1. Team Members
We have had some new members join our team: Koosha Khalvati and Ian Dewancker from UBC, Beomjoon Kim from McGill, and Paul Oramasionwu from Toronto University.

2. CanWheel Advisory Board
Bonnie and Jan presented an update on the CanWheel Advisory Committee.

Members
The CAC consists of four individuals who have been identified and agreed to be on the committee until 2015: Robert Levy, the managing director in Criterion Health USA; Francois Michaud from the University of Sherbrooke; Ase Brant from the Danish Centre for Assistive Technology R&D; and Andrew Frank from Northwick Park Hospital, UK.

Duties
This committee consists of individuals who have common research interests, been recognized in the field, and who are potential research collaborators. They will function as an oversight committee and act as a sounding board for CanWheel team members, as well as providing feedback.

There was some discussion about Dr. Springle potentially being added to the committee. His membership will be discussed further.

3. Brief Updates

P1: Rosalie
Overview
Objectives: evaluating the effectiveness, impact and relevance of wheeled mobility devices from the perspective of users, caregivers, health care providers, policy makers and funding agencies. Process that has been used is looking at qualitative interviews; objectives of interviews is to ascertain from older adults, caregivers and health care providers how they define the technological, social and physical needs and abilities of individuals aged 60+ with respect to
power wheelchairs; secondary objective is to look at how these stakeholders perceive and experience “smart wheelchairs” and their influence on social engagement.

**Accomplishments**
In Vancouver, lead by Laura, all of the work interviewing users and care providers has been completed; Toronto finished collecting data; most of the interview data has been collected and now focusing on data analyses and preparation of manuscripts.

**Publications:** national and international conference presentations; presented at RESNA, FICCDAT, UK Gerontology Conference, CAG.

3 journal publications reviewed (in press or in review):

- Ben, Laura and Krista have a publication that is going to be in the American Journal of OT looking at care providers’ experiences with power mobility provision with older adults.
- Alex has a publication submitted to Disability and Society, which is analysis of user data, or people using their PWU and their environments.

**Future work:** consumers offered valuable insights into applicability of collision avoidance; feedback can improve relevance, usefulness and adoption of developed technology; consumer evaluation of prototypes to test usefulness, usability and environmental fit.

**Goals**
Working on some more data analysis; manuscript using path planning data from users, CG and therapists; conference paper linking P1 findings of consumer needs and review of relevant P5 technology; P1 and P3 combined study — hope to develop rapid prototype platform to evaluate control strategies of collision avoidance power wheelchairs; evaluate with older adult residents in long-term care setting; evaluate using mixed methods approach (qualitative and quantitative data).

**P2: Paula**

**Overview**
Covered the core team members, objectives/purposes, project details (e.g. 2-year longitudinal study, new power wheelchair users (PWU) and caregivers (CG), 6 Canadian cities, and 5-7 time points).

**Accomplishments**

**Current enrolment status:** 123 PWU, 23 CG, 12 withdrawals (9 WCU and 3 CG)

**Strengths:** team environment, meet on a quarterly basis, great RAs, lots of productivity, 22 presentations to date.
Challenges: Administration of tools (WST: feasibility of subjects getting to testing sessions four times, not having all tools off-site to administer test), recruitment (e.g. difficult to recruit), finances (e.g. unable to collect as much data collection time points as promised for longitudinal study, ultimately deciding to collect data for one year for all sites, except Vancouver, which will continue to collect 18- and 24-month time point), data logger (e.g. only used by 4 subjects, difficult to install).

Protocol changes: WST administration, ATOP/M, cohort designations, data collection time points reduced.

Productivity: seeing trends in 3-6 months — confidence increasing over time in new PWU, but relatively stable in experienced PWU, participation increasing in new PWU, reliable test/retest results with tools.

Goals
Will end recruitment for P2 in December 2012, PWU group a bit smaller (N=140), to be completed by 2014/2015, publication roll-out plan for objectives 2 and 3, statistical analysis plan development.

P3: Ian
Overview
Designing and validating an intelligent wheelchair towards a clinically-functional outcome; strategies and platforms for a “smart wheelchair” (collaboratively-controlled, environmentally-aware wheelchair innovation). The smart wheelchair is a system which prevents the user from driving into detected obstacles with an audioprompt for wayfinding assistance, which has been tested with six cognitively-impaired older adults in Toronto (NOAH prototype – Navigation and Obstacle Avoidance Help Prototype). It uses a very simple control policy driven by wayfinding technology.

