

Process Design Document / Solution Design Document

Process Name: Aged Orders Radiology

Process Design Document / Solution Design Document

Purpose of Document

This document serves as the technology policies and procedure (AKA runbook) for Intelligent Automation Hub at Geisinger

Intended Audience

This document is intended to be referenced by Geisinger Intelligent Automation Hub's stakeholders and wider project team members as well as the relevant Operational Support groups

DOCUMENT CONTROL

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1.1	03/02			Edits from Business
1.2	06/24			Edits from Business
1.3	07/02			Edits from Business
1.4	09/23/2020			Epic upgrade process adjustments
1.5	11/09/2020			Adjustments per Developer

Functional Design Document

1.6	12/15/20			Necessary screenshots were added.
1.7	1/13/21			

REVIEW

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Joan Topper	Process Owner	

APPROVAL (SIGN OFF)

Name	Role	Date
Joan Topper	Stakeholder	
Jodi Norman	SME	
Jenn Wetzel	IAH Director	

COST

Complexity	Estimated Re-Engineering Cost (in hours)	FTE Hours Savings
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Medium

STAKEHOLDERS

Role	Name	Email
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Process Owner		
SME		
Process Architect		
Process Architect		
HIT team		
HIT team		
HIT team		
Developer		
Developer		

REFERENCE DOCUMENTS (please ensure all have permissions to access link)

Document Name	Description	Link
Not applicable	Not applicable	Not applicable

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Document Details

Purpose of this Document

This document intends to provide a detailed process and solution design proposal for robotics automation of the Aged Order Radiology process.

General Process Description

Process Summary

Geisinger Contact Center has deployed Robotic Process Automation (RPA) software for removing aged Physical Therapy (PT)/Occupational Therapy (OT) orders. The Aged Radiology Order process is similar but applied to only “normal” orders from the active work list after 13 months of aging without removing orders tagged in a future status. Radiology orders have Status indicators to differentiate future orders, standing orders and "blank" (normal order).

Imagined Current State: When scheduling agents identify a “future” radiology order with a “normal” status, the agents defer the order based on the notes indicating when the radiology modality is to be scheduled, populating the “Deferred” tab of the respective Radiology Modality workqueue. Orders with a “normal” status continue to populate the “Active” tab of the respective Radiology Modality workqueue. Working the “Active” tab, agents will filter for order status that does not equal (<>) “Future” or “Standing” and the order date is less than or equal to (<=) 13 months. Each individual order is selected and then removed by selecting the “Remove” activity within the workqueue toolbar, migrating the order from the “Active” to the “Removed” tab. This process is not occurring in a consistent fashion and forecast a backlog of Future scheduled as "Normal" orders (estimate >10,000 orders across 11 RADIANT modality WQs). In addition, when orders have been deferred and return to the active WQ, there is no way to identify that they were previously deferred. For this reason, aged radiology orders are not able to be pulled into a workqueue to be removed.

Automation will eliminate the manual process of working Epic Radiant modality workqueues to remove aged Radiology “normal” orders greater than 13 months from the order date, transferring them from the “active” tab to the “removed” workqueue tab.

Data Flow & Applications

Input

Input	Format	Location	Frequency	Comment
Epic Radiant Modality Order WQ Deferred Tab	CSV	Workqueue export functionality	Daily – accumulating rolling 60-day file	For each Radiant Modality Order Workqueue, create Excel output to network share drive
Epic Radiant Modality Order WQ Active Tab	CSV	Workqueue export functionality	Daily	For each Radiant Modality Order WQ - Orders that do not match orders on the accumulated rolling 30-day deferred file, indicate “remove”

