

**CENTRE FOR EXCELLENCE IN TROPICAL
DESIGN:
*SUSTAINABILITY AND INNOVATION***

Collaborative Learning in Action

Scenarios – The Year is 2015

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Executive Summary

In constructing scenarios for 2015 for a Centre of Excellence in Tropical Design: Sustainability and Innovation 70 participants displayed a great deal of implicit faith in the concept. The scenarios plan for 2015, facilitated by Dr Peter Ellyard, utilising the zing interactive computer technology, was at times energetic, inspiring, humorous and creative. Some 700 ideas were generated in about 90 minutes of intense work and creativity.

The commitment, energy and passion of people was focused on a collaborative learning in action process. In exploring the vision for a centre of tropical design sustainability and innovation a number of clear principles and themes emerged:

Distilling the Principles

- The importance of share leadership across the networked clusters.
- The critical importance of developing the networked clusters as an area of neutral collaboration not constrained by conventional organisational politics.
- The importance for cross sectorial linkage and dialogue or strategic conversation from multi perspectives to inform the development of distinctive competencies.
- The free flow of information and application of advanced communication systems to link and engage people.
- The equal relevance of applied ingenuity and breakthrough research.
- Importance of conversion and diffusion of tacit knowledge into just in time learning.
- Fundamental importance of the commercialisation of new products services and processes.
- The measured evolution of the networked clusters from informal to formal as the level of trust and operations mature.
- The linkage of clusters of tropical knowledge across northern Australia and globally.

Over 18 different creative ways of financing the proposed centre were canvassed, many of which were highly novel and indeed through time possible. Potential sources of financing included association fees, royalties, ethical sustainability bonds, floating a public company, user pays fees development aid and public funding.

The networked structures and processes were seen as essential ingredients for the successful growth of the centre. There was a strong focus on utilising leading edge technologies to keep people engaged, informed and to provide easy and ready access to emerging ideas and innovations. There was a strong emphasis placed on maintaining the integrity and values of the centre with an underlying commitment to ethical principles and ecological perspectives.

A large number of ways were perceived about how design based professions and companies could be assisted by such a centre. The concepts of open planning, joint ventures and strategic alliances and communication processes that allowed for continuous learning, innovation and creativity were strongly endorsed. As was the need to harness business and commercial capabilities to commercialise ideas, products and processes.

39 businesses ranging from immediate achievable to medium term opportunities and the bizarre and novel businesses were developed. These businesses spanned a large number of areas including social development, earth repair, sustainable energy, sustainable agriculture advanced communication systems, sustainable materials and products, disaster planning and relief,

environmental planning and education, water conservation and Bioprospecting. In short there was a full gamut of potential areas for tropical knowledge and innovation.

A bundle of areas for innovation in sustainable building and construction were identified. These include colours of buildings, energy generating buildings, sustainable houses, appropriate designs ecological landscape designs, and recycling building materials, eco-retrofitting. There was strong theme of the need to reform standards, policies and approaches from a tropical as distinct from a southern perspective.

The concept of a cluster was seen as being able to contribute significantly to developing a range of business, infrastructure and approaches to living both healthily and sustainable in topical environments. Some 38 ideas were generated. Ideas and suggestions included banning air conditioning, developing a suitable “tropical slow” culture and a culture that supported walking, building bike networks and providing well designed social and recreational spaces and the development of complimentary health approaches.

There was a strong theme that weaves its way through the questions explored than saw the relevance and potential for a globally competitive vibrant tropical cities and regions of Australia in a strong series of strategic partnerships and alliance with other global tropical cities and regions

A number of critical issues were identified including:

- The fundamental importance of effective communication.
- The need for open and democratic planning and operations.
- The critical importance to be focused both globally and locally (glocalisation).
- Levering free flow of information for developing global distinctive competencies
- Importance of collaborative learning, innovation and continuous creativity.
- The need for cross sectorial collaborations to successfully commercialise products and services.
- The need to engage the community, business, government and academia in a collaborative partnership fully if the centre is to be a success
- The need to manage the creative tension between free flows of information kept in the public domain to encourage learning and at times the commercial imperative for business and institutions to patent such information.

The scenarios planning session developed a wealth of information that can be mined by participants of the networked clusters as it organically develops and take shape. There was a high level of demand to participate in developing an informal knowledge industry cluster network around tropical sustainable design and innovation. There was a large potential agenda to mine and refine along with a high level of passion and commitment to make it happen. The challenge in evolving the concept is to learn how to first walk together slowly to build the informal co-operation, then to learn to walk faster through more formal structures and finally learn to run wildly into the future, where we have a globally competitive region with dynamic and distinctive competencies that provide for a prosperous and sustainable future.

Andrew McEwen

Describe 3 major aspects of the work of the networked clusters?

Free Flow of Information

- Freely exchanged information between groups & organisations
- Free exchange of info
- It is a filtering process for divergent ideas.
- Share knowledge, flexible design units
- Trains world leaders

Diffusion of Tacit Knowledge

- Rapid deployment of innovations and ideas
- We have one of the most used websites linking issues to do with tropical sustainability
- Our website utilisation allows the rest of the world to immediately apply our advances to their situation, and provide immediate feedback.
- sharing practical ideas, not keeping ideas so close to chest as they are commercially valuable

Functions

- Major supplier of food to Asia
- Coordinated the redesign of the Cities after the cyclones of 2011
- We are exporting emergency housing technology

Shared Vision, Values and Norms

- Participants share a commitment to sustainability, embrace diversity and use the networked cluster as a neutral space to share information and learning
- We are a group who do not agree on method, but are like minded in desire to move forward sustainable
- We've realised the importance of people
- We've found ways to be impulsive
- Enables small voices to be heard
- Sustainability of social networks is the focus for all actions
- Free information
- We've generated social investment to redress social exclusion.
- inclusiveness of all communities and interests

Provide leadership

- Encourages the city to practice what the cluster preaches
- Act as Change agent
- Shared leadership across the networks

Commercialisation of distinctive competencies

- A popular entry point for people with ideas ready to commercialise
- Marketing our tropical experience that we have excelled at.
- We are exporting environmental monitoring technologies and training
- Saleable products and designs to other countries in tropical environments.
- Married civil engineering solutions with biological solutions to environmental and urban challenges
- We provide information on new innovations across a global scale.
- We provide a consultancy service to emerging communities.

- We have a globally recognizable brand of tropical designs that support sustainable development
- City as centre of manufacture and design of low cost and available materials.
- We have achieved 50% renewable energy for the city and exporting technology and strategy5
- City is the world experts in dry tropical agriculture.
- Earth repair, direct generation of transportable energy from sunlight, production of building materials from waste products
- We have expanded the inventory appropriate constrict to Tropicson and material use for the
- Exporting force fields to protect against mosquitoes and weather - do away with aircon and insect
- Integrated whole of catchment water cycle management is implemented city wide and has become an internationally competitive industry for the city.
- World experts in tropical disease prevention
- Buildings constructed of block remain standing
- Ethanol & biodiesel commercially developed in the region
- The region has benefited from a cruise ship terminal for 5 years.
- Exporting a billion dollars of tropical services, products and knowledge to global tropical regions by 2015.

