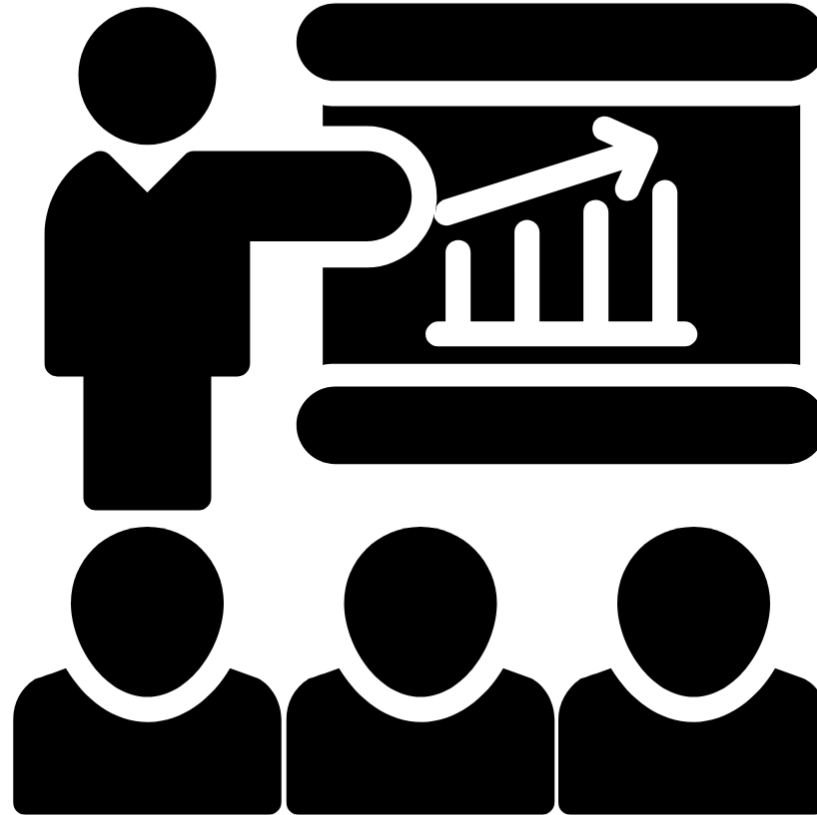


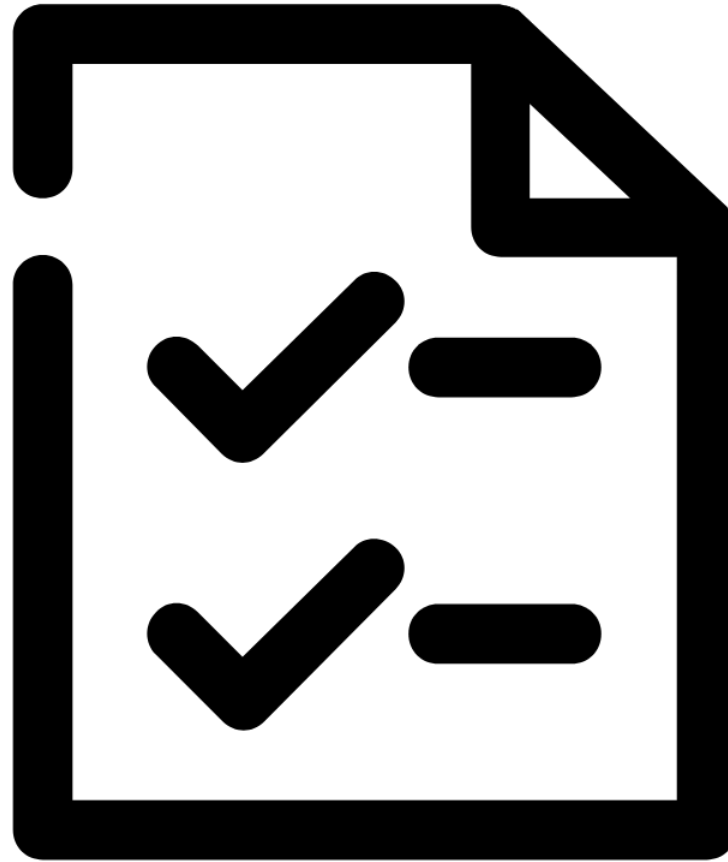


**A SHORT STORY TO  
RAISE THE  
COURSE CURTAINS...**

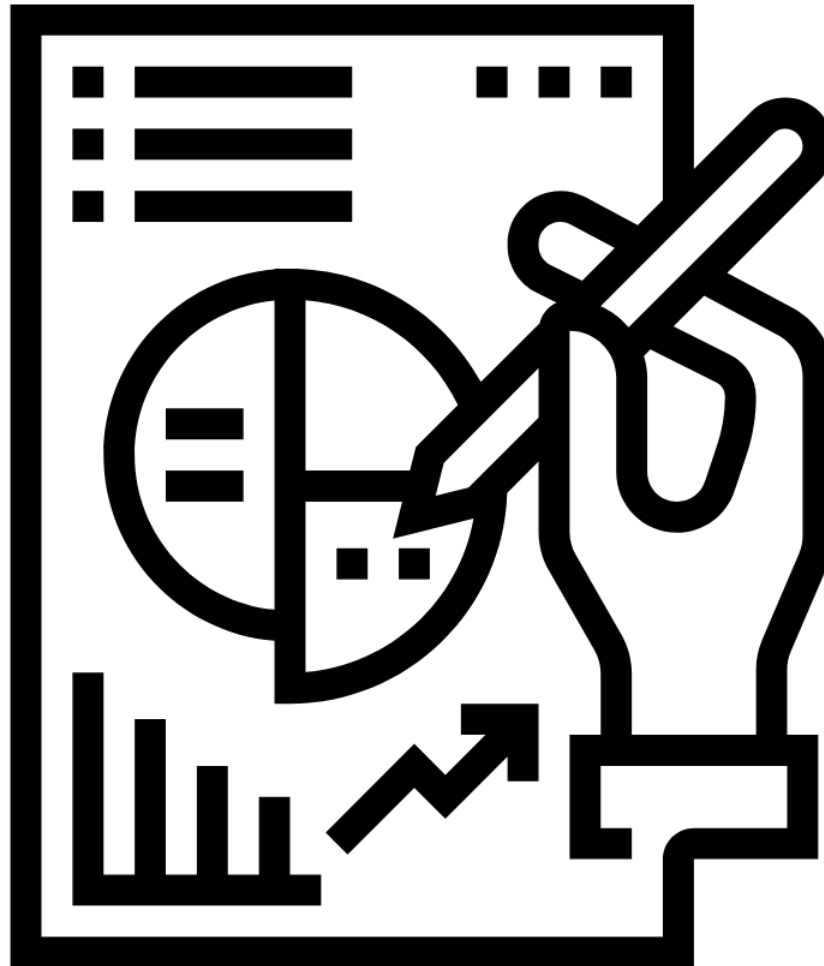
# A SHORT STORY TO RAISE THE COURSE CURTAINS...



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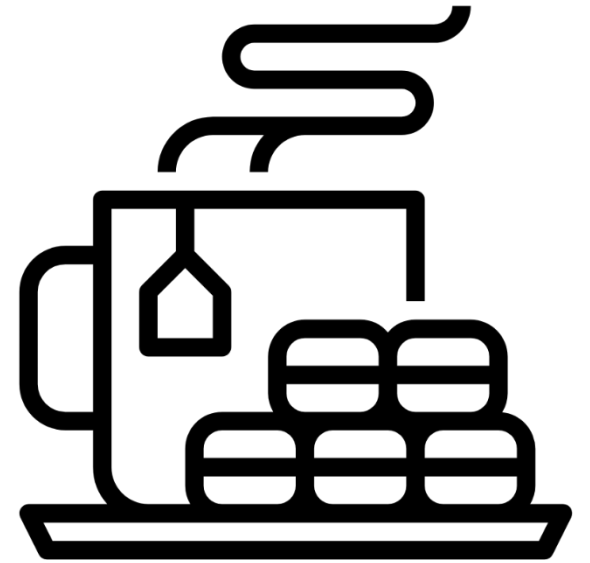
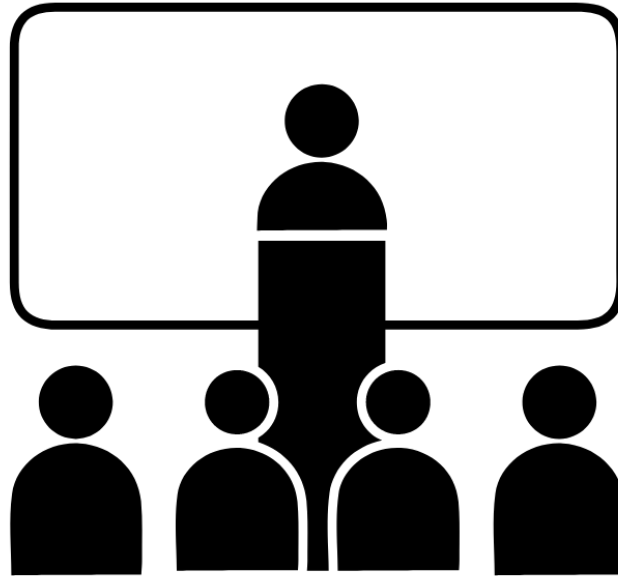


# A SHORT STORY TO RAISE THE COURSE CURTAINS...

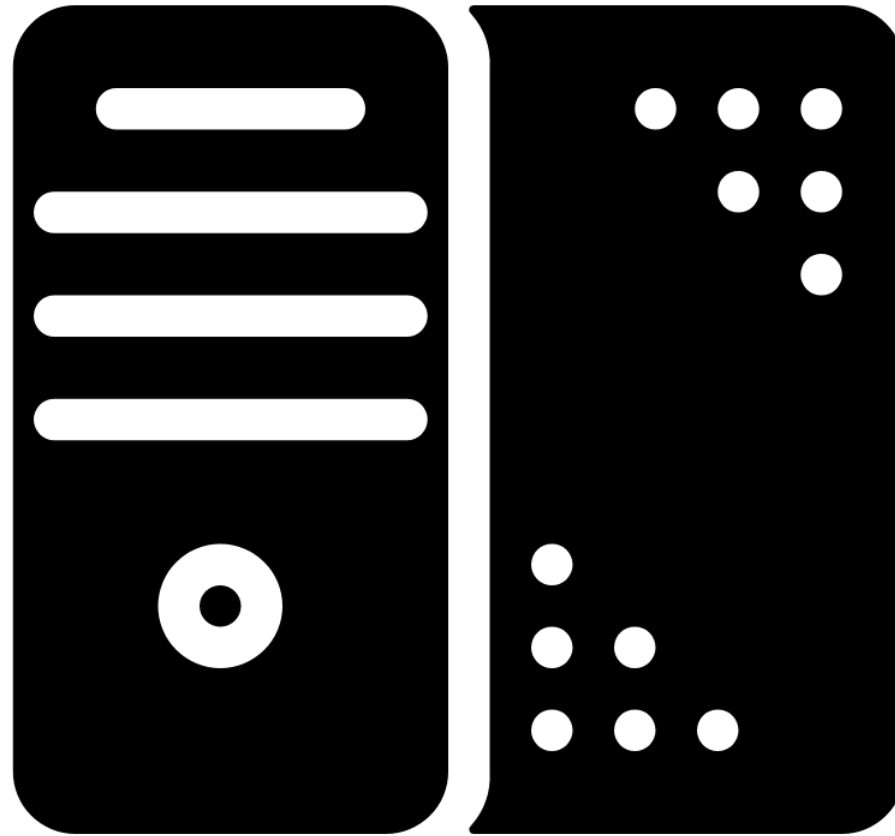


# A SHORT STORY TO RAISE THE COURSE CURTAINS...

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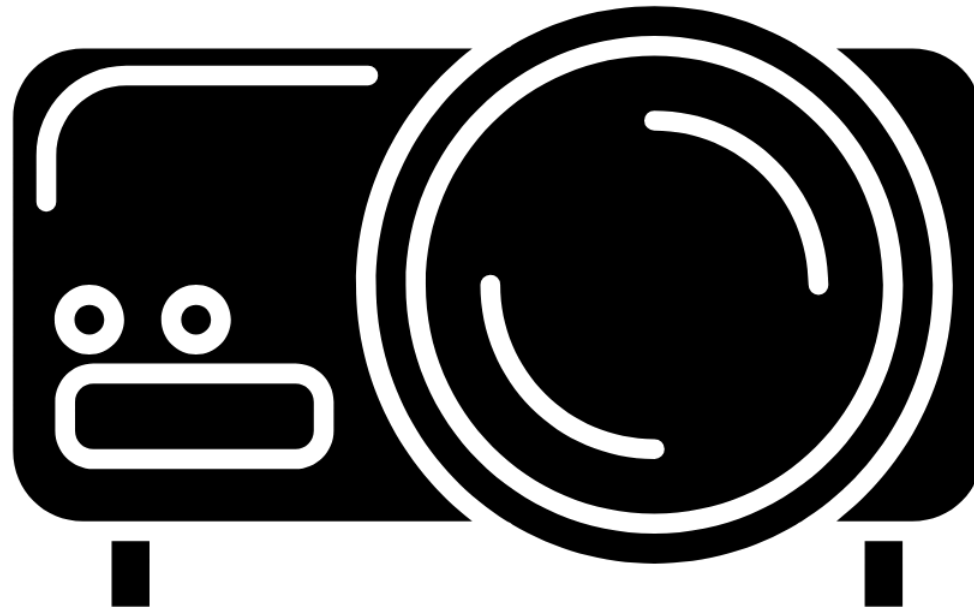


