



T-WORKS FOUNDATION

A Government of Telangana Initiative



Team Name: Brown Zunde

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Project Name: Zunderwear (WIP)

Theme: Pocket Sized Multi-Tool, Merchandise

Objective

At India's largest prototyping center, we have a vast range of industrial equipment to produce parts out of various materials. We design and prototype new ideas and projects. During this entire journey, a problem faced by many of the staff here at T-Works is finding the right tool at the right time. Whether it's a vernier or measuring tape during design, a hex key of the right size when fastening screws, cutters when breaking off 3D printed supports, or a file to deburr a just-finished machined part. We propose to design a tool kit that can be given to all employees at T-Works to solve this problem. The tool will contain all the essential tools needed by our makers packaged into a compact enclosure.

Now the concept of a toolkit already exists and there are multiple products available in the market. They come in [huge plastic cases of heavy-duty shop tools](#), [50 piece screwdriver sets of which 40 are useless](#), [easy to lose allen key sets](#), or as [an expensive repair kit with specialised tools for one task only](#). So while products do exist, there are none that someone working at T-Works can comfortably carry around with them on their prototyping journey from the Team Office to the Wood Shop and then to the Metal Shop and then to the Laser Cutting Shop or Electronics Lab while stopping at the 3D Printing Lab to check if our print is done - as we often do.

Our toolkit will be divided into two pouches. A general pouch which will carry only the most essential and commonly used tools that can be used by the maximum number of makers. We will interview all the staff at T-Works and determine what are the most frequently used tools. These tools will be integrated into the general pouch. Then there will be a secondary pouch for shop specific tools. This is an add-on pouch and the system of pouches can be integrated into a belt so that a person can wear and carry around multiple pouches, depending on their need. The pouches will be attached to the belt by magnets of velcro so that they are detachable and can be carried in their pocket too.

This is also a great project for the Zund challenge because we are exploring the use of soft materials for the first time and the digital cutter will prove indispensable for fabricating

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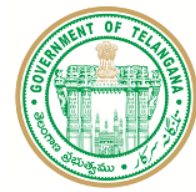
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complex shapes and forms. We anticipate the use of a variety of materials to be used in the project, including but not limited to leather, polyester, foam, plastic, metal, and off-the shelf components. Most of these materials will require the Zund's abilities and precision to get the fit and finish we are looking for. We can utilise the other shops for processing other materials.

Our design will focus on making the kit as useful as possible to the largest section of the staff in the smallest form factor as possible. Functionality, size, shape, weight, and aesthetics are five important criteria in determining the design as we want this product to be used by everyone at T-Works. We also believe that the problems we face here at T-Works are likely to be similar in other similar places, such as a hardware start-up, a makerspace, a machine shop, etc. so we see potential for this to become a merchandise opportunity to provide something functional and aesthetic to the community that reflects our design philosophy and promotes maker culture.

With regard to the Challenge, we plan to design and prototype the main pouch and belt. This will determine the product architecture and design language of the product. We will make one "golden sample" prototype which will look and function like the final product. After this point we will determine the usability of the product through user testing. If the product is well received, then we can also work on the secondary modules after the challenge and also look at batch and scale production.

Technical Specifications/Features

1 x Main Pouch

1 x Belt

Main Pouch may contain:

1 x Screwdriver holder

8 x Screwdriver bits (M3, M4, M5, Large and Small Phillips, Large and Small Flathead, Pointy)

