IPRO 341

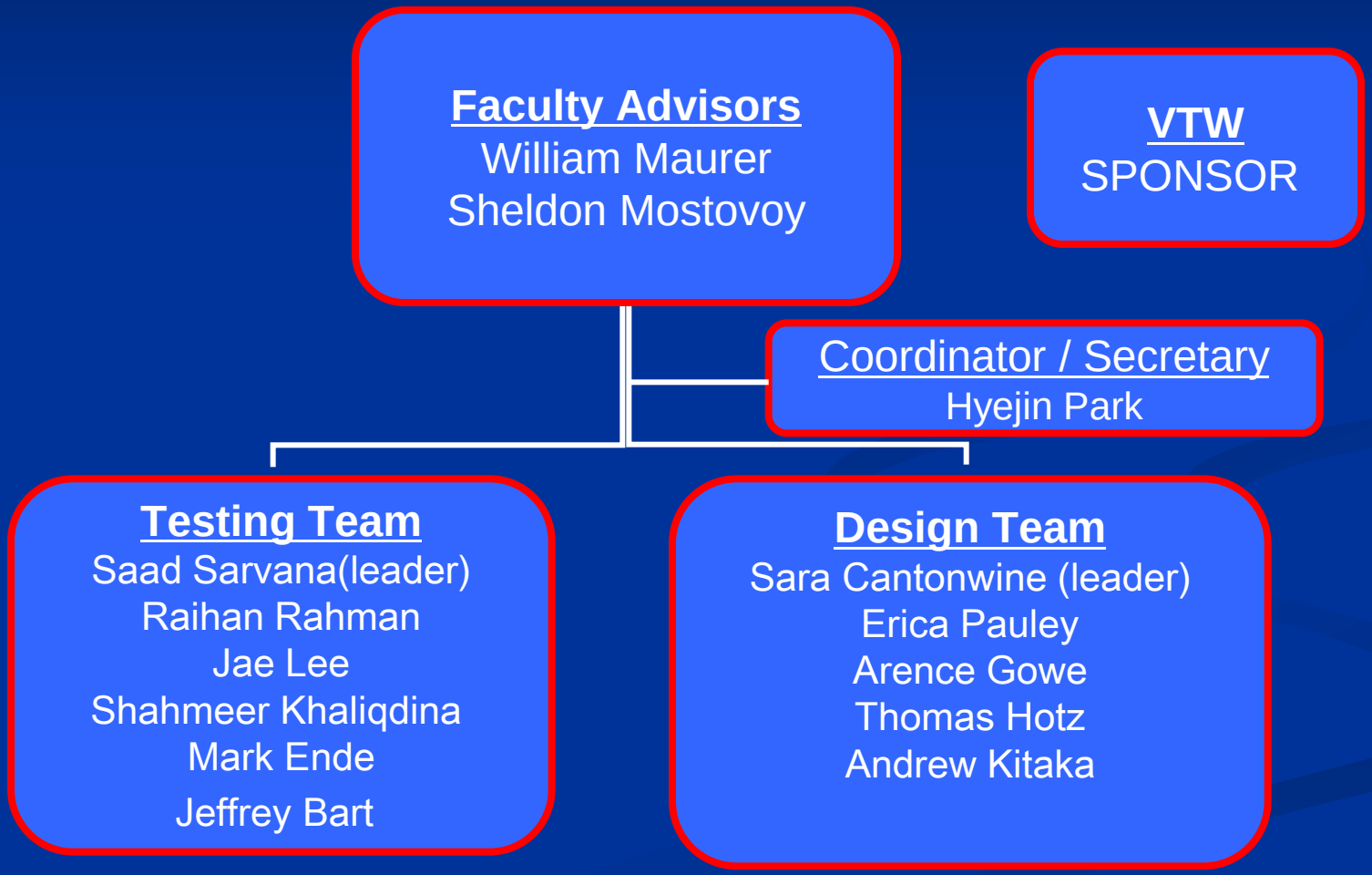
Design and Analysis of a Tool Product

Sponsored by:

