



CRC for **SPATIAL INFORMATION**

*crc•si*

# Current Research Trends from an Australian Perspective

*Dr Philip Collier  
Research Director*

**43°pl**

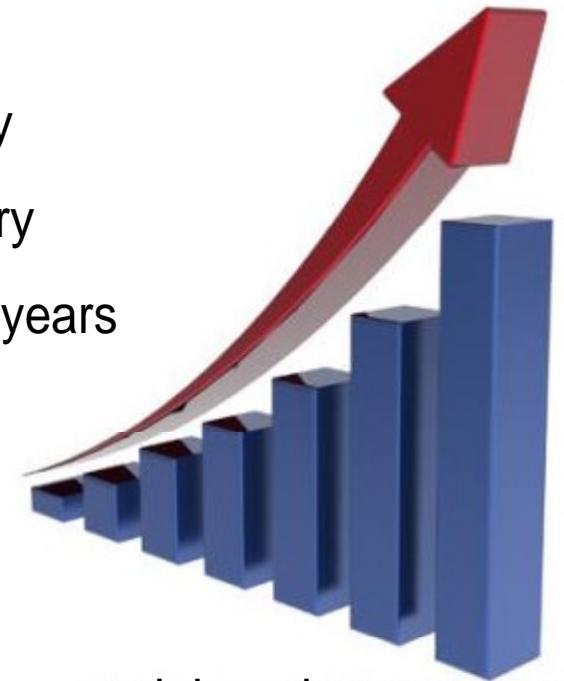
CRC for **SPATIAL INFORMATION**

  
An Australian Government Initiative



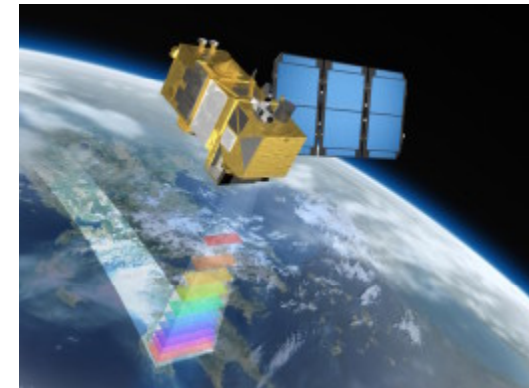
## Growth in the spatial sector....

- 11% pa in the **Global Navigation Satellite System** market 2010-2020
- **300%** growth in **Location Based Services** revenues 2010-2015
- **5** nations building new GNSS/RNSS systems
- **40 nations** with imaging satellites and 160 sensors
- **20-30 Earth observation satellites** launched annually
- 12% pa compound growth in sales of satellite imagery
- **40 countries** launching EO satellites over next seven years
- 30% pa global growth in **geo-services** industries
- 16% pa growth in the global **GIS** industry
- 35% pa growth in parts of the **US GIS** market
- **Geospatial health** set to become the **largest** global geospatial market



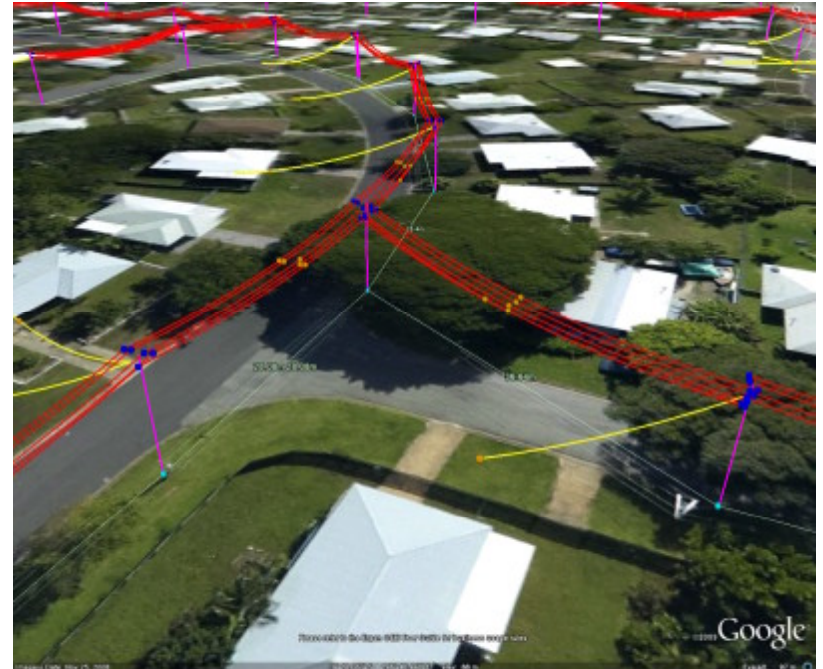
# Mainstreaming spatial....

- Growing spatial awareness
- Growing spatial dependence
- Consumerisation of spatial technologies



## Some facts...

- Australia and New Zealand
- Unincorporated joint venture
- 102 partners
- End-user driven research
- Accelerate spatial enablement
- \$185m over 2010-2018
- 200 researchers
- 40 PhD students
- 40-50 multi-year projects



