



FAMU-FSU
College of
Engineering

Solar Wind Generator (K.A.R.E.N) Presentation 2

Team 303 12/08/2023

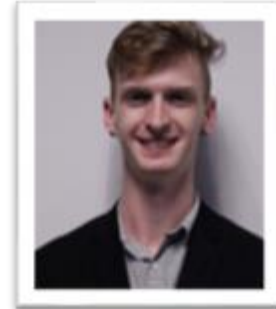
Team Introductions



William Touza
- *Team Lead*



Andrew Putnam
- *Technical Lead*



Tristan Witkowski
- *CAD Designer*



Alberto San Segundo
- *CAD Designer*



Brandon Ortiz
- *Treasurer*



Carlos Vilarino
- *Documentation Specialist*

Sponsor and Advisor

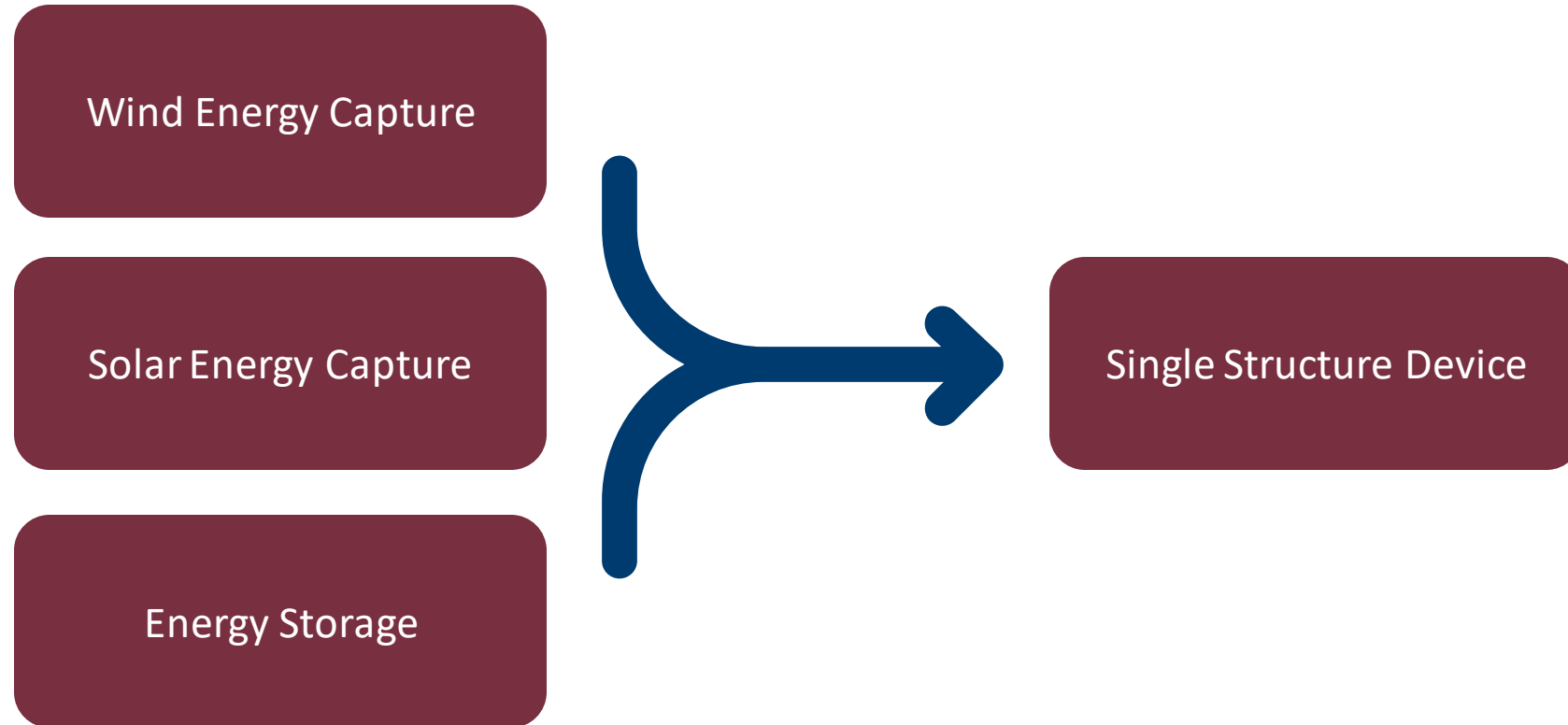


Bruce Morrison
-Sponsor



Dr. Simon Foo
-Advisor

Project Objective



Recap of Presentation 1

- Key Goals
- Assumptions
- Expected Markets
- Customer Needs
- Functional Decomposition

