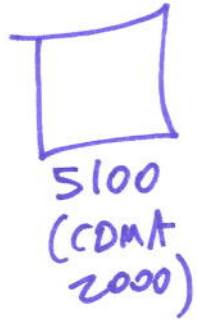
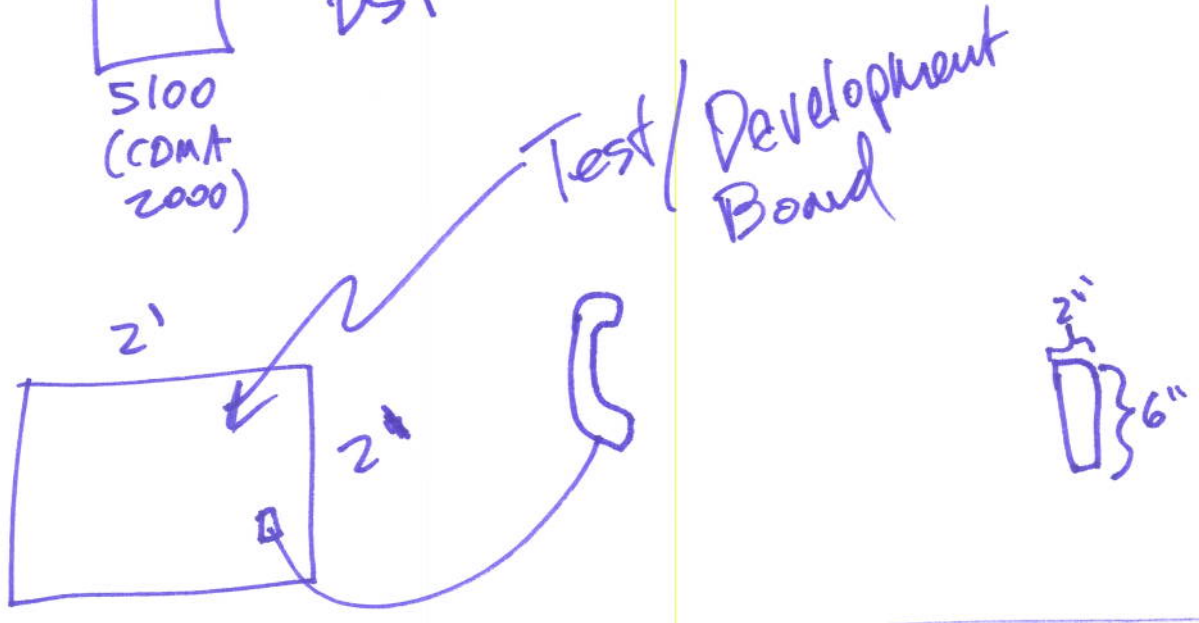


Qualcomm



mcontroller (ARM 7)
DSP



System
Mobile
Phone



- Elec Hardware
- Software ← Base/Comm
- Mechanics
- Power supply
- Paper work
- Box
- Ear buds
- Battery

-
- people
 - Testing
 - Mfg
 - Delivery

How do you know when you are done? When you have finished!

2

Define what you must do = requirements.

