

PROTOTYPING

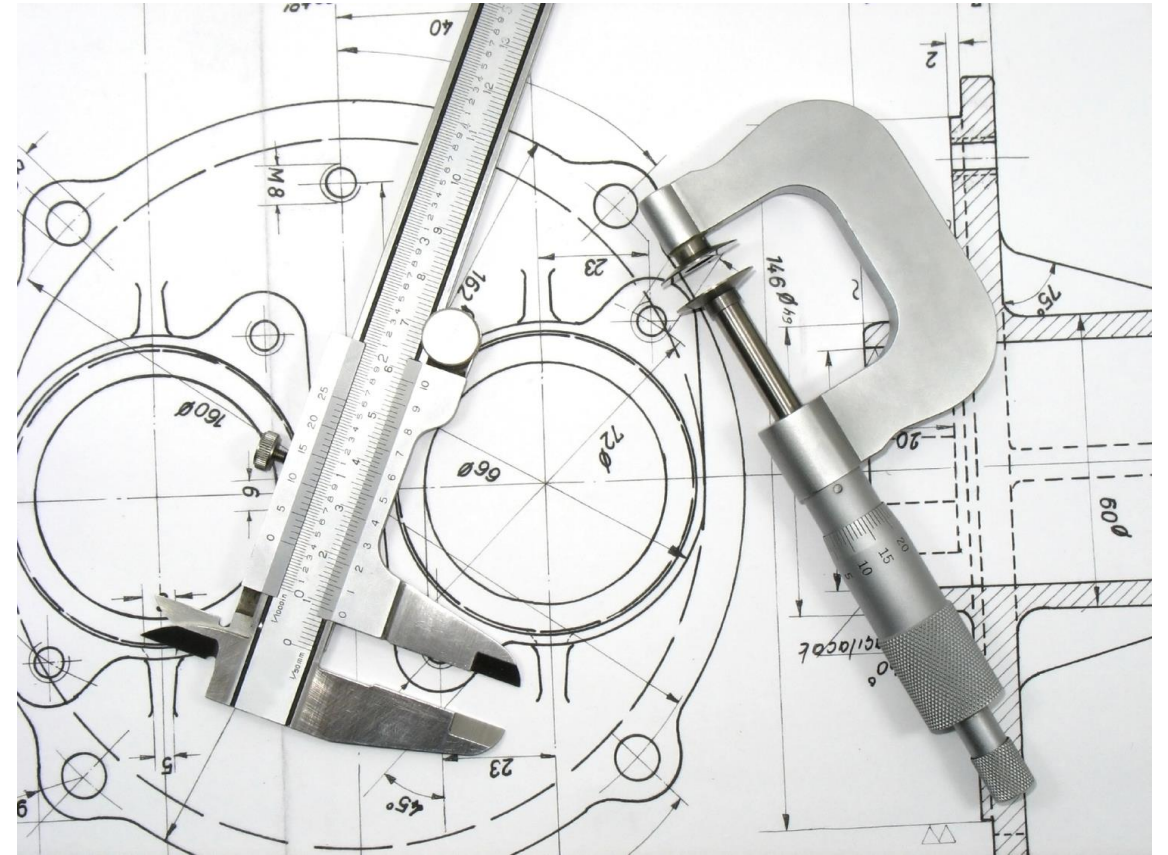
THE

PHYSICAL



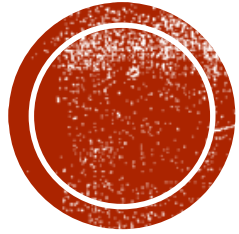
# WORKSHOP OUTLINE

- Introduction – Who am I? Who are you?
- Why do we prototype?
- Types of prototypes
- The prototype process
- Designing for prototype
- Learning from prototypes
- Common prototype mistakes
- Case Study – Propeller blades
- Group discussion



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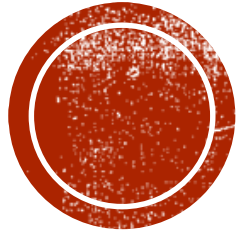
# INTRODUCTION - ME



Industrial Designer  
Furniture Industry  
Marine / Military / Aerospace  
Scientific equipment  
Signage  
Automotive



