



FAMU-FSU
College of
Engineering

Virtual Design Review 1

Team 510 – Danfoss IGV

10/19/2023



Team Overview



Joseph Bechara
*Controls
Engineer*



Hunter Dabbs
Systems Engineer



Tye Fountain
*Mechanical Design
Engineer*



Thiago Todesco
*Manufacturing
Engineer*



Sponsor and Advisor



Engineering Mentor
Bruce Barnett
Manufacturing Engineer



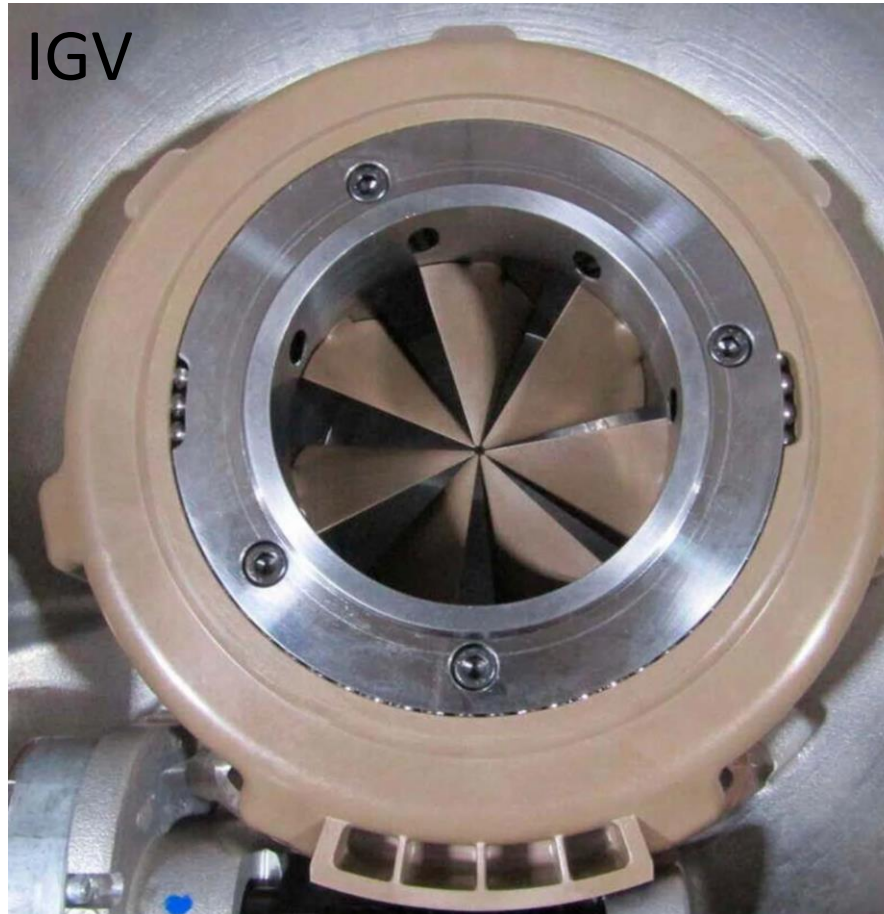
Academic Advisor
Shayne McConomy, Ph.D.
Teaching Faculty II



