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A Sustainable Mobility Solution for Persons Living with Disability in Burkina Faso

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MESSIAH UNIVERSITY | DEPARTMENT OF ENGINEERING

Joey Sinsel and Timothy Glavin

the Collaboratory for strategic partnerships and applied research

Our Mission

The Sustainable Mobility Project empowers people living with disabilities in Burkina Faso to participate more fully in family and community life. Disabilities can prevent people from independently choosing where they want to go and when, thereby limiting their opportunities to pursue an education, a job, or a family. Our team seeks to show more people Christ's love by enabling independent mobility and by reducing the stigma surrounding disability. We hope that our work will enable more people to establish their identities in Christ, not their disability.

What if . . .

- You lacked upper body mobility?
- You lived where outside help is scarce?
- There were no sidewalks or roads?

Design

Process

- Iterative design and field trials in partnership with SIM in Burkina Faso.
- Intergenerational team of students, educators, and volunteer professionals.

Approach

A design that local fabricators can be trained and equipped to build on demand.

- We use locally sourced materials when possible.
  - Steel Tube
  - Angle Iron
  - Sheet Metal
  - Lumber
- We repurpose low-cost, massed-produced parts.
  - Moped sprockets and chain
  - Electric scooter motors
  - Bicycle wheels, tires, and handlebar components
  - Batteries

Solution

An electric off-road tricycle for persons who, because of their disability or location, are unable to operate a hand powered wheelchair or tricycle.

Performance

- Range: 15 km (9 miles)
- Top Speed: 19 kph (12 mph)
- Max Load: 110 kg (250 lbs.)
- Cost: $700 (materials)

We Provide

- Tools, Fixtures and Jigs to setup a trike fabrication center.
- A parts kit of items not available in local markets.
- Image-driven assembly instructions with support videos.

New Project—Modular Mobility

- Meet the needs of more people in more places by making the trike easily adjustable for different environments.
- Redesign the fixtures and jigs to enable them to be build by trike fabricators in the field.

Scan this QR Code to contact us, sign up to receive updates, and/or download information!

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