SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

An Autonomous Institution

Accredited by NAAC – UGC with 'A' Grade

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF COMPUTER SCIENCE AND TECHNOLOGY

COURSE NAME : 19OE114 –TOTAL QUALITY MANAGEMENT

III YEAR / VI SEMESTER

Unit 4 - TQM TOOLS & TECHNIQUESII

QUALITY FUNCTION DEVELOPMENT

QUALITY FUNCTION DEPLOYMENT

Quality Function Deployment is:

What is QFD?

A method for developing a design quality aimed at satisfying the consumer and then translating the consumer's demands into design targets and major QA points to be used throughout out the production phase

Comprehensive process for reaching customer satisfaction

Systematic way to define winning business (conquering business model, products / services)

What is QFD?

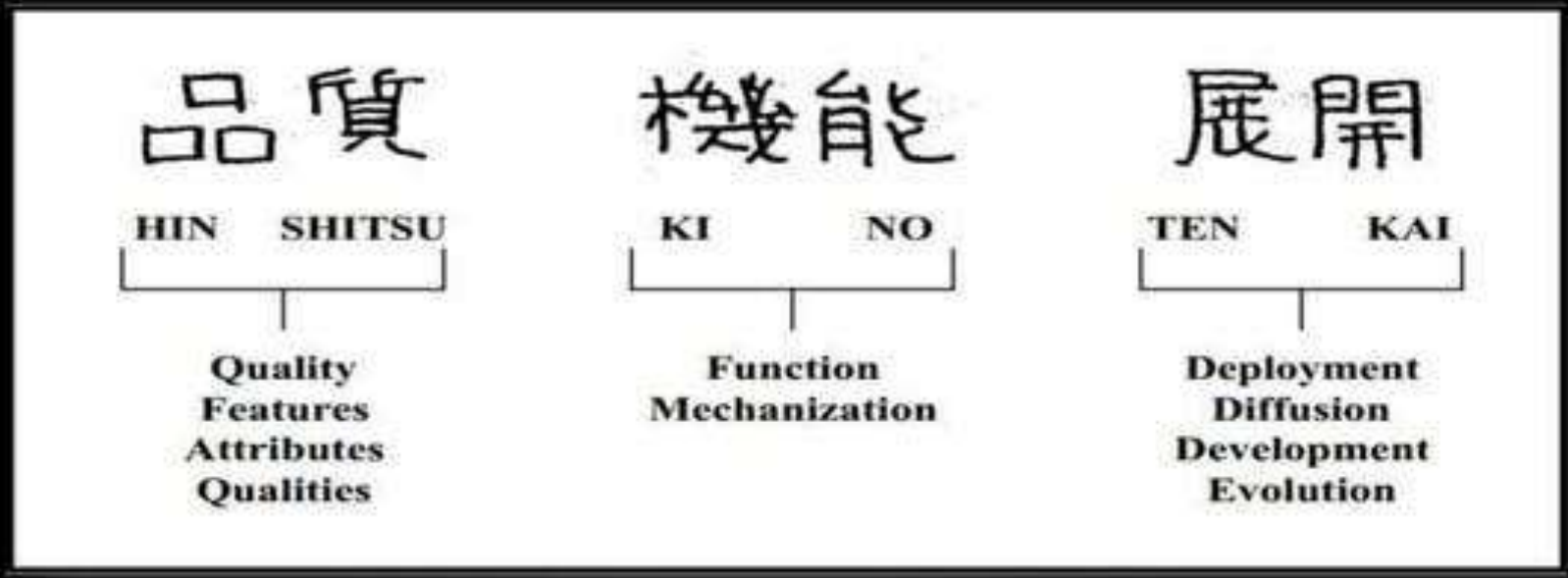
Also called another Quality Management System(QMS)

Developed to bring personal interface to modern industry

Links the needs of the customer with design, engineering, production and service functions in the supplier organization

QFD Origins

Quality Function Deployment is derived from six Chinese characters with Japanese Kanji pronunciation



"how do we understand the quality that our customers expect and make it happen in a dynamic way"

"QFD is a method for developing a design quality aimed at satisfying the consumer and then translating the consumer's demand into design targets and major quality assurance points to be used throughout the production phase. ... [QFD] is a way to assure the design quality while the product is still in the design stage."