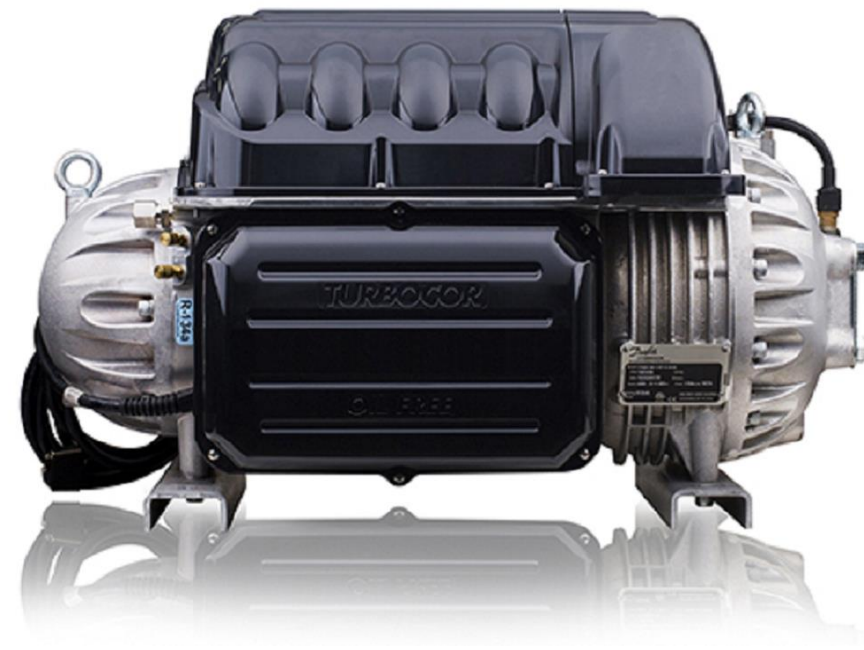
Objective

Develop an apparatus that tests the functionality of four different Danfoss Inlet Guide Vanes (IGVs), giving relevant data and prompting the operator with a pass or fail message.

