Canadian Wood Fibre Centre
Enhanced Forest Inventory Research Program

 EFI Workshop
Mar. 5, 2013, Kamloops, BC
Where values exist, or could exist is key!
VCO depends on good inventory!
Typical FMU is > 1 M ha

Strategic (forest-level)

Serves multiple objectives

Depict broad species comp., guestimated age, height, stocking, sometimes by ecosite. Timber volume is imputed.

Good for long-term, aspatial decisions!
Provincial Forest Inventories – do they meet our needs?

✓ Based on manual photo interpretation.
✓ Cost ~ $1.50/ha
✓ Delivery is often bottlenecked
✓ Technology had advanced, but process and product are really the “same-old”
Operational Cruising...

- Height
- Volume (GTV, GMV)
- Basal area
- Density
- Quadratic mean DBH
- Biomass
- Diameter and Basal Area Distributions

\[ \hat{\mu}_y \]

\~$15/ha; ~1\% view; Not Spatial!
Needs today...

✓ Reasonable cost (~$1.00/ha?).
✓ Spatial.
✓ Operational, tactical, strategic.
✓ Better species compositions.
✓ Product potential and value.
✓ Information about site (operations, silviculture, G&Y).
✓ Information to reduce costs and maximize profits - VCO.
CWFC National Program; Regional Delivery...

Foothills AB, 1 M ha...
CWFC National Program; Regional Delivery...

Northeastern ON, 2 M ha...
CWFC National Program; Regional Delivery...

Operational inventory in QC...
CWFC National Program; Regional Delivery...

NL: minimize variation in wood density...
CWFC National Program; Regional Delivery...

NB: Site productivity + EFI = Future view...
CWFC National Program; Regional Delivery...

Semiautomated interpretation...
CWFC National Program; Regional Delivery...

K-Nearest Neighbors (K-NN)
CWFC National Program; Regional Delivery...

Terrestrial LiDAR (T-LiDAR)...

Canadian Wood Fibre Centre
Working together to optimize wood fibre value – creating forest sector solutions with FPInnovations
**CWFC National Program; Regional Delivery...**

Crown-fibre attribute relationships...

**Jack Pine - Dbh**

\[ y = 1.1364x + 5.945 \]

\[ R^2 = 0.8163 \]

**Black Spruce - DBH**

\[ y = 1.019x + 7.4676 \]

\[ R^2 = 0.7241 \]
CWFC National Program; Regional Delivery...

Airborne LiDAR (A-LiDAR)...
**CWFC National Program; Regional Delivery...**

**FPInnovations:** CWFC, Forest Ops., Wood Prod., Pulp&Paper

**CFS:** Luther, Leckie, Gougeon, Wulder, Beaudoin

**Universities:** UBC, Queen’s, Nipissing, Sherbrooke, UQAM, Laval, Sir Wilfred Grenfell

**Provinces:** BCMoFR, ASRD, OMNR, MRNF-QC, NLNDNR, NBDNR

**Industry:** West Fraser, Tembec, Foothills G&Y, Corner Brook P&P, J.D. Irving

**Funding partners:** GEOIDE, OCE, FQRNT, ACOA, AIFI, NSERC

...Inventory systems that support VCO by allowing us to send the right wood to the right markets, at the right time!

**Partnership is key to success!**