

Folding Wheelchairs, and More!

Wenxian Hong and Tish
Scolnik



Community:
Northeastern Tanzania

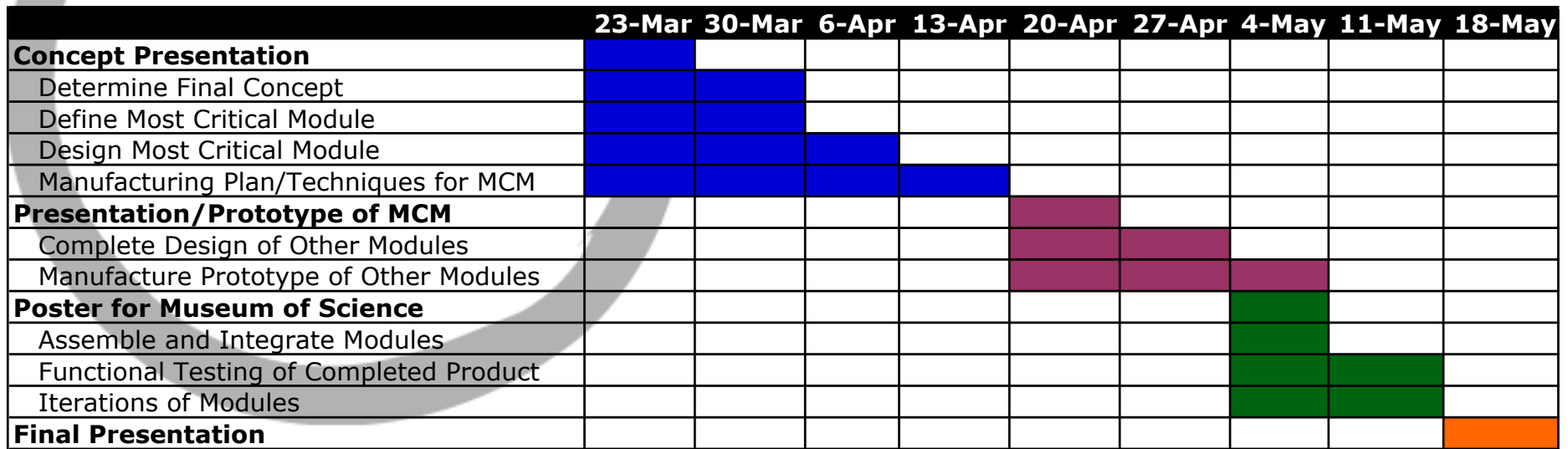
Partners:
MobilityCare and
Kilimanjaro Christian
Medical Center (KCMC)

How my experience began...



- Spring 2007: took SP.784- Wheelchair Design in Developing Countries!
- Worked in small group designing a foldable three-wheeler (with Nathan, Vidya, Wenxian, and Lawrence)

