Supplier Root Cause and Corrective Action (RCCA) Response and Intelex System Guideline

Global Procurement & Materials (GPM)

Keysight Technologies

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2. Eight Discipline (8D) Approach Guideline
3. Intelex System Guideline

Eight Discipline (8D) Approach Guideline

Objective

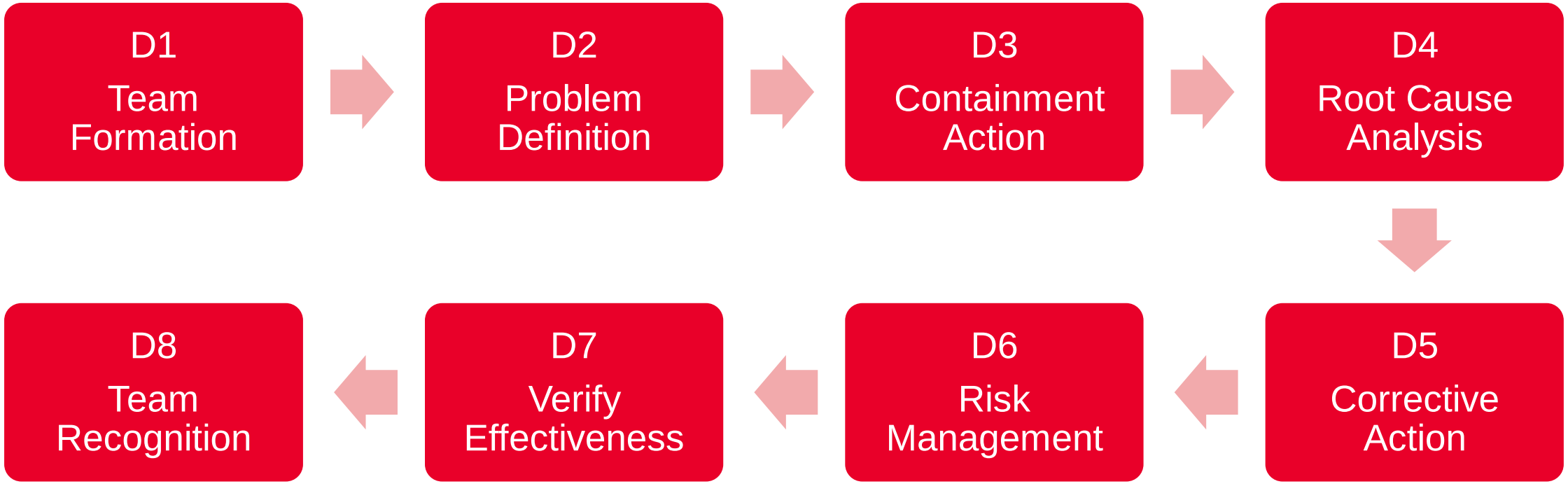
- This document guide suppliers
  - To identify the real root cause and implement the corrective action effectively to prevent the recurrence.
  - To answer the Supplier Corrective Action Request (SCAR)/External Sub Case (ESC) through Intelex System.
- To cascade the Keysight requirement to suppliers
  - Supplier shall respond to Supplier Corrective Action Request (SCAR) within fourteen days upon supplier receipt of the defective part. Supplier may extend the supplier's response time to more than fourteen days with valid justification.

Scope

- All Keysight Suppliers

Supplier Corrective Action Request (SCAR)

8D APPROACH



D1 Team Formation

Establish a small group of people with the process or product knowledge, allocate time, authority, and skill in the required technical disciplines to solve the problem and implement corrective actions.

Guideline:

Team members should include as below (but not limited to)

- Cross Functional or Multi Disciplinary
- Process Owner & Technical Expert
- Others involved in the containment, root cause analysis, correction and prevention of the

Example:

Name	Designation	Email Address
Ashly Tan CY	Product Engineer	ashly_Tan@supplier.com
Jackson Bill	Quality Engineer	jackson_bill@supplier.com
Yeong Wei Ting	Process Engineer	weiting_yeong@supplier.com

D2 Problem Definition

Problem verification is the first step of problem investigation. There are 3 main activities:

- Verify the problem
- Collect information
- Describe the problem

Guideline:

To describe the problem specifically, (5W2H) terms (who, what, where, when, why, how, and how many) would help.

5W2H	Questions to ask	Answer should be provided
Who	Who first observed? / Who is affected?	- Location of defect found
What	What type of problem? / What has the problem? / What is happening?	- Failure reported/ Part Number/ Model/ Detail description of failure
Why	Why it is a problem?	- Detail description on the failure and verification done/ Date code of defective part
Where	Where was the problem observed/ occur?	
When	When the problem first noticed?	
How much/many	How much/ many involved?	- Quantity affected
How often	What is the trend? Has the problem occurred previously?	- Failure history

Example:

- SCAR Number: 1234-SCA-567-ESC-890
- Keysight Part Number: 1234-5678
- Failure Description: 1234-5566 is received instead of the correct part (1234-5678). One piece rejected out of total received quantity hundred pieces. The defective part date code is 0421. This is the first case reported from customer.

