

Tortoise Technologies Pty .Ltd. (ABN 76 110 613 226)

"Where there is no vision , the people perish "

P. O. Box 322, Springwood NSW 2777 0417 208 215 or (02) 4784 -2075 tortoise@tortoise.com.au www.tortoise.com.au

7th July, 2006

The Secretary, House Economics Committee, Parliament House, Canberra ACT 2600

SUBMISSION TO: Inquiry into Services Sector, 2006

Please accept the attached submission to your Inquiry

Yours faithfully,

D. H. Price , Director

Executive Summary of Submission

(1) Types of services that could be exported, that could be developed to reduce reliance on imported services

The types of services dealt with in this submission are:-

EXPORT

- Corporate Ecology processes
- Business Facilitation systems
- Compliance development techniques

DEVELOP

- Knowledge / Skill Transfer systems
- Information Synthesis processes
- Learning Communities
- (2) Drivers of demand for such services

EXPORT

- ease of translation into a foreign commercial context
- back up and support materials
- quality and depth of training offered

DEVELOP

- emerging knowledge mills
- global appreciation of benefits of holistic approach
- explosion of "knowledge" vs capacity to harness same
- (3) Key Issues

EXPORT

- Whole of government approach
- ♣ Value –adding vs. quarry approach
- Developing analysts as opposed to academics

DEVELOP

- ✓ Whole of government approach
- ✓ Virtual and Real Infrastructure balance
- ✓ Innovation critical culture
- (4) Concluding Comments

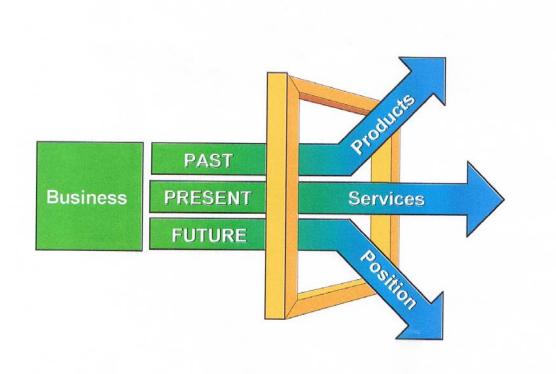
With the death of so many "traditional" jobs, which has accelerated since the 1994 report "Intelligent Exports and the Silent Revolution in Services", the disappearance of lifetime employment, we need to provide new industries to meaningfully employ our young people and those who will need to be re-directed from careers that have evaporated.

The work done by the Australian Bureau of Statistics in the areas of Knowledge based economies and societies, along with the Annual Services Industry Survey Program and new classification of ANZSCO Occupations, provide a data base for use by researchers into the development of new industries.

In 1994, the Australian Manufacturing Council released a report entitled "The Wealth of Ideas – How linkages help sustain Innovation and Growth " and the concepts from this report have been researched, e.g. development of networks and strategic alliances and written up in various papers since.

If we wish to escape the social dislocation and disruption of an ever increasing underclass, we need to create service based industries

Which will provide meaningful and rewarding employment and we probably only have a few years to make a substantial start on this.



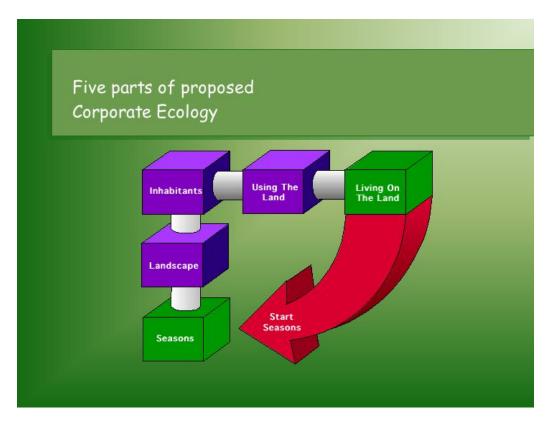
(In addressing the issues, I have drawn on the insights and wisdom of others, as support for my observations)

(1) Types of services that could be exported, that could be developed to reduce reliance on imported services.

