Anticipatory Knowledge Delivery

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Knowledge, Information & Collaboration Solutions

September, 2017

MITRE

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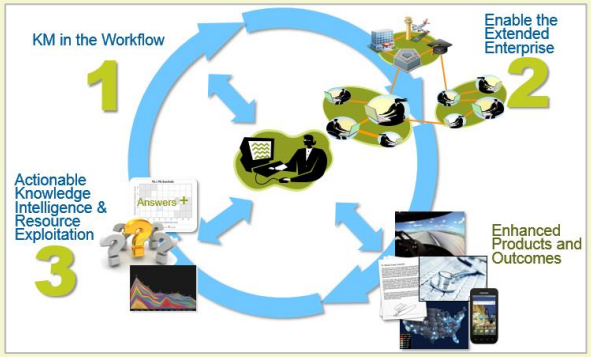
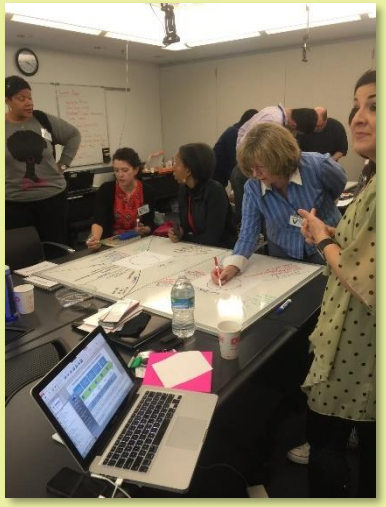
Themes for This Meeting

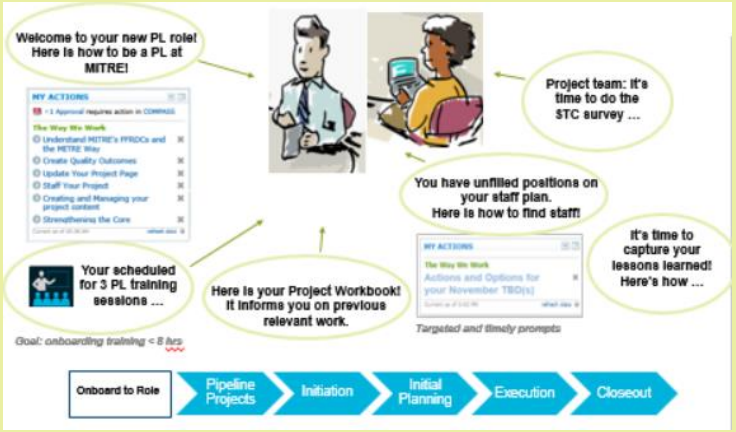
Knowledge Driven Enterprise - 2015



Collaborative and Neighborhood Spaces



Anticipatory Knowledge Delivery: "Intelligent Digital Assistants"



Human-Machine Teaming: Calibrated Trust

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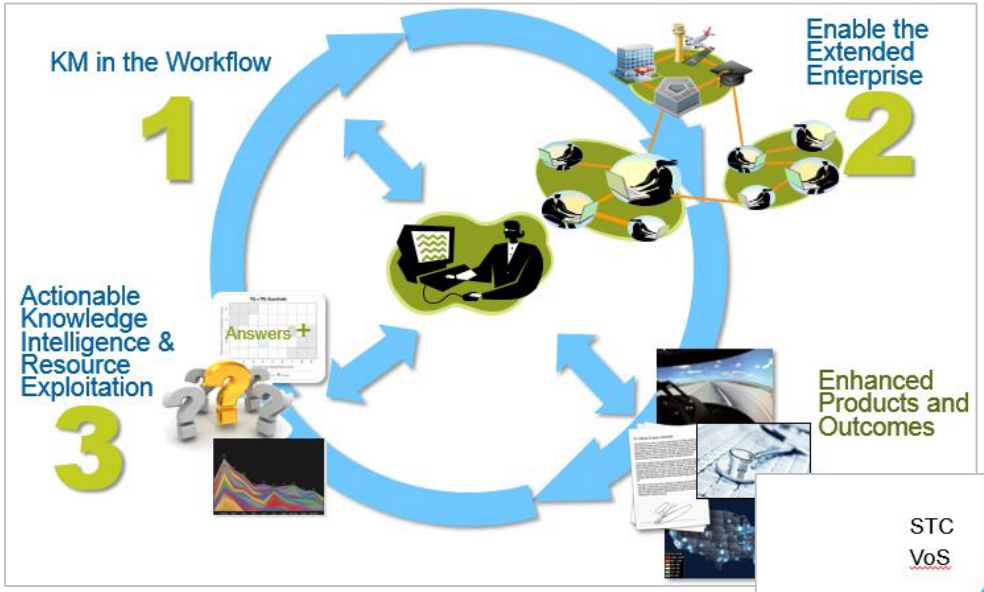
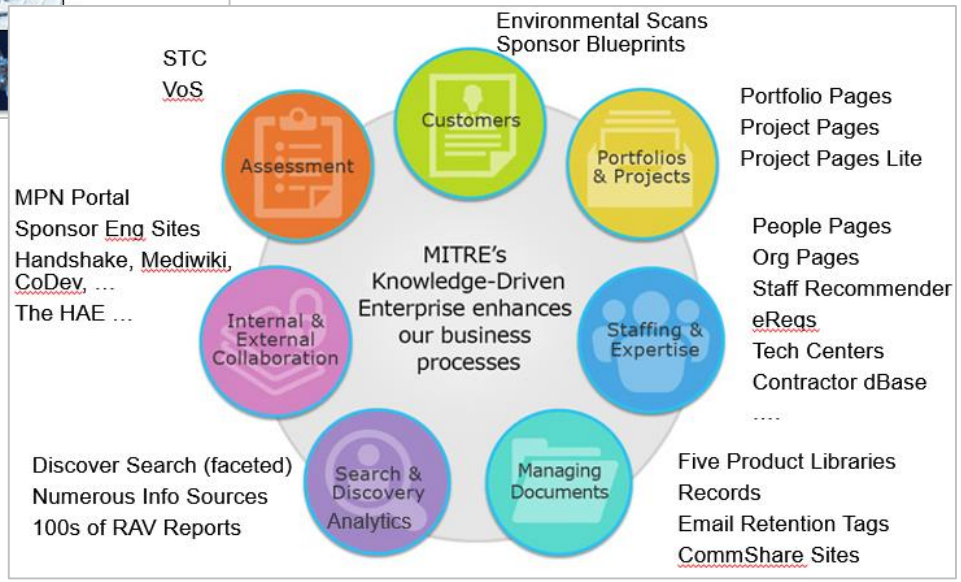
Background: Three Year Strategy Knowledge Driven Enterprise





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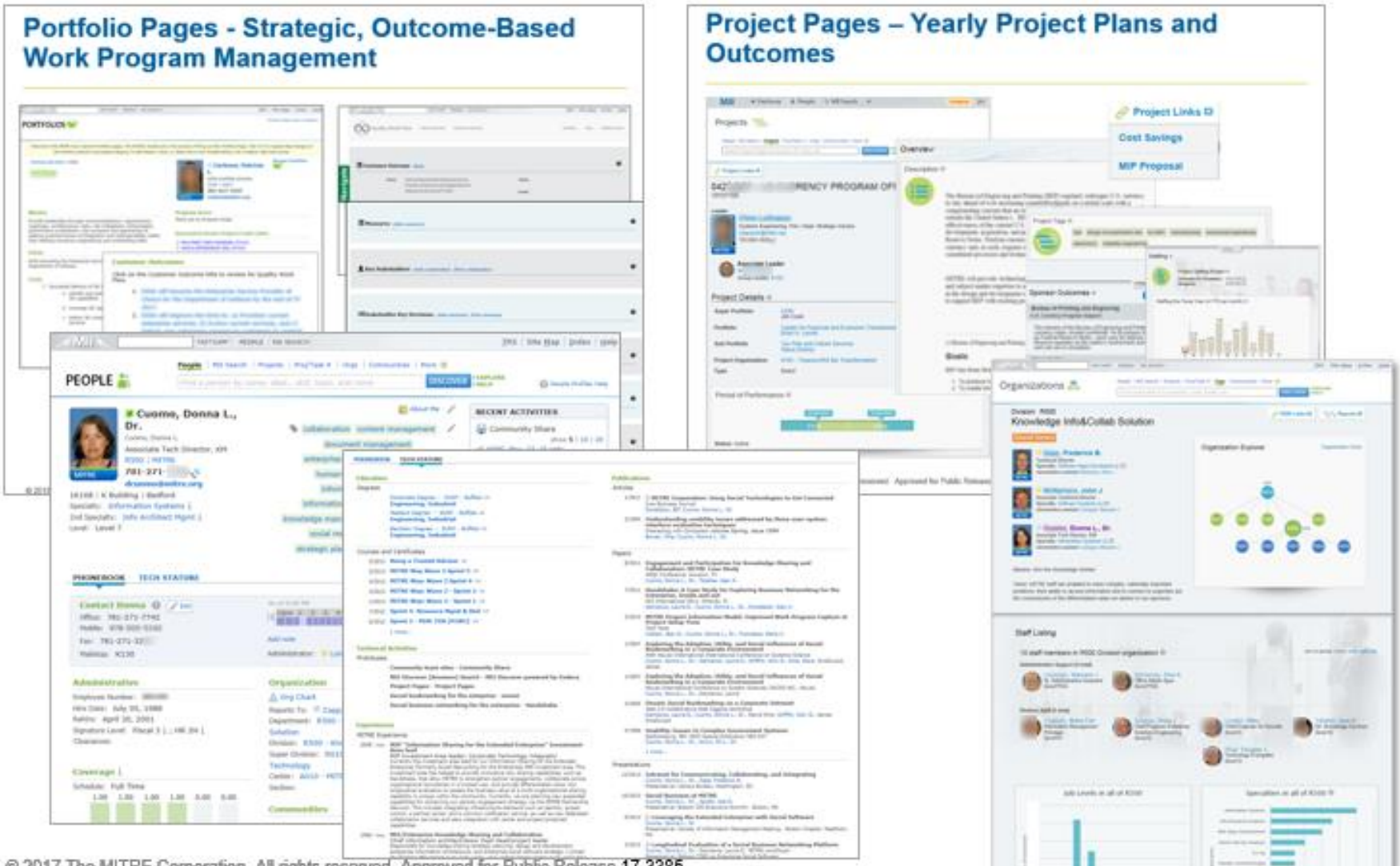
People, Portfolio, Project, Organization Pages



