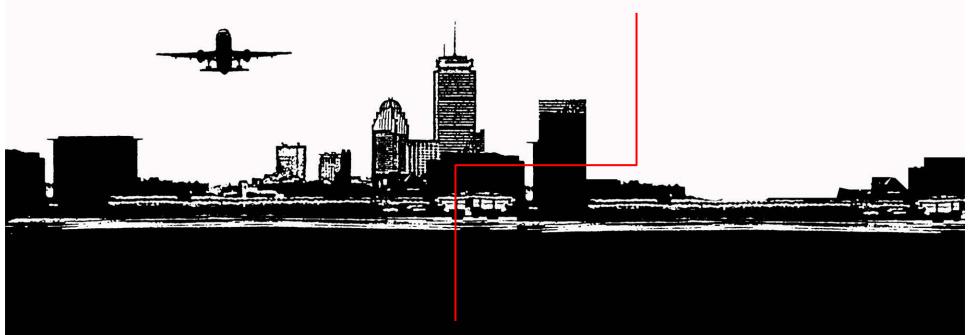
WORKSHOP AGENDA FOR KEY STAKEHOLDERS



The Airport Metropolis: Managing the Interfaces

Research Update



Airport Metropolis Project
Queensland University of Technology



Progress to date



Development

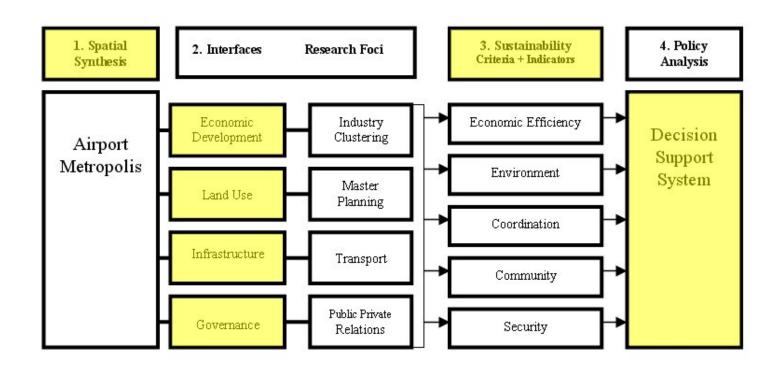
- Engaged with Partner Research Institutions
 - University of New South Wales
 - □ Delft University of Technology
 - University of North Carolina

Implementation



Links to Project

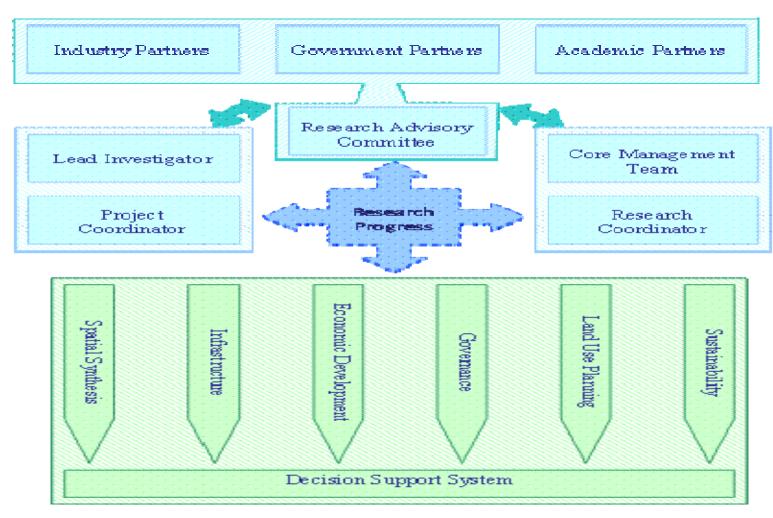






Research structure









Initial results - implications for industry



- Research engine
 - Land Use
 - Infrastructure
 - Economic Development
 - **Governance**
 - Spatial Synthesis
 - Sustainability
- Focus on what achieved so far & what this might mean for industry partners
- Invite industry input into research



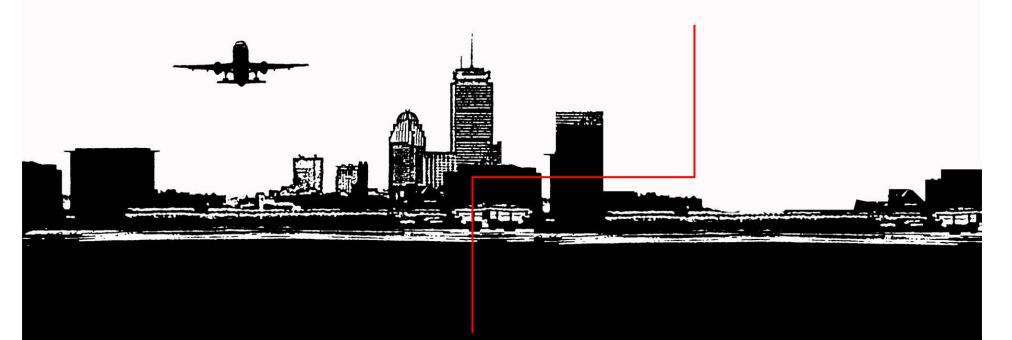
Presentations



Presentation of short term research results

- Spatial Synthesis PhD Kym Foster
- Land Use PhD Nicholas Stevens
- Infrastructure Dr Andre Dantas
- Sustainability PhD Philip Kimmet
- Decision Support Dr Arron Walker

Spatial Synthesis Update



Kym Foster
Airport Metropolis Project
University of New South Wales



The Personnel



Chief Investigator: Rob Freestone

PhD Student: Kym Foster

Partner Investigator: John Kasarda

Research is based in the City Futures Research Centre, Faculty of Built Environment, UNSW



This Component



Systematically investigate the evolution and characteristics of varied forms of planned and unplanned airport metropolis relationships.

Then relate these forms to contemporary theories of urban form and structure that understate the role of major airports in metropolitan globalisation.



