Design and Specification Requirements

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Engineering design

- Once the customer's wants and needs have been identified, the design team **converts them to engineering requirements** for the product.

- These engineering requirements become parts of the **design requirements** for the product

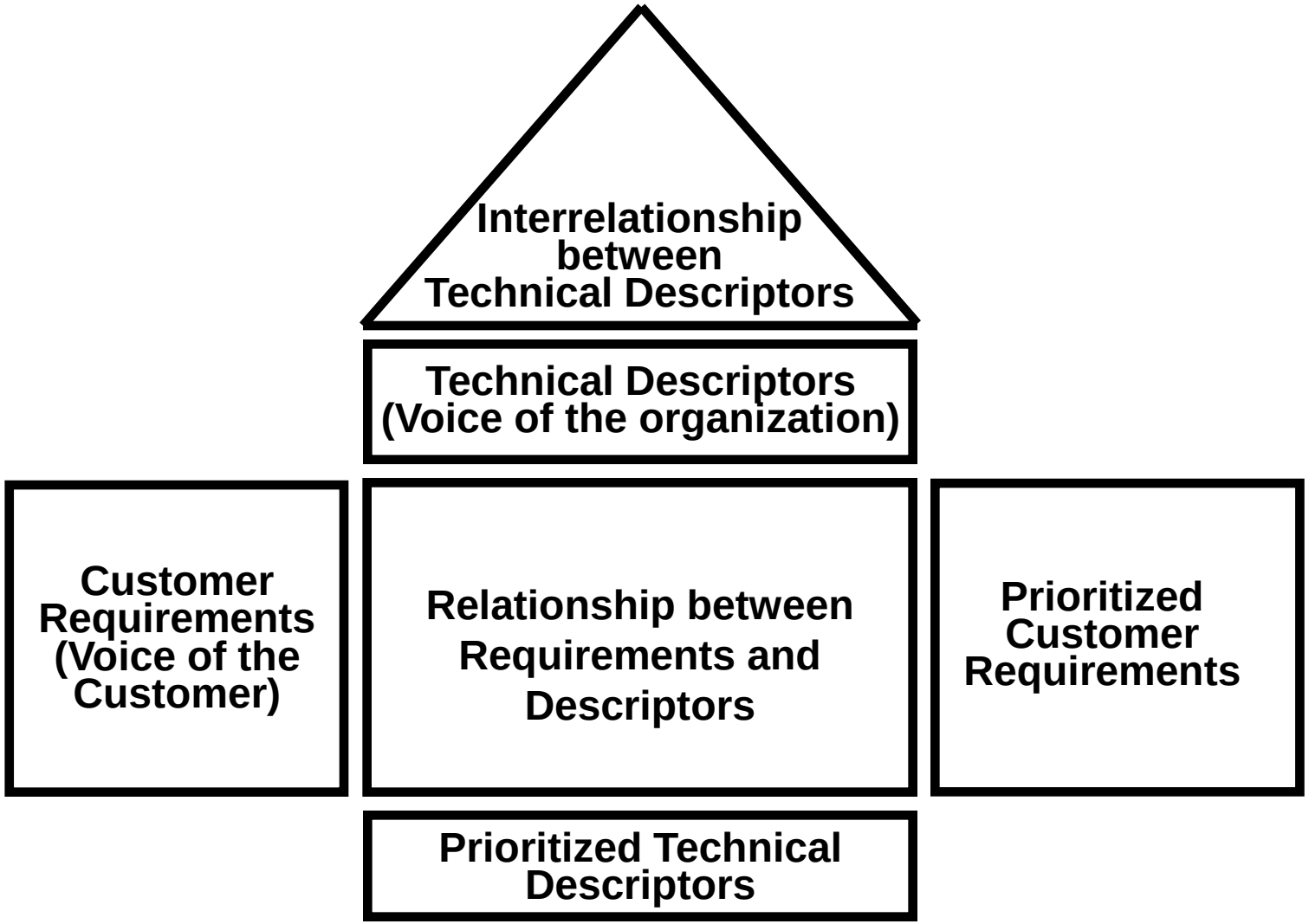
- Successfully converting the customer's wants and needs to meaningful engineering requirements needs good **communication between the design and engineering groups** within an organization

- An engineering technique that is useful for helping design teams **convert** customer wants and needs to engineering requirements is **quality function deployment (QFD)**

