



FRC Scouting 4451 – ROBOTZ Garage

SCRIW III
Oct 12, 2013

FRC Scouting



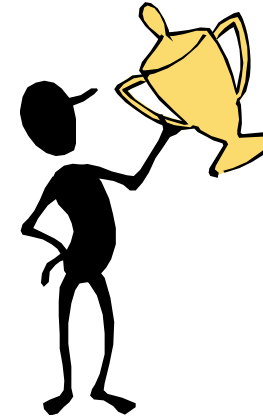
- Why should we do that?
- What is scouting?
- How can we scout effectively with the resources we have?





WHY SHOULD WE DO THAT?

Why should we do that?



“Scouting is the easiest way to make your team more successful at competition”

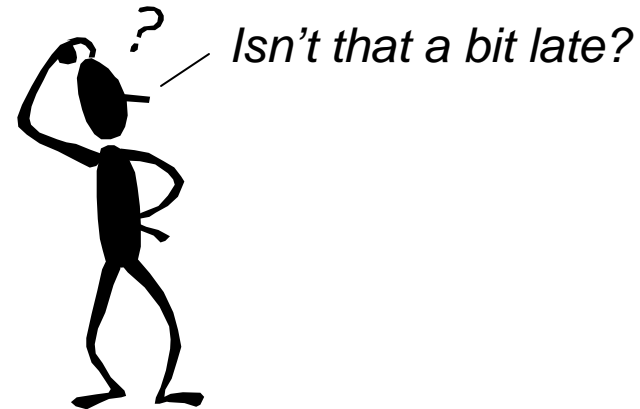
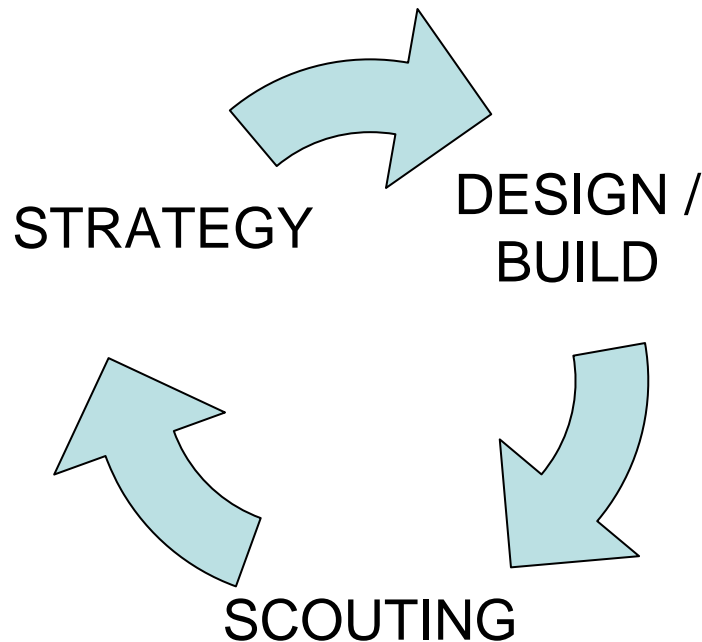
FRC 1114 - Simbotics

Why should we do that?



“Scouting makes your robot better”

David Allred - FRC 4451- ROBOTZ Garage



- Scouting improves your strategy
- Strategy improves your robot design process
- Improved robot design with a clear strategy improves your performance
BINGO

Why should we do that?



Here's another viewpoint....



