

# The Old Geeks Shed



## Conceptual Architecture Schematics



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## Document History

Date	Modification	Author	Notes
05/02/2022	Add global constraints section	AW	
13/07/2022	Reorder pages	AW	Align to supporting essays on software bias
13/07/2022	Add Rise of Bureaucracy Page 45	AW	
13/07/2022	Align schematics with supporting documents	AW	
27/09/2022	Amend viability schematic to include organisation boundary	AW	
30/12/2022	Add Requisite Variety notes	AW	

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### Statement of Copyright

This set of schematics has been put together by one (now very old) man. Its aim is to help rather than hinder. Furthermore, were there any copyright infringements, the author would have no chance of defending copyright infringements anyway.

To those who seek some form of collaboration, thank you but no. I am retired, the nature of the effort and expense involved in publishing or otherwise commercially exploiting this is of no interest to me, help yourselves, exploit away, if you make your fortune, good luck to you. My wife is partial to Rose and Prosecco wine though.

To give people an idea of the nature of the effort and expense just to get this far, the organisation mapping software (see the page on “mapping the organisation”), took 10 years to develop and cost, roughly £500k. For me its not practical any more and the figure quoted is laid down as a warning. Its an expensive business writing software.

So, use, abuse or simply ignore as you see fit. I have more stuff of a similar nature if anyone wants it, the reason this is being offered is that rare thing (it seems), to show just one way of solving more than a few complex problems, but in overview, as a “world view” if you like... These are “free of charge” (which is why MS and the like are billion dollar organisations and I do Statdler impressions). All that written, use this document as a start point, a basis to structure your own equivalent.

However, it would be kind if people let me know if this lot comes in handy

Take care and good luck.

Allen

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## Caveats.

The final amendment of these schematics is dated 21/06/2021. Hopefully readers will note that there are pages in this set of diagrams and notes going back to 2016. Some of the software referred to in the “implementation” pages was started in 1996 and took a further 10 years to build, modify and otherwise fiddle with, while at the same time making a living.

A lot of study and thought has gone into the assembling of the schematics and there is a fair amount of supporting documentation in support of them if anyone would like copies. Nevertheless, treat it all as pathfinder, not gospel. As this document and the rest, is the work of just one man who may well have got things wrong.

And on getting things wrong? Oh yes, the author has. And arguably, one of the best ways to learn is to learn from mistakes. Above all therefore, this document pack is an attempt to demonstrate learning from mistakes and to give people the chance to avoid some of them....

If the author was still working, given the nature of his last role, if interviewing someone for the post of information management architect or CISO or indeed any senior data management role, he would expect attendees to produce something similar on interview. Because without some concept of through life architecture, then experience would indicate that planning in support of evidence based decision support (which is what information management is really about), will have an increased chance of going awry.

As a consequence, there are many, many ways to skin the architectural cat.

The aim, in respect of the way notes are written, is to provide a means for non technical people to get a handle on the architectural nature of IT nowadays. If readers want highly technical descriptions of content please get in touch. Book recommendations galore will follow.

And finally, none of this is simple. None of it. Readers will find that out in due course. Anyone who suggests it is simple has never, ever operated in a complex IT operating environment.

And.. On the difference between data protection and privacy. Before proceeding, think about when you were a teenager, going out for your first under age beer. And then having to prove your age to a stranger behind a bar.... In that one little scenario, there is a world of architectural complexity, which is the kind of thing these schematics are about.

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## Opening Notes.

This Document contained, originally, some 20 schematics that illustrated in what is hoped to be a coherent form, how an enterprise wide integrated information management architecture might look. The schematics were produced within the context of complex forward and reverse supply/support chain in an attempt to shed light on some of the complications that surround the provision of timely and accurate decision support in a contingency environment. As readers can see, the original 20 have been expanded on and restructured and some supporting notes have been included where appropriate. **Be warned, it's a big document.**

The overarching aim of the schematics is to present a structurally coherent view of how to test an organisations “viability”. Testing and proving organisation viability implies the need for an information management architectural design that can support the idea of contextually sound decision support information delivered on an “on demand”, “clear line of sight” basis but one capable of taking into account the constraints of time and inferential distance which in turn is dependent on being able to understand, manage and control both ownership and location.

The schematics were the basis for the design of the authors own web portal which was successfully deployed on the UK Defence Intranet (many years ago now) and was subsequently used to demonstrate and illustrate some of the complexities of data protection in the light of legislation like the GDPR. The aim being to provide the means to connect into a live case study that demonstrates the benefit of integrated information management which is founded on a multi-dimensional multi perspective meta model designed to support “the business”

The schematics formed part of the web portal infrastructure as active image maps or gateways into the portal itself. The schematics are supported by a case study of 8 documents which provide more detail on the way the schematics were applied.

The architecture itself, is a mix of desktop tools (primarily Microsoft Office add ins), programmable components (an document reader and cataloguing component for example) and integrated web services that together support desktop to server side (the portal) data gathering and report delivery. A key design aim being to fill a number of meta gaps in order to support the idea of managed data to information transition that is multi dimensional and multi perspective in nature that can also be validated and verified as accurate from any start point in the in the architecture. A key design concept is that traditionally, data collection is focussed,, typically, on “process” which inevitably leads to parochial functional silos that are disjointed. With that I mind, The Performance Organisers have their own organisation mapping tool the purpose of which is to describe organisation form, function and purpose in database form that forms part of a common meta model that can be referenced, seamlessly, by other parts of the architecture.

As a consequence, the architecture as a whole, supports the ability to “burrow” from any entry point with the contextual benefit of supporting the principle of “clear line of sight” top down and bottom up constrained by the “need to know”.

Note also, that the architecture supports the idea of being able to align structured and unstructured data which is strategically important given that for many organisations (if not most) unstructured data accounts for an estimated 80% of untapped business intelligence. The Performance Organisers demonstrate this particular aspect of the architecture using what is referred to as the “Lithium Test” which can be carried out live on the web portal. Details of the nature of the test are available on request.

It is the firm belief of The Performance Organisers that increasingly, given the disruptive impact of legislation like the EU GDPR (and supporting judgements like FashionID, Schrems 2 and more), Sarbanes Oxley, 4MLD and the US Arms Export Control Act, will bring about the need for the kind of architectural approach presented here which places emphasis on organisation form, function and purpose; for data to information targeting purposes as opposed to the comparatively common but parochial emphasis on “process” the end effect of which is the development of data silo’s.

Where possible, in the original document form, key elements of the schematics are active in that they connect to the portal. The original document (as a Visio 2010 diagram set) is available on request from woodsa200@gmail.com .

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Allen Woods, the author of this document is now retired. Before retirement he worked primarily for the UK Ministry of Defence both in and out of Uniform for nearly 50 years. The first 15 years being on front line operational duties with British Army Infantry Battalions. The remainder of his time spent working on information management related activities for Defence Logistics. On leaving the Army in 1995 he was described by his then commanding officer as the “backbone” of his Corps software development effort and with an Exemplary record both in front line service and subsequently for the UK Defence Logistics Support Chain.

Allen worked in just about every major Defence Logistics IT modernisation programme in that time. His last task “behind the wire” was the provision of “Independent Qualification Body” (IQB) services with oversight of the RAF Voyager Programme (the aircraft type that is the official aircraft of the UK Prime Minister amongst other things) IT transformation project. As IQB Allen was one of the “sign off” authorities of the programme testing phase immediately prior to “go live”. Along the way, he was a finalist in the UK British Computer Society “Developer of the Year Award” in 2010. Now resigned from all of the professional bodies he belonged to, for many years Allen was a Chartered Member of the British Computer Society and a Fellow of the Institution of Analysts and Programmers.

Key parts of his experience in the case of this document is that much of his work was focussed on issues related to regulatory compliance both nationally and internationally and included development of support software and also involved a detailed forensic review of software licensing associated with an £800m outsourcing contract and more besides.

He spends his time now doing ad hoc work “stuff” related to privacy regulation and subsequent compliance to while away the time and via a hololens, trying to get a grip of a pink gecko on a bike...



Architecture – High Level Design Concepts	The Constraints	Part 1
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# 1. The Constraints



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# The Law of Requisite Variety

The sole purpose of information management is to support the maintenance of the viability of the organisation as a system. If the information management effort does not do that, then it is not fit for purpose. The key driver therefore is organisation form, function and purpose. With purpose being defined as:

“The Purpose of a System Is What It Does”

The principle support function of information management therefore is to put decision takers in a position where they can detect and better understand emergent issues, of any kind and be placed in a position where, if necessary, they can plan mitigation effort such that they can address any capability shortfalls

In that context, it is the case that the word “system” is much misused. The system IS the way things are organised to meet a given aim, everything else is part of the system and must support achievement of the aim.

The “Law of Requisite Variety” applies:

*“An important theory within Cybernetics, created by Ross Ashby states that, if a system is to be stable, the number of states of its regulatory mechanism must be greater than or equal to the number of states in the system being regulated. Thus Ashby’s Law means that for a system – an organism, a government, a cat – to be regulated or under control means that for any given change in state presented by its environment the system can generate a response so as to maintain functionality. The system has to be able to respond to the diversity of alterations by choosing from some capacity or response that it has to counteract it thus enabling it to maintain homeostasis and control, e.g. for the body to maintain homeostasis when an antigen invades it must have the appropriate type of antibody, or the manager of a business must have a model or way or working with sufficient variety to match the market and different eventualities it may present”*



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# GIGO

Time spent on validation and verification of data is never wasted. If 10% of the data held is not complete or valid and cannot be robustly proved to be so, then **ALL** reporting is suspect.

Furthermore, validation and verification is not just an issue at the point of data collection. It is the case that different parts of an organisation or “system” have different reporting requirements in terms of the nature of content and how it is structured and of course presentation. However, the minute someone or increasingly something triggers an enquiry of a “who, what, where, why, when, how” then inevitably that triggers investigation of one kind or another.

The investigation of the kind described above, implies the need to provide for the means to navigate both “top down and bottom up” and “laterally from left of arc to right of arc” round available information to the level of granularity that can be achieved, which will also be constrained by the “right to view” or some other access control. It should be noted that as the nature of reporting changes, so will the nature of processing required to deliver a reporting capability. Those changes in reporting requirement will force changes from a more deterministic to one with an emphasis statistical probability. This change in analytical approach in turn often means a change in the nature of the logical modelling (from the procedural and linear to predication for example). And that means a multi layered approach should be considered in respect of validation and verification too and both are therefore, architectural in impact.

GIGO therefore is perhaps the one constant in information technology and is increasingly multi layered, multi dimensional and multi perspective in terms of design impact.

GIGO rules. End of.



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# Limits of Observation

The concept of “system” is not solely about the use of an IT “package”. A “system” is much wider in scope and amongst other things has an operating environment in which it exists and interacts with other “systems”. There are therefore constraints of behaviour and capability that are, in no small measure, set by other systems and interactions over which the “system” people operate and work in have limited control but must, in terms of viability, seek to control or influence. This section sets out, in overview, what the major constraints, universal in nature and common to all “systems” might be.

## Time

“Here to day, gone tomorrow” as a phrase, just about sums the influence of time up. As does the concept of “Through Life”. Time is transient and multi dimensional in impact. The symbols below are used to represent two things connected in some way. Typically, as explained elsewhere, in graph schemas the line, or edge implies a single track of exchange of information with the “edge” implying a communication channel. However, the “things” have shape and form they also mature over time which in turn changes the shape and form of thing. But the same is true of the edge or relationship and perhaps of more subtle influence, the edges do too. Furthermore, the edge or line, the kind of data or information exchange is multi perspective in nature as the “thing” matures. The changes maturity brings implies a form of geometry conceptual in nature which has similarities to traditional geometrical mathematics, but is different..



The readers attention is drawn to this lecture:

[https://www.youtube.com/watch?v=Y3\\_zlm9DrYk](https://www.youtube.com/watch?v=Y3_zlm9DrYk)

## Observation

Following hard on “Time” is “Observation”, or the limits thereof. Limits of observation are exposed whenever someone asks “What if” or “My numbers are not your numbers” issues arise in any reporting scenario. The limits of observation and how they are addressed drive changes to the shape of things (the introduction of new data gathering efforts being but one example) and to the complexity of the nature of the complexity and richness of the relationships between things.

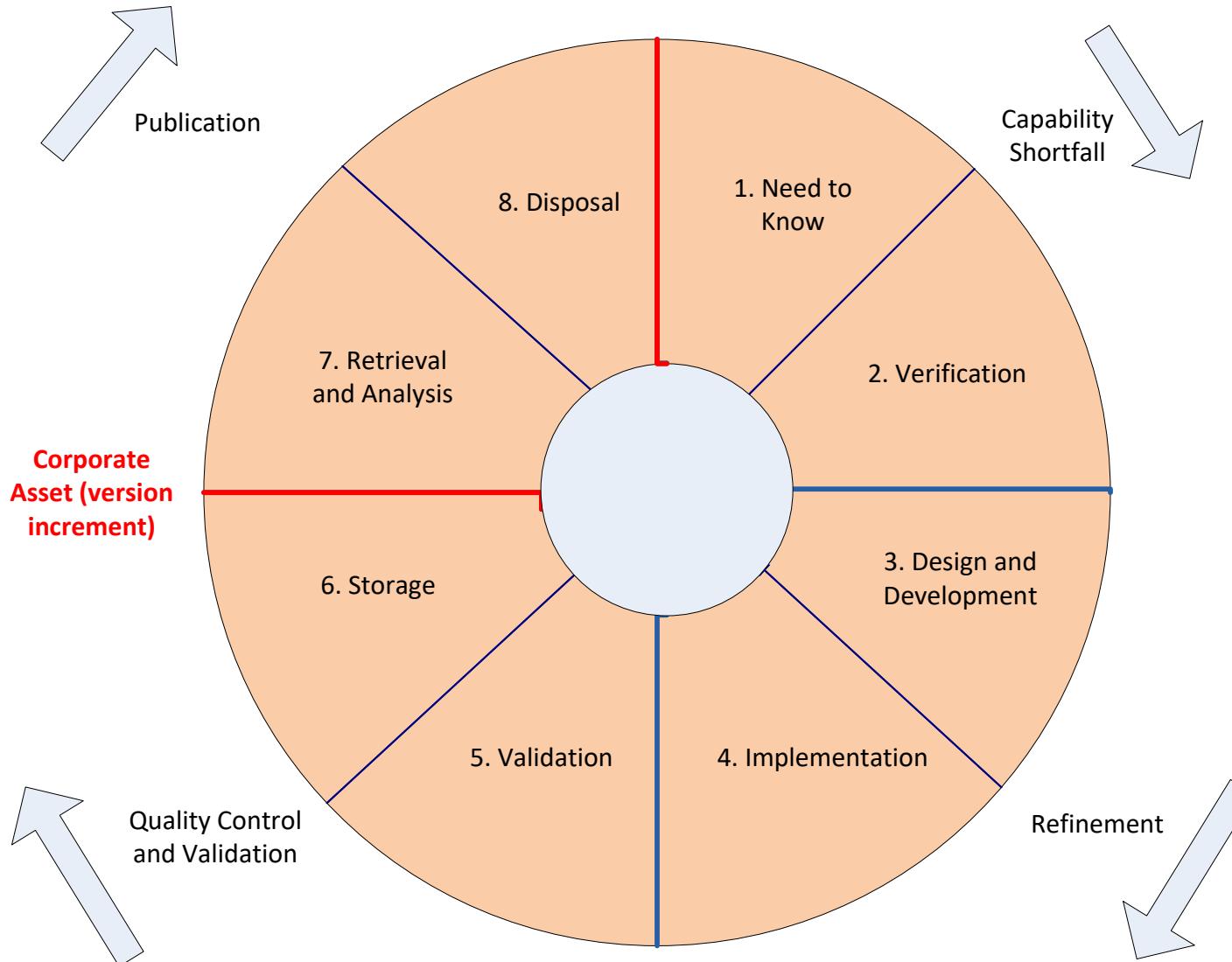
## Three works

Maturana and his essays on “Cognition and Autopoiesis” and Bertalanffy and his “Introduction to Cybernetics” and Iain McGilchrist’s “The Matter with things”, in combination illustrate and explain the nature of the complexity of observation which, in no small measure is influenced by cultural differences. For example, on the impact of culture, a western mind came up with the DIKW pyramid, usually described or illustrated as a pyramid. And eastern mind developed something called the “knowledge spiral” both about the transition from data to wisdom, both different in concept and construct.

Failure to take into account the limits of validated and verifiable information is an all to common error, usually accidental, in the development of information systems and increasingly, has legal implications.



## Time - All Data is Lived



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# The Constraints – Emergence and Significance

Everything changes.

## Emergence

Change is a matter of “emergence” and being in a position to detect it and then to mitigate its impact or to adapt and adopt those emergent factors which may be of benefit. Emergence therefore drives capability change which in turn drives changes to organisation or system form, function and purpose. Inevitably those changes are architectural in nature and must be made to “fit” into what exists or bring about changes to what constitutes “fit”

## Significance

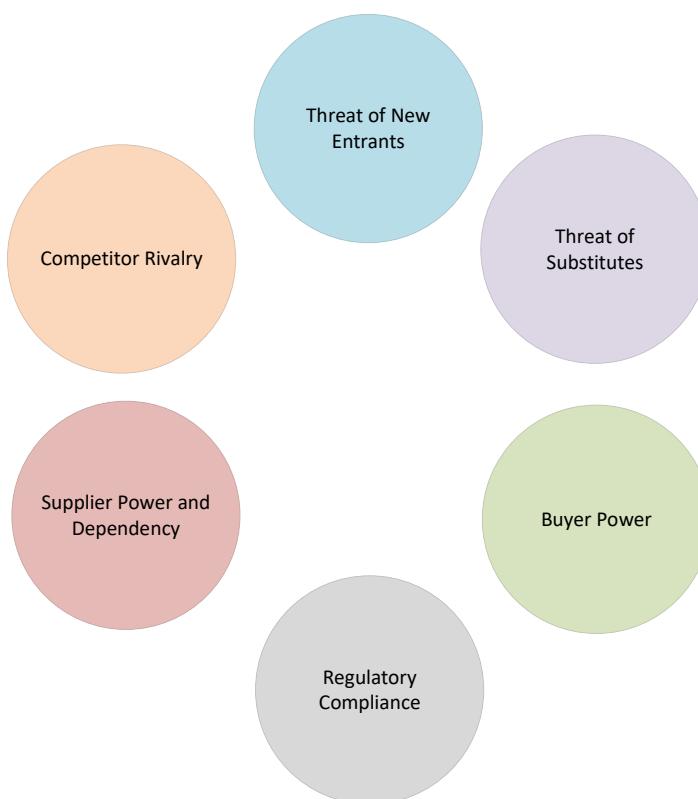
Close on the heals of “Emergence” is significance. In other words describing or identifying which emerging issues will have the greatest impact on organisation form function and purpose. Arguably, the combination are what defines risk management.

One of the primary reasons for information management is the provision of a decision support capability that is timely, as observationally complete as possible and properly validated such that emerging issues can be identified and assessed for their systemic impact. All of which is about maintenance of viability. If information management cannot do that, then it will fail.



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## Emergence and Risk



A “risk” can be defined as something, a change in circumstances internally or externally, that is unanticipated that may have a beneficial or detrimental impact on the organisation. Risk is “emergent”. Once a potential risk is identified, it may, or may not mature until such time as something identified as a risk becomes an event that the organisation is obliged to deal with one way or another..

The purpose of risk mitigation is one of planning and preparation for risk becoming something that must be dealt with. The aim of mitigation is to assess impact and plan to reduce the impact form existing capabilities, or where such capability shortfalls can be addressed, to make provision to fill such shortfalls.

Risk maturity has velocity, risk monitoring therefore is not a “one off” exercise and instead is a matter of monitoring risk maturity as time goes by. Ideally, mitigation planning will mature faster or as fast as the risk matures.

The images are the left are drawn from Porters “5 Forces”, with the addition of regulatory compliance. However, there may be other forces at play that generate risk.

A popular risk maturity assessment approach is “three point estimation”, based on an objective assessment of cost (of mitigation), time (of velocity) and impact. However, given that risk is a matter of “probability” risk assessment may also concern itself with the likelihood of a risk becoming an event. Which, inevitably, means a move from deterministic analysis to something based on probability and/or regression testing.

Risk is organic and viral with different forms of risk affecting different parts of the organisation. Risk reporting therefore is a matter of planned review and the balancing of risk, based on objective review, across the organisation. Risk management therefore is an iterative exercise in which review is a cyclical arrangement that should cater for ad-hoc changes in circumstance.

A good, objective approach to monitoring risk and managing it can be found in the HM Treasury “Orange Book” published by the UK Government available here:

<https://www.gov.uk/government/publications/orange-book>

Risk management therefore is an integral part of the maintenance of organisation viability.



## Emergence and Risk 2. What you Know... Or Not

*On the risk register, under regular review, testing for velocity and probability. Three point estimation.*

**Things that may impact on viability that there is an active mitigation plan for**

*Market research, accidental discover, beyond control until potential impact is realised*

**Things you have no idea about that may impact on viability**

**Things you know about and are managing**

**Things you should know about but aren't managing properly**

*Subject to performance monitoring on a multi perspective basis, paired metrics, qualitative and qualitative, four perspectives (Economic, Effective, Efficient, Evolve)*

*Inversion of control. Something happening that the organisation should be aware of that it isn't. Quality assurance reviews should detect these kinds of events*

Emergence

Economic

Effective

Efficient

Evolve

Risk monitoring and management forms part of testing the viability of the organisation as a system and therefore is part of normal performance!

