

Team 6 – Mountain Bike

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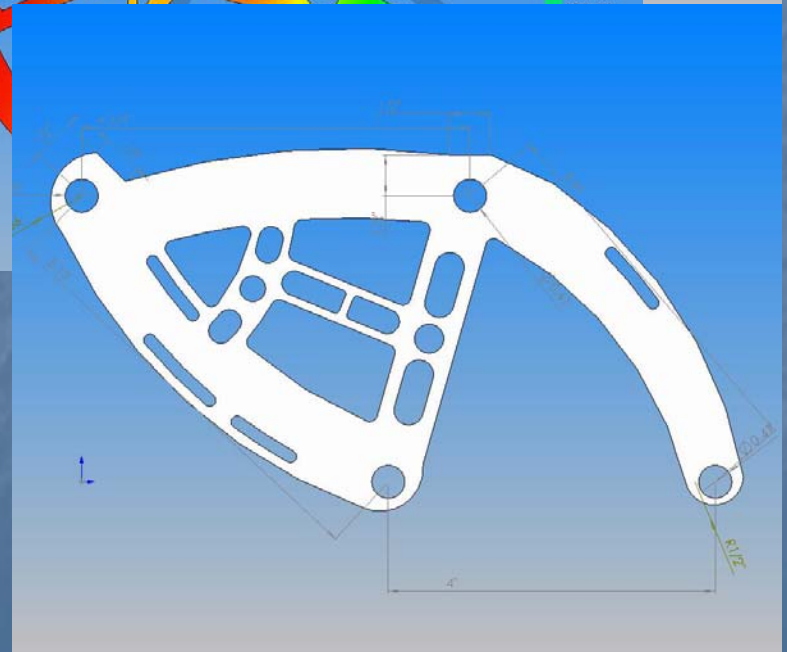
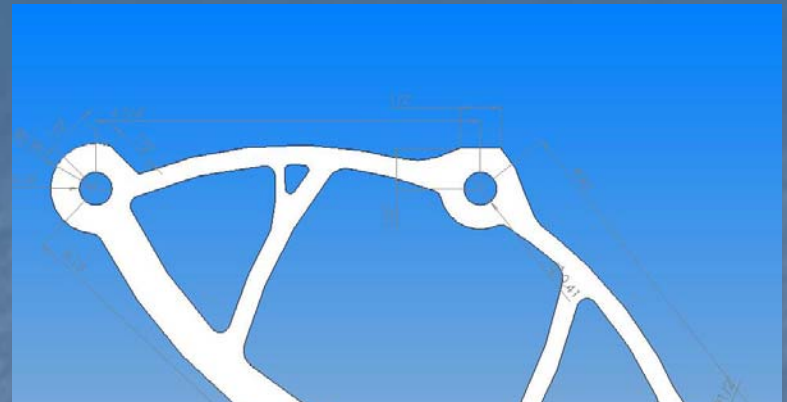
- Wanted smooth contours, natural supports
- Chose organic, eyeball shape

It didn't work very well.

- Needed center supports

Tested and reworked . . .