CORPORATE ECOLOGY PROCESSES

Australia is a world leader in the area of corporate ecology systems, where two forms of "triple bottom line" are integrated into one holistic approach to living as a responsible and responsive corporate citizen.

This is one approach that combines "triple bottom line" thinking into a form of corporate ecology:-



The Australian Compliance Institute has been internationally recognised as a leader in this area and by working co-operatively, the business community of Australia can build on the work of such bodies as the Australian Compliance Institute .

There has been a great deal of work done in this area, with two examples of this being set out below:-

Information Summary -

"The Centerless Corporation"
Pasternack and Viscio, Simon and Schuster
1998 ISBN 0-684-83835-4

(This book addresses issues also dealt with in the writings of Charles Handy and Stephen Covey)

"The Centerless Corporation" is the name given by the authors to a new business framework /model they have developed, based on their experiences in the worlds of business development and value –adding knowledge management. This model is seen as having three drivers:-

PEOPLE

- the "gardeners" who work the "gardens" of the corporation, from which come the products and services offered by the corporation.

KNOWLEDGE

 keeping all involved well supplied with rich information as well as value adding applications of this information

COHERENCE

- relating different elements of the corporation to each other to create and maintain a distinct, unique, flavour for the corporation, wherever it operates.

For this model to work, a different form of 'global core' needs to be established, to carry out five key functions on behalf of the corporation:-

- (1) contribute strategic leadership
- (2) distribute / provide access to capabilities as needed
- (3) create, manage and maintain the identity of the corporation
- (4) provide cost -effective funding as required
- (5) ensure that business imperatives are met.

At an operational level, this can be reduced to enabling and empowering everyone, at whatever level in the corporation, to meaningfully contribute their

skills and talents in meeting the business imperatives. A nominal set of these imperatives is set out on page 267 of the book as follows:

- Generating and exploiting sufficient value-creating opportunities
- Developing strong awareness of emerging market trends coupled with a clear customer focus
- Establishing a continuous transformation process
- ◆ Tailoring a geographic reach (global, multinational, regional, local) to match evolving business
- ♦ Developing and transferring knowledge across the business
- ♦ Improving quality and cost -effectiveness
- Providing an environment to attract and retain the best people
- Developing leaders
- Encouraging prudent risk –taking and managing risks actively
- ♦ Working seamlessly across the organization to maximise shareholder value

Using this model, the authors believe that corporations will discover new "business space" that they can ,for a time at least, make their own and deliver them thereby a competitive advantage.

Governance is seen by the authors as requiring sophisticated planning, to ensure timely risk management and compliance with legislative and fiduciary responsibilities, of the corporation, the joint –ventures, alliances and local level operations.

Supporting effectiveness at all levels is a "people partnership"; the authors see the features of such a "partnership" as:-

- corporation accepts responsibility for providing opportunities for work, for equipping and empowering employees, through resourcing and training /skilling employees
- employees take responsibility for their own career, for remaining employable
- interdependency, mutual benefit and earning remuneration received replace dependency, paternalism and entitlement.

Following on from these features are five key principles:

- both parties see *employee well -being* as a core value
- > open communication is the foundation of the relationship
- > employees manage their **own** career
- employees gain "employability" by remaining current
- > accountability is a two way street, not a dead end

This form of "people partnership" may mean a radical transformation; at the very least, it will need on –going mutual trust and respect to be developed and made explicit by establishing qualitative and then quantitative measures /processes for managing, monitoring and taking forward the corporation into the challenges of the 21st century.