Yoji Akao

Developed QFD in Japan in 1966

History of QFD

1972	First application at Mitsubishi, Japan
1976	QFD implementation in production of mini vans by Toyota
1979	20% reduction in start up costs in launch of a new van
1982	38% reduction in costs
1984	68% cumulative reduction in costs
1984	First introduced in USA

Main Goals in Implementing QFD

Prioritize spoken and unspoken customer wants and needs

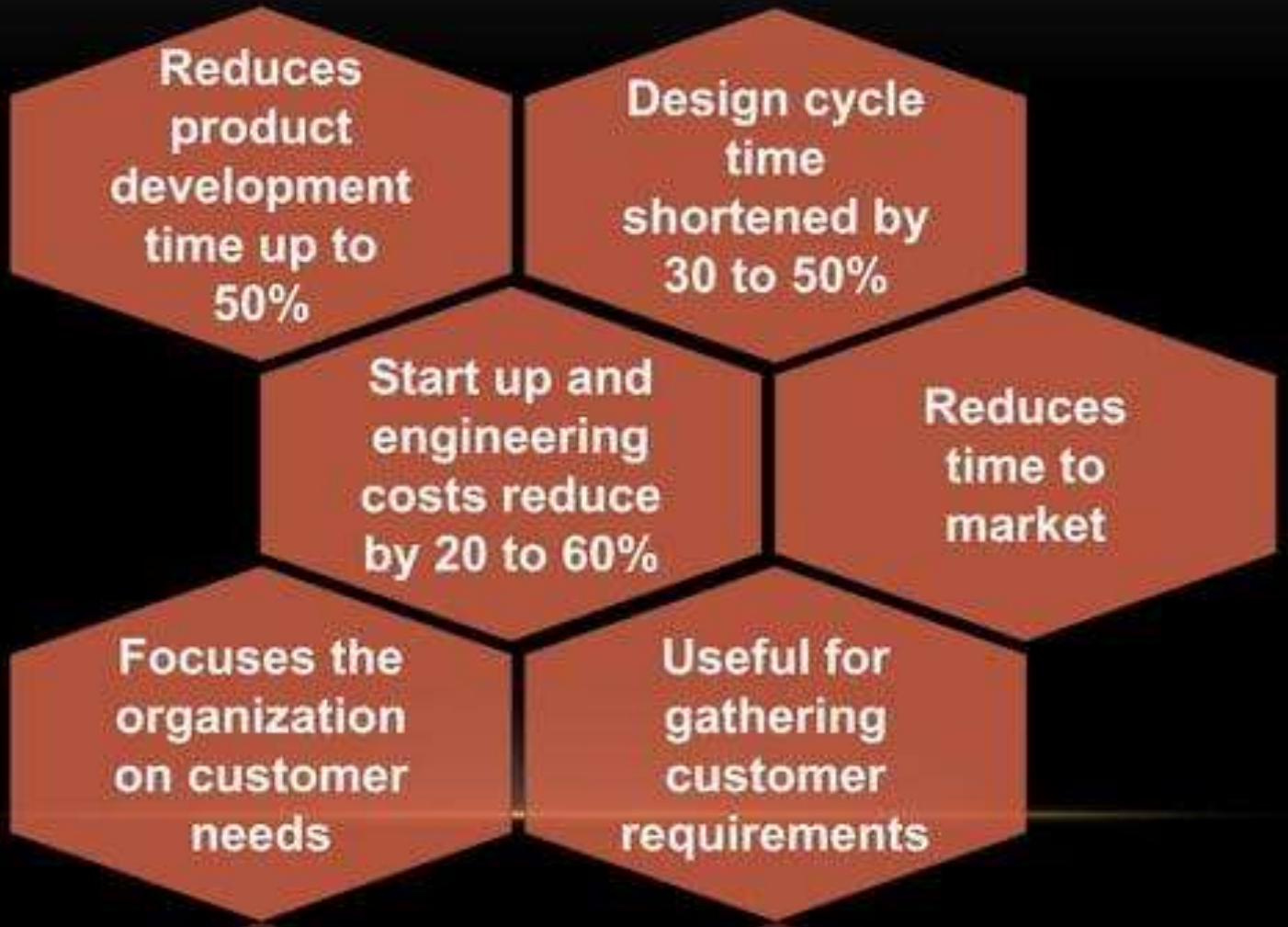
Translate these needs into technical characteristics and specifications

