Note to Semi-Finalists

Thank you very much for participating in the HUNCH Design and Prototyping. This was by far the most difficult year for deciding finalists. Part of the difficulty was the number of teams participating but the most important part was the number of high quality of prototypes for each of the 10 projects.

Each Mentor helped choose potential finalists for their area and were then compared with the same type of projects across the country. Teams that were selected to be finalists had very tough competition and it was very difficult to down select. Although everyone wants to be a finalist it isn't possible and decisions have to be made. Some of the decisions include the requirements but also trying to show diversity of how the problem could be solved. There was no shortage of good and diverse ideas.

Being a Semi-Finalist is a great honor because each of you put together a project and data that made the teams think, learn and be excited about space. Your great ideas and hard work is what makes NASA HUNCH a challenge and a great experience for engineering. We hope you enjoyed the projects as much as we all enjoyed seeing your prototypes.

If you are a senior and moving on to college, industry, or trade schools, make sure you include your project with NASA HUNCH on your resume. You will find that your interview will center on "what did you do for NASA?" The more you tell them, the more they will want to hear. You will be receiving a letter of recommendation from NASA HUNCH describing Design and Prototype and the project you worked on. We hope that your work will translate to opening doors for your future. Thank you for being in the NASA HUNCH Design and Prototype Program.

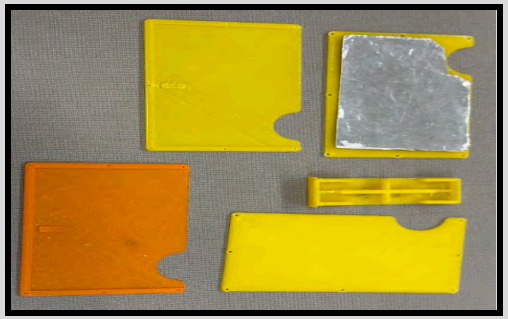
Problem

The problem we are trying to solve for everyday workers of NASA is that they forget some of the items needed for their everyday job from time to time, in order to prevent that we have designed 2 prototypes to help save the amount of space and time it takes to hold all of those different types of necessities, our project was created to make a badge holder that can hold the everyday items needed for on the job to create a multitool, as an attempt to suit the needs of the workers using the badge holder without exceeding the maximum weight and requirements.

Here is the Showcase Videos

Or Alternatively Here's the Link.

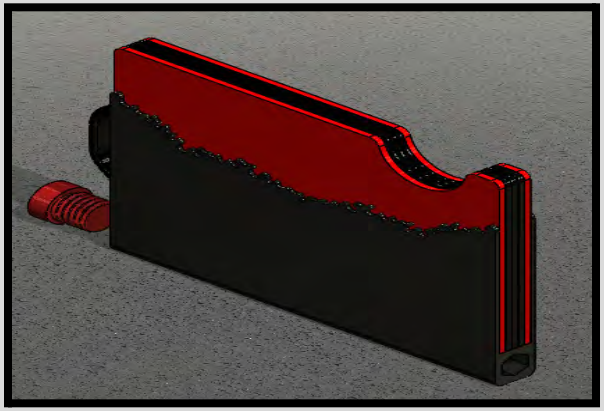
Early Prototypes



The early prototypes of this design varied from team member to team member but after days of sharing and comparing ideas, this was the final prototype base model that was chosen. We decided to make one design that would be an office focused part that would have SD cards and USB drives and the other would be a workshop would have 4 screwdriver bit slots and have a slot that would work like a screwdriver after testing we realized that this design would be too thick so we had to redesign using the same base design.

Badge Holders

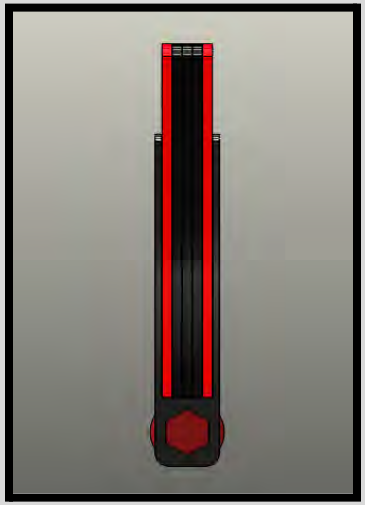
By: Ramaya M. | CJ B.| Brayden S
Josh P | Alexander D.
Teacher :Mr. Reyes
Space Coast Jr/Sr High School,
Cocoa FL.

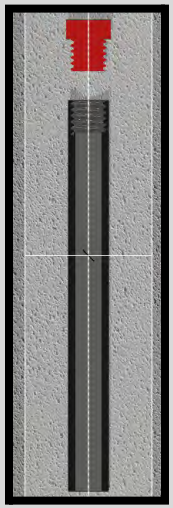


NASA HUNCH

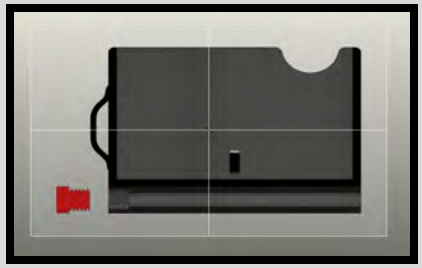
Workshop Part

The screw driver works with friction, preventing the 4 interchangeable bits from sliding out by accident. The screw is being used as a backstop, preventing the bits from falling out when the screw driver is in use.





Side view of the prototype showing where the drill bits will be placed and the sections of the card holders\
The Specifications of the Workshop Part in Solidworks
Mass = 55g
Surface area = 73354.59



This is the Inside section view of the workshop version of the prototype. This shows the functions of the cards and how they will be placed inside and the drill bits and how they will sit inside the prototype.

Core Design

This is our base core design for both versions of the badge holder. This design was equipped with the card slots and the overall shape and form before we added modifications for the different versions of the holder.

Office Part

The images below show the office version of the badge holder prototype.

The office version of the badge holder is equipped with some of the similar features as the workshop version. It has 3 card slots that can hold your personal cards or ID badges and also a keychain attachment so you would be able to attach it to wherever you would like on your body.

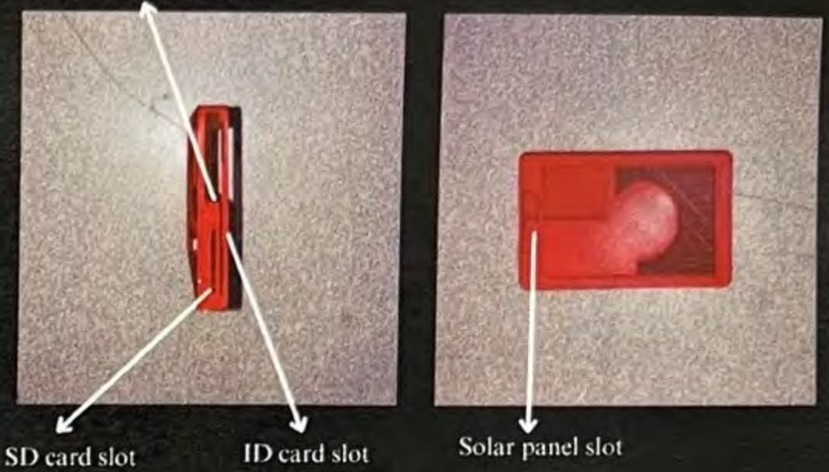
Multi-Tool Badge Holder

Palm Bay Magnet Senior High School
Mrs. Allen
Billy Brown, Dakoda Doyle, Andy Ortiz-Cueto

Solid Body(Testing)

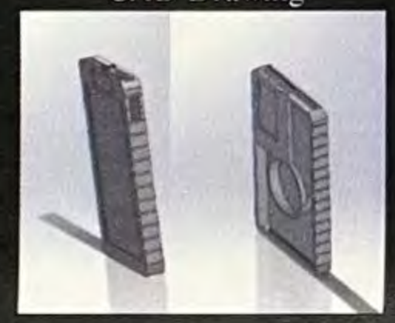
Design 1 (Solid Body)

The "Solid Body" prototype consists a badge holder with a slot for a digital tape measure, SD card slot, solar panel, lines painted with Phosphorescence and a round bubble level. The whole design is 3D printed and can be attached to a lanyard via a hook located on top of the design. The only items that come with the design are the digital measurer, solar panel, Phosphorescence paint, and level. The aluminum plate, lanyard, and SD card all come separately. The total weight of the base holder is 16.93 but with the tape measurer, solar panel, and round bubble level it would weigh approximately 54 grams.



Cards(Testing)

CAD Drawing



Design 2 (Card Prototype)

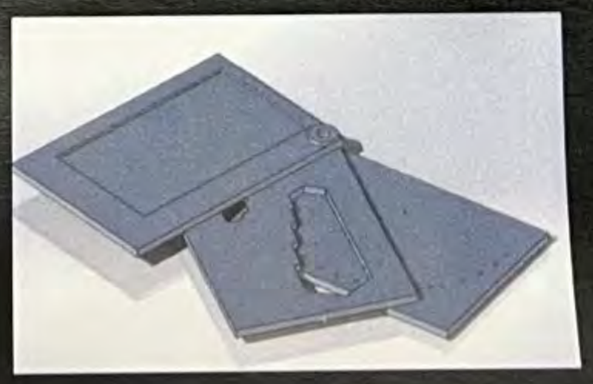
The "Cards" prototype features several cards 3d printed that all have a unique purpose. "Cards" is held together by a pin in the top right corner that allows each card to swivel into a useable position. The top card holds the ID while other cards are customizable but as a base layout the second card will be socket sizes (in inches) while the third card is a protractor with a ruler. Although it will be customizable for example a post-it holder and/or small container.

SolidWorks Drawing

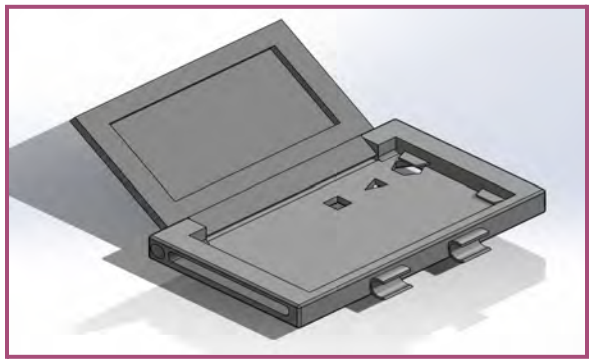
Cards

Protractor /Ruler

The squad



Sockets (Inches)

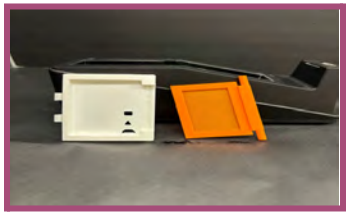


Our designs would be made out of either a lightweight aluminum material or an abs plastics for a more durable and lightweight use

We have gone through our primary design to be a robust and durable design able withstand high drops, and it will have several models from the office field to the physical engineering side of the job, with our 3 models it will leave the option for the user to decide what they would need for their job.

Badge Holder Multi-Tool

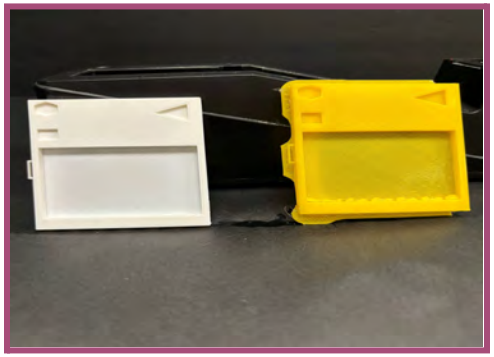
Jason Lee, Edelyn Brion, Angel Buzzell



Space Coast Jr/Sr High
Cocoa, FL
Mr. Reyes

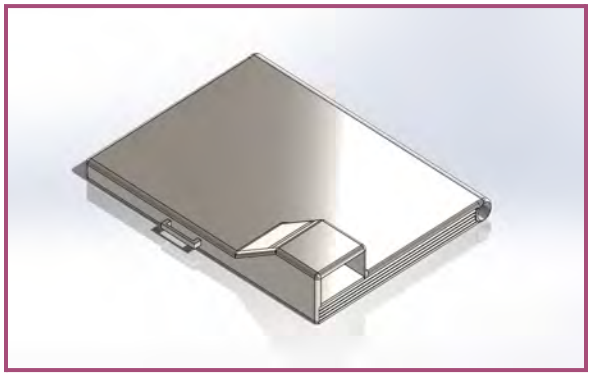
The badge holder is designed with the intent of being used in a rugged work environment so the design reflects the work that's being done. The badge holder is to be made of aluminum / steel for the purpose that the badge holder itself will be used as a tool.

The design allows multiple hand held tools such as screwdrivers, hex heads, ect. to be incorporated into the badge holder as if it was a multitool but more lightweight and easier to carry. For one of the badge holders we wanted to implement a spring loaded system that pushes the card out of the holder itself.



The badge holder is designed for more office purposes so it's more oriented towards holding multiple cards by placing the workers ID at the front and the business cards, contact info, Ect.

Another main implement to the design is the universal USB holder for all kinds of flash drives in an office environment

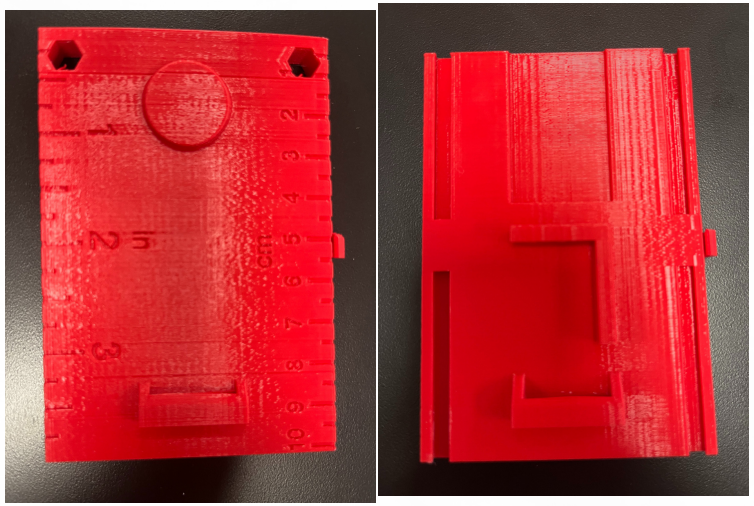


Multi-Tool Badge Holder

Names: Owen, Matt, Jackson, Chris, and Thor

Requirements

60 grams weight limit
RFID Blocked
Needs to be 4" by 2 3/4" by a 1/2



Teacher Information

We had different teachers test out our badge holders for a day or two.