D3 Containment Action

Containment action is to limit a problem extent while continue normal operation until the root cause is defined and permanent corrective action is implemented

The containment area should cover production, finished goods, customer on hand (Keysight), Incoming material, and Warehouse Storage.

Guideline

Containment action

- Stoppage of production or shipment
- Segregation goods on pass or fail
- Additional visual control
- Informing customer about the problem
- Informing operators about the problem
- Check on similar product or processes if there is similar risk

Example:

No.	Containment Action Plan	Inventory Location	Implementation Date	Responsible Person	Results
1	100% screening	Supplier Production	30/04/2021	Supplier	0 pcs/1000 pcs rejection (Date Code 0321 and 0421)
2	100% screening	Supplier Warehouse	30/04/2021	Supplier	0 pcs rejection

D4 Root Cause Analysis

Root cause identification is the most important step. The problem will be solved only if the corrective action implemented is addressing the real root cause accurately.

Root Cause Analysis (RCA) is a systematic approach to identify the actual root causes of a problem.

Guideline

Below are the tools frequently used in RCA.

- 5 Whys Analysis OR
- Fishbone Diagram (Cause and Effect Diagram)

Notes: The RCA should identify root cause for both

- *Occurrence (Why it occur?) AND*
- *Detection (Why it can't be detected?)*

D4 Root Cause Analysis

5 WHYS ANALYSIS

5 Whys Analysis (or Why-Why Analysis) is a continuous question-asking technique used to explore the cause-and-effect relationships underlying a particular problem.

Guideline

i. Define the problem.
ii. Ask Why the problem happen and write down the answer
iii. Validate the answer is it the real root cause
iv. If no, Repeat step 3 until problem's root cause is identified.

D4 Root Cause Analysis

5 WHYS ANALYSIS

Evaluate the effectiveness of corrective action to identify the real root cause

Example (Occurrence):

Why	Questions	Answer	Correction Action	Evidence & Summary
Why 1	Why the wrong part shipped to Keysight?	Wrong part was pull from the inventory	Retrain the stock picker- **almost no benefit.** The cause is come from mislabel from supplier	e.g., Supplier Failure Analysis Report, process flow etc.
Why 2	Why was the wrong part pull from the inventory?	The part was mislabeled	Perform inspection on inventory- **minimum benefit** Apply to on hand inventory only	
Why 3	Why was the part mislabeled?	Our supplier mislabeled the part before ship to the warehouse.	Contain the problem by sorting out the mislabel part -**very limited long-term benefit**	
Why 4	Why your supplier mislabeled the part before ship to the warehouse?	The operator at supplier site took the other label and placed at the product	Conduct training for operator – **limited long-term benefit**	
Why 5	Why the operator at supplier site took the other label and placed at the product?	Many labels with different order was printed at the same location everyday so it is easy to cause mislabeled	Revise the process flow, only print one order at one location. Clear the location before proceeding to the subsequent order. (Mistake proof printing label process or application) – **highly effective**	

Example (Escapee):

Why	Questions	Answer	Correction Action	Evidence & Summary
Why 1	Why was the wrong part not detected?	a) Outgoing Inspection (OQA) Operator miss out to detect this b) The in-process inspector do not inspect the label.	a) Retrain the operator – **almost no benefit.** b) Alert the operator to check the label– **almost no benefit.**	
Why 2	a) Why was the operator miss out to detect this? b) Why was the in-process inspection do not inspect the label?	a) The operator just check the label without checking the physical part. b) This is not stated as checking criteria in the Work Instruction.	a) Create alert notice for OQA operator to create awareness . **limited long-term benefit** b) Enhance the in-process inspection criteria to include inspection of the label versus physical part. (To detect mislabeled parts at the earlier stage) - **highly effective**	

D4 Root Cause Analysis

FISHBONE DIAGRAM (CAUSE AND EFFECT DIAGRAM)

A fishbone diagram is a visualization tool for categorizing the potential causes of a problem in order to identify its root causes.

