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*Tool-of-the-Month Club: Critical to
Quality Tree*

Agenda



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- What are CTQ (Critical to Quality) and VOC (Voice of the Customer)?
- What is the CTQ Tree?
- Example of a CTQ Tree
- Step by Step COMPASS CTQ Tree
- Categorizing and Prioritizing Using Kano Analysis
- Next Steps



Voice of the Customer (VOC)

- Voice of the customer (VOC) is a term used to describe the in-depth process of capturing a customer's expectations, preferences, and aversions.
- Market research technique that produces a detailed set of customer wants and needs.
- Organized into a hierarchical structure.
- Prioritized in terms of relative importance and satisfaction with current alternatives.





CTQ (Critical To Quality)

- The key driver for VOC success is quantify and design to customer needs, wants, and expectations. This requires CTQ research:
 - Identification of the customer.
 - Clarification of customer needs and requirements.
 - Generation of appropriate metrics to evaluate performance.
 - Transition of quantified needs and metrics to design and features.





Critical to Quality

- Critical to Quality (CTQ) is primarily about learning what is important to the customers. Tools and technique examples used for gathering data include:
 - Surveys
 - Letters
 - Complaints
 - Published Reviews
 - Customer Demands
- The above are the Voice of the Customer.
- These must be Translated to Requirements.



Customer Requirements Statements

- ❑ Must Link to a Specific Output
- ❑ Must Describe a Single Performance Criterion
- ❑ Must Be Expressed Using Measurable or Observable Factors
- ❑ Must Establish a Level of Acceptable / Unacceptable Performance
- ❑ Must Be Validated By the Voice of the Customer (VOC)





When would we utilize this tool?

- When we are defining our problem and customer requirements for the process (Define Stage of DMAIC)
- When we are in the early stages of Developing/Designing a new service, process, or product.





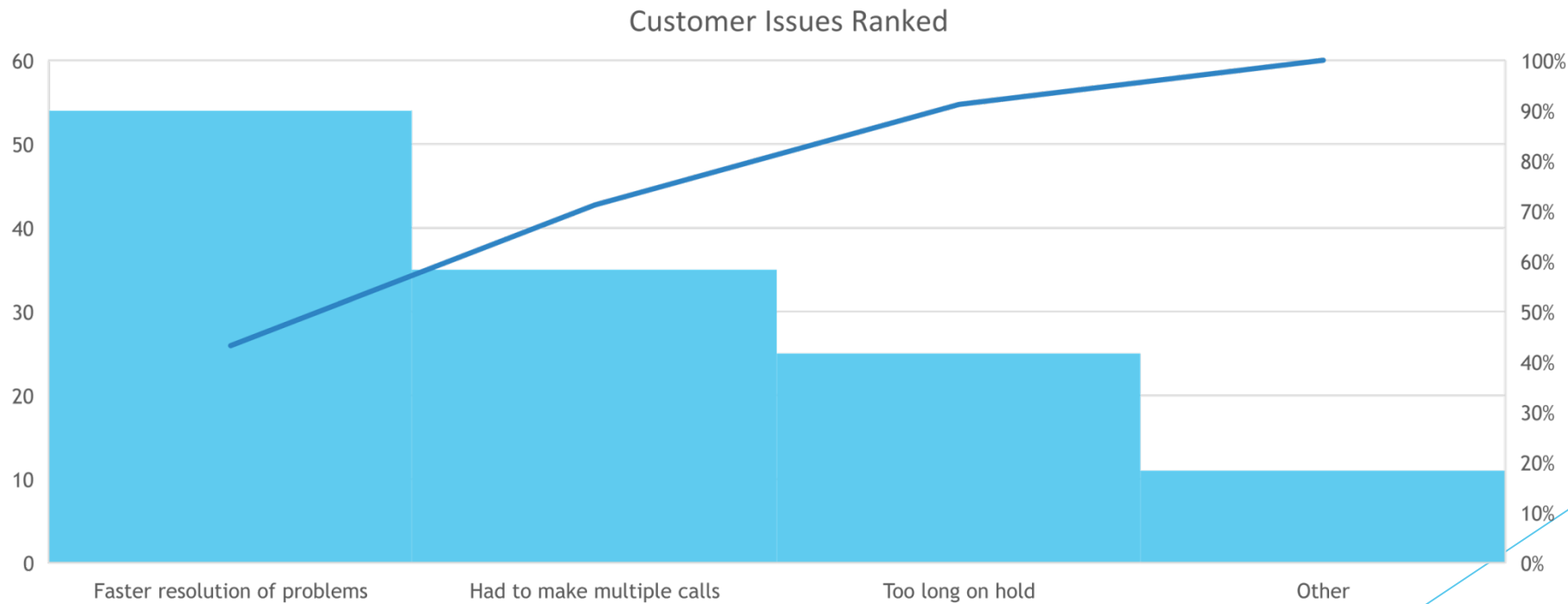
Which Customer Needs/VOC do we include when we work on this?