Critical Targets

- 100 W power generation
- 10% max electrical losses
- 45 mph max wind speed
- 5 Year Durability
- 50 m portability

Concept Generation

Medium Fidelity:

- Heat Cylinders
- Fish Turbines
- Solar Cylinders
- Turtleneck
- Car Spinner

High Fidelity:

- Parallel Solarness
- Box Man
- Sunflower

Concept Selection

Binary Pairwise Chart

Customer Need	Priority
Generating Solar/Wind Energy	7
Charges Battery	6
Transportable	5
Single Structure	4
Environmental Forces	3
5 Year Durability	2
Ground Based	1
Doesn't Need Scalability	0

House of Quality Results

Engineering Characteristic	Criteria Weight
Structurally Sound (MPa/m ²)	16.88%
Energy Generated by Solar (Wh)	13.96%
Energy Generated by Wind (Wh)	13.96%
Energy Stored (Wh)	12.50%
Force Required to Move (N/m)	10.71%

Pugh Chart Results

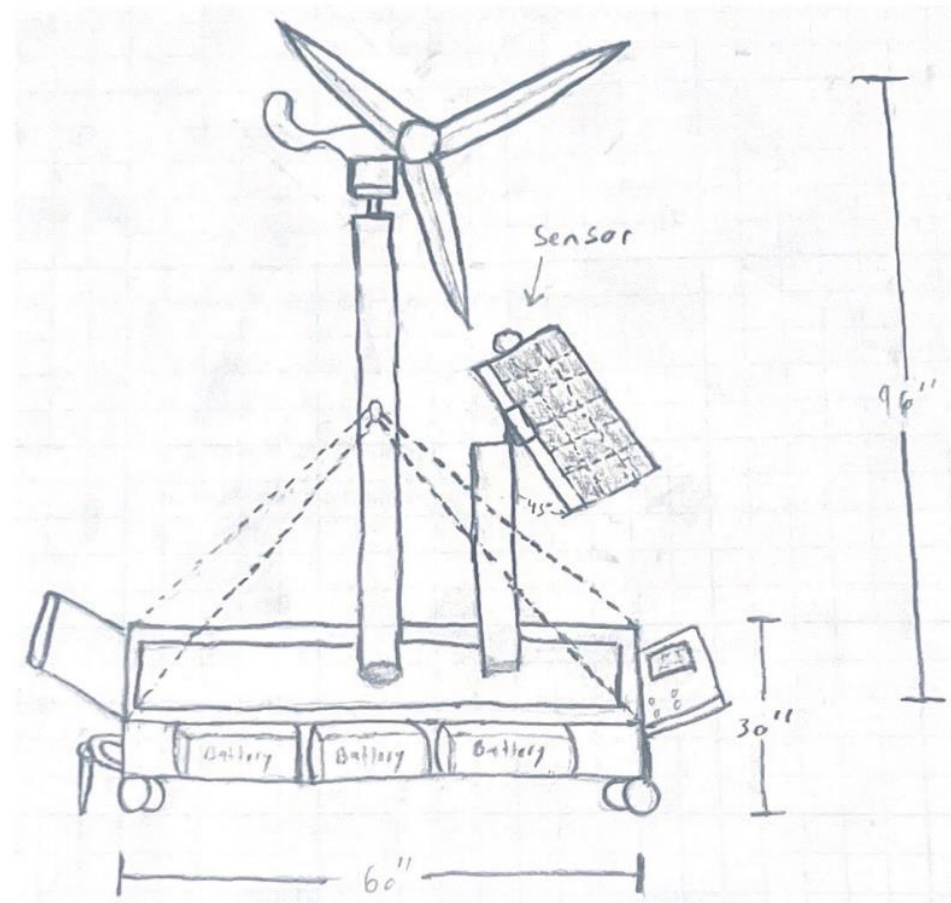
Concept	Fish Turbines	Solar Cylinders	Sunflower
Number of Pluses	2	3	1
Number of Minuses	1	0	2

Analytical Hierarchy Process

Concept	Alternative Value
Fish Turbines	0.250
Solar Cylinders	0.329
Sunflower	0.421

Final Selected Concept

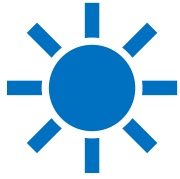
Sunflower



Up and Coming

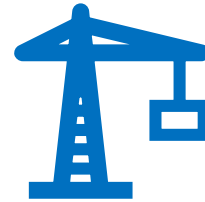


Design Analysis



Solar/Wind

- Energy Analysis
- Force Analysis
- Programming



Structure

- Stress/Strain
- Construction
- Structural Simulation and Testing

Questions?