Output

Output	Format	Location	Frequency	Comment
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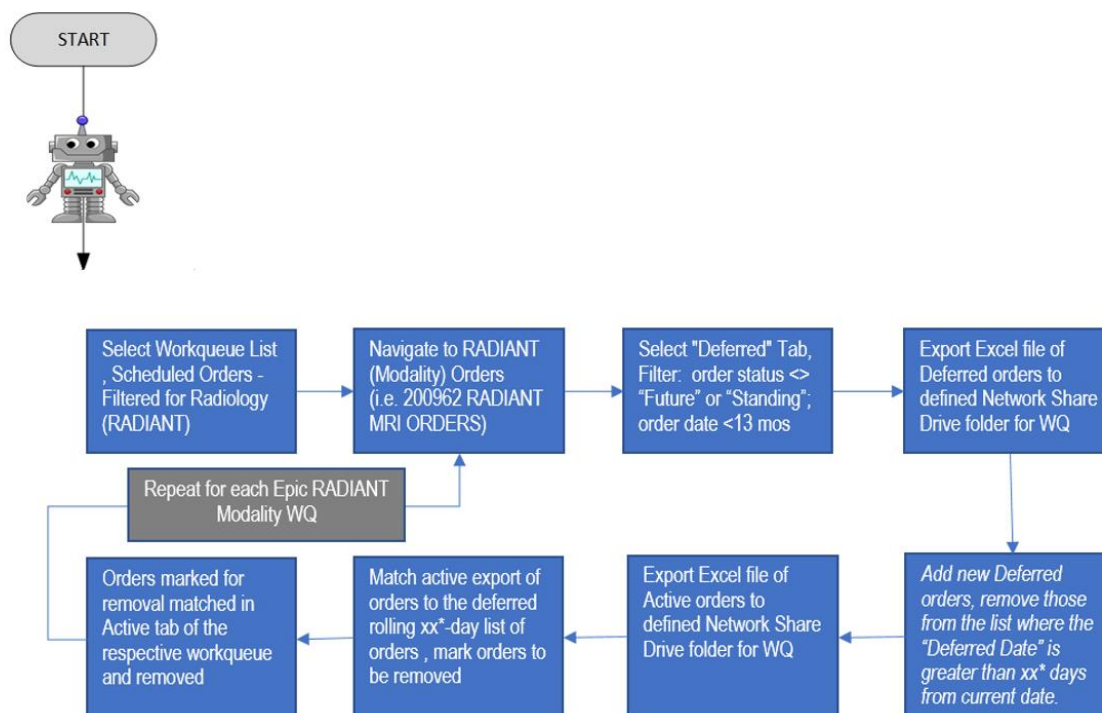
Deferred Report File	Excel	Network Share Drive	Daily – accumulating rolling 60-day file	For each Radiant Modality Workqueue
Aged Radiology Orders Removed	Excel	Network Share Drive	Daily	For each Radiant Modality Workqueue

Systems

Application	Interface	Req Key / Operation / URL	Comment
Epic	Desktop Application	Not applicable	

Process Flow

Bot Automation Process & Workflow (To- Be)



Detailed "To-Be" Process Steps

Assumption: Bot has a "worklist" of RADIANT Modality Workqueues. For each workqueue (~11):

1. Filter Defer tab within RADIANT modality order workqueue to exclude Standing and Future orders (Standing Status) and Order Date less than 13 months prior to the current date
2. Export Excel file of Deferred orders to defined Network Share Drive folder for WQ
3. Export Excel File of Active orders to defined Network Share Drive folder for WQ
4. Match active tab list of orders to the deferred rolling 60-day* list of orders to determine what to remove based on deferred date
5. Orders marked for removal matched in Active tab of the respective workqueue and removed - process modeled from aged PT/OT orders
 1. Bot closes each order with a removal reason
 2. Order moves from “active” to “removed” tab of workqueue due to closure
 3. Bot sends a report to SME on status of automation

*- TBD – 60 days confirmed by J. Norman 07/02/2020

Business Rules

Requirements:

- Active record is older than 13 months and never been deferred, will be deleted immediately.
- Active record is older than 13 months and have been deferred and moved back to active tab, counter will start counting and when it reaches 60 days, record will be deleted on the 61th day.
- Active record is older than 13 months and have been deferred multiple times and moved back to active, on the most recent date of moving back to active tab, counter will start counting and when it reaches 60 days, record will be deleted on the 61th day.

Implementation Roll Out Requirements:

- All the work queues will start running at the go live and keep calculating 60 days period.
- Removing orders from work queues will be completed one work queue at a time, based on business' input and feedback.