Associated with these two risk schematics is a sample risk management policy and a sample risk profile.

A risk owner plans mitigation effort, but on the understanding that any single risk may affect the organisation in different ways. As a consequence, risk managers, particularly those identified risks for which there is planned mitigation effort, will need to liaise with other key players.

Any risk analysis effort should seek to identify both beneficial and detrimental impact.



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# Location

If you do not know where something is, it cannot be found.

Location is a many splendored thing mind you.... Not least because data has legs and changes shape, as does, with increasing frequency the source code that manages it and where it is stored.

Location is also impacted by matters like BYOD (data gets copied on to devices that the organisation does not own for example).

Data is collected by many to be used by the few, that can be seen in any exercise involving the monitoring of web site visitor traffic.

Lose control of location any concept of ownership is lost.

Simples.

Handing over data to third parties represents an increasing legal risk (note the confusion as a result of the EU GDPR's definition of "controller" and "processor". Handing over data to third parties, when there is no direct control is also a massive commercial risk.

Nothing, nothing at all, should cross the boundary of the organisation as a system without the full knowledge and consent of the organisation. End of.

Note too that complex applications, like Customer Relationship Modelling applications have data schema's or plans that may contain tens of thousands of data entities or tables. Each of which will, as a matter of design, need to be described in a data dictionary and a supporting design schema

It should be understood that one of the key advantages of a database, properly designed, is that of indexing, which in turn means a design consideration. Typically, for each index in a data table, as a matter of sizing, each index will require an additional 10% of the original data storage space.

It should also be noted that an indexing strategy depends on an understanding of the more popular search requirements.

While there are many kinds of ways of storing data, the oldest with the mostest is EF Codds "Relational Model". For those who seek to control data it is recommended that the relational model is studied, carefully. Note that in the MS Access help files, there is an excellent guide and training suite on the subject of "normalisation. Normalisation is key to the concept of "Minimum data to maximum effect".



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# The Constraints – Ownership

Which raises the other great constraint, that of ownership.

In principle and in fact, nothing should cross the organisation boundary, in or out without consent either side of the border. Anything collected or sent should be actioned on the basis of the minimum data held for the minimum of time, to maximum effect.

But like much in IT, ownership is a many layered thing. As described in the previous page, the primary purpose of developer and manufacturer T&C is the granting of limited rights to use. In respect of ownership of, say, data, those storing data, unless they have built software from scratch, only own the data which, when an architectural adjustment is made (an M&A acquisition or a change of software product), it is then that product users discover that they own very little. Typically things like a series of comma separated value (CSV) files. They do not, for example, have access to detailed database design documentation for example, which means, usually, a complex data transfer and alignment exercise is usually the end result.

The same is particularly true of cloud related services not forgetting that the use of such things extends the organisation boundary and responsibilities for security and integrity often into another geographical location (and therefore a different legal regime) from that of the operators of a “system”.

A further issue related to ownership, is the transfer of data into a third party for ongoing processing. It is the case that T&C in many such arrangements are geared towards the delivery of any agreed service, but also for those holding the processed data to be able to use it for themselves and their purposes (subject to contractual constraints of course if they are in place).

For an example of the way such conditions may be set:

<https://marketingplatform.google.com/about/analytics/terms/us/>

Study paras 6, 7 and 8.

The commercial advantage for those who collect vast quantities of data often outweigh any commercial benefit of those in receipt of such SaaS arrangements.

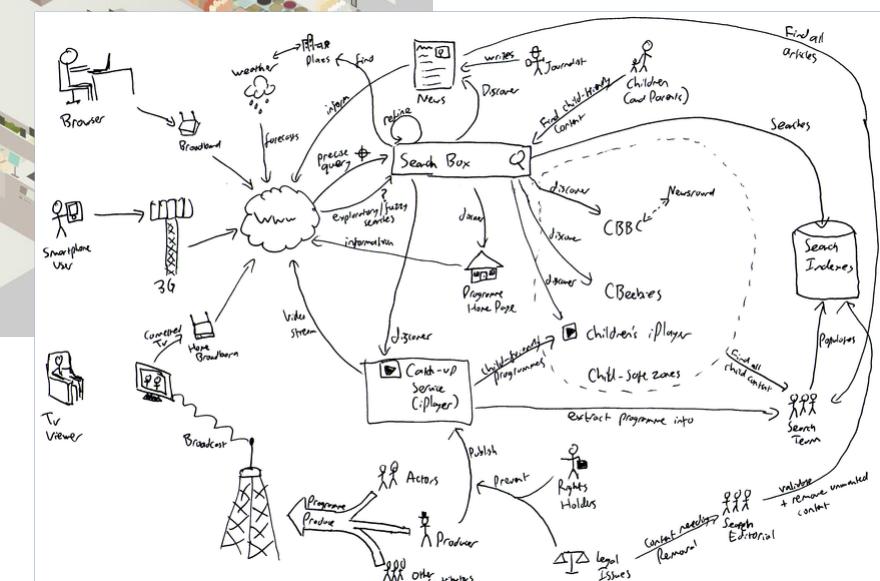
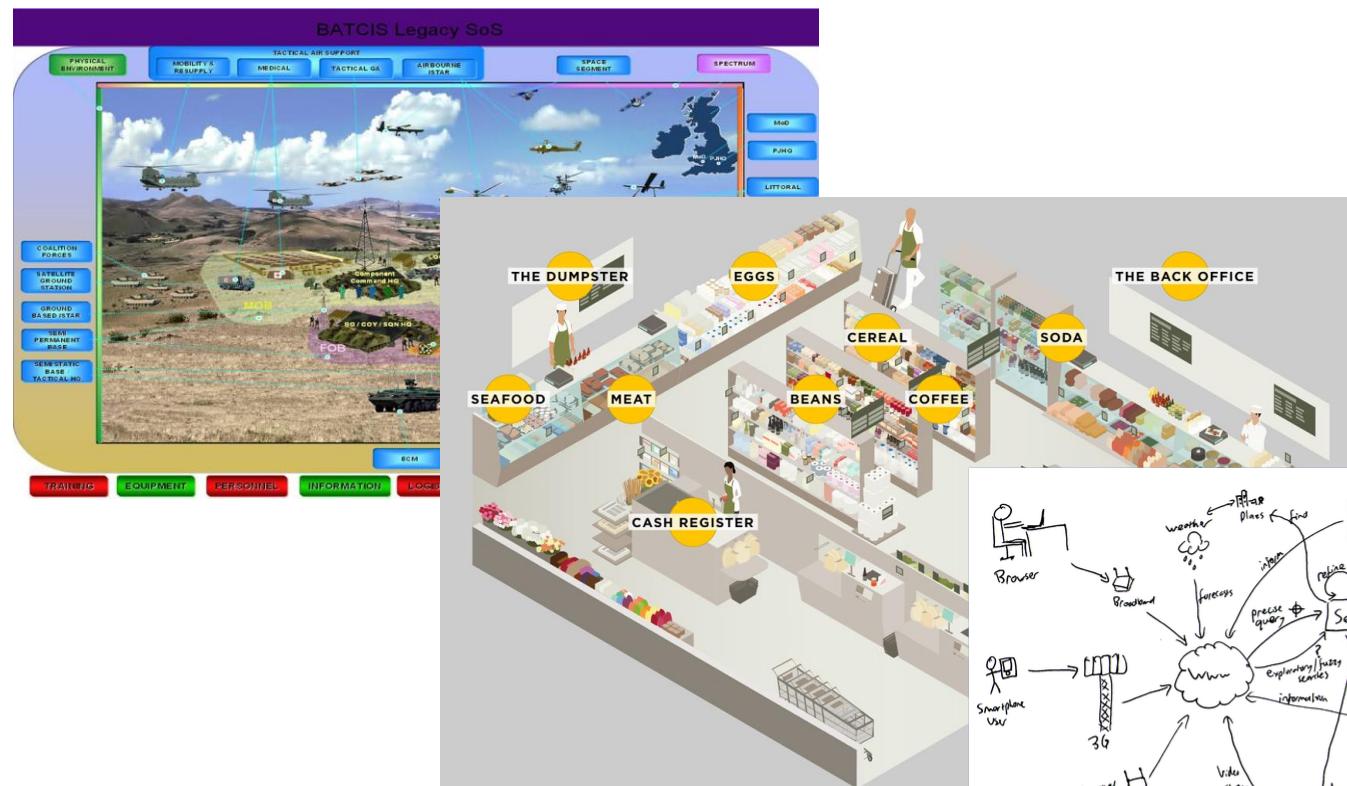


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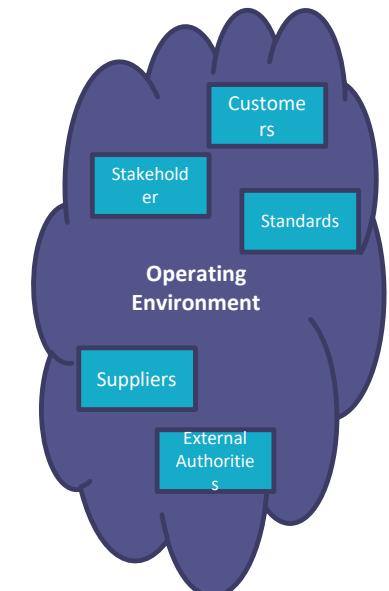
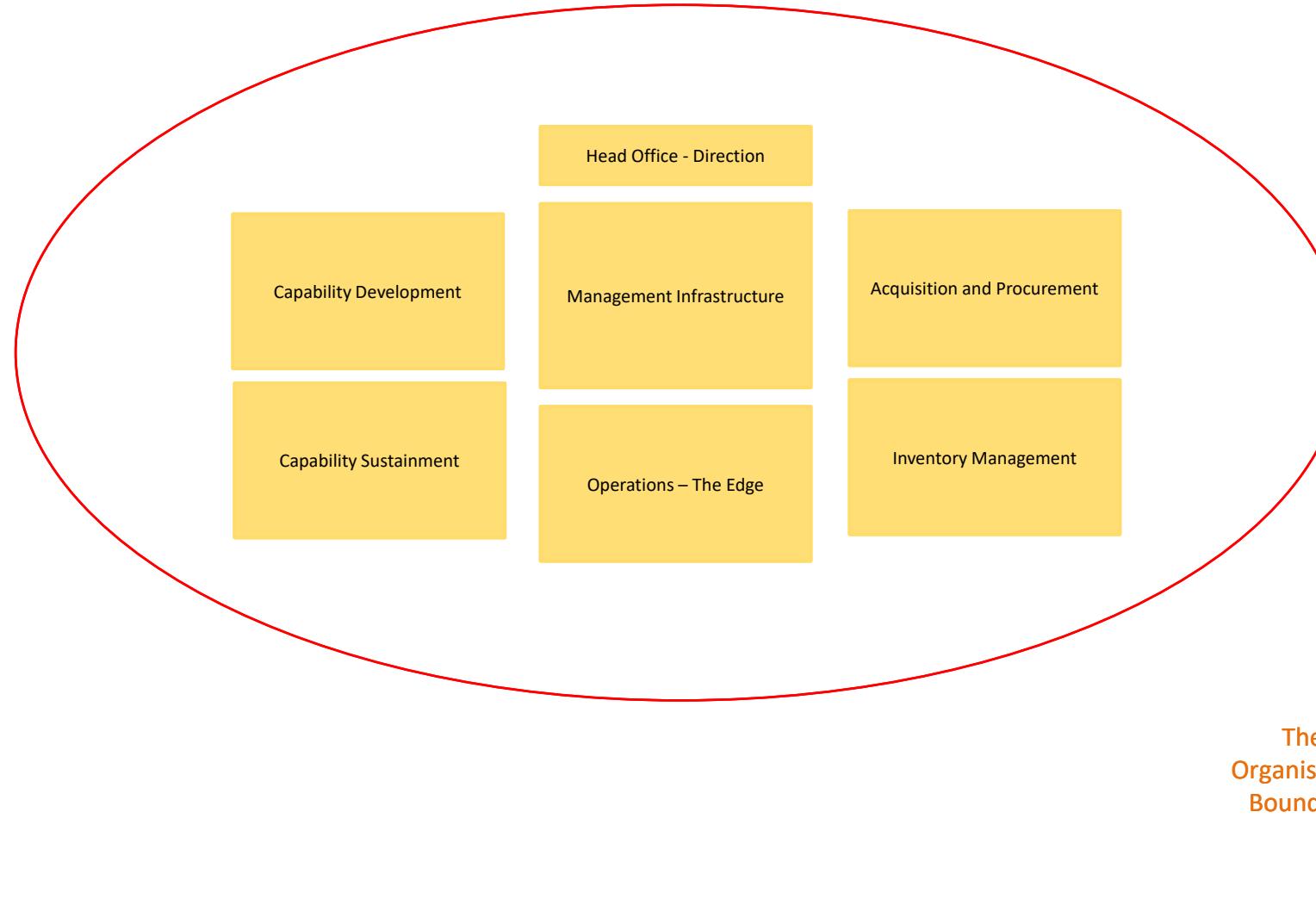
## 2. POSIWID



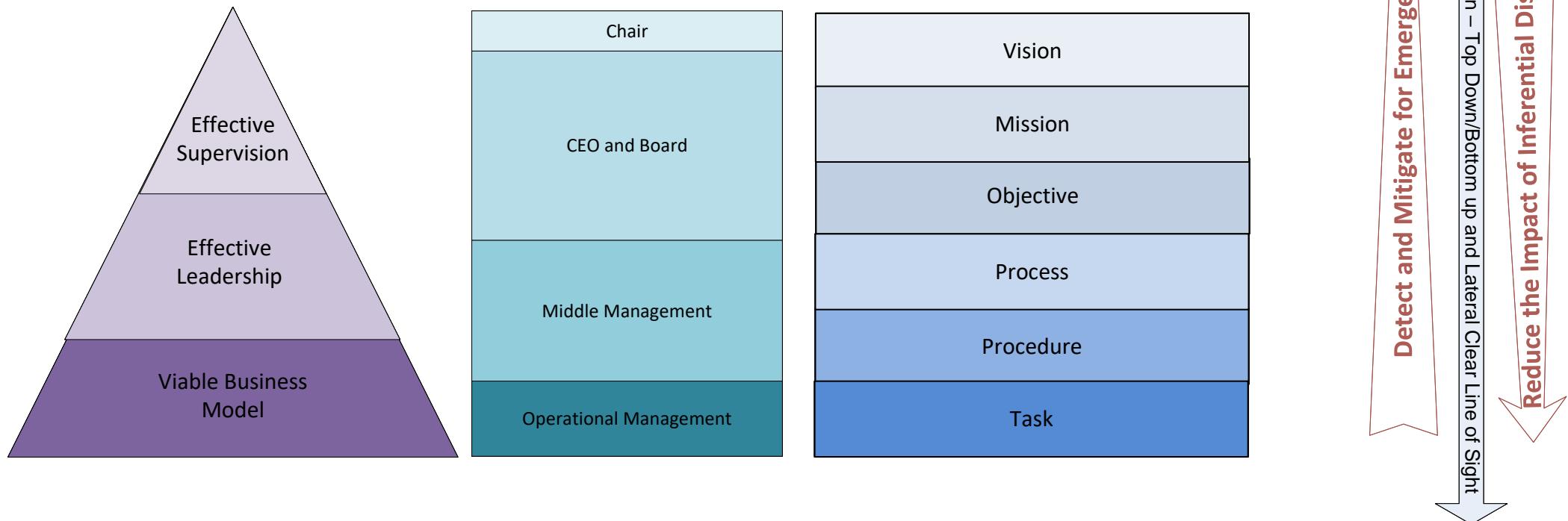
## Context – Rich Pictures

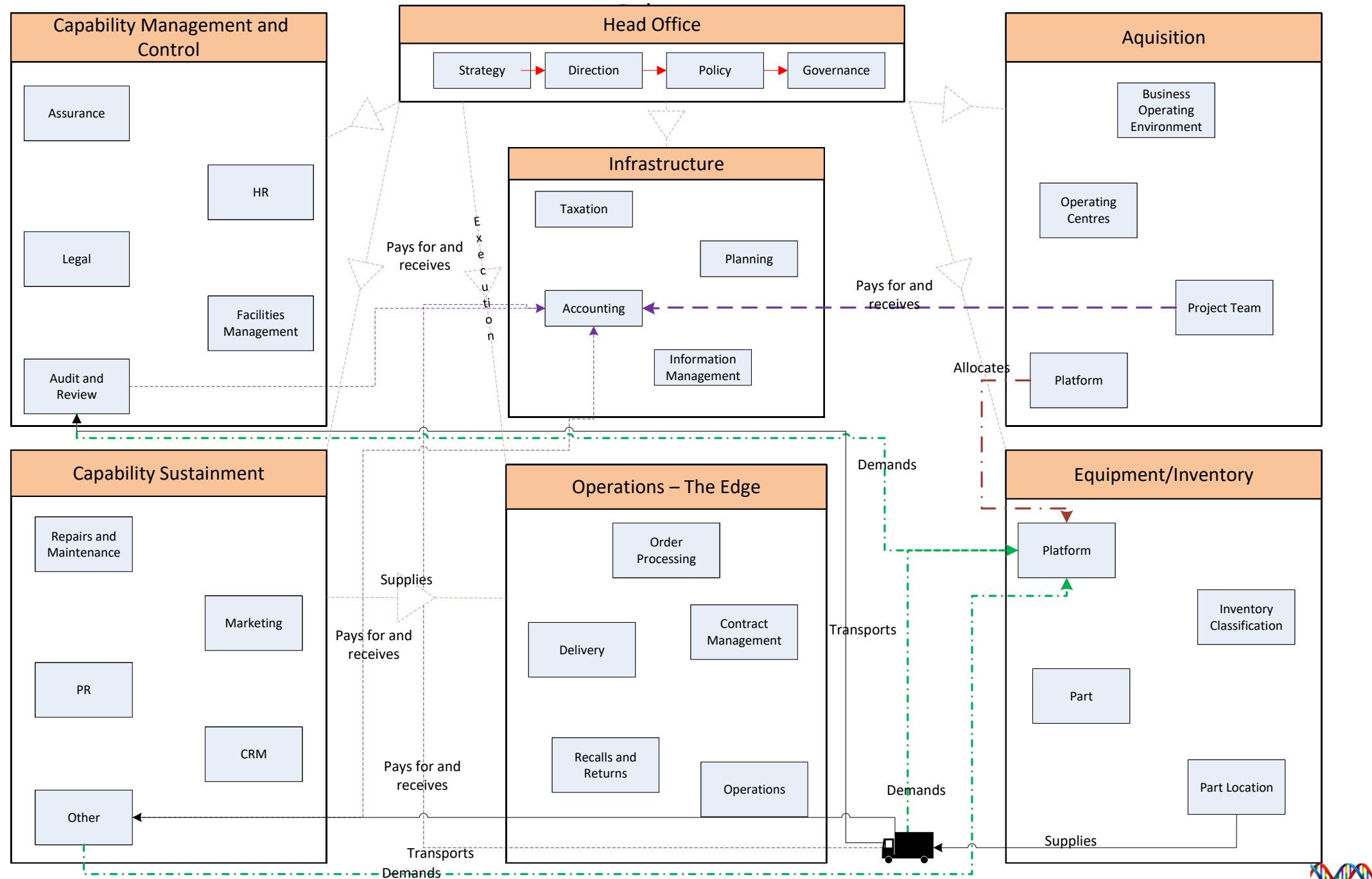


# The Organisation Boundary



# Management Taxonomy





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Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 1.00
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# General Classes or Types of Organisation Activity

The preceding schematic should be seen as just a guide as the readers own organisation will have the general activities happenning in their organisation but the way things are organised as, say, in organogram form may vary. Furthermore, fractal like, the nature of the work may take place in more than one of the general classes.

Nevertheless, each is present in all organisations

1. "Head Office", responsible for providing direction expressed as policy, from which can be derived governance. Governance being the way to monitor progress towards the organisation aim.
2. "Infrastructure" - The provision of centralised day to day management support.
3. "The Edge" - Delivery of customer and other operational requirements
4. "Capability Management and Control" - Asset management, inventory control, Legal
5. "Capability Sustainment" - Repair and maintenance of assets.
6. "Acquisition" - Purchase of inventory, requirements generation
7. "Warehousing" - Storage of assets of any kind

The lines of communication on the diagram are illustrative as inevitably, there will be multiples of relationships between all 7 of the classes of activity.

Each class of activity will have its own compliance issues to be addressed including but not necessarily always present Privacy, Data Protection, hazardous Materials handling and more besides. Each will have its own professional standards. Each will have its own, distinct reporting and data collection needs.

Each class of activity will have its own processes, however, processes will be similar in nature in many respects. A suggested exemplar in recognising the general classes of activity and their similarity, visit the American Productivity & Quality Center (AQPC) and download their catalogues of processes and performance metrics. Better still, join the organisation if it is affordable.

