

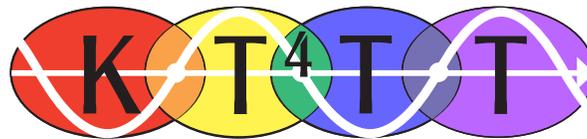
Morph Foldable Wheelchair Wheel Beta Focus Group Report

prepared for



by

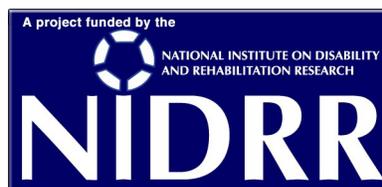
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SECTION A

EXECUTIVE SUMMARY

- Project Goals /Focus /Recruitment Criteria
- Report Description
- Key Functions and Features
- Aspects of Morph Wheelchair Wheel Influencing Purchase Decisions
- Pricing Information /Purchase Intent



SECTION A

Executive Summary

Project Goals/Focus/Recruitment Criteria

The primary purpose of this project is to provide Maddak Inc. with information that will allow them to refine the functions and features of Morph Foldable Wheelchair Wheel through a critique of the Beta prototype by consumers. For the Beta consumer focus groups that were to be run, preproduction prototypes of functional models were produced Maddak Inc. personnel. Focus group participants were given the opportunity to rank the prototype's design features that were previously identified in concept definition focus groups. Parameters of the project as discussed with and agreed upon by members of the Maddak Inc. project staff were as follows:

- Beta focus group participants were to be a representative sample of the Alpha focus group participants.
- We targeted recruiting a total of 26 people to participate in two focus groups (11-13 people per group) on the Morph Foldable Wheelchair Wheel. All focus group participants were to be over the age of 18 with no specific gender requirements. Recruitment was to be a cross section of individuals from a broad spectrum of manual wheelchair users as well as clinicians recruited from organizations that specifically work (prescribing and developing systems) with people using manual wheelchairs. We targeted both active manual wheelchair users with quick release wheels, less active users of manual wheelchairs, caregivers of people using manual wheelchairs (who assist in storing wheelchair in vehicles, etc.), and clinicians and prescribers (who recommend manual wheelchairs and components for purchase).

Participants were audio and video recorded during the focus groups, and DVD copies of the focus groups are provided to Maddak Inc. along with this report. An abbreviated transcript of the focus groups is included in Appendices D3 and D4 of this report. As Maddak Inc. representatives watch the DVD's of the focus groups, it may help to have the transcribed comments available for review.

Report Description

This report quantifies and summarizes the results of two consumer focus groups that were held to critique and rank the key design features on the Morph Foldable Wheelchair Wheel. Focus group attendees were asked to participate in an open forum discussion led by a focus group moderator. Information was collected on: (1) Rank ordering of previously identified design features of the product concept based on importance, (2) Preference of key features on Morph Foldable Wheelchair Wheel, (3) How well the viewed prototype met function and design feature expectations, and (4) Price point and purchase intent.

Key Functions and Features

This list highlights a subset of the highest ranked features of the Morph Foldable Wheelchair Wheel as indicated by focus group participants. For a more in depth listing of the rank ordering for all of the features identified in the groups, please refer to Section C of this report.

Features Ranked Highest (Important to more than 50% of participants)

1. "Wheel is easy to fold by the wheelchair user"
(94% of participants found this feature important)



2. “Wheel has quick release from wheelchair – one hand operation”
(76% of participants found this feature important)
3. “Wheel is light weight”
(71% of participants found this feature important)
4. “Tires have good gripping surface for ice and snow”
(53% of participants found this feature important)
5. “Wheel folds down in 1-2 steps”
(53% of participants found this feature important)
6. “When unfolded, the wheel is truly round – no square wheels”
(53% of participants found this feature important)

A subset of the comments offered by focus group participants upon their initial review of the Beta prototype is as follows:

Likes: Wheel feels solid when unfolded; lightweight; able to store wheels in backseat of car; easy for air travel stowage; can't drop the axel now; easy to change tire yourself; not too steep of a learning curve; looks nice.

Dislikes: Wheel has to come off of wheelchair to fold; folding and unfolding of the wheel has a learning curve; blue plastic lever may snap in cold weather; does not fold as flat as you would like; dexterity and strength required; doesn't look maintenance free.

For a total listing of all the comments made by participants, please refer to sections D3 and D4 of the report.

Purchase Intent/Pricing Information

Participants were asked the following questions for pricing information and purchase intent:

1. How much would you be willing to pay for the Morph Foldable Wheelchair Wheel set (includes: 2 wheels, 2 tires & 2 push rims)?
2. Would you purchase the Morph Foldable Wheelchair Wheel set (includes: 2 wheels, 2 tires & 2 push rims) for that price?
3. Would you pay \$950 (price specified by Maddak Inc.) for the Morph Foldable Wheelchair Wheel set (includes: 2 wheels, 2 tires & 2 push rims)?
4. Would you like to receive the Morph Foldable Wheelchair Wheel set (includes: 2 wheels, 2 tires & 2 push rims) as a gift?
5. Would you like the option to purchase only Morph Wheel as an emergency spare tire?

These two focus groups had a combined mean price of \$556 with a range of \$100 to \$2,500. The median price was \$400.00. These prices were participant generated and at those prices, seven participants (41.2%) definitely would purchase or probably would purchase the Morph Foldable Wheelchair Wheel for their own use.

At the Maddak Inc. set price of \$950.00, two participants (11.8%) definitely would purchase or probably would purchase the Morph Foldable Wheelchair Wheel for their own use. Eleven participants (64.7%) indicated that they would like to receive the Morph Foldable Wheelchair Wheel as a gift. Seven participants (41.2%) indicated that they would like the option to purchase only one Morph Wheel as an emergency spare.

For a more in depth listing of all purchase intent and pricing information, please refer to Section C of this report.



SECTION B

BACKGROUND INFORMATION

- Dates and Times of the Focus Groups
- Participant Recruitment Information /Criteria



Background Information

Dates and Times of the Groups

From 6:00 pm to 8:00 pm on December 5th and 6th, 2012, the Center on Knowledge Translation for Technology Transfer held consumer focus groups to critique and rank the key design functions and features on the Morph Foldable Wheelchair Wheel. Focus group attendees were asked to participate in an open forum discussion led by a focus group moderator after a presentation of the functions and features of the application. Information was collected on: (1) Rank ordering of previously identified function and design features of the product concept based on importance, (2) Preference of key features on Morph Foldable Wheelchair Wheel, (3) How well the viewed prototype met function and design feature expectations, and (4) Price point and purchase intent.

Participant Recruitment Information /Criteria

Beta focus group participants are a representative sample of the Alpha focus group participants. Recruitment of the previous Alpha focus group participants were targeted to mirror the United States population of consumers who use a manual wheelchair and were to include prescribers. For additional demographic information including a complete listing of all the participant demographics by group and combined, please refer to Appendix D1 of this report.

- Beta focus group participants were to be a representative sample of the Alpha focus group participants.
- We targeted recruiting a total of 26 people to participate in two focus groups (11-13 people per group) on the Morph Foldable Wheelchair Wheel. All focus group participants were to be over the age of 18 with no specific gender requirements. Recruitment was to be a cross section of individuals from a broad spectrum of manual wheelchair users as well as clinicians recruited from organizations that specifically work (prescribing and developing systems) with people using manual wheelchairs. We targeted both active manual wheelchair users with quick release wheels, less active users of manual wheelchairs, caregivers of people using manual wheelchairs (who assist in storing wheelchair in vehicles, etc.), and clinicians and prescribers (who recommend manual wheelchairs and components for purchase).

The key screening /recruiting questions for the participants were:

- 1) *Do you use a manual wheelchair?*
- 2) *Does your wheelchair have quick release wheels?*
- 3) *Which statement best describes how you transfer out of your wheelchair and into and out of vehicles?*
 - *Completely by myself, with a little assistance, with quite a lot of assistance, or with total assistance?*

SECTION C

FOCUS GROUP EVALUATION AND RESULTS

- Voting on Features of the Morph Foldable Wheelchair Wheel
- Pricing/Purchase Intent Questionnaire Results
- Consumer Expectation Results
- Recommendations/Comments From KT4TT Staff



SECTION C

Focus Group Evaluation and Results

Voting on Features of the Morph Foldable Wheelchair Wheel

Participants were asked to rank, in order of importance, the features of the Morph Foldable Wheelchair Wheel using a one-third voting process. Participants were provided with a list of twenty-six features identified in the Alpha Focus Groups. Participants were then asked to choose their top nine most important features from the list provided. The preferences for each function were summed and the results are provided, separated by group as well as all participants combined. Results are shown from most important to least important.

Table 1. Group 1 and 2 Combined Ranking of Features, 17 Participants

	Number of Votes Group 1	Number of Votes Group 2	Total Number of Votes	Percentage of Total
1. Wheel is easy to fold by the wheelchair user	8	8	16	94%
2. Wheel has a quick release from wheelchair – one hand operation	7	6	13	76%
3. Wheel is light weight	9	3	12	71%
4. When unfolded, the wheel is truly round - no square wheels	5	4	9	53%
5. Wheel folds down in 1-2 steps	6	3	9	53%
6. Tires have good gripping surface for ice and snow	4	5	9	53%
7. Wheel locks in shape when unfolded	3	5	8	47%
8. Wheel snaps into place	6	2	8	47%
9. Wheel is weather resistant	4	3	7	41%
10. Wheel takes less than a minute to unfold	4	2	6	35%
11. None of the parts rust	4	2	6	35%
12. Wheel has a secure locking mechanism	3	3	6	35%
13. Wheel can be tied down when wheelchair occupant and wheelchair are being transported by Para Transit	2	3	5	29%
14. Wheel has no pinch points	3	2	5	29%
15. Push rim is a comfortable distance away from wheel	0	5	5	29%
16. Tire acts as a shock absorber	1	3	4	24%
17. Long bearing life (3-5 years)	2	2	4	24%
18. Wheel is maintenance free	2	2	4	24%
19. Axle has a way to prevent dropping or losing it	2	2	4	24%

Table 1 continued. Group 1 and 2 Combined Ranking of Features, 17 Participants

	Number of Votes Group 1	Number of Votes Group 2	Total Number of Votes	Percentage of Total
20. Wheel has no cracks, grooves, or seams that things could get stuck in	1	2	3	18%
21. Wheel has texture on push rim – not slippery when wet	1	2	3	18%
22. Tire does not leave marks on floor surfaces	2	0	2	12%
23. Wheel has a color coded switch /locking mechanism	1	1	2	12%
24. Hub material does not need greasing	1	1	2	12%
25. Wheel folds in half	0	0	0	0%
26. Wheel doesn't collect dirt easily	0	0	0	0%

Non-Consumer Feature Ranking

We were able to cull out the rankings of the non-consumer focus group participants. These participants include three prescribers, one caregiver, and one insurance adjuster for a total of five participants out of seventeen participants (includes both focus groups). Their rankings were similar to those of the overall group. Notable differences are in the features “None of the parts rust,” which 60% of non-consumers ranked important and 35% of all participants ranked important, and “Wheel can be tied down when wheelchair occupant and wheelchair are being transported by Para Transit,” which 60% of non-consumers ranked important and 29% of all participants ranked important.