Rule	Rationale
Create and maintain rolling [60-day] aged-“Deferred” Orders Excel/csv file for each Radiant Modality Workqueue	1. To compare Active List to Deferred List orders, removing only those that have not appeared on the Deferred list for the prior 60-day period 2. To enable a window of ≤ 60 days to schedule “Future” orders from deferred date
Once [60-day] aged “Deferred Orders Excel/csv file created, automation will run daily	1. To ensure Radiant Modality “normal” order status greater than 13 months are removed with workqueue populated with only those requiring attention
Removal reason will be “Removed by Resulted Batch”	Bot must select reason to close order
Automation frequency	Daily
Bot run time	3am-7am
Excluding weekends and holidays	No

CURRENT STATE METRICS

Backlog	# Batches Monthly	Avg. Volume / Batch	Weekly Avg. Volume	Frequency
~11,000	n/a	n/a	~168	Daily

Step-By-Step Process Documentation

Happy Path of Automation

1. Select Epic Hyperspace icon (specified in TDD section 5.1)
2. Enters log-in credentials at login screen once Epic is open (user name & password) and click "Log in" button
3. Epic will direct user to department screen (currently defaults to: RESULTS REVIEW[200032] . Bot clicks "Continue"
4. Epic will open to message of the day screen. Bot clicks "OK"
5. Once Epic opens to "In-basket" home screen, select " Epic " drop-down in upper left-hand corner of screen
6. From drop down list, select "Schedule Orders"> "Workque List".
7. Select Workqueue list Epic Workspace Tab
8. Selected Scheduled Orders – Filtered (RADIANT), Double click on selected workqueue to open workqueue

9. Select Deferred Tab.

10. Select Filter Activity

11. Create Filter Rules

I. Remove existing filter rules by selecting the corresponding "X", and the [Remove] button.

II. Select [Accept] button.

III. Reselect Filter Activity to set new filters

IV. Set filter for "Normals" only by selecting "And" Evaluation Logic

Filter (1): Radiology Order Status of "Normals", exclude "Standing" and "Futures"

1. Property: Order>>Standing Orders
2. Operator: <>
3. Value: "Standing", "Futures"

V. Filter for Order Status Indication of "Normal"

1. Rule editor Property/Rule Select Window displays
2. Property: Orders>> Standing Orders
3. Select Operator: does not equal "<>"