# A SHORT STORY TO RAISE THE COURSE CURTAINS...

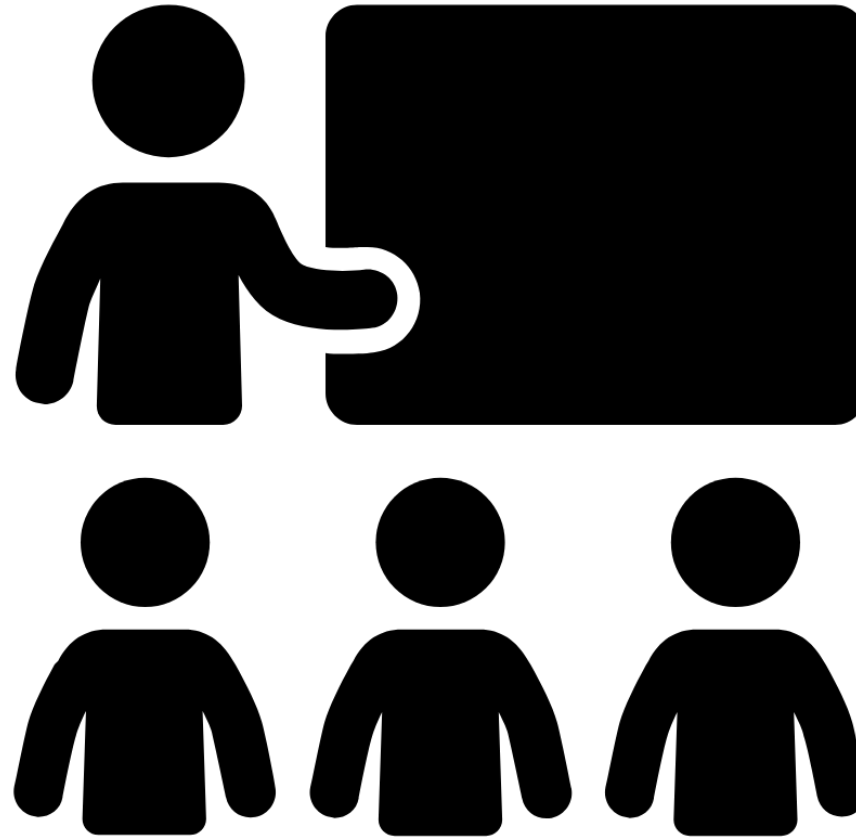




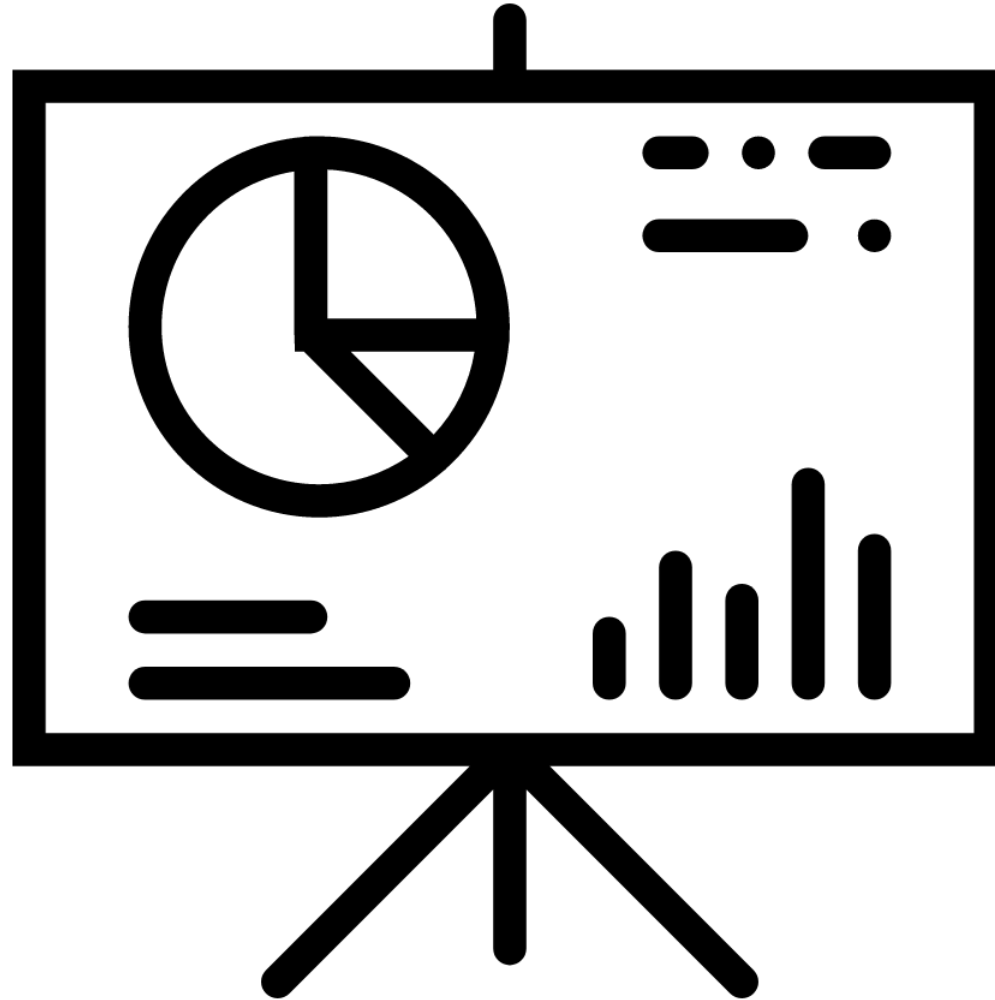
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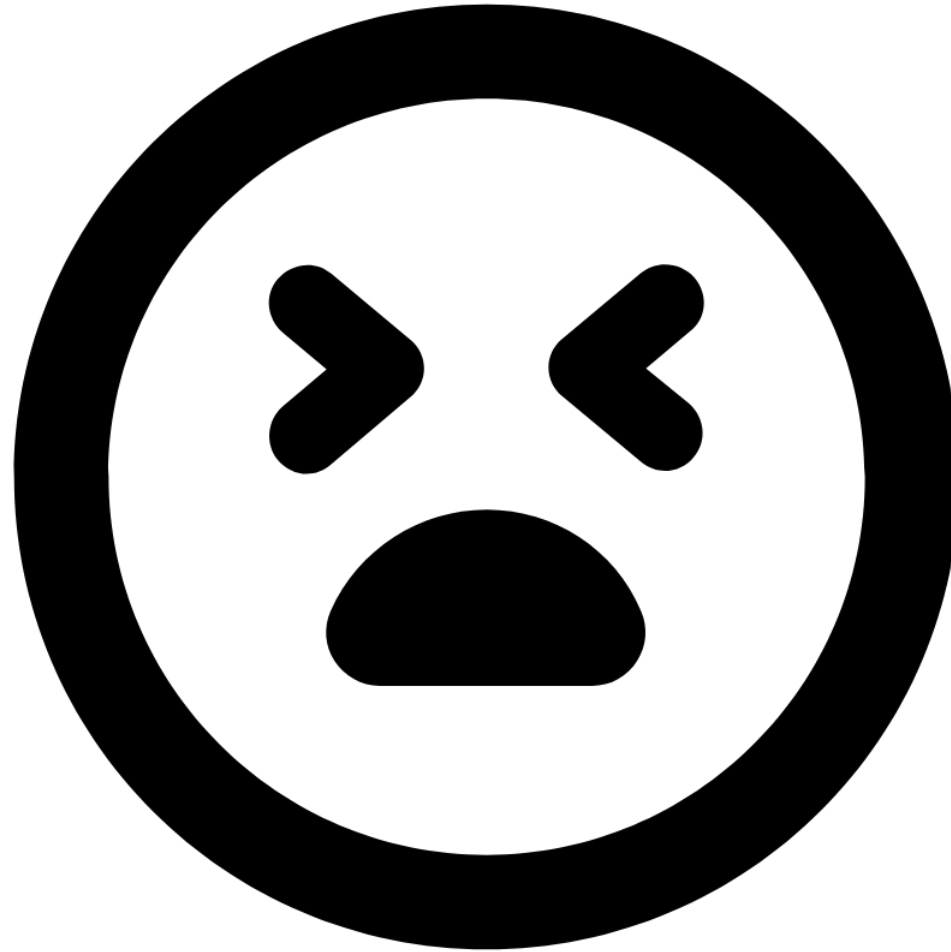
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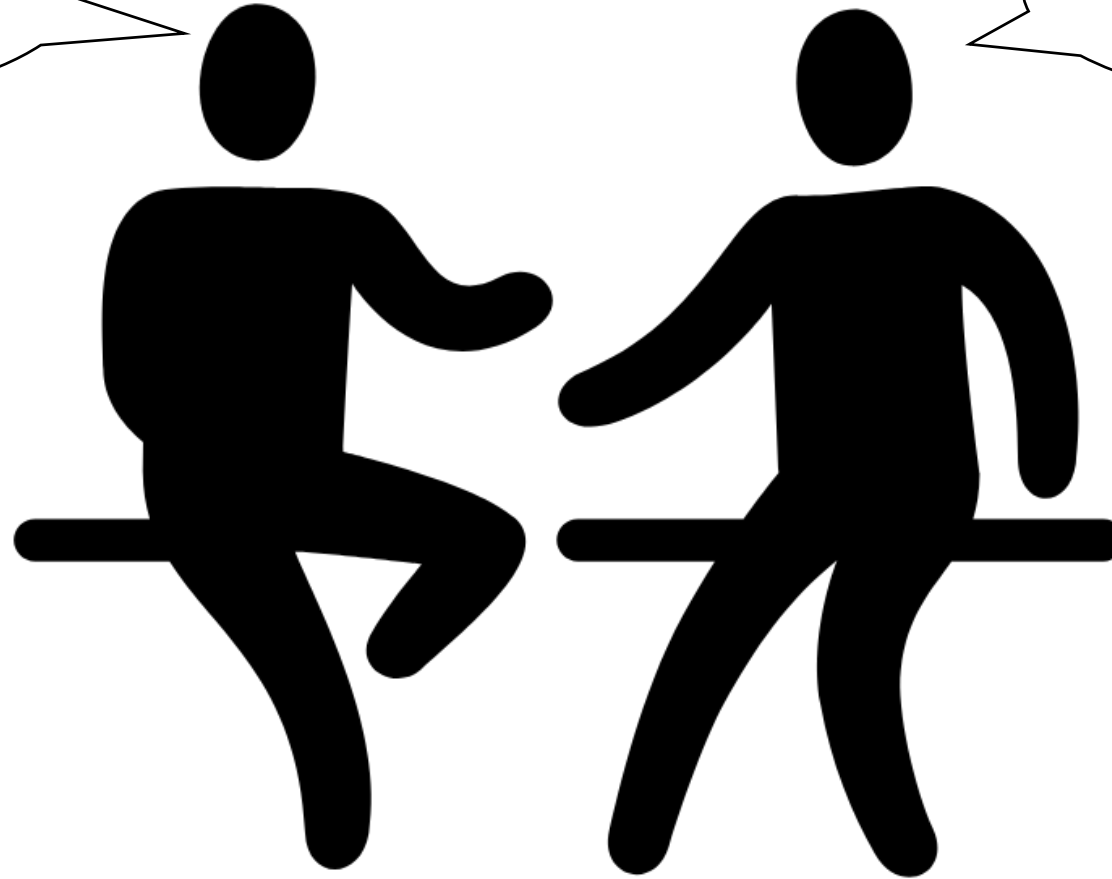
# A SHORT STORY TO RAISE THE COURSE CURTAINS...



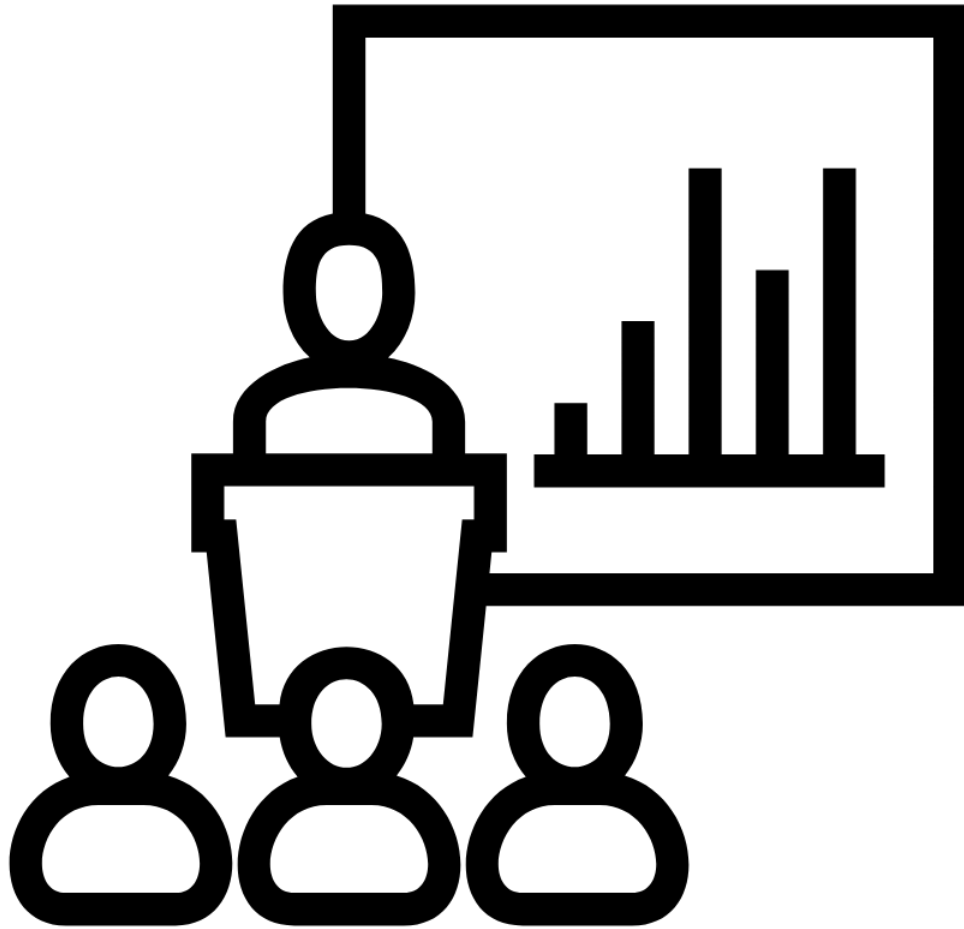
# A SHORT STORY TO RAISE THE COURSE CURTAINS...

**How can you ensure  
there are no glitches  
in future events?**

**We missed using  
FMEA & we'll use it  
for every event  
hereafter**



# A SHORT STORY TO RAISE THE COURSE CURTAINS...



**60+ EVENTS**

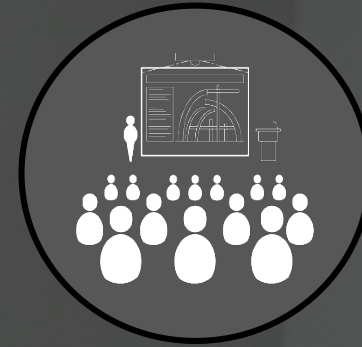
**USED FMEA EVERYTIME**

**EACH EVENT WAS BLIP FREE  
& SMOOTH**





## **THE FAILURE MODE & EFFECT ANALYSIS (FMEA)**



## **SECTION INTRODUCTION**

# **WHAT IS A FAILURE MODE & EFFECT ANALYSIS (FMEA)?**

# FAILURE MODE & EFFECT ANALYSIS (FMEA)

WHAT IS FMEA?	STAGE 01: IDENTIFYING THE FAILURE MODE AND SPECIFYING ITS SEVERITY	STAGE 02: SPECIFYING THE OCCURRENCE OF FAILURE	STAGE 03: SPECIFYING THE DETECTABILITY OF FAILURE
SECTION INTRODUCTION	SECTION INTRODUCTION	SECTION INTRODUCTION	SECTION INTRODUCTION
WHAT IS A FAILURE MODE & EFFECT ANALYSIS?	WHAT ARE THE 6 DIFFERENT STAGES OF FMEA?	WHAT ARE THE POTENTIAL CAUSES?	WHAT ARE THE CURRENT PROCESS CONTROLS?
WHY AND WHEN TO USE FMEA?	PROCESS FMEA: TOP SECTION	WHAT IS THE OCCURRENCE RATING?	WHAT IS THE DETECTABILITY RATING?
THE HISTORY OF FMEA	WHAT ARE THE COMPONENTS OF STAGE 01? P1	ACTIVITY: STAGE 02	ACTIVITY: STAGE 03
WHAT ARE THE TYPES OF FMEA?	WHAT ARE THE COMPONENTS OF STAGE 01? P2	ACTIVITY SOLUTION: STAGE 02	ACTIVITY SOLUTION: STAGE 03
WHAT IS A PROCESS FMEA?	WHAT ARE THE COMPONENTS OF STAGE 01? P3	SECTION CONCLUSION	SECTION CONCLUSION
ACTIVITY: WHAT IS FMEA?	ACTIVITY: STAGE 01		
ACTIVITY SOLUTION: WHAT IS FMEA?	ACTIVITY SOLUTION: STAGE 01		
SECTION CONCLUSION	SECTION CONCLUSION		
STAGE 04 AND 05: QUANTIFYING RISK AND CORRECTING HIGH RISK SITUATIONS	STAGE 06: REEVALUATING THE RISK AND VISUALIZING YOUR FMEA	WHAT ARE THE STEPS TO CONSTRUCT AN FMEA?	WHAT ARE THE BENEFITS AND SHORTCOMINGS OF FMEA?
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WHAT IS RPN?	CALCULATING THE RESULTING RPN	WHAT ARE THE STEPS TO CONSTRUCT FMEA? P1	WHAT ARE THE BENEFITS OF FMEA?
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WHAT IS RESPONSIBILITY, TARGET COMPLETION DATES AND ACTIONS TAKEN?	SECTION CONCLUSION		
SECTION CONCLUSION			

	Section
	Lecture
	Activity

**IN THIS SECTION, YOU WILL LEARN:**

**WHAT IS A FAILURE MODE AND EFFECT ANALYSIS?**

**WHY AND WHEN TO USE FMEA?**

**THE HISTORY OF FMEA**

**WHAT ARE THE TYPES OF FMEA?**

**WHAT IS A PROCESS FMEA?**

**ACTIVITY & ACTIVITY SOLUTION**

## NEXT LECTURE

# WHAT IS A FAILURE MODE AND EFFECT ANALYSIS?





# WHAT IS A FAILURE MODE & EFFECT ANALYSIS (FMEA)?

# WHAT IS FMEA?

Business Function	Process step	Potential failure mode	Potential failure effects	S E V	Potential causes	O C C	Current process controls	D E T	R P N
Which Functional Department?	What is the step?	In what ways can the step go wrong?	What is the impact on the customer if the failure mode is not prevented or corrected?	10	What causes the step to go wrong? (i.e., How could the failure mode occur?)	10	What are the existing controls that either prevent the failure mode from occurring or detect it should it occur?	10	1000