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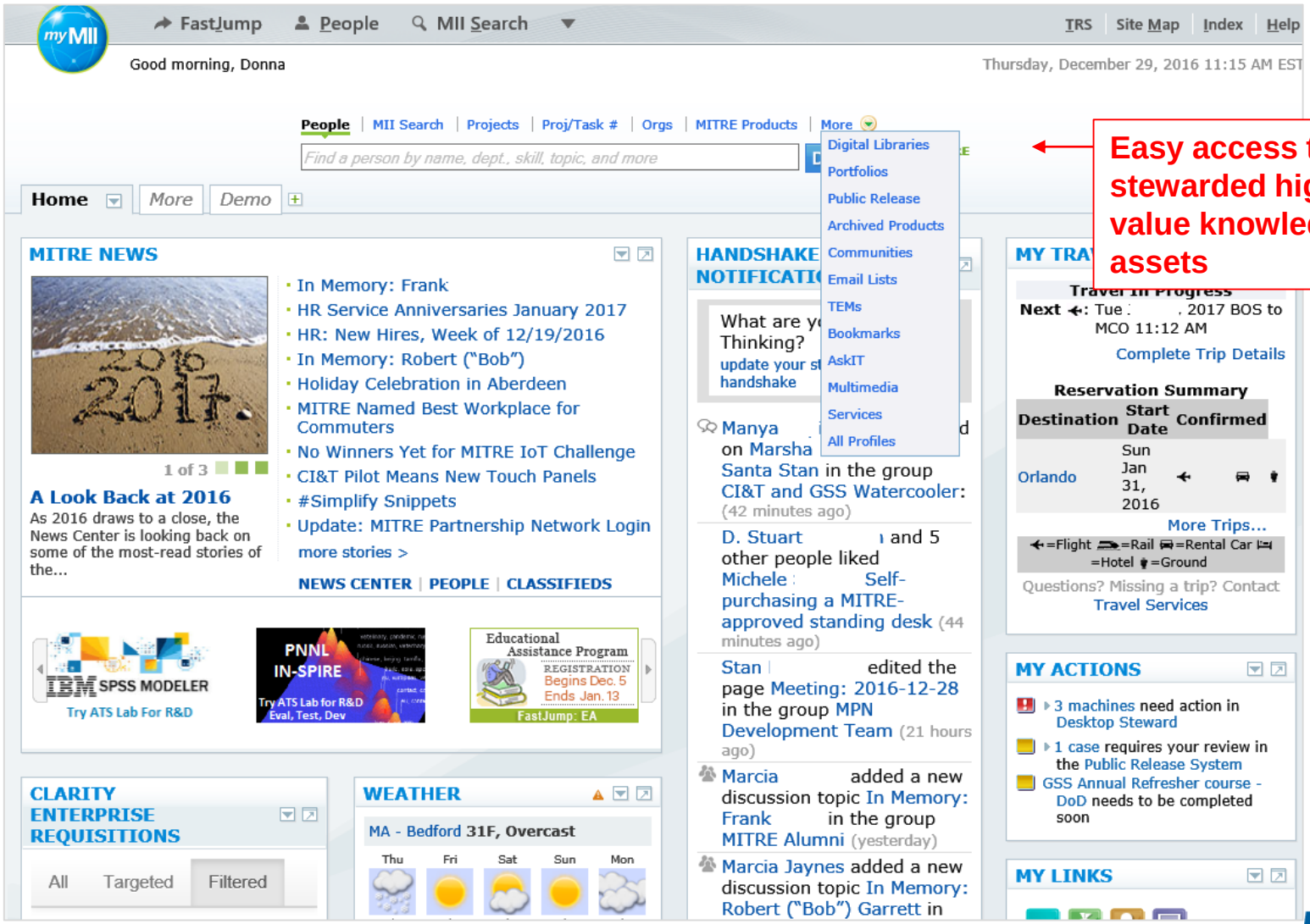
MyMII – Customized Information, Resources at Your Fingertips



Easy access to well-stewarded high value knowledge assets

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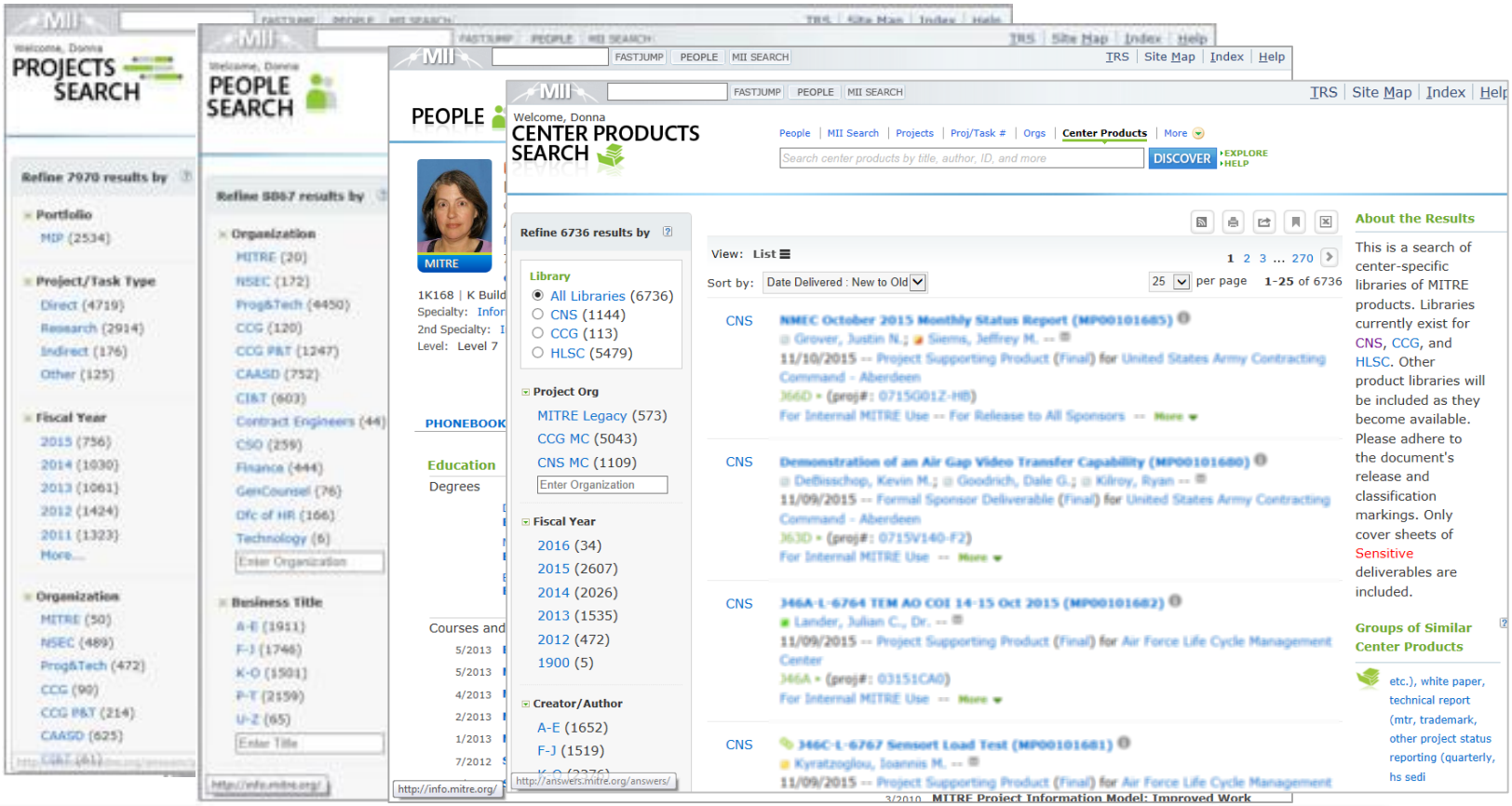
Retrieval Capabilities in Faceted Search, Query Refinement

People Projects Portfolios Orgs Communities PRR Products …



Future: Customers Ent Reqs Web Sites …

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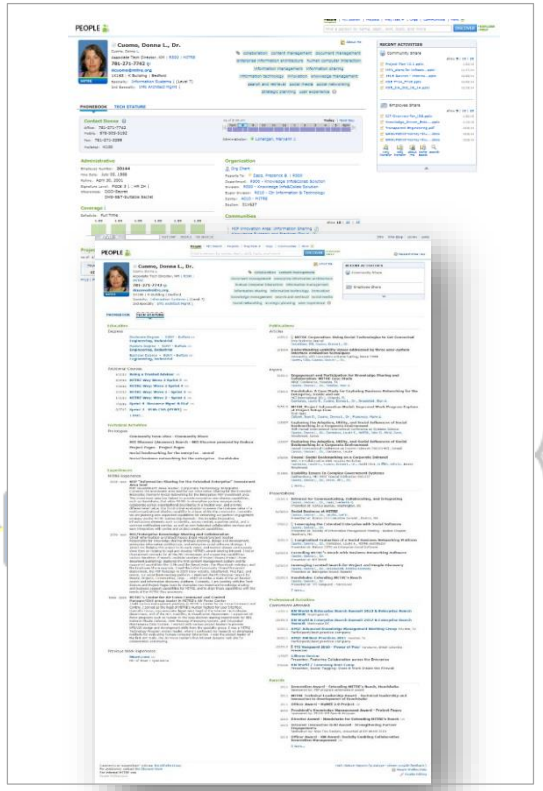
Most of the Work is Done for You

Integration across 13 of our business and knowledge systems

- Tags
  - Tags WS
  - Tech Stature tags
- Peoplesoft
  - MITRE API Person WS
  - Education, Last Job prior to MITRE, Courses taken via MITRE, MITRE awards, Military experience, Foreign lang
- Public Release System
  - Web service
  - Public released docs
- Clarity Clearances
  - Web service
  - Collateral clearance
- Clarity Availability
  - Web service
  - Allocation to Projects
- Project Outcomes
- Handshake groups and colleagues
- Memberships
- Roles
- Public release repository prr
- Spigit



- EDW ODS
  - Mitre API Person WS
  - Core Person data
- LUIS
  - Person WS and Sites WS
  - Office phone and alternative contact push
- Oracle Fin
  - IW Service
  - Project charges
- Ccures
  - Static directory
  - Employee photos
- Exchange
  - Availabilty WS
  - Free busy info
- Sharepoint
  - Comshare Docs and Communities Srv
  - List of Comshare docs with doc site, and urls, communities and urls
- Presence
  - DLL MSFT Office
  - Presence status
- Empshare
  - Transfer folder
  - List of docs in Transfer folder