You know what looks “good” to you on the field

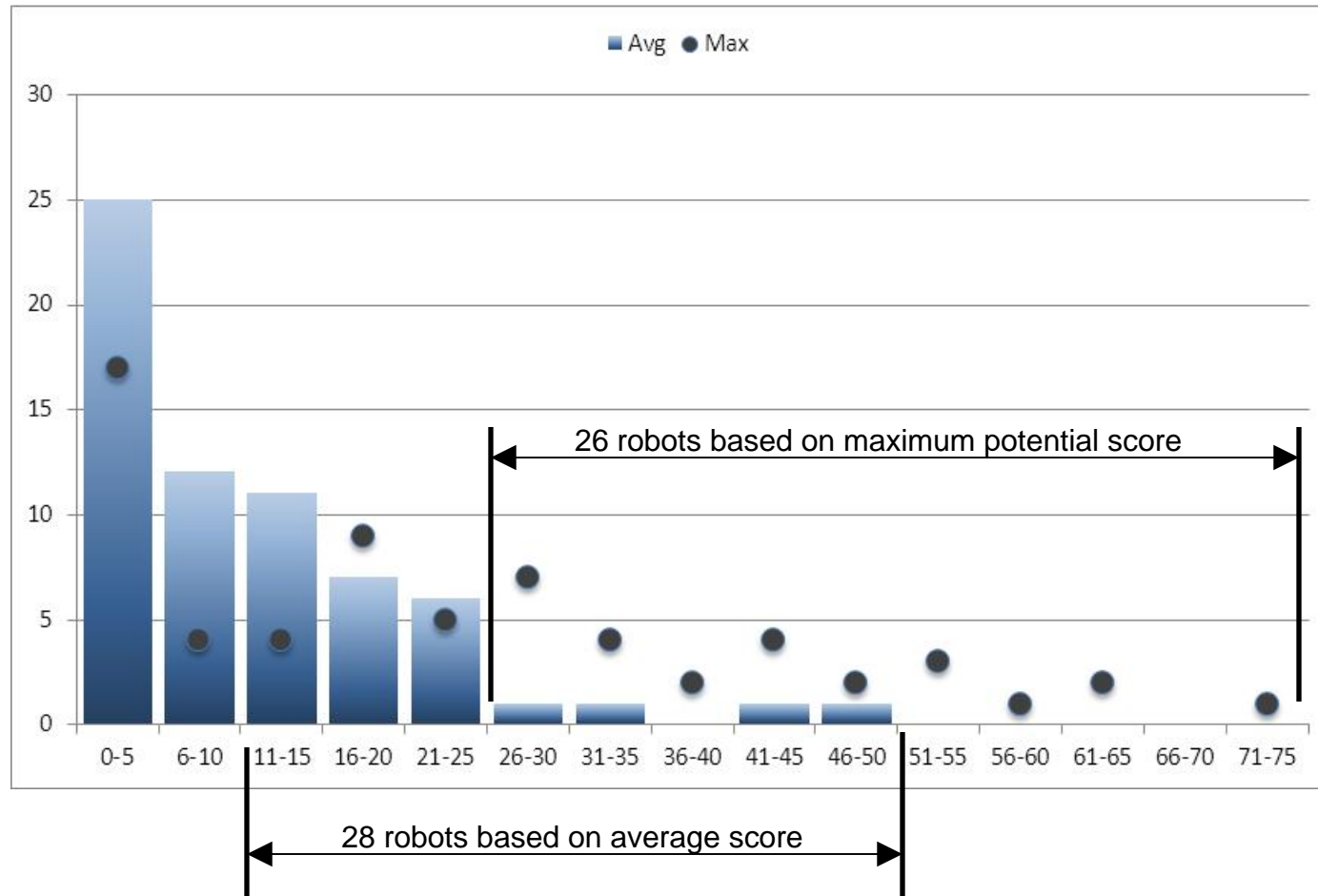
- How can your team achieve that? Don't you want other teams to say you look good on their scouting forms?
- Scouting lots of teams gives you this context.



Improves your ability to predict scoring averages

- Helps with game strategy at your competition
- Helps you predict scoring averages during strategy discussions next season...

Average / Max Robot Scores 2013 Palmetto – Friday data

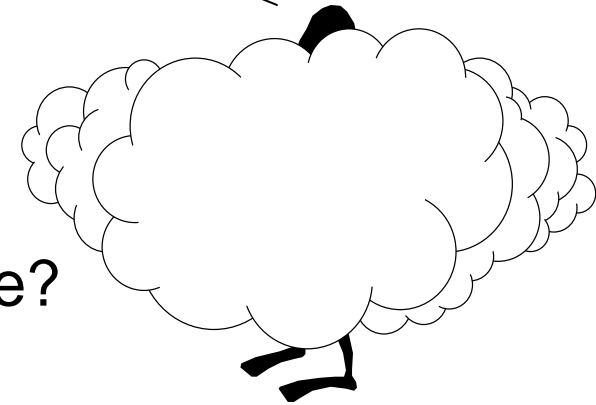


Why should we do that?



We look good... I think

- Scout yourself:
 - How do others perceive you?
 - Do you need to re-focus your role?
 - Give your drive team feedback



“Scouting is the easiest way to make your team more successful at competition”

FRC 1114 - Simbotics



WHAT IS SCOUTING?

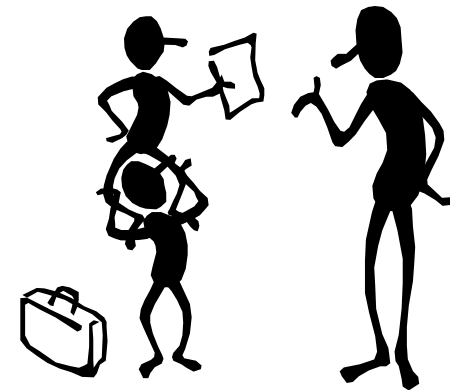
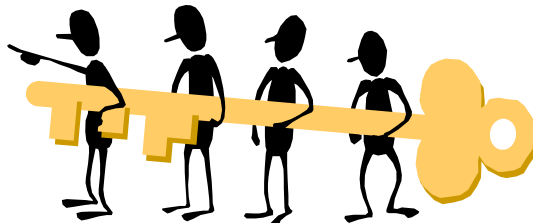
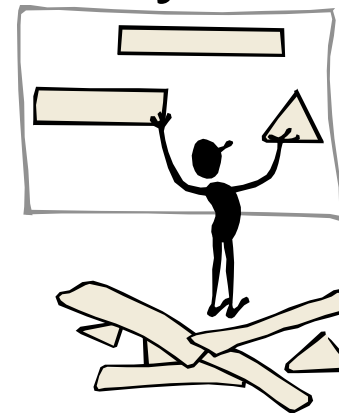
What is scouting?



