Technology Convergence Concept and Application

Rick Williams

Ocean Renewable Energy Conference XI
September 21-22, 2016

OWET
OREGON WAVE ENERGY TRUST

1. Value Chain

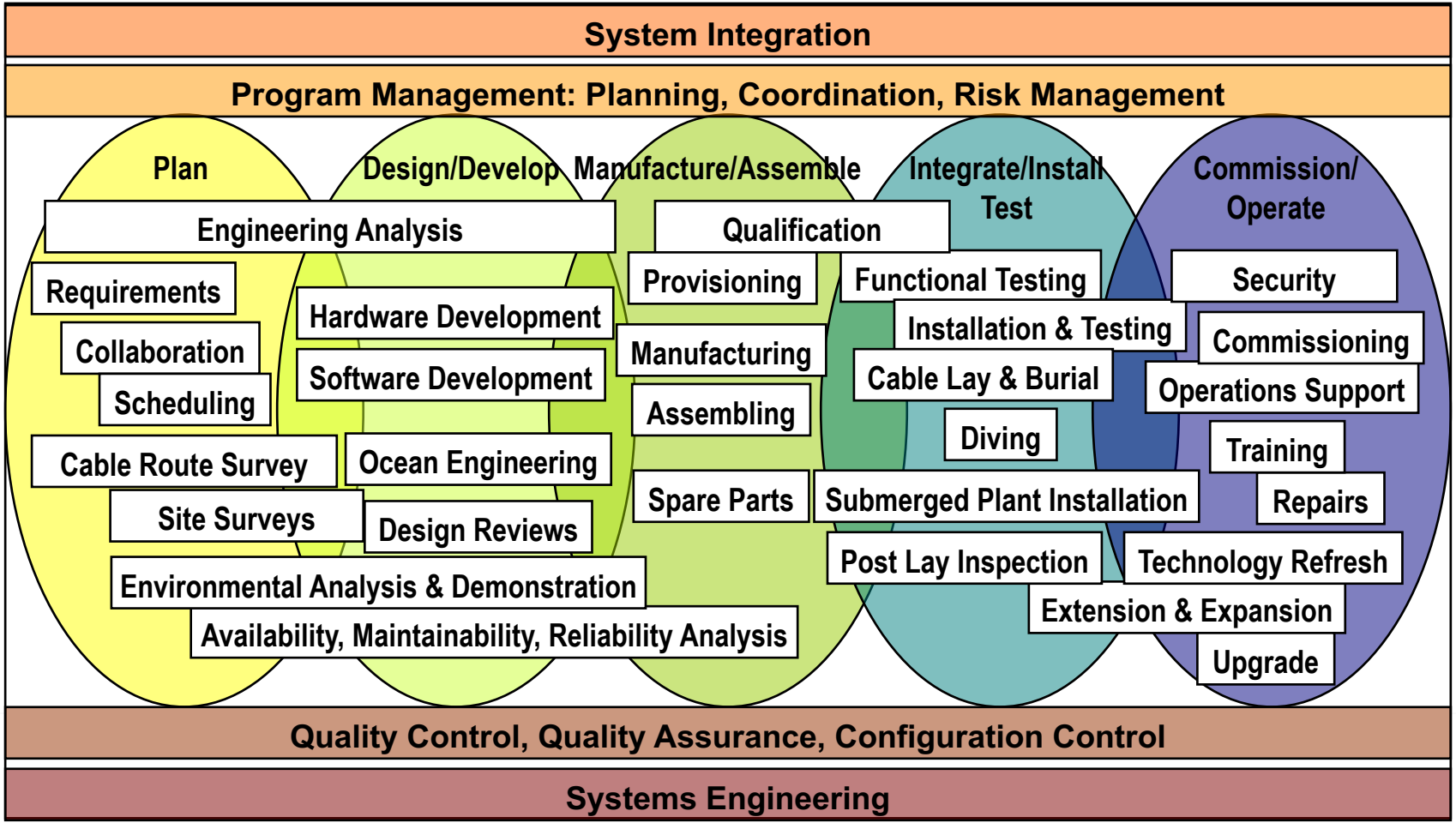
2. Infrastructure Planning and Due Diligence

3. Ocean Engineering

4. Systems Approach

5. Program/Project Management & New Product Development & Standardization of Critical Interfaces

It takes a village… Marine Renewable Energy Value Chain *…. Jobs*



Infrastructure Planning and Due Diligence

What about extreme events?
- We will meet and exceed relevant building standards.
- We will execute due diligence.

