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# Implementing COTS in the Time of COVID

Paula Schindele and Graham Bass

NLIT 2022

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## Background of Project

In 2018 IT and ES&H leadership Identified a pressing need to consolidate a huge collection of custom applications in order to simplify ongoing M&O, ensure reliability, and maintain availability. It was determined that the best solution in alignment with changing IT priorities and labor availability was to procure a COTS product that could fill a majority of these needs.

The first module was released in early December of 2019, with the intent of continuing to release new modules regularly thereafter.

In March of 2020 the operational landscape changed dramatically, and the role that technology played changed in step with that. Two years later we have a much more mature strategy for coordinating the work of hundreds of people working remotely with onsite teams, offsite employees, contractors, and vendors.





# ESHield Integration Plan (FY18 – FY24)



## 5-Year Roadmap for Integrated IT/ES&H



Event Management (FY18–FY22 Q2)

Permits (FY23 Q1–Q4)

Hazard Analysis/Risk Identification (FY20 Q3–FY24 Q4)

IT Improvements  
(FY18–FY20)

Inspections (FY21 Q1–Q4)

Reporting (FY24 Q1– Q4)

Compliance Management (FY21 Q1–FY22 Q4)

Utility/Productivity  
(FY24 Q1–Q4)

Materials/Asset Management (FY21 Q3–FY23 Q4)

Enhance & expand ES&H Data Warehouse to house data from broad spectrum of program applications for predictive analytics (FY20+)

FY20

FY21

FY22

FY23

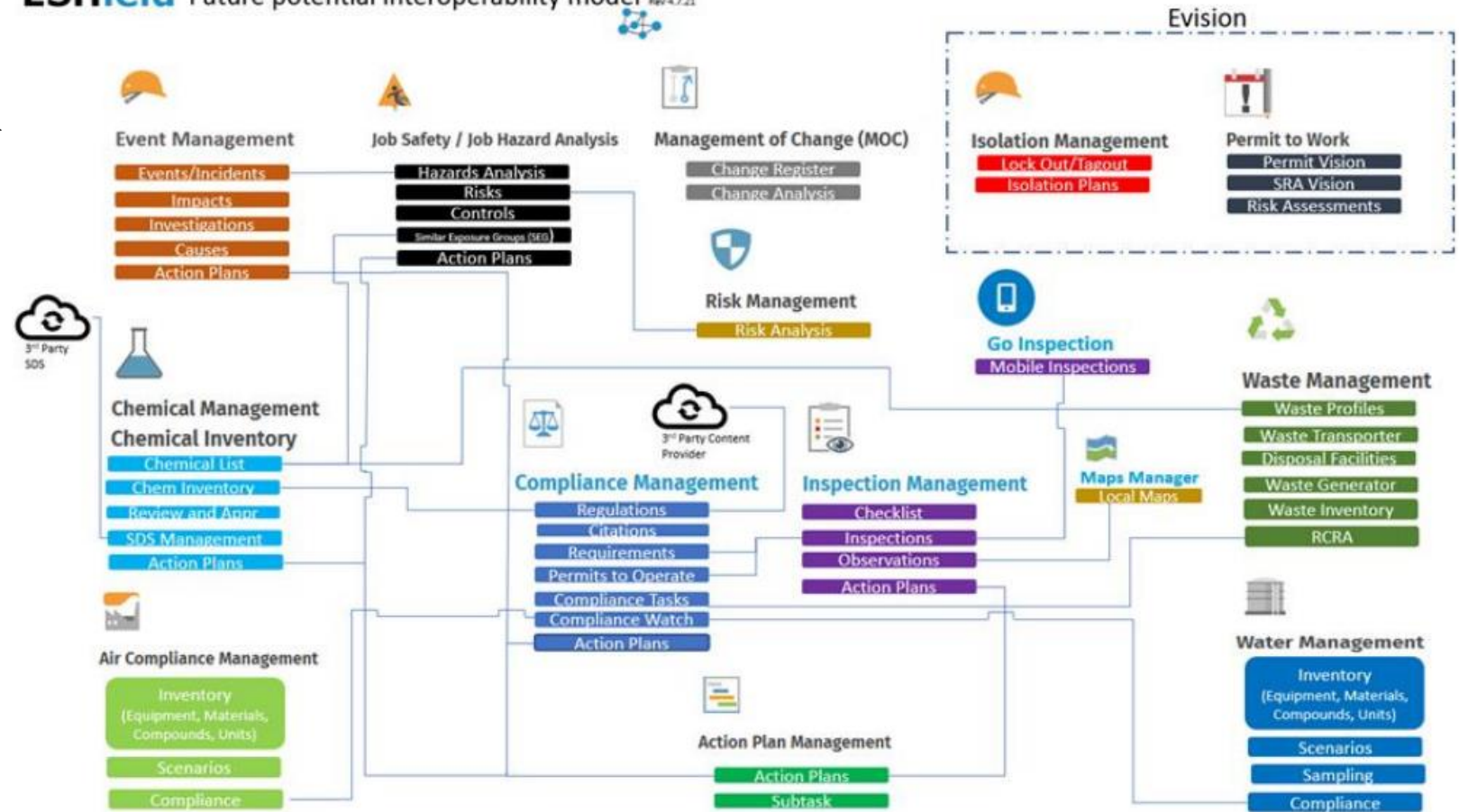
FY24

And we'll make it happen face to face... just like we always have!



# Future State – Diverse work areas in a single platform

ESHield Future potential interoperability model Rev 4.7.21





## Problem Statement(s)

How do we organize, manage, and communicate between teams in a virtual environment that keeps them productive, engaged, and informed?

- Transparency
- Productivity
- Engagement

How do we leverage technology solutions to improve delivery times by digitizing existing templates and best practices?

- Standard Work
- Best Practices
- Quality










# Requirements: What does it take to get work done?

We're going  
to science  
the  
\*\$%#@  
out of  
this...  
iteratively.



# Key Pieces of our Software Stack for Virtual Collaboration

-  Confluence – Main collaboration hub, content hosting
-  MultiExcerpt Macro – Create reusable page snippets
-  draw.io Macro – process flows, prototyping
-  Confirms Macro – data input/reporting, page creation
-  Jira – task tracking, planning, dependencies
-  Microsoft Teams – meetings, support channels
-  Microsoft OneNote – ad hoc notes, real-time collaboration





# Iteration 1: Early use of Confluence for Team Work

You want me to edit table thingies on the web? Cya.