1 x Tweezer

1 x Wire Cutter+Stripper

1 x Needle Nose Plier

1 x Retractable Measuring Tape

1 x Precision Knife

1 x Small Scissors

1 x Round File

1 x Flat File

1 x Small Dispenser bottle

1 x Thickness Gauge

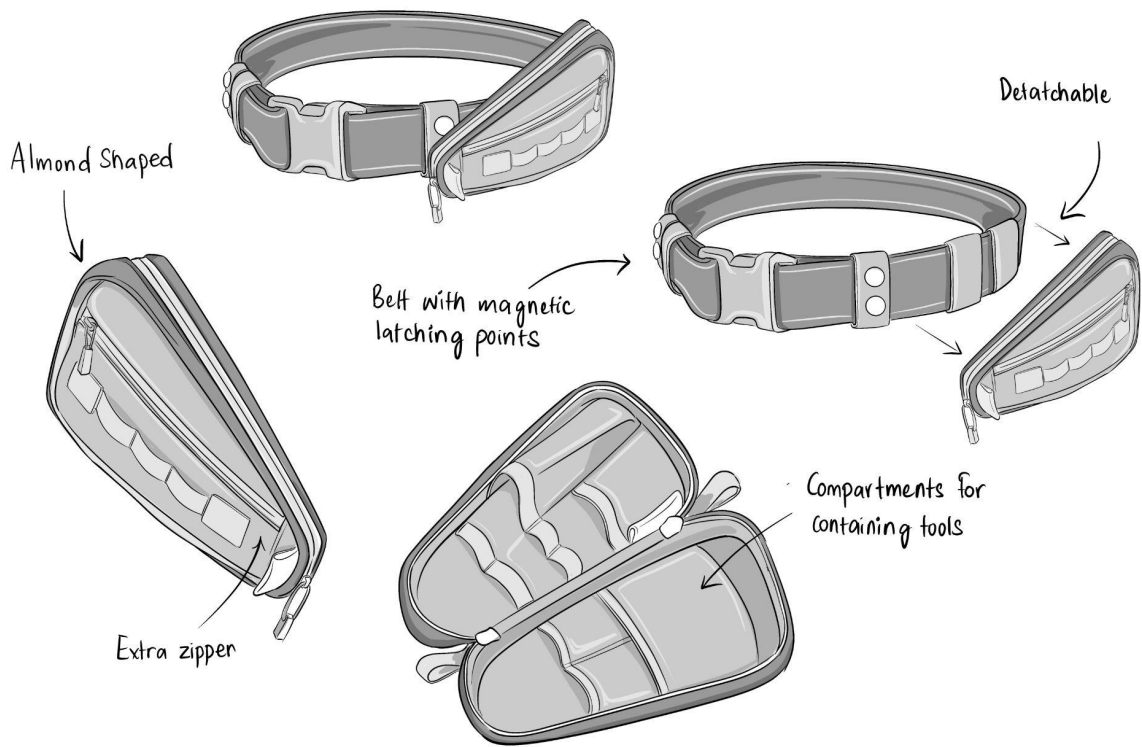
1 x Magnetic Strip

1 x Permanent Marker

1 x Business Card Holder

1 x ID Card + Access Card Slot

Design and Engineering Concepts



Concept sketch is for representation only. Design is subject to change.



Budget Estimates

Budget Cap: 25,000

#	Item	Unit Cost	Qty.	Vendor	Comments
1	110 Piece Screw Driver Set	595	1	https://www.amazon.in/EzLife-Precision-Screwdriver-Set-Magnetic/dp/B0BY9LFK8D/	Screwdriver, Bits
2	Plier Multi-Tool	720	1	https://www.amazon.in/Stanley-1-84-519-12-in-1-Multi-Tool/dp/B001LUMZHO	Multi-tool
3	Small Snap-Off Blade	44	1	https://www.amazon.in/STANLEY-10-131-S-Basic-Snap-off-Blade/dp/B0999BQG5S/	Precision Knife
4	5 pc File Set	319	1	https://www.amazon.in/Johnson-Diamond-Triangle-Half-Round-Jewelres/dp/B08KQC8B9S/	Files
5	Metric Thickness gauge (0.05-1.00mm)	299	1	https://www.amazon.in/JAIBROS-thickness-feeler-blades-stainless/dp/B0BNVMW86Y/	Thickness Gauge
6	1m Magnetic Tape	199	1	https://www.amazon.in/Worison-Adhesive-Flexible-Magnetic-Organization/dp/B0BPY4F7RP/	Magnetic Tape
7	Grooming Scissors	228	1	https://www.amazon.in/Grooming-Scissor-Cutting-Moustache-Trimming/	Small Scissors
8	Needle Nose Plier	177	1	https://www.amazon.in/Taparia-1408-Long-Needle-Plier/dp/B00QIK3SGY/	Needle Nose Plier
9	Cutting Plier	65	1	https://www.amazon.in/Taparia-WS-05-Steel-Stripping/dp/B07HR9519D/	Cutting Plier
10	Cutting Plier + Stripper	559	1	https://www.amazon.in/KAIWETS-Wire-Cutters-Multi-function-Electrical/dp/B097SZRNJV/	Cutting Plier + Wire Stripper
11	3 pc 30mL Dispenser Bottle	149	1	https://www.amazon.in/nsb-herbals-Refillable-Containers-Toiletries/dp/B0BMW39S2S/	Small Dispenser Bottle

12	5 pc Tweezer Set	312	1	https://www.amazon.in/THEMISTO-Stainless-Steel-Tweezer-Set/dp/B07P8MSS4W/	Tweezer
13	2M Measuring Tape	199	1	https://www.amazon.in/AASONS-Stainless-Measuring-Retracting-Measurement/dp/B0BWDVYPTD/	Measuring Tape
14	Utility bag 1	499	1	https://www.amazon.in/gp/product/B0915XLPVP/ref=ewc_prime_img_1?smid=AZTMIE3YVTS63&th=1	Research
15	Utility bag 2	209	1	https://www.amazon.in/gp/product/B0BS3H67K1/ref=ewc_prime_img_2?smid=A2S2EARM2CRHM&th=1	Research
16	Utility bag 3	729	1	https://www.amazon.in/gp/product/B0821H1X88/ref=ewc_prime_img_3?smid=AKKKXHYHXGINQ&th=1	Research
17	Fabrics	5,000	N/A	N/A	Raw material
18	External Fabrication	5,000	N/A	N/A	Prototyping
19	Miscellaneous	4,000	N/A	N/A	Shipping, Taxes, etc.
	Total	19,302			