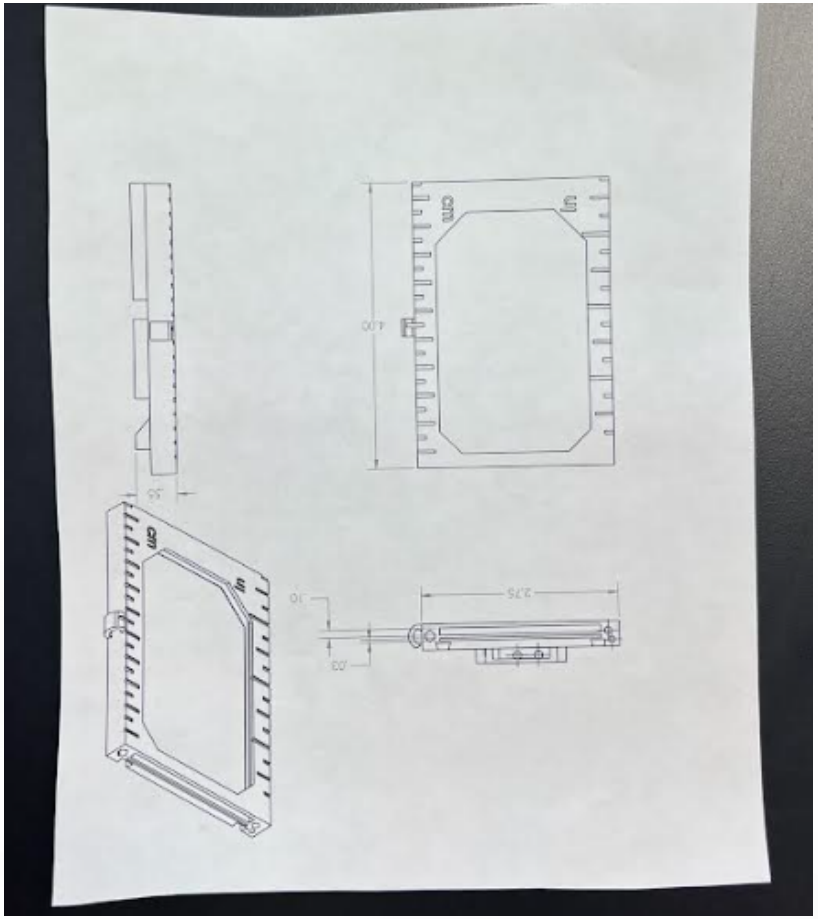
<u>Teacher testers</u>
Mrs. Greenman
Mrs. Hegedorn
Mr. Hardgrave
Mr. Laley
Mrs. Mitchell

Feedback
Some of the feedback from teachers
Most of them liked it
Adv: all in one
Dis: Slides out to early and kinda bulky
Attachment ideas: Retractable lanyard

Attachment Ideas

pencil/pen holder
felt tip cleaner
tweezers
scissors
paper clip holders
magnifying glass
screwdriver holder
custom precision screwdriver

Fairport High School,NY
Mr. Stornello
Mrs. Himmelberg



Contact Us

Stellar Badgers
(405)-564-4362 OR (405)-906-9192
gideonhiel@gmail.com
ella.calvert@gmail.com

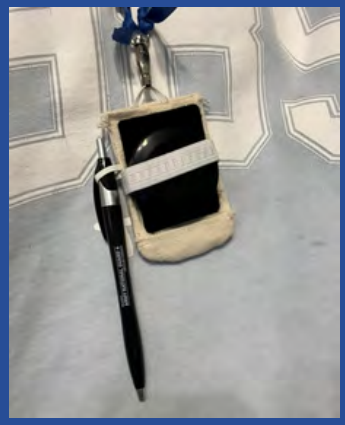
Left to Right: Gideon Hiel, Ella Calvert, Rachel Renollet, Addison Brown, Tanner Zemp
Mr. Mantooth- Meridian Technology Center

MERIDIAN TECHNOLOGY CENTER

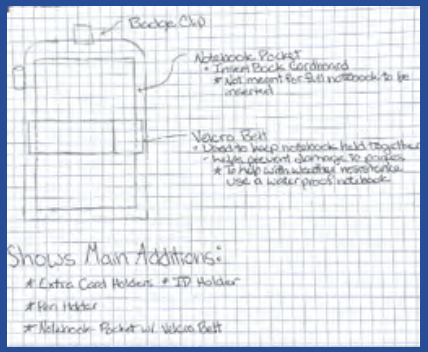
NASA HUNCH

Multi-Tool ID Badge Holder

Stellar Badgers



Fabric Badge



Cloth Badge

- 31.4g
- 4" x 2.5" x .5"
- Three different tools
- Theft Protection

Designed for comfort and style

Capable of holding cards, pen, and a velcro interchangeable function (tape measure)

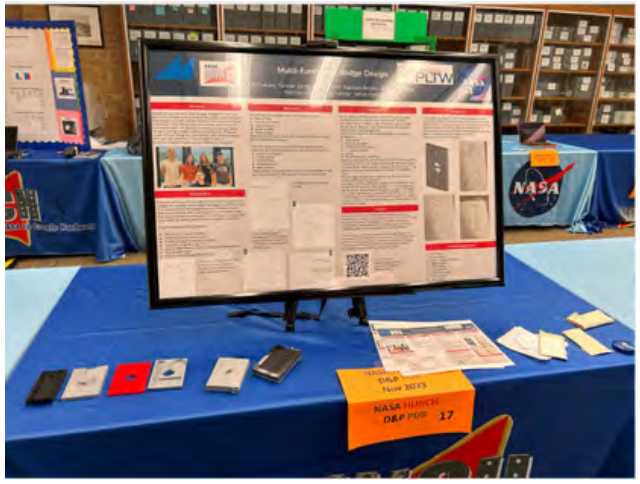
Leather Badge

Same functions as the cloth but in leather, implemented after PDR suggestion to become more “stylish”

Could sell as a kit

Easier assembly, could mass produce

Our Badge



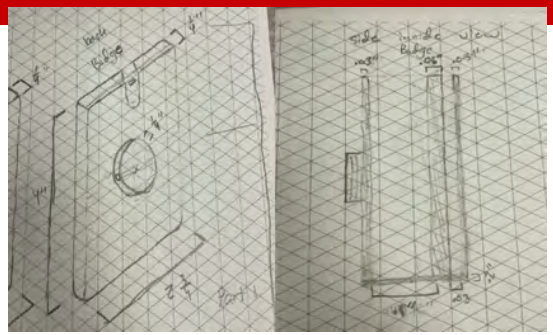
People all over the world have to wear badges for their daily jobs, both on and off the job site. We were tasked with coming up with a multi-tool badge design that would work for multiple professions and is a compact design.

By asking people in different professions, ”What are some common things you leave at your desk when you walk off to go help someone?” we were able to brainstorm ideas for our prototypes.

- 46g
- 4" x 2.5" x .5"
- Three parts
- Four different tools
- Theft Protection

Video of 3D Badge Design

3D Badge



Designed to be more durable for harsh work environments

Two parts: one used as a protected badge holder and the other as storage

Includes Pen, Tape Measure, Extra Storage Space, Badge Holder, and Card Holder

Physical Prototype

The Team

Team Leader: Brady Brown
Resource Manager: Bryden Carney
Reporters: Laura Huckabay and Anna Leport

Acknowledgments

Mr. Glenn Johnson
NASA HUNCH D&P

Mrs. Debbie Short
Meridian Technology Center

Mr. James Mantooth
Meridian Technology Center

Badge Holder Multitool

Meridian Technology Center

Mr. James Mantooth

Brady Brown, Bryden Carney, Laura Huckabay, Anna Leport

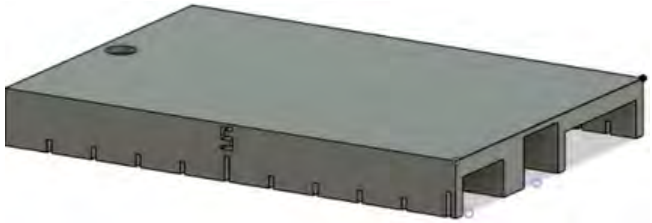
Design Features

Capabilities

1. ID Card Holder with RFID Blocking
2. Ruler
   a. Centimeters
   b. Inches
3. Writing Utensil Storage
   a. Pen or Pencil
4. Sticky Note Holder
5. USB Holder

Important Constraints

1. Can hold a credit card-sized badge without obstructing the visibility of badge information
2. Cannot be larger than 2.75" x 4" x 1/2"
3. No heavier than 60 grams, as to not weigh down shirts
4. Will not damage clothes



CAD Drawing Isometric View

CAD Drawing Right Side VIew

CAD Drawing Left Side View

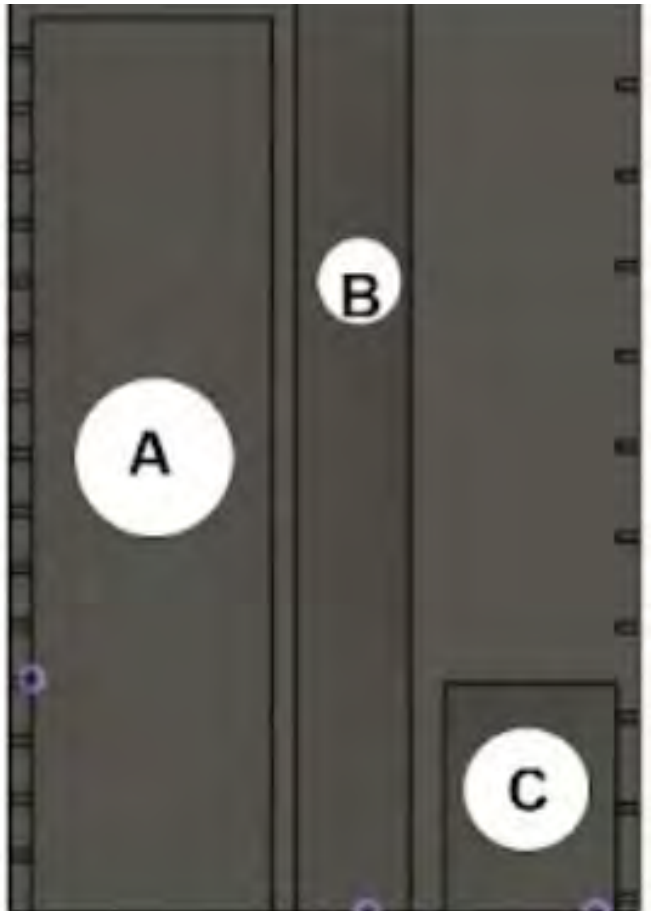
RESULTS

The front of the badge has a spot for the ID that has RFID blocker material in it. The two lower pictures display both sides of the badge holder which have engraved rulers.

Note Taking Capabilities

This is the backside of the badge holder which includes the following items:

A. Sticky Notes
B. Writing Utensil Holder
C. USB



Test Results:

The 5 testers were given a questionnaire with five questions which consisted of the following:

- **How is the accessibility of the tools and ID? Average score: 4.8**
- **Are the tools incorporated in a clean fashion? Average score: 5**
- **How is the comfortability of the badge holder? Average score: 4.2**

These three questions were rated on a scale from 1 to 5 with five being the best. The next questions were free response. Here are the other two questions:

- **Do you feel anything is missing?**
- **Do you have any additional comments?**

Here are the suggestions we fixed based on a decision matrix:

- **Different lanyard clip that fits all types of lanyard clips.**
- **Attachments need a tighter fit.**

Contact Us

Email:
andersone@billingsschools.org

QR Code With More Information:

Badge Holder Multi-Tool

Billings Career Center
Mr. Anderson
Adam Landrie, Mckenzie Miller, Moses Garza

The main feature of our badge is the customizability. All the tools are able to be switched, and maneuvered. Our badge has an unlimited amount of tools that can be used however has six slots including the four attachment slots, the second card holder and the clip.

