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*** *VAZA* Business Architecture ***

-7 Architectural Principles for 21st Century Business-

Dr David E Probert – *VAZA* International
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(1) Summary and Objectives

This discussion paper follows on from the previous paper spanning "Strategic Business Planning and Management for the 21st Century". In this paper we cover:

- The necessity for new business architectures for the 21st Century
- Proposals for 7 Basic Architectural Business Principles
- Further Analysis of these 7 Principles and their Inter-Relationships
- Suggestions for Practical Business Applications of these Principles
- The extended role of "21stC-Business-Planning" within the VAZA Architecture

During the course of this discussion paper we'll see the major trends :

- Moving from CALENDAR Clock-Time to REAL Micro-Second Time
- From Window Shopping to buying the cheapest quality product on-line
- From REAL Physical Business to VIRTUAL Electronic business
- From the Victorian Board Room to the Internet War Room
- Moving from industrial age business architectures built around machines to internet age architectures modelled on genes & cells

(2) Historical Background

Architectures for business emerged during the start of the industrial revolution at the start of the 1800's. They were conceptually based upon the designs of the machine age such as the mechanical steam engines and subsequently the early locomotives of the 1840's onwards. The cotton-mills were developed as monolithic hierarchical organisations, with raw materials and goods shipped by the newly built canals and later by the railway network across the European Continent.

If we examine Business Architectures today, such as the Zachman Framework then we still see a significant legacy from the industrial age for business with the discussion of physical systems, linkages, process and logistics plan, all tightly coupled within a matrix of relationships. It is my personal view that such frameworks are no longer adequate for the management, operation and successful forecasting of the integrated physical and electronic business of the early 21st century.

The closest we seem to get to suitable architectures are those developed for real-time command and control for military organisations. The C4ISR Architecture Framework

(V2.0) developed in 1997 by the US Defence Department (DOD) for Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance is probably the closest there is to architecture for "Real-Time Business". Some aspects of this framework were then extended to create the Federal Government Enterprise Architecture Framework during 1999, although there is still a major dependence upon the older Zachman Framework published back in the pre-Commercial Internet years of the 1980's.

Following the birth of the Commercial Internet during 1994/1995, we saw the emergence of Electronic Commerce (e-Commerce) and Electronic Business (e-Business). These were essentially extensions of the traditional "industrial age" business discussed above. Most companies initially assumed that the development of a web-site with their catalogue of products and services available for on-line credit-card purchase would propel them into the profitable age of e-Commerce. Of course, this was just the 1st practical step akin to transporting goods by canal, train or ship during the early industrial age to customers in distant towns and countries.

In the previous paper we discussed the essential concepts of "real-time" business and the emergence of the "virtual war room" that would allow management to integrate all elements, assets, information and data relating to BOTH the physical and electronic business. This takes us to the 2nd stage of e-Business which requires us to develop and deploy new architectural tools and strategies which are discussed in the next section. We then show how "21stC-Business-Planning" can be easily extended to provide a competitive strategic planning tool that integrates these new architectural principles for clients.

(3) Definitions of the 7 Basic Architectural Principles

Most published enterprise architectures seem to be ultimately based on some form of matrix framework. These have served business extremely well for the last 50 years when the focus was on systems and processes that were running relatively slowly. However, today we're moving from the focus on physical systems to self-organising networks, and electronic business which operate in micro-seconds – in "real-time".

So during the last 20 years I've developed a personal framework of 7 underlying conceptual principles which combine to generate a more organic and adaptive model of the 21st century enterprise. I've already written about some of the earlier versions of these concepts in presentations such as the "Business Blueprint" and the "Knowledge Lens". In this discussion paper I'm bringing all these 7 concepts together for the first time as a complete business architecture. So here are the basic principles:

- **(3.1) Space –** This concerns all spatial aspects of the business including geography, location of offices, suppliers, partners, customers. In additional it includes all spatial trajectories and networks which connect these various geographical centres. In fact traditional industrial matrix architectures have focused almost wholly on these spatial aspects at the expense of the temporal aspects which now dominate much strategic thought.