Benefits Of QFD

- Customer Driven
  - Creates Focus On Customer Requirements
  - Uses Competitive Information Effectively
  - Prioritizes Resources
  - Identifies Items That Can Be Acted On
- Reduces Implementation Time
  - Decreases Midstream Design Change
  - Avoids Future Development Redundancies
  - Identifies Future Application Opportunities
  - Surfaces Missing Assumptions
- Promotes Teamwork
- Provides Documentation

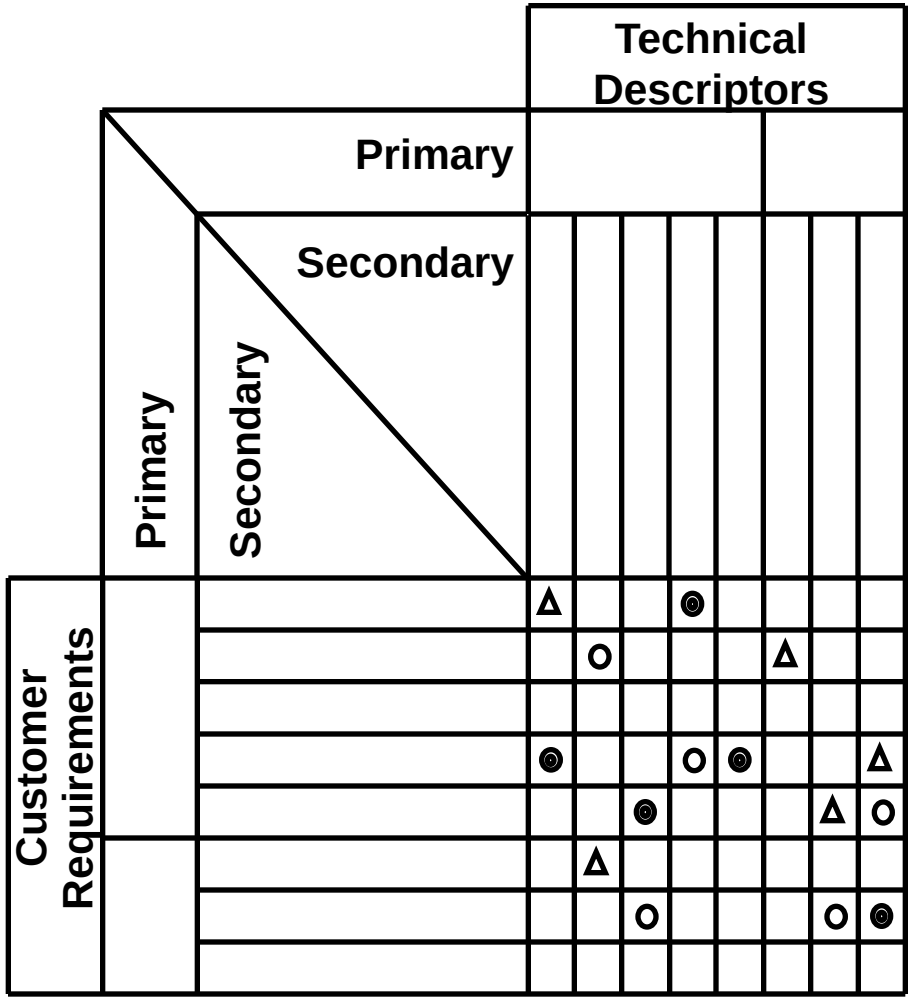
House of Quality



Building A House Of Quality (WHY)

- List Customer Requirements (What's)
- List Technical Descriptors (How's)
- Develop Relationship (What's & How's)
- Develop Interrelationship (How's)
- Competitive Assessments
- Prioritize Customer Requirements
- Prioritize Technical Descriptors