- We must prioritize using Pareto Analysis of our Customer Input (surveys, complaints, etc.)
- First, list and rank the feedback by theme
- Sort and combine similar feedback into a single issue.

Issue	Number of Customers Identifying Issue
Faster resolution of problems	54
Had to make multiple calls	35
Too long on hold	25
Other	11
Total	125

Which Customer Needs/VOC do we include when we work on this?

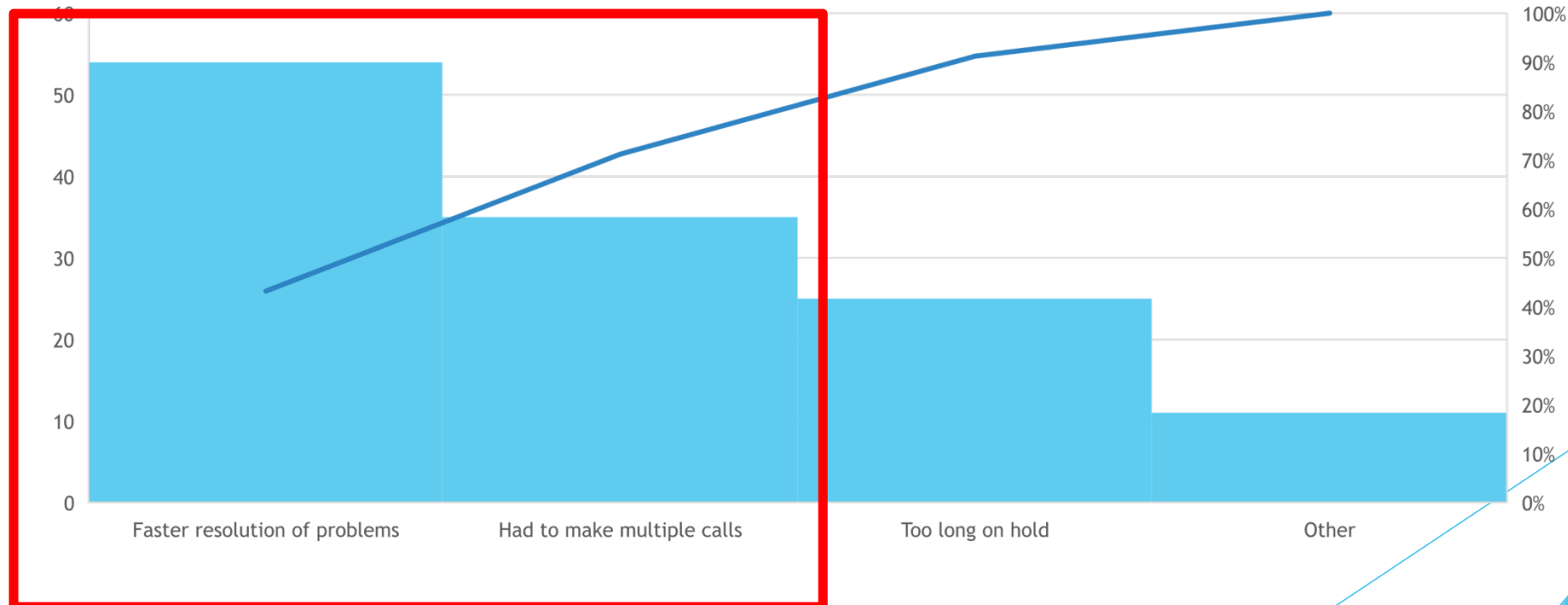
□ Next, Create a Pareto Chart



Which Customer Needs/VOC do we include when we work on this?

