

ME537 - PRODUCT REALIZATION			
PROJECT NAME	3D Tic-Tac-Toe		
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DOCUMENT TRACKING			
VERSION	EDITS COMPLETED BY	DATE	DESCRIPTION OF EDIT
1.0	Mikey Pando	02/20/2020	Initial listing
2.0	Tim Eberhardt	03/22/2020	VOC,Product Specs, Usage Conditions updates
Links to other Specification documents			
Doc #	Name	Link	Description

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PROJECT NAME	3D Tic-Tac-Toe				
1.0 Product Brief					
We are delivering a portable 3D Tic-Tac-Toe game set. The product will be sturdy and easy to set-up and pack for storage. The product itself will be aesthetic enough to be displayed as it is.					
2.0 Brand					
The brand of the product should communicate a sense of enjoyment and functionality. The product should appear to be a reliable source of entertainment for all ages (>10 yo) and able to be used in a variety of environments and settings.					
3.0 Stakeholder					
	Stakeholder	Description	Who are they	What do they value?	
3.01	Initiator	Persons who initiate the sale of the product	Avid board game collectors; People who travel in groups over long distances frequently	Importance of constructive time-pass/ socialising and spending time with family and friends instead of being hooked up to gadgets	
3.02	Gatekeeper	They are the "face of the team/company"- they control what information is given out to the customers; handle complaints and evaluate trends and root cause of any returns	Quality and Inspection Team Members	Minimizing returns /post-shipment failures / scrap ; Meeting customer need; Increasing profits on sales; Increasing Process Efficiency; Ensuring mistakes are not repeated	
3.03	Decider	People who decide whether it is worth spending money on a particular product to buy it in bulk to sell end-users	Retail Outlets	Which products will attract most customers; Product storage requirements; How much shelf space to allocate each product; Profit margins	
3.04	Purchasers	People who spend money on buying a product for personal use	People from any economic bracket (can be online or in-person)	Good value for money; Durability; Aesthetics; Convenience	
3.05	Target User	Consumers who want a unique, aesthically pleasing board game	Anyone above 10 years old	The ability to use their products with their friends or on the go and enjoy their time	
3.06	Influencer	People who affect deciders,target users and purchasers decision to buy a product	Preceding batch of customers; Youtubers; Parents; Peers; Online shopping stores	Providing authethic feedback to future customers as a goodwill or getting publicity in return in form of YouTube views	
4.0 Key Partners and Suppliers					
	Partner	Role/ Contribution		Notes	
4.01	Boulter Plywood	Will be the supplier of all the wood used in our product. High quality wood is esential to allow the Produce the game pieces that are essential to the product and have the most user interaction.		These partner ships help to shape our product and define the end quality. Keeping good partnerships will allow us to produce a consistent quality product.	
4.02	Piece Manufacturer				
4.03					
NOTES					
	Initiator	recognizes the value of a product			
	Gatekeeper	gives information to the DMU			
	Decider	who makes the purchasing decision			
	Influencers	influence the users			
	Purchasers	who pays for the product			
	Users	who consumes the product			

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5.0 Voice of the customer	
5.01	Product is light-weight and compact enough to carry around
5.02	The pieces stack nice and tight
5.03	The game should be easy to learn
5.04	The box and the pieces feel sturdy and high-quality
5.05	Pieces are a nice size to play with
5.06	Pieces storage is simple
5.07	Will not cut/splinter themselves on the wood
5.08	The product should have a way of easily transporting it around with one hand
5.09	I should not get a splinter using it
5.10	
6.0 Key features, functional and capabilities	
6.01	The game is small, lightweight, portable and self-containing
6.02	It is more challenging and fun compared to conventional tic-tac-toe
6.03	
6.04	
7.0 Product compatibility with other products / systems	
7.01	Will easily fit in a normal sized backpack
7.02	Can be played on a small table even while travelling
7.03	Made with bright colors to be aesthetically pleasing
7.04	Aesthetic enough to be displayed by itself
7.05	
7.06	

8.0 Renderings

The image below shows the final CAD rendering of the 3D Tic-Tac-Toe game set.

**9.0 Color material finish**

The wooden box will be sanded and finished with Shellac, rather than being painted. Acrylic game board will be polished and left transparent. The game pieces will be a dyed plastic that is smooth and polished.

10.0 Logo and marketing placement

The logo will be engraved on the outer surface of one of the box sides, and the rules of the game will be engraved on the inner surface of the bottom of the box.