    - **Symbol–** Curved trajectory shaped like letter S moving upwards in the Space time continuum from "micro" to "macro" size.

- **(3.2) Time –** This concerns all temporal aspects of the business including "time to market", logistics management, customer service management, delivery times for both off and on-line businesses. In fact practically all aspects of the new electronic business and e-commerce are related to "real-time" management of this new virtual business.

  - **Symbol –** Curved trajectory shaped like a curved letter Z sweeping through time from the distant past to the future

- **(3.3) Focus –** Within any business there is usually too much raw data, and information within which to make a decision. In particular, several consultants have written during the last 10 years with regard to "taming chaos" within the enterprise, and transforming the chaos to order. So the principle to achieve this objective is the "knowledge-lens" which transforms and focuses the raw information to provide the necessary knowledge at any point in space & time, and hence to make decisions.

  - **Symbol –** Magnifying Glass shaped as a dual convex lens. In reality this focusing lens is a "negative entropy" filter that produces order structure from the highly dynamic and prevalent chaos.

- **(3.4) Scaling –** A key feature of any successful architecture is that it scales up from very small (micro) to extremely large (macro), as well as in time from very short duration events (micro-seconds) to very long strategic projects that might take several years to deploy.

  - **Symbol –** This is the basic organic "cell" which we represent as an oval with a directional arrow to symbolise internal energy.

- **(3.5) Memory –** Moving up from the basic cell we have the business memory which represents the complete set of data regarding past operations, financial results, competitive activity and market share. In addition, the memory principle includes knowledge of all future forecasts, strategic scenarios, options and potential management decisions.

  - **Symbol –** Memory is represented by a dynamic horizontal figure of 8 into which is embedded an infinite dual spiral. Once spiral has a time arrow coming from the distant past (-ve infinity), whilst the forward spiral has a time arrow leading to the distant future (+ve infinity). This memory symbol is essentially made up of two basic scaling cells, and in fact each of the basic elements can be scaled up in the space-time continuum.

- **(3.6) Adaptation –** A key goal of any business is to respond and adapt to its competitive customer environment. The emergence of electronic business means that such adaptation has to take place continuously in "real-time" in response to new customer requirements, competitive products, and 24/7 operations around the globe.

- **Symbol –** We use a 3-leaved cloverleaf curve with directional arrow as the primary symbol. This curve represents the dynamic value-chain for the enterprise, and has featured in several presentations and articles published during the early 1990's. In fact this symbol goes right back to my doctoral thesis 30 years ago (1976) when it provided the conceptual structure for evolving self-organising systems in an unknown dynamic environment.

- **(3.7) Integration –** The final principle is that of integration. I originally developed this model when analysing the integration of computing with telecommunications during the late 1980's. But in reality, similar models are applicable to the management of the integration of physical (Real) electronic and electronic business (Virtual). As mentioned before, this principle also scales at all cellular levels of the business. In this sense, integration is generally distributed amongst networked spheres of business operations rather than being some monolithic all embracing Gaia!

  - **Symbol -** We use 2 symbolic triangles that are free to move along a horizontal axis. One represents the real physical business, whilst the second is the newer electronic business. As they move together, overlap and fuse we have a symmetric 6-pointed star.

(4) The Principles in Practice Today

The Internet Business pioneers have already made many advances in the development of "avant garde" real-time business architectures following the 7 principles above. In all cases, the power of the electronic business is under the control of the end-user customer – A complete contrast to the industrial enterprise which controlled the customer. So in no particular order let's summarise some key players :

- eBay – Auctions are conducted on a worldwide basis, and practically any legal good or service can be acquired through the eBay auction web-site. My personal strategy is to place an initial low bid, and then a final automatic high bid just 3 seconds before the auction closure to maximise my chances of success. This real-time strategy seems to work around 63% of the time based on a sample of more than 150 successful bids. In fact eBay is an excellent example of a peer to peer network that cuts out all intermediaries apart from the postal service, and payment agency (usually Paypal which is itself an eBay subsidiary).