"The Elephant and the Flea"

(Charles Handy, Hutchinson, London, 2001 ISBN 0 09 1793637)

Overview

this book discusses the concept of the "portfolio worker", who is involved with at least four different types of work:

- (a) household work
- (b) gift (donated time) work
- (c) life long learning (study) work
- (d) remunerated (paid) work
- "elephants" are described as the big organisations, whether of government or business, that were the major employers of the 20th century
- "fleas" are described as the independent operators, who through choice or necessity, work for themselves
- Charles Handy uses his own experiences, both as an "organisation man", working for elephants and as a "flea" to reflect on current and possible future trends for the world of work.

Concepts and thoughts from the book

Five groups of thoughts and concepts have been selected, with samples from each of these groups provided :

- challenges for the elephants
- challenges for the fleas
- role of education
- need for trust, truth and ethics
- e-business development

CHALLENGES FOR THE ELEPHANTS

- the need for irritant individuals or groups to germinate innovations that are lying dormant
- growing bigger but remaining small and personal
- combining creativity with efficiency
- becoming and remaining prosperous whilst being socially responsible and acceptable
- rewarding the innovators within as well as the shareholders without
- facilitating 'alchemists' who are passionate, who go beyond the rational and the logical, to the improbable, who have the capacity to see what does not yet exist but is needed and go on to create it

CHALLENGES FOR THE FLEAS

- how to avoid becoming selfish, self centred, self satisfied
 ("The independent life is an invitation to selfishness and a recipe for a very privatized society . But where there is no responsibility for others there is no need for concepts of right and wrong" p.205)
- how to replace the sense of belonging, the sense of place, that goes with employment in an elephant?
- dealing with the changed dynamics of life that "fleahood" brings with it

ROLE OF EDUCATION

- "passion as the secret of learning" (p.14)
- "you only truly learn by living and then reflecting on the living" (p.16)
- "An educational system that judges people on the demonstrated proficiency in a subject rather than their potential for future learning is unreasonable" (p.37)
- "Information out of context is soon forgotten" (p.46)
- "It is absurdly impractical to prepare oneself for the world as it was or as you would like it to be, when the reality is so different" (p.12)

NEED FOR TRUST, TRUTH, ETHICS

- Charles Handy quotes the observation of philosopher Arthur Schopenhauer, that all truth passes through three stages:
 - (a) it is ridiculed
 - (b) it is opposed
 - (c) it is accepted as self -evident
- "Remember that the laws of the market do not take precedence over the demands of justice and ethics" (p.70)
- "So it was that writing, lecturing and broadcasting became the mortar for my learning, the stuff that made it stick" (p.164)
- "trust was like a sheet of glass- once broken it could never be the same again no matter how hard you tried to glue it together" (p.176)

E-BUSINESS DEVELOPMENT

Charles Handy sees e-business as presenting unique challenges to both the elephant and the flea; for example, on page 93, he outlines ten skills /capacities he sees as needed to manage an e-business:-

- (1) speed
- (2) good people
- (3) openness
- (4) collaboration
- (5) discipline
- (6) good communications
- (7) content management
- (8) customer focus
- (9) knowledge management
- (10)leadership by example

In relation to information and knowledge management, Charles Handy points out, on page 109:-

" ... information without interpretation is only data. To turn it into knowledge that is useful requires analysis, an understanding of the context, and a technical awareness of the field in question"

END OF SUMMARY.

BUSINESS FACILITATION SYSTEMS

Australians are very innovative and creative people, as the history of inventions etc., will readily show; one of the unrecognised areas of expertise as yet untapped is the vast array of business facilitation systems that are in Australian businesses, which deserve a wider audience.

Rather than quote Australian examples, which cannot be good until they are bought by an overseas entity and sold back to us at a multiple of the price we could have had it for, at which time they are seen as excellent, let us look at what two internationally recognised consultants have to say on this:-

INFORMATION SUMMARY

The Experience Economy- a text by Pine & Gilmore, Harvard Business School Press, 1998. ISBN 0-87584-819-2.

This text explores the theme that work is theatre. It suggests that going into the 21st Century, a business will have five groups of economic offerings to choose from:—

- Commodities
- Goods
- Services
- Experiences
- Transformations

My own feeling is that the higher level transactions, experiences and transformations, will need to be packaged with services, goods and/or commodities, to be saleable to businesses, whether in the profit or not for profit sectors.