Resource efficiency

- 50% self sufficient in renewable energy
- All our citizens live in comfortable habitat
- We are leaving an energy and water neutral footprint in our region
- Our resource efficiency is a significant global competitive advantage and has ensured more social equity particularly for lower income people

Collaborative linkages

- Encourages world wide collaboration
- We are celebrating the 5 year reunion of the CETD branches in Bangkok Colombo and Santo Domingo and Townsville
- Strong an seamless web of collaboration from young people, communities, schools, businesses, education bodies and government agencies is a major competitive strength

Learning and continuous innovation

- More shift work in linked time zones
- Curriculum wide sustainability education
- Focus on global best practice in management, HR and innovation
- We share our learning's in balanced choices with others in similar situations for their benefit
- Leading edge continuous innovation and creativity process abound and now are exported as consultancy services globally

Global Competitiveness

- We are a very prosperous community based on a high knowledge intensity and low resource intensity economy.

Shared Agenda and Strategic Intent

- Significant source of inspiration / idea and motivation

- A number of collaborative projects and research programs focused on achieving sustainable outcomes are operating

R&D & Knowledge Creation Education

- Information about cluster expertise and capacity is freely available among network members and the world

Commercialisation and distinctive competencies

- The City as recognised international centre of solar power research and development.
- The development labs provide complete support, from business advise and commercialisation to hands on prototype construction
- Port access has increased by 11%.
- To provide affordable living.
- Forge connections with tropical based culture groups setting Brisbane line action. xx
- time as creative and lesson task
- All construction achieves minimal environmental rating.
- We have a fully sustainable, energy-conserving public transport system that 90% of the population use - doing away with the need for roads
- Kevlar and/or carbon fibre building material as an alternative, easier transportation, stronger, eliminates termite issues, cyclone issues

Global Competitiveness:-Outcomes and Achievements

- A pre-eminent and prosperous region and Cities (Townsville & Cairns)
- Only one council: Townsvilgowa
- The Prime Minister lives in North Qld and fully appreciates the benefits and problems that a tropical environment produces
- Improving quality of life through use effective use of energy, energy efficient technologies, monitoring, and to provide affordable living.
- We've halted global warming.
- Serve as a cultural bridge through tropical branding across a Global Village of cultures throughout tropical environments
- We have balanced our growth with the sustainability limits of our own region

Describe the tropical design knowledge & innovation networked structure and process?

Guardianship vs. control

- The success of the centre is based on strong guardianship by key stakeholders and leaders to ensure that the CETD Centre-network *is not captured by vested interests*
- Strong ethos of neutrality and respect for diversity

Open Planning

- Use zing technology

Flat structures and process

- Govern Information transfer is via short vertical conduits and long horizontal conduits

Multi nodal hubs of excellence

- Clusters are regional Centres of Excellency specializing in particular area--i.e., Townsville=Innovative Technology, Cairns= Environmental Management
- Enforced iron supported by the BCA.

Networked series of Innovation cluster

- Cluster network operates from the CBD HQ that covers the 5 floors of the North Town complex - with communications city wide is the key communication technology for the groups.
- Riverway becomes a hub of creative arts industries

Efficient transport

- We have personalize portable transportation (transportational IPOD)

Real time communication

- Video conferences when ever new concepts arrive are shared amongst the cluster
- Share of knowledge through internet websites
- The knowledge cluster has a common data warehouse - clearing house.
- The Jetson's phone is used to maintain a virtual office a workplace. All clusters work as one single office, promoting the new integrated department culture
- tropicaldesign.org is the world leading information source AND LIVE ONLINE SUPPORT to anyone, from anywhere.
- Wikipedia of tropical knowledge makes NQ centre of emerging field of global tropical knowledge

Collaborative partnerships globally

- We have partnerships between businesses and universities locally and internationally in tropical cities = - eg shanghai, manila, KL, Mumbai, Mexico City, Kenya,
- Ideas and problems aware shared through the cluster, and these are worked through collaboratively
- Open information sharing through sophisticated computer links and database searching protocols that minimise time in sharing information etc
- The process is networked to Southeast Asia on a first name basis.
- Form connections between international centres of like-learning

Open source intellectual property

- Research and design within public domain - free in public domain
- Public sector research is declared free in the public domain.
- ensuring that a joint set of guidelines are formed
- Using shareware not having a locked up IP
- Sharing intellectual property
- All advances will benefit all partners
- Competitive advantage based not on patents but on businesses being higher up on the learning curve than their competitors

Networked knowledge cluster structure-process

- A successful polymer housing network
- Knowledge cluster ideals and vision exported to sister cities
- There is no epicentre its a distributed knowledge system - not a tree

- Faculty of sustainable regional development established in 2009 with training courses out posted to topical universities globally and in 2015 has 1000 overseas students annually.

Collaborative linkages

- Industry mentors provided to tertiary education.
- There is a program of regular secondment within TV/Thur and internationally between all types of orgs.

Products

- Termite resistant timber building products
- Hot Harry's being exported worldwide
- We have established Ned a job swapping program (i.e. Townsville and FIJI) for knowledge sharing
- House additions bought in Woolworth's on a Saturday morning with the milk and bread that is Kevlar, carbon fibre room additions
- Designing for energy neutral way of heating and cooling.
- Feng shui adapted for the tropics
- Have established principles (off the shelf) housing solutions
- Pre-fab timber design that solves problems

Freed up commercial sector

- Government has decided to free up the commercial sector and undertake its core business of governance. The practice back in the nineties and nortys of cross sector duplication is seen for the farce it was
- There is a mixture of competition and collaboration that drives innovation

R&D Knowledge Creation and Education

- The knowledge clusters the worlds first in the development of trade skills for tropical design and construction.
- The university has been restructured towards commercialisation
- The university resolves to be a leading exemplar of not living of its region but being a central agencies for development of the region with strong emphasis on community and capacity building socially, commercialisation economically and environmental stewardship
- The Centre as hub for world class faculty in tropical architecture.
- A virtual tropical sustainability Degree-PhD Program (Design, Ecology, Business, Social Planning and Community Development) starts as a collaborative learning program spanning university, government agencies, community groups and the private sector

Regional Collaborative Partnership Strategy

- Government policy is no longer a barrier it is the support mechanism for multi level ecology of relationships and decision making
- Government adopts collaborative regional partnership for developing a genuinely smart state strategy.
- Northern Australia association of business clusters holds the first tropical knowledge networked cluster international symposium in 2008.