    - Principles used by eBay include : Scaling (End-User Cells), Memory (Massive Auction Database), Time and Focus. The integration provides the bridge between physical goods and the virtual global auction database.

- Google – As well as the core SEARCH service, Google is now branching into many other markets including GoogleEARTH, LOCAL Google, as well as advertising (main revenue stream) GMail, and News. Again, the core proposition is providing a bridge

between the physical world of the end-user to the Terabytes of information in the virtual world of the World-Wide-Web. Based on the share price, and explosive 8 year growth it is clear that such broadband bridges are extremely profitable for both staff and shareholders, as well as a rich content experience for end-users

> - Principles used by Google include : Scaling (WWW Index), Focus (Zoom into required data, satellite image, map or news), as well as Memory, and Integration. In addition, Google is probably the best example of an adaptive start-up e-Business as it explores new market options through its GoogleLabs.

- Amazon – A more traditional e-Commerce venture established initially during 1996 as an on-line Book Seller, now provides access to an on-line catalogue spanning video, software, books, toys, games, and even home and garden products. Already companies such as Amazon are challenging the traditional retail market with a significant proportion of smaller high-street shops expected to leave the marketplace during the next 10 to 20 years.
    - Principles used by Amazon include : Memory (Massive catalogue of practically every published book, DVD, game etc) coupled with integration to physical transportation delivery systems.

- Yahoo – Established originally as an alternative search engine, the company has expanded into more commercial on-line services, as well as acquiring Geocities and building up its own successful fully-featured hosting operation (Used by www.valentina.net) .

    > - Principles used by Yahoo include : Scaling and Memory.

- Apple – Computer pioneer from the 1980's has continued to adapt to the new e-marketplace, and the recent iPOD and iTUNES ventures have driven the marketplace for both wired, wireless music and on-line music & video which is being copied by others.

    > - Principles used by Apple include : Adaptation as well as Scaling, Memory, Integration and Time in its various on-line and off-line businesses which remain very well connected.

Other businesses and industries that have moved strongly forward in the e-business marketplace and applied the new architectural principles include :

- Airlines – The low-cost airline such as EasyJet and Ryanair were the first to promote on-line bookings, e-tickets and discount fares. But now the traditional providers such as British Airways are catching up fast, and once again becoming profitable as they move into self-service kiosks, on-line check-in, and self-printed boarding cards for most international destinations.

- Principles used by airlines include : Adaptation, Time and Integration (Physical Passengers with on-line bookings).

- **Supermarkets** – The largest operators such as TESCO in the UK have fully embraced the Internet and simply grown larger and more profitable. New Services include on-line shopping, as well as store cards and voucher deals that can be quickly fulfilled on-line through electronic codes similar to software licences codes. The next generation of applications will centre on the new RFID tags for food, clothing and virtually any items that can be tagged.

  - Principles used by supermarkets include : Adaptation, Scaling, Focus (Provide on-line customers with their list of goods through deployment of physical store "pickers")

- **Travel Industry** – More generally the entire travel industry is in the process of the largest transformation since the emergence of the railways during the mid-19th century. Many small travel-agents are struggling as customers book directly through portals such as expedia, Travelocity, as well as with airlines and hotels. Package operators and cruise operators are now forced to adapt to the new dynamics since direct on-line bookings can typically reduce the cost of a package holiday by at least 50%, with minimal risks.

  - Principles used by the Travel Industry include : Adaptation, Focus (customers want a holiday tailored to their family needs), Time (Real-Time management of hotel rooms, & airline seats), and scaling (Up to a Boeing 747, or 4000 room Vegas Hotel!)

- **Advanced Research** – Finally I've added in an example from the academic world since it was CERN at which the WWW was invented by Tim-Berners Lee during the early 1990's based upon the TCP/IP Protocol created by Dr Vint Cerf during the late 1970's as the basis of the US DOD funded Arpanet. The example here is the BOINC (Berkeley Open Infrastructure for Networked Computing). This is a global open network of home and business PC's and servers that are used to process data from projects such as SETI (Search for intelligent Life), or EINSTEIN (Search for Gravitational Waves). My own home PC is connected to BOINC and is actively deployed in the US Einstein Project.