Site selection requires due diligence
- Site Specific analysis “with pointy pencil”
- Camp Rilea example – found good spots
- Vandenberg example – four candidate shore sites
  – five candidate offshore sites

Cable Route Desktop Study
- Study what has been done
- Gap Analysis
- ICPC Standard

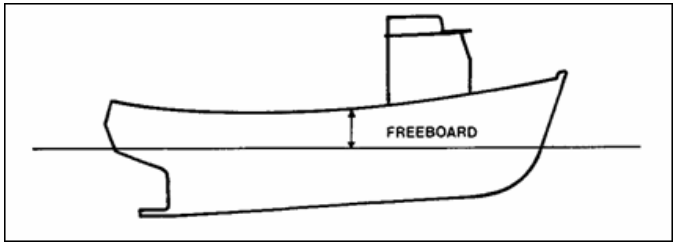
ICPC Recommendation

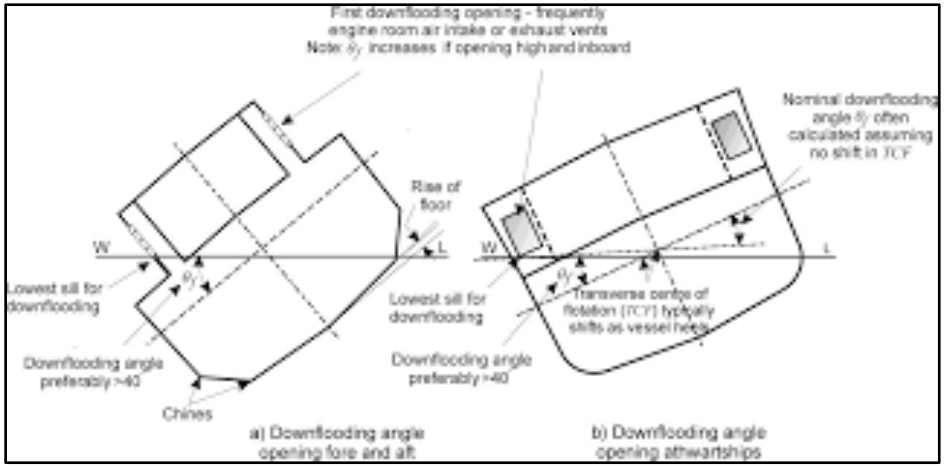
Recommendation No. 9

Minimum Technical Requirements for a Desktop Study (also known as Cable Route Study)

Ocean Engineering

- Multi-disciplinary
- Safety and risk management
- Freeboard and Down-flooding
- Extreme Waves