Guideline

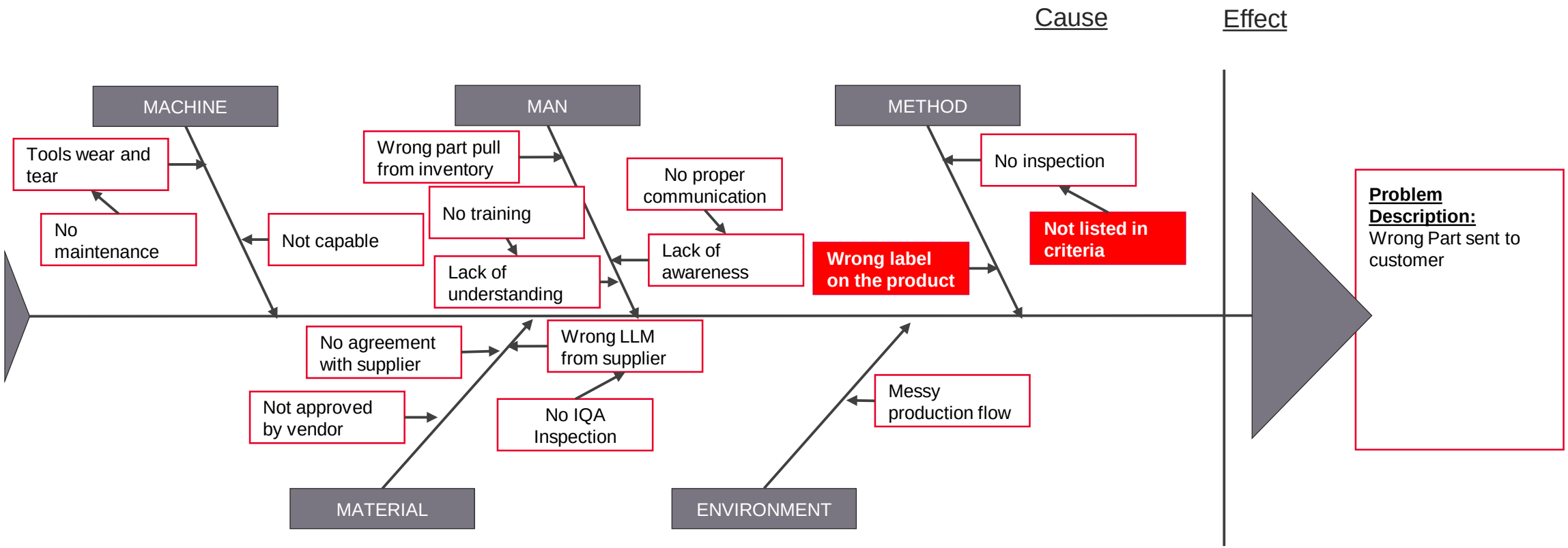
i. Define the problem
ii. Identify the key causes
iii. Brainstorm the causes
iv. Validate the identified root cause causes.

D4 Root Cause Analysis

FISHBONE DIAGRAM (CAUSE AND EFFECT DIAGRAM)

Example:

1. Identify potential root cause



D4 Root Cause Analysis

FISHBONE DIAGRAM (CAUSE AND EFFECT DIAGRAM)

Example:

2. Validate identified root cause

Category	Potential Root cause	Validation / investigations	Findings	Conclusion: True / false
Man	Wrong product pull from inventory	The operator pull the product by part number following the process.	This is not the root cause	FALSE
Man	Lack of awareness	Retraining is conducted half yearly.	This is not the root cause	FALSE
Method	Wrong label on the product	The label is the correct part number (1234-5678), but the physical part is 1234-5566.	Many labels with different order was printed at the same location everyday so it is easy to cause mislabeled.	TRUE
Material	Wrong LLM from supplier	…	…	…
…	…	…	…	…
…	…	….	…	….

D5 Corrective Action

Corrective action (CA) is to **remove the root cause** and prevent a problem from ever happening again.

The corrective action should **correspond to the root cause identified** earlier in order to eliminate the real root cause and prevent recurrence of the problem.

Method such as brainstorming is recommended as it can help to select appropriate corrective action for identified root cause.

Guideline

For root cause of "Why problem occur?"	For root cause of "Why not detected?"
• Introduce additional process control • Introduce new process	• Introduce new testing gate • Enhance previous testing coverage

Example:

Area of Focus	Corrective Action	Responsible Person	Implementation Date	Status	Evidence
Occurrence	Revise the process flow, only print one order at one location. Clear the location before proceeding to the subsequent order.	Supplier	15/05/2021	Close	e.g., new process flow
Detection	Update in-process inspection work instruction to include criteria to inspect the label versus physical part.	Supplier	30/05/2021	Close	e.g., new inspection work instruction

D6 Risk Management (Prevent Recurrence)

An action to eliminate the causes of nonconformities in order to prevent recurrence which is permanent and prevent any similar cases to occur. These actions are proactive and oriented towards a potential event in the future.

Preventive action need to be taken if there is any identified risk.

Guideline

- Update or modify management processes
- Implement the corrective action to Keysight product with similar design or product using the same process.
- Update controls system Failure Mode & Effect Analysis (FMEA), Process Control Plan (PCP), work instructions, quality alerts and procedures
- Changing the process parameter/ product specification

Note: Preventive action shall not be the same as Corrective Action

Example:

Area of Focus	Preventive Action	Responsible Person	Implementation Date	Status	Evidence
Documentation	Update the control in FMEA document and process control plan.	Supplier QA	15/05/2021	Close	Updated FMEA and PCP.
Process Control	Implement corrective action in D5 to similar parts (KPN 1234-5566 and 8765-4321)	Supplier	30/05/2021	Close	

D7 Verify Effectiveness

After the corrective actions is implemented, the effectiveness should be verified.

The key to verification is evidence. This evidence usually takes the form of data, records or first-hand observations.

It is recommended the verification made by monitoring the quality of next deliveries

Guideline

Items to be included (but not limited to the following)

- Monitoring Method (e.g., Type of testing, monitoring area and expected results)
- Duration of monitoring (minimum three months)
- Serial number/Batch/ Lot Number (minimum three batch/lot should be inspected)
- Evidence of monitoring (e.g., testing data, inspection results)

Note: For low volume production, batch/lot required could be reduced (with justification and consensus from Keysight)

Example:

Monitoring Metrics	Responsible Person	Monitoring Period	Results	Evidence
Monitor the next three lots for any recurrence	Supplier	Monitor for three months	Monitored for three lots, date code 200920, 201003 and 201117. No similar issue reported.	*Attached the outgoing inspection results

D8 Team Recognition

To congratulate and recognize the team efforts and special team member contribution.