  - Principles used by BOINC : Scaling (Extending the University computing resources to an under deployed global network of millions of personal computer servers. Integration since the research lab is effectively extended world-wide, and users like myself are providing virtual funding through additional processing, as well as the electrical energy required!

These are just a few examples of both leading Internet Companies as well as traditional industry sectors that are adopting and adapting to the new architectural

ways. The reality is that just as virtually every company has a web-site, then during the coming 5 years they will need to also adopt the 7 basic business principles in order to compete and survive within the increasingly dynamic and chaotic marketplace.

Forecasting and planning are themselves changing. As an analogy, in forecasting the weather it is known that mathematically this is inherently a "chaotic" system and there are physical limits to the degree of detail and certainly that it will ever be possible to forecast. In similar ways, the business environment is now also becoming a real-time and inherently chaotic environment so new tools and principles are required such as businesses can analyse and implement effective and profitable growth strategies.

Within the industrial enterprise the business dynamics were usually relatively slow and could be forecast with relative accuracy – rather like the dynamics of a deterministic machine or steam engine. However, the integrated electronic business possesses the dynamics of a self-organising system, which are more akin to those of a living organisation surviving within a chaotic hostile environment. The lessons are the same - Our strategic planning tools need to quickly adapt to this new world!

(5) Further Analysis of the 7 Principles

A complete analysis of the 7 principles and their interactions is beyond the scope of this introductory discussion paper. However, in this section I'll give a more detailed idea of why these principles are both necessary and sufficient to model the self-organising business of the 21st century. In essence these principles define a form of mathematical algebra or calculus that I've personally used for nearly 20 years to understand the interaction, integration and management of the real physical business and the virtual electronic business.

Let's go through the 7 elements again, but this time group them together into 3 sets:

(A) The Decision Set – Space, Time and Focus

These 3 elements concern taking decisions at any point in space and time. In fact we'll commonly refer focus as the "Space-Time" Knowledge Lens. We place the lens on an event in order to "slow down time" for long enough to analysis sufficient information in order to take the best decision with respect to future business actions.

SPACE : The Spatial Principle relates to the VIRTUAL War Room which scales up from a single person or office to span the entire enterprise, including customers, suppliers, and channels partners. In fact, we should always try to view the enterprise from the customer perspective in taking strategic decisions from within the "War Room". The key difference between the traditional physical Board Room (Board of Directors) and the "Virtual War-Room" is that the latter is in permanent Operation – 24/7 – and can be accessed from any networked node, anywhere in the world. In contrast the Board of Directors will typically only function once a month or occasionally more frequently in more enlightened companies. In my experience many companies now have weekly Executive Board Meetings, whilst a few have daily scheduled tactical reviews.

TIME : The Temporal Principle relates to the REAL-TIME Management of the Business. We've already noted that this is associated very much with the Virtual Electronic Business which operates in micro-seconds on networked processors & storage servers. It has been the military commanders that have traditionally developed and understand the importance of real-time operations, intelligence and decision making. Within the business world, the foreign exchange and commodity dealers have understand the importance of decisions, supported by the fastest computing and communications technology being executed within a micro-second. I worked on such systems briefly at BT plc during 1984 during the emergence of electronic screen-based systems at the London and Chicago Stock Exchanges. So today, EVERY business needs to consider how it can migrate its business decisions and forecasting to super-fast electronic systems akin to the trading systems of the 1980's and 1990's.

FOCUS : Finally in this group we come to the "space-time" focusing lens or "knowledge lens". This is the heart of distributed real-time decision making within the new enterprise. This focusing lens "plugs-in" to all the relevant real-time and stored datasets and effectively brings time to a brief standstill – transforming the chaotic dynamics to an ordered environment just long enough to make optimal business decisions. In fact modern decision theory is based upon advanced probability and statistics, so the lens symbol is highly appropriate as the culmination of the VAZA "Decision Set".