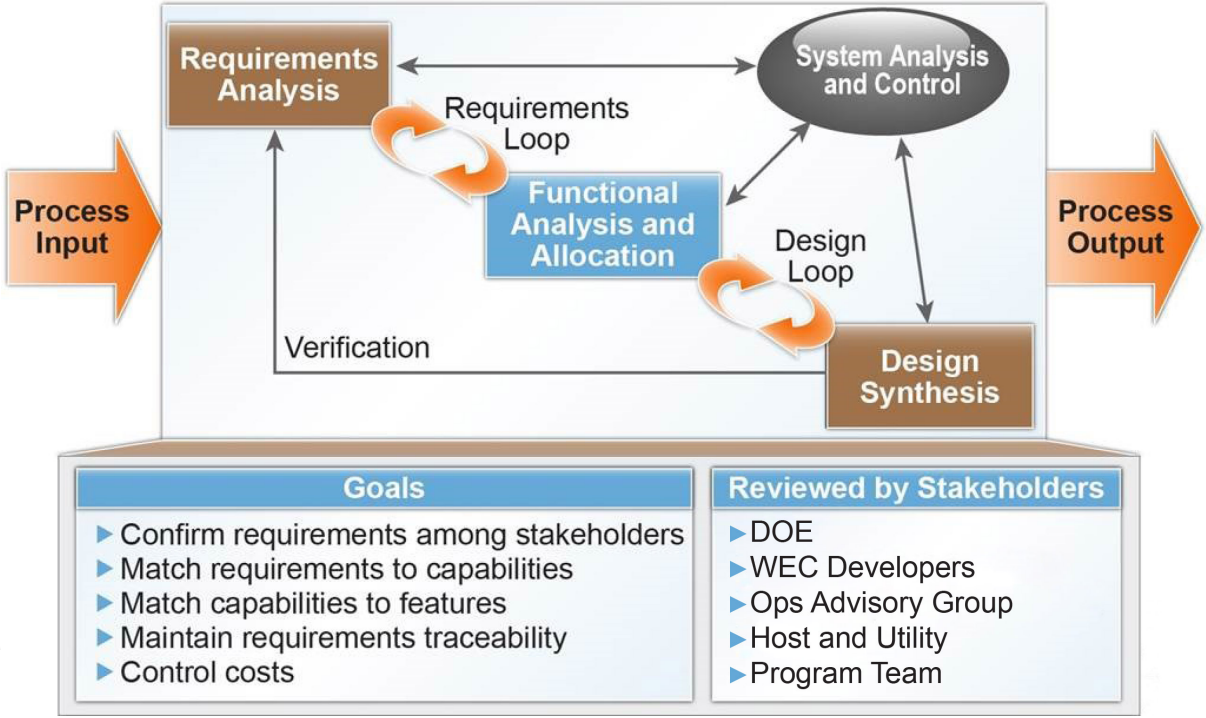


Systems Approach:

Requirements-Driven / Technology-Neutral / Vendor Agnostic

Requirements and tracking to requirement features.

Testing and validation as opposed to hope.



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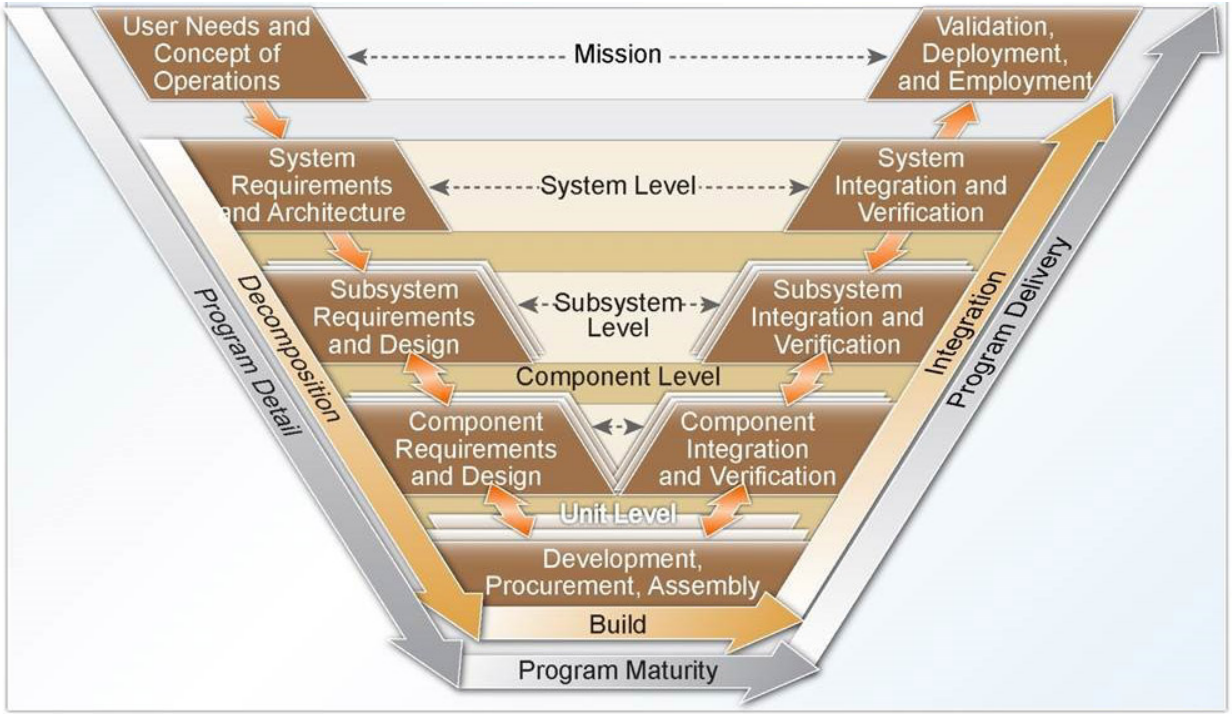