Important Info:

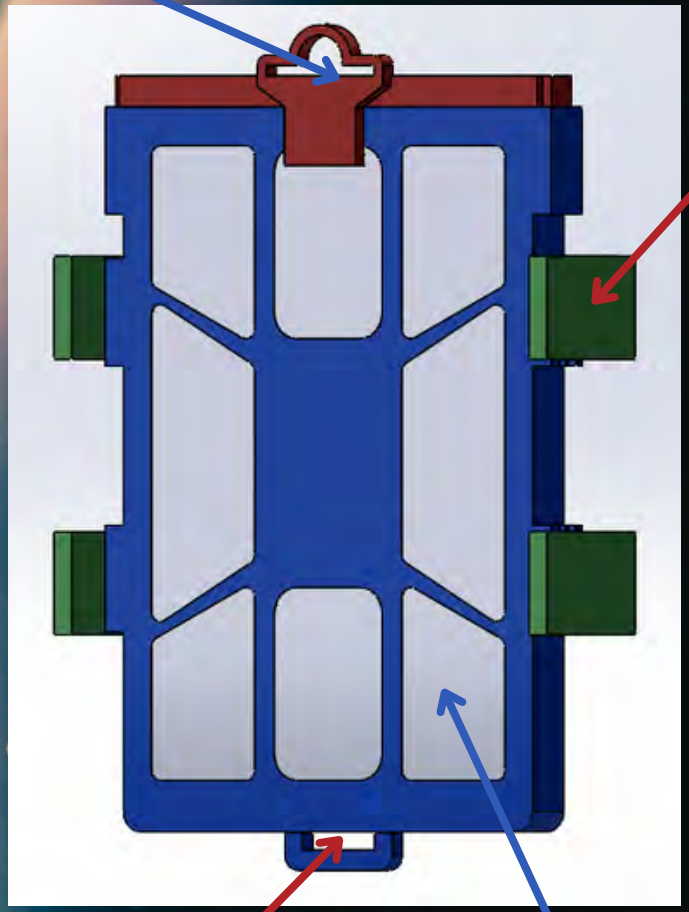
- Weight: 36 grams (Includes Badge, badge top, 4 attachments, and aluminum backing)
- Dimensions: 2.2" x 2.9" x 0.3"

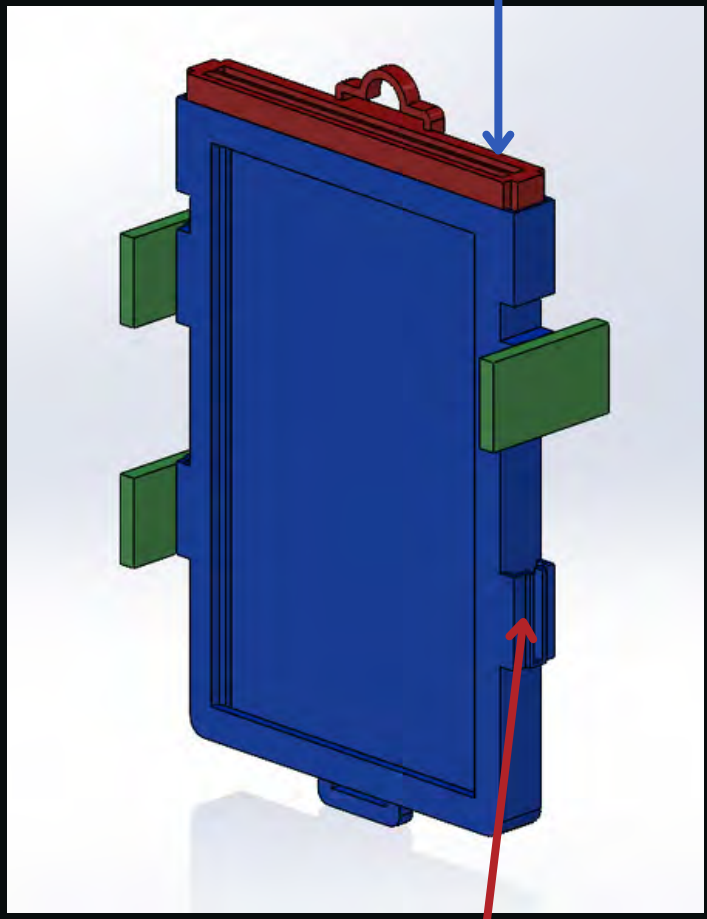
-Cost: Roughly $1 per unit (not including tools)

2 card slots that can hold any type of card which can be easily put in or removed (Multi-tool Card, ID, etc...)

Place to attach lanyard (Fits almost all types of lanyard clips)

Attachments (5 Different Options)





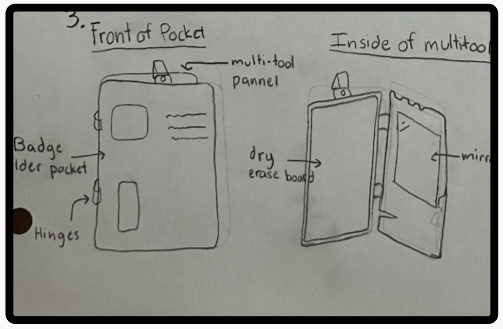
RFID Aluminum Backing

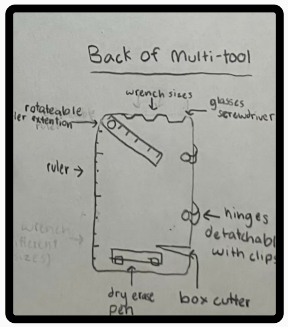
Attachment Slot that holds attachments

Slot for clip to be added

Initial Idea

When we first started the brainstorming of how our product would work, we focused on the layout. We wanted a main panel just for the ID, and separate attachable panels with tools on it.





Tests

Test:	Result/Data:
Handle strength test:	1200 grams+
Handle bend test:	600 grams+
Phone holder strength test:	300 grams+
Wire cutter/stripper function test:	The cutter easily and cleanly cut and stripped the wire.
Measurement test:	The hex heads and the ruler are correctly sized.
ID removal test:	The ID was secure but was removed with minimal effort.

For more Information and details on our design and process, visit our website: https://t.ly/ON8_1

We Have An IDea

Badge Holder Multi-Tool

By:
Rachael Janecek
Cai Coveton

Teacher: Mr. Hayes
School: Theo

About the Project

Problem:

NASA HUNCH needs a badge holder multi-tool for workers that is compact and includes everyday items that may not always be at hand.

Solution:

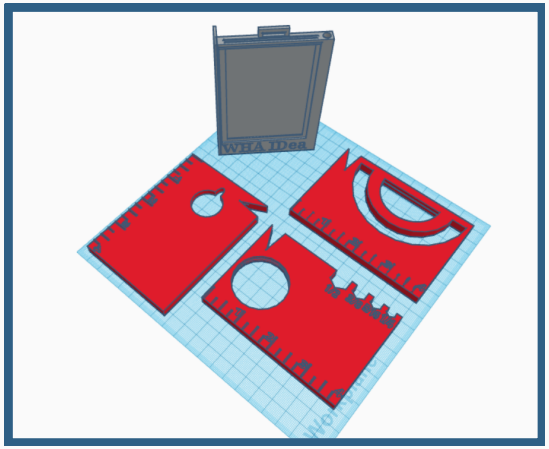
A badge holder that has attached panels on the back with different useful tools depending on necessity.

Current Design

- Vinyl cover on the front side of the ID
- Aluminum foil layer behind to protect magnet strip
- Connected by Velcro
- Phone Stand
- Glasses screwdriver
- Wire cutter/stripper
- Ruler
- Multipurpose keychain for tracker

- <u>Panel #1 Unique Tools:</u>
  - Magnifying glass
  - Hex heads
- <u>Panel #2 Unique Tools:</u>
  - Flashlight
  - Mini Pocket
- <u>Panel #3 Unique Tools:</u>
  - Protractor

Design Photos



FEATURES:

- Multitool holder
- Flat head screwdriver
- Phillips head screwdriver
- Tweezers
- Magnifying Lens
- Wrench
- X acto knife
- Pencil/Pen
- Pocket with velcro on back

OUR PROJECT:

- Holds your badge, while opening up to contain tools
- Contains a ruler and pocket on the back
- Clip on back allows for easy transportation
- Under 60 grams
- 4in X 2.75in X .5in
- Aluminum sheet protects badge information
- Includes notebook, multitool holder, and multiple tools

PROTOTYPING/TESTING:

Test 1: Had the correct dimensions but no features.

Test 2: Featured new design elements like a spring mechanism and as a ring of tools, which was found to catch on clothing.

Test 3: Final toolbox design included all wanted tools, no cloth catching, and other features such as a notebook and a pocket.

CAD Design

Website with Engineering Notebook

Badge Holder

37

Design and Prototype

Team #1

Teacher: Mr. Preble

Frisco, TX

Legacy Christian Academy

Cate Woodward

Cody Young

Highlights

Our design includes a ruler, a tracker to easily find it, and a tool wheel with multiple screw bits.

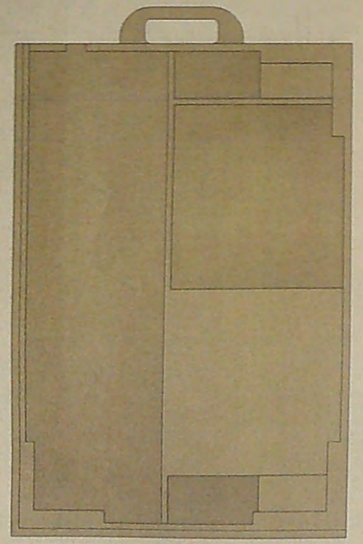
Value Statement

Our deisgn includes the tools that NASA employees use daily. It will help to consolidate all the most important tools onto a badge that employees wear wherever they go

ks, we plan
ze our
e it, and
Our
optimize
od and
other

OUR DESIGN

Our design features a USB port to have easy access to all sort of USBs. It can plug into any USB-C port with open ports on the side.

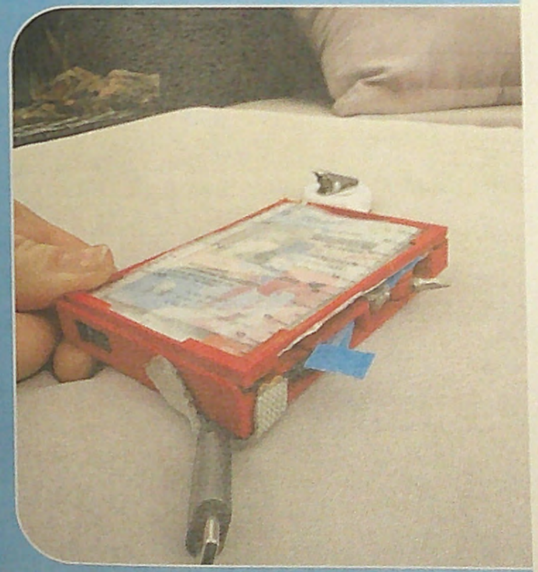


FEATURES

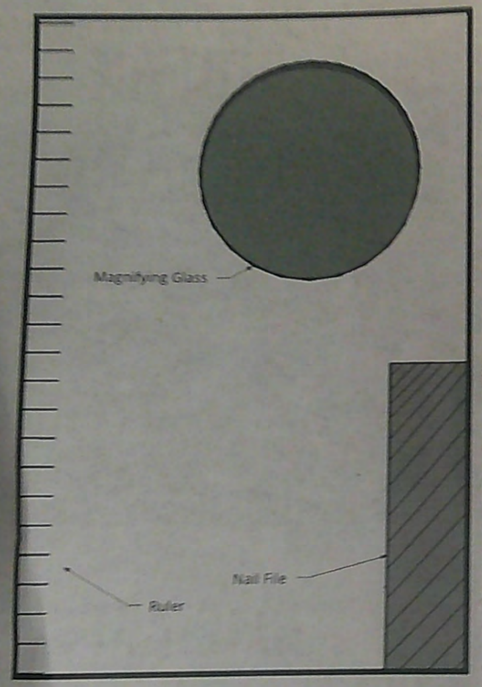
1. PROTRACTOR
2. CALIPER
3. RULER
4. MAGNETS

UNIQUE ASPECTS

1. TOOL WHEEL
2. USB PORT
3. TRACKER



MULTI-TOOL



PROTOTYPE TESTING VIDEO

43 NASA ID BADGE HOLDER WITH MULTI-TOOL

TITANS
ACADEMY

Testing

The QR code contains both testing and videos of prototypes in action.

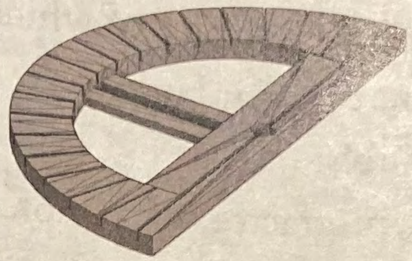
Production Material

ABS Plastic

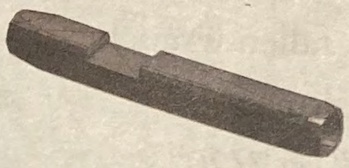
Aluminum

Plexiglass

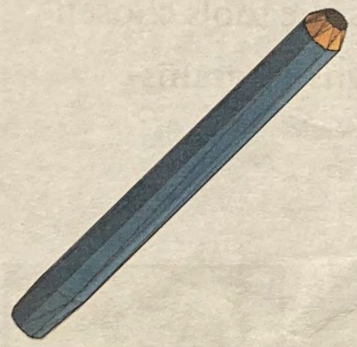
Additional Features



Protractor



Screwdriver/
Allen wrench handle



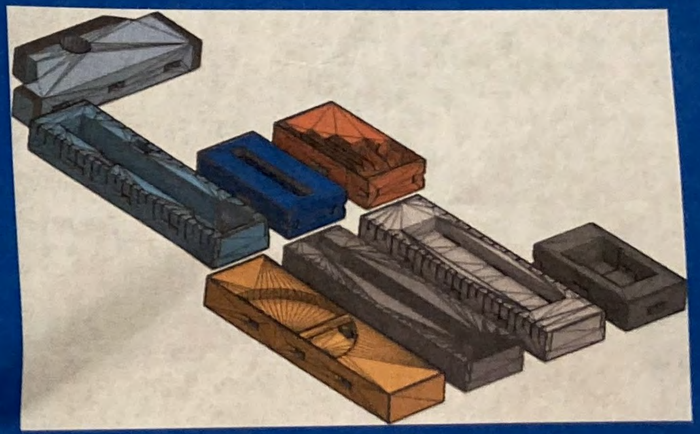
Pen

Allen Wrenches

Top

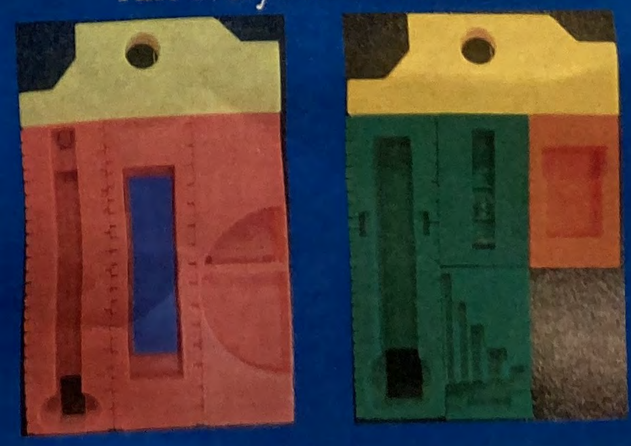
BADGE HOLDER MULTI TOOL

By: Margot Miller, Dylan King
Manning Middle School
Teacher: Sarah Maud



Design 1- Interchangable

We offer a variety of tools to suit everyone's needs.