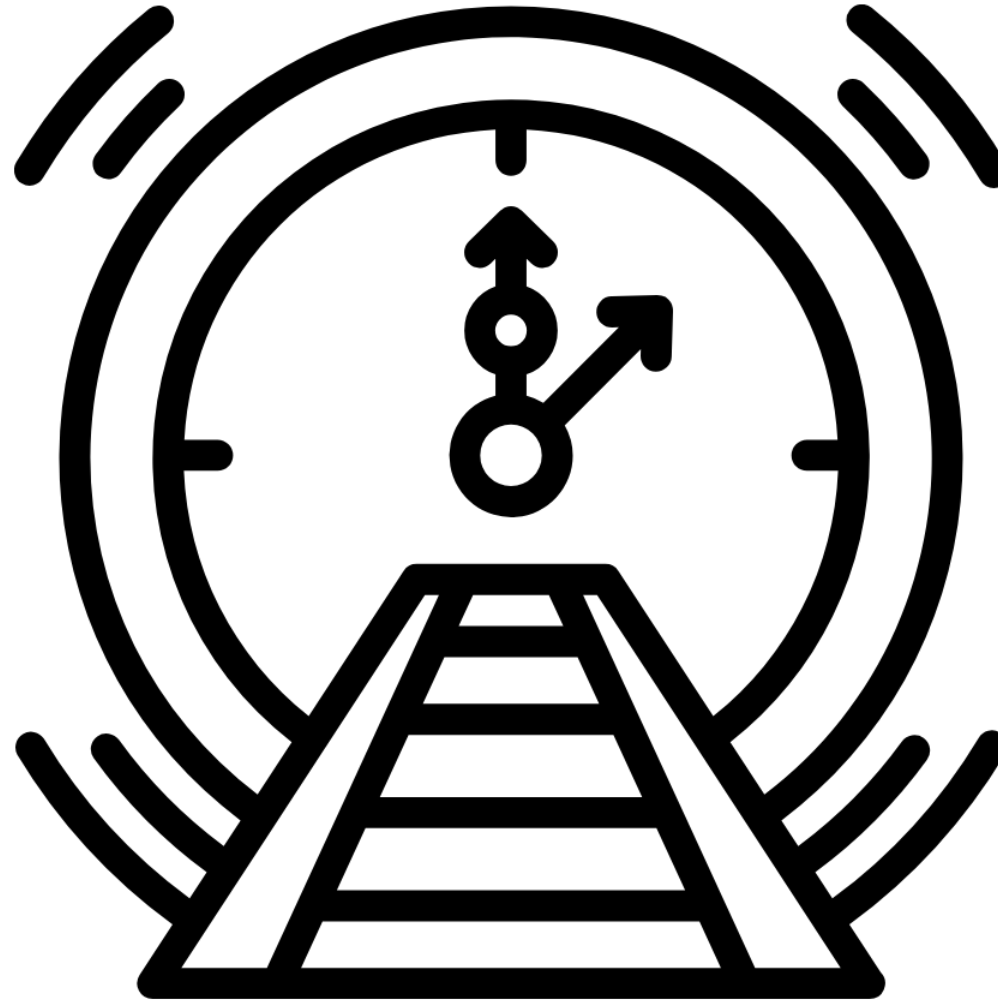
**METHODICAL AND SYSTEMATIC TECHNIQUE**

**JOINS THE INNOVATION AND EXPERIENCE OF PEOPLE**

**HELPS IDENTIFY PREDICTABLE FAILURE MODES OF YOUR PROCESS**

**YOU CAN THEN PLAN TO EITHER ELIMINATE THESE FAILURE MODES OR MINIMIZE THEM**

# WHAT IS FMEA?





# WHAT IS FMEA?

## ANALOGY

SIT IN THE TIME MACHINE 😊



OBSERVE THE ENTIRE EVENT



MAKE NOTES OF ALL THE FAILURE MODES THAT  
COULD OCCUR IN THE EVENT



COME BACK TO THE CURRENT DATE | ALSO  
PRIORITIZE THE FAILURE MODES



CREATE ACTION PLANS TO ELIMINATE OR  
MINIMIZE THOSE FAILURE MODES

## HOW FMEA WORKS?

GET INTO A CONFERENCE ROOM



BRAINSTORM ALL POSSIBLE STEPS OF THE EVENT



MAKE NOTES OF ALL THE FAILURE MODES THAT  
COULD OCCUR IN THE EVENT



PRIORITIZE THE FAILURE MODES



CREATE ACTION PLANS TO ELIMINATE OR  
MINIMIZE THOSE FAILURE MODES

# WHAT IS FMEA?

**WHEN IMPLEMENTING FMEA, YOU ARE PERFORMING A SET OF ACTIONS DESIGNED TO:**

**PERCEIVE AND ASSESS  
POTENTIAL FAILURES OF  
YOUR PRODUCT OR  
SERVICE**

**RECOGNIZE ACTIVITY THAT  
COULD ELIMINATE  
POTENTIAL FAILURES**

**DOCUMENT  
YOUR  
PROCESS**

**FMEA IS A PROACTIVE TOOL**

**REQUIRES COLLABORATION AMONGST TEAM MEMBERS**

**HELPS DEPARTMENTS INCORPORATE +VE CHANGES**

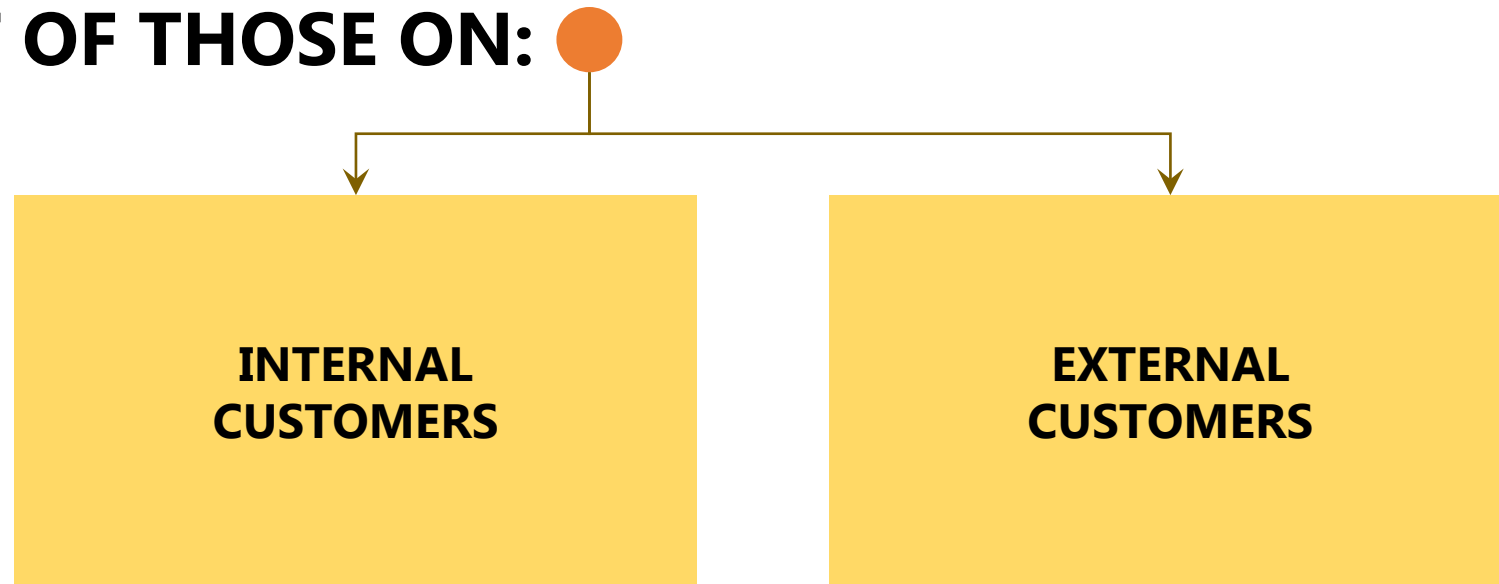
# WHAT IS FMEA?

**FMEA CAN BE EXECUTED IN DESIGN AND OPERATIONS**

**IN MANUFACTURING AS WELL AS SERVICE INDUSTRY**

**INVOLVES IDENTIFICATION OF POTENTIAL FAILURE MODES**

**AND IMPACT OF THOSE ON:**



# WHAT IS FMEA?

**HELPS YOU FOCUS ON DETECTING THE POTENTIAL PRODUCT OR PROCESS RELATED FAILURE MODES**

**FMEA IS UTILIZED TO:**

- **ANTICIPATE REASONS FOR FAILURE**
- **KEEP THEM FROM OCCURRING**

# WHAT IS FMEA?

**FMEA USES 3 CRITERIA'S TO DEVELOP A RISK PRIORITIZATION #:**

**SEVERITY**

**SEVERITY OF THE FAILURE MODE**

**OCCURRENCE**

**OCCURRENCE OF THE FAILURE  
MODE**

**DETECTION**

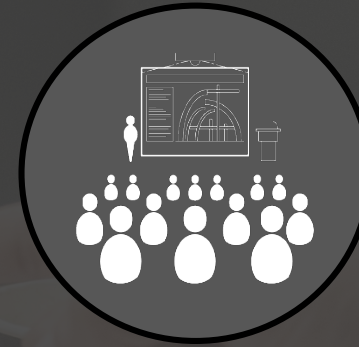
**DETECTION PROBABILITY OF THE  
FAILURE MODE**

**RPN HELPS YOU UNDERSTAND WHICH FAILURE MODES ARE  
CRITICAL AND ARE TO BE ACTIONED IMMEDIATELY**

# WHAT IS FMEA?

**TREAT FMEA AS A “LIVING” DOCUMENT**

**DO NOT CONSIDER FMEA AS A ONE-TIME EXERCISE**



# WHY & WHEN TO USE FMEA?



# WHY FMEA?

**HELPS IDENTIFY ALL POSSIBLE  
CAUSES OF FAILURE**

**HELPS YOU UNDERSTAND  
YOUR BUSINESS PROCESS**

**HIGHLIGHTS RISK + HELPS YOU  
BUILD COUNTER MEASURES**

**EMPOWERS LEARNING +  
DEVELOPS MULTI-DISCIPLINED  
TEAMS**

**USE OF FMEA IS MORE  
SIGNIFICANT TODAY**

**PROCESSES ARE MORE  
MUDDLED, INTERTWINED &  
COMPLICATED**

**REQUIRES MORE  
ORGANIZATION &  
PRECAUTION**

**NEEDS FAR MORE PLANNING  
TO CREATE RELIABLE  
PRODUCTS**

**CUSTOMERS ARE MORE  
SPECIFIC THAN EVER BEFORE**

**CUSTOMERS REQUEST RESULTS  
OF BEST QUALITY WITH LEAST  
PRICE**

**HELPS YOU TRACK THOUGHTS  
& ACTIONS TO ENSURE SAFE &  
RELIABLE PRODUCTS**

**HELPS YOU MATCH  
CUSTOMERS PRESENT MODE  
OF THINKING**

**LEGAL & JUDICIAL SYSTEM IS  
MORE STRICT THAN EVER**

**HELPS YOU FOLLOW-UP &  
TRACK PROGRESS ON FAILURE  
MODES OF YOUR PRODUCTS**

**DOCUMENT FAILURE MODES  
IN A THOROUGH, PRECISE &  
STRUCTURED MANNER**



# WHEN TO USE FMEA?

**TO ANALYZE FAILURES OF EXISTING PRODUCTS, PROCESSES OR SERVICE**

**WHEN YOU RESTRUCTURE OR UPGRADE YOUR PRODUCTS, PROCESSES OR SERVICE**

**WHEN IMPLEMENTING CONTROLS FOR A NEW OR MODIFIED PROCESSES**

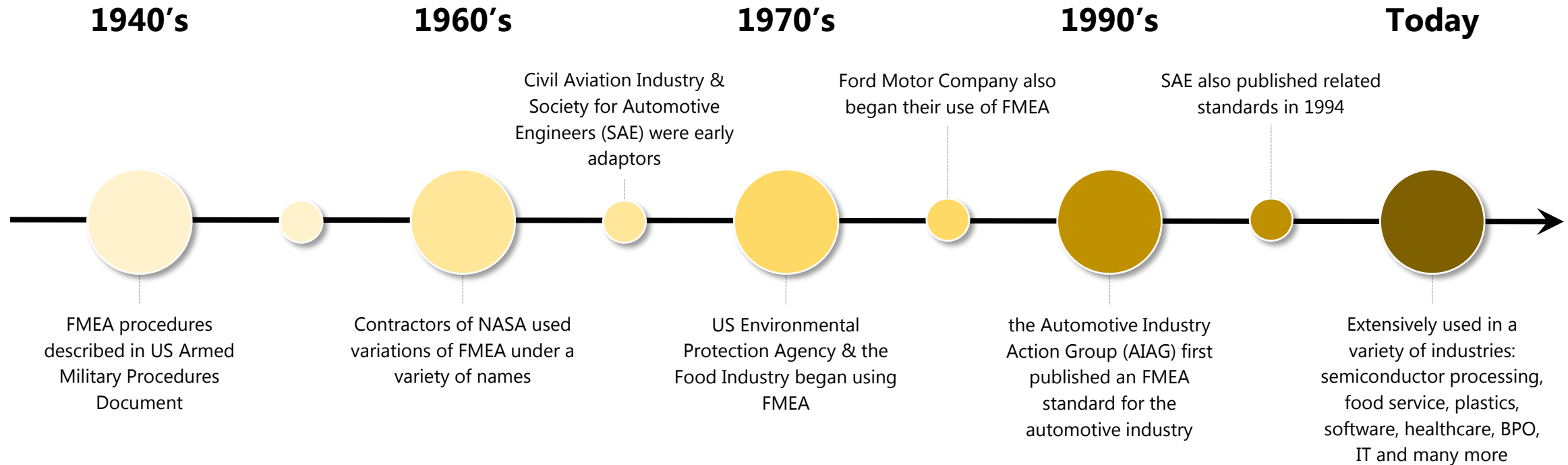
**WHEN IMPROVEMENT OBJECTIVES ARE BEING SET**