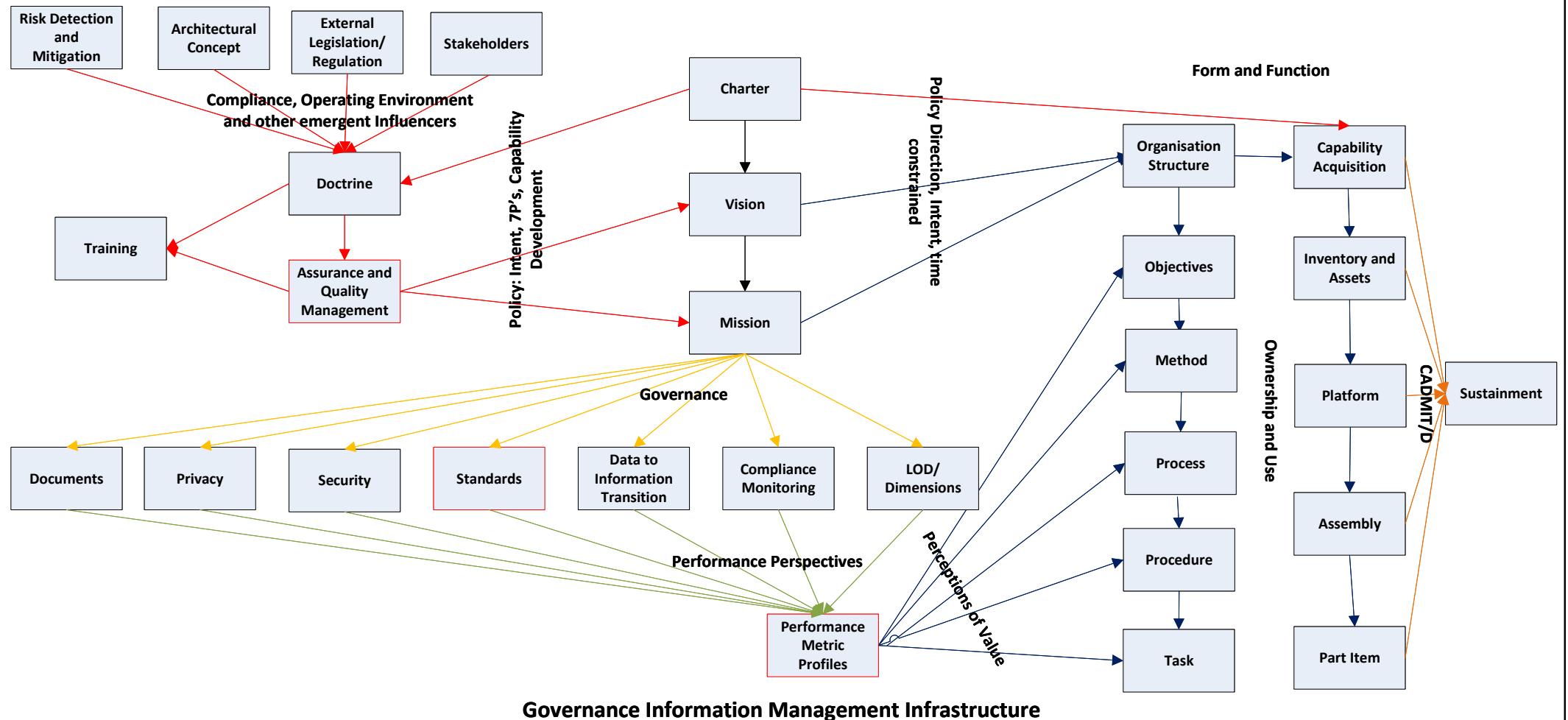
In Europe, the a valid equivalent is the European Quality Foundation Model (EFQM).

For both, rom the perspective of information management, each can be used on an architectural basis to determine process level performance metrics.

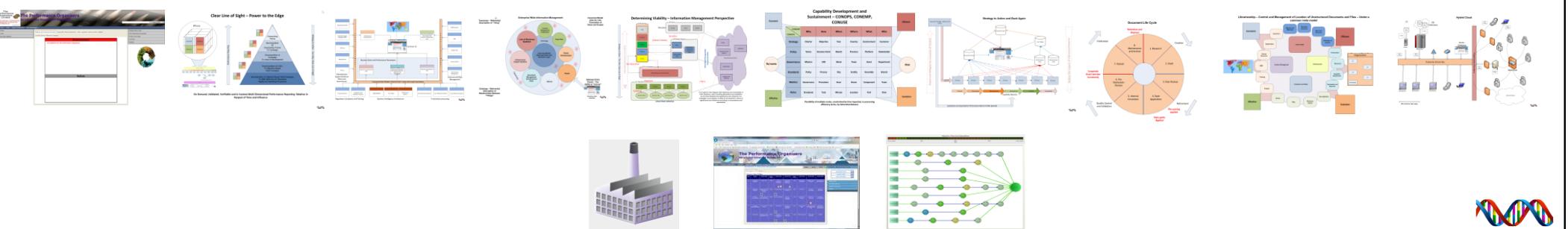


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## Policy and Governance - Form, Function and Purpose: Organisation “DNA”



Governance Information Management Infrastructure



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System/Project Name: General		Dated: 07/06/2021

## Policy and Governance - Form, Function and Purpose: Organisation “DNA”

Policy and Governance is the primary means by which the organisation sets out its information requirements which in turn provides architectural structure to the information technology design effort.

Policy describes the way the organisation is to achieve its various aims and should be founded on a description of form, function and purposes as described in an organisations charter or articles of association with the aim of explaining how the organisation will meet short and long term planning aims expressed as “Mission” and “Vision”. Governance, arguably the one concept thing that information technology should support both as a means to support data storage and the provision of performance reporting capabilities, should provide the means to describe and specify the monitoring of organisation behaviour.

**Both policy and governance give a highly detailed view of how the organisation works and therefore are highly sensitive commercially and should be internal. No policy and governance documentation should be publicly published unless there is a legal requirement to do so**

Policy and governance should also be written in a manner that reflects the organisations “Lines Of Development” (LOD). One way of defining the structure of policy construction is through the use of TEPIDOILS for which, there should be, at a minimum, a policy document for each LOD. Policy and governance should, as a matter of course, be reviewed and modified as circumstances demand it.

Policy and Governance documentation should be templated as a matter of quality assurance and placed in a controlled location. Policy and governance templates should provide, as a frontispiece or annex, details of version control, location management and details of accessibility and access constraints.

The image contains two side-by-side screenshots of a document template. The left screenshot shows the main content area with fields for 'Main Title', 'Date', 'Author', 'Release', 'Version', 'Revision History' (with columns for 'Revision Date', 'Author', 'Summary of Change', 'Date of last revision', and 'Changes made'), 'Appendices' (with columns for 'Title', 'Signature', 'Date of issue', and 'Version'), and 'Distribution' (with columns for 'Name', 'Title', 'Date of issue', and 'Version'). The right screenshot shows sections for 'References' (with columns for 'Index', 'Set', 'Description', and 'Location') and 'Location Details' (with columns for 'Original Path on Development' and 'TPO File Location'). Both screenshots include a small DNA helix logo in the top right corner and copyright information at the bottom.

Sample document template

It should be noted that if policy and governance documentation, with appropriate version and location control mechanisms are in place, then the concept of “ownership” can be more properly applied to the management of both structured and unstructured data. It should also be noted that controlled documents may have the means to programmatically manage their integrity built into them with the supporting aim of making search returns more comprehensive and therefore more complete for decision support purposes.

All policy documents should be “signed off” at the appropriate level of authority. In particular, the ownership of the maintenance of policy documents should be clearly expressed.

**As a by the by, what is passes as “privacy” policy nowadays in respect of data protection is not usually policy proper and merely an expression of intent.**



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## Policy and Governance – Notes

There is a structural form to the development of policy and governance driven by the need to delegate authority and resources to other people as an organisation grows in complexity and full control by one person becomes difficult if not impossible to do.

Arguably, the decomposition of policy and governance is fractal like in that deconstruction can continue indefinitely until the organisation merges with another or dies (it should be noted that the life span of the average Dow Jones register entry is estimated to be just 30 years). There is a relationship between policy and governance (policy drives the need to develop a means to monitor and prove the viability of execution) and the nature of the relationship is both multi perspective and multi dimensional therefore. Arguably there is no one value chain there are instead multiples of perceptions of value that decision takers at all levels should be able to make informed decisions on as and when circumstances demand it.

In the authors view, the relationships between policy and governance lend themselves to the application of graph theory and network analysis as a matter of architectural design principle. It should be noted that if the means to treat document files in the same way as database records can be achieved (see the sections on librarianship, the document life cycle and data to information transition) then the nature, number and complexity of relationships between document content and database content grows exponentially as does the opportunities to reduce the impact of inference and to better detect detrimental or beneficial control inversion.

The author has produced a number of case studies to explain and illustrate the nature of the development effort (or rather one way of doing it) required to bring about treating document files which are available on request). It should be noted however, that this implies that documents of all kinds, are subject to a requirement to design and standardise templates.

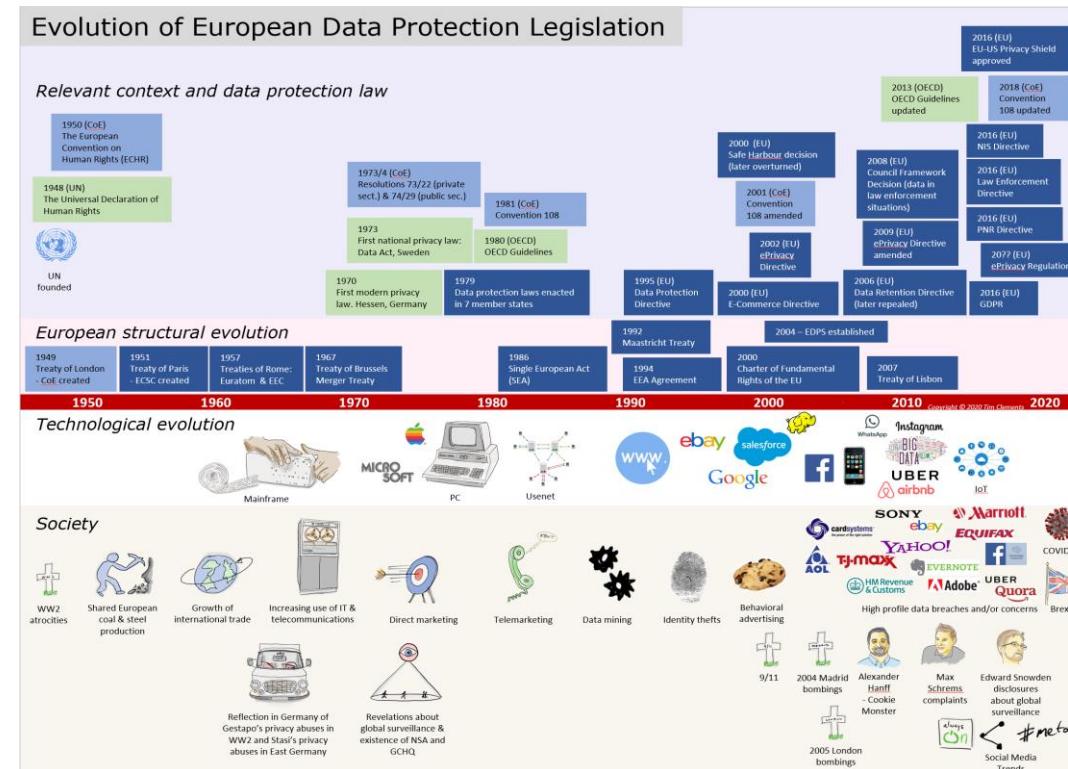
The ultimate aim of the design effort being to test and prove organisation viability and do so in a way that as comprehensive as possibly, validated and verifiable decision support evidence should be available on demand that is timely and can support navigation for “drill down” investigative purposes that works top down/bottom up and laterally.



Architecture – High Level Design Concepts	The Law and the Organisation Boundary	Page 20.
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 2.00
System/Project Name: General		Dated: 30/01/2022

# The Law and the Organisation

The increasing constraint... The complexity of the Law against which compliance must be proved.



The legal environment of computing is getting more and more complicated and therefore more and more difficult to comply with. The graphic above sets out the history, as a matter of capability development, of one of the more influential pieces of regulation introduced over the last 5 years, the European General Data Protection Regulation.

However, the GDPR is not the only piece of legislation that the UK Data Protection Commissioner is obliged to police, the full list can be found at this URL:

<https://ico.org.uk/about-the-ico/what-we-do/legislation-we-cover/>

With each separate piece of legislation being, in no small measure, equally complex in terms of evidence gathering for policing purposes, monitoring and more besides. The pace of change in legislation is getting faster. It is recommended that those in the EU follow up on the following pieces of legislation from Brussels:

The Data Act. The Digital Services Act, The Data Management Act, NIS 2 and forthcoming regulation of Artificial intelligence. Bear in mind to, there is international legislation to consider for most. You are all international lawyers now it seems, or need to be!.



Architecture – High Level Design Concepts	The Constraints – The Law and the Organisation	Page 24.
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 2.00
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# The Law and the Organisation Notes

Furthermore, the Law and Regulation are both open to interpretation in any legal proceedings that result in prosecution or the exercise of other legal sanction (fines etc). As a consequence, there are court judgements, that set precedent in the way the law is implemented, must also be considered when the idea of things like “privacy by design” are considered. Some of the more influential judgements (in the authors view) are listed below with the relevant URL's.

Schrems 2 - <https://curia.europa.eu/juris/document/document.jsf?text=&docid=228677&pageIndex=0&doctlang=en&mode=lst&dir=&occ=first&part=1&cid=12312155>

Fashion ID - <https://curia.europa.eu/juris/document/document.jsf?docid=209357&doctlang=EN>

Planet 49 - <https://curia.europa.eu/juris/document/document.jsf;jsessionid=E230FB3D569226137CCADAAE013DB0BA?text=&docid=218462&pageIndex=0&doctlang=EN&mode=lst&dir=&occ=first&part=1&cid=720968>

From the EU. And:

The “Morrisons Judgement” - <https://www.supremecourt.uk/cases/docs/uksc-2018-0213-judgment.pdf>

Lloyd V Google - <https://www.supremecourt.uk/cases/uksc-2019-0213.html>

Bates v Post Office - <https://www.judiciary.uk/wp-content/uploads/2019/12/bates-v-post-office-judgment.pdf>

From the UK courts system. There are many, many more such judgements.

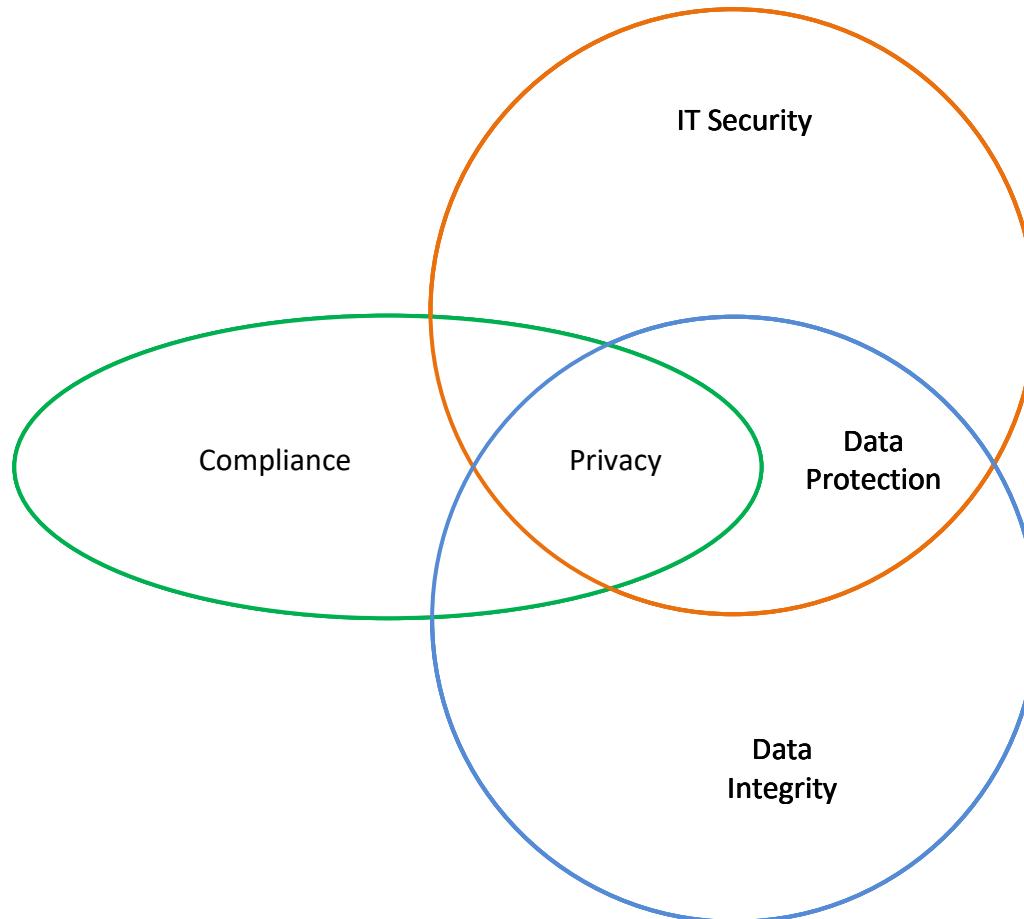
In addition, there is the legal high jinks of software companies and other IT OEM's in the way that they write their Terms and Conditions such that their aim is to reduce supplier responsibilities and liabilities, while at the same time increasing those of end users such that their liabilities (joint, vicarious and fiduciary) are minimised while at the same time their intellectual property rights are maintained. In addition, one of the purposes of information technology is to support regulatory compliance in other forms of business activity. Financial reporting, under IFRS standards or those of the OECD need to be considered in any information management exercise both at the design AND implementation stages and in any subsequent (and inevitable, given law changes) support effort.

Compliance with legal and regulatory requirements is, like so much in information management, a many layered thing.



Architecture – High Level Design Concepts	Compliance and Complexity	Page 21.
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# Compliance and Complexity



Compliance is not just about “a” piece of legislation and what it says. No one piece of legislation is “primus inter pares” and inevitably a balance must be struck.

Nor is interpretation of legislation the preserve of a single professional discipline.

Privacy for example, is more nuanced than data protection as it is founded on robust data management, but has its own constraints like visibility (who can see what) and access (who can edit or change things)

Good data protection is dependent on robust security measures.

As a consequence “compliance” is multi-perspective and multi-disciplinary. A mix of expertise is required.

Nor is it appropriate for any of the professional disciplines involved in information management to hide behind “not my responsibility”. All involved in developing a business intelligence capability should be aware of their legal responsibilities and liabilities.

A warning:

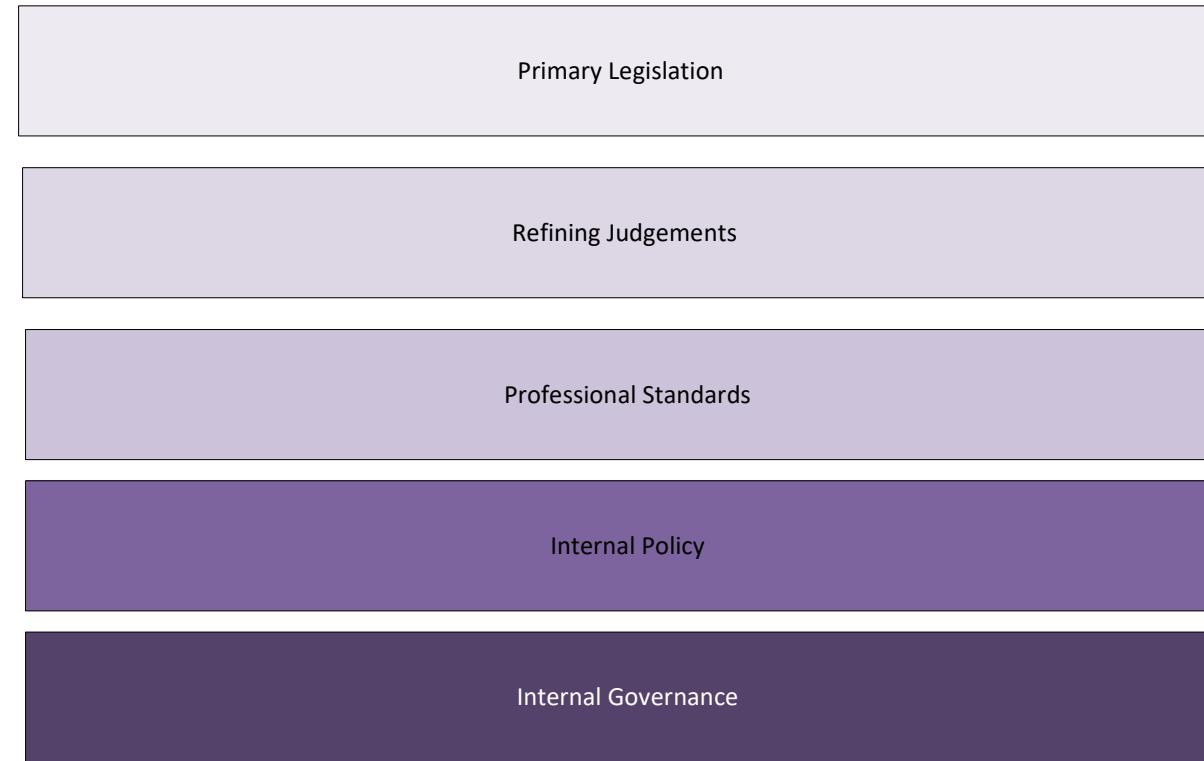
Out of Enron came SOX, out of a lack of respect for privacy came legislation like GDPR, out of Solarwinds has come “zero trust”, at the time of writing, out of a myriad of blockchain failures will come..... Something.

Heads up.

