



Hardware Prototyping Workshop

August 9, 2023

SUNY New Paltz

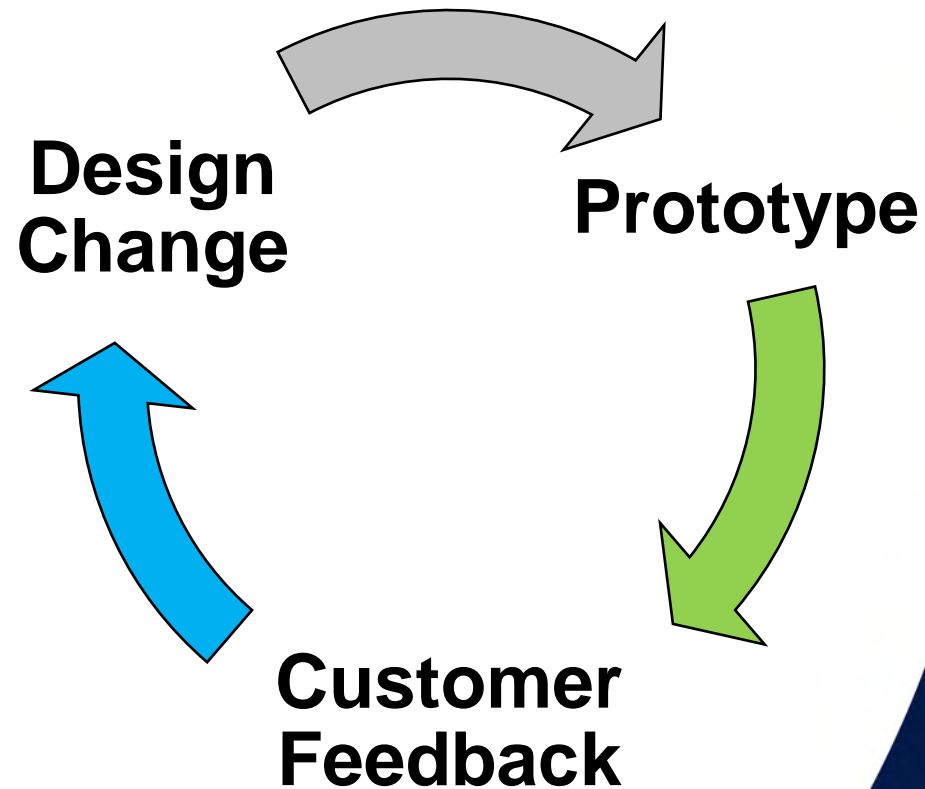
Process Review

Eric Fasser
FuzeHub

2:45 pm

Process Review

- Process Iteration
 - Beware “Analysis Paralysis”
- Lean Design
- Failure Mode Analysis



Lean Design

Importance:

- Simplify, reduce waste
- Lower cost (time, effort, materials)
- Reduce risk (opportunity for error)
- Improve quality

Key Considerations: Can you eliminate any parts that:

- Do not need to move relative to each other
- Do not need to be made from different materials
- Commonly fail

Leaning Your Product Design

Follow these principles for a fundamentally good design:

- Design parts that are easy to locate/position
- Design parts that can fixture themselves to one another
- Design the product for Poka-Yoke (Error Proof)
- Design out handling problems (think bulk packaging)
- Use gravity, don't fight it
- Question servicing
- Simplify or eliminate packaging

Leaning Your Product Design

Minimize:

- The number of parts
- The number of process steps
- The amount of labor or “takt time” required in the manufacturing and assembly processes

Try to eliminate:

- Parts that commonly fail (springs, fasteners, belts)
- Multi-touch operations, re-orienting, re-positioning
- Movements, adjustments, ergonomic problems

Leaning Your Product Design

- Look for areas where you can make lean improvements:
 - Standardized fasteners (i.e. different size/length screws) or replace with snap-together design elements
 - Evaluate if several parts could be efficiently purchased as a sub-assembly
 - Determine if all inspections are necessary, or can be combined into fewer inspections
- Review principles from the Design for X section
- Remember every part and assembly step is an added cost!

Conclusion

Everton Henriques
FuzeHub

3:00 pm

Conclusion

- Certificates
- Badges
- NYS Innovation Summit
 - October 16-17
 - Saratoga Springs, NY

Thank You!



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