



FastForward Study Group: Economic Trade Studies from IAC 2008 Paper

Version A | 16 January 2009

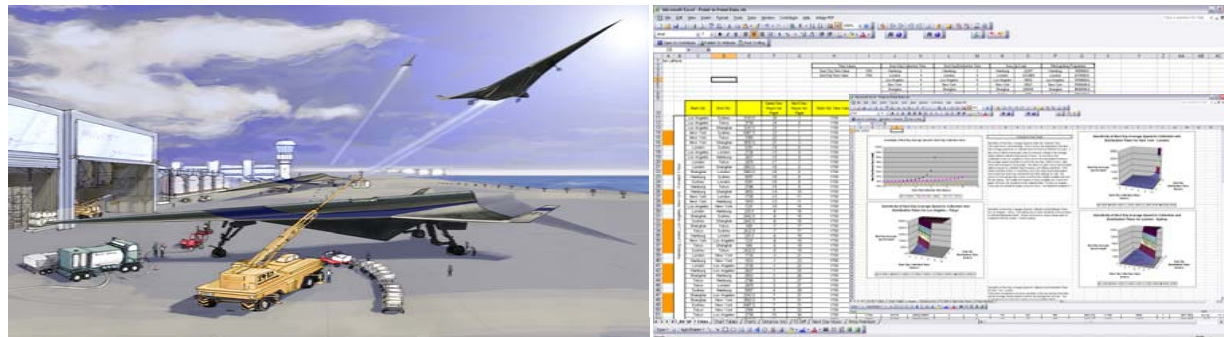
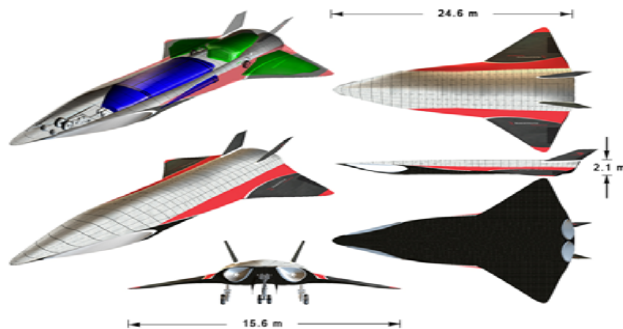
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- **Updates to economic analysis from paper: “Is the World Ready for High-Speed Intercontinental Package Delivery (Yet)?,” IAC-08-D2.4.5**
 - Modeling of global high speed point-to-point cargo delivery
 - Demand assumptions coupled with initial vehicle design
 - Economic modeling of venture (discounted cash flow)
- **Two trades:**
 - Trade 1: Series of sensitivity analyses on economic model to identify the most sensitive variables (e.g. market size, investment cost, revenue per package, operating costs, etc.)
 - Trade 2: Drastically increase the number of daily flights in the model (hypothetically) just to see what the limit might look like economically. The results of these trade studies will be presented at the next telecon.



