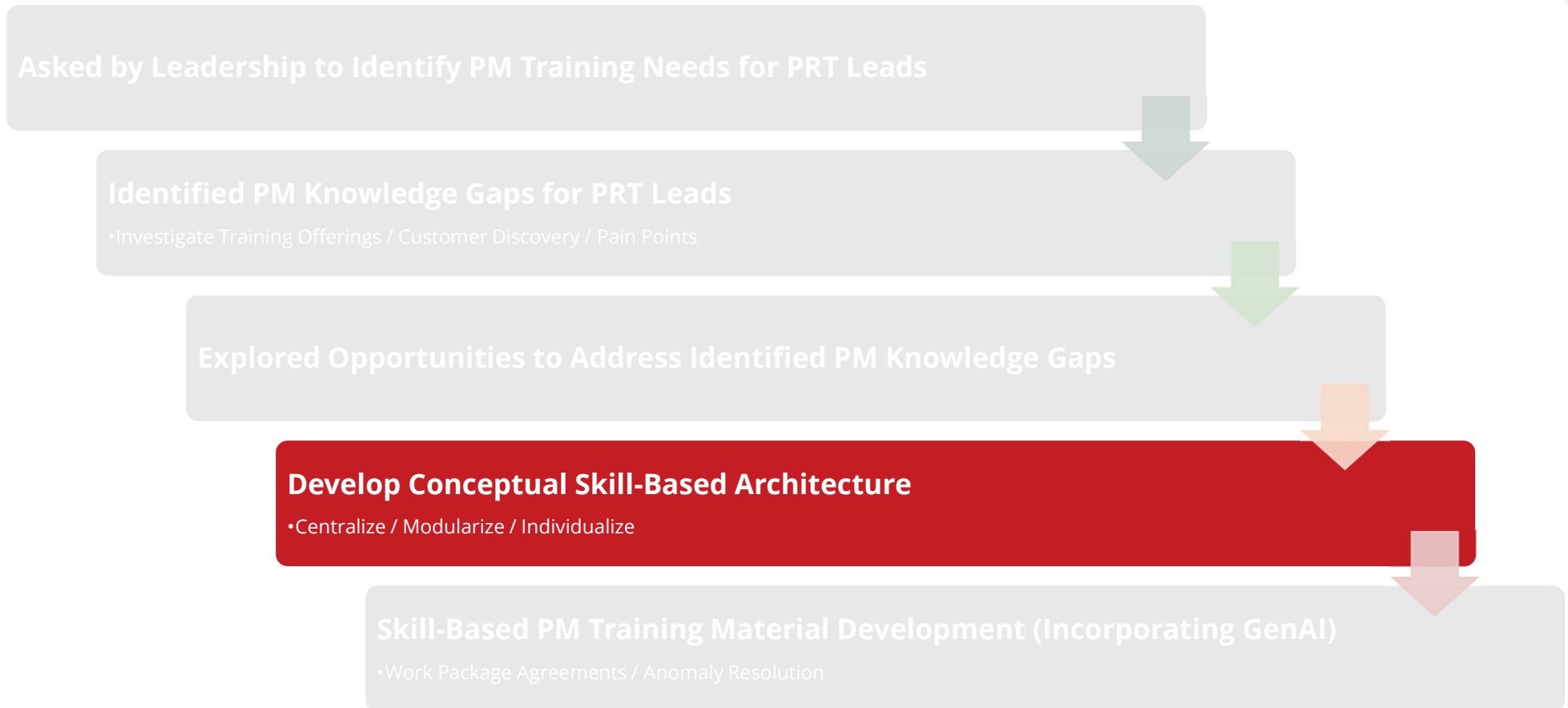
✓ Does the PRT require a schedule?
 ✓ Do you need to negotiate schedule activity time?
 Do you need to report on the schedule?
 No Yes
 Do you participate in schedule forecasting?
 No Yes
 Do you participate in schedule statusing?
 No Yes
 Has a schedule been created?
 No Yes

Resources

Export to Excel

Recommended Priority	Competency	Sub Competency	Course
1.01	Schedule	Scheduling Basics	Need Training: Introduction to Scheduling Terminology
1.02	Schedule	Scheduling Basics	Need Training: Scheduling at Sandia
1.03	Schedule	Scheduling Basics	Need Training: Schedule Value
4.01	Schedule	Tools	Need Training: P6 at Sandia Overview
4.02	Schedule	Tools	Introduction to Primavera P6
5.01	Schedule	Knowledge Points	Need Training: Introduction to Knowledge Gaps

TEAM PROCESS





HOW TO CREATE INDIVIDUALIZED CURRICULUMS?