(B) The Learning Set – Scaling, Memory and Adaptation

These 3 elements are concerned with the learning, evolution, and self-organisation of the business enterprise within its chaotic competitive market environment. Whilst the Decision Set (A) is largely based upon traditional business elements, the learning set has only emerged during the last 15 to 20 years.

SCALING : The initial element is the single "living" cell which may sound straight forward, but its understanding is at the heart of the evolving enterprise. Organisms are essentially millions of scaled differentiated cells, governed by the genetic code or architecture. So in the context of the business world, it is of critical importance for us to define the equivalent genetic code for the enterprise that scales up from person, products, and services to the complete business. During the last 200 years of industrial society this was relatively straightforward since business was simply designed as a giant machine according to an engineering blueprint with mechanical linkages, and connecting rods.

If we think in terms of scaling up time in "powers of 2" from 1 second, then 1 day is around 2 to the power 16 seconds, whilst 1 year is around 2 to the power 25 seconds. We could do the same for staff, so that an enterprise with 1000 staff has around 2 to the power 10 staff members. A detailed analysis of cellular scaling is beyond the scope of this paper since it is rather mathematical and involves the theory of groups. However, we repeat that scaling governed by a genetic architecture is at the core of any successful evolving and self-organising system, and hence at the heart of the 21st century living enterprise.

MEMORY : As mentioned in the original definitions, memory is essentially a dual concept or dual cell. The first linked cell is the spiral arm that rotates back into the

distant past which includes all data relating to historical operations, annual reports, competitive strategies, projects, and marketing campaigns. In contrast, the second linked cell (the cells are connected like a figure 8) contains the spiral arm that rotates forward into the future and at the top scaled level includes the forward business plans, strategies, proposed partnerships, alliances, suppliers, and financial strategy.

A key difference in this principle and the traditional "memory" is all the relevant business, supplier and financial data is available 24/7 in real-time to anyone that enters the "virtual war-room". In the same way, the forward business plan and forecasts are also tracked in real time and connected to the past through a decision lens at the nexus of the "figure of 8" connecting the "Past Cell" and "Future Cell" to the here and NOW!

ADAPTATION : Traditional businesses were relatively static and would change with switches in chairman, CEO/CFO and senior management, as well as fundamental changes in their business environment. It is interesting that already within both USA and Europe, some major airlines and retail chains have already failed to adapt to the "Internet Age" and have either filed for bankruptcy, Chapter 11 or Administration. My prediction is that such trends will become even stronger during the coming 5 to 10 years as companies undertake the migration from "web-site" to "real-time" business.

Consultants such as Peter Senge have already analysed the adaptive business, but a full understanding of evolving and adaptive businesses is still several years away. My hope is that these 7 principles will help to stimulate the discussion and will support "21stC-Business-Planning" in the further development and adaptation of this powerful toolset for deployment in many new customers during the coming 5 to 10 years.

The cloverleaf symbol for adaptation can be understood as a core set of adaptive rules linked to probing lobes that push into new markets, design new products and form new partnerships in a continuous process. I've also previously documented the way in which this cloverleaf can be understood to be a dynamic enterprise value-chain linking, in real-time, all the main business functions from R/D, product development, manufacturing, sales and marketing, human resources, finances and management. The level and degree of adaptation of this value-chain to the chaotic business environment represents in many ways *the quality* of the business, its partnerships and products.

So this LEARNING Set (B) are expected to become at least as important as the traditional DECISION Set (A) during the coming 5 years as every business attempts to adapt to the fundamental changes in the competitive business environment. Every business will need to re-invent itself and to understand its core values as they integrate their traditional physical business with an emergent electronic on-line business.

   (C) The Integration Set – Integration by itself!

INTEGRATION : This final set is the principle of Integration all by itself, as it should be. At the highest level of conceptualisation we can understand this as the integration of the 2 sets (A) and (B) that each consist of 3 principles. The integration principle brings together the DECISION Set and LEARNING Set within the single INTEGRATION Set that represents the complete enterprise.