**DURING THE ENTIRE LIFECYCLE OF PRODUCTS, PROCESSES OR SERVICE – AT REGULAR INTERVALS OF TIME**



# THE HISTORY OF FMEA

# THE HISTORY OF FMEA

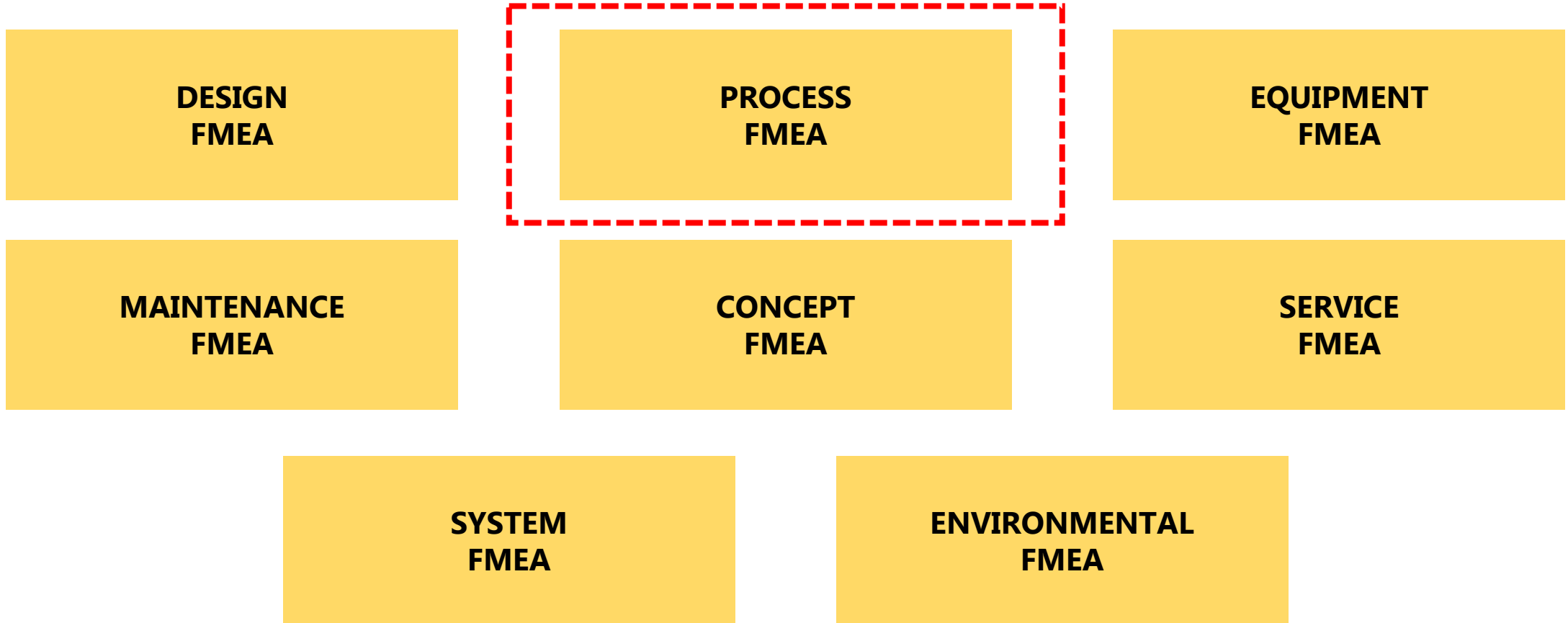






# WHAT ARE THE DIFFERENT TYPES OF FMEA?

# WHAT ARE THE DIFFERENT TYPES OF FMEA?







# WHAT IS A PROCESS FMEA?

# WHAT IS A PROCESS FMEA?

Business Function	Process step	Potential failure mode	Potential failure effects	SEV	Potential causes	OCC	Current process controls	DET	RPN	Actions recommen
Which Functional Department?	What is the step?	In what ways can the step go wrong?	What is the impact on the customer if the failure mode is not prevented or corrected?	10	What causes the step to go wrong? (i.e., How could the failure mode occur?)	10	What are the existing controls that either prevent the failure mode from occurring or detect it should it occur?	10	1000	What are the action reducing the occurrence cause or for improv detection? You should actions on all high RPNs severity ratings of 9 d
		No calls	<ul style="list-style-type: none"> <li>• Loss of Business</li> <li>• Client Dissatisfaction</li> <li>• Impact on Repeat Business</li> <li>• Impact on Revenue</li> <li>• Communication Breakdown</li> </ul>	8	<ul style="list-style-type: none"> <li>• CMS link failure</li> <li>• Issues with PG (Peripheral Gateway) server for incoming calls</li> <li>• Issues with outbound calls which are routed through PG.</li> <li>• For outbound calls: Issues with the trunks, either from SP end or from local end.</li> </ul>	7	<ul style="list-style-type: none"> <li>• Continuous Monitoring of CMS link</li> <li>• Monitoring of session running on CMS for PG</li> <li>• Any issue with PG, Technology will escalate to GS telephony team for resolution</li> </ul>	3	168	<ul style="list-style-type: none"> <li>• Voice DR Infrastru</li> <li>• Appropriate Notific procedure (Escal Matrix)</li> <li>• Awareness trainin Escalation Matrix to rung of frontlin supervisors</li> </ul>
	Connectivity		<ul style="list-style-type: none"> <li>• Loss of Business</li> <li>• Client Dissatisfaction</li> </ul>							• Timely review of Esc

**IDENTIFIES FAILURE MODES BY RANKING FAILURES**

**HELPS ESTABLISH PRIORITIES AS PER THE RELATIVE EFFECT ON THE INTERNAL OR EXTERNAL CUSTOMER**

**ESTABLISH CONTROLS FOR OCCURRENCE REDUCTION AND INCREASING DETECTION OF IDENTIFIED FAILURE MODES**

# WHAT IS A PROCESS FMEA?

**POTENTIAL  
FAILURE MODE**

**CALL DROPS**

**KEY  
ACTIONS**

**ESTABLISH EFFECTIVE  
CONTROLS FOR  
OCCURRENCE REDUCTION  
AND EASY DETECTION**



# WHAT IS A PROCESS FMEA?

## POTENTIAL FAILURE MODE

**A FEW CALL DROPS ARE  
OBSERVED**

## KEY ACTIONS

**LOG A TICKET WITH YOUR  
SERVICE PROVIDER**

**MULTIPLE CALL DROPS ARE  
OBSERVED**

**CALL SERVICE PROVIDER | LOG  
A TICKET WITH HIGH SEVERITY  
RATING**

**PROCESS FMEA IS USED FOR BUSINESS AS USUAL ALREADY  
ESTABLISHED BUSINESS OPERATIONS**

# CONGRATULATIONS



**IN THIS SECTION, YOU LEARNT:**

**WHAT IS A FAILURE MODE AND EFFECT ANALYSIS?**

**WHY AND WHEN TO USE FMEA?**

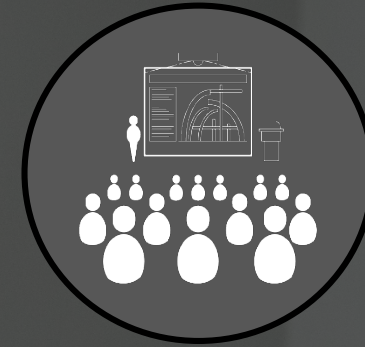
**THE HISTORY OF FMEA**

**WHAT ARE THE TYPES OF FMEA?**

**WHAT IS A PROCESS FMEA?**

**ACTIVITY & ACTIVITY SOLUTION**





**SECTION INTRODUCTION**

**STAGE 01: IDENTIFYING  
THE FAILURE MODE &  
SPECIFYING ITS  
SEVERITY**

# FAILURE MODE & EFFECT ANALYSIS (FMEA)

WHAT IS FMEA?	STAGE 01: IDENTIFYING THE FAILURE MODE AND SPECIFYING ITS SEVERITY	STAGE 02: SPECIFYING THE OCCURRENCE OF FAILURE	STAGE 03: SPECIFYING THE DETECTABILITY OF FAILURE
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ACTIVITY: WHAT IS FMEA?	ACTIVITY: STAGE 01		
ACTIVITY SOLUTION: WHAT IS FMEA?	ACTIVITY SOLUTION: STAGE 01		
SECTION CONCLUSION	SECTION CONCLUSION		
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SECTION CONCLUSION			

	Section
	Lecture
	Activity

**IN THIS SECTION, YOU WILL LEARN:**

**WHAT ARE THE 6 STAGES OF FMEA?**

**PROCESS FMEA: TOP SECTION**

**WHAT ARE THE COMPONENTS OF STAGE 01?**

**ACTIVITY & ACTIVITY SOLUTION**

## NEXT LECTURE

# WHAT ARE THE 6 STAGES OF FMEA?





# WHAT ARE THE 6 DIFFERENT STAGES OF FMEA?



# WHAT ARE THE 6 STAGES OF FMEA?

1

## IDENTIFYING THE FAILURE AND SPECIFYING THE SEVERITY OF IT

- a. Discuss different steps and activities
- b. Brainstorm potential failure modes
- c. Document potential failure effects
- d. Assign a severity ranking to each failure mode

2

## SPECIFYING THE OCCURRENCE OF FAILURE

- a. Identify potential causes of each failure mode
- b. Assign an occurrence ranking

3

## SPECIFYING THE DETECTABILITY OF FAILURE

- a. Identify the current process controls of each failure mode
- b. Assign a Detection rating

4

## QUANTIFYING RISK

- a. Calculate Risk Priority number for each failure mode

5

## CORRECTING HIGH RISK SITUATIONS

- a. Document recommended actions
- b. Assign the responsibility and target date for eliminating or mitigating high risk/high severity failure modes

6

## RE-EVALUATING THE RISK

- a. After completing the identified actions, document the specific actions
- b. Revise the severity, occurrence and detection ratings
- c. Calculate the new RPN number



# PROCESS FMEA: TOP SECTION

# PROCESS FMEA: TOP SECTION

Failure modes and effects analysis (FMEA)				
Project:	Write the Title of Your Project		Date:	Update the date
FMEA Team:	Write the Names of Team Members involved to Create this FMEA		Prepared by:	Write the Names of Individuals who prepared this worksheet

# THE PROJECT TITLE SECTION

Failure modes and effects analysis (FMEA)			
Project:	Write the Title of Your Project	Date:	Update the date
FMEA Team:	Write the Names of Team Members involved to Create this FMEA	Prepared by:	Write the Names of Individuals who prepared this worksheet

**UPDATE THE NAME OF THE PROJECT OR THE PROCESS FOR WHICH THE FMEA IS BEING CREATED**

# THE DATE SECTION

Failure modes and effects analysis (FMEA)			
Project:	Write the Title of Your Project		Date: Update the date
FMEA Team:	Write the Names of Team Members involved to Create this FMEA		Prepared by: Write the Names of Individuals who prepared this worksheet

**ADD THE DATE THE ORIGINAL FMEA WAS COMPILED**

**THE LATEST REVISION DATE CAN ALSO BE PLACED WHEN YOU REVISE THE FMEA**

# FMEA TEAM SECTION

Failure modes and effects analysis (FMEA)				
Project:	Write the Title of Your Project		Date:	Update the date
FMEA Team:	Write the Names of Team Members involved to Create this FMEA		Prepared by:	Write the Names of Individuals who prepared this worksheet

**WRITE NAMES OF THE RESPONSIBLE INDIVIDUALS AND DEPARTMENTS THAT HAVE AUTHORITY TO PERFORM TASKS**

**YOU CAN ALSO ADD TEAM MEMBER DEPARTMENT NAMES, PHONE NUMBERS AND EMAIL ADDRESSES**



# PREPARED BY SECTION

Failure modes and effects analysis (FMEA)				
Project:	Write the Title of Your Project		Date:	Update the date
FMEA Team:	Write the Names of Team Members involved to Create this FMEA		Prepared by:	Write the Names of Individuals who prepared this worksheet

**ADD THE NAME(S), TELEPHONE NUMBER(S), EMAIL ADDRESS(ES) OF INDIVIDUALS WHO WILL OR HAVE PREPARED THE FMEA WORKSHEET**

# ACTIVITY: CREATE YOUR FMEA

Failure modes and effects analysis (FMEA)				
Project:	Write the Title of Your Project		Date:	Update the date
FMEA Team:	Write the Names of Team Members involved to Create this FMEA		Prepared by:	Write the Names of Individuals who prepared this worksheet

**PROJECT TITLE: ADD A SUITABLE TITLE**

**DATE: ADD TODAY'S DATE**

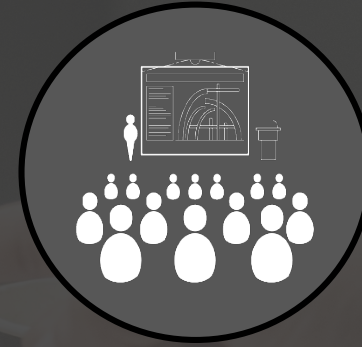
**FMEA TEAM: ADD YOUR NAME AND NAME OF INVOLVED MEMBERS**

**PREPARED BY: ADD YOUR NAME AND NAME OF INDIVIDUALS WHO WILL PREPARE THIS FMEA WORKSHEET**



## NEXT LECTURE

# WHAT ARE THE COMPONENTS OF STAGE 01? PART 01



# **WHAT ARE THE COMPONENTS OF STAGE 01: IDENTIFYING THE FAILURE & SPECIFYING OF IT?**

# THE 6 STAGES OF FMEA?

1

## IDENTIFYING THE FAILURE AND SPECIFYING THE SEVERITY OF IT

- a. Discuss different steps and activities
- b. Brainstorm potential failure modes
- c. Document potential failure effects
- d. Assign a severity ranking to each failure mode

2

## SPECIFYING THE OCCURRENCE OF FAILURE

- a. Identify potential causes of each failure mode
- b. Assign an occurrence ranking

3

## SPECIFYING THE DETECTABILITY OF FAILURE

- a. Identify the current process controls of each failure mode
- b. Assign a Detection rating

4

## QUANTIFYING RISK

- a. Calculate Risk Priority number for each failure mode

5

## CORRECTING HIGH RISK SITUATIONS

- a. Document recommended actions
- b. Assign the responsibility and target date for eliminating or mitigating high risk/high severity failure modes

6

## RE-EVALUATING THE RISK

- a. After completing the identified actions, document the specific actions
- b. Revise the severity, occurrence and detection ratings
- c. Calculate the new RPN number

# COMPONENTS OF STAGE 01

Business Function	Process step	Potential failure mode	Potential failure effects	S E V	Potential causes	O C C
Which Functional Department?	What is the step?	In what ways can the step go wrong?	What is the impact on the customer if the failure mode is not prevented or corrected?	10	What causes the step to go wrong? (i.e., How could the failure mode occur?)	10

# THE BUSINESS FUNCTION

Business Function	Process step	Potential failure mode	Potential failure effects	SEV
Which Functional Department?	What is the step?	In what ways can the step go wrong?	What is the impact on the customer if the failure mode is not prevented or corrected?	10

**DOCUMENT THE FUNCTIONAL DEPARTMENT THAT IS BEING DISCUSSED FOR A FAILURE MODE**

**YOU WILL NOT ENTER A PRODUCT OR STEP OF THE FAILURE MODE**

**ENTER A DESCRIPTION OF THE PROCESS THAT IS BEING ANALYZED**

# EXAMPLE: THE BUSINESS FUNCTION

Business Function	Process step	Potential failure mode	Potential failure effects	S E V
Which Functional Department?	What is the step?	In what ways can the step go wrong?	What is the impact on the customer if the failure mode is not prevented or corrected?	10
Technology (Voice)				



# **ACTIVITY: CREATE YOUR FMEA**

**IN YOUR FMEA DOCUMENT, WRITE THE NAME OF YOUR BUSINESS PROCESS**

**PAUSE THIS VIDEO, COMPLETE THE ACTIVITY & CONTINUE**



# THE PROCESS STEP

Business Function	Process step	Potential failure mode	Potential failure effects	S E V
Which Functional Department?	What is the step?	In what ways can the step go wrong?	What is the impact on the customer if the failure mode is not prevented or corrected?	10

## DOCUMENT THE STEP OF THE FAILURE MODE

**“WHEN CREATING YOUR FMEA, PLEASE KEEP A PROCESS MAP OF YOUR IN-SCOPE BUSINESS PROCESS HANDY”**

**USING A PROCESS MAP IS OPTIONAL & NOT MANDATORY**

# EXAMPLE: THE PROCESS STEP

Business Function	Process step	Potential failure mode	Potential failure effects	S E V
Which Functional Department?	What is the step?	In what ways can the step go wrong?	What is the impact on the customer if the failure mode is not prevented or corrected?	10
Technology (Voice)	Connectivity			
	Quality			

## **ACTIVITY: CREATE YOUR FMEA**

**IN YOUR FMEA DOCUMENT, DOCUMENT THE HIGH LEVEL PROCESS STEPS OF YOUR BUSINESS PROCESS**

**KEEP THE PROCESS STEPS SIMPLE AND UPTO 3 TO 4 STEPS ONLY**

**PAUSE THIS VIDEO, COMPLETE THE ACTIVITY & CONTINUE**

# POTENTIAL FAILURE MODE

Business Function	Process step	Potential failure mode	Potential failure effects	SEV
Which Functional Department?	What is the step?	In what ways can the step go wrong?	What is the impact on the customer if the failure mode is not prevented or corrected?	10