This is a good section to document lessons learned.

Example:

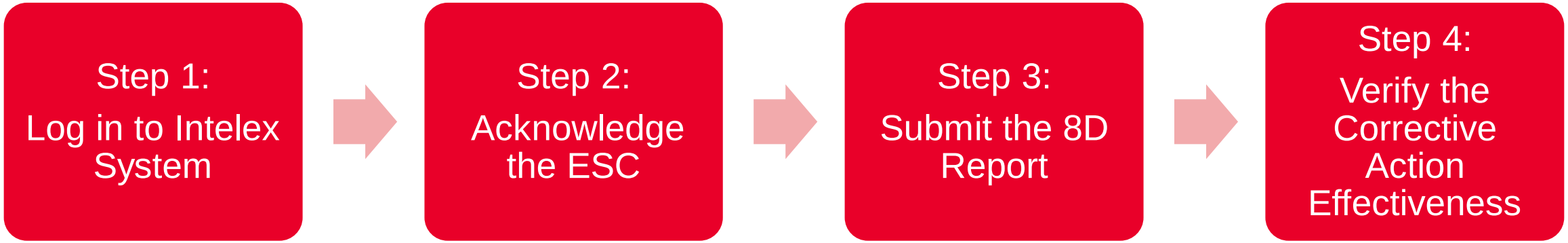
Name	Designation	Email Address
Ashly Tan CY	Product Engineer	ashly_Tan@supplier.com
Jackson Bill	Quality Engineer	jackson_bill@supplier.com
Yeong Wei Ting	Process Engineer	weiting_yeong@supplier.com

Appendix

Term	Definition
8D	Eight Discipline
RCCA	Root Cause and Corrective Action
SCAR	Supplier Corrective Action Request
FMEA	Failure Mode and Effects Analysis
PCP	Process Control Plan
CA	Corrective Action

Intelex System Guideline

Steps:


Step 1:
Log in to Intelex System
Step 2:
Acknowledge the ESC
Step 3:
Submit the 8D Report
Step 4:
Verify the Corrective Action Effectiveness

Step 1: Log in INTELEX System

Email Notification

1

External Sub Case 41420-SCA-2332-ESC-41421 has been assigned

TO: <ESC Owner>
INITIATOR: <SCA Owner>
CC:

External Sub Case Action 41420-SCA-2332-ESC-41421 has been assigned <ESC Owner> **Please acknowledge it by 2021-05-04 1:22:09 AM and complete it within 30 days after acknowledgement.**

As Keysight user please click here for case details and as external user click here.

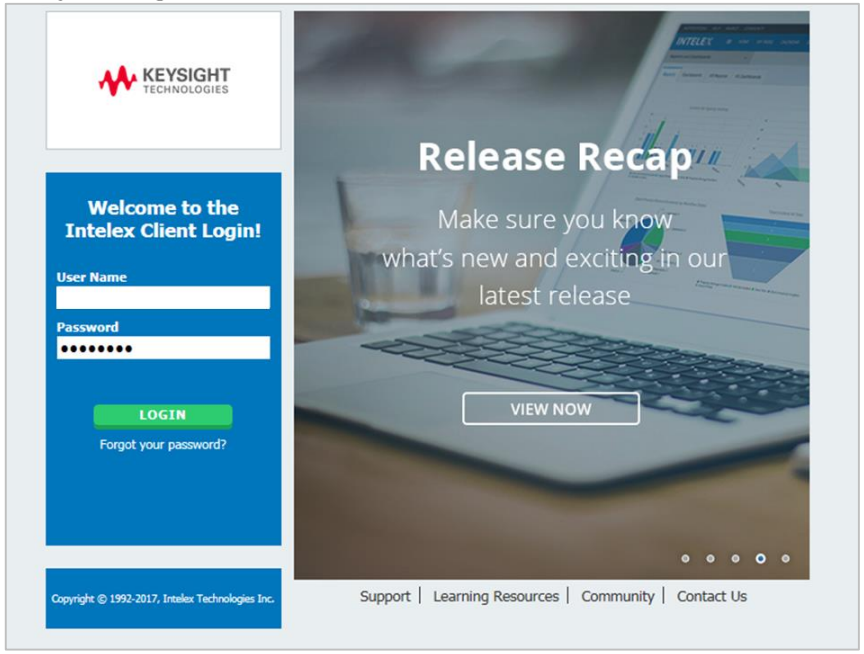
Comment:

2

External Sub Case No.: 41420-SCA-2332-ESC-41421
Supplier Name: Malaysia-Penang
Part Number(s) Returned:
Commodity (ICAT):
Part Description:
Component Quality Alert Number:
Part/info Arrival Date:
RMA#:
Quantity Returned:
Additional Part Information:
Sub Case Action No.