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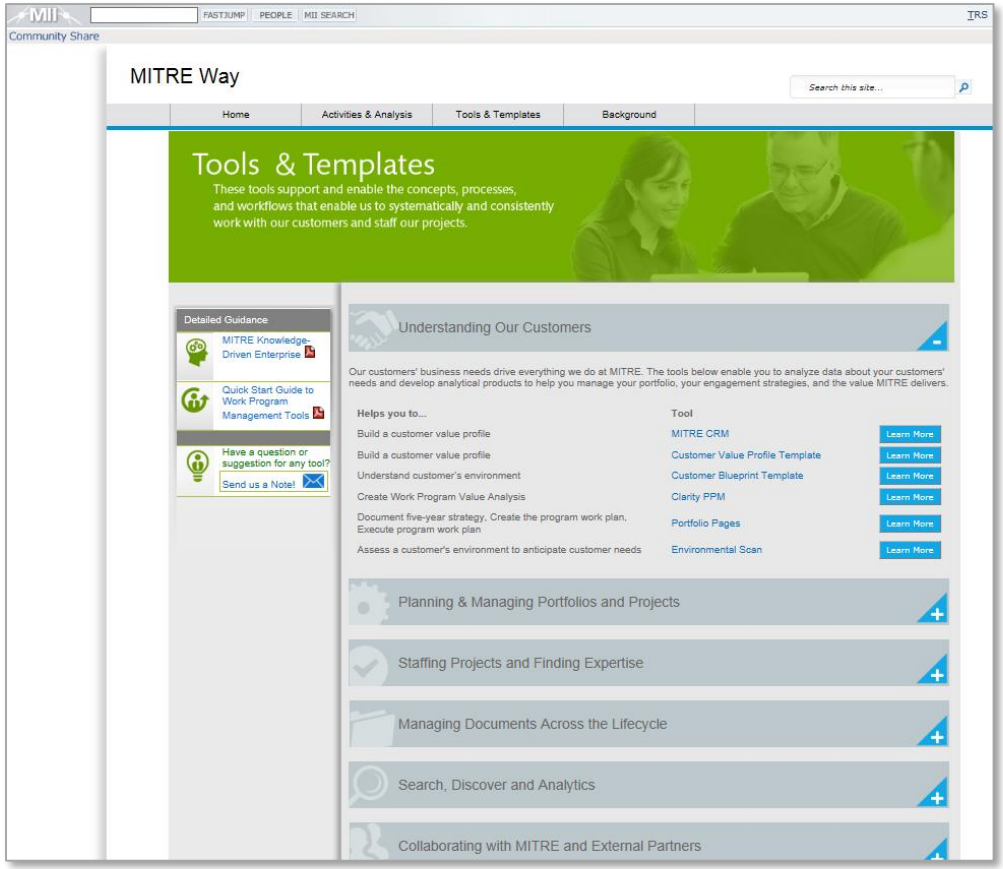
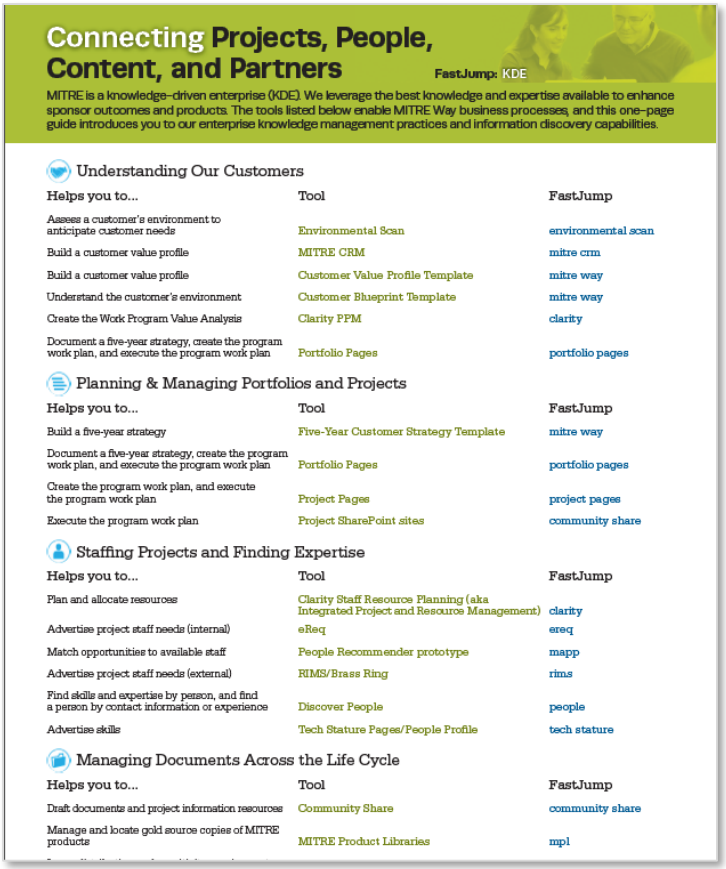
Communicated with Traditional Techniques: Website, One Pager, News Story





Grouping tools, guidance, and training by business process phase

FJ: MITRETools

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Realization: Staff Need On-going Assistance with Knowledge and Business Processes

- Staff are not aware of all the capabilities
- 100s of applications, tools, features, processes, knowledge bases, techniques, actions, collaboration opportunities
- Consistent role-based onboarding was lacking
- 600 – 700 new employees per year
- It's always evolving
- Staff are focused on doing and managing the work

https://plus.google.com/+Transformsolution

Need Anticipatory Support: "Knowledge and Business Process Digital Assistants"!

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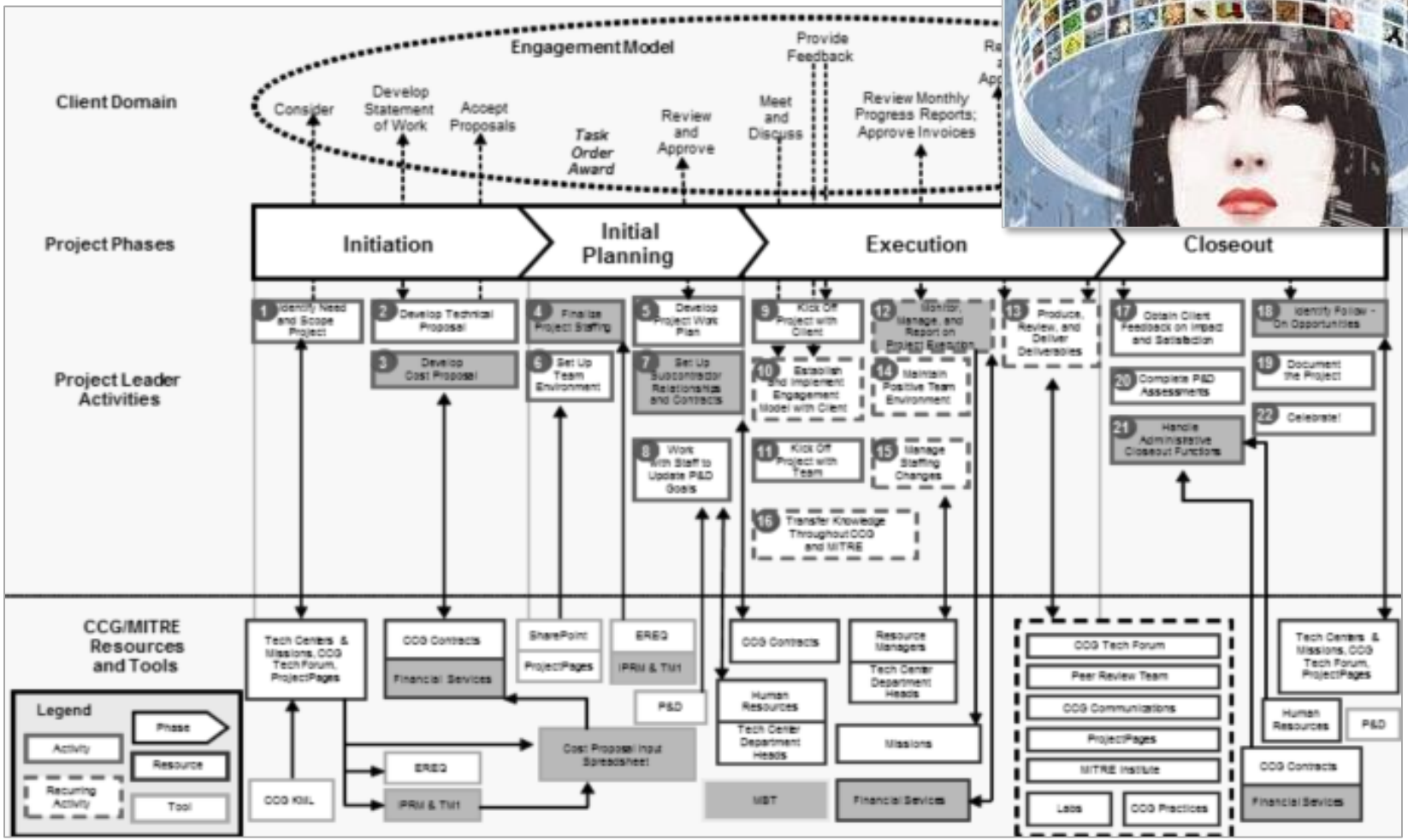
Past: "Navigate Work Program Processes and Onboarding" on Your Own



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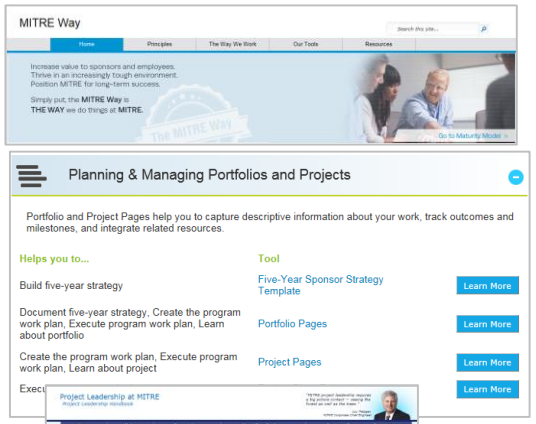
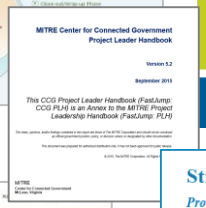
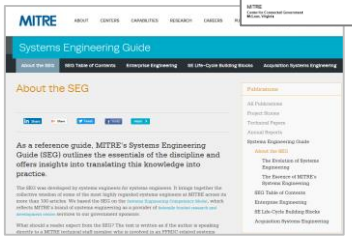
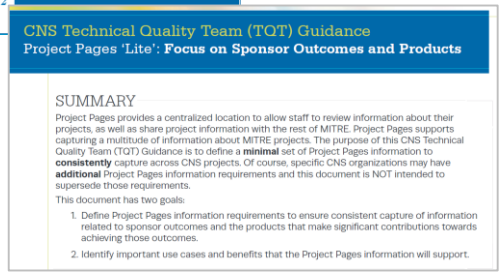
Past: Navigate Process Content and Knowledge Bases on Your Own









- Content overload
- Don't know what exists
- 100s of pages of out-of-date project guidance
- Lack of "quick start" guides
- User experience not coordinated across the enterprise
- Inconsistent practices and processes

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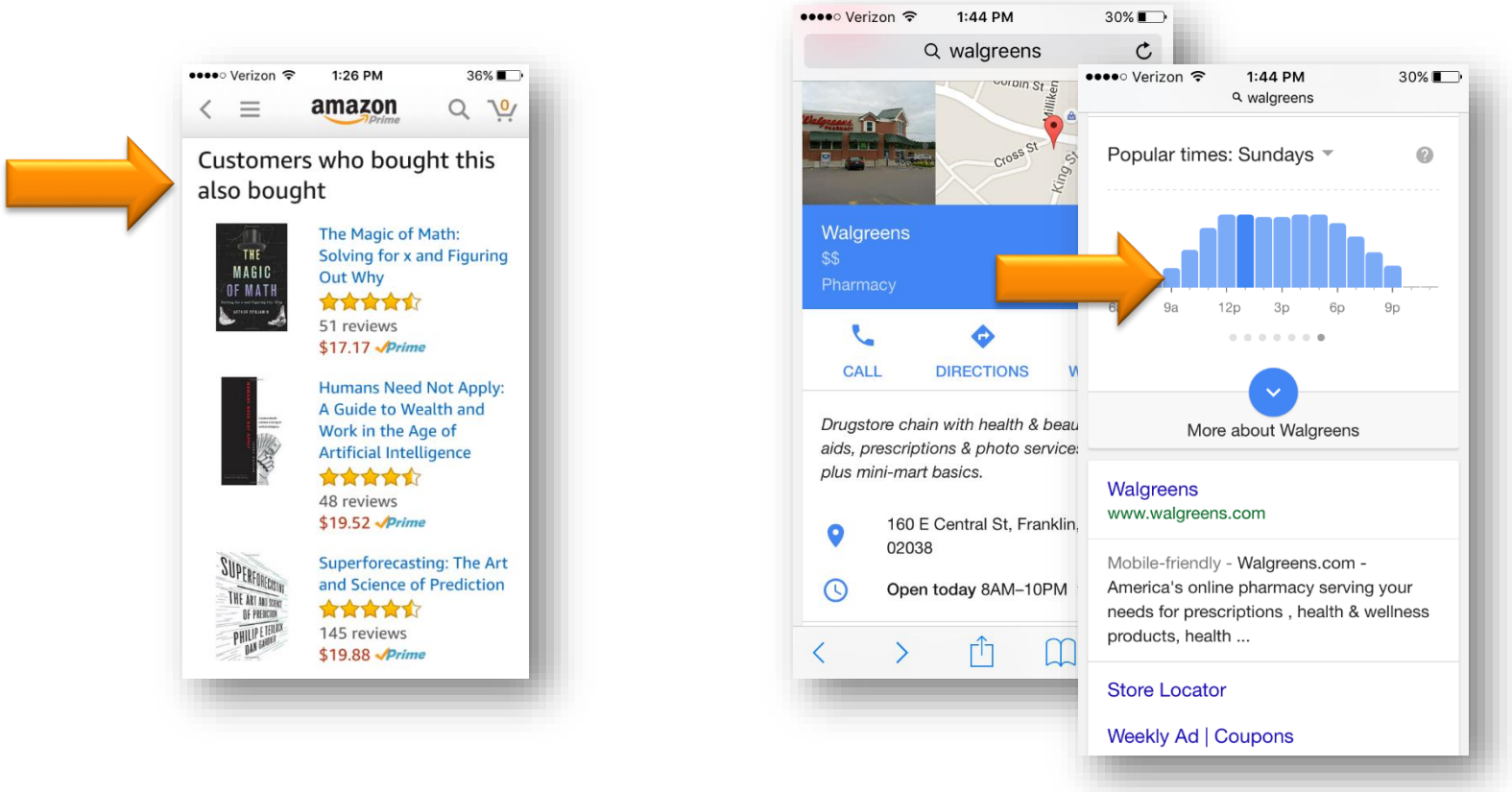
Anticipatory Knowledge Delivery

'Anticipate' your needs and deliver knowledge to help you



What are the possibilities for automating support to employees?

