User interaction during the development of the Waikato Integrated Scenario Explorer (WISE)

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Outline

- Project context
- What is WISE?
- Design and development process
- User feedback and system enhancement
- Conclusions and recommendations

Project structure

Developing and applying planning tools to make informed choices for the future

Environment Waikato Regional Council

Advisory Group

Local & Central Government

OBJECTIVE 1:

Improved communication & deliberation tools

agresearch

SCION

C3ED

Foundation for Research Science & Technology

OBJECTIVE 2:

Spatial decision support system development

Landcare Research Manaaki Whenua

EERNZ

NIWA

RIKS

The University of Waikato

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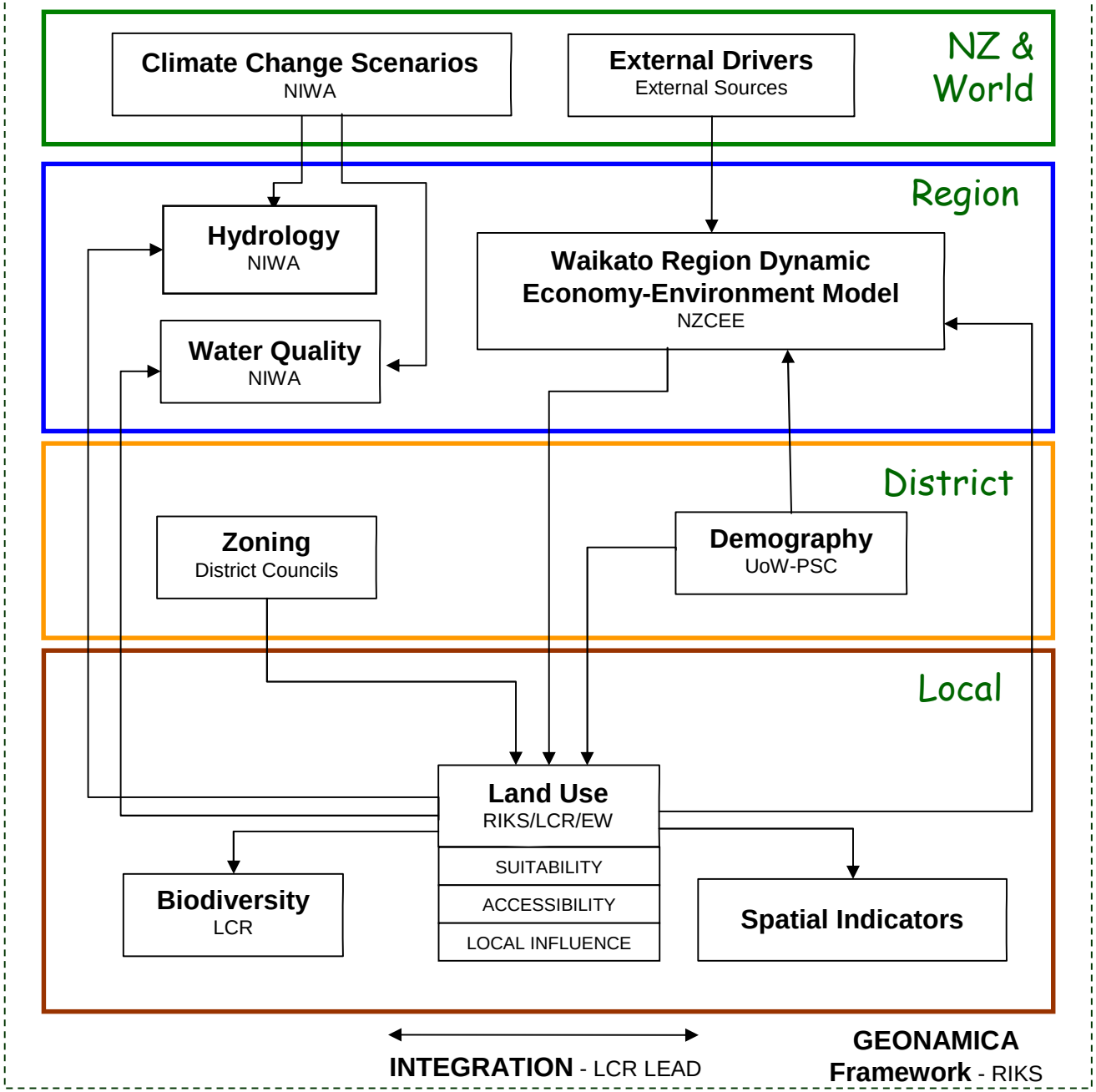
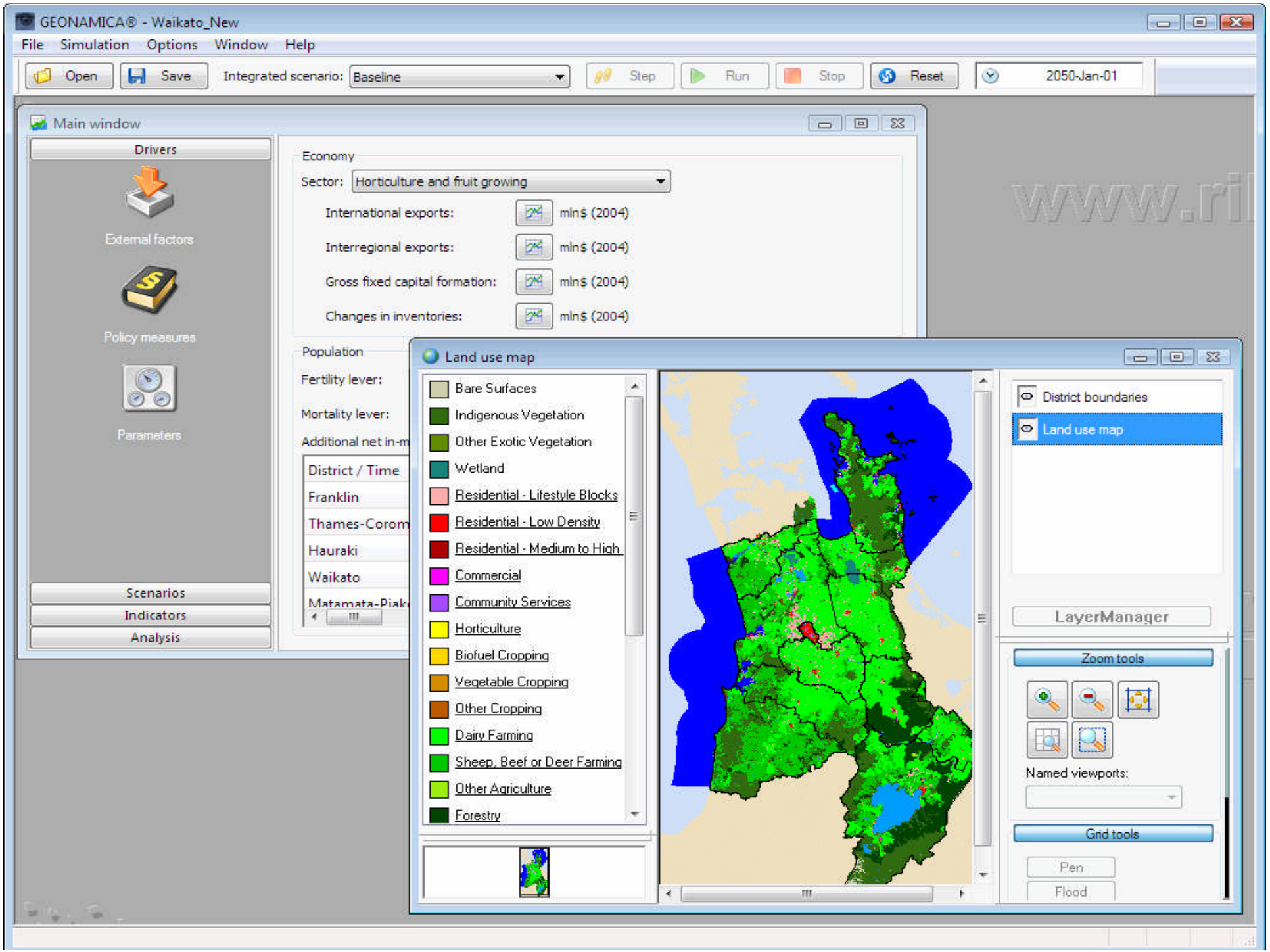
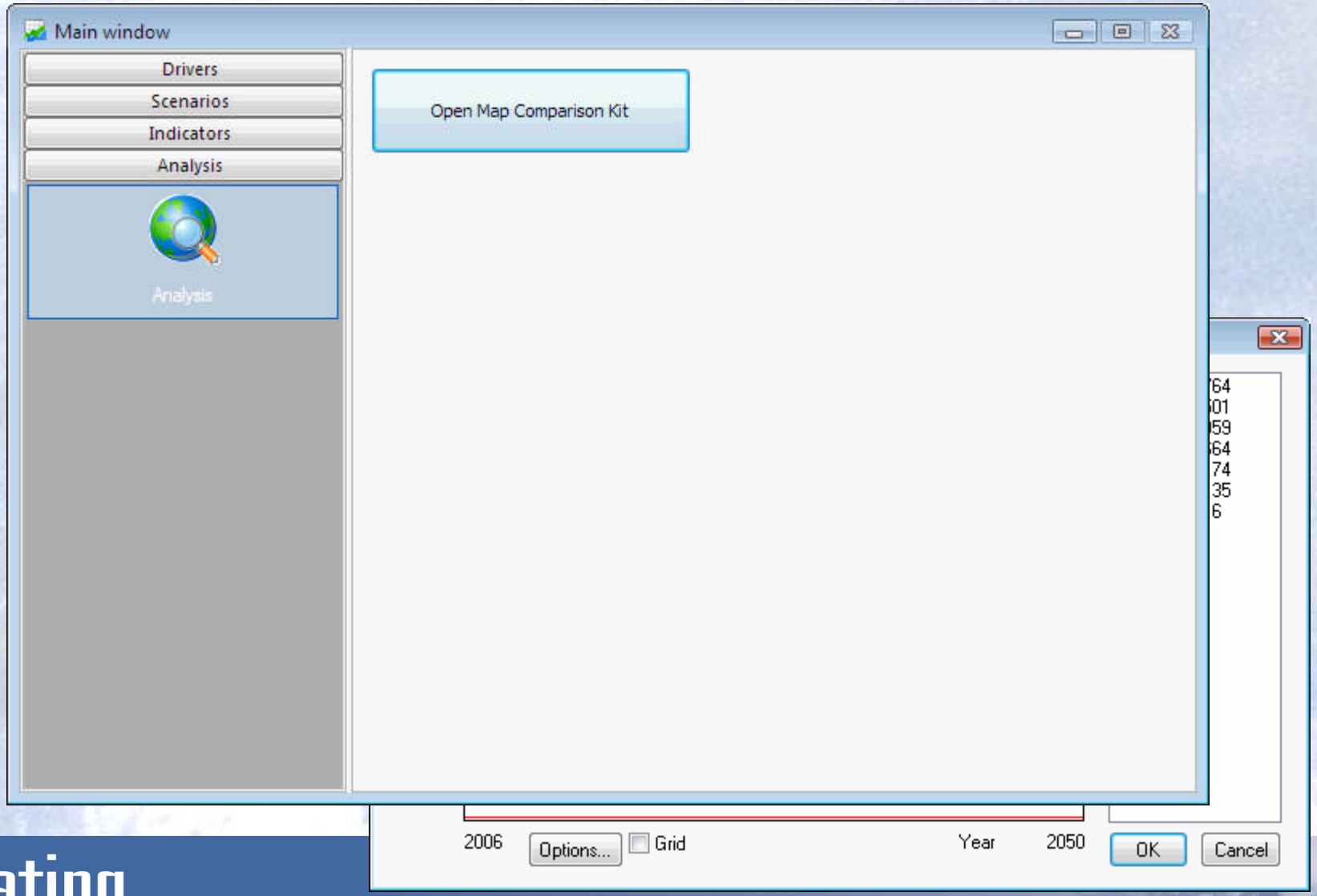
What is WISE?