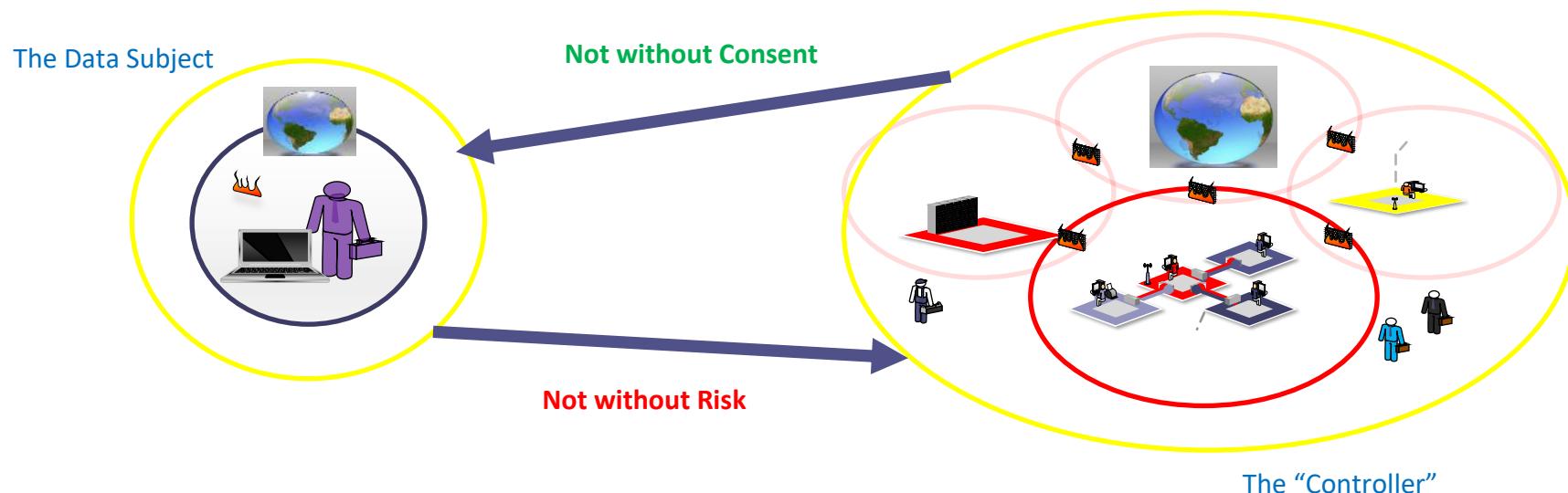


Architecture – High Level Design Concepts	Compliance Is Layered	Page 22.
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# Compliance is Layered...



## Sphere of Privacy



### Privacy by design

*"Terminal equipment of users of electronic communications networks and any information stored on such equipment are part of the private sphere of the users requiring protection under the European Convention for the Protection of Human Rights and Fundamental Freedoms. So-called spyware, web bugs, hidden identifiers and other similar devices can enter the user's terminal without their knowledge in order to gain access to information, to store hidden information or to trace the activities of the user and may seriously intrude upon the privacy of these users. The use of such devices should be allowed only for legitimate purposes, with the knowledge of the users concerned.". Page 3 Para 24 (as at 07/06/2021).*

However “privacy” and “data protection” are not a one way issue. And the focus on “person as thing” is not the only consideration, crossing the organisation boundary represents an existential commercial risk if uncontrolled. Nor is one piece of law the be all and end all. Both privacy and data protection must “fit” in the wider legal framework, whatever that may mean.



Architecture – High Level Design Concepts	The Constraints – Professional Standards and Internal Policy & Governance	Page 25.
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 2.00
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# Professional Standards and Internal Policy and Governance

It should be noted that professional standards will almost certainly apply. For example, financial reporting and how it is arranged in respect of detail and frequency is covered by documents like “International Financial Report Standards” (IFRS), there are security standards like ISO 27001 and more besides. The following is a list of just some of the information management organisations that may need to be considered carefully in respect of the standards they promote:

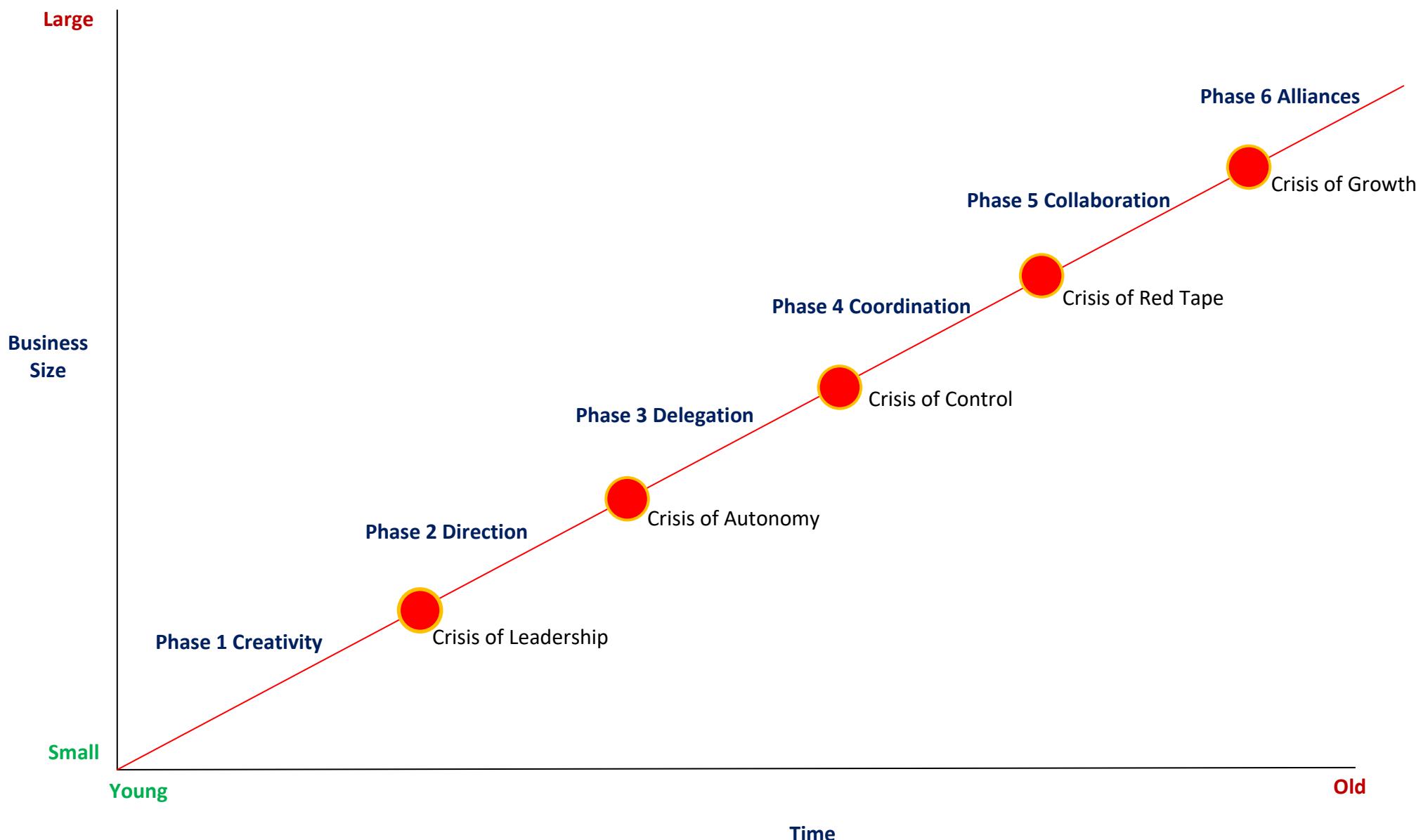
- The UK Information Commissioners Office
- Irish Data Protection Commission
- CNIL
- The UK National Cyber Security Centre
- The US National Institute of Standards in Technology
- The Open Web Application Security Project
- The British Computer Society
- The International Association of Privacy Professionals
- The British Standards Institute
- The Centre for Information Technology and Law
- UK National Cyber Security Centre
- The World Wide Web Consortium
- ISACA

ALL of the above, once reviewed for applicability, will have an impact on the nature of information system design and implementation



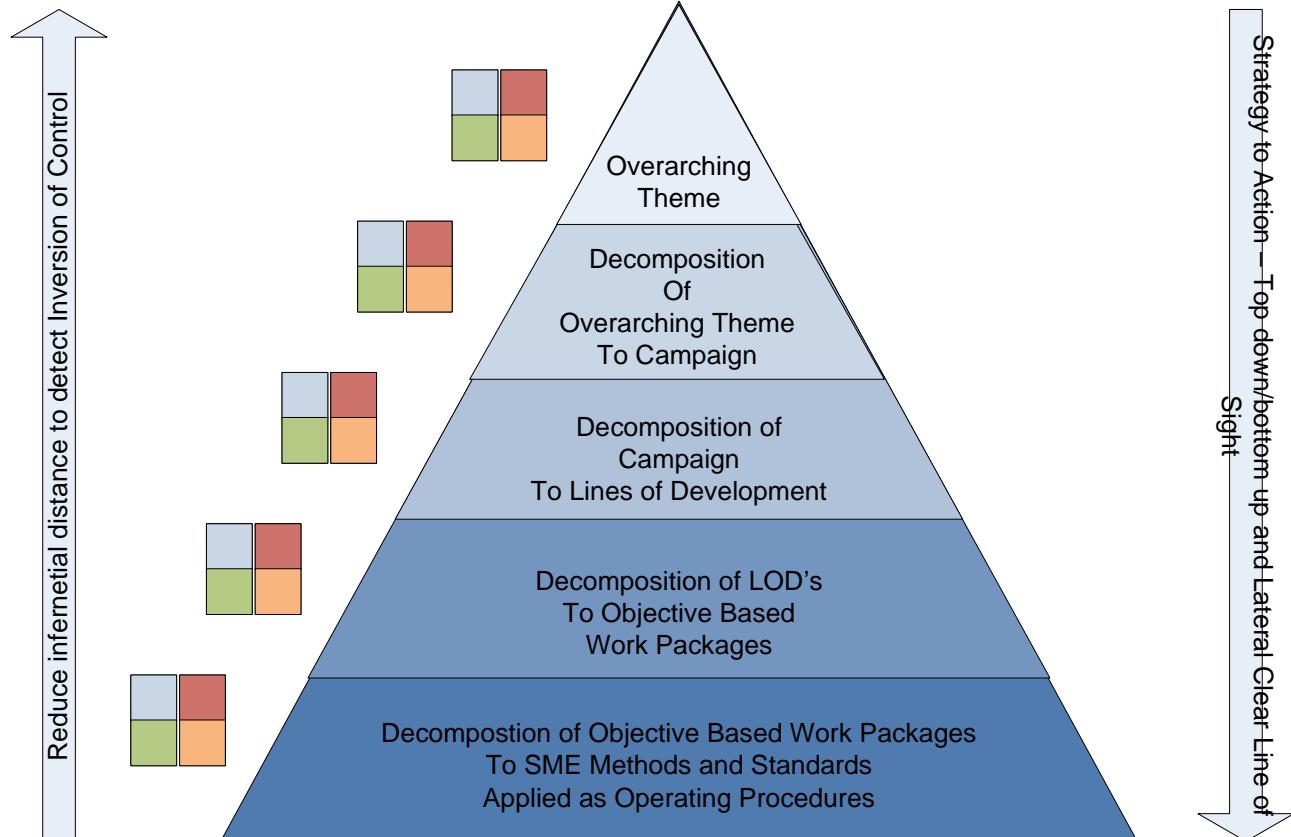
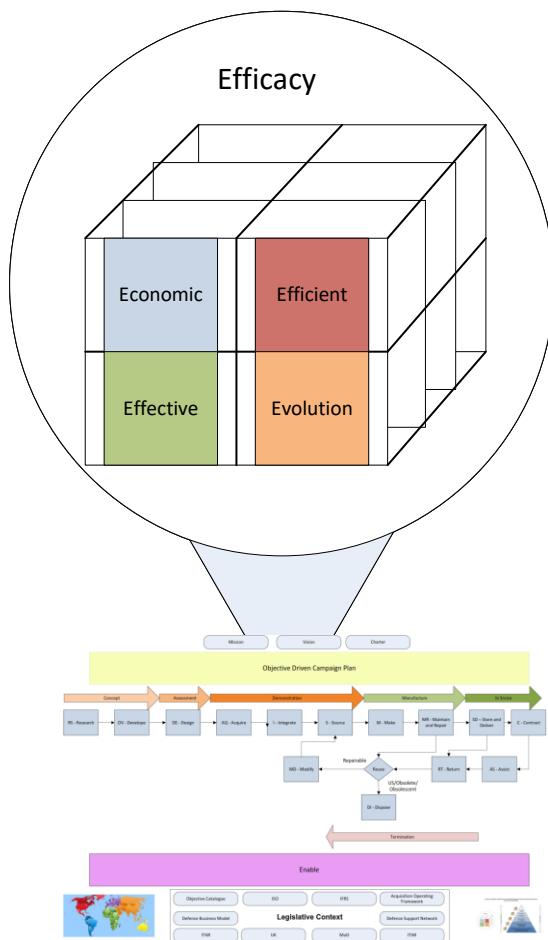
Architecture – High Level Design Concepts	The Rise of Bureaucracy	Page 26.
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 1.00
System/Project Name: General		Dated: 27/12/2016

## The Rise of Bureaucracy



Architecture – High Level Design Concepts	Policy to Governance	Page 27.
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 1.00
System/Project Name: General		Dated: 27/12/2016

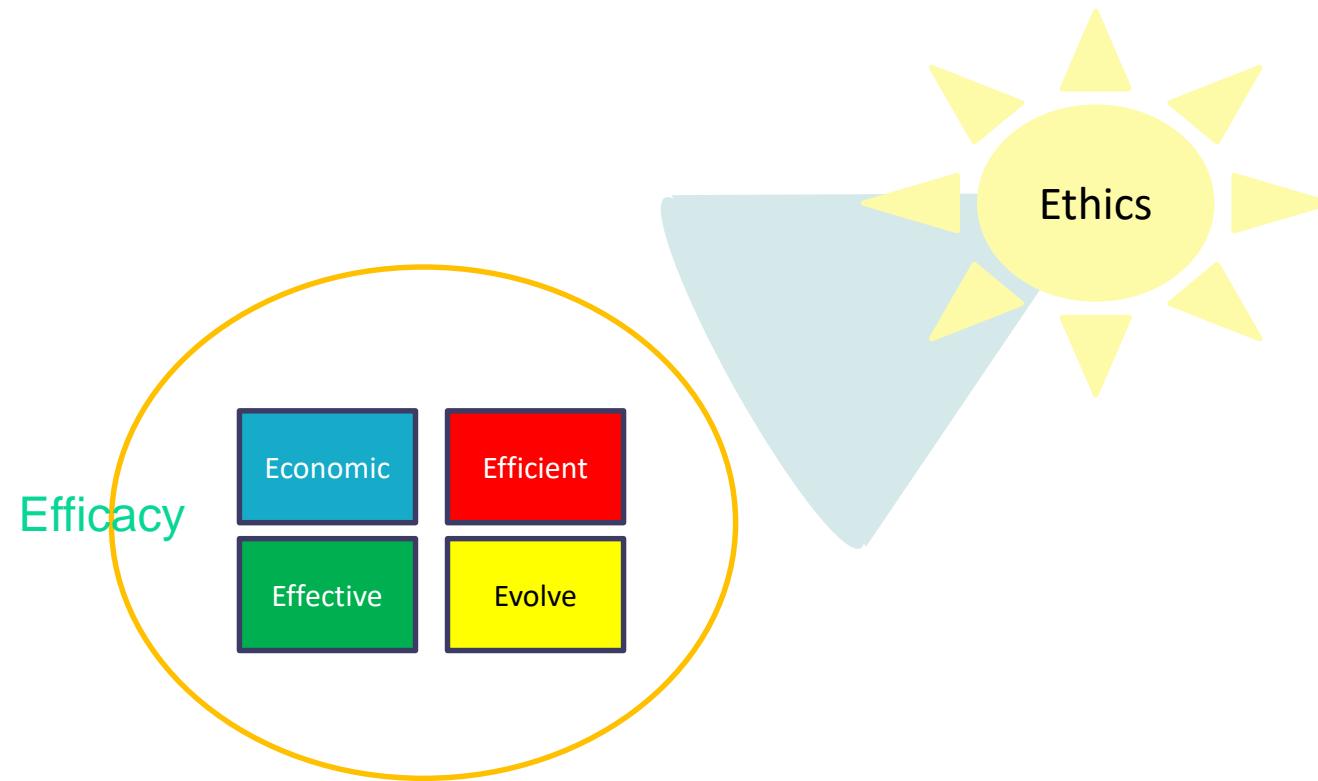
# **Clear Line of Sight – Power to the Edge**



## **On Demand, Validated, Verifiable and In Context Multi Dimensional Performance Reporting Relative to Time, Authority and Influence**

Architecture – High Level Design Concepts	Ethical Perspectives	Page 28.
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 1.00
System/Project Name: General		Dated: 27/12/2016

## Ethical Efficacy, Economic, Efficient, Effective, Evolve Key Perspectives and Entry Points



Basically, “Do no harm”.



Architecture – High Level Design Concepts	Ethics, Integrity and Security Notes	Page 29.
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 1.00
System/Project Name: General		Dated: 17/06/2021

## **Ethics, Integrity and Security**

For each of the Lines of Development (LOD) set out in the acronym “TEPIDOILS” there is a need to write formal, internal policy, from which to derive governance part of which is monitoring service delivery and the justifiable need to improve or be in a position to react on the basis of objective risk assessment to emergence. Each of the LOD’s present there own technological and cultural issues that will mean, for each, as a matter of campaign planning, there will be a need, fractal like, to review each one on a similar, but increasingly specialised TEPIDOILS basis.

At the time of writing, given issues like Solarwinds (which the author produced an “on the hoof” report published on LinkedIn) data protection and privacy protection and associated legislation, in the authors view broken both technologically and culturally, the following considerations should be taken into account when writing policy along the “Security” line which should have its own TEPIDOILS campaign (as shoud the others):

1. A fortress is only as secure as its gateways. By definition, building or creating a gateway is and has been for time immemorial, an architectural issue.
2. Gateways should be minimised and provide a focus for security and protection efforts.
3. If part of the sub plot of security is to protect property, then allowing devices and other equipment and software access through a gateway over which there is no ownership or ability to control, is probably not clever. BYOD therefore, of any kind, represents risk. Using code components, or any kind over which there is no control either, is likewise not smart.
4. Not knowing, in detail, what you own, is a mistake. Therefore asset management is part of security and data protection.
5. All software has licensing terms and conditions as a matter of contract. “Open Source” does not mean free of responsibility or liability. ALL licensing terms grant limited use rights, but not ownership which remains with the vendor and usually the vendor reserves the right to amend their product at their discretion. That is ALL vendors, from the GAFAM’s on down. There is no parity of negotiating position on this, to suggest there is, is, frankly, a tale of optimism over hard reality.
6. Any patching should therefore, as a matter of contract and control, be treated with caution. “zero trust” in the current parlance.
7. Contractually, and legally platform operators are responsible for maintaining the integrity of anything, at all, passed to end users, be that email, web pages, or whatever. That means it is vital, on the basis of security, data protection and more, that all deliverables have been checked and reviewed prior to delivery.
8. All data should be held internally and ideally air gapped between the organisation itself and its external boundary.
9. Integration testing, with the aim of ensuring the integrity of data and the supporting software, should be seen as an integral exercise. People should not just “do stuff”.
10. In a world in which a 2Tb USB drive is easy to acquire, no external means of connecting a device to an internal machine, of any kind, should be permitted. Ideally, in the vast majority of cases, USB connections should be disconnected or otherwise disabled.
11. Sheep dipping all email should be accepted practice. Corporate email addresses, with the twin purpose of establishing ownership and the facilitation of sheep dipping should be standard operating procedure.
12. Fundamentally, privacy protection is not the same, at all, as data protection. Privacy protection is about access and visibility contorl which is way more nuanced than data protection as legislation like the UK “On Line Harms Bill” will demonstrate in due course.
13. And a web site? It gives the means for any connected person, anywhere in the world, to look into your organisation. That means, expressly, that all current leiglation, world wide, should be taken into account (not just the GDPR and CCPA).
14. And more..... Penetration testing, firewalls, AV are not the be all and end all.....



Architecture – High Level Design Concepts	Operating Principles	Part 3.
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 2.00
System/Project Name: General		Dated: 20/01/2022

# 3. Operating Principles



General Design Principles	Operating Principles Notes	Page 30.
Author: A P Woods	Document Location TLMP/05 Plans and Processes/01 Business Continuity Plan/	Version: 2.00
System/Project Name: General		Dated: 20/01/2022

**Goal - Prove Viability:** The strategic goal of an information architecture is to test and prove the **viability of the organisation** it is meant to support. To do that, there will be a need to apply various forms of statistical and analytical techniques (deterministic, Bayesian, Game Play etc.) at the appropriate architectural level, taking into account that a number of transitions from data to information must be robustly designed constructed and maintained in respect of the maintenance of referential integrity on a multi-dimensional multi-perspective basis.

**Clear Line of Sight:** An information management architecture that is fit for purpose should support the ability to view information on a “top down” and “bottom up” and lateral basis constrained by the “need to know”. “Clear line of Sight” is contextual and multi-dimensional with both being constrained by time. It should also be understood that information delivery should be available on an “on demand” basis.

**The Central Control vis-a-vis delegated responsibility paradox:** “Clear Line of Sight” implies that the information architecture should be flexible enough to cope with the conflict of interests that are caused by the need to delegate over the need to manage centrally. This also implies that navigation and different perceptions of value must be accessible across the information management architecture in order to resolve “my numbers are not your numbers” debate.