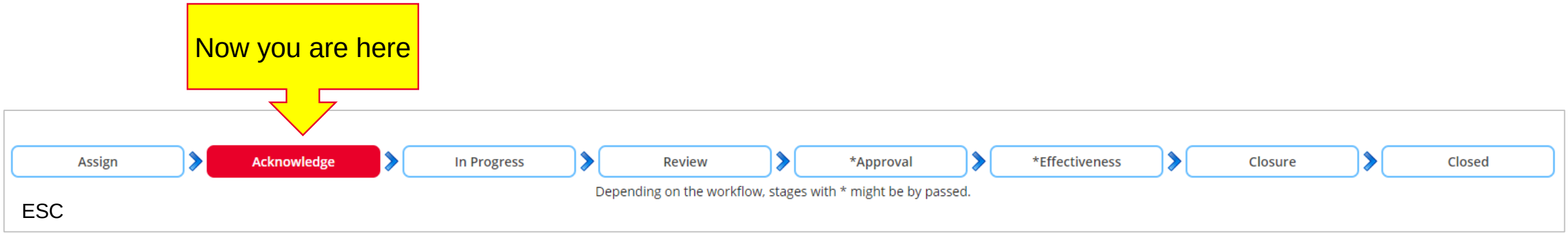
Master Case Record No.:
Source of Failure:
Service Request Number:
Product Line:
Product Serial Number:
Part Number:
Assigned By:

3

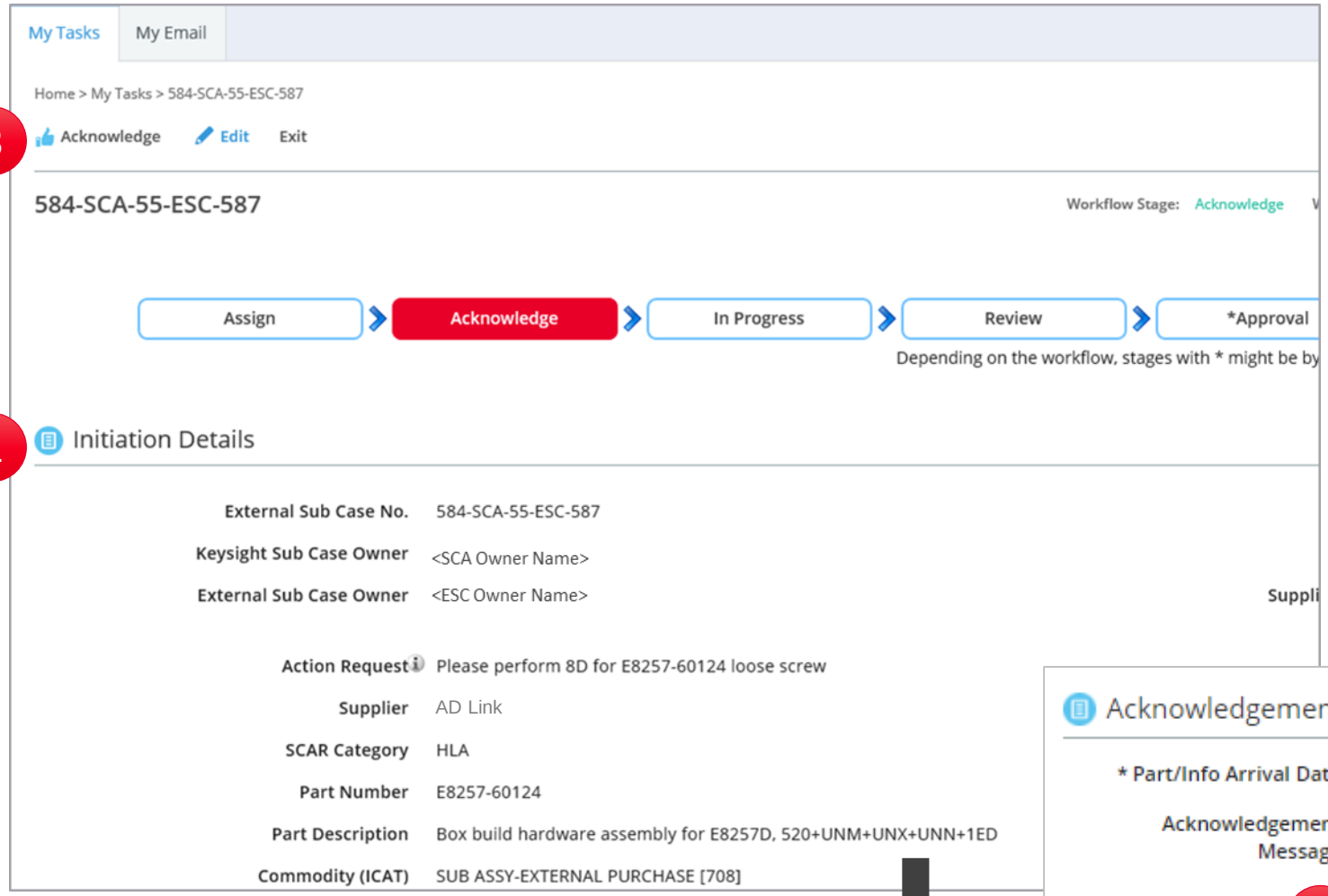


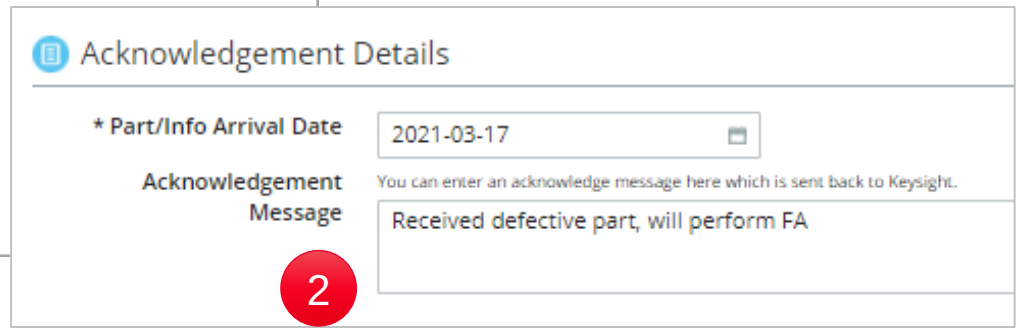
	Steps
1.	The following email will be sent to the Supplier (ESC Owner), copying the SCA Owner and other recipients in the Distribution List.
2.	Click the Link “ **here** ” in email to access to the assigned ESC.
3.	Log in to Intelex using the username and password set

Step 2: Acknowledge External Sub Case (ESC)



Step 2: Acknowledge External Sub Case (ESC)





	Steps
1.	Review information provided in “Initiation Details” session.
2.	Click “ **Edit** ” to fill in acknowledgement Message and Part/Info Arrival Date.
3.	Click “ **Acknowledge** “to complete task

Step 2: Acknowledge External Sub Case (ESC)

Email Notification

External Sub Case 41428-SCA-2336-ESC-41429 has been acknowledged

TO: <SCA Owner>
CC: <ESC Owner> <ESC Approver>

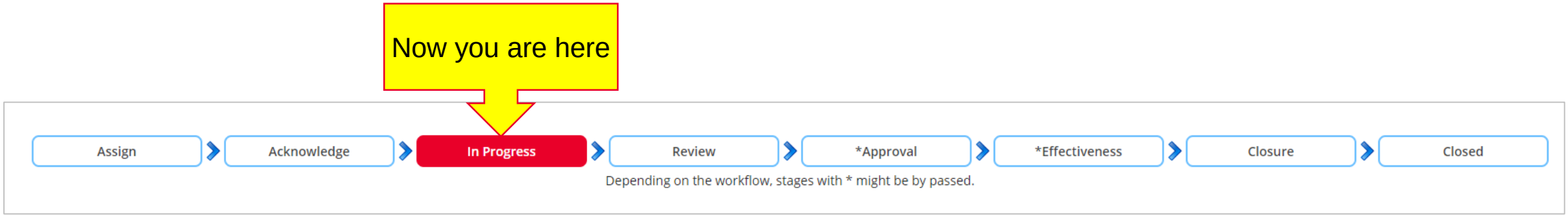
External Sub Case 41428-SCA-2336-ESC-41429 has been acknowledged by I<ESC Owner>

As Keysight user please click here for case details and as external user click here.