Main Responsibilities



- Determining lessons from international spatial planning frameworks (Kym Foster)
- Research into urban theory, environmental and privatisation issues (R Freestone with D Baker)
- Supervision of undergraduate research projects, Bankstown & Essendon Airports (R Freestone)



Problem statement



Research Issues

- Airports are emerging rapidly as portals for regional, national an international economic growth
- Airports and cities are in conflict over development matters
- These trends pose major and rising planning challenges for integrating airports with their regions and not unique to Australia
- How are airport region spatial conflicts managed and resolved overseas between governance hierarchies, in theory and in practice



Problem statement, cont'd



Research Issues, cont'd

- Which spatial governance structures for overseas airport regions acknowledge and integrate the development of airports and their regions
- Consider the varying scale of benefits and costs that aeronautical and non-aeronautical development generate, including the broader planning consequences, by the various types of airport metropoli
- We need to learn from the lessons of best and poor practice of overseas airport regions, mindful of the cross-cultural variations between international regions



Summary Objectives



- Determine the level of diversity of airport region spatial planning governance arrangements
- Determine how we can better mesh airport planning and development with that in the urban & regional context to generate a responsive, economically efficient, integrated & sustainable airport region



Research Questions



The Airport Metropolis Phenomenon

- 1 My main focus explore the diversity of types, especially in terms of planning frameworks
- What airport development models help capture airport-centric growth and explicitly address the need for planning responses?
- 3 Learning from the development catastrophes and successes of aspiring overseas airport metropolises?
- Interested in how these significant economic growth nodes are planned and managed, as well as how they should be, in the context of metropolitan/regional globalisation pressures?



Research Questions, cont'd



Governance of Airport Regions

- 1 How are jurisdictional spatial planning conflicts managed and resolved at the overseas airport regions, in theory and practice, particularly with integrating airport and airport-related development?
- 2 What are the major relationships between airport, regional and national planning stakeholders?
- 3 How have these airport region governance networks and hierarchies evolved similarities, differences particularly those dealing with off-airport interests?
- 4 What are the key implications for Australia from the above findings in terms of learnings, poor practices and best practices that can be gleaned?



Theoretical Context



'Glocalisation' (Swygenouw, Brenner) - the global/local nexus

- Broader forces have to land somewhere. Globalisation is not only about an information revolution.
- Also a revolution in people & cargo flows airports are crucial here.
- Spatial Governance (Salet & Thornley, E.R. Alexander)
- The network society has triggered greater complexity at the local level, as well as at the global level
- Creates growing complexity and challenges for planning regarding:
 - i) local decision-making process to balance local and global interests;
 - ii) planning policy frameworks;
 - iii) traditional elite hierarchies and networks;
 - iv) cross-governmental relationships



Theoretical Context, cont'd



Collaborative Planning (Healey, Graham)

- Actors are searching for new relationships with stakeholders
- Need transparent measures for coordinating information flows, inputs and consultation in planning decisions

Airport Development (Guller & Guller, Burghouwt, de Jong)

- The potential for sustainable economic growth around airports not only dependent upon airside capacity
- There's a need to consider new spatial development policies for airport regions



Method



- Initial desk-top based international literature review commenced
- Focus to discern the general types of spatial regional planning governance arrangements applying at major overseas airports
- Followed with a detailed examination of spatial governance arrangements applying to 3 airport regions selected for in-depth case study.



Timeline



Year 1

- General review of literature on airport metropoli
- Desk-top review of spatial governance models of 25 overseas airport regions preparation for 3 case studies in Year 2
- Variety of sources & techniques (content analysis, some QUT data, input from Project partners, key international analyses e.g. York Aviation (UK) and Boston Consulting Group)
- Examining: i) institutional framework, ii) spatial economic framework; iii) spatial nature of the airport regions; and gaps in traditional planning approaches
- Distilling typology of the different types of airport metropoli



Timeline, cont'd



Year 2

- Prepare, undertake, then analyse initial survey results of key overseas stakeholders/actors on spatial governance matters
- Detailed preparation for undertaking the case studies
- Analyse and write up the results from the case studies
- Detailed assessment of the inter-relationships between airports, local, regional and national planning structures and strategies



Timeline, cont'd



Year 3

- Develop a planning framework for airport-related development to assist governance stakeholders with planning decisions & policies
- Distill learnings
- Examine the implications for Australian airport regions
- Refine, finalise and submit my PhD thesis for assessment



Progress with the PhD

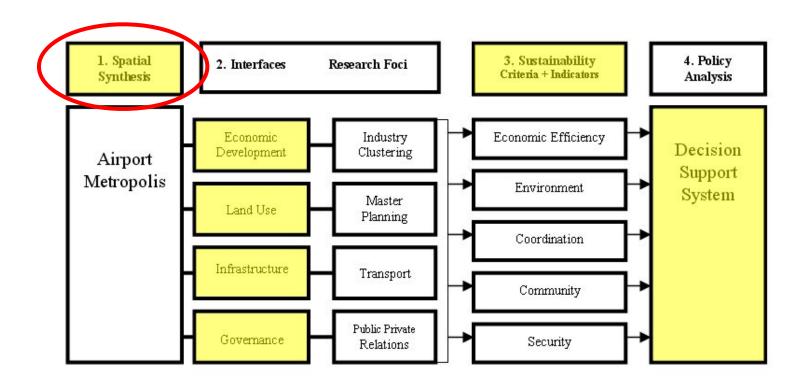


- Commenced late March 2008
- Developing a revised and expanded thesis proposal
- Co-contributor to UNSW's City Futures Research Centre submission to the National Aviation Policy Review (NAPR)
- Currently analysing submissions made to the National Aviation Policy Review for the spatial governance aspect of my thesis
- Projected visit to Kuala Lumpur in October for ACED Conference and trial survey
- Assisted with preparations for, conduct of, and analysis from the Adelaide Workshop



Links to Project







Links to Project



- Relate the airport metropolis concept to contemporary theories of urban form and structure to best understand its role in metropolitan/regional globalisation
- Develop a typological approach to deconstruct the concept into different airport-urban/regional forms, drawing on some QUT data
- Decipher the spatial governance frameworks which explicitly attempt to handle the airport/urban interface in its complexity
- Draw lessons (good and bad examples) from <u>international</u> governance models on how best to handle the spatial challenges of integrating airports and their regions.

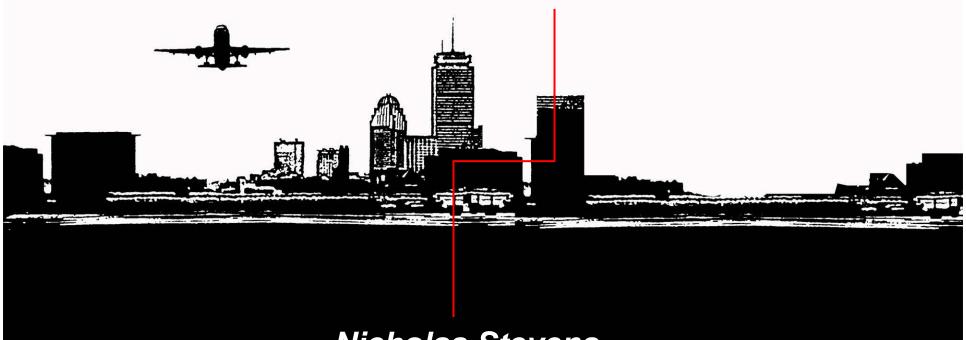


Implications for Industry

The research will:

- Help in grounding our major Australian airport regions in a considered international context;
- Lay a strong knowledge base on international airport, aviation and related general business trends in which to consider policy issues;
- Highlight what works well, what doesn't, and why, at overseas airport regions;
- Spawn further broad learnings in terms of creative ideas/practices that may be transferable, with modification, to our context; and
- Offer policy suggestions for new airport region spatial governance arrangements and mechanisms that maximise the broader planning benefits for our major airports and their airport regions.