1. Organizational Construct for Skills

- *What are the skills that individuals need to know?*

2. Centralization of Learning Resources

- *How do we create a repository of on-demand videos, job aids, downloadable files (xlsx, mpp)?*

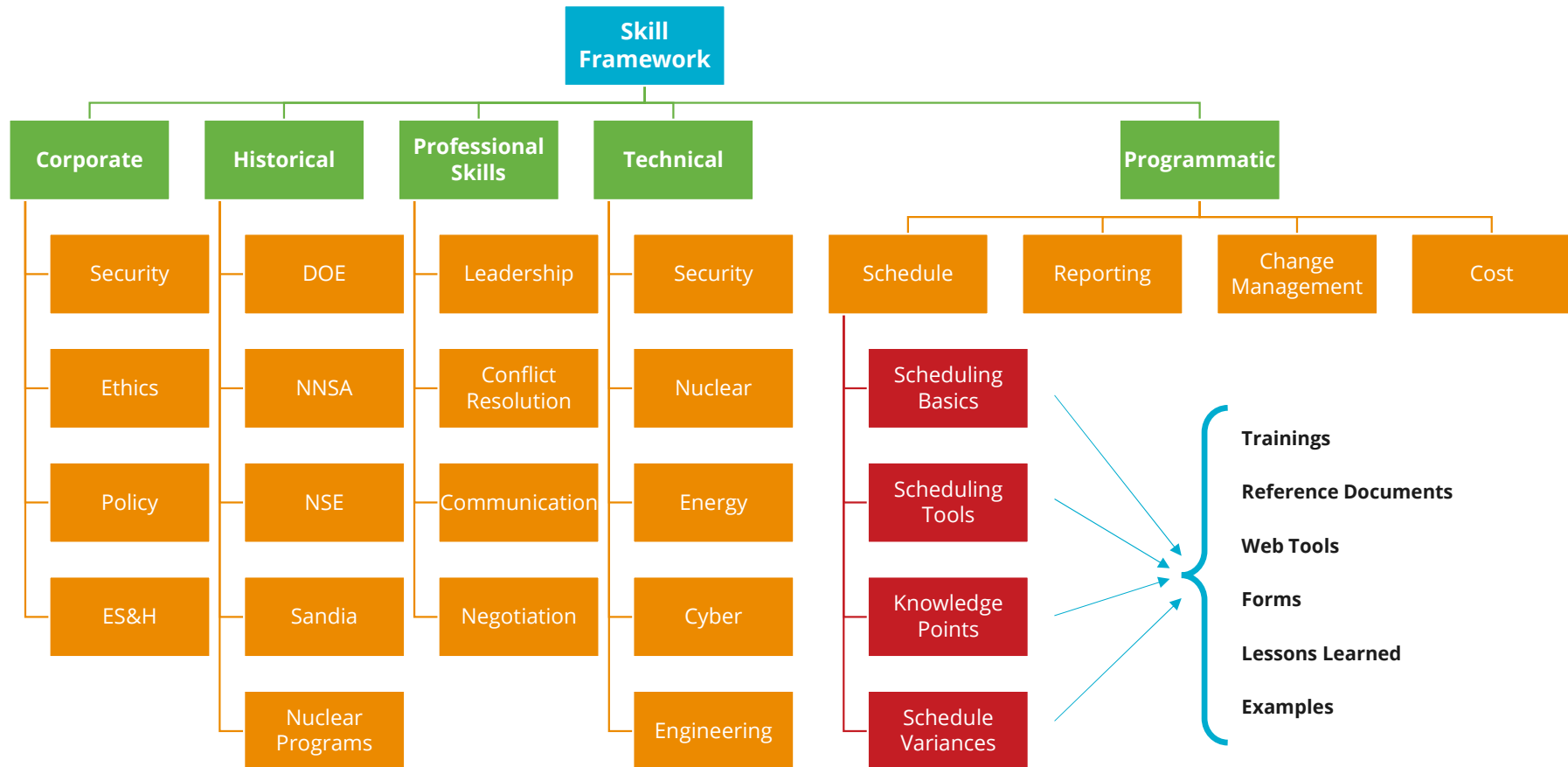
3. Process to Identify an Employee's Training Needs

