

①

Hdwr / software co-design

Figure out - what to do

System definition → capabilities & Requirements

System

Software ←

Electrical Hdwr ←

Mechanical Hdwr

Standards

Box: Instructions, charger, cardboard
 Marketing, supply chain, Mfg

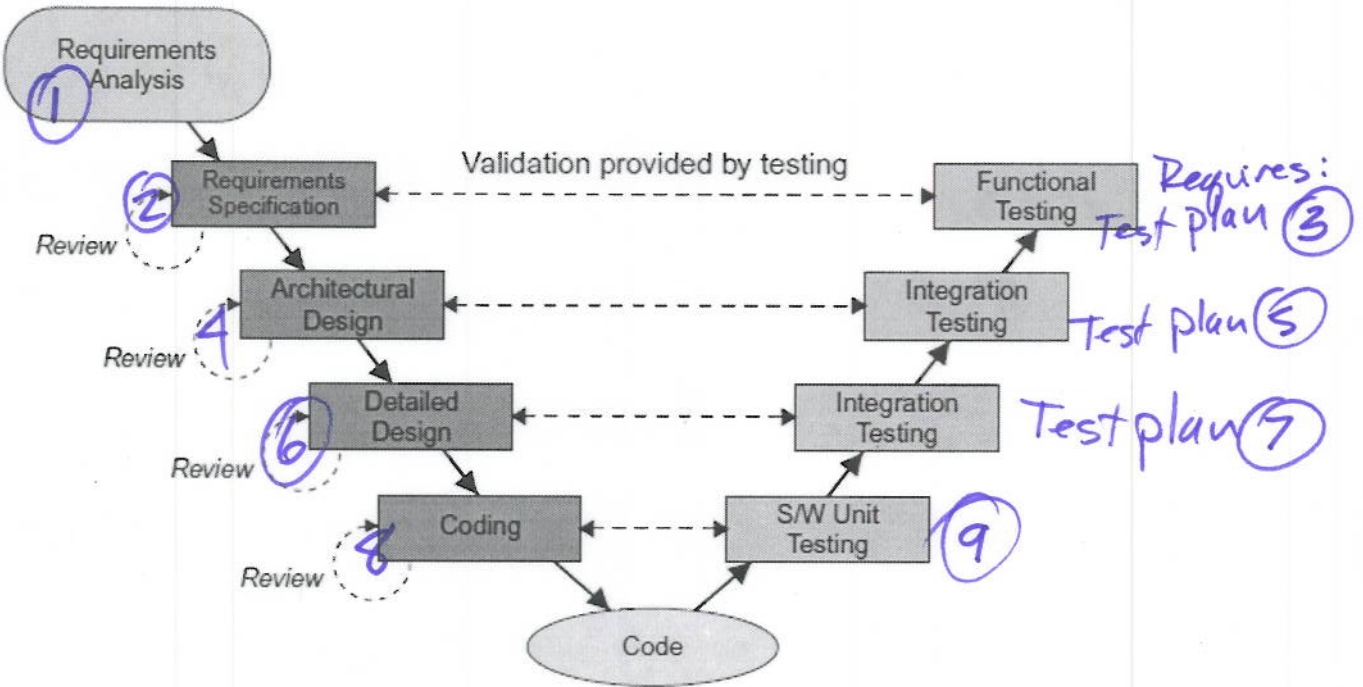
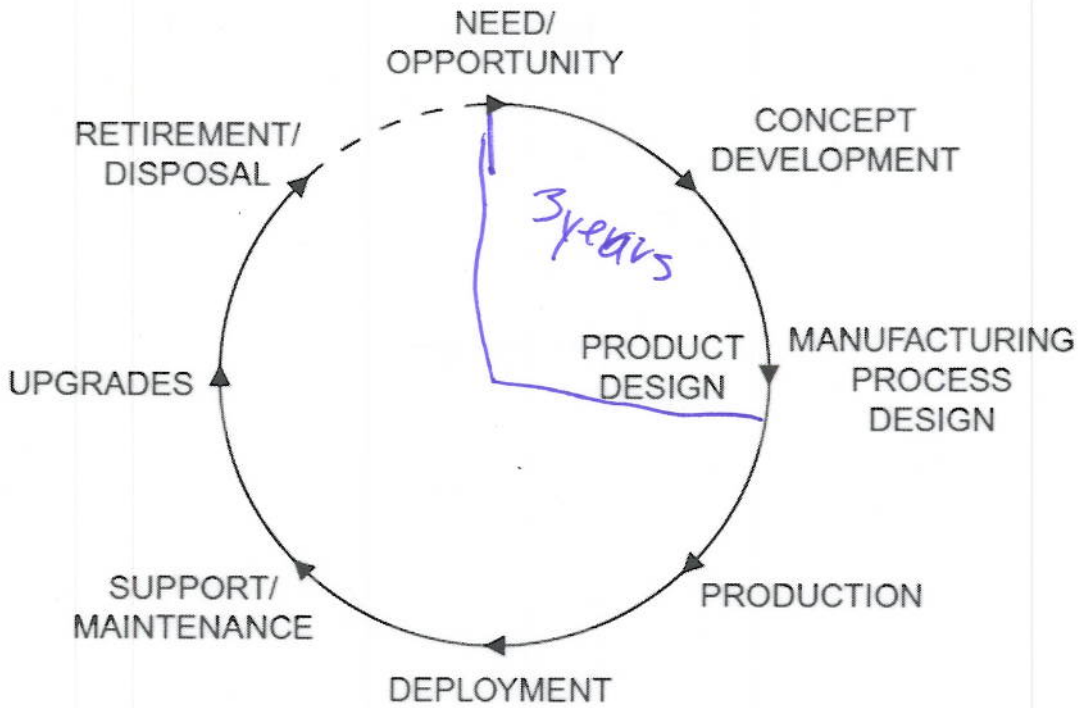
Design & Requirements phases