- Then, Select the top needs from which to create requirements using the CTQ chart.

Customer Issues Ranked



Begin Working on the CTQ Tree

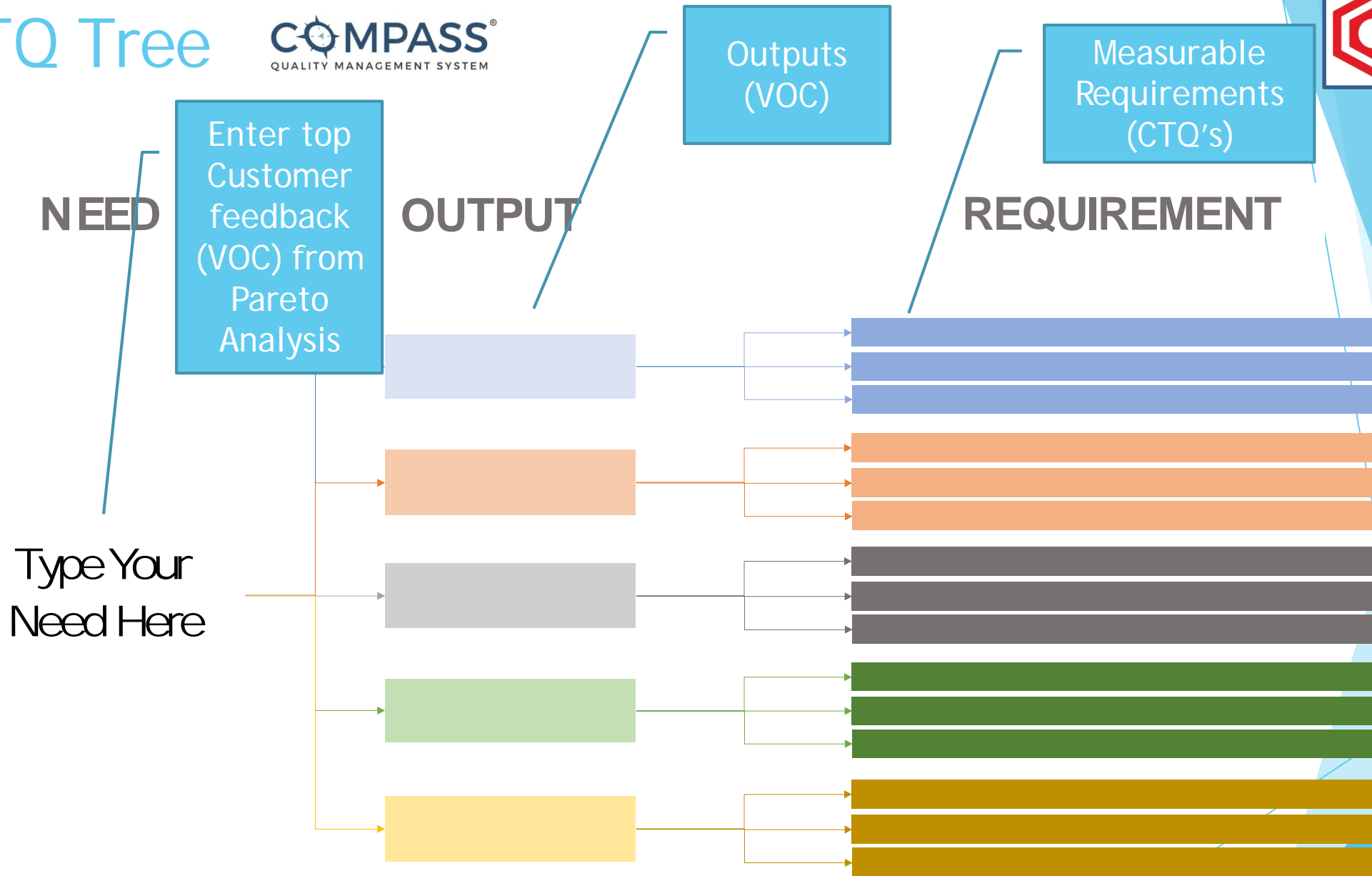


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The screenshot shows the Microsoft Excel interface with the following elements:

- Excel Ribbon:** File, Home, Insert, Draw, Page Layout, Formulas, Data, Review, View, Help, JMP, Acrobat.
- Font Group:** Lato font, size 11, bold (B), italic (I), underline (U), text color (A), background color (fill), bullet points, indent, decrease indent, increase indent, number (123), currency (\$), percentage (%), comma (,), decimal (0.00), thousands (0.00).
- Number Group:** General, Conditional Formatting, Format as Table, Cell Styles.
- Cells Group:** Insert, Delete, Format.
- Editing Group:** Sum (Σ), Sort & Filter (Z), Find & Select (magnifying glass).
- Formulas Bar:** B4, X, Y, Z.
- CTQ TREE Interface:**
 - CREATO Performance Solutions** logo on the left.
 - COMPASS QUALITY MANAGEMENT SYSTEM** logo on the right.
 - Instructions:**
 - Double click a need box to start editing details
 - If the images below don't refresh, go to Formulas on the toolbar, then click 'Calculate Now'
 - To add further needs, click the 'Add Need' link
 - Buttons:** Video Instructions, Copy, Add Need, Return to Compass.
 - Diagram Structure:** Two identical diagrams side-by-side. Each has three columns: NEED, OUTPUT, and REQUIREMENT. The NEED column has a box labeled 'Type Your Need Here'. The OUTPUT column has five colored boxes (blue, orange, grey, green, yellow). The REQUIREMENT column has five corresponding colored boxes. Lines connect the NEED box to the OUTPUT boxes, and each OUTPUT box to its corresponding REQUIREMENT box.