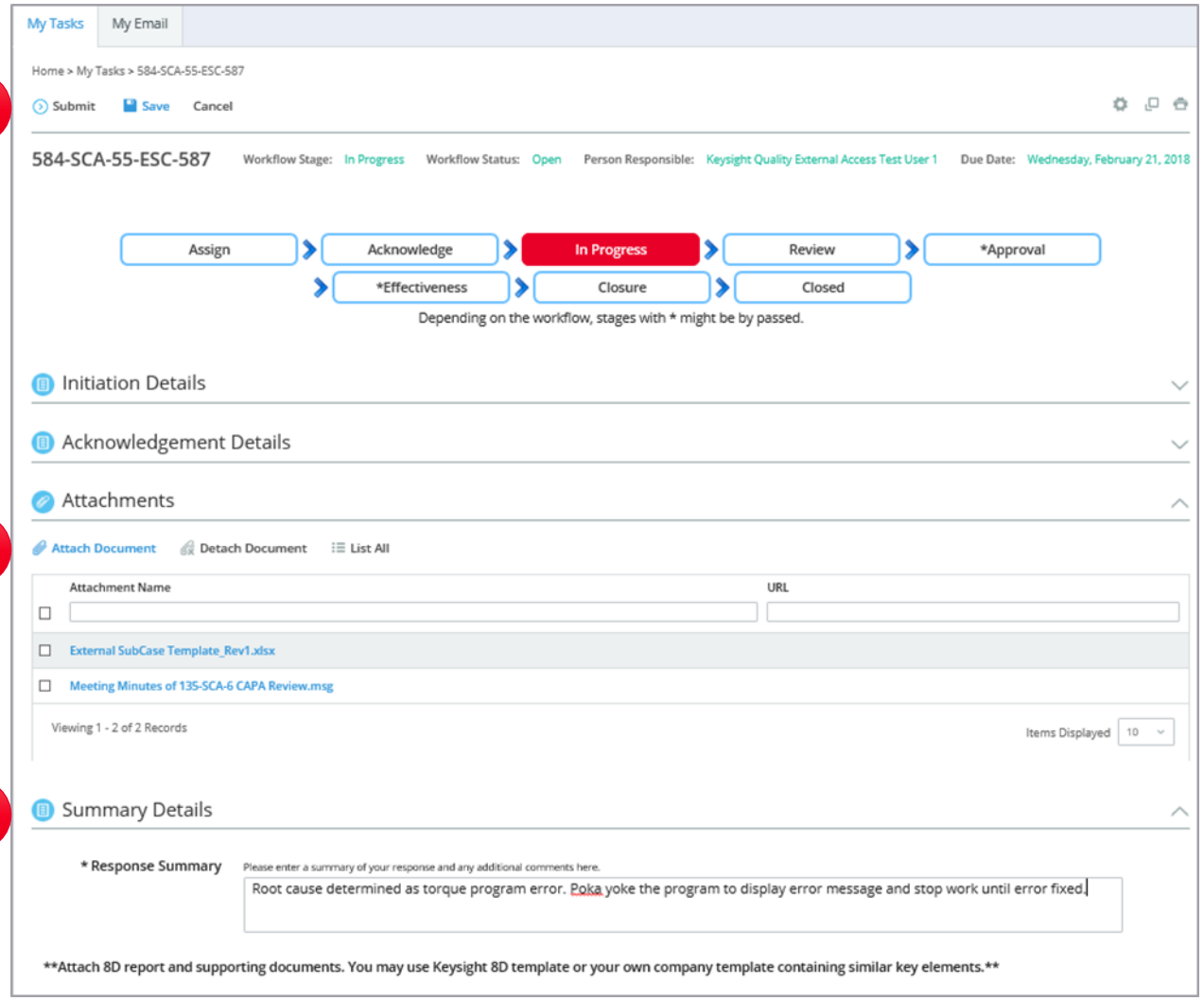
Acknowledgement Message:

External Sub Case No.:	41428-SCA-2336-ESC-41429
Supplier Name:	<Supplier>
Part Number(s) Returned:	
Commodity (ICAT):	
Part Description:	
Component Quality Alert Number:	
Part/info Arrival Date:	2021-04-29
RMA#:	
Quantity Returned:	
Additional Part Information:	
Sub Case Action No.	41428-SCA-2336
Master Case Record No.:	41428
Source of Failure:	Other
Service Request Number:	
Product Line:	
Product Serial Number:	
Part Number:	
Assigned By:	<SCA Owner>

Step 3: Submit the 8D Report



Step 3: Submit the 8D Report



	Steps
1.	After complete 8D Review with Keysight Sub Case Owner and Master Case Owner, submit ESC by clicking “ **Attach Documents** ” to attach 8D report, related files and meeting minutes
2.	Provide a brief summary of **Root Cause, Corrective Action and Verification Action** done in “Response Summary”.
3.	Click “ **Save** ” then click “ **Submit** ” once completed.

Step 3: Submit the 8D Report

Email Notification

External Sub Case 41428-SCA-2336-ESC-41429 has been completed

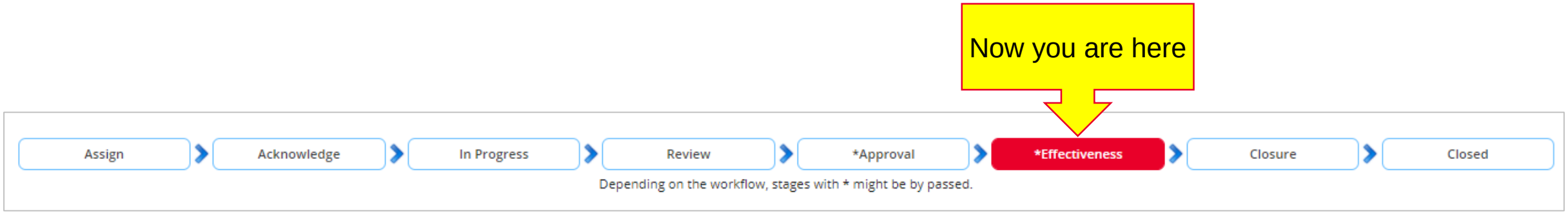
TO: <SCA Owner>
CC: <ESC Owner> <ESC Approver>

External Sub Case 41428-SCA-2336-ESC-41429 has been completed by <ESC Owner> '<SCA Owner> **please review and approve.**

As Keysight user please click here for case details and as external user click here.