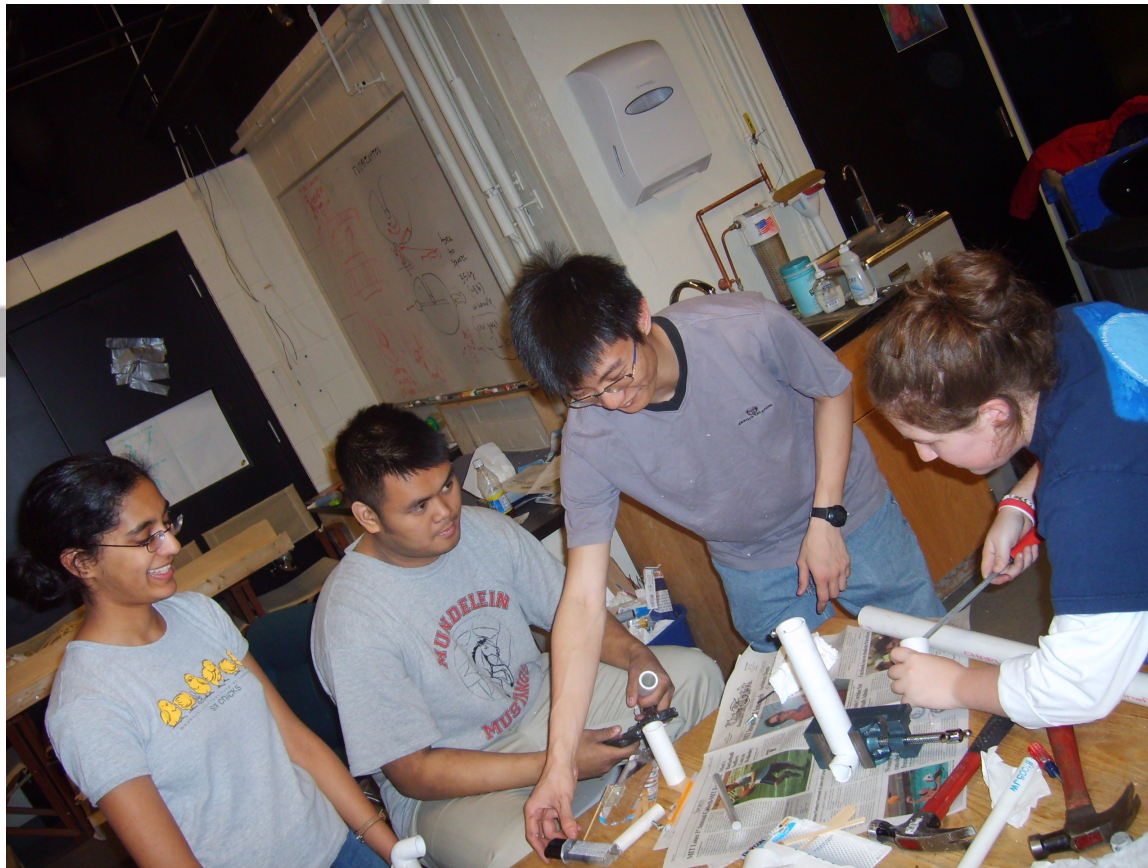
During the class...



	90° Front Wheel	Revolving Front Wheel	Lazy Tong	Z-Fold	Telescoping	Removal
Joint Strength	0	0	-2	-1	1	1
Cost	1	0	-3	0	-1	1
Ease of Manufacturing	1	0	-2	0	-1	1
Durability	1	1	-2	0	-1	4
Ease of Maintenance	0	-1	-2	-1	-1	2
Ease of Use	1	0	3	0	-1	-2
Projected Weight	0	0	-1	0	-1	0
Aesthetics	1	2	3	2	1	0
Availability of Parts	1	1	-3	-2	0	1
Totals	6	3	-9	-2	-4	8

Gantt Chart to budget time and Pugh chart to review ideas for MCM

Big Prototyping Session...



Got our hands a little dirty...



And with a little pink spray paint...



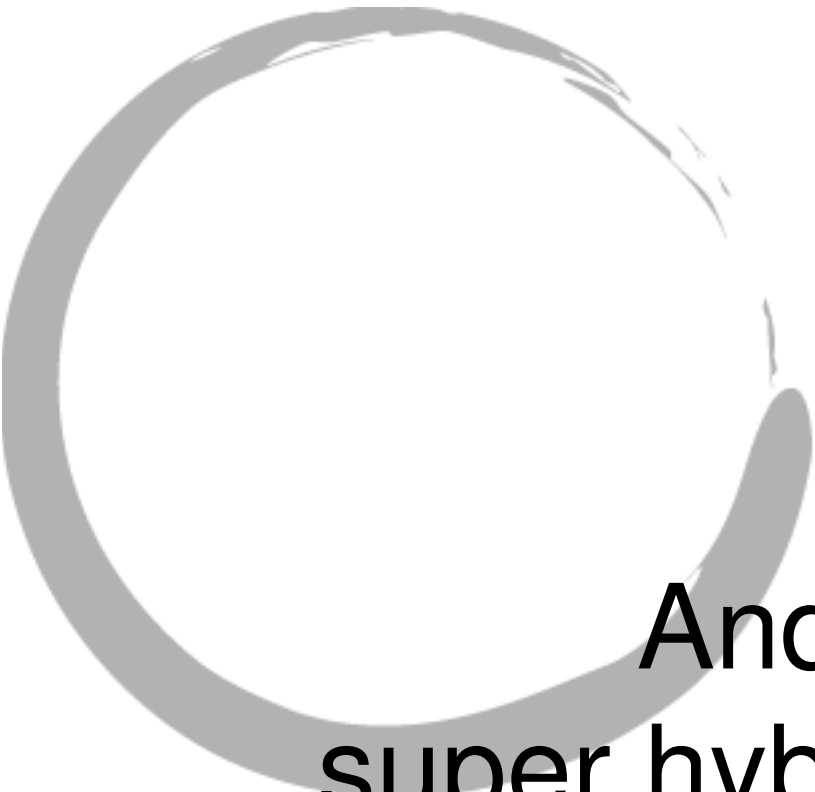
More thinking...