Land Use Update



Nicholas Stevens
Airport Metropolis Project
Queensland University of Technology



Problem statement



- The changing role of the modern airport, physically and institutionally, has recast the notion of compatibility between the airport and the region.
- We need new knowledge to better ensure that potential and opportunity for both the airport and the surrounding region is maximised through compatibility and certainty in land use.







Research Questions



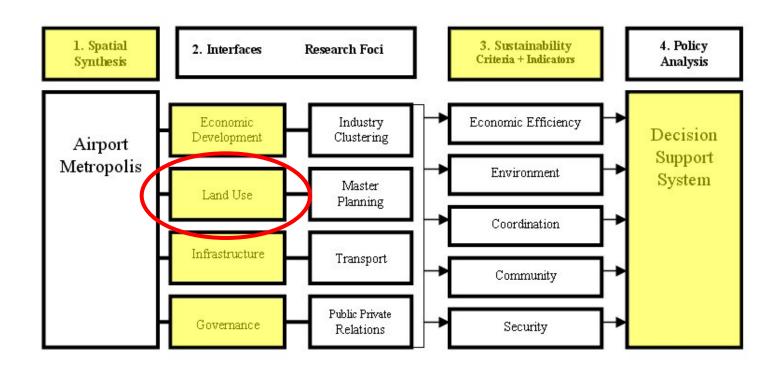
- How has land use planning impacted land use outcomes in and around capital city airports in Australia?
- What are the land uses?
- Who are the land users?
- **Why** are they there?





Links to Project







Literature Review



- Key conflicts and opportunities relating to land use in Australia and internationally
 - What is considered compatibility in airport and regional land use
 - Means by which airport and regions strive for compatibility
 - New source of data available from the *Issues Paper* responses







Literature Review





- Content analysis
- Literature over time
- 'New' airport models
 - Airport City (Conway, 1993)
 - Aerotropolis (Kasarda, 1991)
 - Aviapolis (Finavia, 2004)
 - Airfront (Blanton, 2004)



Additional Research Methods



- Case Study Workshops
 - Adelaide (April 2008)
 - Brisbane (August 2008)
 - Canberra (November 2008)
 - **Schiphol** (2009)
- Land Use Classification of Airports and the Region
 - Internationally
 - Nationally



Progress to date: Land Use Study



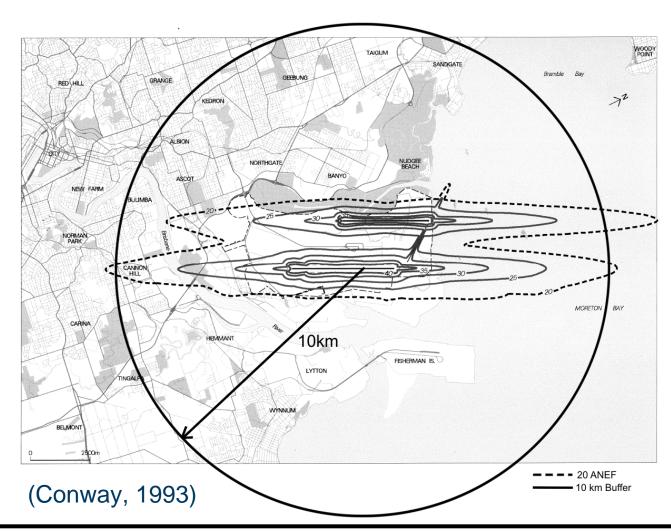
- Understanding past and current land use around airports is key to the success of cooperative airport and regional development
- Classification Methodology
 - Top 25 airports per region (WLU)
 - Modified 'Anderson' system
 - 1:30,000 scale
 - Satellite images
 - (Google Earth &ESRI GIS servers)
 - □ 10km buffer (radius)





