RNSS
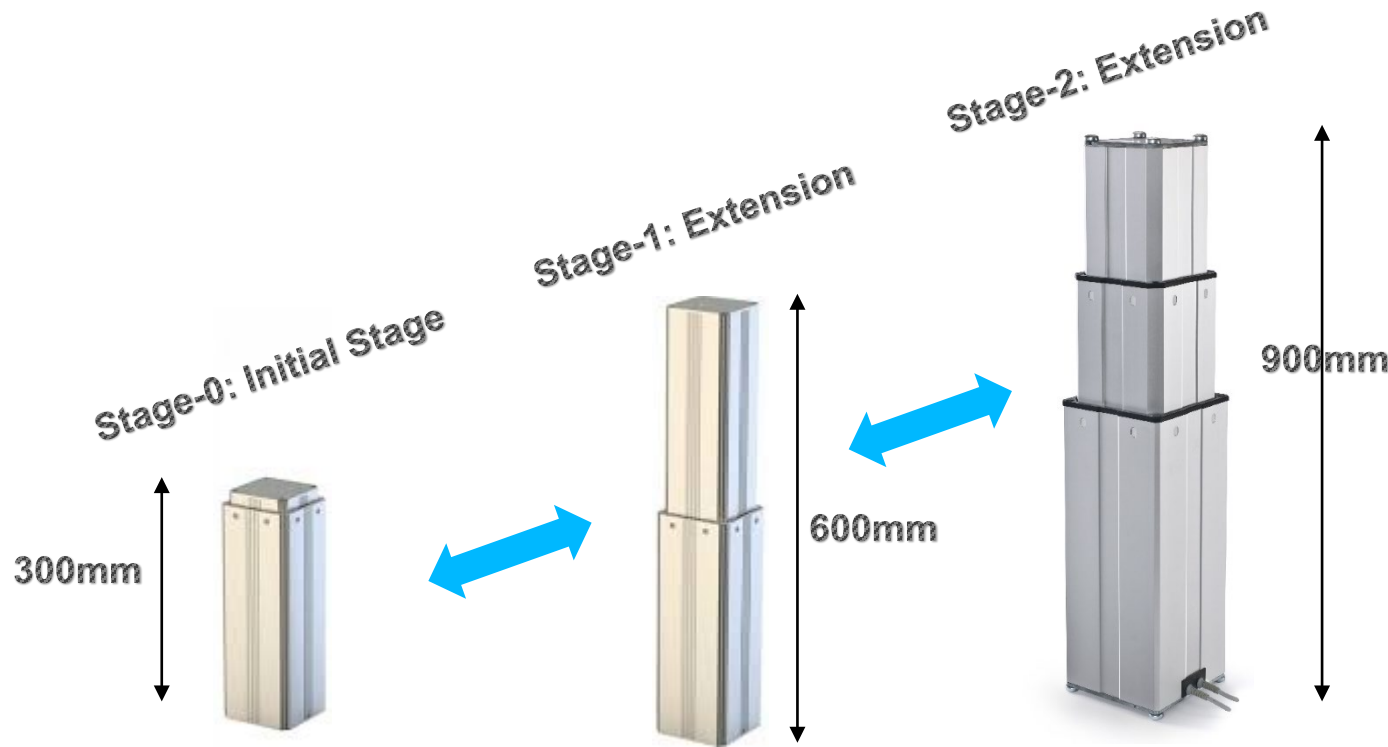# Problem Statements
for

IANC Conclave 2024

① Topic : Torque carrying multistage shaft mechanism with Sequential Operation(as shown below)

Stage-0: Initial Stage

Stage-1: Extension

Stage-2: Extension

300mm

600mm

900mm

Note : Above image is only for illustration purpose
(Circular tube structure is preferable)

② Instruction for Sequential operation

1) Extension Sequence:
- Stage 0 → Stage 1 (Outer vs. middle sha...
- Stage 1 → Stage 2 (Middle vs. Inner shaf...

2) Reduction Sequence:
- Stage 2 → Stage 1 (Middle vs. Inner shaf...
- Stage 1 → Stage 0 (Outer vs. middle shaft)

3) This system to be manually operable (Electrical or Hydraulic assist not allowed)