Policy and code reforms

- All use of timber in building materials banned
- Building codes and guidelines to incorporate features specific to tropical areas
- Learning all on-line

Learning, innovation and continuous creativity

- Mobile think tank problem solving cells.
- There is an information and innovation exchange network
- Success in achieving innovative solutions breeds more success in previously unrelated areas
- The Centre provides a resource of innovative consultants
- Tropical design information needs to be transferred to the building industry
- Comprehensive design process (involves building designer occupier and constructor) in one process
- Rewards for innovation
- Facilitate innovative technologies by generating alliances between c shared interests

Integrity and values

- We have established governance principles being ethical and ecological considerations
- Moderator rather than governance process
- Maintaining integrity and adherence to agreed scope and goals of the centre (doesn't degenerate into bureaucratic bog)
- Clusters outsource among each other using each other's strength so that the total is greater than the sum of the parts.
- Change is acceptable and promotes a healthy way of working (not stress)
- We allow new players outside the organisations that are recognised... are welcomed, talent is easily recognised
- Generates a sense of brotherhood-sisterhood in sense of design work

Shared Vision, Values and Norms

- Global network inspired by common vision
- The organisation is self sustaining and not reliant on specific individuals or key groups

North and Northern Queensland is a vibrant tropical region, cities and communities.

- NQ is a destination point for skilled immigration

A culture of servant-leadership and stewardship

- Short duration governance roles so that no power bases of self interest have time to obscure or pervert the free though process

Eco-lore recognised as complimentary knowledge systems

- Indigenous cultures respected and celebrated.
- Tradition lore people gain recognition academically for the tropical knowledge and awarded PhDs.

Auditing

- Auditing dep. as its own cluster

How does the networked clusters assist all design based professionals and companies in their work?

Open planning and consultation

- Community consultation techniques that respond to local needs and encourages local solutions

Joint ventures & strategic alliances

- Joint venture opportunities
- Actively encourage key professionals from industries overseas to become evolved in the network cluster
- Leonardo Di Caprio sets up the 2nd Sustainability Foundation in his Strand Office.
- Assist in connecting global markets to local ideas through technology and cultural exchanges
- The Centre brings in students from developing countries in a Sister City mentoring program.⁹

Loose tight properties for intellectual property (Open, shared and closed)

- Provides for tiered payments for intellectual property
- Sharing of technology that works in different climates

Cluster as communication system of formal and informal learning

- Cluster as a communication conduit for all members.
- Provides web based search facilitates for expertise and knowledge/communication systems for easy sourcing of information and exchange
- Akin to google search engine - people are cetding it to find out about innovation and excellence
- Cyberama tropical design buildings on web
- Host largest information grid that allows grid conferencing across network.
- The fluidity of materials development will be sourced on a daily basis.
- The Centre as global information clearing house on information and technology for sustainability
- As video conferencing / real time meetings are an everyday occurrence, we can have meetings on a daily basis and discuss and view problem topics on immediate basis.
- The international year of the creek to corals success
- We use the zing technology on a global basis
- Effective attention to community needs and local ideas draws more interest and work for the network

Competitive edge through resource efficiency

- Reduced operating costs through energy efficiency
- Lower cost of living and sustainability ethos attracts new eco-settlers

Evolution of a distinctive tropical design style

- Conference to avoid design sameness (reinvention of wheel)
- An international fusion style of tropical architecture and design evolves starting in 2012 with the first annual tropical aesthetics awards held at Riverway and on the Strand.

Shared resources

- Access to resources and knowledge to take on any project
- Web based publishing journals to establish peer reviewed papers covering specific issues

Learning, innovation and continuous creativity

- To make ideas and inventions possible
- Create community of designers and create tropical topical camps in each country once a year to provide self-sustaining funds....

- Exploration of the value of traditional indigenous designs in Australia and globally
- Bounty awards for solutions to known problems listed on the website
- Use of networked ipod for communications.
- The centre acts as global marketing for the services of its design professional members.
- There is no regulation preventing worst practice, innovation is an expectation and obligation and responsibility
- Published sets of standards/principles. Online live support. Publish case studies. Run conferences/seminars/workshops. Product epos
- Indonesian designs adopted in Townsville
- Access to education
- The benefit of multi-disciplinary contribution
- Review of all design processes posted on websites by workshops
- We use software that shares design ideas and allows for shared development of design ideas across networks
- Media and it knowledge innovation
- Designers world wide refer to the network for problem solving and critiquing
- Channels the development of overarching climate and culturally appropriate approaches to design
- Produces (generated) use of design shareware on a global basis
- Feedback facility, monitoring performance, maintenance and knowledge base
- Promote a tropical component for all global conferences--i.e., world health tropical topics, UN tropical topics...
- A world leading innovation trade centre is located on the site of the old Townsville hospital.
- Established standard of deigns across globe
- Faster better clearer flow of information between clusters
- We are major / real-time video conferencing node in problem defining and solving.
- Fosters the promotion of plug and play design solutions
- There is no regulation preventing worst practice, innovation is an expectation and obligation and responsibility
- Improved quality of life and environment
- Global tropical ideas bank endowed by leading local business people becomes a vital source of knowledge to deal with emerging climate change issues.

Commercialising distinctive tropical competencies

- Design ideas promoting common understanding for the tropics
- Shared resource available to go places throughout the world to spread the knowledge and indeed gain new knowledge. A wide as possible network will ultimately gain even further knowledge
- The City is rebuilt as the most energy efficient city in the world following the cyclones of 2011
- Seed ideas grow
- Tropical Innovations Start-Up Fund
- Venture management model developed by consortium of university, councils and businesses
- CETD philosophies accepted in China
- Low-interest loans provided to community proposals through a subscription membership account
- London seeks advice from Australia
- Limiting failures and increasing productivity
- Global marine science centre based in Townsville

- Elevated design premise to a new level of creativity. Promoting synergies
- Creating mentors and specialist professionals

Conversion and diffusion of tacit knowledge

- Research is a more effective design tool on an every day basis.
- lessons reinventing the wheel
- The Olympics.....
- Bulletins posted to advise any update of ideas or failures
- Designers like solutions. Ground breaking inventions do not occur often. Give worked situations

From control structures, boundaries and places to 21st century flows, networks and clusters and emergent and resilient systems

- Barrier (silo) breakdown across industry
- Advertise: WE ARE RENTING GOOD BRAINS NOW!
- Businesses access freelance designers and experts in a virtual environment
- Uncontemplated design process
- A proprietary based expert system for tropical design and fee for use basis

R&D Knowledge Creation and Education

- Develops inbound visitation from worldwide professionals to observe our successes-boost to tourism.
- Townsville competes with Sandia Labs and the Spanish solar research institute in the development of Concentrating Solar Power.
- We have a finance pool for R&D innovation
- Sponsorship of high-profile events
- The centre offers the Nobel Prize in innovation and sustainability.
- Create a simulation technology to create/adjust tropical environments and designs by adding/subtracting--rearranging inputs and determining outputs via cyberspace.
- Transparent knowledge of known failures, corrective procedures and successes

Resources

- We recognise and enable income generation in line with philanthropic inputs
- Builds community wealth

Other

- Access to BMP and designs
- Problem with design of spaceship city... Flight paths over Mt Louisa
- The cluster provides linkages between people and instructions without a central hub essentially screening that
- Fish and chips now \$60.50

Sustainable design awards

- The Centre runs an annual design award.
- The Cannes of innovation design Awards
- Bring the worlds developing country representatives to Townsville to answer there problems
- Standardisation of design worldwide. Move on from ISO
- Following the 2009 award for the best schooling in tropical design expertise drawn from all over the world to Townsville

- From a world basis income is harnessed from idea generation
- Invites and encourages exchange of ideas rather than perpetuating barriers between designers and professionals

Sustainability quality design certification

- The centre issues certificates of excellence for existing projects, as a seal of approval, thus promoting the centre besides our own projects.
- Six star sustainability becomes the norm in 2012.