Anticipating their knowledge and process needs?

"Right information to the right person at the right time"

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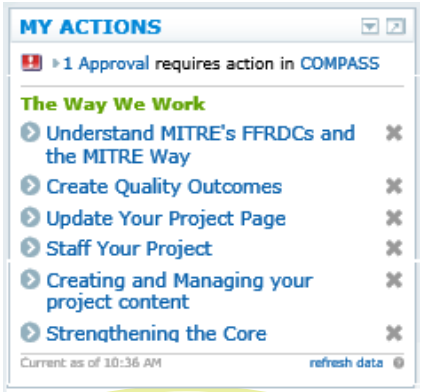
"Anticipatory Assistance" for Staff

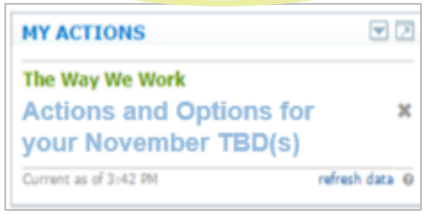
ASSIST the staff throughout critical business processes and role onboarding

Welcome to your new PL role! Here is how to be a PL at MITRE!



Project team: It's time to do the STC survey …

You have unfilled positions on your staff plan. Here is how to find staff!



Targeted and timely prompts

It's time to capture your lessons learned! Here's how …

Your scheduled for 3 PL training sessions …

Here is your Project Workbook! It informs you on previous relevant work.

Goal: onboarding training < 8 hrs

Onboard to Role → Pipeline Projects → Initiation → Initial Planning → Execution → Closeout

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Anticipatory Knowledge Delivery (AKD) Concept

External Sources

- Sponsor budgets
- Legislation
- FFRDC-related

Trigger Event

User profile: Role, status, topic/ tags, activities, org, sponsor …

Congress just …

It's time to…

The status is…

Here is how you …

Recommended for you…

Anticipatory action fires and pushes:

- Recommendations
- Action alerts ...
- Process guidance
- Technical content
- Reminders

For enhanced insights

Business Logic

Sensor Layer

Trigger

Internal Sources

Databases

Documents

Applications

Reports, Metrics

Guidance

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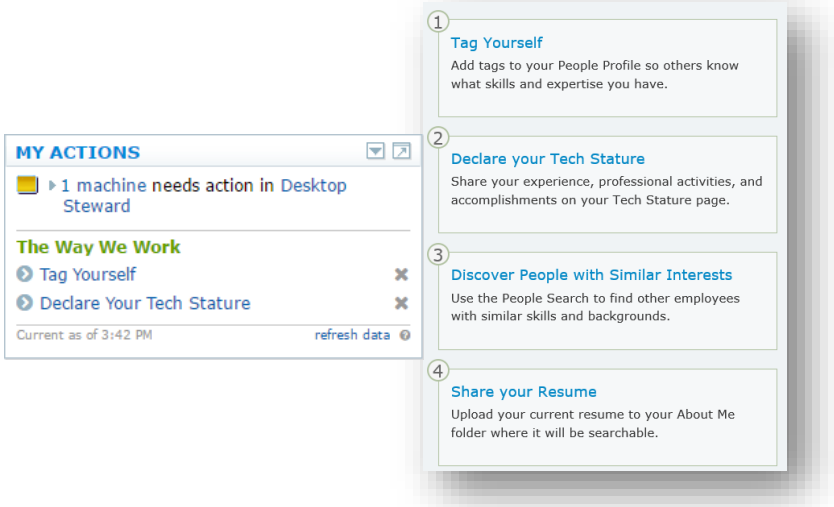
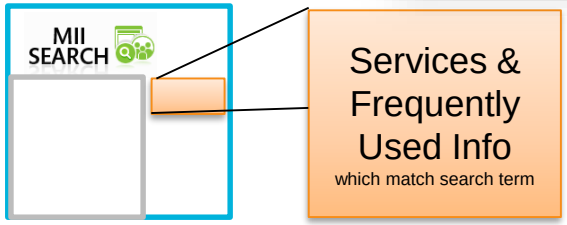
Anticipatory Knowledge Delivery (AKD) Use Cases Deployed in FY16 and FY17

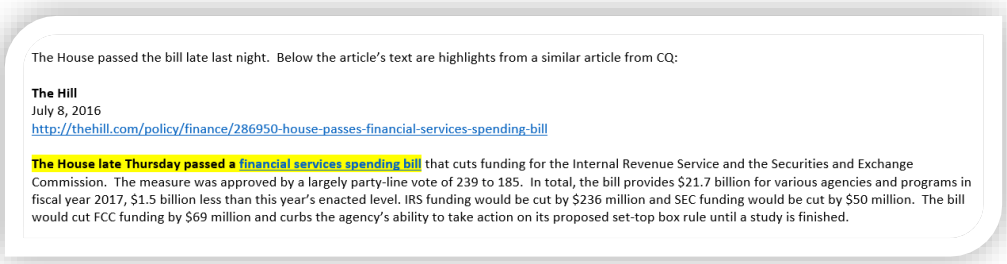
- **Business Process, Role-based Use Cases**
  - New Employee
  - New Project Leader
  - New Staffing Need (PL)
  - New Portfolio Leader
  - Operational Portfolio notifications
  - Operational Project notifications
  - Operational HR notifications



- **Anticipatory MII search pilot**
  - Provide an additional panel of useful service information which matches your search term



- **External alerts to MITRE senior managers**
  - Sponsor budget changes/drift
  - Legislation that affects MITRE or other FFRDCs



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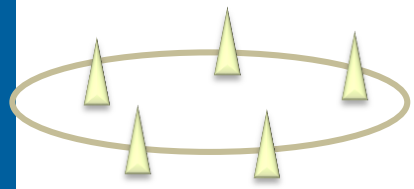
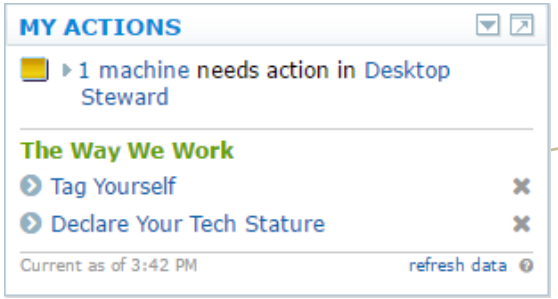
AKD Concept Overview

Define the "trigger event" – anticipate staff has a need



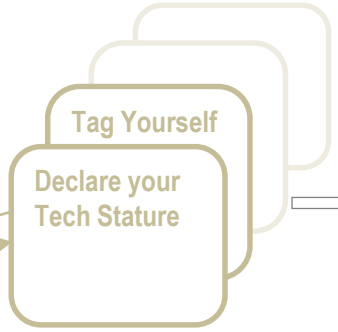
Event messaging system detects, acts upon, and persists the events

"The Way We Work" Notifications Delivered over Time



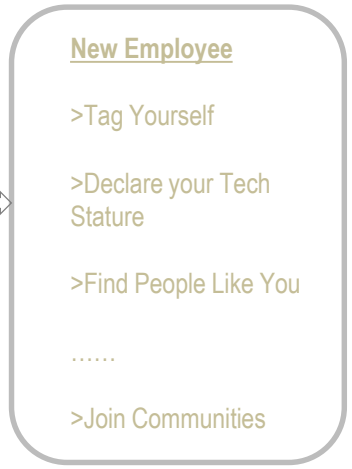
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
PL JumpStart Week	*Designated New PL this week!*	PL JumpStart (+1)		Update your Project Page & Outcomes (+1 to +4)		
MITRE Way & STC Week		MITRE Way (+8)		Strengthening the Core (+10)		
Leadership & Staffing Week		Staffing (+15)		Leadership (+17)		
PL Connect Week		Connect & Stay Informed (+22)		Reference (+24)		PL Self-assessment (+ 3 months)

"Bite size information"



- Bite-size statement of "why" and "how to" quick start
- One per notification

"Show me all"



- List of all notifications with "the why", "the action", and pointer to "how to"