**Any Point Entry:** An information architecture should support the concept of “any point entry” that is to suggest that any document or other artefact should be capable, natively, where possible, of acting as a gateway into the architecture without especial effort. “Any point entry” should be contextual. This means the provision of desktop entry points that are native to the desktop applications themselves such that desk level operators can connect seamlessly into the architecture and draw down information in a form that whichever desktop application they are using can read the data itself.

**The Provision of the Ability to “Burrow”:** Once entered, any entry point should provide, natively, the means to burrow into or navigate in and around its architecture acting as a gateway. In effect, “discovery” should native and as simple to accomplish as possible. Any entry point can be both self-contained but capable of bringing together, on the basis of collation any architecture elements and do so on, an autonomous basis.

**Evidence Based Decision Support:** On entry, at any point, a fit for purpose architecture should provide, on demand and in a timely manner evidence based decision support that can, if necessary, be validated and verified by the gateway or entry point user. It is imperative that evidence based decision support includes the means to aggregate through to support a particular decision hypothesis. In effect, to determine “cause and effect” and operate on the principle of “change the diagram, change the information flow” where feasible and possible.

**Data collection is carried out at process and is linear or procedural in nature. Reporting is contextual and viral:** Broadly, this principle acknowledges that data collection and reporting are fundamentally different in processing terms. Data collection is the foundation activity of any information management architecture and is dependent, for its success, on robust validation as without validation, all data collected is suspect in terms of integrity. Reporting on the other hand is contextual and in principle is required by any organisation member on a random and on demand basis. The major features of reporting activity are collation and the management of the general transition of data, multiple sources, into report forms. And in respect of the form of reporting, that will be dependent on the “need to know” and constrained by issues like system access policy. A sound information architecture should provide the means, by “drill down” and/or lateral navigation, to verify and prove the validity of any collected data. To the satisfaction of an enquirer.

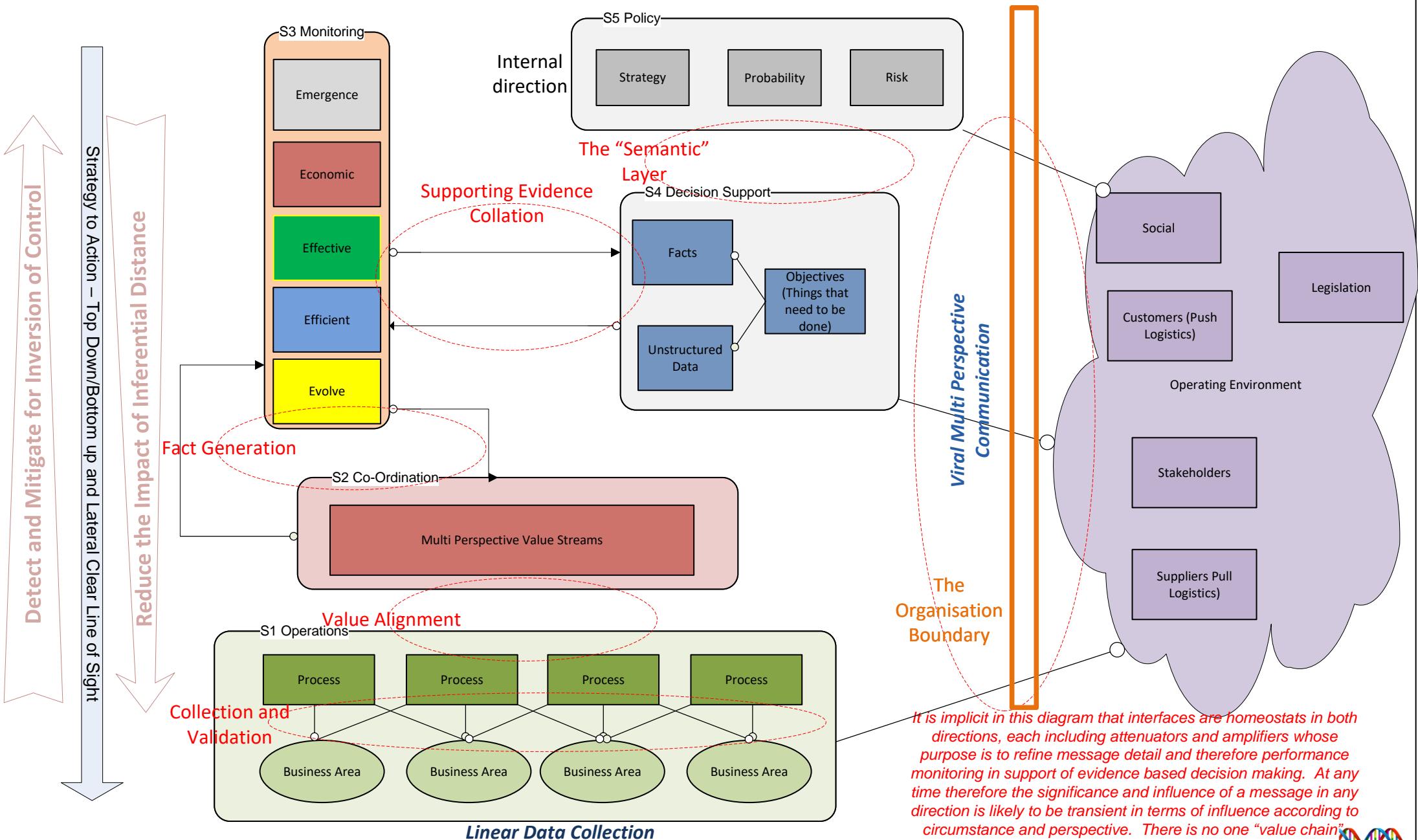
**Treat Structured and Unstructured Data as mutually supportive evidence:** An architecture that is fit for purpose should be as capable of tapping into document files as databases such that when queried, both documents and database search results can be presented in the same gateway. Inevitably this means that the capability to read and catalogue document content in such a way that techniques like referential design can be applied using the same meta model or master data register, but without the need for design or architectural understanding of referential theory etc.

**Comprehensive Management of Location:** Basically, all of the above counts for naught if both structured and unstructured data cannot be found when required. That means that understanding location, on a cartesian basis is one of the building blocks with just as much significance, in terms of referential integrity, as normalisation and other database tuning techniques. The underlying principle being that if something cannot be found, then it may as well not be there. This means that broadly the same principles of database design (record once use many) must be applied to database design and file folder storage and that both should be capable of being treated the same way in respect of the maintenance of referential integrity. It also implies an understanding of the concept that in spatial terms, dimensions and perspectives are relative to each other at any one time in respect of time and the impact of inferential distance.

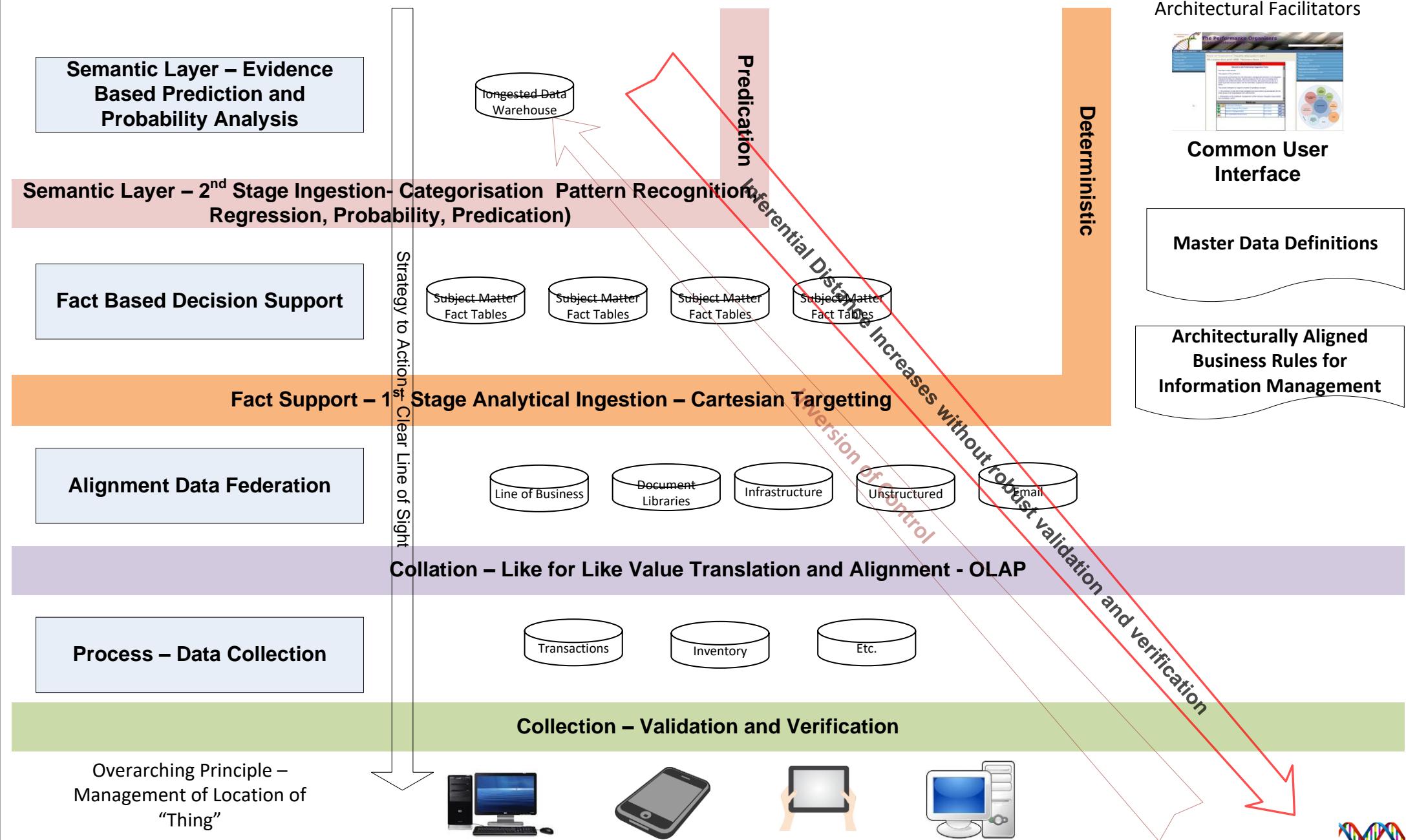
**Any one dataset is a filtration of the totality of available data.** By this TPO means that initially, what is recorded as data is not all of the information available and instead is a sub set that someone, with sufficient authority has deemed it necessary to collect. Furthermore, such data collection exercises tend to be at the process level and are therefore parochial. Instead, there should be an emphasis on organisation form, function and purpose, which inevitably means one or more collation or transition (in the modern vernacular “Export, Transform Load (ETL)” exercises, which may mean changes in storage form and logic form in respect of software development effort (from the procedural to predication for example).



# Determining Viability – Information Management Perspective



# Data Form Transition and Attenuation



Architecture – High Level Design Concepts	The Nature of Transitions	Page 33.
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 2.00
System/Project Name: General		Dated: 20/01/2022

# The Nature of Transition and Attenuation to Support Viability Testing

The purpose of an information management architecture is to support the organisation and its “need to know”. Specifically, to prove to those who need to know that the organisation is viable. Proving viability is multi dimensional and multi perspective in terms of frequency of reporting, volume of data analysed, logic form applied to analysis, coding technique applied and visibility and access control. Additionally, data collection tends to be procedural and linear in nature whereas reporting is contextual viral and organic. Both collection and reporting are limited by the comprehensiveness of observation which in turn is limited by the organisations purpose, form and function. Therefore there is no one “value chain”, rather there are multiples of “perspectives of value”. As a consequence, there are a series of transitions, from data to information and thence to knowledge that any information architecture should be founded on.

It should be noted too that the nature of the transition from data to various forms of reporting capability should be impacted in as limited a way as possible by “inferential distance” and provide the means to detect any form of inversion or loss of control. That implies that any single report or data collection exercises are connected to others in any reporting architecture both laterally and vertically (top down and bottom up) such that if required, investigative research may be executed within the scope of the investigators “right or authority to know”.

The nature of the transitions set out in this schematic and these notes are not hierarchical in a management sense, rather they express a technological structure related to the placement of coding technique and data form. Nor are they the only way to do things. Just a way that works.

**Attenuation and Transduction.** Inevitably, exercises in transduction (joining and mixing data from various sources) will need to be executed given changes in data form from, the relational model (perhaps), to the use of storage forms like RDF. Transduction including the alignment with unstructured data forms (document files for example) with tabular data. At each stage attenuation is key in respect of aligning scope value and types of data and their cumulative value with the aim of reducing the impact of “my numbers are not your numbers”. In respect of Artificial Intelligence, the nature and risk associated with the concept of “bias” grows with each transition and bias starts at the point of data collection given the limit of observation raised earlier and the impact of GIGO (the only constant in information management).

## The Transitions

1. **Validation.** Data capture from the outside operating environment. Typically linear and procedural, The gateway into the architecture and should be subject to stringent validation and verification testing and proving. To reiterate, GIGO is the only constant in information management and the risk starts at data entry. At this point, the relational model is paramount. Key design deliverable, a data dictionary and physical design schema are fundamentally important. At this point, time spent on validation in order to verify is never, ever wasted and indeed is crucial.

2. **1<sup>st</sup> Stage Alignment.** Alignment of data in terms of meaning, scope and data type such that data from any number of federated data sets can be integrated for analytical purposes, primarily deterministic, linear and procedural in nature this is about identifying commonalities in the definition of data attributes that, for example, may be named differently in multiple data sets but have the same type etc. It implies the need for a data dictionary and the development of physical data schematics. Consider the complexity, if there are three tables, each containing 500k records and a join is attempted, that means 500k x 500k tests of a join statement. Any single omission in the join results renders the whole exercise questionable. Validation of data attribute alignment therefore is key.

3. **Fact Generation** The generation of fact based summaries against which date from the previous two stages are reviewed and a series of reductionist exercises applied for analytical purposes to support the four standard perspectives (economic, efficiency, effectiveness and evolution which together support multi-perspective efficacy proving) with a forward planning reporting requirement to plan for emergent issues. It should be noted that fact tables may be subject to further normalisation review and the application of dimensional primary and foreign keys the aim being to provide the means to detect interdependency and relationships between “facts”. The key design driver at this point are Key Performance Metric profiles that should be written as business driven specifications of requirement and treated as such by developers.

4. **Evidence Collation** 2<sup>nd</sup> Stage Alignment. The marrying up of structured (data in databases) and unstructured (document files). For this element of the architecture a number of additional components were developed both server and client side to align disparate data forms, including a corporate dictionary or lexicon of document content, a series of cataloguing “spiders” and desk top application components. Accompanying this schematic set are a series of documents and slide decks on an approach to treated document files as “just another data set”.

5. **Emergence.** The ability of the Organisation to react to changing circumstances is key to its existence as a system. The Law of Requisite Variety applies. This transition refers to the application of a mix of Euclidean, Cartesian and Bayesian analytical approaches to data collation and review that also includes a switch in logic form from the procedural to (not limited by) predication. It also includes the need to understand the organisation vocabulary and be in a position to detect things like word or phrase significance. In essence, the identification of risk and associated issues like control inversion

6. **Inform.** The planned integration of data from the outside world, across the organisation boundary. Of necessity, this last stage presents more than a few issues of an unknown and emergent nature given the lack of control of the media or content structure that this may represent. However, where possible, standard message forms would be applied (the OAGIS 10 message library for example). There will also be a considerable number of legal compliance issues. Basically, nothing should cross the organisation boundary, in or out, without the knowledge and express permission of the holding organisation. Furthermore, passing data of any kind to third parties represents a considerable commercial risk. Tread carefully.



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# The Nature of Transition and Attenuation to Support Viability Testing

The following notes were written, with the viability schematic in October 2021.

*"GDPR and EA. Data has legs.... It moves and is manipulated and part of the problem of understanding how that happens is about having the means to structure the movement types or classes architecturally speaking. The way data moves drives the nature of any development and compliance effort.*

*I prefer to use the idea of testing and proving organisation viability. In summary, the "Viable Systems Model" identifies five kinds of organisation behaviour as types of work or process. Each with their own reporting requirements. Between each are feedback loops the purpose of which is transduction and attenuation, the way I use the loops is:*

1. Validation. Data capture from the outside operating environment limited by observation and please note, AI "bias" starts here. Bear in mind GIGO is the only constant, folk should never forget that.
2. 1st Stage Alignment. Alignment of data in terms of meaning, scope and data type from multiple data sets.
3. Fact Generation The generation of fact based summaries against which data from the previous two stages are used for procedural performance monitoring.
4. Evidence Collation 2nd and 3rd Stage Alignment and the marrying up of structured (data in databases) and unstructured (document files, emails etc) data.
5. Semantics. Not quite the right word, but this transition refers to the application of a mix of Euclidean, Cartesian and Bayesian analytical approaches including predication, regression and probability testing.

*Basically, a CEO does not need the same kind of reports as, say, a production line foreman (that kind of thing) and therefore the kind of processing applied changes in respect of data form and associated coding approach. But, for investigative purposes, each transition must be mutually supportive, top down, bottom up and left to right of arc, for no other reason than reporting prompts investigation (like data subject access requests amongst other things) which increases the need for sophisticated and verifiable evidence based decision support drawn, ideally, from the same data federation.*

*Please note, this is not hierarchical. The way each transition is applied is driven by the sophistication of the need to know*

*You just don't do stuff.. Or rather people do, but should not. "By design" means something like this.*

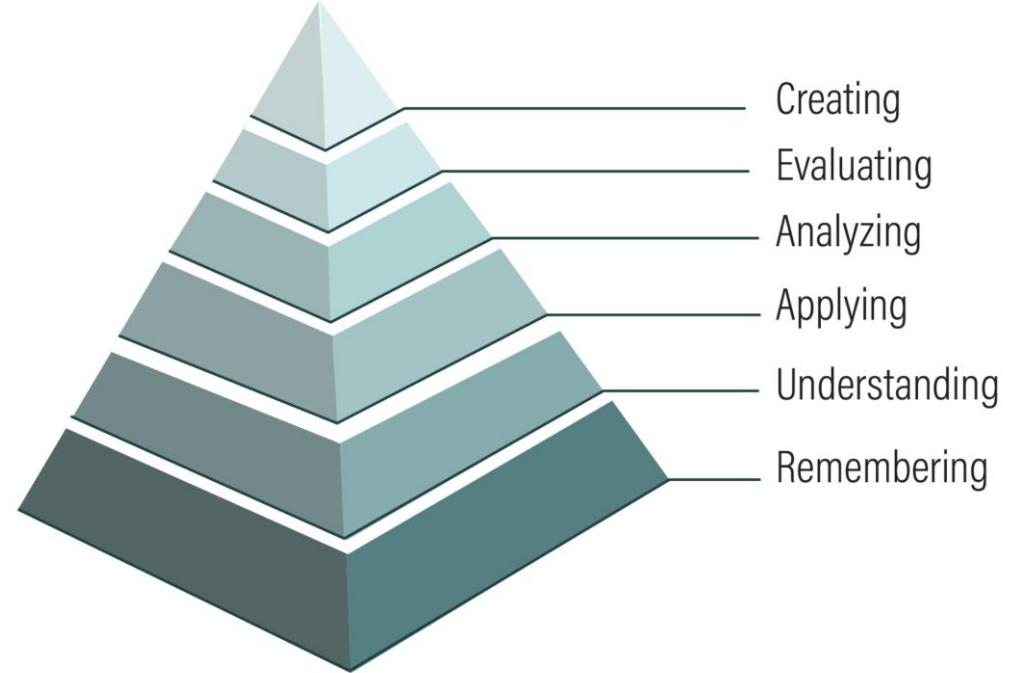
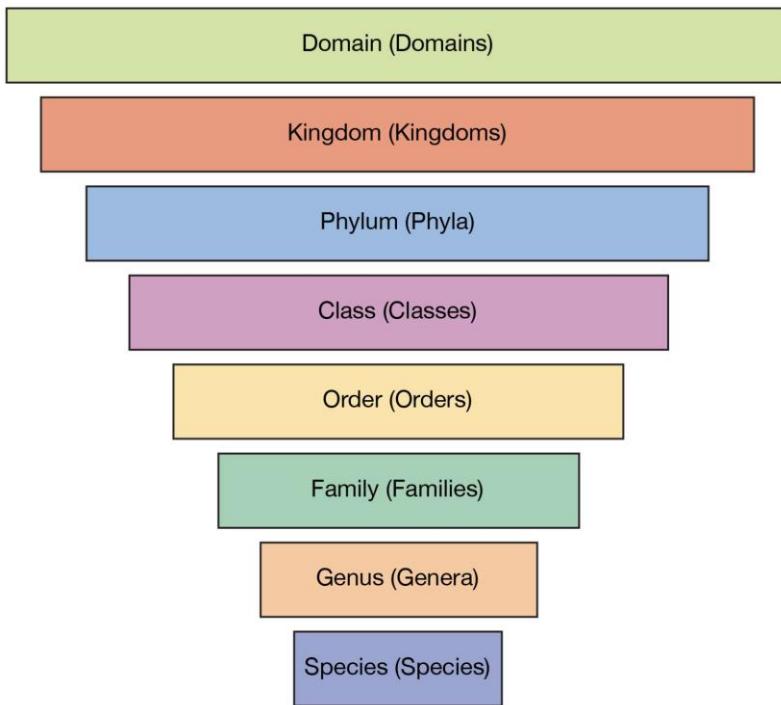
*In the authors view, one of the greatest mistakes in the world of information and data management is the "People, Process and Technology" paradigm which has brought about the creation of silos of data sets that eventually need integrating and it is the case that any such integration exercise tends to be made more complicated as a result. Information management is an architectural matter made more complicated by the need, increasingly, to be in a position to be able to manage complex multi directional conversations between the organisation and its stakeholders the majority of which are recorded by IT infrastructure into databases of various kinds and design.*

*I use my portal on "one on one" demonstrations to illustrate the nature of transition AND that it is one of the reasons why the likes of FB can set contract terms the way they do..... They are not interested in "Me" per se..... They are interested in what thousands of "me's" similar to "me" do with their on line lives. And for that, they must structure their IM architecture in a similar kind of way."*

Readers can see a description of the Portal in the "Implementation" section of this document.