- Components of a complete system

- Pre-event scouting
- At the event

- Pit scouting
- Match scouting
- Match strategy
- Alliance selection pick list



Critical Robot Data



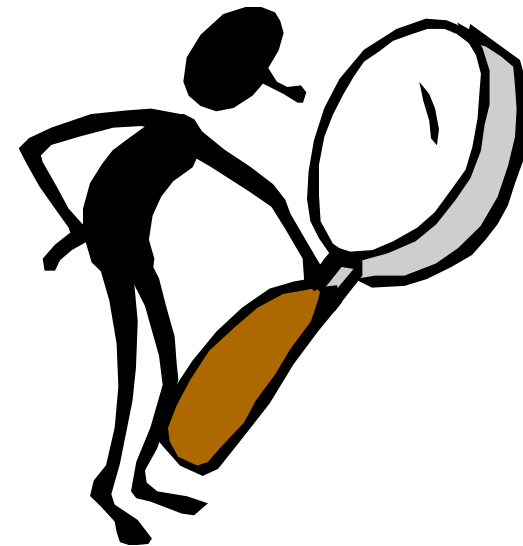
- Goal: Have list of robots, their scoring performance, their typical game plan / role
- Pit data
 - Robot picture – with bumpers
 - Drive train
 - Intended role
 - Key game features
- Match Data
 - Offense stats: Autonomous, Tele-op, End Game
 - Observation Comments:
 - What did they do? / What roles?
 - Did they breakdown?
 - Did they look good?
 - Defense stats



2013 Pit Data Sheet



- Drive train
 - Type: Tank steer, mecanum, swerve, etc..
 - 1 speed / 2 speed
 - Motor count
 - # of traction wheels / # of omni wheels
- Role
 - Example: 3pt cycler with 10pt hanger
- Climber***
 - Level, Location
- Short or tall?
- Comment



*** Need to check compatibility with 4451's climber

2013 Match Scouting Sheet



- Pre-match
 - Show / No-show
 - Starting position
- Auto
 - Made shots 6pt, 4pt, 2pt
- Tele-Op
 - Made shots 5pt, 3pt, 2pt, 1pt
 - Primary shooting spot
 - Floor pick up?
 - Wall pick up?
 - Defense?
- End game
 - Attempt?
 - Level achieved
 - Climb time estimate
- Fouls
- Comments

Hmm....

Why not missed shots?



How can you measure defense?

Performance analysis



	NAME	MATCHES	SCORE RANK	Consistency	AVG PTS	Auto	Tele	Climb	MAX Points	Auto	Tele	Climb	Shooting spot	Defense	Climb attempt %	Role	Climb Time	Comment
25	Raider Robot	5	44	59%	34.00	10.80	11.20	12.00	58.00	18.00	20.00	20.00	-	40%	100%	3pt, floor pickup, 20pt climb	35 SEC TO 20PT	CLIMB ON BACK BAR FOR 20, 10
68	Truck Town T	3	5	75%	70.67	14.00	50.00	6.67	94.00	18.00	66.00	10.00	B	0%	67%	5-disc auto (??), 3pt cycle, 10pt hang	-	Verify multi-disc auto
79	Team Krunch	4	7	75%	66.00	18.00	40.50	7.50	88.00	18.00	60.00	10.00	-	0%	75%	3pt, wall pickup, 10pt hang	-	verify front corner shooting, to
88	TJ(Squared)	4	54	30%	15.00	-	5.00	10.00	50.00	-	20.00	30.00	-	0%	100%	30pt climber / 20pt dumper	45 secs according to CD	climb outside corner
93	N.E.W. Apple	4	46	54%	28.00	13.50	12.00	2.50	52.00	18.00	24.00	10.00	-	25%	25%	shooter, 10pt hang	-	
116	Epsilon Delta	4	40	55%	38.75	12.00	21.75	5.00	70.00	18.00	42.00	10.00	B, S	25%	75%	3pt shooter, 10pt hang	-	
128	The Botcats	4	7	80%	66.00	18.00	40.50	7.50	82.00	18.00	54.00	10.00	-	0%	100%	3pt fast cyclor, 10pt	-	
131	C.H.A.O.S.	4	19	80%	48.75	16.50	24.75	7.50	61.00	18.00	33.00	10.00	B, BC	0%	100%	3pt cyclor, 10pt hang	-	
141	WO-BOT	4	24	85%	46.75	18.00	18.75	10.00	55.00	18.00	27.00	10.00	-	0%	100%	-	-	need pit data - check for multi
155	The Technon	4	27	88%	46.00	16.50	19.50	10.00	52.00	18.00	24.00	10.00	-	0%	100%	-	-	need pit scouting data - climb
175	Buzz Robotics	4	16	60%	52.75	25.50	24.75	2.50	88.00	42.00	36.00	10.00	-	0%	75%	5-disc auto, 3pt shooter, 10pt hang	-	WIDE BOT, EASY TO DEFEND
180	S.P.A.M.	4	22	78%	47.75	7.50	32.75	7.50	61.00	12.00	39.00	10.00	FCS, B	0%	75%	Full court shooter, 3pt cycle, 10pt hang	-	Removed floor pick-up, top he
190	Gompei and	4	28	72%	44.75	6.00	13.75	25.00	62.00	12.00	20.00	30.00	-	25%	100%	30pt climber, SHOOT IN AUTO, DUMP 20PT	30 SEC	CLIMB ON BACK BAR
191	X-CATS	4	21	69%	48.00	16.50	24.00	7.50	70.00	18.00	42.00	10.00	-	0%	75%	Cyclor, 10pt hang	-	
195	Cyber Knight	4	1	76%	84.75	6.00	71.25	7.50	112.00	12.00	90.00	10.00	-	0%	100%	FCS, 3pt cyclor	-	Good full court shot