Build and deliver a quality product or service by focusing everybody toward customer satisfaction

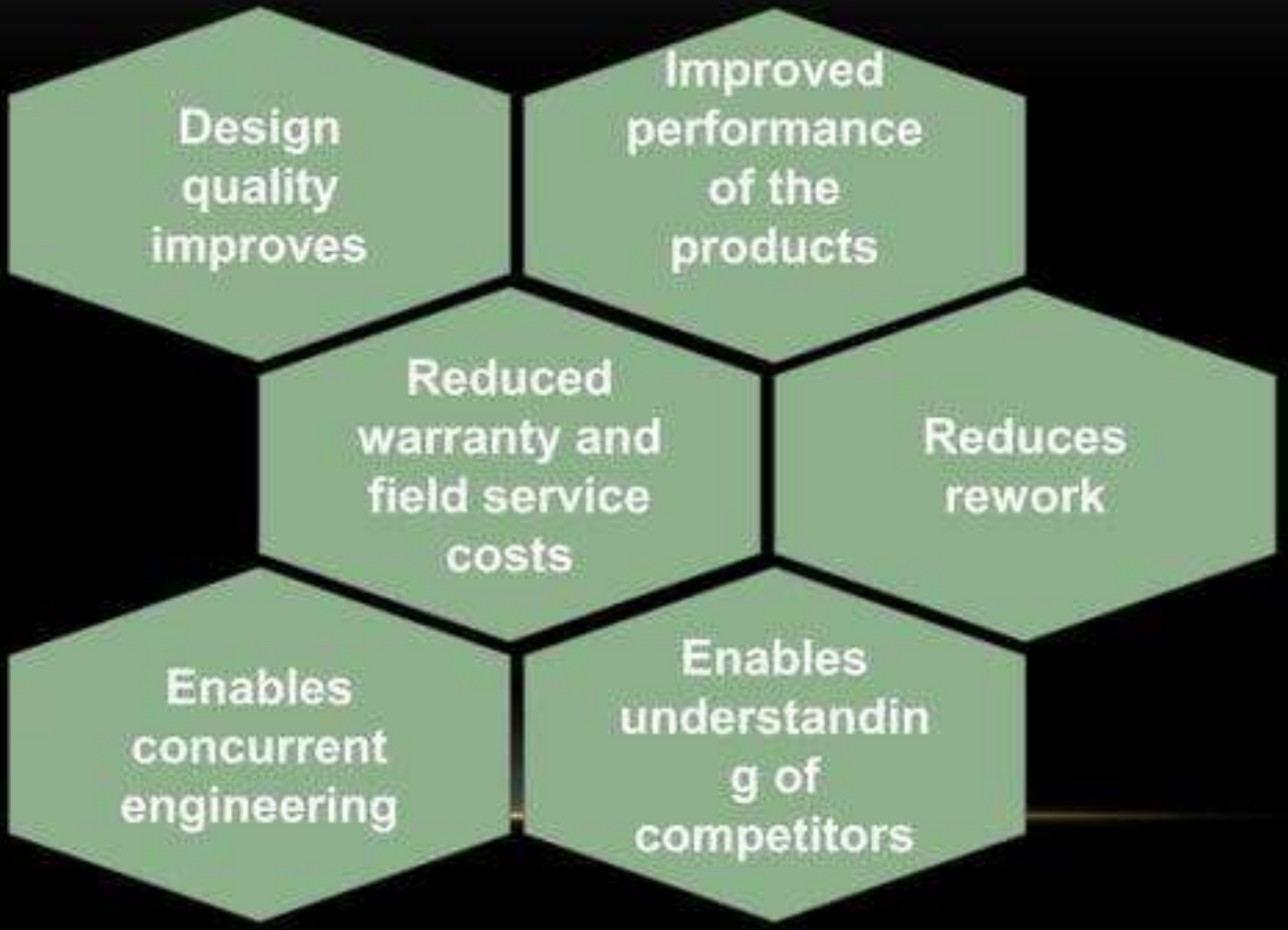
QFD Teams


Marketing
Design
Quality
Time
Work
Quality Assurance
Purchase
Production
QFD Team

