A project on analysis and design of a tall wood building by NEWBuildS Highly Qualified Personnel (HQP)

Y. H. Chui
Scientific Director
NEWBuildS

In collaboration with FPInnovations

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Goals of NEWBuildS

- To increase the use of wood-based products in multi-storey and non-residential buildings through development of:
  - a better understanding of building performance;
  - design and analysis tools; and
  - innovative building solutions
- To train highly qualified personnel (HQP)

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NEWBuildS themes

T1. Cross laminated timber (CLT) – material characterization and structural performance

T2. Hybrid building systems – structural performance

T3. Building systems – fire, acoustic and vibration serviceability

T4. Building systems – durability, sustainability and enhanced products

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Network Statistics

- 25 professors from 13 universities
- 74 HQP (63 students and 11 PDF) conducting 37 projects
- Non-university partners:
  - FPInnovations (17 scientists)
  - National Research Council (2 scientists)
  - Canadian Wood Council

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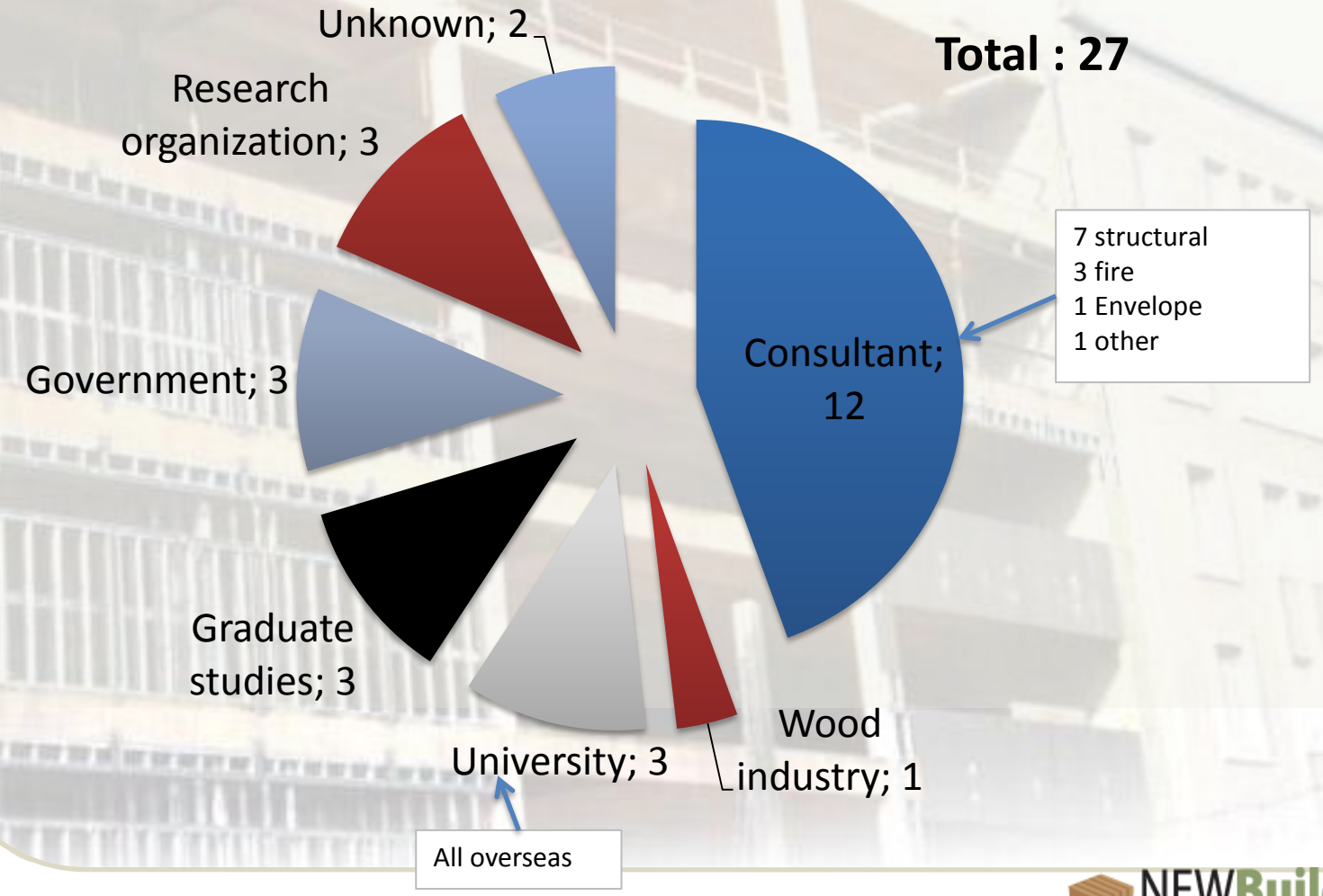
HQP Employment Status – April 2014