- Team work items in one location
- Intuitive
- Action Items documented
- Versioning
- Accessible by team and management

- Low utilization of space features
- Not a mainstream solution... yet.
- **Users are in the editor** a lot doing page formatting and inserting macros.

## Environmental Process Requirements

Created by Paula Marie Schindele, last modified on Feb 03, 2022

Current Process	Missing Component	Required Output	Possible Solution

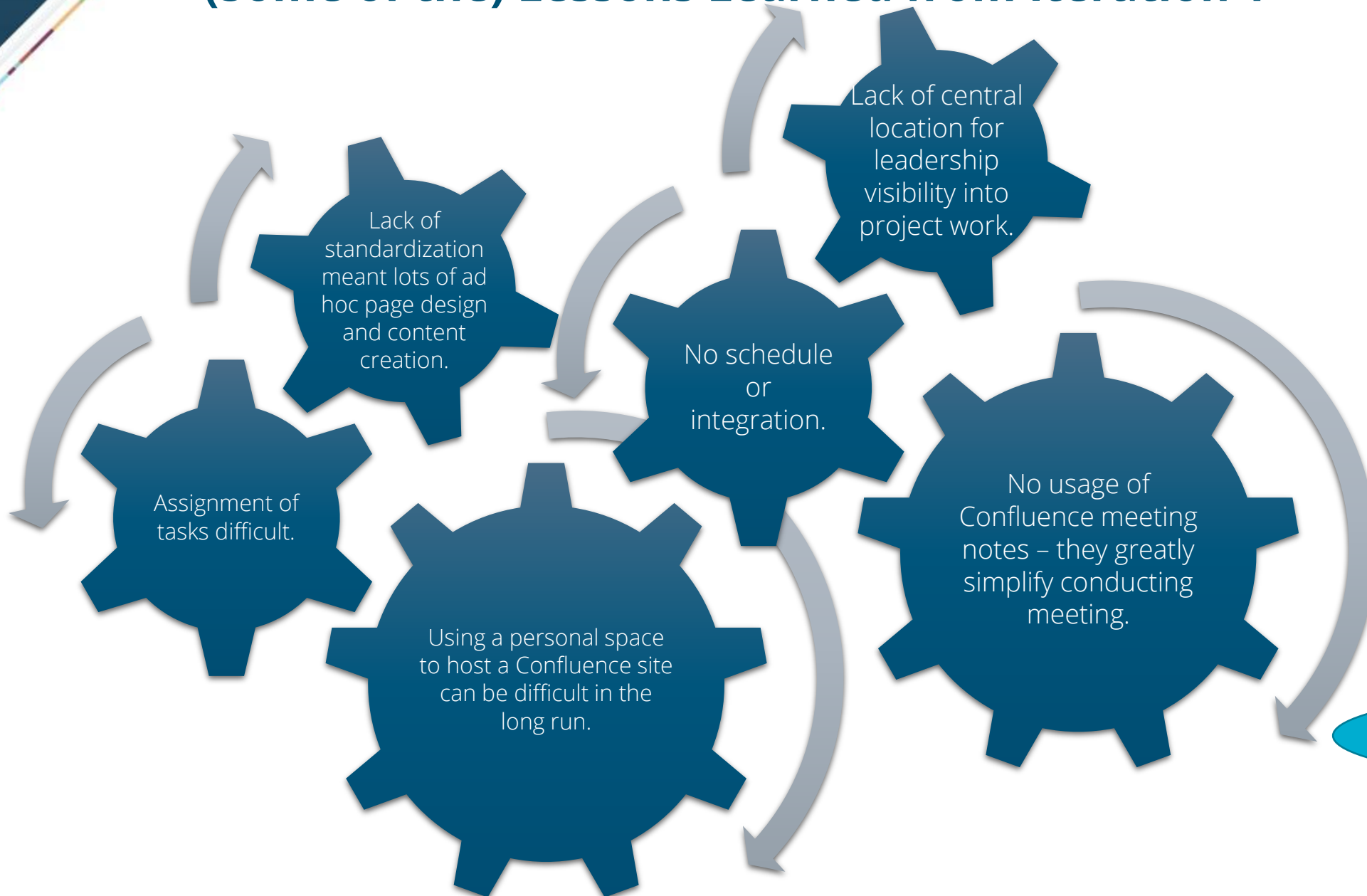
### Document Attachments/Links

### Meeting Notes:

Date	Note	Action
1/17/22	Historian new buildings on list until 50 year review.	Ask Historian for validation/options.
1/17/22	Maximo review and integration into ESHield (Engineered Controls)	Incorporate Robert Thosen's actions for engineered controls
1/17/22	Process Maps to IT for understanding of data entry	Process Analysis may have been completed (Ray Serna)
1/17/22	Robert Process Map (Requirements)	Sent to Andrew and Paula for review
1/17/22	Revise NEPA approval for drop down	Action in Note
1/17/22	Review CA Facilities use and needs	What is specific to CA and what can/should be standardized
1/17/22	Review level of Rigor for Engineered Control	



## (Some of the) Lessons Learned from Iteration 1



## Iteration 2: Improved Functionality and Data Flow



- Charter info visible
- Page is mostly updated without the editor
- Tabbed workspace  
Items condense team artifacts
- Confirms provides bidirectional flow of information from team to management
- Teams are visible and editable
- Help tab included
- MultiExcerpts make most parts modular and maintainable.

It's just too  
much!!  
why do  
they ask  
this of me?



- Information density is very high
- Training required for effective utilization

**Environment, Safety & Health - Subcontractor Environmental Initiative**

Purpose	Problem	Goals and Objectives	Scope	Team
Identify and develop an enhanced environmental review process for the Division 4000 Work Order process. The ideal state would produce an engineered controlled process that is utilized by SNL to ensure environmental requirements are met prior to work execution.	The current work order process has failed to identify environmental requirements in the medium to high rigor review resulting in environmental noncompliance.	<ul style="list-style-type: none"> <li>Evaluate Work Order process flow</li> <li>identify areas for engineered controls</li> <li>Review and evaluate Facilities Work Package Quality Assurance (Deb A. Lead)</li> <li>Review benchmarked reports for integration into Environmental Process</li> <li>Evaluate Environmental current Work</li> </ul>	Environmental requirements implementation into the Division 4000 project planning and execution	<b>Champion:</b> Stephanie Salinas <b>Product/Process Owner:</b> Terry W Cooper <b>Team Facilitator:</b> Paula Marie Schindele <b>Team Members:</b> Anyaibe, Andrea Hendricks, Dee Dee Dicker, Brandyn J Antolak, Amy Joyce Moser, Catherine Noble, Robert J Thoesen

Annotations from diagram:

- Confluence calendar → Purpose column
- Jira Kanban Board → Problem column
- Confirms Table → Goals and Objectives column
- Confluence Page Attachments → Scope column
- Conforms Tables + MultiExcerpt Include → Team column
- MultiExcerpt Include → Team column
- Confluence Table → Task Report Macro
- Task Report Macro → Confluence Table

Navigation tabs: Calendar | Kanban | Decision Log | Files | Links/References | Meeting Followup | Parking Lot | Status | Risks | Help Needed/Flow Downs | Need Help?