Airport City Area of Influence

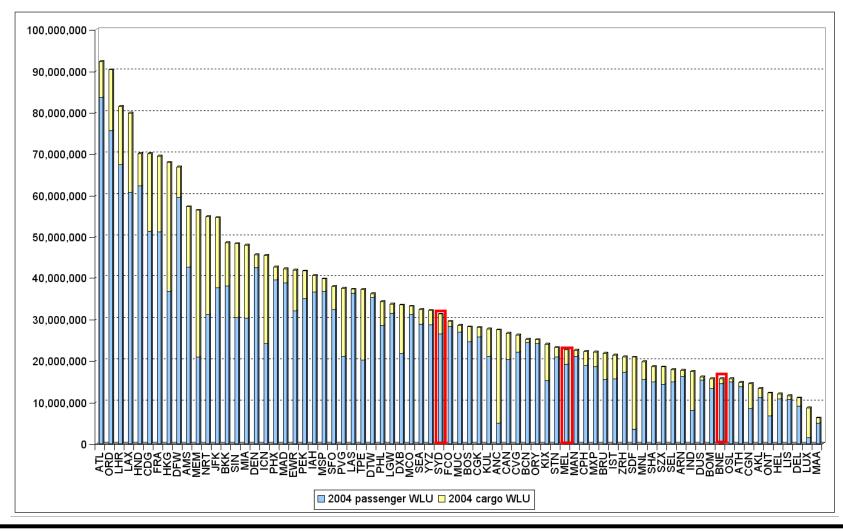






Passenger/Cargo WLU 2004

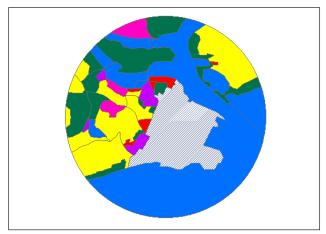




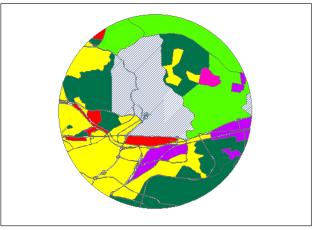


Land Use Classification Examples

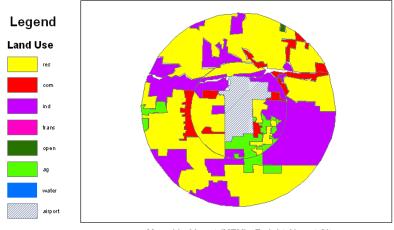




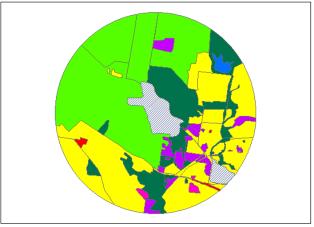
Changi Airport (SIN) - Airport City



Madrid Barajas International Airport (MAD) - Passenger Airport City



Memphis Airport (MEM) - Freight Airport City

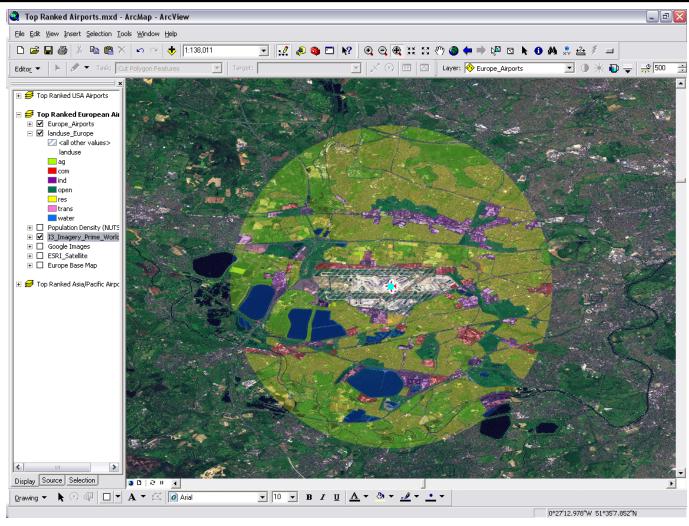


Melbourne Tullamarine International Airport (MEL) - Small Airport



Land Use for Heathrow







Land Use Results







Some trends



North American airports have:

- Twice as much residential land around airports (45%) compared to Europe and Asia
- And up to twice as much commercial (18%) & industrial (23%) land uses compared to Europe and Asia

Asia Pacific airports are dominated by:

water (22%), agriculture (36%) and residential (18%)

European airports:

- High agricultural land (34%) & open space (17%) as surrounding uses
- Low commercial (8%) and industrial uses (4%)



Australian On-Airport Land Use

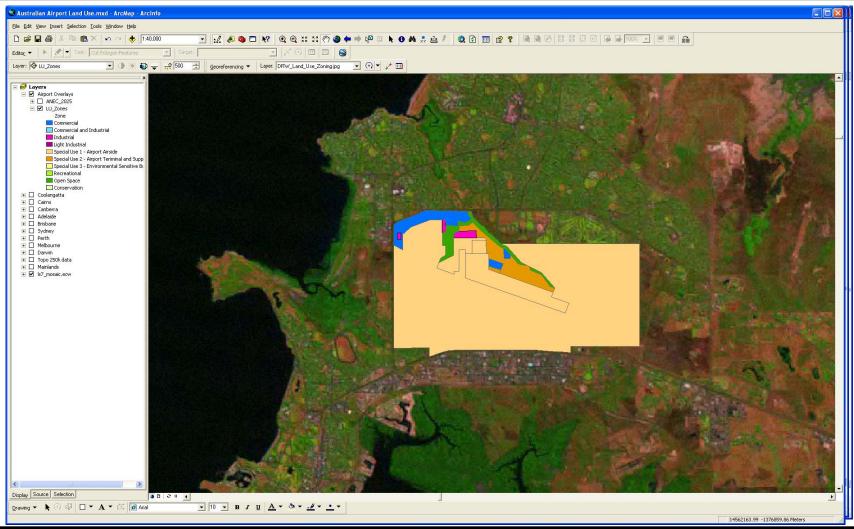


- Early work in the Australian context also has concentrated on regional land use, yet importantly also on-airport land use
- Comparing and classifying land uses outlined in airport master plans
- Need to compare apples with apples, *Airports Act* encourages the use of similar languages
 between regions and MP, yet not nationally



Master Plans – Land Use



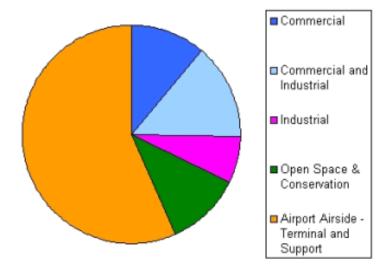




On-Airport Land Use Australia



Land Use Zoning Australian Airports



Begin calculate % of onairport land use

Not differentiating non aero and aero dev within the classifications

Detailed on site analysis will give a better indication of **Who** the land users are



What next?



- More land use mapping....
 - Mark Historical contexts
 - On airport international
 - National land user identification and verification
- Canberra Workshop
- Reduce the scale and begin sub classification both onairport and in the region:
 - Industrial
 - Light industry

 - Clothing manufacturing
 - E etc
- Examine synergies and complementarities of **what** and **who**

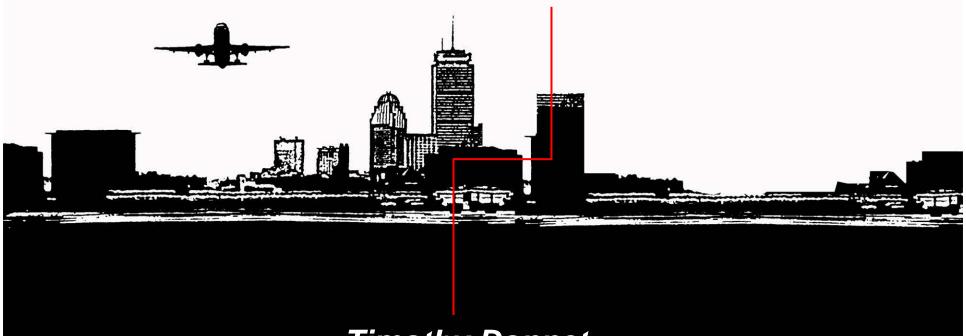


Implications for Industry



- Construction of new knowledge to assist in the determination of land use compatibility on airports and within the region.
 - What are the land uses?
 - Mho are the land users?
- International airport analyses -highlighting issues, impacts and opportunities for the Australian context.
- Evaluation of the range of mechanisms utilised internationally to assist airport and regional land use planning and development

Governance Update



Timothy Donnet
Airport Metropolis Project
Queensland University of Technology



Exploring the interactions of governance and infrastructure development



Research Issues

- Airport development impacts regional plans, and regional development impact airport plans
- Competing interests across multiple jurisdictions to capture or influence locus of control in airport development
- Complexity in defining responsibility and control



Research Questions



- How (and why) do different modes of decision making interact with airport development initiatives?
- Does this interaction affect the ability of an Airport Metropolis to achieve its planned outcomes?