Pine and Gilmore, use the example of coffee, as a commodity, then as a service, finishing with coffee as an experience. Coffee the commodity, sells at say 2 cents a cup. After it (the coffee) has been ground and packaged, it could now sell at say 25 cents a cup. (Commodity)

In a "run of the mill" café, a cup of coffee could be sold for say \$2 and in say a restaurant, for \$5. (Service)

Now, imagine you are one of fifty people who have paid \$3,000 to attend a classical Greek tragedy drama staged in an amphitheatre in Athens. At interval, with the stars shining down, you pay \$15 for a cup of coffee served in an earthenware cup and think nothing of it. (Experience)

So, why the price differences and how do the transactions differ?.

According to the authors, commodities are just that; the perception is that it does not matter about the qualities of the commodity, so differentiating your commodity from another is virtually impossible. This is "death", for those who offer a commodity, or whose offerings have been reduced to a commodity, because almost invariably, the buyer sets the price, not the seller/provider.

When, however, a service is purchased, the purchaser receives a set of intangible, personalized activities, where the provision/delivery can be tailored to meet specific target markets.

Businesses "stage an experience", when their customer(s) are engaged at a number of levels, through all their senses, by being able to see, smell, hear, relate to, become an actor in the drama, rather than just a passive bystander, whose only role is perceived by them as paying for the drama.

So ,by way of summary:--

GOODS: tangible products, that are standardized and inventoried

SERVICES: intangible activities performed for a particular client

EXPERIENCES: events that engage individuals in a personal way.

The challenge therefore is to position oneself as offering transformations, not commodities. "While the work of the experience stager perishes, the value of the experience lingers" (page 13 of text)

FOR EXAMPLE-when buying a Harley Davidson, are you buying a bike or an experience/way of life?.

BEWARE!! Do not confuse experience and entertainment; an experience personally and directly engages the whole person, whereas entertainment is merely a distraction for a period of time. Entertainment may be most enjoyable, but will only become an experience, if the whole person is engaged.

Having set the scene, the authors then provide their understanding of what they see as the four domains inherent in what they have defined as an experience:--

DOMAIN ONE- ENTERTAINMENT

- Passive absorption through the senses, of a series of events, for example, when viewing a performance, listening to music, or reading for pleasure.
- Entertainment provides one the oldest forms of experience, as well as one of the most developed and most familiar.

DOMAIN TWO- EDUCATIONAL

- Unlike entertainment ,education requires the active involvement of the individual.
- The term edutainment was coined to connote an experience straddling the realms of experience and entertainment.

DOMAIN THREE- THE ESCAPIST

The person involved in an escapist experience in completely immersed

in and actively involved in the event.

Are Rather than watching others act, the individual becomes an actor, able to impact on the whole performance. Examples of this are virtual reality headsets, motion simulator rides based on popular movies and arcade games, where the individual is matching wits with a computer.

DOMAIN FOUR- THE AESTHETIC

- ❖ In this, the individual would immerse themselves but remain passive.
- ❖ Participants here just want to lose themselves in the moment, for example, watching the sunrise standing on the rim of the Grand Canyon.

The authors argue that the most effective experiences, from the point of view of providing the customer of a business with a truly significant and memorable experience, would combine elements from each of these four domains.

Having set the scene and explained the role of experience in making your business both different and memorable, whilst avoiding the trap of being caught in the death valley of commoditization, the authors now move into the "how to do it "section.

The authors suggest that you ask yourself four key questions:--

- (1) what can be done to improve the aesthetics of the experience?
- (2) once there, what should your customer/guest do?
- (3) what do YOU want the participants,? including yourself and your staff, to learn from this?
- (4) what can be done, by way of entertainment, to make this experience more fun, more enjoyable, more memorable?

