

Having a Sloth of Bears at the Race

2019 IEF Solar Car Conference
Presented By: Andrew Dong





Overview

- ◆ **CalSol Presence at Races**
 - Zephyr 1.0 Era (2013–2015)
 - Zephyr 2.0 Era (2016–2018)
- ◆ **Recruitment**
 - Opportunities
 - Numbers
 - Practices
- ◆ **Case Studies (2016–2018)**
- ◆ **Race Personnel Management**
 - Basic Needs
 - Personnel Considerations
 - Odds and Ends
- ◆ **Key Takeaways**



Before We Begin

- ❖ This is not aimed to be comprehensive nor 100% ideal as there are many specifics and circumstances unique to each team.
- ❖ I am aiming to highlight things one should not forget/undervalue/underestimate with regards to race personnel management and planning.
- ❖ I hope the lessons learned being presented help avoid having to experience headaches for your respective teams.



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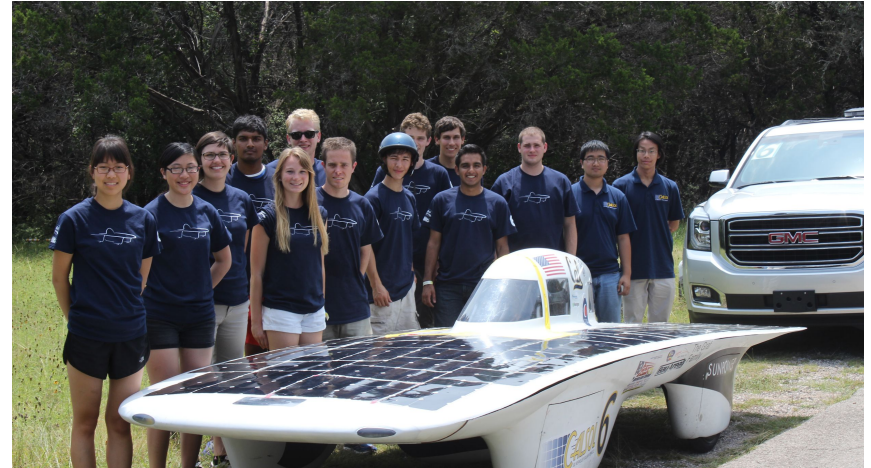


Zephyr 1.0 - FSGP 2013



Zephyr 1.0 - FSGP/ASC 2014

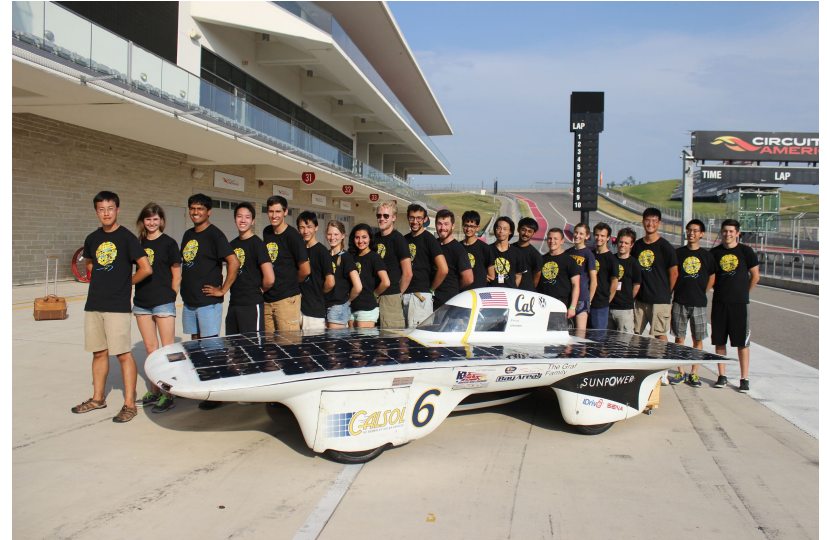
- ❖ 18 at FSGP, 17 at ASC
 - 21 unique members
 - Max 14 members at FSGP
- ❖ Did not qualify for ASC 2014
 - Lent Esteban a motor
 - Most flew home
 - Some shadowed ASC
 - Trailer crew went scenic route