Backup Slides



Project Scope



Project Background

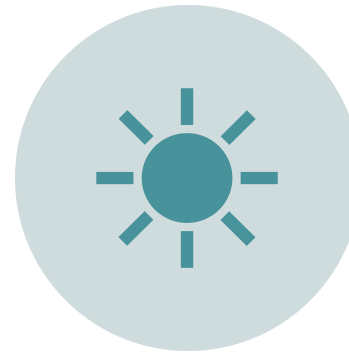
Key Goals



SUPPLY 100W



SEMI PORTABLE



HARNESSES SOLAR
AND WIND ENERGY

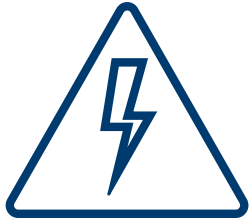
Assumptions

Device will be placed outside

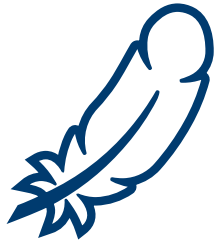
Sufficient solar and wind energy provided

Proper usage of the device is expected

Technical Challenges

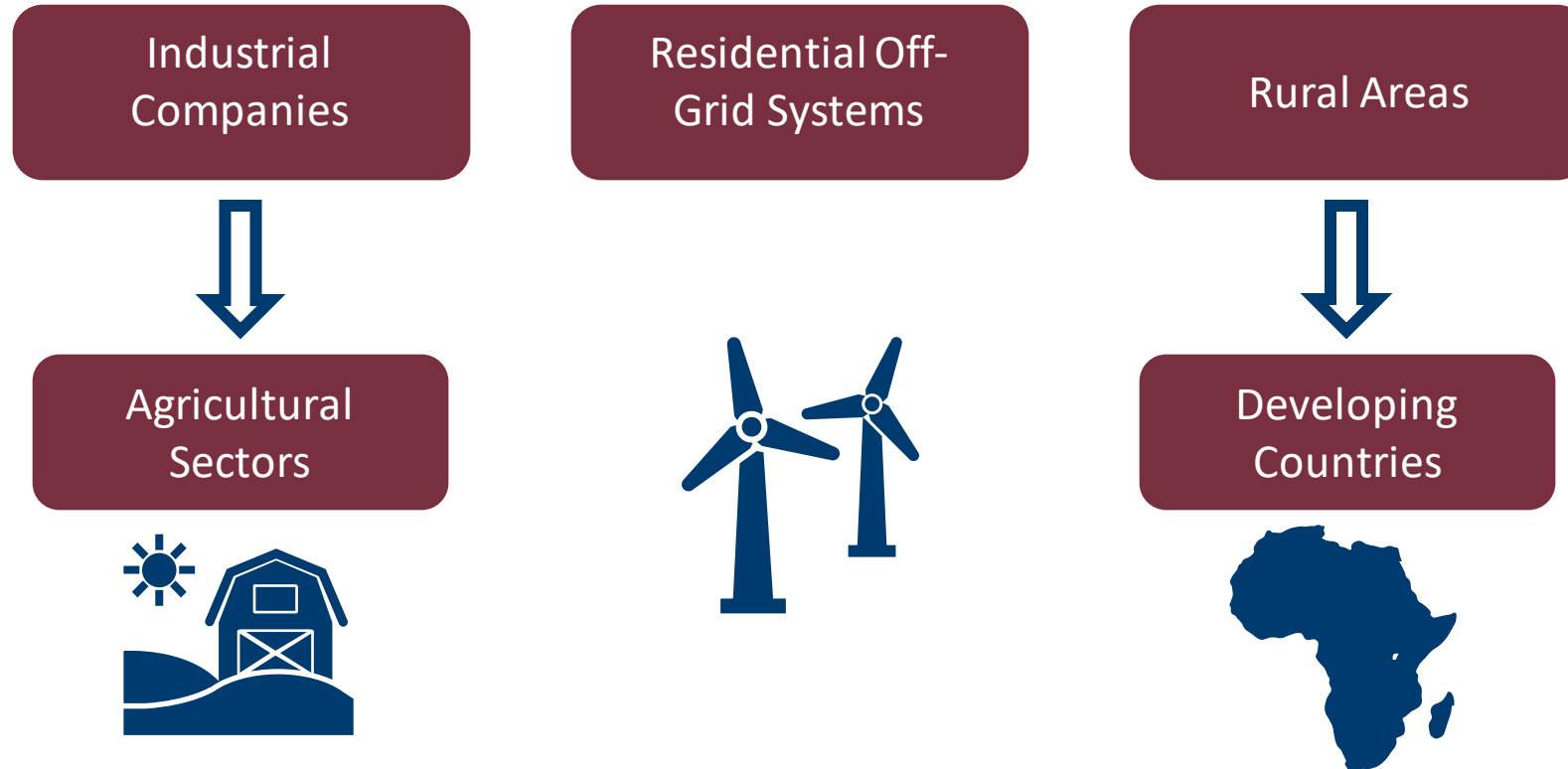


Designing a device that can capture both wind and solar energy efficiently

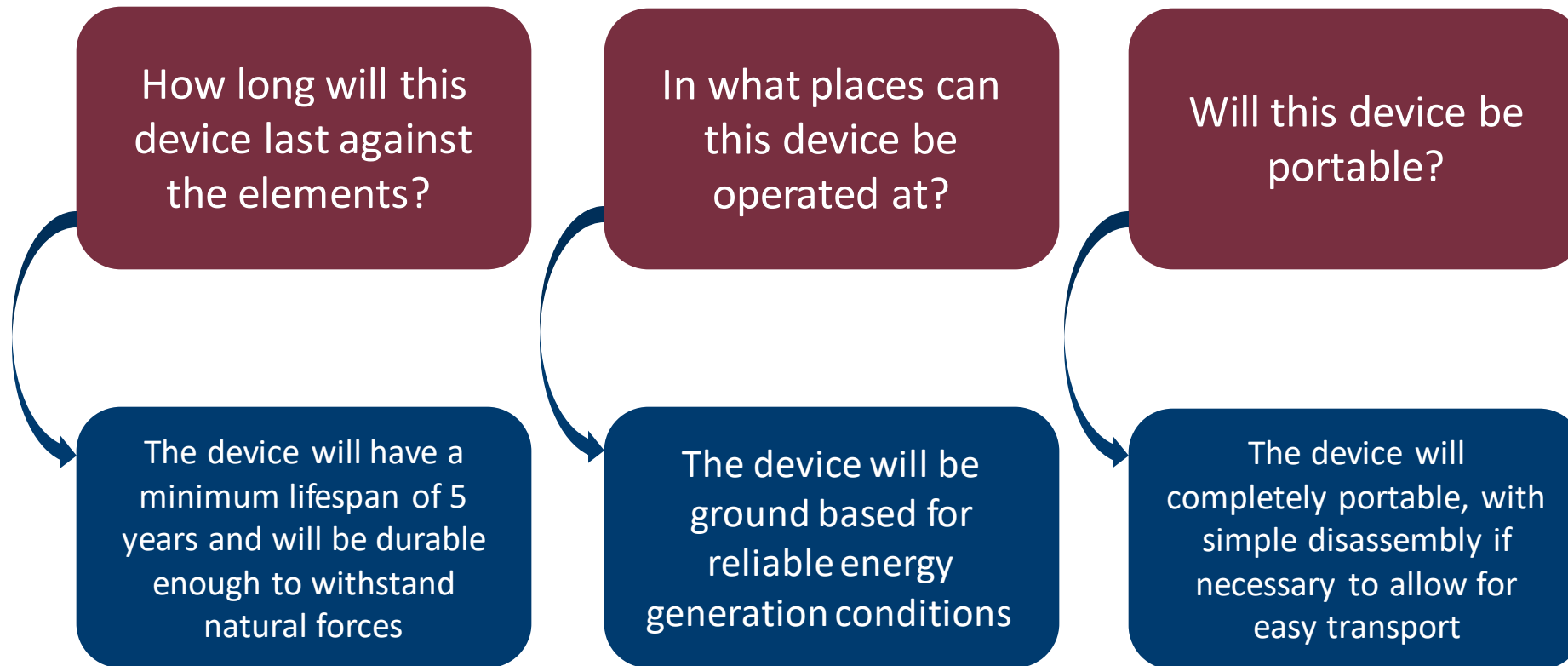