- Analyze score potential in each game phase
 - Average score and maximum score
 - Confirms a team's "role"
- Keep comments on tendencies

Performance analysis

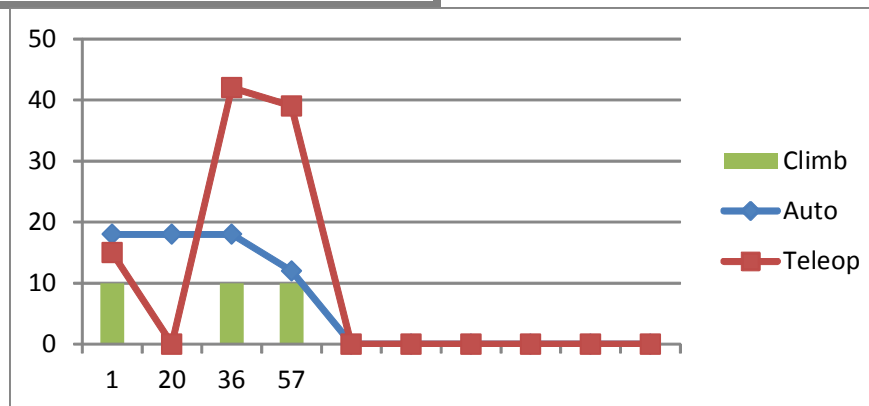


	Avg	Max	
Total	48.0	70.0	69%
Auto	16.5	18.0	92%
Tele	24.0	42.0	57%
Climb	7.5	10.0	75%
Role	cyclor, 10pt hang		
Comments	good shooter, consistent		