## University partners...



## Government partners...

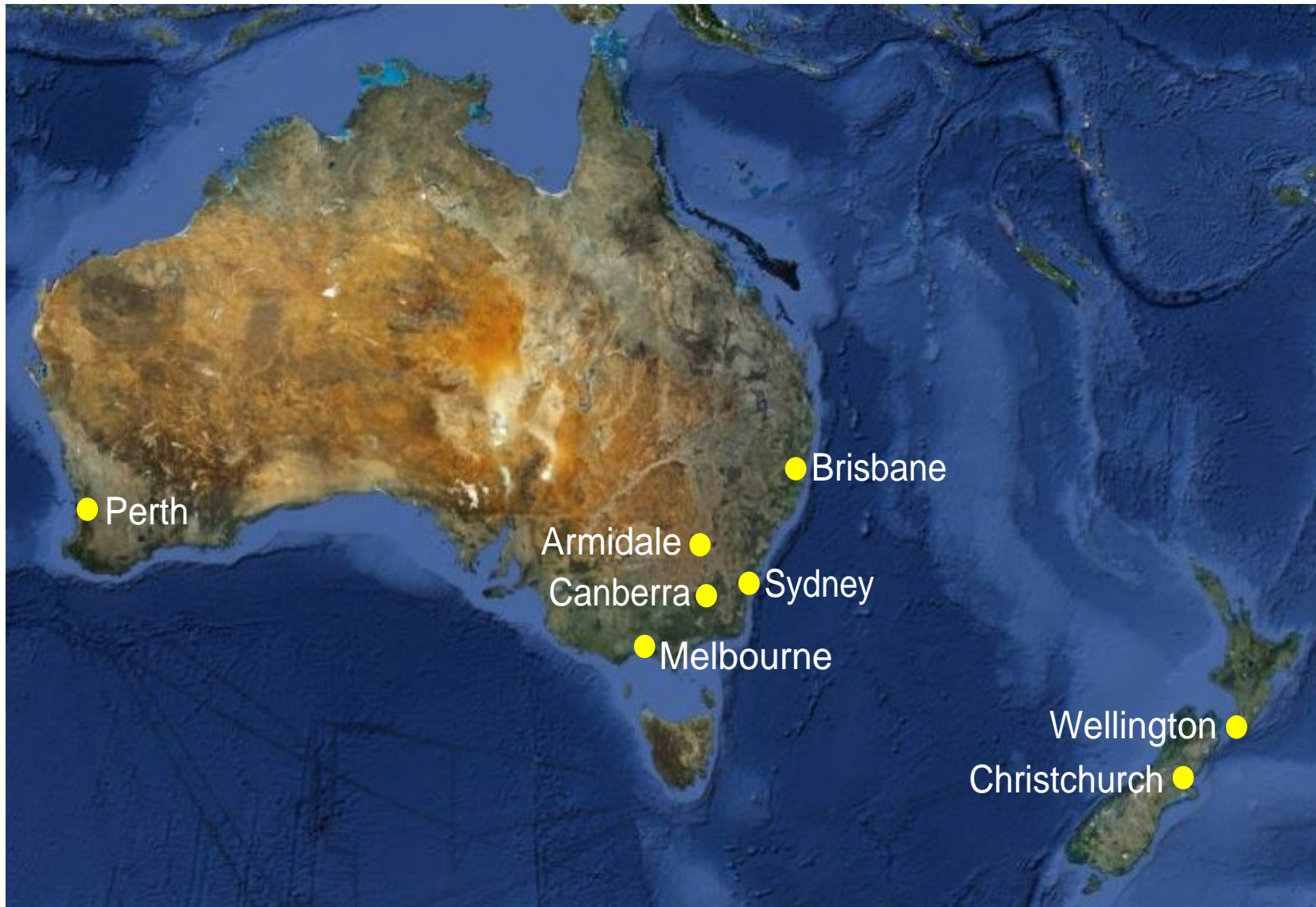




# International partners...

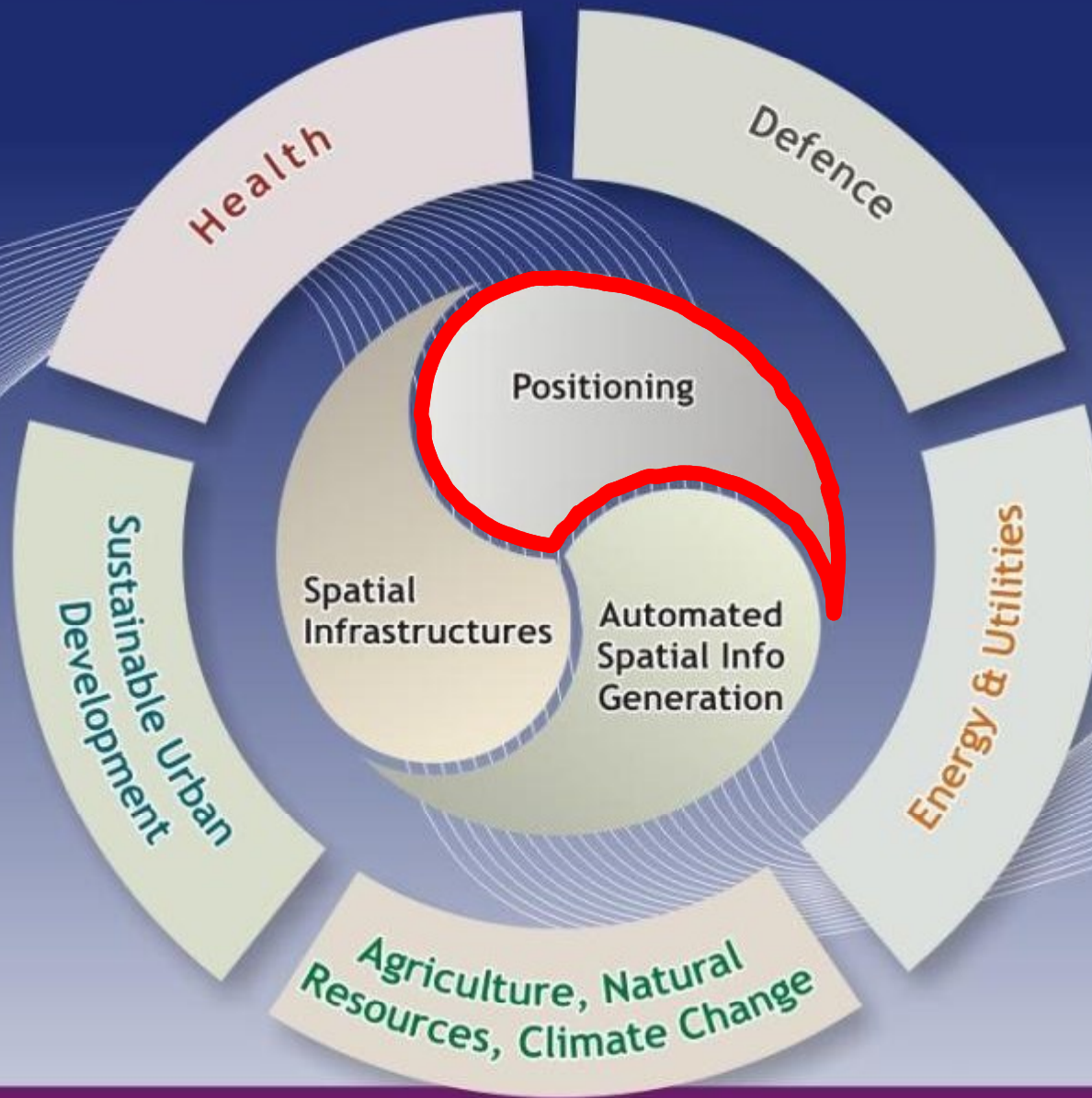


## Where we are...

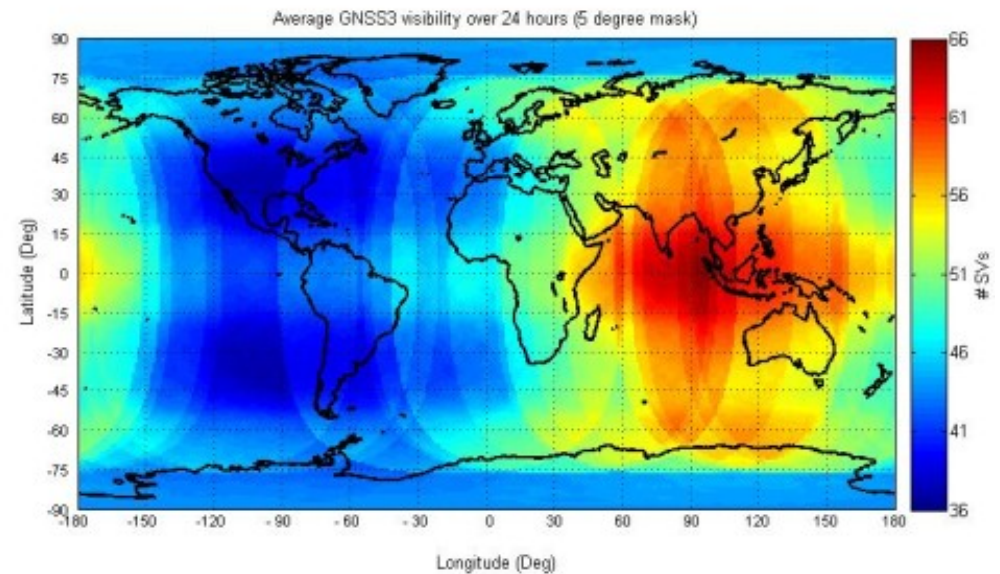
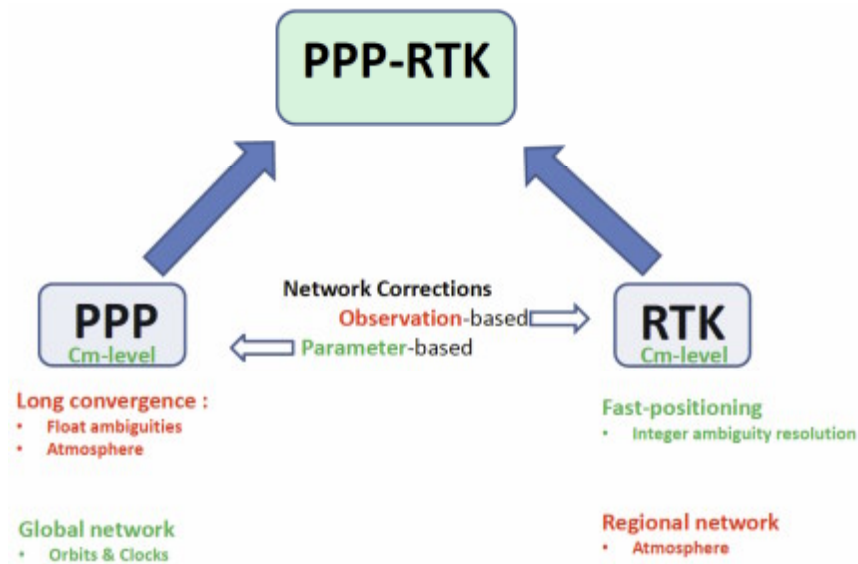
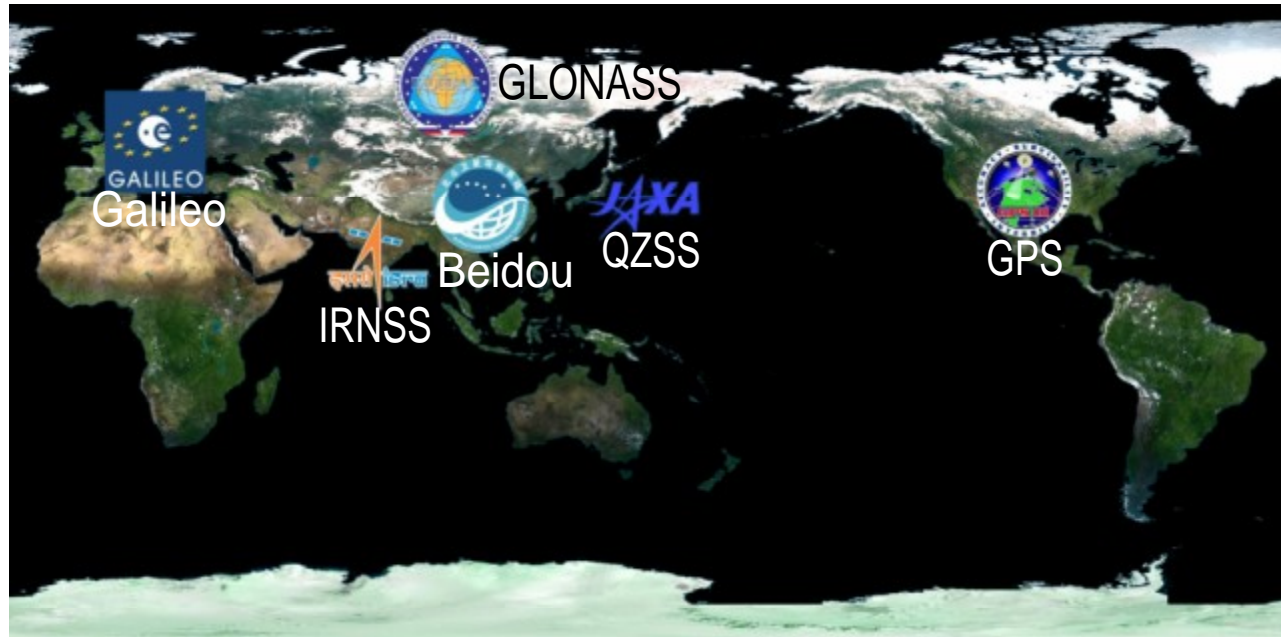