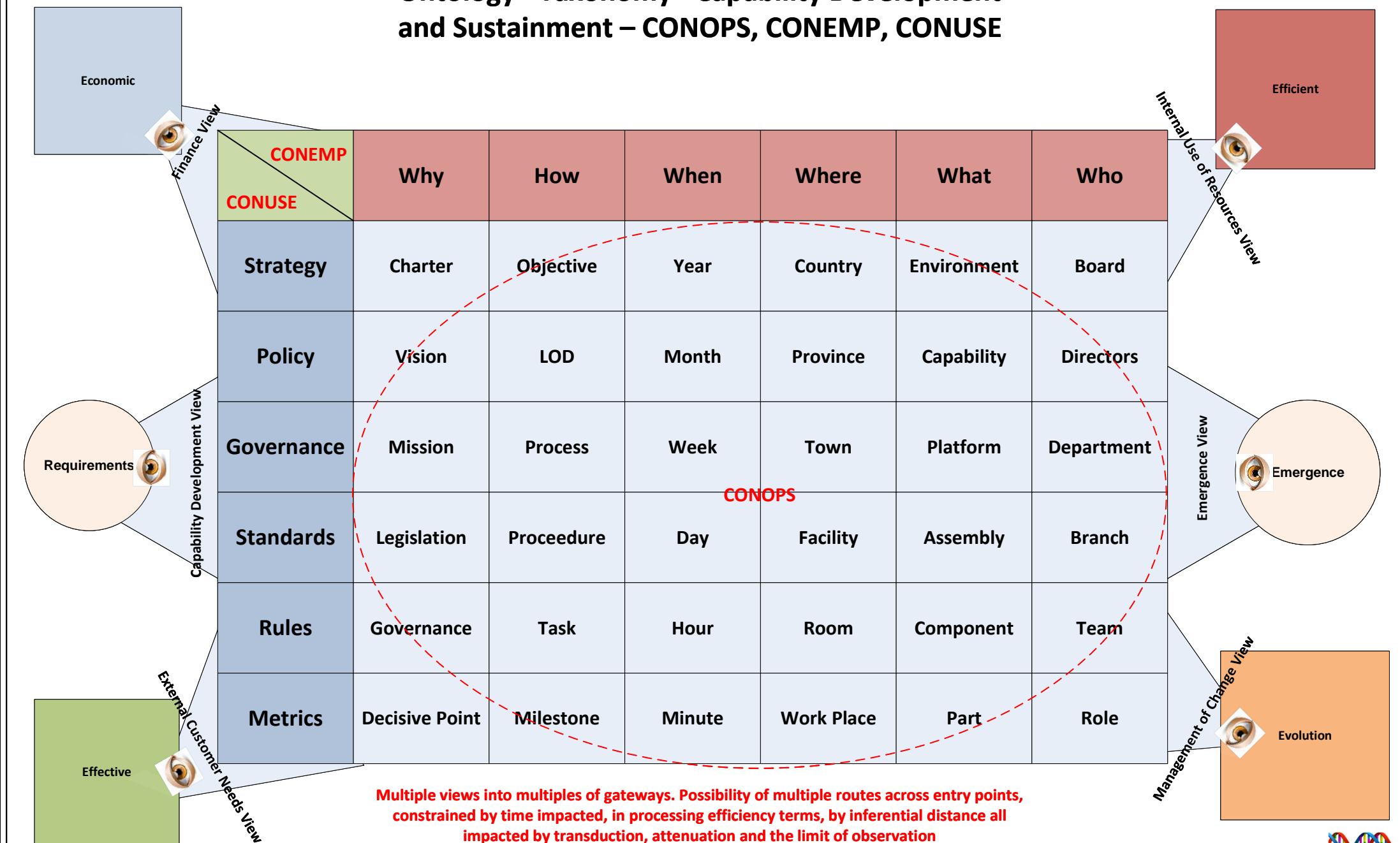


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## Ontology - Taxonomy - Capability Development and Sustainment – CONOPS, CONEMP, CONUSE



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# Ontology Capability Development and Sustainment Notes

Data capture tends to be procedural and linear, reporting on the other hand is organic, contextual and viral. Additionally the concept of the “internet of things” means that data collection is increasingly conversational in nature and a maturing series of conversations at that.

As a consequence, the need for evidence based decision support is difficult to define on a “one size fits all”. There is no single value chain, there are multiples of perceptions of value instead and as a consequence and that means the higher up the decision making chain people are there is a need to balance probability and risk but in the context of available capabilities with the means to provide different views of capability being provided. The military orders the way of dealing with this kind of complexity under the banner “Joint Operations” in which multiples plans written by experts are brought together to achieve the commanders overarching aim. The ontological matrix on the previous page sets out a comprehensive cross referencing mechanism that provides the means to establish the idea of “relationships between things” and their relevance to a particular issue of significance.

As a distillation, for reporting purposes, the following concepts are applied

1. Concept of Operations (CONOPS) – the way operations, work, is executed.
2. Concept of Use (CONUSE) – the way things, capabilities are used to meet the organisation aim
3. Concept of Employment (CONEMP) – the way capabilities are operated or made available to meet the operational aim

The overarching architectural aim being the establishment of a “Network Enabled Capability” that provides the means to deliver “Power to the Edge”, that is to say to deliver all decision takers, validated and verifiable hard evidence based decision support in a way that is contextually sound that takes into account limits to authorised visibility and also does so in a manner that takes into account the great constraint “time” in all its various impacts.

Which must include the subsidiary aims of supporting the following needs:

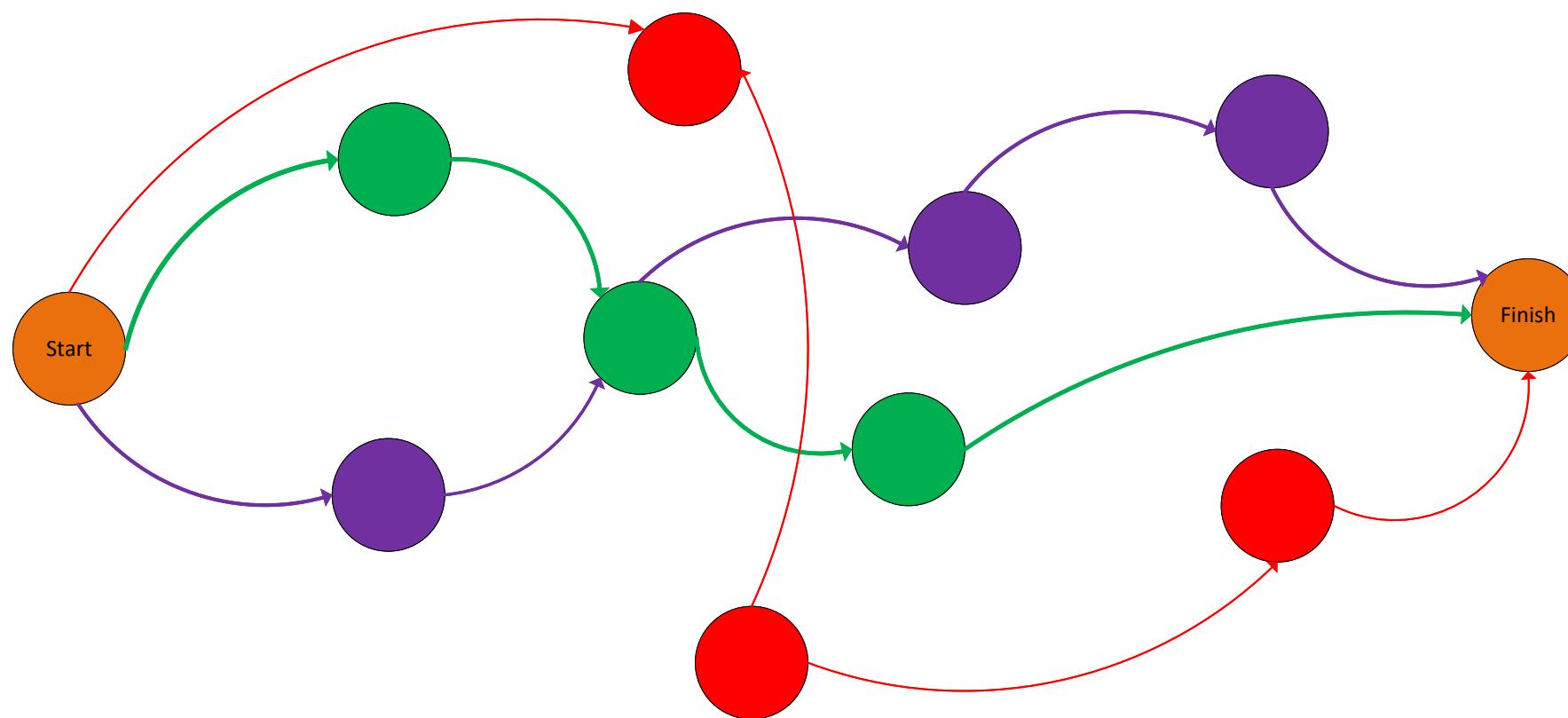
1. Provide a reporting capability that takes in the four performance perspectives (**Economic**, **Efficiency**, **Effectiveness** and **Economic** issues) that will effect any decision and can be used for filtering and targeting purposes against the kind of ontological gateway matrix the preceding diagram represents.
2. Provide the means to identify risks and opportunities with the aim of planning mitigation of risk and the exploitation of opportunities as both are identified.
3. To provide the means to identify capability shortfalls and from them provide a sound basis for requirements definition

The kind of ontological matrix set out in the preceding page giving the means to better target reporting capabilities to those who need them bearing in mind that “C” suite board members usually do not require the same kinds of reports as, say, production line foreman, but both (and those in between), should be able to establish co-relations between how they are doing their jobs in relation to others but in the wider information delivery architecture with the attendant issues of access and visibility being taken into account. The matrix forming a series of gateways, mutually supportive, as investigation points triggered by “what if” or “my numbers are not your numbers”.

**Conceptually, each of the matrix boxes constitute nodes lend themselves to the application of graph theory, transduction and attenuation that together provide an architecturally sound construct that will facilitate the development of what are now commonly referred to as “AI”.**



## Value Streams – Multiple Perceptions of Value...



The idea of a “value stream” was first proposed by Michael Porter in his book “Competitive Advantage”. However it is a contention of this series that the idea of “a” value stream is flawed and instead there are multiple “perceptions of value” brought about by the idea that different parts of an organisation as a system will have different priorities and those senior decision takers will be obliged to strike a “balance of priority” more frequently than is anticipated driven by circumstances like funding requirements and more.

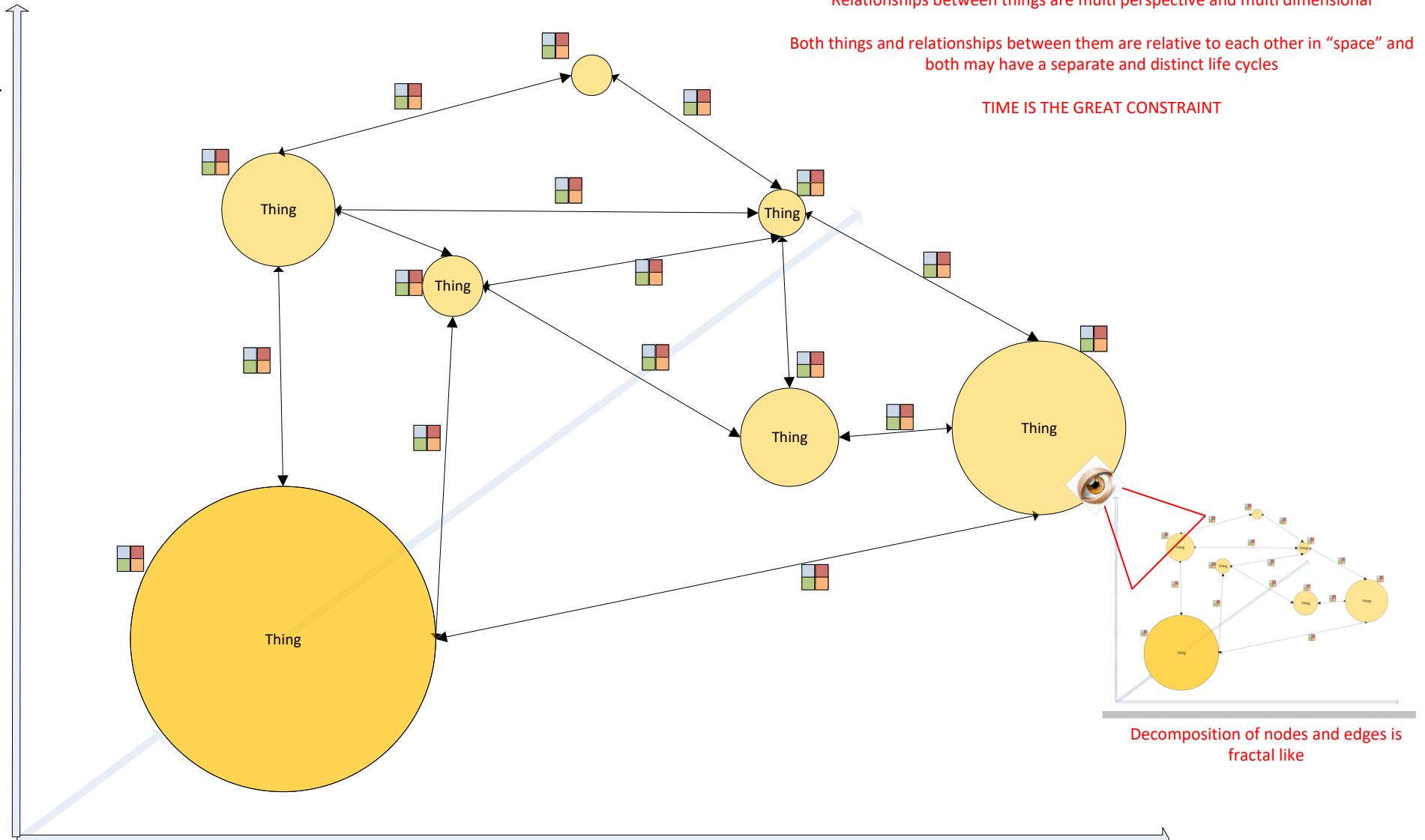
A further complication is that of “route efficiency” in that determining perceptions of value will be influenced by the nature of data sourcing across a data federation illustrated by the schematic above. There are three routes from start to finish (red, green and blue) all valid responses to solving an information requirement problem, but the distance between “things” indicated by the circles or (“nodes” in graph theory terms) varies. One way of indicating “distance” being time, in the diagram, it is implied that the red route takes longer than the other two for example to execute for any number of reasons. It is implied that there is some form of geometry in play. A “conceptual geometry” rather than something hard of a trigonometrical nature say.



## Nodes and Edges – Relationships Between Things

 Performance Reporting along nodes on four perspectives:

Economic  
Effective  
Efficient  
Evolution  
Giving efficacy.



There may be multiple routes from node to node which will impact on route efficiency in terms of processing and may increase inferential distance

Route efficiency will impact on any ability to accurately detect control inversion

Control inversion may be beneficial or detrimental



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## Nodes and Edges – Relationships Between Things

1. Nodes and edges are both multi dimensional and therefore multi perspective
2. Whilst there is geometrical form, the concept of distance between nodes is not akin to, say, feet and inches and is instead conceptual in nature
3. Adding nodes drawn from additional data sets will change the overall shape of the representation of the graph
4. Adding nodes will also change the nature of relationships and therefore matters like route efficiency
5. Simplistically speaking, the number of edges leading to and from a node is an indication of sensitivity
6. Removing a node will also remove edges and therefore will remove the accuracy of any inferential analysis across the graph schema
7. Route efficiency in situations where there is more than one path across a graph construction from node to node may give different answers to a question.
8. Nodes and edges are limited by the nature of observational evidence
9. Decomposition of nodes or edges is a fractal like phenomena, that will bring about a sub set of nodes and edges that reflects the granularity of any deomposition
10. In respect of “distance” or the length of edges, it is the case that relationships between nodes will change over time. Time being the great constraint. As a consequence, one of the most practical ways to illustrating distance is to use time as the “length” definition with “permanent” being at 100% and a percentage soring mechanism being derived from an assessment of how long relationships exist being specific to circumstance.
11. The overall shape of any schema will change when new data structures are introduced. The introduction of new data sets will often occur when resolution of “my numbers are not your numbers” debates arise or someone asks “what if?” and similar questions as both change the “need to know”. The “need to know” limited by limits of observation exposed by emerging issues that need to be addressed in order for the organisation to remain viable.
12. Drawing graphs schemas as flat “2d” diagrams is a conceptual and representational mistake.

Additionally, readers may find it useful to view the lecture given by the Swedish Academic, Peter Gardenfors on ideas associated with “Conceptual geometry” which can be viewed here:

[https://www.youtube.com/watch?v=Y3\\_zlm9DrYk](https://www.youtube.com/watch?v=Y3_zlm9DrYk)

Another illustration of the fractal and iterative nature of any development effort can be viewed here:

<https://www.youtube.com/watch?v=7eJZ-uDJYtM>

The following two pages contains notes from a post the author placed on LinkedIn as a response to some debate about the behaviour of one of the majors and an inability or perceived reluctance by the Irish DPC to address many issues people are rightly concerned about. It is recommended that those looking at these schematics read the notes and consider their own operating environments. The risk involved in passing data across to anyone is commercially speaking, existential. Heads up



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## Nodes and Edges – Relationships between Things

From a linked in Post published 24/10/2017

*"This data stuff gets about a bit. It really does. I see there is some consternation about the Irish DPC and FB. I think that what FB are saying is, in this case, possibly legit in tech terms and the reason for writing that is because of something called "graph theory" that, in privacy circles, never, ever gets a mention. Lets try. Bear with me.*

*My last post was about the nature of data transition and attenuation. If that kind of concept is applied, then what becomes exposed, in increasing complexity, is the diverse kinds of relationships between "things". "Person as thing" being one of them. And "graph schemas" are an excellent way of illustrating the complexity. Unfortunately, they are regularly drawn as flat schematics, but in practice they are anything but.*

*In the image below, the "things" are the circles, referred to as "nodes" and the lines are indicators of the relationships between "things", and are referred to as "edges"*

*Note the "X", "Y" and "Z" axes implying the nodes and edges are in three dimensional space. I would further ask people to consider that the "edges" have length, which indicates distance expressed in some form or other. For me, the "distance" relates to time, or more appropriately, life cycle, because very few relationships between things are permanent and in any event, the nodes tend to be lifed too. Edges are bi-directional, comms being two way.*

*Note too, that more often than not, there is more than one way to get from "thing" to "thing", I use the term "route efficiency". There is therefore no one "value chain", rather there are "perceptions of value" which reflects the real world.*

*Additionally, the bottom right hand corner the "mini" graph is an indication that very frequently, once a schema is created and implemented, someone will ask "what if" and inevitably, that draws attention to a limit of observation if the question cannot be answered until more data of a different type or form is added and that has the habit of changing the shape of the entire schema including the space it sits in. People should also get the idea that the adding of nodes and edges driven by perfectly sensible questions, is fractal like in that decomposition can be near endless.*

*In terms of the GDPR for example, there is the GDPR as a document and it is made up of articles, sentences and so on all part of the same document structure, all referenced separately as need demands for different reasons. The same principle of decomposition and deconstruction applies to just about everything.*

*Note the little boxes along the edges indicate the nature of multi perspective performance reporting as the impact of relationships are understood and "what if" kicks in."*



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## Nodes and Edges – Relationships between Things

From a linked in Post published 24/10/2017

*"The idea of multiple routes from node to node across multiple edges means a couple of things need to be considered for analytical and compliance purposes.*

*1. There is no real need to concern over much about "person as thing" in the sense of having an idea of precise identity in order to identify behaviour.*

*2. But, the impact of route efficiency, like GIGO, is a factor that will (not may) impact on the accuracy of any calculations and is another matter that inevitably introduces bias into any and all AI exercises.*

*From a compliance with GDPR perspective, "person as thing" on the basis of the use of PII becomes an irrelevance in any event not least because the concept of graph theory presents a much, much richer analytical environment*

*Where "person" comes into play, is just a matter of patience. There is no need to "target", just wait until they show up and then place an Ad (say), but not to any one individual specifically, but rather aimed at some form of social economic grouping of any number of people.*

*And in order to do that, all they need to do, any of them, is to revise their contract terms such that people accept that their data will be used and that they may be informed of "stuff" that may interest them.*

*To pull this off needs vast qualities of data mind you. And aside from people signing up to a GAFAM account, one of the major ways of extending the shape of a graph schema, is to get other commercial enterprises to sign up to freebies like traffic analysis..... And in the process signing up to another form of T&C.*

*So why is it possibly legit? Quite simply the use of "graph", understanding the nature of transitions, understanding the nature of data design coupled with the kind of processing power those big data centres represent, give an unprecedented market research capability that the vast majority of small to medium sized enterprises can only dream of.*