- Integrated spatially explicit decision support system (ISDSS) to support long-term, integrated planning
- System of interacting models linking aspects of economy, environment, and society
- Spatial, dynamic systems model
- Multi-scale: regional – district – local (200 m cells)
- Stand-alone software application

WISE System Design




GEONAMICA® - Waikato_New
File Simulation Options Window Help
Open Save Integrated scenario: Baseline Step Run Stop Reset 2050-Jan-01
Main window
Drivers
External factors
Policy measures
Parameters
Scenarios
Indicators
Analysis
Economy
Sector: Horticulture and fruit growing
International exports: mln$ (2004)
Interregional exports: mln$ (2004)
Gross fixed capital formation: mln$ (2004)
Changes in inventories: mln$ (2004)
Population
Fertility lever:
Mortality lever:
Additional net in-m
District / Time
Franklin
Thames-Corom
Hauraki
Waikato
Land use map
Bare Surfaces
Indigenous Vegetation
Other Exotic Vegetation
Wetland
Residential - Lifestyle Blocks
Residential - Low Density
Residential - Medium to High
Commercial
Community Services
Horticulture
Biofuel Cropping
Vegetable Cropping
Other Cropping
Dairy Farming
Sheep, Beef or Deer Farming
Other Agriculture
Forestry
District boundaries
Land use map
LayerManager
Zoom tools
Named viewports:
Grid tools
Pen
Flood



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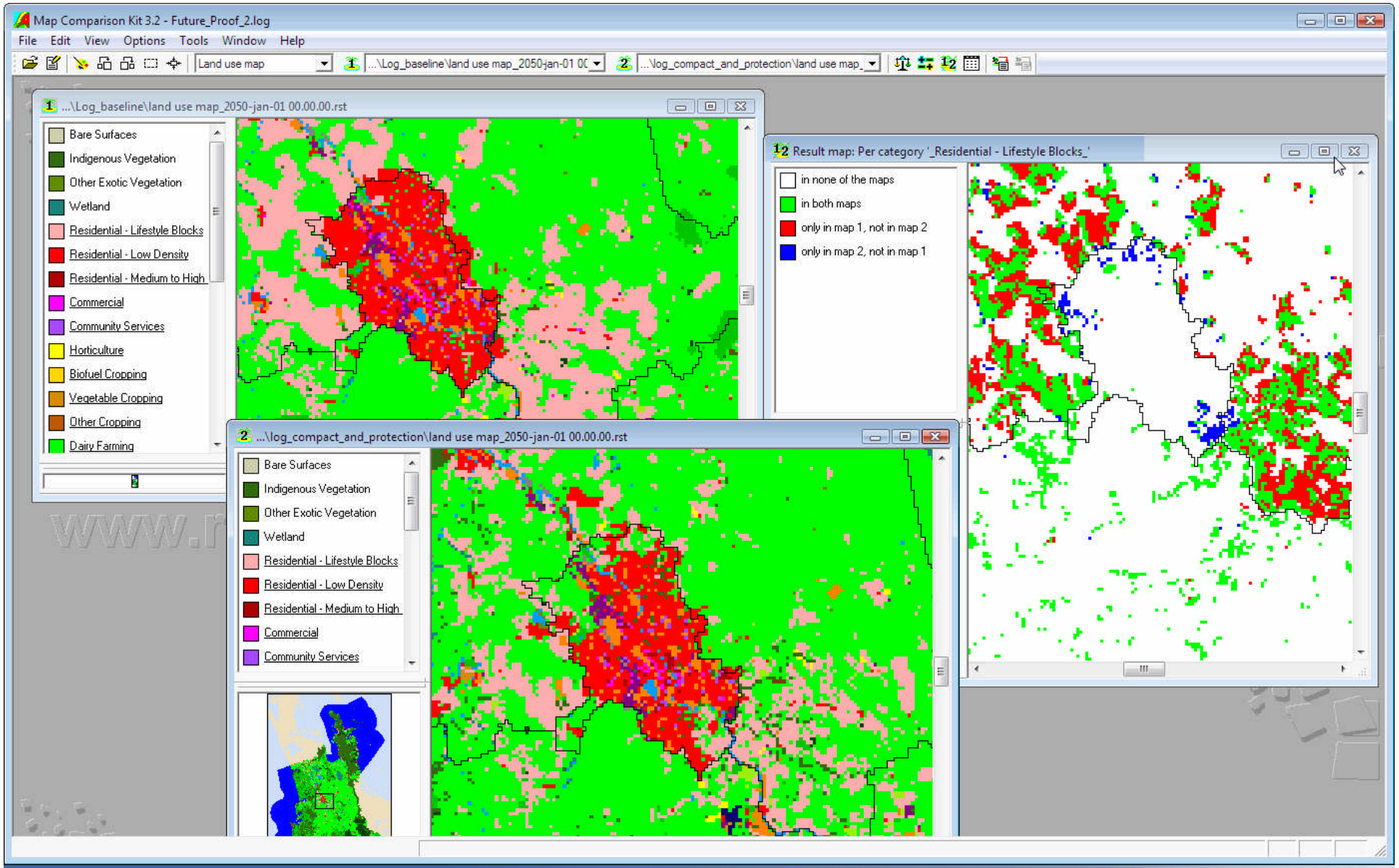