**IDENTIFY IN WHAT WAYS CAN THE STEP GO WRONG?**

**DOCUMENT EVERY FAILURE MODE, BUT LIMIT ONE FAILURE MODE TO EACH ROW OF YOUR FMEA WORKSHEET**

# EXAMPLE: POTENTIAL FAILURE MODE

Business Function	Process step	Potential failure mode	Potential failure effects	SEV
Which Functional Department?	What is the step?	In what ways can the step go wrong?	What is the impact on the customer if the failure mode is not prevented or corrected?	10
Technology (Voice)	Connectivity	No calls		
		Call Drops		
	Quality	Bad Connection /Static		
		Lower Decibel In Voice Quality		

## **ACTIVITY: CREATE YOUR FMEA**

**IN YOUR FMEA DOCUMENT, THINK ABOUT THE FAILURE MODES OF YOUR BUSINESS PROCESS. DOCUMENT THEM.**

**LIMIT THE FAILURE MODES TO A MAX. OF 6 TO 7 ONLY FOR THE PURPOSE OF THIS EXERCISE**

**PAUSE THIS VIDEO, COMPLETE THE ACTIVITY & CONTINUE**



# POTENTIAL FAILURE EFFECTS

Business Function	Process step	Potential failure mode	Potential failure effects	SEV
Which Functional Department?	What is the step?	In what ways can the step go wrong?	What is the impact on the customer if the failure mode is not prevented or corrected?	10

**“WHAT IS THE IMPACT ON THE CUSTOMER IF THE FAILURE MODE IS NOT PREVENTED OR CORRECTED?”**

**THE FAILURE EFFECTS SHOULD BE AS PERCEIVED BY THE CUSTOMER**

**EFFECTS OF MULTIPLE FAILURE MODES COULD COINCIDE**

# EXAMPLE: POTENTIAL FAILURE EFFECTS

Business Function	Process step	Potential failure mode	Potential failure effects	SEV
Which Functional Department?	What is the step?	In what ways can the step go wrong?	What is the impact on the customer if the failure mode is not prevented or corrected?	10
Technology (Voice)	Connectivity	No calls	<ul style="list-style-type: none"> <li>• Loss of Business</li> <li>• Client Dissatisfaction</li> <li>• Impact on Repeat Business</li> <li>• Impact on Revenue</li> <li>• Communication Breakdown</li> </ul>	
		Call Drops	<ul style="list-style-type: none"> <li>• Loss of Business</li> <li>• Client Dissatisfaction</li> <li>• Impact on Repeat Business</li> <li>• Impact on Revenue</li> <li>• Communication Breakdown</li> </ul>	
	Quality	Bad Connection /Static	<ul style="list-style-type: none"> <li>• Customer/Agent dissatisfaction</li> <li>• High Resolution Time</li> <li>• SLA Misses</li> <li>• Incorrect Resolution</li> <li>• Increase in Cost / loss in Revenue</li> </ul>	
		Lower Decibel In Voice Quality	<ul style="list-style-type: none"> <li>• Customer Dissatisfaction</li> <li>• High AHT</li> </ul>	

## **ACTIVITY: CREATE YOUR FMEA**

**IN YOUR FMEA DOCUMENT, DOCUMENT THE POTENTIAL FAILURE EFFECTS OF THE IDENTIFIED FAILURE MODES OF YOUR BUSINESS PROCESS**

**PAUSE THIS VIDEO, COMPLETE THE ACTIVITY & CONTINUE**

# SEVERITY

Business Function	Process step	Potential failure mode	Potential failure effects	SEV
Which Functional Department?	What is the step?	In what ways can the step go wrong?	What is the impact on the customer if the failure mode is not prevented or corrected?	10

**ASSESSMENT OF THE SERIOUSNESS OF THE EFFECT OF THE POTENTIAL FAILURE MODE**

**SEVERITY APPLIES ONLY TO THE EFFECT OF THE FAILURE**

**SEVERITY VALUE DOESN'T CHANGE IN FMEA UNLESS SPECIFIC DESIGN CHANGES ARE MADE IN YOUR BUSINESS PROCESS**

# EXAMPLE: SEVERITY RATING

Business Function	Process step	Potential failure mode	Potential failure effects	SEV
Which Functional Department?	What is the step?	In what ways can the step go wrong?	What is the impact on the customer if the failure mode is not prevented or corrected?	10
Technology (Voice)	Connectivity	No calls	<ul style="list-style-type: none"> <li>• Loss of Business</li> <li>• Client Dissatisfaction</li> <li>• Impact on Repeat Business</li> <li>• Impact on Revenue</li> <li>• Communication Breakdown</li> </ul>	
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		Lower Decibel In Voice Quality	<ul style="list-style-type: none"> <li>• Customer Dissatisfaction</li> <li>• High AHT</li> </ul>	



# EXAMPLE: SEVERITY RATING

Business Function	Process step	Potential failure mode	Potential failure effects	SEV
Which Functional Department?	What is the step?	In what ways can the step go wrong?	What is the impact on the customer if the failure mode is not prevented or corrected?	10
Technology (Voice)	Connectivity	No calls	<ul style="list-style-type: none"> <li>• Loss of Business</li> <li>• Client Dissatisfaction</li> <li>• Impact on Repeat Business</li> <li>• Impact on Revenue</li> <li>• Communication Breakdown</li> </ul>	8
		Call Drops	<ul style="list-style-type: none"> <li>• Loss of Business</li> <li>• Client Dissatisfaction</li> <li>• Impact on Repeat Business</li> <li>• Impact on Revenue</li> <li>• Communication Breakdown</li> </ul>	8
	Quality	Bad Connection /Static	<ul style="list-style-type: none"> <li>• Customer/Agent dissatisfaction</li> <li>• High Resolution Time</li> <li>• SLA Misses</li> <li>• Incorrect Resolution</li> <li>• Increase in Cost / loss in Revenue</li> </ul>	5
		Lower Decibel In Voice Quality	<ul style="list-style-type: none"> <li>• Customer Dissatisfaction</li> <li>• High AHT</li> </ul>	3

## **ACTIVITY: CREATE YOUR FMEA**

**IN YOUR FMEA DOCUMENT, IDENTIFY AND DOCUMENT THE SEVERITY RATING FOR EACH FAILURE MODE**

**DOWNLOAD AND REVIEW THE RATING SCALE FROM ATTACHED RESOURCES FOR MANUFACTURING/SERVICE INDUSTRIES**

**PAUSE THIS VIDEO, COMPLETE THE ACTIVITY & CONTINUE**

# CONGRATULATIONS



**IN THIS SECTION, YOU LEARNT:**

**WHAT ARE THE 6 STAGES OF FMEA?**

**PROCESS FMEA: TOP SECTION**

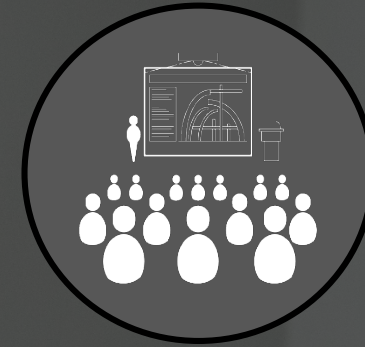
**WHAT ARE THE COMPONENTS OF STAGE 01?**

**ACTIVITY & ACTIVITY SOLUTION**

## NEXT SECTION

# STAGE 02: SPECIFYING THE OCCURRENCE OF FAILURE





## **SECTION INTRODUCTION**

# **STAGE 02: SPECIFYING THE OCCURRENCE OF FAILURE**

# FAILURE MODE & EFFECT ANALYSIS (FMEA)

WHAT IS FMEA?	STAGE 01: IDENTIFYING THE FAILURE MODE AND SPECIFYING ITS SEVERITY	STAGE 02: SPECIFYING THE OCCURRENCE OF FAILURE	STAGE 03: SPECIFYING THE DETECTABILITY OF FAILURE
SECTION INTRODUCTION	SECTION INTRODUCTION	SECTION INTRODUCTION	SECTION INTRODUCTION
WHAT IS A FAILURE MODE & EFFECT ANALYSIS?	WHAT ARE THE 6 DIFFERENT STAGES OF FMEA?	WHAT ARE THE POTENTIAL CAUSES?	WHAT ARE THE CURRENT PROCESS CONTROLS?
WHY AND WHEN TO USE FMEA?	PROCESS FMEA: TOP SECTION	WHAT IS THE OCCURRENCE RATING?	WHAT IS THE DETECTABILITY RATING?
THE HISTORY OF FMEA	WHAT ARE THE COMPONENTS OF STAGE 01? P1	ACTIVITY: STAGE 02	ACTIVITY: STAGE 03
WHAT ARE THE TYPES OF FMEA?	WHAT ARE THE COMPONENTS OF STAGE 01? P2	ACTIVITY SOLUTION: STAGE 02	ACTIVITY SOLUTION: STAGE 03
WHAT IS A PROCESS FMEA?	WHAT ARE THE COMPONENTS OF STAGE 01? P3	SECTION CONCLUSION	SECTION CONCLUSION
ACTIVITY: WHAT IS FMEA?	ACTIVITY: STAGE 01		
ACTIVITY SOLUTION: WHAT IS FMEA?	ACTIVITY SOLUTION: STAGE 01		
SECTION CONCLUSION	SECTION CONCLUSION		
STAGE 04 AND 05: QUANTIFYING RISK AND CORRECTING HIGH RISK SITUATIONS	STAGE 06: REEVALUATING THE RISK AND VISUALIZING YOUR FMEA	WHAT ARE THE STEPS TO CONSTRUCT AN FMEA?	WHAT ARE THE BENEFITS AND SHORTCOMINGS OF FMEA?
SECTION INTRODUCTION	SECTION INTRODUCTION	SECTION INTRODUCTION	SECTION INTRODUCTION
WHAT IS RPN?	CALCULATING THE RESULTING RPN	WHAT ARE THE STEPS TO CONSTRUCT FMEA? P1	WHAT ARE THE BENEFITS OF FMEA?
WHAT ARE ACTIONS RECOMMENDED?	CREATING A SPIDER CHART	WHAT ARE THE STEPS TO CONSTRUCT FMEA? P2	WHAT ARE THE SHORTCOMINGS OF FMEA?
WHAT IS RESPONSIBILITY, TARGET COMPLETION DATES AND ACTIONS TAKEN?	SECTION CONCLUSION		
SECTION CONCLUSION			

	Section
	Lecture
	Activity

**IN THIS SECTION, YOU WILL LEARN:**

**WHAT ARE POTENTIAL CAUSES?**

**WHAT IS THE OCCURRENCE RATING?**

**ACTIVITY & ACTIVITY SOLUTION**

## NEXT LECTURE

# WHAT ARE POTENTIAL CAUSES?





# WHAT ARE THE POTENTIAL CAUSES?

# WHAT ARE THE POTENTIAL CAUSES?

Business Function	Process step	Potential failure mode	Potential causes	O C C
Which Functional Department?	What is the step?	In what ways can the step go wrong?	What causes the step to go wrong? (i.e., How could the failure mode occur?)	10

**ASK THE QUESTION, “WHAT CAUSES THE STEP TO GO WRONG?”**

**EVERY POSSIBLE POTENTIAL CAUSE FOR EACH FAILURE MODE SHOULD BE LISTED AS COMPLETELY AND CONCISELY AS POSSIBLE**

**AMBIGUOUS PHRASES SHOULD NOT BE USED**

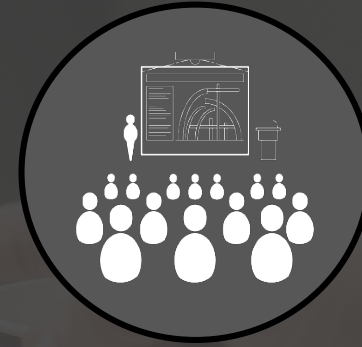


# EXAMPLE: POTENTIAL CAUSES

Business Function	Process step	Potential failure mode	Potential causes	O C C
Which Functional Department?	What is the step?	In what ways can the step go wrong?	What causes the step to go wrong? (i.e., How could the failure mode occur?)	10
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		Call Drops	<ul style="list-style-type: none"> <li>• Fluctuation in trunks at local end or from Service Provider end</li> </ul>	
	Quality	Bad Connection /Static	<ul style="list-style-type: none"> <li>• Faulty headsets</li> <li>• Faulty QD chord</li> <li>• Errors on trunks either at local or from SP end</li> <li>• Phone Issue at Caller's end</li> </ul>	
		Lower Decibel In Voice Quality	<ul style="list-style-type: none"> <li>• Improper routing at PG end.</li> </ul>	

## **ACTIVITY: CREATE YOUR FMEA**

**IN YOUR FMEA DOCUMENT, LIST DOWN THE POTENTIAL CAUSES OF EACH FAILURE MODE**



# WHAT IS THE OCCURRENCE RATING?

# OCCURRENCE

Business Function	Process step	Potential failure mode	Potential causes	<div>O</div> <div>C</div> <div>C</div>
Which Functional Department?	What is the step?	In what ways can the step go wrong?	What causes the step to go wrong? (i.e., How could the failure mode occur?)	10

**OCCURRENCE IS HOW FREQUENTLY THE SPECIFIC FAILURE IS PROJECTED TO OCCUR**

**THIS MUST BE DONE FOR EVERY FAILURE LISTED**

**REDUCTION IN OCCURRENCE RANKING MUST ONLY COME FROM A DIRECT CHANGE IN THE BUSINESS PROCESS**

# EXAMPLE: OCCURRENCE RATING

Business Function	Process step	Potential failure mode	Potential causes	O C C
Which Functional Department?	What is the step?	In what ways can the step go wrong?	What causes the step to go wrong? (i.e., How could the failure mode occur?)	10
Technology (Voice)	Connectivity	No calls	<ul style="list-style-type: none"> <li>• CMS link failure</li> <li>• Issues with PG (Peripheral Gateway) server for incoming calls</li> <li>• Issues with outbound calls which are routed through PG.</li> </ul>	
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		Lower Decibel In Voice Quality	<ul style="list-style-type: none"> <li>• Improper routing at PG end.</li> </ul>	

# EXAMPLE: OCCURRENCE RATING

Business Function	Process step	Potential failure mode	Potential causes	OCC
Which Functional Department?	What is the step?	In what ways can the step go wrong?	What causes the step to go wrong? (i.e., How could the failure mode occur?)	10
Technology (Voice)	Connectivity	No calls	<ul style="list-style-type: none"> <li>• CMS link failure</li> <li>• Issues with PG (Peripheral Gateway) server for incoming calls</li> <li>• Issues with outbound calls which are routed through PG.</li> </ul>	7
		Call Drops	<ul style="list-style-type: none"> <li>• Fluctuation in trunks at local end or from Service Provider end</li> </ul>	2
	Quality	Bad Connection /Static	<ul style="list-style-type: none"> <li>• Faulty headsets</li> <li>• Faulty QD chord</li> <li>• Errors on trunks either at local or from SP end</li> <li>• Phone Issue at Caller's end</li> </ul>	4
		Lower Decibel In Voice Quality	<ul style="list-style-type: none"> <li>• Improper routing at PG end.</li> </ul>	4