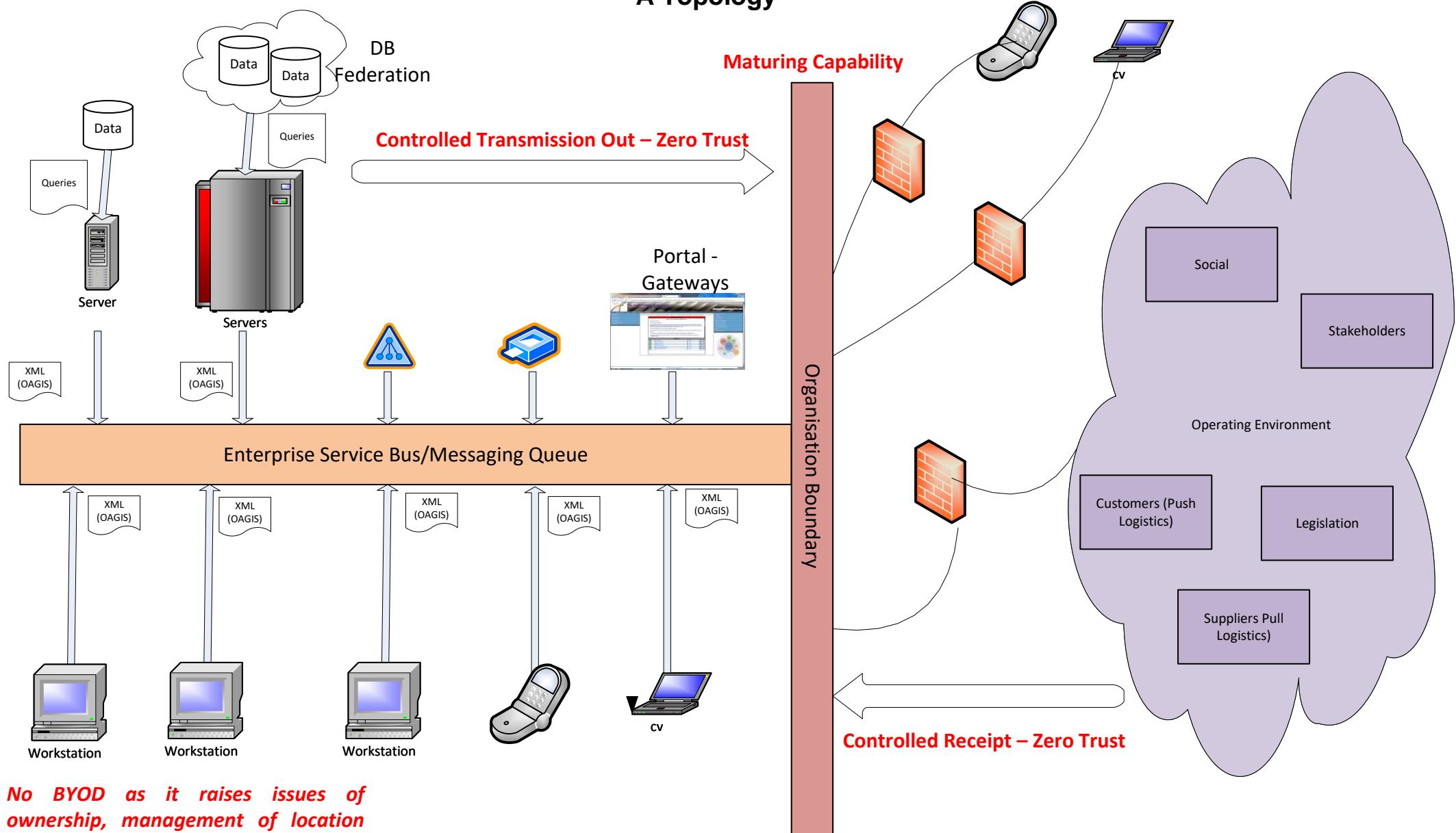
*And first person singular? Or cookies... Please get your heads round this.. Cookies do not track. If I buy a shirt, it does not matter much (wife permitting), however, if there is the means to identify 100k people like me, then the sales opportunity is 100,001 people. And there is no need to pester at all, selling just 10k shirts is a massive financial boost to all involved. But particularly so for those who have the research capability that others lack.*

*Handing over data, of any kind, at all, or using freebies like visitor traffic analysis, is giving away hard market intelligence on your business and clients as sure as eggs are eggs. And for the legal world... Client confidentiality is a near none starter I am afraid. All because of nodes and edges. Pleading, try to understand this stuff...*

*Folk should also consider that none of the majors actually sell data, they are not that daft...."*



## A Topology



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## **Network Topology Notes – Zero Trust**

“Zero trust.. Now there’s the rub”.

If data is the new gold or oil, then it follows that no data or information should cross the organisation boundary without the full knowledge of those leading the organisation unless of course, issues related to legislative compliance drive the need to pass data to a third party.

End of.

However, it also means that data is held for the maximum effect at the minimum volume for the minimum time required which has the benefits:

1. Of increasing the ability of the organisation to demonstrate compliance
2. Maintain the value of an increasingly strategically significant resource that supports evidence based decision support in order to test, properly, the organisations viability and deal with emergence in all its risky gory.
3. Increase the ability of the organisation to protect its boundaries. A fortress is only as strong as its gateways, reducing data transfer opportunities reducing the number and significance of gateways.

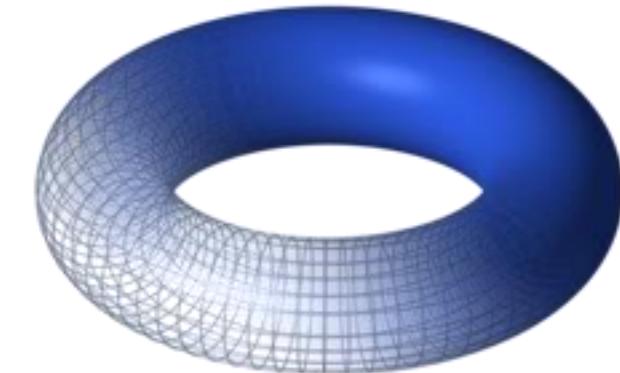
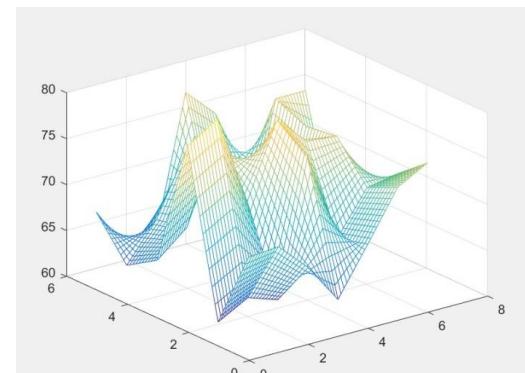
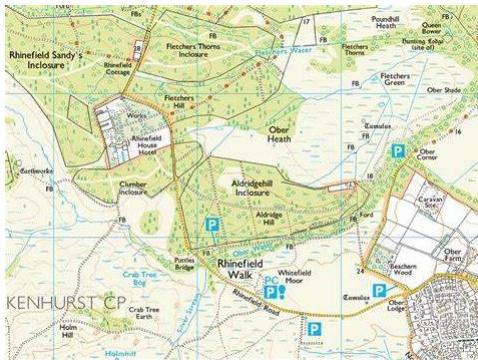
It should be noted that all of the above applies to data transfers in or out of any gateway. It should be noted too tht the idea of “zero-trust” applies to all forms of information exchange including software upgrades, the use of BYOD, instantiation of multiple operating systems and more.

It should be noted that the idea of policing the organisation boundary also applies to hardware devices like USB “flash” drives (at the time of writing, it is possible to purchase, on line, 2Tb drives the size of little finger and “stick” PC’s hat can be plugged into any USB port on any device).

The validity of the use of cloud based services in particular demand careful consideration and not just from the perception that cloud services are cheaper. The fact of the matter is that nearly all IT terms and conditions are a matter of contract and each and every set of T&C seeks to reduce the responsibilities and liabilities of those granting a licence to use a capability while at the same time increasing the responsibilities and liabilities of the end user (whether the “end user” is a person or some other form of legal entity the aim of T&C is nearly always the same).

In short, end users have limited rights to use and do not own much that is tangible and at the same time, end users are obliged to protect the ownership and intellectual property rights of those who do own licensed assets).



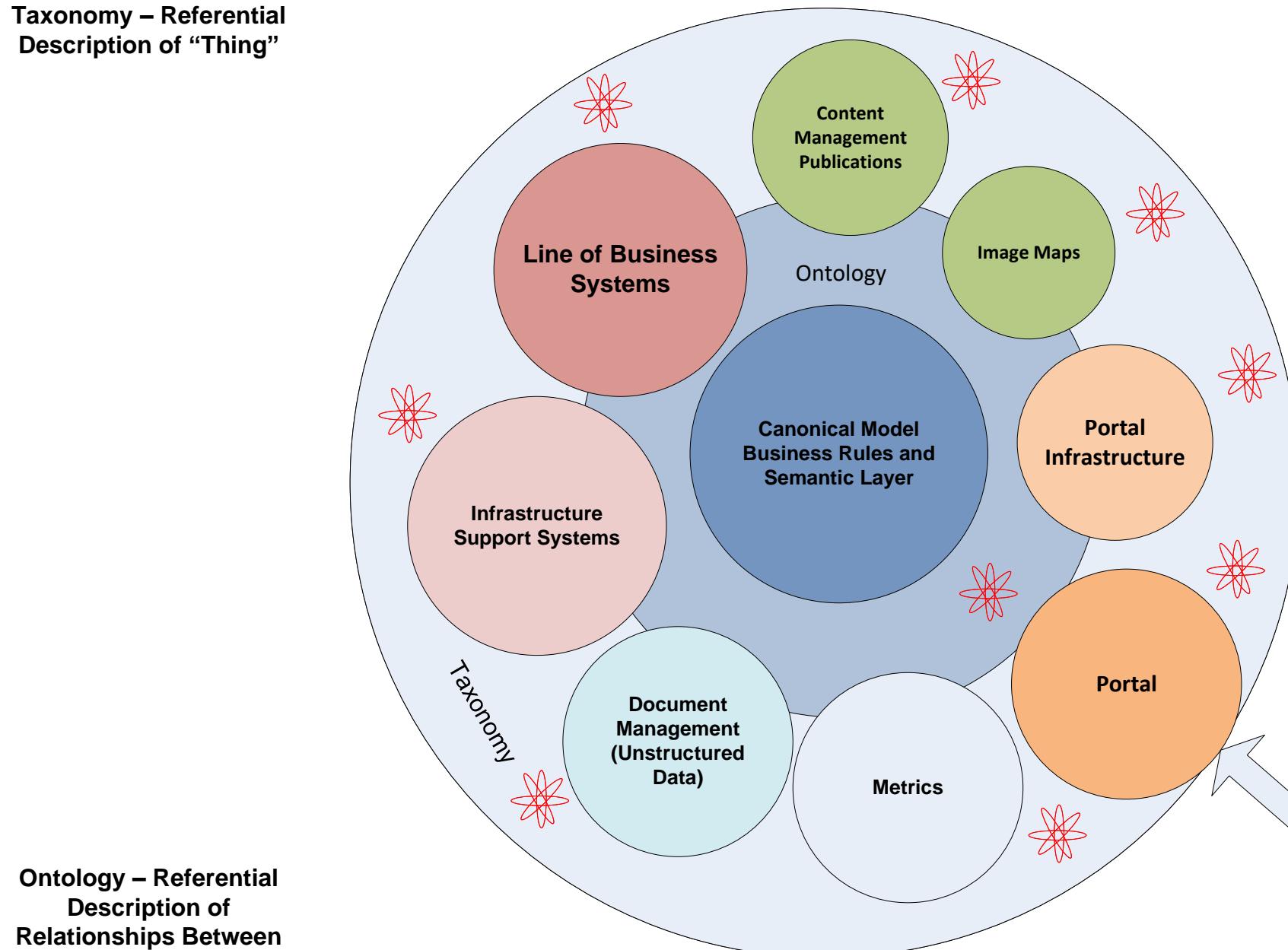


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## Enterprise Wide Information Management

**Taxonomy – Referential Description of “Thing”**

**Canonical Model**  
(Like for Like Translation of Value and Scope)



**Ontology – Referential Description of Relationships Between “Things”**

**Gateway Entry Points – The ability to “burrow”**



**Common User Interface**



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## Canonical Model Notes

From the authors perspective, the following words, to be used consistently in respect of context, underpin the design and implementation of architectural principle in respect of structured and coherent information management. :



**Atomisation** - related to the planned and structured decomposition of data.

**Access** – The controlled means to enter a gateway

**Attenuation** – The alignment and tuning, on a like for like basis in respect of value, meaning and scope, of any and all data forms in an information architecture

**Conversation** – Increasingly, data exchange between the organisation and external agencies and individuals is a matter of maturing conversation, each conversation stage changing the focus of the conversation

**Cybernetics** – the science of communication

**Gateways** – Any and all entry points into a wider information management architecture. Any and all gateways are constrained by policy and governance related to access and visibility. Gateways should be minimised

**Index Plan** – The application of the same kinds of indexing structures in order to speed up response to database queries

**Meta Model** – The application of the definition of database table key values such that primary keys have the same meaning, type and scope across a set of federated databases

**Ontology** – Structured definition and description of relationships between “things”

**Taxonomy** – Structured definition and description of “thing”

**Time** – The great constraint. Everything is lifed.

**Transduction** – Controlled and managed attenuation. In particular the use of this word applies to the application of different logic forms and coding approaches across an architecture

**Structured Data** – refers to data stored in tabular form in database containers

**Unstructured Data** – all other data forms not held in a database container

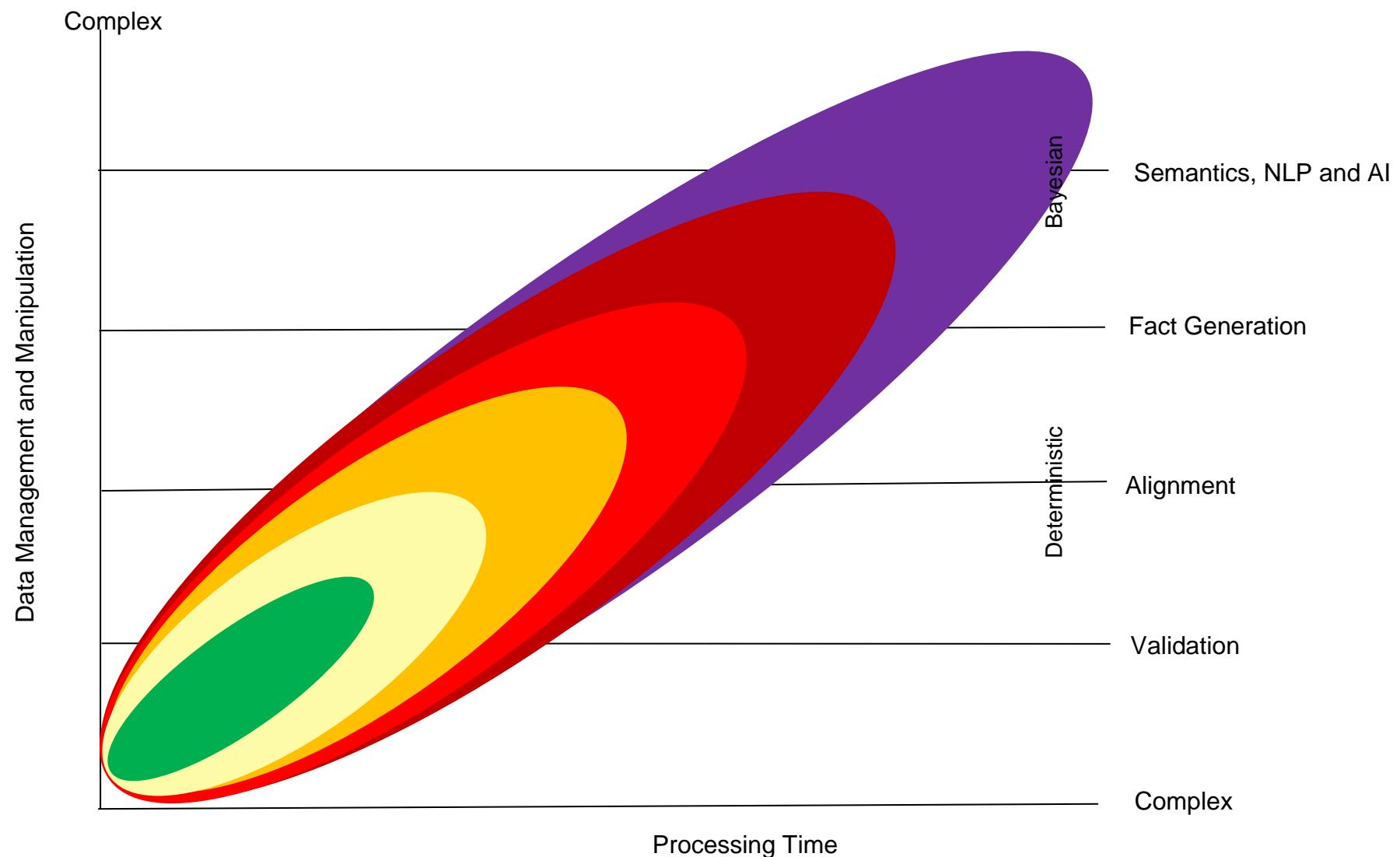
**Visibility** – once access is granted, what can be viewed and manipulated

**Viability** – The proving of the “health” of an organisation.

**Reason?** Data collection is linear and procedural, reporting is organic, contextual and viral. The differences need to be resolved in order to meet the need for structured, verifiable and properly validated evidence based decision support that is also contextually sound.



# Capability Development and Maturity



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# Capability Development and Maturity Notes

There is a relationship between the complexity of problem solving and final resolution, the length of time needed to write and properly document the code required and matters like “lines of code”, associated testing and subsequent documentation and finally deployment.

There is also a relationship in respect of capability development in respect of the time and expense associated with learning to operate a complex piece of software as part of a much wider “system”.

Both are true even in respect of the simplest of development effort, even web sites, given, as all sites are, that they are dependent on the communication capabilities of the internet.

There are many ways of trying to optimise for speed of execution, many ways to optimise data design.

All are impacted by time.

All capability development is iterative and subject to change both internal and external.



# Perspectives - The Gateways.....

A means to structure ways of looking into an information management architecture

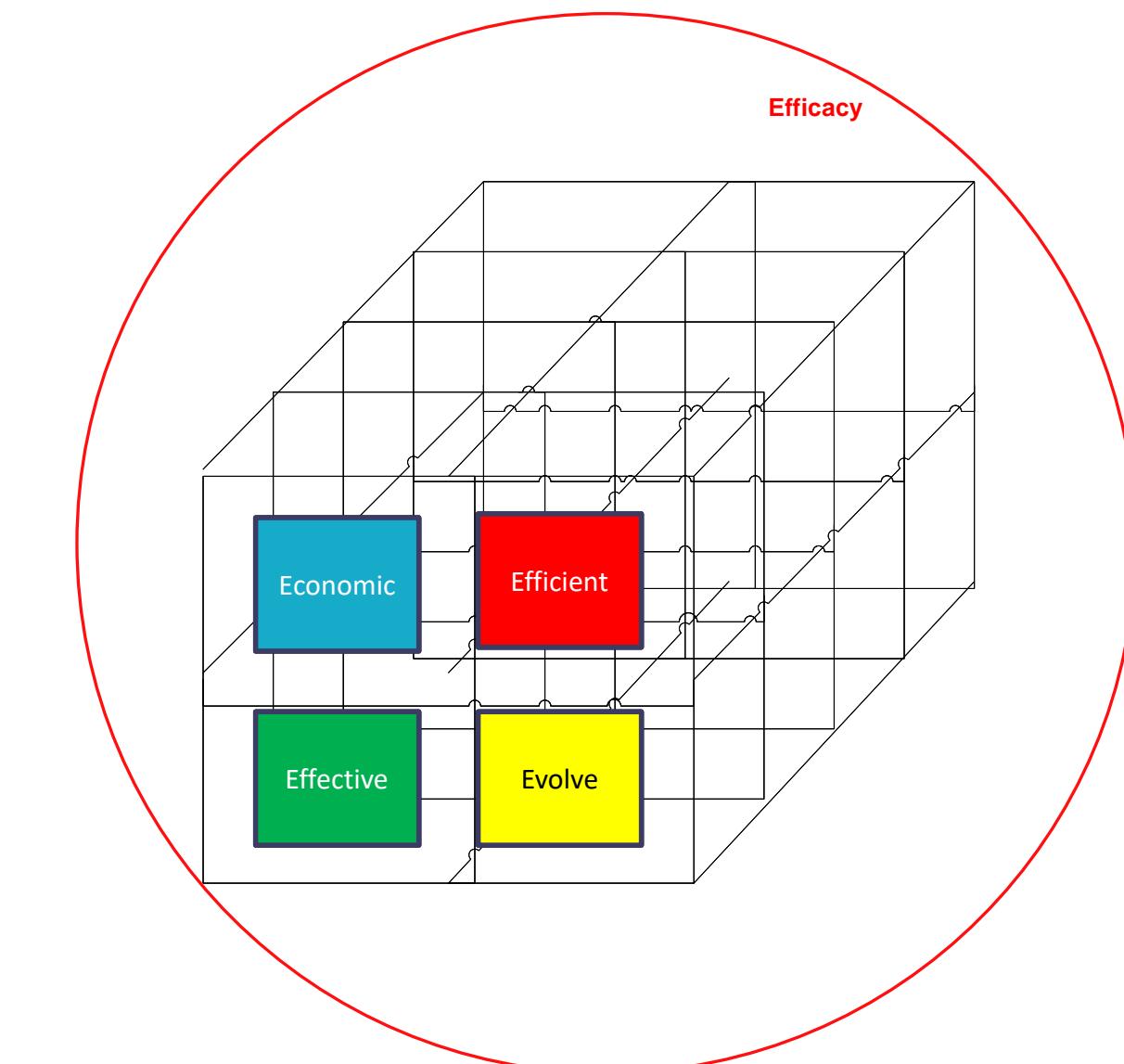
1. Economic. Related to the use of money in all its ways of being used
2. Efficient. Internal, best use of resources
3. Effective. Meeting customer and other stakeholder needs
4. Evolve. The ability of the organisation to manage or deal with change.