Design 2- Shop

Design 2 was our first prototype. It is designed for general construction work.

Tools:

Screwdriver

Level

Sticknotes

Allen Wrenches (5)

Hex Holes (5)

Thumb Drive Holder

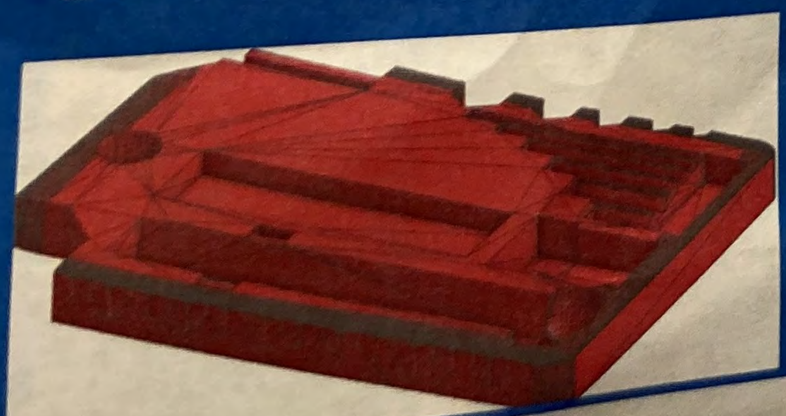
Ruler

Dimensions:

2 3/4" by 4" by 7/20"

Weight:

45 grams



Design 1- Interchangeable

Design 1 was our third prototype. It is designed to give the user a choice of which tools they want on their badge.

Tools:

Desktop: pencil, pen, protractor, sticky notes, thumb drive, ruler

Shop: level, screwdriver, fallen wrenches, ruler

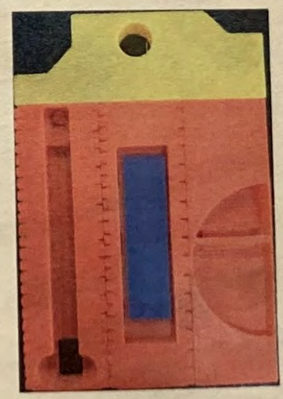
Dimensions:

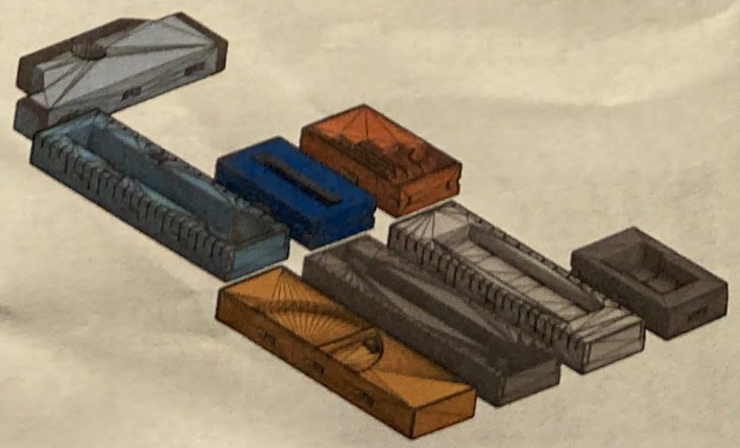
2 3/4" by 4" by 7/20"

Weight:

Dependent on the tools chosen

Top weighs 15 grams





Design 3- Desktop

Design 3 was our second prototype. It is designed for office work.

Tools:

Pencil

Screwdriver

Protractor

Sticky notes

Thumb Drive Holder

Ruler (metric and imperial)

Dimensions:

2 3/4" by 4" by 7/20"

Weight:

45 grams

TESTING

- School faculty used our designs for a couple weeks
- Incorporated features that professionals from NREL requested
- Personally used the holders and experienced them firsthand
- Produced no adverse effects when rubbing against shirts
- Went through multiple variations of infill to ensure integrity

RESEARCH

- Tested out many materials for our final design
- Looked into RFID wave blocking technologies
- Found existing badge holders and analyzed what they were missing
- Asked engineers from NREL about what features they would like

CONTACT US

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Jake Clayton

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Visit our Website!

NASA HUNCH

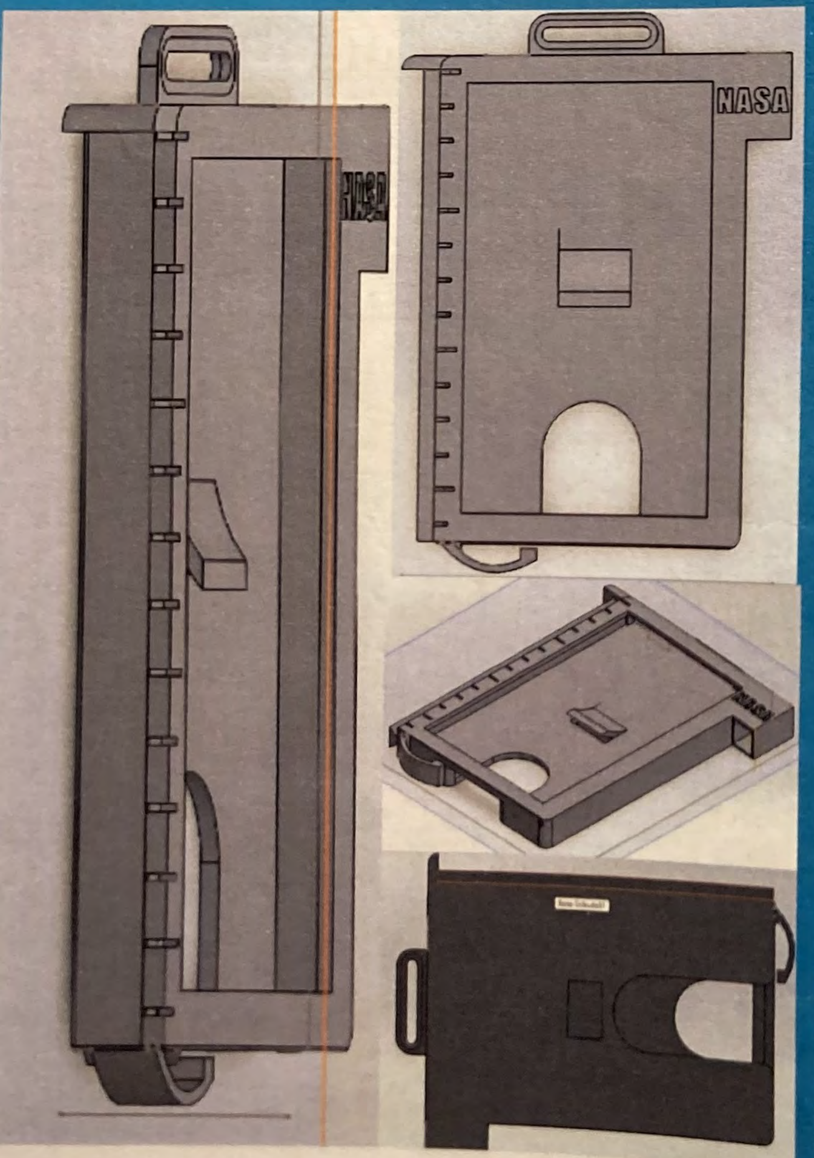
BESPOKE BADGES

Green Mountain HS.
Jennifer Flores' Class

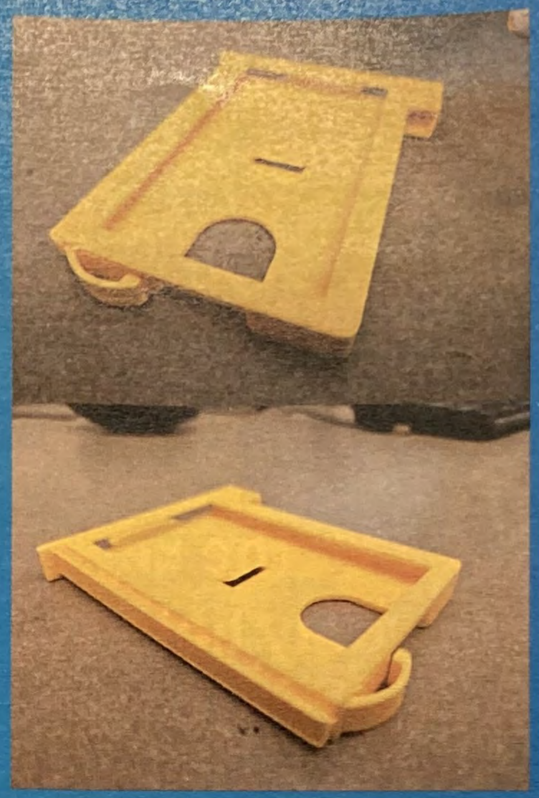
How?

The process of making the badge holder was a lot of trial and error. Quentin would design while Seba would test and give feedback. Eventually we went through many designs and found the best possible model for most people beyond just Engineers.

CAD model:



Photos:



Scan and give feedback please!

Contacts:

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173409e@jeffcoschools.us
Student:
2128310@jeffcoschools.us
2251713@jeffcoschools.us

Sebastian Todd
Quentin Dimovitz

REMAKING THE BADGE HOLDER

Lakewood High School
Ashley Pederson
Engineering 1

What?

Pencil Holder: We remade it completely so it's compatible with a pencil, this is because pencil is better for sketching than pen and it's more accessible.

Caliper: Fixed the caliper so now it has a simple rail and design that can be used compared to past iterations. Now it is able to slide with no difficulty!

Ruler: We made a example ruler that can go to down to ¼ inch. If this were to be manufactured, then we would be able to get it down to extremely small measurements such as millimeters (we would switch to metric system if that is what is used more at NASA).

Final solution:

For the final solution we decided to add a caliper and fix some features that hardly worked before.

Things like the key holder now will only hold 1 or two keys since otherwise it would be too heavy and the lanyard would just outshine the purpose.

We also redesigned the pen holder to be a pen & pencil holder, with enough room for most glasses if needed.

Material cost:

ASA printing material: .43$

Reflective tape: .02$

Plexiglass (if added): .66$

Aluminum sheet: 1.45$

Total: 2.73$

2.07$ without plexiglass

CRITERIA AND CONSTRAINTS

- Create a badge holder that looks good, has high functionality, and is comfortable and lightweight to use.
- To Provide a secure encasing that blocks signals and RFID to ensure the security of NASA personnel.
- Must weigh less than 30 grams
- Must be within the dimensions: 2 ¾" x 4" x 1/2"

OUR VISION

Our vision is to create a NASA HUNCH badge holder that's more than just a badge holder. We're turning it into a practical multi-tool inspired by space exploration. Picture a simple badge holder with added functions - it's not just a piece of equipment; it's a symbol of innovation and adaptability, echoing NASA's spirit. We're making everyday items extraordinary, and our vision is to showcase this blend of practicality and inspiration in our unique badge holder design.

PERFECT DESIGN

MAJOR BRAIN STORMING (MBS):

- PENCIL
- RULER AND A STRAIGHT EDGE
- SCREWDRIVER
- USB DRIVE
- KEY CARD
- LEVEL
- METAL PLATE TO BLOCK RFID AND OTHER SIGNALS FOR SECURITY.
- LIT ON WIEGHT
- SMALL

Research

From holding IDs to carrying tools, badge holders evolved. They started as ID carriers, added tools for convenience, and now, in the 21st century, they're tech-savvy accessories for security and quick access in different situations.

- badge holder
- multi tools
- Pencil
- Ruler
- Screwdriver
- USB Drive
- Key Card
- Level
- eraser
- tracker

DRIVING QUESTION:

1. What are important tools that people often forget and need at their desk
2. What tools can fit in a small badge holder the size of a card
3. What tools can we integrate that are light enough to not exceed 60g
4. Will these tools pass TSA

PROBLEM STATEMENT

- **Addressing the challenge faced by NASA personnel who frequently lack access to common desk items, we seek a badge holder that functions as a multi-tool, offering conveniently accessible essentials to enhance desk efficiency and productivity.**

NASA HUNCH

WHY PEOPLE NEED BADGE HOLDER

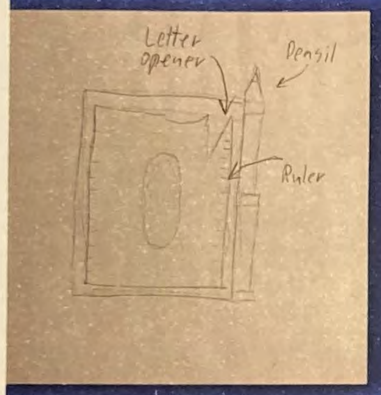
Having a badge holder is important for your protection, and for safety security. It displays your ID and a very good thing to have om the go. For example the badge holder can contain tools like pencils, Usb, screwdriver bits and a leveler. These ideas are used on a daily . So overall this is why a Badge Holder is a must need.