- Lots of feedback after last presentation
- Looks significantly heavier
- Trying to be too ambitious
- PCV allowed easier sliding than steel would
- Concerns about denting
- Thumbscrews easy to lose




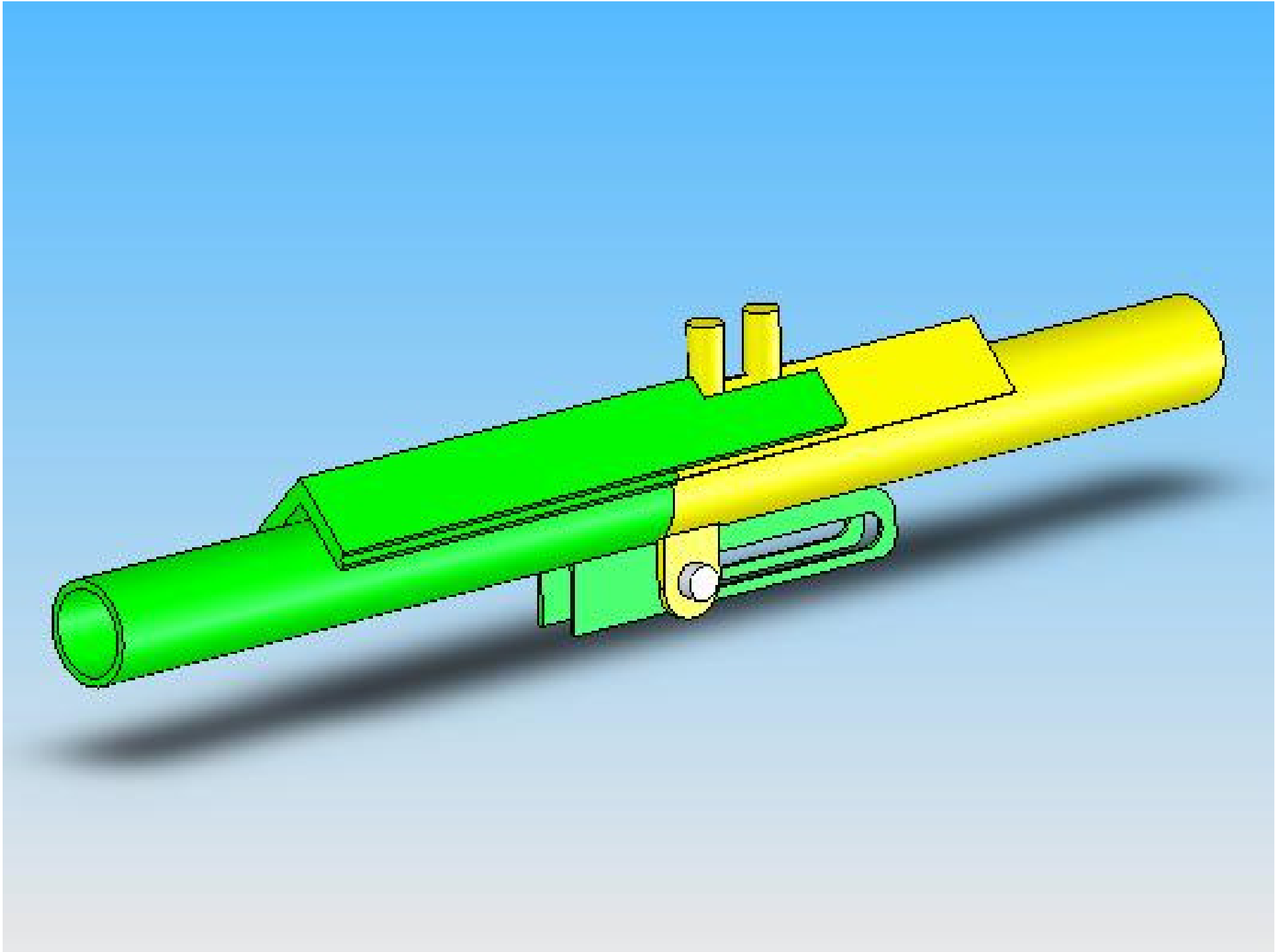
New Thoughts

- Refocused on most critical module, the third wheel
- Considered all of our original ideas for this mechanism
- Narrowed to top three: simple removal, sliding, and folding