Having answered these questions, you are now in a position to move on to step two of the three part action plan proposed by the authors, which is:

Work as theatre

drama=strategy

script=processes

theatre=work

performance=offering of product(s),service (s),or a package of products and services.

The final step is to apply the four dimensions of value creation that have been identified by the authors, to the results of steps one and

+1		\sim	
Ľ	٧V	U	

- ORIGINATION work that generates value from something new
- □ EXECUTION work that generates value from something done
- CORRECTION work that generates value from something improved
- □ APPLICATION work that generates value from something used.

Information Summary -

"Leadership is an Art"

Max De Pree, Information Australia Group Pty. Ltd.

1989 ISBN 1863500103

This book, as the title suggests, is a reflection on an art, the art of leadership, rather than a statement of a science, the science of leadership. Max De Pree reflects on his experiences of corporate life as the CEO of a 'Fortune 500' corporation in America.

Max defines the art of leadership as "liberating people to do what is required of them in the most effective and humane way possible".

There are many challenging thoughts and concepts discussed and dealt with in this book, particularly a different view of intimacy as it relates to the relationship between who a person is, their work and their workplace. A selection of these thoughts and concepts follows:-

- "abandoning oneself to the strengths of others"
- "the first responsibility of a leader is to define reality. The last is to say thank you. In between the two, the leader must become a servant and a debtor. This sums up the progress of an artful leader"
- "leaders owe a certain maturity. Maturity as expressed in a sense of self –
 worth, a sense of belonging, a sense of expectancy, a sense of
 responsibility, a sense of accountability and a sense of equality"
- "momentum comes from a clear vision of what the corporation ought to be, from a well-thought –out strategy to achieve that vision, and from carefully conceived and communicated directions and plans which enable everyone to participate and be publicly accountable in achieving those plans "
- "to be part of a throwaway mentality that discards principles and law, that discards persons and families, is to be at the dying edge"
- "beliefs are connected to intimacy. Beliefs come before policies, standards or practices. Practice without belief is a forlorn existence.
 Managers who have no beliefs but only understand methodology and

quantification are modern –day eunuchs. They can never engender competence or confidence. They can never be truly intimate"

- "functionally and technologically we are concerned with intimacy, We should be concerned with intimacy when we design the organisational structures which, after all, are the road maps that help us to work together"
- "intimacy concerns us personally and professionally, at work and at play"
- "intimacy with our work directly affects our accountability and results in personal authenticity in the work process. A key component of intimacy is passion"
- "we find intimacy through a search for comfort with ambiguity. We do not grow by knowing all the answers, but rather by living with the questions"
- "intimacy rises from translating personal and corporate values into daily work practices, from searching for knowledge and wisdom and justice. Above all, intimacy rises from, and gives rise to, strong relationships. Intimacy is one way of describing the relationship we all desire with work"
- "intelligence and education can ascertain the facts. Wisdom can discover the truth. The life of a corporation needs both"
- "hierarchy and equality are not mutually exclusive. Hierarchy provides connections. Equality makes hierarchy responsive and responsible"

These understandings are echoed in books such as :-

- "The Experience Economy", Pine and Gilmore
- "Living the Seven Habits", Covey
- "The Centerless Corporation", Pasternack and Viscio
- "The Change Masters", Kanter.

We have Australian examples of excellent business facilitation systems, but lack an "enterprise culture".

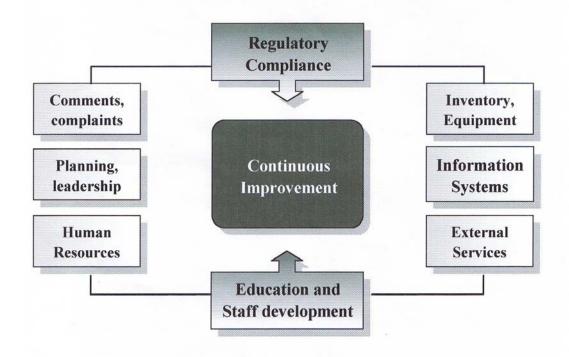
COMPLIANCE DEVELOPMENT TECHNIQUES

In an ideal world, there would be no need for these; the work of the Australian Compliance Institute in this area has already been referred to and we have created a concept known as a "culture of compliance", which is a world first.