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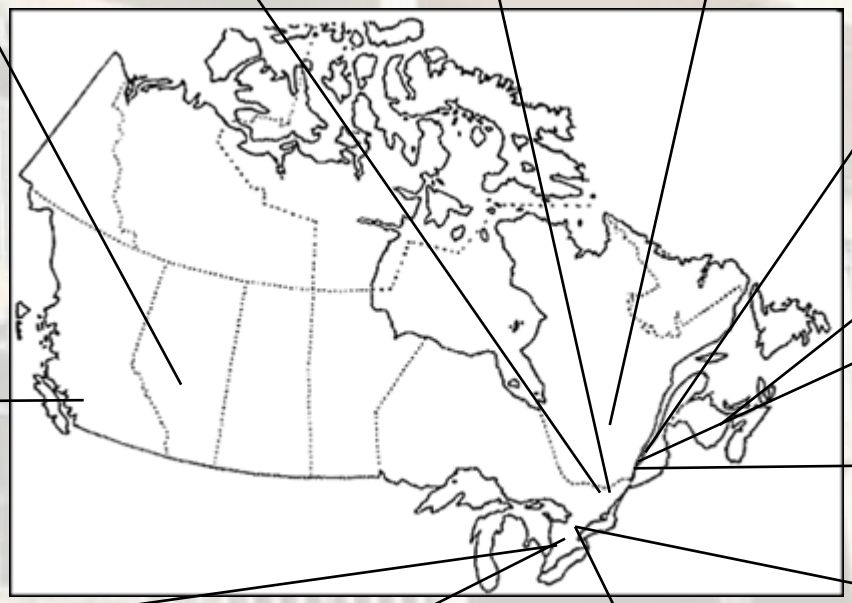
University members (13)