Zephyr 1.0 - FSGP 2015

- ❖ 25 members at FSGP
 - 2 UC Davis guests
 - 1 Michigan State guest
- ❖ Lodging changed throughout
 - 3 AirBnBs
 - Members were split





Zephyr 2.0 - FSGP/ASC 2016



- ❖ 33 unique members
 - 19 peak at FSGP, 31 peak at ASC



Zephyr 2.0 - FSGP 2017

- ◆ 32 Team Members
 - 2 UVA guests





Zephyr 2.0 - FSGP/ASC 2018



- ❖ 37 unique team members
 - 33 at FSGP, 20 at ASC
 - 3 UVA guests (FSGP), 2 UCLA guests (1 FSGP, 2 ASC)



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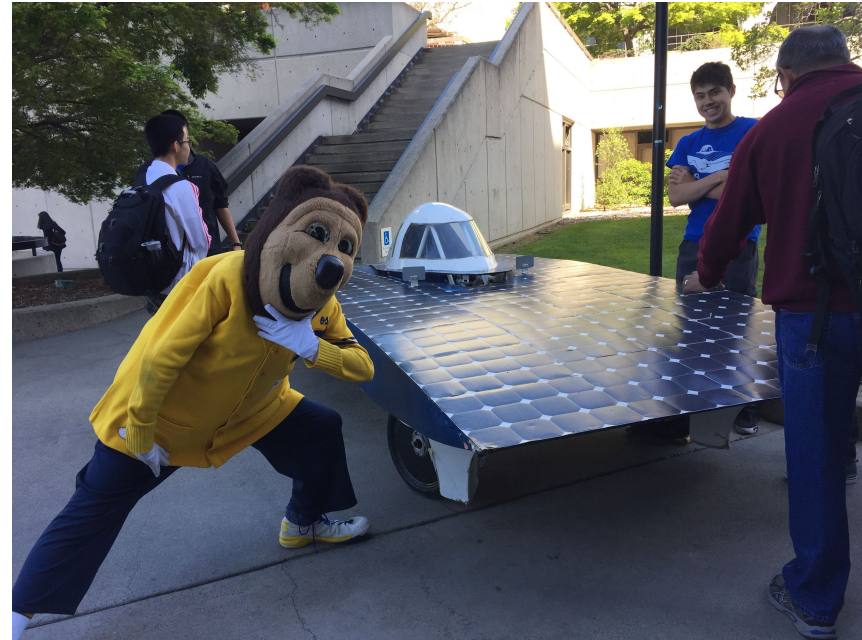
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Opportunities

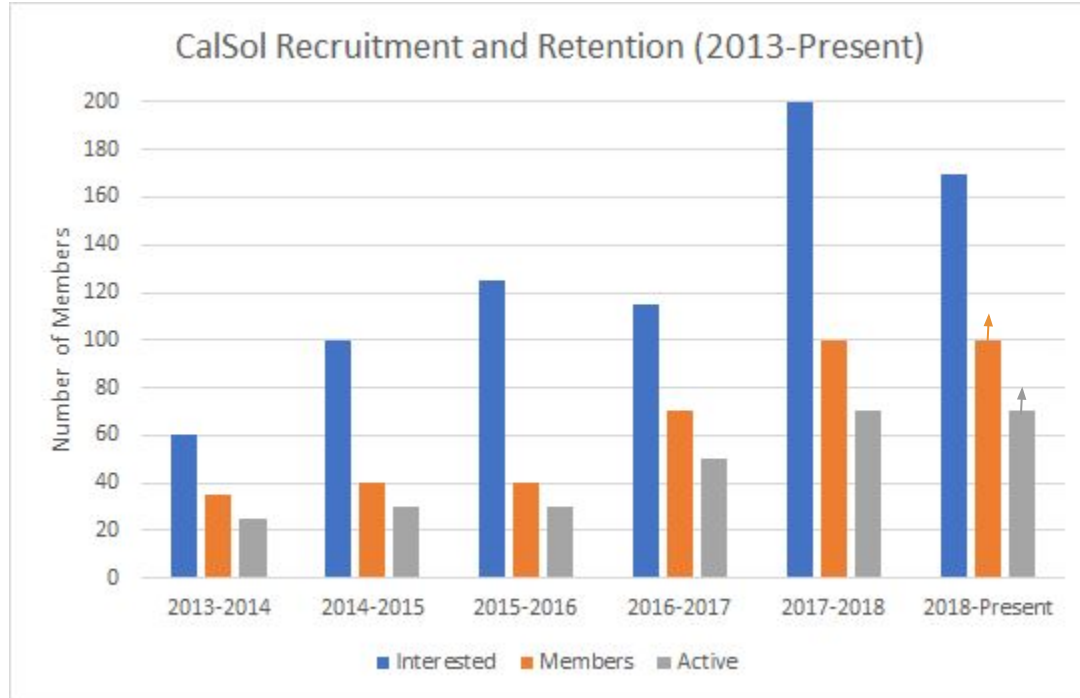
- ❖ New Student Orientation
 - Now Golden Bear Orientation
- ❖ Calpalooza
 - Fall: 500+ clubs tabling
 - Spring: 250+ clubs tabling
- ❖ Recent Signups Numbers
 - Fall: 300+ unique signups
 - Spring: 50+ additional signups

