Powering Sustainable Packaging:
Where Sustainability Meets Innovation

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Dell’s Advancing Sustainability Goals

By 2030, for every metric ton of our product a customer buys, one metric ton will be reused or recycled

By 2030, 100% of our packaging will be made from recycled or renewable material, or will utilize reused packaging

By 2030, more than half of our product content will be made from recycled, renewable or reduced carbon emissions material

Advancing Sustainability

- Circular Economy

Overall Packaging achieved our FY25 target of 97% against our Advancing Sustainability goal of achieving 100% recycled/renewable material, or reused packaging by 2030

2030 GOAL

By 2030, 100% of our packaging will be made from recycled or renewable material, or will utilize reused packaging.

*By percentage of total packaging weight

In FY25, we achieved 97% of our packaging goal

The recycled/renewable/reuse content was:
129 million kg of the total 133 million kg shipped packaging material

Does Sustainability cost more, or cost less, if done correctly?
Let's take the temperature of the room…

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How we approach a challenge is everything.

Packaging's posture on sustainability innovation is cost parity or less, preferably less…

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Key Things We Learned & Can Share

Having the right posture to a challenge is it's own superpower

- Starting Point:
  - A green version of what we already have is probably not the right starting point for our cost objectives.
  - What problem are we really solving?
- Extending the thinking:
  - Can the function and purpose be accomplished by a different material or architecture?
  - Is someone else, in another industry doing something similar and can we copy or adapt?
  - Can we asses thru engineering analytics? Math is like gravity.
  - For new technologies what does the cost curve look like?
  - Can we develop it in a year?
  - Have we asked enough provocative questions to challenge our thinking?
  - Is it something that Corporate Comms can tell a story on to help us create industry advantage, leverage, or both?

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Three Key Cutting Edge Technologies & Strategies Driving Innovation

Digital Tools & Simulation

- Virtual drop tests
- Faster development time
- Extends sustainable design to more products

Plastic Alternatives

- Single-Use Plastics: adverse customer & regulatory environment
- Plastic replacement materials, or 100% recycled plastic

Data Analytics & AI

- Data is Packaging 2.0
- Packaging data is as important as the physical packaging due to regulatory reporting
- AI holds the promise to synthesize large data for more creative and cost effective solutions.

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Business continues to speed up. We simultaneously developed two brand new packaging architectures for 24 notebook platforms in 50% of prior time. Digital tools enabled the schedule.

The Challenge	What We Did	Results
24 Platforms	Simulation Strategy	✓ Winning Design
~~12 months~~	Predictive Analysis	✓ On-time Launch
6 months	Virtual Drop Tests	✓ Material Cost
All new architecture	Optimization	✓ Logistics Cost
	2 Suppliers in Parallel	✓ Protection