Interpretivist Approach

Aim to understand phenomena through enriched interpretation



Links to Project



Provides insights to how governance impacts the effectiveness and efficiency of major infrastructure projects

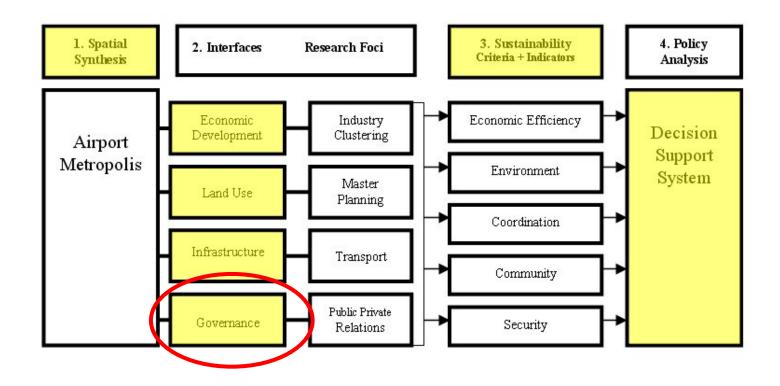
Decision Support System

Ability to create governance scenarios based on observed planning interactions between airport and regional spaces.



Links to Project







Literature Review



How authority is ceded in decision making

Trend from Government to Governance

(Rhodes 1996; Stoker 1998)

Modes of Governance

Network (Jones, Hesterly & Borgatti 1997; Keast, Mandell & Brown 2006)

Market (Lowndes 1998)

Hierarchy (Williamson 1996; Fischer 2003)

Hybrid-Governance Arrangements (Bardach & Eccles

1991; Lowndes & Skelcher 1998; Keast, Mandell & Brown 2006



Gaps in Literature



- Decline in hierarchical governance (Hill & Laurence 2004)
- Evolution of polycentric regulatory regimes (Black 2008)
- Crowded policy domains (Keast, Mandell & Brown 2006)
- Emergence of Airport Metropolis as a field of literature (Kasarda 2000; Stevens, Baker & Freestone 2007)
 - Who benefits, how, and what does that mean?
 Who gets to make the decisions?



Method



Year 1

- Literature review and method development
- Filot method on cases from Schiphol Airport

Year 2

- Revise method and develop Brisbane Airport cases
- 1-2 other Airports to be studied
- Data analysis

Year 3

- Data analysis continues
- Conclusions drawn
- **Scenarios developed for DSS**



Progress-to-date



Literature review

Methodology

V

- Semi-structured interviews
- Survey data
- Background case data
 - Schiphol

V

Brisbane

V



Implications for Industry



- Maps governance arrangements for a number of current / recent infrastructure projects
 - Allows the identification of both good and sub-optimal governance arrangements for learning and improvement
 - Enhances the understanding of project outcomes based on different approaches to decision making and coordination
- Provides a tool for airports to identify appropriate decision making strategies for implementing future projects



Future Work



- Comparative study between cases both domestic and international
- Governance arrangements between industry, airport and region
- Governance scenarios for the DSS

Infrastructure Update



Luis Ferreira
Andre Dantas
Airport Metropolis Project
Queensland University of Technology



Problem statement



Airport metropolis impacts on the performance of regional land transport system;



Research Questions

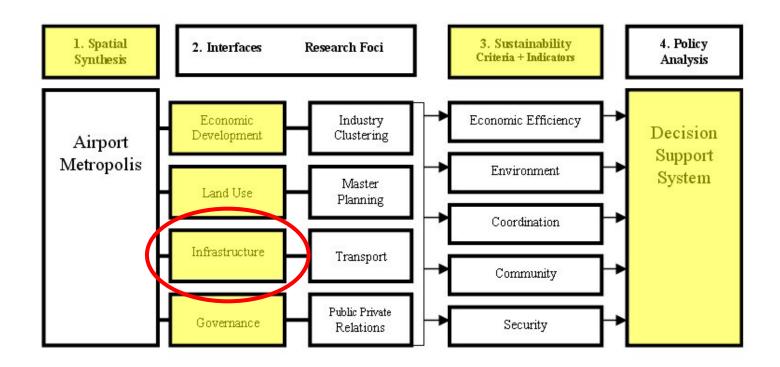


- How does an Airport Metropolis affect travel behavior dynamics?
 - Short/Medium/Long-term planning horizons?
 - Regional/Local effects?
 - Network impacts?
 - Multi-modal interactions?
 - Benefits/Disbenefits?
 - System operational costs?



Links to Project







Method



- Analysis of previous regional transport studies;
- Creation of land use-transport scenarios;
- **Study of previous modelling exercises;**
- Initial modelling and testing of land use-transport scenarios;
- Discussion and feedback with modelling practitioners;
- Refinement of modelling and testing of land usetransport scenarios; and
- **Analysis and conclusions.**



Progress-to-date



- Review of existing documentation;
- Review of state-of-the art modelling techniques;
- Contact with local practitioners;

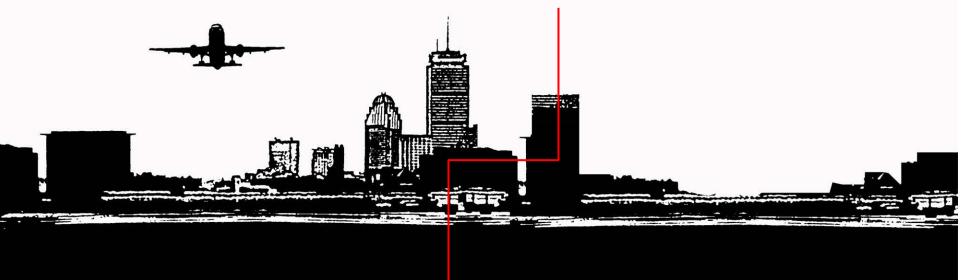


Future work



Mark Obtain existing data and models;





Philip Kimmet
Airport Metropolis Project
Queensland University of Technology



Problem statement



A need to address the environmental implications arising from increasing aircraft traffic ie. sustainable operations and development as defined by contextual case study approaches to key issues such as noise.