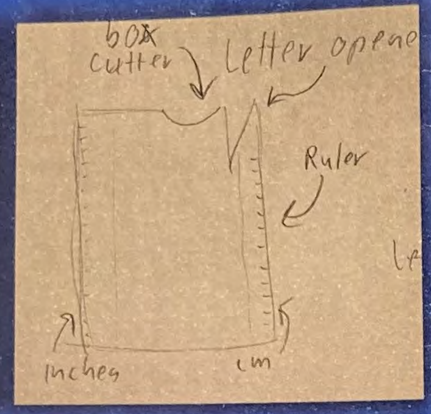
Jeffrey Karpinski -
Elijah Marston

BADGE HOLDER - MULTI TOOL

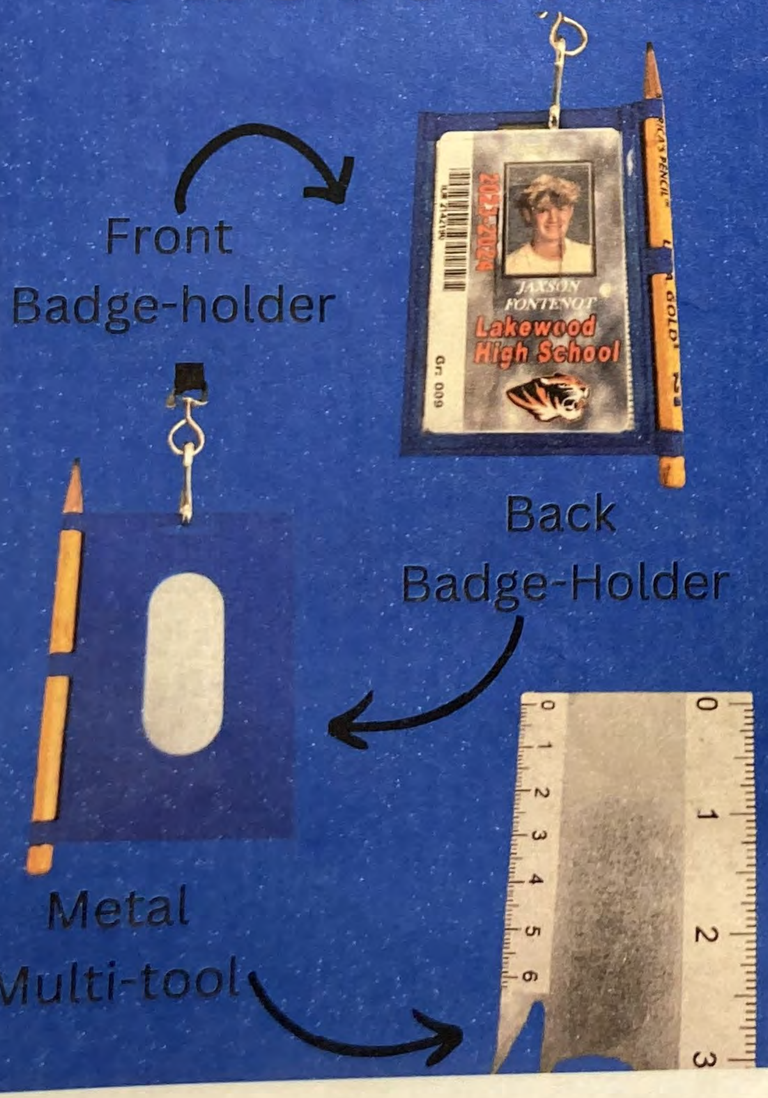
LAKEWOOD HS, MRS. PEDERSON

SKETCHES





PROTOTYPE



TESTING

NEXT STEPS

- Creating a carbon fiber alloy so the badge holder and multi-tool are more durable and lighter
- Find a company that is willing to test our product in a workplace environment to give us feedback
- Explore different companies that could mass produce our product at an affordable price.

MULTI BADGE

LAKEWOOD HIGH SCHOOL
NASA HUNCH

TEAM MEMBERS: CRISTIAN SKACH, BEN SHAPIRO, JJ FONTENOT

MS. PEDERSON

SPECS

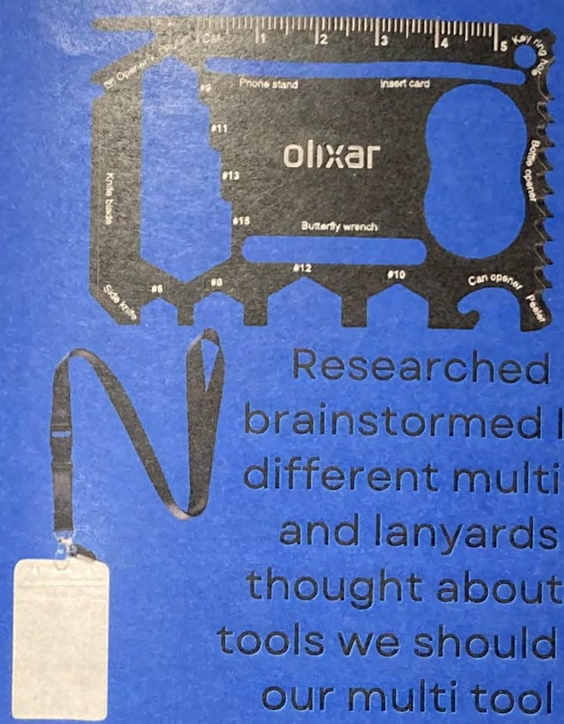
- Weight: 42 grams
- Width: 0.2 Inches
- Length: 2.65 Inches
- Height: 3.86 Inches
- The badge holder has a removable
- multitool that provides users with
- many convinces
- Box cutter tool used to open and dissect boxes (Half circular shaped for optimul cutting ability)
- Letter opener very important for mail opening and important letters and mail. Triangularly shaped with sharp edge to allow precise and effortless letter cutting.

ESTIMATED COSTS

- ID Lanyard with detachable clip: ($0.75)
- Aluminum Multi-tool card:($1.00)
- Plexiglass shield($0.50)
- Badge Holder($0.05)

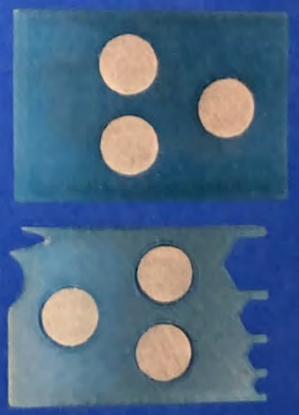
The production for all materials for one Badge Holder Multi-tool comes out to about $2.30 to produce.

RESEARCH



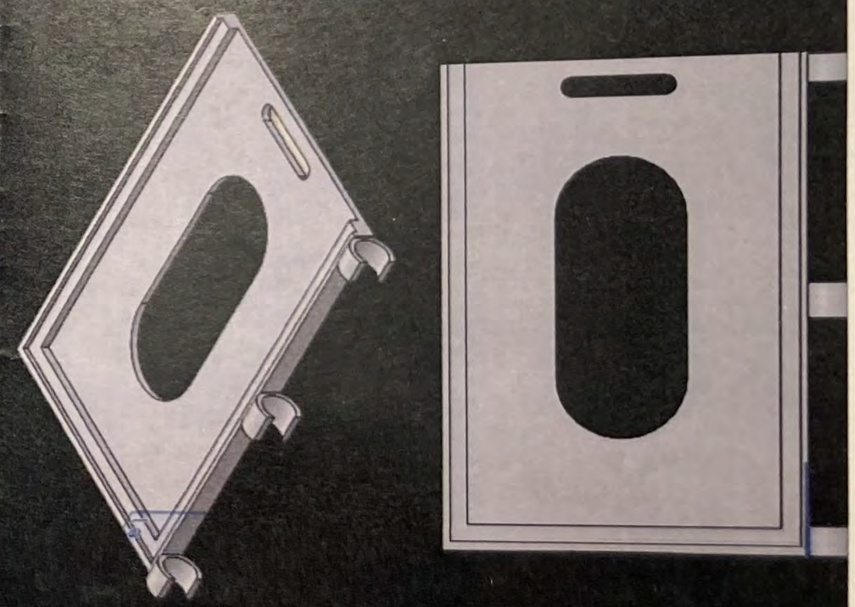
Researched and brainstormed lots of different multi-tools and lanyards and thought about what tools we should add to our multi tool card

Also thought about how to attach the multi-tool card to the badge holder and first thought we should use velcro or magnets to attach it but then realized that putting the metal multi-tool card in the badge holder would be more efficient and would also double for RFID protection



CAD DRAWINGS

Multi-Tool Badge Holder



FORM QR CODE

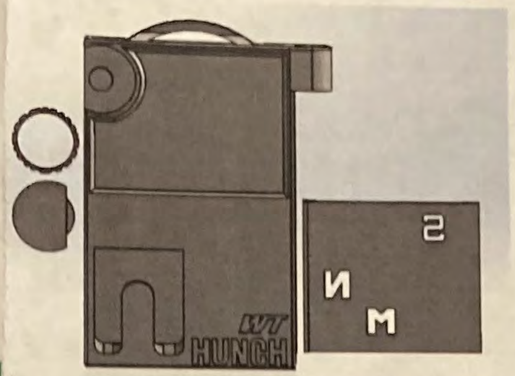
MTB

Multi-Tool Badge

Nathan Olsen
Warren Tech Central

Scan this to see our project slides!

Our Final Prototype Progress



SolidWorks

Final

Scan to watch a demonstration of our badge tools!

Challenge:

NASA employees/affiliates need a badge that protects ID's and has tools for the office, warehouse, shop, etc.

Solution:

Design a badge with 5-8 functional tools that blocks RFID scans and assists employees in various jobs

Contact Us

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Nick Appl:
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Evan Smith:
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Gio Barrows:
giovannijbarrows@gmail.com

Our Website

Prototype 3D Print

About Us

Avanish and Sam met each other at the Allen ISD STEAM Center in Mr. Mayberry's "Practicum in STEM" class. They joined the same NASA HUNCH team in order to work on an project that could truly help NASA employees. Both of them love engineering and cars and hope to do something involving both in the future.

NASA HUNCH D&P

Multi-Tool ID Holder

Allen ISD STEAM Center

Providing NASA employees easy access to useful tools

Avanish Jeendru and Sam Hamad

Allen, TX

Problem

NASA employees need easy access to tools that they constantly use but may not always have on-hand. An employee or astronaut may need to quickly get an approximate measurement of an object but doesn't want to run around trying to find a ruler.

Criteria

Our project had constraints in order to ensure in met the required standard:

- Must be small and light
- Must clearly show the ID
- Must prevent skimming
- Must pass a TSA check
- Must provide easy access to the ID

Testing

We tested our prototypes as if we are NASA employees to see if our product met our personal standards. Unfortunately, our 1st and 2nd prototypes were useless. So, we continued creating better prototypes until we landed on our final design, version 4.

Solution

- Create an ID holder with an integrated multitool.
- Always have their IDs on them since it is a rule
- Integrate a multitool into the ID holder.
- ID holder will provide us with a fair amount of room
- Such as tools like, screw drivers, flashlights and a hex driver etc.

Design

We began designing the ID holder by creating a simple ID holder in a CAD software with a lanyard cutout. Then, we came up with some tools that we could integrate into ID holder that we had created. We included flat-head screwdriver, a centimeter ruler and a inch ruler in our first design pictured to the right. We 3D printed this design to run some preliminary tests on it.

Final Design

Our final design has 4 different tools integrated into it. These include: inch and centimeter rulers, a bit holder, a pencil holder, and a laser pointer. This design can holder one standard size ID card, or a proxy card and an ID card. It includes a lanyard attachment hole and an optional aluminum plate to prevent skimming. Including all accessories, the prototype weighs under 50g.

FUTURE PROJECTS

Borcelle is continually working on improvements on our design and is considering magnetic applications for the next ID holder

SPECS

Dimensions: 2.4" x 3.5" x .49"

Weight: 48 grams

Light Output: 16 lumens

Light Lifetime: 10 hours

Tape Measure Length: 6 feet

Can hold one USB-A flash drive

Can hold one #2 pencil

BORCELLE

Design and Presentation Team #2

AISD STEAM Center
Allen, TX
Leviz Leo Vithayathil
Sungyook Jung

levizvithayathil.wixsite.com/borcelleids

OUR MISSION

Founded in 2023, Borcelle strives to make ID holders that are both multi-functional and fashionable for everyone

Leviz Leo Vithayathil

Lead Designer

Sungyook Jung

Lead Manager

FEATURES

1 - Tape Measure

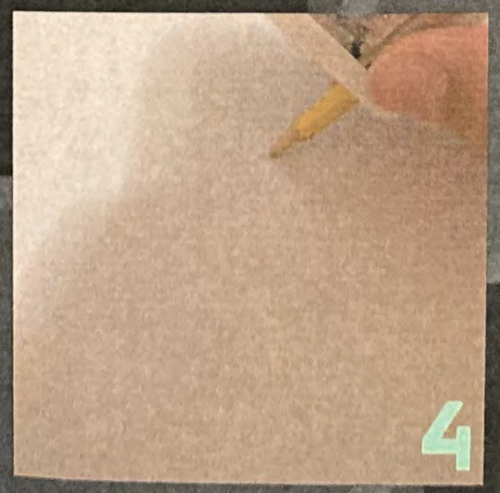
2 - USB-A Holder

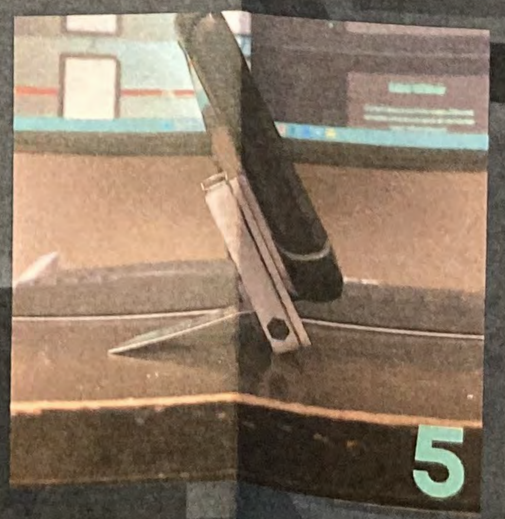
3 - LED Light

4 - Pencil Holder

5 - Phone Stand

6 - RFID-Blocking Mirror





UNIQUE ASPECTS

RFID blocker doubles as a mirror

Long lasting LED Light

Very long tape measure

Can use ID as a phone stand

Very fashionable

Uses recycled materials

ABOUT

The ID Badger multi-tool holder is a multi layer card holder that can be worn by anyone with a lanyard. It contains a multi-tool to give the user unique but limited access to different sets of tools. The badge itself can fit different sizes of IDs safely and securely. The ID badge holder can come in different colors and sizes, so think carefully which one you choose for.

BADGEr

BY BEN ALBUS, ENZO ALVAREZ,
AND CHARLIE MCCARTHY

"WEAR IT WITH PERSISTENCE AND POWER LIKE A BADGER"

SPECIAL FEATURES

The ID badge holder contains many special and unique features and abilities.

One of these is the exoskeleton frame on the back of the badge which is used to help reduce weight of the overall badge.

Another feature that is been added to the badge is a two inch ruler which is been imprinted at the bottom of the badge.

