Self-Powered Lifting Wheelchair

2.009 Green A

Mock Up Review

19 October 2006

Survey Results

- **Disability Types of Users Interviewed**
  - Paraplegia
  - Quadriplegia
  - Multiple Sclerosis (MS)

- **Top Concerns**
  - Weight
  - Safety
  - Communication
  - Reach

Customer Needs

- **Manual Lift**
  - Improves communication
  - Improves reach
- **Safety**
  -
- **Accessibility**
  - ADA Regulations
- **Portability**
- **Stability**

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Technical Aspects

- **Design Considerations**
  - Ergonomics
  - Regulations
  - Usability
  - Stability
- **Critical Mechanisms**
  - Lifting
  - Pivoting

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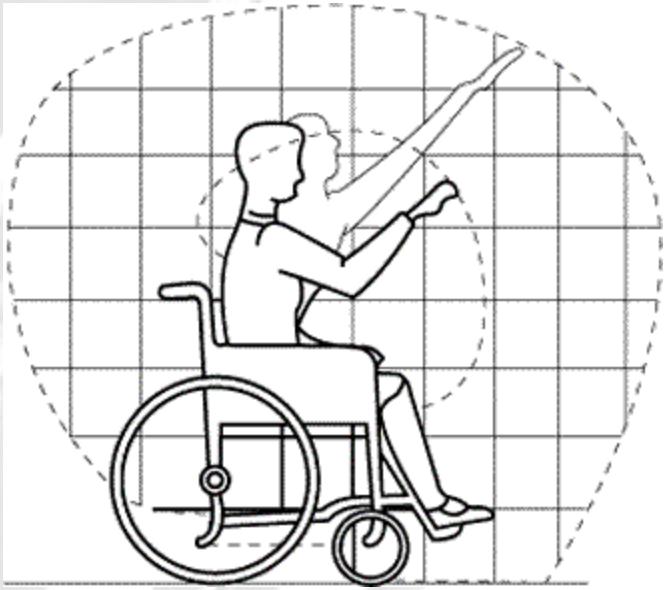
Ergonomics

Design Considerations

- **Comfort**
- **Push Force**
- **Reach**
  - Little to no compromise



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Regulations

Design Considerations

- **ADA regulations**
  - Accessibility
- **FDA regulations**
  - Class II device
  - Straight to market

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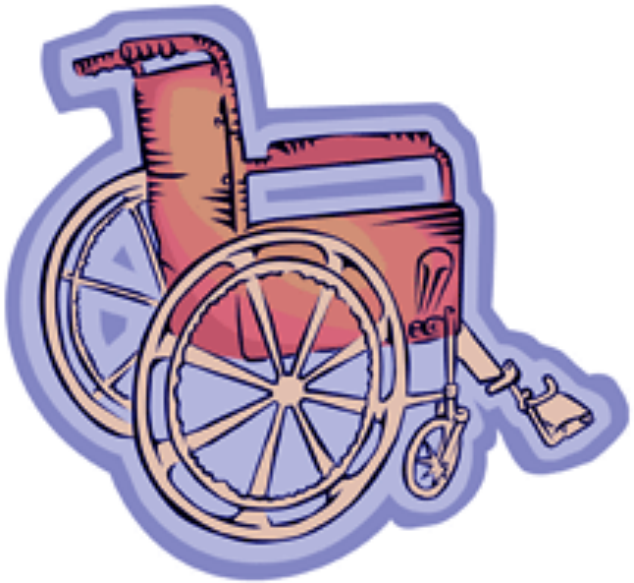
Usability

Design Considerations

- **Easy to Lift**
  - Low force
    Few repetitions
- **Portability**
  - Weight
- **Mobility**
  - Maintain standards



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Stability

Design Considerations

- **Center of Mass (CM)**
  - Controlled in raised and lowered positions
- **Stable on inclines**
  - Up to 35 degrees

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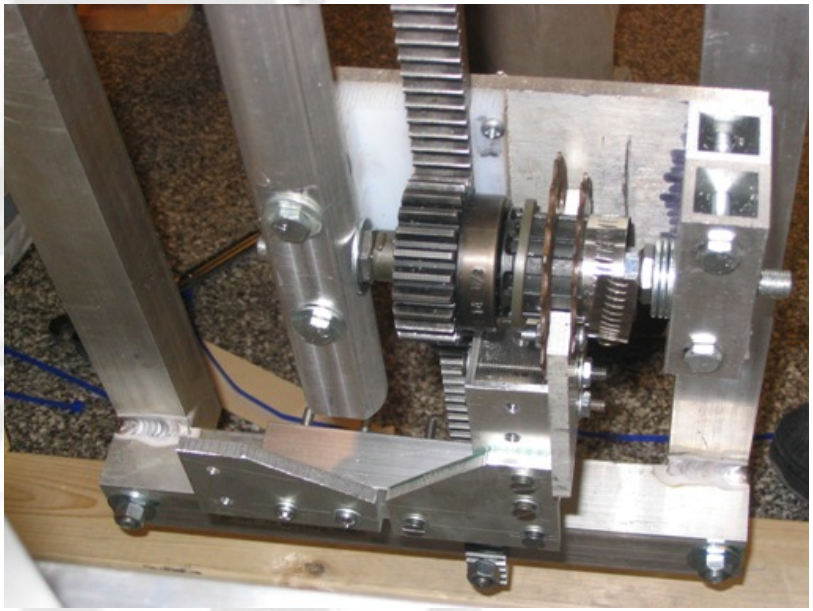
Lifting

Critical Mechanisms

- **Lifting Mechanisms**
  - Rack & Pinion
  - Air Pistons
  - Locking Collar
- **Raised Height**
  - Aids in Communication
  - Extends Independent Living



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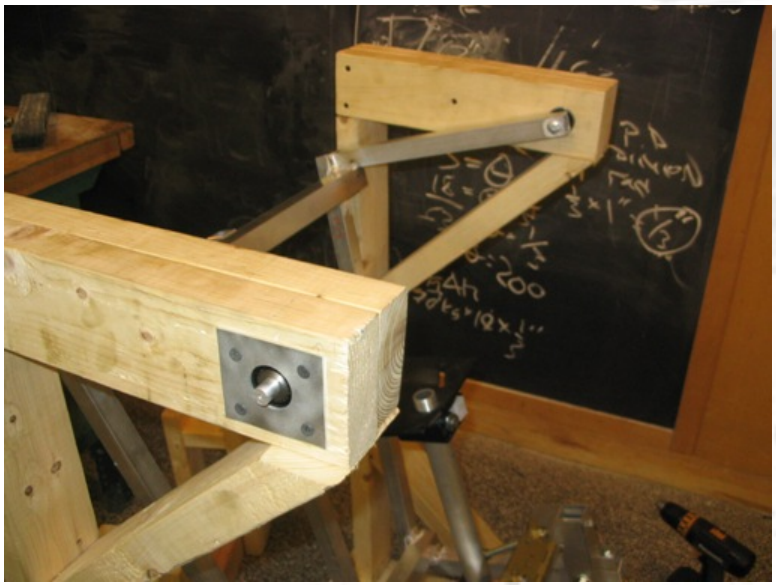
Pivoting

Critical Mechanisms



- **Pivoting Mechanism**
  - Pivot
  - Bearings
- **Stability**
  - Moving CM
  - Meets current regulations
- **Range of Motion**
  - No Compromise

Affordability

- **Market comparison**
  - iBot: $25000+
  - Powered standing chairs: $8600+

- **Customer Data**
  - User comfort range of $1500-$7000
  - Target price: $2000
  - Possible insurance coverage

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