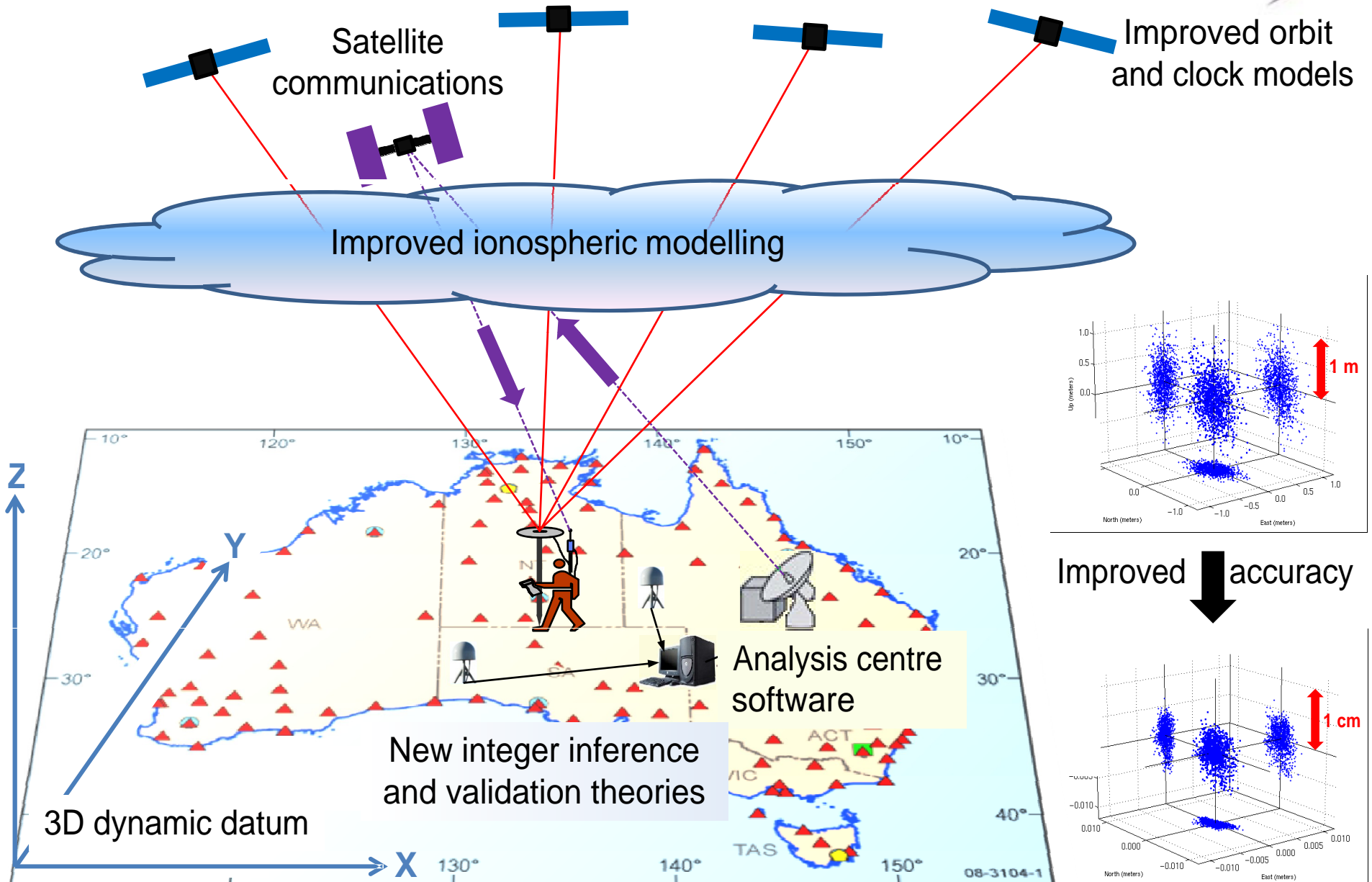
# SPATIALLY ENABLING AUSTRALIA & NEW ZEALAND



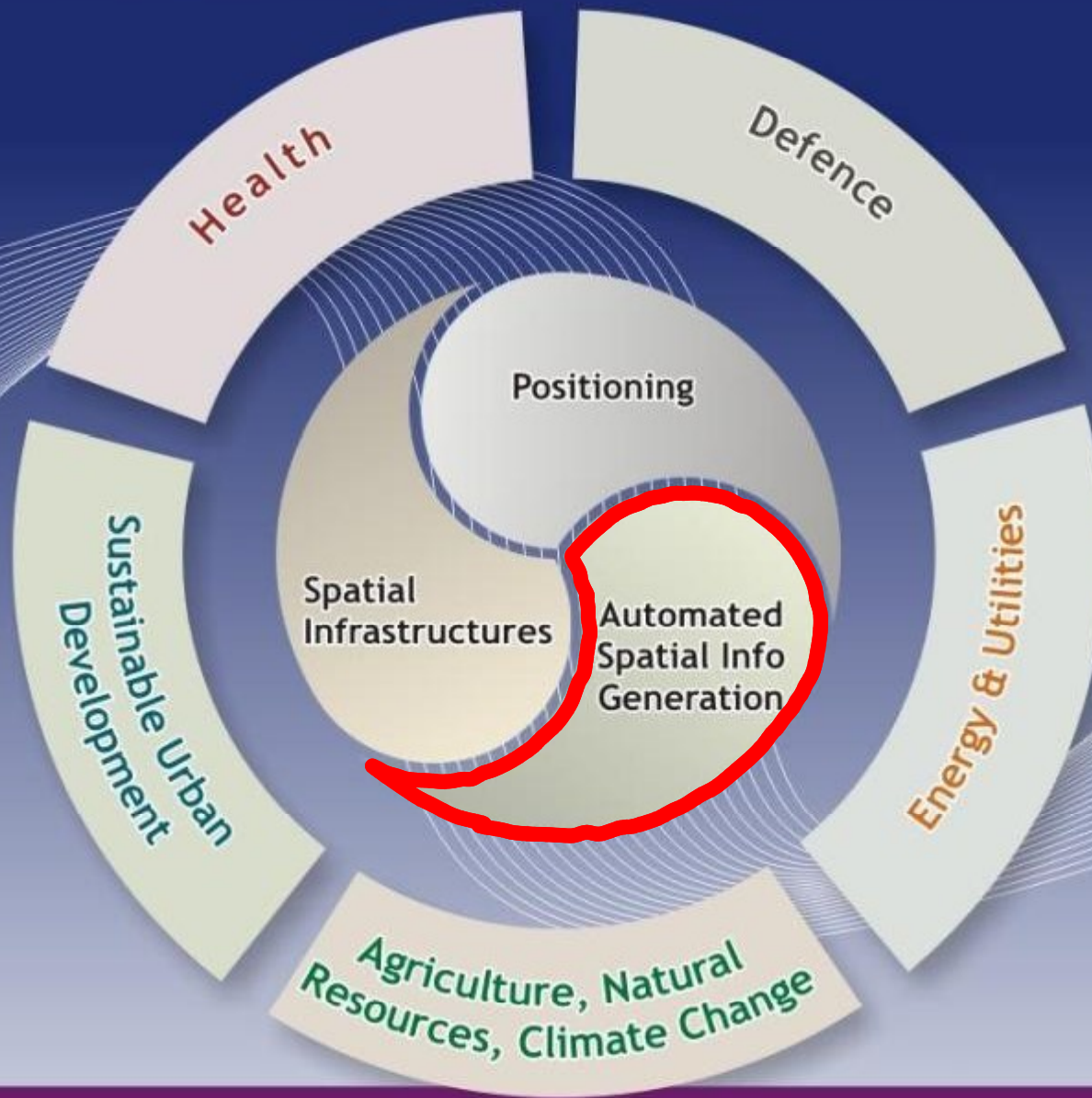
# Technology drivers in positioning...



# The CRCI vision...

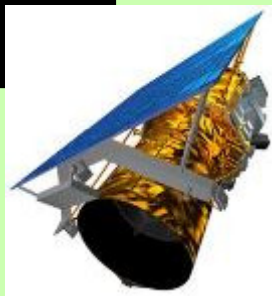


# SPATIALLY ENABLING AUSTRALIA & NEW ZEALAND



# Automated spatial information generation....

Integrated multi-sensor data acquisition systems

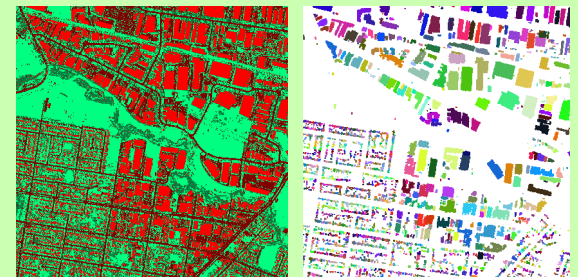
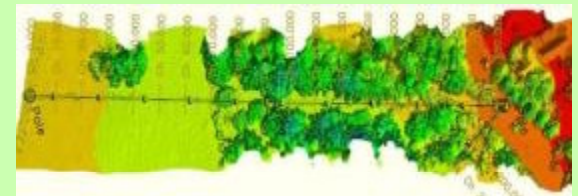


... from aerial, space and terrestrial platforms

## *Research challenges*

- Sensor Modelling & Georeferencing
  - Data Fusion
  - Feature Extraction
- ... and above all:*
- Increased automation of the spatial information generation process

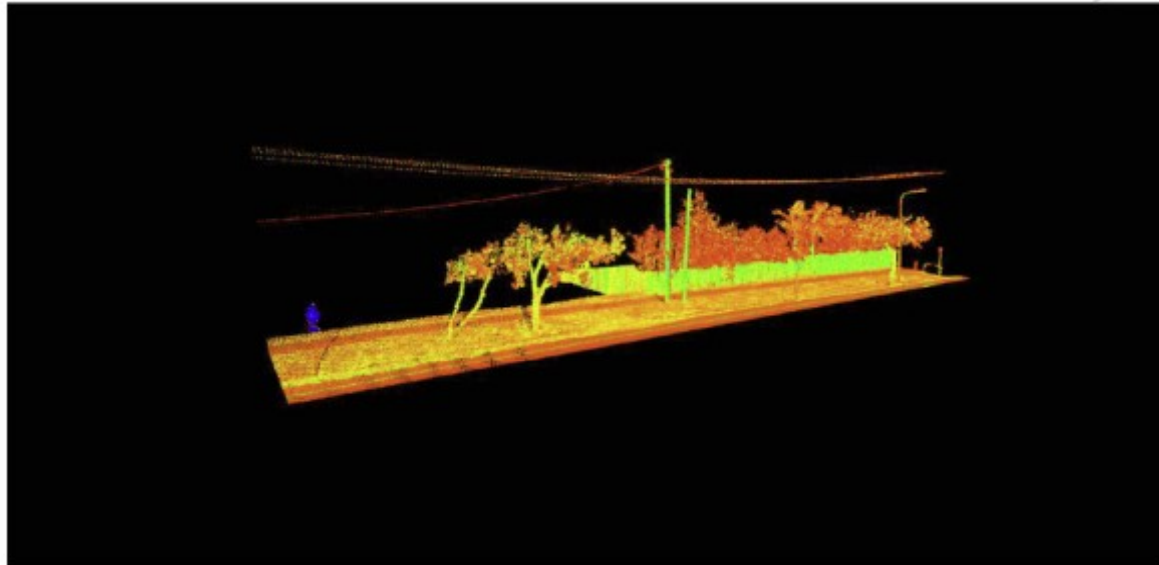
Fit-for-purpose, automatically generated spatial information products