Creating a structurally sound device that is also portable

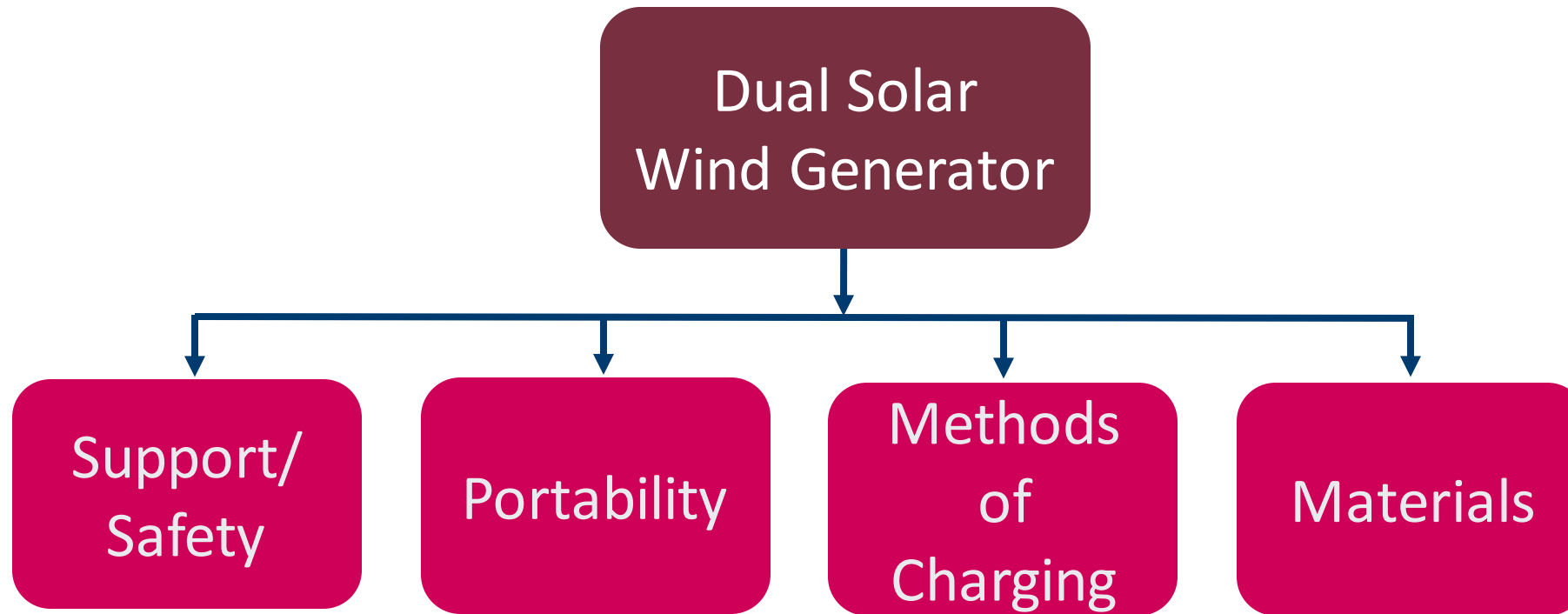
Expected markets



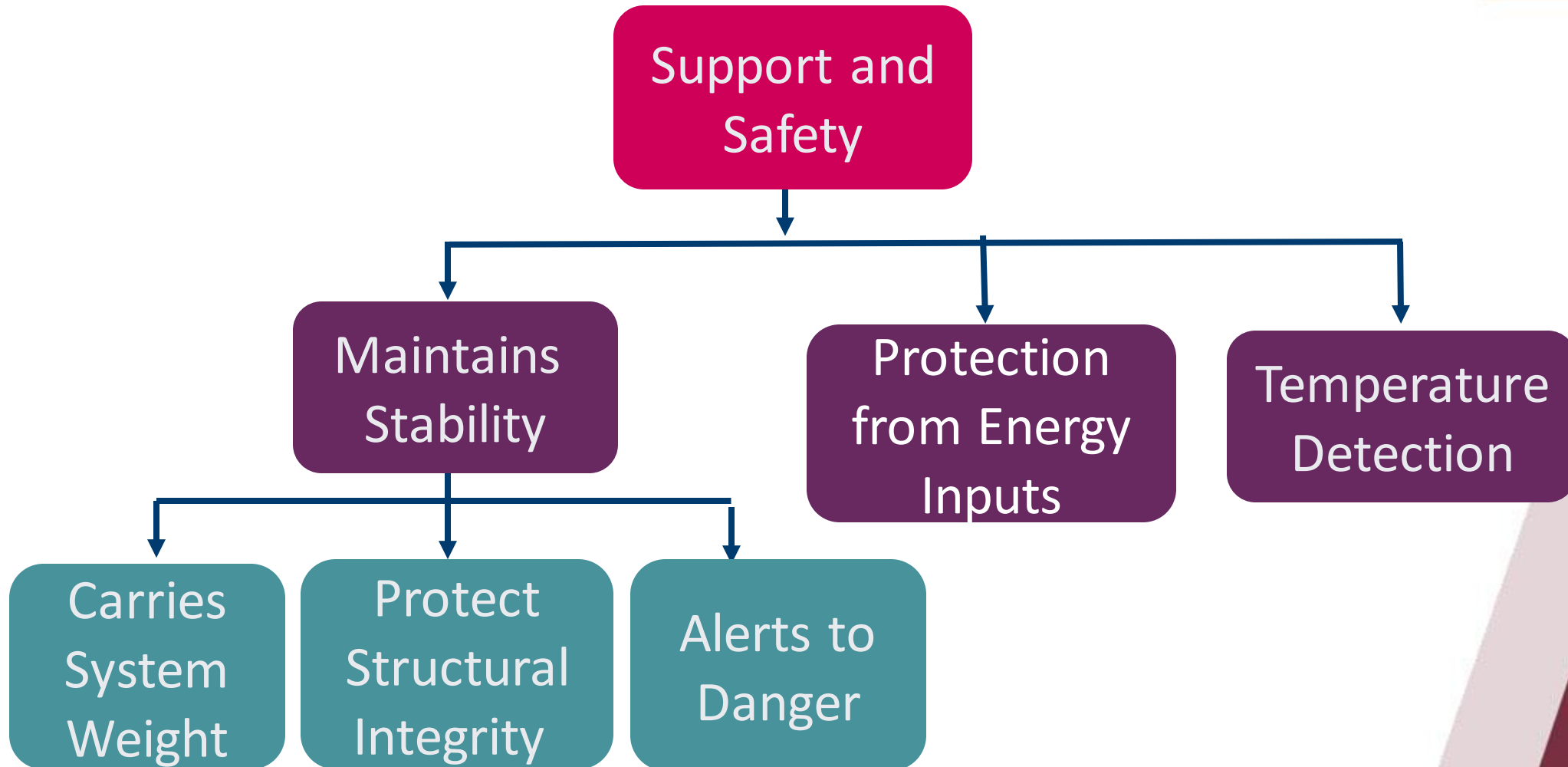
Customer Needs



