How Lockheed Martin Uses SAPUI5 to Centralize a Manual PR Request System

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LOCKHEED MARTIN

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About the Speakers

Audrey Mays

- Software Engineer, Lockheed Martin

- 25+ years of IT experience

- My superpower of choice is Superhuman Speed

Steve Sweeney

- Software Engineer, Lockheed Martin

- ABAP/UI5 Developer for 9+ years

- My 4 year old niece taught me how to use my first Smartphone

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Key Takeaways

➢ With SAPUI5, Fiori, and ABAP we were able to implement robust applications for the manual purchase requisition request process

➢ New Procedures
  ➢ Consistent approval process
  ➢ Streamlined approach
  ➢ User-friendly interface

Agenda

➢ Lockheed Martin Overview

➢ SAP Landscape

➢ Manual Purchase Requisition Request(PRR) History

➢ PRR Requirements & Implementation

➢ Achievements

➢ Enhancements

➢ Lessons Learned

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Lockheed Martin Overview

AERONAUTICS
- Tactical fighters
- Tactical and strategic airlift
- Advanced Development

ROTARY AND MISSION SYSTEMS
- Maritime Solutions
- Radar and Surveillance Systems
- Aviation Systems and Rotorcraft Platforms
- Training and Logistics Solution

MISSILES & FIRE CONTROL
- Air and missile defense
- Fire control and situational awareness
- Nuclear systems and solutions

SPACE SYSTEMS
- Surveillance and navigation
- Global communications
- Human space flight
- Strategic and defensive systems

➢ Headquartered in Bethesda, Maryland
➢ Global security and aerospace company
➢ Employs approximately 100,000 people worldwide
➢ Principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services
➢ 2018 Sales: $53.8 billion

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SAP Landscape

		Aero	MFC	RMS	SSC	Enterprise
PDM/ PLM Product Data/ Lifecycle Management	**Engineering**	SIEMENS TEAMCENTER	Windchill PTC	Windchill PTC DASSAULT SYSTEMES	Windchill PTC	
ERP Enterprise Resource Planning	**Finance Mfg Planning Supply Chain Sustainment**	SAP OneAero SAP Greenville	SAP MFC SAP LM UK	SAP CES/COS SAP Canada SAP SAC SAP	SAP SSC FICO SAP SSC ERP	SAP P2P SAP ICL SAP Spectrum
MES Manufacturing Execution System	**Shop Floor Manufacturing**	SAP CAMS iBASEt SOLUMINA	APRISO.	iBASEt SOLUMINA	SAP CAMS	
HRMS HR Management System	**Human Resource Management**	ORACLE PEOPLESOFT successfactors An SAP Company SAP				

Before PRR(Purchase Requisition Request)

Emails

Phone Calls

Handwritten Notes

Manual Purchase Requisition Request

INCONSISTENT PROCESSES

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PRR Requirements

➢ Application must be web-enabled

➢ Accessible to all MFC employees without requesting SAP access

➢ Simple and easy to use, while housing all of the necessary data to create a manual PR

➢ Automatically send emails to the appropriate approvers

➢ Once all the approvals are in place, a PR should be created if applicable

VERY SIMPLE RIGHT?

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APPLICATION MUST BE WEB-ENABLED

Fiori Launchpad

PRR Tiles
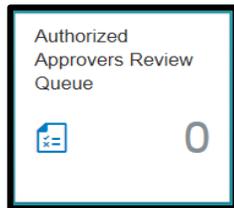
Create a Purchase Requisition Request
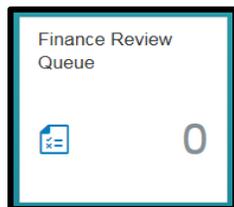
Requestor uses this tile to initiate a PRR
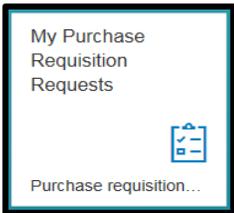
My Purchase Requisition Requests Queue

A complete list of the PRR's created for a particular Requestor

Authorized Approvers Review Queue

Designated Authorized Approvers will be able to review the PRR's assigned to them for approval

Finance Review Queue

Designated Authorized Financial Approver who will be reviewing and approving the charging objects

PRR Queues

Requestor's Queue

Authorized Approver's Queue

Access Options Explored

➢ Create users on the fly
  ➢ Promising Wiki article - Automatic User Account Creation and Update using SAML 2.0 in AS ABAP
  ➢ Required too much resource time to explore

➢ SAP's IDM (Identity Management)
  ➢ Identity management service for SAP applications
  ➢ Centrally manage user identities (functional user profiles/roles/permissions) and ensures the proper authorization and processes are utilized
  ➢ Enterprise version recently implemented at Lockheed, but not rolled out to all projects/business areas yet

➢ LDAP Sync
  ➢ Tried and true solution here at Lockheed since it is currently being used for other Fiori applications
  ➢ Allows you to create and maintain users in SAP from Active Directory, based on certain attributes