Features Ranked Highest (Important to more than 50% of non-consumer participants)

1. “Wheel is easy to fold by the wheelchair user”
(80% of non-consumer participants found this feature important)
Ranked important by 94% of all participants
2. “Wheel has quick release from wheelchair – one hand operation”
(80% of non-consumer participants found this feature important)
Ranked important by 76% of all participants
3. “Wheel is light weight”
(80% of non-consumer participants found this feature important)
Ranked important by 71% of all participants
4. “Wheel folds down in 1-2 steps”
(60% of non-consumer participants found this feature important)
Ranked important by 53% of all participants
5. “None of the parts rust”
(60% of non-consumer participants found this feature important)
Ranked important by 35% of all participants



6. “Wheel can be tied down when wheelchair occupant and wheelchair are being transported by Para Transit” (60% of non-consumer participants found this feature important)
Ranked important by 29% of all participants

Pricing/Purchase Intent Questionnaire Results

In addition to the design information gathered during the focus group discussion, participants were asked the following questions about pricing and purchase intent:

1. How much would you be willing to pay for the Morph Foldable Wheelchair Wheel set (includes: 2 wheels, 2 tires & 2 push rims)?
2. Would you purchase the Morph Foldable Wheelchair Wheel set (includes: 2 wheels, 2 tires & 2 push rims) for that price?
3. Would you pay \$950 (price specified by Maddak Inc.) for the Morph Foldable Wheelchair Wheel set (includes: 2 wheels, 2 tires & 2 push rims)?
4. Would you like to receive the Morph Foldable Wheelchair Wheel set (includes: 2 wheels, 2 tires & 2 push rims) as a gift?
5. Would you like the option to purchase only Morph Wheel as an emergency spare tire?

Participants from both focus groups combined indicated that the mean price for the ideal Morph Foldable Wheelchair Wheel should be approximately \$556; the median price indicated was \$400. For the participant’s indicated price, one participant (5.9%) definitely would consider purchasing the Morph Foldable Wheelchair Wheel for that price and six participants (35.3%) probably would. Overall, seven participants (41.2%) participants would consider purchasing it for their indicated prices.

At Maddak Inc.’s suggested price of \$950 for the Morph Foldable Wheelchair Wheel set, no participants indicated that they definitely would consider purchasing it. However, two participants (11.8%) probably would purchase it. Six participants (35.3%) probably would not purchase it, while nine participants (53%) definitely would not purchase it. Eleven participants (64.8%) would like to receive the Morph Foldable Wheelchair Wheel as a gift. Seven participants (41.2%) would like the option of purchasing it as an emergency spare tire.

Non-consumer participant answers from both focus groups were separated into a subset of answers, which can be found below. Non-consumer participants include three prescribers, one caregiver, and one insurance adjuster. While their answers, in general, were similar to those of all participants, these participants had a higher mean price of the Morph Foldable Wheelchair Wheel (\$578 compared to \$556) and had a higher demand for purchasing one Morph Foldable Wheelchair Wheel as an emergency spare (60% compared to 41.2%).

Questions asked of focus group participants and their responses are as follows:

Question 1: If the Foldable Wheelchair Wheel, evaluated by the group, was available as a set (includes: 2 wheels, 2 tires & 2 push rims) for purchase, what do you think the price of this set should be?

Table 2. Group 1 and 2 responses to Question 1

Price of Product, Group 1	Price of Product, Group 2
\$200	\$100
\$300	\$200
\$395	\$200
\$400	\$300
\$400	\$300
\$400	\$500
\$500	\$900
\$595	\$2,500*
\$1,200*	-
Mean Price: \$488	Mean Price: \$625
Combined Mean Price: \$556	
Mean Prices without outliers (denoted with *)	
Mean Price: \$399	Mean Price: \$357
Combined Mean Price: \$378	

Table 3. Non-consumers responses to Question 1

\$300
\$395
\$400
\$595
\$1,200*
Mean Price: \$578
Mean Price without outlier (denoted with *): \$422.50

In general, the mean price of non-consumers is slightly higher than mean price of all participants.

Question 2: If the Foldable Wheelchair Wheel was available as a set (includes: 2 wheels, 2 tires & 2 push rims) at the price you stated in question #1, how likely is it that you would purchase this set or recommend its purchase?

Table 4. Group 1 responses to Question 2, 9 Participants

Response	Number of Participants	Percentage of Participants
Definitely Would	0	0%
Probably Would	2	22.2%
Probably Would Not	6	66.7%
Definitely Would Not	1	11.1%



Table 5. Group 2 responses to Question 2, 8 Participants

Response	Number of Participants	Percentage of Participants
Definitely Would	1	12.5%
Probably Would	4	50%
Probably Would Not	2	25%
Definitely Would Not	1	12.5%

Table 6. Group 1 and 2 combined responses to Question 2, 17 Participants

Response	Number of Participants	Percentage of Participants
Definitely Would	1	5.9%
Probably Would	6	35.3%
Probably Would Not	8	47.1%
Definitely Would Not	2	11.8%

Table 7. Non-consumer responses to Question 2, 5 Participants

Response	Number of Participants	Percentage of Participants
Definitely Would	0	0%
Probably Would	1	20%
Probably Would Not	3	60%
Definitely Would Not	1	20%

In general, less non-consumer participants would purchase the Morph Foldable Wheelchair Wheel at their specified price compared to all participants.

Question 3: If the Foldable Wheelchair Wheel was available as a set (includes: 2 wheels, 2 tires & 2 push rims) for a purchase price of \$950.00 how likely is it you would purchase this set?

Table 8. Group 1 responses to Question 3, 9 Participants

Response	Number of Participants	Percentage of Participants
Definitely Would	0	0%
Probably Would	1	11.1%
Probably Would Not	3	33.3%
Definitely Would Not	5	55.6%

Table 9. Group 2 responses to Question 3, 8 Participants

Response	Number of Participants	Percentage of Participants
Definitely Would	0	0%
Probably Would	1	12.5%
Probably Would Not	3	37.5%
Definitely Would Not	4	50%



Table 10. Group 1 and 2 combined responses to Question 3, 17 Participants

Response	Number of Participants	Percentage of Participants
Definitely Would	0	0%
Probably Would	2	11.8%
Probably Would Not	6	35.3%
Definitely Would Not	9	52.9%

Table 11. Non-consumer responses to Question 3, 5 Participants

Response	Number of Participants	Percentage of Participants
Definitely Would	0	0%
Probably Would	0	0%
Probably Would Not	3	60%
Definitely Would Not	2	40%

In general, less non-consumer participants would purchase the Morph Foldable Wheelchair Wheel at Maddak Inc.'s price compared to all participants.

Question 4: Is the Foldable Wheelchair Wheel set (includes: 2 wheels, 2 tires & 2 push rims) something you would like to receive as a gift from a friend or relative?

Table 12. Group 1 responses to Question 4, 9 Participants

Response	Number of Participants	Percentage of Participants
Yes	5	55.6%
No	4	44.4%

Table 13. Group 2 responses to Question 4, 8 Participants

Response	Number of Participants	Percentage of Participants
Yes	6	75%
No	2	25%

Table 14. Group 1 and 2 combined responses to Question 4, 17 Participants

Response	Number of Participants	Percentage of Participants
Yes	11	64.7%
No	6	35.3%

Table 15. Non-consumer responses to Question 4, 5 Participants

Response	Number of Participants	Percentage of Participants
Yes	4	80%
No	1	20%



Similar to all participants, non-consumers believe that the Morph Foldable Wheelchair Wheel would make a good gift.

Question 5: Would you like the option to purchase only one Foldable Wheelchair Wheel (includes: 1 wheel, 1 tire & 1 push rim) as an emergency spare tire?

Table 16. Group 1 responses to Question 5, 9 Participants

Response	Number of Participants	Percentage of Participants
Yes	2	22.2%
No	7	77.8%

Table 17. Group 2 responses to Question 5, 8 Participants

Response	Number of Participants	Percentage of Participants
Yes	5	62.5%
No	3	37.5%

Table 18. Group 1 and 2 combined responses to Question 5, 17 Participants

Response	Number of Participants	Percentage of Participants
Yes	7	41.2%
No	10	58.8%

Table 19. Non-consumer responses to Question 5, 5 Participants

Response	Number of Participants	Percentage of Participants
Yes	3	60%
No	2	40%

Dissimilar to all participants, a majority of non-consumers would like the option to purchase only one Morph Wheel as an emergency spare.

Consumer Expectation Results

Participants in the focus groups were asked to indicate whether the primary features of the Morph Foldable Wheelchair Wheel exceeded, met, or did not meet their expectations of the ideal application they originally identified in the alpha focus groups. If participants indicated that the product did not meet their expectations for a particular function or feature, they were asked to explain why the feature did not meet their expectations. Below are the tabulated results of the consumers' expectations and a summary of the comments participants made to explain why a feature did not meet their expectations. The features are listed according to importance (determined in Table 1).

