CMMI Requirements Development (RD)

Listening to the Voice of the Customer

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- improve quality and productivity
- reduce operating costs

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- capture the market with high quality products and services
- help you become the industry standard by which your competitors measure themselves

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Objectives

Review CMMI RD Process Area, specifically how to develop customer requirements (Specific Goal 1).

Provide an overview of how Juran's version of Quality Function Deployment (QFD) can be used to identify the different customer(s) and their needs.

Review a practical spreadsheet *(Juran's product design spreadsheet)* to capture the the needs of the customer.

Answer any of your questions.

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Agenda

RD Process Area (CMMI)

Juran's version of QFD

Identify Customers

Discover Customer Needs

Summary

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RD Specific Goals

Purpose: The purpose of Requirements Development (RD) is to produce and analyze customer, product, and product component requirements.

Specific Goal 1: Develop Customer Requirements*

Specific Goal 2: Develop Product Requirements

Specific Goal 3: Analyze and Validate Requirements

• **Reference: "CMMI -SE/SW/IPPD, V1.02 - Continuous Representation" ,CMU/ SEI-2000-TR-031**

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SG 1 - Develop Customer Requirements

<u>SP 1.1-1</u>: Collect Stakeholder Needs

- may not be in technical terms

<u>SP 1.1-2</u>: Elicit Needs

- proactively identify additional requirements/needs not explicitly provided by customer

<u>SP 1.2-1:</u> Transform Stakeholder Needs, Expectations, Constraints, and interfaces into Customer Requirements

- Document Customer Needs

- **Reference: "CMMI -SE/SW/IPPD, V1.02 - Continuous Representation" ,CMU/ SEI-2000-TR-031**

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QFD in a Nutshell

QFD is a pointed way of listening to customers to learn exactly what they want, and then using a logical system to determine how best to fulfill those needs with available resources

<u>QFD can be viewed by answering 3 questions:</u>

1. **What are the qualities the customer desires?**

2. **What function(s) must this product serve and what functions must we use to provide this product or service?**

3. **Based upon the resources we have available, how can we best provide what our customer wants?**

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Juran's version of QFD - 1

Juran's version of QFD

1. Identify Customers*

2. Discover Customer Needs*

3. Develop Product

4. Develop Process

5. Develop Process Controls/Transfer to Operations

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Juran's Version of QFD - 2

1. Identify Customers

- Construct high-level flow diagram
- Create List of all external customers
- Create List of all internal customers
- Prioritize customer lists

2. Discover Customer Needs *(*Difficult!)*

- Plan to collect customers' needs
- Collect list of customers' needs in their language
- Examine and prioritize customers' needs
- Translate their needs into your language
- Establish units of measurements and sensors

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Juran's Product Design Spreadsheet

					Product Features			
Customer	**Needs (1)**	**Translation**	**Unit of Measure**	**Sensor**	Feature 1	Feature 2	Feature ..	Feature N
					Goal 1	Goal 2	Goal 3	Goal 4
					Product Goals			

- Adapted from Juran, "Leadership for Quality", 1989

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Who Are Your Customers?

A customer is defined as anyone who is affected by the product or the process to create it.

<u>Generally there are two primary groups of customers:</u>

- **the <u>external</u> customers - those outside your organization**
- **the <u>internal</u> customers - those inside your organization**

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Identify Customers

Identify Customers:

- Construct high-level flow diagram
- Create List of all external customers
- Create List of all internal customers
- Prioritize customer lists