Key findings: correlate with findings from P1 surveys in terms of likes and dislikes and what needs to be done; only frontal collisions were done — the number of frontal collisions went down, the route lengths went down when the wayfinding system was activated; completion time increased (but that is likely because the wheelchair stops when about to collide with an object); correlation between user confidence and performance, questions regarding validity, less confident users rely more on wayfinding prompts.

Themes: links between memory and wayfinding abilities; decrease in confusion and anxiety; need for powered mobility and control; shared decision-making, social acceptance, etc.

Other ongoing research:
Active Robot Localization with Macro Actions
Goal is to try and plan paths to get you to distinguishable places on a map.

Safe Control with Sampled Data
Wheelchair can only get sensory readings at a certain rate.

Maintaining Local Map Information
NOAH prototype used a simple obstacle map with odometry information.

**Wizard of Oz**

Design of the WCs intelligence depends on interface, and vice versa (significant programming and testing is required before a robot can support user trials of the interface). Wizard of Oz study allows testing of the user interface without robotics infrastructure (hidden researcher remotely controls the WC to act according to proposed interface; other researchers stay with participant to collect data [e.g. surveys, think-out-loud]; quantitative data collected by WC systems). Planning trial in Vancouver (explore possible interfaces, take advantage of UBCs WC facilities, establish connections with local LTC facilities, collaborate with P1).

**Risk in Man-Machine Dialogues**

Must account for multiple sources of risk (uncertainty and errors in communication; dangerous or costly actions); context dependent (during transfer or dock in tasks, proximity to an obstacle is intentional; affects choice of interface (identify and clarify reasoning behind high-risk evaluation; confirm before executing for high risk tasks).

**Intelligent Wheelchair System (IWS) Object Classification**

Improve user interaction with the environment and with the wheelchair itself by recognizing different objects (facilitate docking at a table; facilitate transfer to a bed or chair; alert user of hazards and fragile objects), using state of the art algorithms evaluated on TRI image set of target.

**Topological Localization**

Determines which room you are in. Possible applications: location identification for WC wayfinding interface, tracking indoor lifescape measures automatically.

**P5: Lee**

**Overview**

**Background:** P5 is in the initial stages. While some work has been done looking at implementing a training program with manual wheelchair users demonstrating that a more formal approach to skills training is more effective than standard care, to date there have only been a few small uncontrolled trials for PWU. Thus, there is need for an RCT looking at a PWU training program.

**Hypothesis:** those who receive a standardized wheelchair skills training program will improve their WST-Questionnaire results as compared with those who receive no training program (standard care).

Secondary hypothesis: looking at new versus experienced PWU and stratifying at the three-month cut-off. Also looking at stratification on the basis of age, with PWU over 50 years of age.

**Methodology:** After baseline, participants will be randomized into two groups; the control group, who will receive standard care, and the experimental group, who will receive up to 5, 30-minute training sessions over a period of a month, based on goals that will be identified during the baseline evaluation. At the end of the training, they’ll have a second set of assessments to
evaluate the efficacy of the training, and then follow-up at 3 months, which will include some added measures (e.g. WheelCon, LSA, progress/injuries, etc.).

**Accomplishments**
Ethics approval for all sites, funds have been distributed, RAs have been trained and data collection has begun. There will be a major uptake in recruitment to begin when P2 stops collecting in December 2012 (as they are using the same patient database).

4. **Finances**

**P1 Funding:** Because of the study progression, it hasn’t changed much and it is not expected that the balance for Year 4 or the amount to be spent to change (until march 2013).

**P2 Funding:** A complicated budget, as there are 6 sites in total – there are different balances and financial situations depending on the site. Because of the different study progressions, there are 3 sites that are close to wrapping up data collection, and 3 sites that are still open to recruitment. As for the total budget, it has mostly been spent, and future funding will end in the next fiscal year as the projects wrap up.

**P3 Funding:** Has changed slightly from the last project funding, as different students have gone onto different project grants and salary. The balance for Year 4 is doing well. Ian has been talking with different sites about future money spending plans.