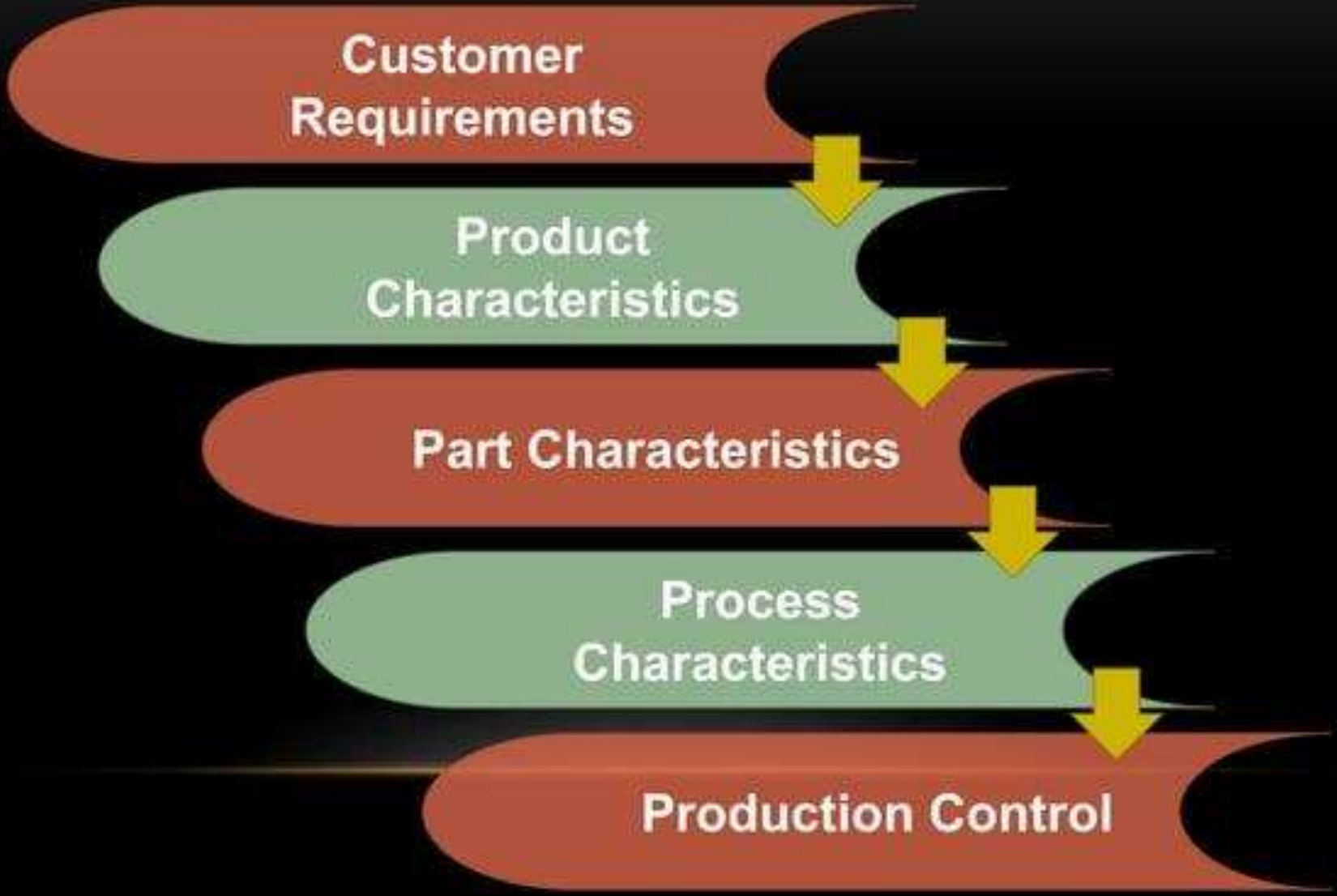
Benefits of QFD



Benefits of QFD



American Supplier Institute's Four Phase Approach



The Voice of the Customer

- represents the requirements of the customers
- QFD is a technique to record every requirement expressed by the customer and take a conscious decision about the voice of the customers

Sources of Information for Finding Out Customer Requirements

- Market survey from customers
- Information from sales team
- Information from service team
- Customer complaints
- Customer feedback
- Testing of products in labs

Data Analysis and Organization

The information received should be checked for authenticity. Conflicting requirements should be analyzed and resolved

Data organization can be best served by the affinity and inter-relationship diagram

Problems of QFD

If all relational matrixes combined into a single deployment, the size of each of the combined relational matrixes would be very large