The final feature that we added was a hole placed at the top the badge to allow the user to use a lanyard to wear the badge more securely.

Professional Company

We are a group of three from Lewisville Science and Technology. We are taught by Mr. Burke & Mr. Stauffer.

NASA HUNCH

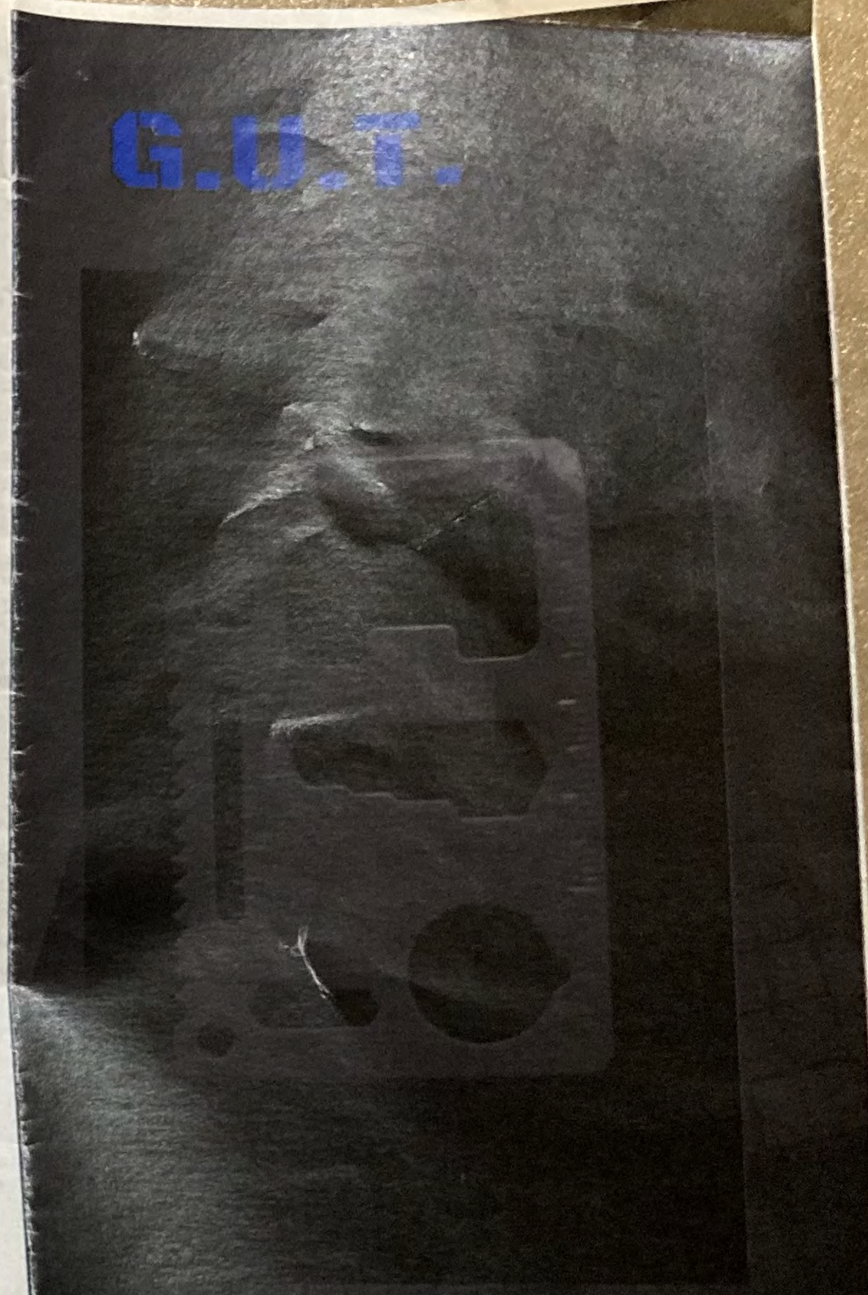
Guardian Universal Tools

Contact Us

214-493-2053

ng5683@students.responsiveedtx.com

650 Bennett Ln Lewisville TX



Guardian Universal Tools

Current Design

On our current design we have changed the way you can wear it. We have also improved the features on the multi tool card. It can both fit onto your hip and have a lanyard attached onto it. It has easy access the the tools and doesn't hinder you while on the job.

Feedback & Revisions

Some of the feedback we had gotten from wearer are it was comfortable while standing, moving, and sitting. It is small enough and they didn't feel as it was very heavy and did not interrupt them from working.

Future Implementations

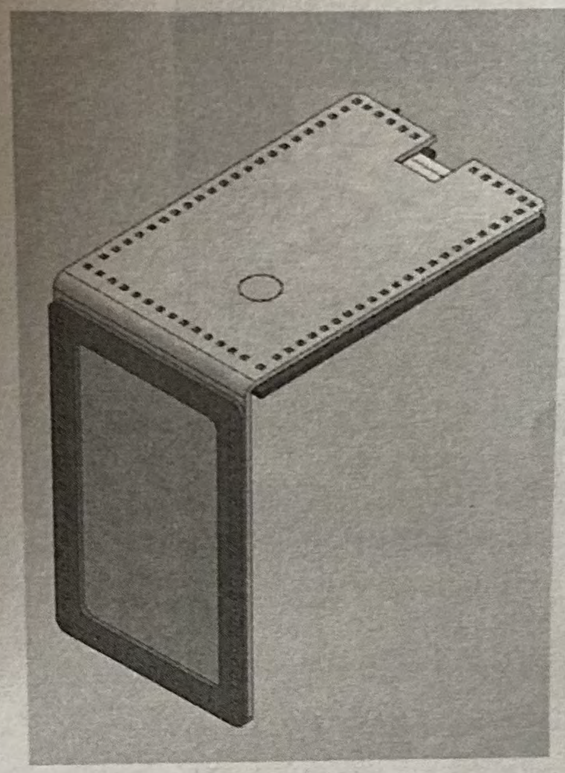
- Addition of a second card slot
- More diverse variety of the sliding components
- Feature that integrates with a security system

OUR PROBLEM

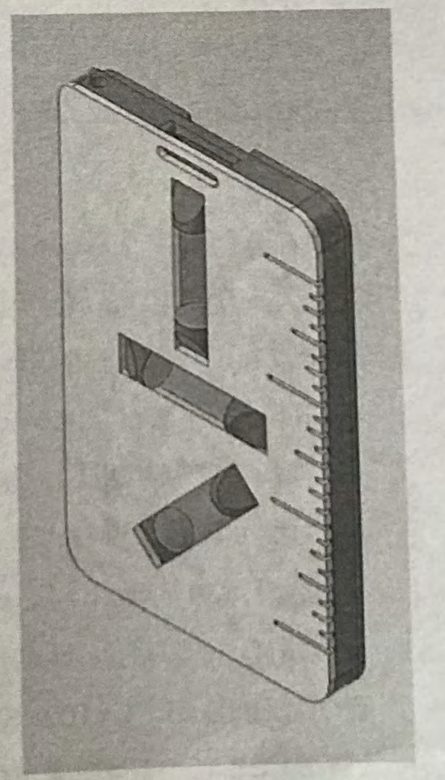
We were tasked with creating an ID badge holder that functions as a multi tool device. There needs to be at least three different tools useful in a pinch, and must not hinder the user in any way.

NASA HUNCH
High school students United with NASA to Create Hardware

CAD DRAWINGS CONT.



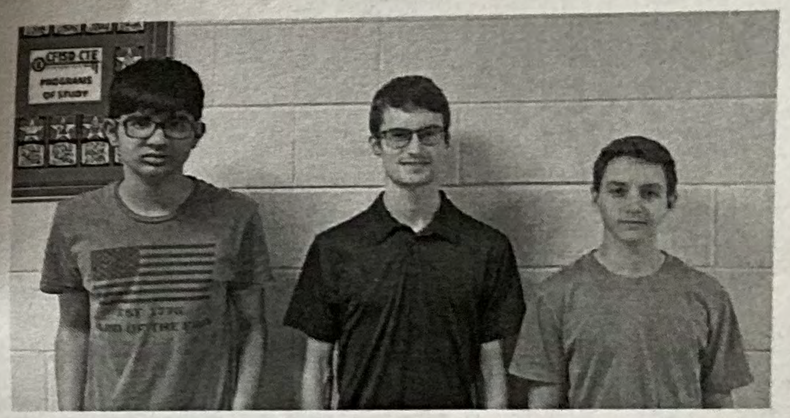
Design #1 Isometric



Design #2 Isometric

Badge Holder Multi Tool

Teacher: David Laughlin
School: Bridgeland High School
(10707 Mason Rd, Cypress, TX 77433)



Hamd Tabrez (Left), William Montgomery (Middle), Ethan Presswood (Right)

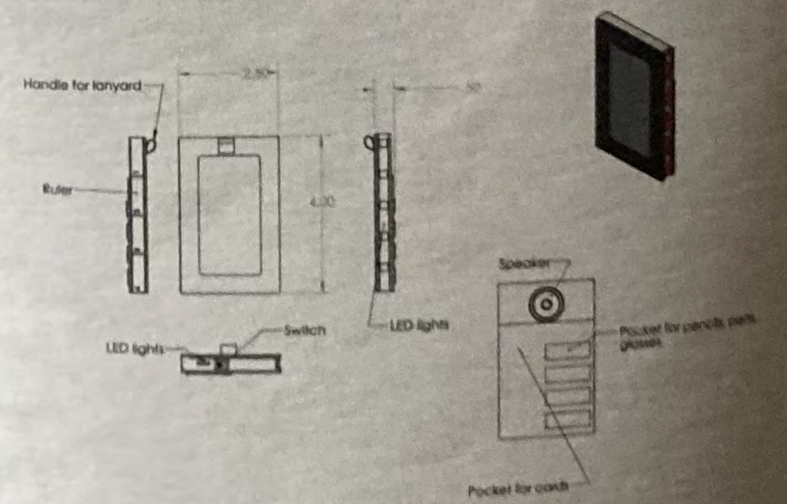
Scan to view video and powerpoint presentation

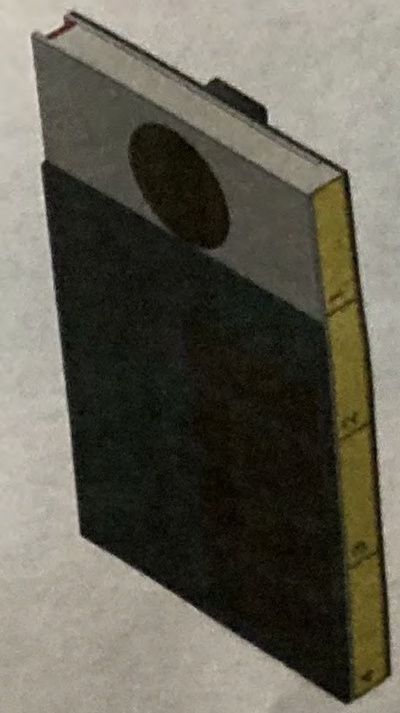
Badge Holder Multi-Tool

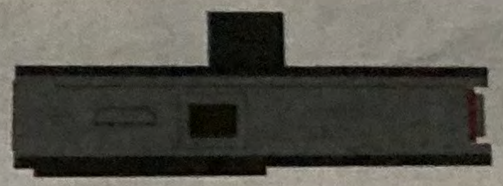
Conroe High School
Mr. Canestorp
Jaynie Octaviano

The main features of this badge holder will be that it has a numerous amount of tools that may be used on a daily basis. The tool is made from plastics and reused fabric, thus reducing the costs of production. So far it contains 5 different tools.

Each tool on the badge holder is important. The bluetooth speaker, located on the back, and LED lights, located on the side, will allow users to locate their ID with ease. The circuit board component and wires are covered by a 3D printed layer which will protect it from taking a lot of damage if dropped. The big grey pocket on the back allows for cards held with the badge holder, while the 4 black strips are meant for pens/pencils. The ruler increments on the side of the badge will also aid users in measuring objects.







(Badge holder will be charged via micro-usb charger)

Scan for more info

ABOUT OUR PROJECT/PROBLEM

We are striving to make a light, useful, and innovative take on the badge holder. We want it to include items that one would need everyday but don't always have quick access to. Our design solves this problem by having different sets of tools that are customizable based upon various occupations, those of the variety that require one to wear an identification badge, that is.

GET IN TOUCH

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NASA HUNCH

MULTI-TOOL BADGE HOLDER

BY KADE SMITH AND MASON HOWARD

CLEAR CREEK HIGH SCHOOL

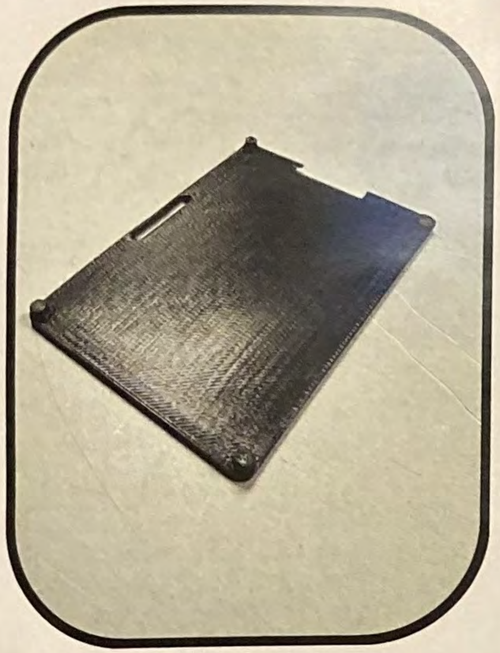
2305 E MAIN ST.