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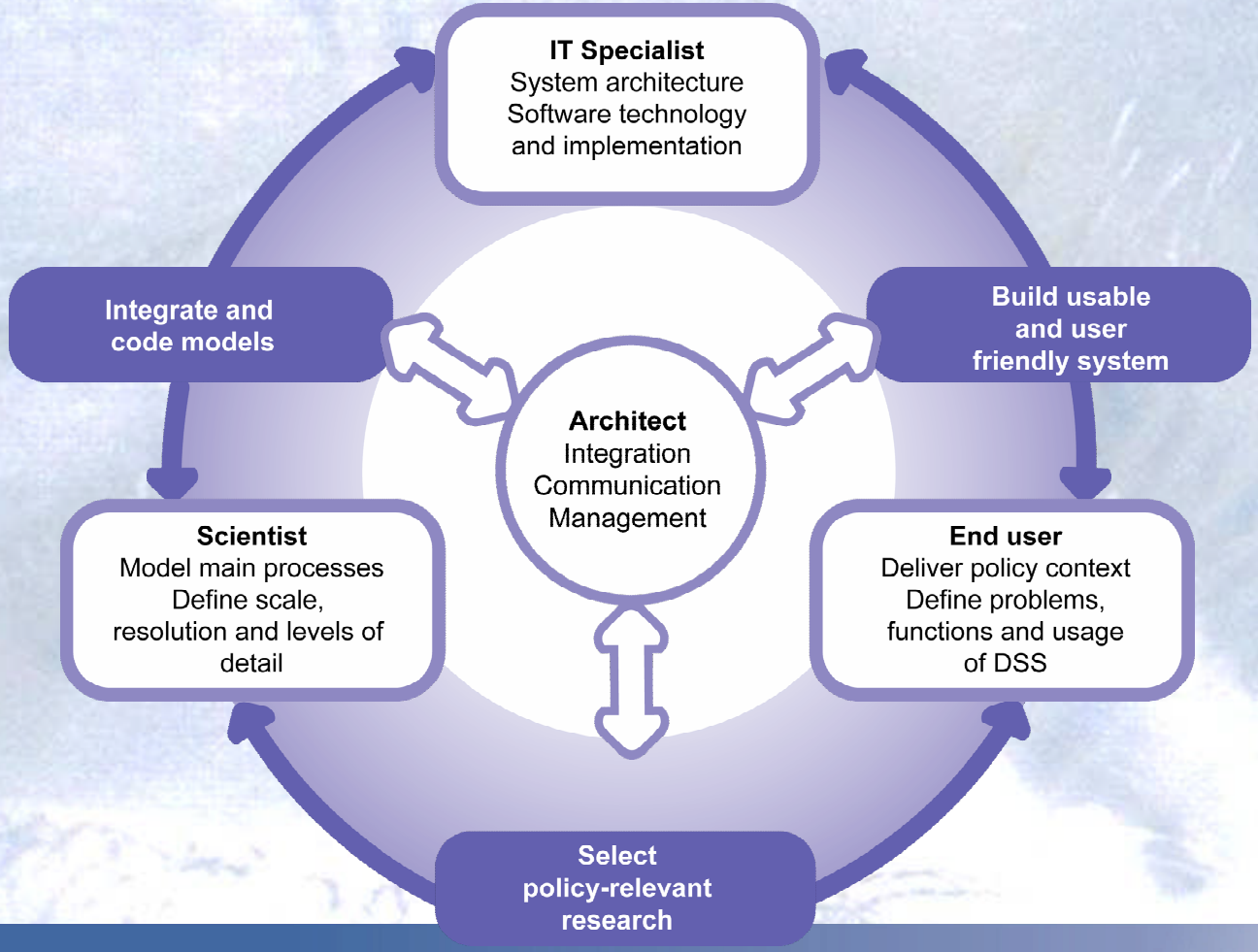
An iterative and interactive process