# INTRODUCTION - YOU

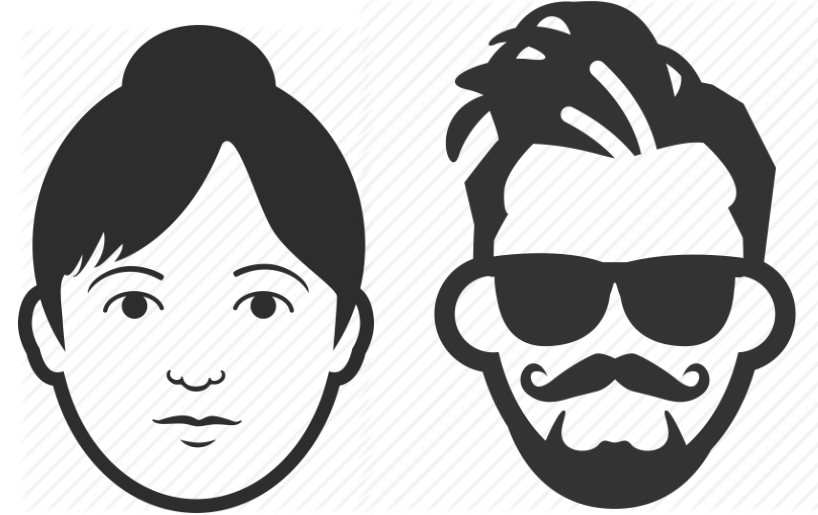


Who are you?

Prototyping / designing / making background?

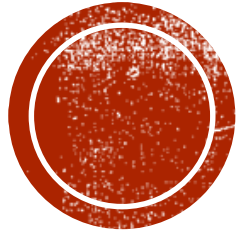
Do you have a specific product you are working on?

What do you hope get out of this workshop?





# WHY DO WE PROTOTYPE?



Prototype for initial exploration

Prototype to choose the appropriate direction

Prototype to attract funding

Prototype for feedback

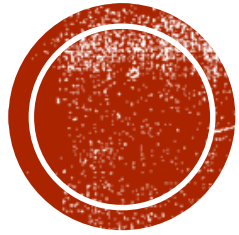
Prototype to refine design

Prototype to facilitate manufacturing

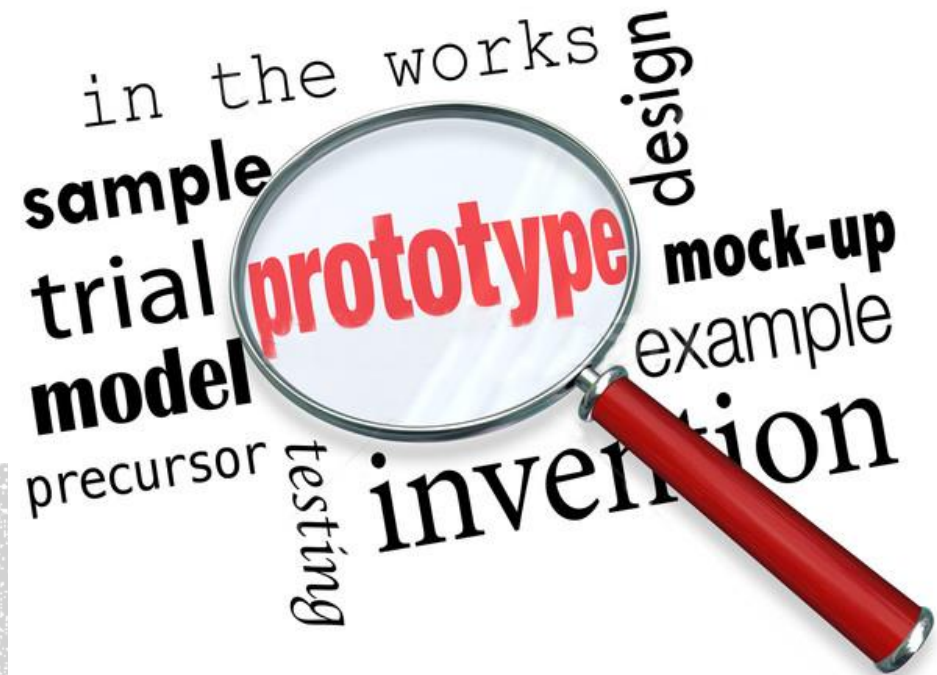
“If a picture is worth 1000 words, then a prototype is worth 1000 meetings”

# TYPES OF PROTOTYPES

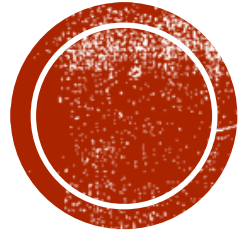
What are you hoping to achieve?