Define the notifications, their timing and sequencing

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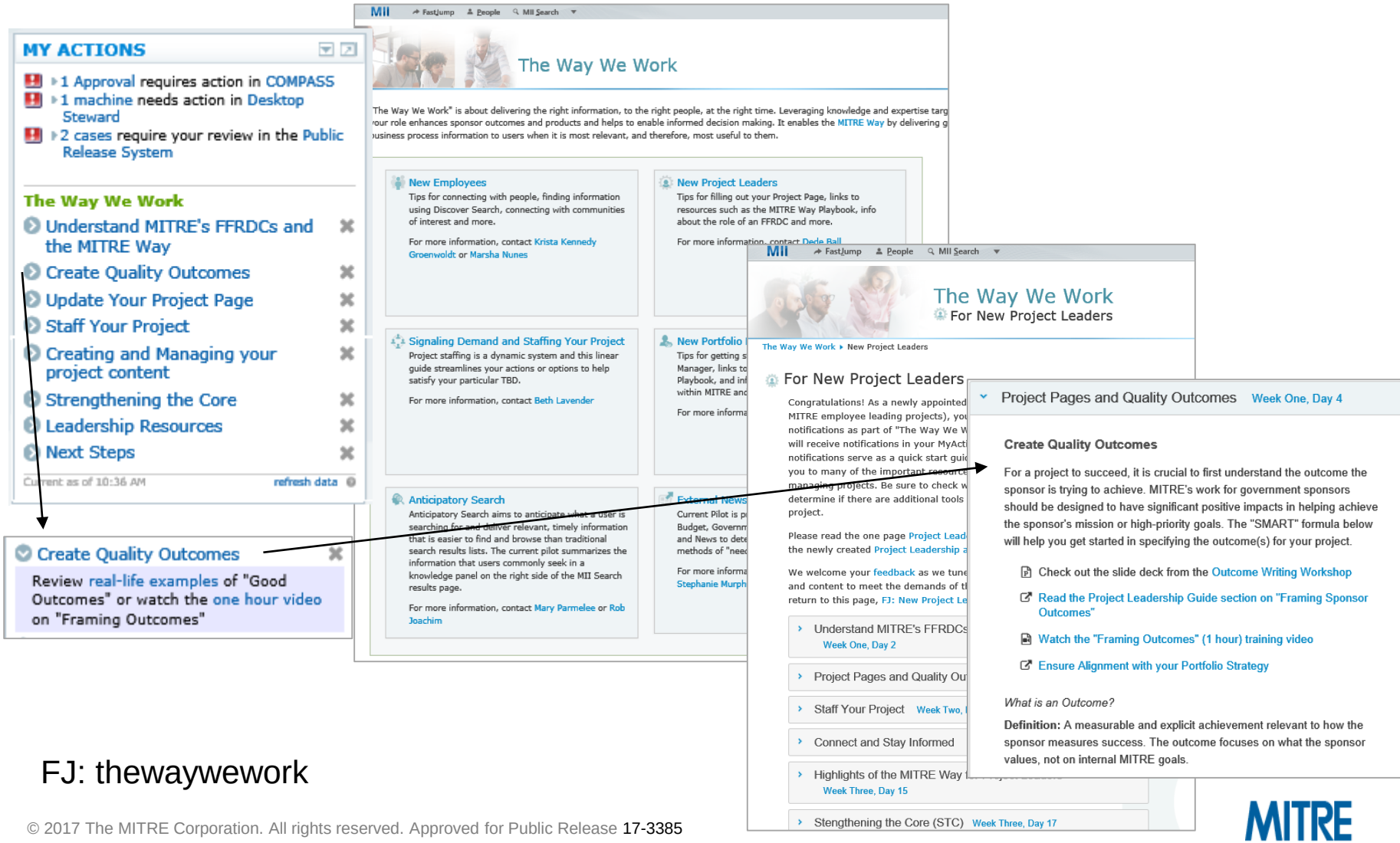
The AKD User Experience



FJ: thewaywework

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Use Case:
Modernizing the New Employee Onboarding Experience

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New Employee Onboarding Experience
pre-January 2016

- **New Employees**
  - Received approximately ~54 forms and 84 pieces of documents between the time they accept the position & the first day
  - Went through a ½ day orientation and released to their department
  - Computers were delivered to the office
  - Had 10-12 emails from Corporate level in their inbox on the first day (in addition to about 25 others)
  - Some centers had their own ½ to full day orientation
- **Findings**
  - ½ day wasn't enough time
  - Weren't using industry best practices
  - Sites had separate and inconsistent programs
  - Help Desk calls spiked with new employees every Monday
  - Dated website

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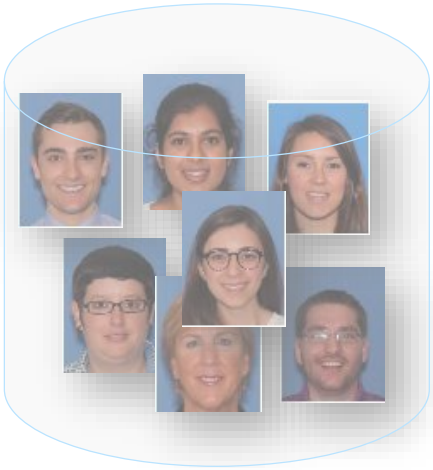
New Employee AKD Use Case

Goal: Create a welcoming experience and provide a foundation for new hires to begin their career at MITRE

Detect New Employees



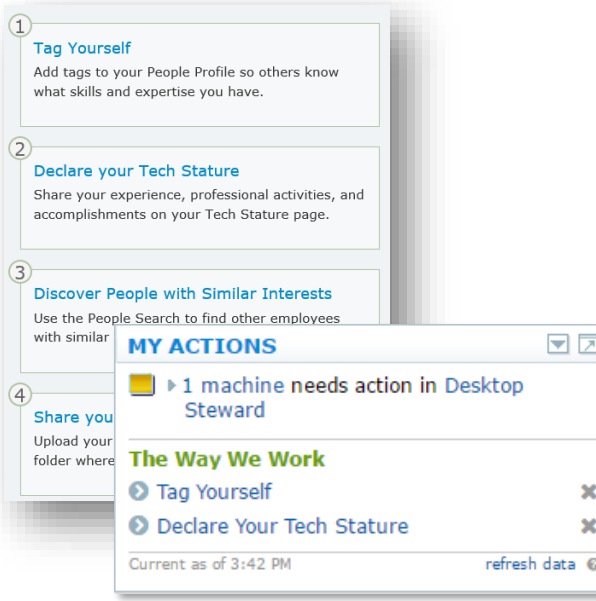
Deliver Notifications over a Period of Time

myMII

"The Way We Work" notifications

Event Messaging System
Detect, act upon, and persist system events

Provide Enterprise Guidance in a New Format



Week 1: Tags, Tech Stature

Week 2: People Search, About Me, Project Search

Week 3: Communities, Handshake, Discover

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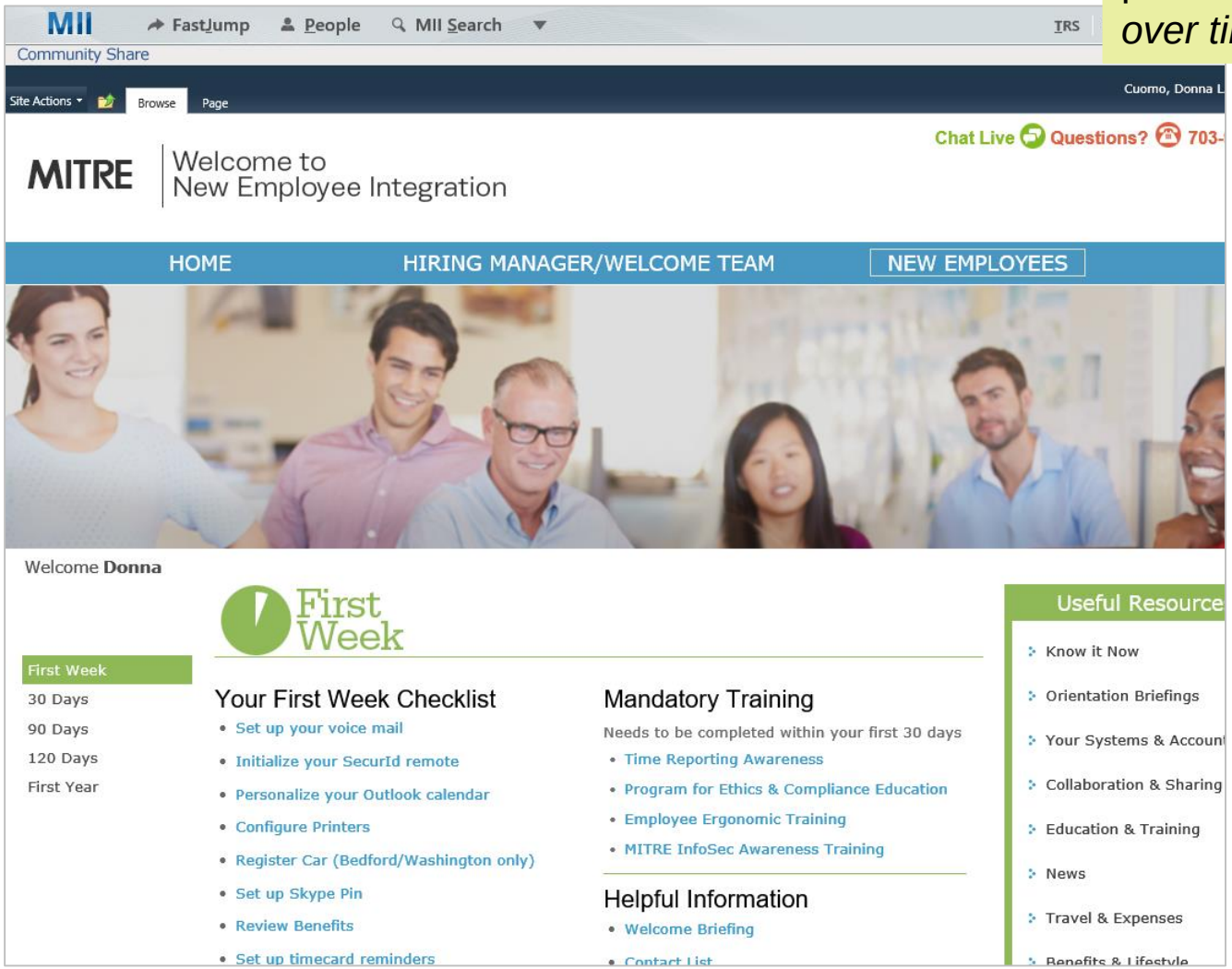
New Website for New Employees (Employee View and Manager View)

Enforces the notion that onboarding is a process that occurs *over time*



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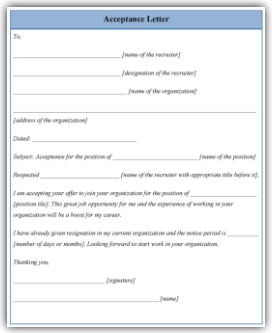
New Employee Experience – 2016 - Present

Staff "journey" at the heart, utilizes a combination of techniques

How does it look at a high level today

Applicant Response



1st Day Welcome

New Employee Orientation

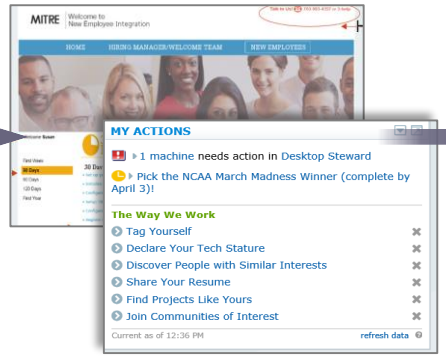
2nd Day Welcome Team

First Week Integration

Coffee With A Colleague

Buddy System

Integration Occurs 30 Days thru 180 Days…



Integration Occurs 180 days thru Year…

Handshake

MITRE and Our Work

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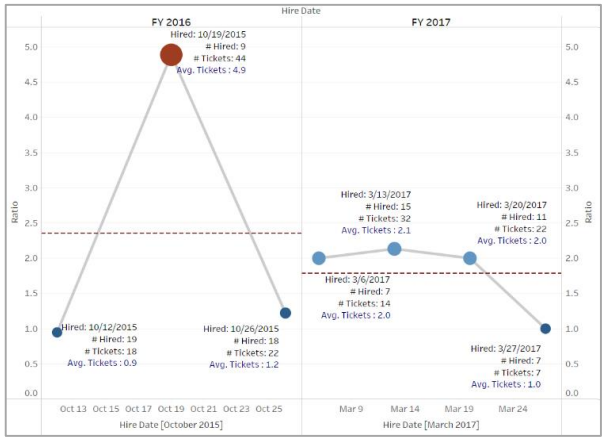
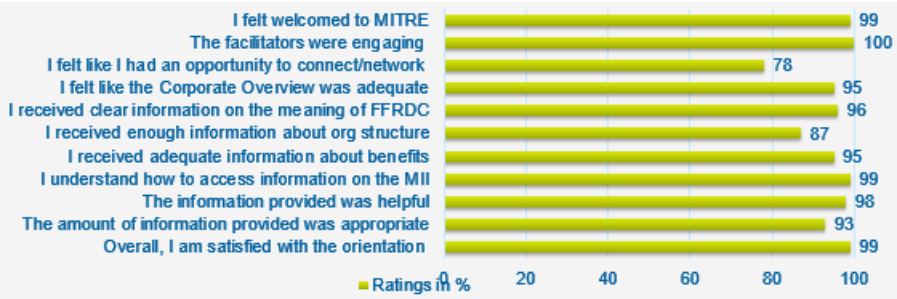
New Employee Feedback: What's Been Working Well