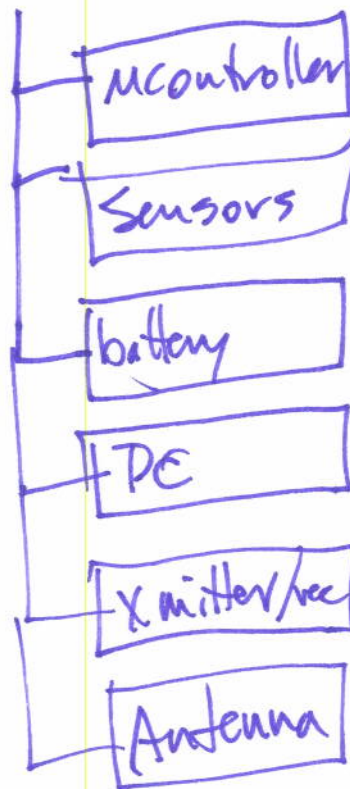
eg, Color
Weight

Performance
Screen resolution

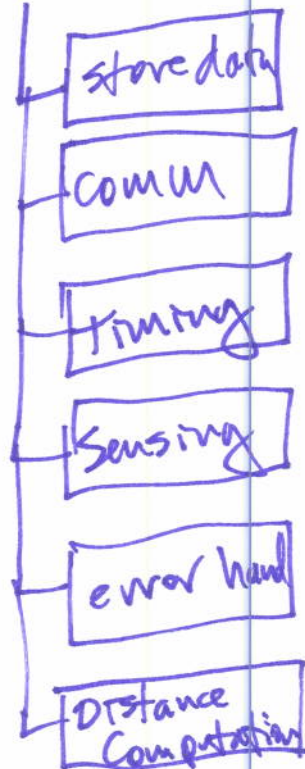
Example System



Electrical



Software



Product:

- 1) Device = 1" x 1"
- 2) Attach to wall w/ Velcro
- 3) 3v watch battery
- 4) measure temp & humidity ever 1 minute, & ~~record~~ transmit the following:

- A) Distance from base station 1
- B) Distance from base station 2
- C) temp (in C) \rightarrow $\frac{1}{10}$ of C (i.e. $20^{\circ}\text{C} = 200$)
- D) Humidity 0 to 100%

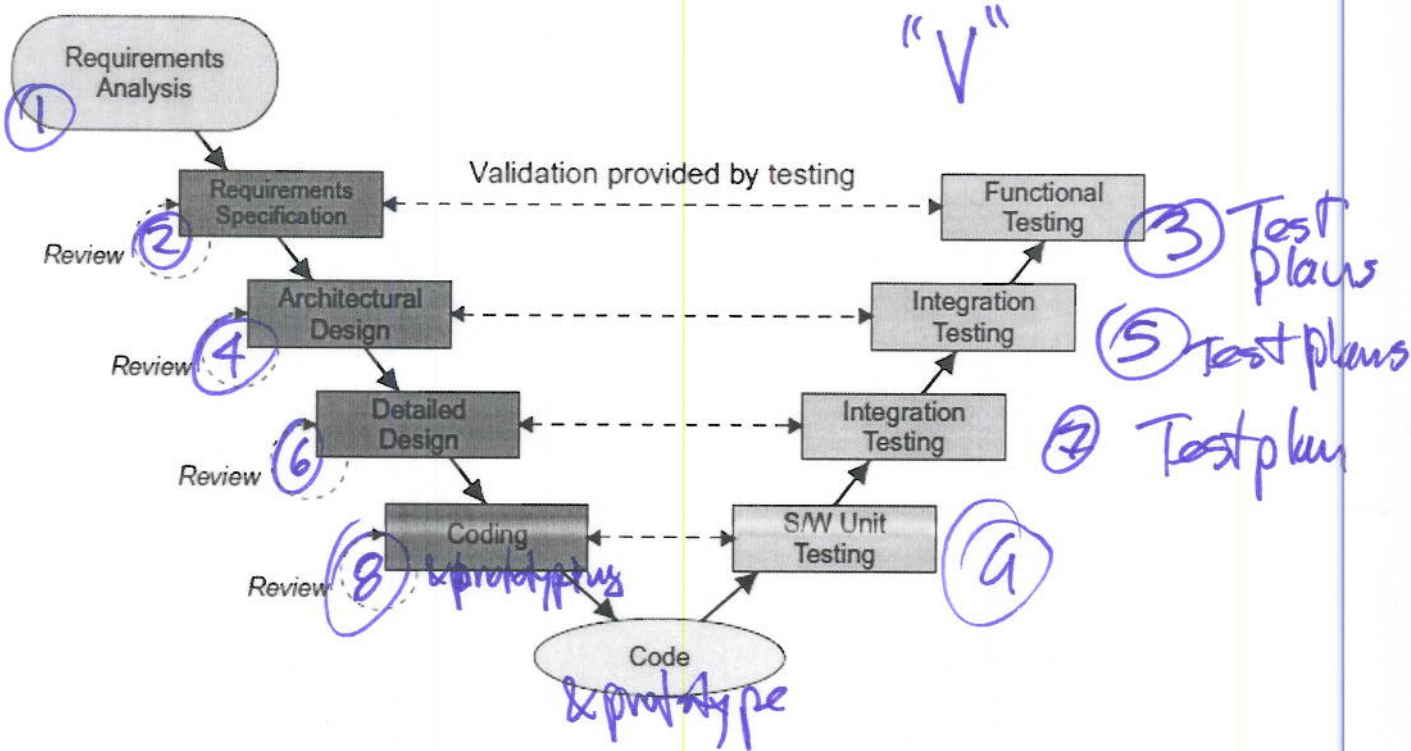
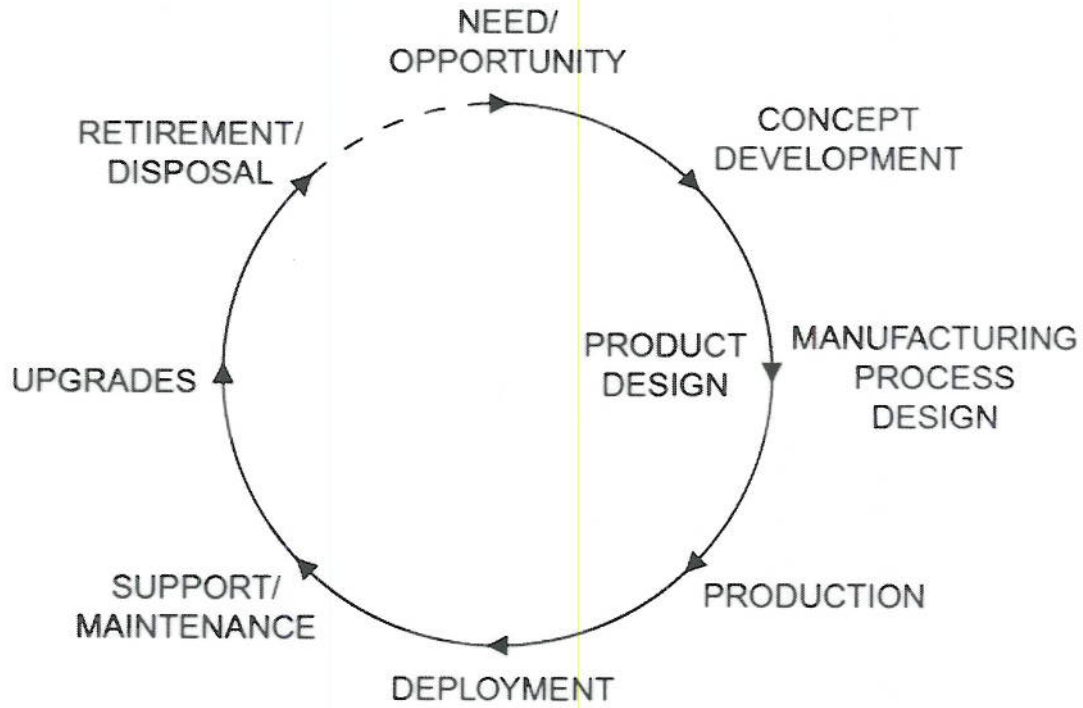
Goal Define what is important for each of the following "sub systems":