Table 20. Consumer Expectations of Group 1 only

Features	Importance Given by Participants	Exceeded Expectation	Met Expectation	Did Not Meet Expectation
1. Wheel is easy to fold by the wheelchair user	94%	0	2	7
2. Wheel has a quick release from wheelchair – one hand operation	76%	2	6	1
3. Wheel is light weight	71%	2	4	3
4. When unfolded, the wheel is truly round - no square wheels	53%	5	4	0
5. Wheel folds down in 1-2 steps	53%	0	5	4
6. Tires have good gripping surface for ice and snow	53%	1	4	4
7. Wheel locks in shape when unfolded	47%	5	4	0
8. Wheel snaps into place	47%	0	7	2
9. Wheel is weather resistant	41%	0	7	2
10. Wheel takes less than a minute to unfold	35%	0	8	1
11. None of the parts rust	35%	7	2	0
12. Wheel has a secure locking mechanism	35%	5	3	1
13. Wheel can be tied down when wheelchair occupant and wheelchair are being transported by Para Transit	29%	0	7	2
14. Wheel has no pinch points	29%	0	9	0
15. Push rim is a comfortable distance away from wheel	29%	0	9	0
16. Tire acts as a shock absorber	24%	0	0	9
17. Long bearing life (3-5 years)	24%	2	7	0
18. Wheel is maintenance free	24%	0	2	7
19. Axle has a way to prevent dropping or losing it	24%	1	4	4
20. Wheel has no cracks, grooves, or seams that things could get stuck in	18%	3	4	2
21. Wheel has texture on push rim – not slippery when wet	18%	1	8	0
22. Tire does not leave marks on floor surfaces	12%	1	5	3
23. Wheel has a color coded switch / locking mechanism	12%	5	3	1
24. Hub material does not need greasing	12%	8	1	0
25. Wheel folds in half	0%	1	7	1
26. Wheel doesn't collect dirt easily	0%	0	3	6

Comments and reasons why participants felt that the Morph Foldable Wheelchair Wheel features did not meet their expectations are below. Numbers correspond to numbers on the above listed features.

1. The wheel is easy to fold by the wheelchair user.

- Should require less strength
- Too cumbersome; hard to fold it up
- Not fond of lever to release the spoke; the action of releasing it

2. The wheel has a quick release from wheelchair – one hand operation.

- Inherently a problem for everyone

3. The wheel is light weight.

- Could be lighter and then it'd be easier to maneuver it into position

5. The wheel folds down in 1-2 steps.

- Has to be off the wheelchair to fold
- Took more than 2 steps to fold it but number of steps was not unreasonable

5. The wheels have good gripping surface for traveling in ice and snow.

- No evidence
- The wheel does not appear to have very good traction

6. The wheels have good gripping surface for traveling in ice and snow.

- No evidence
- The wheel does not appear to have very good traction

8. The wheel snaps into place.

- When the wheel was put back on the wheelchair, it did not snap
- When demonstrated, the wheel pulled right off

9. The wheel is weather resistant.

- No evidence
- Lots of little plastic parts that may break in the cold weather

10. The wheel takes less than a minute to unfold.

- Takes a lot of strength to unfold
- Not as easy as expected

13. The wheel can be tied down for when wheelchair occupant and wheelchair are being transported by Para Transit (consumer is in wheelchair).

- Secure a wheelchair by the frame, not the wheels

16. The tire acts as a shock absorber.

- No evidence
- Does not act as a shock absorber because it is a solid tire
- If it was air /cushioning material filled, it could be a shock absorber

18. The wheel is maintenance free.

- Need lubricant to keep it moving freely
- If it collects dirt, snow, grime, will it affect movement

19. The axle should have a way to prevent dropping or losing it.

- The axel fell on the floor during demonstration

20. The wheel has no cracks, grooves, or seams that things could get stuck in.

- Creases in the area that it folds - you could get your finger, clothing, or necktie caught in it
- Square shaped hollow points collect mud and snow

22. Tire does not leave marks on floor surfaces.

- Not sure if bright red wheels will leave a mark on the floor

23. The wheel has a color coded switch /locking mechanism.



- Did not show a color change when it was locked versus unlocked

25. The wheel folds in half.

- Folds 60% - reasonable, but technically not half

26. The wheel doesn't collect dirt easily.

- Too many nooks and crannies where dirt and grime will build up

Overall

- To make a fair assessment of the product, I would have to have someone who uses the chair compare and validate it for us
- Colors on the tire might mark the floors

Table 21. Consumer Expectations of Group 2

Features	Importance Given by Participants	Exceeded Expectation	Met Expectation	Did Not Meet Expectation
1. Wheel is easy to fold by the wheelchair user	94%	0	7	1
2. Wheel has a quick release from wheelchair – one hand operation	76%	0	8	0
3. Wheel is light weight	71%	8	0	0
4. When unfolded, the wheel is truly round - no square wheels	53%	1	7	0
5. Wheel folds down in 1-2 steps	53%	0	5	3
6. Tires have good gripping surface for ice and snow	53%	0	5	3
7. Wheel locks in shape when unfolded	47%	6	2	0
8. Wheel snaps into place	47%	1	7	0
9. Wheel is weather resistant	41%	0	8	0
10. Wheel takes less than a minute to unfold	35%	0	7	1
11. None of the parts rust	35%	1	7	0
12. Wheel has a secure locking mechanism	35%	2	6	0
13. Wheel can be tied down when wheelchair occupant and wheelchair are being transported by Para Transit	29%	0	7	1
14. Wheel has no pinch points	29%	0	7	1
15. Push rim is a comfortable distance away from wheel	29%	4	3	1
16. Tire acts as a shock absorber	24%	0*	0	0
17. Long bearing life (3-5 years)	24%	0	8	0
18. Wheel is maintenance free	24%	0	4	4
19. Axle has a way to prevent dropping or losing it	24%	8	0	0



Table 21 continued. Consumer Expectations of Group 2

Features	Importance Given by Participants	Exceeded Expectation	Met Expectation	Did Not Meet Expectation
21. Wheel has texture on push rim – not slippery when wet	18%	2	6	0
22. Tire does not leave marks on floor surfaces	12%	0*	0	0
23. Wheel has a color coded switch / locking mechanism	12%	0	8	0
24. Hub material does not need greasing	12%	0	8	0
25. Wheel folds in half	0%	0	8	0
26. Wheel doesn't collect dirt easily	0%	0	4	4

*Participants abstained from voting because they were not allowed to try it and, therefore, could not comment on its qualities.

Comments and reasons why participants felt that the Morph Foldable Wheelchair Wheel features did not meet their expectations are below. Numbers correspond to numbers on the above listed features.

1. The wheel is easy to fold by the wheelchair user.

- Have to use both hands, which makes it difficult.

5. The wheel folds down in 1-2 steps.

- Required more than two steps
 - Could be problematic if had to do it in a hurry, or out in the cold
 - Issues with silver plate and blue latch

6. The wheels have good gripping surface for traveling in ice and snow.

- Tire doesn't look like it has any tread, which means no gripping surface
- Seems thinner than most tires

10. The wheel takes less than a minute to unfold.

- Fumbling with it, the latch getting stuck, etc.

13. The wheel can be tied down for when wheelchair occupant and wheelchair are being transported by Para Transit (consumer is in wheelchair).

- Possibly damage the wheel
- Most systems use the frame as a tie down

14. The wheel has no pinch points.

- If grabbed it at the wrong point, it will pinch finger

15. The push rim is a comfortable distance away from wheel.

- Looks a little far away

18. The wheel is maintenance free.

- No evidence
- The joints where the wheel folds may need maintenance.
- Composite plastic needs to stay lubricated

20. The wheel has no cracks, grooves, or seams that things could get stuck in.

- Seam could wear if it is folded and unfolded multiple times
- Snow could get stuck in it



26. The wheel doesn't collect dirt easily.

- In folded position, there are spaces that will collect dirt
- In the open position, dirt may collect under the plate

Additional Information on Features

On a questionnaire that all participants filled out, they were asked to describe any other features that they would like to be changed and/or improved. Below are their responses.

- More aggressive tires, tires with treads
- Should fold to a smaller size
- Easier to fold
- Lighter
- Blue release handle needs reevaluating
- Make wheel foldable on wheelchair

Marketing Data Collected

In addition to the design and price information gathered during the focus group discussion, participants were asked the following questions about the marketing of the product:

After reviewing this prototype,

1. Who do you believe would most likely use the Morph Wheel?
2. What other activities of daily living could the Morph Wheel's technology be used for?
3. Where would you expect to see the Morph Wheel in use?
4. Where would you expect to use the Morph Wheel?
5. Where would you expect to obtain information on the Morph Wheel?
6. Where would you expect to purchase the Morph Wheel?
7. Where would you like to see the Morph Wheel sold?
8. Who would purchase the Morph Wheel?
9. Who would recommend the Morph Wheel?
10. Who would pay for the Morph Wheel?
11. Who influences you when buying wheels for your wheelchair?

Participants from both focus groups agreed that active individuals would use the Morph Foldable Wheelchair Wheel for travel, especially in small cars.

Questions asked of focus group participants and both groups' responses are as follows:

Question 1: Who do you believe would most likely use the Morph Wheel?

- Caregivers
- Parents of a child with a disability
- Those who travel a lot



- Active persons
- Small car owners
- Athletes

Question 2: What other activities of daily living could the Morph Wheel's technology be used for?

- Bicycles
- Strollers
- Commode chair

Question 3: Where would you expect to see the Morph Wheel in use?

- Airports
- Trains
- College campuses
- Malls
- Grocery stores
- Footpaths
- Getting in and out of cars

Question 4: Where would you expect to use the Morph Wheel?

- Traveling
 - Airplanes, cars, and buses
 - Typically, use their wheelchairs because frame goes underneath
 - No need for collapsible wheel
- Small cars
- Tight spaces

Additional answers from a questionnaire that all participants filled out:

“In what situations do you see yourself using the Morph Wheel?”

- Vehicles
- Love the spare tire idea
- Sports /competition
- Would use every day as main set of wheels
- Don't see a lot of uses – spaced saved doesn't seem worth the cost
- Wouldn't use it unless it folded on the wheelchair

Question 5: Where would you expect to obtain information on the Morph Wheel?

- Internet
- Brochure
- Catalog
- Durable Medicate Equipment Provider
- Medical Supplier



- Physical Therapist

Question 6: Where would you expect to purchase the Morph Wheel?

- Medical supply stores
 - Sheridan Surgical – local company
 - Main Mobility – local company
- Wheelchair stores
- Internet

Question 7: Where would you like to see the Morph Wheel sold?

- Discount medical supply store
- Internet
- Anywhere they sell wheelchair wheels
- QVC, eBay
- *Not at a medical supply place because price will increase

Question 8: Who would purchase the Morph Wheel?

