

# Computer Controlled Aiming & Tagging System

## Product Specification and Project Plan EML 4551C – Senior Design – Fall 2011 Deliverable 2

Team # 2

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## Introduction

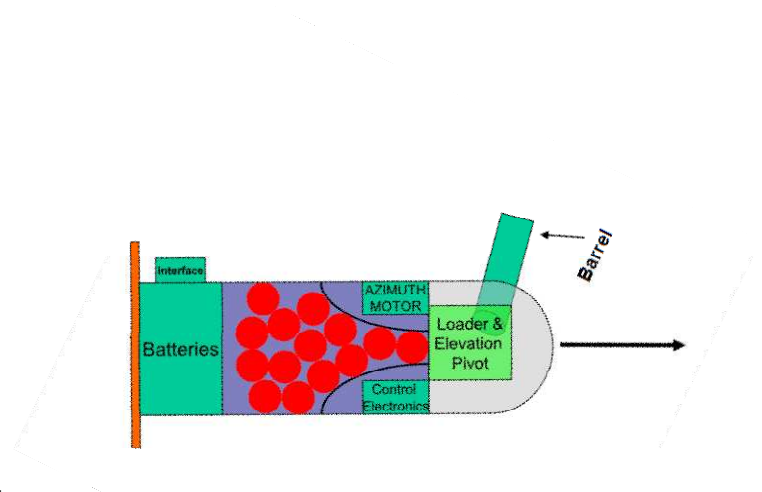
The goal of this project is to design a nondestructive method to test and evaluate the accuracy of a Computer Controlled Aiming and Tagging System (CCATS). This design will allow the user to input data for multiple targets of interest and tag them with high precision and accuracy in a static testing environment.

## Product Specification

The tagging system will use a nondestructive method to tag the targets of interest and measure the dispersion and accuracy of the tagging system to ensure peak performance during live simulation. Paintballs will be used as visual aid to measure and evaluate the repeatability and of each test run. User inputs will be integrated in the system to allow the user to cycle through targets at predetermined locations. The barrel of the tagging system should ideally move from each target within one second or less to minimize latency and allow a smooth motion of the barrel without any jerk between each target. After talking with our customer we generated a list of customer needs and translated them into engineering specifications in the QFD.

## Customer Needs

- Less than 50lbs
- All components locally housed
- Smooth azimuth/elevation movement
- Be able to shoot and re-aim in any direction less than 1 second
- System is very accurate
- The system can produce repeatable results as far as accuracy firing on different targets
- Computer interface
- Rechargeable batteries
- Tag marker
- Safe to operate



# Quality Function Deployment

		Engineering Specifications					
		Case must be lighter than 50 lbs.	Power System last longer than 6 hours	Slew rate resolution less than 1 degree/sec	User input coordinates (deg)	Paintball Gun accurate to 25 m	Firing System fires within 2 sec of aiming
<b>Customer Needs</b>	Must be light weight	x	x			x	
	Locally Housed Components	x					
	Smooth Azimuth/Elevation Movement			x			x
	Easy to Use Power System		x				
	Computer Interfacing				x		x
	Accurate			x		x	x
	Repeatable			x		x	
	Must be able to shoot and Re-aim			x			
	Non Destructive Marking Device					x	
	Must be safe to operate						x

An x denotes that there is a relation between the customer need and the translation into an engineering specification. It can be seen that the Slew rate resolution and selecting a Paintball Gun will be a significant factor in meeting customer needs.

## Budget

Our budget as of now is set at \$2000 from Eglin AFB. Additional funds may be available from Eglin and is currently being researched. Since a final concept has not been decided on exact materials are unknown at this time. However, these funds will go towards purchasing materials, software needed for programming and any machine work needed.

## Project Plan

<b>Computer Controlled Aiming and Tagging System</b>			
<b>Tasks</b>	<b>Start Date</b>	<b>Duration (Days)</b>	<b>End Date</b>
Needs Assessment	20-Sep	15	4-Oct
Product Specification	5-Oct	9	13-Oct
Product Specification Review	11-Oct	3	13-Oct
Concept Generation and Selection	14-Oct	14	27-Oct
Concept Generation and Selection Review	25-Oct	3	27-Oct
Interim Design	28-Oct	19	15-Nov
Interim Design Review	13-Nov	3	15-Nov
Overall Assessment (Go/ No Go)	16-Nov	7	22-Nov
Final Design Package	22-Nov	15	6-Dec
Finalize Bill of Materials	24-Nov	7	1-Dec
Order Materials	1-Dec	17	16-Dec
Build Prototype	4-Jan	32	4-Feb
Testing/Rebuilding	10-Jan	81	31-Mar
Final Design	1-Apr	6	6-Apr

## Gantt Chart

