

# Philosophy of Designing and Operating a Solar Car

Caden Pong  
SSCT Captain

# Seattle Solar Car Team



# What we will talk about

- Why reliability is the most important aspect of solar racing
- How to optimize your car and *team* for your goals
- Lessons that we have learned and methods we use

# The Problem:



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- Make a car that can hold the highest average speed on the energy it captures.



# Solar Racing in Practice



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# Reliability

Mileage Lost = Time not spent driving \* Usual Average Speed



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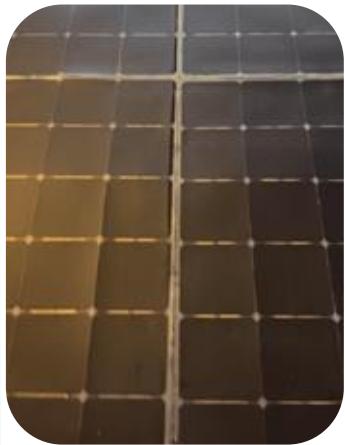
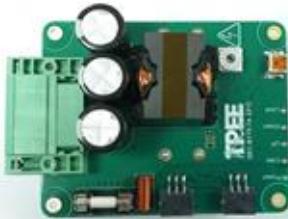
Mileage Lost = 2 hours \* 50 MPH

Mileage Lost = 100 Miles

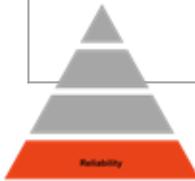
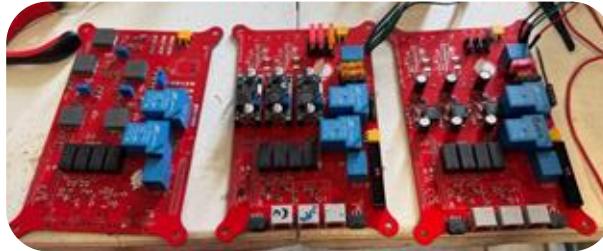


# Reliability

Durability



Repairability



# Effectiveness?

Make a car that can hold the highest average speed on the energy it captures.



# Effectiveness?



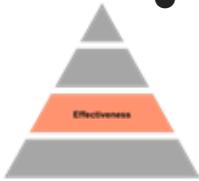
Jimmy (2022)

- 8 m<sup>2</sup> Array
- Below Average Efficiency



Sockeye (2024)

- 4 m<sup>2</sup> Array
- Super Efficient



# Effectiveness

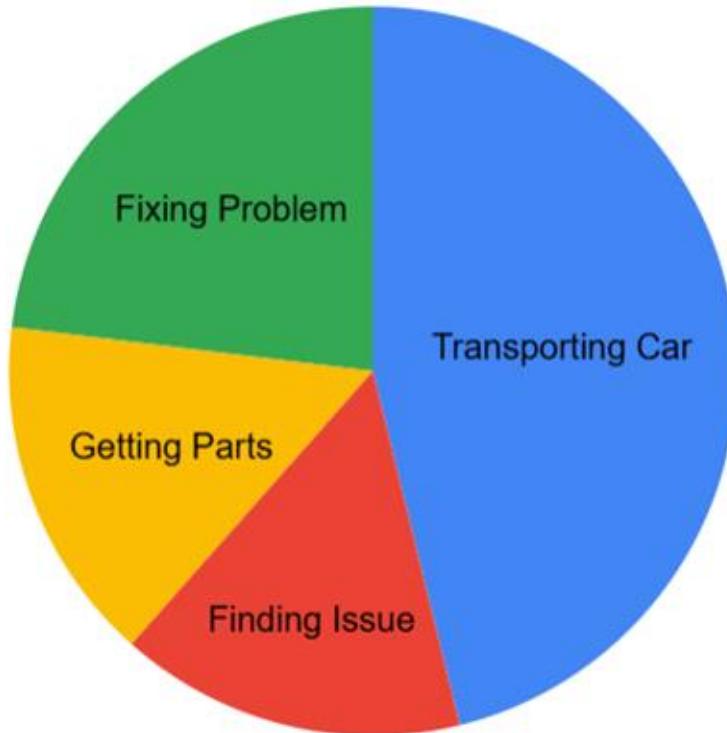
Efficiency	Energy Collection
Smaller Car Lighter Materials Better Components	Larger Solar Array More Sophisticated Solar Array Better MPPTs



# Why do we care about Operations?



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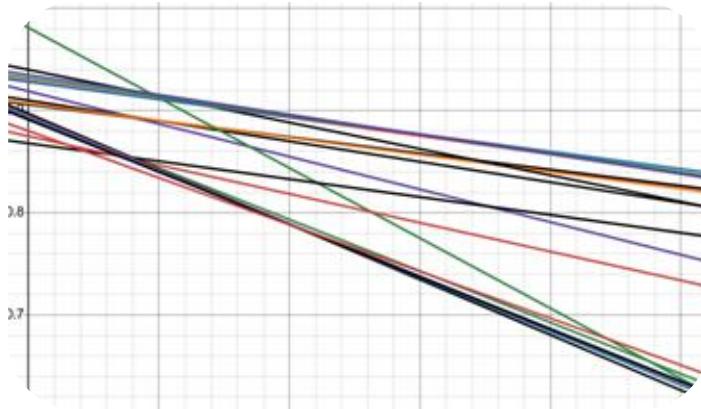