QFD is a qualitative method. Due to the ambiguity in the voice of the customer, many of the answers that customers give are difficult to categorize as demands

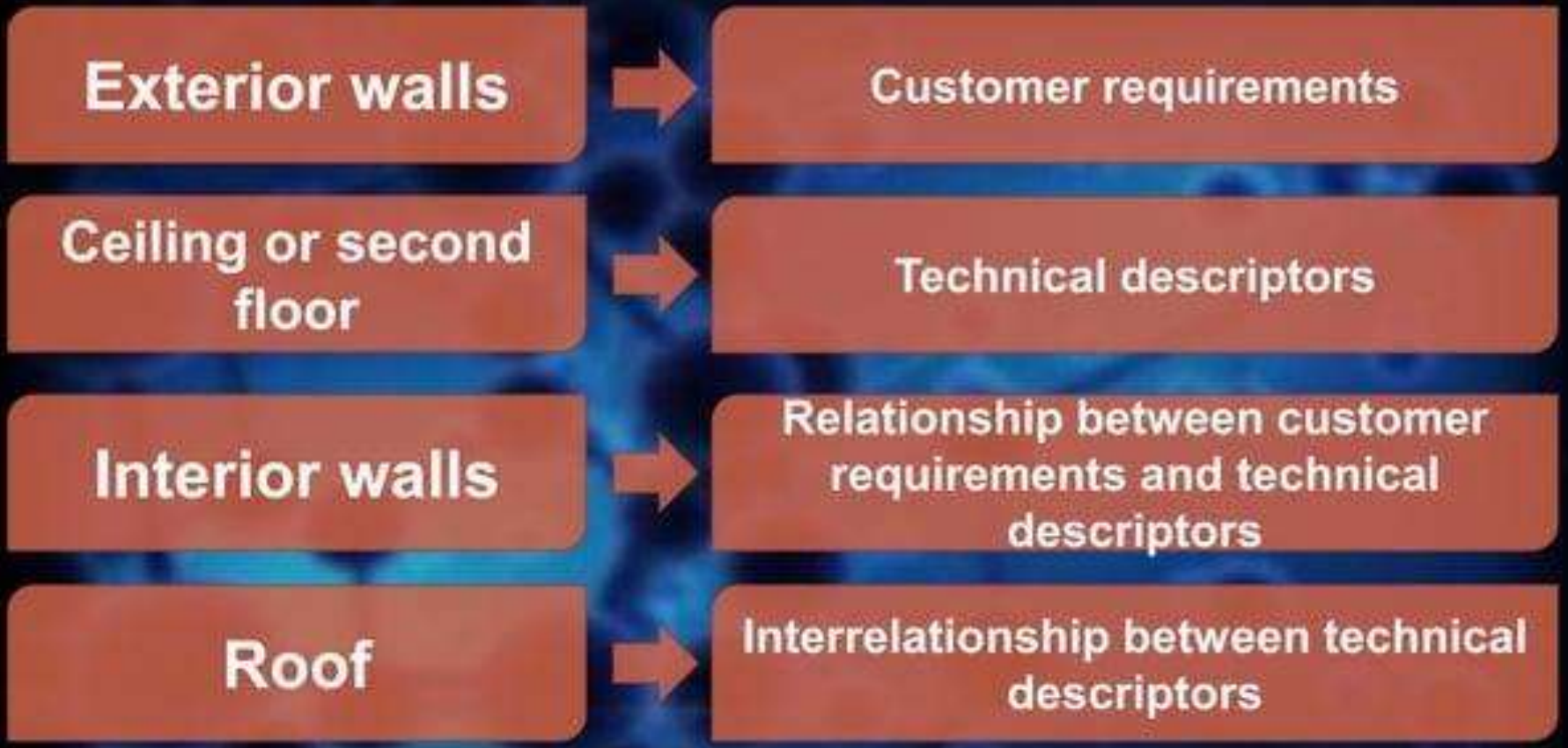
It can be difficult to determine the connection between customer demands and technical properties