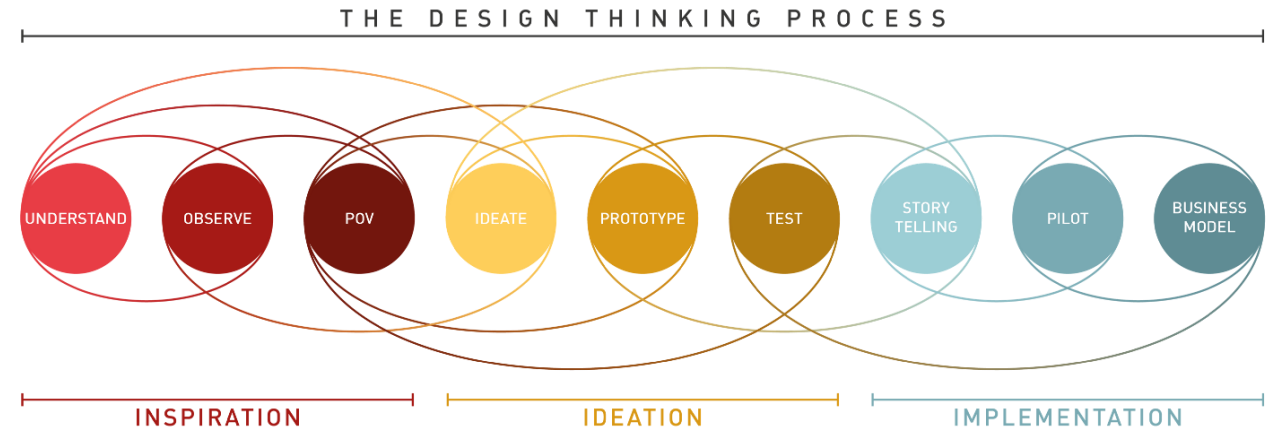
- Proof of concept prototype
- Partial prototype
- Scale model
- Full size model
- Full working product



# THE PROTOTYPE PROCESS



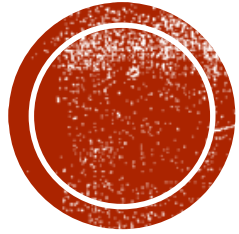
- Market research
- Product research
- Reverse-Engineer Competing Products
- Rough & cheap prototype
- Evaluate
- Full working prototype
- Evaluate
- Implement
- Evaluate



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# DESIGNING FOR PROTOTYPE

Choose your battles... do you need to prototype everything?

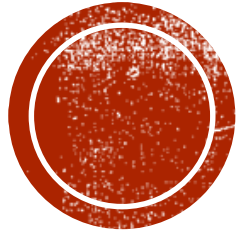


- Design for adjustment
- Design for assembly
- Design for disassembly
- Design for evolution
- Design to replicate production





# COMMON PROTOTYPE MISTAKES



Tolerances

Aesthetics

Surface finishes

Wear

Weight

Strength

Time

Assembly

Material selection

Project management

Supplier selection

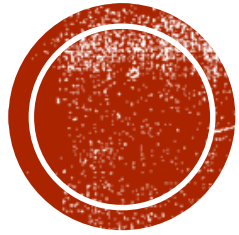
Design secrecy

“I have not failed,  
I’ve just found  
10,000 ways that  
won’t work”