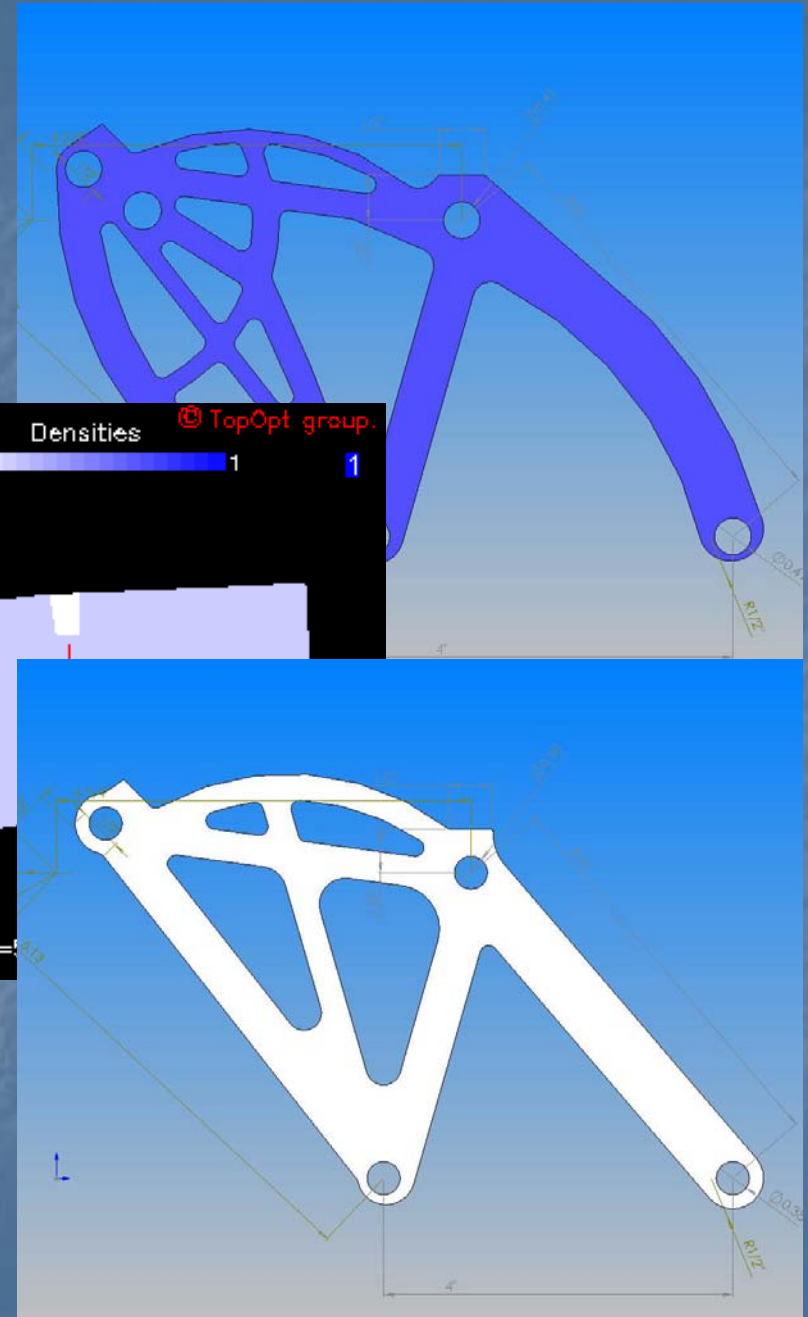
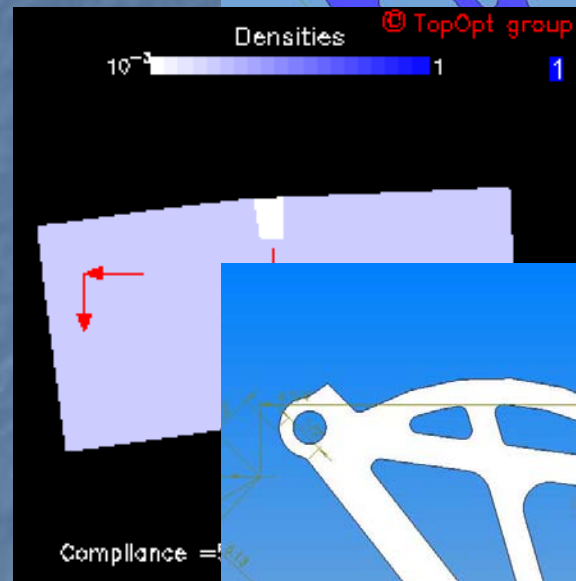
- Minimized displacement
- Reduced mass with holes



- Modified first version
- Maintained curved lines
- Needed to reduce mass further

- Optimized shape using www.topopt.dtu.dk
- Saw strong resemblance to modified first version

- Straightened a few beams
- Removed others



Results

	Version 1				Version 2			
Factor	FEM	Actual	Req	Met?	FEM	Actual	Req	Met?
Mass (Lbs)	.34	.357	< .30	No	.28	.288	<.30	Yes
δ 1 (mm)	.0568	.044	< .057	Yes	.0545	.101	< .057	No
δ 2 (mm)	.0073	.022	< .009	Yes	.0044	.042	< .009	No
1 st Mode	444 Hz	445 Hz	> 548 Hz	No	522 Hz	556 Hz	> 548 Hz	Yes
Cost \$	--	10.42	> 6.70	No	--	6.47	> 6.70	Yes

Attribute	Constrain	Optimize	Accept
Cost			
Performance			
Mass			