Danfoss



Project Brief



IGV is Assembled

IGV Functionality
is Tested

IGVs are Separated
by **Model**

IGV is Assembled
into Compressor

Project Scope



Measure
Resistance from
Motor



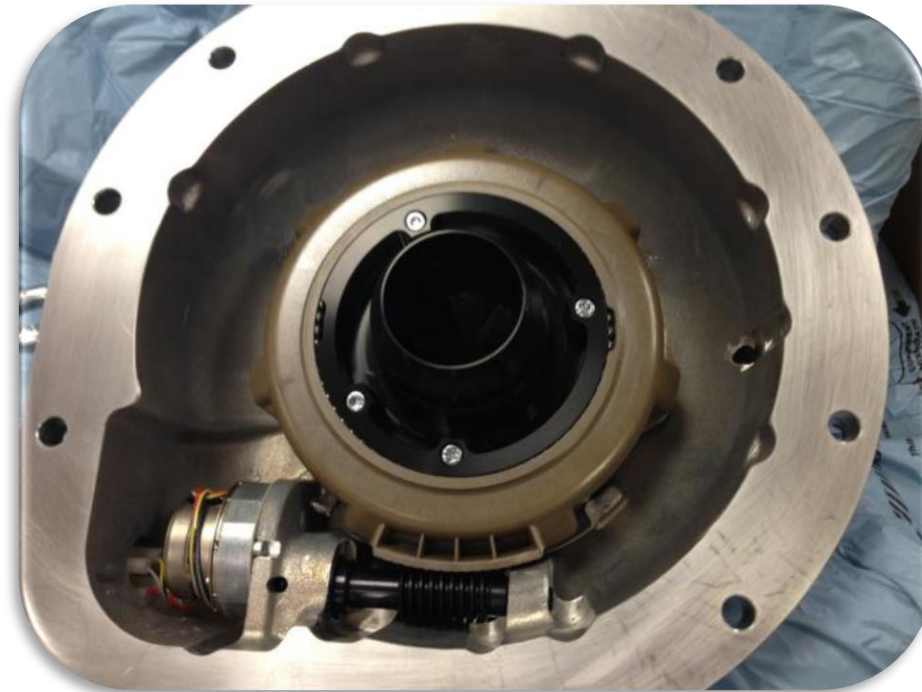
Track Ball Indicator
Location



Track Movement
of IGV Blades



Determine IGV
Model



Markets

1



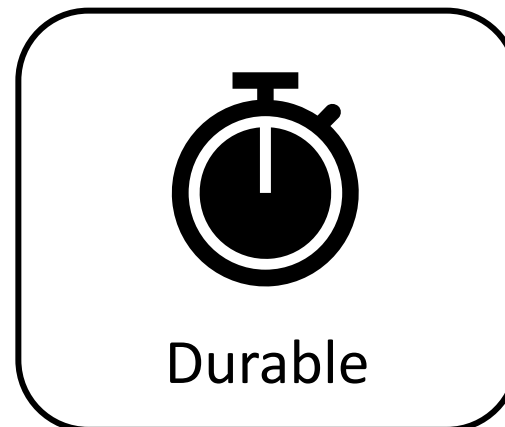
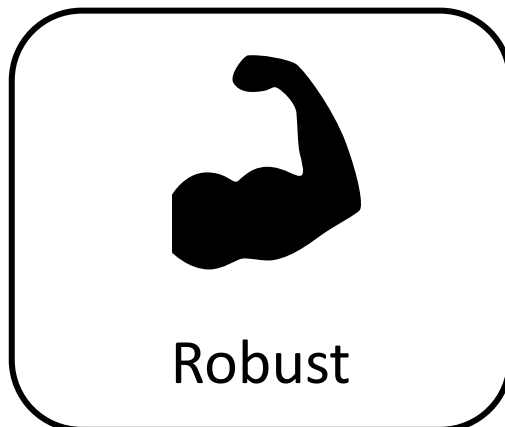
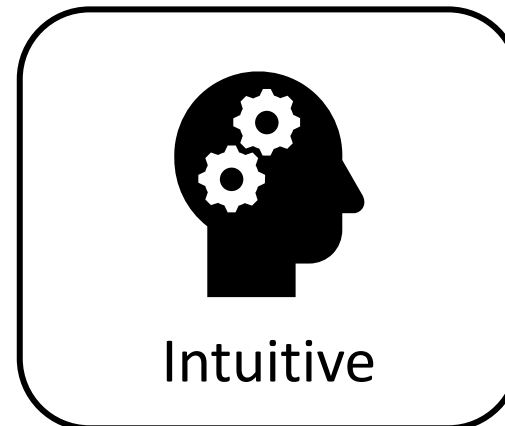
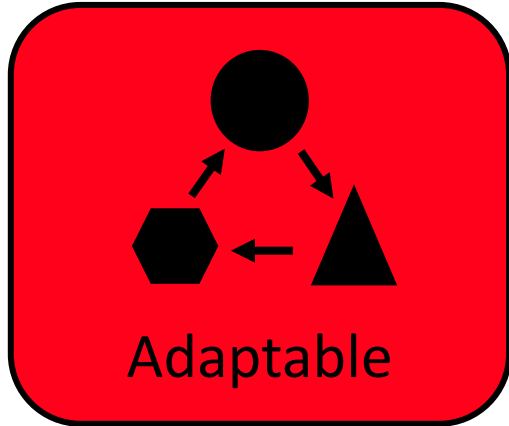
2



AIR POWER EAST LTD



Key Goals



Assumptions



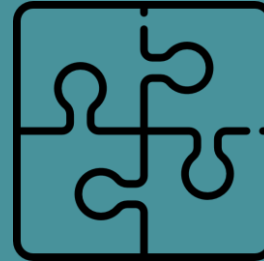
Test duration of
5 minutes or
less



Responsibility
for all
Documentation



Test fixture fits
into existing
workstation



Production ready
IGV



Operators can lift
40 pounds

Assumptions



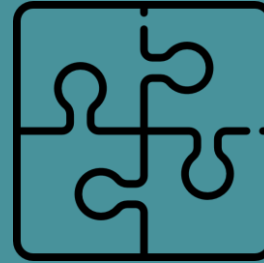
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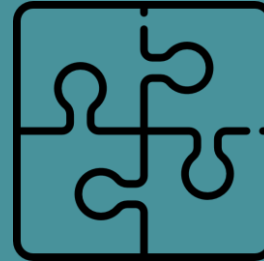
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Operators are
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Impairments



Assumptions



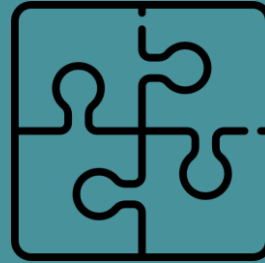
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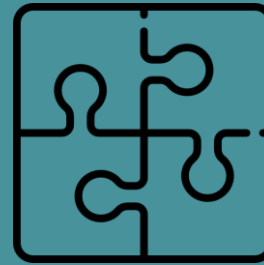
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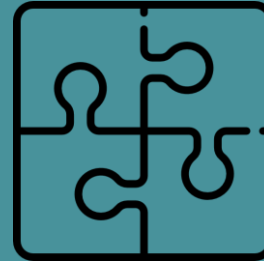
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Stakeholders

Danfoss



Bruce Barnett



William Bilbow



Shayne McConomy, Ph.D.



