

2020

## Designing a Locally Manufacturable Wheelchair for Nepal

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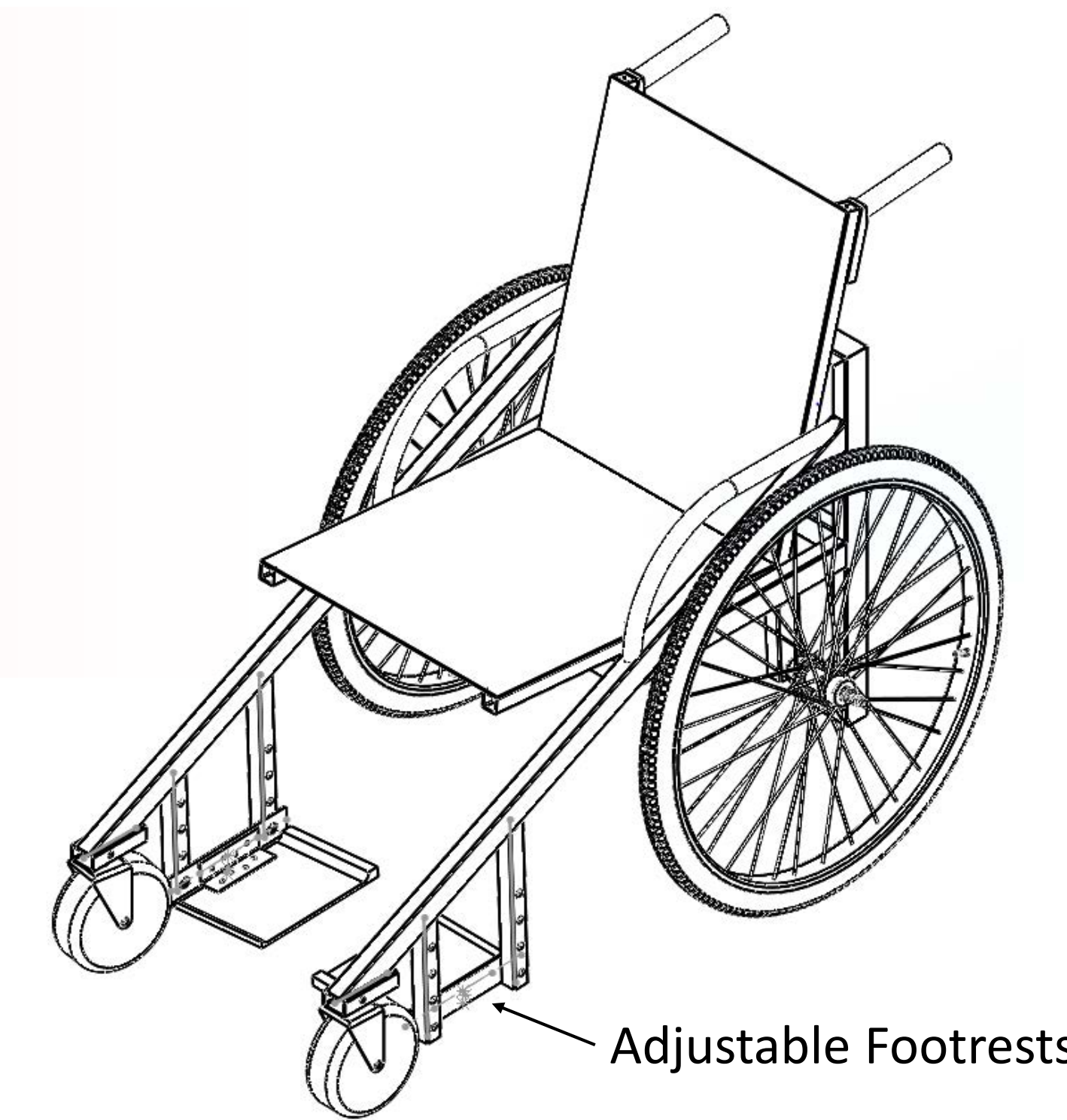
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# DESIGNING A LOCALLY MANUFACTURABLE WHEELCHAIR FOR NEPAL

2020 COLLABORATORY/ENGINEERING SYMPOSIUM  
CADE BENDER, DYLAN DERSTINE, & PETER HOPKINS



## CLIENT

International Nepal Fellowship (INF) aims to bring sustainable improvements in health and quality of life of people and communities. INF currently has 11 locations throughout Nepal. One of the ways that INF provides support is through supplying wheelchairs to persons with disabilities.