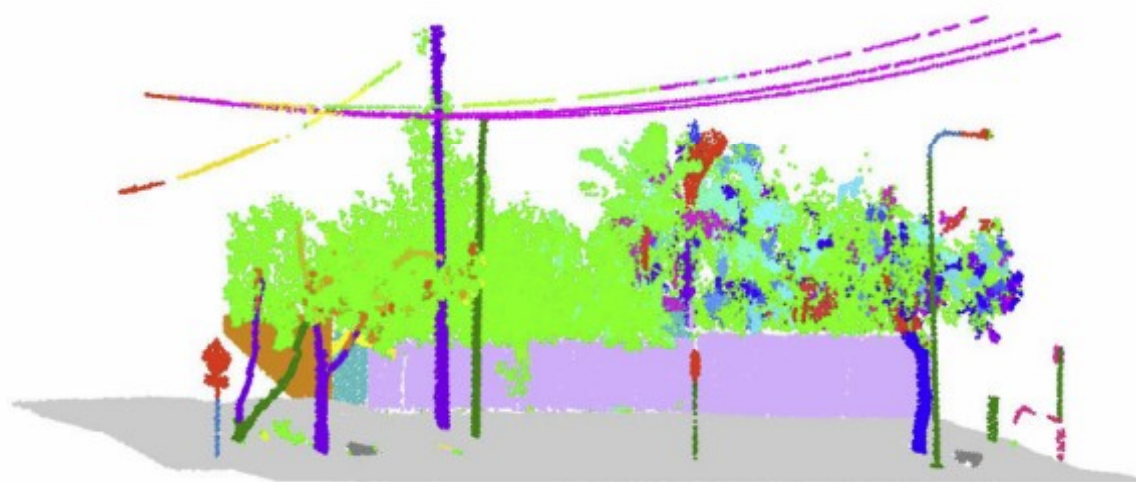
## Separation of trees from buildings....



# Automated identification of road furniture...

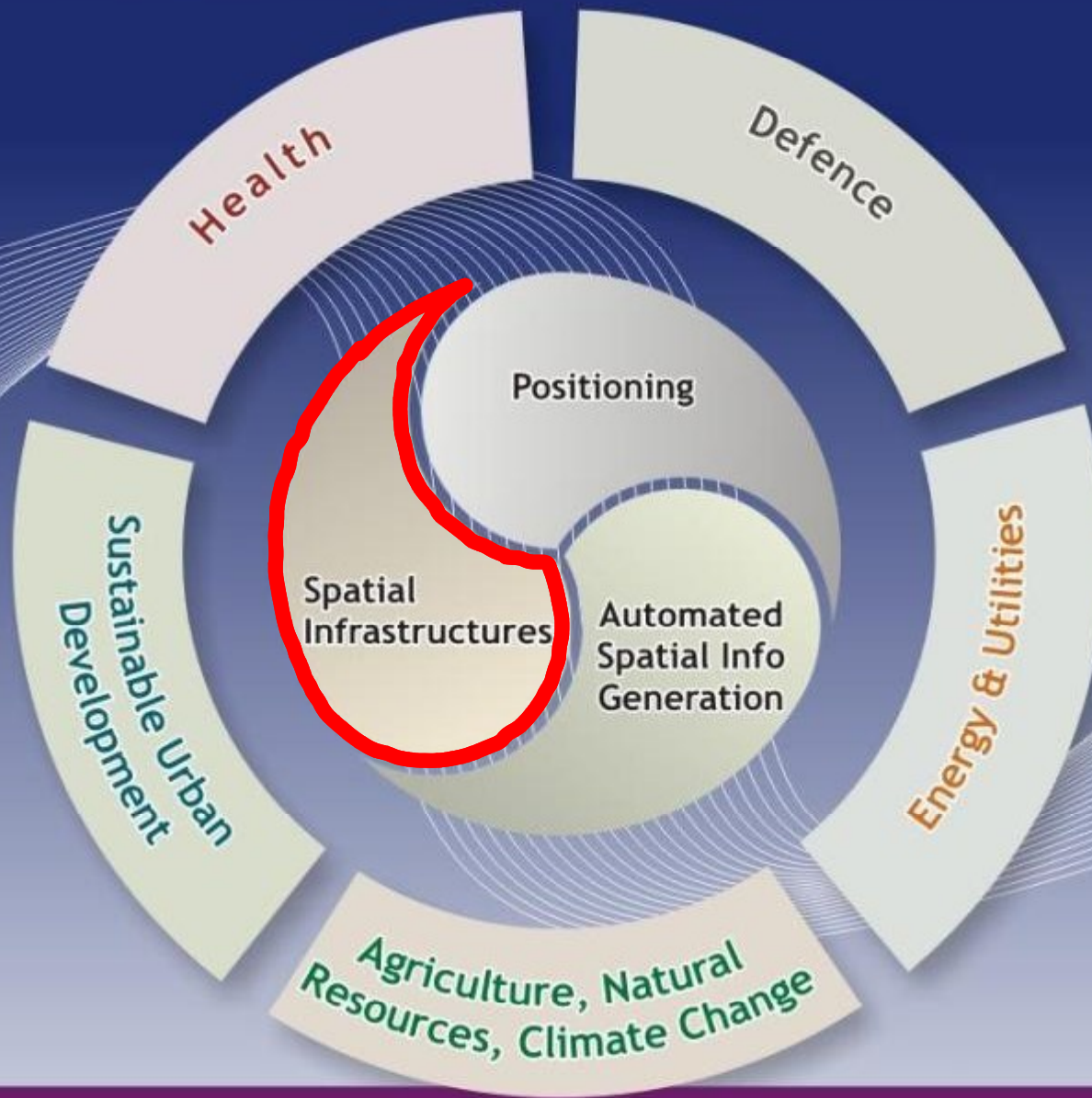


Dataset



Robust segmentation

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## Vision and outcomes...

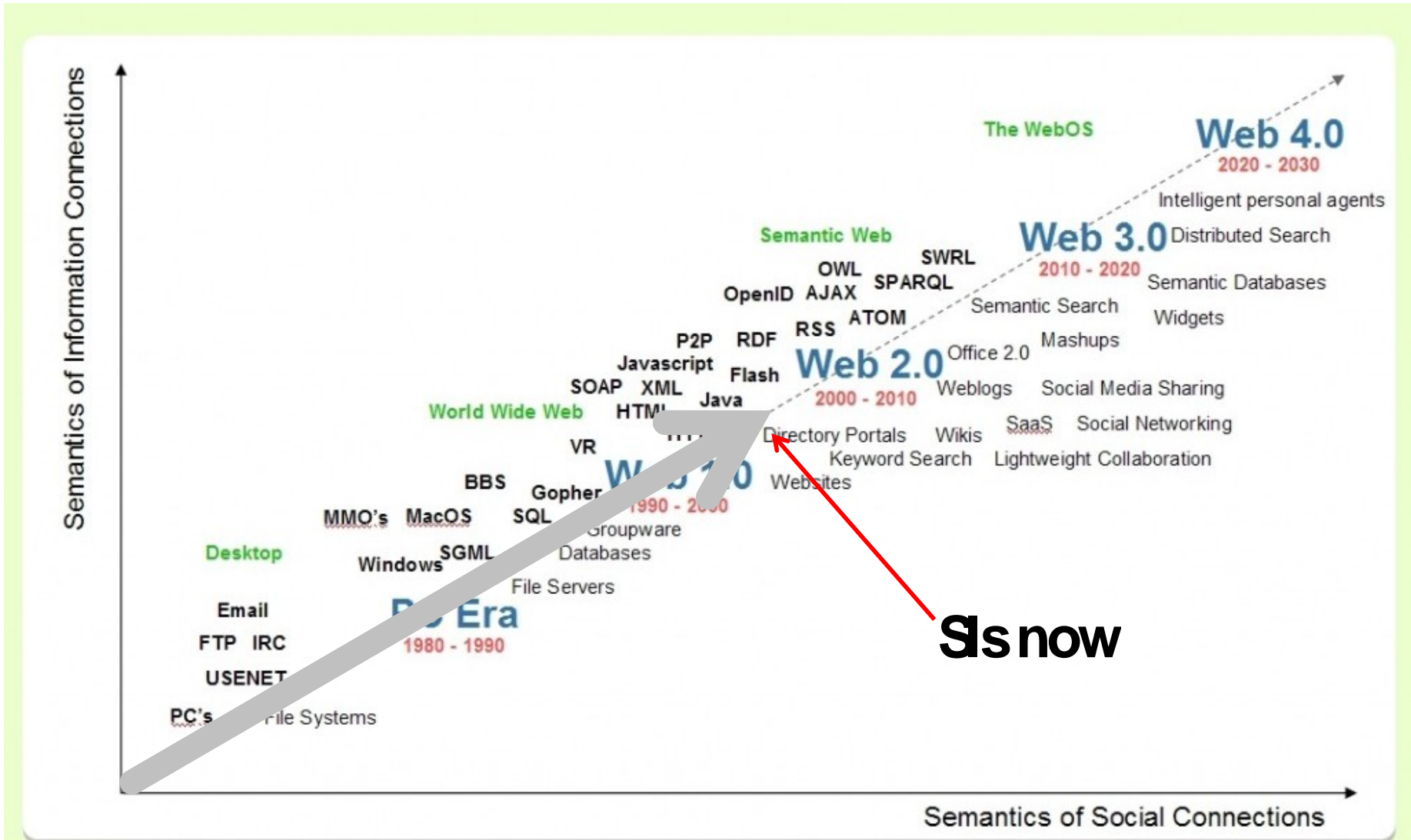
### Vision

*Seamless access to the right spatial knowledge, at the right time, in the right format, at the right price.*