4. Select Value "Add". Select "Standing" then [Accept]

VI. Return to Filter Edit window, "Standing" Value displays

2. Select Value "Add" for second Value filter

3. Select "Future" then [Accept]

VII. Add Filter logic for Normal orders aged 13 months

Filter (2): Radiology Order Date

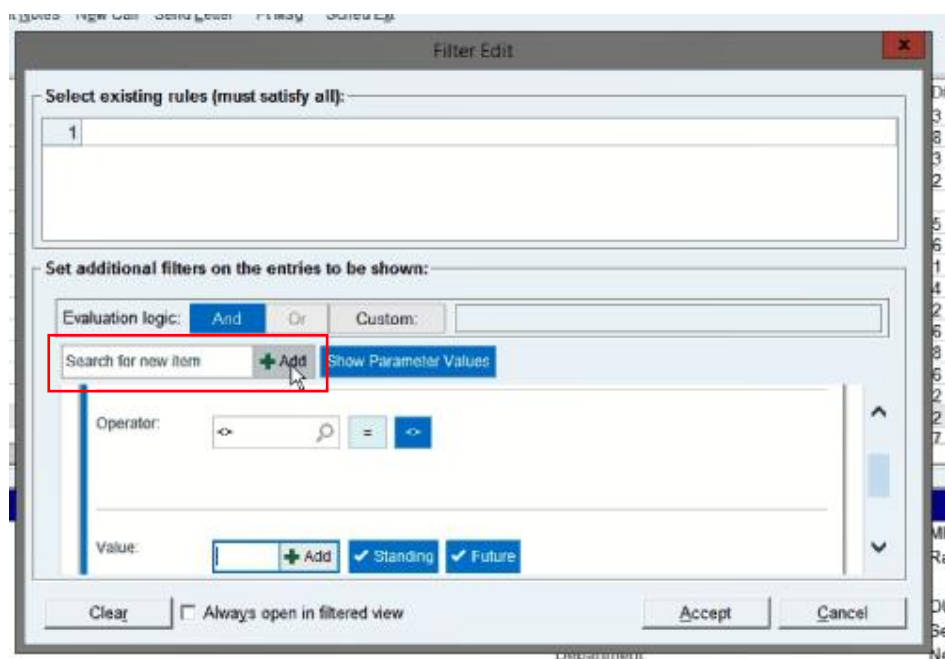
4. Property: Order>>Order Date

5. Operator: =<

6. Value: [enter current date "mm/dd/yyyy"]

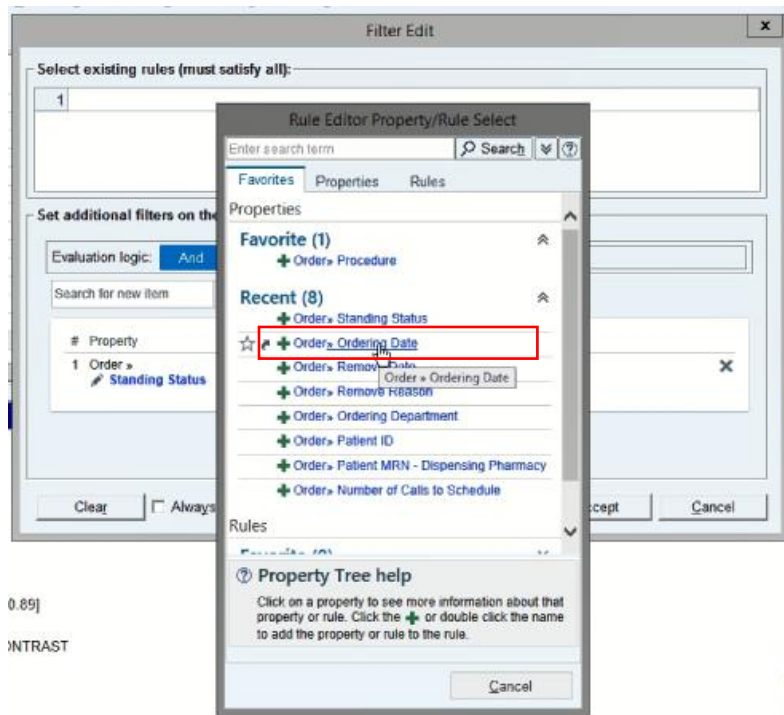
Filter for Order Status Indication of "Normal"

1. Select "Search for new item" "Add"



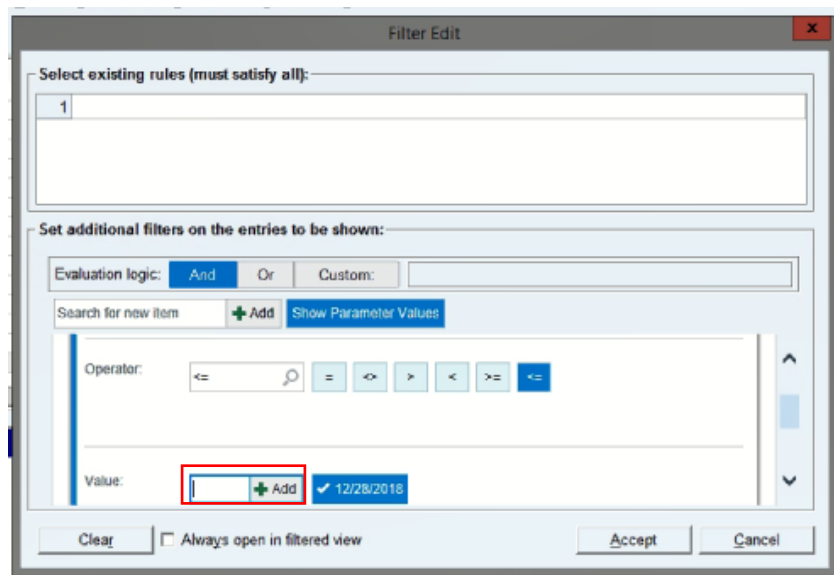
2. Rule editor Property/Rule Select Window displays