CTQ Tree



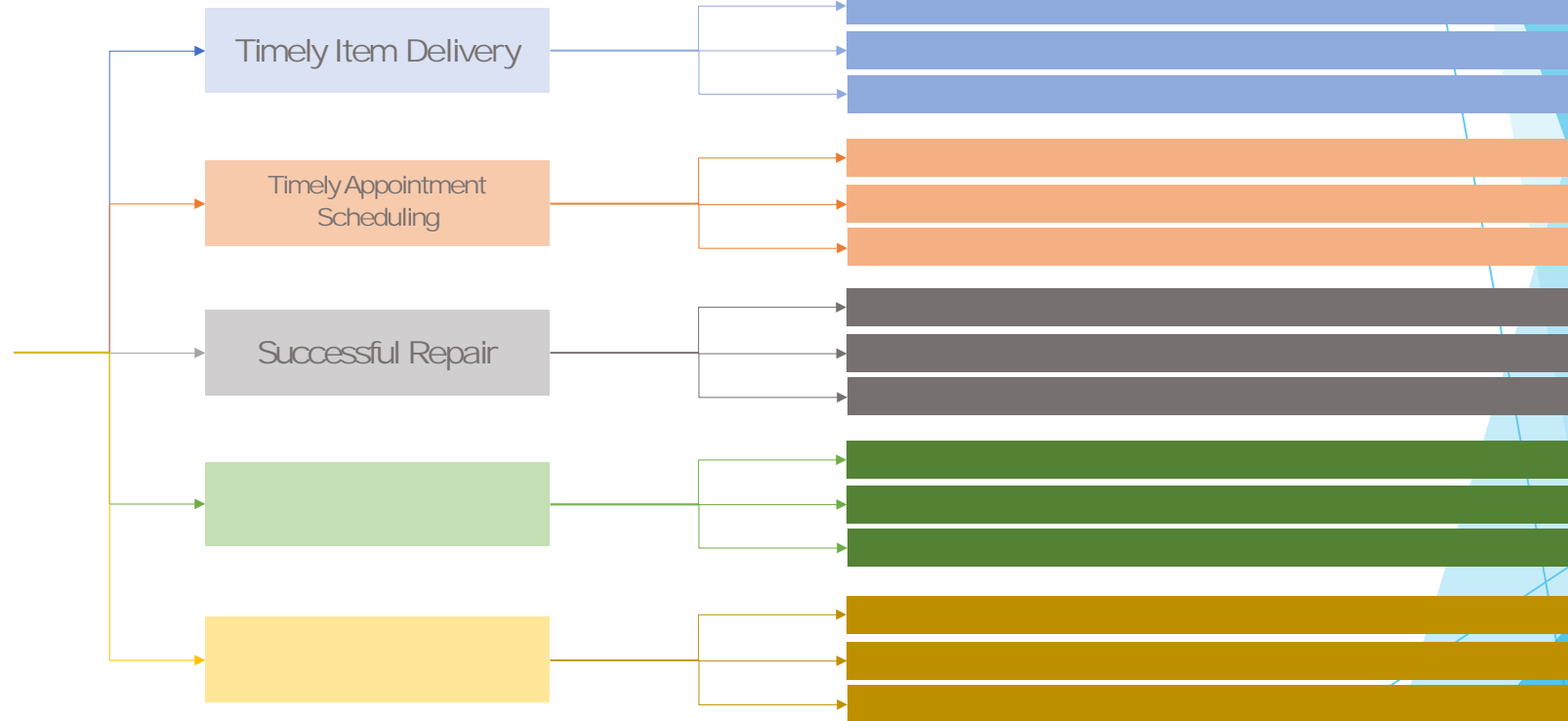
NEED

OUTPUT

Enter
Outputs
related to
need

REQUIREMENT

Fast Resolution of
Problems



Options

Return to CTQ
Tree

Return to
Compass

Writing Requirements Statements for Outputs



Poor Requirement Statement	Acceptable Requirement Statement
Treat Customers Like Family	Greet patrons within 30 seconds of entry into restaurant
Easy to fill out form	Form must take no more than 5 minutes on average to complete
Easy to assemble furniture	All chairs must be able to be assembled by any adult within 15 minutes using a maximum of 3 tools
Fast Delivery	Product delivered within 24 hours of customer order
Short Wait Time on Hold	Waiting time Must Not Exceed 60 seconds