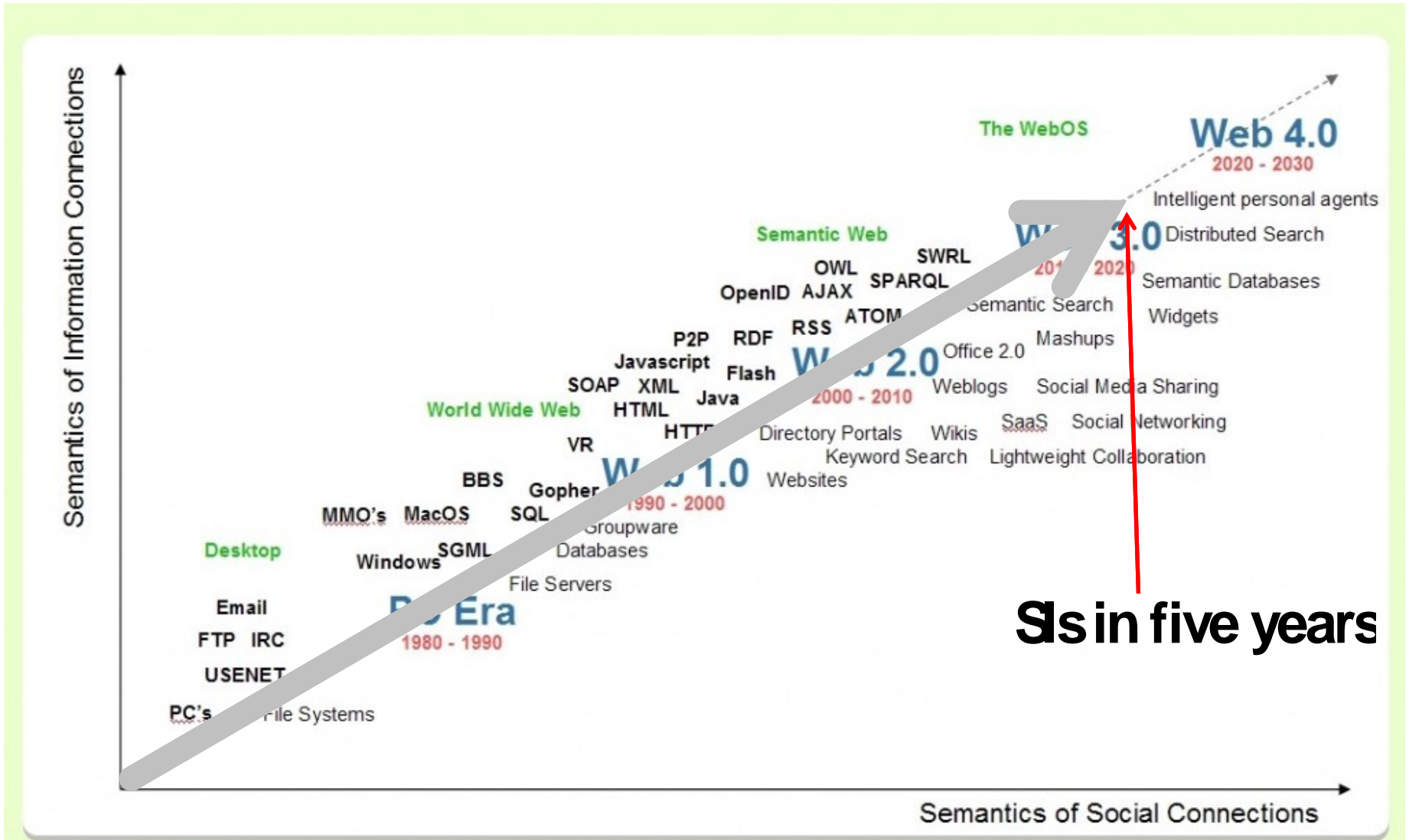
### Outcomes

- Intelligent search and discovery
- Vertical and horizontal linking of data & processes
- Orchestration of web services
- Crowd sourced integration
- Fast and effective big data querying
- Supply chain management and processing

