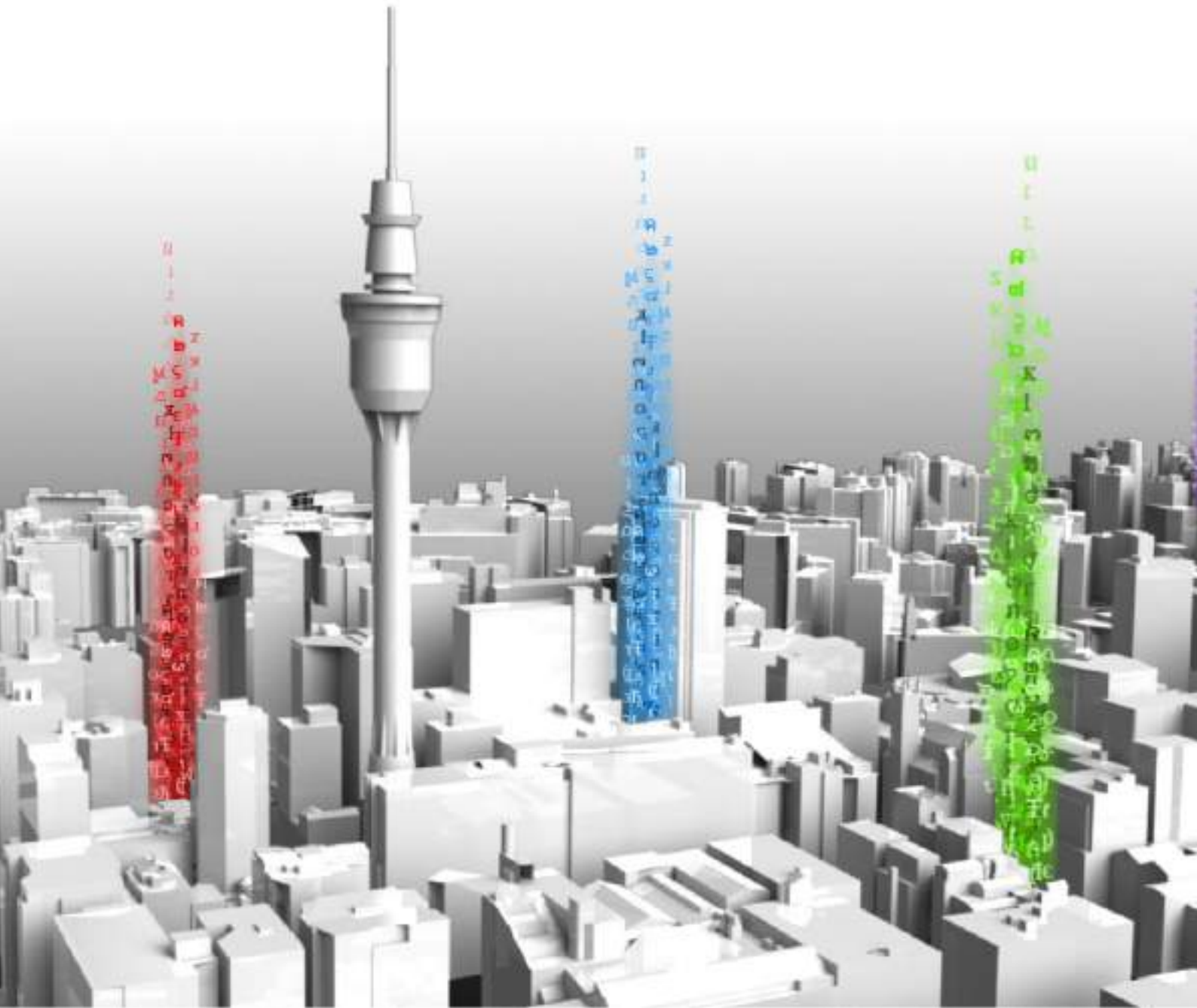




Champions Trophy

Case Competition 2012



Case 2: Nextspace

2 February 2012

Case prepared by Ms Neeharika Chowdhary under the supervision of Mr Sunny Gu. This case has been prepared solely for the Champions Trophy Case Competition. All data in this case has been obtained from publicly available sources and Nextspace. This case is not intended to serve as an endorsement, a source of primary data or an illustration of effective or ineffective management.

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Techie Lover

From: Techie Lover
Sent: 2nd February 2012
To: Nextspace Strategy team
CC: Michelle Money; David Dollar; Peter Partner; Warren Wallstreet; John Jobs
Subject: Nextspace presentation

Team,

Nextspace provides powerful tools for utilities, cities and infrastructure providers that reduce costs, improve efficiency and decision-making through 3D visualisation.

Nextspace has recently received funding from a consortium of Auckland angels to further develop their software and expand sales capacity. Currently, a component of Nextspace's Visual City technology utilises Right Hemisphere's products - Right Hemisphere is a company now owned by SAP. The software development is still contingent on Nextspace securing more clients who will through their use of the software help refine and add to the core product.

The Right Hemisphere technology was developed for behemoth companies like Boeing and finding the right strategy to deliver this technology partnered with Nextspace's own technology solutions to customers in a completely different industry has been a challenge.

Having a more complete product suite will enable Nextspace to partner with global technology giants to rollout their software to customers around the globe.

Gavin Lennox is interested to hear your thoughts on the following:

- a) How to secure a stable pipeline of customers can be achieved, particularly within the next 12 months.
- b) Whether the business model should be adapted.
- c) How partners can be leveraged in Nextspace's future strategy.

As Nextspace's product evolves, so too will Nextspace itself. The management team of Nextspace is looking forward to your presentation. I have included a short glossary at the bottom of this email to help with some technical terms.

Regards,

Techie Lover

Silicon Valley Consulting

Glossary

CAD: computer aided design.

Geospatial: data or information that identifies the geographic location of features and boundaries on Earth, such as natural or constructed features, oceans, and more. Spatial data is usually stored as coordinates and topology, and is data that can be mapped. Spatial data is often accessed, manipulated or analysed through GIS.

GIS: Geographic Information System - a system designed to capture, store, manipulate, analyse, manage, and present all types of geographically referenced data.

ERP: enterprise resource planning.



The Business



Company history

Nextspace was formed in 2007 in conjunction with an agreement between Right Hemisphere, a New Zealand based 3D graphics technology provider¹, and the New Zealand Government.

This agreement - the Spillover Agreement - envisaged 'spillover' benefits for New Zealand's economy from investments in the Product Graphics Management (PGM) industry. The Government's vision of a New Zealand PGM industry was a world leading 'virtual cluster' or ecosystem of private companies, research, and education organisations co-operating in the development and delivery of PGM products and services, and related 3D digital content.

Nextspace was created to make this vision a reality. Nextspace was given a grant of NZ\$7 million over three years to help get the value of Right Hemisphere's technology into New Zealand companies, research entities and education institutes.

Since its inception, Nextspace has provided 3D software and consulting services to a range of New Zealand and international companies in a range of industries including manufacturing, local government, utilities and training/education. In addition it has provided over \$10 million worth of software to education and research institutes to help catalyse the growth of the industry and foster partnerships with commercial organisations.

While Nextspace was not started as a profit-making entity, the company has now evolved to become a privately held, commercial company. There are three key developments which have recently occurred.

1. Investment secured from ICE Angels-led consortium

Nextspace secured investment capital in late October last year to further develop and export its technology to the world.

The undisclosed funding amount was provided by ICE Angels. ICE Angels is an Auckland-based angel investment network that was founded by the ICEHOUSE business incubator in 2003. Its objective is to connect high-potential start-up ventures with willing investors in order to support the success of emerging New Zealand companies. ICE Angels is composed of 105 members who have collectively invested more than \$30 million in 20 companies over 54 rounds. ICE Angels' investors are interested in early stage ventures with international growth potential within sectors including software, media, internet, communications, life sciences and medical devices.

The ICE Angels' typical deal is shaped as follows:

- Stage: Beta product or service² developed with validation customers.
- Capital needs: \$100k - \$1.25 million.
- Market opportunity: international with a potential market of >NZ\$100 million.
- Exit Opportunity: potential liquidity event identified with >10X return.

Two of the ICE Angels investing in the deal were themselves employees at Nextspace.

As a result of this deal, the shareholding of the entity representing the government's original interests (which reflect the Spillover Agreement), the New Zealand 3D Catalyst, has been diluted to a minority stake. A portion of the shares in Nextspace remain as a part of an employee share option plan.

(See appendices for detailed press release and a related news article)

¹ Right Hemisphere's technology allows large models, such as aircraft, automobiles, and buildings, to be displayed in an interactive manner in real time on standard computers.

² A product's beta is an officially released version of a product which includes most of the product's functionality. The beta version is intended for external testing of the product in order to identify configurations that cause problems, as well as collect requirements and suggestions from users. Before its official release, a beta version undergoes a full cycle of internal testing, after which the application is sufficiently stable in the majority of computing environments.

2. SAP's acquisition of Right Hemisphere

In early September last year, SAP, a global market leader in enterprise application software, acquired Right Hemisphere, which provides technology that is part of Nextspace's own technology platform.

Nextspace's strong partnership and close technical collaboration will remain in place, as the current agreements with Right Hemisphere will continue under the new ownership structure. SAP has said they will continue to invest in Right Hemisphere's operations in New Zealand with the same management team.

(See appendices for detailed press release and a related news article)

3. Refined scope of Nextspace's target industries

Nextspace's technology was versatile enough to enable them to provide solutions to a number of different industries. In the past, Nextspace's technology was used to develop online 3D industry training by converting cumbersome page-by-page manuals into user-friendly, interactive, online courses. Additionally, it was used to create 3D safety training as well as build custom packaging models for manufacturers of consumer products.

Nextspace is now entirely focused on developing and selling a platform for managing and visualising city data. Nextspace provides a platform for infrastructure, utility companies and cities to visualise their assets and operations digitally in 3D to improve efficiencies and reduce costs and risks through more informed decision-making, more innovative services and more robust consultation. The global market opportunity they are now focused on is driven by the trend towards urbanisation.

Nextspace is based in Auckland with 12 employees, four of whom are developers. With the latest funding from the ICE Angels, Nextspace is looking to hire three more developers to work on their "Visual City" platform and additional sales.

Nextspace's market opportunity

Urbanisation is the challenge for the twenty first century. The issues faced by cities, and associated utility and infrastructure organisations, are immense.

By 2030 there will be over eight billion people worldwide, of which 60 percent will be living in cities³. Today, over 450 cities already have in excess of one million people. This urban migration is placing even greater demands on water, energy and transport infrastructures.

To support the growth of cities, it is estimated that US\$60 trillion⁴ will need to be invested in urban infrastructure over the next 20 years. Recent surveys show that nine out of ten infrastructure projects will be over budget by an average of 45 percent⁵.

Decisions related to urbanisation will be driven by the data that is available. Cities are awash with data which is increasing exponentially and is often trapped within organisational silos. An increasing proportion of data is now being captured directly in 3D and remotely through aerial imaging and sensors.

Making sense of this data is difficult with a traditional "filing clerk" approach. If you can't see the problem, you can't manage it.

City planners and operations staff must make decisions based on good evidence-based data. If this data is accessible to decision makers there is huge potential to reduce costs. Some of the problems faced when trying to address these highlighted challenges are:

- Huge amounts of data from transport systems, sensors, and people are collected.
- City planners and managers are unable to manage and communicate complex data effectively.
- City operations staff (like utilities) are unable to know what lies below the ground before digging with potentially costly impacts.
- Information is lost in translation between systems losing insights and knowledge.
- Citizens and planners are frustrated at not being able to engage in consultation effectively.