---

### Help Needed/Flow Downs

This will appear on the Senior Managers' Initiative Workgroup Meeting and the Cat1 Updates

Date	Team	Entered By	What do you need help with?	Response from Management	Responder	Escalation Status
03/16/22	Subcontractor Environmental Initiative	Stephanie Salinas	Resources supplied through Stakeholder.			COMPLETED
<b>+ Help Needed</b>						

Date	Team	Message from Management	Responder	Escalation Status
02/02/22	All Initiatives	Teams need to define what reporting needs your process needs to include...is there information/data that has to be reported (regulatory, KPI's, balanced scorecard, line partner wants to see certain data and wants a report for that data, etc).	Stephanie Salinas	INFORMATIONAL
02/02/22	All Initiatives	Communications team will be supporting all initiatives and not just ESHield as originally scoped. Champions to provide more detailed information to team on engaging with the Communications Team.	Stephanie Salinas	INFORMATIONAL

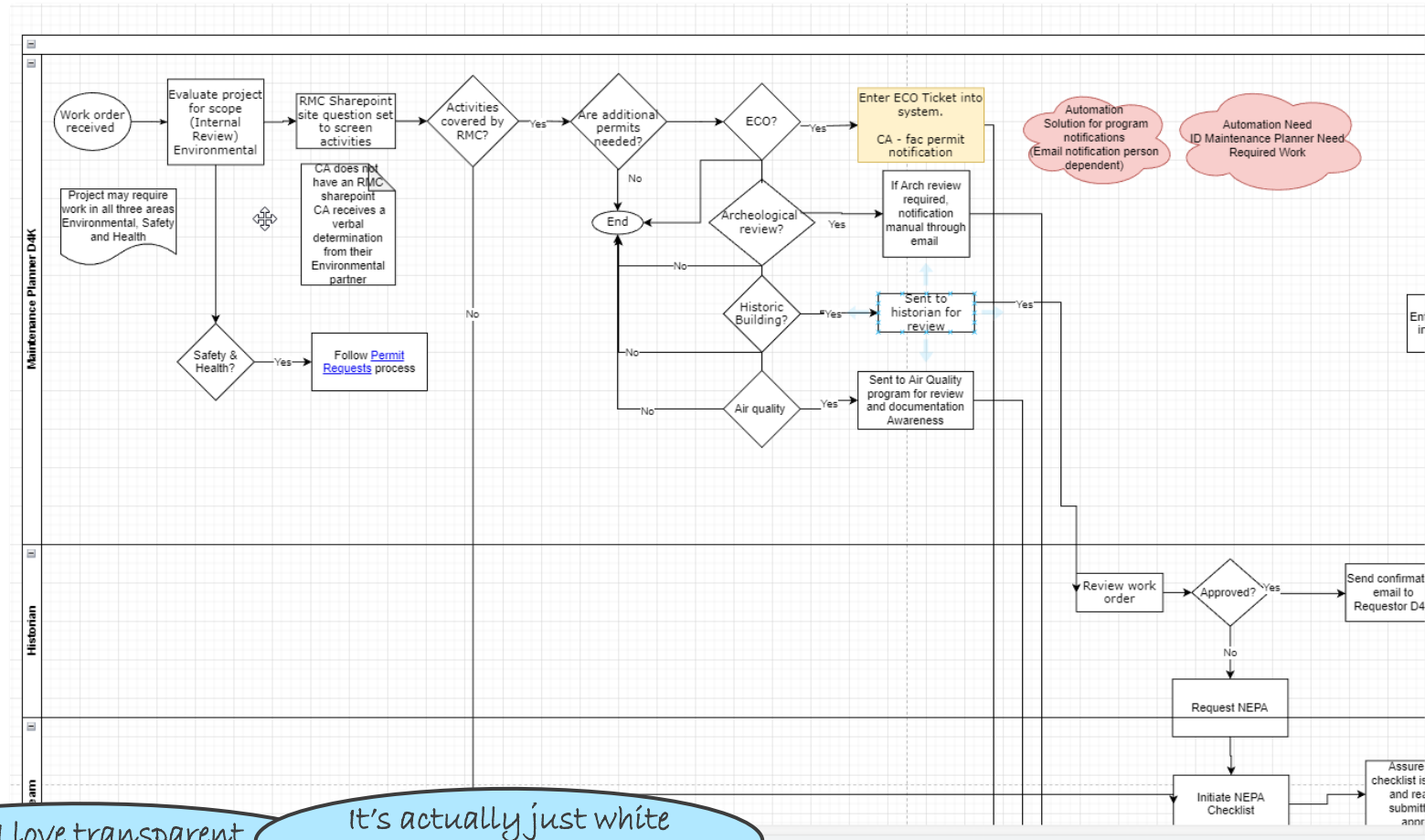


# Tools: draw.io Diagram Macro



- No software needed
- Intuitive
- Versioning
- Simultaneous work
- Big icon/shape library
- Accessible by teams and management

- Compatibility can be an obstacle
- Exporting hi-res images to pdf is fiddly
- Copying/Pasting can be tricky



Oh... I love transparent processes!!

It's actually just white on white.