# How to make Operations better?

3	Full Pit Practice Schedule 2025 V3 Practice Day 1		
4	Person	Task run 1	Task run 2
5	Hika	Driver	N/A
6	Shou	Driver Replacement	Driver
7	Caden	Wheel Swap 1	Driver Replacement
8	Jude	Wheel Swap 2	Wheel Swap 1
9	Atticus	HV Fuse Change	Wheel Swap 2
	Reorder	N/A	Driver Change

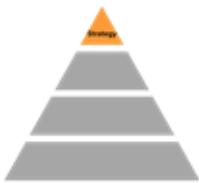


# Strategy

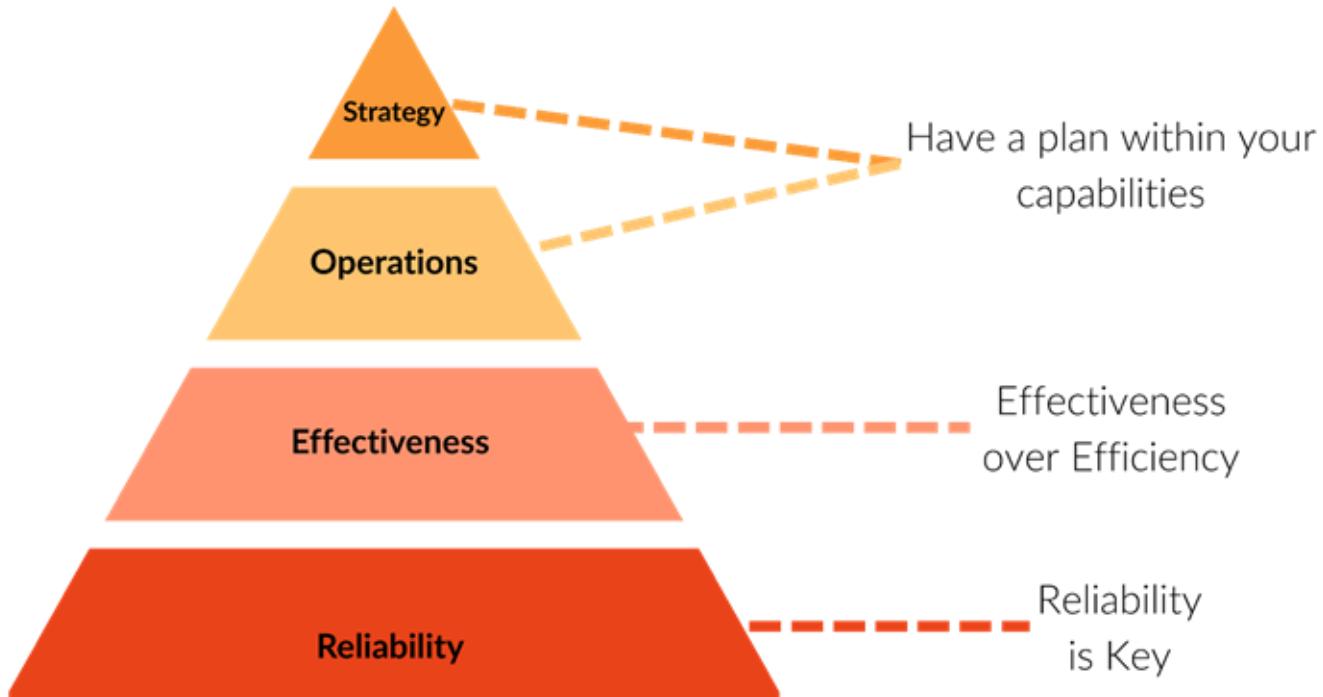


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.48294	0.866175194	1.312582255	0.881101972	0.7618570159	997.0743713

	A	B	C	D	E	F	G
1	Start	End	Notes	Driving	Rest	Spot	Pits
5	9:00 AM	10:00 AM	Racing Period	Hika	Jude	Atticus	Brandon
6	10:00 AM	11:00 AM	Racing Period	Hika	Jude	Atticus	Alex
						Shou	Shou
						Brandon	
						Caden	
7	11:00 AM	12:00 PM	Racing Period	Brandon	Hika	Alex	Atticus
						Shou	Shou
						Caden	
8	12:00 PM	1:00 PM	Racing Period	Brandon	Hika	Alex	Atticus
						Shou	Shou
						Jude	
9	1:00 PM	2:00 PM	Racing Period	Caden	Brandon	Atticus	Hika
						Alex	Jude
10	2:00 PM	3:00 PM	Racing Period	Caden	Brandon	Shou	Hika
						Alex	Brandon
						Shou	Atticus
11	3:00 PM	4:00 PM	Racing Period	Jude	Caden	Hika	Alex



# Main Takeaways



# Questions?

pongaden@gmail.com