ME537 - PRODUCT REALIZATION**PROJECT NAME** 3D Tic-Tac-Toe**11.0 Gift box / packaging. Picture and description**

The game set will be packaged in a gift box that is sturdy enough to prevent scratches and dings if dropped and will prevent moisture from reaching the product. The game pieces will be packaged inside the box in an bag to prevent moving around during shipment

12.0 List of what is included in the gift box

	Part name	Part description
12.01	Product	One unit
12.02	Rules Page	Optional at the moment because we may etch rules on the box
12.03	One extra game piece of each type	In case of misplacement, they can be used
12.04		
12.05		

Shipping and other packaging

	Part name	Part description
3.01	Master carton	5x5x5 master carton printed with logo, tagline and required
3.02		

Other packaging information

Since the product is designed to be self-containing, the packaging material can be made out of recycled and biodegradable paper to keep the packaging eco-friendly.

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13.0 Dates and volume targets

Date	Stage	Volumes	Comments
3/23/2020	EVT	1	
4/8/2020	DVT	2	
4/27/2020	PVT	7-10	
7/1/2020	MP - first month	500	Date based on tooling lead times
8/1/2020	MP	500	
9/1/2020	MP	1000	

14.0 Cost Targets

Number	Category	Description	Target
14.01	NRE	Non recurring engineering	\$350,000.00
14.02	Tooling costs	Total tooling and fixture costs	\$350,000.00
14.03	COGs - Launch	BOM Cost +assembly labor, overhead	\$15.00
14.04	COGs - 6 months	BOM Cost +assembly labor, overhead	\$10.00
14.05	Landed costs	Cost to get to the customer	
14.06	Price to distributors	How much distributors like amazon are charged	\$19.99
14.07	MSRP	Target retail price?	\$29.99
14.08	Acceptable Margin	How much do you need to earn when selling a unit?	150%
14.09			

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14.0 Product Specifications						
	Specification	Units	Target	Min	Max	Type
14.01	Box Size	in X in	4 x 4	3.98	4.02	HTB
	Weight - Overall	oz	17	N/A	20	LTB
14.02	Game Piece Size	in	Ø1.00 x 1.25	0.99 x 1.24	1.01 x 1.26	LTB
14.03	Stacked Pieces without tipping	# of game pieces	4	3	6	HTB
14.04	Force to put in/ remove pieces	N	2	2	4	LTB
14.05	Force to slide board out	N	5	4	7	LTB
14.06	Pieces all fit inside the box	# of game pieces	29	27	31	HTB
14.07	No sharp edges	N/A	N/A	N/A	N/A	N/A
14.08	handle that can easily be grabed	in	7	5	9	LTB
14.09	Wood does not splinter	N/A	N/A	N/A	N/A	N/A
14.10						
14.11						
14.12						
15.0 Selected components						
	Part	Supplier	Cost target	specification	Other notes and information	
15.01	Finger Joints	Manufacturing Team		14.01		
15.02	Game Pieces	Piece Manufacturer		14.04, 14.06, 14.03		
15.03						
15.04						
15.05						
15.06						
15.07						
15.08						

ME537 - PRODUCT REALIZATION**PROJECT NAME** 3D Tic-Tac-Toe**16.0 Countries of Sale**

U.S. initially, and expand internationally depending on market demand.

17.0 Certifications

Number	Classification	Country	Comments
17.01	FCC	US	N/A
17.02	UL	US	Needed for safety
17.03	FDA	US	N/A
17.04	ASTM	US	Needed for safety as children's toy
17.05	CE	EU	N/A - needed only when sold in EU
17.06	WEE	US, EU	Needed to indicate recycled materials
17.07	Rohs	EU	N/A
17.08	Calif Prop 65	US	Needed
17.09	US DOT	US	N/A - needed only sold internationally