LEAGUE CITY, TX 77573

FOR: ROBIN MERRIT,

RMERRITT1@CCISD.NET

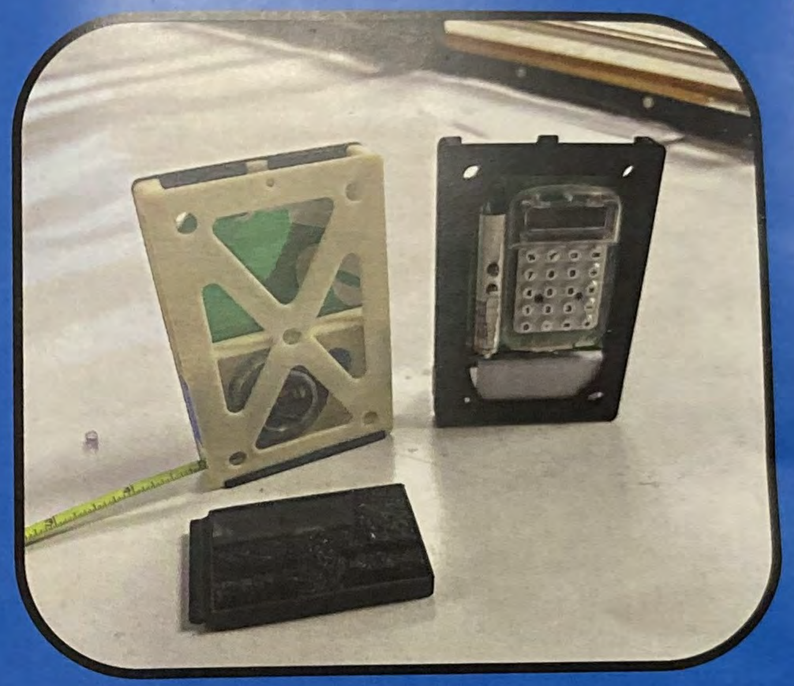
1ST AND 2ND PROTOTYPE



Our first prototype used a peg style connection, unfortunately, we found them brittle and unreliable. We tried to reinforce the connection but in the end it was still too brittle and wasn't going to work with our design.

We redesigned our entire connection mechanism to a hook and clip style which proved to be way for reliable and make the connection seamless.

FINAL DESIGN



With our final design we had to cut a lot of weight off our Badge Holder. We cut out sections on the front plate to cut weight while keeping adequate structural stability. Our final design includes 3 screw bits a T handle driver and a 6-foot tape measure. And the other pack includes a laser pointer, calculator, and thumb drive.

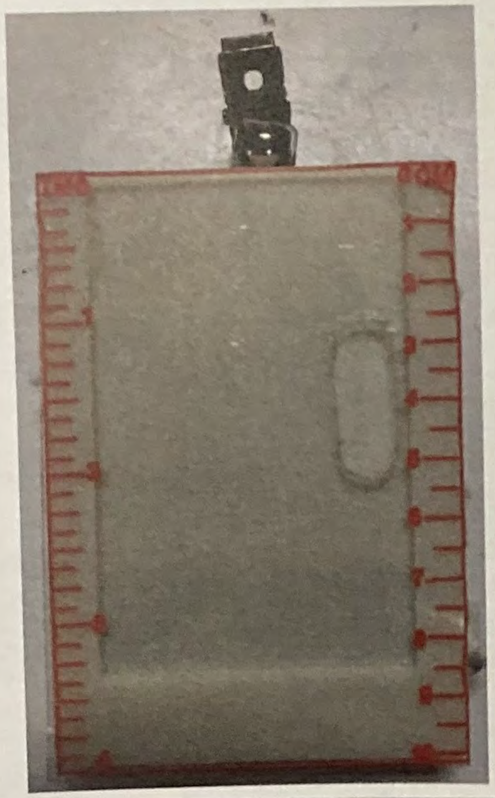
3RD PROTOTYPE

In our 3rd Prototype we added the drawer which will house the screw bits and T-Handle Driver, added the tape measure, and added a aluminum RFID blocking plate behind the ID.

MATERIALS

ABS PLASTIC
PLEXIGLASS
SCREWDRIVER BITS- chrome vanadium steel
KNIT ELASTIC
STAINLESS STEEL
SUPER GLUE
THUMB DRIVE
MAGNETS

THE FINALE PROTOTYPE



CONTACT US

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SOPHMORE AT CCHS
madalynaa2001@gmail.com

Annalyn Matthews
SOPHMORE AT CCHS
annalyn.matthews@gmail.com

PROBLEM STATEMENT

Making a Badge holder that can be used in most scenarios by engineers, and is still functional for every day wear/use.

GRADING RUBRIC

OUR WEBSITE

NASA HUNCH
High school students United with NASA to Create Hardware

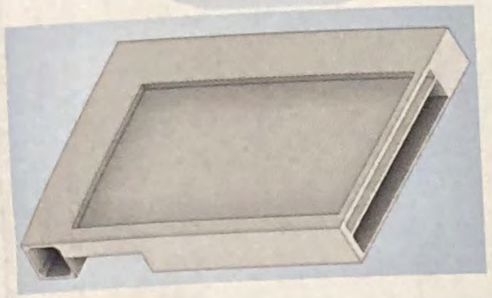
Annalyn Matthews
Madalyn Arevalo

Badge Holder

CLEAR CREEK HIGH SCHOOL
2305 MAIN ST.
LEAUGE CITY, TEXAS 77573
INSTRUCTOR: ROBIN MERRITT

Our Prototypes

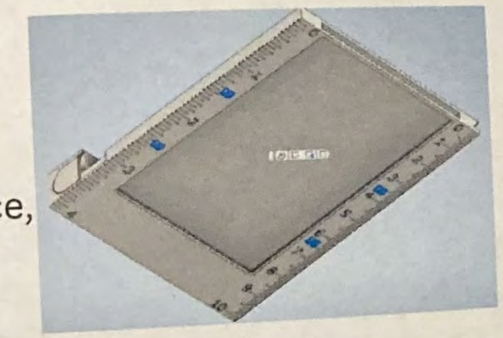
Prototype #1



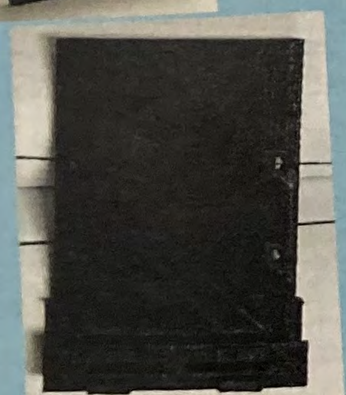
This prototype was too big, limited space for creativity.

Prototype #2

There was not enough tolerance, and sharp edge broke off

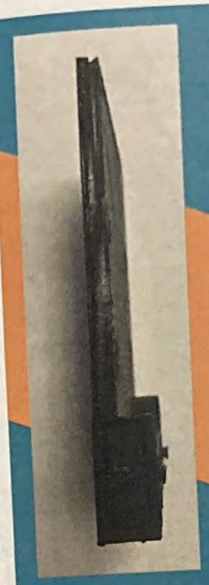


Prototype #3



This prototype didn't have enough tolerance with the screw covers, so they were stuck.

Prototype #4



We messed up with tolerance again, but we fixed the screw covers and the screw seat.

Prototype #5

The buttons worked but were fragile, the clip fell off the ID badged, and the elastic could have been tighter. We also realized our screw seats we overly complicated.

DESIGN FUNCTIONALITY

Storage

Drawers

The drawer is 1.19 by 2.63 and .28 by .26 inches deep. It holds screw bits, the screwdriver handle, and the thumb drive, they are secured by the knit elastics.

Cut Out Sections

These cut out sections are made to hold a tape measure, foldable scissors, and the last hole is just there to reduce the weight of the badge. They are secured by elastic.

Elastic

The elastic on the back is meant to hold on to small items, such as money or sticky notes, and the keep the items in the cut-out spaces secure.

Verified Optimal Identification Device

Badge Holder Multitool

Tobias White
Jacob Fues
Hayley Pennington

Mr. Merz

mmerz@cpsk12.org

Scan to view design log

Columbia Area Career Center
Battle Highschool
Rockbridge Highschool
Hickman Highschool

TOOLS IN EACH DEVICE

- Screw Drivers
  - Philips head
  - Flat head
- Tweezers
- Mini Level
- TILE mini tracker
- Pen and Pencil lead

The tools fit the uses of many different jobs inside NASA

V.O.I.D. V1

Slot for pen

Slot for ID card

Screwdriver storage

Space for Mini Level

Bluetooth Tracker storage

CASA

V.O.I.D. Is an ID badge holder that also functions as a multi-tool

We designed V.O.I.D to be easy to use, and to accommodate tools that are needed on a daily basis

COLUMBUS AREA CAREER CENTER

V.O.I.D. V2

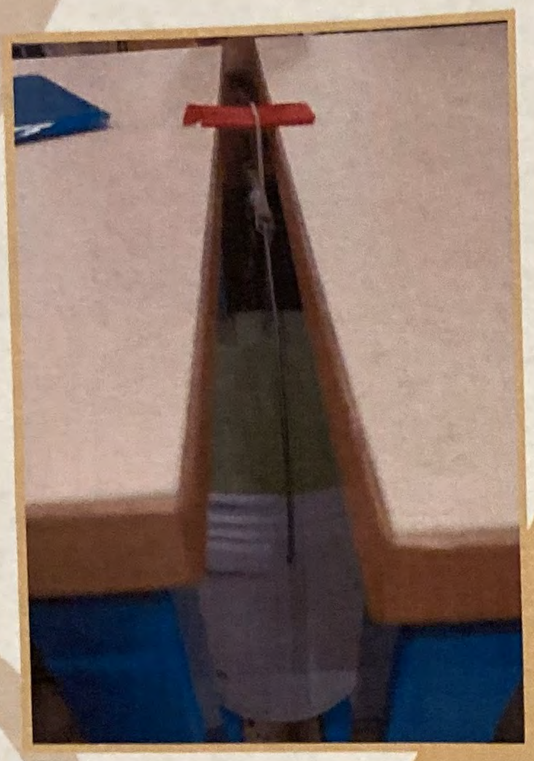
Lanyard Attachment Point

ID Holder

Ergonomic Slider

Modular Storage

Our Research



Durability

- Held 55 lbs without breaking
- Only got a few scratches when dropped (distance)
- Can be broken but you have to be trying
- The best infill pattern is cubic

Why we chose our logo

We chose this logo because it is a mythical creature that was part lion, part goat, and part snake. And just like our project, it combined multiple different elements from different things

This project was created through NASA Hunch

Scan the QR code for more info and website

NASA HUNCH

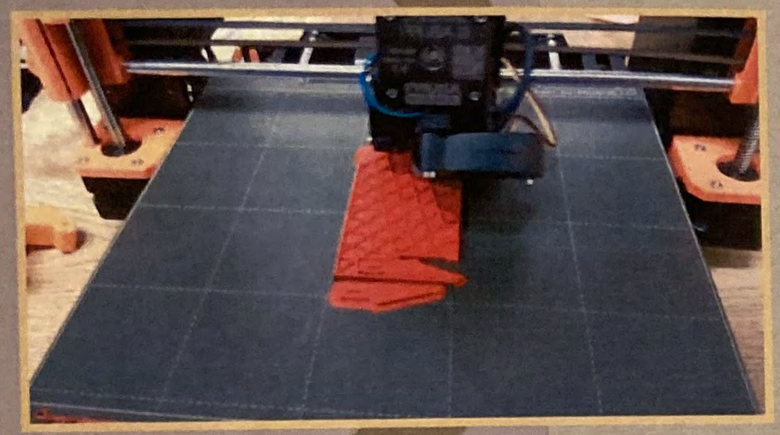
CHIMERA

ID multitool badge holder project

Project Chimera

Dylan Adkins
Trenton Marema
Jeremiah Primm

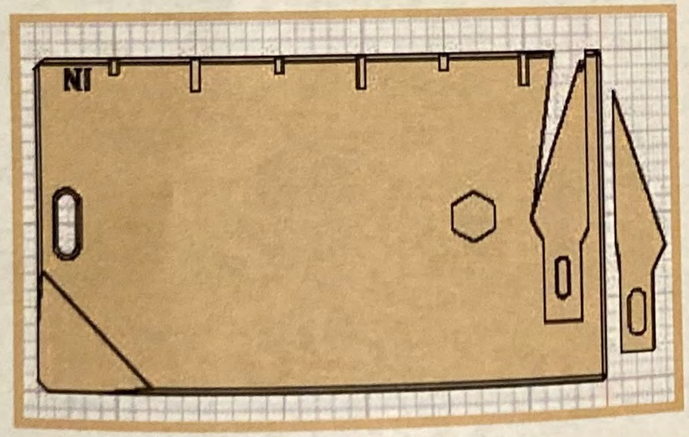
Goal



- Create a multitool attachment to an ID badge holder
- Have a wide range of tools
- Have a safe design-TSA safe/compliant
- Weigh under 60 grams

Design

We included a lanyard hole so you can attach it directly to your lanyard



- TSA Compliant
- Letter Opener
- Ruler
- Lanyard Attachment Point
- Pry Bar/Screwdriver
- Pencil Holder
- USB Holder

Engineer-Specific

- Bit driver

Office-Specific

- Mirror
- Bluetooth tracker

objective

our objective was to create a multi-tool I.D badge holder to be used by NASA employees. To do so, we needed to brainstorm, research, and create an I.D badge with our team and find what worked best

criteria

- a thin RFID blocking metal sheet must be included
- Must be able to go through TSA
- Include a transparent cover allowing visibility of the I.D while keeping it protected

constraints

- no heavier than 60 grams
- no larger than 2 ¾" x 4" x ½"
- must not snag or damage clothing

powerpoint

video description

MPHS

NASA Hunch

Multi tool badge holder

5th period

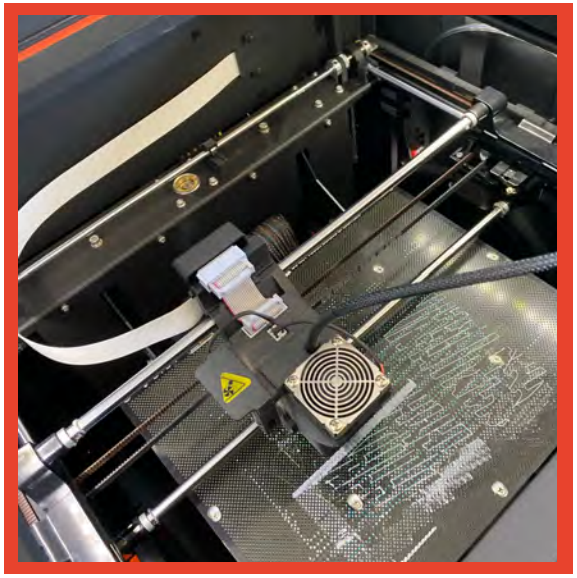
group: Genesis Fernandez, Golden Bennett, Sophia Woodson, Shaun Gaddes, Azarion Robinson

teacher: Mr. Woodard

Creative Process

during our process, we looked at many different badge holders to find which features we liked and disliked. anything we liked we tried to find ways to incorperate them into our designs. Different careers had different features added until we could narrow it down to specific, all inclusive features and added those to the final design

pictures



after brainstorming, we looked at our drawings to begin to bring our design to life. measurements were taken, 3D prints were made, and we overlooked anything that may have needed any extra attention. Eventually, the final design was chosen. The badge holder was made to have different modules that could be added for the job instead of many designs for different professions. There are four unique add-ons shown in the demonstration video

The final design has been 3D printed, with a carbon fiber front plate. There are places for three magnetized modules. The front card slot can hold an RFID blocking metal sheet, along with an ID. The modules include a clip, elastic band. flashlight, and a USB holder. A calculator, sticky notes, pen, screwdriver, and money can be attached to the holder. There is a ruler on the left hand side for easy measuring

Why our Badge Holders?