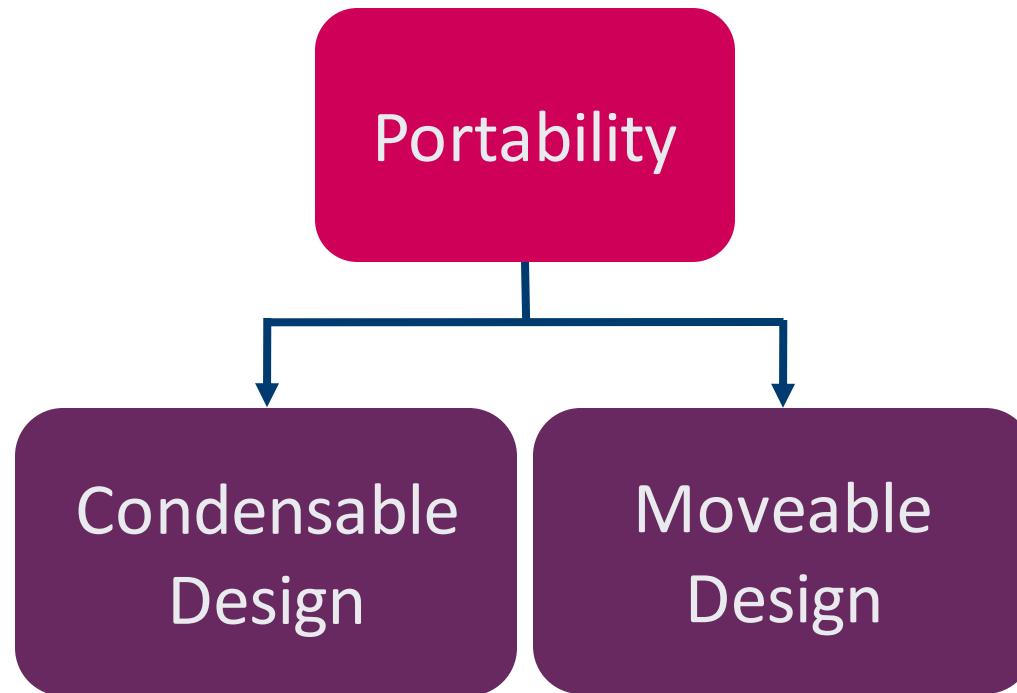
Functional Decomposition



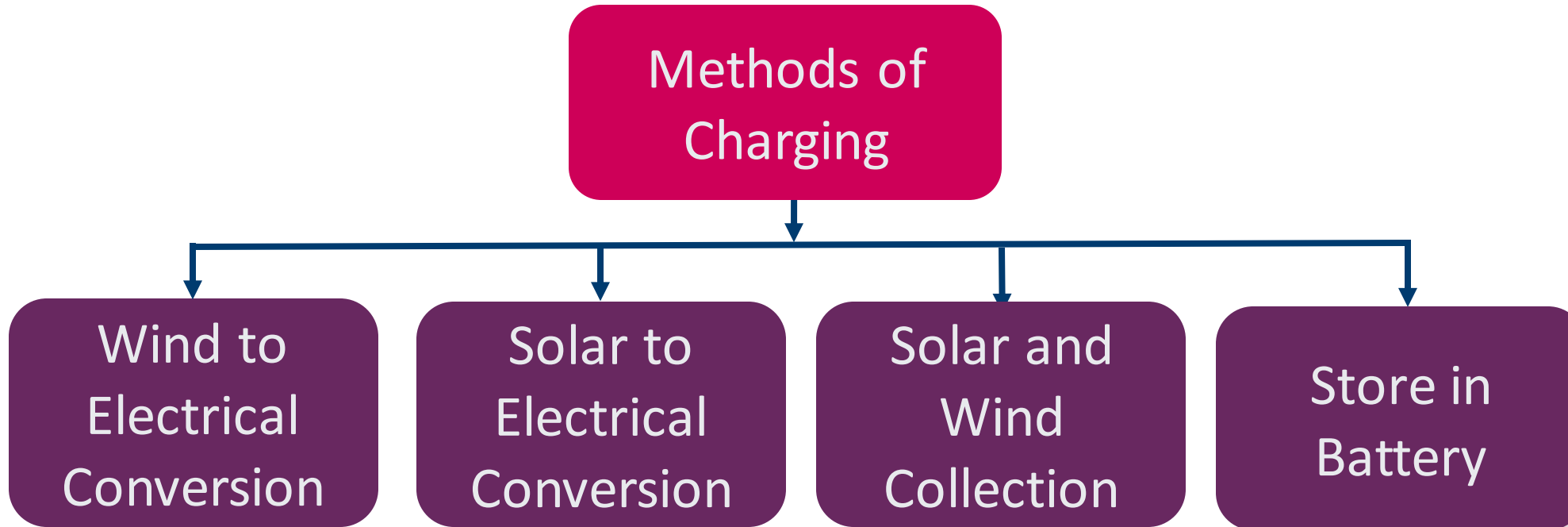
Functional Decomposition



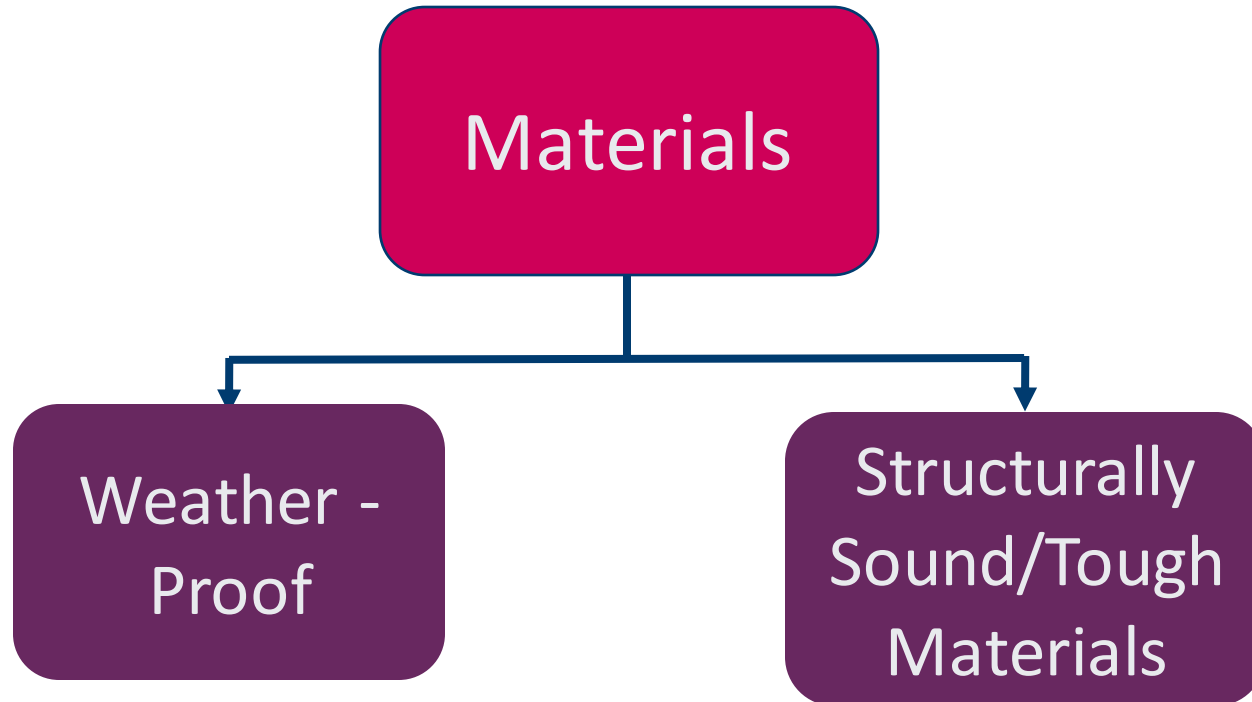