Motivation

Summary Economic Results for Baseline Case

Table 10. Financial Case A.†

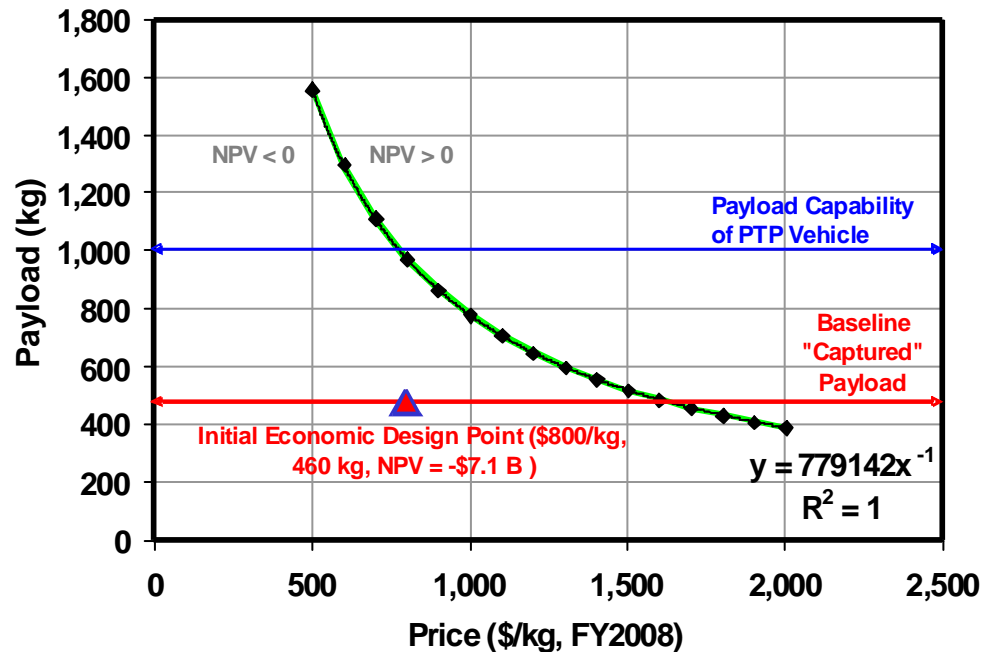
| Item | Value |
|--------------------------------|---------------------|
| WACC | 15.82% |
| Payload | 460.0 kg |
| Price | \$800.0/kg |
| Net Present Value (NPV) | -\$7,691.4 M |
| DDT&E Cost | \$4,458.5 M |
| Acquisition Cost | \$10,377.9 M |
| Facilities Cost | \$1,659.5 M |
| Recurring Cost | \$29,266.0 M |
| Financing Cost | \$10,261.7 M |
| Taxes | \$2,499.0 M |
| Revenue | \$57,408.0 M |
| Total Equity Investment | \$10,059.2 M |

† - rounded FY2008 US\$, assuming a 2.1% inflation rate, any errors due to rounding

Table 11. Financial Case B.†

| Item | Value |
|--------------------------------|---------------------|
| WACC | 15.82% |
| Payload | 460.0 kg |
| Price | \$1,693.8/kg |
| Net Present Value (NPV) | \$0.0 M |
| DDT&E Cost | \$4,458.5 M |
| Acquisition Cost | \$10,377.9 M |
| Facilities Cost | \$1,659.5 M |
| Recurring Cost | \$29,266.0 M |
| Financing Cost | \$9,663.7 M |
| Taxes | \$19,809.2 M |
| Revenue | \$121,546.1 M |
| Total Equity Investment | \$9,392.3 M |