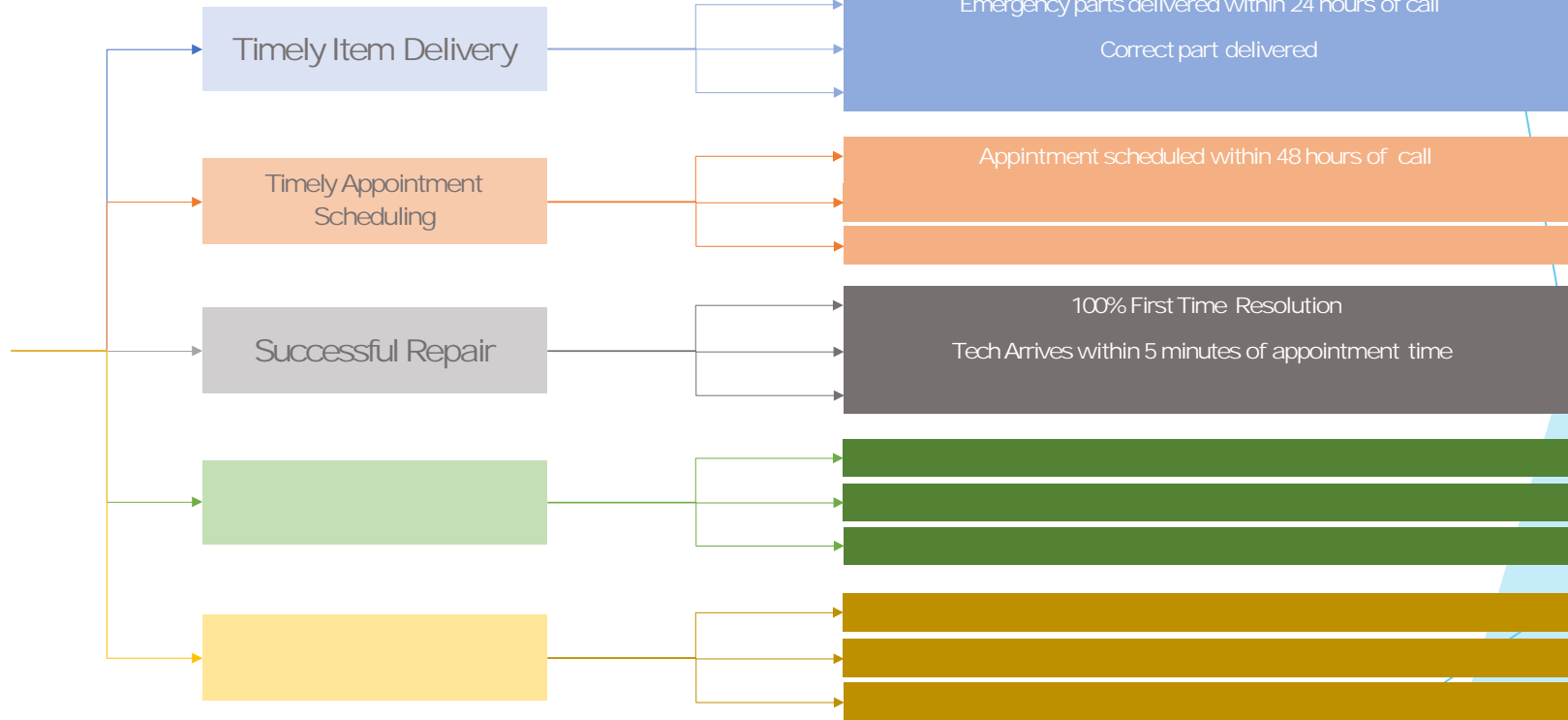
NEED

OUTPUT

REQUIREMENT

Write Requirement Statements for outputs

Fast Resolution of Problems



Options

Return to CTQ Tree

Return to Compass