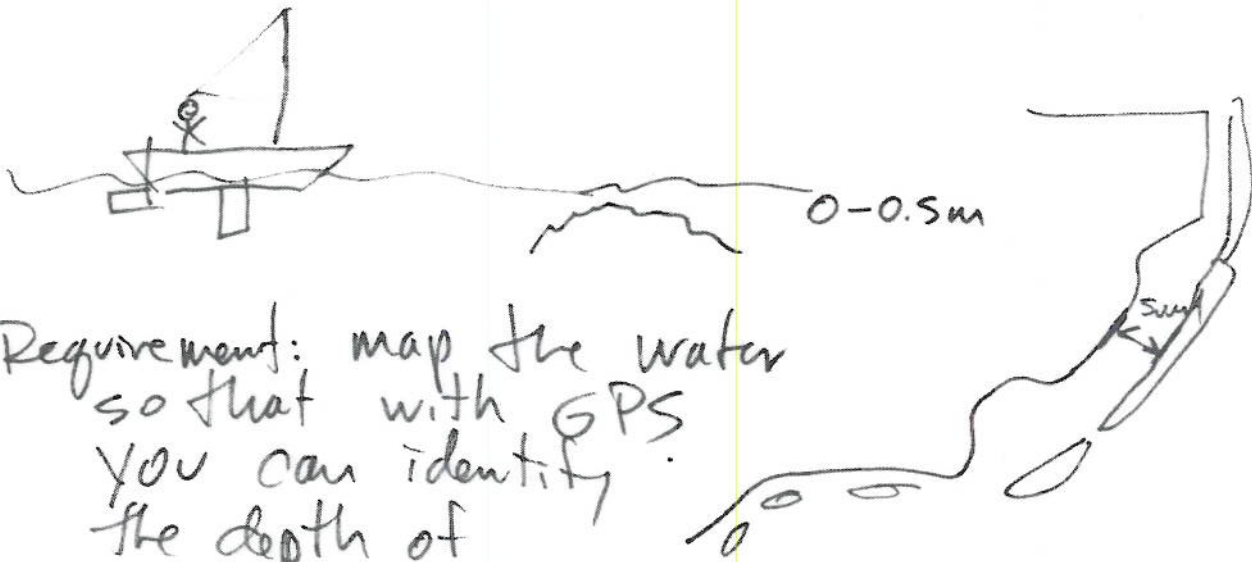
- A Mechanical
- B Elec Hdwr
- C Software