Functional Decomposition



Functional Decomposition



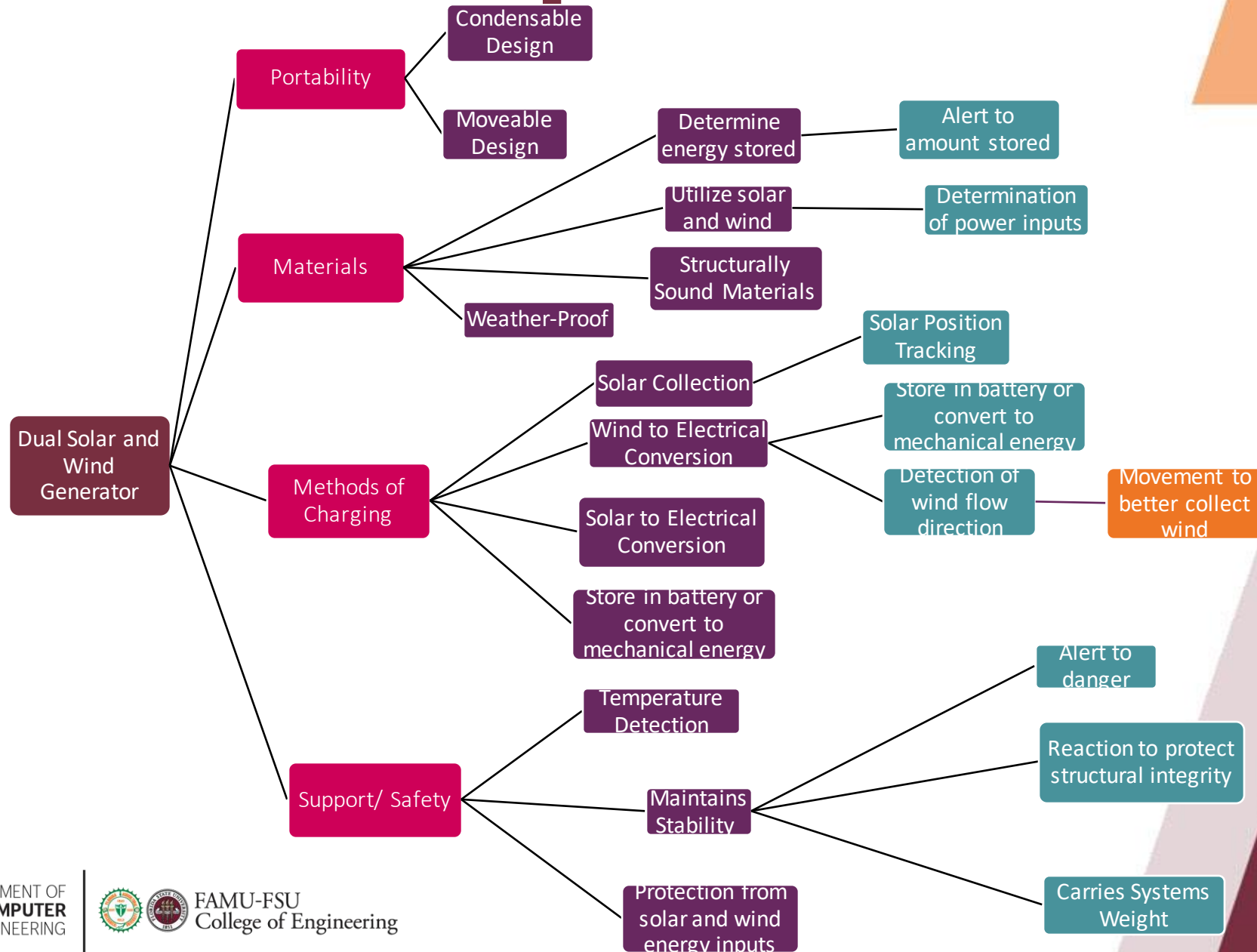
Functional Decomposition



Risk Assessment



Functional Decomposition



Functional Decomposition