UNIVERSITY OF ALBERTA

uOttawa

Université du Québec en Abitibi-Témiscamingue

Carleton UNIVERSITY

UNIVERSITÉ LAVAL

UNB
UNIVERSITY OF NEW BRUNSWICK
Host University

UBC

UNIVERSITÉ Concordia UNIVERSITY

McGill

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Western UNIVERSITY · CANADA

UNIVERSITY OF WATERLOO

RYERSON UNIVERSITY

VELUT ARBOR AVO

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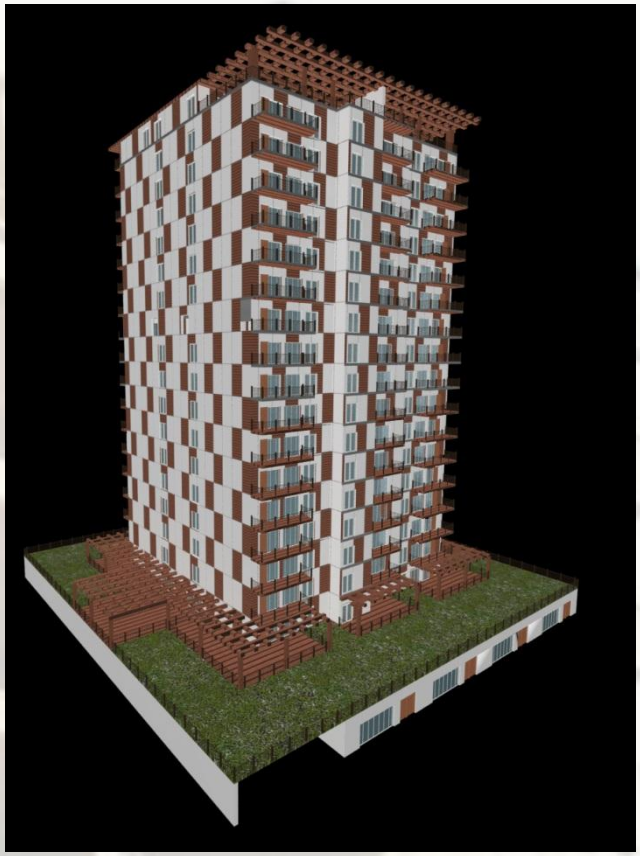
Emphasis on knowledge transfer



Research from 37 projects and others

Practice –
Design of a 20-storey building

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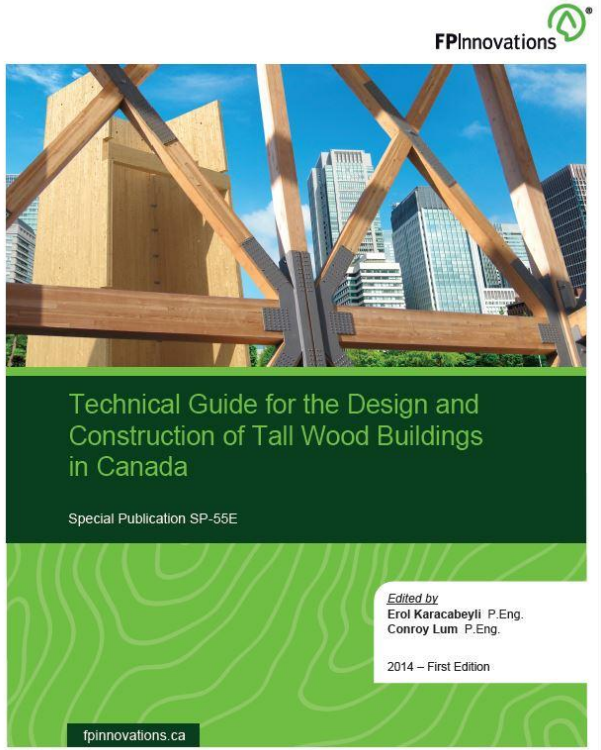
Objectives of the Design Project

- To enhance training of HQP
- To demonstrate the application of analysis tools developed in NEWBuildS program
- To demonstrate the use of alternative solution approach, based on FPInnovations' Tall Wood Building Guide



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Analysis and design of a tall wood building

Architecture/ Building envelope

Fire safety

Structural

Model & Data

Model & Data

Model & Data

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Project Team - HQP

- Architecture and Building Envelope
  - Dr. Mohamed Nadim, University of Alberta
  - Sabrina D'Ambra, Concordia University
- Structural Engineering
  - Dr. Zhiyong Chen, University of New Brunswick
  - Dr. Minghao Li, University of British Columbia
- Fire Engineering
  - Xiao Li, Carleton University
  - Alejandro Medina, Carleton University

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Project Team - Consultants and Advisors

- Architecture and Building Envelope
  - Robert Drew, Perkins + Wills
- Structural Engineering
  - Eric Karsh, Equilibrium Consulting
- Fire Engineering
  - Andrew Harmsworth, GHL Consultants
- Advisors
  - Dr. Marjan Popovski, Mr. Christian Dagenais, Dr. Jieying Wang, FPInnovations
  - Caroline Frenette, Cecobois
  - Supervisors of HQP