- *How do we develop the hierarchical question tree for each skill area?*

4. Building an Integrated Tool

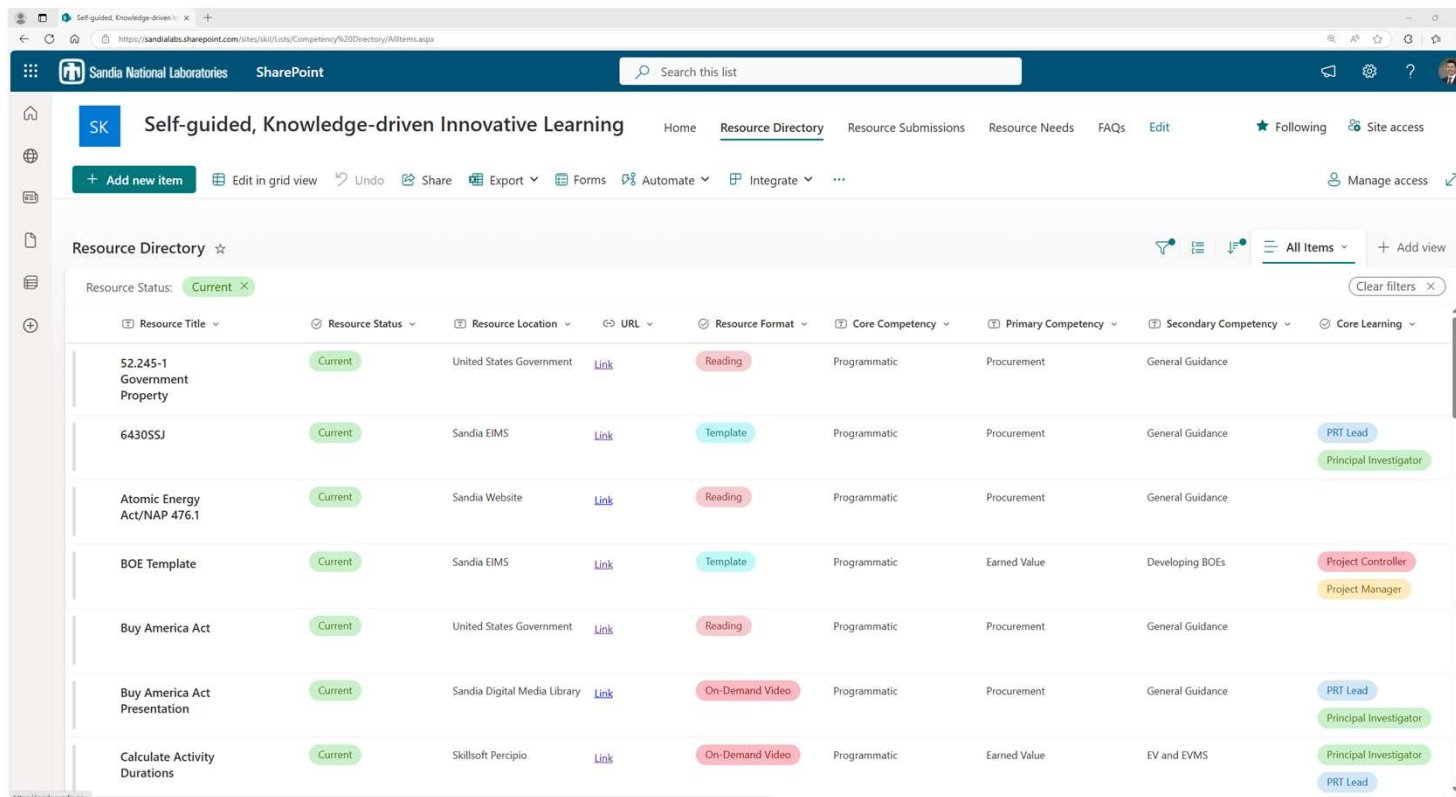
- *Is it possible to put this into a tool that **dynamically generates** on-demand, **modular** training based on an individual's needs and role throughout product lifecycle?*

1) CONCEPTUAL ORGANIZATIONAL CONSTRUCT FOR SKILLS



2) CENTRALIZATION OF LEARNING RESOURCES

Demo of prototype example demonstrating the creation of a centralized repository.



