QFD Matrix

PHASE I QFD

	% drag reduction at 35 mph	Damage to car after cone impact at 60 mph	Decrease in lap time on 45 second course	Fuel used in 22 km endurance event	System response time	Power draw per lap	Weight of DRS	Sustained lateral acceleration	Horizontal extension behind rear tires	Horizontal extension in front of frount tires	Width of widest aero component	Clearance of aero components around tires	Minimum radius on leading edges of all components	Cost
% drag reduction at 35 mph														
Damage to car after cone impact at 60 mph	-													
Decrease in lap time on 45 second course					***NO INPUT IN THIS AREA***									
Fuel used in 22 km endurance event			-											
System response time			++	-										
Power draw per lap			-	++	+									
Weight of DRS	-		+	+										
Sustained lateral acceleration			++		++		+							
Horizontal extension behind rear tires			+		+		-	+						
Horizontal extension in front of frount tires		-	+		+		-	+						
Width of widest aero component		+	+		+		-	+						
Clearance of aero components around tires														
Minimum radius on leading edge of all components														
Cost	-	-					-							
Preferred														

Correlation Codes	
+ +	Very Positive
+	Positive
-	Negative
- -	Very Negative

Customer Requirements	**Customer Weights**	% drag reduction at 35 mph	Damage to car after cone impact at 60 mph	Decrease in lap time on 45 second course	Fuel used in 22 km endurance event	System response time	Power draw per lap	Weight of DRS	Sustained lateral acceleration	Horizontal extension behind rear tires	Horizontal extension in front of frount tires	Width of widest aero component	Clearance of aero components around tires	Minimum radius on leading edges of all components	Cost	**Customer Perception** *1 Worse*	*2*	*3*	*4*	*5 Better*
Lower lap times	3	1		1		1		1	1										A	
Increase lateral acceleration potential	1					1			1										A	
Maintain current aero efficiency	2	1			1													A		
Sustain aero loads	3																		A	
Sustain cone impact loads	2		1									1								A
Sustain car vibration	3							1										A		
Perform sufficient component testing	2	1	1																	A
Integrate with surrounding components	2		1				1						1						A	
Meet FSAE/FSG Regulations	3									1	1	1	1	1				A		
Remain within financial means	1														1		A			
Technical Targets (Specifications)		75%	Not structurally compromised	1.0 second average over previous ca	0.6 gallons	50 ms	35 mAh	3 pounds	3 G	12 inches	30 inches	Within outside of the tires	2.7 inches	0.060 inches	$1,500					
Technical Benchmarking *Better*	*5*	A	A			A		A	A											
	4			A	A															
	3						A			A	A	A	A	A						
	2														A					
Worse	*1*																			
	Raw score	7	6	3	2	4	2	6	4	3	3	5	5	3	1					
	Relative Weight	13%	11%	6%	4%	7%	4%	11%	7%	6%	6%	9%	9%	6%	2%					

A: Benchmark Product #1
RIT F21