Displaying vehicle is hugely important!
Work with administration/campus events





Numbers



Interested: signed into roster

Members: consistently showed up

Active: consistently worked



Practices - Recent

- ❖ No application
 - No experience required
 - All majors welcomed
 - Can join at any time
- ❖ Membership Dues
 - Used to procure sponsor/administrative thank-yous
 - Not “mandatory” and able to be opted out
- ❖ “Natural Selection”
 - Huge membership drop off after first midterm/test



Team Types - Pros and Cons

“Small Selective Team”

Pros

- ❖ More committed manpower
- ❖ Efficient use of resources
- ❖ Greater specialization

Cons

- ❖ Narrow reach of member enrichment
- ❖ Limited mobility
- ❖ “House of Cards”

“Large Freeform Team”

Pros

- ❖ Able to impact more members
- ❖ More available manpower
- ❖ “Organic” membership

Cons

- ❖ Inefficient training/bring up
- ❖ Widely variable prior experience
- ❖ More bureaucracy
- ❖ “Tragedy of the Commons”

There are of course many factors unique to each team. There are also practices that can limit both the pros and the cons of different team sizes. A certain team size is not necessarily better than another. It really comes down to team philosophy and resources.



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FSGP/ASC 2016

“We didn’t leave the race as friends”

◆ Was CalSol’s first road race since 2012

◆ FSGP:

- AirBnB was cheap and spacious (for 20 people)
- Unknown until then, location was terrible
 - 40 mins away from both the airport and the track
 - Couldn’t easily cook, many people stayed overnight at track, complicated logistics
- People arrived and left throughout FSGP
 - Costly for personnel and vehicle availability

◆ ASC:

- Way too many people, numbers should have been reversed (30 at FSGP, 20 at ASC)
 - Led to extra cars of restless members
 - Extremely complicated logistics with members flying in and out
 - Toll on lodging, food, and vehicle logistics
- Little to no effective/clear chain of command



FSGP 2017

“This is a nice AirBnB”

- ❖ FSGP-only year allowed us to focus on getting specific things right
 - Mandated arrival dates and Day 0 preparation (30 members)
 - All but 2 members arrived the day before
 - AirBnB was just big enough to fit 30+ people, and relatively cheap
 - AirBnB was 5 mins away from track, 13 minutes away from airport
 - Food was able to be cooked and delivered to the track still piping hot



FSGP/ASC 2018

“Let’s not repeat 2016”

- ❖ Time to apply lessons learned from 2016 and 2017
- ❖ FSGP:
 - EVERYONE arrived **two days early** (17 on the same flight!)
 - Main lodging was cold pit
 - Required additional room at nearby hotel (advisor + solar drivers)
- ❖ ASC:
 - Arrivals and departures mandated on “Rest Day”
 - Only 1 premature departure during ASC
 - Had a dedicated support SUV + UHaul carrying luggage and nonessential stuff
 - Counting advisor, observer, and max 2 alumni, had 39 seats for 24 people
 - Still borderline on space!