³ UN Population Division

⁴ OECD report 2006-2007

⁵ Bent Flyvbjerg, Policy and planning for large-infrastructure projects: problems, causes, cures, Environment and Planning B: Planning and Design 2007

Nextspace's market potential

Complex data can be made more accessible by providing it in a way that people understand – by linking it to a physical metaphor that represents the way we understand the city – visually, and in 3D.

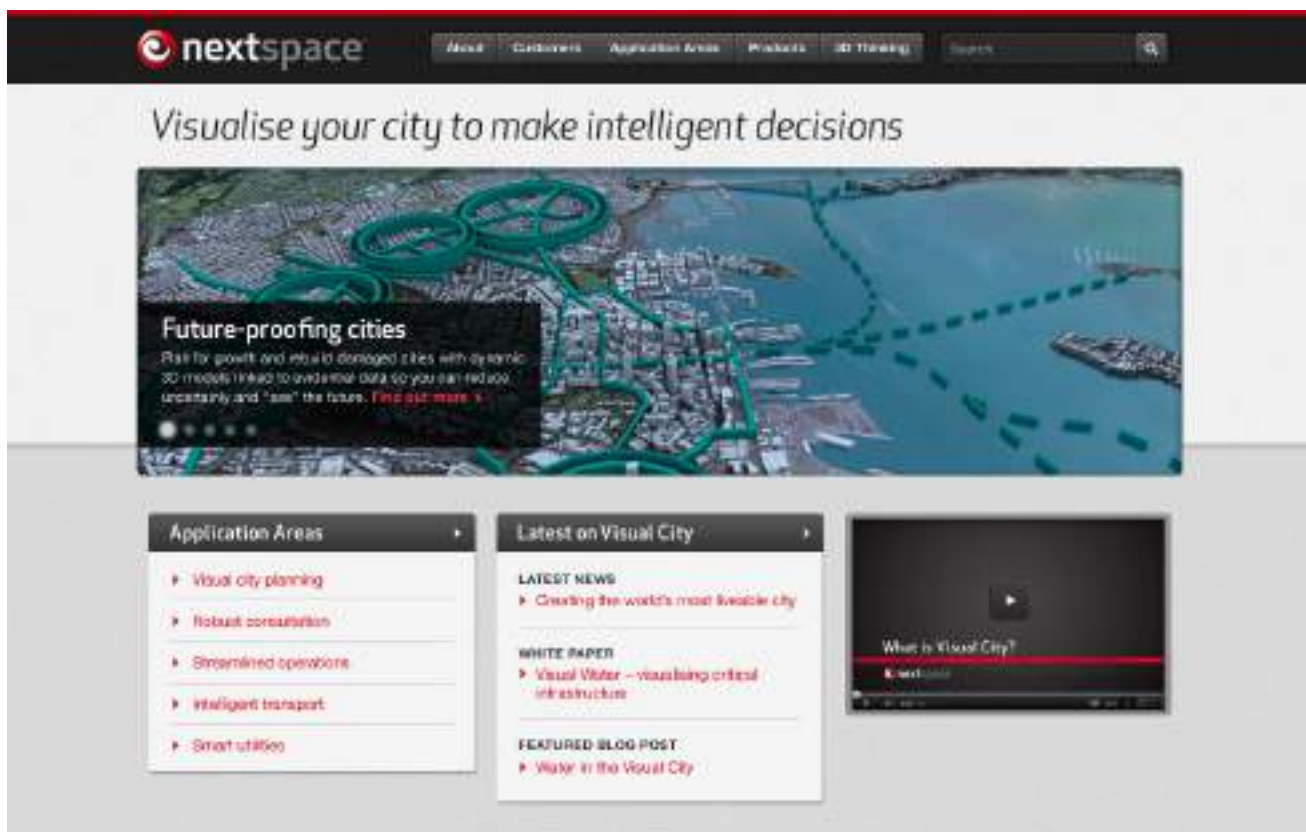
The Visual City platform enables a wide range of applications that allow complexity to be conveyed simply through visualisation in one space. The platform integrates and extends geospatial information systems (GIS), 3D computer-aided design (CAD) and other structured and unstructured data into a common repository – an evidential clearing house. The platform delivers “post-GIS” benefits using visualisation tools to view physical and logical representations of the as-built world.

The Visual City combines 3D visualisation with evidential data management to convey complexity in simple ways. Typical benefits include:

- Evidence driven decision making - reduced errors in decision processes and more optimal outcomes.
- More robust consultation - dynamic “what-if” modelling and clarity on the impact and effectiveness of proposed changes. Informed debate through interacting with 3D models.
- Smart services - reduced administration, compliance and consenting times. Improved communication with more informed services.
- Intelligent transport - reducing energy costs and increased safety.
- Smart utility networks - improved services, reduced risks and network resilience.

The Visual City platform “mirrors” the real world. 3D representations of the physical world can be overlaid with other non-visible information such as air pollution or citizen feedback.

As well as representing the physical or “as-built” world, the system can show visualisation of logical views of information such as a water or transport network.



Homepage of Nextspace showing their product and software solutions.

Products

Nextspace's Visual City platform provides multiple ways to develop unique and robust applications for cities, utilities and infrastructure providers. The core product continues to be further developed and extended with each new customer and each new application.

Right: Artist's impression showing part of the model built for Auckland City. Geographical information is merged with information about air quality, utilities nearby as well as showing comments by different people about the design.

Visual City Server Capabilities

Data services - leveraging existing data and systems

Data services allow data from existing client operational systems to be imported, pre-processed and published to and from the Visual City Server. It does not matter what file format the files are in as these services can import or export over 170 different graphic file formats.

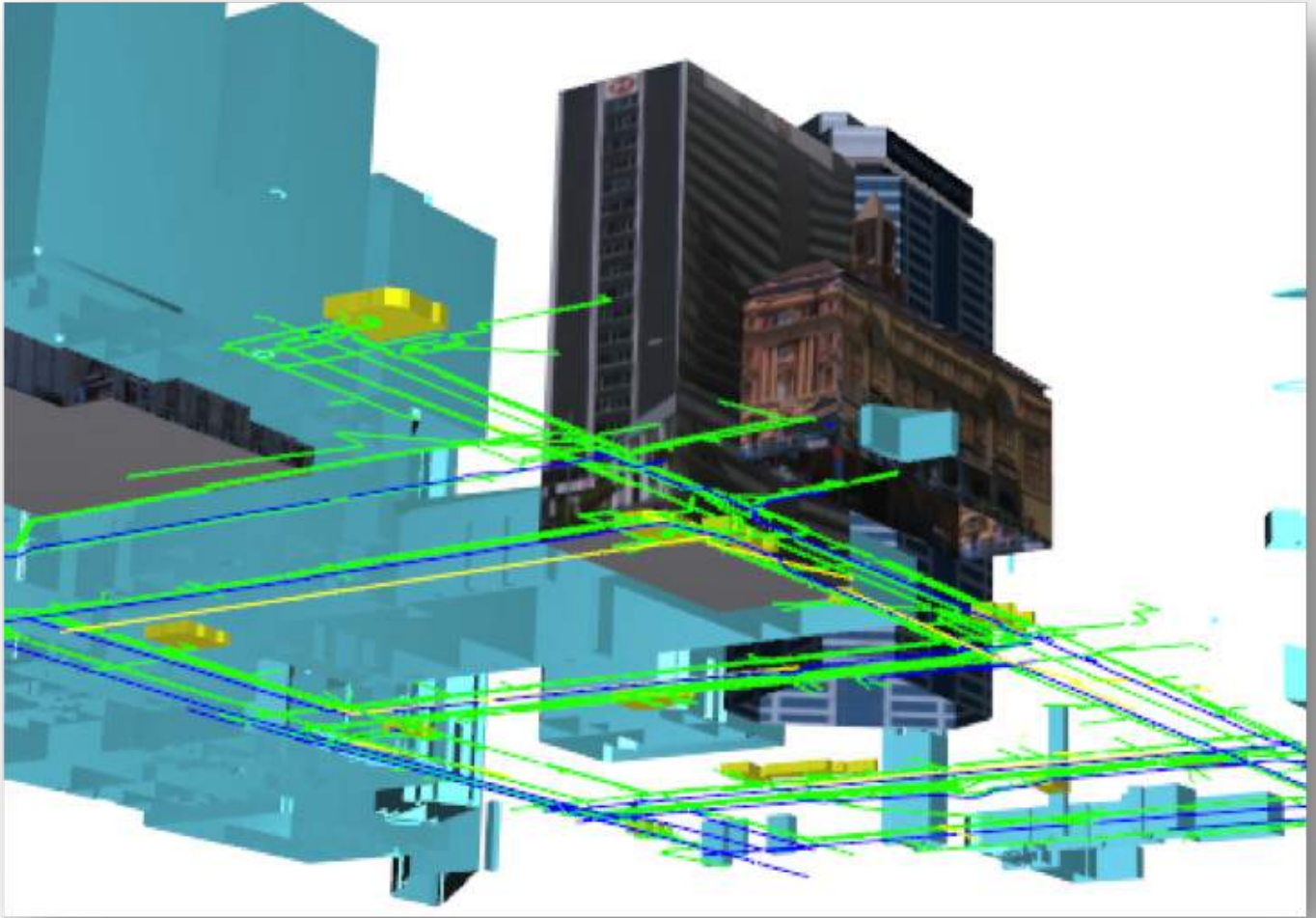
ECHO - geospatial, temporal and evidential database

The Visual City Server includes the ECHO database which serves as clearing house to prepare, unify and process data to meet needs of visualisation.

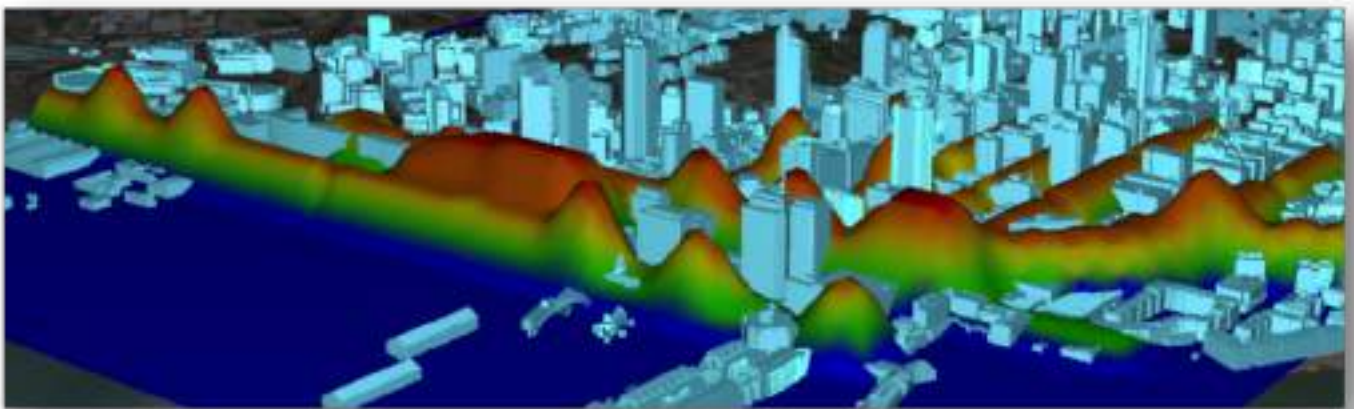
3D model visualisation and process automation

The Visual City Server includes SAP Visual Enterprise Generator (formerly Right Hemisphere's Deep Server), which provides a powerful graphics processing engine that is used to automate complex repetitive graphics creation processes. Also included is SAP Visual Enterprise Navigator (formerly Right Hemisphere's Deep Vision) which supports the real-time interaction and manipulation of extremely large and complex models that are typical when interacting with city-level building and terrain information.