Embedded Systems

Lecture 9

④





1.0 Requirement: map the water so that with GPS you can identify the depth of the water.

1.1 Requirement: the measurement will also record the current tide levels

1.2 Requirement: The location via GPS will be recorded every 1 second.

1.3 Req: The embedded device will be .3x.3x.3 meters & ~~draw no~~ be waterproof.

1.4 Req: The device shall need 12V or less & draw no more than 1A.

1.5 Req: The depth shall be measured with an OTS fish/depth finder every 1 second.

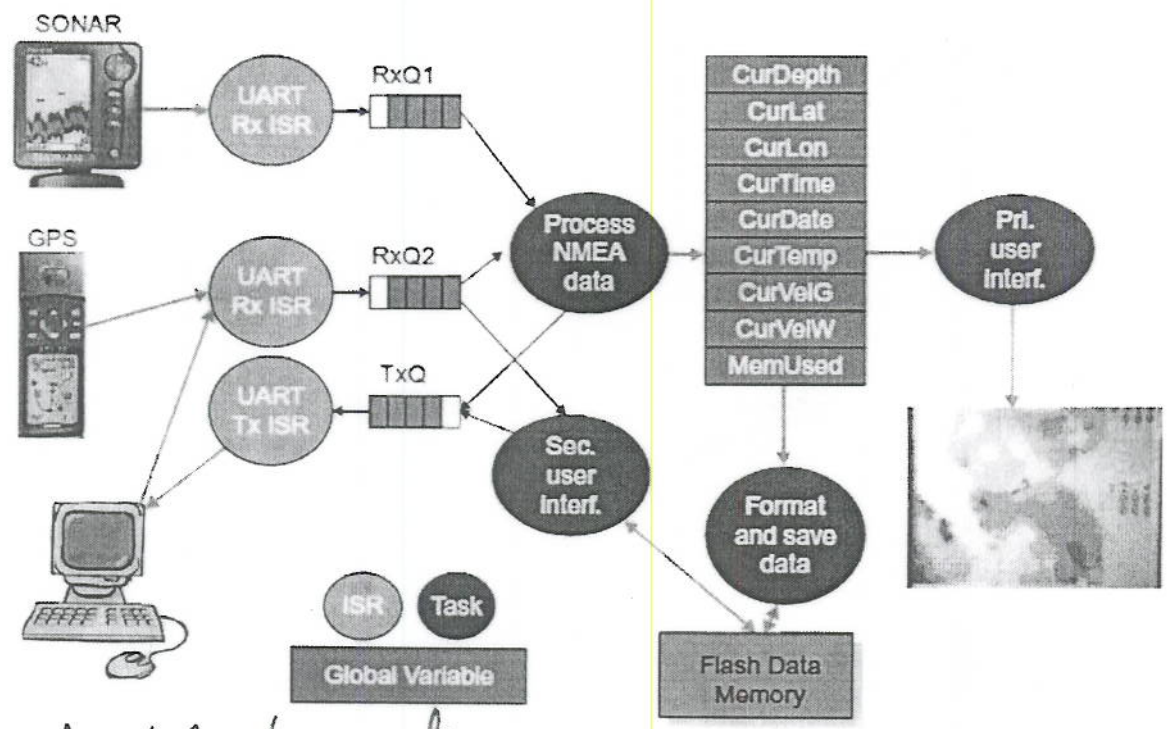
1.6 Req: The GPS & sonar shall communicate via RS-232C at 4800 bps.