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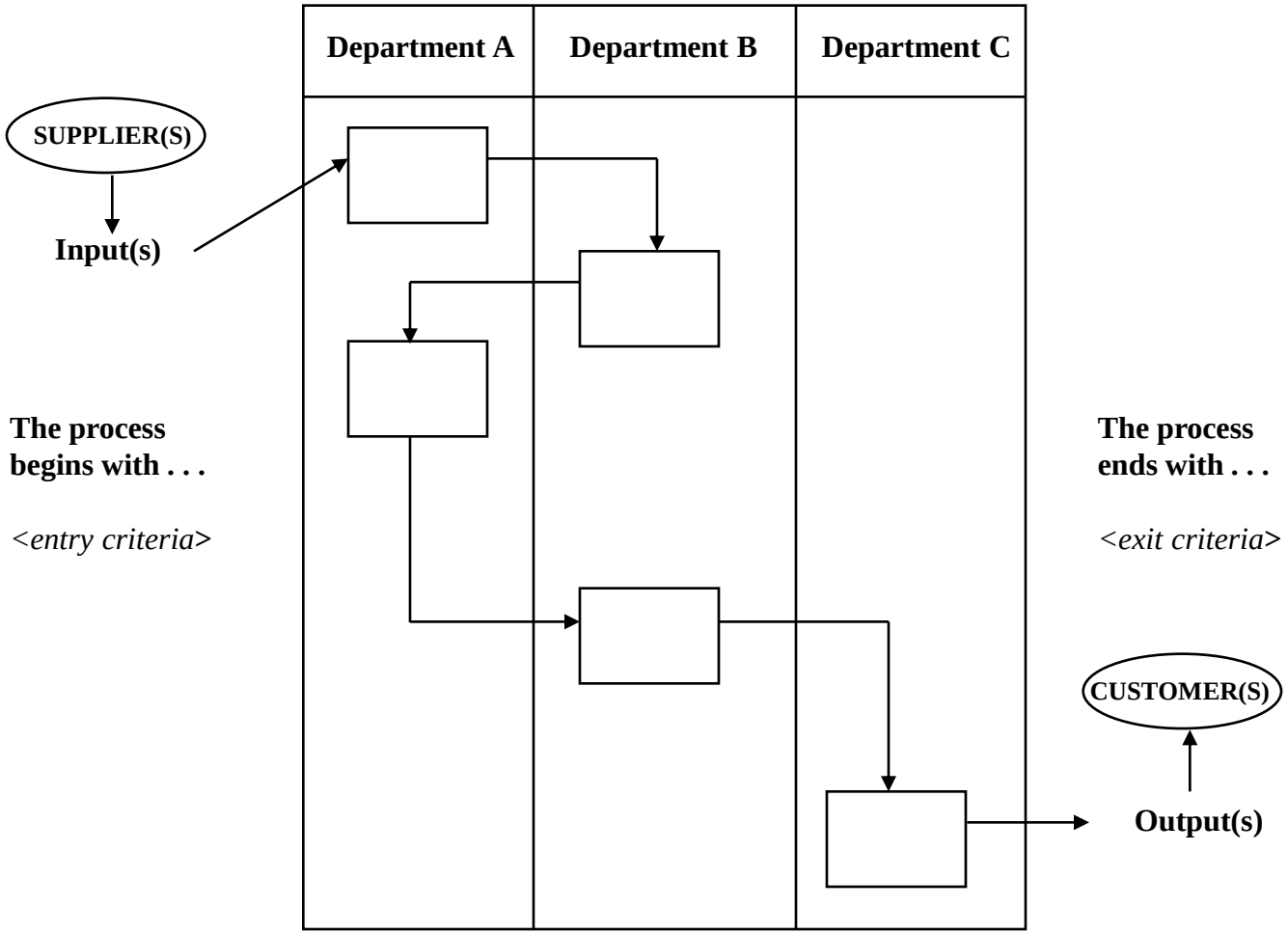
Construct High Level Flow Diagram

Purpose:



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Example: Family on Vacation

Customer	Needs (1)	Translation	Unit of Measure	Sensor
Father				
Mother				
Daughter				
(10)				
Son				
(14)				
Daughter				
(16)				
Other				

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Definitions of Customer Needs

Need *(Voice of the Customer)*:

- **A condition of desiring something; an issue to be resolved.**

Product Feature *(Voice of the Engineer):*

- **A property or characteristic possessed by a product; what it does.**

Benefit*:*

- **What the customer will gain or how his/her problem will be solved by possessing a particular product feature; what it does for the customer.**

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Discover Customer Needs

Discover Customer Needs *(*Difficult!)*

- **Plan to collect customers' needs**
- **Collect list of customers' needs in their language**
- **Examine and prioritize customers' needs**
- **Translate their needs into your language**
- **Establish units of measurements and sensors**

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Customer Satisfaction Study

FACTORS (IN ORDER OF IMPORTANCE)		Us	Them
EXTREME IMPORTANCE			
1.	SERVICE: SALES REPS ARE KNOWLEDGEABLE ABOUT THEIR BUSINESS	9.3 =	10.0
2.	AVAILABILITY: IS MAILING ON TIME, WHEN PROMISED	7.7 −−	9.5
3.	AVAILABILITY: NOTIFIES YOU IN ADVANCE WHEN A DEADLINE CANNOT BE MET	7.7 −−	9.7
4.	SERVICE: SALES REPS ARE RELIABLE	8.5 ++	7.5
5.	SERVICE: RESOLVES DIFFICULT SITUATIONS QUICKLY	8.2 =	7.8
ABOVE AVERAGE IMPORTANCE			
6.	SERVICE: CSRS RETURN CALLS ON A TIMELY BASIS	7.8 =	8.4
7.	PRODUCT: CONSISTENTLY MEETS MAILING SCHEDULES	7.1 −−	8.4
8.	SERVICE: CSRS GIVE YOU ACCURATE INFORMATION	8.5 ++	7.4
9.	SERVICE: CSRS ARE AVAILABLE WHEN YOU NEED THEM	8.2 =	8.0
10.	SERVICE: CSRS ARE RELIABLE	8.6 =	8.6
11.	PRICE: HAS COMPETITIVE PRICES	7.8 ++	5.3
12.	SERVICE: CONFIRMS VERBAL ORDERS IN WRITING IN A TIMELY FASHION	8.2 =	8.0
13.	SERVICE: WRITES CLEAR COMMUNICATIONS	8.4 +	7.4
14.	SERVICE: SALES REPS GIVE YOU ACCURATE INFORMATION	8.2 ++	5.5
15.	SERVICE: PROVIDES INVOICES THAT ARE COMPLETE AND ACCURATE	8.1 +	7.2
16.	SERVICE: SALES REPS RETURN CALLS ON A TIMELY BASIS	8.0 ++	5.1