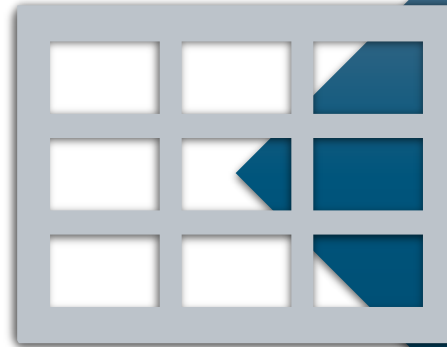




# Tools: Conforms Macro



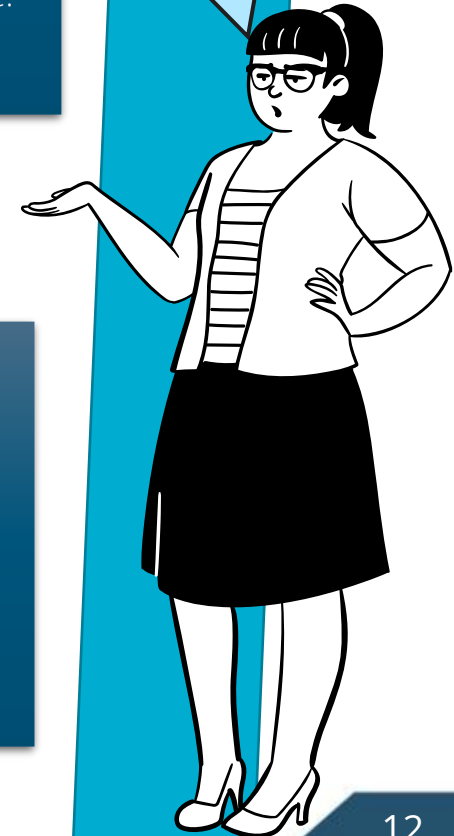
- Powerful and flexible
- Lots of automation options
- Reference fields and content from other tables
- Intuitive form interface.
- Excellent developer support



Conforms is a “registration” tool that can be used for so much more.

- Allows **form building** with an extensive library of field types.
- Provide **display options** from tables to custom layouts.
- Storage is done in **data tables** that live on a host page.
- Data is easily viewable and **exportable**.

Octocloud?  
Cloudapus?  
What even  
is this? I do  
like  
Conforms  
though...



- Significant learning curve for creating advanced functionality from scratch
- Programming/DBA background helpful



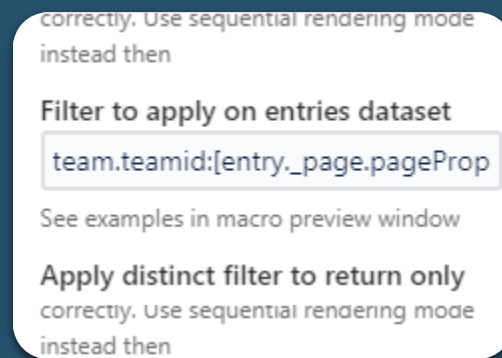
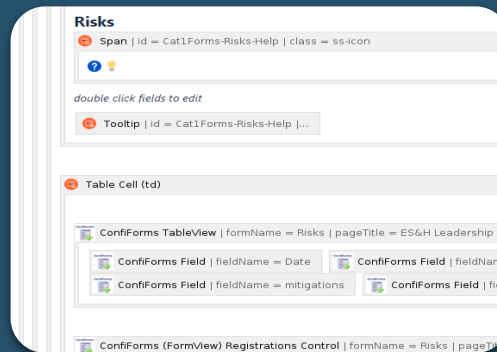
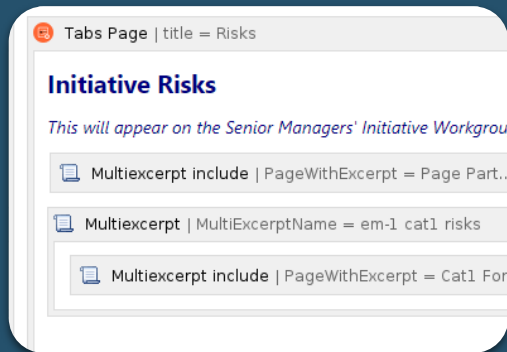
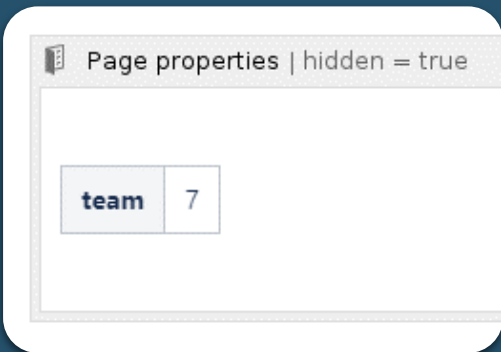
IFTTT integration allows extensive automation triggered by record creation/updates, including:

- Page creation
- Record creation/modification
- Sending **emails**
- **Jira** issue creation
- And more



# Tools: Using MultiExcerpt and Confiforms Together

How do you make Confiforms work on different pages without hardcoding values?



1. Set up a **Page Properties** Macro and insert a horizontal table. The header value is the reference field. The cell is interpreted as a string

2. On the page that the hosts the content all you see is the **MultiExcerpt** Include. *In the options, make sure to check "Use Page Context"*

3. Apply denser formatting within the include. This keeps a simple view for the end user while still using custom formatting more macros without risk of breakage or cluttering up the editor view.

3. In **Confiforms** filter use the filters to access the page property. `[entry._page]` gives access to page ID/object, `.pageProperties("")` returns value from the table.

