

# Airport Strategic Planning

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## Outline

- **The Vision**
- **The Context**
- **The Problem**
  - Fixed Master Plan
  - Management Commitment to Plan
  - Inflexibility ; Losses
- **The Solution: Dynamic Strategic Planning**
  - Recognition of Risk as Reality of Planning
  - Analysis of Situation
  - Flexible, Dynamic Planning

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## The Vision

**A significantly improved approach to Airport Systems Planning that realistically accounts for rapid changes**

- in the economy
- airline routes and alliances
- airport competitors (regional and local)
- and technology

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## The Context

- **The Traditional Approach is a Master Plan**
  - e.g.: US Federal Aviation Advisory Circular 150/5070-6A
  - Or: ICAO Airport Planning Manual, Part 1, Master Planning
  
- **The development of a Master Plan involves**
  - Defining the Forecast (pick one)
  - Examining Alternatives ways of development for THAT FORECAST
  - Selecting a SINGLE SEQUENCE OF DEVELOPMENT with no examination of alternative scenarios

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# The Problem

- **The Master Plan**
  - does not anticipate RISK of possible changes in market conditions, that is, of “trend-breakers”
  - thus does not provide insurance against those real risks,
  - is inflexible, and inherently unresponsive to the risks.
- **Management furthermore may commit to plan concept (if not timing...)**
  - leading to resistance to change when it is needed
- **The consequences are**
  - losses or extra costs ; losses of opportunities

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# Examples of the Problem

- **New Denver**
  - Management could not reduce initial size... Even when airlines not committed => unnecessary passenger building
  - No back-up for failure of new technology (Bag System)
- **Dallas / Fort Worth**
  - Gate Arrival Master Plan: No Provision for Transfer passengers, and huge unnecessary costs
  - No provision for failure of technological leap (AirTrans)

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## Forecast versus Actual Operations after 5 years

Airport	Base Year	Forecast	Actual	F/A Ratio
Bangor, ME	1976	113	85	1.33
Bedford, MA	1980	363	228	1.59
Beverly, MA	1977	176	174	1.01
Hyannis, MA (a)	1977	174	108	1.61
Hyannis, MA (b)	1977	143	108	1.32
Nantucket, MA	1977	70	66	1.06
New Bedford, MA	1980	97	82	1.18
Norwood, MA	1977	255	205	1.24
Portland, ME	1977	147	103	1.43
Providence, RI	1979	256	245	1.04

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## Forecast versus Actual Operations after 10 years

Airport	Base Year	Forecast	Actual	F/A Ratio
Bangor, ME	1981	150	71	2.11
Bedford, MA	1985	530	244	2.17
Beverly, MA	1982	220	105	2.10
Hyannis, MA (a)	1982	244	145	1.68
Hyannis, MA (b)	1982	183	145	1.26
Nantucket, MA	1982	87	104	0.84
New Bedford, MA	1985	116	102	1.14
Norwood, MA	1982	295	168	1.76
Portland, ME	1982	188	78	2.41
Providence, RI	1985	274	203	1.35

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## Forecast versus Actual Projects after 5 years

Airport	Base Year	Proposed	Actual Projects			F/A Ratio
			Forecast	New	Total	
Bangor, ME	1976	4	N/A	N/A	N/A	N/A
Beverly, MA	1977	3	1	3	4	0.25
Hyannis, MA	1977	2	1	2	3	0.33
Nantucket, MA	1977	3	N/A	N/A	N/A	N/A
New Bedford, MA	1980	3	3	0	3	1.00
Norwood, MA	1977	4	N/A	N/A	N/A	N/A
Providence, RI	1980	2	2	5	7	0.29

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## Forecast versus Actual Operations after 15 years

Airport	Base Year	Forecast	Actual	F/A Ratio
Bangor, ME	1986	215	114	1.89
Bedford, MA	1990	755	244	3.09
Beverly, MA	1987	271	152	1.78
Hyannis, MA (a)	1987	309	176	1.76
Hyannis, MA (b)	1987	223	176	1.27
Nantucket, MA	1987	99	150	0.66
New Bedford, MA	1990	136	119	1.14
Norwood, MA	1987	375	136	2.76
Portland, ME	1987	231	120	1.93
Providence, RI	1990	308	207	1.49

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## Forecast Unreliability Increases for Longer Planning Horizon

Planning Horizon	F/A Ratio Characteristics			
	Years	Average - 1	Range	Std. Dev.
Five	0.23	0.64 - 1.96	0.3	23%
Ten	0.41	0.58 - 2.40	0.54	34%
Fifteen	0.78	0.66 - 3.1	0.69	76%

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## Forecast versus Actual Projects after 10 years

Airport	Base Year	Proposed	Actual Projects			F/A Ratio
			Forecast	New	Total	
Bangor, ME	1981	4	2	1	3	0.67
Beverly, MA	1982	2	1	2	3	0.33
Hyannis, MA	1982	1	1	4	5	0.20
Nantucket, MA	1982	1	0	3	3	0.00
New Bedford, MA	1985	2	1	2	3	0.33
Norwood, MA	1982	4	2	2	4	0.50
Providence, RI	1985	3	1	4	5	0.20

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## Forecast versus Actual Projects after 15 years

Airport	Base Year	Proposed	Actual Projects			F/A Ratio
			Forecast	New	Total	
Bangor, ME	1986	5	3	1	4	0.75
Beverly, MA	1987	2	2	3	5	0.40
Hyannis, MA	1987	1	1	3	4	0.25
Nantucket, MA	1987	3	2	4	6	0.33
New Bedford, MA	1990	1	1	2	3	0.33
Norwood, MA	1987	3	0	2	2	0.00
Providence, RI	1990	3	1	4	5	0.20