3. Property: Orders>> Ordering Date

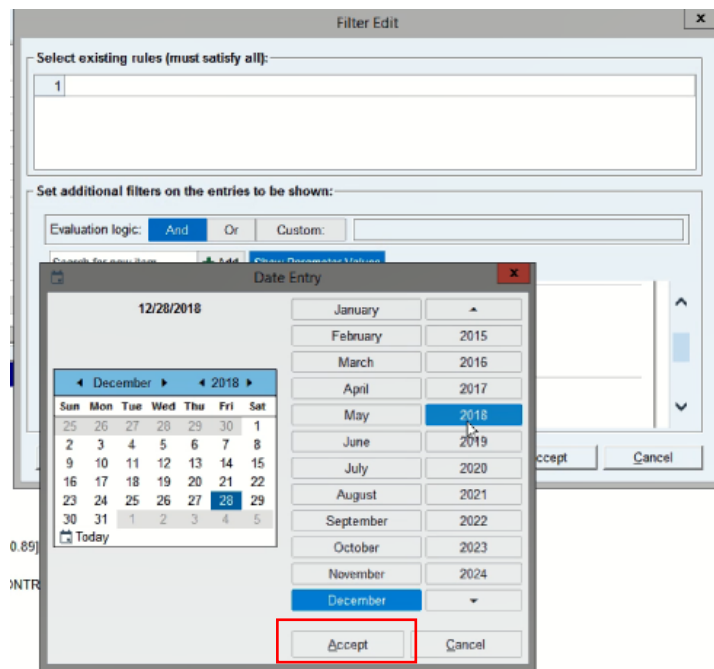


4. Operator: < (Less than)

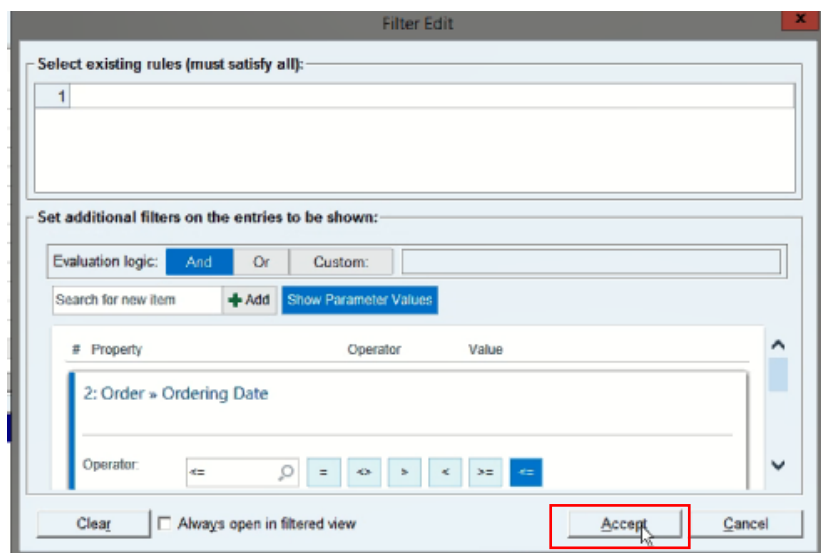
5. Select Value "Add"



6. From "Data Entry Window", select month 13 months back from current date (i.e. on January 28, 2020, select December and 2018).
7. [Accept]



8. Select [Accept]



VIII. Filter logic applied to workqueue

IX. Select Filter Activity (FOR TESTING ONLY _Not for BOT to PERFORM)

1. Confirm the Filter Evaluation Logic for the two properties: (1) Order>>Standing Orders, (2) Order>>Ordering Date

12. Create export of Deferred orders, filtered for only “normals”

- i. Click on Column Actions
- ii. Select “Export” from the drop down list
- iii. Select “Export to CSV File
- iv. Pop up Window Displays:
- v. Respond “Yes”
- vi. From “Save As” window, Navigate to Network Share Drive folder for respective WQ Deferred Orders.
- vii. File Encryption Password Window requires Password (Need to supply), and then Verify password. The bot will then click ‘Accept’.