SAP ACCESS REQUIRED FOR FIORI LAUNCHPAD

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FORM MUST BE SIMPLE AND EASY TO USE, WHILE HOUSING ALL OF THE NECESSARY DATA TO CREATE A MANUAL PR

UI5 Implementation Challenges

➤ Time lapse between training and development

➤ Resources with different skillsets needed

➤ Web IDE personal edition or cloud

➤ Create from standard template or from scratch or a combination

➤ Understanding views (JavaScript or XML)

➤ Getting familiar with data models (JSON, OData)

➤ Understanding Gateway services

➤ Understanding navigation

LEARNING CURVE

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PRR Form

➢Sections
  - ➢General Data
    - ➢ Common to all items
    - ➢ Copied to each item on PRR and PR
  - ➢Order Items
    - ➢ Fields specific to an item
    - ➢ Material and funding data
  - ➢Attachments
    - ➢ Supporting documentation for PRR
    - ➢ Documents do not flow to the PR by design
  - ➢Status History

➢Field names are similar to SAP names for consistency

FOCUS ON EASE OF USE

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General Data Section

Ease of Use

- Form is one page for single item requests
- Search help is implemented for Desired Vendor and Approvers
- Delivery Address is auto-populated based on the selected plant
- Suggest lists are used for Plant and Approvers
- Can easily reorder items by copying an existing PRR

Order Items Section

Single Item PRR

Multi-Item PRR

Ease of Use

➢ Search help is implemented for Material, UoM, Material Group, Purchasing Group, and Invoice Approver
➢ Suggest list is used for Material
➢ If a valid MMR exists, the following are auto populated
  ➢ UOM
  ➢ Description
  ➢ Unit Cost (if it is on the MMR)
  ➢ Material Group
  ➢ Purchasing Group

Order Items Funding Section

Cost Center

Account Distribution

Ease of Use

Search help is implemented for all cost objects

Internal Order

Network Activity

Attachments Section

ATTACHMENTS

Attachments (2)   +

W This is a test document - Copy (4).docx
                                                                   ⊗

W This is a test document - Copy (6).docx
                                                                   ⊗

Ease of Use

Supporting documents can be attached to augment the approval process

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Status History Section

Purchase Requisition Request (63)   Status: PR Created

GENERAL DATA   ORDER ITEMS   ATTACHMENTS   **STATUS HISTORY**

Status History

Status	Status Note	Status Changed By	Changed Date/Time
PR Created		▉▉▉▉	08/27/2018 09:59:25
Finance Review		▉▉▉▉	08/27/2018 09:19:44
Resubmitted		▉▉▉▉	08/23/2018 14:40:55
Rejected	Please update charge number to ▉▉▉▉	▉▉▉	08/22/2018 15:05:35
Submitted		▉▉▉▉	08/22/2018 13:49:42
New		▉▉▉	08/22/2018 13:49:04

Ease of Use

Can easily determine when a PRR has moved on to the next step

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Dispositioning a PRR

Requestor

| Submit for Approval | Cancel Request | Optional comment |

Authorized Approver

| Approve | Reject | Comment is required for Reject |

Financial Approver

| Approve | Reject | Comment is required for Reject |

<u>Ease of Use</u>

Appropriate buttons are displayed based on the user's role

APPROVERS SHOULD RECEIVE EMAIL NOTIFICATIONS FOR ANY ITEMS REQUIRING THEIR APPROVAL

Emails

➢Emails are sent to users to indicate they need to take action on a request
  ➢Approvers and MRP controllers receive emails for items awaiting their disposition
  ➢Requestors receive emails for rejected requests

➢Emails contain the major details of the request for all of the items, along with links to the user's queue and the PRR request

Please find the following details for PR request #179. This request is currently in the Submitted status and requires your approval for further processing. If you reject it for any reason, you will need to enter a reason in the application.

Requisitioner:

MRP Controller Code:

Order Items:

Quantity: 10.000	**Material Part #:**	**UoM:** EA	**Description:** TEST SOFTWARE	**Unit Cost:** 5	**Item Total:** 50
Receivable: X	**Invoice Approval required:**		**Invoice Approver:**		
Inspection Required:	**Hazardous Material:**		**Funding:**	**Cost Element:**	
Material Type:				**Cost Object:** Cost Center 0000	

|					
Quantity: 3.000	**Material Part #:**	**UoM:** EA	**Description:** TEST WARE	**Unit Cost:** 20	**Item Total:** 60
Receivable: X	**Invoice Approval required:**		**Invoice Approver:**		
Inspection Required:	**Hazardous Material:**		**Funding:**	**Cost Element:**	
Material Type:				**Cost Object:** Cost Center 0000	

Manage Purchase Req Request 179

View Queue

KEEP THE PROCESS MOVING

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ONCE ALL THE APPROVALS ARE IN PLACE, A PR SHOULD BE CREATED IF APPLICABLE