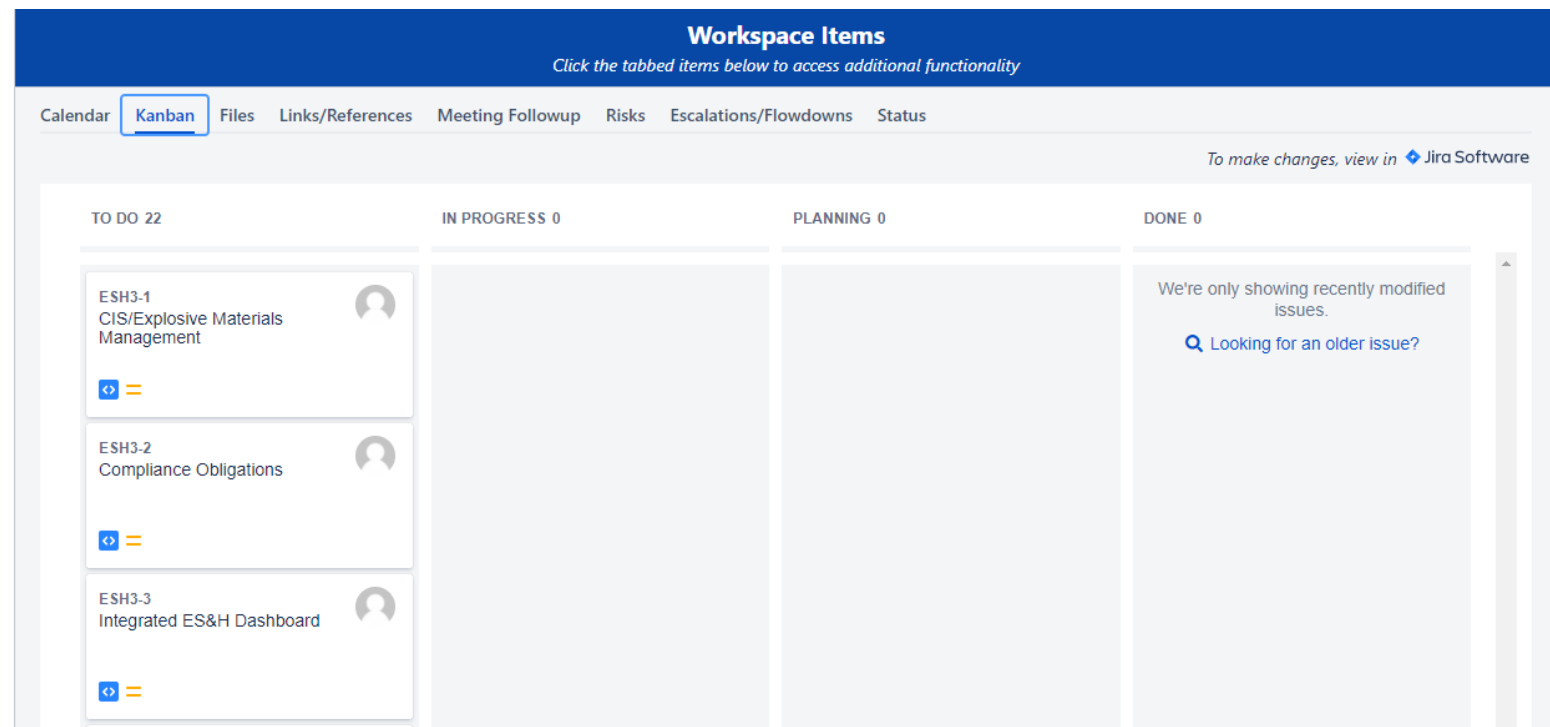


# Tools: Jira and the Confluence Agile Wallboard Gadget



- A Jira board can be displayed in Confluence to help keep people up to speed on active work.
- Theoretically, visibility for teams and management of work in progress, directly in the team space.
- Flexible configuration options in the plugin
- Supports quick filters and other view configurations

- Not interactive, changes still have to be made in Jira
- Doesn't facilitate adoption of either product



# Confluence Collaboration Macros

## File Storage

File

Modified ^

>

EShield Integration Charter - Updated 12-06-21 (4).docx

Dec 20, 2021 by Paula Marie Schindele

>

Sandia CA Permit Request Form rev 041521 final.pdf

Mar 18, 2022 by Paula Marie Schindele

>

HA-QRA\_FutureState\_Swimlane\_Working\_Feb2022.vsd

Mar 21, 2022 by Paula Marie Schindele

>

Integrated Process Flow Maps ESNH.vsd

Mar 24, 2022 by Paula Marie Schindele

>

3-24-22 Integrated Process Flow Maps ESNH V2.vsd

Mar 28, 2022 by Paula Marie Schindele

▼

Business and IT Integrated Process Map.vsd

May 24, 2022 by Graham Milleret Bass

Labels

No labels

Version history

Version 3 (current version)

Modified by Graham Milleret Bass

May 24, 2022

Version 2

Modified by Graham Milleret Bass

May 24, 2022

Version 1

Created by Graham Milleret Bass

May 23, 2022

Preview

Properties

Edit

Delete

⬇

Drag and drop to upload or [browse for files](#)

⬇

Download All

- Nice visual display
- Versioning is easy and allows quick access to old versions
- Easy to upload
- Can be implemented on an existing page (no version support for existing files)
- New helper app reduces number extra versions.

- Confluence helper app required for easiest workflow.
- Doesn't support real-time simultaneous collaboration like SharePoint

## Team Calendar

Today

<

>

October 2022

Subscribe

Add Event

Sun	Mon	Tue	Wed	Thu	Fri	Sat
25	26	27	28	29	30	1
<div> <div> <div>Enabalon Code Freeze</div> </div> </div>						
			<div> <div> <div>CAT 1 Report Due</div> <div>(ESHield, CIS, Compliance)</div> </div> </div>			
			<div> <div> <div>IT Bytes</div> </div> </div>			
2	3	4	5	6	7	8
<div> <div> <div>Upgrade Roll Out</div> </div> </div>		<div> <div> <div>Gaye Lynn Linthicum: Finalize User Guides</div> </div> </div>				
<div> <div> <div>1:00 PM ESHield Communications Review</div> </div> </div>		<div> <div> <div>CAT 1 Report Due</div> <div>(ESHield, CIS, Compliance)</div> </div> </div>				
		<div> <div> <div>IT Bytes</div> </div> </div>				
9	10	11	12	13	14	15
<div> <div> <div>Gaye Lynn Linthicum: Finalize User Guides</div> </div> </div>						
			<div> <div> <div>CAT 1 Report Due</div> <div>(ESHield, CIS, Compliance)</div> </div> </div>			
			<div> <div> <div>IT Bytes</div> </div> </div>			
16	17	18	19	20	21	22
<div> <div> <div>Gaye Lynn Linthicum: Finalize User Guides</div> </div> </div>						
<div> <div> <div>1:00 PM ESHield Communications Review</div> </div> </div>		<div> <div> <div>CAT 1 Report Due</div> <div>(ESHield, CIS, Compliance)</div> </div> </div>				
		<div> <div> <div>IT Bytes</div> </div> </div>				
23	24	25	26	27	28	29
<div> <div> <div>Gaye Lynn Linthicum: Finalize User Guides</div> </div> </div>						
			<div> <div> <div>CAT 1 Report Due</div> <div>(ESHield, CIS, Compliance)</div> </div> </div>			
			<div> <div> <div>IT Bytes</div> </div> </div>			
30	31	1	2	3	4	5
<div> <div> <div>Gaye Lynn Linthicum: Finalize User Guides</div> </div> </div>						
<div> <div> <div>1:00 PM ESHield Communications Review</div> </div> </div>		<div> <div> <div>CAT 1 Report Due</div> <div>(ESHield, CIS, Compliance)</div> </div> </div>			<div> <div> <div>Kellie Jean Campbell: Vacation</div> </div> </div>	
		<div> <div> <div>IT Bytes</div> </div> </div>				

ESHield Training Initi...

Enabalon

Events

Expansion Actio...

IT Bytes

Leave

ESHield Records Man...

Events

ESHield Integrations ...

Events

ESHield High Side W...

Events

ESHield Formality of ...