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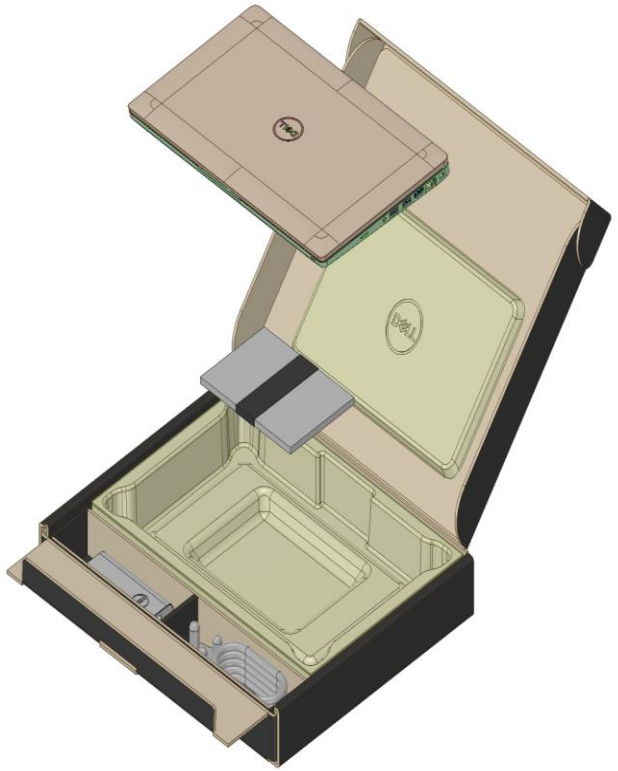
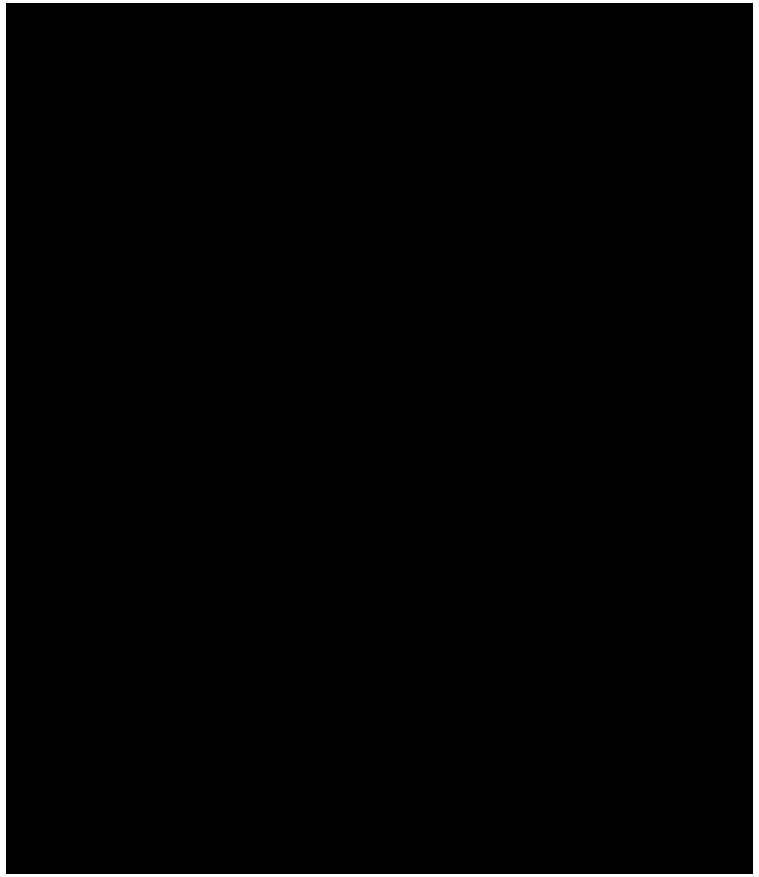
Finite Element Analysis simulations enabled virtual rapid prototyping. Structural integrity, drop test performance, packaging weight, and palletization could be assessed digitally in 1 - 3 days.

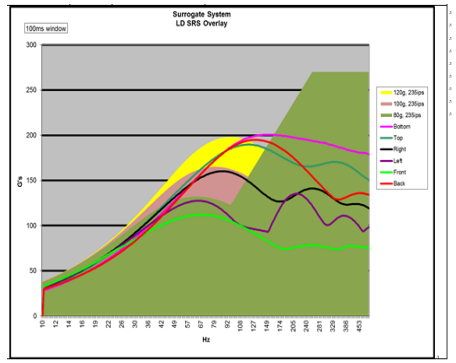
Design Schematic



Finite Element Analysis:
Drop Test Simulation



Validation: SRS Surrogate & Live Unit Testing



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And here is the result. Dell 2030 compliant: 100% renewable or recycled packaging material.

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Supply Chain optimization now encompasses eco-aware supply chains by linking sustainability and innovation to supply chain. We use a global partner model to drive scale.