Final Step

➢PRR without a material master

  ➢BAPI_PR_CREATE is used to create a PR

  ➢Can be normal or repair PR

➢PRR with a material master

  ➢Reservation is created or updated

   ➢ BAPI_RESERVATION_CREATE1 is used to create a reservation for items charged to a cost center (i.e. MB21)

   ➢ BAPI_NETWORK_COMP_ADD is used to update a reservation for items charged to a network/activity (i.e. CN22)

  ➢Normal MRP process will generate PR

➢PRR number is documented in the PR and reservation for auditing purposes
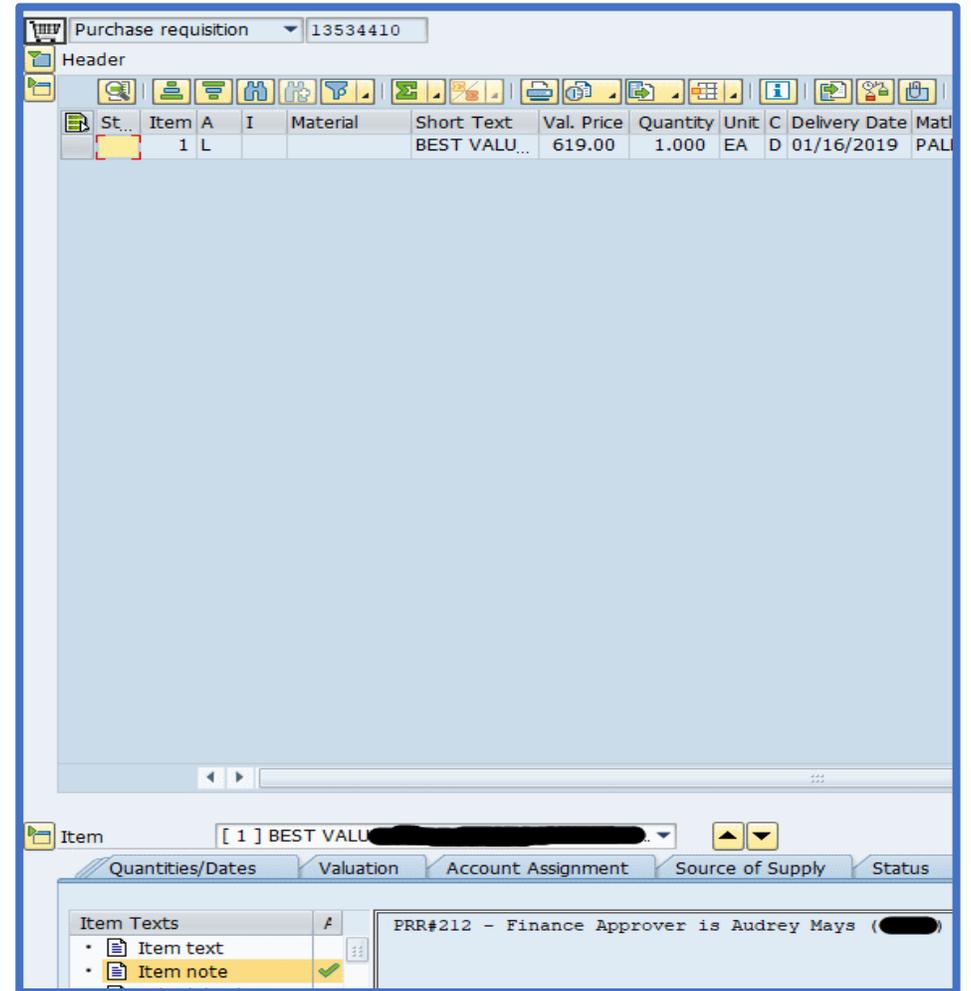
Achievements

➢ One of our plants was able to shave 7 days off of getting approvals.

➢ Completely removed our BOM planners from manually creating reservations for MMR items.

➢ Completely removed BUY planners/BOM planners from non-program creation of PR items in general.

➢ Provided the ability for end users to track their PRRs via reservations or SAP purchase requisitions.

➢ Auditable – all approvals are date and time stamped, and have supporting documentation all in one place

SUCCESS!

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Enhancements

➢ All data will be at the item level, including approvers.

  ➢ We will implement the master detail app template
  ➢ Multiple PR's can possibly be created from one PRR, depending on which items are approved together

➢ Extend search capabilities. Initially could only search within your requests

➢ Add in automation for warehouse personnel to pull in-stock requests

➢ Enhance approval queues so approvers can see past approvals

➢ Add functionality to mass upload PRR items

WHAT'S NEXT?

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Lessons Learned

➤ Account for a learning curve in the schedule for your 1st SAPUI5 application

➤ Using one of the templates in SAP Web IDE allows for rapid development and deployment of a fully functional application

➤ SAPUI5 and Fiori have been around long enough so there are plenty of useful online resources

➤ A more agile approach would have been helpful in implementing some of the enhancements during the initial release.

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Q&A

For questions after this session, contact us at audrey.k.mays@lmco.com and steve.j.sweeney@lmco.com.

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