We have people in Australia who work unrecognised, doing excellent things in this area of corporate culture , whose talent could be harnessed to commercialise a wide range of techniques.

Set out below is a possible starting points for such products :-

Management Systems, staffing and organisational development

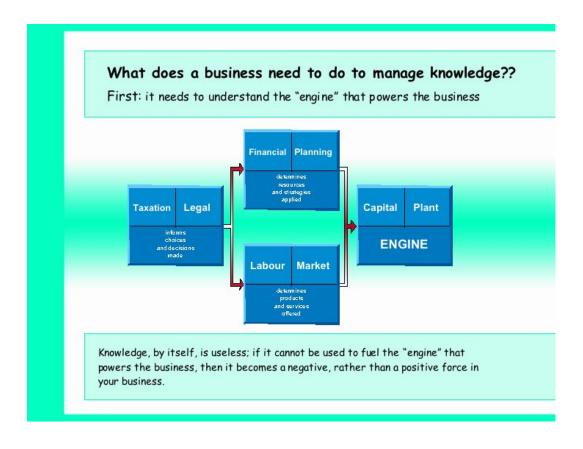


Holistic, integrated thinking, as practiced by many Australian businesses, is perceived as the key to developing a range of commercial products in this area.

Having considered the types of services we could export, let us now look at those services we could develop:-

Knowledge / Skill Transfer Systems

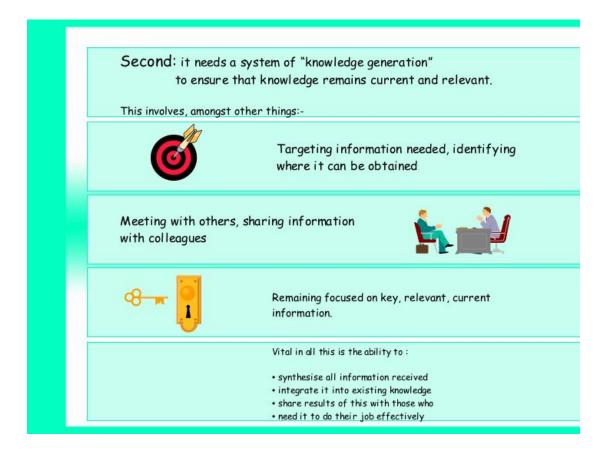
An introduction to what is understood by this is set out below :-



Every day, the "knowledge" of the world about itself, its people and its place in the world increases; however, even if there is willingness to share this knowledge with others, there are great practical and other problems associated with this.

Two of these many problems is that of currency and relevance; it is essential that that the most current and the most relevant information is processed, amalgamated with any other information and then provided to a person or an expert system, with the knowledge, skill and experience to use it to solve problems or resolve issues that have arisen.

This "knowledge generation" is outlined below:-



This needs to work in the context of any form of economy, as well as within multiple environments, e.g. political, economic, social, virtual environments.

Further, as economies develop from subsistence, through to industrial thence to technological, whether state controlled or a mixture of free market and state controls, different forms and types of service products can be created, ensuring on –going export markets.

Educational services have been an export winner for Australia; with increasing competition in the higher education sector, developing a focus on knowledge / skill transfer systems will deliver a competitive edge to Australian educational institutions.

Information Synthesis processes

These are a subset of the previous service products, knowledge / skill transfer systems; an introduction to what is envisaged here follows:-



Australia needs to become a key player in the provider of "service stations" on the Information Super Highway, before it is too late; an associated challenge for Australia is to ensure that wide spectrum broadband is available, throughout Australia, so that Web based learning technologies can be effectively deployed.