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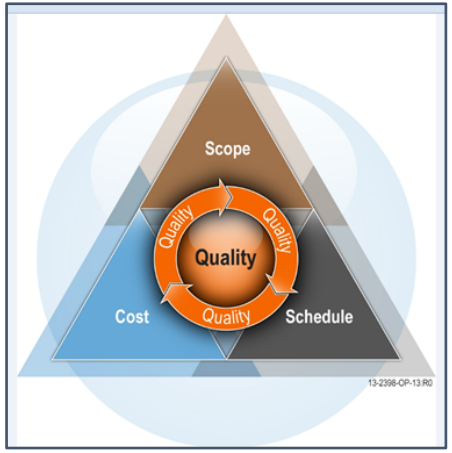
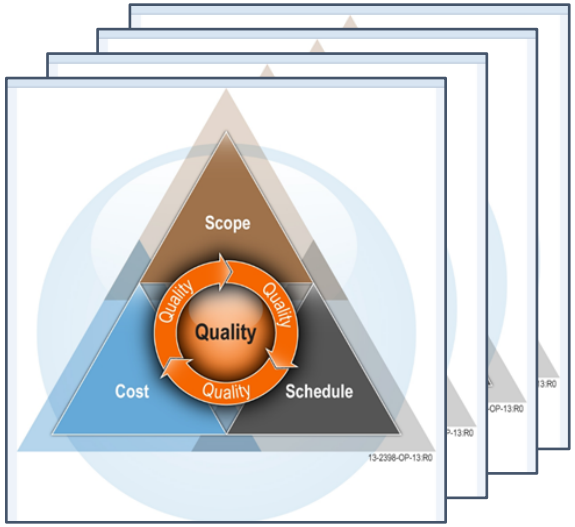
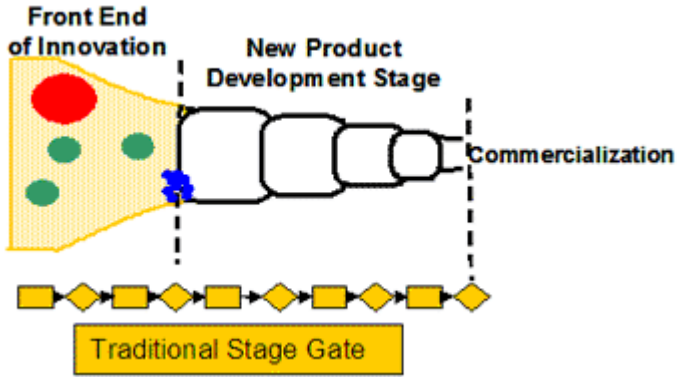
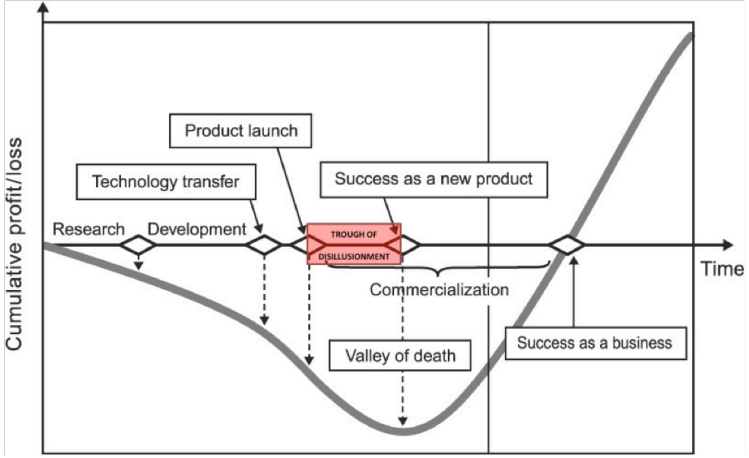
Project Management vs Program Management vs New Product Development