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Basic Needs

- ❖ **Sleep:** find a single lodging place close to track/route
 - Every minute wasted in transit is one less minute of sleep
 - Races are long (especially FSGP + ASC) and fatigue builds up
 - Beware personnel overlap between late night and early morning shifts

- ❖ **Food:** don't overlook shopping, meal prep, and distribution
 - Have designated chefs, and don't belittle that role

- ❖ **Money:** have people on-call for shopping
 - Race deposits (via Venmo) for food, lodging, transportation, etc. costs are a way to rapidly reimburse purchasers

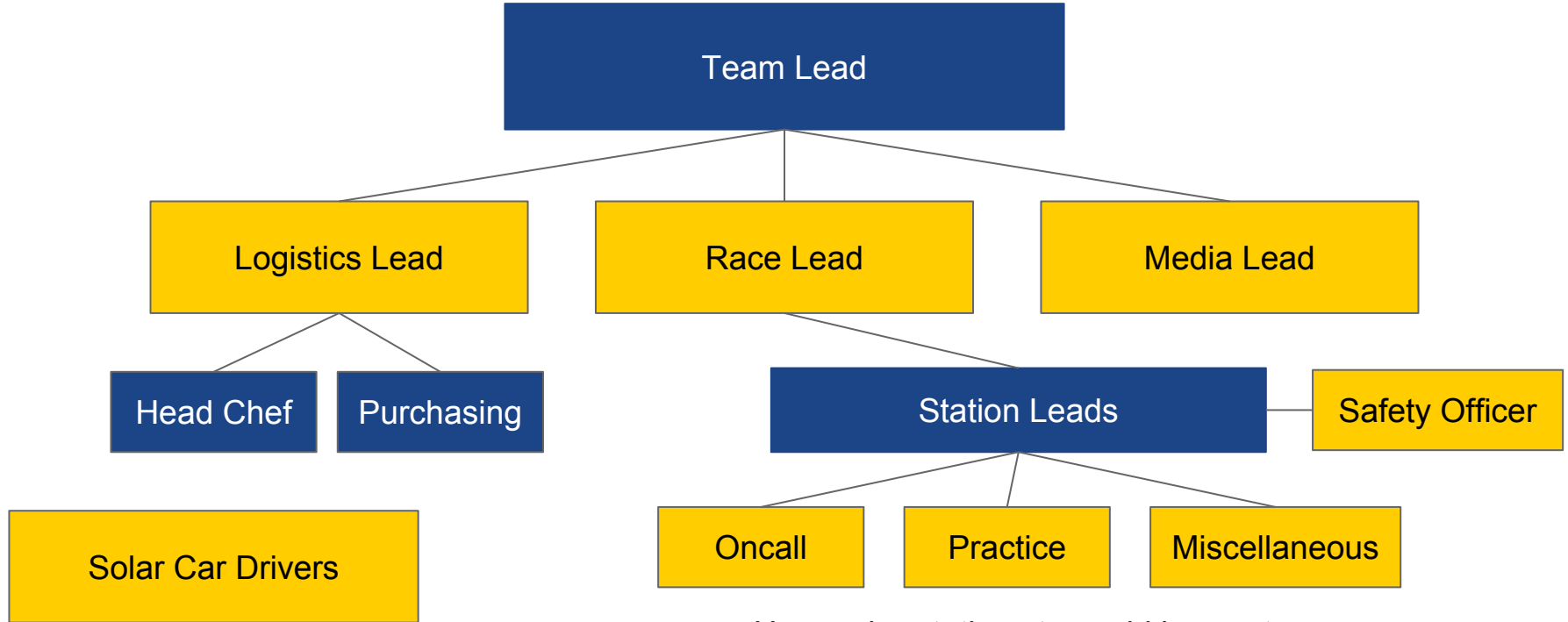


Personnel Considerations

- ❖ **CalSol-imposed cap of 30 members at FSGP, 20 at ASC**
 - Start approaching members in early Spring (if not earlier)
 - “Waitlist” system in place pending availability
 - Fill in members based on level of activity/specialty
- ❖ **Have members commit for entire race**
 - Saves a LOT of logistical nightmares
- ❖ **Arrive early if possible**
 - Inventory, shopping, getting into “race mode”
- ❖ **Internship/Work/Summer Classes**
 - >80% CalSol members are “unavailable” during the summer
 - Heavy workload for remaining members
 - Local members help out on weekends
 - Vast majority successfully obtain days off for races
 - Notify recruiter/professor at beginning