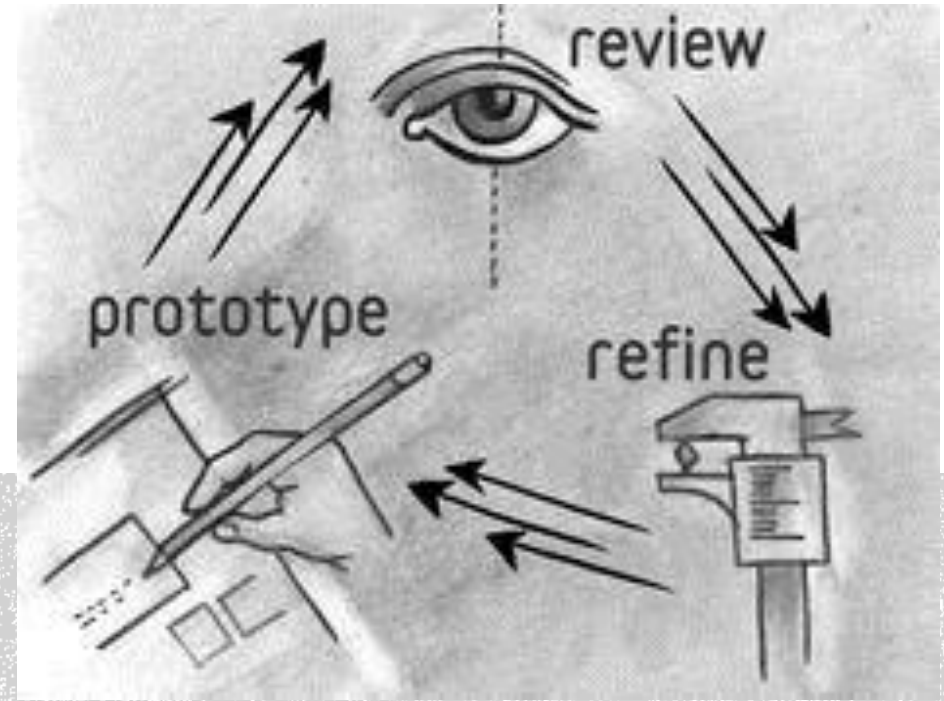
- Thomas Edison

# LEARNING FROM PROTOTYPES

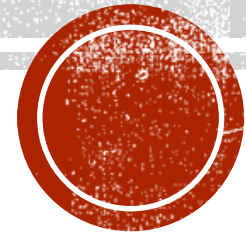
Back to the drawing board? Or to Production



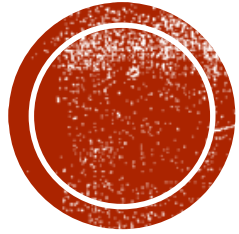
- Customer / client / investor feedback
- Assembly guidance
- Part reduction
- Price reduction
- Tolerances
- Supply chains



# CASE STUDY: PROPELLERS



## Design brief: make it cheaper!



Performance –physical thrust, weight, noise, adjustability

Cost

Manufacturability – reject factors

Wear

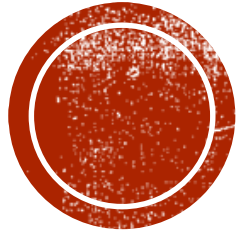
Maintainability – in field service

QA & certification.



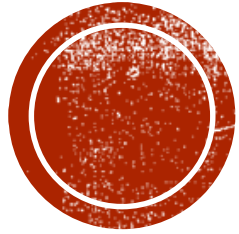
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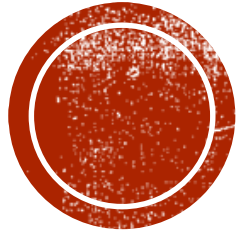


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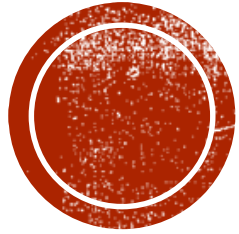




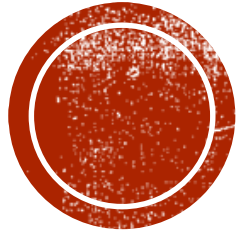


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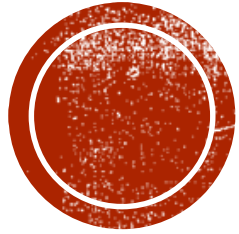






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# CASE STUDY: PROPELLERS



# GROUP DISCUSSION