Versatility Tool Works & Manufacturing

Industrial cabinet

Team organization

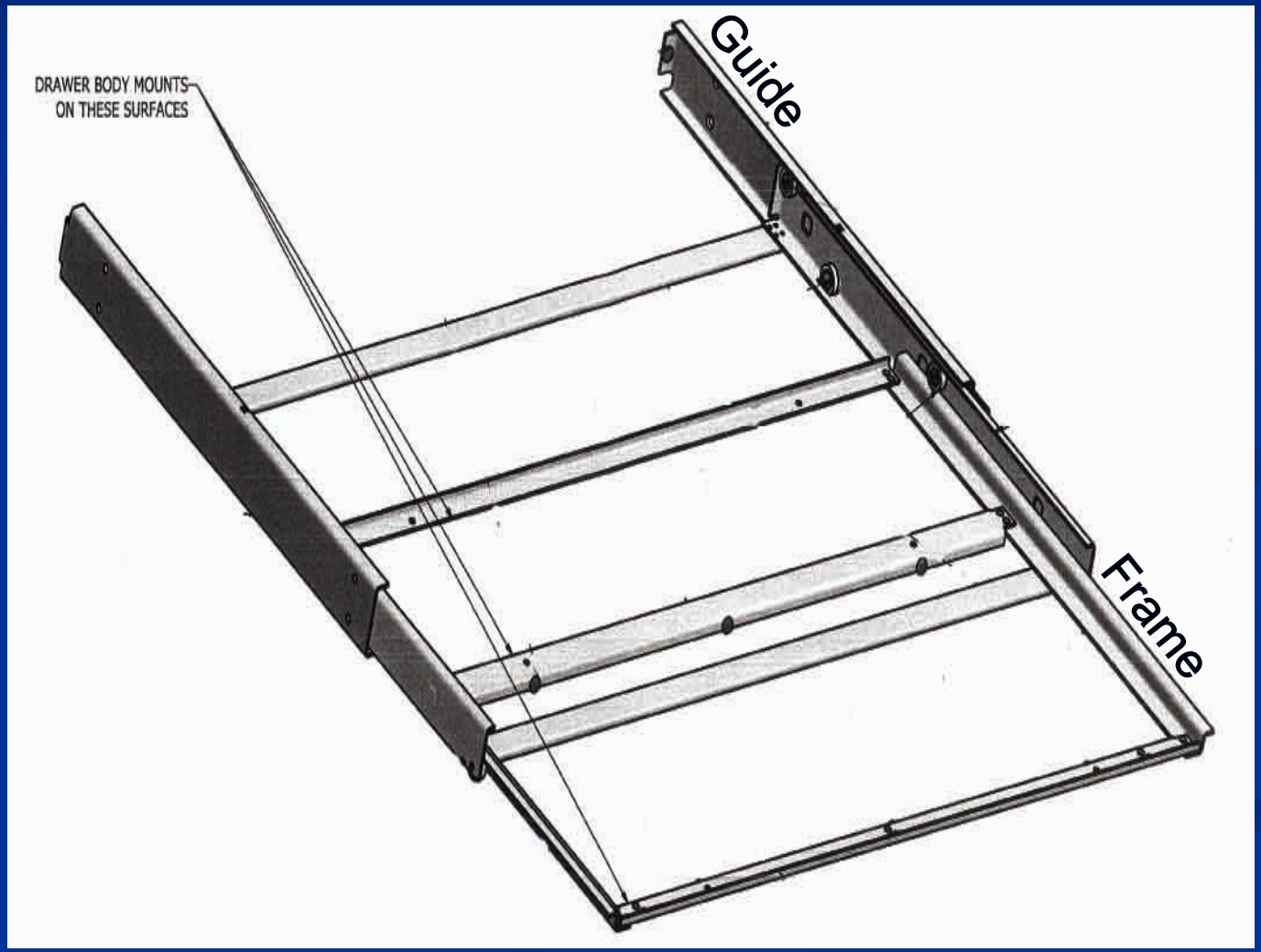


Project objective

TESTING TEAM

- Capacity to sustain 550 lbs
- 20,000 cycle life

Testing machine



1st Test result

- 1st Test failed after 632 cycles
  - 88 Rockwell B Guide & Frame
  - 550 LBS loading
  - Frame pivots due to the locking mechanism.
  - Deformation in the Frame

Future plan

- Testing without locking mechanism
- FEA
  - Find high stress area
  - Possible improvement
- Redesign the frame

Design Team

- Features
  - Rotating/detachable cabinet
  - Locking system
  - Push-to-open drawers
  - Lighting system
  - Pull-out work bench
  - Integrated computer and tracking system
  - Detachable toolbox

Tracking System

Aluminum Bar Coding

Challenges

- Functional and competitive
- Space within tool cabinet
- Customer Feedback
- Feasibility

Design Team Future Plan

- Research and design
- Communication with Versatility Tool Works
- CAD
- Stress analysis and dynamic simulation in CAD software
- Integrate tracking system within the design

Ethical Issues

- Non-Disclosure Agreement