Customer Needs

Test IGV functions with accuracy and precision

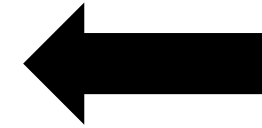
Notify operator with test result and part number

System is OSHA compliant

System is reliable, durable and structurally stable

Complete system documentation

Track IGV with PN data



Customer Needs

Test IGV functions with accuracy and precision

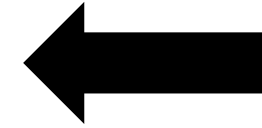
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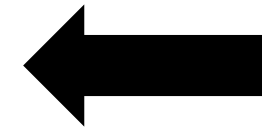
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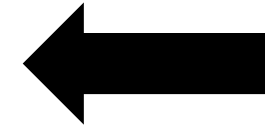
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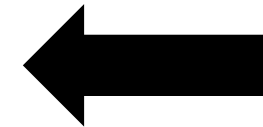
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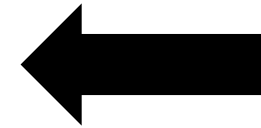
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Functional Decomposition



Structure



Communication



Controls



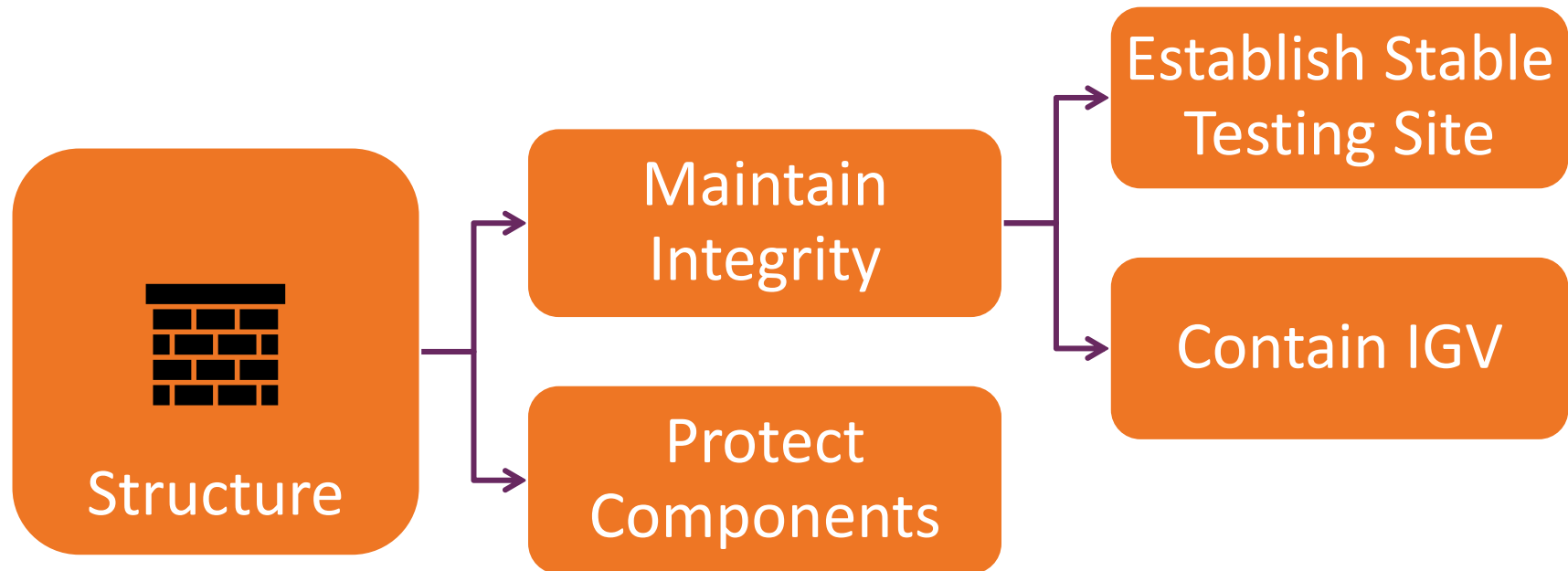
Sense



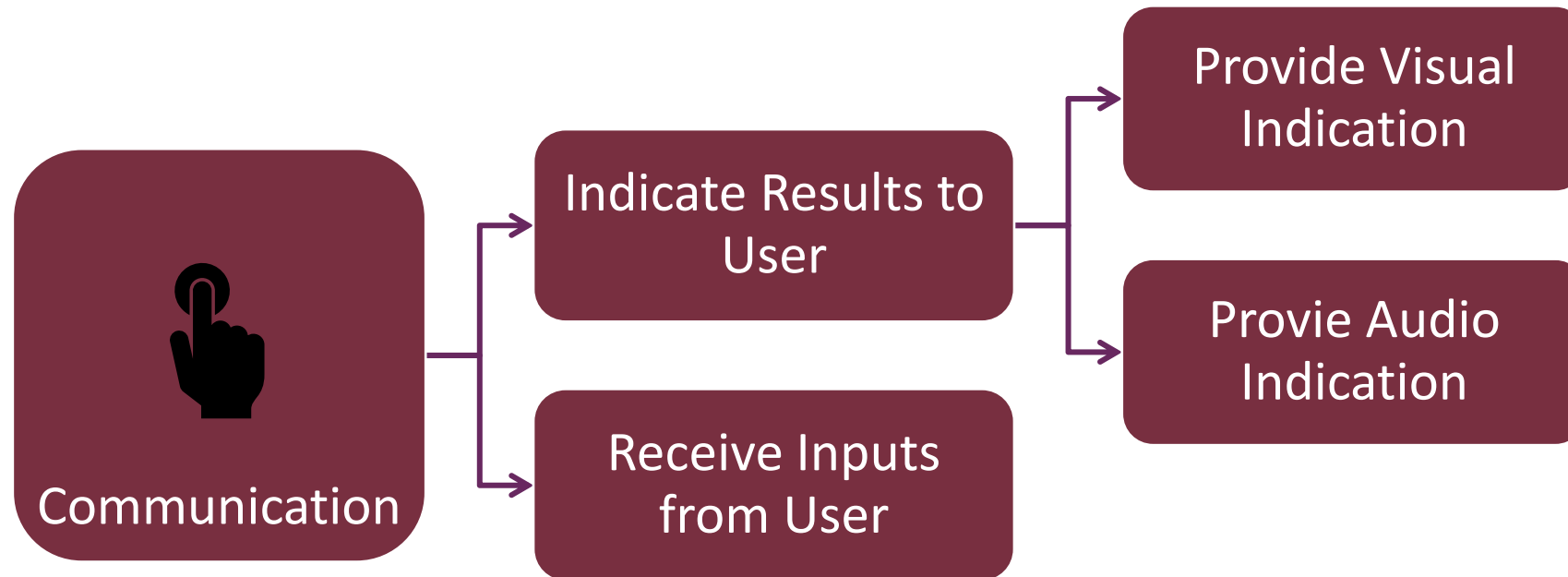
Provision



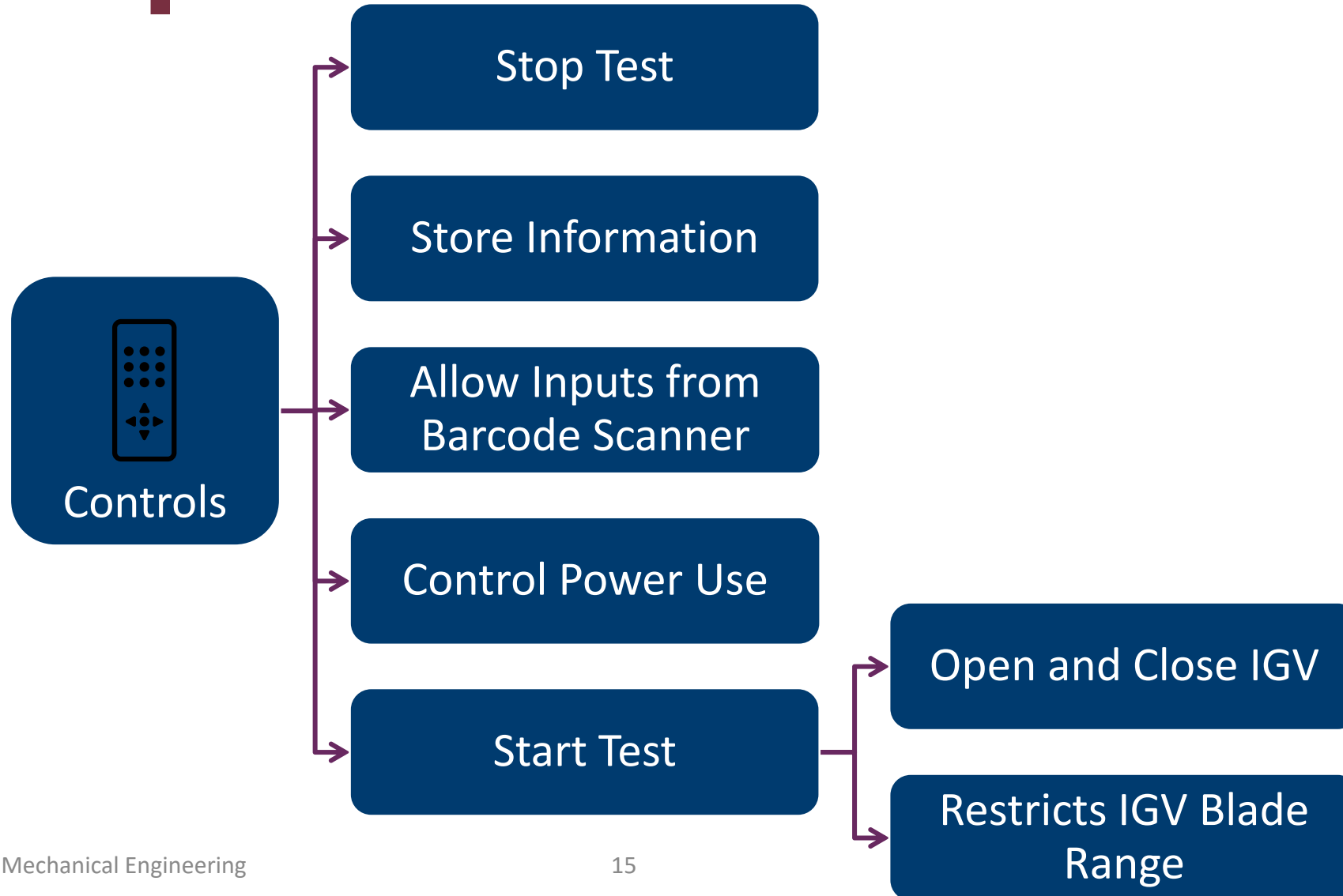
Functional Decomposition



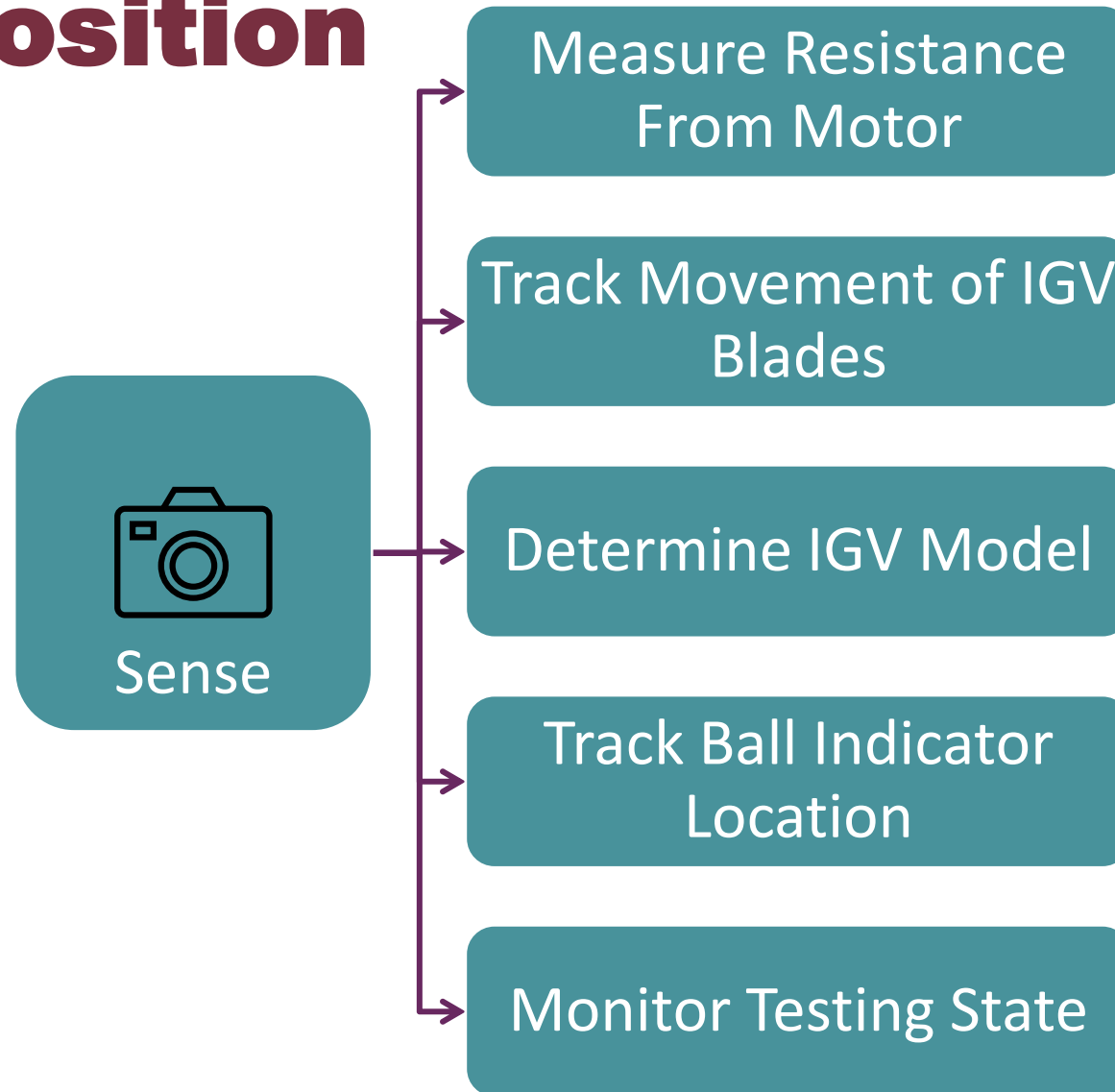
Functional Decomposition