The next two diagrams address this :-

Learning Technologies - Web based services

RESOURCES

- · Multi-media products
- · Integrated web-portal, providing for:-
 - multi-media materials
 - -self-paced resources
 - on-line research capacity
 - -research papers prepared for users of service
 - -e-commerce facility
 - discussion groups
 - conferences on-line
- · Telephone support, fax, e-mail, post, face to face meetings
- · Courseware, workbooks, on-line assessing
- · Administration infrastructure

In order to establish and then provide these resources, a great deal of time money and effort would be required; the technologies used would need to be as near universal in format and in their application as possible, to allow for different users with different systems, capacities and software. Ideally, access would be by "universal web-browser", rather than requiring users to have specific software.

With the disappearance of employment for life and the need for multiple careers, Australia needs to understand what types of services could utilize the talents of skilled educators , who no longer have a class to teach in front of them , but may have students connected in a variety of locations around Australia, or watching a presentation pre –recorded ,

provided by means of video streaming or a similar technology.

Knowing what mix of technology, educational resources including form of media to be developed, is a science and needs qualified and experienced practitioners.

The second diagram looks at this from a different perspective, but an equally vital one:-

"Information Rules" - Shapiro and Varian,
Harvard Business School Press, 1999.
ISBN 0-87584-863-X
(This book should be read in conjunction with another book,
from the same publisher, "The Experience Economy".)

"The Experience Economy" text
identified five forms of economic afferings:Commodities
Goods
Services
Experiences
Transformations

"Information Rules" book ass:information is expensive to produce, but cheap to reproduce,
technology, software and hardware acting in unison) is the
packaging that allows information to be delivered to end users.
information flues' deats with information goods
and discusses how to differentiate such goods and
then progress into ceating what the "Experiences and
Transformations.

INFORMATION is seen as an experience good
- it must be experienced before it can be appreciated and / or understood.

What is necessary for all that has been spoken about to come into existence and provide export dollars, employment and incentives for the best in the world to make Australia their home ??

The answer provided here is "Learning Communities"; a model follows that outlines the particular from of learning community envisaged.

BACKGROUND TO KNOWLEDGE COMMUNITIES

- What is a knowledge community?
- How is it created?
- Why would it be created?
- Who would create it?

**

WHY BUSINESS AS A LEARNING COMMUNITY ?

- ➤ Globalization imperatives
- Knowledge ideas economy
- > Information infrastructure developments
- Paradigms and paradoxes that confront businesses

SEVEN POSSIBLE FEATURES OF A BUSINESS BASED KNOWLEDGE COMMUNITY

- Offers those involved recognition for effort
- ◆ Enables all involved to be informed agents of change
- ♦ Develops appropriate, tangible financial resources
- ♦ Totally committed to transformation of data into knowledge, thence into applied innovations of commercial worth.
- ♦ Provides mechanisms for sharing rewards for innovations
- ◆ Cognitive culture of ethical excellence in all transactions
- Shared competency in identifying and managing risk

What is a knowledge community?

It is a group of like minded people, coming together, with a shared passion to create, use and share new knowledge for tangible ,discernable, purposes.

This "shared passion" would include sharing cultures, traditions and values, during the working and talking together of those involved in the community.

Mutual trust and respect are the cornerstones of such a community; ideas, knowledge, wisdom, understandings will not be shared and developed without these cornerstones in place.

In such a community, thinkers are also doers and doers are also thinkers; providing fresh, different, ways of looking at business issues, whilst at the same time identifying profitable, competitive, value adding opportunities, is the major work of such a community.

How is it created?

Knowledge communities were originally formed in ancient times, to discuss and debate issues of the day; the schools of Plato, Socrates and others, were the facilitators of this type of community in their day. Senates, counsellors, kings, leader and universities ,are other examples; current communities have a focus on capturing and then commercialising creative concepts and ideas.

The main currency of such a community is information; the learning that takes place in such a community involves inputs from enthusiasts, visionaries, pragmatists, conservatives and skeptics.

