Game Reveal – **FIRST Releases Game to the World**

1. Information Gathering: Learn the game – Work Day 1

With no regards to strategy or design, team achieves mastery in understanding the game.

2. Strategy Phase – Work Day 2

- Consider what the robot is going to do & explicitly what the robot is not going to do.
- Functional Requirements: metrics of success are documented. These must be ***testable***.
- After whole team discussion, game play strategy is decided by the Desicion Voting Council (DVC).

3. Design Phase – Work Day 3 – 13

- Work begins on one (or multiple) alpha bots
- Robot is compartmentalized into various discrete subsystems (as best as possible)
- Any predetermined subsystems created before build season are briefly reviewed & finalized for approval to step 4. Depending on human resource allocation hardware & software are started as soon as possible.
- Design Process
  - Research existing mechanisms (do not reinvent the wheel)
  - Design novel solutions
  - Prototype & CAD various mechanisms
    - Multiple quick & dirty prototypes (< day)
    - Fewer full-size mock up prototypes on drivetrain
    - Test metrics - Refine prototype until functional requirements achieved
  - Preliminary Design Review (PDR): Remove obvious unsuccessful designs. Multiple PDR's until design is ready for Critical Design Review.
  - CAD nearly complete robot to fully visualize design
- Critical Design Review (CDR) of full robot – Final designs decided by DVC
- Precision Mechanical Design Review: Smaller, more refined group of mechanical engineering students & mentors review detailed hardware components for integrity & proper placement. CAD is updated to reflect changes.

4. Build Phase – Work Day 6 - 36

Hardware	Software
❖ Finalize CAD, precision drawings, & exploded Views	❖ Design top level architecture
❖ Subsytem manufacturing: decide which parts will be manufactured vs. acquired	❖ Define tasks & subtasks
❖ Subsytem assembly	❖ Write task/subtask code
❖ Ful unit robot assembly	❖ Integrate → test on simulations → debug → optimize code
	❖ Document & comment for user ease
	❖ Deploy & continued maintenance

5. Testing Phase – Work Day 13 – 33

- Integration Testing: run code & test hardware & software task integration
- Validate robot strategy & functional requirements
  - Revisit step 3 or 4 if functional requirements are not met or any subsystems do not work. Careful consideration to personnel time and material resources if proposing major changes

6. Practice Game, Refine Human Player & Optimize Hardware & Software – Work Day 8 - 37

- Simulate game & human player practice
  - Drive team & Pit team practice all roles (strategy, scouters, drivers, operations, pit managers, etc.)
  - Continuous & repeated driver/operator teleop practice
- Autonomous Practice: routines finalized
- Hardware & software continually optimized to meet or exceed functional requirements

Compete → Debrief → Practice → Repeat

Continuously Iterate & Prototype