ESHield Events Modu...

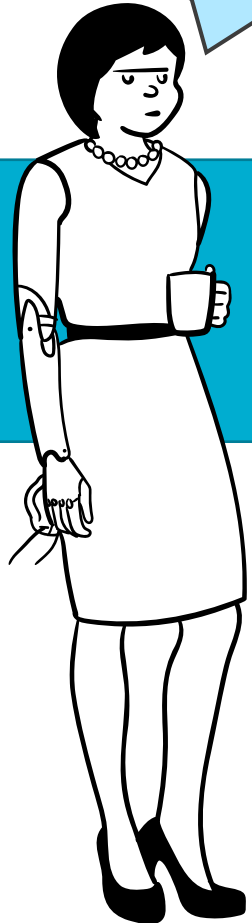
- Access calendars from across multiple spaces
- Combine multiple calendars in one as a rollup
- Customizable event types and icons
- Send reminders

- Doesn't sync with Outlook calendar without using 3<sup>rd</sup> party plugin
- Not the greatest user interface

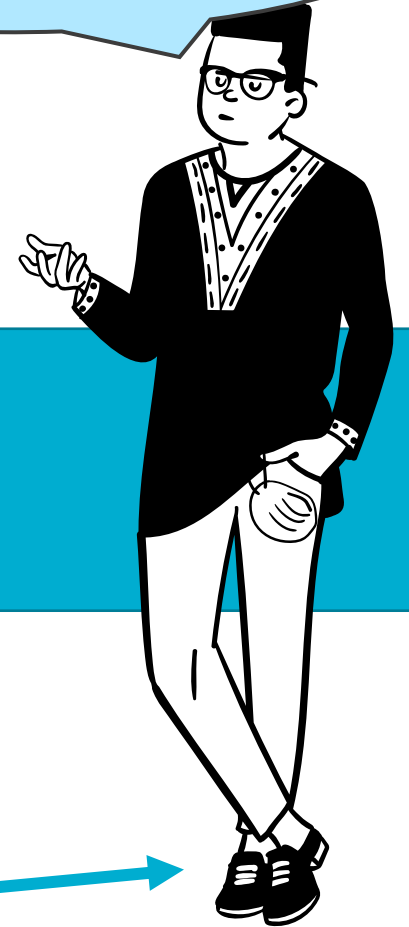


## Complexity isn't bad but...

Complexity  
doesn't bother  
me. I'm always  
a super user.



All this functionality is really  
cool, but we have to bring along  
the whole center...



> 6'





## Lessons Learned from Iteration 2

Lots of capabilities improved users' abilities to do work, but..

Many users didn't understand all the functionality/capability or didn't want to take the time to.

Many improvements weren't used because of lack of training.

Learning curve for Confluence AND Jira at once was overwhelming for most users.

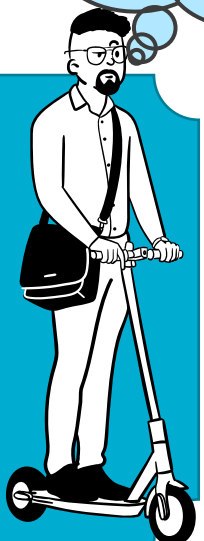
Much content was archival vs. functional, that is you couldn't DO anything with it.

Ah good, the challenges are mostly with people. Those are simple.

Leadership spaces needed better requirements development over time.

No human centered design concepts – content not tailored to common usages

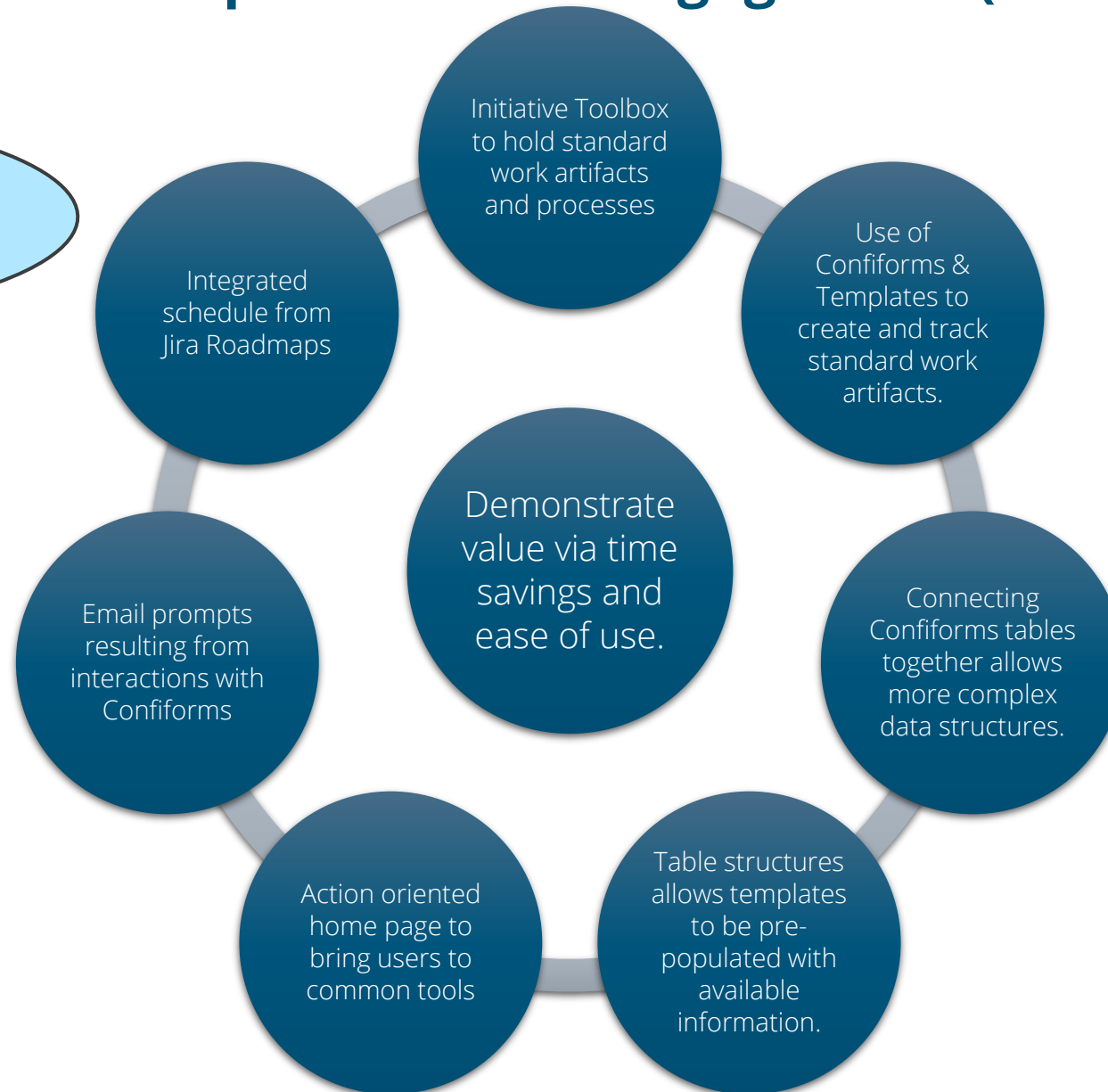
Users needed prompting to go to the space, but the space didn't provide any prompts.