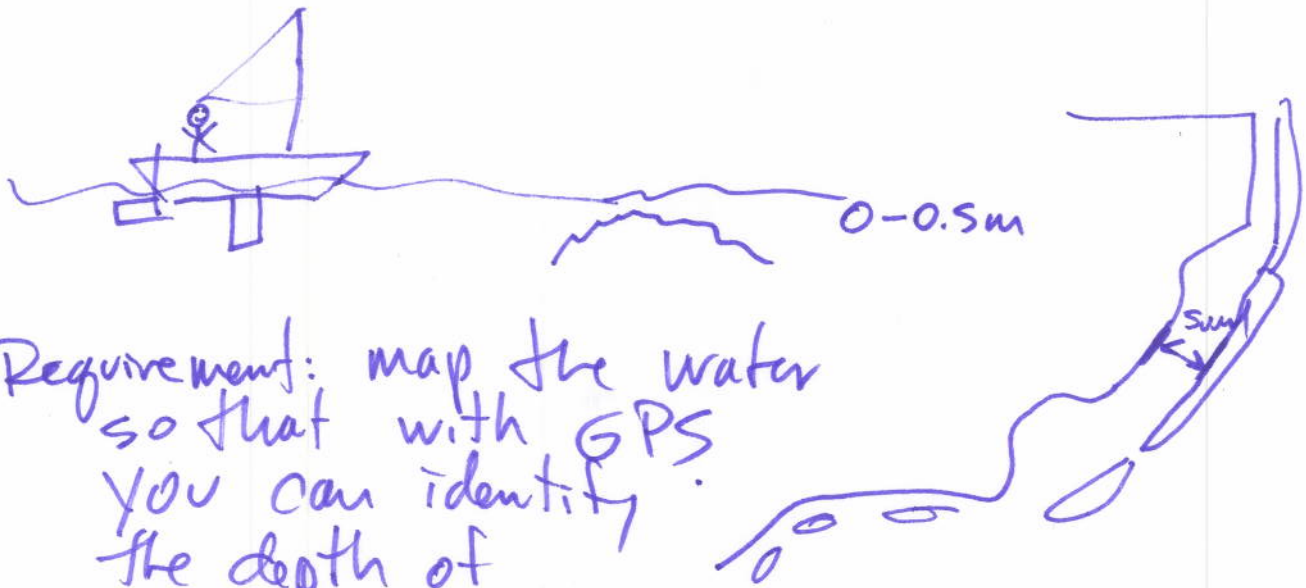
are ~~the~~ very small parts of the
 life cycle.

