STRATEGIC DESIGN

Increasing Performance and the Speed of Baja Car Development
History of Evolution

BAJA COMPETITION VEHICLE IN 2002

BAJA COMPETITION VEHICLE CURRENT
History of Evolution

ROLLER CHAIN REDUCTION (LATE 80’S -2005)  CURRENT PLANETARY/SILENT REDUCTION
Current Competition Trend

- Demand for Higher Performance Level
- More Sophisticated Design
- Increasing Complexity
- Increasing development time
Competition Wide Trend

BRAKING BASED TRACTION CONTROL
OREGON STATE 2007

MID ENGINE DESIGN
UNIVERSITÉ DE SHERBROOKE 2008
Suspension Design Strategy Origination

- Compile Suspension Information
- Create a Baja Vehicle Dynamics Reference
Growth of the suspension Design Strategy

- Document and Leverage Past Experience
- Accelerating and Improving The Design and Documentation Process
  - "Enabling" Design Process vs. "Bureaucratic"
- Growing talent, knowledge, and ideas within the team.
Leveraging Past Experience

- Create Database of Suspension Information
- Motivate conversations between alumni and current members
- Create the Suspension Designer Handbook
Accelerating the Design Process

- Enhancing communication through “on the fly” documentation
- Providing tools for Idea evaluation and tough design decision making.
- Helping designers ask critical questions of concepts.

**Speed**
Creation of the Designer’s Toolbox

- Compile effective templates for design process
- Provide Examples
- Create a place for designers to turn when faced with complex design decisions
Team Cost/Benefit Analysis

Team Cost Benefit Summary

- Strong Benefit
- Neutral Benefit
- Large Cost

- Team, -0.2
- Manufacturing, 1.2
- Design, 1.2
- Testing, 1.6
Strategic Design Cycle

1. Design
   - On the Fly Documents
   - Improved Communication
   - Critical Analysis of Cost/Benefit

2. Test

3. Build
   - Optimized Usage of Resources
   - Reliable Goal Completion
   - Broader Understanding of Design

Increasingly Competitive Team
Lasting Team Knowledge Gain
The Strategy Take Home

“Efficient Methods”
Design Process
Organize Knowledge

“Engineer Smarter”
Avoid Design Failure and
Efficiently use Resources

“Continued Excellence”
in a Fast Paced Environment
Discussion

- How to create lasting resources for the team??
- How can we create a motivating and successful design environment?