The screenshot displays a SharePoint 'Resource Directory' page for Sandia National Laboratories. The page title is 'Self-guided, Knowledge-driven Innovative Learning'. The 'Resource Directory' tab is active, showing a list of resources. The table includes columns for Resource Title, Resource Status, Resource Location, URL, Resource Format, Core Competency, Primary Competency, Secondary Competency, and Core Learning. The resources listed are:

Resource Title	Resource Status	Resource Location	URL	Resource Format	Core Competency	Primary Competency	Secondary Competency	Core Learning
52.245-1 Government Property	Current	United States Government	Link	Reading	Programmatic	Procurement	General Guidance	
6430SSJ	Current	Sandia EIMS	Link	Template	Programmatic	Procurement	General Guidance	PRT Lead Principal Investigator
Atomic Energy Act/NAP 476.1	Current	Sandia Website	Link	Reading	Programmatic	Procurement	General Guidance	
BOE Template	Current	Sandia EIMS	Link	Template	Programmatic	Earned Value	Developing BOEs	Project Controller Project Manager
Buy America Act	Current	United States Government	Link	Reading	Programmatic	Procurement	General Guidance	
Buy America Act Presentation	Current	Sandia Digital Media Library	Link	On-Demand Video	Programmatic	Procurement	General Guidance	PRT Lead Principal Investigator
Calculate Activity Durations	Current	Skillsoft Percipio	Link	On-Demand Video	Programmatic	Earned Value	EV and EVMS	Principal Investigator PRT Lead

3) PROCESS TO IDENTIFY AN EMPLOYEE'S TRAINING NEEDS

Demo of prototype example demonstrating a top down questionnaire.

The image displays a sequence of three overlapping questionnaire screens, illustrating a top-down process for identifying training needs. Each screen contains a question, a list of options with checkboxes, and a 'Next' button.

Screen 1: What Mission Area do you support?

- ☐ Energy
- ☐ Global Security
- ☐ National Security Program
- ☐ Nuclear Weapons

Screen 2: What Mission Area Topic do you support?