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## Outline of Solution

- **Dynamic Strategic Planning**
- **3 Phases**
  - Recognition of Risk as Reality of Planning
  - Analysis of Situation
  - Flexible, Dynamic Planning -- designed to track real developments in air transport industry
- **Compatible with Master Planning but**
  - Examine plans under various forecasts
  - Analyze variety of development patterns, sequences
  - Reallocate analytic effort
    - from in depth examination of an unlikely future
    - to many quick reviews likely to include actuality

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# Process of Dynamic Strategic Planning

- **Recognizes Risk**
  - looks ahead at opportunities and threats of many scenarios
  - accepts that future levels and types of traffic cannot be known
- **Examines Complex Possible Developments**
  - “Pure” plans PLUS
  - combinations of these: “HYBRID” solutions
- **Chooses Flexibility**
  - Plans responsive to market, industry conditions
  - These are necessarily “HYBRID”
- **Commits only one period at a time**

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## Chess Analogy

**DYNAMIC STRATEGIC PLANNING IS LIKE  
PLAYING CHESS AS A GRAND MASTER  
-- YOU LOOK AHEAD MANY MOVES  
BUT ONLY DECIDE ONE MOVE AT A TIME.**

**DYNAMIC STRATEGIC PLANNING COMPARES  
TO MASTER PLANNING AS GRAND MASTER  
CHESS COMPARES TO BEGINNER PLAY.**

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# Phase 1: Recognition of Risk and Complexity

- **Risk: Wide Range of Futures**
  - The Forecast is “always wrong”
    - Extrapolations of past cannot anticipate the surprises that always occur somewhere
    - Many extrapolations are possible for any historical record
- **Complexity: Wide Range of Choices**
  - Number of Choices is Enormous
    - “Pure” solutions only 1 or 2% of possibilities
    - Most possibilities are “hybrid”, that combine elements of “pure” solutions
    - “Hybrid” choices provide most flexibility

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## Hybrid Designs

- **Combine “Pure” Concepts**
  - New York/LaGuardia: “Finger Piers” and “Gate Arrival”
  - Paris/de Gaulle: Gate Arrivals, Transporters, Finger, and soon satellite buildings
  - Chicago/O’Hare (United): “Gate Arrival” and “Midfield”
- **Are Inevitable -- The “Pure” concepts become inadequate for actual conditions**
  - Dallas/Fort Worth:  
“Gate Arrival” => “Midfield” (Delta) + Central (American)
  - Washington/Dulles:  
“Transporters” => + “Gate Arrival” => “Midfield”

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## Phase 2: Analysis

- **Strengths, Weaknesses, Opportunities, Threats (SWOT)**
- **Identifying Risks**
- **Decision Analysis of Possibilities**
- **Identification of Initial Phase and Potential Different Responses to Actual Events**

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## Phase 3: Dynamic Strategic Planning

- **The Choice**
  - Any Choice is a PORTFOLIO OF RISK
  - Choices differ in their
    - Likely benefits
    - Performance over a range of futures
- **The Plan**
  - Buys Insurance -- by building in flexibility
  - Balances Level of Insurance to Nature of Risk
  - Commits only to immediate first stage decisions
  - Maintains Understanding of Need for Flexibility

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## The Best Choices

- **Permit good Performance for range of futures**
- **Achieve Overall Best Performance by**
  - Building in Flexibility to adjust plan to actual situation is later periods -- this costs money
  - Sacrificing Maximum Performance under some circumstances
- **“Buy Insurance” in the form of flexibility; capacity to adjust easily to future situations**
- **Commit only to Immediate Period**
  - Decisions later in should depend on then actual situation

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## Example of Flexible Plans: Paris/de Gaulle (Air France)

- **Hybrid Design:**
  - Gate Arrival that permits Transporters as Needed
- **Anticipation of Future**
  - Room for Expansion
  - Provisions for Rail Access
- **Investment according to need**
  - Easy to Change Design (as done)

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## Example of Flexible Plans: Sydney Second Airport

- **Hybrid Strategy:**
  - Maintain and Enhance Principal Airport
  - Acquire Major Site
- **Anticipation of Future**
  - New Site is Insurance against Need
  - Cost small compared to Major Construction
- **Investment According to Need**
  - Future Plans Easily Tailored to Industry Structure, Traffic Levels

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## Example of Inflexible Plans: New Denver

- **Pure Design: Multi-Airline Super-Hub**
  - But United Dominates
  - Phase-out of Continental
- **Massive Immediate Commitment**
  - Could not adjust to actual traffic
  - Disadvantages of High Costs per Passenger
- **Reliance on Untested Technology**
  - Failure of High-tech baggage system
  - No effective fall-back position

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## Example of Inflexible Plans: New York / Newark

- **Pure Design: Unit Terminals, Satellites**
  - Unsited for actual Transfer, International Traffic
  - Use of 1950's Terminal
- **Premature Investments**
  - Terminal C Boarded up, unopened for decade
  - Major changes required

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## Recommendation

- **Evaluate Situation**
  - Strengths, Weaknesses, Opportunities, Threats
  - Risks
- **Analyze Possibilities**
  - Major Attention to "Hybrid" Options
  - Match Physical Facilities to Industry Structure
    - Current Major Clients
    - Possible Future Clients
- **Dynamic Strategic Plan**
  - Define Initial Commitment
  - How Plan Can Develop to Meet Range of Possible Future Market Conditions

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