How is the networked clusters-centre financed to ensure long term economic security?

Virtual

- Membership fees
- Overhead cost are low due to implementation of our own ideas
- Virtual community therefore minimal funding required, if too much financial clout it becomes too powerful and will fail
- Limited administrative costs and
- First choice reputation

Association

- There is no thing therefore no funding required
- Subscribing members
- Members pay a subscription to be involved in the C of E and then the C of E loans money to innovators to develop their product. In return, the C of E collects a % of the returns on that innovation as it is sold around the World.

Acts as an enterprise

- Through design, construct & turn key solutions
- A communication system protects the ideas that come in so that they can be refinanced or funded.
- Return on investment through revolving loan funds

Royalties

- Royalties` on patents
- Nation of intellectual property
- Facilitation cluster royalty
- Royalty on design
- Past commercial successes eg % of royalties or conversely voluntary gifting from those who have commercially/otherwise benefited
- Key player in the world environmental technologies trading - receive royalties for ideas developed fully by others
- Research base of global data collection and any innovations would be patented and part of proceeds go to network

Ethical Sustainability Bond

- Sustainability bonds are sold to ethical investment funds and lotto fiancé retrofitting city

Advertising on Web site

- www.cetd.google.com is the premier source of information on the internet for tropical design, sustainability and innovation.

Sustainability Levy

- \$10 application fee for building permits.... potentially millions of dollars

Wild ideas

- Climate change allows Antarctica to become part of the Australian landmass.
- Elimination of intellectual law
- Townsville has a GDP larger than California.
- Efficient renewable energy resource
- Get Nude - clothing unsuppliers

Commercial products

- Coconut biodiesel.

Carbon Credits from energy saving technologies

- Sustainability offsets trading
- Past proven green solutions have led to the network receiving accreditation within the latest Kyoto protocols to receive credits on its ideas
- Conversion of unsustainable practices (i.e. Carbon tax) into CETD funding
- Funded by carbon tax credits by for impact on rainforests
- Carbon tax credits for any sustainable practices

Foundation funding

- Foundation endowed by Ecolore as a sustainable development learning centre
- Develop a common pool for global environmental sustainability trusts
- Benefactor from USA Louisiana after the global sea rise invest half his billion dollars into eh foundation
- Sponsorship of idea development with an option to buy for 'development and marketing

Sustainability bonds

- Tax leveraged sustainability bonds.

Float Public Company

- Public float
- Idea Ideas are the precious metals of the economy.
- Bill Gates endows the centre for is approach to holistic community development in tropical communities

Tobin Tax

- Tobin Tax. % of all financial transactions is taxed for pooled funds. Used for development of all things positive.

Tourist and training levy for overseas people on short term courses

- Townsville is the centre for world environmental development
- Educational fees for propagating skills and continual education
- There is a \$300.00 entry tax for inbound flights to Townsville airport.

User pays fees

- User pays data base of refined information. Website shop cart buying of info.

UN and Overseas Aid Funding

- UNDP program funds centre cluster network to develop tropical knowledge networks cluster sin Asia, Africa and Latin America
- Endorsements of other innovative solutions worldwide by our cluster
- Reverse ideas tax. Those who do not contribute their ideas to each session will be taxed as they're not retaining the reason for why the cluster was created
- Major contracts with AUSAID, Asia Development Bank, World Bank and global NGO's

Papers-symposium

- Publications
- International symposium now so popular that the they attract 10000 people annually and finance the secretariat operations

Public Funding

- %1 tax on Bill gates income.
- Retain a benevolent benefactor
- Each time Microsoft crashes your hard drive YOU receive compensation

Venture management Venture capital fund-bank

- Custer based banking unit. (The China Model)

Succession as a Stage

- North Queensland secedes and becomes a tax haven for the filthy rich and very brainy.

Sustainability Lottery

- \$10,000,000 Research and Development lottery.

Public good vs. private good

- Finance seen as barrier so removed from service transaction so no fees for info exchange - value of info exchange to community/city is wholly more valuable
- Licensing of market ready ideas
- Ideas are recreational as the world is in social and environmental balance/.
- Exporting of energy efficient products suited to tropical environments
- Increase the user pays system
- Subscription to early information of new research
- We would have previously discovered a cure for malaria and living off proceeds
- International students paying to learn at CETD university
- Consumers pay airfares to designers for design information to their country for a holiday
- Barter exchange system with alternate local currency pays social dividend that finances the operations through their alternate currency system
- Government introduces an energy tax that rewards sustainable energy.
- Rolling future fund for achieving sustainable outcomes
- Input from government because they're going to reap the rewards
- The network has created a currency of knowledge exchange that is yielding continual profits
- Innovation barter card to exchange good ideas coordinated through the centre.
- Scholarships and fellowships

- Develop an association-incorporated legal entity structure to allow trading without personal liability.
- The quest for long term economic security fulfils the physical and mental health aspects of the whole community

Wilde Ideas

- Commonwealth Government relocates to Townsville.

What are some of the new businesses that have developed over ten years and what is their relationship to the networked clusters?

Sustainable Tropical health

- McHealthy

International Branding

- Splat International is a global brand name.
- Biosustain
- GFR Solutions Great Barrier Reef - an internationally recognised entity
- Project Sierra HQ Townsville
- OceanChem
- B17 international
- Big feet small footprint
- UNTECH - motto the answer to everything
- Thuringlobal
- Microsoft 2.... tropic soft b
- Lean-to-Enterprises - tropical housing for the world

Arborist

- Northern Tree Specialists

Sustainable relationships and families

- Relationships Australia

Sustainable buildings and structures

- Sustainstructures
- Sustain behaviour

Earth Repair businesses

- Earth band aid
- Tropical reforestation technologies

Sustainable agriculture

- Tropical Fruit wine intoxicates more people than beer.
- Green thumb, organic food for the world
- Dry tropic bearer the food source for the world
- Jungle Jims juice factory
- Global Urban Agriculture Inc.