## Iteration 3: Better User Experience and Engagement (The Present)

People are still at the core of what we do. If our technology isn't shaped to our people then it will not serve them well.

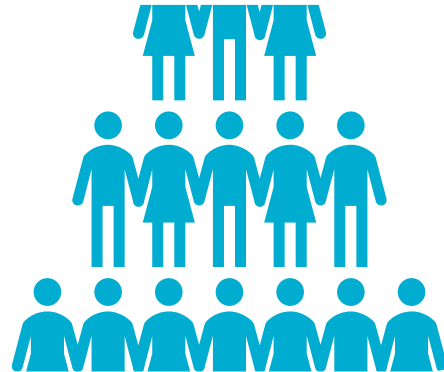




## Creating Business Velocity with ITIL (let's call it IBIL?)



In IT we frequently go to ITIL as the standard for guiding the co-creation of value, but what happens when you have more needs and less time than IT capacity?



Changes in labor availability, dependency on contractors, and bandwidth are rarely in alignment. Having IT hand-hold the business through projects burns valuable resources that could be utilized for delivering value.



If the business can hold its own hand then it can be a more effective partner in the co-creation of value and increase productive IT bandwidth.

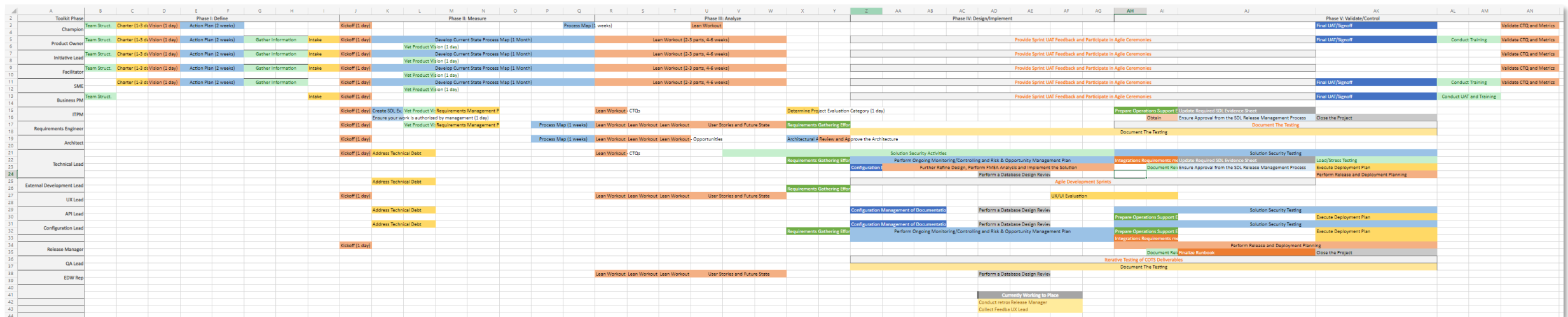


Having a single location to house standard phased processes and work artifacts is needed to simplify the experience for users.



# Aligning IT and Business Activities

We engaged our IT partners to build a swim-laned Gantt chart that aligns Design for Six Sigma practices (DMADV/DMEDI) with the Sandia's Software Development Lifecycle, built around PDCA.



Identified process gaps in need participation IT, Business, Vendors.

Identified all required participants for activities, ensuring correct stakeholder participation.

Helped identify dependencies, resources constraints, and bottlenecks.

Serves as a model for helping build out a shared integrated schedule between IT and business



# Reducing Effort and Ensuring Consistency

Team	Where should this be created?	Page Title	Template Used	Page ID	Page Link	Created At	Activity Owners	Status	Sub-Item
ES/High Side W/BC Tool Initiative	ESHC - Conf Forms	Testing team roles	Toolbox Roles and Responsibilities Template	1055423143	Testing team roles	08/22/2022	Graham Milner Bass	NEW	
al347d5a-0e7-4a2b-832b-6b9594687321	ESHC - Conf Forms	Just Another Test Page	Team Home Page	1055131091	Just Another Test Page	08/21/2022	Shawn Henry	NEW	
al347d5a-0e7-4a2b-832b-6b9594687321	ESHC - Conf Forms	Little Green Men from Space	Team Home Page	1055131059	Little Green Men from Space	08/21/2022	Shawn Henry	NEW	
5e381aa-3b9d-473a-97a7-2a1469505532	ESHC - Conf Forms	Jumping Javelinas Den	Team Home Page	1055131095	Jumping Javelinas Den	08/21/2022	Paula Marie Schreide	NEW	
al347d5a-0e7-4a2b-832b-6b9594687321	ESHC - Bandit Midway	Team Table	Toolbox Roles and Responsibilities Template	1055327198	Team Table	08/20/2022	Bertram N Huff Stephanie Salinas	OK/ARCH	
al347d5a-0e7-4a2b-832b-6b9594687321	ESHC - Business Process Strategic Element	Bandit Midway	Team Home Page	1055327193	Bandit Midway	08/20/2022	Julie V Conders	NEW	
CIS Explosive Materials Management Initiative	ESHC - Conf Forms	Paula's Strategy for Action in P123	F1 Strategic Action Plan Template	1042460746	Paula's Strategy for Action in P123	08/13/2022	Paula Marie Schreide Shawn Henry	NEW	

- We use Conforms to create and track activities using templates. Links to pages are store as records with location, template name, leads, and status.

ConfiForms IFTTT Integration Rules | event = onCreated | action = Cr...

Multiexcerpt include | PageWithExcerpt = Page Part...

[template.[entry.\_page.pageProperties(templatepagename)]]

Page properties | hidden = true

Created	[entry.created]
Created By	[entry.createdBy]
Template	[entry.template]

- Confluence templates are kept clean of tracking markup by adding configuration information as part of the page creation process. The header uses a multiExcerpt, but the footer is processed through the template creation process.