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18.0 Usage scenarios			
	Condition		
18.01	Product will need to fit in a backpack or large handbag and handle conditions of banging around in a bag		
18.02	The product will sit on a coffee table and be used occasionally		
18.03	Product sit on a shelf in the corner of a bedroom		
18.04	The product will be used a a game night/ family gathering were it may be played with on the floor or a table outside/ on a deck		
18.05	Product will sit by a window in the sun all day/ for many days		
18.06	Product may be played on a unstable table		
18.07	Products may be played with by kids with recently cleaned/disenfected hands		
19.0 Shipping requirements			
	Condition	Comments	
19.01	ISTA-2A	Do stack testing	
20.0 Environment Storage in Gift box			
Conditions: Product in gift box, not powered, not assembled, not operational. Minor aesthetic damage only. Passes all functional tests			
	Condition	Values	Comments and other conditions
20.01	HTHH	104F / 90% RH	TBD
20.02	LTLH	-10F / 10% RH	TBD
20.03	HTLH	104F / 90% RH	TBD
20.04	Vibration	Random RMS	
20.05	Water / dust	0%	No water is tolerable by wooden box
20.06	Drop	6 ft	Should survive drops from minimum height of 6 ft.
20.07	Loading	5 N	Should withstand a minimum of 5 N.
20.08	UV Exposure	3 hr	Box and pieces should withstand minimum of 3 hrs
20.09			
21.0 Operational			
Conditions: Product in assembled, powered and operational. Minor aesthetic damage only. Passes all functional tests			
	Condition	Values	Comments and other conditions
21.01	HTHH	104F / 90% RH	TBD
21.02	LTLH	-10F / 10% RH	TBD
21.03	HTLH	104F / 90% RH	TBD
21.04	Moisture	0%	No water is tolerable by wooden box
21.05	Drop	6 ft	Should survive drops from minimum height of 6 ft.
21.06	Loading	5 N	Should withstand a minimum of 5 N.
21.07	UV exposure	3 hr	Box and pieces should withstand minimum of 3 hrs
21.08	Chemical resistace	Antiseptics	Antiseptics on hands should not damage game
21.09	Tension	N/A	
21.10	ESD testing	N/A	
21.11	Torsion	N/A	
21.12			
22.0 Non operational - storage or transport			

Conditions: Product in assembled, powered and operational. Minor aesthetic damage only. Passes all functional tests

	Condition	Values	Comments and other conditions
22.01	HTHH	104F / 90% RH	
22.02	LTLH	-10F / 10% RH	
22.03	HTLH	104F / 90% RH	
22.04	Vibration	Random RMS	
22.05	Moisture	0%	No water is tolerable by wooden box
22.06	Drop	6 ft	Should survive drops from minimum height of 6 ft.
22.07	Loading	5 N	Should withstand a minimum of 5 N.
22.08	UV exposure	3 hr	Box and pieces should withstand minimum of 3 hrs
22.09	Torsion	N/A	
22.10	Compression (pieces)	2 N	Should withstand a minimum of 2 N.
22.11	Compression (acrylic)	5 N	Should withstand a minimum of 5 N.

23.0 Warranty and reliability targets

Warranty period	The product will have a 1-year warranty with an expected usage of 3-5 years.	Target return rate	5%	Target reliability rate	2%
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24.0 Cycles over warranty period

	Operation	Cycles per warranty period	Comment
24.01	Slide acrylic board	500	
24.02	Drop box	100	
24.03	Drop game pieces	200	
24.04	Connect and disconnect pieces	1000	
24.05			
24.06			
24.07			
24.08			

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25.0 Spare and repairs

The product will have one extra game piece for each shape. No repairs will be done on sold products.

25.0 How is the product going to be supported

Support will be managed through distributors who will return defective product for reimbursement and they can also arrange more spares if needed. Products damaged upon delivery will the responsibility of distributors.

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PROJECT NAME	3D Tic-Tac-Toe				
NOTES	Link to aesthetic inspection criteria and examples LINK				
26.0 Aesthetic					
	Defect	Suface classification	Max defect allowed	Max count allowed	Critical/Major/ Minor classification
25.01	Cracks	A-D	NONE	NONE	Critical
25.02	Burrs/sharp edges	A-D	NONE	NONE	Critical
25.03	Scuff	A	NONE	NONE	Major
25.04	Scuff	B, C	1/4"	1	Minor
25.05	Sink marks	A	NONE	NONE	Major
25.06	Sink marks	B	.005 in	1	Minor
25.07	Sink marks	C	.01 in	1	Minor
25.08	Misalignment		NONE	NONE	Critical
25.09	Perpendicularity		offest by 1/16"	1	Major
25.10	Fisheye		1/16"	2	Major
25.11	Parting line marks		-	4/box	Major
25.12	Color matching		2 shades	2	Major
25.13	Surface finish		Non-homogenous surface finish on a single part	NONE	Major
25.14	Gloss		different amount of gloss on each side/ patches	a patch no bigger than 1x1mm	Minor