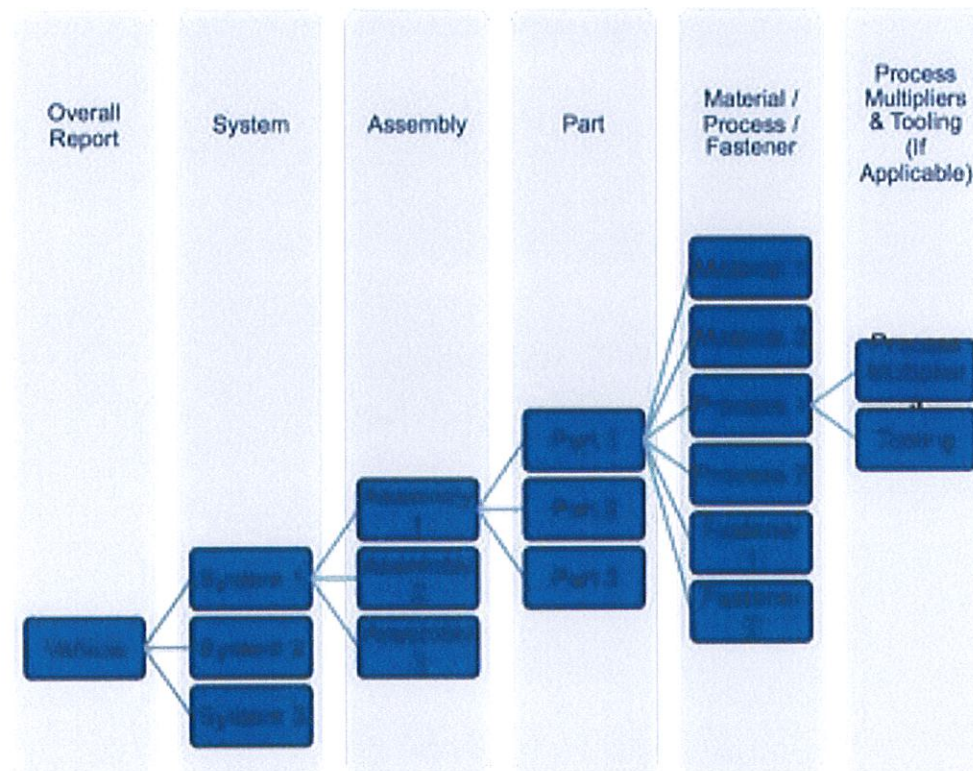


## Cost Report – BOM Structure

- The Cost Report is a costed Bill of Material (BOM)
- Hierarchy: System → Assembly → Part → Material/Process/Fastener → Tooling



## Cost Report – BOM Structure - Cont'd

- Eight Systems:
  - Brakes
  - Engine & Drivetrain
  - Frame & Body
  - Electrical
  - Misc. & Finish
  - Steering
  - Suspension
  - Wheels, Bearings & Tires
- **This structure is required**

See Appendix S-3 for  
more details

## Cost Report – BOM Structure - Cont'd

- Sample BOM from rules:

S4.10.2 An example BOM structure is shown below:

- Engine & Drivetrain..... System
  - Engine..... Assembly
  - Differential..... Assembly
    - Housing..... Part
      - Aluminum..... Material
      - Needle Bearing..... Material
      - Sand cast..... Process
        - ✦ Die & Core Package #4..... Tooling
      - Machining-Turn..... Process
      - Weld..... Process
      - M6x1.25 Grade 8.8..... Fastener
    - Internals..... Part
    - End Cap..... Part

The BOM must follow the format given above. There must be no other BOM levels added or any removed. Deviations from the structure published will be penalized per Section S4.10.



## Make vs. Buy

- Designation of “Made” or “Bought” is applied to each part on the car
- Determines how Cost is calculated
  - “Made” parts are those that start with raw materials (aluminum, etc.), have operations performed on them and may have subassembly
    - o Examples: pedals, differential housing, brake discs
  - “Bought” parts come right off the tables and get assembled to vehicle
    - o “Bought” parts can have operations if the team modifies the standard parts
    - o Examples: dampers, engines, safety harness
- “Bought” parts appear in tables by manufacturer and model (generally)
- “Made” parts are designated as “Student Built”

## Make vs. Buy - Cont'd

- Table from rule S4.13.3

How Table Lists Part	How Team Actually Acquired the Part	
	Team Made	Team Bought
Table Lists Part as "Made", or Part is not Listed in the Tables	Cost as "Made"	Cost as "Made"
Table Lists Part as "Bought"	Team made option NOT in table cost as "Bought". If team made option in table team can choose either "Bought" or "Made"	Cost as "Bought"

## Make vs. Buy - Cont'd

### Explanation

- Table lists a part as “Bought” but team actually made the part:
  - If the Table lists “Team Made” as an option, then team can choose to cost the part as “Bought” or “Made”.
  - If the table does NOT list “Team Made” as an option, then the cost MUST be taken as “Bought” from the Tables

## Some Items - All “Cost as Made”

- Axle
- Brake Rotor/Disc
- Composite tubing
- Differential Housing
- Pulley
- Sprocket or gear
- Fuel Rail
- Heat Exchanger Fan Shroud
- Muffler
- Mirror, Rear View, Housing
- Seat
- Steering Pinion
- Steering Rack Housing
- Steering Rack
- Steering Wheel, Quick Release
- Steering Wheel
- Throttle Body

## Published Cost Materials

- Formula SAE Rules, Part S – Article 4
- Appendix S-1 Cost Models and Cost Methodology
- Appendix S-2 Standard Part Numbering
- Appendix S-3 Organized List of Systems and Assemblies
- Appendix S-4 Power Tool Package Envelopes
- Table: Materials
- Table: Process
- Table: Process Multipliers
- Table: Fasteners
- Table: Tooling
- Two Cost Report Examples



## Cost Tables

- Materials - Lists the **costs for raw materials** used to manufacture parts built by the teams and also of **finished parts purchased** by the teams.
- Process - **Operations which modify materials** such as cutting, joining, assembling, etc.
- Process Multipliers - Modify the standard costs of different operations to account for **material and geometric differences in the part**
- Fasteners - Consists of not only traditional fasteners such as bolts, nuts and rivets **but also adhesives, hose clamps and retaining rings**
- Tooling - The **production tooling** associated with processes that are **specific to the part geometry**