- Those traveling
 - In a little car or bus
- Active individuals in a wheelchair
- Young adults

Question 9: Who would recommend the Morph Wheel?

- Physical or occupational therapists
- Vendors
- Special education teachers
- Other users
- Durable Medical Equipment suppliers
- Suppliers

Question 10: Who would pay for the Morph Wheel?

- Families
- Individual
- Insurance companies
- Medicare / Medicaid
- Private Companies

Question 11: Who influences you when buying wheels for your wheelchair?

- Vendor
- No one – they individually decide through personal research
 - Past Experience



- Word of Mouth from another user
- Physical therapist
- Insurance company, makes final decision
- Sales person at medical supply company

Question 12: (additional question asked): How many of you would view this as a rental product for a trip?

- **Group 1:** 4 out of 9
- **Group 2:** 0 out of 8
- **Total:** 4 out of 17

Question 13: (additional question asked): What do you think of the name “Morph Wheel”?

- **Group 1:**
 - Like the name: 1
 - No opinion: 1
 - Do not like the name: 6
 - Suggested names surrounding the words: travel, collapsible, transformation, transforming
- **Group 2:**
 - Like the name: 2
 - Do not mind the name: 3
 - Do not like the name: 1
 - Suggested names surrounding the words: collapsible, transformer, squish

Recommendations /Comments from KT4TT Staff

After reviewing the comments and suggestions, the KT4TT has the following responses:

- 1) Name needs to be revisited – both consumers and professionals felt that the Morph Wheel name did not adequately represent the device. Travel Easy, Travel Lite, Fold ‘N’ Go Wheel could possibly be more appropriate names
- 2) From a PR perspective – need a video loop showing how to operate the Wheel, and most importantly the various scenarios /situations where the Wheel could be used.
 - a. Show the Wheel being folded and stored in an overhead bin on an airplane while the frame is stowed with luggage – mention that it’s a nice way to carry a spare tire /wheel with you on trips
 - b. Show the quick release wheel being removed from the wheelchair frame, folded, and stored now in the front seat of a car – no longer do you have to stretch and reach to retrieve your wheels from the back seat. Show the wheel being bagged so that it doesn’t dirty your upholstery.
 - c. Show professional men and women folding /unfolding the Wheel and attaching it to their wheelchair. Show active individuals ‘on the go’ and how they would use the Wheel
 - d. Show how people in cramped living quarters who have a power wheelchair and have a manual wheelchair for a back-up would now benefit from easy storage of their manual wheelchair in a closet, etc
 - e. Demonstrate how you now have the ability to change your own solid tire on your wheel
 - f. Showcase the Wheel with different types of solid tires – example a more aggressive tread for winter

conditions. Can be done with various still pictures.

- g. Show Wheel use in various weather conditions – rain, snow etc.
 - h. Highlight in video or in still pictures specific features of the Wheel mechanisms
 - i. Highlight that caregivers will no longer have to struggle finding room in the trunk of their small car for both the wheels and frame of the wheelchair
 - j. Show the non-marking tires do not scuff vinyl floors, etc. Picture of wheelchair on vinyl or ceramic flooring.
 - k. Show the device is perfectly round when unfolded and locked into place
 - l. Mention parts are guaranteed rust free.
 - m. Showcase the push rim – its texture, etc.
 - n. Warranty on wheel (not tire) is for how long? 10 year warranty or more would really add to consumer confidence
- 3) Provide both a training video and written instructions on the operation and use of the Wheel. Provide cleaning instructions – no abrasives etc.
 - 4) Cushioned travel bags are included with tire set purchase?
 - 5) Tire changing tool is included? Could be a nice low cost add on.
 - 6) For Trade Shows – pop-up display with sample wheel and tire to be tried out by consumer? Tire could be permanently attached to floor of weighted display so that the folding and unfolding operation could be performed by a person seated in the wheelchair and they wouldn't have to pick up the tire and wheel.
 - 7) For DME Dealers – video and a pop up display showcasing various still pictures of the Morph Wheel functions and features being used by a variety of individuals (pictures mentioned earlier – example of loading the wheel onto an overhead bin on an airplane)

Ideas for marketing the Morph Foldable Wheelchair Wheel

- Market to insurance companies as they have the final say in what is covered
- Market to prescribers as they influence purchasing decisions
- Market as emergency spare tire
- Target active individuals, specifically those traveling
 - Small car may be best option because in an airplane the wheelchair frame has to be stored away, regardless of tire size



SECTION D

APPENDICES

- D1 Demographic Profile of Participants by Group and Combined
- D2 Morph Foldable Wheelchair Wheel Demonstration Transcript
- D3 Abbreviated Transcript of the December 5, 2012 Focus Group
- D4 Abbreviated Transcript of the December 6, 2012 Focus Group
- D5 Feature Ranking Document
- D6 Purchase Intent /Pricing Questionnaire
- D7 Consumer Focus Group Process Description



APPENDIX D1

Demographic Profile of Participants by Group and Combined



Table 22. Demographic Profile of Group 1, 12/05/2012

Participant Number	Age 40-49	Age 50-59	Age 60-69	Male	Female	African American	Caucasian	Household Size	Marital Status	Education /Vocation Status	Income	Employment Status	Disability	Participant Type
1			X		X		X	2	Married	Some College	\$30,000-\$39,999	Full Time	Bilateral Amputee	Consumer
2			X		X		X	2	Married	Some College	\$60,000-\$69,999	SSI	Multiple Sclerosis	Consumer
3	X			X			X	4	Married	Bachelor's	\$80,000-\$89,999	Full Time	None	Prescriber
4		X			X		X	4	Married	High School	Over \$100,000	Full Time	None	Prescriber
5	X				X		X	5	Divorced	Some College	\$20,000-\$29,999	Part Time	None	Caregiver
6	X			X			X	1	Divorced	Bachelor's	\$30,000-\$39,999	SSI	Paraplegic	Consumer
7	X			X			X	2	Married	Some College	\$50,000-\$59,999	SSI	Spinal Cord Injury	Consumer
8			X	X			X	2	Married	Some College	Over \$100,000	Full Time	None	Prescriber
9	X				X		X	1	Single	Master's	\$10,000-\$19,999	PT/SSI	Multiple Sclerosis	Consumer
TOTAL	5	1	3	4	5	0	9	-	-	-	-	-	-	-



Table 23. Demographic Profile of Group 2, 12/06/2012

Participant Number	Age 40-49	Age 50-59	Age 60-69	Male	Female	African American	Caucasian	Household Size	Marital Status	Education /Vocation Status	Income	Employment Status	Disability	Participant Type
1	X				X		X	3	Single	Some College	\$40,000-\$49,999	Full Time	None	Insurance Adjustments
2		X			X		X	4	Married	Bachelor's	\$50,000-\$59,999	SSI	Heart Attack	Consumer
3		X		X			X	3	Single	Associate's	\$10,000-\$19,999	SSI	Multiple Sclerosis	Consumer
4			X		X		X	1	Single	Bachelor's	\$80,000-\$89,999	Full Time	Post-Polio Paraplegic	Consumer
5		X		X			X	2	Married	High School	\$70,000-\$79,999	SSI	Spinal Cord Injury	Consumer
6	X			X			X	1	Divorced	High School	\$10,000-\$19,999	Part Time	Paraplegic	Consumer
7	X			X			X	1	Divorced	Some College	\$30,000-\$39,999	Full Time	Cerebral Palsy	Consumer
8			X		X		X	1	Widowed	Master's	\$30,000-\$39,999	Full Time	Spinal Cord Injury	Consumer
TOTAL	3	3	2	4	4	0	9	-	-	-	-	-	-	-



Table 24. Demographic Profile of Group 1 and 2

ALL PARTICIPANT RECAP	Age 40-49	Age 50-59	Age 60-69	Male	Female	Income (In Thousands)	Employment Status	Participant Type (Disability, if applicable)
Age	8	4	5					
Sex				8	9			
Income (In Thousands)						\$10-19:3 \$20-29:1 \$30-39:4 \$40-49:1 \$50-59:2 \$60-69:1 \$70-79:1 \$80-89:2 \$100+:2		
Employment Status							Full Time:8 Part Time:3* SSI:6	
Participant Type (Disability, if applicable)								Caregiver: 1, Insurance Adjustments: 1, Prescriber: 3, Consumer: 12 [Heart Attack-1; Bilateral Amputee-1; Cerebral Palsy-1; Multiple Sclerosis-3; Paraplegic-3; Spinal Cord Injury-3

*Participant 9 in the first focus group is Part Time and SSI. Participant 9 counted as Part Time.



APPENDIX D2

D1 Morph Foldable Wheelchair Wheel Demonstration Transcript

This prototype demonstration transcript, authored by Kathleen Hanek, was read by her on both nights. During this time, Kathleen Hanek demonstrated the features of the product.

Prototype Introduction Script:

I am going to demonstrate the Morph Foldable Wheelchair Wheel by Maddak. The Morph Foldable Wheel is constructed from a heavy duty composite plastic. It consists of a specially designed rim and hand rim and includes a solid tire. It is only meant for use with a solid tire.

The Morph Wheel attaches to a wheelchair like any wheel with a standard quick release axles would. To remove the wheel you just push the button of the quick release axles and pull the wheel off the chair.

There are two major safety features incorporated into the design of the Morph Folding Wheel.

- As long as the axle is through the hub of the wheel the wheel cannot fold
- This metal spoke adds extra strength and stability; however, the axle cannot go through the hub of the wheel unless the metal spoke is locked into place.

The quick release axle acts as a fail-proof mechanism that ensures the wheel will not fold. As long as the axle is inserted fully through the wheel hub the wheel cannot fold. In order for the wheel to fold this quick release axle needs to be removed.

Additionally there is a metal spoke incorporated into the design. The metal spoke gives the wheel additional strength. The wheel is designed that the axles cannot go through the hub until the metal spoke is locked into place.

So obviously the wheel cannot attach to the chair if the axle is not through the hub. The axle cannot go through the hub unless the metal spoke is locked into place. Once the axle is through the hub it is impossible for the wheel to fold.

So if this wheel is attached to a chair you can be assured.

Once the axle is out of the wheel you pull back on this blue lever, while simultaneously pushing.

- It will not fold
- It is strong
- It is stable

Folding and unfolding the wheel is easy.

Face the wheel so the rim is away from you.