And then the
super hybrid was born....





Summer 2007

- Spent nine weeks in northern Tanzania as a Public Service Center Fellow
- Worked with two of the workshops to prototype and test designs for the folding three-wheeler





My
supervisors



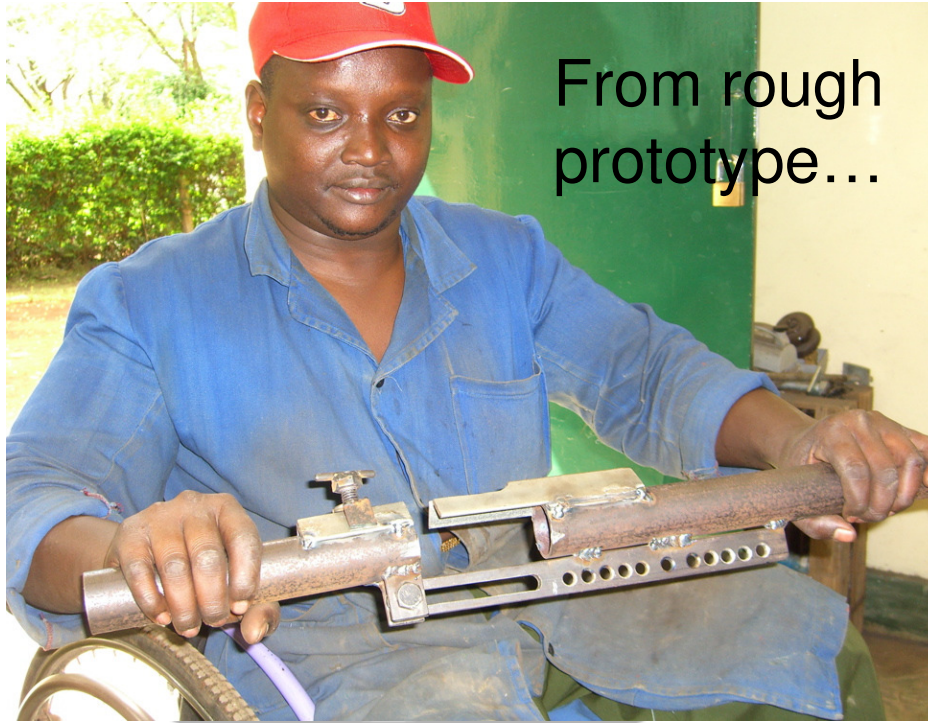
Finding
Tanzania!

Mobility Care in Arusha,
with Daniel Namkessa

KCMC in Moshi, with
Abdullah Munish

Progress on Folding Three-Wheeler

- Built two prototypes of 3F (one at each workshop)
- Conducted week-long trials with four rural wheelchair users
- Collected feedback and made changes/adjustments where necessary
- Will soon be put into production



From rough
prototype...



... to user
testing.

Small Business Wheelchair

- Introduced to the idea of designing a wheelchair that could double as a small business
- A small business wheelchair would provide not only a mobility aid, but also a way to generate an income
- Wheelchair users face an increasingly narrow job market
 - No jobs that require heavy labor
 - Not all businesses are wheelchair accessible
- Began working out design and rough prototype, complete with drawers, collapsible tray, and umbrella

- Collaborated with Daniel and MobilityCare to produce the first design
- Initial small business would be selling phone top-up cards, but could be expanded to a variety of other businesses



What I'm Doing Now...



- Reviewing small business design from this summer; generating more designs
- Writing proposal to request funds from Vodacom, major mobile phone provider in TZ
- Looking for other sources of funding and other small businesses that could be run from a wheelchair