As mentioned earlier, trust and respect, are necessary to create the physically, mentally and spiritually safe, environment, that allows such learning to be captured, documented, reviewed and applied. Communities of practice, to which practitioners of a common discipline belong, can be formal or informal, visible or invisible, unaccountable or accountable to the members of the community.

Why would it be created?

Knowledge shared results in the creation of new information; isolated developments seldom see the light of day, or achieve their potential. A 'thinking and testing' process, such as that provided by a knowledge community ,is an excellent laboratory in which to create prototypes of concepts, innovations and designs.

Who would create a learning community?

The five principal constituencies represented in this form of community are:-

- Knowledge holders/owners
- Knowledge seekers
- Knowledge users and appliers
- Knowledge managers
- Knowledge catalysts

Membership, at the inception of a community, is a factor of availability and interest; subsequently, membership is usually by invitation, rather than by self-selection. This informs the rules/ norms of the community, such as :-

- Ideas and values of members
- Relationships of members to each other
- Orientation of community
- Objectives of community
- Administration / management of community
- Sharing the costs/rewards of innovation
- Identifying intellectual property created
- Assigning ownership to such intellectual property

WHY BUSINESS AS A LEARNING COMMUNITY ?

Globalization imperatives

Many employees feel an emotional disconnection with their workplace, which leads to them feeling alienated, isolated and ignored; a knowledge community offers a sense of belonging and acceptance.

The role of knowledge in business is being re-evaluated as part of the global approach to business; over the past centuries, the pattern of economic growth

and development for most nations has been :-

- Domestic orientation
- Export orientation
- Overseas production ,sold overseas and at home
- Domestic and overseas production integrated, through trading companies that start on an international basis, move to multi- nationalism and thence to a global corporation.

At the beginning of the 21st century, the economic imperative lies with the transnational, global entities, who are a law unto themselves, rather than being subject to the laws of an individual nation.

These entities shift work, jobs, economic worth and activity from place to place ,on a discontinuous basis, as the reality of such enterprises is that many of their products and services can be created and sold anywhere .

Knowledge ideas economy

This economy is fluid and dynamic; the life cycle of products and services is very short and this has led to a 'quick disposal' society, with major waste creation and thence disposal problems. The new challenge is to evaluate innovations and to create a culture that values failure as an integral part of developing successful innovations, with commercial ,social and environmental applications.

Examples of values that would support such a culture are:-

- Hard on ideas, soft on people
- Diversity encouraged
- Treat risk/failure with reason, not ridicule
- Collaboration vs competition
- Trust rather than command
- Acceptability of questioning accepted norms, etc
- Failure seen as a learning opportunity

Information infrastructure developments

Three key elements of any information infrastructure are:

- Communication systems
 - Optical fibre
 - Satellite
 - Wireless
- > Tools for managing information
 - Software
 - Multimedia
 - Robotics
- Means of processing information
 - Microchips
 - Computers
 - Artificial intelligence

Paradigms and paradoxes that confront businesses

A paradigm is a term for a way of expressing a collection of ideas about how something works; it may reflect reality or it may not.

Depending on the paradigm, so the way in which information is perceived and dealt with; in a knowledge community, there may be a number of paradigms that are used, almost like the facets of a diamond, to reflect the views and values of those participating in the community.

The paradoxes posed by globalization revolve around the perceived benefits and disadvantages of globalisation; the advocates of globalization could see the benefits of globalisation as:-

- ◆ Creation of world, rather than national, citizens
- ♦ World wide, common, standards and practices
- Flexibility of location for means of production
- Servicing global, rather than national markets

The critics of globalisation might perceive its disadvantages to include:-

- > Destabilisation of communities when jobs shifted to another nation
- ➤ Destruction of natural environments ,habits and practices of the inhabitants of any given area
- Problems of adjustment for those moved from one nation to another
- Damage to the economy of a nation, as part of its globalisation