3D visualisation of buildings showing the utilities that lie underneath



3D visualisation of a city showing atmospheric changes that would occur if the buildings were constructed according to the model

Visual City browser capabilities

The Visual City browser allows easy viewing and interaction with 3D graphics. Models of any size can be streamed to users in real-time bringing in all details as users pan, zoom and navigate the 3D model. This enables users to explore, search and query the full model. The web-based tool leverages industry standard desktop applications and provides:

- Fly throughs of cities and buildings above and below ground.
- Standard points of view.
- Asset data analysis and viewing.
- Layer controls.
- Measurement of area, volume and distance.

Arrangement with Right Hemisphere and now SAP

The 3D model visualisation and process automation as well as the Visual City Browser are technologies that were developed by Right Hemisphere. This technology is now owned by SAP but the agreement that Nextspace had with Right Hemisphere before Right Hemisphere's acquisition is still in place. Nextspace currently has a five-year agreement to use the Right Hemisphere technology and a three-year agreement to be a reseller. Nextspace currently has a positive relationship with SAP.

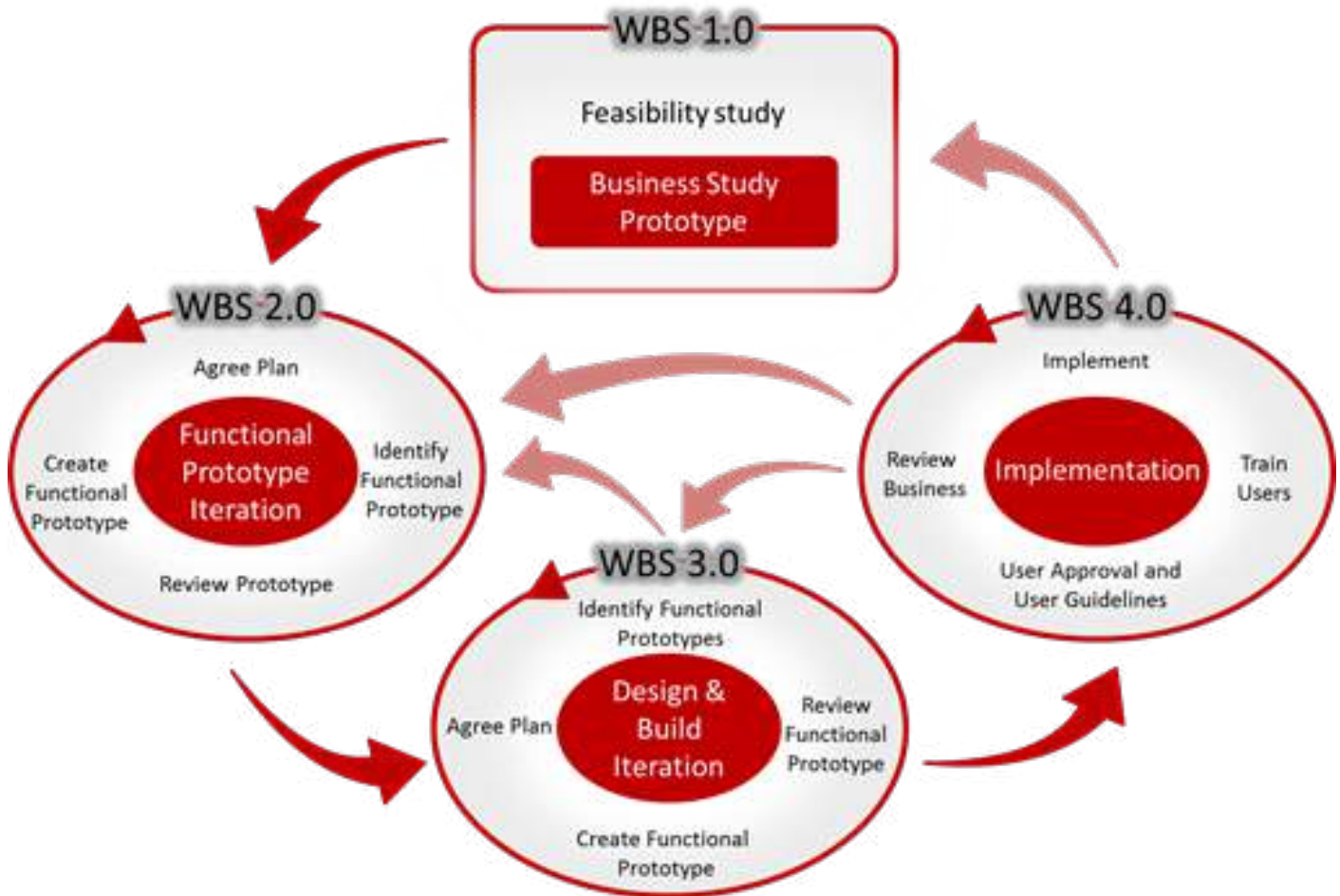


Strategy

Business Model

Nextspace's business model will evolve as the suite of product offerings develops to a product-focused company scaling through alternative sales and distribution partnerships.

The initial business model is to secure key reference customers by selling agile development services that inform and help develop enterprise software and packaged services to selected local government and water utility prospects.



There are four key phases of engagement with a client. Each work breakdown structure (WBS) has its own deliverables.

WBS 1: (3-6 months)

The business study examines the influenced business processes, user groups involved and their respective needs and wishes.

WBS 2: (3-6 months)

During WBS 2 the requirements that have been identified in WBS 1 are converted to a functional model.

WBS 3: (6-12 months)

The main focus of WBS 3 is to integrate the functional components from the previous phase into one system that satisfies user needs.

WBS 4: (3-6 months)

Implementation of the Visual City platform includes installation and configuration of hardware and software, process integration, training, developing guidelines and delivering support.

Typical total year one revenue will be \$500,000 made up of \$400,000 services and \$100,000 software. Software will be sold on a subscription basis for three or five year subscriptions with typical annuity software revenues of \$100,000-\$200,000 per year. As the product suite matures, software will represent a greater proportion of the revenue stream and a greater proportion sold through channel partners.

Invoicing calculations for an average customer

| Phase | Amount | Time to carry out |
|-----------------------------|-----------|-------------------|
| WBS1a Consultation | \$50,000 | 1-2 months |
| WBS1b Hosted Deep Server | \$50,000 | 6 months |
| WBS1c Feasibility Prototype | \$25,000 | 3 months |
| WBS2 Functional Prototype | \$260,000 | 6 months |
| WBS3 Modular Product Build | \$260,000 | 6 months |
| WBS4 Implementation | \$260,000 | 6 months |

Sales and distribution

Nextspace's current customers have been engaged through direct B2B sales. Some customers have issued a request for proposal which has led to an extended sale cycle.

The customer's decision making criteria will vary depending on what part of the organisation they are in. A high level decision maker will want to see an entity wide holistic solution while a department manager would be looking for a point solution and Nextspace will tailor the pitch accordingly.

The following is an excerpt from a conversation with Gavin Lennox about how Nextspace has engaged customers:

"Auckland Council – contact started about a year ago starting with approaches to the Chief Planning Officer through personal contacts. We identified critical business issues that could be addressed using 3D (the communication of the Auckland Spatial Plan). A \$50,000 prototype was secured to complete this work by June. Further direct sales approaches through the CPO are continuing to secure a multi-hundred thousand-dollar business case for 'Digital Auckland' (Visual City).

South East Water – personal contacts from previous companies allowed direct access to key decision makers. Vision creation (ie, helping the customer to see how 3D could improve their business) led to a prototype in December 2009. This completed in March 2010. A larger project following on from the proof-of-concept was secured within six months.

City of Melbourne – through our Australian partner, VPAC⁶ we identified an RFP for 3D Modeling of the City of Melbourne for planning purposes. The RFP was identified in October and completed in November with presentations in December 2011. We are shortlisted with four other players – we are awaiting the decision in February."

The geographic market is largely Australia and New Zealand. Nextspace aims to get one to two major cities as reference customers and two to three utility companies within the next 12 months. There are currently two people within Nextspace with a third being hired soon to manage relationship building with new clients and direct sales to enterprises.

As Nextspace is based in Auckland, there is a lot of travel involved when trying to secure customers in Australia. Additionally, the distance means there is intermittent face to face contact. The other alternative would be to have a base in Australia but Australian cities are so widespread themselves that it is unlikely that there would be a travel advantage to having a base in Australia.

Nextspace has worked on projects with the following organisations:

- South East Water Ltd and "us" Utility Services – flagship water utility customer based in Melbourne. ECHo including Deep Server provide visualisation and asset capture capabilities both above and below ground. An iPad application (iField) provides contractors with tools to consult with home owners and capture "as-built" infrastructure.

⁶ VPAC (Victorian Partnership for Advanced Computing) is a not for profit research service provider established in 2000 by a consortium of Victorian universities.

- Auckland Council – providing consulting services to recommend a roadmap for the building of a “Digital Auckland”. Providing a digital asset management system for 3D city graphics.
- CyberCity 3D – a US-based company that creates 3D models of cities. Nextspace provided development services to improve their digital asset creation workflow.
- New Zealand Transport Agency – prototype to provide a 3D model-centric approach to vehicle inspection.
- Institute of Earth Sciences & Engineering – research agency based in Auckland. Nextspace partners with IESE to provide visualisation of subterranean earthquake and fault data.

Nextspace have active qualified opportunities with the following targeted companies:

- Mass Transit Rail (Hong Kong) – proposal for feasibility prototype to amalgamate CAD and GIS data for better planning and operations.
- NSW Land & Property Management Authority (Australia) – proposal to allow visualisation of GIS and building information.
- NSW Department of Transport (Australia) – qualified opportunity.
- Christchurch City Council – proposal to visualise the Christchurch of the future for public consultation and infrastructure management.
- Wellington City Council – early discussions on how the Visual City can improve the city operations.
- SA Water (Adelaide) – early discussions about how Visual Water applications as delivered to South East Water could save infrastructure costs.
- Melbourne Water
- Allconnex Water (Queensland)
- Sydney Water
- Watercare Services (Auckland) – pilot project to visualise green field site infrastructure roll-out with council and transport.

In parallel with the direct sales to key reference customers, Nextspace is developing channel partners including:

- South East Water Ltd – negotiations are underway to partner with South East Water Ltd (SEWL) in the water utilities segment. The partnership would allow more rapid penetration of the Australian utilities market.
- IBM – IBM’s “Smart Cities”⁷ initiative is highly complementary to Nextspace’s Visual City. Essentially Nextspace would be providing the 3D visualisation component to IBM’s data management and professional services capabilities.
- SAP – SAP’s ERP solutions are present in a large number of the world’s local authorities and utilities. Nextspace has engaged with SAP’s global public sector industry team to explore partnership opportunities.
- ESRI – ESRI are the world’s leading GIS company. Adding 3D visualisation to their geospatial data systems is the basis of a complementary partnership strategy.
- VPAC (Victorian Partnership for Advanced Computing) is a not for profit research service provider established in 2000 by a consortium of Victorian universities. Their aim is to help Australians utilise innovative tools and advanced computing that will place Australia at the forefront of global scientific achievement.
- Datacom NZ – provides IT services such as IT management software development and business applications in New Zealand, Australia and parts of Asia (Manilla and Kuala Lumpur). They have done work for governments in Australia and New Zealand and helped with infrastructure projects

Before a channel partner can be engaged, however, Nextspace needs to have a fully developed product suite.