The most important thing to remember is that the axle needs to be pulled out before trying to fold the wheel. Notice the axle does not need to be pulled fully out of the wheel. There is no need to press the button on the quick release axles. Just pull and a mechanism is design into the hub so it will stop before it comes out. Now if



you do pull it all the way out that is not a problem. Just slide it back in. This stop is another safety feature that ensures the axle will not be dropped.

Once the axle is out of the wheel, you pull back on this blue lever, while simultaneously pushing up and out on the metal lever. This will cause the lever to swing away.

Push down on the wheel where the blue lever is and it will fold down

The axles can now be pushed back through the hub for easier storage.

To Open the wheel:

Once again make sure the axle is pulled all the way out — that is always the first key step for both opening and closing — make sure the axle is pulled out

Hold the hand rim at 10 and 2 and pull the wheel apart.

It's always good to gently tap on the ground to make sure the wheel is fully round

Swing the metal arm towards the blue lever until it is up against the lever

Pull slightly up on the metal arm and it will lock into place

Push the axle back through the hub

Another advantage of the Morph Folding Wheel is that typically without the use of special equipment it is nearly impossible to change a solid tire, but in a closed position the tire of the Morph Wheel can be changed with relative ease.

That is the Morph Folding Wheel by Maddak — are there any questions?



APPENDIX D3

D3 Abbreviated Transcript of Focus Group 1, 12/05/2012*

*(Superfluous comments removed for clarity)

Part 1. Introduction: Purpose of the Group

You all have been part of a previous focus group where we spoke about the need for a foldable wheel.

You have been asked to return to give us your feedback as it relates to our efforts in developing the device. What we want to do now is explore how well we have met the features of such a device and how well we met your expectations.

Part 2. Introduce the Paperwork

- Confidentiality
- Release of Image
- Human Subject Form
- Social Security paperwork

Part 3. Review the Procedures

- Tell participants they are being recorded on audio/video.
- Have the participants introduce themselves (first names only)

Part 4. Review the Process

- We will rank the features of the Morph Wheel that previous groups have identified as important for a foldable wheel.
- A prototype of a Morph Wheel will then be shown to you for your feedback.
- We then will want your input on how well we met the desired features you had previously ranked.
- We will finish up with a brief questionnaire to end the evening.

Part 5. Rank Order of Features

Participants are asked to rank, in order of importance, the features of the Morph Foldable Wheelchair Wheel using a one-third voting process. Participants are provided with a list of twenty-six features identified in the Alpha Focus Groups. Participants are then asked to circle their top nine most important features from the list provided.

Morph Wheel Features:

1. Wheel locks in shape when unfolded
2. When unfolded, the wheel is truly round - no square wheels
3. Wheel folds down in 1-2 steps
4. Wheel folds in half



5. Wheel is easy to fold by the wheelchair user
6. Wheel takes less than a minute to unfold
7. Tire acts as a shock absorber
8. Wheel has no cracks, grooves, or seams that things could get stuck in
9. Wheel doesn't collect dirt easily
10. None of the parts rust
11. Wheel is weather resistant
12. Long bearing life (3-5 years)
13. Tire does not leave marks on floor surfaces
14. Wheel snaps into place
15. Wheel has a color coded switch/locking mechanism
16. Wheel has a secure locking mechanism
17. Wheel has a quick release from wheelchair – one hand operation
18. Wheel is maintenance free
19. Hub material does not need greasing
20. Wheel is light weight
21. Axle has a way to prevent dropping or losing it
22. Wheel has texture on push rim – not slippery when wet
23. Tires have good gripping surface for ice and snow
24. Wheel can be tied down when wheelchair occupant and wheelchair are being transported by Para Transit (consumer is in wheelchair)
25. Wheel has no pinch points
26. Push rim is a comfortable distance away from wheel

Features Listed in order of importance	Number of Votes Group 1
1. Wheel is easy to fold by the wheelchair user	8
2. Wheel has a quick release from wheelchair – one hand operation	7
3. Wheel is light weight	9
4. When unfolded, the wheel is truly round - no square wheels	5
5. Wheel folds down in 1-2 steps	6
6. Tires have good gripping surface for ice and snow	4
7. Wheel locks in shape when unfolded	3
8. Wheel snaps into place	6
9. Wheel is weather resistant	4
10. Wheel takes less than a minute to unfold	4
11. None of the parts rust	4
12. Wheel has a secure locking mechanism	3
13. Wheel can be tied down when wheelchair occupant and wheelchair are being transported by Para Transit	2
14. Wheel has no pinch points	3
15. Push rim is a comfortable distance away from wheel	0
16. Tire acts as a shock absorber	1
17. Long bearing life (3-5 years)	2



Features Listed in order of importance	Number of Votes Group 1
19. Axle has a way to prevent dropping or losing it	2
20. Wheel has no cracks, grooves, or seams that things could get stuck in	1
21. Wheel has texture on push rim – not slippery when wet	1
22. Tire does not leave marks on floor surfaces	2
23. Wheel has a color coded switch /locking mechanism	1
24. Hub material does not need greasing	1
25. Wheel folds in half	0
26. Wheel doesn't collect dirt easily	0

Part 6. Presentation of the Prototype

During this time, Kathleen Hanek will be narrating the presentation. Discussion is not allowed, but questions can be asked for further clarification.

Morph Wheel is presented to the participants. They are shown how it:

- Goes on the wheelchair
- Removes from the wheelchair
- Folds
- Expands to full size

The wheel is passed around to all participants for them to feel and examine up close.

Participants are then asked questions about their initial reactions.

- What do you like about it?
 - Light
 - Double locking mechanism
 - Foldable wheel, able to collapse
 - Has potential, as far as giving someone options
 - Ability to store if you are traveling
 - Neat concept
 - Would work well with aggressive tires
- What are the positive aspects about it?
 - Like how it folds up
 - Doesn't weigh a lot, it is manageable
 - Easy to learn once do it a few times
 - Once you break it in it will get easier
 - Ease of transport
 - Step above the prototype before this
- What are the benefits of it?
 - Takes up less space
 - Can use a smaller vehicle to transport



- Useful if person who travels a lot
- What don't you like about it?
 - Wheel has to be off the wheelchair before it folds
 - Cumbersome, the whole mechanism is a bit of a struggle and required a lot of effort
 - Seems to be a learning curve
 - Needed to find the right pull points to get it to work
 - Difficult in the winter weather
 - Blue lever is difficult for people with dexterity issues
 - Blue plastic lever may snap easy in the cold weather
 - Not a clean fold, too much technique and “fussing around”
 - Takes a certain degree of strength to open the wheel from a folded position
- What are the negative aspects of it?
 - A lot of steps to go through
 - Does not fold as flat as I would like it to; smaller than the oval
 - Won't fold as easy in the snow /bad weather

Part 7. Functions: Exceed, Meet, or Fall Short of Expectation

Now we are going to review the functions again. This time, please raise your hand if the prototype you were just shown exceeded, met, or fell short of your expectation. If it fell short, please explain why.

1. The wheel locks in shape when unfolded.
 - How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 5
 - How many of you believe that it meets your expectations with this feature?
 - 4
 - How many of you believe it fell short of your expectations?
 - 0
2. When unfolded, the wheel is truly round – no square wheels.
 - How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 5
 - How many of you believe that it meets your expectations with this feature?
 - 4
 - How many of you believe it fell short of your expectations?
 - 0
3. The wheel folds down in 1-2 steps.
 - How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 0
 - How many of you believe that it meets your expectations with this feature?
 - 5
 - How many of you believe it fell short of your expectations?
 - 4



- Why did it fall short of what you were expecting?
 - Has to be off the wheelchair to fold
 - Took more than 2 steps to fold it; not unreasonable but takes more than 1-2

4. The wheel folds in half.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 1
- How many of you believe that it meets your expectations with this feature?
 - 7
- How many of you believe it fell short of your expectations?
 - 1
 - Why did it fall short of what you were expecting?
 - I don't think it goes in half. Goes 60%. It is ok, but not half.

5. The wheel is easy to fold by the wheelchair user.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 0
- How many of you believe that it meets your expectations with this feature?
 - 2
- How many of you believe it fell short of your expectations?
 - 7
 - Why did it fall short of what you were expecting?
 - Too hard on the initial try, needs to be simpler
 - Should require less strength
 - Too cumbersome; hard to fold it up
 - Not fond of lever to release the spoke; the action of releasing it

6. The wheel takes less than a minute to unfold.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 0
- How many of you believe that it meets your expectations with this feature?
 - 8
- How many of you believe it fell short of your expectations?
 - 1
 - Why did it fall short of what you were expecting?
 - Takes a lot of strength to unfold
 - Not as easy as expected

7. The tire acts as a shock absorber.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 0
- How many of you believe that it meets your expectations with this feature?
 - 0
- How many of you believe it fell short of your expectations?
 - 9



- Why did it fall short of what you were expecting?
 - I don't understand the shock absorbing quality of it
 - How does it act as a shock absorber?
 - Does not act as a shock absorber because it is a solid tire
 - If it was air /cushioning material filled it would be a shock absorber
 - Can't tell without using the chair
8. The wheel has no cracks, grooves, or seams that things could get stuck in.
- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 3
 - How many of you believe that it meets your expectations with this feature?
 - 4
 - How many of you believe it fell short of your expectations?
 - 2
 - Why did it fall short of what you were expecting?
 - Creases in the area that it folds, you could get your finger or clothing caught in it
 - Bent over trying to collapse the wheel a necktie could get caught
 - Square shaped hollow points, collect mud and snow
 - Will drag a lot of debris with it
9. The wheel doesn't collect dirt easily.
- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 0
 - How many of you believe that it meets your expectations with this feature?
 - 3
 - How many of you believe it fell short of your expectations?
 - 6
 - Why did it fall short of what you were expecting?
 - Too many nooks and crannies
 - Dirt and grime will build up in nooks and crannies
 - It is plastic so easy to hose it off
10. None of the parts rust.
- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 7
 - How many of you believe that it meets your expectations with this feature?
 - 2
 - How many of you believe it fell short of your expectations?
 - 0
11. The wheel is weather resistant.
- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 0
 - How many of you believe that it meets your expectations with this feature?
 - 7



- How many of you believe it fell short of your expectations?
 - 2
 - Why did it fall short of what you were expecting?
 - Can't prove whether or not because the weather is fine in this room
 - Lots of little plastic parts that may break in the cold weather

12. Long bearing life (3-5 years).

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 2
- How many of you believe that it meets your expectations with this feature?
 - 7
- How many of you believe it fell short of your expectations?
 - 0

13. The wheel does not leave marks on floor surfaces.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 1
- How many of you believe that it meets your expectations with this feature?
 - 5
- How many of you believe it fell short of your expectations?
 - 3
 - Why did it fall short of what you were expecting?
 - Not sure on carpet
 - Not sure if bright red wheels will leave a mark on the floor

14. The wheel snaps into place.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 0
- How many of you believe that it meets your expectations with this feature?
 - 7
- How many of you believe it fell short of your expectations?
 - 2
 - Why did it fall short of what you were expecting?
 - When put back on the wheelchair, did not snap. Not sure it is connected.
 - It might yank off

15. The wheel has a color coded switch /locking mechanism.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 5
- How many of you believe that it meets your expectations with this feature?
 - 3
- How many of you believe it fell short of your expectations?
 - 1
 - Why did it fall short of what you were expecting?
 - Did not show a color when it was locked versus unlocked



16. The wheel has a secure locking mechanism.

- Which locking mechanism are we referring to? Lock onto the chair or lock in place folded or open?
 - Locking in the folded position.
- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 2
- How many of you believe that it meets your expectations with this feature?
 - 7
- How many of you believe it fell short of your expectations?
 - 0
 - Why did it fall short of what you were expecting?

