Overview of IC-IMPACTS — Celebrating Success of the First Five Years and Vision for the Next Five years

Nemy Banthia

CEO & SCIENTIFIC DIRECTOR: IC-IMPACTS
Professor and Canada Research Chair: University of British Columbia
IC-IMPACTS

- The first and only International Network of Centres of Excellence hosted at UBC
- Pan-Canadian, pan-Indian and equally funded by Canada and India
Equal Participation from Canada and India
Core Research Areas

Safe & Sustainable Infrastructure
- Low-Carbon Materials
- Sensors
- Strengthening

Integrated Water Management
- Sensors
- Alternative Power Supplies
- Water Treatment Systems

Public Health
- Rapid Diagnostic Devices and Lab-on-chip Sensors
- Infectious and Waterborne Diseases
- Mobile Health Technologies
First Five Years

- **38** Canada-India research projects
- **808** research publications
- **27** patents & inventions
- **792** Highly Qualified Personnel trained
- **16** technology deployments
- **278** partnerships
- **7** start-up companies
Partners & Collaborators

78 Academic Partners  99 Industry Partners  42 Government Partners  24 Community Partners

[Logos of various academic, industry, and government partners]
Thondebhavi, India, Self-Healing Road

- Concrete with Nano-Modified Hydrophilic Fibers
- Reduced Carbon footprint by 50%, and Enhanced life by $x3$
- Next project in Canada’s Fisher River Cree Nation

Self-Healing Road in India
Water Treatment Systems for Lytton, BC

Dr. Mohseni (Canada) and NEERI (India)

- Improving existing UV technology for water treatment system
- Installation of the full scale water treatment system (through INAC’s capital infrastructure investment)
- Removal of boil water advisory after 23 years for Lytton First Nations community
Seismic Upgrade of Jamieson Elementary School Vancouver Using EDC C

- BC gets nearly 2500 earthquakes per year. 100 are over Richter 5.
- 364 schools considered high risk (118 remain to be addressed).
Start-ups by Recent IC-IMPACTS Graduates

Seven start-ups.

Dr. Negar Roghanian, Mithra Sustainable Solutions:
• Anti-corrosion materials that can be applied to pipes and other structures to extend their lifespan.

Dr. Harsh Rathod, HRG Infrastructure:
• Condition assessment, monitoring, and management of civil infrastructures.
Next Five Years of IC-IMPACTS
What’s ahead?

Two News Calls for Proposals

DST/IC-IMPACTS: Improving Survivability of Occupants under Building Fires and Using Cyber-Physical Interfaces

DBT/IC-IMPACTS: Rejuvenating River Ganga Near Varanasi, India and Another Body of Water in Canada’s FN Community.
What's ahead?

- Call on First Nations Housing

- Workshop with Assembly of First Nations, July 17, 2018

- Call for Proposals on Smart, Resilient Homes for FN Communities
What’s Ahead: Expanded Partnerships

- Rick Hansen Institute and Indian Spinal Injuries Center: Collaboration on Technologies to Improve the Lives of Mobility Challenged

- Other NCEs: Kids Brain Health Network on autism spectrum disorder, cerebral palsy, and fetal alcohol spectrum disorder
What’s ahead: Precision Farming

FUTURE FARMS
small and smart

SURVEY DRONES
Aerial drones survey the fields, mapping weeds, yield and soil variation. This enables precise application of inputs, mapping spread of noxious weeds and grass could increase wheat yields by 2-5%.

FLEET OF AGRIBOTS
A herd of automated agrirobots tend to crops, weeding, fertilising and harvesting. Robots capable of microdroplet application of fertiliser reduce fertiliser cost by 90.9%.

FARMING DATA
The farm generates vast quantities of rich and varied data. This is stored in the cloud. Data can be used as digital evidence reducing time spent completing grant applications or carrying out farm inspections saving an average £5,000 per farm per year.

TEXTING COWS
Sensors attached to livestock allowing monitoring of animal health and wellbeing. They can send texts to alert farmers when a cow goes into labour or develops infection increasing herd survival and increasing milk yields by 10%.

SMART TRACTORS
GPS controlled steering and optimised route planning reduces soil erosion, saving fuel costs by 10%.
Thank you!

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