Example: Automobile → designed in
 3 years, can last 20 years

Ω

(2)





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't: The embedded device will be .3x.3x.3 meters & ~~draw~~ ~~not~~ be waterproof.

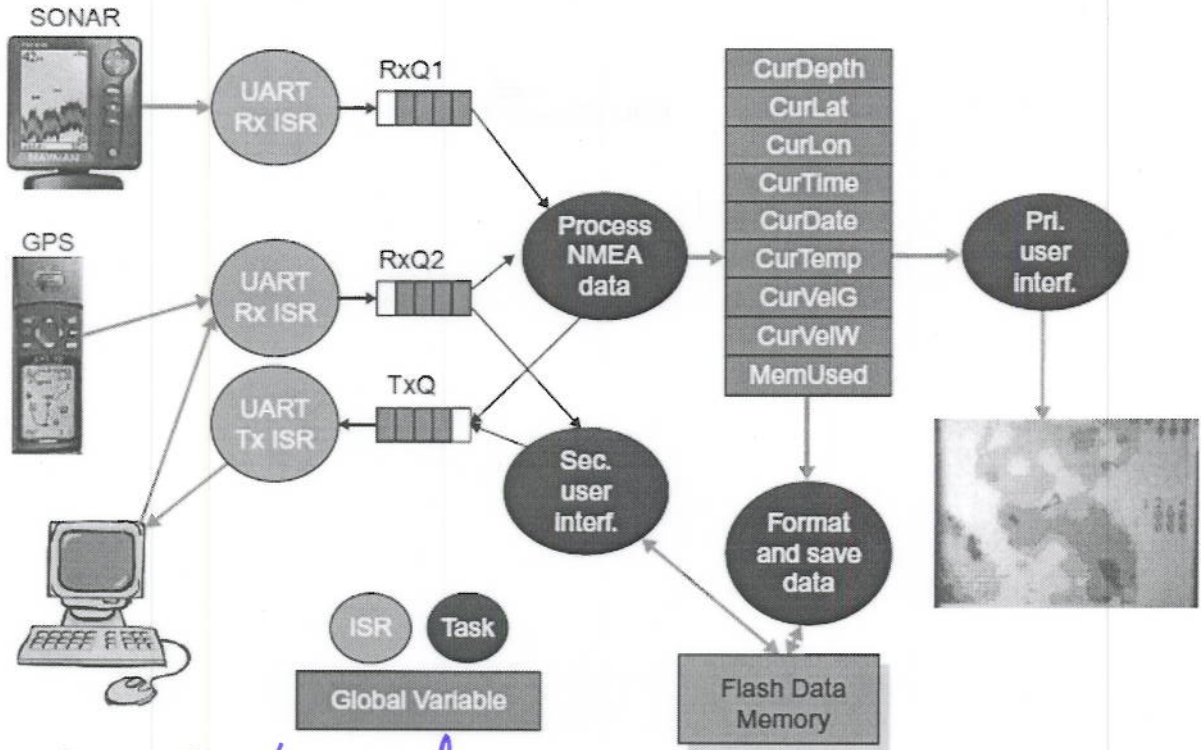
1.4 Req't: The device shall need 12V or less & draw no more than 1A.