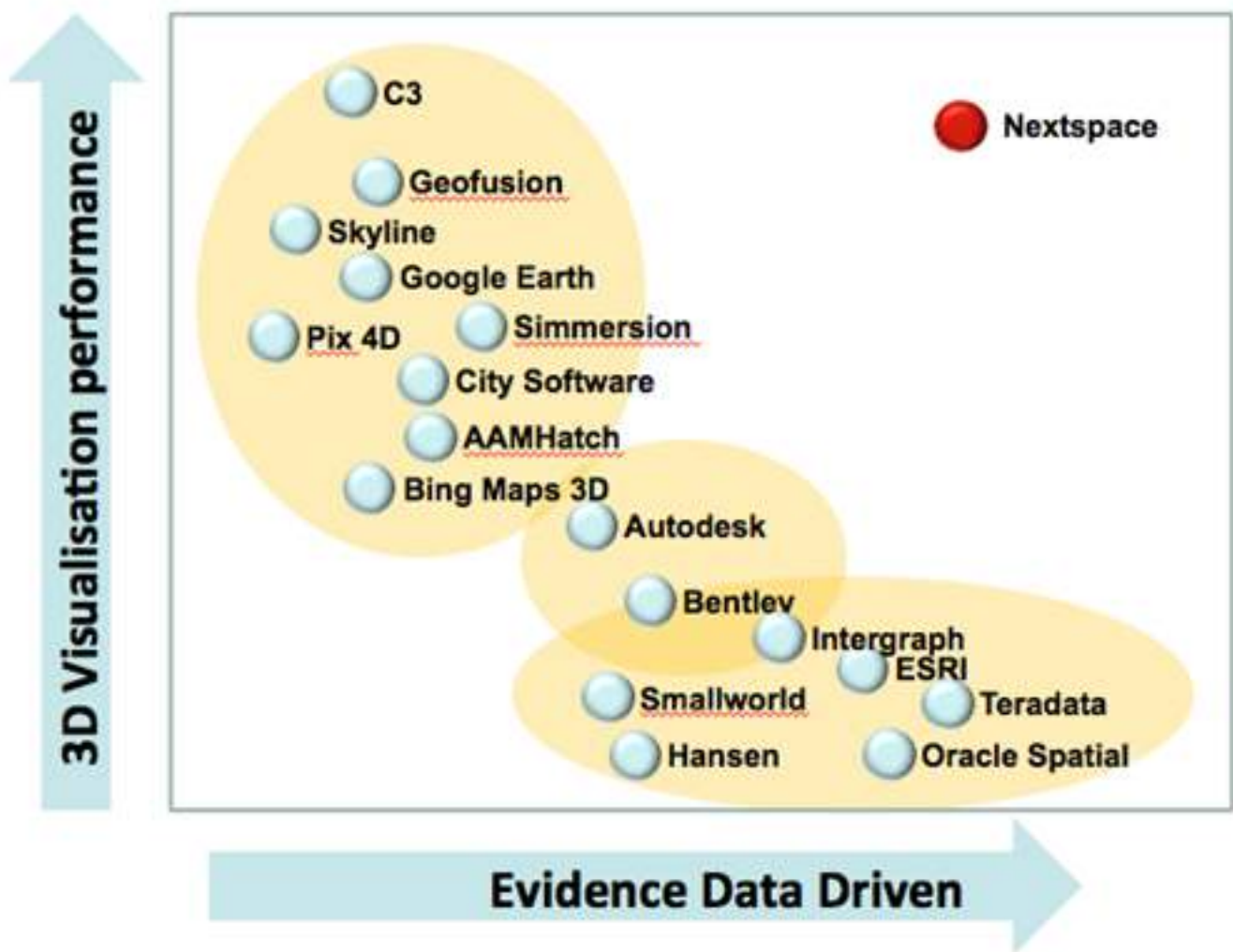
⁷ IBM Intelligent Operations Center for Smarter Cities monitors and manages city services. It provides operational insight into daily city operations through centralised intelligence.



The industry



Competitors



Competitive landscape as envisioned by Nextspace

There are multiple players in the market who address the challenges of visualising, managing and accessing the data from cities from different angles. Nextspace's unique competitive differentiation is the ability to deliver high-performance 3D visualisation of complex data combined with an evidence driven database.

The following are competitors who have been identified by Nextspace from their market experience in this industry.

3D visualisation companies

There are a number of companies that have invested in the visualisation of city data, particularly above ground information. These include:

- Skyline Inc (US based company that provides an in-house Google Earth-like capability).
- City Software (UK based CAD tool for urban planners).
- AAMHatch (Australian remote data and photogrammetry⁸ company).
- Google Earth.
- C3 (Swiss 3D imaging company).
- Pix 4D (Swiss company that provides fully automated software solutions to combine aerial images together to produce meaningful 2D and 3D representations).
- Simmersion (Australian visualisation and simulation company).

⁸ The practice of determining the geometric properties of objects from photographic images.

GIS and Data companies

There are a number of well-established companies that focus on managing the data in a city. These include GIS players and database organisations. Companies include:

- Intergraph (US based software development and services company providing enterprise engineering and geospatially powered software).
- ESRI (US based software development and services company).
- Teradata (a listed, US based company selling database software for data warehouses).
- Oracle (a listed, US based computer technology company specialising in developing and marketing computer hardware systems and enterprise software).
- Smallworld (GIS products owned by GE Energy used by telecommunications, utility and public systems organisations).

3D CAD companies

The third group is made up of 3D CAD companies that play in the infrastructure design space. They have 3D visualisation experience and understand the management of data. These companies include:

- Bentley Systems (a listed, US based software company that produces solutions for the design, construction and operation of infrastructure).
- Autodesk (a listed, US based company focusing on 3D design software for use in architecture, engineering, construction, manufacturing, media, and entertainment).

See appendix for more competitor information.



Market sizing

The target customers for Nextspace are:

1. Water or other utilities
2. Local/State Government
3. Infrastructure providers

Market size – bottom up

- 481 cities worldwide with populations > one million people¹⁰.
- Average lifetime software and services sales to each city >\$2 million (based on the business model).
- Average lifetime software and services sales to each water utility >\$1 million (based on the business model).
- On average two water utilities per city.
- >\$4 million per city, therefore market potential of \$2 billion over five years.

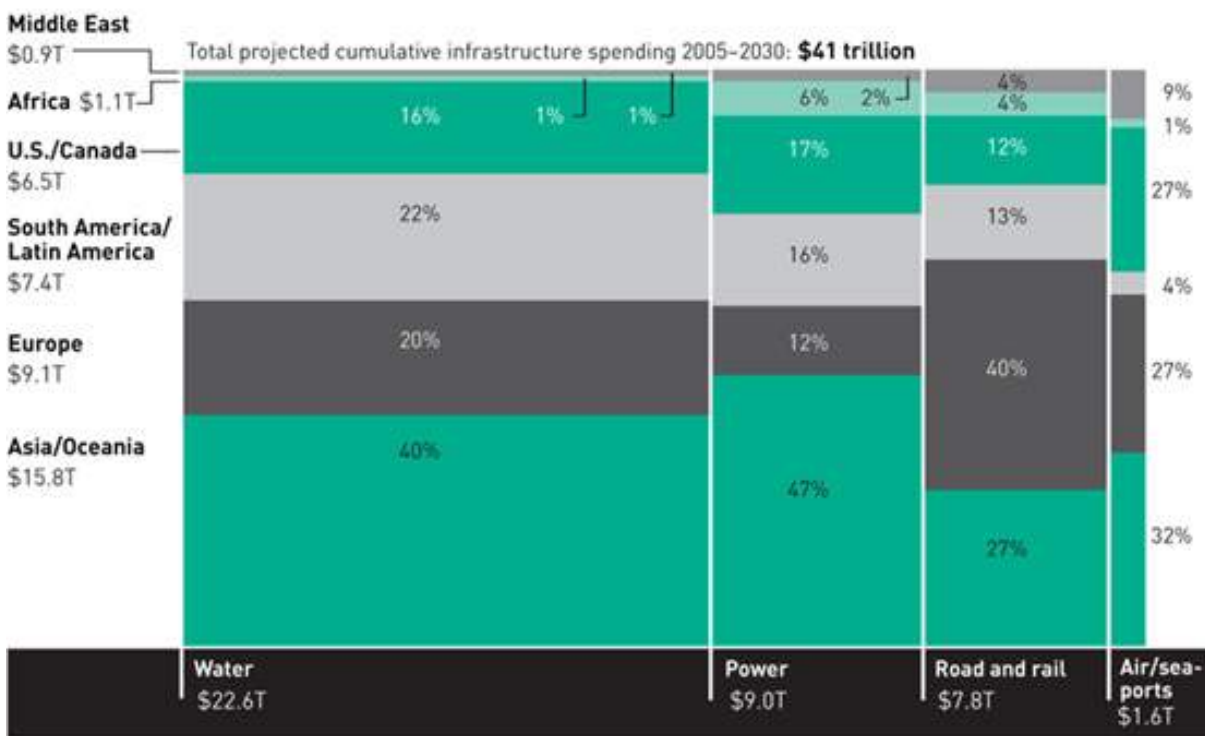
Market size – top down

- Total spend on infrastructure globally expected to be over \$60 trillion by 2030¹¹ or \$15 trillion over next five years.
- Nine out of ten projects have cost overruns averaging up to 45 percent.
- By saving less than 0.1 percent of this overspend through better decision making and planning (one of the top causes of overspend) this would result in over \$6 billion of savings.

In Australia, A\$14 billion¹² of capital investment projects are currently underway to serve water users¹³.

Exhibit 1: The Infrastructure Challenge

Percentages of total projected cumulative infrastructure investment needed during the next 25 years to modernize obsolescent systems and meet expanding demand, broken down by region (rows) and sector (columns).



Source: Booz Allen Hamilton, Global Infrastructure Partners, World Energy Outlook, Organisation for Economic Co-operation and Development (OECD), Boeing, Drewry Shipping Consultants, U.S. Department of Transportation