- **High level survey results**
  - Feel welcomed on the first day
  - Very satisfied with orientation
  - Felt engaged during their first 30 days with their department, work programs & organization
- **Orientation**
  - Computer
  - MII / FastJump
- **First Few Weeks**
  - Ambassador emails
  - AKD Notifications
  - New Employee site
- **Over the course of the year**
  - People
  - MII & FastJump
  - Managers put in a lot of effort into onboarding



New Employee Help Desk Calls Down



New Employee Onboarding Satisfaction Up

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HR Surveys: August 2016 to February 2017

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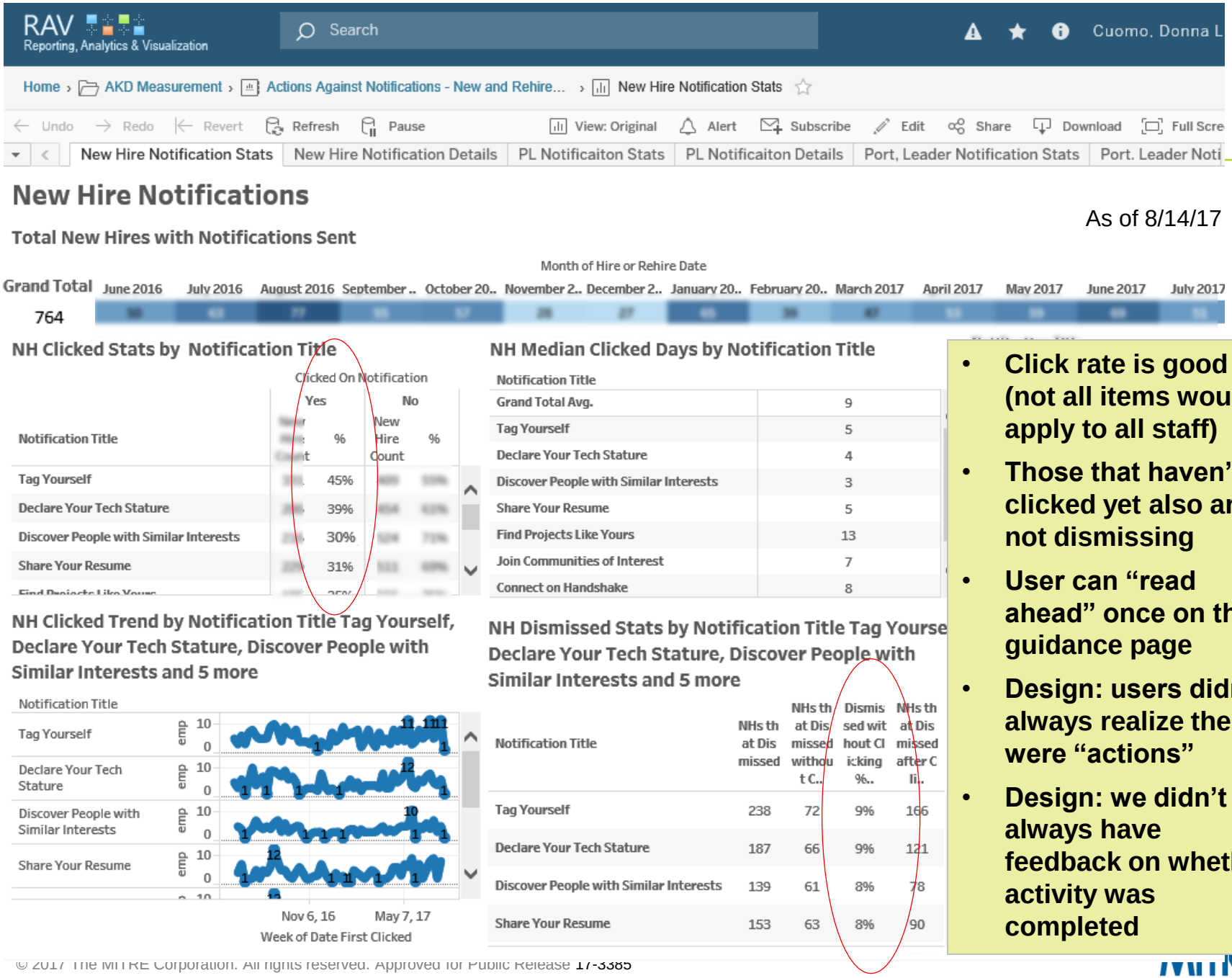

- **Click rate is good (not all items would apply to all staff)**
- **Those that haven't clicked yet also are not dismissing**
- **User can "read ahead" once on the guidance page**
- **Design: users didn't always realize these were "actions"**
- **Design: we didn't always have feedback on whether activity was completed**

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Use Case:
Modernizing the Project Leader Experience

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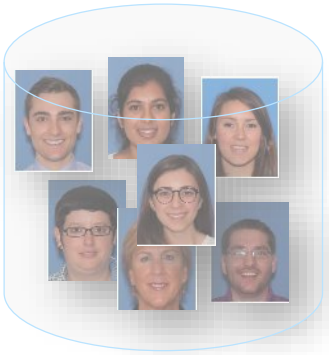
New Project Leader (PL) AKD Use Case

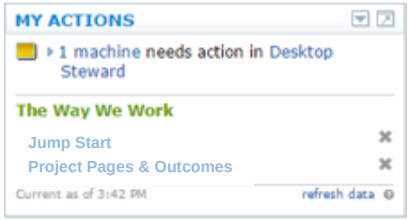
Detect New Project Leaders



- Initial assignment as PL in O*F
- *8 digit direct* projects only
- Not previously named as a PL in the past 3 years, AND/OR
- Is new to MITRE within the past two years
- Later added additional PLs manually

Deliver Notifications over a period of time

Provide actionable & referential resources



- Understand MITRE's FFRDCs and the MITRE Way — Week One, Day 2
- Project Pages and Quality Outcomes — Week One, Day 4
- Staff Your Project — Week Two, Day 8
- Connect and Stay Informed — Week Two, Day 10
- Highlights of the MITRE Way for Project Leaders — Week Three, Day 15
- Stengthening the Core (STC) — Week Three, Day 17
- Leadership Resources — Week Four, Day 22
- Next Steps — Week Four, Day 24

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Drove a Project Leader Process Materials Update and Consolidation

New PL@M Site and Guide

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Impact of New PL AKDs

- **180 PL participants received notifications as of July 2017**
  - In May 2017, added 48 PL participants manually at MITRE < 3 years
- **September 2016 emailed all PLs (604) and their managers (327) to introduce the pilot**
- **336 hits/month on average to the New PL AKD page!**
- **Same pattern of use as new employees**
  - Some drop off in notification clicks over the sequence
  - But they were not dismissing them
  - Less certainty on our part of whether these actions are needed by all participants, if it is the appropriate time of year, if it is part of their role – We need feedback for better targeting
- **STC Operations notification**
  - 40% responded to notification

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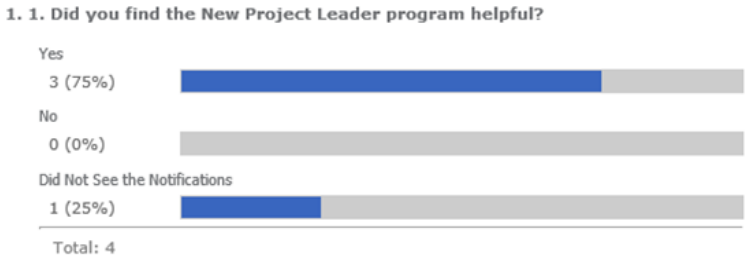
Phase 1 Feedback Initial survey, small sample size (4), 5/17



"I am very pleased with the content and availability thus far"

"My project was over by the time I realized this was there… I think most of the content would be great for new employees, no matter what the level"

"important thing to me is that **I don't have to go digging for this information**. I won't dig … I wouldn't want you to take them away"

"having any content at all pushed to me **was very unexpected and helpful**"

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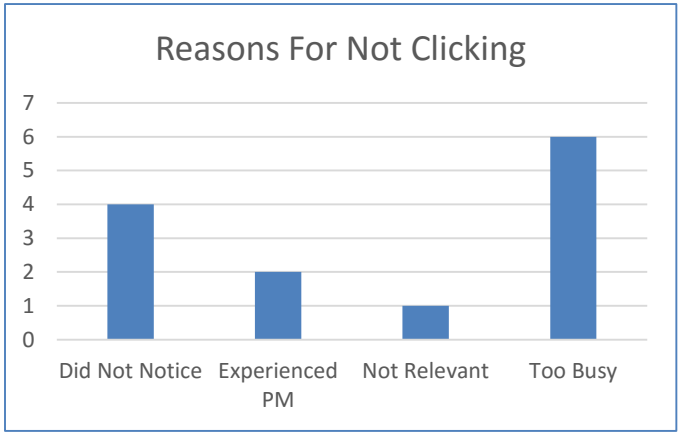
New PL AKD User Feedback Summary



Email responses from those who *never clicked* (13)

- **Six PLs: 'too busy' but almost all felt the pilot was worthwhile and would get to materials eventually**
- **Four PL did not notice the MyActions, two use CAASD hub as home page**

Phone interviews (3)

- **Did they notice the "MyActions" – split responses**
  - **One respondent cited poor connectivity from sponsor site, rarely checks MII**
- **Content helpful? – all responded the content was useful**
  - **Content recommended for all staff**
  - **Suggestion to identify and include 'soon to be' PLs**
- **Delivery mechanism – all preferred MyActions, with one request for initial email**
  - **Several respondents stated they did not dismiss the notification as they retained content as reference material**
- **Overall comments and feedback**
  - **Let people know the content is there**
  - **Would prefer the material all at once rather than over four weeks**
  - **Would like to see guidelines for resource consumption for specific activities**

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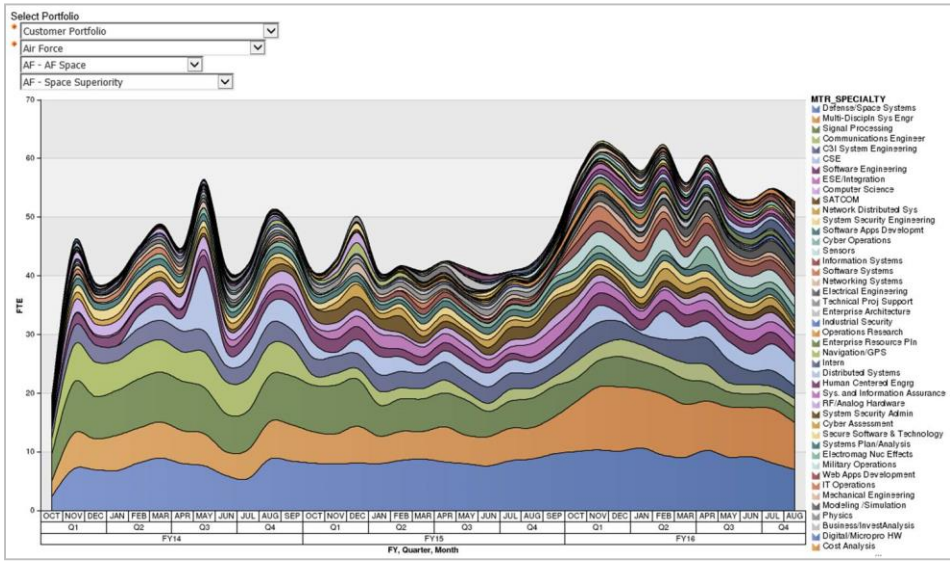
AKD for Project Staffing
Just-in-Time Guidance on Finding Staff