VERY CONSISTENT AUTO

GOT SHUTDOWN IN ONE MATCH
AND COULD NOT SCORE

MISSED 1 OF 4 ATTEMPTS



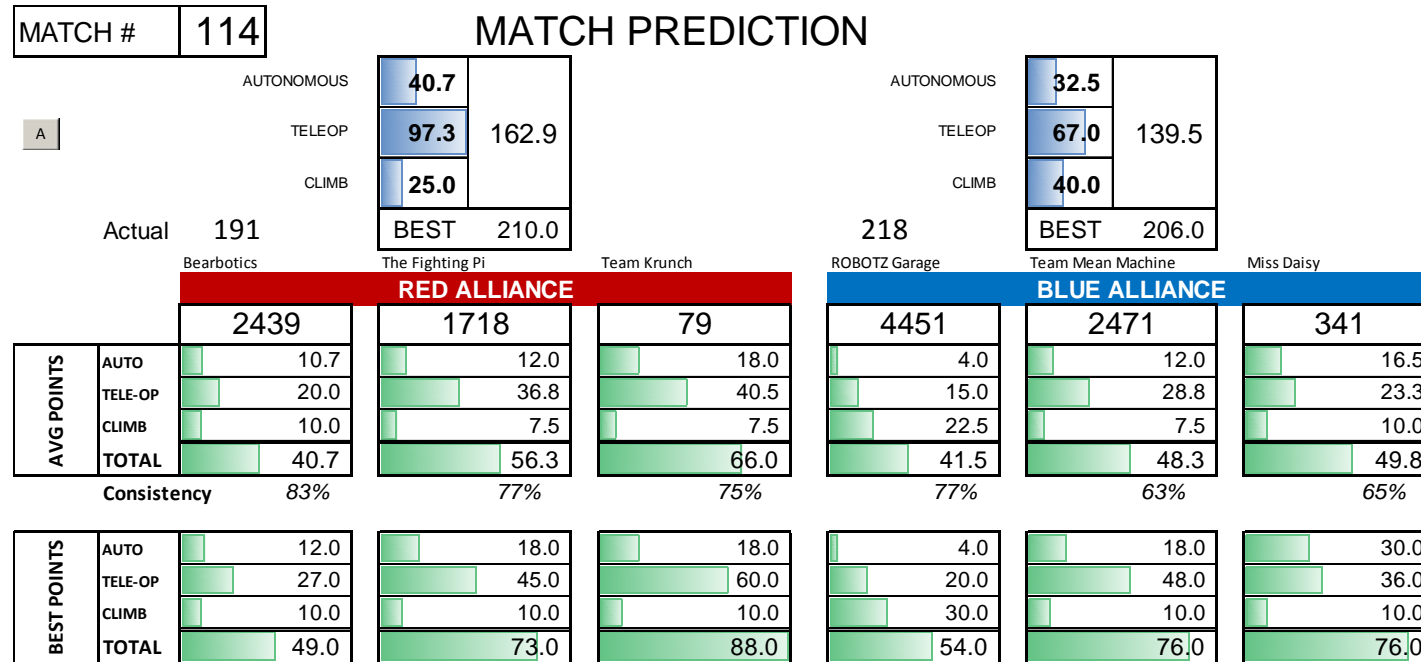
2013 Match Strategy Sheet



- Can you win it?
 - Predict outcome** – change outcome to your favor
- Understand your alliance
 - Assets / shortcomings
 - Focus pre-match strategy
 - Teams tend to exaggerate their own performance
- Understand your opponents
 - One key scoring robot?
 - Get them out of their comfort zone

*** "Predictions" are not a reliable indicator of actual results*

2013 Match Strategy Sheet

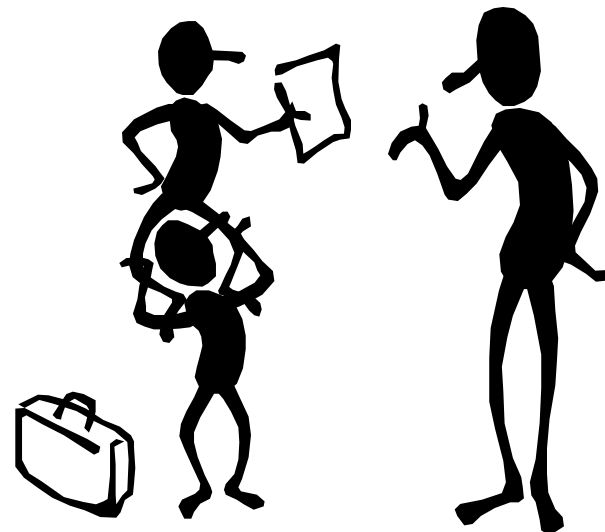


This is actual scouting data used to create a match strategy. In this case, the strategy was to have all three team members focus on scoring with some defense from 4451 near the feeder station to slow down the good shooters. 341 scored better than their previous best to help the Blue Alliance win, even though the Red Alliance performed near their previous combined top score.

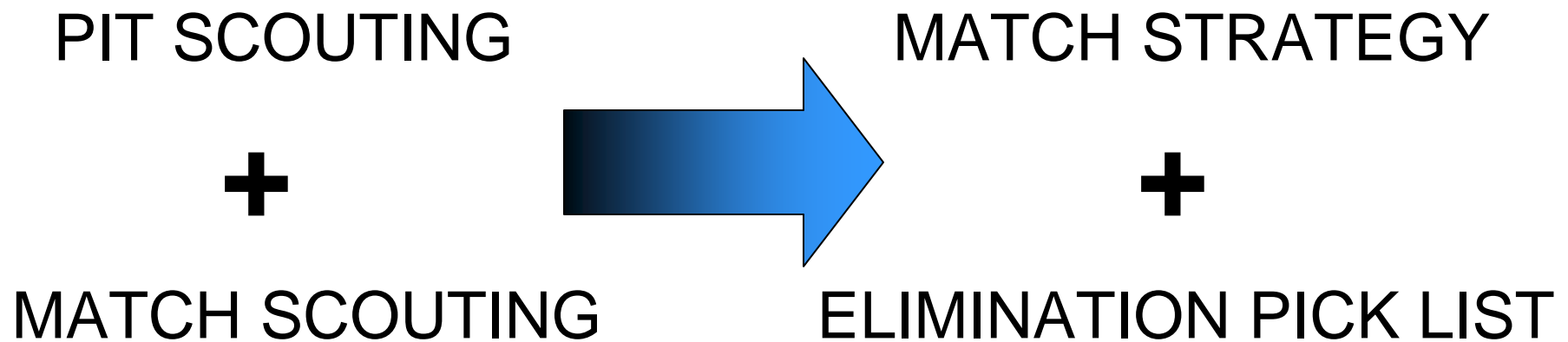
Creating a Pick List



- Need to understand performance AND roles to make a good alliance
 - Complements your strategy
- Look for consistency
 - Can pick an inconsistent high potential team and risk it
- All information should be considered
 - Good team collaboration
 - Scoring output
 - Drive train
 - Defense
 - Quality / reliability



What is scouting?