17. The wheel has a quick release from wheelchair – one hand operation.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 2
- How many of you believe that it meets your expectations with this feature?
 - 6
- How many of you believe it fell short of your expectations?
 - 1
 - Why did it fall short of what you were expecting?
 - Quick release wheels are inherently a problem for everyone
 - Everything has to work perfectly when using one hand

18. The wheel is maintenance free.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 0
- How many of you believe that it meets your expectations with this feature?
 - 2
- How many of you believe it fell short of your expectations?
 - 7
 - Why did it fall short of what you were expecting?
 - Will have to lube everything to keep it moving freely
 - If it collects dirt, snow, grime, will it affect movement

19. The hub material does not need greasing.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 0
- How many of you believe that it meets your expectations with this feature?
 - 9
- How many of you believe it fell short of your expectations?
 - 0

20. The wheel is light weight.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 2
- How many of you believe that it meets your expectations with this feature?



- 4
- How many of you believe it fell short of your expectations?
 - 3
 - Why did it fall short of what you were expecting?
 - It could be lighter
 - It would be nice if it was a little lighter, it would be easier to maneuver it into position

21. The axle should have a way to prevent dropping or losing it.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 1
- How many of you believe that it meets your expectations with this feature?
 - 4
- How many of you believe it fell short of your expectations?
 - 4
 - Why did it fall short of what you were expecting?
 - The axel fell on the floor during demonstration

22. The wheel has texture on push rim – not slippery when wet.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 1
- How many of you believe that it meets your expectations with this feature?
 - 8
- How many of you believe it fell short of your expectations?
 - 0

23. The wheels have good gripping surface for traveling in ice and snow.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 1
- How many of you believe that it meets your expectations with this feature?
 - 4
- How many of you believe it fell short of your expectations?
 - 4
 - Why did it fall short of what you were expecting?
 - No evidence
 - The wheel does not appear to have very good traction (the tire currently on the rim)
 - Possibly could with a different tire

24. The wheel can be tied down for when wheelchair occupant and wheelchair are being transported by Para Transit (consumer is in wheelchair).

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 1
- How many of you believe that it meets your expectations with this feature?
 - 7
- How many of you believe it fell short of your expectations?
 - 1



- Why did it fall short of what you were expecting?
 - Secure a wheelchair by the frame not the wheels
 - They hook wheels and frame on Para Transit

25. The wheel has no pinch points.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 0
- How many of you believe that it meets your expectations with this feature?
 - 9
- How many of you believe it fell short of your expectations?
 - 0

26. The push rim is a comfortable distance away from wheel.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 0
- How many of you believe that it meets your expectations with this feature?
 - 9
- How many of you believe it fell short of your expectations?
 - 0

Overall, does the Morph Wheel prototype,

- Exceed your expectations?
 - 0
- Meet your expectations?
 - 7
- Fall short of your expectations, and why?
 - 2
 - Why did it fall short of what you were expecting?
 - To make a fair assessment of the product, I would have to have someone who uses the chair compares us for it. I would need to have someone actually use it and validate it.
 - Colors on the tire might mark

Part 8. Marketing Information

After reviewing this prototype,

- Who do you believe would most likely use the Morph Wheel?
 - People who travel a lot
 - The caregiver / someone who was dependent on caregiver (have to put wheelchair in the car)
 - Active person
 - Someone who has a small car
 - One who drives themselves around
- What other activities of daily living could the Morph Wheel's technology be used for?
 - Bicycle
 - Strollers



- Where would you expect to see the Morph Wheel in use?
 - Airplanes / airports
 - On a wheelchair
 - College campuses
 - Grocery Stores
 - Malls / shopping centers
 - Footpaths
- Where would you expect to use the Morph Wheel?
 - Traveling (flying / driving / bus / train)
 - Any tight space
 - When flying, can't use your own wheelchair, have to store that as luggage, and you have to use the airport's wheelchair
 - Bus
- Where would you expect to obtain information on the Morph Wheel?
 - Internet
 - Brochures / catalogues
 - Where wheelchairs are sold
- Where would you expect to purchase the Morph Wheel?
 - Sheridan Surgical – local company
 - Internet
 - Dove Medical – local company
 - Discounted wheelchair supplier
- Where would you like to see the Morph Wheel sold?
 - Sheridan Surgical – local company
 - Pharmacies
 - Wherever, stores
 - Bicycle Store
 - Internet
 - QVC
 - Main Mobility – local company
- Who would purchase the Morph Wheel?
 - Someone who wants to travel somewhere they can't walk
- Who would recommend the Morph Wheel?
 - Therapist – physical therapist, occupational therapist
 - Wheelchair vendor
- Who would pay for the Morph Wheel?
 - Insurance company
 - Private purchaser
 - Individual



- Family
- Who influences you when buying wheels for your wheelchair?
 - No one, I decide
 - Past experience
 - Word of mouth-another user
- Would you see this as a rental product for when you go on a trip?
 - 4 out of 5 consumers said yes
- What is your opinion of the name Morph Wheel?
 - I like it
 - I don't think it suggests it is a folding wheel
 - Not crazy about it
 - No opinion
 - I don't like it
 - I don't like it
 - I don't like it-Folding wheel /foldable wheel
 - I don't like it
 - I don't like it-Collapsible wheel

Part 9. Pricing and Purchasing Intent Questionnaire

Now, we ask you to fill out the pricing and purchase intent questionnaire without discussion.

(This information can be found in Section C of the report)

Part 10. Closing

If you had any last words to say to the manufacturer, what would they be?

- Change the name
- Inform the market about why they want someone to buy this. Is there a reason to buy it? I think an active individual, avid traveler, college campus, etc.
- This product falls in line with high end chairs, people with expendable income to spend on it
- Limited Market
- Need to reevaluate the release /locking spoke /connection
- How quick of a release is it?
- I want it to be usable with one hand and this isn't like that
- No purpose for it
- Complicated

Thank you for participating and here is your payment.



APPENDIX D4

D4 Abbreviated Transcript of Focus Group 2, 12/06/2012*

*(Superfluous comments removed for clarity)

Part 1. Introduction: Purpose of the Group

You all have been part of a previous focus group where we spoke about the need for a Foldable Wheel.

You have been asked to return to give us your feedback as it relates to our efforts in developing the device. What we want to do now is explore how well we have met the features of such a device and how well we met your expectations.

Part 2. Introduce the Paperwork

- Confidentiality
- Release of Image
- Human Subject Form
- Social Security paperwork

Part 3. Review the Procedures

- Tell participants they are being recorded on audio/video.
- Have the participants introduce themselves (first names only)

Part 4. Review the Process

- We will rank the features of the Morph Wheel that previous groups have identified as important for a foldable wheel.
- A prototype of a Morph Wheel will then be shown to you for your feedback.
- We then will want your input on how well we met the desired features you had previously ranked.
- We will finish up with a brief questionnaire to end the evening.

Part 5. Rank Order of Features

Participants are asked to rank, in order of importance, the features of the Morph Foldable Wheelchair Wheel using a one-third voting process. Participants are provided with a list of twenty-six features identified in the Alpha Focus Groups. Participants are then asked to circle their top nine most important features from the list provided.

Morph Wheel Features:

1. Wheel locks in shape when unfolded
2. When unfolded, the wheel is truly round - no square wheels
3. Wheel folds down in 1-2 steps
4. Wheel folds in half
5. Wheel is easy to fold by the wheelchair user



6. Wheel takes less than a minute to unfold
7. Tire acts as a shock absorber
8. Wheel has no cracks, grooves, or seams that things could get stuck in
9. Wheel doesn't collect dirt easily
10. None of the parts rust
11. Wheel is weather resistant
12. Long bearing life (3-5 years)
13. Tire does not leave marks on floor surfaces
14. Wheel snaps into place
15. Wheel has a color coded switch /locking mechanism
16. Wheel has a secure locking mechanism
17. Wheel has a quick release from wheelchair – one hand operation
18. Wheel is maintenance free
19. Hub material does not need greasing
20. Wheel is light weight
21. Axle has a way to prevent dropping or losing it
22. Wheel has texture on push rim – not slippery when wet
23. Tires have good gripping surface for ice and snow
24. Wheel can be tied down when wheelchair occupant and wheelchair are being transported by Para Transit (consumer is in wheelchair)
25. Wheel has no pinch points
26. Push rim is a comfortable distance away from wheel

Features Listed in order of importance	Number of Votes Group 2
1. Wheel is easy to fold by the wheelchair user	8
2. Wheel has a quick release from wheelchair – one hand operation	6
3. Wheel is light weight	3
4. When unfolded, the wheel is truly round - no square wheels	4
5. Wheel folds down in 1-2 steps	3
6. Tires have good gripping surface for ice and snow	5
7. Wheel locks in shape when unfolded	5
8. Wheel snaps into place	2
9. Wheel is weather resistant	3
10. Wheel takes less than a minute to unfold	2
11. None of the parts rust	2
12. Wheel has a secure locking mechanism	3
13. Wheel can be tied down when wheelchair occupant and wheelchair are being transported by Para Transit	3
14. Wheel has no pinch points	2
15. Push rim is a comfortable distance away from wheel	5
16. Tire acts as a shock absorber	3
17. Long bearing life (3-5 years)	2
18. Wheel is maintenance free	2



Features Listed in order of importance	Number of Votes Group 2
21. Wheel has texture on push rim – not slippery when wet	2
22. Tire does not leave marks on floor surfaces	0
23. Wheel has a color coded switch /locking mechanism	1
24. Hub material does not need greasing	1
25. Wheel folds in half	0
26. Wheel doesn't collect dirt easily	0

Part 6. Presentation of the Prototype

During this time, Kathleen Hanek will be narrating the presentation. Discussion is not allowed, but questions can be asked for further clarification.