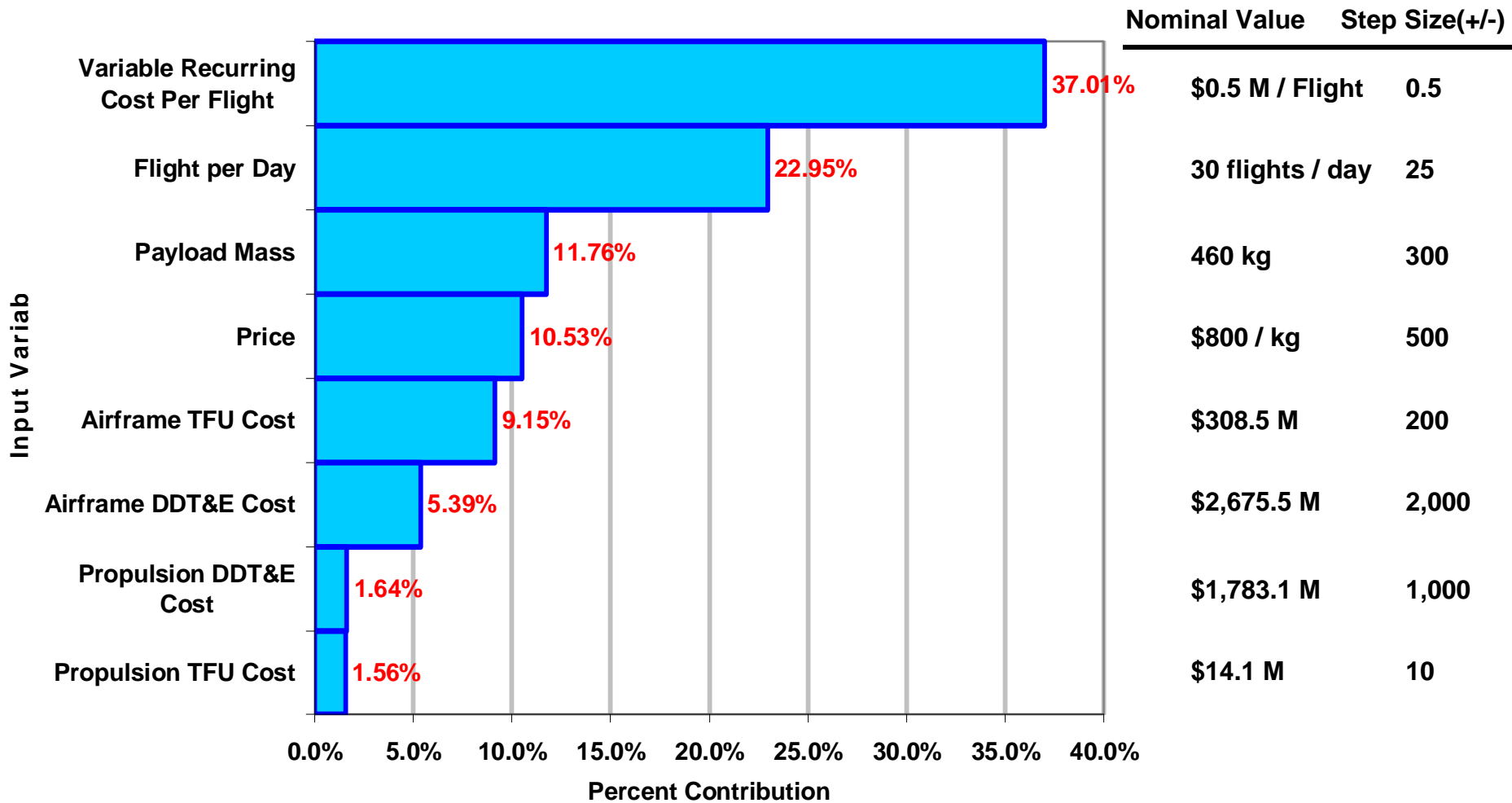
† - rounded FY2008 US\$, assuming a 2.1% inflation rate, any errors due to rounding



“The minimum fleet size required for the mission scenario (5 days per week, 30 flights per business day, 52 weeks per year) is approximately thirty (30) vehicles. For added robustness and to take into account vehicle downtime (i.e. depot maintenance), thirty-five (35) vehicle airframes are acquired in the economic analysis. Similarly, even though each airframe requires only two (2) propulsion units for flight, four (4) propulsion units are acquired per airframe, providing 100% redundancy for the propulsion systems. It is assumed that all airframe and propulsion systems can be utilized during the entire span of the flight campaign over 20 years (7,800 flights per year).”