- viii. Bot will need to navigate to Network Share Drive folder for WQ's Deferred Orders and add new Deferred orders, remove those from the list where the "Deferred Date" is greater than 60 days from current date.
- b. Create an export of the Active orders, filtered for only "normals", aged for 13 months
(Active Tab uses filter above, filter on standing and future but no date filter for the Deferred Tab)
 - i. Click on Column Actions
 - ii. Select "Export" from the drop down list
 - iii. Select "Export to CSV File"
 - iv. Pop up Window Displays:
 - v. Respond "Yes"
 - vi. From "Save As" window, Navigate to Network Share Drive folder for respective WQ Active Orders.
 - vii. File Encryption Password Window requires Password (Need to supply), and then Verify password



- 14. Bot will then Navigate to the Network Share Drive for the respective RADIANT (Radiology) Modality Active Excel file and the Deferred "rolling 60-day" orders
- 15. The Active "Normals" order file is compared to the Deferred "Normals" order file.
- 16. The Active "Normals" orders that are not listed in the Deferred "normals" order file are marked "Remove".
- 17. The Bot will then Navigate back to the Epic RADIANT (Radiology) Modality WQ.

18. **The process to remove Aged Radiology Modality Orders will follow the Aged PT/OT Order removal process to filter by specific Order in WQ list:** Select the respective WQ List.
19. Once WQ list opens, select the “filter button” to open filter edit screen.
20. Select the “Add” button to access filter property screen.
21. Select the “Order ID” filter from the property rule list to add it to the filter edit screen.
22. Scroll down to “value” field and enter in corresponding order ID number of order from the Active “Normals” aged orders marked “remove”.
23. Select “Add” button and then “Accept” to apply filter.
24. Select “Accept” at the bottom of the “Filter Edit” window to show specific order.
25. Left click order and select “Cancel Request” (removal reason pop up will appear). Click search window and type “Removed by Resulted Batch”
26. Select matching Title, “Removed by Resulted Batch” from pop-up screen Title Window below.
27. Select “Cancel Requests” on pop-up screen
28. Once order is removed via resulted batch, it will migrate from the “active” to the “cancelled” tab of the workqueue resulting in order closure.

29. The process to remove Aged Radiology Modality Orders follows the Aged PT/OT Order removal process and continues for each fo the Aged RADIANT (Radiology) “Normals” orders reported as “remove”.

a. The entire process is repeated for each of the Epic RADIANT (Radiology) Modality workqueue.

Step 1 - capture & tracking of 'deferred' orders for 60 days beginning week of 4/12

Step 2 - begin processing of 'aged' orders 60 days later; begin with CT, followed by DEXA, and then the remaining 8

Go-Live	ID	Name	Owning Area	Description
1	200961	RADIANT BI ORDERS	Diagnostics Institute	Breast Imaging Diagnostic orders that need to be scheduled.
	200967	RADIANT BI SCREENING ORDERS	Diagnostics Institute	Breast Imaging Screening orders that need to be scheduled.
	200963	RADIANT CT ORDERS	Diagnostics Institute	CT imaging orders that need to be scheduled.
	4694	RADIANT DEXA ORDERS	Diagnostics Institute	DEXA imaging orders that need to be scheduled.
	200966	RADIANT FL ORDERS	Diagnostics Institute	Fluoroscopy orders that need to be scheduled.
	4804	RADIANT IR ORDERS	Diagnostics Institute	IR orders that need to be scheduled.
	200962	RADIANT MRI ORDERS	Diagnostics Institute	MR orders that need to be scheduled.
	4697	RADIANT NM ORDERS	Diagnostics Institute	Nuclear Medicine orders that need to be scheduled.
2	200969	RADIANT PET SCAN ORDERS	Diagnostics Institute	PET Scan orders that need to be scheduled.

200964

RADIANT US
ORDERS

Diagnostics
Institute

Ultrasound
orders that need
to be scheduled.