At the next level of abstraction, the integration represents the fundamental linkage of the real physical business within the virtual electronic business, such that all the synergies of on-line trading, e-commerce, self-service kiosks, and on-line search and bidding are bought together for the benefit of both customers, shareholders and staff.

My view is that applications such as GOOGLE and eBay still only represent the 1st level of linkage between the customer and the global electronic world of web-sites, auctions, and entertainment (games, gambling and travel). This is the scaled 1st level of a single physical end-user interacting with the virtual electronic model of reality (rather like the "Matrix" films in some ways!) . At the next scaled levels we need tools that allow a team (2nd level) and enterprise (3rd level) to interact and adapt to this virtual world of on-line suppliers, marketplaces, customer services, and multimedia VoIP communications.

In this way I see "21stC-Business-Planning" itself evolving as an integrated 2nd level bridge between the physical strategic business team and the world of electronic business. "21stC-Business-Planning" can be viewed as a high-level integrating "focusing lens" that pulls together all the intelligence from the physical and electronic business worlds, and then provides a real-time platform to project forward with optimal market trajectories.

In time, following success as the 2nd level bridge, then the breadth of "21stC-Business-Planning" tools could be extended to the entire enterprise as a 3rd level bridge, such that any approved employee can access the BW network to review, refine and deploy micro strategies related to their scaled level of operations. Of course such a programme will take us several years of consultancy, successful deployment and software revisions.

(6) Next Steps

This discussion paper represents "work in progress" on the 7 architectural principles and it is my intention to devote a further paper to explore more detailed relationships between the principles, and in particular to the scaled cellular architecture. These principles will then be mapped as a framework to a typical modern-day business such that "21stC-Business-Planning" can be deployed with even greater value and benefit to customers.

For any business I would suggest that there are 3 main steps forward based upon the 7 point VAZA Business Architecture :

- Integrate the REAL and VIRTUAL Business – If the traditional and on-line business are run separately then ultimately the traditional business will fail as it is overtaken by competitors. This integration will require the step-by-step deployment of a company-wide VIRTUAL War-Room with electronic probes or agents in every dataset, commercial application. market and competitive analysis, business plan and forecast.

- Establish REAL-Time linkages with all physical staff in every location whether in the office, home or mobile. In the medium to

longer term this should include RFID tags (Radio-Frequency Tags) on every product and physical asset within the company, This should also be extended to electronic codes on virtual goods and services of any financial value within the business environment.

- Implement "21stC-Business-Planning" as your preferred Strategic Planning Tool for integrating your Real and Virtual Business, and your Decision (Set A) and Learning (Set B) Business Architectures. Using "21stC-Business-Planning", companies will be able to far more easily establish their own "virtual war-room" as a DIY kit for rapid deployment.

Of course, the 7 principles provide significant scope for training courses and seminars for ambitious junior and middle management that want a new orientation and understanding of business that will give them the foundations for "going to the top". This is probably the best route into the "sales cycle" which will be followed up by a trial deployment of the "21stC-Business-Planning" Software Suite coupled within some in-depth consultancy for the core planning & forecasting team. My understanding is that "21stC-Business-Planning" already has many of the "database" and Microsoft plug-ins for enterprise data centre deployment, but that these will need some refinement to support a full networked war room with interfaces to a range of mobile management devices.

Appendix (1) – Frequently Asked Questions (FAQ)

(a) Why develop a VAZA Business Architecture?

As explained in the discussion paper, many frameworks and architectures in use today are still based largely on models and concepts from the industrial & machine age. Much of the new business growth and transformation is now in the electronic marketplace which is more akin to a living self-organising system than a machine.

In order for businesses to prepare excellent plans, and to respond to competitive pressures it is critical that management have an architecture that models the actual business and market environment. The VAZA Architectural Principles provide a framework that relate to an adaptive organism in a dynamic uncertain environment.