## DESIGN SPECIFICATIONS

- Wheelchair must be manufacturable in Nepal
- Wheelchair must be adjustable to fit specific patients
- Wheelchair must enable users to engage in their community and get around their residence

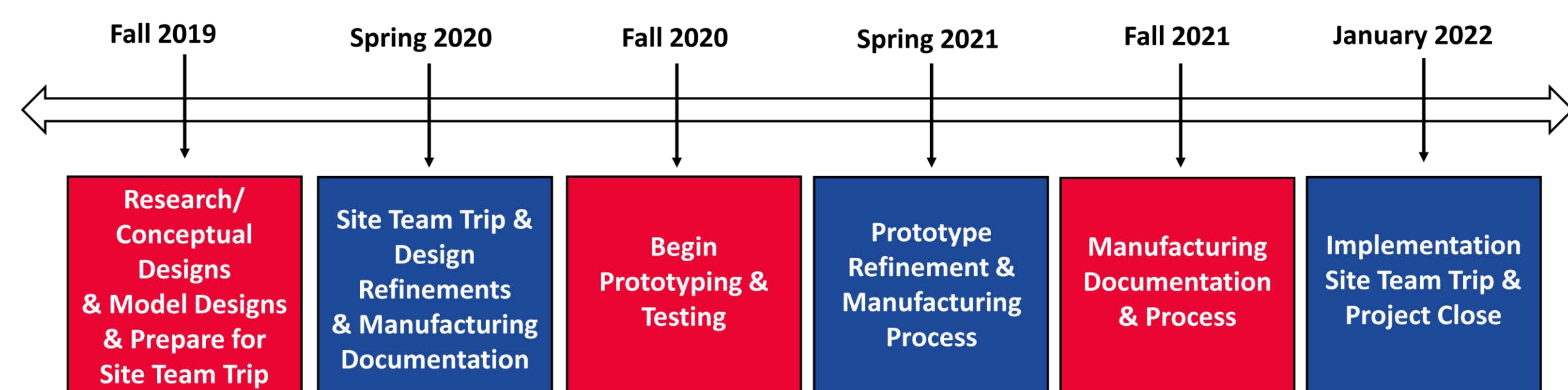


## PROBLEM STATEMENT

The wheelchair kits that INF currently uses are expensive, difficult to import, and can be held up at the border for up to 18 months. Replacement parts for imported wheelchairs are nearly impossible to find. INF needs a wheelchair design that can overcome these obstacles and restrictions in a time and cost-efficient manner.

## PROJECT GOAL

Our team aims to provide International Nepal Fellowship (INF) with a wheelchair design, and manufacturing documentation for it, that can be produced in Nepal by INF staff.



