

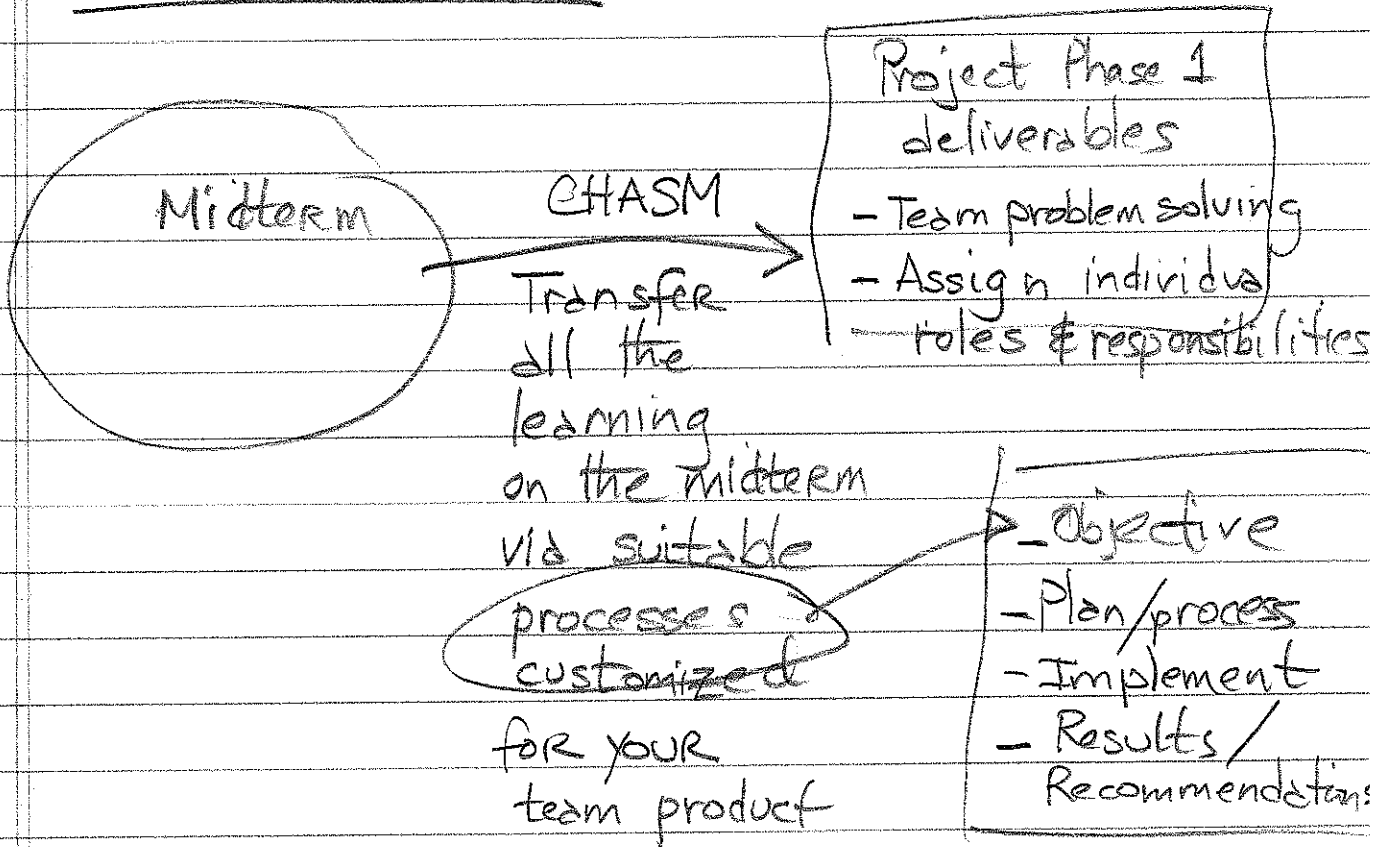
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## TIM 105/205, LECTURE #10 (10/29/13)

### Agenda:

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

## Project Phase 1



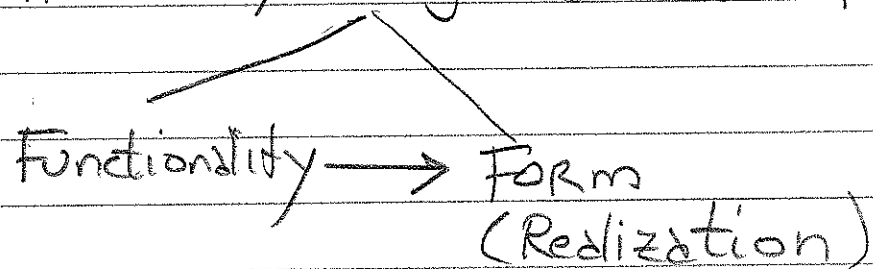
due, with Project Review, Tuesday, next week

## Concluding remarks on the HQQ

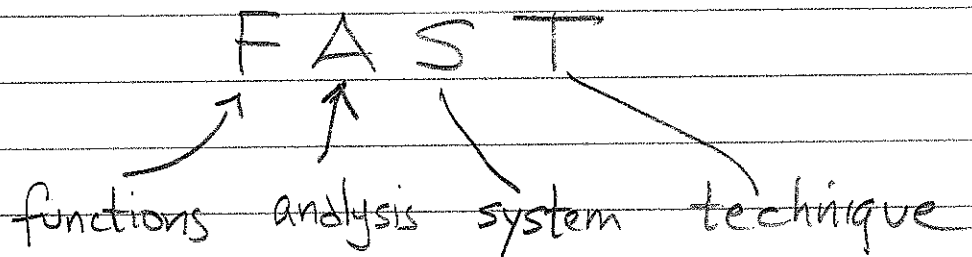
- QFD/HQQ methods were developed in Japan (car industry, shipbuilding, telecommunications, etc.) & resulted in significant ( $\sim 50\%$ ) reduction in cost & development time.
- In a typical industry, e.g. automotive, there are typically  $\sim 1000$ s of HQQ from the highest (product level) all the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