- **Finding right staff is a challenge**
  - 3000+ staff in 10 Tech Centers, 3400+ in Program Divisions
  - 1500+ Projects
  - >20% staff charge 3-6 projects
  - 800+ new hires in CY2016
  - Special clearances
  - 10+ PL considerations: skills, experience, clearances, team fit, soft skills, domain knowledge, interest/passion, cost, location, timing,
  - 5+ Staff considerations – interest/passion, location, team fit, travel, career, …
  - .. and come in on target (budget)



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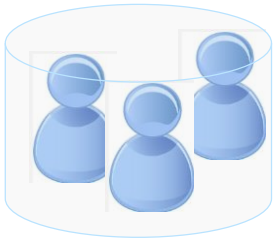
"Project Staffing" AKD Operational Use Case

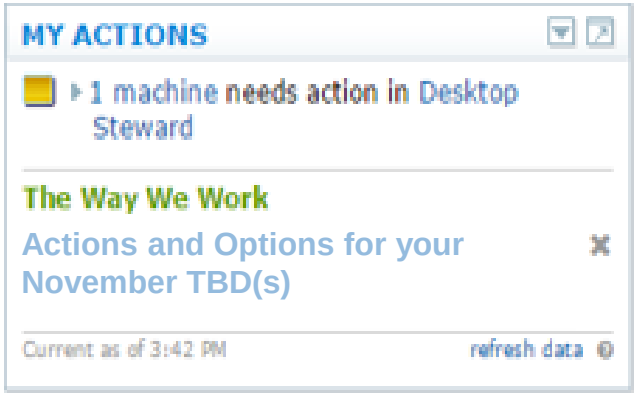
Trigger

"TBDs" in the *next* fiscal month in Clarity Projects Staff Plans

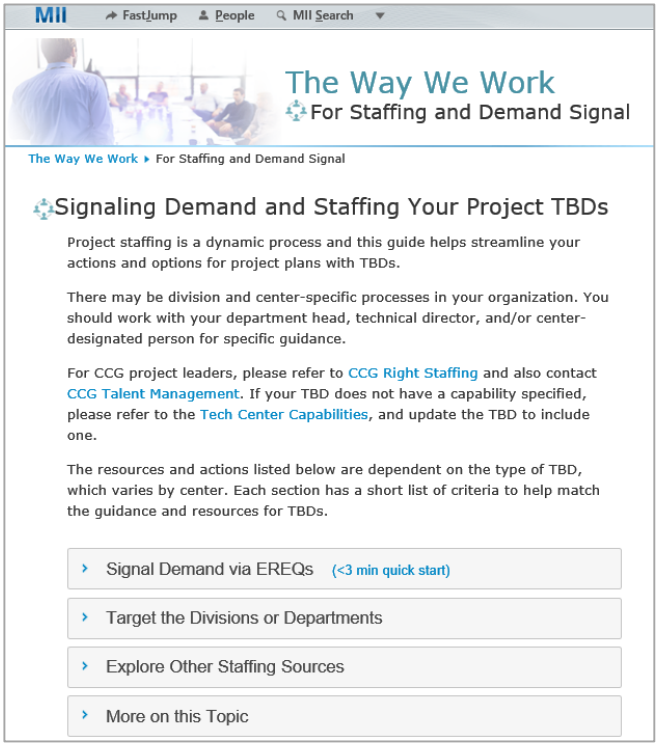


Action

PL will have notification in the "The Way We Work"



Actions, Guidance, and Resources



66% of recipients clicked on this (just in time) staffing notification

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Initial Overall AKD Findings

- **"MyActions", while the preferred notification method, needs augmentation to ensure staff are aware of the materials**
  - MyActions not always noticed
  - Staff may not have MII as home page (e
  - Staff at sponsor sites may have connecti to the MII
- **Staff who clicked on content all felt it wa**
  - However, the click rate dropped off for la
  - We don't know if they read ahead or not
- **Staff who self-reported they were too bu valuable and planned to get to it eventua**
  - Several reported content would be usefu requested their Associate PLs be manua
- **Several participants plan to retain the ma to never dismiss) so its present when ne**
  - This could cause "noise" on the My Actio

Take Aways from User Feedback

- Send an introductory email to introduce staff and their managers to the campaigns
- Prompt users to do the activities by introducing some urgency via due dates
- Design a feedback mechanism into the notifications so we know if action completed, or why not
- Provide easy access to the materials for future reference so users are comfortable dismissing the notifications
- Continue to fine-tune audience targeting

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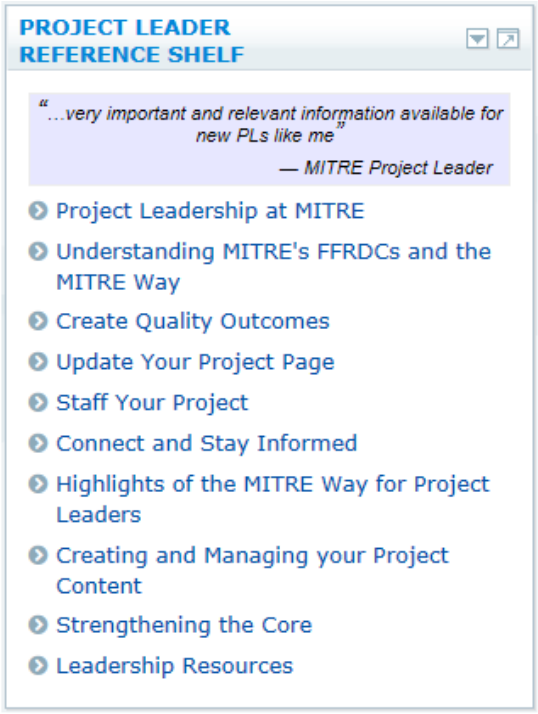
Piloting a Revised Concept

- **Try a "Act, Why, Help" format**
- **Collect real-time user feedback on whether they completed the actions**
- **Deploy a "PL Reference Shelf" gadget for persistent access to the materials**

Action-oriented language with due dates

Real-time feedback on whether they completed action, or why not



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"Subscribe to Employee Newsletters" New Employee Notification, Using the New Format

- **65 new employees received "Subscribe to Employee Newsletters" notifications so far, with the new UI**
- **21 Responded to date (32%) – good response rate**
  - 14 people signed up for newsletters
  - 4 said "No"
  - 3 said "Remind me later"
- **We are assured they have awareness of the capability**
  - With "find it yourself" technique, traditionally could take from months to never
- **Practically "free" to acquire these users**
- **Gives us feedback on the interest, the targeting accuracy, the "why not"**

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Elements of the AKD Campaigns

Determining the audience

- Via algorithm, specificity
- Manual list creation
- Combo

Create the notifications

- Level of granularity
- Actionable action vs guidance/ learning activity
- Design the content and the referenced content
- De-dup across campaigns

Feedback mechanism

- Can we track the action from the back-end system?
- Feedback from the user on what they actually did

Event push stream

- Automatic sequencing vs one time push
- The timing of the sequencing
- The timing of the initiation
- Delivery channel
- Deadline?
- Expiration?
- Escalation?

Knowledge provisioning reports

- Track over time who has been exposed to which knowledge
- Report to managers

Tracking the metrics

- Metrics of the notification clicks (enhanced with a user response)
- Metric of the action (whether the action was taken, which may be reading something)
- Could read ahead (ambiguity)

May be part of other training/ onboarding or business process support activities

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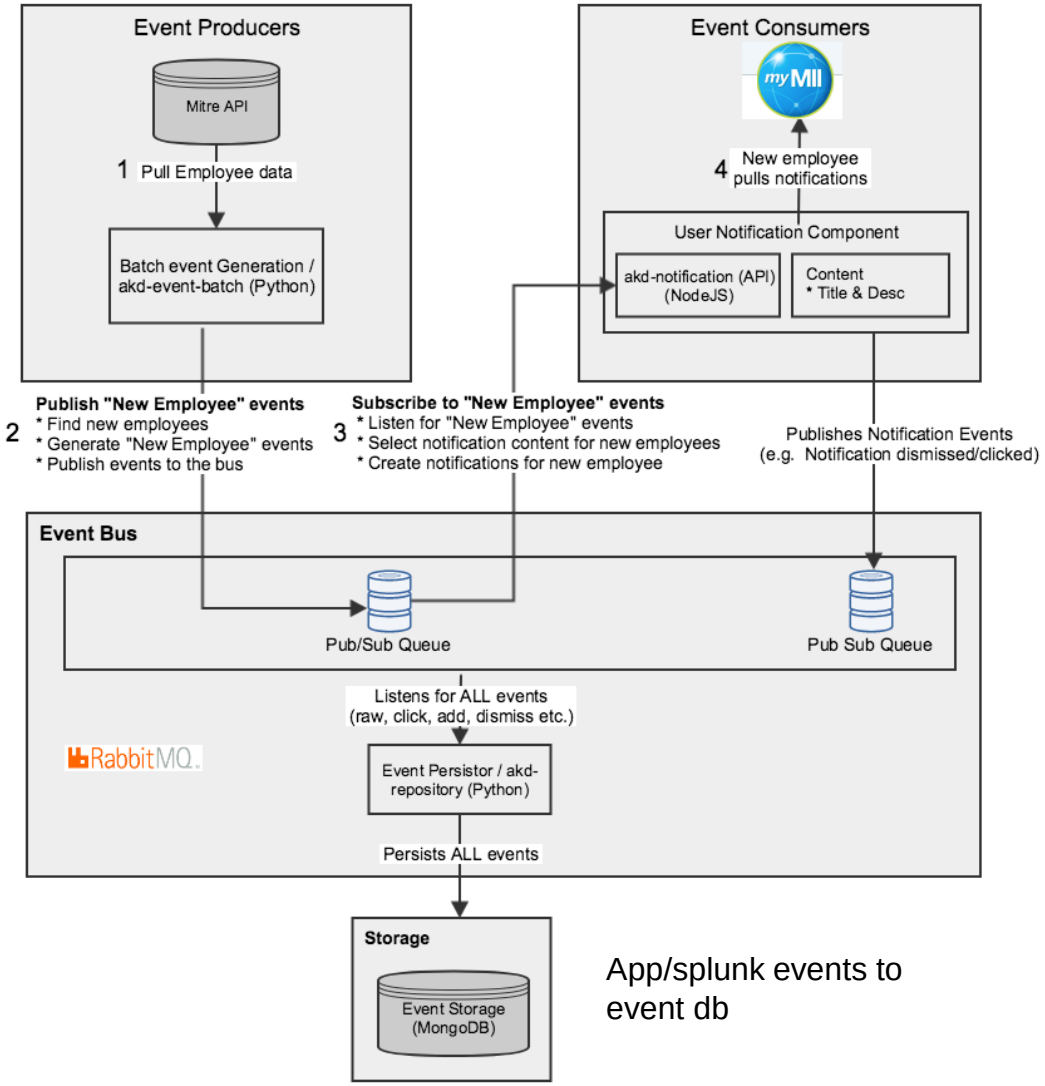
Event Bus Architecture and Planned Updates

New data warehouse design for AKD – organizing our data for efficiency (esp history which is key to this)



Explore Bluemix and others; alignment and opportunities to move to cloud

App/splunk events to event db

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Audience Targeting – New PL Example

EDW Project history table

Has PL field changed or a new project added?

