

Part Naming

- Typical automotive convention
 - Part noun name - 1 or 2 words
 - Description
 - Application
- Examples
 - Wishbone Assy - Left, Front, Upper
 - Bolt - M8x25LG, Grade 9.8 - Left Front Upper Wishbone Attach.
 - Tooling - Upper Wishbone Welding
 - Padding - Main Hoop
 - Tie-Wrap - Main Hoop Padding Attach.
 - Clamp - 37 mm - Radiator Upper Hose/Radiator

Note: This part naming convention is **not** a requirement

Addenda

- A unique addendum is permitted for every competition entered
- Allows teams to change design and content between events
- A cost modifier is used for all changes to the BOM made through addenda
 - Items added in an addendum have 125% of the table cost
 - Items removed in an addendum are credited 75% of the table cost
 - Limits teams submitting entire Cost Report as an addendum
- Do not want length limits since accuracy is scored
- From Rule S.4.17.3:

Note: Late changes to designs impact costs in the real world. Contracts need to be altered, commodity costs can change, cancellation fees may be incurred and information needs to be transmitted to suppliers. The scaling factors for the addenda capture this as well as encourage teams to submit full and accurate information with the initial Cost Report.

Penalties

The penalty system
seems complex -
but is simple at the
Competition

Two tier system

- Method A – Fixed Point Deductions
- Most errors will be penalized using Method A

3.18 Penalty Method A- Fixed Point Deductions

3.18.1 From the Bill of Material, the cost judges will determine if all parts and processes have been included in the analysis. In the case of any omission or error the judges will add a penalty proportional to the BOM level of the error. The following standard points deductions will apply:

- Missing/inaccurate material, process, fastener.....1 pt.
- Missing/inaccurate part..... 3 pt.
- Missing/inaccurate assembly..... 5 pt.

Note: Each of the penalties listed above supersedes the previous penalty. If a 5 point deduction is given for a missing assembly the missing parts are ignored for Method A. Method B would include the cost of the missing parts in the calculation.

- Examples
 - Five M6 fasteners listed, six used – 1 pt.
 - Three kilograms of steel listed, 4.4 used – 1 pt.
 - Bearing carrier face machined, mill operation not included – 1 pt.
 - Installation labor for steering wheel missing – 1 pt.
 - Upright cost as cast but actual part billet machined – 3 pt.
 - Pneumatic shifter not included on BOM – 5 pt.
- Applied to Accuracy Score

Penalties - Cont'd

- Method B – Adjusted Cost Deductions

3.19 Penalty Method B – Adjusted Cost Deductions

The alternative penalty will be calculated using the following equation:

$$\text{Penalty} = 2 \times (\text{Table Cost} - \text{Team Reported Cost})$$

- Intended to **stop “big errors”** that would not be penalized enough with Method A
- **Applied to Adjusted Cost** of vehicle
- Without Method B teams could “forget” systems and take fixed point penalty
- **No penalty is applied when values are over estimated**
 - **Be conservative and estimate high** when part geometry is complicated
 - Or when time is short and the Report is due

“Real Case”

- Event specific
 - Could be cost reduction
 - Could be weight reduction
 - Could be
- Usually published 3-4 weeks before the event.
- Has been 3 possible cost reduction exercises & team gets 1 at random at the Event
- In 2012 Michigan & Lincoln had the same list of systems to present
- Time limit (In 2012 for Michigan & Lincoln it was 5 minutes)
- Flip charts optional
- No hand outs or use of electronic devices
- Must be based on the system on your car

“Real Case” - Cont’d

- Presentation will be evaluated on:
 - The process or methodology(ies) used to develop the proposal(s)
 - The alternatives presented
 - The credibility of the proposals
- Proposals could include
 - Reduced “content”
 - Simplify
 - Change manufacturing process, e.g. machined from billet to cast and machined.

Do's & Don'ts

- Do start your BOM **NOW!**
 - Distribute the work
- Do ask questions early
- When in doubt be conservative
- Don't miss any parts OR processes from your Cost Report
- Don't submit your Cost Report late
- Do prepare for the Real Case.
- Don't miss your assigned time at the Event

Do's & Don't's - Cont'd

- Don't forget:
 - Wheel weights
 - Brake bleeding
 - Suspension alignment/set-up
 - Safety wiring
 - Paint
 - Welding jig tooling
 - Tie wraps/Zip ties

Questions?