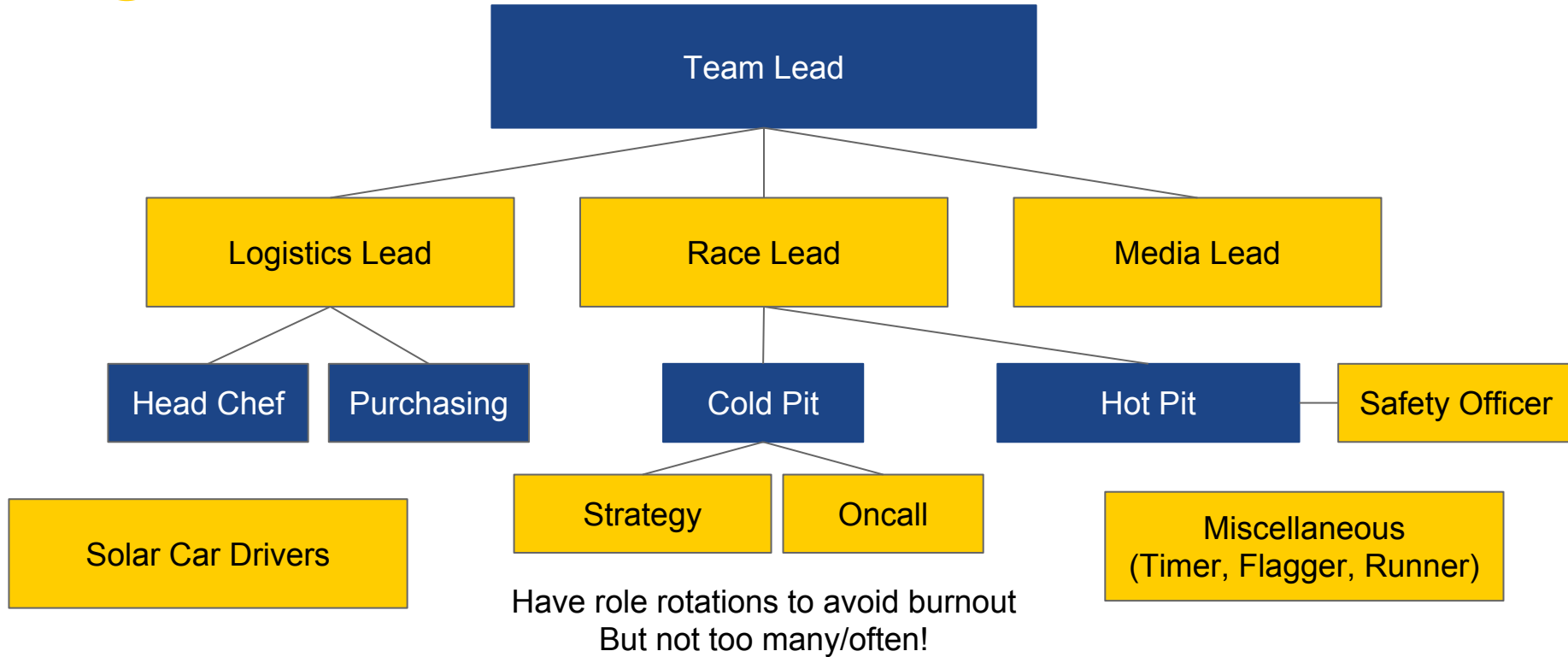
Scrutineering Roles Diagram



Have role rotations to avoid burnout
But not too many/often!