- ☐ Safety & Security
- ☐ Weapons Science & Technology

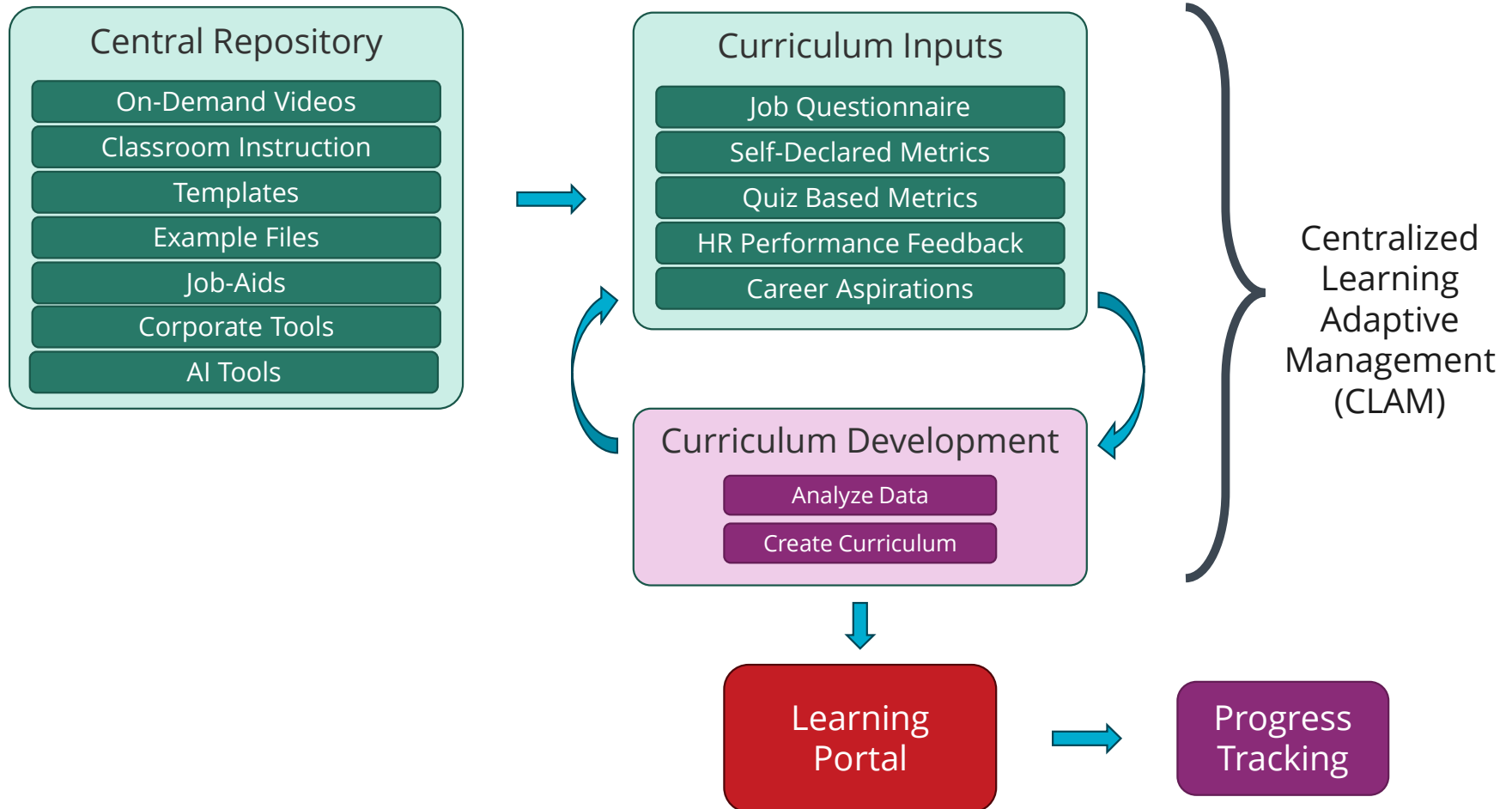
Screen 3: What program(s) do you support?