OH! I really dislike typing the same thing over and over.

Name	Role	Responsibility
Salinas	Product Owner	Responsible as the overall programmatic owner of the overall strategic guidance to ensure objectives, tasks, with program vision/mission and compliance. Provide needed.
	Delegate Owner	Represent the Product/Process Owner when they are delegated decision making authority and represent ti
th	Integration Champion	Responsible for leading and implementing the strate expected outcomes are achieved and ensuring integr across Center 600 and other SNL stakeholders. Ensun other related objectives and tasks.
	Initiative Lead	

- The Toolbox collects and flows information to progressively elaborate document content through the use of Conforms tables and deploying standard work templates.



## Bringing Content and Features to Users

To prevent decision paralysis, the team page starting tab will consolidate key features and uses as the first thing users see.

Email Notifications inform users of new Risks, Escalations, Activities, and Volunteers.

Productivity  
Delivery

Using standard work templates minimizes users' brain cycles on activity setup and stakeholder identification.

Using Confirms, content flows to pages when they are created or later as it becomes known and is entered.



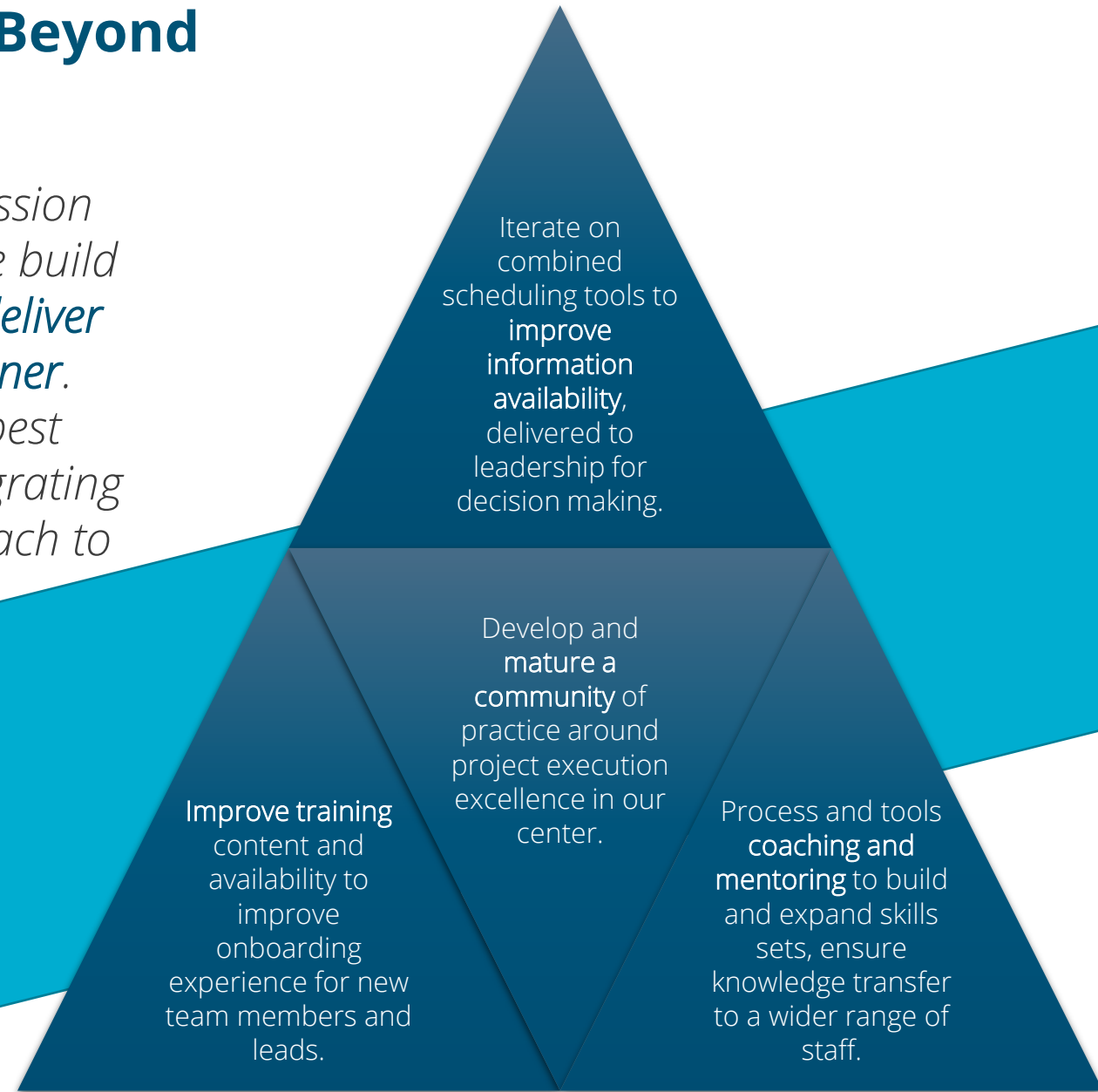
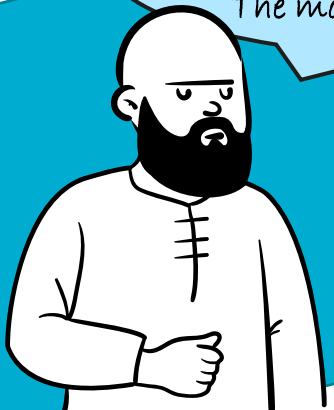


## Next Steps: FY23 and Beyond

The business, our customers, and the mission are **people that work to support**. When we build durable and efficient processes we help **deliver capabilities in a timely predictable manner**.

Leveraging enterprise IT software and best practices can be a force multiplier by integrating practice areas in a comprehensive approach to product and process delivery.

The most important thing,  
is to remember,  
The most important thing.





## Questions or Comments?





# ABOUT THE SANDIA ANGLES TEMPLATES

Create impactful presentations, reports, and visuals with Sandia branded PowerPoint templates.

## FEATURES

- 16:9 HD widescreen format
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- Access fully editable charts, maps, and icons in the [PowerPoint Graphics Library](#)
- Easy to use placeholders crop photos without distortion  
**Note:** To reduce file sizes, templates do not include Images. UUR photos can be accessed at Sandia's [Flickr](#) page.
- Before submitting to Sandia Review and Approval, ensure only the appropriate markings are applied to content slides and Slide Masters.

## Questions?

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Revised 03.04.21

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