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Program

8:45 am	FPInnovations Technical Guide for Tall Wood Buildings **Dr. Mohammad Mohammad**, FPInnovations/NRCan
9:00 am	Checker Building - architectural design and details **Dr. Mohamad Nadim Adi ,** University of Alberta
9:30 am	Checker Building - Structural analysis and design **Dr. Zhiyong Chen,** University of New Brunswick
10:15 am	Checker Building - Envelope Design **Dr. Hua Ge,** Concordia University
10:45 am	Checker Building - Fire resistance design and fire risk analysis **Mr. Xiao Li**, Carleton University
11:15 am	Fire safety of multi-storey wood buildings **Mr. Christian Dagenais,** FPInnovations
11:45 am	Tall wood buildings in Europe **Mr. Robert Drew,** Perkins + Wills
12:15 pm	Concluding remarks and discussion

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Acknowledgements

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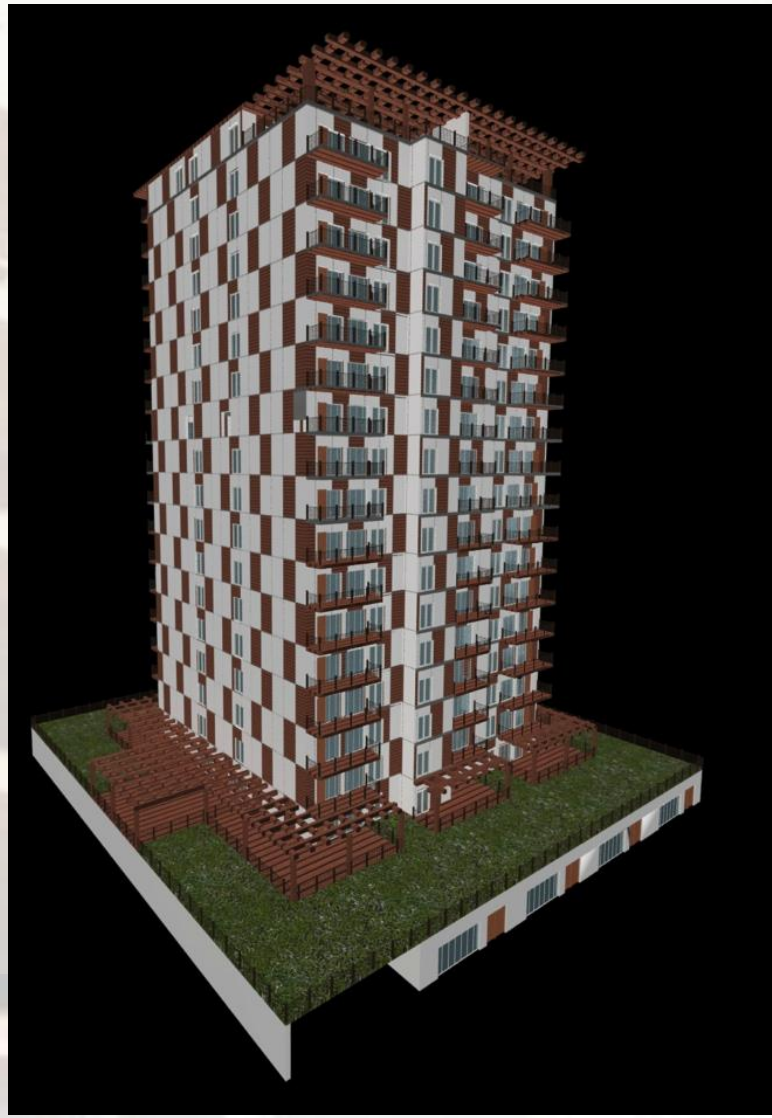
- BC Forestry Innovation Investment – Wood First Program
- NSERC

Technical:

- FPInnovations
- Perkins + Wills
- Equilibrium Consulting
- GHL Consultants
- Cecobois

Enjoy the presentations on **The Checkers**



Sponsors:

- Cecobois
- Nordic Engineered Wood
- SNC-Lavalin Inc

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