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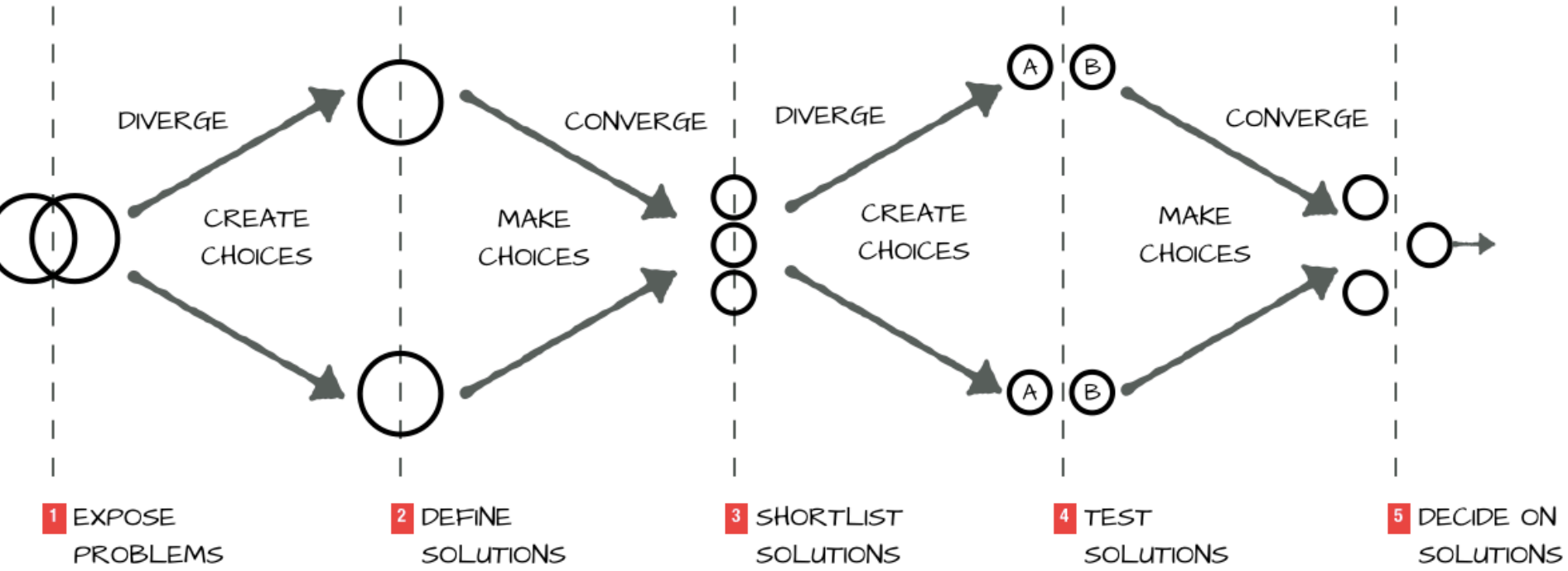
New Product Development Model: Divergent-Convergent Thinking