③ **Outcome:**
→ **Design and Demonstrate the ideas through CAD and Virtual working model.**
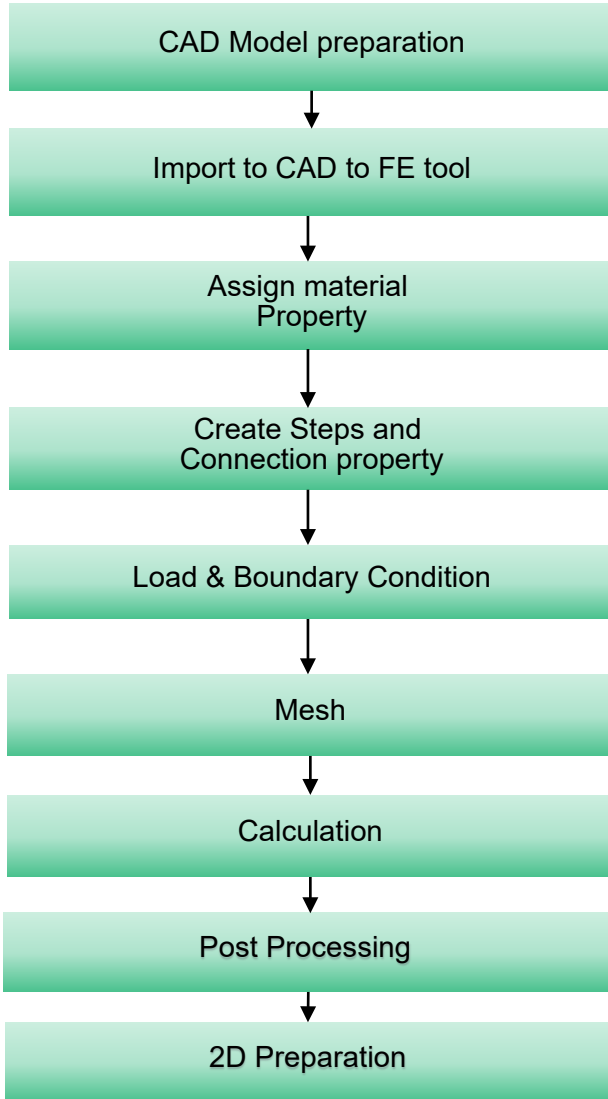→ **Concept will be rated as follows,**
- **Stage 1 & 2 – shall not extend or compressed together (One after another only & follow above conditions for sequential operation).**
- **More robust & rigid systems in terms of torsional load & sliding application.**
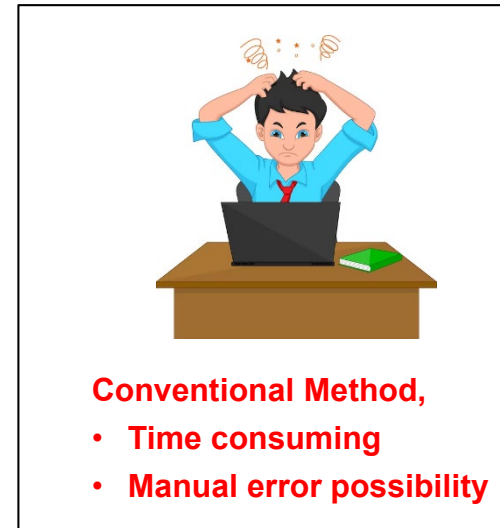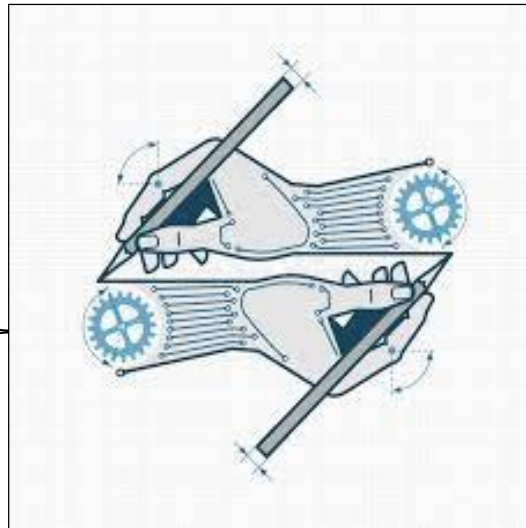
① Topic : Automation of CAD & CAE simulation steps.

General Workflow for CAE simulation

- CAD Model preparation
- Import to CAD to FE tool
- Assign material Property
- Create Steps and Connection property
- Load & Boundary Condition
- Mesh
- Calculation
- Post Processing
- 2D Preparation

Conventional Method

Conventional Method,
- **Time consuming**
- **Manual error possibility**

② Instructions:
- **Choose your own 3d Model.**
- **Use CATIA & Abaqus Tool.**

Automate?

- Get Results Faster
- Minimum Resource Utilization
- Pre-defined simulation process

③ Expected Outcome:
→ Develop & Demonstrate the techniques that can be used to reduce the time & error overall in the process wherever applicable.
→ Show the time consumed with automation b/w Conventional & automated process.
→ Use the automation wherever applicable to reduce the manual steps.

Competition Guidelines:

- Not more than 4 members per team.
- Max. Duration 07 Days.
- Select one Problem per team.
- Several team can collaborate on addressing the same problem.
- Teams are encouraged to use software and open-source tools, with proper acknowledgment in the final presentation..
- The teams must present a comprehensive solution along with their developmental journey during the event.
- Points will be awarded to the team depending on,
  - Problem Understanding
  - Research & Analysis
  - Creativity & Innovation
  - Technical Proficiency
  - Teamwork & Collaboration
  - Final Outcome & Presentation
- Team with Maximum points will be awarded the first and second prizes.
  - Winner Team – Rs. 20,000.
  - Runner Team – Rs. 10,000.

Thank You