Team

07.

Exploring the Role of Sensor Technology in Reducing Water Damage and Insurance Risk

How can modern water sensor technologies reduce water damage claims?

Water damage is one of the leading causes of insurance claims in Canada.



Nearly half of commercial property claims stem from water losses, often driven by indoor plumbing failures such as burst pipes or appliance malfunctions. High repair costs and the frequency of incidents create significant financial pressure for both property owners and insurers, making prevention and early detection critical.

Methodology

Step 1: Background Research

- Reviewed severity of water damages and the different types of water sensor types.

Step 2: Aviva Insurance Claims Analysis

- Used Python for data cleaning, analysis, and visualization to generate evidence-based insights.

Step 3: Centralized Dashboard Creation

A collaborative project with:

UNIVERSITY OF TORONTO

AVIVA

YORK UNIVERSITÉ UNIVERSITY

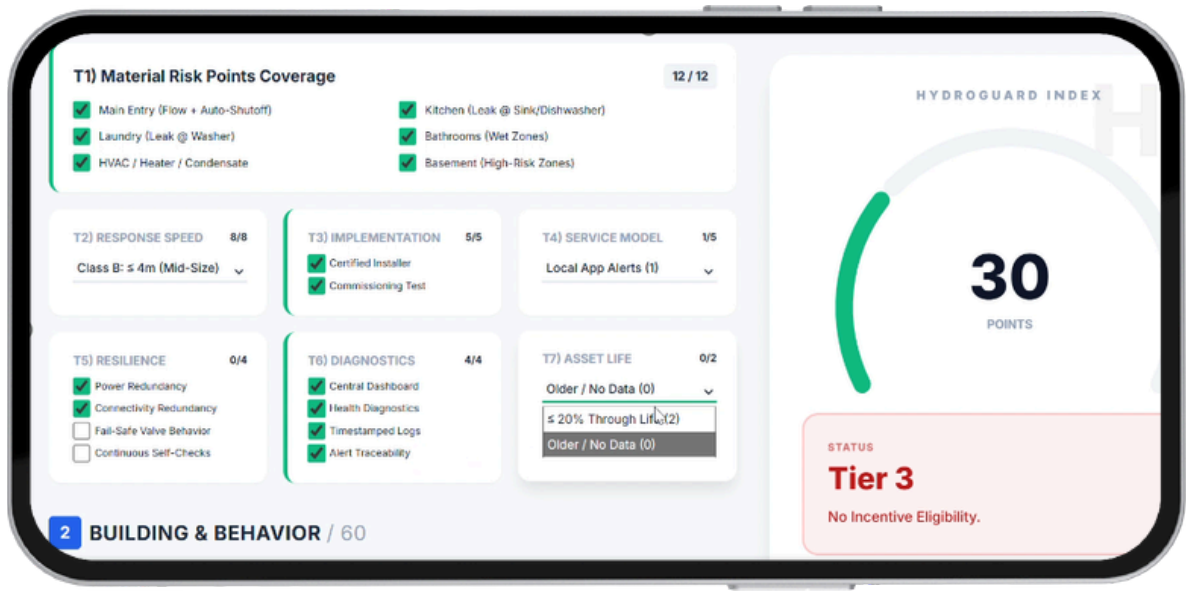
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Insights

- Certain mechanical system failures, including sump pump issues, were among the most severe water damage losses.
- Geographically, **Nunavut exhibited a significant logistical premium**, with per-claim costs 2.6 times higher than Alberta.
- Claim costs are rising at 7.4 percent annually, meaning **losses could double within ten years without intervention.**
- Water damage claims declined in 2020 to 2021, likely due to earlier leak detection from increased time spent at home.

Recommendations

- The team developed a **dual scorecard system** assessing both sensor performance and user behavior.
- This provides insurers with a dynamic risk tool to design incentives and reduce payout risk.
- It also gives property owners early warnings and opportunities to optimize insurance premiums.



Limitations

Current scorecard weightings rely on expert judgment and lack large-scale validation. Future work should use real-world deployment data to refine the model and extend its application to fire and climate risk assessment.

Scorecard component	
1. Technology	Weight: 40
2. Building & Behaviour	Weight: 60

Tier 1	Tier 2	Tier 3
Score: >85	Score: 70-84	Score: <55

Risk and Insurance Studies Centre

Team 7

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