# Evolution of The Web

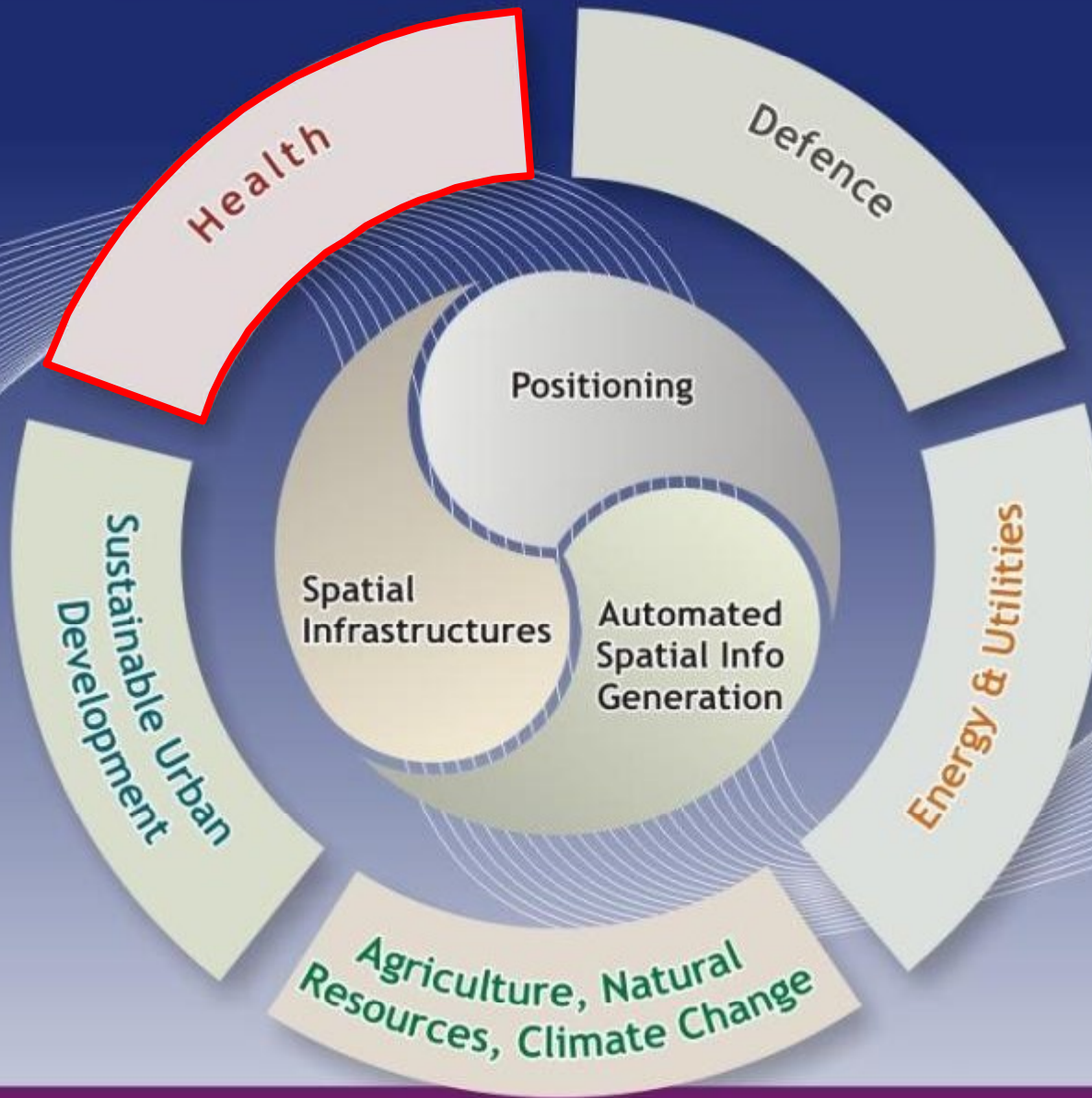


# Evolution of The Web



**SIs in five years**

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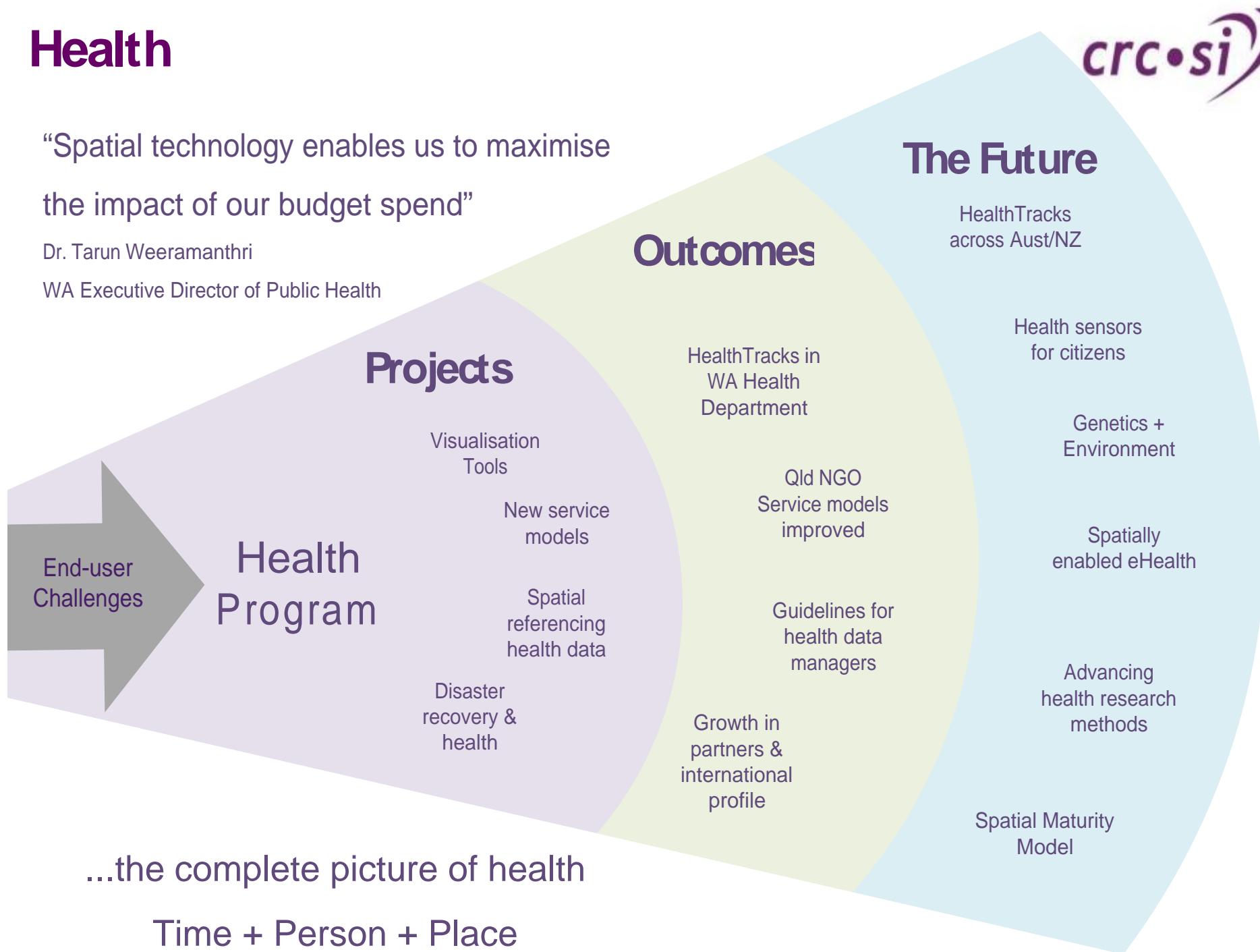
# Health



“Spatial technology enables us to maximise the impact of our budget spend”

Dr. Tarun Weeramanthri

WA Executive Director of Public Health

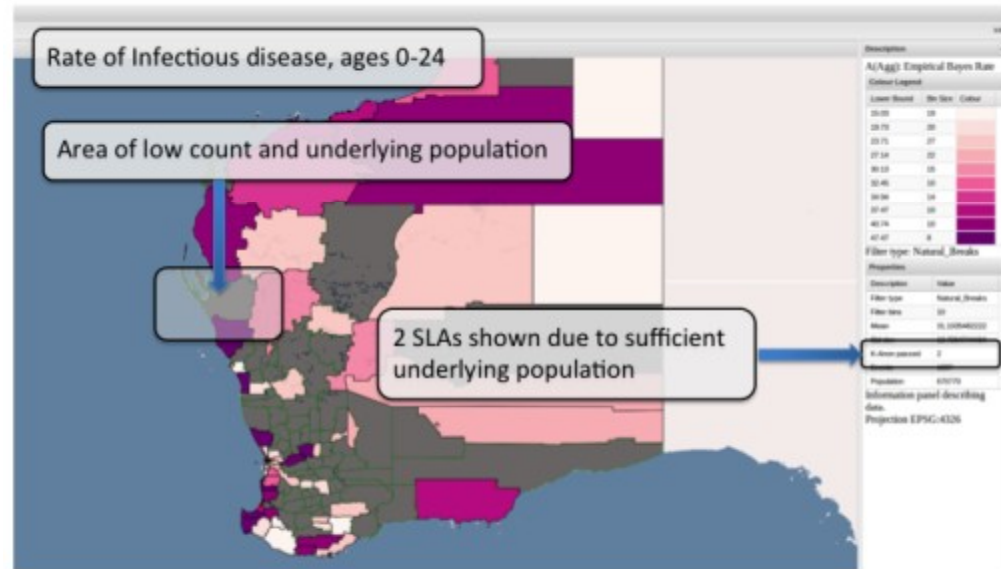


...the complete picture of health

Time + Person + Place

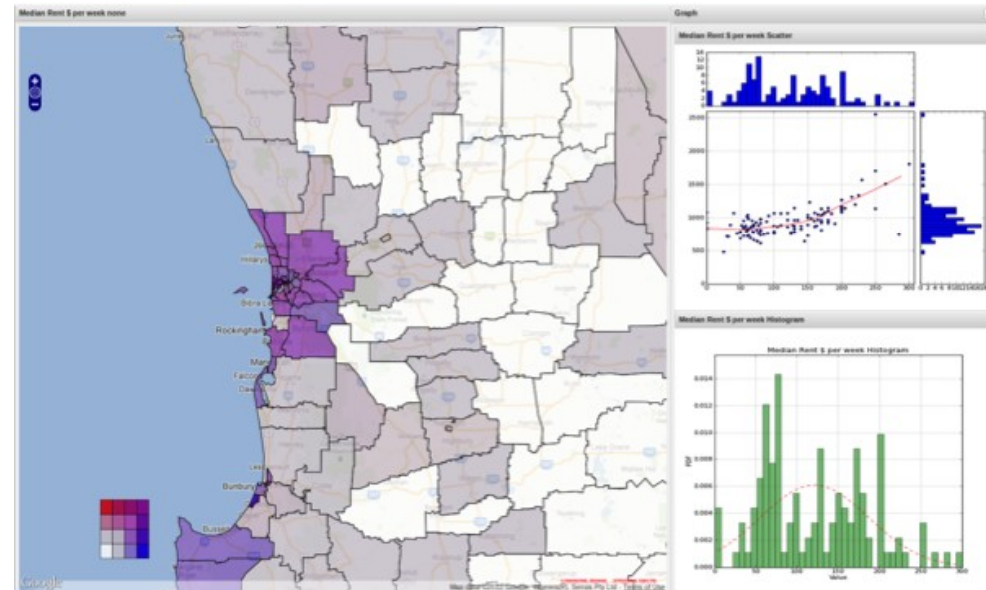


# Access to crucial population health data...

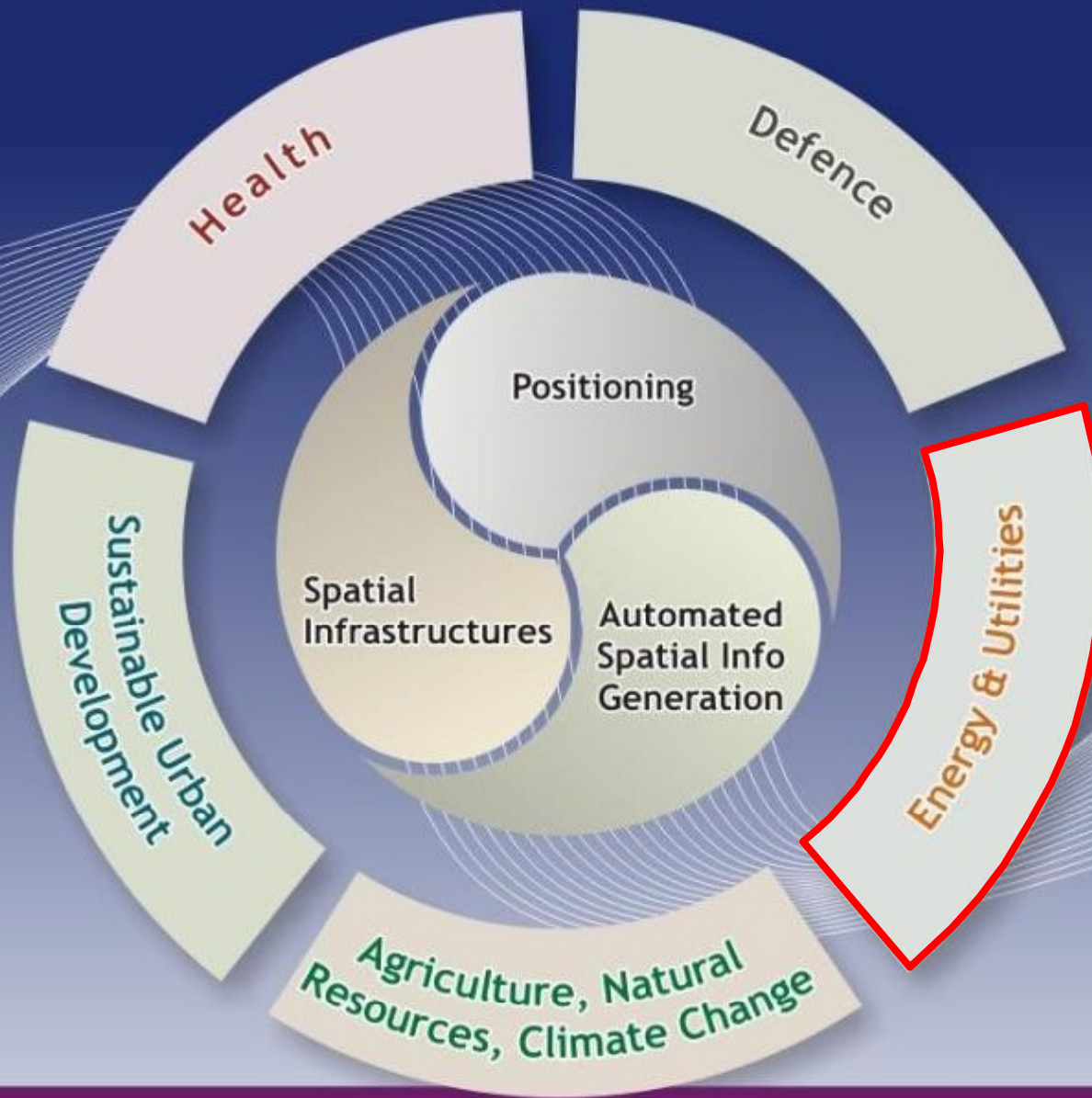


## HealthTracks

- Static and client heavy
- 150 Users
- 10,000 reports so far
- Opens up access
- Highly dynamic
- Processing on the fly
- Privacy issues addressed