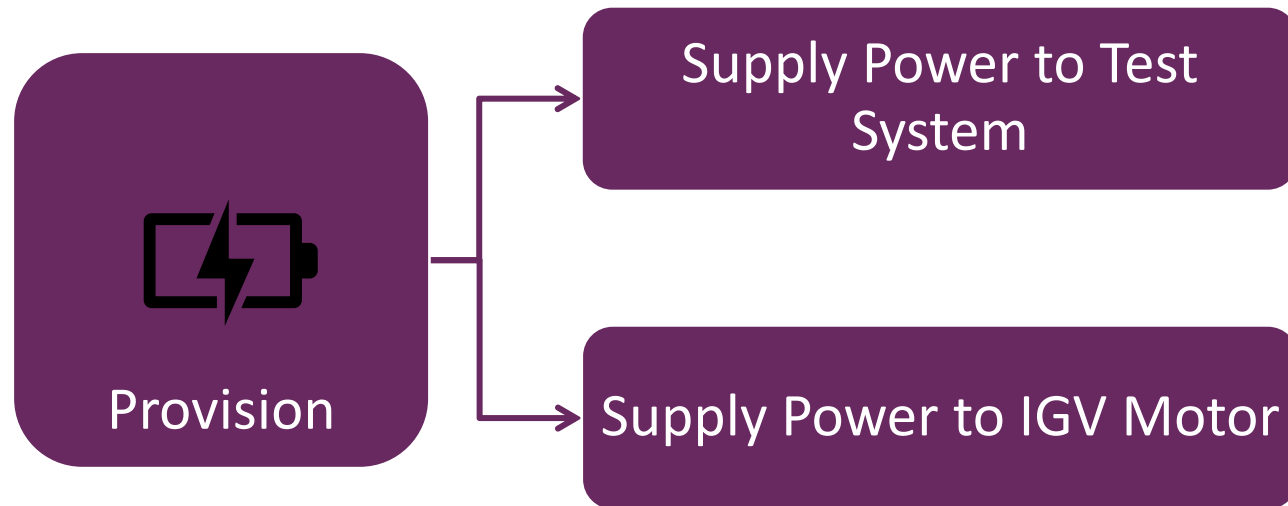
Functional Decomposition



Functional Decomposition



Functional Decomposition



Functional Resolution



Successful


Communication




Controls



Provision

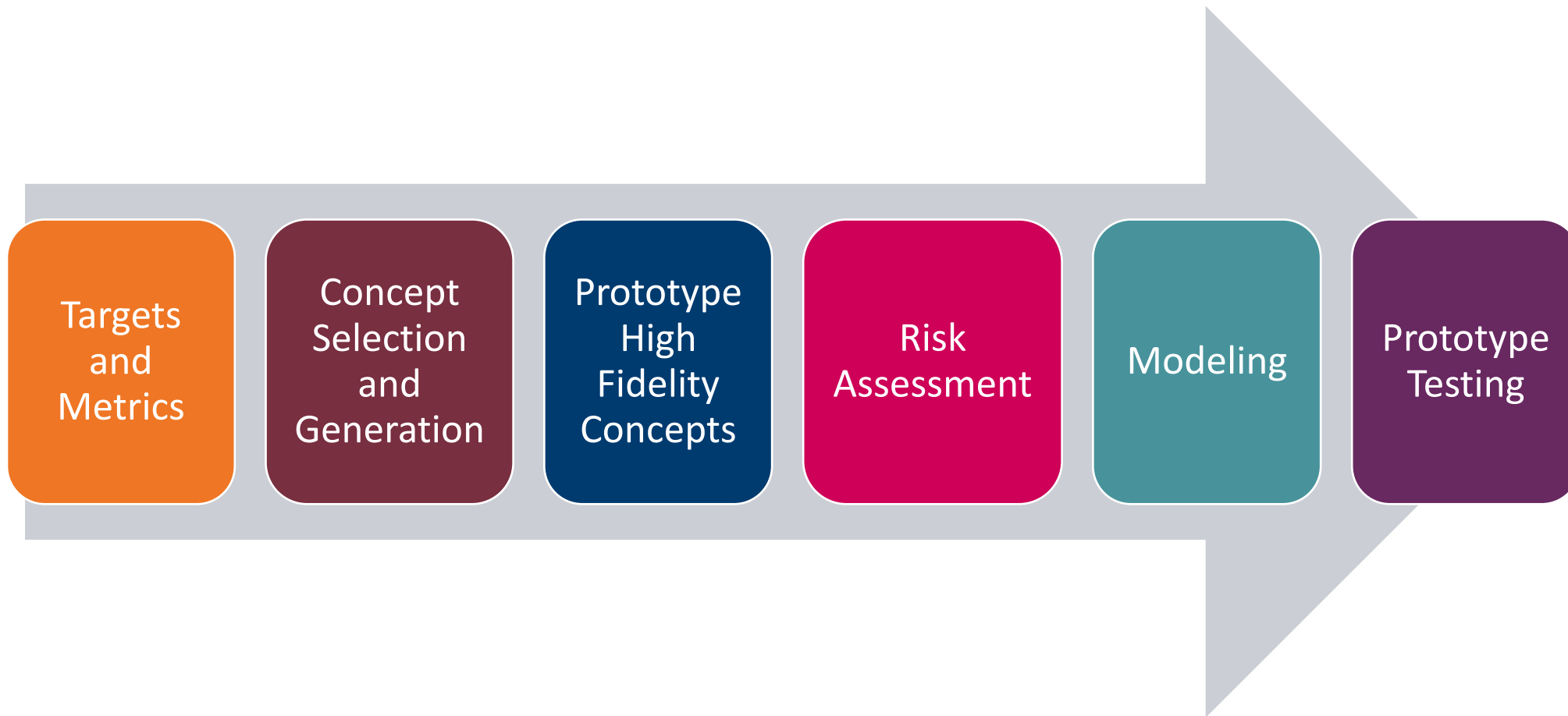


Structure



Sense

Future Work



Questions