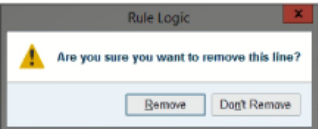
Exceptions In The Process Flow

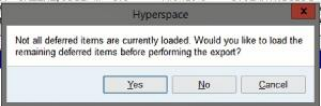
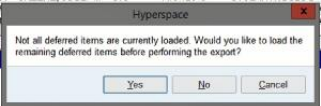
Exception	Trigger	Actions	Comment
Records that are reactivated from 'Deferred' list to 'Active' list	When the bot sees the order in the active list in the rolling 60 day list,	The bot will remove the order number from the rolling 60 day list	This will then be treated as a new order and clock starts from zero day.

System Errors

Error	Trigger	Actions	Comment
Epic is not responding	Epic crashes or access is not possible. Page does not load in the given delay	Bot should try 3 times. Second time after 1 minute and third time after 5 minutes.	

Pop-Ups

Pop-Up	Trigger	Actions	Comment
Rule Logic 	This pops when removing Evaluation Logic from Workqueue Filter criteria	Select [Remove] to confirm removing the evaluation logic property in the Filter Edit window.	"Are you sure you want to remove this line"

Pop-Up	Trigger	Actions	Comment
Hyperspace 	When exporting Deferred orders	Select [Yes]	“Not all deferred items are currently loaded. Would you like to load the remaining deferred items before performing the export”
Hyperspace 	When exporting Deferred orders	Select [Yes]	“Not all deferred items are currently loaded. Would you like to load the remaining deferred items before performing the export”
File Encryption Password 	From “Save As” window, saving WQ export	Enter Password: [TBD] Verify Password: [TBD]	
Remove Order	This pops up closing order	Select removal reason, then “remove order”	

Process Continuity

Event	Result
If the bot fails, how will it continue and resolve issue?	If the bot fails for a specific order, mark with notes then continue to next order. If bot fails for automation completely, it should email the user to provide an update as well as email alert to the Bot Controller [iah_rpa_prod_support@geisinger.edu]. The Bot Controller will then be responsible to triage the bot disruption, fix the issue(s), and either schedule ad hoc processing or resume the bot processing.

What happens once automated process finishes?	The bot will send an email to the user specified in the process flow with a link to the Excel file from the output. Emails to iahrpacontactcenter@geisinger.edu. Uploads file to Network Drive.
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System Characteristics

Not applicable

Additional Process Considerations

Word Or Xls Templates

Input File:

ID	Name	Owning Area	Description
200961	RADIANT BI ORDERS	Diagnostics Institute	Breast Imaging Diagnostic orders that need to be scheduled.
200967	RADIANT BI SCREENING ORDERS	Diagnostics Institute	Breast Imaging Screening orders that need to be scheduled.
200963	RADIANT CT ORDERS	Diagnostics Institute	CT imaging orders that need to be scheduled.
4694	RADIANT DEXA ORDERS	Diagnostics Institute	DEXA imaging orders that need to be scheduled.
200966	RADIANT FL ORDERS	Diagnostics Institute	Fluoroscopy orders that need to be scheduled.
4804	RADIANT IR ORDERS	Diagnostics Institute	IR orders that need to be scheduled.
200962	RADIANT MRI ORDERS	Diagnostics Institute	MR orders that need to be scheduled.
4697	RADIANT NM ORDERS	Diagnostics Institute	Nuclear Medicine orders that need to be scheduled.
200969	RADIANT PET SCAN ORDERS	Diagnostics Institute	PET Scan orders that need to be scheduled.

200964

RADIANT US
ORDERS

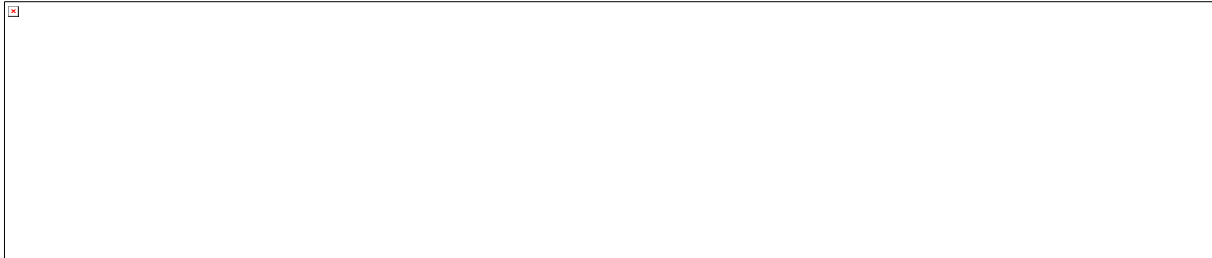
Diagnostics
Institute

Ultrasound
orders that need
to be scheduled.