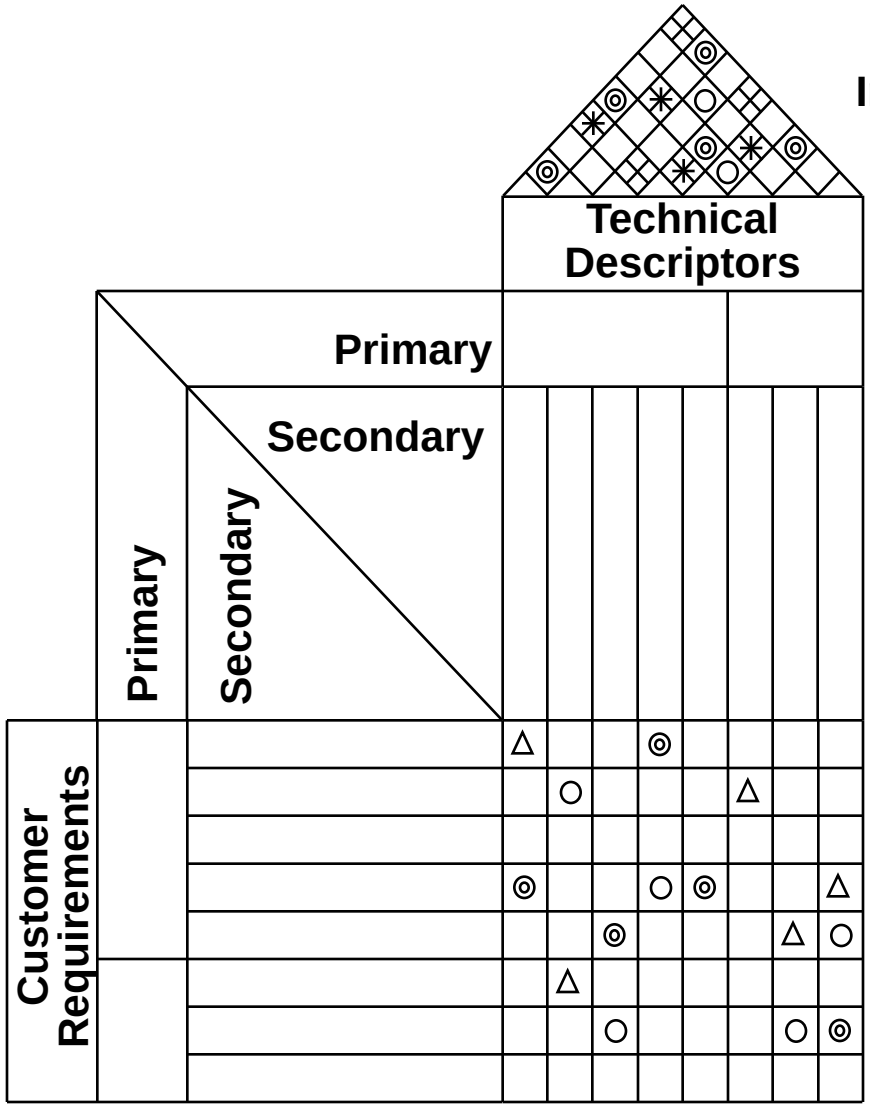
Relationship Matrix



Relationship between Customer Requirements and Technical Descriptors WHATs vs. HOWs

+9	◎	Strong
+3	○	Medium
+1	△	Weak

Correlation Matrix



Interrelationship between Technical Descriptors (correlation matrix) HOWs vs. HOWs

