16.810 Engineering Design and Rapid Prototyping IAP 2004
Massachusetts Institute of Technology
"International Bicycles Corp."

Requirements Sheet

Team Number ____

Product Type: ***Cross Over***

1. Market Description

This bicycle is to be designed for the mass consumer market. The expected sales volume is 100,000 per year. Affordability, excellent performance/cost ratio and light weight are most important to be successful in this market.

2. Requirements

Manufacturing Cost (C):	$C \leq 5.2$ \$ /part
Performance (δ_1, δ_2, f_1):	Displacement $\delta_1 \leq 0.060$ mm Displacement $\delta_2 \leq 0.009$ mm First natural frequency $f_1 \geq 295$ Hz
Mass (m):	$m \leq 0.27$ lbs
Surface Quality (Q):	$Q \geq 4$
Load Case (F):	F1 = 50 lbs / F2 = 75 lbs / F3 = 75 lbs

The part has to conform to the interface requirements and geometrical boundary conditions shown on page 2 of this document. This requirement cannot be waived.

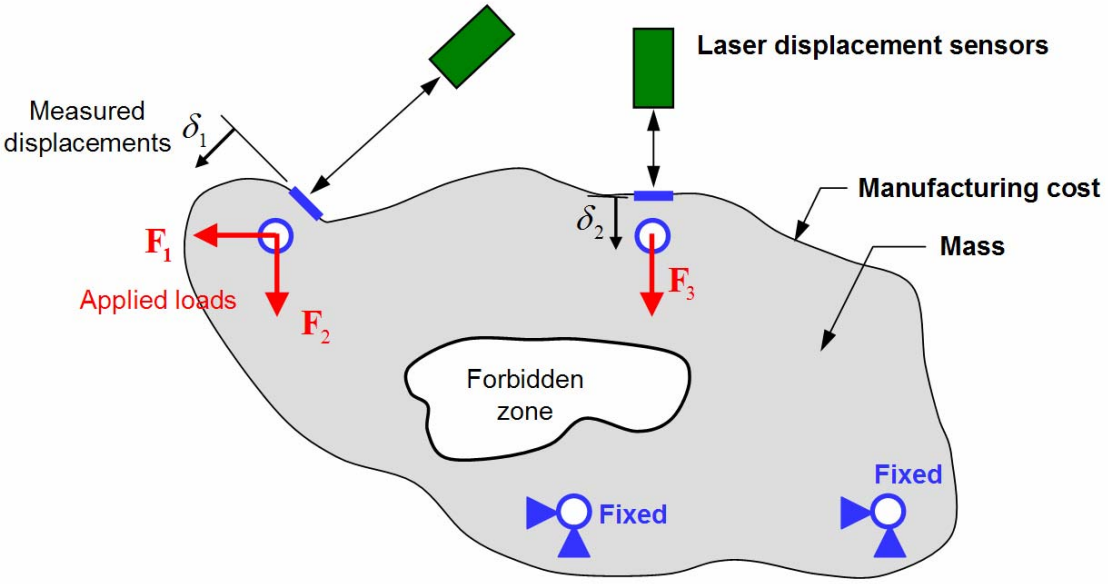
3. Priorities

Light-weighting (low mass) is the first priority for this product. Next, the customer cares about low manufacturing cost and thirdly, structural performance should be as high as possible. These priorities are shown in the Ishii-matrix below:

Attribute	**Constrain**	**Optimize**	**Accept**
Cost		■	
Performance			■
Mass	■		

Modifications to these requirements have to be negotiated with Management.

Configuration



No forbidden zone for your team

Dimensions