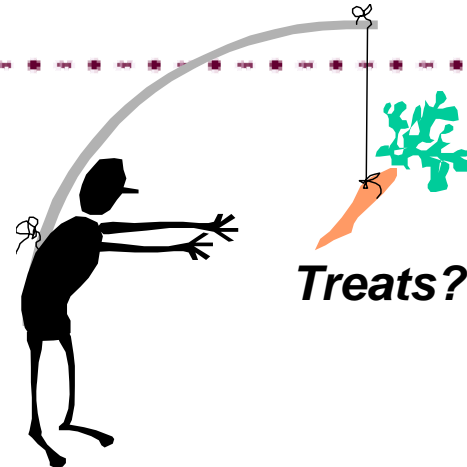
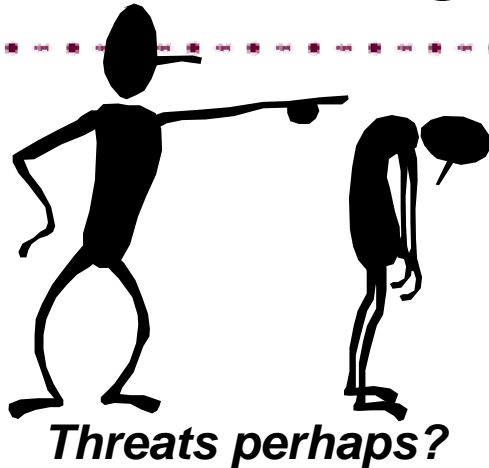
How can we scout effectively with the resources we have?

How can we scout effectively with the resources we have?



- 2 keys:
 - How many people are available
 - Paper or Plastic* (*Computer)

How do we get people excited about scouting?



- Best approach – It's important to the team to know what's coming. This information could be the difference between winning and losing. Does that motivate you?
- Or... Bottom line – not on drive team, not on pit crew...
You're a scout!

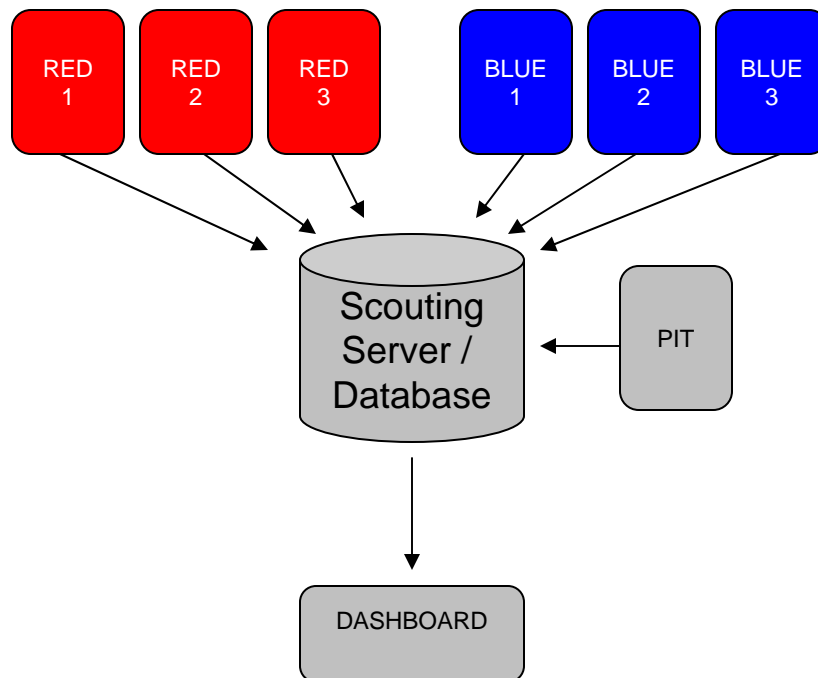
Unlimited Resources

... there's an app for that



FRC 836 - Robobees

FRC Scouting... Google Play Store



Resources

- 8 Android cell phones
- Internet server / database

People

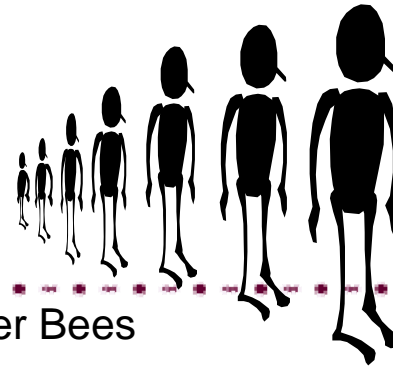
- 1 person per robot
- Back up scouters
- Pit scout
- Lead scout – Dashboard

