GRADING RUBRIC:

For the assembly being used an origin will be identified and the STA, WL, BL of that origin will be identified.

i.e. rather than the origin being 0,0,0 it will be something like STA 360, WL 30, BL 50.5

The competition will be on a small assembly, but the desire would be to use this on an entire airplane. So, when you are designing, think 747 big.

For follow on models of airplanes, Boeing sometimes puts plugs in the airplanes to make them longer (oversimplified, but you get the idea). When they install these plugs that must squeeze them between existing stations and assign them identifiers which are not a value.

So, one example of an extra credit would be a lookup table to identify distances between stations. i.e. If a 40-inch plug were put between STA 360 and STA 380 there might be STA 360A which is 20 inches aft of STA360. And STA 360B which is 40 inches aft of STA 360. Then STA 380 is actually 60 inches aft of STA360 rather than only 20.

Task	Points			
	0-1	2-4	5-7	8-10
Identify location of target pointed at in x, y, z coordinates. (Station (STA), Waterline (WL), Butline (BL)) relative to an axis origin when a feature like a button or screen pushed.	Not attempted/doesn't work.	Error greater than 2 inches.	0.25 to 2 inch error	<0.25 inch error
Measure the distance between 2 features.	Not attempted/doesn't work.	Error greater than 0.5 inches.	0.1 to 0.5 inch error	less than 0.1 inch error
Measure the distances between 2 features.	Not attempted/doesn't work.	Simultaneously in the field of view of the device.	View of the device at the same time.	
Identify a part.	Not attempted/doesn't work.	Identify a part.	Identify part and location.	Identify part, location and next higher assembly (an identical part number will be used in multiple locations on the assembly and we need to be able to know which part we are talking about.)
Identify a part.	Not attempted/doesn't work.	Identify part in low light conditions (think reaching into an access hole in an airplane.)	Identify part when partially obscured by other parts.	Identify part in partially obscured and in low light conditions.
Be able to use all camera available on the device.	No attempted/doesn't work.	Yes	More creative solutions eligible for more points.	

Display of coordinates on screen.	Not attempted/doesn't work.	Display X, Y, Z coordinates from the origin.	Static display of STA, BL, WL on a captured image.	Dynamic display of STA, WL, BL while actively pointing the camera at the feature (real time).
Display	Display has cross hairs or bullseye to identify part.		"Attractiveness of display"	Display features can be modified by user under something like "settings".
Display Capture	Not attempted/doesn't work.	Photo can be captured; must be texted or emailed to export.	For display such as crosshairs; part number; coordinates, next higher assembly	Export features along with data in some form such as data table.
Ease of use	Without verbal instruction	Able to use with written directions	Able to use with quick reference guide	Intuitive to the user how to use.
Ease of use	Doesn't work	Clumsy execution		one touch use; i.e. touch of button to identify point in crosshairs or touch of screen or the lick
EXTRA CREDIT / per feature				up to 10 points / per if you incorporate

Gameplay:

Several features will be identified on the assembly through something like the use of stickers. Teams will be asked to demonstrate the use of the device for the above features and will be scored accordingly.

Ideas for extra credit:

- "Draw" on image being exported
- Attach audio file to image
- Able to input written comments with image
- Able to identify Stations form table in instances when they are not actual measurements between stations (see description at top).