¹⁰ www.citypopulation.de

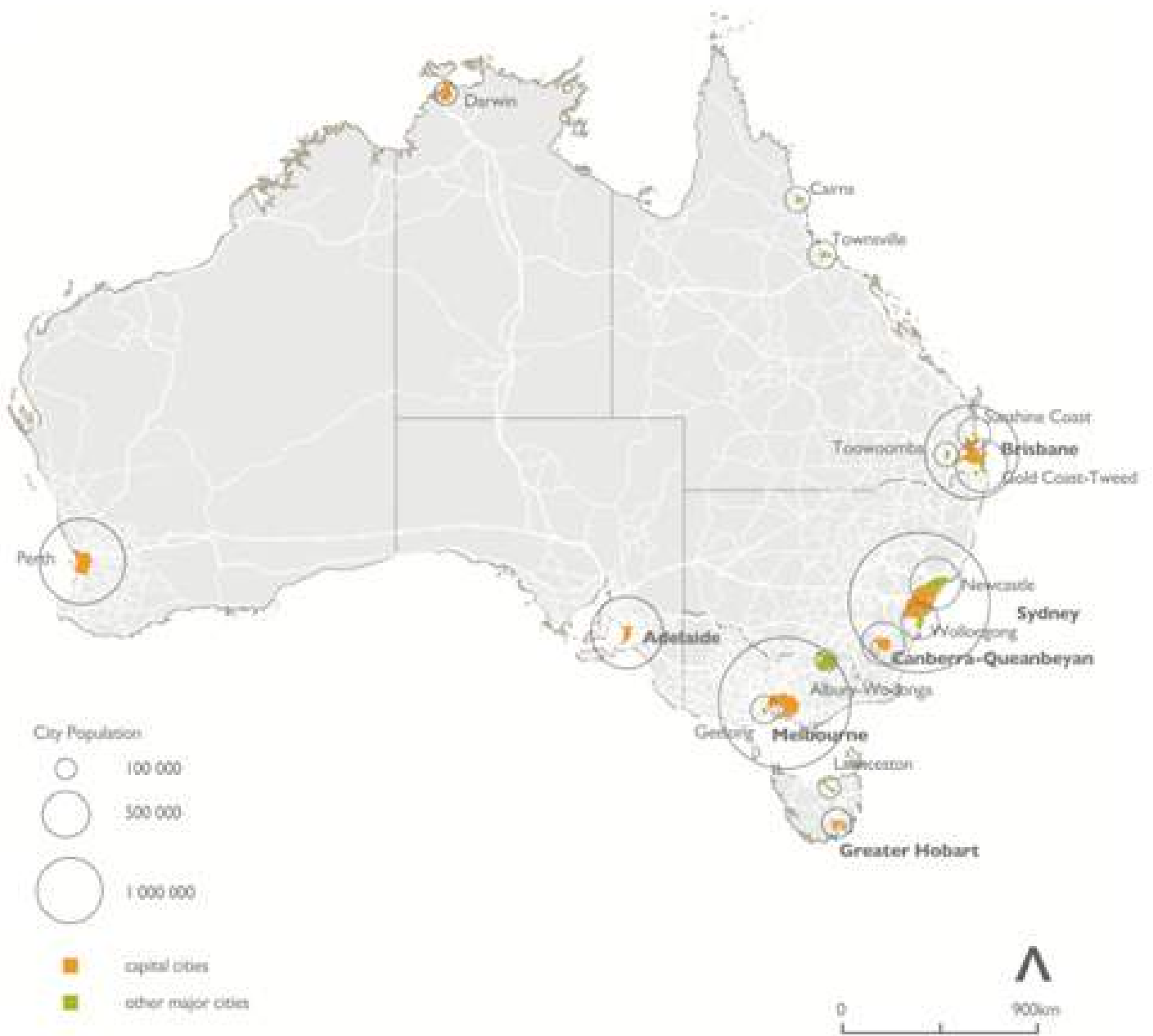
¹¹ OECD

¹² A\$1 = NZ\$1.3

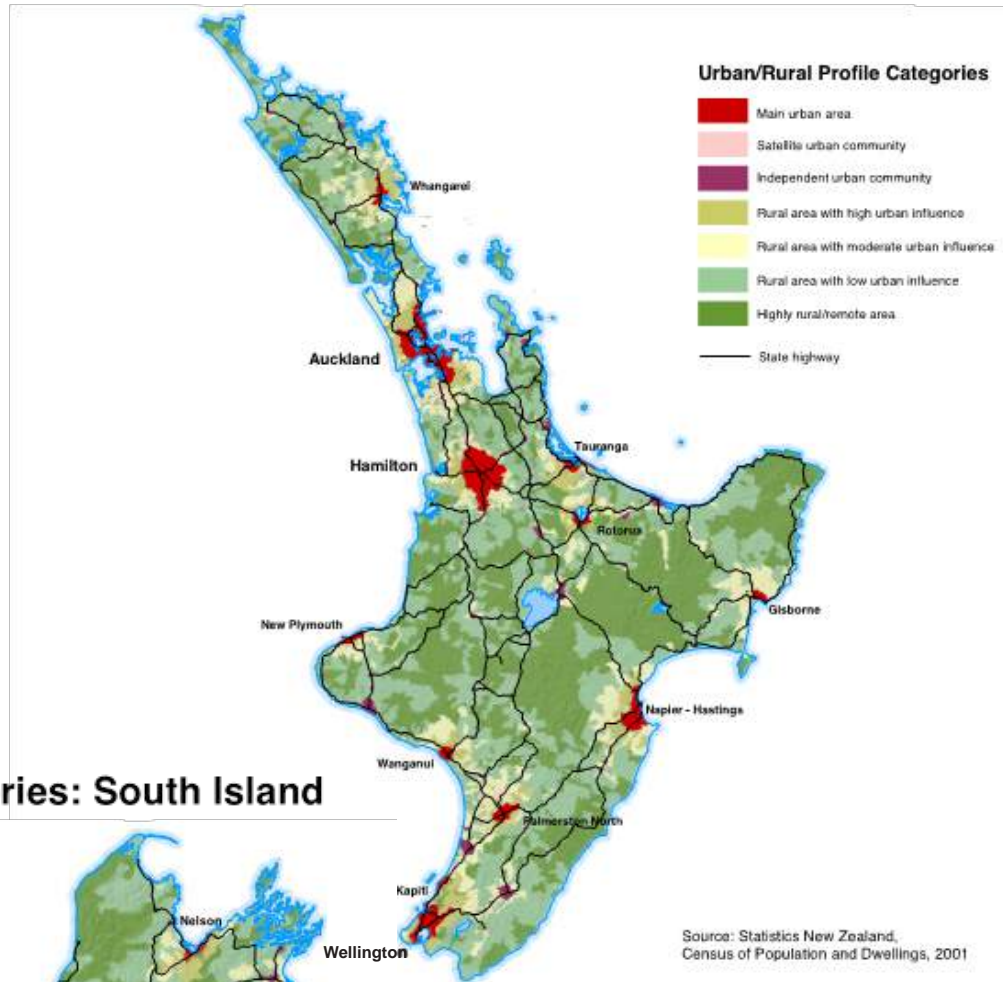
¹³ www.globalwaterintel.com/archive/10/9/general/aussie-water-capex-set-shift-reuse.html

Australasian population information

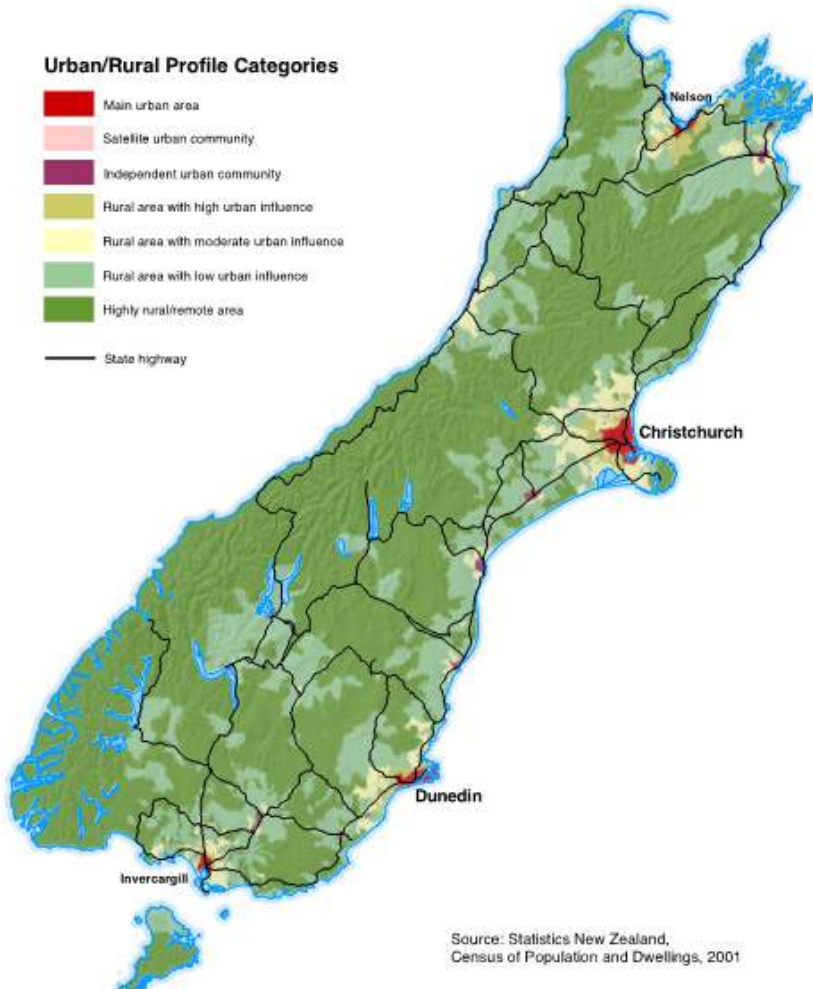
Figure 1.1 Australia's major cities, 2011