(b) How did these architectural principles evolve?

I've personally been active in the field of business planning and strategy for 30 years since completing my doctoral thesis in 1976 at Cambridge University into theoretical models for self-organising systems. Following my development of the 1st systems dynamic model for British Telecom I started to evolve the basic VAZA Architectural Principles from 1986 when establishing a strategic partnership between BT and the computer company – Digital Equipment Corporation (DEC) – to integrate their VAX computers with telephone switches. I then joined DEC Europe and further developed the principles during the early 1990's when I started to manage Internet activities for DEC across EMEA.

Aspects of these principles have already been published and are available in papers on the VAZA International Web-Site. However, this series of discussion papers is the first time that all 7 principles have been presented as a complete architecture. Further papers to be written during 2006 will explore the 7 principles, their relationships and applications in more detail. In particular they will explore the ways in which "21stC-Business-Planning" can be enhanced to provide an even more effective set of tools for planning and forecasting within the context of a real-time networked war-room.

(c) These 7 new principles are very theoretical ?

Of course, it is not easy to understand and model the dynamics of an "Internet Age Business". It took biologists, led by Dr Crick and Dr Watson, many years to model and understand the genetic code, and the way in which it controls the growing adaptive differentiated cells within the larger living organism. In the same way, we should not expect architecture for real-time electronic business to be straightforward to develop and understand. So the answer is that the principles are indeed theoretical, but together they form a powerful conceptual framework for decision making, adaptation and learning within businesses during the coming 10 to 20 years.

(d) How does this all link in with "21stC-Business-Planning"?

"21stC-Business-Planning" Tools are already well developed and link in well with many database architectures and operating systems. However, the 7 VAZA Principles provide further ways in which "21stC-Business-Planning" can be marketed and implemented within client organisation. The primary aim is to create an upgraded client proposition which is sufficiently compelling to significantly extend BW market reach through channel partners during the coming 3 to 5 years. I passionately believe that this new architectural framework is sufficiently exciting, innovative and compelling to be of interest to many new European customers during the coming months and years.

(e) Where's the compelling revenue opportunity?

Improved planning and forecasting within any business can make corresponding significant improvements to revenues, profit margins, and stock rotation. The dramatic increases in the marketplace for all forms of e-services and e-commerce mean that there is also a new market niche for tools that model and forecast the e-sector. This new revenue niche for "21stC-Business-Planning" extends across the entire range of traditional industry sectors. Today the major consultancies, such as IBM – "On demand Business" are adapting their own consulting tools to this sector. But whilst the new architectural principles are being developed their remains scope for an independent vendor such as "21stC-Business-Planning" to licence its solution through trained and certified channel partners, which could include consultancies such as IBM, and CSC.

(f) Where are the graphical representations of the 7 *VAZA* principles?

The next discussion paper – "VAZA Architecture II" will include extensive graphical representations of the 7 architectural principles, including their interactions, and ways

in which they can be used to symbolically model the dynamics and interactions between the worlds of physical and electronic business.

(g) Does "21stC-Business-Planning" or VAZA intend to provide new training courses?

Yes! – Once the new materials and principles are fully documented, we are proposing to offer 1-day starter courses, as well as multi-day sessions that will include in-depth "21stC-Business-Planning" Software Applications Training. We believe that these new principles are quite compelling in their power to increase profits and market share for clients in most business product and service sectors. In fact any business that is in the transition from web-site to integrating their real (Traditional) and virtual (Electronic) business.

Appendix (2) – Selection of On-Line References

(a) Strategic Modelling in British Telecom

- Original Published Paper on BT Planning Model

(b) The Knowledge Lens and Embedded Artificial Intelligence

- Published version of Keynote Speech on Knowledge Lenses

(c) - The Evolution of Stochastic Automata -

- Scanned version of Doctoral Dissertation on Self-Organising Systems

(d) Value-Enhancement and Management of Global Networks

- Original published version of paper on global enterprise networks

(e) MultiMedia Commerce for the 21st Century

- Synthesis of Ideas and Trends on e-Commerce in the late 1990's

(f) Strategic Planning, Computer Modelling & Networking

- Collection of Papers on Computer Modelling & Networking

(g) Business BluePrints, Knowledge Lenses & Networking

- Collection of Papers of Business BluePrints including the original presentations on the cloverleaf, knowledge lens and integration.