BASED ON 32 AND 6 RESPONSES
RATINGS ON A 10 SCALE: 10 IS HIGHEST, 1 IS LOWEST; AVERAGE 7.6, SIGNIFICANCE .8

Voice of the Customer - 1

There are 4 levels of customer requirements:

Expecters:

- **The basic qualities you must offer to be competitive and remain in business are Expectors These are characteristics customers assume as part of the product or service.**

Spokens:

- **Specific features customers say they want in a product or service are Spokens. They are items a company is willing to provide to satisfy its customer.**

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Voice of the Customer - 2

Unspokens:

- **Product or service characteristics customers don't talk about are Unspokens. Unspokens fall into 3 groups:**
  - ***Didn't remember to tell you***
  - ***Didn't want to tell you***
  - ***Didn't know what it was***

Exciters:

- **Unexpected features of a product or service are Exciters. These features make the product unique and distinguish it from the competition.**

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Example: Customer Needs

Customer	Needs (1)	Translation	Unit of Measure	Sensor
Father	Not Work	No Office, No Phones	Interruptions	Diary
	Fun	Fishing, Water, Boats	Occasions	Diary
	Time with Kids	Individually	Hours	Diary
	Time with Kids	Alone	Evenings	Diary
Mother	Not Work	No Office, No Phones, No Domestic Resp.	Interruptions	Diary
(10)	Fun	Outdoors, Scenery, Nice Dinners, Dancing	Occasions	Diary
	Time with Kids		Hours	Diary
	Time with Husband	Alone	Evenings	Diary
Daughter	Fun	Horses, Movies, Other Kids	Complaints	Diary
(10)				
Son	Fun	Video Games, baseball, Scuba Diving, Surfing	Complaints	Diary
(14)				
Daughter	Fun	Boys, Dancing, Books, Nature	Complaints	Diary
(16)				
Other				

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PRODUCT DESIGN SPREADSHEET

Customer	Needs	Translation	Unit of Measure	Sensor	Product Features									
					Far Away	Limited Phone Access	Near Ocean	Maid Service	Restaurant	Lounge	Near Stables	Hiking Trails	Diving Shop Nearby	Charter Boats
Father	Not Work	No Office, No Phones	Interruptions	Diary	XX	XX								
	Fun	Fishing, Water, Boats	Occasions	Diary			XX							XX
	Time with Kids	Individually	Hours	Diary		X		O				X		
	Time with Wife	Alone	Evenings	Diary		X		XX	XX	X		X		
Mother	Not Work	No Office, No Phones, No Domestic Resp.	Interruptions	Diary	XX	XX		XX	XX					
	Fun	Outdoors, Scenery, Nice Dinners, Dancing	Occasions	Diary			X			XX		XX		
	Time with Kids		Hours	Diary		X		X	X			X		
	Time with Husband	Alone	Evenings	Diary		X		X	X	X		X		
Daughter (10)	Fun	Horses, Movies, Other Kids	Complaints	Diary							XX			
Son (14)	Fun	Video Games, Baseball, Scuba Diving, Surfing	Complaints	Diary			XX						XX	
Daughter (16)	Fun	Boys, Dancing, Books, Nature	Complaints	Diary			O			X		X		
					250 Miles	No Phones in Rooms	500 Yards	Daily	Bkfst & Dinner	7 Nights per Week	Walking Distance	5 Miles Long	Walking Distance	Walking Distance
					Product Goals									

Very Strong = XX

Strong = X

Weak = O

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Summary

There are basically 2 types of customers, internal and external, to consider when eliciting requirements.

An effective way of eliciting requirements is using Juran's version of QFD and the Product Design Spreadsheet.

It is important to distinguish the different voices of the customer *(i.e., product features versus customer needs).*

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One to Grow On

Most people listen

NOT

with the intent to understand

BUT

with the intent to reply

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Questions?

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One to Grow On

"The competitor to be feared is one who never bothers about you at all, but goes on making his own business better all the time."

(Henry Ford, Sr.)

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