Response Summary:	test
External Sub Case No.:	41428-SCA-2336-ESC-41429
Supplier Name:	Malaysia-Penang
Part Number(s) Returned:	
Commodity (ICAT):	
Part Description:	
Component Quality Alert Number:	
Part/info Arrival Date:	2021-04-29
RMA#:	
Quantity Returned:	
Additional Part Information:	
Sub Case Action No.	41428-SCA-2336
Master Case Record No.:	41428
Source of Failure:	Other
Service Request Number:	
Product Line:	
Product Serial Number:	
Part Number:	
Assigned By:	<SCA Owner>

Step 4: Verify Corrective Action Effectiveness



Step 4: Verify Corrective Action Effectiveness

1

TO: <ESC Owner>
CC: <SCA Owner>

External Sub Case 40849-SCA-2258-ESC-40854 has been approved by all approvers.
<ESC Owner> **please complete verification of effectiveness by 2021-06-30.**

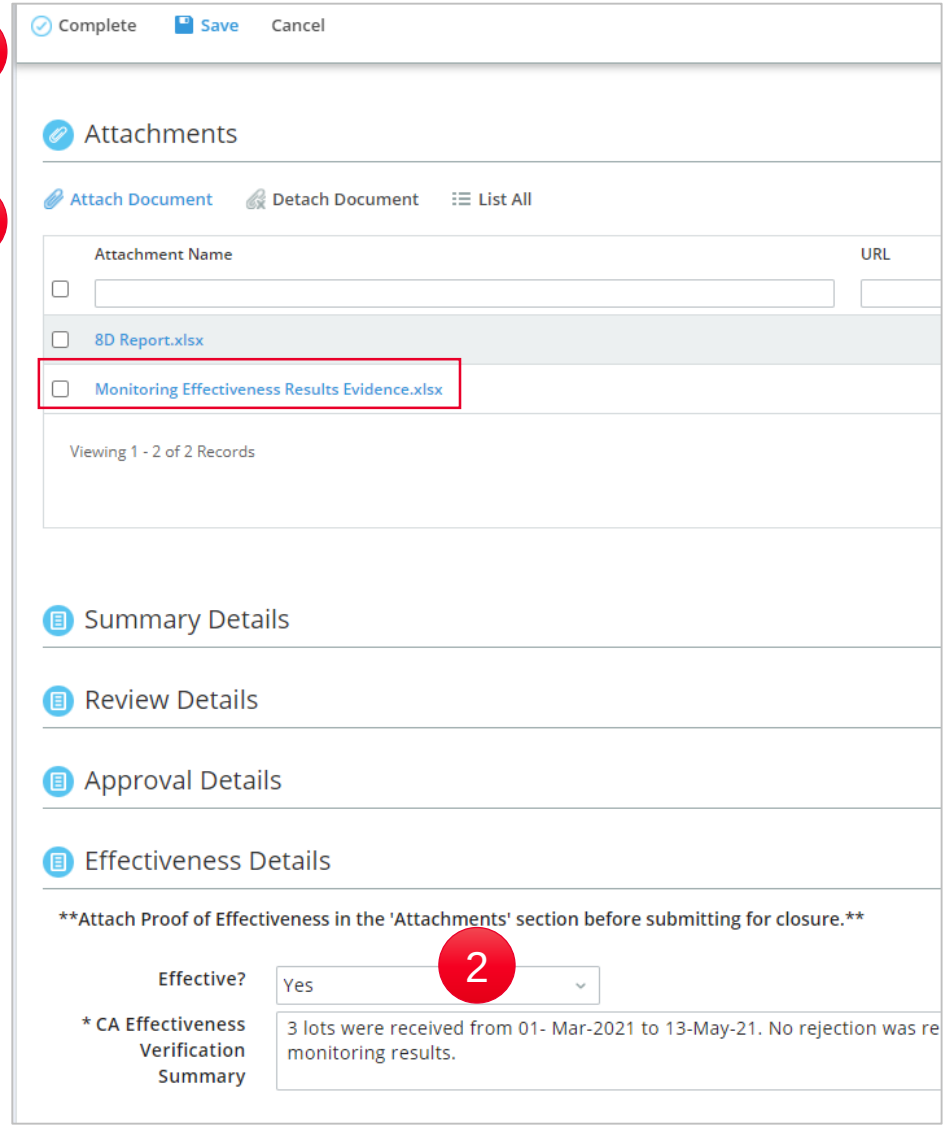
As Keysight user please click here for case details and as external user click here.

Defined Verification: To monitor the next 3 lots starting from Date code 2103. To attach Incoming Inspection report with no reject reported.

External Sub Case No.:	40849-SCA-2258-ESC-40854
Supplier:	ADLINK
Part Number:	
Commodity (ICAT):	
Part Description:	
Component Quality Alert Number:	
Part/info Arrival Date:	2021-03-10
RMA#:	
Quantity Returned:	
Additional Part Information:	
Sub Case Action No.	40849-SCA-2258
Master Case Record No.:	40849
Source of Failure:	Other Field Failure
Service Request Number:	
Product Line:	
Product Serial Number:	
Part Number:	
Assigned By:	Kar Yee Ho

	Steps
1.	The following email will be sent to the Supplier (ESC Owner), copying the SCA Owner and other recipients in the Distribution List.
2.	Once the monitoring is completed, click “ **here** ” to assess the ESC

Step 4: Verify the Corrective Action Effectiveness



	Steps
1.	Click “ **Edit** ” at the top of the page & Click “ **Attach Documents** ” to attach verification data.
2.	Under Effectiveness Details, select “Yes” or “No” and provide summary of CA effectiveness verification.
3.	Click “ **Complete** ” at the top of page. The process is complete.

Thank You!