Prototyping

- Scoping
- 1st prototype: what can be expected?
- 2nd prototype: what needs improving?
- Final project version and implementation

Scoping

- Aim
  - Clarify policy context, functions, models included
- How?
  - Collaborative proposal writing users and scientists
  - Workshop sessions
  - Interviews
- Results
  - Strategic decision making / integrated planning
  - Use in participatory sessions
  - Dual user interface

1st Prototype: what can be expected?

- Aim
  - Raise awareness and gather user feedback
- How?
  - Series of 1-day workshop sessions & questionnaires
- Results
  - Question and answer document for website
  - Trigger for discussion on inclusion of policy measures, operation of the system in user organisation, relevance at district or national level

2nd Prototype: what needs improving?

- Aim
  - Present progress and gather user feedback
- How?
  - Training and testing by core users
  - Selection of case studies and preparation of training
    - Regional policy statement (statutory)
    - Future proof growth strategy (non-statutory)
    - Narrative storylines – 4 different futures for the Waikato
  - Series of 1-day workshop sessions & questionnaires

QUESTION	FIRST PROTOTYPE		SECOND PROTOTYPE	
	Agree	Disagree	Agree	Disagree
My organisation would benefit from using WISE	26	3	21	2
WISE enables communication among planners and decision makers	29	0	24	0
WISE is an easy to use and intuitive tool	17	5	19	5
I have the impression that in order to use WISE, I need a lot of specific knowledge	21	11	17	7
I think learning to use WISE is worthwhile, considering the results I can obtain	27	0	20	1
I would prefer a simpler tool, even if that means less control on the parameters	6	19	6	15
I would prefer a more complex tool, even if that requires more parameters to deal with	9	13	8	15

2nd Prototype: what needs improving?

- Results (1)
  - Users better able to pinpoint benefits and ideas for improvement, e.g.
    - Flexible way on including spatial planning
    - Improved ideas for indicator development
    - Suggestions for additional case studies
  - Integrative character of WISE is seen as both a benefit and a challenge: complexity allows for assessment of (unwanted) side effects of policies, but human capacity has to be sufficient to interpret results

2nd Prototype: what needs improving?

- Results (2)
  - Credibility of results crucial
  - Main expected benefit from users:
    - Explore ‘what-if’ scenarios in policy development
    - Provide support in integrated catchment planning and transport network planning
    - Work with district councils in negotiating district and regional policies and rules
    - Integrate and analyse district policies that vary across adjacent boundaries
    - Explore scenarios in workshops with the public

Final project version and implementation: are we successful?

- Barriers identified:
  - Existing practice needs to be altered
  - Need for training and capacity building
  - Time frames are often under pressure: political expediency can drive over good practice
  - Statutory processes and proposed policies often legally appealed – reluctance to use new methods
  - Cost/benefit of a different approach
- Trial in non-statutory process

Final project version and implementation: are we successful?

- Create an implementation plan and identify (a few additional) champions who can
  - Improve knowledge about WISE and make the system useable, credible and supported
  - Identify further improvements and modifications
  - Minimise time and resources required to use WISE
  - Identify strategies to change the existing paradigms of approaches to planning and community consultation
  - Plan for required technical support
- Secure long-term funding

Conclusions and recommendations

- User interaction crucial during the development – champions
  - Usefulness and user-friendliness
  - Adoption in user organisation
  - How models work and how models are coupled
- Time for individual components vs integration
- Prototyping improves understanding and hence facilitates discussion and builds trust
- Hands-on experience with practical examples was valued positively by users – library of documented examples
- Communication channels are indispensible, but can easily break down – reserve funding!

Thank you!

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