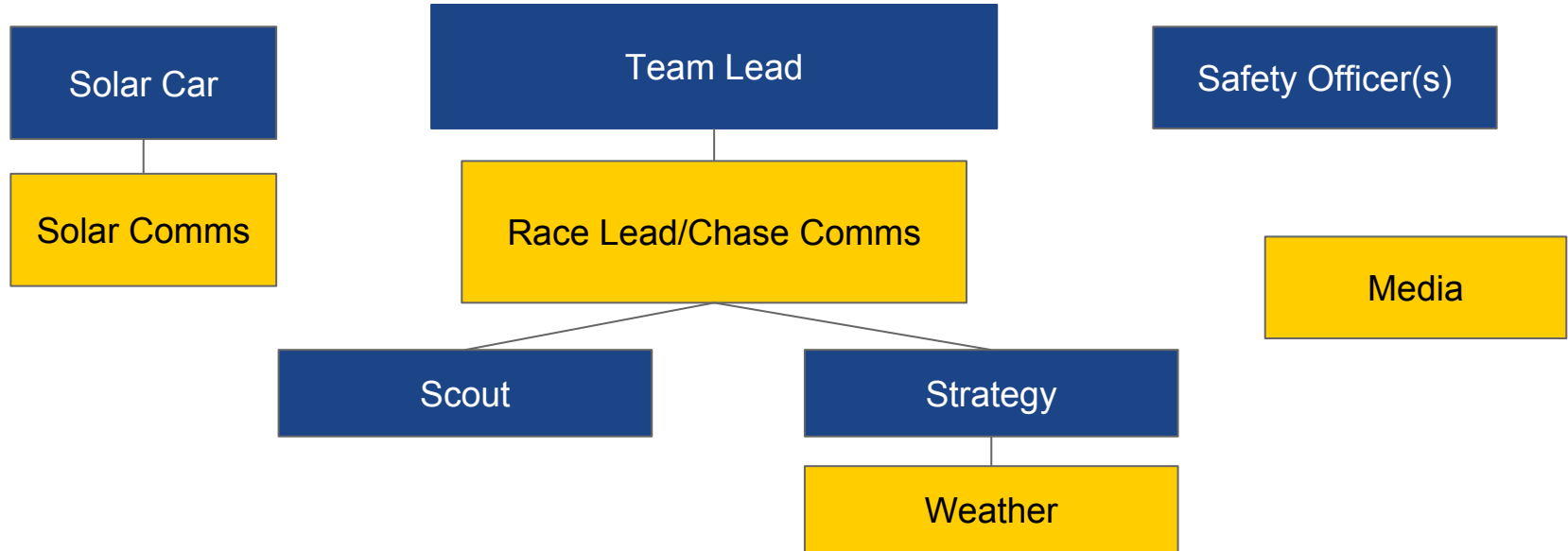


FSGP Roles Diagram





ASC Roles Diagram



Have role rotations to avoid burnout
But not too many/often!



Odds and Ends

Prior To Race:

- ◆ **Hold weekly summer meetings**
 - Lots of things happen over break, keep everyone up to date!
 - Drill pit/caravan operations and roles beforehand
- ◆ **Separate vehicle and non-vehicle tasks**
 - Members physically working on the vehicle should not be in charge of logistical tasks/planning
 - Again fatigue builds up, and these peeps are your most valuable (lots of things happen)

During Race:

- ◆ **Hold All-Hands Meetings**
 - After lunch and after dinner are good times
- ◆ **Have Fun**
 - Regardless if things are going good or bad

Whenever Possible: Test, Drill, and Practice



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Why Bring So Many?

Team Longevity

Classic Solar Car Team:

- ❖ A volunteer, part-time workforce with questionable vehicle experience and essentially 100% turnover every 4 years

- ❖ It's hard to see the big picture without going to a race
- ❖ The more people that go to the race, the more people “get it”
 - Huge implications for team culture, bonding, motivation, experience, etc.
 - Makes the team's life easier in the future

Would also recommend attending at least one race EVERY year!

(Shadow, Old car, New/Improved car)



Key Takeaways

Themes and Frameworks:

- ❖ Attend a race every year
- ❖ Rigid arrival and departure schedules
 - Arrive 1-2 days early if possible!
- ❖ Bring as many members as possible*
- ❖ Learn from previous races

Action Items:

- ❖ Hold weekly summer meetings
- ❖ Make sure basic needs are constantly accounted for
- ❖ Have a clear expenses and reimbursement workflow
- ❖ Establish a clear chain of command (will be different from school year!)
 - More importantly, make sure people are on the same page



Closing Notes

Disclaimer:

While I would hesitate to say that CalSol's recent race management is ideal, at the very least I am confident that it is not bad :P

The vast majority of the things that went well the past few years were direct consequences of things that went horribly wrong (FSGP/ASC 2016)

New CalSol Challenge: WSC Personnel Management