1.7 Req: The device shall record the wind speed & direction

1.8 Req: The device shall ~~computer~~ ~~be~~ need a minimum of 512K bytes of DATA Flash

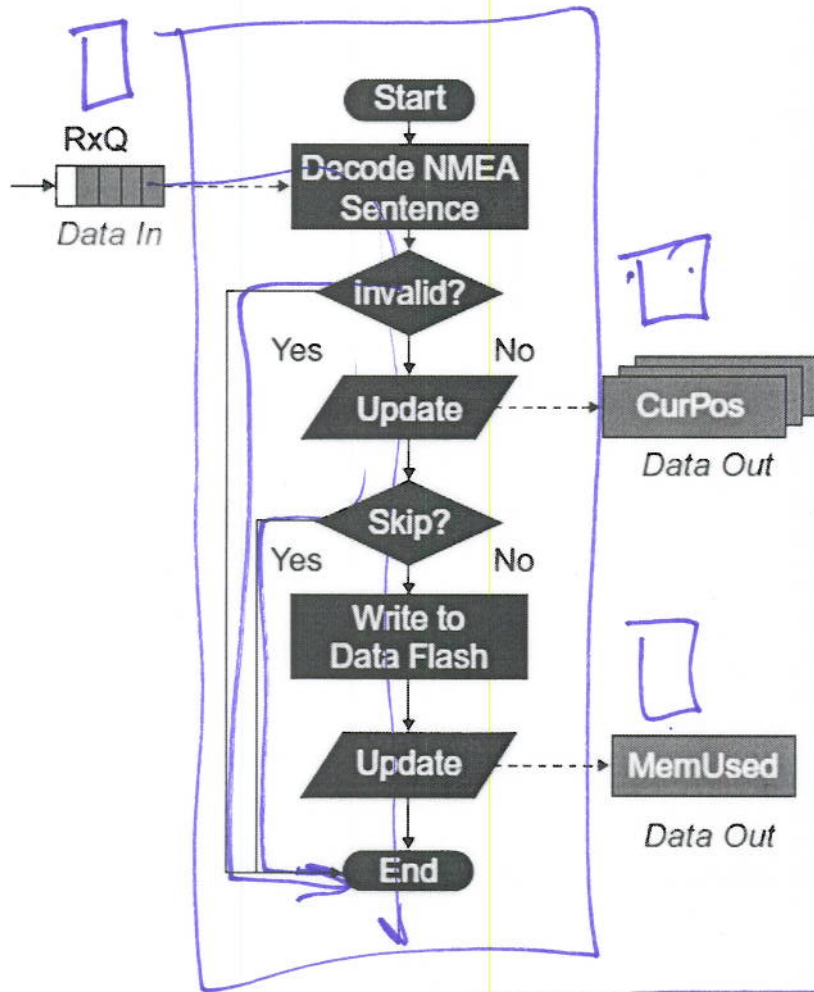
ECGR 4101/5101

Lecture 9



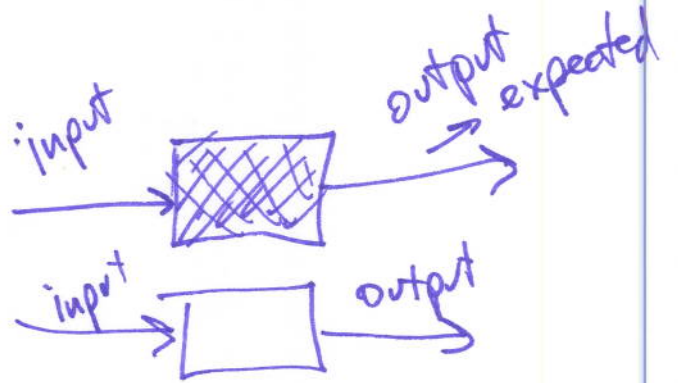
Architecture design

6



Testing

black box
white box



Testcase

- 1) invalid data
- 2) new data
- 3) 'old' data

8