## **ACTIVITY: CREATE YOUR FMEA**

**IN YOUR FMEA DOCUMENT, IDENTIFY THE OCCURRENCE RATING FOR EACH FAILURE MODE**

**DOWNLOAD AND REVIEW THE RATING SCALE FROM ATTACHED RESOURCES FOR MANUFACTURING/SERVICE INDUSTRIES**

# CONGRATULATIONS



**IN THIS SECTION, YOU LEARNT:**

**WHAT ARE POTENTIAL CAUSES?**

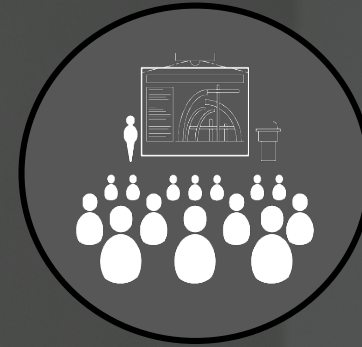
**WHAT IS THE OCCURRENCE RATING?**

**ACTIVITY & ACTIVITY SOLUTION**

## NEXT SECTION

# STAGE 03: SPECIFYING THE DETECTABILITY OF FAILURE





## **SECTION INTRODUCTION**

# **STAGE 03: SPECIFYING THE DETECTABILITY OF FAILURE**

# FAILURE MODE & EFFECT ANALYSIS (FMEA)

WHAT IS FMEA?	STAGE 01: IDENTIFYING THE FAILURE MODE AND SPECIFYING ITS SEVERITY	STAGE 02: SPECIFYING THE OCCURRENCE OF FAILURE	STAGE 03: SPECIFYING THE DETECTABILITY OF FAILURE
SECTION INTRODUCTION	SECTION INTRODUCTION	SECTION INTRODUCTION	SECTION INTRODUCTION
WHAT IS A FAILURE MODE & EFFECT ANALYSIS?	WHAT ARE THE 6 DIFFERENT STAGES OF FMEA?	WHAT ARE THE POTENTIAL CAUSES?	WHAT ARE THE CURRENT PROCESS CONTROLS?
WHY AND WHEN TO USE FMEA?	PROCESS FMEA: TOP SECTION	WHAT IS THE OCCURRENCE RATING?	WHAT IS THE DETECTABILITY RATING?
THE HISTORY OF FMEA	WHAT ARE THE COMPONENTS OF STAGE 01? P1	ACTIVITY: STAGE 02	ACTIVITY: STAGE 03
WHAT ARE THE TYPES OF FMEA?	WHAT ARE THE COMPONENTS OF STAGE 01? P2	ACTIVITY SOLUTION: STAGE 02	ACTIVITY SOLUTION: STAGE 03
WHAT IS A PROCESS FMEA?	WHAT ARE THE COMPONENTS OF STAGE 01? P3	SECTION CONCLUSION	SECTION CONCLUSION
ACTIVITY: WHAT IS FMEA?	ACTIVITY: STAGE 01		
ACTIVITY SOLUTION: WHAT IS FMEA?	ACTIVITY SOLUTION: STAGE 01		
SECTION CONCLUSION	SECTION CONCLUSION		
STAGE 04 AND 05: QUANTIFYING RISK AND CORRECTING HIGH RISK SITUATIONS	STAGE 06: REEVALUATING THE RISK AND VISUALIZING YOUR FMEA	WHAT ARE THE STEPS TO CONSTRUCT AN FMEA?	WHAT ARE THE BENEFITS AND SHORTCOMINGS OF FMEA?
SECTION INTRODUCTION	SECTION INTRODUCTION	SECTION INTRODUCTION	SECTION INTRODUCTION
WHAT IS RPN?	CALCULATING THE RESULTING RPN	WHAT ARE THE STEPS TO CONSTRUCT FMEA? P1	WHAT ARE THE BENEFITS OF FMEA?
WHAT ARE ACTIONS RECOMMENDED?	CREATING A SPIDER CHART	WHAT ARE THE STEPS TO CONSTRUCT FMEA? P2	WHAT ARE THE SHORTCOMINGS OF FMEA?
WHAT IS RESPONSIBILITY, TARGET COMPLETION DATES AND ACTIONS TAKEN?	SECTION CONCLUSION		
SECTION CONCLUSION			

	Section
	Lecture
	Activity



**IN THIS SECTION, YOU WILL LEARN:**

**WHAT ARE THE CURRENT PROCESS CONTROLS?**

**WHAT IS A DETECTABILITY RATING?**

**ACTIVITY & ACTIVITY SOLUTION**

## NEXT LECTURE

# WHAT ARE THE CURRENT PROCESS CONTROLS?



# WHAT ARE THE CURRENT PROCESS CONTROLS?

# WHAT ARE THE CURRENT PROCESS CONTROLS?

Business Function	Process step	Potential failure mode	Current process controls	DET
Which Functional Department?	What is the step?	In what ways can the step go wrong?	What are the existing controls that either prevent the failure mode from occurring or detect it should it occur?	10

**DESCRIPTIONS OF CONTROLS THAT EITHER PREVENT THE FAILURE MODE FROM OCCURRING OR DETECT IT IF IT SHOULD OCCUR**

**MAY INCLUDE PREVENTION MEASURES, PROCESS VALIDATION AND VERIFICATION**

# WHAT ARE THE CURRENT PROCESS CONTROLS?

**THERE ARE THREE TYPES OF PROCESS CONTROLS:**



**PREVENT THE FAILURE  
MODE FROM OCCURRING /  
REDUCE THE RATE OF  
OCCURRENCE**

**DETECT THE CAUSE &  
LEAD TO CORRECTIVE  
ACTIONS**

**DETECT ONLY THE  
FAILURE MODE**

**IF FIRST METHOD IS EMPLOYED, THE OCCURRENCE RANKING MAY BE  
CHANGED ON THE FOLLOWING VERSION OF THE DOCUMENT**

**TO IMPROVE THE OCCURRENCE RATING FOR FAILURE MODE, THE  
PROCESS CONTROL MUST BE EMPLOYED**

# EXAMPLE: CURRENT PROCESS CONTROLS

Business Function	Process step	Potential failure mode	Current process controls	D E T
Which Functional Department?	What is the step?	In what ways can the step go wrong?	What are the existing controls that either prevent the failure mode from occurring or detect it should it occur?	10
Technology (Voice)	Connectivity	No calls	<ul style="list-style-type: none"> <li>• Continuous Monitoring of CMS link</li> <li>• Monitoring of session running on CMS for PG</li> <li>• Any issue with PG, Technology will escalate to telephony team for resolution</li> </ul>	
		Call Drops	<ul style="list-style-type: none"> <li>• Monitoring the status of the trunks &amp; alarms on PBX</li> </ul>	
	Quality	Bad Connection /Static	<ul style="list-style-type: none"> <li>• Supervisors to replace faulty headset/QD chord</li> <li>• Voice team &amp; telecom team to take care if any thing related to trunk or SP end</li> </ul>	
		Lower Decibel In Voice Quality	<ul style="list-style-type: none"> <li>• Telephony team to take care of this</li> </ul>	



## **ACTIVITY: CREATE YOUR FMEA**

**IN YOUR FMEA DOCUMENT, LIST DOWN THE CURRENT PROCESS CONTROLS OF EACH FAILURE MODE THAT YOU HAVE DOCUMENTED**



# WHAT IS THE DETECTABILITY RATING?

# DETECTABILITY

Business Function	Process step	Potential failure mode	Current process controls	DET
Which Functional Department?	What is the step?	In what ways can the step go wrong?	What are the existing controls that either prevent the failure mode from occurring or detect it should it occur?	10

**ASSESSMENT THAT THE PROPOSED PROCESS CONTROL STEP WILL DETECT A POTENTIAL WEAKNESS OR SUBSEQUENT FAILURE MODE**

**NEVER ASSUME THAT DETECTION RANKING IS LOW BECAUSE OCCURRENCE IS LOW**

**RANKING SYSTEMS SHOULD BE AGREED ON BY THE ENTIRE TEAM**

# EXAMPLE: DETECTABILITY RATING

Business Function	Process step	Potential failure mode	Potential causes	O C C
Which Functional Department?	What is the step?	In what ways can the step go wrong?	What causes the step to go wrong? (i.e., How could the failure mode occur?)	10
Technology (Voice)	Connectivity	No calls	<ul style="list-style-type: none"> <li>• CMS link failure</li> <li>• Issues with PG (Peripheral Gateway) server for incoming calls</li> <li>• Issues with outbound calls which are routed through PG.</li> </ul>	
		Call Drops	<ul style="list-style-type: none"> <li>• Fluctuation in trunk local end or from Service Provider end</li> </ul>	
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		Lower Decibel In Voice Quality	<ul style="list-style-type: none"> <li>• Improper routing at PG end.</li> </ul>	

## Ability to Detect Rating:

- 1 - 100%
- 2 - 99%
- 3 - 95%
- 4 - 90%
- 5 - 85%
- 6 - 80%
- 7 - 70%
- 8 - 60%
- 9 - 50%
- 10 - less than 50%

# EXAMPLE: DETECTABILITY RATING

Business Function	Process step	Potential failure mode	Current process controls	DET
Which Functional Department?	What is the step?	In what ways can the step go wrong?	What are the existing controls that either prevent the failure mode from occurring or detect it should it occur?	10
Technology (Voice)	Connectivity	No calls	<ul style="list-style-type: none"> <li>• Continuous Monitoring of CMS link</li> <li>• Monitoring of session running on CMS for PG</li> <li>• Any issue with PG, Technology will escalate to telephony team for resolution</li> </ul>	3
		Call Drops	<ul style="list-style-type: none"> <li>• Monitoring the status of the trunks &amp; alarms on PBX</li> </ul>	1
	Quality	Bad Connection /Static	<ul style="list-style-type: none"> <li>• Supervisors to replace faulty headset/QD chord</li> <li>• Voice team &amp; telecom team to take care if any thing related to trunk or SP end</li> </ul>	1
		Lower Decibel In Voice Quality	<ul style="list-style-type: none"> <li>• Telephony team to take care of this</li> </ul>	1

## **ACTIVITY: CREATE YOUR FMEA**

**IN YOUR FMEA DOCUMENT, IDENTIFY THE DETECTABILITY RATING FOR EACH FAILURE MODE**

**DOWNLOAD AND REVIEW THE RATING SCALE FROM ATTACHED RESOURCES FOR MANUFACTURING/SERVICE INDUSTRIES**



# CONGRATULATIONS



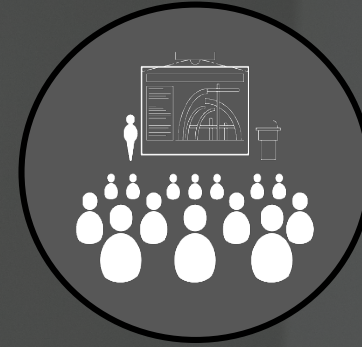
**IN THIS SECTION, YOU LEARNT:**

**WHAT ARE THE CURRENT PROCESS CONTROLS?**

**WHAT IS A DETECTABILITY RATING?**

**ACTIVITY & ACTIVITY SOLUTION**





## **SECTION INTRODUCTION**

# **STAGE 04 AND 05: QUANTIFYING THE RISK AND CORRECTING HIGH RISK SITUATIONS**

# FAILURE MODE & EFFECT ANALYSIS (FMEA)

WHAT IS FMEA?	STAGE 01: IDENTIFYING THE FAILURE MODE AND SPECIFYING ITS SEVERITY	STAGE 02: SPECIFYING THE OCCURRENCE OF FAILURE	STAGE 03: SPECIFYING THE DETECTABILITY OF FAILURE
SECTION INTRODUCTION	SECTION INTRODUCTION	SECTION INTRODUCTION	SECTION INTRODUCTION
WHAT IS A FAILURE MODE & EFFECT ANALYSIS?	WHAT ARE THE 6 DIFFERENT STAGES OF FMEA?	WHAT ARE THE POTENTIAL CAUSES?	WHAT ARE THE CURRENT PROCESS CONTROLS?
WHY AND WHEN TO USE FMEA?	PROCESS FMEA: TOP SECTION	WHAT IS THE OCCURRENCE RATING?	WHAT IS THE DETECTABILITY RATING?
THE HISTORY OF FMEA	WHAT ARE THE COMPONENTS OF STAGE 01? P1	ACTIVITY: STAGE 02	ACTIVITY: STAGE 03
WHAT ARE THE TYPES OF FMEA?	WHAT ARE THE COMPONENTS OF STAGE 01? P2	ACTIVITY SOLUTION: STAGE 02	ACTIVITY SOLUTION: STAGE 03
WHAT IS A PROCESS FMEA?	WHAT ARE THE COMPONENTS OF STAGE 01? P3	SECTION CONCLUSION	SECTION CONCLUSION
ACTIVITY: WHAT IS FMEA?	ACTIVITY: STAGE 01		
ACTIVITY SOLUTION: WHAT IS FMEA?	ACTIVITY SOLUTION: STAGE 01		
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SECTION CONCLUSION			

	Section
	Lecture
	Activity

## **IN THIS SECTION, YOU WILL LEARN:**

**WHAT IS A RISK PRIORITY NUMBER (RPN)?**

**WHAT ARE ACTIONS RECOMMENDED?**

**WHAT IS RESPONSIBILITY, TARGET COMPLETION DATE AND ACTIONS TAKEN?**



## NEXT LECTURE

# WHAT IS A RISK PRIORITY NUMBER (RPN)?



# WHAT IS A RISK PRIORITY NUMBER (RPN)?

# WHAT IS A RISK PRIORITY NUMBER (RPN)?

Business Function	Process step	S E V	O C C	D E T	R P N	Actions recommended	Responsibility (target date)
Which Functional Department?	What is the step?	10	10	10	1000	What are the actions for reducing the occurrence of the cause or for improving its detection? You should provide actions on all high RPNs and on severity ratings of 9 or 10.	Who is responsible for the recommended action? What date should it be completed by?

**BY DEFINITION THE RISK PRIORITY NUMBER IS:**

$$\underline{\text{RPN} = (\text{S}) \times (\text{O}) \times (\text{D})}$$

**WHERE S = SEVERITY, O = OCCURRENCE & D = DETECTION**

# WHAT IS A RISK PRIORITY NUMBER (RPN)?

**RELATIVE MEASURE OF OPERATIONAL RISK**

**VALUES CAN RANGE FROM 1 TO 1000**

**THESE VALUES HELP TO RANK ORDER THE FAILURE MODES**

**FAILURE MODES WITH HIGH RPN SHOULD BE ACTIONED**

**FAILURE MODES WITH HIGH SEVERITY SHOULD ALSO BE ACTIONED**

# EXAMPLE: RISK PRIORITY NUMBER (RPN)

Business Function	Process step	Potential failure mode	S E V	O C C	D E T	R P N
Which Functional Department?	What is the step?	In what ways can the step go wrong?	10	10	10	1000
Technology (Voice)	Connectivity	No calls	8	7	3	168
		Call Drops	8	2	1	16
	Quality	Bad Connection /Static	5	4	1	20
		Lower Decibel In Voice Quality	3	4	1	12



## **ACTIVITY: CREATE YOUR FMEA**

**IN YOUR FMEA DOCUMENT, IT IS NOW TIME TO USE THE FORMULA  
AND CALCULATE THE RPN NUMBER**



**WHAT ARE THE  
ACTIONS  
RECOMMENDED?**

# WHAT ARE THE ACTIONS RECOMMENDED?

**AFTER ADDING A RISK PRIORITY NUMBER, DISCUSS THE CORRECTIVE ACTIONS FOR FAILURE MODES**

**BEGIN WITH THE FAILURE MODE WITH THE GREATEST RPN AND WORKING IN DESCENDING ORDER TO RPN**

**FAILURE MODES WITH HIGH SEVERITY CRITERIA SHOULD BE EXAMINED WITH THE LEAD GROUP OF FAILURE MODES**

# WHAT ARE THE ACTIONS RECOMMENDED?

**THE PURPOSE OF THE RECOMMENDED ACTIONS IS TO REDUCE FAILURE MODES THAT HAVE HIGH RISK PRIORITY NUMBERS:**

**INCREASE IN PROCESS  
VALIDATION ACTIONS  
RESULTS IN REDUCTION OF  
DETECTION RANKING**

**REDESIGNING THE  
PROCESS HELPS MITIGATE  
POTENTIAL CAUSES &  
REDUCES THE  
OCCURRENCE RANKING**

**A PROCESS LEVEL REVISION  
CAN BRING ABOUT A  
REDUCTION IN THE  
SEVERITY RANKING**

**ENTER "NONE" IF THERE ARE NO RECOMMENDED ACTIONS  
AVAILABLE TO REDUCE ANY OF THE RANKING CRITERIA**



# EXAMPLE: ACTIONS RECOMMENDED

Business Function	Process step	Potential failure mode	Actions recommended
Which Functional Department?	What is the step?	In what ways can the step go wrong?	What are the actions for reducing the occurrence of the cause or for improving its detection? You should provide actions on all high RPNs and on severity ratings of 9 or 10.
Technology (Voice)	Connectivity	No calls	<ul style="list-style-type: none"> <li>• Voice DR Infrastructure</li> <li>• Appropriate Notification procedure (Escalation Matrix)</li> <li>• Awareness training of Escalation Matrix to frontline supervisors</li> </ul>
		Call Drops	<ul style="list-style-type: none"> <li>• Timely review of Escalation Matrix</li> <li>• Increase Awareness to follow Escalation Matrix</li> </ul>
	Quality	Bad Connection /Static	<ul style="list-style-type: none"> <li>• Supervisors to replace faulty headset as well as the cord</li> <li>• Voice and Telecom Team to follow Asset maintenance procedure for trunk issues</li> </ul>
		Lower Decibel In Voice Quality	<ul style="list-style-type: none"> <li>• The telephony team to work with the vendor to identify the root cause of the problem</li> <li>• Regular Asset Maintenance</li> </ul>



## **ACTIVITY: CREATE YOUR FMEA**

**CREATE SUITABLE ACTIONS THAT WILL HELP IN REDUCING THE OCCURRENCE, INCREASING THE DETECTABILITY**

**THERE MAY BE CERTAIN ACTIONS THAT MAY HAVE IMPACT ON SEVERITY AS WELL. BUT IN MY EXPERIENCE THOSE WILL BE RARE**

**GO AHEAD AND HAVE THESE ACTIONS DOCUMENTED IN YOUR FMEA TEMPLATE**



# **WHAT ARE RESPONSIBILITY, TARGET COMPLETION DATES AND ACTIONS TAKEN?**

# RESPONSIBILITY & TARGET COMPLETION DATES

Business Function	Process step	Potential failure mode	Responsibility (target date)	Actions taken
Which Functional Department?	What is the step?	In what ways can the step go wrong?	Who is responsible for the recommended action? What date should it be completed by?	What were the actions implemented? Include completion month/year (then recalculate resulting RPN).

