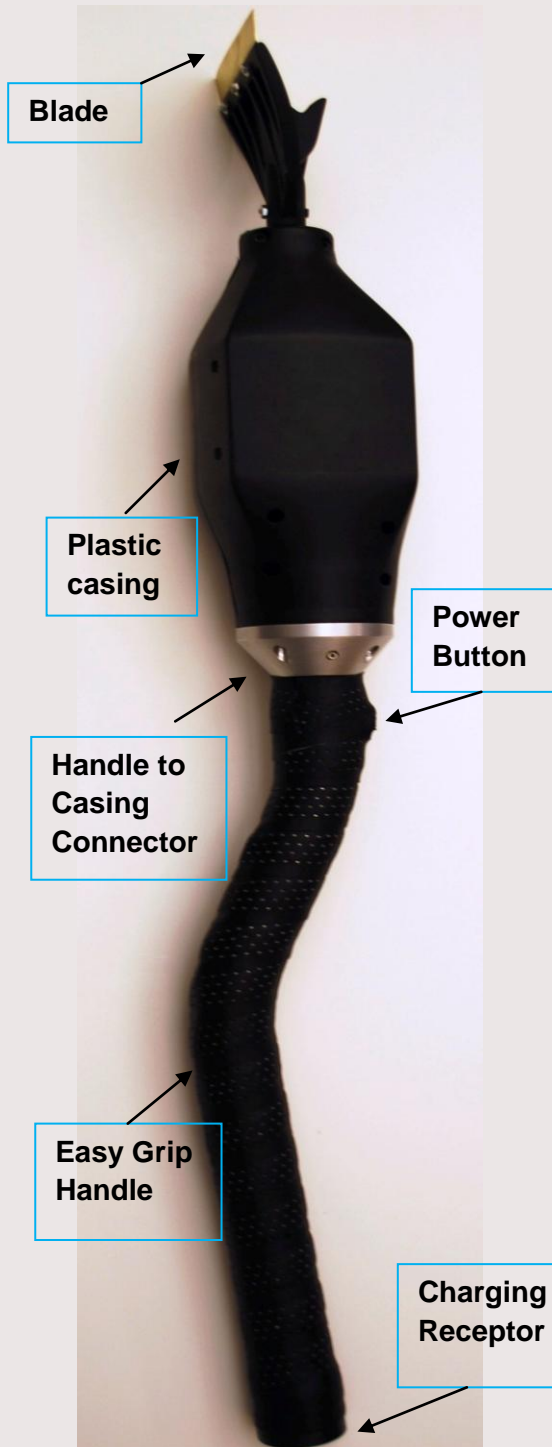


Final Integration:



Acknowledgments:

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David Meeker

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400 User Survey Respondents

Brought to you by:

2.009 Team Silver

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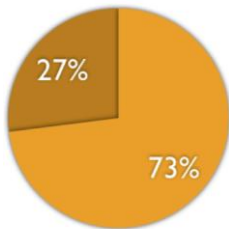
The High Performance Powered Ice Scraper

Silver Team

Market Research and User Experience:

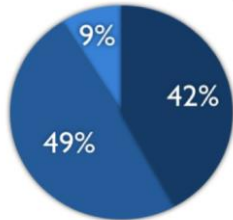
Experience: Obtaining market research from target users helped refine key user needs.

Driven car without removing ice



● Yes
● No

Time to clear ice with conventional scraper



● < 5 min
● 5-10 min
● 10-20 min

Data from online survey of 400 drivers over 18

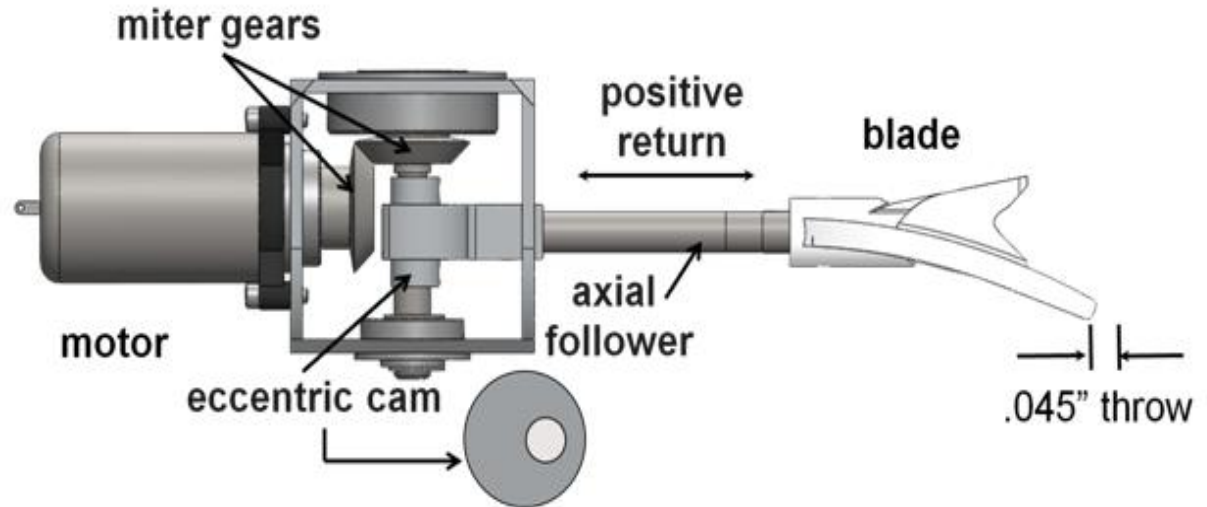
User Needs and Performance Goals:

Goals: Key user needs derived from market research were used to determine performance goals.

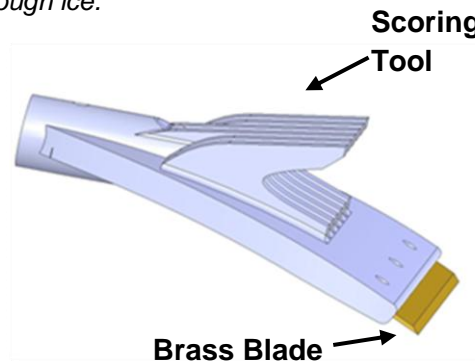
User Need	Performance Goals
Effortless	Clears windshield in <5 min
	Minimal applied force at grips
Comfortable	Handle Diameter and length
	Reach distance over 2'
	<5lbs in weight
Durable	Functional in cold weather
	Minimal component wear

Key Design Features:

Actuation Mechanism: Chipping motion is rendered by axially oriented eccentric drive.



Blade Design: Blade material is safe for use on auto glass, but pliant to get under tough ice.



Handle Ergonomics: Incorporates physical needs of the scraper into a high end aesthetic.

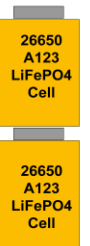


Power: Lithium Nanophosphate batteries were chosen to fulfill performance requirements.

Car Jack 12-14V Charging Circuit Charge Signal

- Lithium NanoPhosphate Chemistry
- Excellent cold weather performance
- Safe, eco-friendly
- High energy density
- Lightweight
- Trade off-Cost

Batteries



Business Plan:

- Sales Price: \$165
- NPV: \$1.3 million
- Investment: \$350,000
- ROI: 80%
- Break-even point: 3 years