Repeat this exercise for each major need



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CTQ TREE



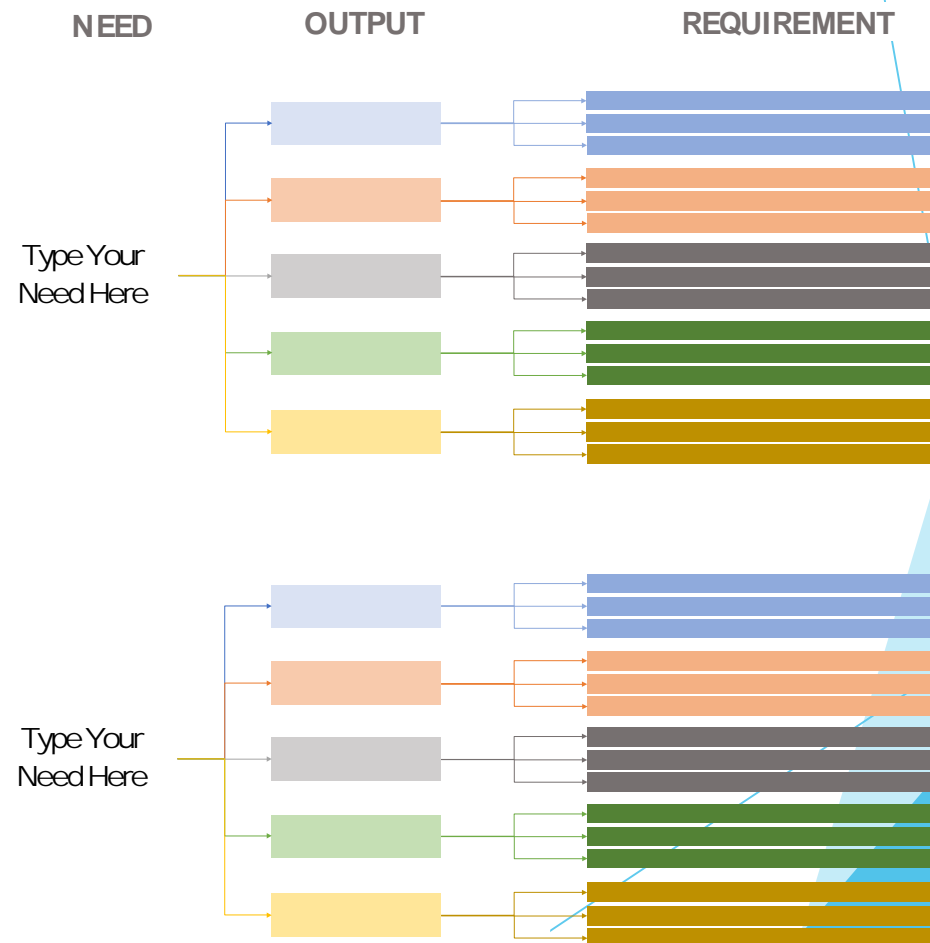
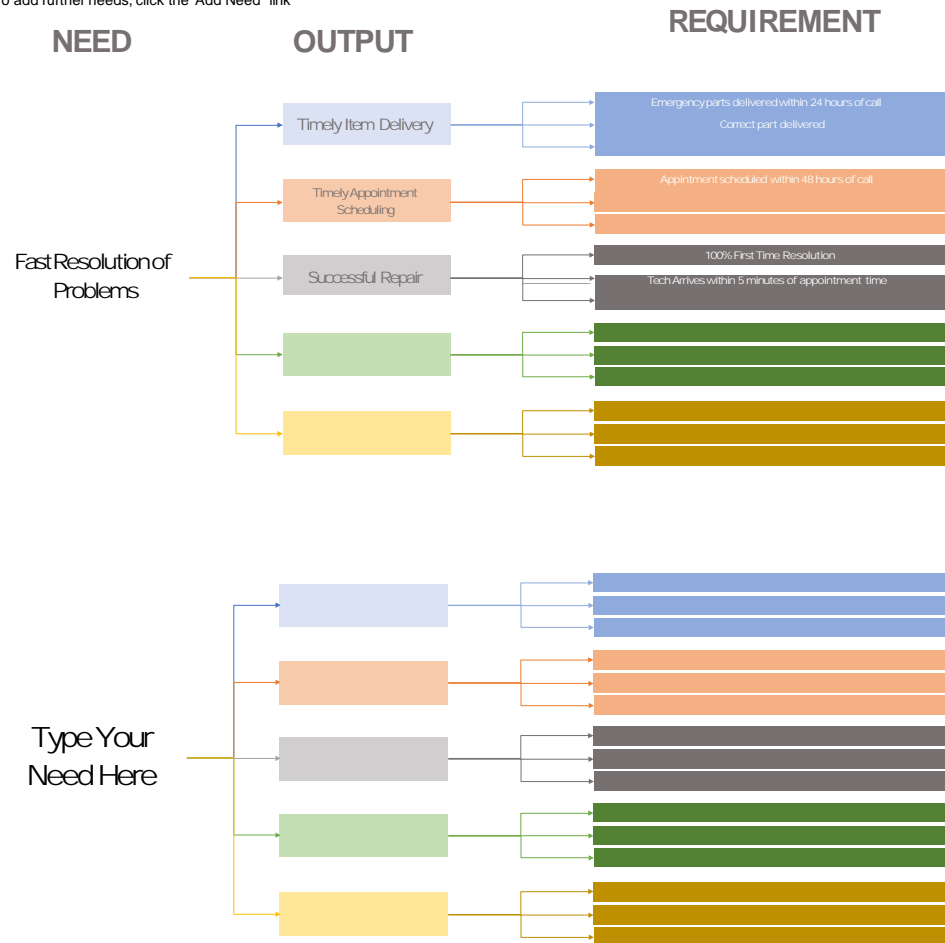
Instructions