Advanced communication devices

- Teleport Inc.
- Wikipedia of tropical Knowledge becomes global touchstone of current best practice and design principles for tropical environments

Sustainable Energy

- Chepo Energy
- Sun Power Futures Pty Ltd
- Tidal energy

Sustainable communication systems

- Cyberama

Tropical fashion

- Nike, shoes that are actually good for feet

Biological waste management systems

- ffmicrobial mess munchers

Energy resource conservation

- Solacoat
- Thermal storage techniques, use of energy, shifting energy profiles
- Coconut biodiesel inc
- Photosynthetic solar panels revolutionize electricity production. This supports the idea of sustainable Cities
- Tropical energy solutions
- Carbon Cures into reforestation...
- Ethanol micro power turbine technology
- High rise buildings as energy system and museums of poor design
- Solar Sausage
- Hydrogen cell fuel centre

Sustainable youth social Entrepreneurialism

- Sustain – youth environment network – a network cluster that is empowered by young people for young people

Sustainable learning systems

- A second university has been established

Ecological sound pest management systems

- Tropical Waste
- Toads'R'Us...genetic modification of pests
- Evictabat sets up in charters towers
- Cockroach Killers Inc

Creative design professionals

- xyz advertising corporation finds the best solutions for promoting new designs

Sustainable materials

- Tecficiency

- Microhard
- Swelless chipboard

Marine sciences

- Veliger Biotech's - marine sourced solutions for health and medicine
- GBR Reconstruction

Sustainable Cultural communication systems

- Entrepreneurial cooperatives of artists promote the sustainability message through song, art and visual plays, movies etc
- Cross cultural and cross sectorial exchanges through up new and novel perspectives

Environmental planning consultancies

- Environ tech solutions

Sustainability education

- Education queensland core curriculum subject focussed on tropical design/technology and eco efficiency

Water conservation

- Natural spring water from recycled sewage

Carbon minimisation

- Carbon neutral water cycle management tech systems – the total water cycle management and energy alternative

Sustainable well being business

- You beaut health centres
- Dengue Tsia Ping.....molecular biology probes for disease diagnosis focusing on china

Nano Technology applications for tropical environments

- nano-marine coatings antifouling for the tropics

Water Conservation

- Closed nutrient cycling (for agricultural and residential applications)

Sustainable Governance systems and processes

- Ecological Good Governments Org

Bioprospecting

- Tropical pharmaceutical centre of the world

Architecture and design

- Tropo

Disaster relief and new housing forms

- Instant houses
- House in a box. Kevlar, carbon fibre, no screws needed. No Japanese instructions

Sustainability network capacity building

- Hell bent Productions a research and development facilitator
- Radical - floating village for the aged, sinking for the really aged

Sustainable development models & learning systems

- Andrew McEwen wins international award for complex diagrams.

Sustainable natural resource management

- Natural resource management, It's worked

Sustainable tourism

- Total Recall Holidays

Sustainable living systems

- Tropical garden/outdoor living

Tropical weather consultants and enlarging

- Cyclone Technology provides international consultancy services for cyclone design, disaster management

Eco-lore

- Wulguru indigenous art works - linking dots to people in living
- Zero waste homes
- Don't worry about your body, just use your brain, Inc
- Concepts of Indigenous housing - applies to new technology housing designs and materials selection
- The international Tropical Design Recourse Awards that was held in Cairns in 2005 has now become an annual event, as showcase for the rest of the world.

Wild ideas

- Brain memory chips
- Cybercell
- Storage tanks incorporated
- KnowNET
- Townsville becomes the new golden triangle for its development of smokeable cane toads
- Cane toad technologies
- Insanity inc
- Design your baby
- Pharmaceutical benefits of cane toads found to be negligible – cane toad technology stock slips 4% overnight
- Sell toad, buy fish
- Gosprin... Medication to end religious decency
- Barrier reef solutions - just add water - drugs from fish
- Townsville Inc.
- Archaeology of natural species...
- Toadology inc
- Cryogenics anonymous
- 200km section of reef removed to make the best surf beach in Australia on the strand.
- Sleep working
- Looters Inc

Disaster planning and relief services

- Tropical rapid response disaster force
- Retno tech scan for direct purchase links to your personal bank details.
- University of the tropics
- Tropo architects
- 2015 - US decides not to invade Iraq
- Radical land ownership... .. owned by all... systems
- Invisible Atoms Funeral service
- Transformational business strategies - supporting values driven businesses
- Transcontinental Tropical Design
- Natural habitat rehabilitation (to protect endangered species)
- environ protection and repair consulting
- Townsville Independent Taxi Service
- DancingWithDolphins World-wide, tourism funded Marine Parks patrol, research and maintenance
- Tree - me: Tropical Shelters (2020 Architectural firm)
- Tidal Technologies, creating power on the way though. Goes in and comes out.....
- Townsville solar power beamed to colder climes
- Tropical strength deodorant
- Coralwatch
- Turbine Technology

Foods

- GEMs - Genetically evolved meals
- Townsville Independent Technology Services

Sustainable transportation systems

- More Thrifty - bicycle rentals
- H Car - the Hydrogen car

Outline up to three aspects of the work in the networked cluster buildings - commercial & domestic

Sustainability education

- Education and culture change of people to want sustainable, cheap, recyclable buildings
- Education of building designers and builders on psychometrics

Appropriate colours for energy

- Ban dark coloured roofs

Renewable materials

- Materials sourced from renewable materials that are 100% recyclable
- Material usage that doesn't drain natural resources

Energy generating buildings

- Smart use of energy in commercial builds=dings
- Windmill cities
- Mandatory use of power producing windows

- Photovoltaic windows
- Design for unreliable electricity supply solar panels are the windows
- Photosynthetic walls of buildings
- Shifting energy profiles in order to maximise electricity generating plant
- High efficiency insulation systems
- New technologies to allow openness and ventilation but maintain acoustic and visual privacy
- Put the energy price up
- House generates energy - knowledge, solar and total water recycling
- Councils offer rebates on rates for households and businesses that exceed embedded energy and renewable energy
- Turn high-rises into power generating systems and museums of inappropriate design
- Roofs of large industrial buildings become power generators
- Geothermal walls
- All buildings are powered by renewable energies
- Power supply authorities offer cash rebates for off peak utilisation (i.e. Night time). Savings in transmission line losses and better utilisation of power generation infrastructure
- Bagass
- Houses are energy negative
- Lightning attractor to harness energy with storage system for power requirements
- Geoffrey Bawa

Sustainable Housing

- Houses last 200 years
- The 200 year house.
- Dismantle able homes
- Grass-roofed houses
- Modular building systems that are moveable and capable of indefinite life
- Grow your own house.
- Inflatable homes

Appropriate designs

- Tropical designed apartments
- Live work design
- Improved architectural designs
- Dual natural/built living and working spaces bringing nature back into our spaces
- Local native gardens... birds and interp is great

Performance based regulations

- Building applications are only approved on the basis of meeting and exceeding each of the quadruple bottom line requirements

Ecological landscape design

- Spaces between buildings soften the building landscape.
- Use of land that is 100% recycled
- Totally reusable
- House openings capture breezes
- Establishing greenways and corridors becomes a prerequisite for all new development approvals
- Integration of indoor outdoor living for maximum flexibility of living environment

- Building integration rather than building dominance
- Greenery is integral to built form design