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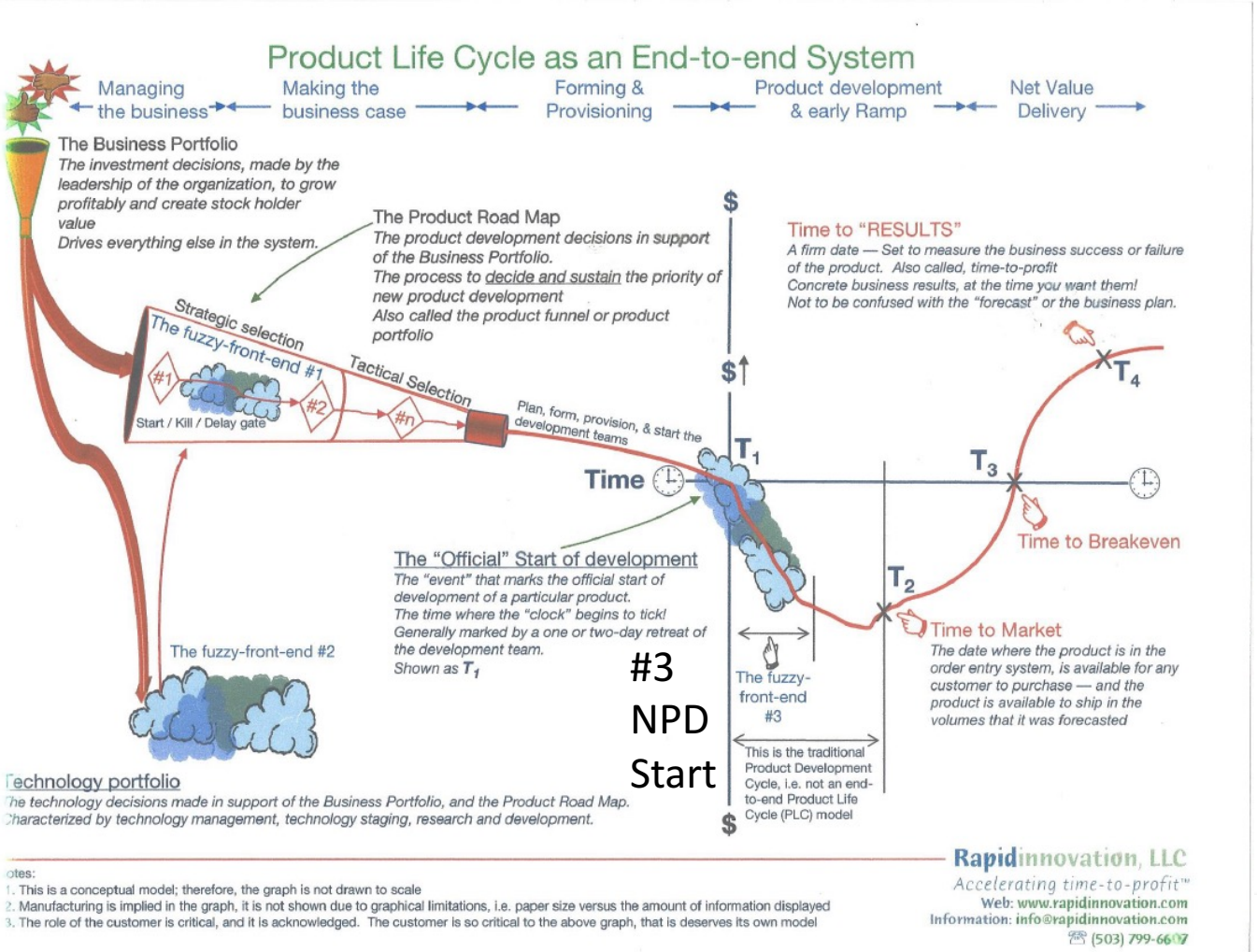
#1 Business Portfolio