Urban/Rural Profile Categories: North Island



Urban/Rural Profile Categories: South Island

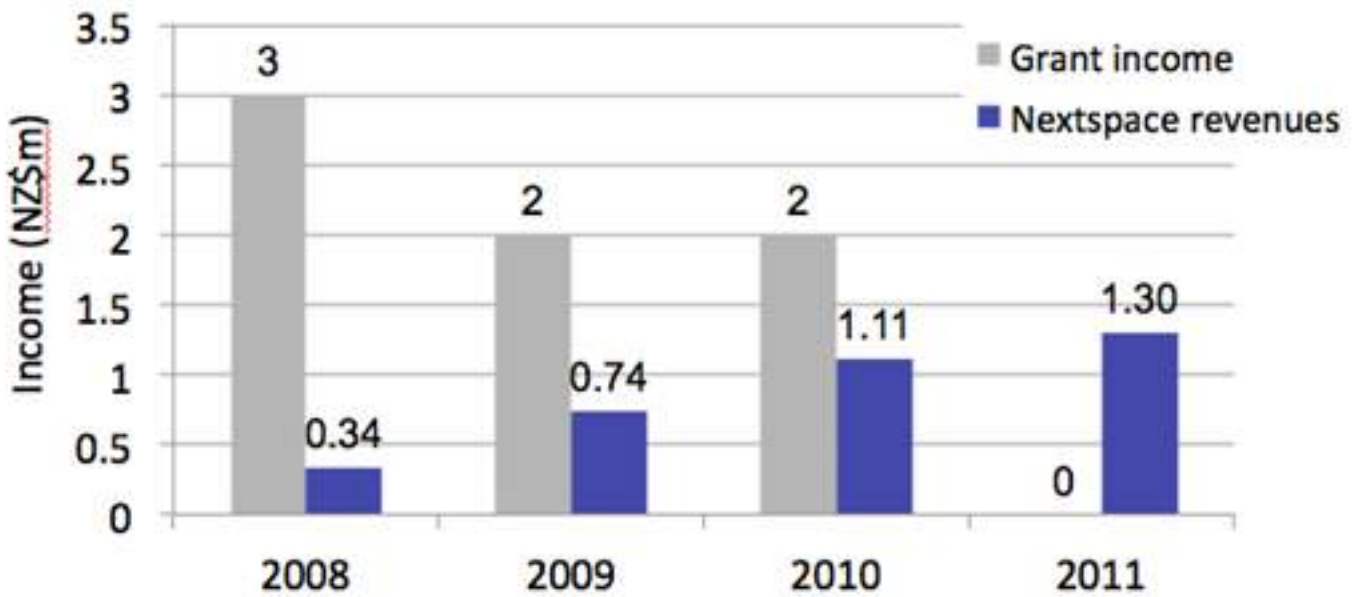




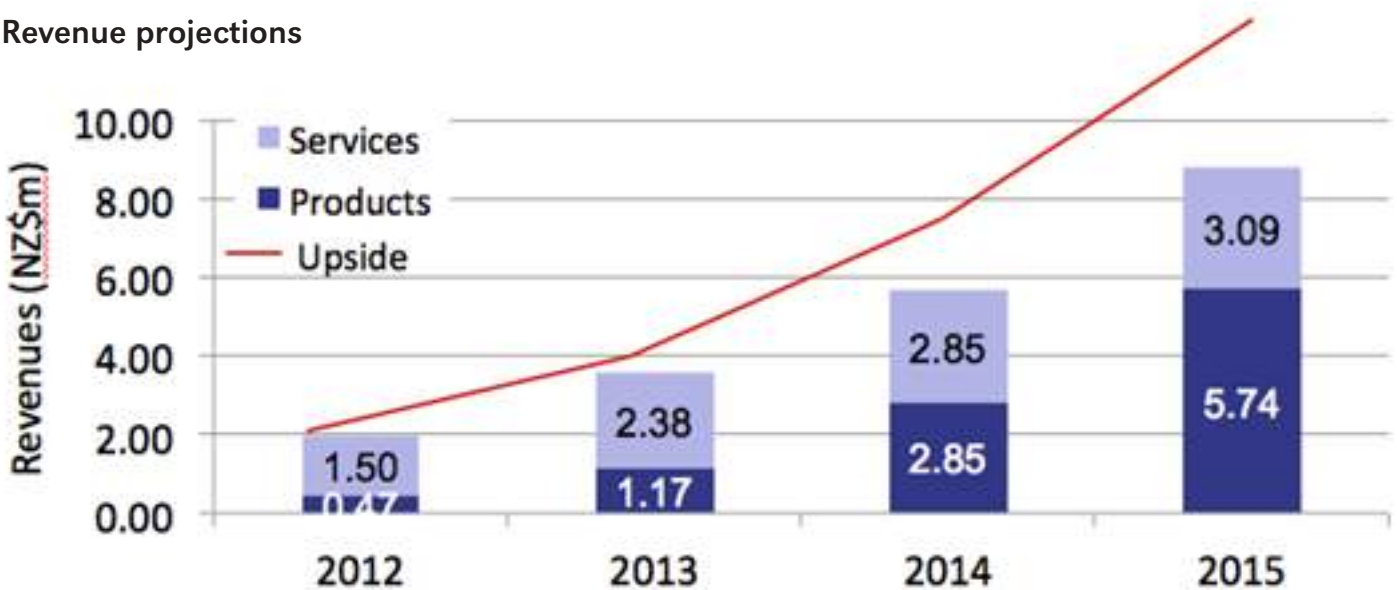
Financial information



Historic financial performance



Revenue projections



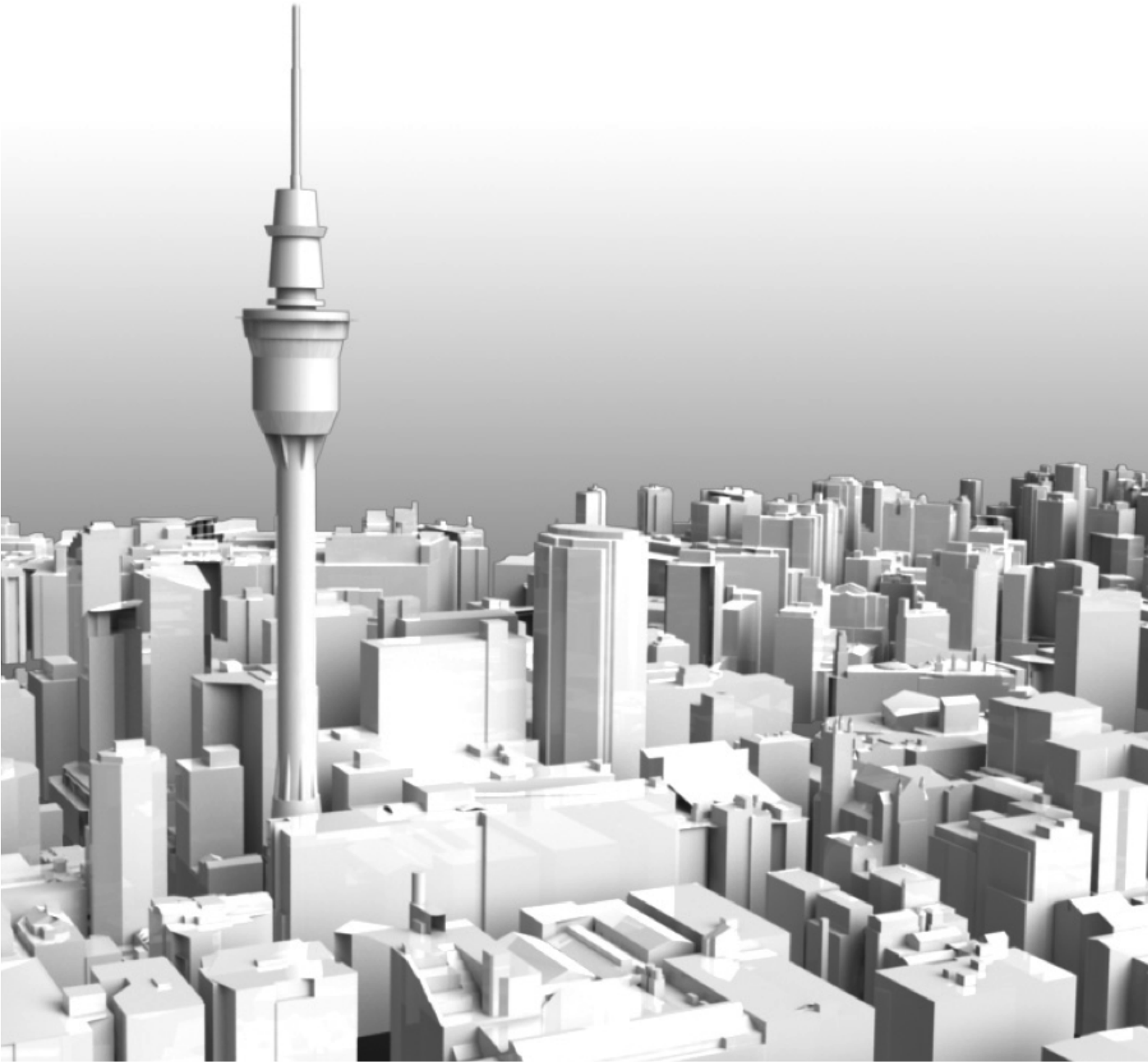
Nextspace's focus on the Visual City market opportunity by building the ECHo platform as part of the South East Water project forms the basis of future growth.

The revenue projections are split into two: base-line plan and upside. The upside growth will be driven by the following factors:

- Successful engagement of global partner in addition to South East Water Limited.
- Additional development resources to accelerate product development delivery.



Management team



Board of Directors:

Phil Norman, Chairman/Director



Phil has over 30 years' experience in the ICT sector, having been an owner, manager, director and investor in a number of local and international companies.

These roles have included the establishment, growth and successful exit of an accounting software company, Interactive Applications Limited, which at the time the business sold was the market leader in New Zealand and Australia; the establishment of the first New Zealand distributorship for Microsoft and then, subsequently, a sales and marketing management position in the start-up team for Microsoft New Zealand; a two year assignment for Telecom New Zealand during which Phil was responsible for the conception and rollout of Xtra, Telecom's Internet Service Provider; and a five year term as Executive Chairman of Strathmore Group Limited, an NZX-listed technology investment company. Phil also has considerable venture capital and investment banking experience. He was Chairman of the New Zealand Venture Capital Association during 2002 and 2003 and was for six years a member of New Zealand Trade & Enterprise's Beachheads Advisory Board, resigning in June 2010.

Scott Gilmour, Director



Scott is an angel investor and mentor/director with a number of Kiwi technology companies, including Right Hemisphere, Jade, Biomatters, DataBrake and Nextspace. His 25+ years' IT experience in the US and New Zealand includes 12 years with Intel and co-founding a software company in the US in 1989 (ABC Technologies Inc), which was sold to SAS in 2002. Scott serves on the Advisory Boards for the Ice Angels angel investor network and the NZTE Beachheads programme. He is also the Project Sponsor for the first "I Have a Dream" programme to be implemented outside the US. He has a Bachelor of Commerce from Otago University and an MBA from the University of Oregon.

Mark Thomas, Director



Mark is a founder and the President/Chief Technology Officer of Right Hemisphere. Mark is an acknowledged expert in both engineering graphics (Mechanical CAD, 3D Visualization, FEA, CFD) and entertainment graphics (Game Animation, Special Effects, 2D/3D Video Editing). Previously, Mark founded CADS, New Zealand's leading mechanical CAD reseller. Mark has a degree in Mechanical Engineering and Masters in Computer Graphics. He is also a graduate of The University of Auckland Business School.

Management team:

Gavin Lennox, CEO



With extensive experience in general management, sales, marketing and service operations, Gavin has successfully led and grown software and technology businesses and brings an international business perspective having lived and worked on three continents. Before joining Nextspace, Gavin was Vice President, Global Sales and Marketing, for Healthphone, a global healthcare software company founded in New Zealand. Prior to that, he worked in Europe and North America with Lotus Development, IBM, Doubleclick, and MapInfo Corporation in a variety of senior international roles. This gave him valuable experience in commercial applications for visual data and its integration with business processes. Gavin holds a Master of Engineering and Bachelor of Science from Brunel University, UK.

Richard Simpson, Business Development Director



An early pioneer of the New Zealand computer graphics industry, Richard founded one of the first New Zealand companies devoted to the development and application of 3D design, simulation and visualisation technology. He is an appointed member of the Executive Committee for the International Society of Digital Earth (ISDE), chair of ISDE's working committee for the Digital City, and also serves on the editorial board for the *International Journal for the Digital Earth* (published bimonthly by Taylor and Francis). Richard also served formerly as an elected City Councillor and was Chair of Auckland's Transport Committee and Deputy Chair of Economic Development. He has worked at Intergraph Corporation with global responsibilities for the utilities, local government, and telecommunications industry. Richard holds a Bachelor of Science from Otago University, New Zealand.

Mark Talbot, CFO



Mark is a Chartered Accountant who works with start-up and high growth companies in New Zealand, mostly in the technology sector. Through his company, Diablo Management, Mark provides virtual CFO and virtual financial controller services.

Stephen Long, Head of Products



Stephen manages the Nextspace's product strategy and business analytics with over 20 years' experience in geospatial and 3D technologies. Prior to joining Nextspace, Stephen worked for Right Hemisphere as a development manager. He has also runs his own company, providing Intergraph's 2D CAD software. He previously worked for the Auckland Electric Power Board and Mercury Energy on a number of multi-million dollar engineering projects – experience he is applying to Nextspace's utility offerings.

