

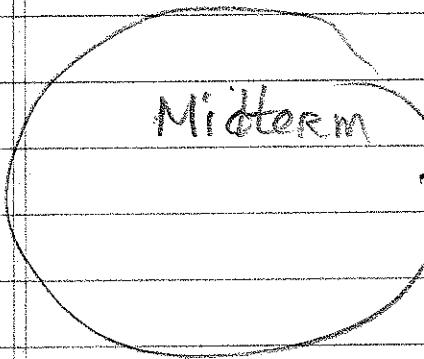
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TIM 105/205, LECTURE #10 (10/29/13)

Agenda:

- Project Phase 1
- Concluding remarks on QFD/HQQ
- Production Dissection (aka
Reverse Engineering)
 - FAST technique
- Turn in completed Midterm

Project Phase 1



CHASM

Transfer
all the
learningon the midterm
via suitableprocesses
customizedfor your
team product

Project Phase 1 deliverables

- Team problem solving
- Assign individual roles & responsibilities

Objective

- Plan/process
- Implement
- Results/
Recommendations

due, with Project Review, Tuesday next week

Concluding remarks on the HOQ

- QFD/HOQ methods were developed in Japan (car industry, shipbuilding, telecommunications, etc.) & resulted in significant ($\sim 50\%$) reduction in cost & development time.
- In a typical industry, e.g. automotive, there are typically $\sim 1000s$ of HOQ from the highest (product level) all the way down to the component (e.g. car door) level.
- To do a HOQ for a complex product (e.g. bicycle, car) it is useful to precede the HOQ by doing a product dissection (first).

Summary

For the Video-game console (VGC)
 (on the midterm)

- you read (Internet) about how the VGC worked
- how do you organize the information

Functionality → Form
 (Realization)

- The formal technique for dissecting a product (which exists) & organizing the function-form relations is called

F A S T
 functions analysis system technique

- The information is represented in the form of a FAST diagram.

The FAST Diagram Process

Definition:

Function: A function is a verb-noun combination, which indicates the purpose of the system (e.g. product, service, ...), or subsystems, or the components

e.g., function of a light-bulb is to "create light"

function of the filament (in the light-bulb) is to "provide a high resistance"

Form: refers to how function is realized, i.e. made real.

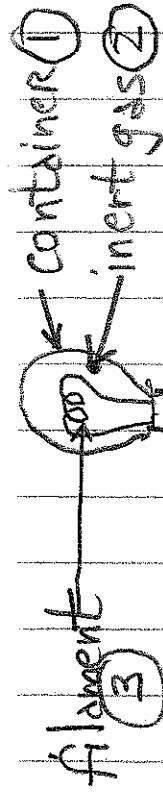
e.g. the function "provide a high resistance" is realized by the filament (in a light-bulb)

To create a FAST diagram,

- (I) start with the high-level function of the system being dissected
- (II) organize the diagram with the "WHYS" (functions) to the right (\rightarrow), and the "HOWS" (realizations, forms) to the left (\leftarrow)
- (III) stop when you reach the level of the major components.

\rightarrow WHYS (Function)

FAST diagram for Light-bulb



→ How's (realization)
form)

Provide
container.
①

Provide
inert
gas
②

Use a
③
high
resistance
(filament)

Provide
current flow
through filament

Provide
electrical
connectors
④

Provide
voltage

Provide
an
oxygen-free
atmosphere

Create
a high
temperature

$P = I^2 R$
heat
resistance

Create
light

10.8/8

Project related activities

- {
 - Identify related products
 - Dissect these products.

→ for Phase 1

- Create a HOQ for
your intended product