**THE INDIVIDUAL OR GROUP RESPONSIBLE FOR THE RECOMMENDED ACTIONS AND THE TARGET COMPLETION DATE SHOULD BE ENTERED AS REFERENCE FOR FUTURE DOCUMENT USERS**

# ACTIONS TAKEN

Business Function	Process step	Potential failure mode	Responsibility (target date)	Actions taken
Which Functional Department?	What is the step?	In what ways can the step go wrong?	Who is responsible for the recommended action? What date should it be completed by?	What were the actions implemented? Include completion month/year (then recalculate resulting RPN).

**AFTER AN ACTION HAS BEEN IMPLEMENTED, A BRIEF DESCRIPTION OF THE ACTUAL ACTION AND ITS EFFECTIVE DATE SHOULD BE ENTERED**

# ACTIVITY: CREATE YOUR FMEA

**FOR YOUR FMEA, DOCUMENT THE RESPONSIBILITY, TARGET COMPLETION DATES AND ACTIONS TAKEN**



# CONGRATULATIONS



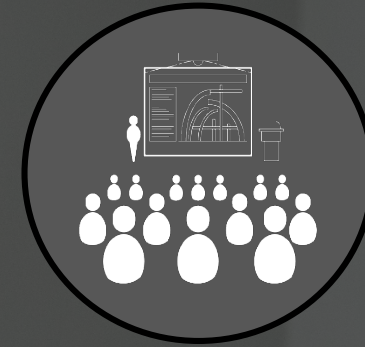
## **IN THIS SECTION, YOU LEARNT:**

**WHAT IS A RISK PRIORITY NUMBER (RPN)?**

**WHAT ARE ACTIONS RECOMMENDED?**

**WHAT IS RESPONSIBILITY, TARGET COMPLETION DATE AND ACTIONS TAKEN?**





## **SECTION INTRODUCTION**

# **STAGE 06: REEVALUATING THE RISK AND VISUALIZING YOUR FMEA**

# FAILURE MODE & EFFECT ANALYSIS (FMEA)

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**IN THIS SECTION, YOU WILL LEARN:**

**CALCULATING THE RESULTING RPN**

**CREATING A SPIDER CHART**



## NEXT LECTURE

# CALCULATING THE RESULTING RPN



# CALCULATING THE RESULTING RPN

# CALCULATING THE RESULTING RPN

Business Function	Process step	Potential failure mode	N S e E w V	N O e C w C	N D e E w T	N R e P w N
Which Functional Department?	What is the step?	In what ways can the step go wrong?	10	10	10	1000

**AFTER THE CORRECTIVE ACTIONS HAVE BEEN EXECUTED, THE RESULTING SOD RANKINGS SHOULD BE RE-ESTIMATED**

**THEN THE RESULTING RPN SHOULD BE RE-CALCULATED AND RECORDED**

**IF NO ACTIONS ARE TAKEN, THIS SECTION SHOULD BE LEFT BLANK**

# WHAT IS A RISK PRIORITY NUMBER (RPN)?

**AFTER THE SECTION IS COMPLETED, THE RESULTING RPN'S SHOULD BE EVALUATED, AND IF FURTHER ACTION IS DEEMED NECESSARY, STEPS FROM THE RECOMMENDED ACTIONS SECTIONS SHOULD BE REPEATED**

## **ACTIVITY: CREATE YOUR FMEA**

**FOR YOUR FMEA, YOU CAN WAIT UNTIL ALL ACTIONS GET IMPLEMENTED**

**ONCE IMPLEMENTED, YOU CAN RE-ESTIMATE THE RESULTING SOD RANKING & RECALCULATE THE RPN**

**RE-VISIT YOUR FMEA REGULARLY TO IDENTIFY AND DOCUMENT ANY ADDITIONAL FAILURE MODES**

**FMEA SHOULD BE A LIVING DOCUMENT AND THUS, MUST BE UPDATED REGULARLY**



# CONGRATULATIONS

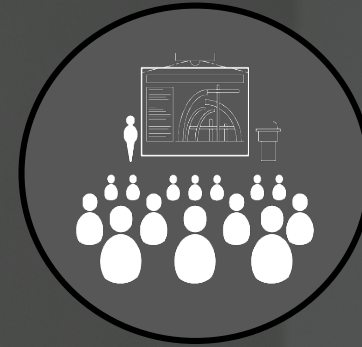


**IN THIS SECTION, YOU LEARNT:**

**CALCULATING THE RESULTING RPN**

**CREATING A SPIDER CHART**





## **SECTION INTRODUCTION**

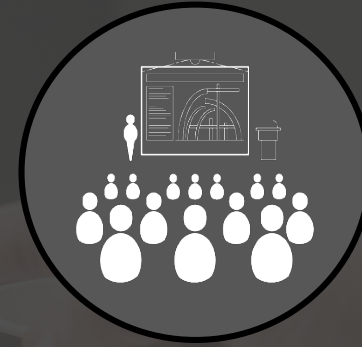
**WHAT ARE THE STEPS  
TO CONSTRUCT A  
FAILURE MODE AND  
EFFECT ANALYSIS?**

# FAILURE MODE & EFFECT ANALYSIS (FMEA)

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# WHAT ARE THE STEPS TO CONSTRUCT A FAILURE MODE AND EFFECT ANALYSIS?



# STEPS TO CONSTRUCT FMEA

1

**ASSEMBLE A CROSS-FUNCTIONAL TEAM**

2

**IDENTIFY THE SCOPE OF FMEA**

3

**FILL IN THE IDENTIFYING INFORMATION AT THE TOP OF YOUR FMEA FORM**

4

**IDENTIFY THE FUNCTIONS OF YOUR SCOPE & PROCESS STEPS**

5

**FOR EACH FUNCTION, IDENTIFY THE POTENTIAL FAILURE MODES**

6

**FOR EACH FAILURE MODE, IDENTIFY THE POTENTIAL FAILURE EFFECTS**

7

**DETERMINE HOW SERIOUS EACH EFFECT IS**

8

**FOR EACH FAILURE MODE, DETERMINE ALL THE POTENTIAL ROOT CAUSES**

9

**FOR EACH CAUSE, DETERMINE THE OCCURRENCE RATING**

10

**FOR EACH CAUSE, IDENTIFY CURRENT PROCESS CONTROLS**

11

**FOR EACH CONTROL, DETERMINE THE DETECTION RATING**

12

**CALCULATE THE RISK PRIORITY NUMBER (RPN)**

13

**IDENTIFY RECOMMENDED ACTIONS**

14

**CONTINUE TO RE-EVALUATE THE RISKS AND FAILURES IN YOUR BUSINESS PROCESS**

# 1. ASSEMBLE A CROSS-FUNCTIONAL TEAM

## ASSEMBLE A CROSS-FUNCTIONAL TEAM OF PEOPLE WITH DIVERSE KNOWLEDGE

### MANUFACTURING FUNCTIONS OFTEN INCLUDED ARE:

DESIGN

MANUFACTURING

QUALITY

TESTING

RELIABILITY

MAINTENANCE

PURCHASING  
(& SUPPLIERS)

SALES

MARKETING

CUSTOMER  
SERVICE

### SERVICE INDUSTRY FUNCTIONS INCLUDED ARE:

OPERATIONS

TRAINING

FINANCE

MIS

QUALITY

TRANSITION

CUSTOMER  
SUPPORT

## **2. IDENTIFY THE SCOPE OF FMEA**

**IS IT FOR CONCEPT, SYSTEM, DESIGN, PROCESS, OR SERVICE?**

**WHAT ARE THE BOUNDARIES?**

**HOW DETAILED SHOULD WE BE?**

**USE FLOWCHARTS TO IDENTIFY THE SCOPE AND TO MAKE SURE EVERY TEAM MEMBER UNDERSTANDS IT IN DETAIL**

### 3. FILL IDENTIFYING INFORMATION

#### **FILL IN THE:**

- **PROJECT TITLE**
- **DATE WHEN THE FMEA WAS CREATED**
- **FMEA TEAM MEMBER NAMES AND**
- **THE NAMES OF INDIVIDUALS INVOLVED IN CREATING FMEA WORKSHEET**

## **4. IDENTIFY THE FUNCTIONS OF YOUR SCOPE**

**IDENTIFY WHICH FUNCTIONAL DEPARTMENTS WOULD YOU BE CREATING YOUR FMEA**

**YOU CAN ALSO DOCUMENT THE PROCESS STEPS**



## 5. IDENTIFY THE POTENTIAL FAILURE MODES

**BRAINSTORM THE POTENTIAL FAILURE MODES OF EACH STEP OR EACH FUNCTIONAL DEPARTMENT**

## 6. IDENTIFY THE POTENTIAL FAILURE EFFECTS

**IDENTIFY THE POTENTIAL FAILURE EFFECTS ON:**

**SYSTEM**

**RELATED SYSTEMS**

**PROCESS**

**RELATED PROCESSES**

**PRODUCT**

**SERVICE**

**CUSTOMER**

**REGULATIONS**

**"WHAT DOES THE CUSTOMER EXPERIENCE BECAUSE OF THIS FAILURE?"**

**"WHAT HAPPENS WHEN THIS FAILURE OCCURS?"**

## 7. DETERMINE HOW SERIOUS EACH EFFECT IS

**THIS IS THE SEVERITY RATING**

**SEVERITY IS USUALLY RATED ON A SCALE FROM 1 TO 10, WHERE 1 IS INSIGNIFICANT AND 10 IS CATASTROPHIC**

## **8. DETERMINE ALL THE POTENTIAL ROOT CAUSES**

**USE TOOLS CLASSIFIED AS ROOT CAUSE ANALYSIS TOOLS, AS WELL AS THE BEST KNOWLEDGE AND EXPERIENCE OF THE TEAM**

**LIST ALL POSSIBLE CAUSES FOR EACH FAILURE MODE ON THE FMEA FORM**

## 9. DETERMINE THE OCCURRENCE RATING

**THIS RATING ESTIMATES THE PROBABILITY OF FAILURE OCCURRING FOR THAT REASON DURING THE LIFETIME OF YOUR SCOPE**

**OCCURRENCE IS USUALLY RATED ON A SCALE FROM 1 TO 10, WHERE 1 IS EXTREMELY UNLIKELY AND 10 IS INEVITABLE**

**ON THE FMEA TABLE, LIST THE OCCURRENCE RATING FOR EACH CAUSE**



## 10. IDENTIFY CURRENT PROCESS CONTROLS

**THESE ARE TESTS, PROCEDURES OR MECHANISMS THAT YOU NOW HAVE IN PLACE TO KEEP FAILURES FROM REACHING THE CUSTOMER**

**THESE CONTROLS MIGHT PREVENT THE CAUSE FROM HAPPENING, REDUCE THE LIKELIHOOD THAT IT WILL HAPPEN OR DETECT FAILURE AFTER THE CAUSE HAS ALREADY HAPPENED BUT BEFORE THE CUSTOMER IS AFFECTED**

## **11. DETERMINE THE DETECTION RATING**

**THIS RATING ESTIMATES HOW WELL THE CONTROLS CAN DETECT ITS FAILURE MODE AFTER THEY HAVE HAPPENED**

**DETECTION IS USUALLY RATED ON A SCALE FROM 1 TO 10**

**1 MEANS THE CONTROL IS ABSOLUTELY CERTAIN TO DETECT THE PROBLEM**

**10 MEANS THE CONTROL IS CERTAIN NOT TO DETECT THE PROBLEM (OR NO CONTROL EXISTS)**

**ON THE FMEA TABLE, LIST THE DETECTION RATING FOR EACH CAUSE**

## 12. CALCULATE THE RISK PRIORITY NUMBER

$$\text{RPN} = \text{S} \times \text{O} \times \text{D}$$

**RPN PROVIDES GUIDANCE FOR RANKING POTENTIAL FAILURES IN THE ORDER THEY SHOULD BE ADDRESSED**

## 13. IDENTIFY RECOMMENDED ACTIONS

**THESE ACTIONS MAY BE DESIGN OR PROCESS CHANGES TO LOWER OCCURRENCE**

**THEY MAY BE ADDITIONAL CONTROLS TO IMPROVE DETECTION**

**ALSO NOTE WHO IS RESPONSIBLE FOR THE ACTIONS AND TARGET COMPLETION DATES**

## 14. CONTINUE TO RE-EVALUATE

**AS ACTIONS ARE COMPLETED, NOTE RESULTS AND THE DATE ON THE FMEA FORM**

**ALSO, NOTE NEW S, O, OR D RATINGS AND NEW RPNS**

**CONTINUE TO RE-EVALUATE THE RISKS AND FAILURES IN YOUR BUSINESS PROCESS**





## **SECTION INTRODUCTION**

**WHAT ARE THE  
BENEFITS AND  
SHORTCOMINGS OF  
USING FMEA?**

# FAILURE MODE & EFFECT ANALYSIS (FMEA)

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# BENEFITS OF FMEA

1

**CONDUCTS A SYSTEMATIC  
REVIEW OF  
FAILURE MODES**

2

**DETERMINES THE IMPACT  
OF THE FAILURE MODE**

3

**DETERMINES THE PROCESS  
STEPS WHOSE FAILURE  
WILL HAVE CRITICAL  
EFFECTS**

4

**CALCULATES THE  
PROBABILITIES OF  
FAILURES**

5

**HELPS IN SETTING UP TEST  
PROGRAM REQUIREMENTS  
TO DECIDE FAILURE MODE**

6

**HELPS ESTABLISH TEST  
PROGRAM REQUIREMENTS  
TO CONFIRM EXACT  
FORECASTS OF RELIABILITY**

7

**HELPS COLLECT INPUT  
DATA TO UNDERSTAND  
THE IMPACT OF CHANGES**

8

**DETERMINES WHICH ARE  
THE COMPONENTS THAT  
HAVE A HIGH FAILURE  
RATE**

9

**HELPS ELIMINATE  
ADVERSE IMPACT THAT A  
BUSINESS OPERATIONS  
COULD CREATE**

10

**HELPS REVEAL  
OVERSIGHTS,  
MISINTERPRETATIONS,  
ERRORS OR EVEN  
BLUNDERS**

11

**HELPS TO REDUCE THE  
TIME TAKEN TO DEVELOP  
AND IMPLEMENT BAU  
OPERATIONS**





# WHAT ARE THE SHORTCOMINGS OF USING FMEA?

# SHORTCOMINGS OF FMEA

1

**FMEA IS ONLY AS GOOD  
AS THE TEAM BEHIND IT**

2

**ISSUES BEYOND TEAM  
MEMBER KNOWLEDGE  
AREN'T LIKELY TO BE  
DETECTED OR RESOLVED**

3

**IF THE TEAM FORGETS TO  
LIST FAILURE MODES,  
THEY'LL BE IGNORED**

4

**IF THE TEAM DOESN'T  
FOCUS ON DETAILS, MANY  
FAILURE MODES WILL BE  
MISSED**

5

**TOO MANY DETAILS MAY  
MAKE THE ANALYSIS SEEM  
A DAUNTING TASK**

6

**FMEA IS GENERALLY  
TREATED AS A STATIC  
DOCUMENT**





# **COURSE SUMMARY & CONCLUSION**

# FAILURE MODE & EFFECT ANALYSIS (FMEA)

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## **SECTION: WHAT IS FMEA?**