1.5 Req't: The depth shall be measured with an OTS fish/depth finder every 1 second.

1.6 Req't: The GPS & sonar shall communicate via RS-232C at 4800 bps.

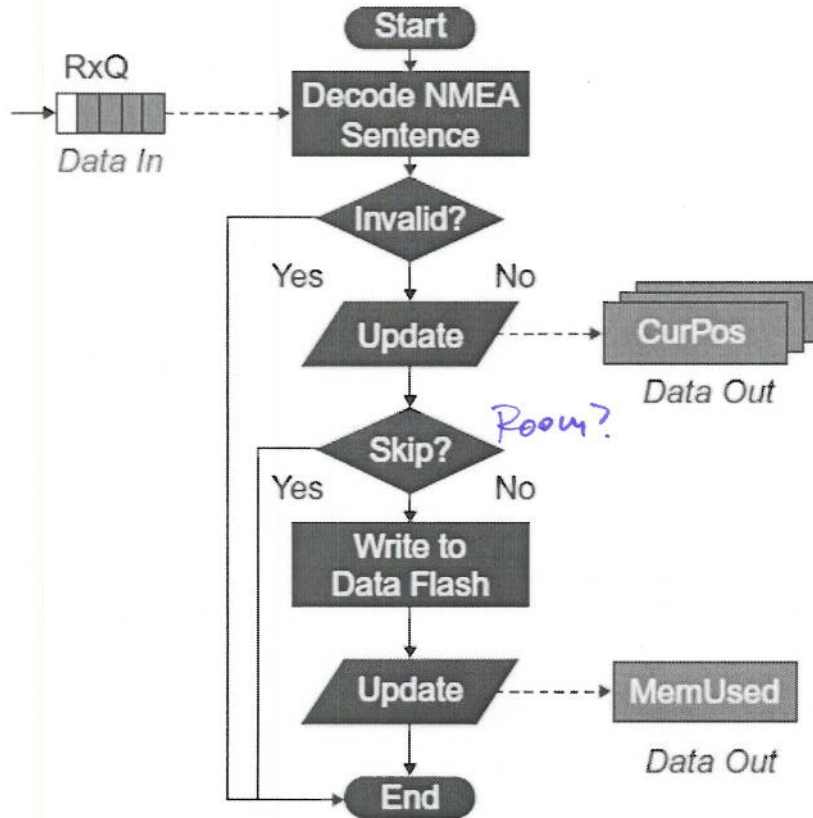
1.7 Req't: The device shall record the wind speed & direction

1.8 Req't: The device shall ~~computer~~ ~~need~~ a minimum of 512K bytes of DATA Flash



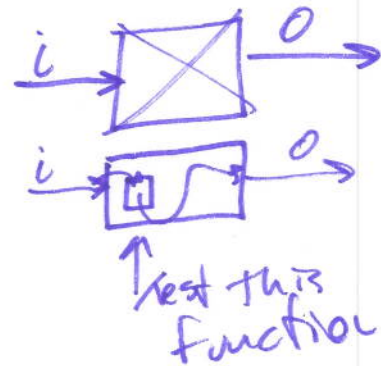
Architecture design

5



Flow chart → detailed design

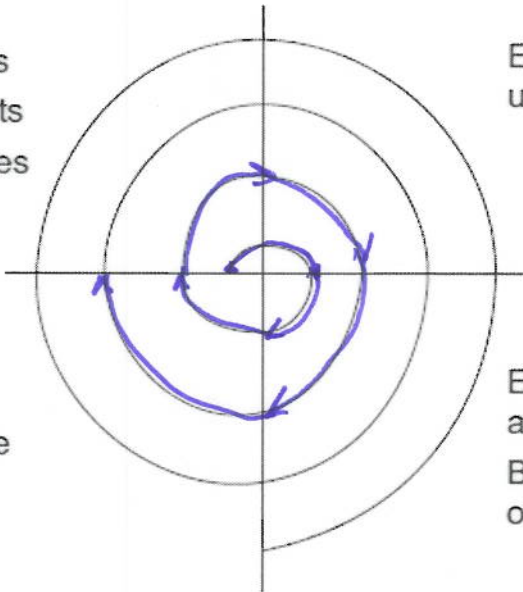
Testing
 black box
 white box



6

Acquire Objectives
Acquire Constraints
Acquire Alternatives

Evaluate the risk
using prototyping



Evaluate product
Plan the next cycle
Continue or stop

Evaluate the risk
aversion approach.
Build the product
of the cycle