QFD is not appropriate for all applications

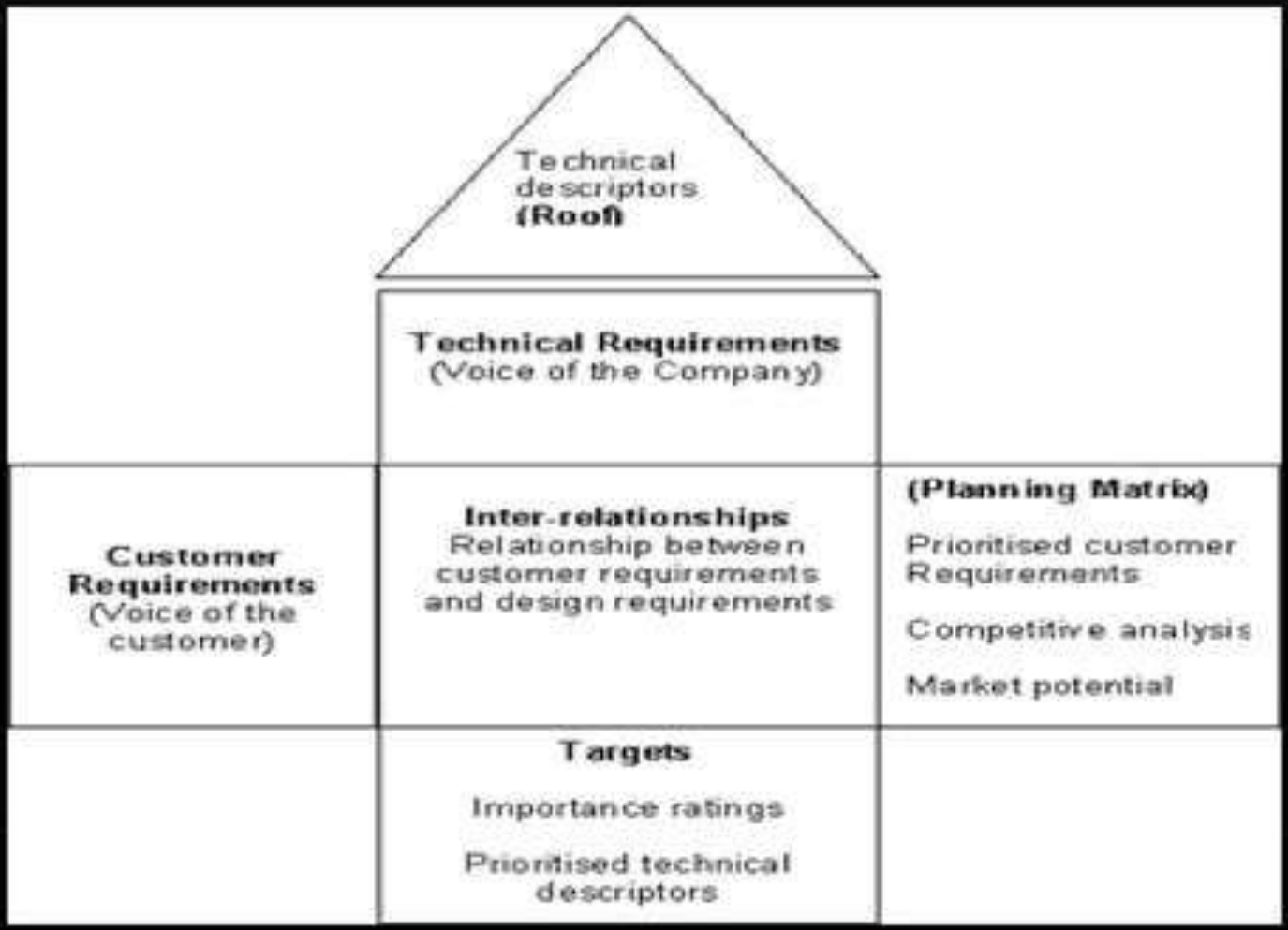
House of Quality

Translates the voice of the customer into design requirements that meet specific target values and matches those against how an organization will meet those requirements

Structure of House of Quality



House of Quality Example



Steps in Building a House of Quality

1. Customer Requirements (What)

- includes the list of goals/objectives
- A structured list of customer requirements
- The steps involved in identifying customer requirements:
  - Identify customers
  - Determine customer requirements/constraints
  - Prioritize customer requirements
  - Put them in house of quality

Steps in Building a House of Quality

2. Technical Requirements (How)

- A structured set of relevant and measurable product or service characteristics
- After the WHATs have been finalized, the QFD team has to identify how these requirements that will facilitate satisfying one or more customer requirements identified