- ☐ W80-4 LEP
- ☐ W87-1 MOD

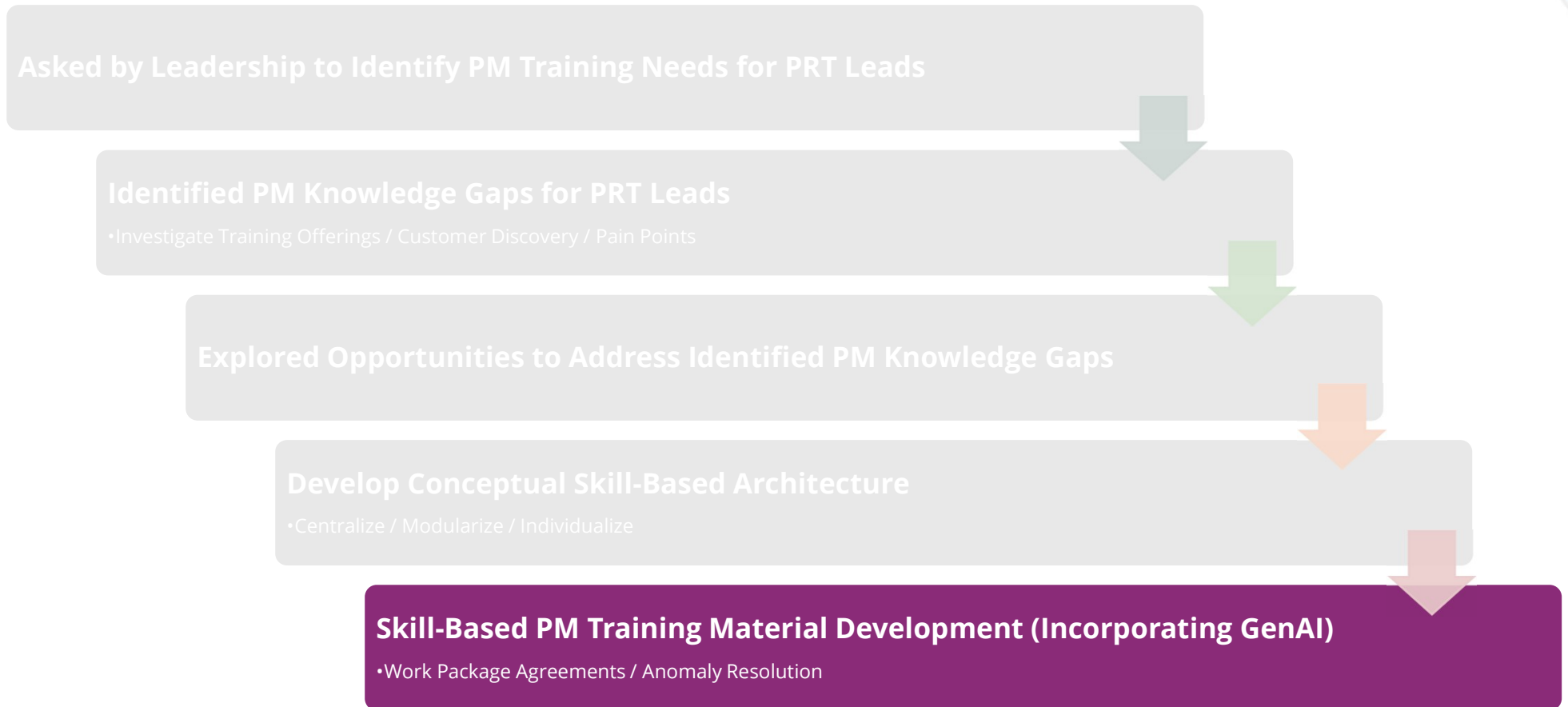


4) BUILDING AN INTEGRATED TOOL

Conceptual Example of Technology and Resource Integration

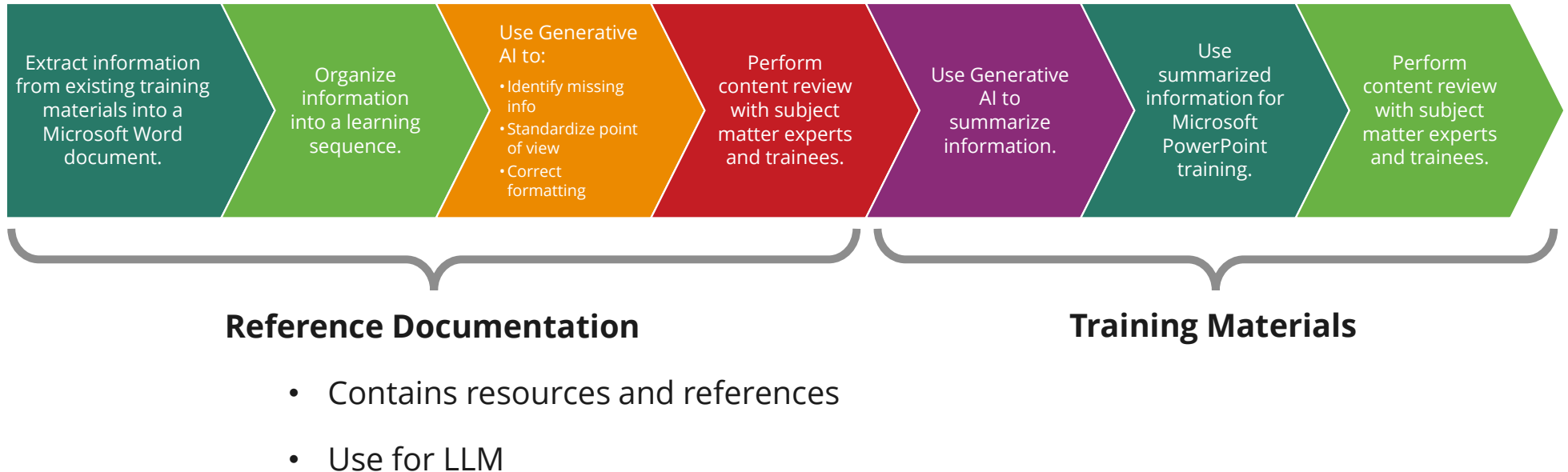


TEAM PROCESS



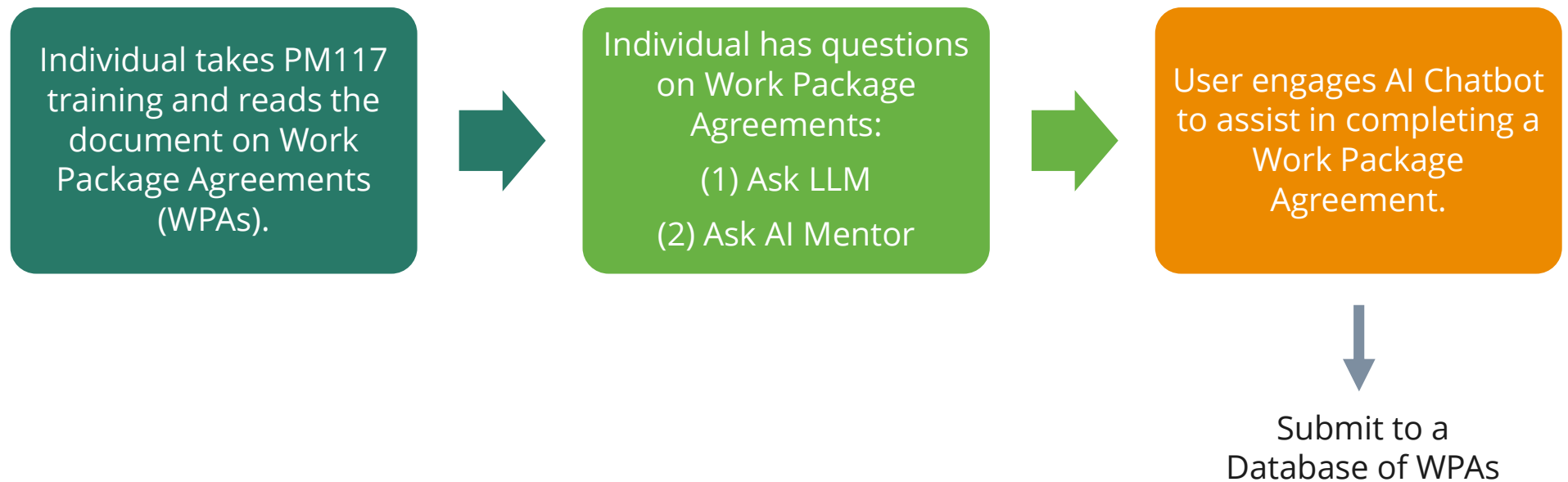


USING GENAI TO ASSIST IN TRAINING MATERIAL DEVELOPMENT



AI = Artificial Intelligence; GenAI: Generative Artificial Intelligence; LLM= Large Language Model

LEARNING EXPERIENCE EXAMPLE #1



***AI** = Artificial Intelligence; **LLM**= Large Language Model; **WPA** = Work Package Agreements*



KEY POINTS

- **Learning strategies must adapt to changes in the workforce.**
 - No longer have the long term career employees.
- **Organization of learning resources.**
 - Everyone learns from the same resources.
 - Easier to find the information you seek.
 - Required to generate individualized curriculums.
- **Leverage Generative AI**
 - Assists in editing existing training materials.
 - Summarization from the reference documents to create training materials.



TEAM (*CORE AND SUPPORT MEMBERS*)

Technical

Mark Kinnan (00340)
NDPMO Systems Engineer
Project Lead

Amy Moy (10410)
Systems Engineering Lead

Josh Smith (07552)
PRT Lead

James Levy (05254)
PRT Lead / System Component Lead

Mark Onuigbo (07625)
PRT Lead

Business

Shannon Boynton (10414)
Program Manager

Annamarie Menicucci (10415)
PPDS Administrative Support

Georgianna Bernal (10414)
Project Manager

Corporate / ND

Erik McIntyre (00517)
KDP Representation

Christine Cole (03261)
TEDS Representation

Tool Development

Toby Trujillo (09352)
Software Systems Engineer

Jordan Wacker (09352)
Software Systems Engineer

Human Resources

Logan W Colyer (03291)
HR Program Analyst

Jeanho Rodriguez (03291)
HR Data Analyst

Management

Christine Mitchell (00340)
NDPMO Senior Manager

Bernadette Gallegos (10400)
Senior Manager (Project Management)

Michael Famiglietta (10410)
Senior Manager (Project Management)

Bob Velasco (10414)
Manager (Project Management)

Robert Velasquez (03257)
Manager (HRBP)

A diverse and integrated team for success now and into the future!



QUESTIONS?