Happier Employees - fidget toys

Improves memory

Boosts cognitive function

Productivity boost

Don’t need to worry about forgetting key tools

Optimized workflow with fewer trips back to your desk

Easy to Use

Easily accessible tools

Carry your desk in your pocket

Multi-Purpose

Many different tools

Personalised for your specialty (IT, Desk job, Engineer)

By: Harlan Schillig, David Wan, Keegan Epstein, and Ian Holland from Pacific Ridge School

Our Designs

Engineers

Works hands-on with many projects

Needs tools to build measure and design

Desk Job

Uses a pen and pencil more than screwdriver

Needs tools to work around an office setting

IT

Works with computers and code

Needs more adapters and thumb drives

The Handyman:

- Ruler/caliper
- Penlight
- magnet pad for
- loose screws

The Organiser:

- Pencil/Pen Holder
- Stapler
- Fidget toy

The Innovator:

- near-universal adapter
  - USB
  - USB-C
  - SD cards
- Thumb Drive

ABOUT THE

TEAM

Our team sets out to help bring frequently used tools closer to a person than ever before. Our newest prototype badgeholder maximizes its space to ensure the tools you need are as avalable as your wallet.

SEE HOW THEY WORK

Watch the videos for more information

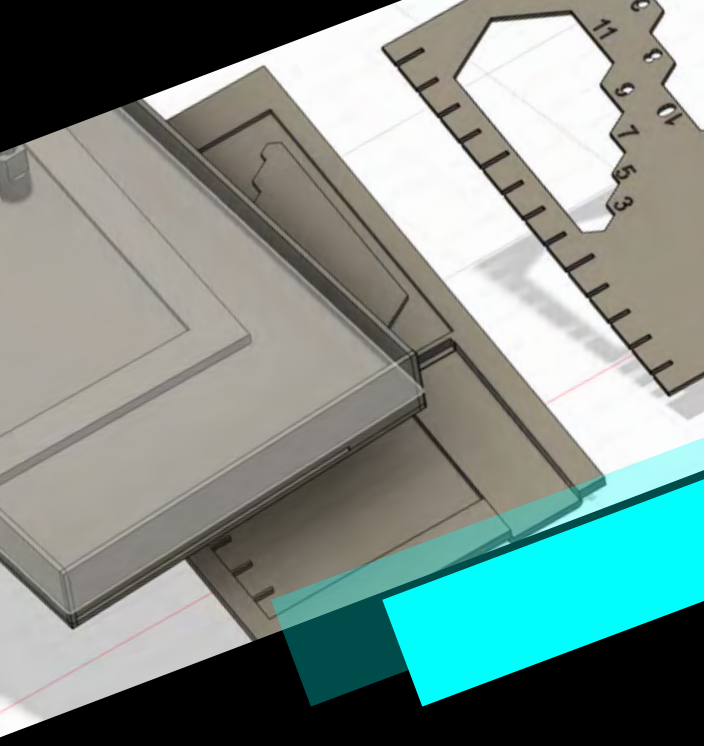
video

video

Jacob Kasuba
Charlie Anderson
Kohlman Bradley
Optimizer

OPTIMIZER MULTITOOL

Helping everyone prepare for life's everyday needs



THE MULTITOOL

Included tools:

- Tape Measure
- RFID Blocking Plate
- Adaptable Clip
- Concealed Pen
- Static Clip
- Hex Wrenches
- Inch Ruler
- Flashlight
- Flashdrive
- Cardholder
- Nail File
- Screwdriver

OVERVIEW

FRONT COVER

The front cover includes a pen holder, detachable design to make it easy to insert your key card, and a clip for attaching to your various other tools and keys

INSIDE

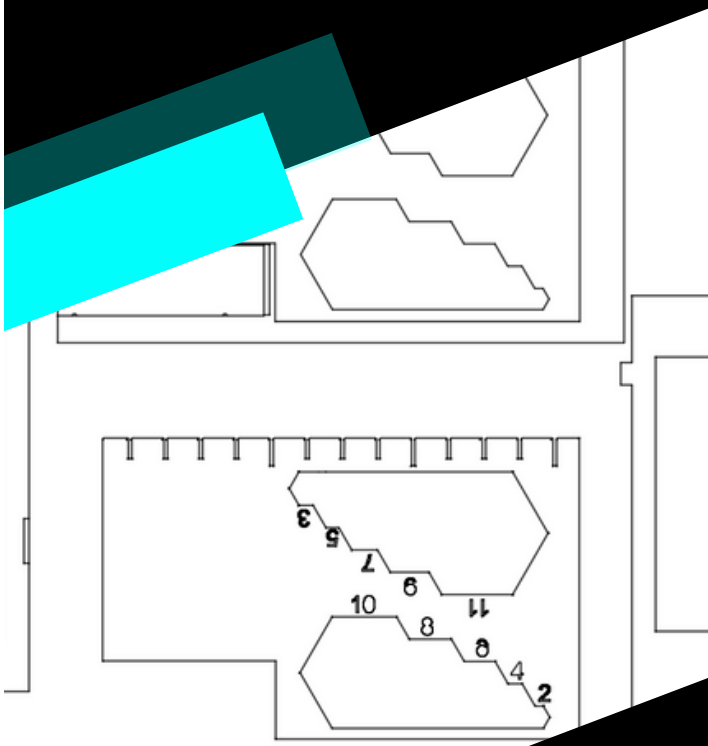
The inside houses a built in tape measure, flashlight, RFID blocker, and a nail file

BACK COVER

The back attaches to the middle and holds a utility tool and flashdrive holder

We are specialized in building unique digital experiences for our clients - from websites to special purpose applications. We also help businesses reach wider audiences through managed digital marketing.

We help companies destroy network viruses and avoid future casualties. We also help businesses reach wider audiences through managed digital marketing.



Badge Holder Multi-Tool

Kennedale High School
Team 1

Summary

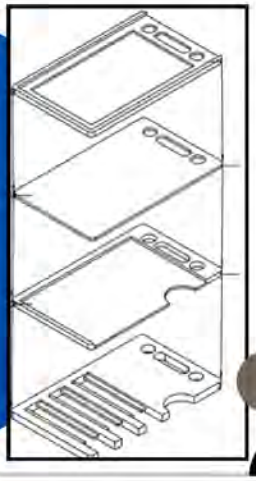
- Our main goal if for this badge holder to be simple, innovative , and useful
- Our badge holder will have a spring screwdriver with multiple removable heads and a USB holder
- What makes our badge holder different is our QR code implemented on the back.

Purpose

Create a badge holder that gives additional function to a previously single-use item. This badge will allow the wearer to have easy access to tools that are commonly needed within the workspace. This solves the problem of having to search for these frequently needed tools and gives the wearer a designated spot to carry these items.

Goals

- ***Simplicity*** - Can be used in a broad range settings from engineers to human resources.
- ***Innovation*** - As one of NASA's main building blocks, this badge holder will be used as jet fuel for other projects.
- ***Utility*** - Can and will be used as an everyday object and integrated into the everyday work life of NASA employees.

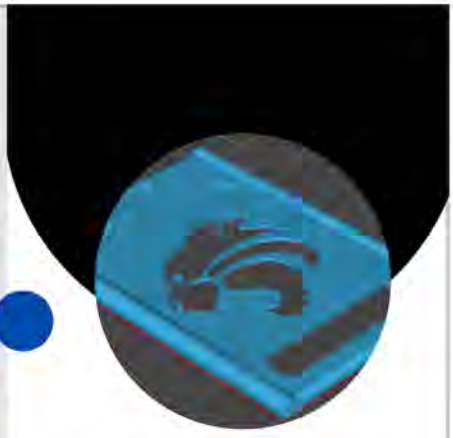


Reach Us

nasaqr.w3spaces.com/index.html

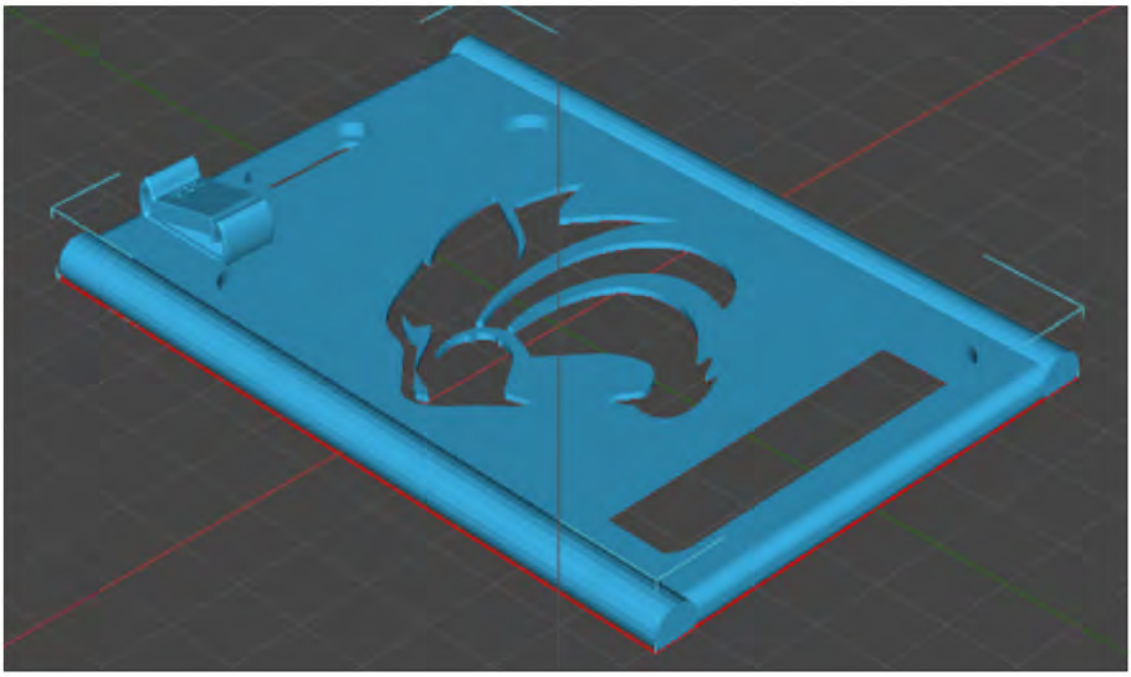
817-353-6686

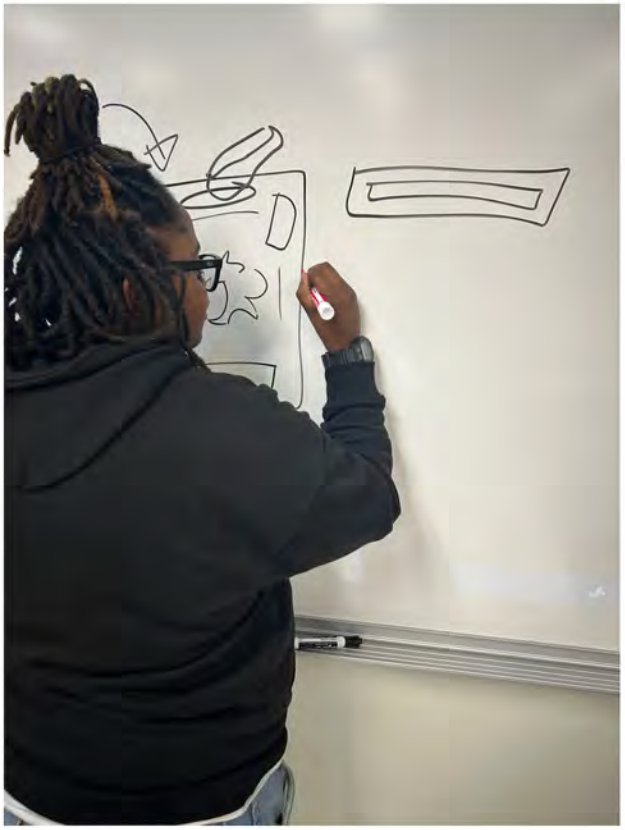
Kennedale ,TX
(Near Dallas)

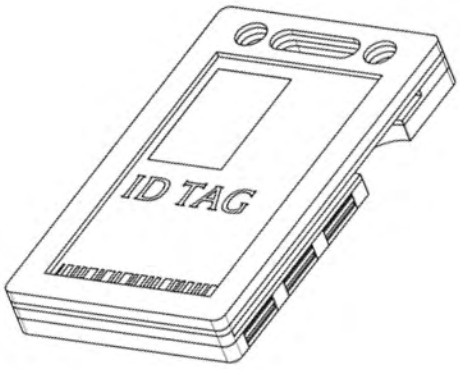


Team Members:
Allowyne Madison,
Braydyn Godley,
Brielle Lyons,
Walker Jackson,
Kate Farrish

Instructor: Emily Pope






ID TAG