Steps in Building a House of Quality

3. Inter-relationship matrix between WHAT's and HOW's

- Illustrates the QFD teams perceptions of inter-relationships between customer requirements and technical requirements
- Different symbols depicting the Degree of relationships between WHAT's and HOW's:

⊙	Strong Relationship
○	Medium Relationship
△	Weak Relationship
Empty	No Relationship

Steps in Building a House of Quality

4. Technical Correlation Matrix

- Used to identify where technical requirements support or impede each other in the product or service design
- Each technical requirement(TR) should be compared with every other technical requirement

Steps in Building a House of Quality

5. Planning matrix

- Illustrates relative importance of customer requirements, customer perception of company and competitor performance in meeting customer requirements
- The Customer Competitive Assessment and Prioritized Customer Requirements

Steps in Building a House of Quality

6. Develop Prioritized Customer Requirements

- The prioritized customer requirements make up a block of columns corresponding to each customer requirements in he house of quality to the right hand side of the customer competitive assessment

Competitive Benchmarking

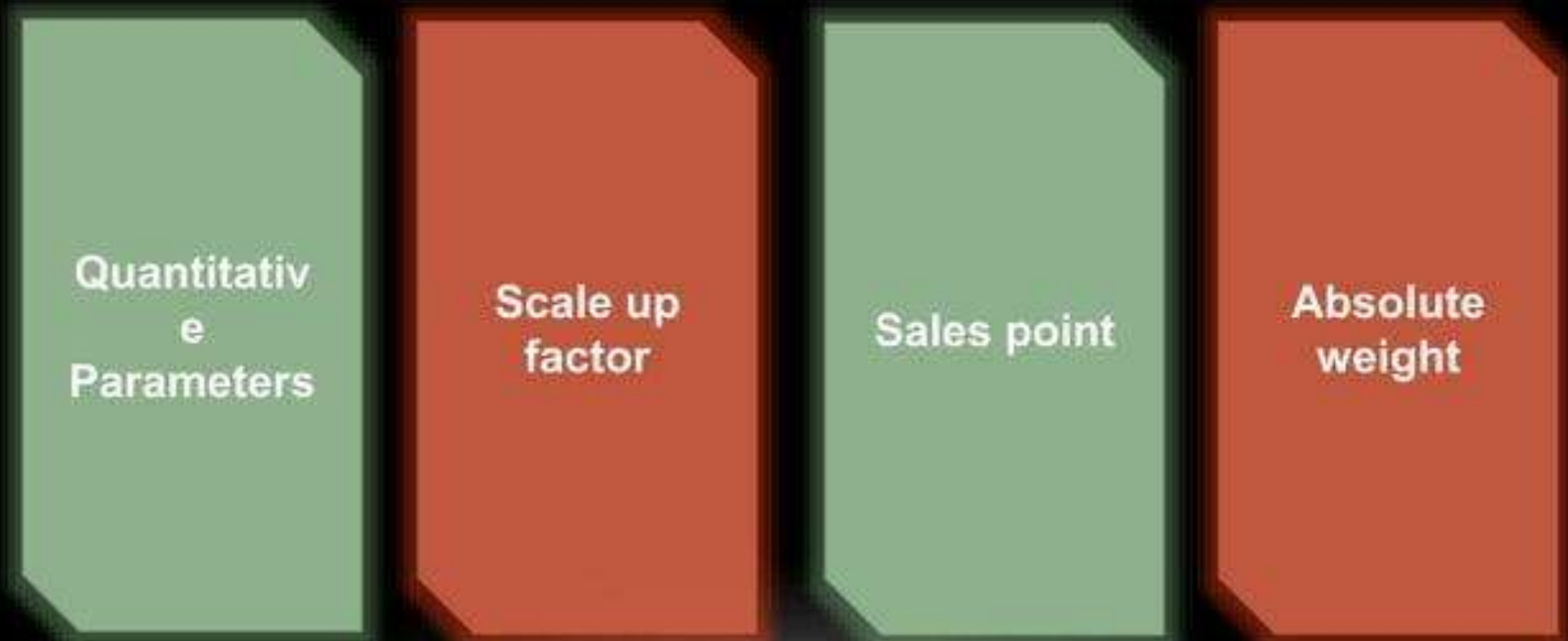
A simple comparison of performances against each requirement of the customer