**WHAT IS A FAILURE MODE AND EFFECT ANALYSIS?**

**WHY AND WHEN TO USE FMEA?**

**THE HISTORY OF FMEA**

**WHAT ARE THE TYPES OF FMEA?**

**WHAT IS A PROCESS FMEA?**

# WHAT ARE THE 6 STAGES OF FMEA?

1

## IDENTIFYING THE FAILURE AND SPECIFYING THE SEVERITY OF IT

- a. Discuss different steps and activities
- b. Brainstorm potential failure modes
- c. Document potential failure effects
- d. Assign a severity ranking to each failure mode

2

## SPECIFYING THE OCCURRENCE OF FAILURE

- a. Identify potential causes of each failure mode
- b. Assign an occurrence ranking

3

## SPECIFYING THE DETECTABILITY OF FAILURE

- a. Identify the current process controls of each failure mode
- b. Assign a Detection rating

4

## QUANTIFYING RISK

- a. Calculate Risk Priority number for each failure mode

5

## CORRECTING HIGH RISK SITUATIONS

- a. Document recommended actions
- b. Assign the responsibility and target date for eliminating or mitigating high risk/high severity failure modes

6

## RE-EVALUATING THE RISK

- a. After completing the identified actions, document the specific actions
- b. Revise the severity, occurrence and detection ratings
- c. Calculate the new RPN number



# SECTION: STAGE 01 OF FMEA

## TOP SECTION OF FMEA:

Failure modes and effects analysis (FMEA)				
Project:	Write the Title of Your Project		Date:	Update the date
FMEA Team:	Write the Names of Team Members involved to Create this FMEA		Prepared by:	Write the Names of Individuals who prepared this worksheet

## DIFFERENT COMPONENTS OF STAGE 01:

Business Function	Process step	Potential failure mode	Potential failure effects	S E V
Which Functional Department?	What is the step?	In what ways can the step go wrong?	What is the impact on the customer if the failure mode is not prevented or corrected?	10



# FAILURE MODE & EFFECT ANALYSIS (FMEA)

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ACTIVITY SOLUTION: WHAT IS FMEA?	ACTIVITY SOLUTION: STAGE 01		
SECTION CONCLUSION	SECTION CONCLUSION		
STAGE 04 AND 05: QUANTIFYING RISK AND CORRECTING HIGH RISK SITUATIONS	STAGE 06: REEVALUATING THE RISK AND VISUALIZING YOUR FMEA	WHAT ARE THE STEPS TO CONSTRUCT AN FMEA?	WHAT ARE THE BENEFITS AND SHORTCOMINGS OF FMEA?
SECTION INTRODUCTION	SECTION INTRODUCTION	SECTION INTRODUCTION	SECTION INTRODUCTION
WHAT IS RPN?	CALCULATING THE RESULTING RPN	WHAT ARE THE STEPS TO CONSTRUCT FMEA? P1	WHAT ARE THE BENEFITS OF FMEA?
WHAT ARE ACTIONS RECOMMENDED?	CREATING A SPIDER CHART	WHAT ARE THE STEPS TO CONSTRUCT FMEA? P2	WHAT ARE THE SHORTCOMINGS OF FMEA?
WHAT IS RESPONSIBILITY, TARGET COMPLETION DATES AND ACTIONS TAKEN?	SECTION CONCLUSION		
SECTION CONCLUSION			

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## SECTION: STAGE 02 OF FMEA

Business Function	Process step	Potential failure mode	Potential causes	O C C
Which Functional Department?	What is the step?	In what ways can the step go wrong?	What causes the step to go wrong? (i.e., How could the failure mode occur?)	10

**WHAT ARE THE POTENTIAL CAUSES?**

**WHAT IS THE OCCURRENCE RATING?**

# FAILURE MODE & EFFECT ANALYSIS (FMEA)

WHAT IS FMEA?	STAGE 01: IDENTIFYING THE FAILURE MODE AND SPECIFYING ITS SEVERITY	STAGE 02: SPECIFYING THE OCCURRENCE OF FAILURE	STAGE 03: SPECIFYING THE DETECTABILITY OF FAILURE
SECTION INTRODUCTION	SECTION INTRODUCTION	SECTION INTRODUCTION	SECTION INTRODUCTION
WHAT IS A FAILURE MODE & EFFECT ANALYSIS?	WHAT ARE THE 6 DIFFERENT STAGES OF FMEA?	WHAT ARE THE POTENTIAL CAUSES?	WHAT ARE THE CURRENT PROCESS CONTROLS?
WHY AND WHEN TO USE FMEA?	PROCESS FMEA: TOP SECTION	WHAT IS THE OCCURRENCE RATING?	WHAT IS THE DETECTABILITY RATING?
THE HISTORY OF FMEA	WHAT ARE THE COMPONENTS OF STAGE 01? P1	ACTIVITY: STAGE 02	ACTIVITY: STAGE 03
WHAT ARE THE TYPES OF FMEA?	WHAT ARE THE COMPONENTS OF STAGE 01? P2	ACTIVITY SOLUTION: STAGE 02	ACTIVITY SOLUTION: STAGE 03
WHAT IS A PROCESS FMEA?	WHAT ARE THE COMPONENTS OF STAGE 01? P3	SECTION CONCLUSION	SECTION CONCLUSION
ACTIVITY: WHAT IS FMEA?	ACTIVITY: STAGE 01		
ACTIVITY SOLUTION: WHAT IS FMEA?	ACTIVITY SOLUTION: STAGE 01		
SECTION CONCLUSION	SECTION CONCLUSION		
STAGE 04 AND 05: QUANTIFYING RISK AND CORRECTING HIGH RISK SITUATIONS	STAGE 06: REEVALUATING THE RISK AND VISUALIZING YOUR FMEA	WHAT ARE THE STEPS TO CONSTRUCT AN FMEA?	WHAT ARE THE BENEFITS AND SHORTCOMINGS OF FMEA?
SECTION INTRODUCTION	SECTION INTRODUCTION	SECTION INTRODUCTION	SECTION INTRODUCTION
WHAT IS RPN?	CALCULATING THE RESULTING RPN	WHAT ARE THE STEPS TO CONSTRUCT FMEA? P1	WHAT ARE THE BENEFITS OF FMEA?
WHAT ARE ACTIONS RECOMMENDED?	CREATING A SPIDER CHART	WHAT ARE THE STEPS TO CONSTRUCT FMEA? P2	WHAT ARE THE SHORTCOMINGS OF FMEA?
WHAT IS RESPONSIBILITY, TARGET COMPLETION DATES AND ACTIONS TAKEN?	SECTION CONCLUSION		
SECTION CONCLUSION			

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# SECTION: STAGE 03 OF FMEA

Business Function	Process step	Potential failure mode	Current process controls	D E T
Which Functional Department?	What is the step?	In what ways can the step go wrong?	What are the existing controls that either prevent the failure mode from occurring or detect it should it occur?	10

**WHAT ARE THE CURRENT PROCESS CONTROLS?**

**WHAT IS THE DETECTION RATING?**

# FAILURE MODE & EFFECT ANALYSIS (FMEA)

WHAT IS FMEA?	STAGE 01: IDENTIFYING THE FAILURE MODE AND SPECIFYING ITS SEVERITY	STAGE 02: SPECIFYING THE OCCURRENCE OF FAILURE	STAGE 03: SPECIFYING THE DETECTABILITY OF FAILURE
SECTION INTRODUCTION	SECTION INTRODUCTION	SECTION INTRODUCTION	SECTION INTRODUCTION
WHAT IS A FAILURE MODE & EFFECT ANALYSIS?	WHAT ARE THE 6 DIFFERENT STAGES OF FMEA?	WHAT ARE THE POTENTIAL CAUSES?	WHAT ARE THE CURRENT PROCESS CONTROLS?
WHY AND WHEN TO USE FMEA?	PROCESS FMEA: TOP SECTION	WHAT IS THE OCCURRENCE RATING?	WHAT IS THE DETECTABILITY RATING?
THE HISTORY OF FMEA	WHAT ARE THE COMPONENTS OF STAGE 01? P1	ACTIVITY: STAGE 02	ACTIVITY: STAGE 03
WHAT ARE THE TYPES OF FMEA?	WHAT ARE THE COMPONENTS OF STAGE 01? P2	ACTIVITY SOLUTION: STAGE 02	ACTIVITY SOLUTION: STAGE 03
WHAT IS A PROCESS FMEA?	WHAT ARE THE COMPONENTS OF STAGE 01? P3	SECTION CONCLUSION	SECTION CONCLUSION
ACTIVITY: WHAT IS FMEA?	ACTIVITY: STAGE 01		
ACTIVITY SOLUTION: WHAT IS FMEA?	ACTIVITY SOLUTION: STAGE 01		
SECTION CONCLUSION	SECTION CONCLUSION		
STAGE 04 AND 05: QUANTIFYING RISK AND CORRECTING HIGH RISK SITUATIONS	STAGE 06: REEVALUATING THE RISK AND VISUALIZING YOUR FMEA	WHAT ARE THE STEPS TO CONSTRUCT AN FMEA?	WHAT ARE THE BENEFITS AND SHORTCOMINGS OF FMEA?
SECTION INTRODUCTION	SECTION INTRODUCTION	SECTION INTRODUCTION	SECTION INTRODUCTION
WHAT IS RPN?	CALCULATING THE RESULTING RPN	WHAT ARE THE STEPS TO CONSTRUCT FMEA? P1	WHAT ARE THE BENEFITS OF FMEA?
WHAT ARE ACTIONS RECOMMENDED?	CREATING A SPIDER CHART	WHAT ARE THE STEPS TO CONSTRUCT FMEA? P2	WHAT ARE THE SHORTCOMINGS OF FMEA?
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SECTION CONCLUSION			

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# SECTION: STAGE 04 & 05 OF FMEA

Business Function	Process step	S E V	O C C	D E T	R P N	Actions recommended	Responsibility (target date)
Which Functional Department?	What is the step?	10	10	10	1000	What are the actions for reducing the occurrence of the cause or for improving its detection? You should provide actions on all high RPNs and on severity ratings of 9 or 10.	Who is responsible for the recommended action? What date should it be completed by?

**WHAT IS A RISK PRIORITY NUMBER?**

**WHAT ARE THE ACTIONS RECOMMENDED?**

**WHAT IS THE RESPONSIBILITY, TARGET COMPLETION DATES AND ACTIONS TAKEN?**

# FAILURE MODE & EFFECT ANALYSIS (FMEA)

WHAT IS FMEA?	STAGE 01: IDENTIFYING THE FAILURE MODE AND SPECIFYING ITS SEVERITY	STAGE 02: SPECIFYING THE OCCURRENCE OF FAILURE	STAGE 03: SPECIFYING THE DETECTABILITY OF FAILURE
SECTION INTRODUCTION	SECTION INTRODUCTION	SECTION INTRODUCTION	SECTION INTRODUCTION
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WHY AND WHEN TO USE FMEA?	PROCESS FMEA: TOP SECTION	WHAT IS THE OCCURRENCE RATING?	WHAT IS THE DETECTABILITY RATING?
THE HISTORY OF FMEA	WHAT ARE THE COMPONENTS OF STAGE 01? P1	ACTIVITY: STAGE 02	ACTIVITY: STAGE 03
WHAT ARE THE TYPES OF FMEA?	WHAT ARE THE COMPONENTS OF STAGE 01? P2	ACTIVITY SOLUTION: STAGE 02	ACTIVITY SOLUTION: STAGE 03
WHAT IS A PROCESS FMEA?	WHAT ARE THE COMPONENTS OF STAGE 01? P3	SECTION CONCLUSION	SECTION CONCLUSION
ACTIVITY: WHAT IS FMEA?	ACTIVITY: STAGE 01		
ACTIVITY SOLUTION: WHAT IS FMEA?	ACTIVITY SOLUTION: STAGE 01		
SECTION CONCLUSION	SECTION CONCLUSION		
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WHAT IS RESPONSIBILITY, TARGET COMPLETION DATES AND ACTIONS TAKEN?	SECTION CONCLUSION		
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# SECTION: STAGE 06 OF FMEA

Business Function	Process step	Potential failure mode	N S e E w V	N O e C w C	N D e E w T	N R e P w N
Which Functional Department?	What is the step?	In what ways can the step go wrong?	10	10	10	1000

## CALCULATING THE RESULTING RPN

## CREATING A SPIDER CHART

# FAILURE MODE & EFFECT ANALYSIS (FMEA)

WHAT IS FMEA?	STAGE 01: IDENTIFYING THE FAILURE MODE AND SPECIFYING ITS SEVERITY	STAGE 02: SPECIFYING THE OCCURRENCE OF FAILURE	STAGE 03: SPECIFYING THE DETECTABILITY OF FAILURE
SECTION INTRODUCTION	SECTION INTRODUCTION	SECTION INTRODUCTION	SECTION INTRODUCTION
WHAT IS A FAILURE MODE & EFFECT ANALYSIS?	WHAT ARE THE 6 DIFFERENT STAGES OF FMEA?	WHAT ARE THE POTENTIAL CAUSES?	WHAT ARE THE CURRENT PROCESS CONTROLS?
WHY AND WHEN TO USE FMEA?	PROCESS FMEA: TOP SECTION	WHAT IS THE OCCURRENCE RATING?	WHAT IS THE DETECTABILITY RATING?
THE HISTORY OF FMEA	WHAT ARE THE COMPONENTS OF STAGE 01? P1	ACTIVITY: STAGE 02	ACTIVITY: STAGE 03
WHAT ARE THE TYPES OF FMEA?	WHAT ARE THE COMPONENTS OF STAGE 01? P2	ACTIVITY SOLUTION: STAGE 02	ACTIVITY SOLUTION: STAGE 03
WHAT IS A PROCESS FMEA?	WHAT ARE THE COMPONENTS OF STAGE 01? P3	SECTION CONCLUSION	SECTION CONCLUSION
ACTIVITY: WHAT IS FMEA?	ACTIVITY: STAGE 01		
ACTIVITY SOLUTION: WHAT IS FMEA?	ACTIVITY SOLUTION: STAGE 01		
SECTION CONCLUSION	SECTION CONCLUSION		
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# SECTION: 14 STEPS TO CONSTRUCT FMEA

1

**ASSEMBLE A CROSS-FUNCTIONAL TEAM**

2

**IDENTIFY THE SCOPE OF FMEA**

3

**FILL IN THE IDENTIFYING INFORMATION AT THE TOP OF YOUR FMEA FORM**

4

**IDENTIFY THE FUNCTIONS OF YOUR SCOPE & PROCESS STEPS**

5

**FOR EACH FUNCTION, IDENTIFY THE POTENTIAL FAILURE MODES**

6

**FOR EACH FAILURE MODE, IDENTIFY THE POTENTIAL FAILURE EFFECTS**

7

**DETERMINE HOW SERIOUS EACH EFFECT IS**

8

**FOR EACH FAILURE MODE, DETERMINE ALL THE POTENTIAL ROOT CAUSES**

9

**FOR EACH CAUSE, DETERMINE THE OCCURRENCE RATING**

10

**FOR EACH CAUSE, IDENTIFY CURRENT PROCESS CONTROLS**

11

**FOR EACH CONTROL, DETERMINE THE DETECTION RATING**

12

**CALCULATE THE RISK PRIORITY NUMBER (RPN)**

13

**IDENTIFY RECOMMENDED ACTIONS**

14

**CONTINUE TO RE-EVALUATE THE RISKS AND FAILURES IN YOUR BUSINESS PROCESS. FMEA IS A LIVING DOCUMENT**



# FAILURE MODE & EFFECT ANALYSIS (FMEA)

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**KEEP LEARNING & KEEP GROWING**