Morph Wheel is presented to the participants. They are shown how it:

- Goes on the wheelchair
- Removes from the wheelchair
- Folds
- Expands to full size

The wheel is passed around to all participants for them to feel and examine up close.

Participants are then asked questions about their initial reactions.

- What do you like about it?
 - How solid it feels when it is unfolded
 - How solid it feels when it is all the way open
 - Light
 - Light
 - Lightweight, easy to handle
 - Lightweight, easy to lift
 - Surprisingly light
 - I can lift it, and if I can lift it, it is light
 - Can't drop the axle, thought about feedback we gave last time
 - Easy to change the tire by yourself
 - Looks nice
 - Red tires
 - Push rim seems the same as every wheelchair
 - Push rim is plastic, which may cause it to be less cold
 - Not too steep of a learning curve
- What are the benefits of it?
 - Saves space, can fit in the backseat of the car
 - Easy for the airplane
 - No grease, don't get hands dirty when take it off the chair



- Axel seems to be locked
- Not too steep of a learning curve, can learn quickly to fold and unfold
- The hub looks sealed, but it could still need greasing
- What don't you like about it?
 - Red tires
 - Afraid of the price
 - Where would you use it? When would it be useful? How much space would you save?
 - When it folds, it's still large, it just folds
 - Reluctant to take it off and store it somewhere
 - Folding and unfolding process has a little learning curve
 - Difficult to do outside or with gloves on
 - Would get dirty outside, would need a really good reason to take wheel on and off
 - If one has any problems with their hands or fine motor skills
 - Dexterity required
 - Requires two hands to collapse
 - Doesn't look maintenance free

Part 7. Functions: Exceed, Meet, or Fall Short of Expectation

Now we are going to review the functions again. This time, please raise your hand if the prototype you were just shown exceeded, met, or fell short of your expectation. If it fell short, please explain why.

1. The wheel locks in shape when unfolded.
 - How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 6
 - How many of you believe that it meets your expectations with this feature?
 - 2
 - How many of you believe it fell short of your expectations?
 - 0
2. When unfolded, the wheel is truly round – no square wheels.
 - How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 1
 - How many of you believe that it meets your expectations with this feature?
 - 7
 - How many of you believe it fell short of your expectations?
 - 0
3. The wheel folds down in 1-2 steps.
 - How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 0
 - How many of you believe that it meets your expectations with this feature?
 - 5
 - How many of you believe it fell short of your expectations?
 - 3



- Why did it fall short of what you were expecting?
 - Required more than two steps, could be problematic if had to do it in a hurry, or out in the cold
 - Fiddling with silver plate getting it into the blue thing will be a problem

4. The wheel folds in half.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 0
- How many of you believe that it meets your expectations with this feature?
 - 8
- How many of you believe it fell short of your expectations?
 - 0

5. The wheel is easy to fold by the wheelchair user.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 0
- How many of you believe that it meets your expectations with this feature?
 - 7
- How many of you believe it fell short of your expectations?
 - 1
- Why did it fall short of what you were expecting?
 - Have to use both hands, which makes it difficult

6. The wheel takes less than a minute to unfold.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 0
- How many of you believe that it meets your expectations with this feature?
 - 7
- How many of you believe it fell short of your expectations?
 - 1
- Why did it fall short of what you were expecting?
 - It would take me longer than a minute. Perhaps with practice it could take less than a minute. I could see myself fumbling with it, the latch getting stuck, etc.

7. The tire acts as a shock absorber.

- The group said – “Not allowed to try it so we are unable to state whether or not it would act as a shock absorber.” They all abstained from answering
- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 0
- How many of you believe that it meets your expectations with this feature?
 - 0
- How many of you believe it fell short of your expectations?
 - 0
- Why did it fall short of what you were expecting?

8. The wheel has no cracks, grooves, or seams that things could get stuck in.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?



- 0
- How many of you believe that it meets your expectations with this feature?
 - 7
- How many of you believe it fell short of your expectations?
 - 1
 - Why did it fall short of what you were expecting?
 - The oblong shape has some spots where the rims bounce back, there is definitely a seam that could wear if it is folded and unfolded multiple times. Snow could get stuck in it.

9. The wheel doesn't collect dirt easily.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 0
- How many of you believe that it meets your expectations with this feature?
 - 4
- How many of you believe it fell short of your expectations?
 - 4
 - Why did it fall short of what you were expecting?
 - All wheels get dirty
 - How does it not get dirty?
 - In folded position, there are spaces that will collect dirt. I can see even in the open position, I can see dirt collecting under the plate.

10. None of the parts rust.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - Participant asked: "What are the parts made out of?"
 - Composite plastic, epoxy coded aluminum, and a bearing.
 - 1
- How many of you believe that it meets your expectations with this feature?
 - 7
- How many of you believe it fell short of your expectations?
 - 0

11. The wheel is weather resistant.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 0
- How many of you believe that it meets your expectations with this feature?
 - 8
- How many of you believe it fell short of your expectations?
 - 0

12. Long bearing life (3-5 years).

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 0
- How many of you believe that it meets your expectations with this feature?
 - 8
- How many of you believe it fell short of your expectations?



○ 0

13. The wheel does not leave marks on floor surfaces.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - N/A
- How many of you believe that it meets your expectations with this feature?
 - N/A
- How many of you believe it fell short of your expectations?
 - N/A
 - Why did it fall short of what you were expecting?
 - We did not demonstrate it adequately enough for the participants to observe.

14. The wheel snaps into place.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 1
- How many of you believe that it meets your expectations with this feature?
 - 7
- How many of you believe it fell short of your expectations?
 - 0

15. The wheel has a color coded switch /locking mechanism.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 0
- How many of you believe that it meets your expectations with this feature?
 - 8
- How many of you believe it fell short of your expectations?
 - 0

16. The wheel has a secure locking mechanism.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 2
- How many of you believe that it meets your expectations with this feature?
 - 6
- How many of you believe it fell short of your expectations?
 - 0

17. The wheel has a quick release from wheelchair – one hand operation.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 0
- How many of you believe that it meets your expectations with this feature?
 - 8
- How many of you believe it fell short of your expectations?
 - 0

18. The wheel is maintenance free.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?



- 0
- How many of you believe that it meets your expectations with this feature?
 - How do we know?
 - It doesn't look maintenance free.
 - 4
- How many of you believe it fell short of your expectations?
 - 4
 - Why did it fall short of what you were expecting?
 - The joints where the wheel folds are going to need maintenance
 - Composite plastic needs to stay lubricated and guard against cracks, especially at the edge where it joins
 - Depends how often you fold and unfold, there will be wear and tear, won't know until we test it
 - Comparing it to what you would expect from a regular chair wheel

19. The hub material does not need greasing.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 0
 - The hub looks sealed, but it could still need greasing
- How many of you believe that it meets your expectations with this feature?
 - 8
- How many of you believe it fell short of your expectations?
 - 0

20. The wheel is light weight.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 8
 - Surprisingly light
 - I can lift it, and if I can lift it, it is light.
- How many of you believe that it meets your expectations with this feature?
 - 0
- How many of you believe it fell short of your expectations?
 - 0

21. The axle should have a way to prevent dropping or losing it.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 8
 - Appears to be true
 - Doesn't fall out, it is locked in
- How many of you believe that it meets your expectations with this feature?
 - 0
- How many of you believe it fell short of your expectations?
 - 0

22. The wheel has texture on push rim – not slippery when wet.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 2
 - Seems the same as every wheelchair.



- It is plastic, which may cause it to be less cold.
- How many of you believe that it meets your expectations with this feature?
 - 6
- How many of you believe it fell short of your expectations?
 - 0

23. The wheels have good gripping surface for traveling in ice and snow.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - How would we know?
 - 0
- How many of you believe that it meets your expectations with this feature?
 - 5
- How many of you believe it fell short of your expectations?
 - 3
 - Why did it fall short of what you were expecting?
 - Tire looks smooth
 - Tire doesn't look like it has any tread, which means no gripping surface
 - Seems thinner than most tires; I think thicker would be better grip
 - Unless it is made of something that is different than a normal tire

24. The wheel can be tied down for when wheelchair occupant and wheelchair are being transported by Para Transit (consumer is in wheelchair).

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 0
- How many of you believe that it meets your expectations with this feature?
 - 7
- How many of you believe it fell short of your expectations?
 - 1
 - Why did it fall short of what you were expecting?
 - I wouldn't tie down the wheel or use it as a tie down because I think it would damage the wheel
 - Most systems use the frame as a tie down

25. The wheel has no pinch points.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?
 - 0
- How many of you believe that it meets your expectations with this feature?
 - 7
- How many of you believe it fell short of your expectations?
 - 1
 - Why did it fall short of what you were expecting?
 - I had to be told where to grip it to fold and unfold it. I had to be told specifically where to pull on it. If I grab it at the wrong point, it will pinch by finger.

26. The push rim is a comfortable distance away from wheel.

- How many of you believe that this Morph Wheel exceeded your expectations with this feature?