No cooling for houses

- Windows to catch breezes...
- Use wider overhangs on roof designs
- New technologies to allow openness and ventilation but maintain acoustic and visual privacy
- Improved indoor air quality, climate, relative humidity's
- Design of ducted air intakes
- Solar powered air-conditioning energy generating buildings
- Air conditioning is being phased out
- Air chimney's
- Volume space and convection
- Air conditioning outlawed
- Shade walls as well as windows
- Wind tracking intelligent buildings
- Airtight buildings
- Windmills to increase air movement and extract water from below the surface

Pest control

- Disease free mozzies so we don't need walls
- Organic non toxic pest control

Housing services using recycled materials

- Materials from each home is processed through 200 homes before it is remelted and reformed

Appropriate density

- Low density housing is restricted to the CBD

Sustainable planning assists

- Clustered into activity nodes. Medium density mixed land use. Local meeting of needs. And in hyperspace.
- Design of building fits into streetscape

Develop a new aesthetic tropical style

- Develop a mechanism for penalising poor aesthetical and dysfunctional buildings
- Address issues within the built form which can adapt to the cultural priorities across the tropical region

Water and soil conservation

- Erosion control systems, water tanks, solar energy as standard
- Effective capture and use of water
- Underground water storage for all housing blocks
- Incorporating systems for use of grey water

Alternative form of provision for housing

- House swapping over home ownership
- Co-operative housing becomes dominant form as people seek real sense of community and social supports for living

Ecological footprint analysis and landscaping

- Soft ecological footprint and landscape integration
- All aspects of environmental footprint from planning to final handover are calculated and included in the approval process
- Shrink the urban footprint

Eco restoration

- Every housing development is required to include succession planting schemes to replace all and any trees lost during development

New community & Eco-village

- Community clusters where families live in specialty designed community around shared internal services
- Sense of community... But networked to special interests
- More home balanced lifestyle activities (i.e. Home gyms, theatres)
- Built form that encourages interaction
- Buildings which facilitate working from home

Tropical designed equipment-standards

- Equipment manufactured for tropical environments

Redefining Housing functions for tropical environments

- Proudly throw out the way building have been built i.e. in 2004 and embrace and imagine a new functional shelter etc
- Prevent D&C contracts

Green developments

- Greener developments...
- Reduce the size of residential projects. Address issues of expectations.

Green politics

- Eliminates the BCA as a barrier to good design

Waste recycling

- Eliminations of waste from homes (re-sues)

Application of nano technology to tropical needs

- Nano technology allows for renewing and self replicating building materials, self maintaining

Use of natural resources

- Do something good with coconuts, because you could do something good for the whole world
- Steel reinforced bamboo

Underground power services

- All electrical supply lines are underground, as this is the only supply meeting the quadruple bottom line

Appropriate tropical Planning and regulations

- Ban temperate zone housing in tropical use
- A tree technical manual has been developed by both city councils to rationalise urban development process
- Small and compact
- Urban agriculture
- Townsville Homes built with snow shutters banned by local Authorities.

Appropriate transport

- Elimination of personal transportation modal to public network opens house to new design
- Utilising household waste system to generate bio generation for house hold needs

Housing products & materials

- Mould resistance building products.
- Building orientation, colour, aspect is considered
- Planning laws abandoned for chaos
- Low cost 2 man lift building materials
- Modular factory - flexibility
- Housing is built from carbon-neutral concrete masonry block
- Simplified roof construction materials, techno to achieve failure safe vapour barrier

Use advanced communication systems

- Hologram workspaces that allow the same level of interaction including smell touch and feel whether or not the person is physically present or somewhere else.
- Video-link on every computer, but video conference centres in Local Govt., Uni, major industrial centres. After internet cafes....

Houses are carbon sinks

- Grow your own house - bamboo scaffold etc etc
- Houses are carbon sinks
- Non hygroscopic building materials

Sustainable forestry

- Genetically modified trees grow to full height then chop themselves down - foresters thrown out of work

Use recycled materials

- Buildings are only to be built with recyclable materials
- All buildings made from recycled materials

Environmental degradation penalties

- Environmental damage incurred during urban development incurs prohibitively high penalties

Rocky springs

- Rocky springs is almost ready to commence -0 on the 10 yr plan

Wild ideas

- Tardus design finalised. The transportable function

- Home holographs
- Solar powered cane toad 300 feet high forms new offices for Cane Toad Inc Cool cyclone resistant house grown on the back of cane toads
- Homes grown from coral reef using electrolysis
- Bagesse Homes made from torrefied bagasse
- Straighten the curves in Annandale
- Plan technology develops tropical plants into building materials
- 0 intake and 0 emotion
- Most homes built from Cane Toads

Outline up to three aspects of the work in the networked cluster in health and well being

Universal access to health care

- World class health care for all

Ban Air conditioning

- Ban air conditioning
- Less reliance on air conditioners. increase design on fan technology

Design and provision of open social and recreational space

- Open space health parks for walking, gathering, playing
- Design well utilized community spaces and networks
- Designing large public spaces that encourage a full range of social in interactions, exercise etc in an safe structure
- Very local sports centres eg yoga on the park down the road, tai chi

Tropical camps

- Tropical tropical camps...for adults

Bike network

- Bike lanes are networked and integrated

Eliminate skin cancer

- Skin cancer has been eliminated
- Gene technology from CETD research cures skin cancers

Slow living

- Afternoon siesta
- 3pm siesta is mandatory
- Siesta with receptionist is commonplace
- Tropical timetables are used in the Anglo-Saxon tropics (siesta)
- Rolling siestas
- Morning and evening work regimes
- Tropical *slow food* movement flourishes

Improve air quality

- Air quality
- Eliminate pollution

Develop a walking culture

- Mobile workplaces, not sitting down, getting dirty again, being able to garden at same time as work,
- Provision for people to walk to work, facilities
- Integrate fitness and urban travel into a supported lifestyle choice.
- Eliminate transport to force fitness
- Get fit by transporting yourself!
- Utilise stored domestic water for recreation

Grow own food

- Ban gyms; gymnastically produce our own food... etc...
- Drinking stagnant water
- Eating healthy and fresh
- Encourage more urban agriculture for exercise and good food.
- Foods that are compatible with our climate and our productive ability at that time of year and our human condition
- Strong organic and biodynamic home production and sustainable agricultural enterprises exporting globally.