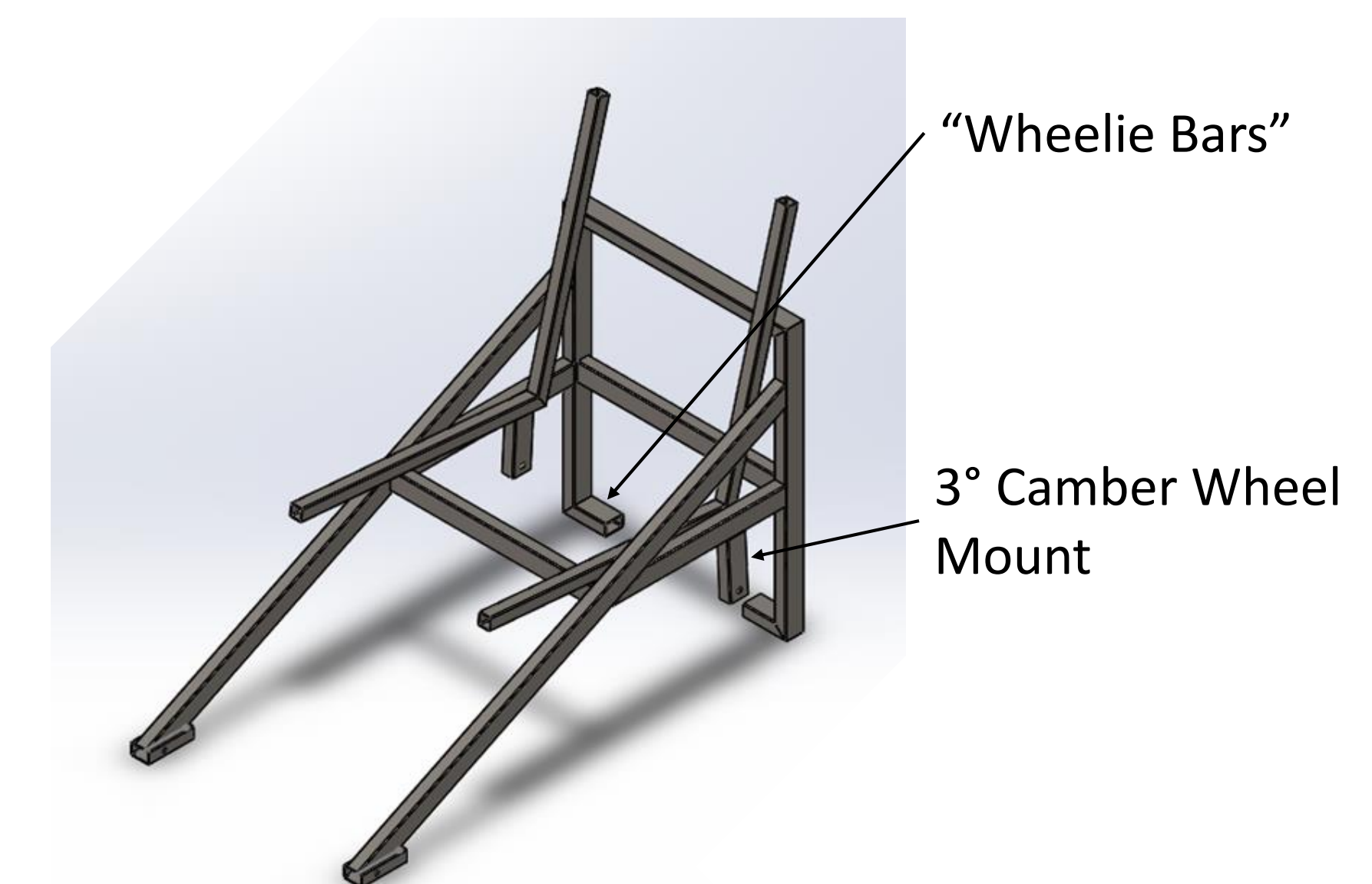
## SITE TEAM TRIP

- Met with client to discuss preliminary design
- Determined part availability at local stores surrounding INF
- Purchased all parts needed for prototyping



## CURRENT DESIGN

- Our current design is based on a simple triangular frame that is constructed from materials found in steelyards and shops in Nepal.
- Adjustable and foldable footrests allow for crucial patient customization and ease of use.
- 3° of rear wheel camber provides added stability
- “Wheelie Bars” allow for assistance in climbing stairs



## CONCLUSIONS

- The Nepal Wheelchair Team has been able to develop a functional design that reflects feedback from our client and is well on its way to fulfilling the project goal. We are now ready to move into prototyping and testing.
- The team believes that the work done this year will allow for the global goal of designing, testing and developing manufacturing documentation for a wheelchair suitable for the Nepal terrain will be met in the coming years.

## ACKNOWLEDGEMENTS

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**Harrison Crosley** – Student Project Manager  
**Alex Vollert** – Project Member  
**Carlie Adair** – Student Volunteer  
**John Meyer** – Workshop Supervisor  
**Raywanta Magar** – INF Wheelchair Technician  
**Dhan Nepali** – INF Wheelchair & Prosthetics Manager  
**Meghan Baker** - INF Occupational Therapist