Software

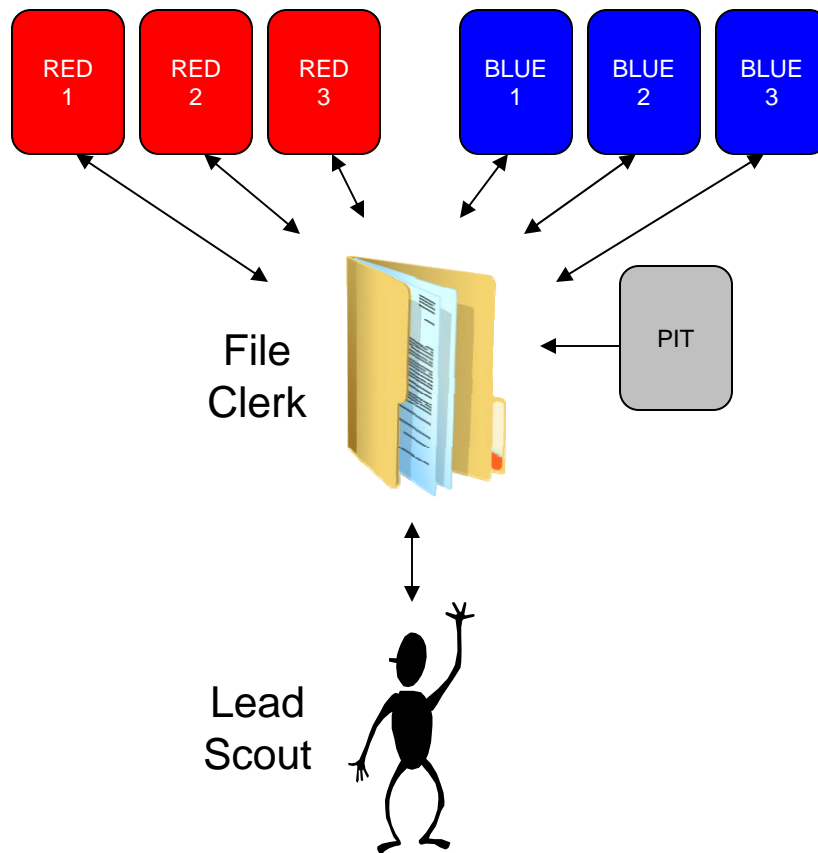
- Free app by FRC 836
- Custom scouting data for each game

<http://www.chiefdelphi.com/media/papers/2790>

***Lots of people
No computers***



FRC 33 – Killer Bees



Resources

- File system – folders or binders

People

- 1 person per robot
- Back up scouts
- 1 file clerk
- Lead scout

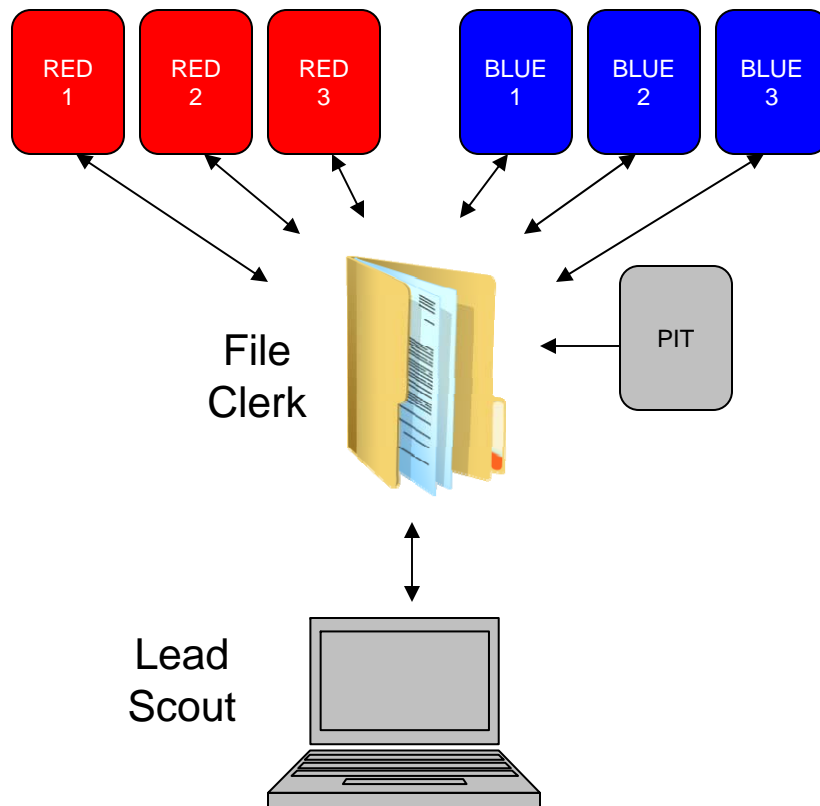
Software

- Make you own sheet – Excel / Word
- Excel sheet published on Chief Delphi

Lots of people One computer



FRC 180 – SPAM



Resources

- PC with Excel
- Battery / charger / inverter

People

- 1 person per robot
- Back up scouts
- 1 file clerk
- Lead scout – Computer / Excel