Develop a balanced life

- Altered work/life/play patterns
- Eliminate stress
- Less work hours but more productive time

Increase canopy in Twin Cities

- Vastly increased canopy coverage over the twin cities area
- Self transportation... walks, ride. Recreate while you move
- Layout of city streets that are cooler to be in - shaded and everything in easy walking distance

Natural healing herbs

- Balgal beach a centre for the production of organic naturopathic herbs and adds \$100m to the local Economy. A network of alternative health practitioners have made Balgal the centre of healing and dying in the tropics
- No addictive substances
- A tropical age of creative wisdom means that majority of people live work and socialise until they die over a period of week not months and years

Stress reduction

- Have meditation rooms
- Reemphasis on relaxation as integral to producing effectively and producing good things
- De-stress feasibility where you can smash computers and mobile phones
- A breathalyser for stress is used to modify work practices

JCU research centre for tropical nutrition

- JCU research centre for tropical nutrition

Integration of work and home

- Residential accommodation includes shared workshop space and hobbies space

- Community clusters creating live/work/play 'horse and cart' community....
- Virtual offices

Heath restoration business

- International Health Farm - peopsick people come here to get healthy
- Planting of local tree species in the backyards of every house gives a 10% rates reduction
- Doctors are paid for maintenance of health rather than curing.
- Bliss co-operative hires peter Ellyard to do futures planning scenarios for further tropical health wellbeing business cluster
- Bliss Inc
- Doctors are trained in nutrition
- Gene technology has reduced the need for the Family Doctor
- Happy Farm Inc - blissfully unaware of bad things
- Peter Ellyard endows a tropical wellbeing foundation through the sustainable prosperity foundation
- World leader in community healing centres

Integration of city and suburbs

- Integrate the cities to the suburbs. Move the workspace to the suburbs.
- Only work if you are happy

Internal climate control

- Reduce the variation in climatic conditions in the living environment
- Genetically modified food so that some people work harder and longer
- Personal development for being supremely productive when we work and so plenty time for relaxing
- More natural areas (trees)

Live in apartments

- Apartment living with ability to have pets

Change mindset

- A mind set of I like it hot

New materials

- Skin coating so we swim with the stingers

Live with and utilise nature

- Accessible urban space that people of different backgrounds feel free to use the space
- Utilize natural environment for comfort
- Utilising the natural environment for general living... park under a tree
- Being part of the ecosystem in which we live
- Sleep under the stars in a hammock
- Creating communities where we are part of the ecosystem
- Love the tropics and its heat

Smoking banned in public

- Smoking banned in public space
- Wellbeing, enjoy being part of ecology with all it's survival of the fittest... we may die.

- Smokes cost \$50/packet... with health fund specifically for treating smoke related disease

Natural water filtration

- Natural water filtration eg RO i.e. zero waste produced in water cleaning

Live don't consume

- Activities that don't have the focus on spending money

Enjoy lifestyle

- Create life exchange opportunities with Design Centre where people come to the Tropical region and simply enjoy the lifestyle

Encourage community participation

- Community participation - feeling useful

Healthy buildings

- Healthy buildings

Promote a culture of respect

- People learn self respect

Fan technology

- Massive development of FAN technology

Walking & hiking trails

- A major network of biking/hiking trails has been constructed

Better design of houses and kitchens

- Good kitchens for small dwellings and better soundproofing , eliminate air con noise
- Slow moving punkah's (fans)

Population Limits

- Population limits1

Exercise

- Every house should have a lap pool
- Beginner level castle hill for more people to exercise more

Landscape to reduce temperature and humidity

- Local climate control, relative humidity control. Shifting moisture in the air to landscape watering
- Climate encourages non reproductive activities
- Keep 'humanising' the tropical landscape to allow more shade for more outdoor activities.

Insect control

- Secure fly screens
- Secure fly screen technology
- Racial harmony
- Global centre for thanatorly

Wild Ideas

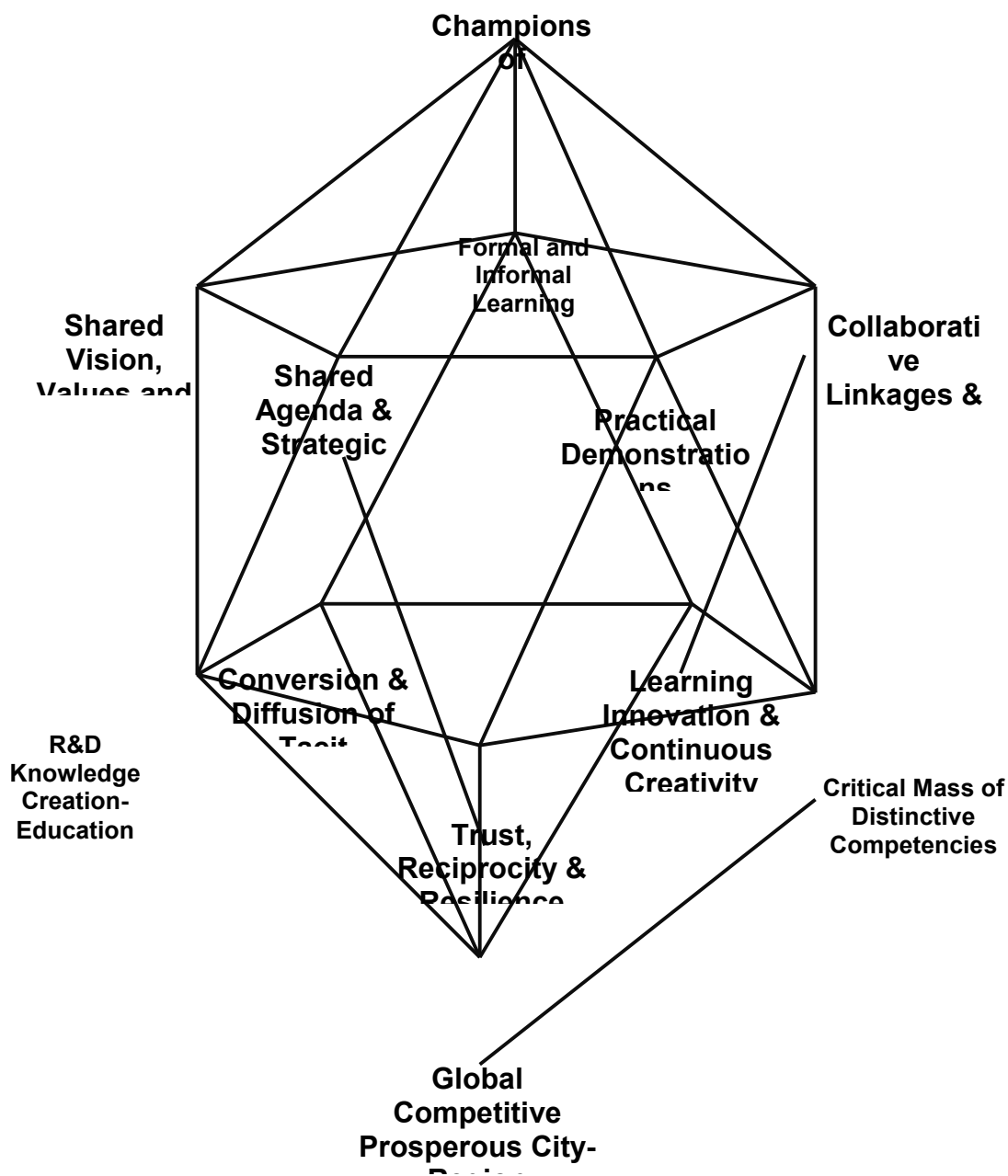
- Outdoors-ness
- Cane toads have medical degrees
- Lots of pina coladas
- Hammocks
- Ban karaoke
- Change at genetic level at birth
- Free antibiotics
- water is no longer used to grow plants
- Crematorium is grid connect to get renewable energy certificates
- Close down all fast food outlets.
- Genetically modified mosquitos
- Antibiotics in the tap water
- Virtual personal trainers
- Road Rage pill

Centre for Excellence in Tropical Design

Knowledge Networked Clusters © CDET 2004

The Underlying Conceptual Model

Andrew McEwen: Manager Economic Development City of Thuringowa



A Centre for Excellence in Tropical Design: Sustainability and Innovation

Developing a prosperous and sustainable city-region in the 21st Century requires both increasing the knowledge intensity of the economy and its resource efficiency (O'hame, Porter, Hawkins & Lovins). Cities, regions and communities need not only to capitalize on their unique competencies and IP, but they also crucially need to drive down the cost of doing business across the value chain by radically increasing resource efficiency, if they wish to remain globally competitive.

