



Water Hog



Design Concept

- All-terrain remote control vehicle with three degree of freedom rotating turret water firing system

Design Capabilities

- Remote control guidance system
- Interactive light and sound capabilities
- Water presence reactive sensors
- Pneumatic/hydraulic water firing system



Design Concept Sub-Systems

Sub-Systems

- Drive train/power systems
- Stamp II/basic circuitry
- LED/sonar/speaker
- Remote/servo/turret controls
- Pneumatic/hydraulic water firing mechanism

Drive train/power systems

- Motor selection for torque and speed
- Steering mechanism
- Treads/wheels
- Piston pneumatic compressor mechanism
- Weight, speed, acceleration, and durability studies
- Stamp II interface



Design Concept Sub-Systems

Stamp II/basic circuitry

- Sensors and actuators
- Acoustics and visual interaction
- Pressure regulation
- Sonar – water level sensory task
- R/C – Stamp II interface
 - Motor and servo control



LED/sonar/speaker

- Low cost sourcing
- LED vs. laser diode
- Speaker acoustics
- Potential sound acquisition – e.g. Contra® explosion noises
- Size and weight studies

Design Concept Sub-Systems

Remote/servo/turret controls

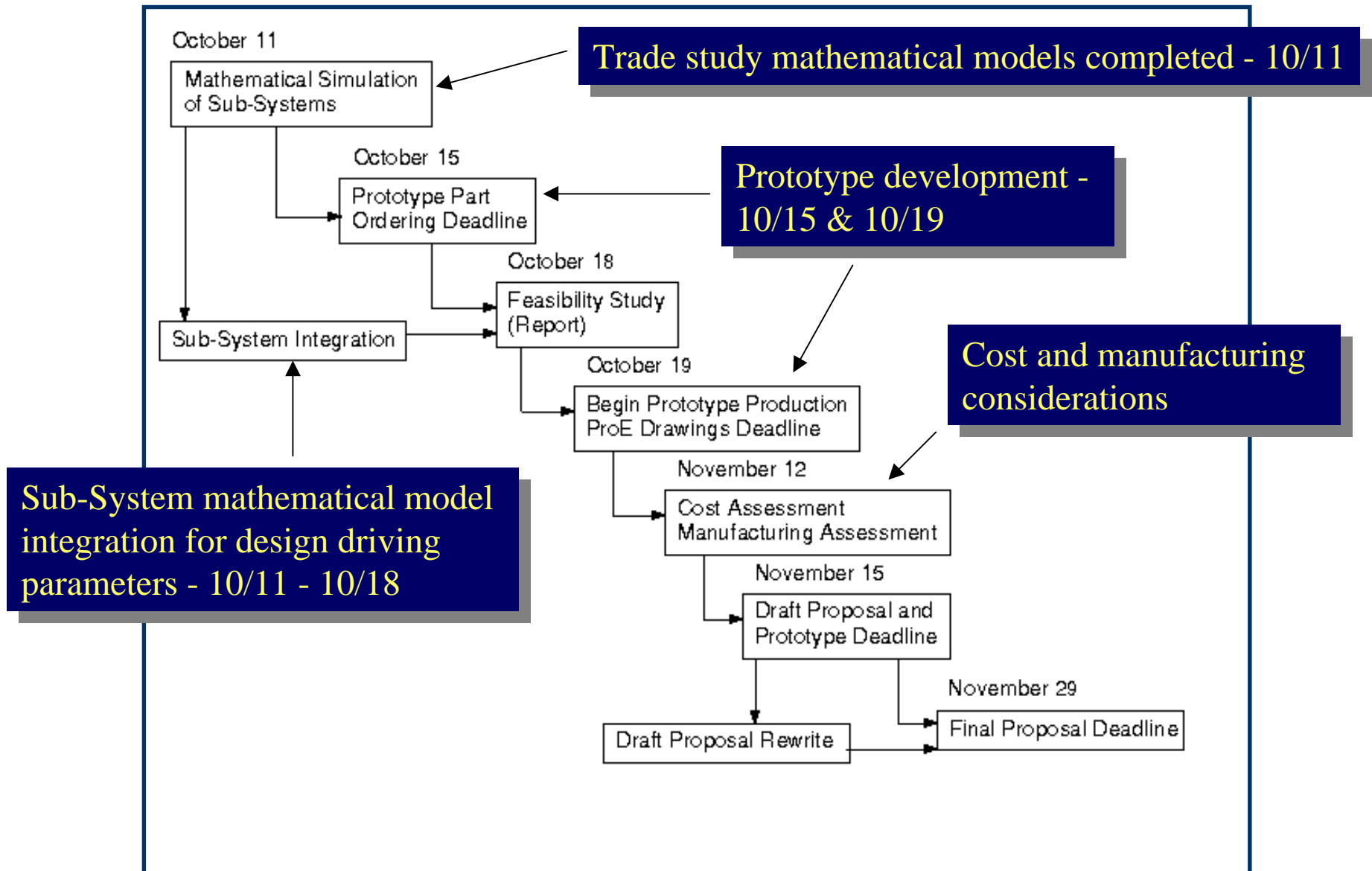
- 5-channel remote control
- Stamp II interfacing
- Turret rotation, barrel elevation
- Motor speed control
- Servo kinematics



Pneumatic/hydraulic water firing mechanism

- Pneumatic vs. pump firing mechanism
- Piston compression system powered by drive train with maximum pressure release valve
- Actuated valve (piezoelectric)
- “Smart compressor” system – Stamp II interface
- Trajectory studies, firing speed, water reservoir

Design Project Plan



General Overview



- Remote control all-terrain vehicle (tank)
- Visual and sound interaction
- Embedded intelligence
- Next generation in interactive water toys

- Rotation turret with elevating firing capabilities
- Pneumatic, pump, or “smart” compressor water firing system
- Potential for outdoor play
- Durable and safe for children above the age of 8