(h) Zachman Enterprise Architecture

- The definitive enterprise architecture used throughout the 1990's by multinational corporations, and originally developed within IBM Labs

(i) [Military Architecture – C4ISR Architecture](#)

- The 1st definitive and effective real-time command and control architecture developed and funded by the US Defence Department

(j) [Federal Enterprise Architecture Framework](#)

- An adapted version and integration of the C4ISR Framework and Zachman Framework for the US Federal Government and Partners

Appendix 3 – About *VAZA* International

VAZA International was established by Dr David E Probert with the following mission :

I. To provide innovative strategic business consultancy in partnership with a network of *international* business associates.

II. To create, publish and present visions and applications for new and emerging technologies. These may include 3G mobile & wireless networks, multimedia communications, on-line search, self-organising and learning networks and "real-time" collaborative computing & communications.

III. To provide project management and mentor support for major national and international projects specifically in the fields of strategic business planning & modelling, multi-media networking, environmental protection, and the deployment of emerging & leading-edge technologies.

During the last 25 years, David Probert has provided the vision and thought leadership for many successful projects including :

- *Long Range Planning Model (LRPM)* – The 1st Dynamic Strategic Planning Model for British Telecom that was developed during advanced management research at Cambridge University during the late-1970's. The model was used to support BT Board Level strategic analysis and decision-making both "pre" and "post – privatisation".

- *Computer Integrated Telephony (CIT)* – Established and led British Telecom's £25M EIGER Project during the mid-1980s' to integrate computers with telephone switches (PABX's). This resulted in the successful development and launch of CIT software applications for telesales and telemarketing operations in a worldwide marketplace.

- *Blueprint for Business Communities* – Visionary Presentation for Digital Equipment Corporation during late-1980's that included the creation of the "knowledge lens" and "community networks".

- ***European Internet Business Group (EIBG)*** – Established and led Digital Equipment Corporation's European Internet Group for 5 years, from 1994 to 1999. Projects included support for the national Internet infrastructure for the countries of Central and Eastern Europe, Russia & the Former Soviet Union and the countries of the Middle East. Dr David Probert was a member of the European Board for Academic and Research Networking (EARN/TERENA) for 7 years (1991 ➔1998)

- ***Supersonic Car (ThrustSSC)*** – Worked with Richard Noble OBE, and the Mach One Club to set up and manage the 1st Multi-Media and e-Commerce Web-Site for the World's 1st Supersonic Car – ThrustSSC.

- ***KolaNet*** – Established and led the KolaNet Project within the Arctic Kola Peninsula, Russia. This multi-national project run from 1992 to 1998 and provided Internet Communications, Web-Sites and Training to Research and Government Institutions within both Russia and the Former Soviet Union. The primary applications for KolaNet were the monitoring of radioactivity from nuclear power plants and sea-borne reactors as well as other harmful industrial chemicals & heavy-metals

- ***Secure Wireless Networking*** – Business Director & VP for New Venture to establish a portfolio of innovative secure wireless networking products with advanced technology partners from both UK and Taiwan. Dr Probert was also appointed as the New Products Director to a well-known UK Group plc in the networked security products sector prior to its successful acquisition by a US corporation.

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Dr David Probert is a Fellow of the Royal Statistical Society, and he has a 1st Class Honours Degree in Mathematics (Bristol University), and PhD Degree from Cambridge University in the field of Self-Organising Systems ("Evolution of Stochastic Automata"). His bio is in the Marquis 2007 Who's Who in the World

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Note to Readers: *This paper was originally written in March 2006 as a Strategic White Paper for an International Business Planning & Modelling Consultancy. All references to this consultancy are now changed to "21stC-Business-Planning".*

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