#2 Technology Portfolio



New Product Development: Triple Fuzzy Front End

New Product Development: Spectrum of Solutions

Preliminary Design Phase

Final Design Phase
Detailed Design

Conceptual Design Phase

In the Water

Wave Tanks

Demonstration

Modeling

Reliability Phase

CAD

Rounded
Boulder

PowerPoint

Boulder

Utility Grade

Bowling Ball

Tumble Weed

Cannonball

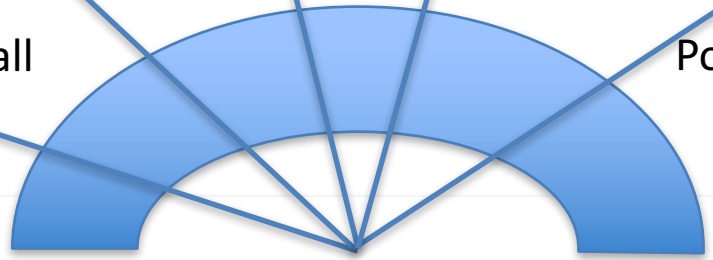
Cocktail
Napkin

Fuzz Ball

Polished Cannonball

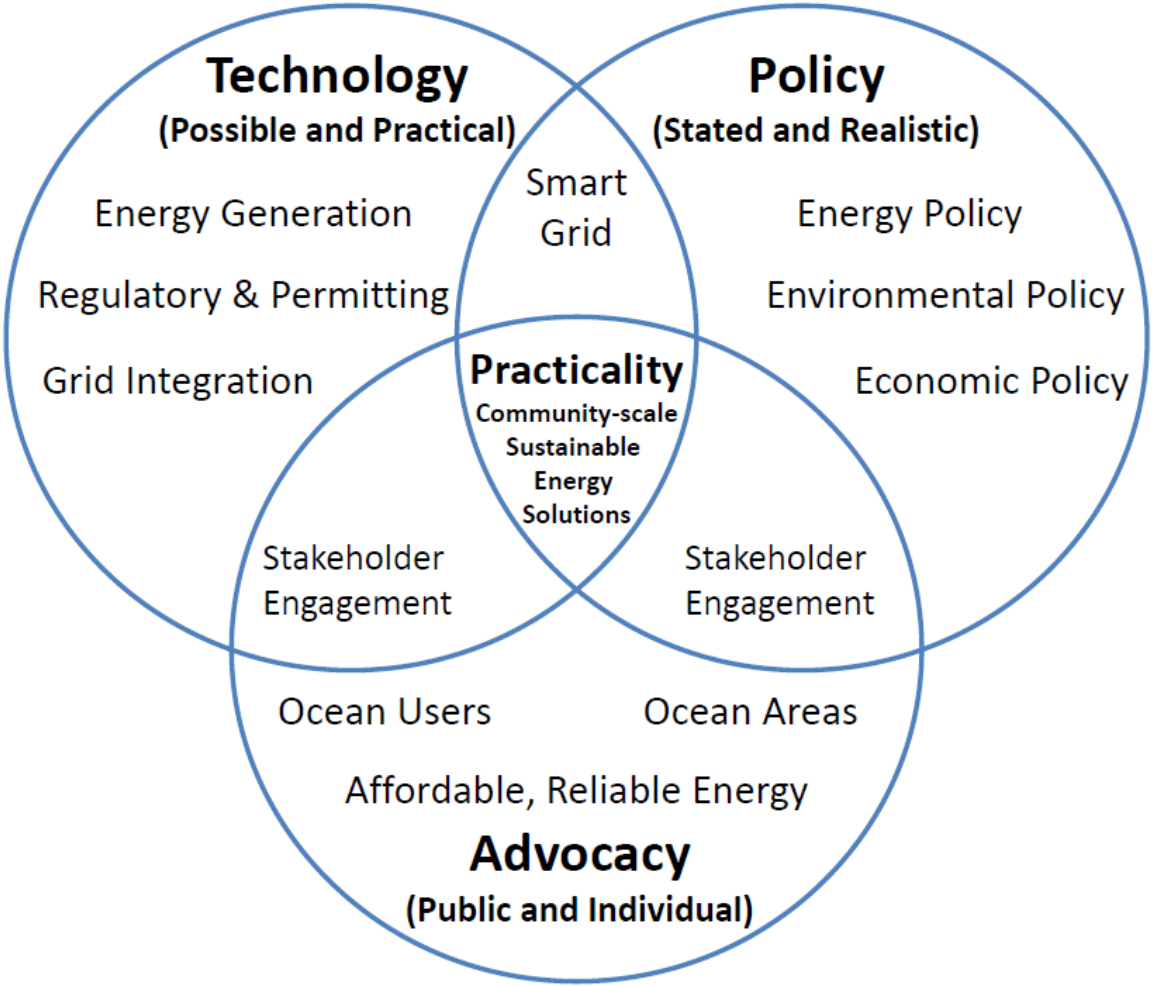
Dust Bunny

Precision Guided Munition



Fuzzy

Crunchy


Technology
(Possible and Practical)
Energy Generation
Regulatory & Permitting
Grid Integration
Policy
(Stated and Realistic)
Energy Policy
Environmental Policy
Economic Policy
Smart Grid
Practicality
Community-scale Sustainable Energy Solutions
Stakeholder Engagement
Stakeholder Engagement
Ocean Users
Ocean Areas
Affordable, Reliable Energy
Advocacy
(Public and Individual)