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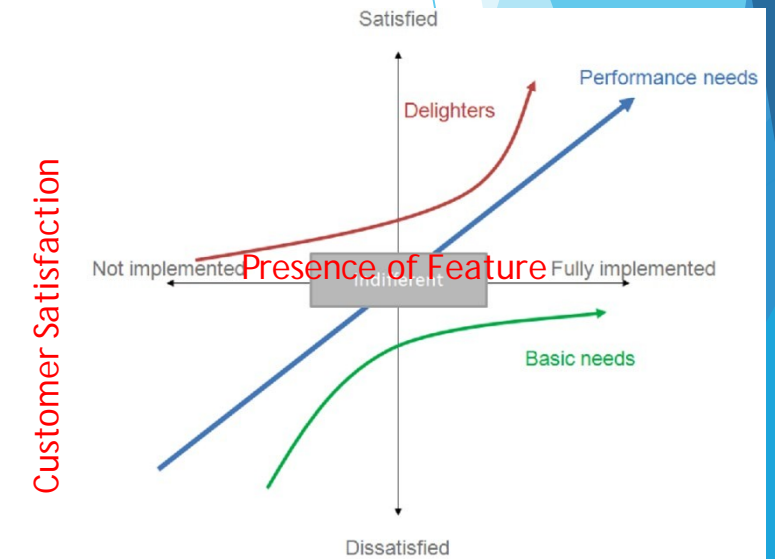
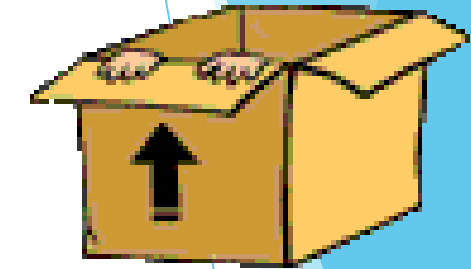
To add further needs, click the 'Add Need' link

[Video Instructions](#) [Copy](#) [Add Need](#) [Return to Compass](#)



Prioritize Requirements Using Kano Analysis

- **Basic Needs (Must Be/Dissatisfiers if Not Present)**
 - Features which are taken for granted, unless they are absent.
 - So basic that customers may fail to mention them.
 - Calls answered quickly, correct answers to questions, claims paid correctly & on-time, compliance rules
- **Performance Needs (More is Better)**
 - “Like to have/see”, “It would be nice”, ... features
 - Faster service, lower costs, fewer hassles, shorter queue times, improved turnaround
- **Delighters**
 - Generally not mentioned, since customers are not dissatisfied with their absence.
 - Very difficult to discover.
 - Beyond customer’s expectations but if you identify them, customers get excited.
 - Delighters today may be expected tomorrow.



Prioritize Requirements Using Kano Analysis



Output	Requirement	Must Be	More is Better	Delighter	Current Performance
Item Delivery	Emergency parts delivered within 24 hours of call		X		85% of cases parts are delivered within 24 hours
Item Delivery	Correct part delivered	X			95% of cases the correct part is delivered
Appointment Scheduling	Appointment scheduled within 48 hours of call	X			Appointments are available within 48 hours 60% of the time
Successful Repair	100% First Time Resolution		X		80% First Time Resolution in Previous 6 Months
Successful Repair	Tech Arrives within 5 minutes of appointment time		X		Not currently measured
Short Waiting Time on hold	On Hold Less than 60 seconds		X		50% of the time callers are on hold for more than 60 seconds





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What's Next?

What's Next after Identifying and Prioritizing Requirements?

- Measure current performance.
- As you proceed through the improvement or development process, ensure that the requirements become features in your product/process design.
- Verify that this is the case by including these as criteria when a solution or design is selected.
- Include selected requirements as potential "Control" metrics to monitor.



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