**P4 Funding:** Ian Dewancker is going to be on the P4 grant. The balance for Year 4 is low, but the salary commitment of the student has already been taken into account.

**P5 Funding:** P5 is expected to change quite a bit, because the study is in its initial stages, and many of the sites have not used their budget.

Overall, P5 finances seem to be on track, and there are no major financial concerns at present.

5. **Review of CIHR Midterm Report**
Bill reviews the formal CIHR Midterm Report, which as submitted October 1st, 2012.

**Team Formation**
There have been some changes in the team composition; a number of new members have joined, and some members have moved on.

**CanWheel Goals**
1. To create and extend an alliance across Canada
2. To provide a systematic and unified approach towards better interventions and measurements of interventions
3. To build research capacity in disciplines and sectors related to wheeled mobility
4. To provide research career opportunities for trainees
5. To build community partnerships to disseminate

Overall, there have been 17 research assistants, 7 post-doctoral students, 11 MSc/PhD students and 2 undergraduate/summer students involved in the projects to date. CanWheel has lead journal clubs, attended conference presentations, and a summer trainee workshop was just completed, with another one planned for Year 6.

**Authorship**

Papers: 1 in print, 2 in press, 7 submitted
Presentations: 23 posters/papers, 4 podiums, 1 symposium

**ACTION:** If CanWheel is not included as an author on a paper, ensure they are included as an acknowledgement. Grant number will be listed on “Resources” page on CanWheel website (or contact Elmira).

**ACTION:** Partition out conference papers and citations (local and regional as opposed to national and international).

**ACTION:** Request feedback letters/summary reports from conference organizers documenting foreseeable clinical impact of presentation when local presentation/paper is given.

**Milestones**

Overall, most projects and timelines are all running on schedule, with the exception of P2 being delayed somewhat (which will be completed by January 2015). There is starting to be some iterations between P1 and P3, which was predicted to happen by now (Year 3).

In terms of general guidelines, all projects are ahead of schedule and there has been great communication between the teams. Thank you to all team members for maintaining the timeline and meeting the milestones!

**6. Next year’s meeting**

CanWheel meeting will occur on June 20th (tentative date) in Vancouver to align with the RESNA/ICORR meeting (June 19th-26th) in Seattle, for those who are interested in attending. Please conspire to submit some of your CanWheel findings.

**RESNA Deadlines (http://resna.org/conference/)**

*September 28, 2012:* First call for papers
*December 17, 2012:* Instructional course and workshop proposals
January 14, 2013: Scientific and Student Scientific Papers
April 26, 2013: Student Design Competition

ICORR Deadlines (http://depts.washington.edu/uwconf/icorr2013/)
January 25, 2013: Deadline for papers and workshops
March 15, 2013: Notification of acceptance
April 19, 2013: Early registration ends

Alternatively, if you are interested in broader travel, please consider submitting a CanWheel poster-paper to the International Association of Gerontology and Geriatrics (IAGG) (http://www.iagg.info/) June 23-27\textsuperscript{th}, 2013 in Seoul, Korea.

10. Other business/Wrap up
Following up from Dr. Joanette’s presentation about future changes in CIHR, with the new emerging teams being phased out while looking at a programmatic carryon (no new team grants moving forward). During his presentation, Dr. Joanette mentioned the formation of clusters/networks, or a consortium on neurodegenerative diseases and dementia, with three main areas of focus: primary prevention, secondary prevention and quality of life (QOL). Going forward, 70% of CIHR will be for open calls, and 30% for strategic, and within that 70%, there is going to be 50% allotted to programs and 50% to investigator-initiated projects. There is some discussion about the future of CanWheel as the project adapts to these CIHR changes.

**ACTION:** Project leads should aim to regularly brainstorm and discuss their thoughts in planning for beyond Year 6.

11. Announcements
- Elmira will be going on a year maternity leave as of January 2013. Madeline, Sarah and a new member of the team, Kate, will be replacing Elmira during her leave.
- Louise Demers has agreed to represent your work for the IAGG conference in case you are unavailable to travel but wanting to share your results in a poster. **Abstract deadline was October 31\textsuperscript{st}, 2012.**
- Congratulations to Ben Mortenson, who has been offered a faculty position at UBC!
- Staff page will be added to the CanWheel website.