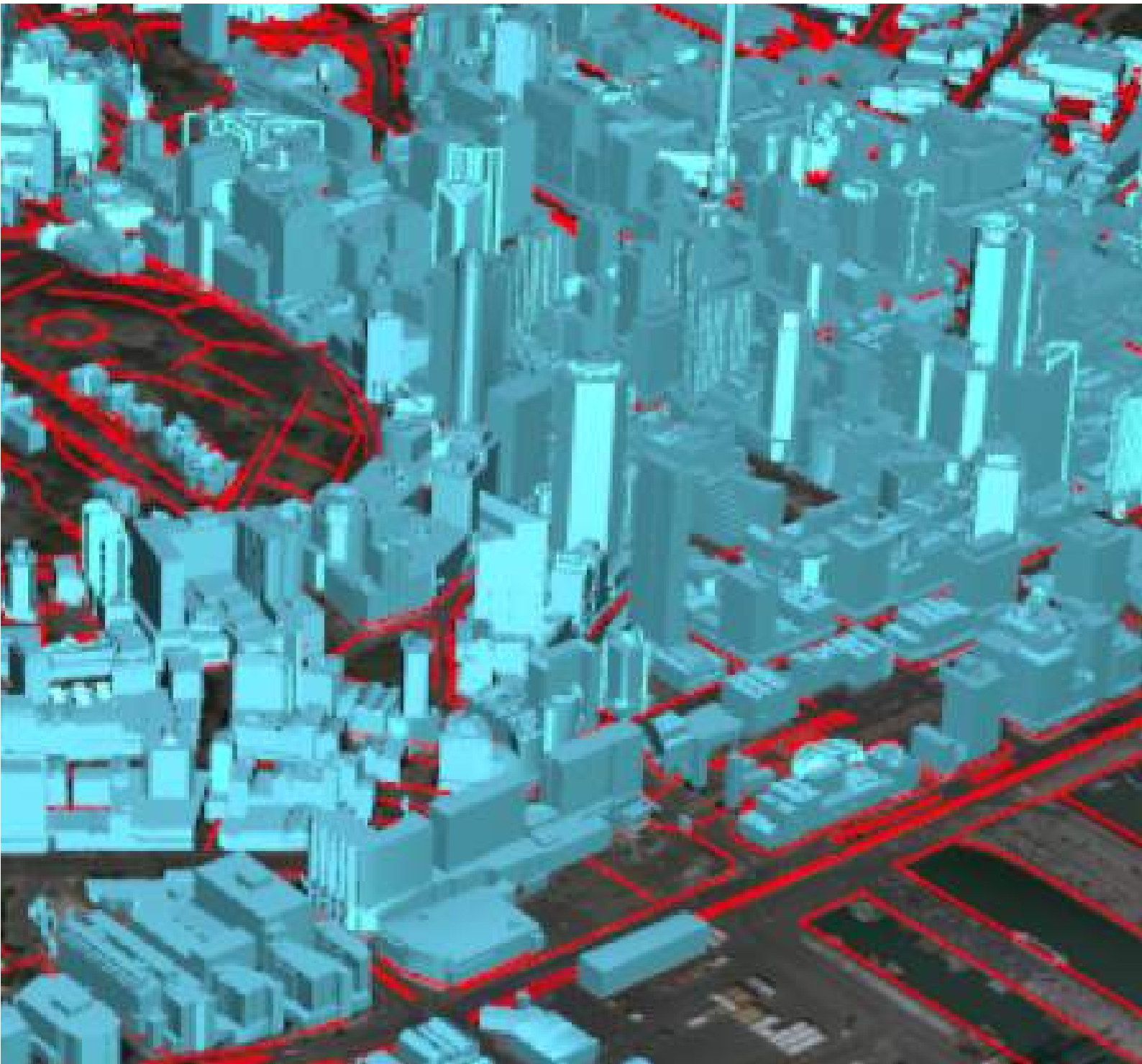
Najam Haq, Head of Development



Najam is an accomplished professional with more than 19 years' experience designing, developing and managing large software systems. Previously he led project teams at FourthWall Media (Virginia, USA) implementing platform solutions for Interactive Television supporting millions of customers. Najam also has experience with artificial intelligence and operations research systems.



Appendices



Key news articles related to Nextspace

Press release

31 October 2011

Nextspace secures investment from ICE Angels-led consortium

3D visualisation company Nextspace has today secured investment capital to further develop and export its interactive Visual City technology to the world.

The funding round is led by the Auckland-based ICE Angels. While the exact investment amount is not disclosed, The ICEHouse's Director of Startups Ken Erskine says it is one of the bigger funding rounds the group has made this year.

"Visual City is another example of New Zealand stepping ahead of the pack in the 3D technology industry," says Mr Erskine. "Our investors were attracted to the technology's export potential, which has already generated significant interest from a wide range of sectors overseas."

"We also see the potential for other businesses to built content-rich applications on top of the Visual City platform, thereby creating further export and employment opportunities."

Visual City is a New Zealand-developed 3D visualisation software solution that provides applications to engage communities and stakeholders in meaningful debate around a city's challenges and opportunities, including transport, utilities, and sustainable urban planning.

Melbourne's South East Water Limited (SEWL) is using Nextspace's visualisation technology to help Australia's second largest city save money and time when building out low-pressure sewer systems. In New Zealand, geologists are using it to advance their understanding of earthquakes and volcanoes, and Auckland Council is developing an accurate, 3D city reference model to help communicate proposals outlined in the Auckland Spatial Plan.

Nextspace CEO Gavin Lennox, who is also a member of the ICE Angels and part of the investment round personally, says that the number of people living in cities is expected to rise from half of the world's population to 60% by 2030, so the market is ripe for solutions that help cities interpret and manage this growth.

"When remote sensors, geospatial information and other raw data sources are used to generate a complex model of a community, then the best information and ideas can be openly shared and made available to everyone," says Mr Lennox. "From all of this, cities and communities can make better evidence-based decisions."

Nextspace's Visual City solution includes technology developed by New Zealand-born Right Hemisphere, which was acquired by enterprise software giant SAP in September. Nextspace was originally established with government support in 2007 but is now a self-sustaining commercial company with 12 employees.

Idealog

31 October 2011

Nextspace's 3D Visual City technology gets angelic investment booster

Kiwi company Nextspace has been performing some impressive feats with its unique 3D visualisation technology. So impressive, in fact, it's secured a healthy dose of investment capital to further develop and export its interactive Visual City technology to the world.

The Kiwi-developed 3D visualisation software solution provides applications to engage communities and stakeholders in meaningful debate around a city's challenges and opportunities in areas that include transport, utilities and sustainable urban planning.

The funding has been led by Ice Angels from business growth centre The Icehouse. Its director of startups, Ken Erskine, is keeping tight-lipped about the exact amount invested, though he says it's one of the bigger funding rounds made by the group this year.

Erskine said investors have been attracted by the technology's export potential, describing it as another example of "New Zealand stepping ahead of the pack in the 3D technology industry".

"We also see the potential for other businesses to build content-rich applications on top of the Visual City platform, thereby creating further export and employment opportunities."

The technology is currently being used across a wide range of applications. Auckland Council is using the technology to develop an accurate, 3D city reference model to help communicate proposals outlined in the Auckland Spatial Plan (its technology was showcased as part of an Auckland Spatial Plan panel discussion last year). Elsewhere geologists in New Zealand are using the technology to better understand earthquakes and volcanoes. It's even been adopted by the Australians with Melbourne's South East Water Limited using it to help Melbourne save money and time when building low-pressure sewer systems.

Nextspace chief executive Gavin Lennox, who is also a member of the Ice Angels and part of the investment round personally, said the number of people living in cities is expected to rise from half of the world's population to 60 percent by 2030, so the market is ripe for solutions that help cities interpret and manage this growth.

"When remote sensors, geospatial information and other raw data sources are used to generate a complex model of a community, then the best information and ideas can be openly shared and made available to everyone," said Lennox. *"From all of this, cities and communities can make better evidence-based decisions."*

Press release

6 September 2011

SAP to Acquire 3-D Visualization Software Maker Right Hemisphere

As part of its mission to help customers innovate the way they do business, SAP AG (NYSE: SAP) will acquire Right Hemisphere, a leading provider of visual enterprise solutions based in San Ramon, California, and Auckland, New Zealand. The 3-D model-based visualization and communications technologies from Right Hemisphere will enhance SAP® software and enable visual navigation and interrogation of an entire product or asset and all its associated data in one, unified environment.

The addition of visualization capabilities to the core product offerings from SAP stands to help customers across diverse industries accelerate time to market, increase people and asset productivity and improve information quality and processes across all lines of businesses. This acquisition is consistent with SAP's strategy to complement existing applications and solutions with innovative technologies and capabilities while maintaining its successful track record of organic growth. The companies already share numerous joint customers that are already seeing benefits of the combination of enterprise software and 3-D visualization.

"We are very excited to be part of SAP," said Michael Lynch, CEO, Right Hemisphere. *"The combination of SAP's vast set of business information and Right Hemisphere's visualization capabilities will change the way businesses of any size create, manage and deliver products and services across their enterprise and their supply chain."*

"Right Hemisphere technology empowers customers to visualize business processes from design to manufacturing through sales, operations and service, helping people to easily cooperate and communicate using the most powerful human sense – vision," said Peter Maier, general manager and head of Line of Business Solutions, SAP AG. *"By bringing 3-D to the enterprise and enriching it with business data, we're setting a new standard in helping companies achieve more efficiency, accuracy and flexibility across the value chain."*

SAP customers will get tangible benefits from the acquisition of Right Hemisphere that will help them unify, synchronize and deliver visual product and business information to improve global product development, launch and support processes.

12 July 2010

Kiwi 3D firm into next stratosphere

Auckland 3D software firm Right Hemisphere says a win in its partnership with SAP will increase its exposure to customers of the enterprise software giant “a hundredfold”.

Right Hemisphere already counts among its customers Boeing, which uses its software to train aircraft mechanics, Chrysler and jet manufacturer Gulfstream.

SAP will include Right Hemisphere’s software in its complex assembly manufacturing solution, so firms can view and share 3D models of complicated manufacturing processes.

Right Hemisphere president Mark Thomas says SAP previously incorporated its technology only in its product lifecycle management software.

“We’ve gone from impacting hundreds of SAP customers to thousands of SAP customers. We’re helping bring this 3D visual communication into the mainstream.”

Right Hemisphere’s spinoff company, Nextspace, which makes its 3D software available to research institutions at a discount and aims to build a \$1 billion visual communications industry by 2018, is meanwhile eyeing up new markets for the technology.

Nextspace chief executive Gavin Lennox says it is working with a large Australian water company to develop software that will let utility firms easily visualise and manage their infrastructure, such as underground pipes and ducts.

The firm is seeking about \$500,000 from the Foundation for Research, Science and Technology to help fund the software’s development.

The software would form part of Nextspace’s “visual city” solution, which could result in local authorities using 3D models to understand and manage all their infrastructure and assets.

Mr Thomas says finding and accessing data on infrastructure and physical assets can be frustrating, because it often involves sifting through a mountain of paperwork.

Interactive 3D documentation is the way of the future and what the PlayStation generation will come to expect, he says.

“You only need to go and see Avatar or The Fifth Element to see the way people access information through holograms and models.

“There’s the potential to add another dimension to communication around 3D as a navigation tool for information.”

New Zealand firms needed to do more to cash in on the country’s 3D expertise. “We seem to have taken a global lead in that thinking, but I don’t think we’ve catalysed that opportunity as a nation.

“We are ahead of Australia when it comes to this technology, but we need to be aligning it with business opportunities.”

Mr Lennox says Nextspace is targeting specialist manufacturers and sees great opportunity for 3D applications for buildings and visual learning.

About 15 research institutions use Right Hemisphere’s software via Nextspace, including Christchurch’s Mars Medipix, which has developed a 3D X-ray imaging tool. Ninety per cent of its customers are commercial clients.

19 January 2011

Global infra spend to miss OECD estimates

The Organisation for Economic Cooperation and Development's estimated \$60tn of needed infrastructure spending through 2030 is likely to be met with only a \$24tn spend by the world's leading economies, according to a prediction made by CG/LA Infrastructure CEO Norman Anderson at the firm's 4th annual leadership forum in New York.

Unless the world's leading economies change the way they currently fund their infrastructure needs, they are likely to spend less than half of the \$60 trillion they need to invest in infrastructure through 2030.

That was the message delivered today by Norman Anderson, chief executive of Washington DC-based CG/LA Infrastructure at the outset of the consulting firm's fourth annual global leadership forum in New York City.

"Given the current infrastructure development model, we're likely to invest about \$24 trillion between now and 2030," Anderson said. CG/LA's 2030 projections focus on 25 countries, including China, Brazil, India, the United States and Indonesia, among others, according to the firm's website.

The Organisation for Economic Cooperation and Development (OECD), the economic policy group for the world's developed countries, has forecast the world will demand cumulative infrastructure investments of about \$60 trillion through 2030.

"There's no way we're going to invest that kind of money. That's what we need," Anderson said of the OECD's estimate.

CG/LA predicted world economies could spend \$42 trillion on their infrastructure needs through 2030 under a more optimistic scenario. Asia would account for nearly half of the \$42 trillion, and China alone would account for about one-third, according to an executive summary of CG/LA's predictions.

But even that figure, Anderson insisted, was unrealistic.

"If you think about it from an infrastructure business development guy's point of view, it doesn't make any sense at all," he said, explaining that many of the world's governments have yet to find ways to involve the private sector in the delivery of their infrastructure.

"You really don't see any evidence for us being able to satisfy the incredible growth in infrastructure demand needs that we're going to see going forward," he added.