Leading edge and global best practice dictates that the pattern of adaptive responses must change to meet the needs and requirements of the networked society (Manual Castells). This is difficult for many people and organizations, because it implies a fundamental changing in paradigms and modus operandi (Barker, Mertens). Being competitive in the 21st Century requires differ forms of leadership, organization and webs of relationships. Strengthening globalisation, the shift to a knowledge economy & demands for sustainability requires a shift in thinking (paradigms) and practice:

From	To
Low knowledge intensity	High knowledge intensity
Education and skills	Continuous learning and innovation
High energy intensity	Low energy intensity
Unsustainable design & living	Sustainable design and living
Commodity exports	Knowledge and service exports
Manufacturing and services	Services, learning and culture
Structured silos & boundaries	Collaborative partnerships & networks

The model underlying the centre assumes that there are *champions of sustainability principles*, who operate outside of narrow corporate self interests for the wider social good. They are the guardians or stewards (Black, Chappell) of constructive change and innovation, who coalesce as a critical minimum core of people and organizations around *a genuinely shared vision, values and norms*. They typically represent all walks of life, business, commercial, community, government and academia. Typically such processes are informal and occur through time, so that mutual understanding and respect can develop. They cannot be imposed or controlled by one level of government or one sector or another.

Through time, a commitment to a share vision allows for *a shared agenda and strategic intent* to develop. The concept of the centre and its agenda grew out of critical collaborations between people, who grew to trust each other based on a shared commitment to the primacy of principles of sustainability. In this context, trust cannot be demanded, it has to be earned (Fukuyama). Key to the successful emergence of the network cluster is in the short terms *developing practical demonstration* projects or as Ifor Ffowcs Williams characterizes picking the low fruit, these will be typically across sectors and bear fruit for all respective partners

Such processes *form increasingly dense and strong partnerships, collaborations and linkages* between organizations, people and sectors that transcend narrow agendas, organization politics and

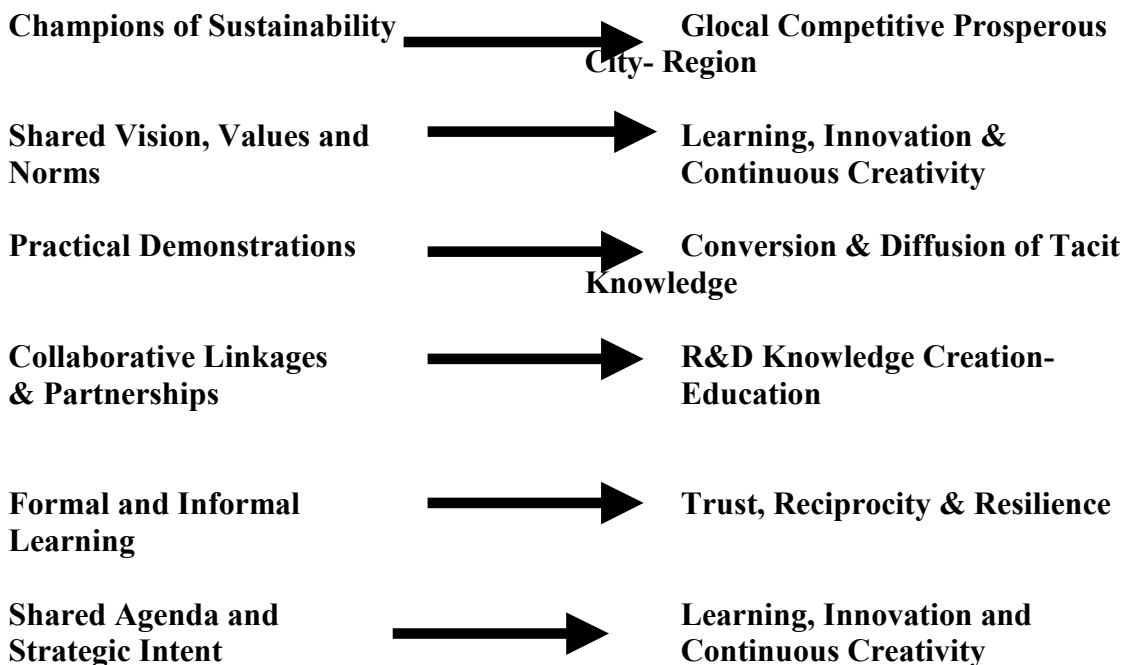
dysfunctional turf wars (Maynard & Mertens). Such webs or relationships open up broad avenues for *formal and informal learning* that are critical for innovation and sustainability. Being in the “flow”, being spontaneous, humorous and creative in such situations generates *high levels of trust, reciprocity and resilience*. *The underlying mindset is one of “abundance” as distinct to a “scarcity” mentality.*

Such partnership allow for a *R&D agenda and knowledge creation process* to emerge from practical collaborations, problems solving and novel thinking. A shared research agenda informed by practical problems and a field of relationships embracing diverse perspective in turn affects the quality of education. The free cross flow of information through a dense series of networks and relationships allows, as in Silicon Valley a *rapid conversion and diffusion of new tacit knowledge that emerges from practical ingenuity*. This two way flow from research institutes to practitioner and from practitioners to research and learning bodies allows for a *process of learning, continuous innovation and creativity*, which is at the core of today and tomorrow’s global competitiveness.

With the shared vision and strategic intent’s trajectory (Hamel and Prahalad) a *critical mass of distinctive competencies* can emerge that allow for the development of a *globally prosperous and sustainability City-region*.

In short pursuing global preeminence in sustainable tropical design and innovation involves a cultural shift (Gunderson & C. S. Holling), which embraces fierce collaborations, intense competition and a commitment to Dr Ell yards Quadruple Bottom Line (Social, economic, cultural and environmental)

Key relationships in the model



Structural Relationships-Triads.

Formal and Informal Learning



CONTINUOUS CREATIVITY

Novel ideas and radical breakthrough thinking came from inspired intuition, which is fueled by a context of formal and

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