Source: “Is the World Ready for High-Speed Intercontinental Package Delivery (Yet)?,” IAC-08-D2.4.5

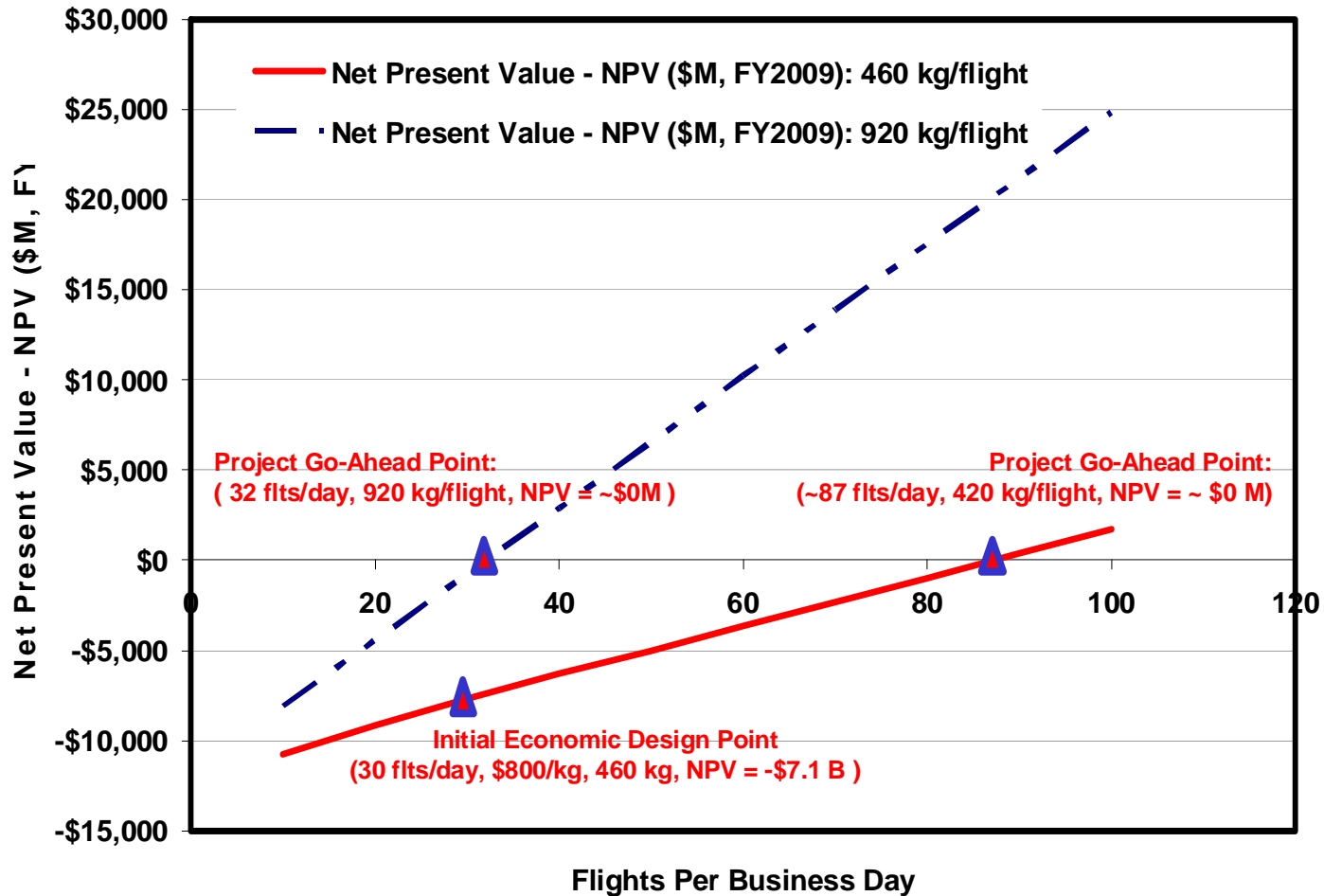
Baseline Economic Case



Recurring variables (cost, demand, payload) are higher in importance than fixed cost items) possibly due to the large number of flights during program life

Note: Nominal case shown above is Financial Case A, fixed fleet size, no loss of vehicle modeled

Trade Study 1: Pareto Analysis - Sensitivity of NPV to Model Inputs



With everything else constant more flight does increase revenue to increase Net Present Value (NPV)

Two cases: Trade on Financial Case A and B

Trade Study 2: Flight/Day Increases

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