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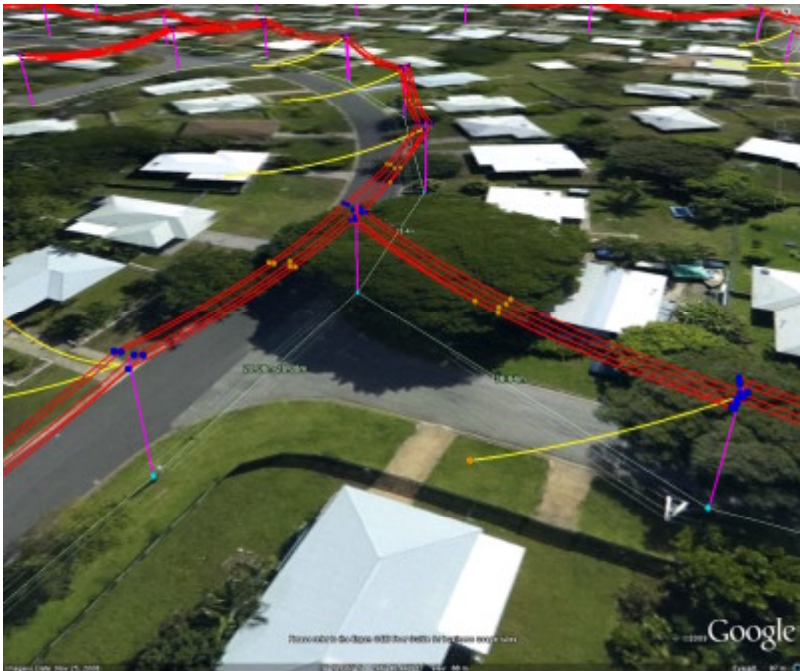


# Energy and Utilities...



## Enhanced Flight Assist System:

- Extending to 3D flight planning and control
- Enhanced flight safety
- Reduced pilot fatigue
- More complete and robust data capture
- Improved flight efficiency



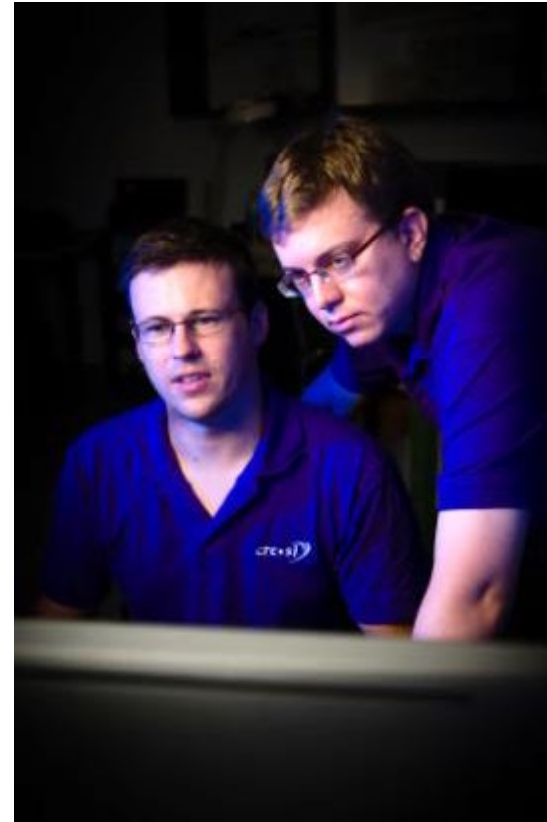


## Enhanced Flight Assist System (eFAS)...



- CRCSI developed technology enables efficient- accurate—consistently captured infrastructure from planes
- Achieves what a pilot cannot do
- Gave rise to the world's largest routine data capture program of power line network (150,000km pa)
- Previously to fly 1/20<sup>th</sup> of this took days to plan, weeks to capture, months to process and analyse. This can now be completed in 24 hrs
- System on track to save Ergon Energy \$14M pa (~ 770M)
- Technology licensed globally and spin off process well advanced
- Aircraft has flown approx. 9 times around the world

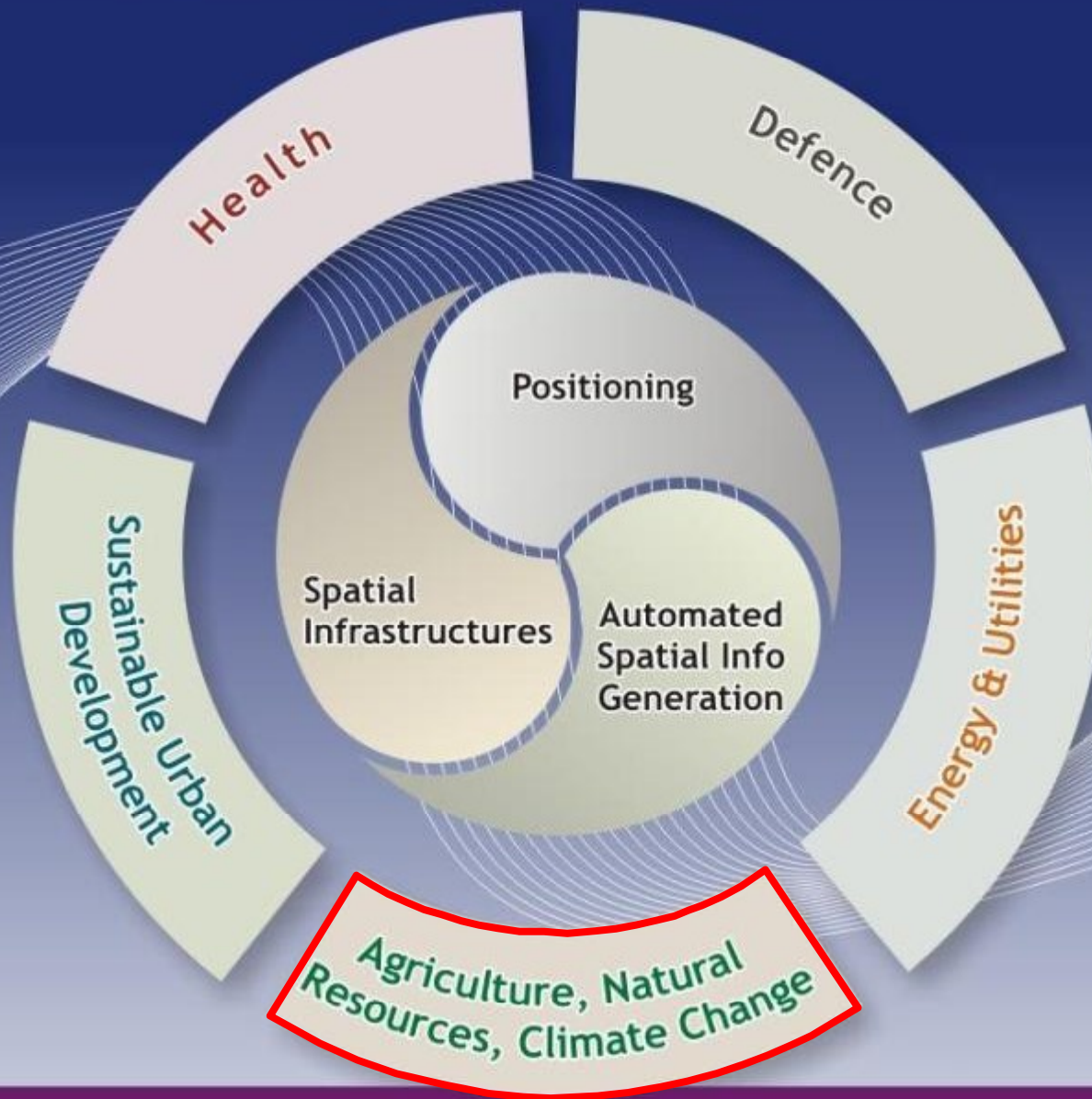
## Energy and Utilities...