A survey of 300 senior infrastructure professionals showed that Anderson was the most bearish of all of them: 35 percent went for the \$60 trillion figure, 39 percent opted for \$42 trillion and another 14% percent guessed infrastructure spending would reach \$34 trillion through 2030.

"Only a few people came near what I consider to be the right answer," Anderson said.

Anderson cautioned that the underinvestment by the public sector would drive a "huge" opportunity for "creative" thinking about how to develop infrastructure. This could spell more opportunity for infrastructure investors and developers.

"One of the facts of the infrastructure business over the next couple of years, I think, is that there's a huge opportunity because we're going to have a lot less investment in infrastructure," Anderson said.

Case studies with Nextspace's products

South East Water Ltd

South East Water Ltd (an Australian water retailer) has saved over A\$300,000 in one neighbourhood installation of a new sewer system by avoiding underground rocks and improving customer consultation.

The iPad application that was developed provides contractors with tools to consult with home owners and capture "as-built" infrastructure.

During the planning stages, models were built and 3D visualisation technology was then used to identify the location of critical rock formations in Belgrave Heights, a neighbourhood in Melbourne, Australia. Drawing in geological survey data from a number of sources, the system was able to show the project team underground landform that has previously not been available in a visual format. Teams planning for pipeline alignments and the position of infrastructure, including grinder tanks for individual properties, were able to draw on this additional information. Rock formations in the local area were of particular concern and the added capacity to visualise their location assisted with design - finding alternative and more cost-effective pipeline alignments.

Construction benefits

- Reduction of project risk contingency and cost.
- Dynamic "what-if" modelling of potential cost savings.
- Better evidence-based decisions.
- Error reduction through mobile in-field capture of as-built information.
- Reduced administration, compliance and certification times.

Customer engagement benefits

- Reduce time to customer sign-off saving from contractor costs and increasing efficiency.
- Improved communication and customer engagement.



Visual Planning and Decision Support

As cities grow, sustainable urban planning and design will develop improved approaches to building and space management and resulting ways citizens live and commute. New planned cities built from the ground up are being developed but for many cities retrofit of existing urban landscapes will dominate. Existing use of 3D visualisation in city planning has found savings in development proposal review, consultation and dispute resolution to be significant. Large savings annually in legal and submission costs are demonstrated.

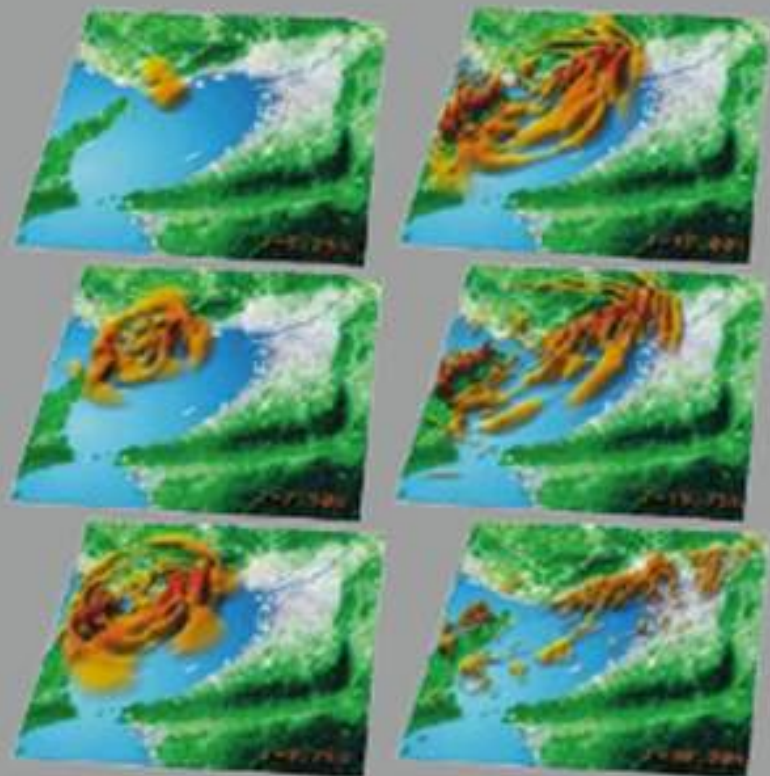
CASE STUDY: EARTHQUAKE

Large-scale parallel finite-difference method (FDM) simulations of seismic wave propagation have been conducted using the Earth Simulator in order to clarify the complex seismic wavefield resulting from heterogeneities in structures and the source rupture process during the Hyogo-ken Nanbu (Kobe) earthquake (Mj 7.2; Mw 6.9) in 1995.

Japan's Earth Simulator ran a high-resolution simulation for seismic waves from the Kobe earthquake and provided a very good reproduction of strong ground motions and a narrow

zone of larger intensity (damage belt) appearing in the Awaji Island and Kobe-Hanshin region. Thus, the current simulation model is considered to be suitable for application in predicting strong ground motions for possible future earthquakes, such as the occurrence of a large earthquake in Tokyo.

This model under pinning this simulation was successively refined with updated crust, rock, and sedimentary soil. The evidential approach being developed by Nextspace for underground modeling could be applied with such simulations to predicting the vulnerability of cities to earthquake damages. This could become a decision support tool for city planning in earthquake vulnerable nations such as New Zealand. The recent Christchurch earthquake provides graphic testament to the risks faced by development on loose sandy soils.

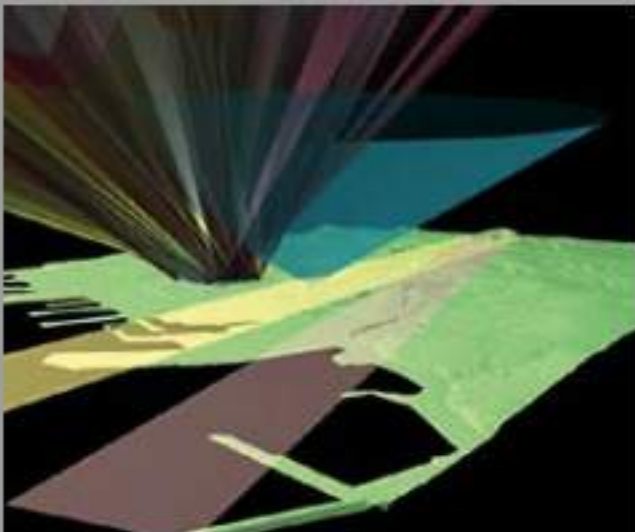
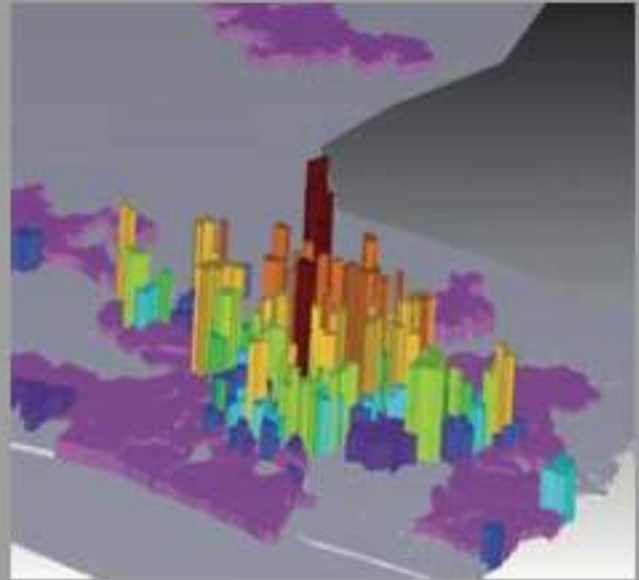


CASE STUDY: **MACROAUCKLAND**

Understanding Auckland involves identifying the dream, the strengths, the challenges and the opportunities in the Auckland region. Through compiling and analysing the research across eight different issues and combining this analysis with primary research from a community panel, MacroAuckland will use the Visual City platform to help in investigating where the Auckland region's social issues, economic issues and demography. 3D visualisation enables the articulations of concepts to wide audiences, and can build a better common understanding of scenarios and situations.

Some of the frameworks being considered by MacroAuckland are:

- Housing (e.g. affordability, crowding, homelessness, households)
- Employment (e.g. employment, unemployment, entrepreneurship, benefit dependency)
- Health (e.g. health related behaviours, access, substance abuse, disability, mental and emotional wellbeing)
- Education (e.g. literacy and numeracy, education Levels, adult/ongoing education, informal education)
- Belonging (e.g. cultural wellbeing, volunteering and community involvement, arts and culture)
- Economic Wellbeing (e.g. debt, household income relative to costs of living, financial literacy)
- Safety (e.g. crime rates, reporting, incarceration and reoffending, road safety, domestic violence and child abuse, neighbourhood watch)
- Environment (e.g. parks/green spaces, recycling, conservation, waste/rubbish, pollution)



CASE STUDY **AUCKLAND**

Environmental performance control envelope defining the skyline of Auckland City as driven by sunlight controls and view shafts. 'Stain glass' rendering provides an interactive quality to the visualisation to yield a deeper understanding of the complex interrelationship of controls. This study was produced in 1988 for Auckland City by Cadabra. This mathematical simulation has dictated the shape of the city form for the past 20 years.

Water Networks

CASE STUDY: VISUAL WATER - EVIDENTIAL MODELLING AND MANAGEMENT OF MULTI-DIMENSIONAL DATA



Visual Water - Evidential modelling and management of multi-dimensional data

In Australia, the driest inhabited continent on earth, running a water utility is demanding - especially when with the droughts and climate change facing Australia's fastest growing city, Melbourne. Success in meeting these challenges has made South East Water Limited an inspirational thought-leader to utilities worldwide.

The Visual Water platform is being developed by Nextspace in partnership with South East Water's capital works arm 'us'-Utility Services to provide a 3D evidential clearinghouse for addressing the complex information management and real-time modelling needs of the water industry. The platform can be thought of as a rich ecology including technologies, policies, data repositories, and skill sets as well as asset models.

Competitor information from company websites

Skyline Software Systems

Founded in 1997, Skyline Software Systems, Inc. is a leading provider of 3D earth visualisation software and services.

Distributor locations:



AAM

AAM Pty Ltd is at the forefront of the spatial information technology revolution. Our teams in Australia, New Zealand, Malaysia and South Africa introduce leading innovations to the market. AAM has 200 staff and has offices in Wollongong, Brisbane, Sydney, Melbourne, Perth, Newcastle, Whylla, Auckland, Kuala Lumpur, Johannesburg and Cape Town.

Google Earth

Google Earth is a virtual globe, map and geographical information programme. It is available as Google Earth (free with limited function) and Google Earth Pro (US\$399 per year) which is intended for commercial use.

Intergraph

Intergraph is the leading global provider of engineering and geospatial software that enables customers to visualise complex data. Businesses and governments in more than 60 countries rely on Intergraph's industry-specific software to organise vast amounts of data and infuse the world with intelligence to make processes and infrastructures better, safer, and smarter.

Intergraph has revenues of over US\$800 million, over 3,800 employees and offices in Asia, the Pacific, North America, Europe, the Middle East, Africa and South America.

Esri

Esri has offices all around the world with more than 2,700 employees and has revenues of more than US\$700 million.

Autodesk

Autodesk is a world leader in 3D design software for manufacturing, building, construction, engineering and entertainment. Established in 1982 it has revenue close to US\$2 billion and over 6,800 employees.

Bentley

Bentley is the global leader dedicated to providing architects, engineers, constructors, and owner-operators with comprehensive architecture and engineering software solutions for sustaining infrastructure. Founded in 1984, Bentley has nearly 3,000 colleagues in more than 45 countries, \$500 million in annual revenues, and, since 2001, has invested more than \$1 billion in research, development, and acquisitions.