Research Questions

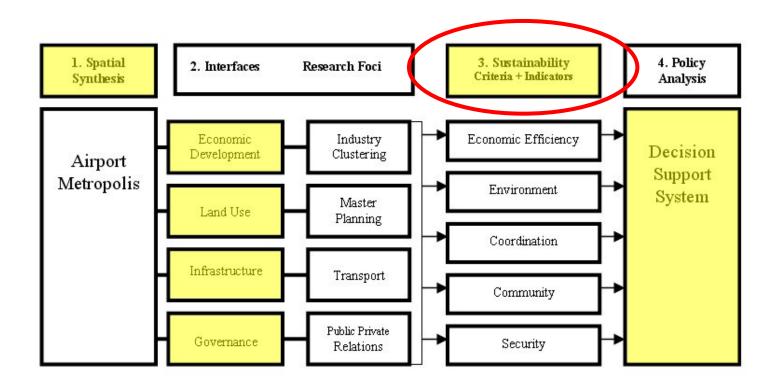


- 1. What are sustainability indicators and Environmental Management Systems (EMS), can they be facilitators of dynamic, creative and open-ended sustainability strategy-making, and how?
- 2. How effective are existing standardised metrics for measuring and comparing airport operations and development, and how can they be improved?



Links to Project







Links to Project



- A primary deliverable of the project is a DSS which fully accommodates the sustainability imperatives intrinsic to modern operational environments.
- Data analysis within EMS frameworks that informs key topical issues (ie. noise).



Literature Review



- Literature generally assumes that solutions are largely technical, and will emerge as transaction costs reduce.
- Review points to the importance of using systems analysis in the form of an EMS.
- Identified gaps in the analysis of emerging technical data (ie. from MAGENTA, NFPMS etc.) to help inform debates over aircraft traffic volumes, curfews, flight paths and expansion.



Method

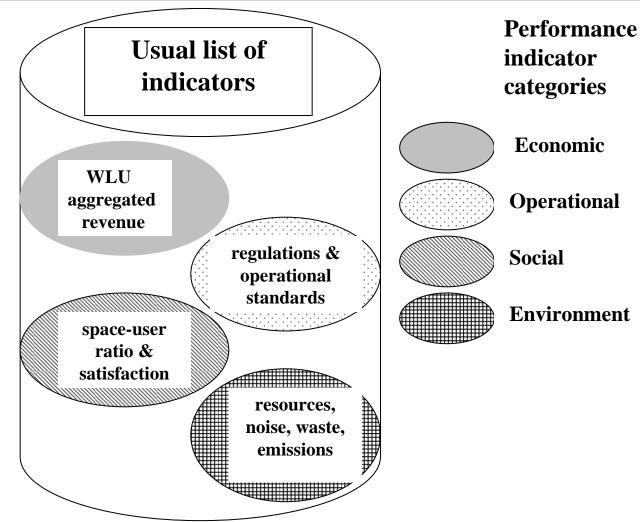


- Year 1. Literature review and problem identification.
- Years 2 and 3. Employing mixed scanning and multi-criteria analysis techniques to analyse data and develop indicators that are part incrementally improved (for appropriate existing indicators), and part rational-comprehensively reconstructed (for topical and non-contextually developed indicators).



From garbage can to mixed scan







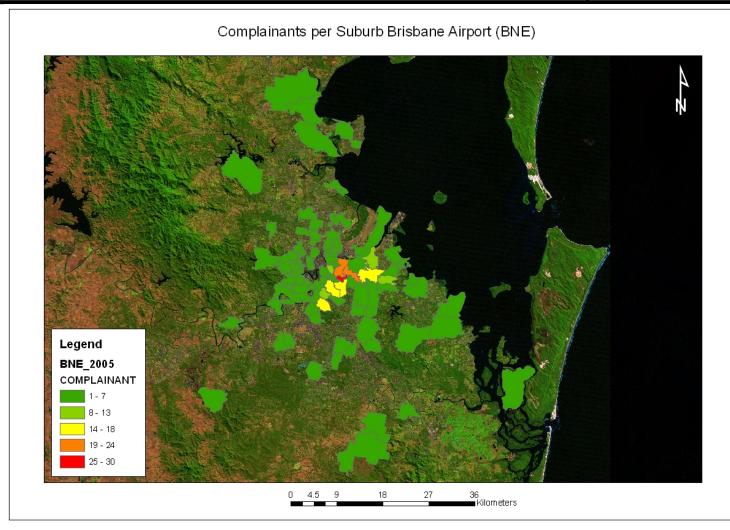
Progress-to-date



- Literature review completed.
- Commenced collecting case study data
- Initial analysis commenced