+9	◎	Strong Positive
+3	○	Positive
-3	×	Negative
-9	✳	Strong Negative

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QFD Matrix

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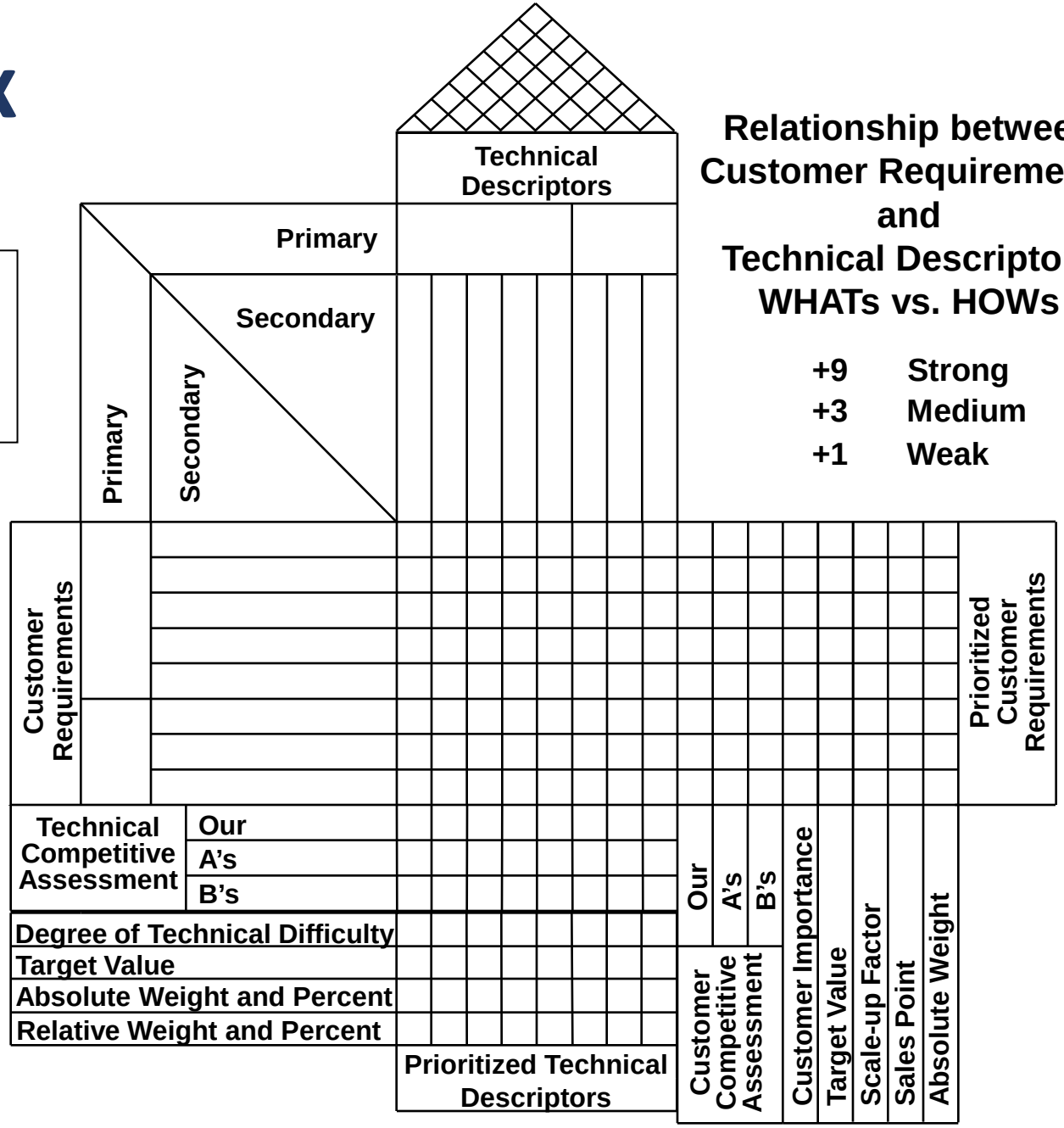