In this step, we have to measure the current performance of our own products against each requirement

Steps in Benchmarking

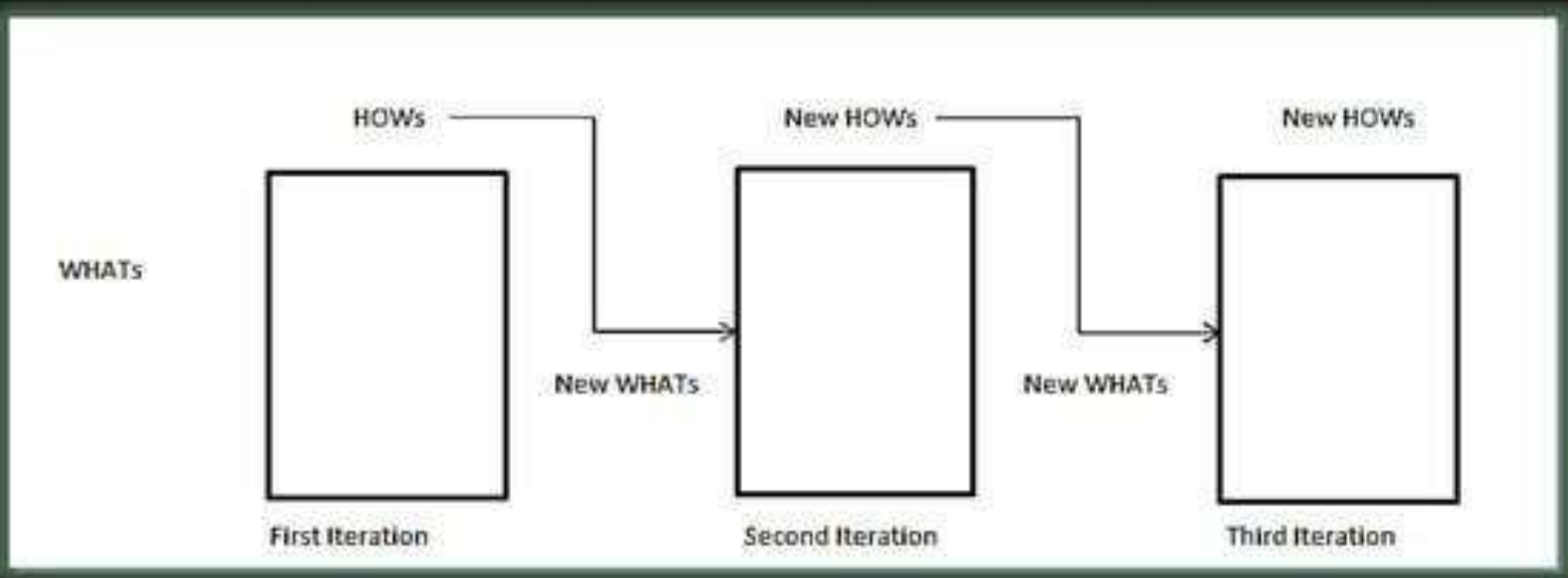
- Identify competitors
- Carry out reverse engineering of competitor's products
- Finalize common set of customer requirements through benchmarking
- Measure performance of competitors' products or services against the same customer requirements
- Rate competitors' products against the same

Prioritized Technical Requirements



Iterative of QFD

The process of QFD can be further extended. In the first iteration, we found WHATs and HOWs. The HOWs are the technical requirements. In the second iteration, the HOWs can be treated as WHATs. These are the new HOWs, which will be very close to the transfer for actual implementation. This process is illustrated below:



Applications of QFD

Production / Manufacturing

Maintenance

Design Courses and Curriculum

Applications of QFD

Military Needs

Aerospace

Design of Performance Measures

Who uses QFD?

Nissan

Toyota

Komatsu

Who uses QFD?

Nipponden so

Honda

Ford

Who uses QFD?

AT&T Bell Lab

Chrysler

HP

Tips for Success of QFD

A consultant is needed to guide through at least the first few projects

The activity should be a formal activity and every member should take part, fully prepared

The meetings should be planned at regular intervals for shorter duration so as to get the best out of this exercise through maintaining focus

Tips for Success of QFD

Elicitation and recording customer requirements is key to success

The new seven management tools should be applied at various stages to get better results

Belief that "we don't know all the requirement of the customers" will lead to success

THANK YOU