resources:								
Traceability Matrix	Project Name: Food Freshness						DHF: version 3 Date 02/28/2022	
ltem #	User Needs	ltem #	Design Inputs (Technical Requirement)	Acceptance Criteria Ideal/Goal Limit		Design Outputs	Design Verification (Outputs = Inputs)	Design Validation (User Needs Met)
1	Customer Requirements (e.g. Functional)		•					•
1.1	Evaluates meat product freshness/spoilage		Puts multiple parameters (temperature, time, humidity, bacteria, etc.) through simple logic gates to determine extent of spoilage. Placeholder Example: Starting to spoil if at above 40°F for 1 hour, spoiled if 2 hours					
1.2	Intuitive for an average consumer to use with little or no instruction		Device comes with clear instructions					
1.3	Compact and fits in common family food storages		Total volume doesn't exceed 20cm x 20cm x 20 cm					
1.4	Simple visual feedback of spoilage risk		Clear sign when food product is "fresh," "starting to spoil," and "spoiled." Placeholder example: Screen displays smiley face when fresh, neutral face when starting to spoil, frowning face when spoiled.					
1.5	Cost is less than value of saved food over lifetime		Device cost is at most \$30					
1.6	Easy to clean		Cleanable with common dish soap safely.					
			At most takes 5 minutes for average user to clean device.					
2	Product Performance Requirements (e.g.Mechanical)							
2.1	Reusable		Material is resistant to time, moisture, and soap related wear. Can be used repeatedly for 3 years without breaking or losing function.					
2.2	Minimally invasive to food product	2.2.1	Contact area, if any, should be below 1 cm ²					
		2.2.2	Penetration depth should be inversely proportional to contact area. The larger the contact area, the less deep it should penetrate					
2.3	Rapid result feedback		Should take as long as a normal digital thermometer would: 40 seconds					
2.4	Functional at freezing temperatures		Fully functional and physically/chemically safe at temperature range $\ 32^\circ$ F - 100° F					
2.5	Water resistant, dust protected		Meets Ingress Protection Code IP55 standard.					
		2.5.1	Level 5: Dust protected					
		2.5.2	Level 5: Water jets					
3	loes not change biochemical, minimal physical properties change on product							
3.2	Does not change biochemical, minimal physical properties change on product		Food contact material made of FDA cleared material.					
4	Regulatory Requirements							
4.1	Safe material for interaction with food and human.		Material is listed in FCS list by FDA: Packaging & Food Contact Substances					
5	Interfaces with Other Systems				_			
5.1	Visual interface suitable for people with color blindess or visual limitations		Area of light/screen should be large enough for people with heavy myopia to observe (xcm by xcm). Information display must not rely on colors only.					
5.2	Operatable with minimal physical interaction		Able to use with only one hand.					
6	Other							