Software

- Excel file published on Chief Delphi
- New Excel file each year

<http://www.chiefdelphi.com/media/papers/2769>

Lots of people One computer ... example sheet

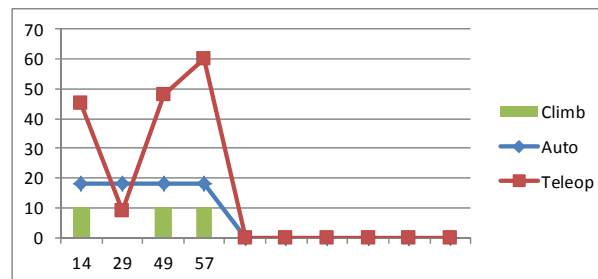


SCOUTING		Points				Autonomous					TeleOp				Strategy				End Game						Penalties		
A		Total	Auto	Teleop	Climb	Starting Spot	6 pt	4 pt	2 pt	Pickup?	Pyramid	3pt	2pt	1pt	Shooting Spot	Floor	Wall	Defense	Attempt	Start Time	End Time	10pt	20pt	30pt	Foul	Tech	
MATCH																											Comments
14		73	18	45	10	BC	3					15					Y		Y			Y					EXTREMELY ACCURATE
29		27	18	9	0	BC	3					3					Y										FELL OVER
49		76	18	48	10	BC	3					16			BC		Y		Y			Y					MADE EVERY SHOT
57		88	18	60	10	BC	3					20			BC		Y		Y			Y					ACCURATE BUT TOP HEAVY
		0	0	0	0																						
		0	0	0	0																						
		0	0	0	0																						
		0	0	0	0																						
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		0	0	0	0																						

0% 0% 100% 0% 75% 75% 0% 0%

		Total	Auto	Teleop	Climb
AVG	4	66.0	18.0	40.5	7.5
MAX POTENTIAL		88.0	18.0	60.0	10.0
Pre-champ OPR		49.5	10.7	29.6	8.6

ROLE: 3pt, wall pickup, 10pt hang
SHOOTING SPOT:
COMMENT: verify front corner shooting, top heavy
CLIMB TIME:



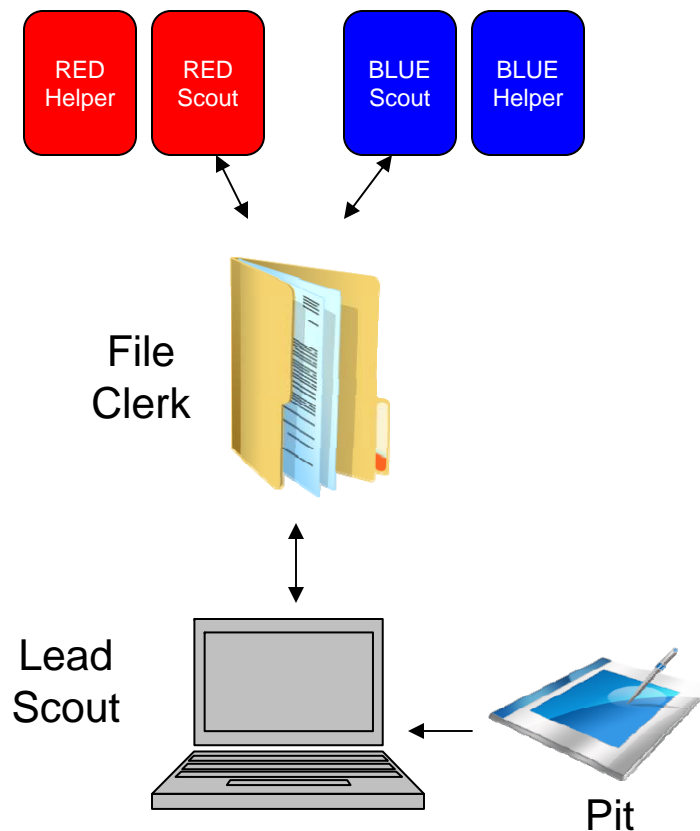
PIT DATA:

DRIVE TRAIN: 6w tank
TALL / SHORT: TALL

Fewer people One computer – ROBOTZ Garage



FRC 4451 – ROBOTZ Garage



Resources

- PC with Excel
- Battery / charger / inverter
- Printer
- Android Tablet / Phone

People

- 2 to 4 scouts
- Back up scouts
- Pit scout
- Lead scout – Computer / Excel

Software

- Excel 2010
- Memento – Android database for pit scouting

Fewer people One computer... example sheet



2013 MATCH SCOUTING

RED ALLIANCE

MATCH #

1

TEAMS	PRE MATCH		AUTONOMOUS				FOULS			
	SHOW (Y/N)	STARTING POSITION	6pt	4pt	2pt	Floor pickup (Y/N)	FOUL	TECH FOUL	YELLOW	RED
123	y	bc	3			n				
456	y	b	2			n				
789	y	fc				n	1			

TEAMS	TELE-OP							END GAME			
	5pt	3pt	2pt	1pt	PRIMARYLY DEFENSE (Y/N)	WALL PICK UP (Y/N)	FLOOR PICK UP (Y/N)	TRIED TO CLIMB (Y/N)	10PT	20PT	30PT
123		14						y	y		
456		1	7					n			
789		1						n			

TEAMS	PRIMARY SHOOTING SPOT	COMMENTS
123	bc	Very accurate, quick cycling robot
456	fcs	Tall full court shooter. OK. Shoots for 2
789	fc	Shooter jams - switched to defense

How can we scout effectively with the resources we have?



- Base your scouting on people resources available
- Simple is effective

Improve your game!