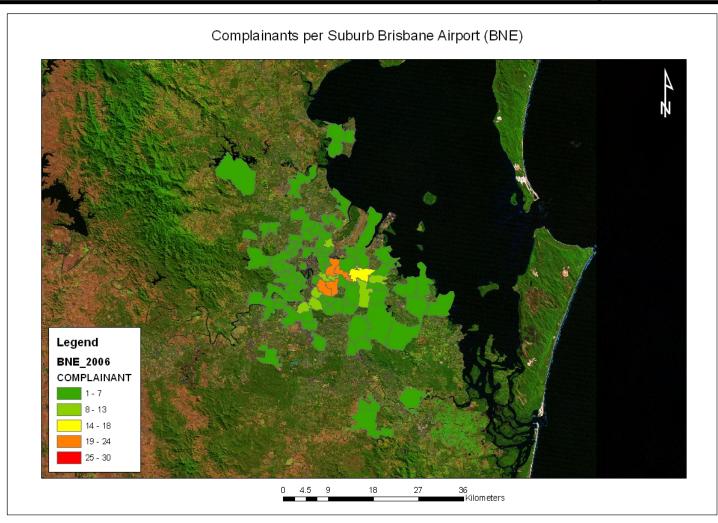






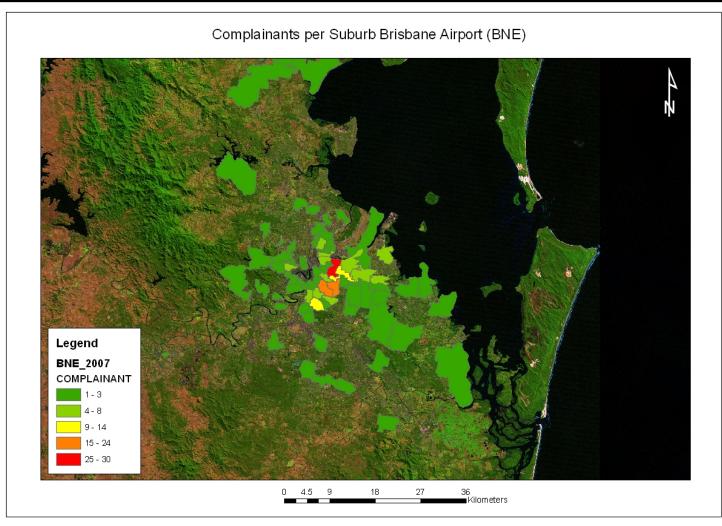






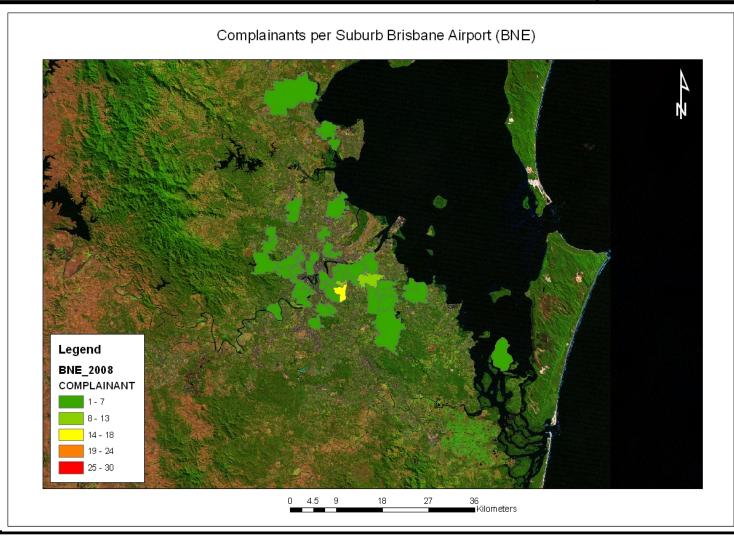














Implications for Industry



Contextual case study analysis of environmental performance.

- Improved environmental measuring, monitoring and reporting systems.
- Sustainability indicators for the project Decision Support System.



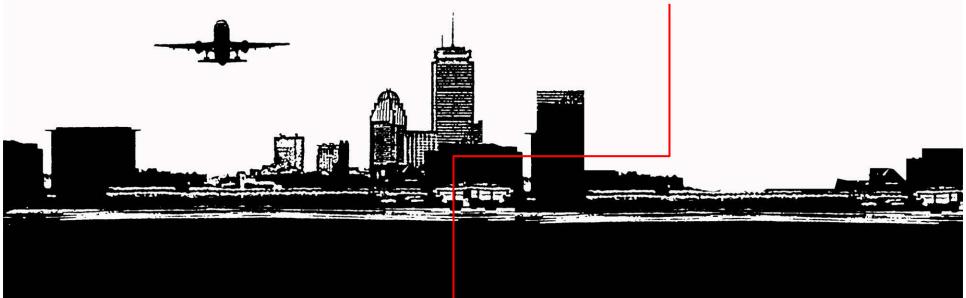
Future Work



- Further data collection and processing.
- A focus on the noise data analysis with a view to determining precise sub-level indicators.

Translate analysis findings into policymaking, planning and decision support.





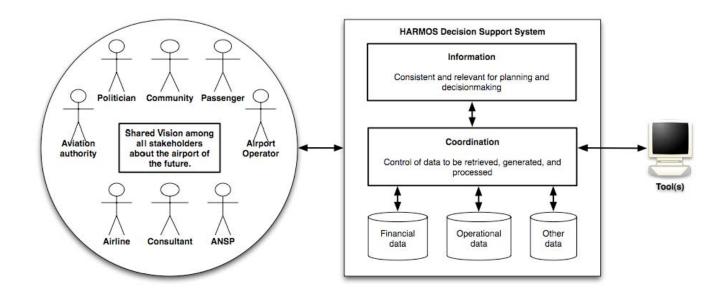
Arron Walker
Airport Metropolis Project
Queensland University of Technology



Problem statement



- No holistic approach
- **Fragmentation**





Research Questions



- What **DSS functionality** should be provided to facilitate fruitful discussion and negotiation about an airport region's development?
- How do we **integrate** the various airport **sub-system components** to model the complete airport complex system?
- How do we **represent** the importance of respective **sustainability indicators** and the relationships between them to create an intuitive intelligent DSS interface?



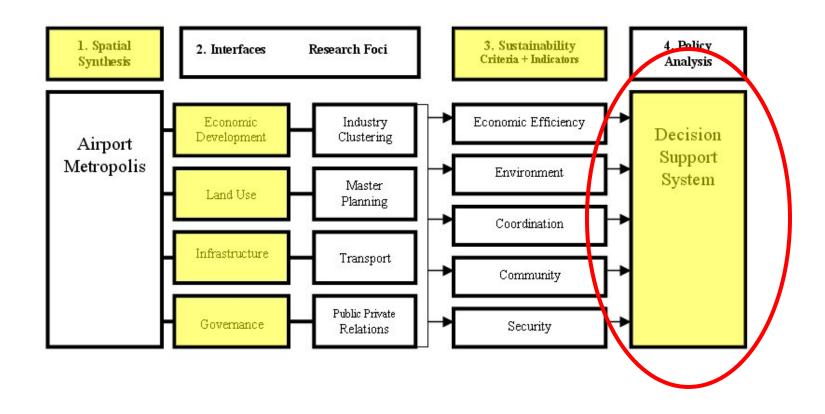




Links to Project



Major deliverable of Project





Literature Review



- Policy Analysis DSS
 - Systematic approach (Walker 2000)
 - Provides holistic approach
 - Tests alternative policies and scenarios
 - Handles uncertainty
- Planning support systems PSS or SDSS
 - Les Use of GIS to support policy analysis approach
 - Australian examples (Lyons 2008, Pullar 2008)
 - Commercial examples
 - MetroQuest SEQ 2020 plan



Literature Review



2 Current Trend Alternate Scenario Population Location Job Location Scenario Summary **Development Density** By Key Indicator Transit Plan Urban **Transportation Options** Containment Household Alternative **Energy & Air Quality** Affordability Transportation Reduce & Recycle Water Conservation Fiscal Commute Population Growth Health Time Economic Growth Waste Fossil Fuel Mgmt Reduction Water Greenhouse Conservation Gas Reduction Eco-Footprint Reduction



Method



Year 1

- Literature review
- Review HARMOS

Year 2

- DSS URS (stakeholders' input)
- Data collection
- **DSS** development

Year 3

- Integration of models
- **DSS** development

Year 4

Domestic and international case studies (test DSS)