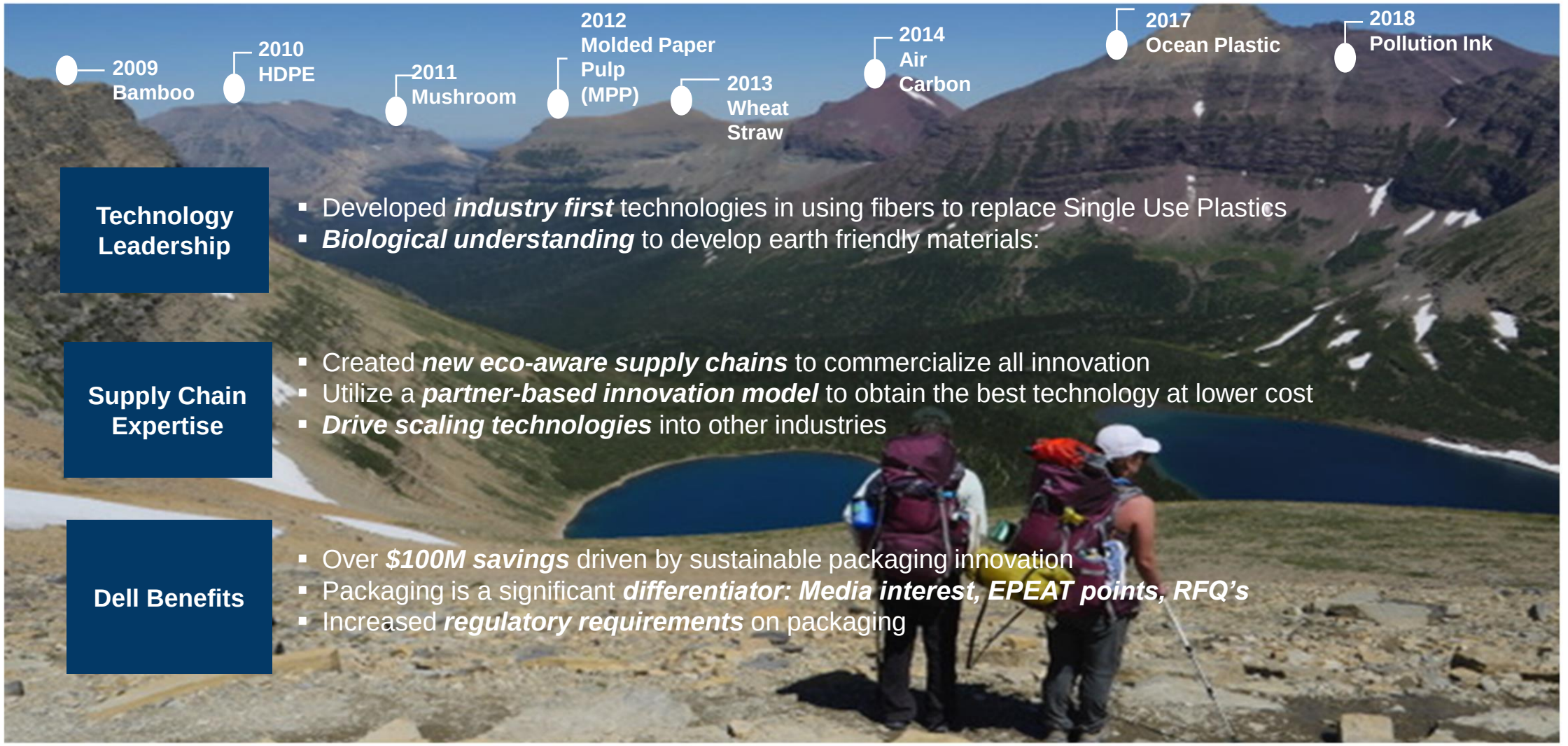

Photo: Triple Divide Pass, Glacier National Park, Montana, USA

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Thank You!

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