Is project a direct project

PL in past 3 years?

	PL	Start date	End Date
01AOH621	12345	9/1/13	8/1/14

SWP Portfolio table

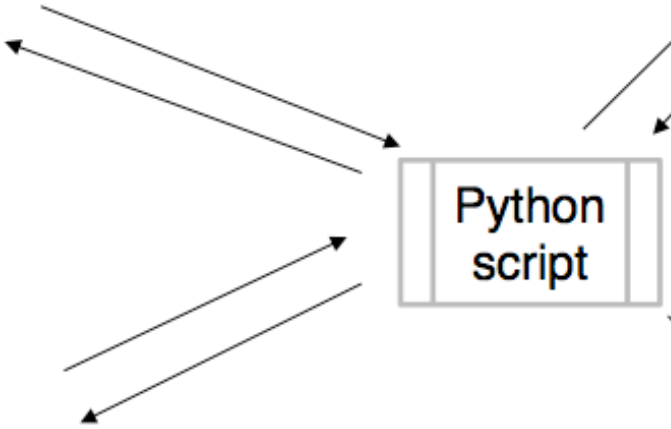
Is not a Portfolio Leader?

Port ID	PfL	
MWP-0252	12377	

ODS People table

- Full time employee?

Emp id	Emp Type
12345	Full Time



Emp id
12345
12346
12347
12348
12349

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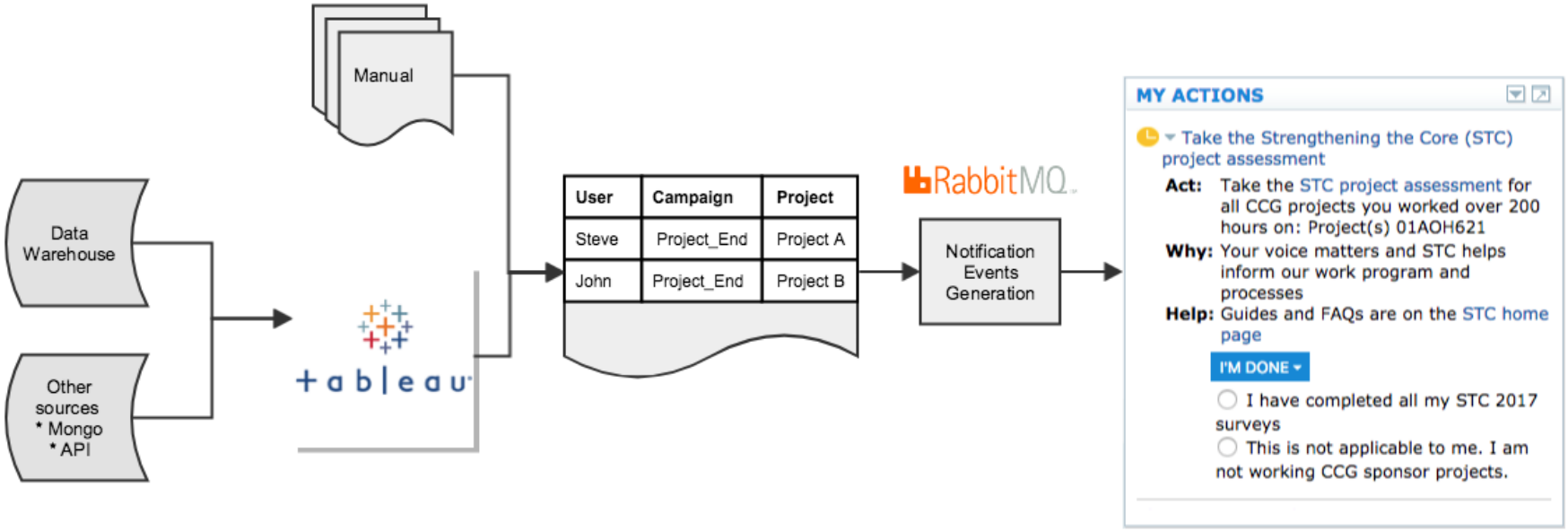
Architecture Updates

- **Goals**
  - Ability to handle very custom notifications. Not easily automated
  - Reduce effort required to add new campaigns



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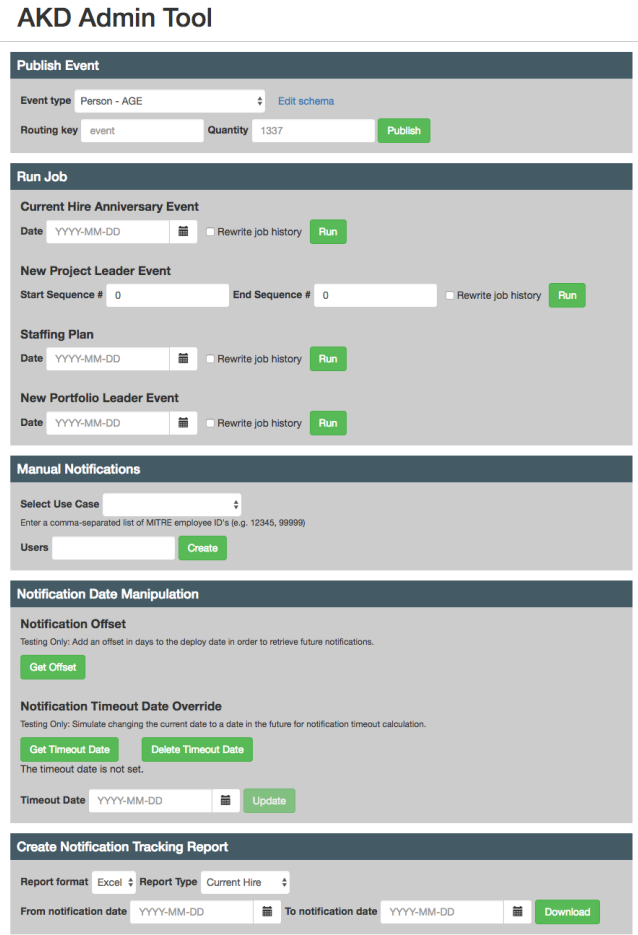
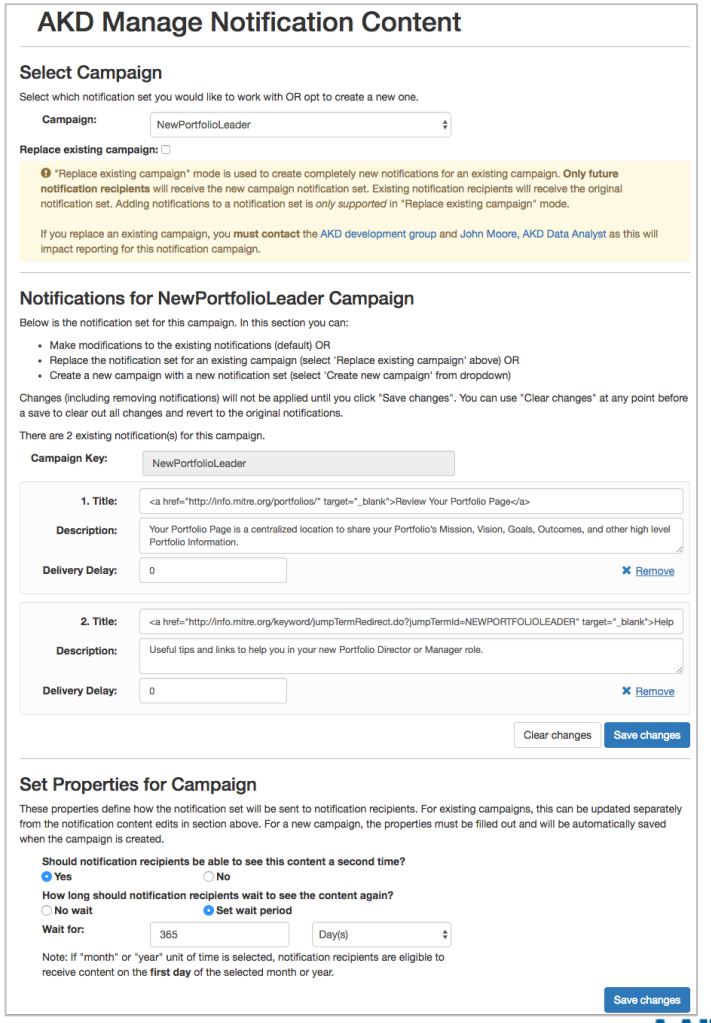
AKD Administration





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Future Steps

- **Evolve toward intelligent "business and knowledge process assistants"**
- **Continue working with other groups across the company to continue to refine the overall experience of these 'journey maps'**
  - AKD is usually just one component
  - F-2-F training, guidance materials, process materials, tools, delivery mechanisms, etc
- **Refining the design of the notification campaigns**
  - Circle back and integrate the older "My Actions" into one comprehensive system with governance
- **Adding other roles, new personalized triggers**
  - Triggers based on what a user has not used, for example
- **Piloting machine learning capabilities to automate or semi-automate content, other types of recommenders, audience definition**
- **There is a "trust" component**
- **Just-in-time training based on user actions**
- **Knowledge provisioning reports for managers**
- **Incentivize or reward staff for effective behaviors**

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Reflections

- **You can get the critical information to employees 'just in time' using today's technologies**
  - It does involve putting structure on information, using information already available about employees, process status, and using "push techniques"
  - Can even be manual, initially
- **Identify some *critical* business processes or activities fundamental to your companies success to get started**
  - Are they well-defined and well-supported at the enterprise level?
  - What do you know already about the critical knowledge objects and process states, from existing systems and data? Build on this.
  - Start small, be agile, don't tackle every role/process, start with the high-value ones
- **Spend time thinking about what it is important for staff to know, what you want them to do, and when**
  - If you can't concisely state this for key roles and key business processes, then your users can't either
  - Talk to staff who have been in a new role for a year or two and ask them what they wished they knew initially
  - Talk to managers and ask them what questions they get the most for various roles and activities
  - How can you determine that staff are in a particular process state?

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- **Questions?**

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Started by “Massaging” Existing Content

- **Jump Start**
  - FFRDC Whiteboard Explainer Video
    - (FJ: Difference, About FFRDCs tab)
  - Explore MITRE’s 7 FFRDCs & 4 Capabilities
    - (FJ: Difference, our unique value tab)
  - MW Principles and Norms
- **Outcomes & Project Pages**
  - Quality Outcomes Examples
  - Framing Outcomes Video
  - Project Pages Lite
  - Update Project Page (FJ: Project Pages)
- **The MITRE Way**
  - MW Preamble
  - MW Position Descriptions
  - MW for Project Leaders Video
  - MITRE Product Libraries – centers
  - MITRE Way Tools Site (FJ: mwtools)
- **Strengthening the Core**
  - STC Overview (FJ: STC)
  - STC Project Assessment Guide (FJ: STC)
- **Staffing**
  - Clarity Role Page
  - Tech Center Site
  - Organization Primer
  - Finding Resources
- **Leadership**
  - Project Leader Skills Inventory (FJ: PLSI)
  - Systems Engineering Process Office (FJ: SEPO)
  - Systems Engineering Guide (FJ: SEG)
- **Connect & Stay informed**
  - Discover Search (FJ: projectsearch)
  - Handshake (FJ: handshake)
  - Mailing Lists (FJ: lists overview)

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