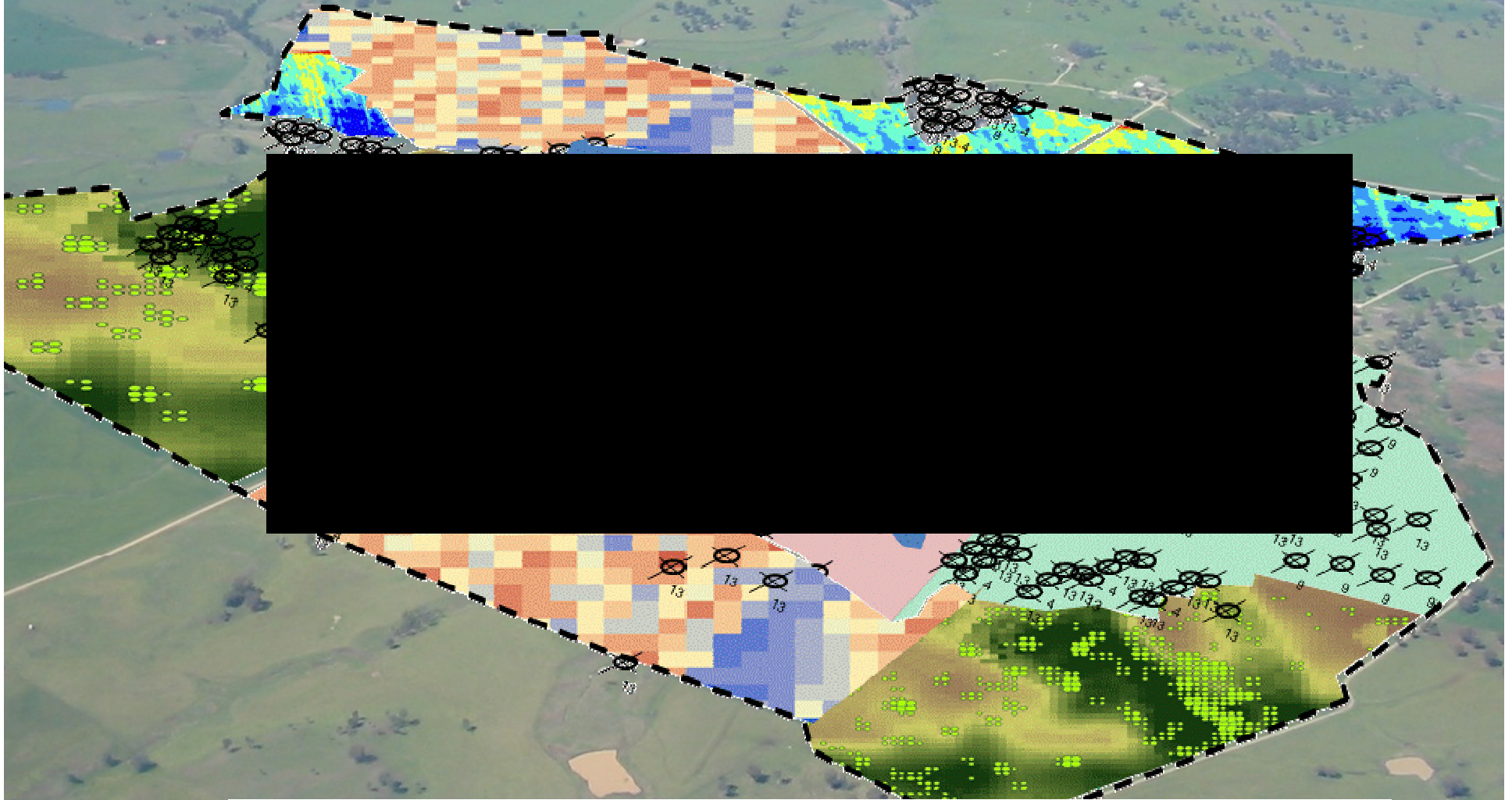
*“By means of this research, the company holds a significant competitive edge in relation to the efficiency (cost and speed) and safety with which it can undertake aerial data acquisition of power line infrastructure...There remains considerable scope to secure further efficiency gains and enhanced flight safety, creating the prospect of increased competitive advantage”*

Matt Coleman, ROAMES Capability Development Manager, Ergon Energy

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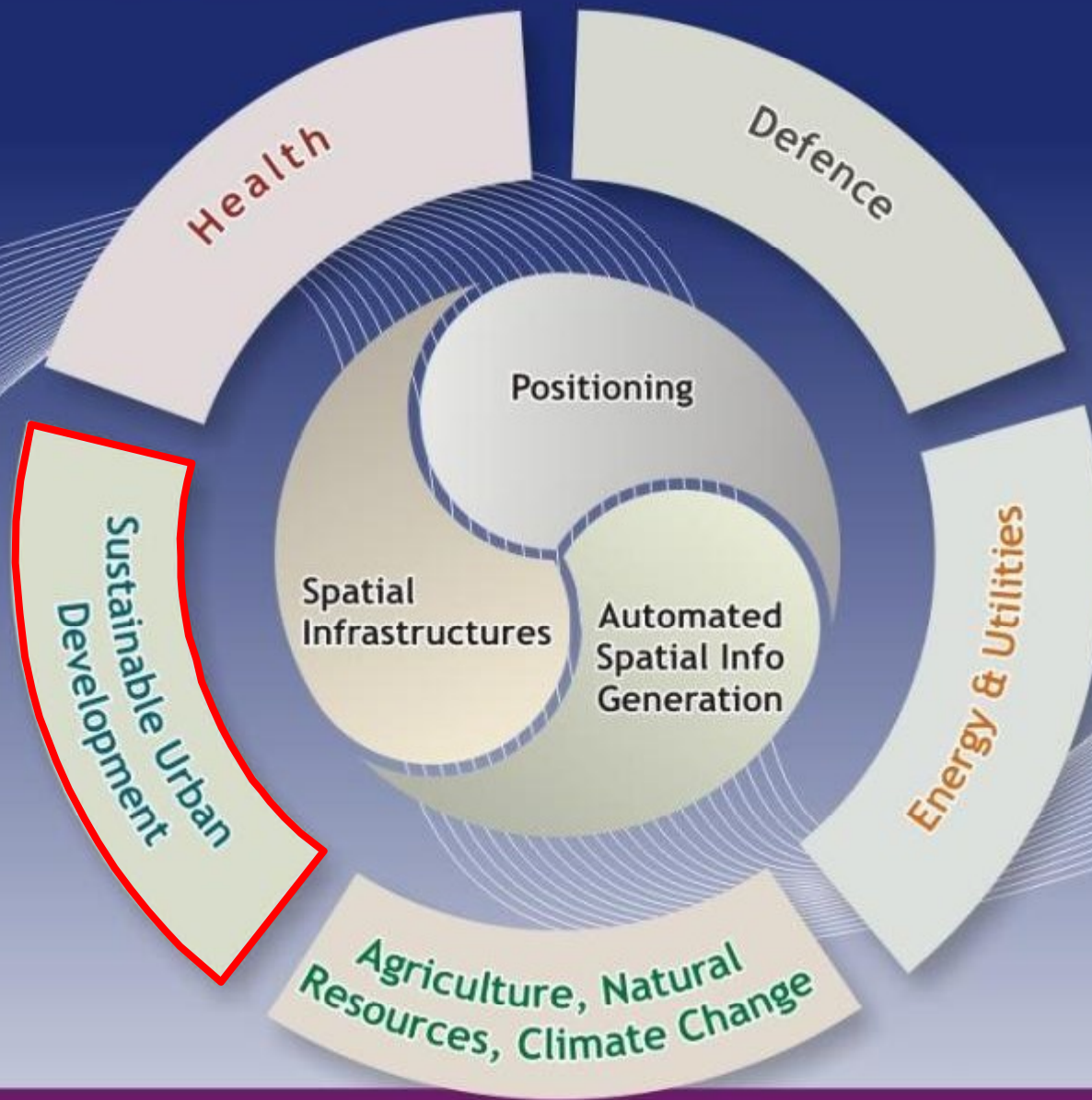


# Biomass Business



| 32 researchers, end users and technology developers | 11 organisations |

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# Sustainable Urban Planning...

## Objective

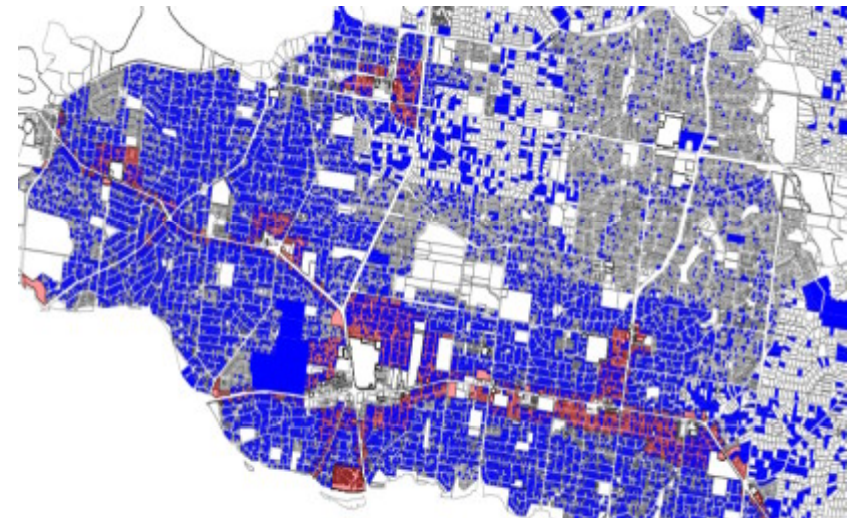
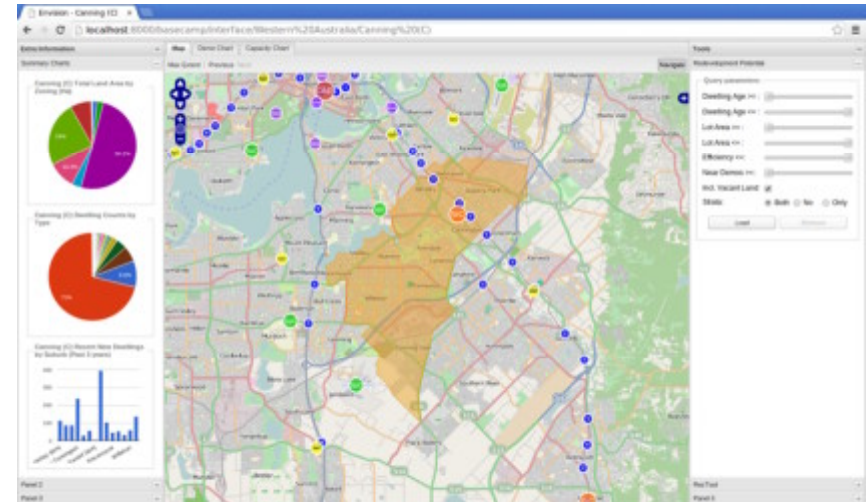
Develop a set of strategies and decision making tools for greyfields re-development

## Outcome

Enhanced economic, social and environmental outcomes for urban regeneration of the middle suburbs

## Steps in research

1. Understanding spatial influences in Australian urban economics
2. Developing a shared urban spatial information platform (ENVISON)
3. Building tools to visualise and assess precinct level greyfield redevelopments
4. Producing a methodology for re-generating greyfield precincts by facilitating stakeholder engagement



**Thank You!**