- 4
- How many of you believe that it meets your expectations with this feature?
 - 3
- How many of you believe it fell short of your expectations?
 - 1
 - Why did it fall short of what you were expecting?
 - Looks a little far away for me

Overall, does the Morph Wheel prototype

- Exceed your expectations?
 - 1
- Meet your expectations?
 - 7
- Or fall short of your expectations, and why?
 - 0

Part 8. Marketing Information

After reviewing this prototype,

- Who do you believe would most likely use the Morph Wheel?
 - The only person I see using it, is someone traveling who needed to store it.
 - I would use it, I still drive a small car and that would be useful to fold it.
 - Easier to carry if you are an athlete
 - Parent of a kid with a disability, easy to transport
- What other activities of daily living could the Morph Wheel's technology be used for?
 - Places that require a commode chair that could be stored in a small space
 - Bicycles; could easily take a tire off so bike wouldn't get stolen
- Where would you expect to see the Morph Wheel in use?
 - Getting in and out of cars, easier access
 - Someone who travels a lot (trains /planes)
- Where would you expect to use the Morph Wheel?
 - All the time, everywhere
 - Friends with a small car that it needs to fit in
 - You are going to use it whether or not you need it if you buy it. I could see it more like a standard feature.
- Where would you expect to obtain information on the Morph Wheel?
 - Internet
 - DME Provider
 - Medical Supplier
 - Physical Therapist
- Where would you expect to purchase the Morph Wheel?
 - Medical supply store
 - Wheelchair store



- Internet
- Where would you like to see the Morph Wheel sold?
 - eBay (just kidding)
 - Not at a medical supply place, price will increase
 - Internet
- Who would purchase the Morph Wheel?
 - Wheelchair user
 - Active wheelchair user
 - Would want it to be purchased as a wheelchair package; Medicaid / Medicare would purchase it for users (unlikely-looks for what you can use in your home not outside)
- Who would recommend the Morph Wheel?
 - PT
 - OT
 - Other users
 - Suppliers
 - DME Suppliers
- Who would pay for the Morph Wheel?
 - Individual
 - Medicaid / Medicare
 - Insurance
 - Private insurance (if part of wheelchair package)
- Who influences you when buying wheels for your wheelchair?
 - PT gives options and tells you what's there
 - The insurance company makes final decision
 - Options limited by PT and Insurance state are needs, but user can decide
- Who influences you when you pick wheels?
 - Personal research
 - Sales person at medical supply company
- Would you see this as a rental product for when you go on a trip?
 - No
 - Not really, unlikely
- What is your opinion of the name "Morph Wheel"?
 - It doesn't morph into anything. Call it a squish wheel
 - Should be foldable wheel or collapsible wheel
 - Transformer wheel? What is my wheelchair transforming into?
 - It morphs from a circle to oblong, I like it
 - I can live with it
 - Sort of like it
 - It's ok with me



- Doesn't sound good, collapsible wheel is better
- It doesn't describe it well, but I don't mind it

Part 9. Pricing and Purchasing Intent Questionnaire

Now, we ask you to fill out the pricing and purchase intent questionnaire without discussion.

(This information can be found in Section C of the report)

Part 10. Closing

If you had any last words to say to the manufacturer, what would they be?

- Improve the collapsing areas so you can cover it up. When it collapses, there are spaces that are open in the rim. Keep them from catching fingers or other things in them.
- I love the idea of a spare tire, great marketing tool. That is when space would be important.
- I would have liked to see it work on uneven surfaces.
- I am trying to figure out when I would want it; I don't think I have a reason to want/need it. The spare idea is a good idea.
- Better indicators of where to fold it, where you need to press to fold it. Don't add too much more color though.
- I can't think of a place I would need to use it.
- I would definitely use it but there is an issue of affordability.
- I see this as an independent product as an option to come with a chair. If they gave us the wheels with the chair, we would find a use for it.

Thank you for participating and here is your payment.



APPENDIX D5

Feature Ranking Document

Morph Wheel Features Ranking

Participant Name: _____ Date: _____

Device Name: Morph Wheel

Directions:

Of the 26 features listed on the reverse side of the paper, please circle 9 features that are most important to you.

Your answers will be kept completely confidential.

PLEASE SEE REVERSE SIDE FOR LISTING OF FEATURES



Of the 26 features listed below, *please circle 9 features* that are most important to you.

Morph Wheel Features:

1. Wheel locks in shape when unfolded
2. When unfolded, the wheel is truly round - no square wheels
3. Wheel folds down in 1-2 steps
4. Wheel folds in half
5. Wheel is easy to fold by the wheelchair user
6. Wheel takes less than a minute to unfold
7. Tire acts as a shock absorber
8. Wheel has no cracks, grooves, or seams that things could get stuck in
9. Wheel doesn't collect dirt easily
10. None of the parts rust
11. Wheel is weather resistant
12. Long bearing life (3-5 years)
13. Tire does not leave marks on floor surfaces
14. Wheel snaps into place
15. Wheel has a color coded switch /locking mechanism
16. Wheel has a secure locking mechanism
17. Wheel has a quick release from wheelchair – one hand operation
18. Wheel is maintenance free
19. Hub material does not need greasing
20. Wheel is light weight
21. Axle has a way to prevent dropping or losing it
22. Wheel has texture on push rim – not slippery when wet
23. Tires have good gripping surface for ice and snow
24. Wheel can be tied down when wheelchair occupant and wheelchair are being transported by Para Transit (consumer is in wheelchair)
25. Wheel has no pinch points
26. Push rim is a comfortable distance away from wheel



APPENDIX D6

Purchase Intent/Pricing Questionnaire

Participant Name: _____ Date: _____

Device Name: Morph Wheel

Directions: Please answer the following questions based on the discussion of the Morph Wheel presented in this session.

- 1) If the *Morph Wheel*, evaluated by the group, was available as a set (includes: 2 wheels, 2 tires & 2 push rims) for purchase, what do you think the price of this set should be? \$_____
- 2) If the *Morph Wheel* was available as a set (includes: 2 wheels, 2 tires & 2 push rims) at the price you stated in question #1, how likely is it that you would purchase this set or recommend its purchase?
Please circle only ONE answer.
 - a. Definitely Would
 - b. Probably Would
 - c. Probably Would Not
 - d. Definitely Would Not
- 3) If the *Morph Wheel* was available as a set (includes: 2 wheels, 2 tires & 2 push rims) for a purchase price of \$950.00 how likely is it you would purchase this set?
Please circle only ONE answer.
 - a. Definitely Would
 - b. Probably Would
 - c. Probably Would Not
 - d. Definitely Would Not



4) Is the *Morph Wheel* set (includes: 2 wheels, 2 tires & 2 push rims) something you would like to receive as a gift from a friend or relative?

Please circle only ONE answer.

a. YES

b. NO

5) Would you like the option to purchase only one *Morph Wheel* (includes: 1 wheel, 1 tire & 1 push rim) as an emergency spare tire?

Please circle only ONE answer.

a. YES

b. NO

6) In what situations do you see yourself using the *Morph Wheel*?

7) Please describe any other functions or features (that have not been previously mentioned during this focus group session) that you would like to be changed and /or improved on the *Morph Wheel* set (includes: 2 wheels, 2 tires & 2 push rims):



APPENDIX D7

Consumer Focus Group Process Description

Step 1: Consumer Recruitment

KT4TT places a strong emphasis on consumer input. Recruitment is done primarily through mass media advertising (television and newspaper ads). As part of our sample, we include the correct percentage of older adults and people with disabilities in these groups. Recruitment of these consumers is accomplished by utilizing the Western New York Independent Living Project's database of consumers, prescribers, and caregivers which allows us to recruit the device appropriate participants with disabilities.

Focus Group participants for the Maddak Inc. focus groups received remuneration in the amount of \$75 for consumers and \$125 for professionals for their time. Participants also received light refreshments (sandwiches, soda, snacks, etc) at the sessions.

Step 2: Alpha Focus Groups

Focus groups are used in research to generate hypotheses, gather information, or to compliment more quantitative analyses. Alpha focus groups are the first groups conducted for a particular product or topic, while Beta focus groups are conducted later in the process. Alpha focus groups involve consumers in defining product requirements and setting priorities for product design. Three or four Alpha focus groups, each consisting of twelve to fifteen participants, are necessary to identify product requirements. These groups use mixed rather than uniform samples, so that all participants are exposed to various relevant perspectives. The parameters of using at least forty participants, using mixed samples, running two focus groups, meets minimum industry standards for validity and reliability. The T²RERC follows these parameters as being optimally efficient and effective.

From our Alpha or Concept Definition Focus Groups, we provide the manufacturer with primary market research. Participants in these groups are asked to participate in an open forum discussion led by an experienced focus group moderator. The three primary topic areas include (1) the current status of the technology area being discussed from the participants' perspective. In other words, how do consumers currently address the need being discussed, (2) the description of what their ideal product to perform that function would be, and (3) an evaluation of product concept designs. To determine the current status and consumer satisfaction levels with their product function techniques and devices, the participants are asked to provide background information on a variety of topics involving the product. On the topic of ideal product, participants in the focus groups are asked to provide the attributes of what they perceived to be the ideal device to perform the function.

The focus group participants undertake an evaluation of product concept models prepared in advance for the groups. A brief description of each model is read to each group. Each model is presented separately and discussed. Lastly, purchase intent and price point questions will be asked of the participants for both the Conceptualized Ideal Product and for the concept models shown. Upon completion of the groups, we analyze the information gathered from the groups and formulate a report for the manufacturer. The report will include all the information that was collected in the focus groups, but it will center on a listing of specific design and functional features identified by our consumer focus group participants. The manufacturer, to the best of their ability, incorporates these features into their Beta prototype, which they provide to us for further refinement.

Step 3: Beta Focus Group

Beta focus groups primarily allow the refinement of a product's appearance through a critique of key design features of a prototype. They also provide an opportunity to rank a product's function and design features previ-



ously identified in concept definition focus groups. Beta focus group participants are a representative sample of the Alpha focus group participants. Two Beta groups of twelve participants each are usually sufficient.

Beta groups provide the ability to obtain quantitative data on the previously collected qualitative information and allows that data to be applied to the prototype being evaluated. Basically they answer the question as to whether or not a prototype addresses the top function and design features a product must have to be deemed desirable by the consumer. Beta groups provide us with the ability to score how well a prototype meets consumer expectations and gauge consumer interest in the product along with their desire or intent to purchase the product. Our Beta group participants rank, in order of importance, the previously identified function and design features of the product concept, an evaluation of how the viewed prototype met those required function and design features, a ranking of consumer preference on any additional product models shown, a ranking of consumer preference on specific design features, and provide comments regarding their usage of the beta prototype. The Beta group activity is captured, analyzed, and relayed to the manufacturing Maddak Inc. in a concise and timely report. In effect our Beta focus groups choose the final overall design and functionality of the device.