Progress-to-date

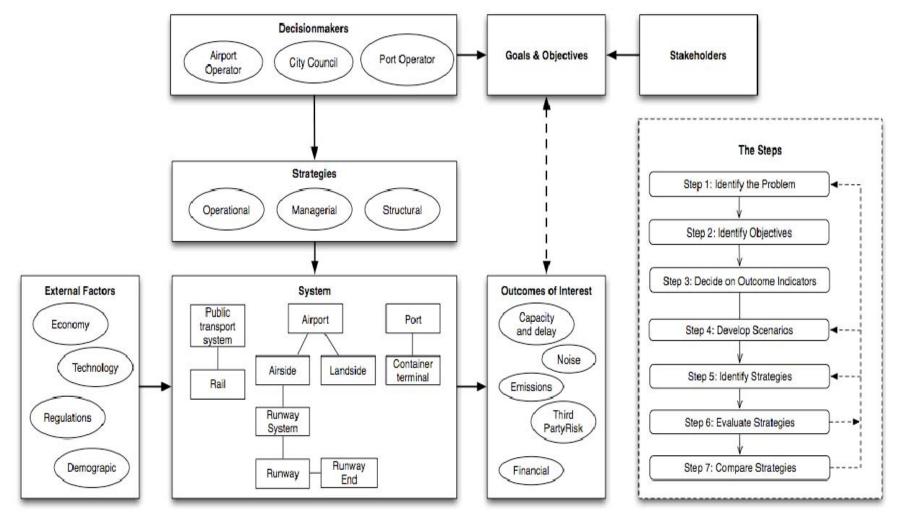


- Literature Review ✓
- System Development
 ✓
 - □ Develop system diagram ✓
 - Identify decision making domain ✓
 - Identify external factors ✓
 - Adelaide & Brisbane Workshops
 - Planning support maps
 ✓
 - Planning GIS data
 ✓
 - Evaluation of HARMOS DSS ✓



HARMOS Framework

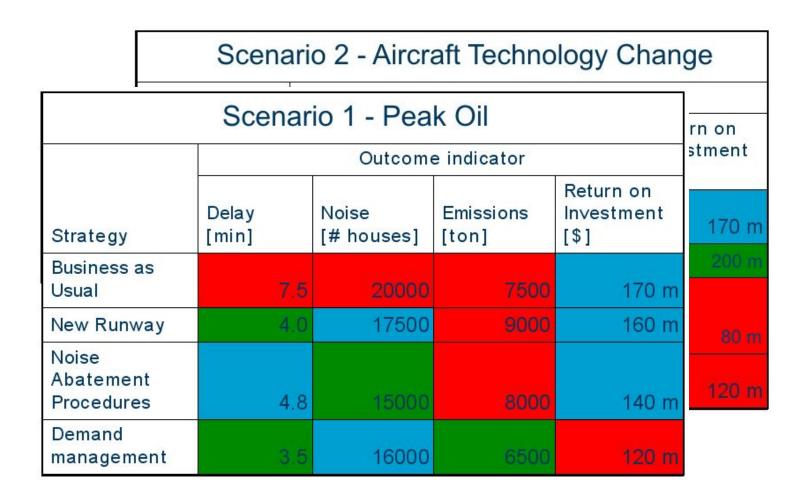






HARMOS score card

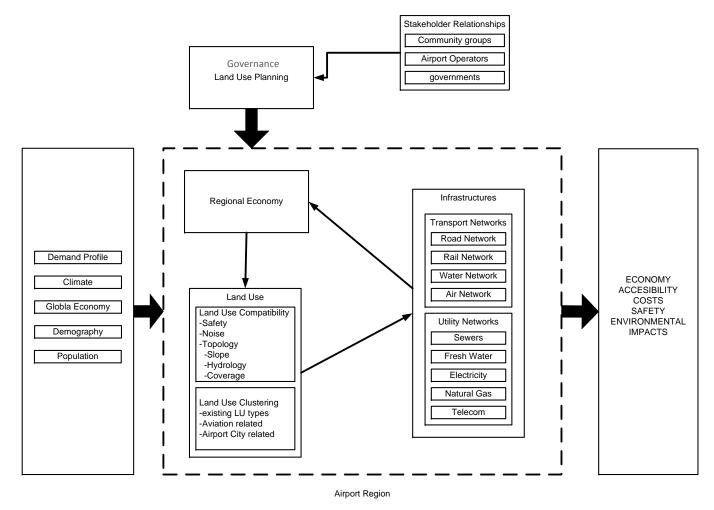






System Diagram







Progress-to-date



- Land use
 - Airport Region
 - Airport Property
- Aviation impacts
 - ANEF

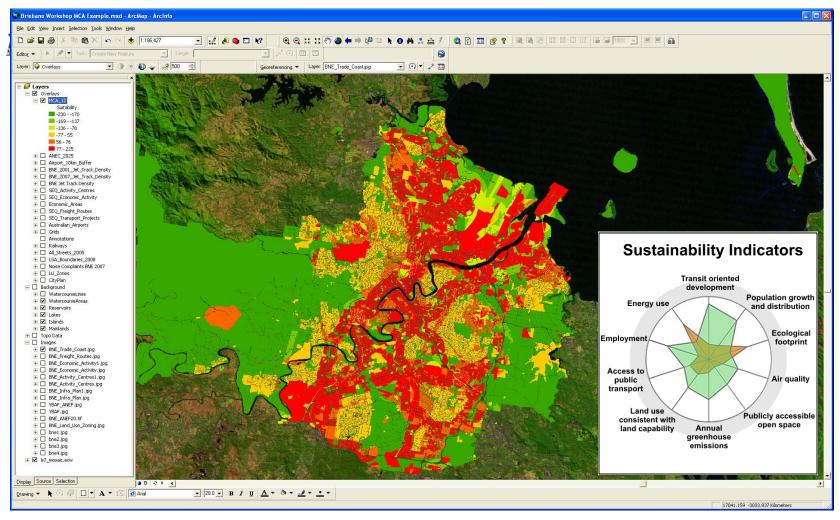
 - Moise complaints
- Multi Criteria Analysis
 - Compatible zoning





Spatial DSS – Progress-to-date







Implications for Industry



- Holistic approach to airport planning
- Involvement by all stakeholders
- Evaluation of
 - Multiple strategies
 - Multiple scenarios
- Improved decision making



Future Work



- Extend HARMOS so that it captures the additional complexity of airport regions
- Customise HARMOS for use in the Brisbane case study



Lunch





Project Introduction



- Workshop outline and introduction to the project for new participants
- Breakout groups to workshop issues relating to:
 - Land Use & Environment
 - Land Use & Infrastructure
 - Land Use & Governance
 - Land Use & Economic Development



Confirmation and Prioritisation





Response & 'Next Steps'





Summing Up