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

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



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



- 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  
 ("WHY")

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.  
 ("HOW")

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

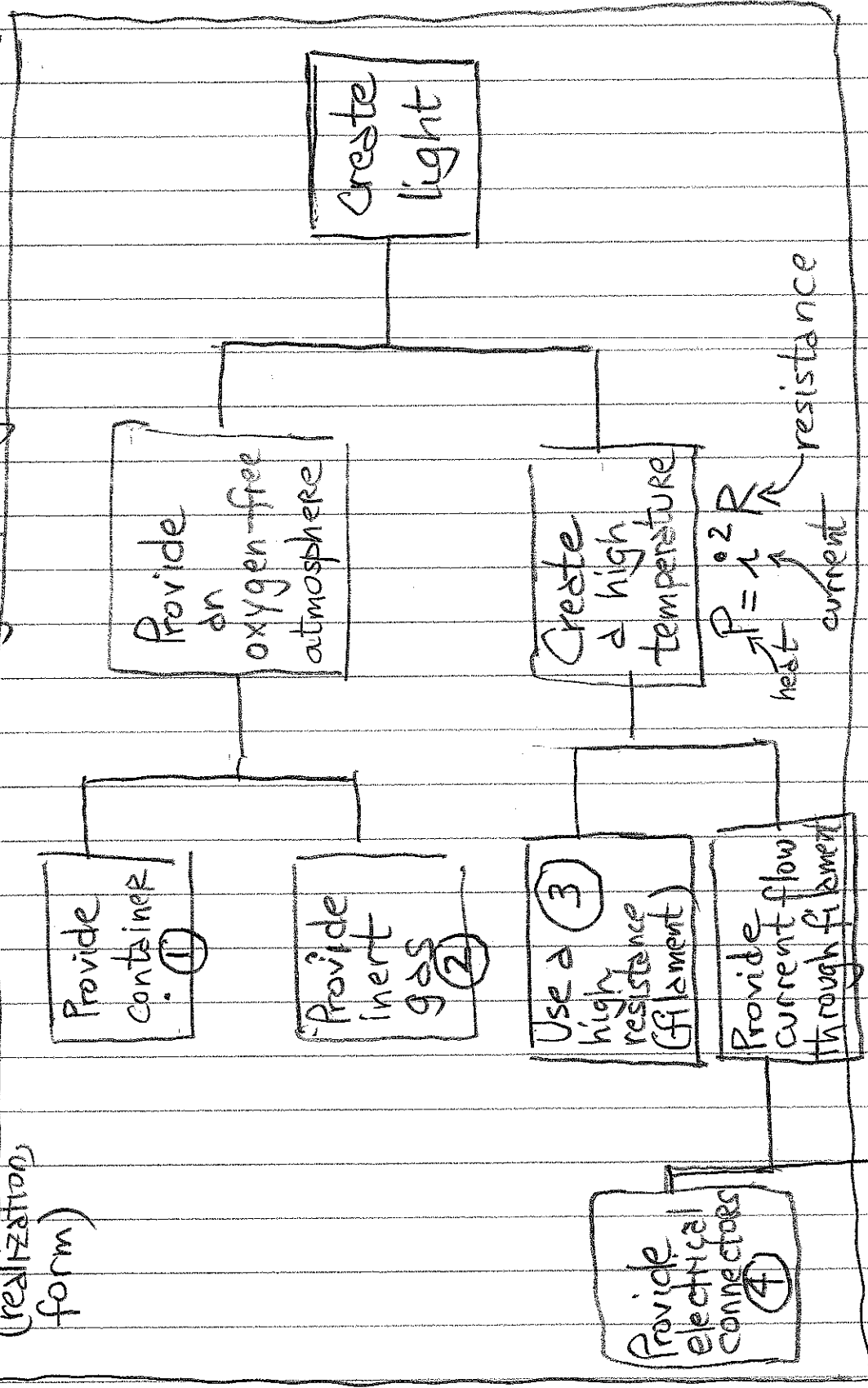
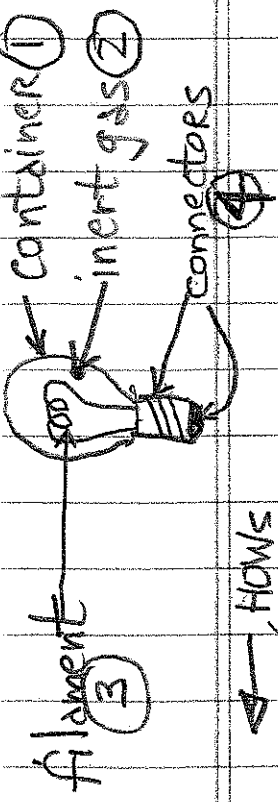
To create a FAST diagram,

- (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.

→ WHYs (Function)

FAST diagram for Light-bulb

← HOWs (realization form)



$$P = i^2 R$$

heat ↑ current

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## Project related activities

- Identify related products
- Dissect these products.

→ for Phase 1

- Create a HQ Q for your intended product