How Boeing Manages Innovation

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WBT – Open Innovation Luncheon
Our Vision
To be the strongest, best, and best-integrated aerospace company in the world—now and in the future.
Customer Aware, Disruptively Innovative, Productivity Driven

The alchemy of success in a more-for-less world
More than 70% improvement in fuel efficiency

90% reduction in noise footprint

70% fuel improvement and reduced CO₂

New-Generation jet airplanes are exponentially more efficient

1960s — 2000s

Noise footprint based on 85 dBA
Thomas Edison Had It Right: “Genius is 1% inspiration, 99% perspiration”

Technologies:
- Carbon-fiber and titanium
- Advanced engines
- Advanced electronics, aerodynamics and systems

Speed ...

Sonic Cruiser
- Mach 0.98 speed (about 15% faster)
- Same fuel burn per seat as a 777

or Efficiency?

787
- 20% more fuel-efficient than current similar-size airplanes
- Normal speed (Mach 0.85)

Innovation must be customer-inspired
What is Innovation?

*Innovation resides at the intersection of invention and insight, leading to the creation of social and economic value*

- National Innovation Initiative

*If your cool new thing doesn't generate enough money to cover costs and make a profit, it isn't innovation . . . It's art*
Types of Innovation

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<thead>
<tr>
<th>Product</th>
<th>Process</th>
<th>Business Model</th>
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</thead>
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Innovation: A Balance
Everyone Can Innovate

Past Operations

Present Lean Operations

Productivity fuels (and funds) innovation
“Incremental” Doesn’t Mean “Insignificant”

All innovation must add value for customers, shareholders & company
Demonstrators accelerate technology

Quiet Technology Demonstrators

Biofuel Flight Demonstrations

<table>
<thead>
<tr>
<th>Test Flights</th>
<th>Commercial demo Flights</th>
<th>Demand for Regular Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlantic</td>
<td>KLM</td>
<td>Boeing</td>
</tr>
<tr>
<td>AIR New Zealand</td>
<td>Finnair</td>
<td></td>
</tr>
<tr>
<td>Continental Airlines</td>
<td>Lufthansa</td>
<td></td>
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<tr>
<td>JAL</td>
<td>interjet</td>
<td></td>
</tr>
<tr>
<td>NAVY</td>
<td>787-8</td>
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<td>NAVY</td>
<td>Boeing</td>
<td></td>
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<tr>
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Designing the most efficient airplane

**787 technologies**
- Laminar flow nacelle and empennage
- Flight deck displays & functionality
- Flight controls and high lift design

**777 technologies**
- Overall systems architecture

**2020 technologies**
- High span composite wing
- All new engine
- 2020 Passenger experience
Technology Applied in Autonomous Systems

Phantom Ray

Echo Ranger

eoDemonstrator

X-51A WaveRider

X-37B

Phantom Eye

X-48B BWB
Our Challenge

- Focus innovation around customers, who expect more for less
- Generate greater value than the sum of our many parts
- Improve development-program performance
- Apply lessons learned; prevent repeat of mis-steps on future efforts
- Find ways to innovate for significantly less cost

Where we were in mid-2000s
Currently On Boeing’s Radar: Reducing the Aerospace Development-Cost Curve

Similarly challenged industries are reversing the trend; we can, too

Source: DARPA
Creating an Innovative Culture

- Find ways to innovate the culture and make it unique, in and of itself!
- Promote and reward curiosity.
- Acknowledge great ideas come from anywhere and create mechanisms to capture those ideas. Create a seamless, resistance-free flow of ideas.
- Blend social media technologies, communication, and multiple generations to form teams capable of innovating.
- Create structured innovation processes that leverage new ideas and recognize and reward those who create them. Think of idea generation as *purpose generating*.
- Identify high potential employees with strong discipline, teaching, and learning to participate in idea generation.
- Build innovation into financial decisions and systems, risk strategies, HR strategies (hiring practices).
- Find ways to manage and accept failure to promote risk-taking because *speed is of the essence*. 
What Boeing Needs In Its Innovators

Must-haves:

- Technical excellence in chosen field
- Strong sense of purpose and values
- Global outlook, broad cultural and geographic perspectives
- Ability to work as part of small and large teams
- Ability to manage complexity and diversity in its many forms
- Creativity balanced with analytical thinking

Managing innovation requires combination of “hard” and “soft” skills