Output File: Excel with automation status

Two files:

1. 'Deferred' Output File
 1. All Epic Columns
 2. Days Past
 - I. The date the order was added to the running output file
 - II. The bot will delete the records from this file that were added more than 30 days ago
2. 'Active' Output File
 1. All Epic
 2. Automation Status
 - I. Success- Removed, Success- Not Removed, Failed



Vb(A) Or Other Scripts Used In The Flow

Not Applicable

E-Mail Templates

Email for bot to send once complete:

Distribution List:

Subject: Contact Center- Aged Order Radiology – Auto Removal Status

Body: Attached is the report of the automation ran on *insert date of run*

Attachment: Aged_Order_Auto_Removal_Status.yyyymmdd

Email for bot to send if Process Fails:

Distribution List:

Subject: *Contact Center- Aged Order Radiology – Auto Removal Status * – Process Failed

Body: Process failed on *insert date of run* due to *insert reason*

Attachment: *Aged Order Radiology- Auto Removal Status*- Error Report yyyymmdd

Process Standardization

Not applicable

Queries

Not applicable

Other Automated Tasks Related To The Process Or To The Applications In The Process

Not applicable

Access

Bot user ID credentials for EPIC will need to be provisioned with the appropriate permissions

Access	Username/Password	Comment
Epic Cadence	User: IAHCAD2 Password: test11	
Epic Prod	User: IAHCONTACT Password:	

Access Management SharePoint	https://geisinger.sharepoint.com/sites/AccessManagement/Shared%20Documents/Forms/AllItems.aspx	Bots and Developers have been provisioned access
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Assumptions And Risks

Assumptions

Assumption	Rationale
The entire process is automated end to end with no manual intervention	
Availability of Epic system is assumed without any disruptions	

Dependencies

Dependency	Impact	Owner	Status
Assigning security roles to Epic Cadence ID	Dev/Testing/Prod	TBD	

Outstanding Issues

Issue	Date Raised	Owner	Status	Date Closed	Comments

Known Risks

Risk	Impact	Date Raised	Owner	Status	Date Closed	Comments

Appendix

Glossary

Acronym/Term	Meaning

Other Interesting And Existing Documentation

Not applicable

PROCESS CONTINUITY

Prevention: Establishing and defining what redundancies and protocols are in place to prevent failures in the process and maintain business continuity		
Event	Actions (Who/what/How)	Result
When the system or application is down (i.e. EPIC)	Alert set up for IAH team	B.A. will alert the developer and technical analyst on the error. Bot will be paused until issue is identified if Bot is not functioning properly Bot will process the queues the next day
Detection: Defining what protocols are in place for monitoring the process to detect bugs and stop incorrect actions at all points post go-live and escalated monitoring during massive systems changes		
Event	Actions (Who/what/How)	Result
Quality Assurance	- Audit/Manual review (10% of daily orders) - Alert system	B.A. or Dev. will alert the developer and technical analyst on the error. Bot will be paused until issue is identified if Bot is not functioning properly
Hypercare	- Alert system - Logs reviewed by BA and Developer (10% of daily orders)	B.A. or Dev. will alert the developer and technical analyst on the error. Bot will be paused until issue is identified if Bot is not functioning properly
Recovery Assessing the level of risk, define strategic stakeholders to be alerted in need of a recovery and outlining the recovery plan to get back to operational state.		
Event	Actions (Who/what/How)	Result

If the bot fails, how will it continue and resolve issue?	If bot fails on one queue, it will try again If bot fails to run the whole process, bot will stop and run the queues the next day.	If bot is unable to complete the automated process, it should email the user to provide an update as well as email alert to the Bot Controller [iah_rpa_prod_support@geisinger.edu]. The Bot Controller will then be responsible to triage the bot disruption, fix the issue(s), and either schedule ad hoc processing or resume the bot processing.
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