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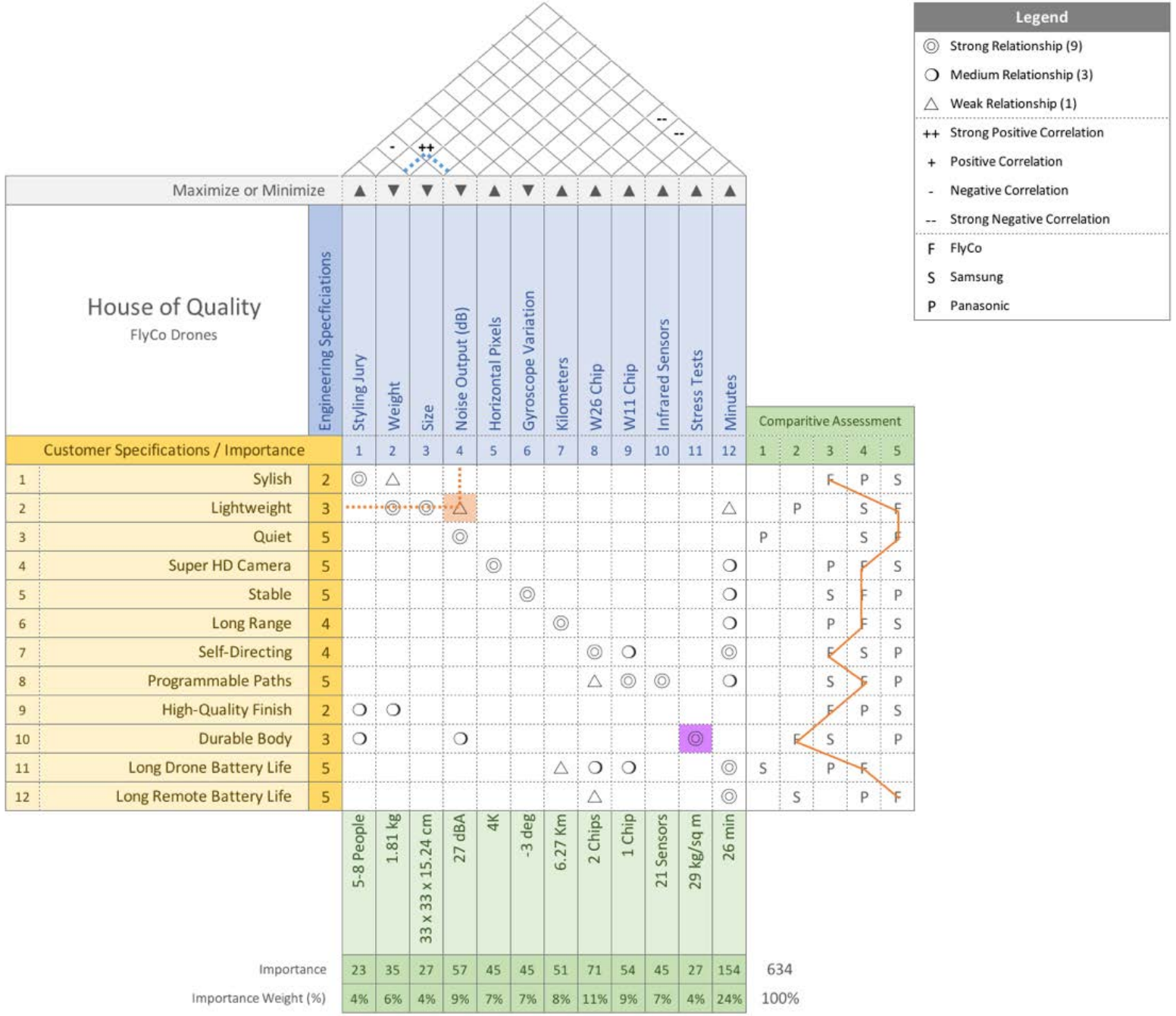
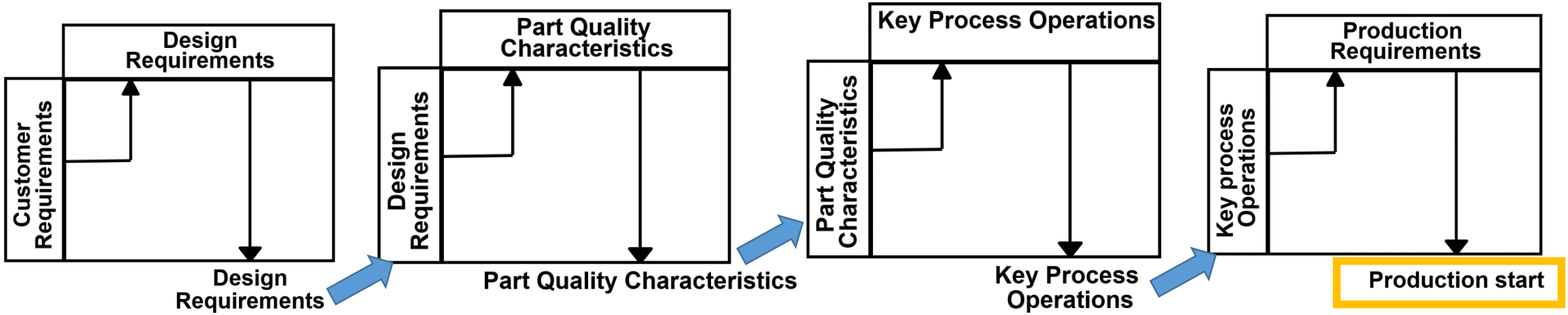
Example : Drone



https://www.whatissixsigma.net/house-of-quality-qfd/

Product Development Cycle



First HOQ

Second HOQ

Third HOQ

Fourth HOQ

Conclusions : A House of Quality (HoQ)

- QFD gives Orderly Way Of Obtaining Information
- Shorter Product Development Cycle
- Considerably Reduced Start-Up Costs
- Fewer Engineering Changes
- Reduced Chance Of Oversights During Design Process
- Environment Of Teamwork : **Always build HOQ together !**
- Consensus Decisions
- Preserves Everything In Writing

Thank you