All four giving the means to test viability and determine "Efficacy".

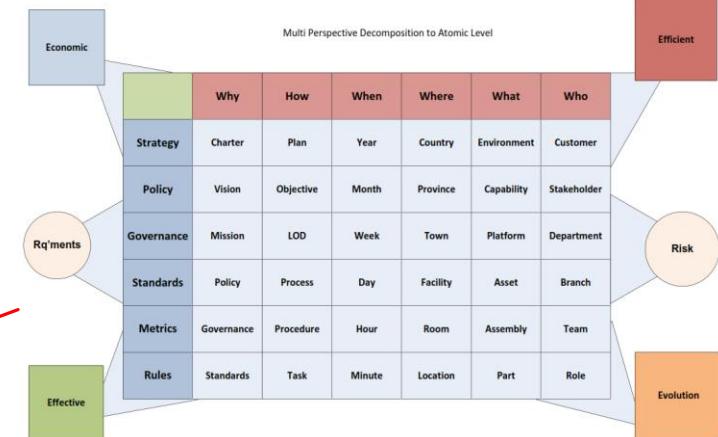
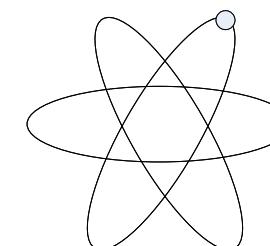
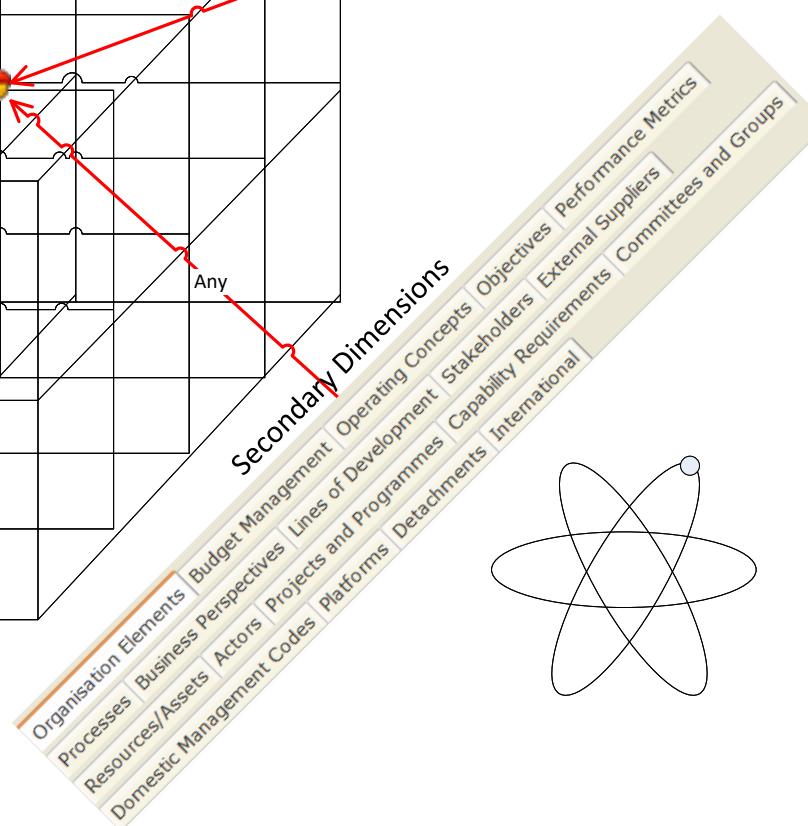
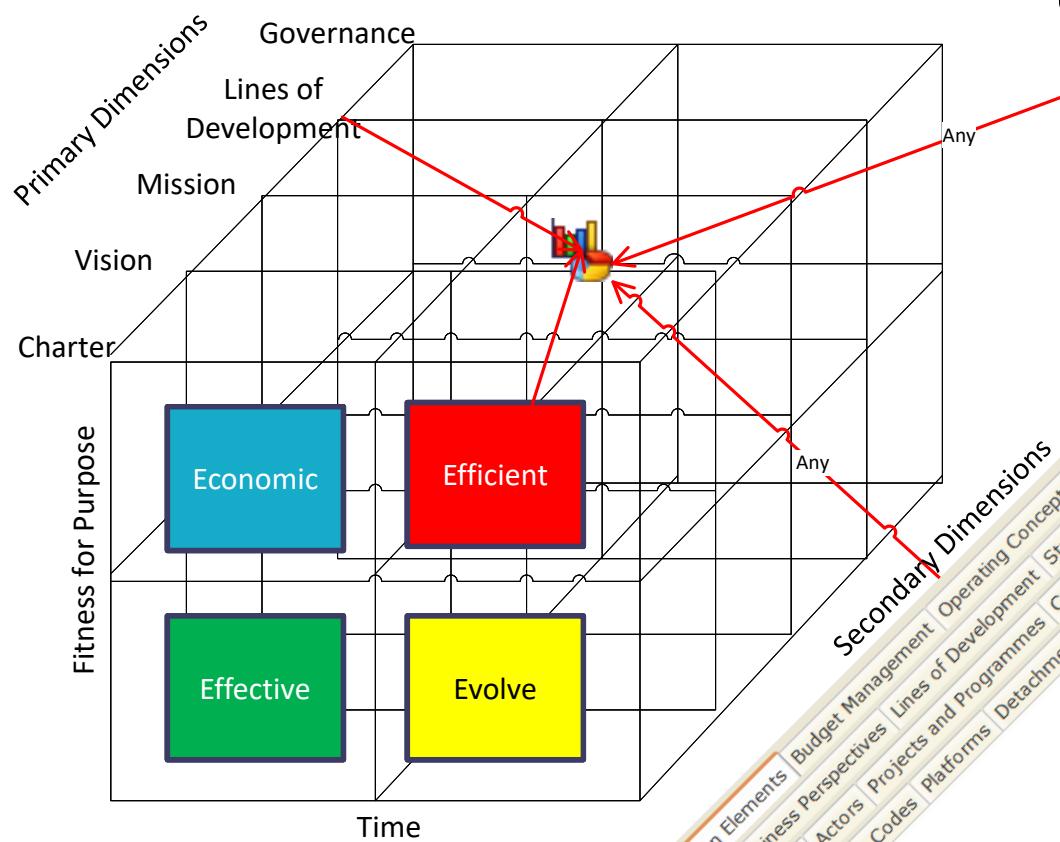
All constrained by time in its many aspects and impacts.

The purpose to provide the means to detect emergent issues like "inversion of control"

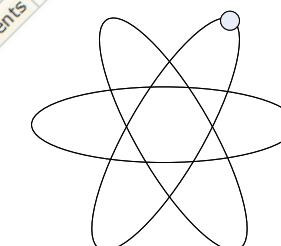
And to be in a position to reduce the impact of inferential distance



# Perspectives Are Multi Dimensional



Supporting Ontology Matrix  
– Tertiary Dimensions



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# Perspectives and Dimensions

In order to structure the targeting of the collation of data for reporting purposes and to do so on a contextually sound basis, it is useful to have an architectural structure on which to base “drill down” as an investigative capability. The need to investigate by the idea that once reporting tolerances are agreed, then any indication of failure or success will prompt the question “why”.

There are multiple perspectives of “why?” and any drill down, in order to be logically robust, must be capable of demonstrating causal links between reporting needs from high level semantic and trend reporting down to data collection.

The approach taken for this section schematics is to apply the “Balanced Scorecard” as a high level reporting paradigm with the following primary perspectives:

1. Economic. Related to the use of money in all its ways of being used
2. Efficient. Internal, best use of resources
3. Effective. Meeting customer and other stakeholder needs
4. Evolve. The ability of the organisation to manage or deal with change.

All four giving the means to test viability and determine “Efficacy”.

Beneath each, two layers of dimensions, primary and secondary as indicated in the diagram and the application of an ontological matrix of the kind advocated by John Zachman

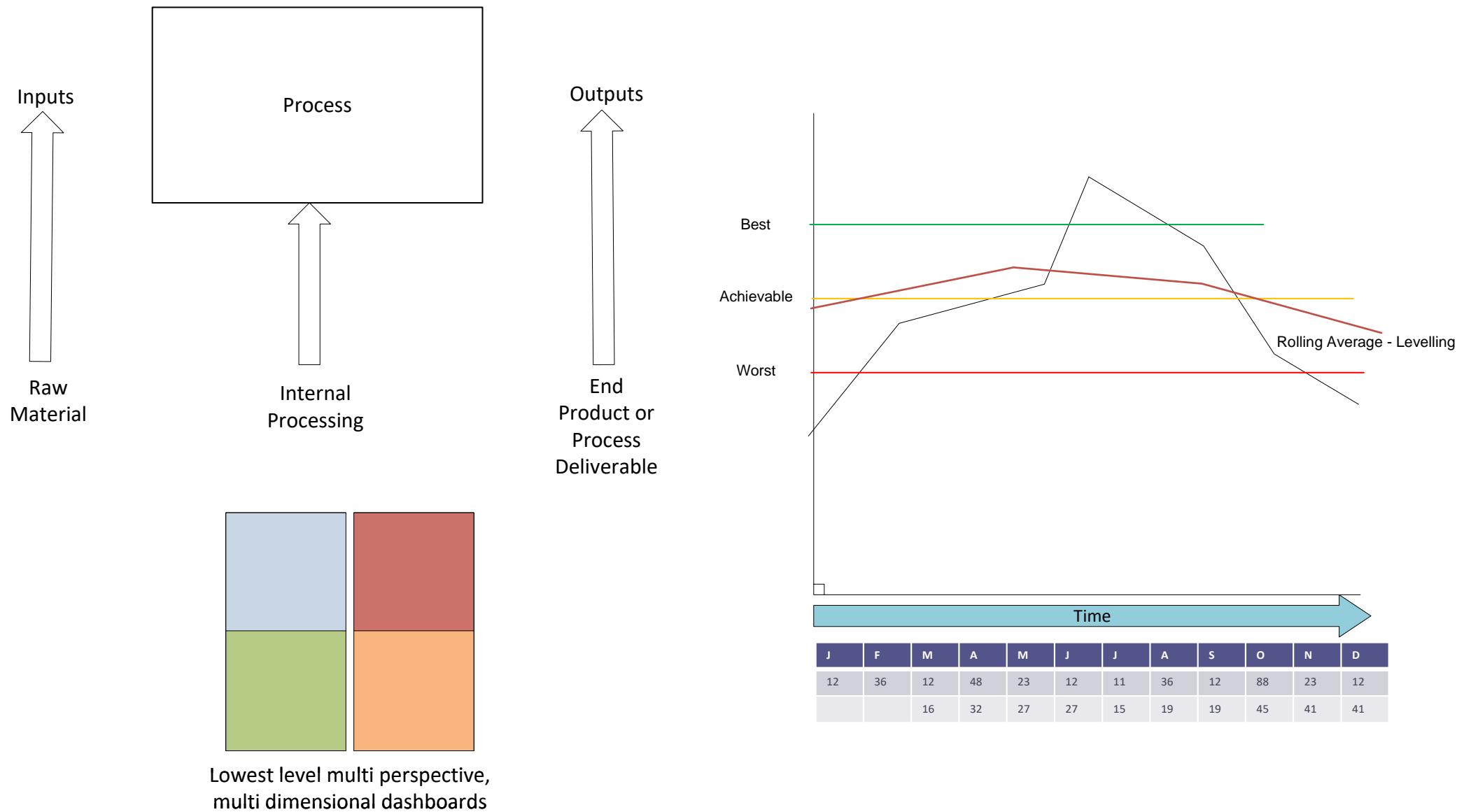
The primary and secondary dimension being identified according to circumstance with the same “according to circumstance” being applied to the definition of the matrix columns and title blocks.

The aim of the construct being to provide the means to apply the same reporting structures across the organisation no matter where someone sits in an organisation management structure based on the simple concept that a process level shop floor foreman does not necessarily want or need the same kind of report as C Suite executives, but recognising that both are mutually supportive at least.



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## Process Level Measureable Transaction Points



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## Process Level Measureable Transaction Points

The point at which data collection occurs is typically at the level of “process”.

Process “ownership” may vary over the end to end lateral scope of a process.

Processes do not operate in isolation and may be dependent on contributions from other processes which may well be fundamental to process operation or constrain the process operation in some way (Eli Goldratts “Theory of Constraint” for example).

The paradigm usually quoted in respect of process is “People, Process and Technology”, which gives rise, inevitably, to data silos as process is parochial in nature and initially, it is the case that any information management acquisition is about solving a problem at the level of process.

Data collection at the process level tends to be localised, procedural and linear in nature therefore. Reporting on the other hand is contextual, viral, organic and diverse.

Reporting includes data from multiples of processes, therefore, reporting, at nearly every management level includes, as a matter of design, alignment (of data attributes in respect of meaning, type and scope of acceptable values) which in turn gives the opportunity for planned transition from one data form to another (relational data to “fact” based data for example), the aim being to bring about attenuation of any number of data sets.

**Data collection is the first architectural transition, which is constrained by time and the nature of observation.**

Observation and its limitations drives the nature of the specification of requirements of data collection.

*Time (to implement, operate, currency of data etc) is the great constraint.*

*Data collection, though procedural and linear, is often conversational in nature as the level of detail in collected data increases in volume and scope over time.*

*At the level of data collection, time spent on design verification and data input validation is never, ever wasted. “Garbage in garbage out” rules. If 10% of the data collected is incomplete or inaccurate in other ways, then all reporting must be suspect.*

It is the case however, that there is a need to trade off in requirements specification and that trade off too, should be on the basis of balanced structured assessment of priority. The acronym “MOSCOW” is one way of structuring requirements definition, there are others.

The structuring of process definition is the basis for all forms of quality assurance including ISO 9000 like constructs. Structuring process definition, or, the production of a process catalogue, is also fundamental to “the business” being able to properly direct information management efforts such that viability and efficacy can be assessed “top down, bottom up and laterally”.

At the level of process, for reasons of software quality control, records of processing activity (ROPA), for multiple purposes, should be produced. Be aware that ROPA are usually highly complex documents that are dependent, for their production, on the presence of design documentation like a data dictionary, logical and physical data designs, update process outlines and more besides.

Of all of the process based operations, deletion needs the greatest design and implementation care

***It should be noted that while all of this may not be “rocket science”, it most definitely is “rocket engineering. Heads up.***



Architecture – High Level Design Concepts	Process Level Measureable Transaction Point Notes (2) - Measurement	Page 54.
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 1.00
System/Project Name: General		Dated: 07/06/2021

## Process Level Measureable Transaction Points Notes (2) - Measurement

In respect of evidence based information delivery for decision support purposes across the organisation, the key measurement point is “process”. “Process” should be derived from strategy is and the point where “action” takes place. Classically, two key points in process are used for measurement purposes:

1. The Input point in a process in which raw materiel (from the process perspective) of one kind or another is to be worked on
2. The output point at which work executed on the process inputs results in an output of some kind.

Both inputs and outputs are measureable from the four “E” perspectives (Economic, Efficiency, Effectiveness and Evolution) in order to viability and determine efficacy from an organisation wide perspective.

Internal to the process, the structure of “process, procedure, task” can be applied, with “procedure and “task” both having inputs and outputs which are in effect an “atomised” view of the work carried out as “process” is executed.

Measurement of process is founded on the operating concept known as “Key Performance Indication” or KPI’s. Like objectives, the KPI profiles should be derived from the organisation mission and vision and used to provide verifiable evidence one progress towards the meeting of objectives and in particular to inform key decision points of a “go/no go” nature.

It is beneficial to apply the concept of tolerances in a similar way to that applied to engineering quality control. In the authors experience, five tolerance levels should be identified with the aim of detecting beneficial or detrimental “inversion of control” with the hope of exploiting beneficial inversion of control, or correcting detrimental inversion. The tolereances bands are:

1. Unanticipated High Exception – in which work achieves unanticipated hig or positive level results.
2. Anticipated High exception
3. The achievable mean, given current planned process capacity
4. Anticipated low exception
5. Unanticipated low exception

All such measurements to be taken over time, with the means to average out over time being applied through the use of “rolling averages”.

It should be noted that all such measurements and the techniques applied to measurement are deterministic in nature and based on linear hard evidence of process behaviour.

In terms of information delivery, the concept of “drill down” should be supported such that each data point in a chart of graph is “clickable”.

**Process level measurement of this kind being the second “data to information transition” set out in the viability diagram provided on page 5.**

It should also be noted that measurement is reductionist in nature and leads, inevitably to the definition of “facts” in respect of how the organisation is behaving in respect of the achievement of objectives derived from the organisation mission and vision.



Architecture – High Level Design Concepts	Process Level Measureable Transaction Point Notes (3) – The Establishment of Facts	Page 55.
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## **Process Level Measureable Transaction Points Notes (3) – The Establishment of “Facts”**

Once the establishment of structured level performance reporting is established. The next step is to refine the nature of fact reporting such that issues related to “perceptions of value” which can be assessed on a like for like basis for prioritisation purposes.

### **The generation of “fact” tables is the third major transition of data to information**

Fact tables are the planned and designed summaries of multiple data sets. Facts tables should be designed on the basis of being capable of being aligned against both perspectives and ontologically derived dimension views (see pages 8 to 11).

It is recommended that as a matter of design, relational database normalisation techniques are applied such that relationships between different forms of fact can be established and, in order to seed up report generation, consideration is given to an indexing strategy based on the more popular facts. Fact popularity being driven by frequency of use.

It should be noted that there is no one value chain and there are instead many, many perceptions of value. The underlying purpose of fact tables is to address the “my numbers are not your numbers” paradox that occurs frequently when several different parts of an organisation use the same data to demonstrate their particular view of what their view of organisational value might be.

There are six other major considerations in respect of architectural design that are related to facts and their support that MUST be taken account of at all times. They are:

1. The completeness and accuracy of data in terms of meaning and scope of data attributes. Basically, if data is not “clean” and complete and proved to be so, then any reports that are based on data, whether from a relational model or using fact tables, becomes suspect.
2. There is a need, as a matter of requirement definition to specify standard query forms that should be applied to all reporting, that must be used for other ad hoc reporting if the need for ad hoc reporting arises.
3. Specification of metrics should be business driven but should also be seen as key design artefacts for the development of a reporting capability.
4. Methods of calculation should be carefully and comprehensive defined and tested.
5. The frequency of report generation should also be made clear. Reporting frequency will inform decisions to be made related to the refreshing of supporting data.
6. The currency of facts, in respect of time, should be described.

The generation of facts may be exploited on a multi dimensional/multi perspective basis. This in turn may bring about a need to treat dimensions and perspective in the same way as relational model primary and foreign keys. Facts table design should also be planned on the basis that the fact tables should be capable of being used for drill down purposes into the lower transitions referred to elsewhere in this schematic set.

Fact tables, in association with infrastructure data sets like a digital organisation map or risk register, are together the basis for the structured and planned use of graph theory in which relationships between things can be exploited with a managed change from deterministic analysis to the reliable use of techniques like regression testing and probability testing can be more better applied.



Architecture – High Level Design Concepts	The Need to Know	Part 4.
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 1.00
System/Project Name: General		Dated: 27/12/2016

# 4. The Need to Know

Associated with this section is document ID:- 20170711-TLMP Folder Structure-U



Architecture – High Level Design Concepts	The Organisation as a System Notes	Page 56.
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 1.00
System/Project Name: General		Dated: 07/06/2021

# The Organisation as a System, Notes and Observations

Organisations do not exist in isolation, they have a purpose and the purpose drives form and function. If the organisation succeeds it matures in respect of scope and diversity of activities and capabilities it needs in order to survive. As the need for a more wide ranging set of capabilities grow, so the ability of any one person to manage everything diminishes and responsibility for the management of what becomes a set of specialisations grows, so responsibilities are delegated and management becomes a team effort.

Bureaucracy also grows in terms of complexity as does the need to comply with multiple forms of legislation, professional standards and more besides grows in sophistication.

Nevertheless, there are similar kinds of things or tasks that all organisations have, classes of management activity that are broadly similar in terms of function. Similarly there are forms of “compliance” that may need to be achieved (ISO 9000 being a case in point) depending on circumstances by multiples of organisations in vastly different spheres of activity. The devil being in the detail.

All of which is hindered or enhanced by the nature of observation such that inferential distance across (say) the management chain, both vertically and horizontally can be reduced and opportunities or risks can be detected or taken advantage of (referred to as “inversion of control”). All of which are limited by the nature of observation and constrained by time.

All of the factors above influencing the articulation of policy (what the organisation is meant to be doing) and governance (how the achievement of policy is monitored).

Further recommended reading on the nature of organisations and their design include but are not limited to:

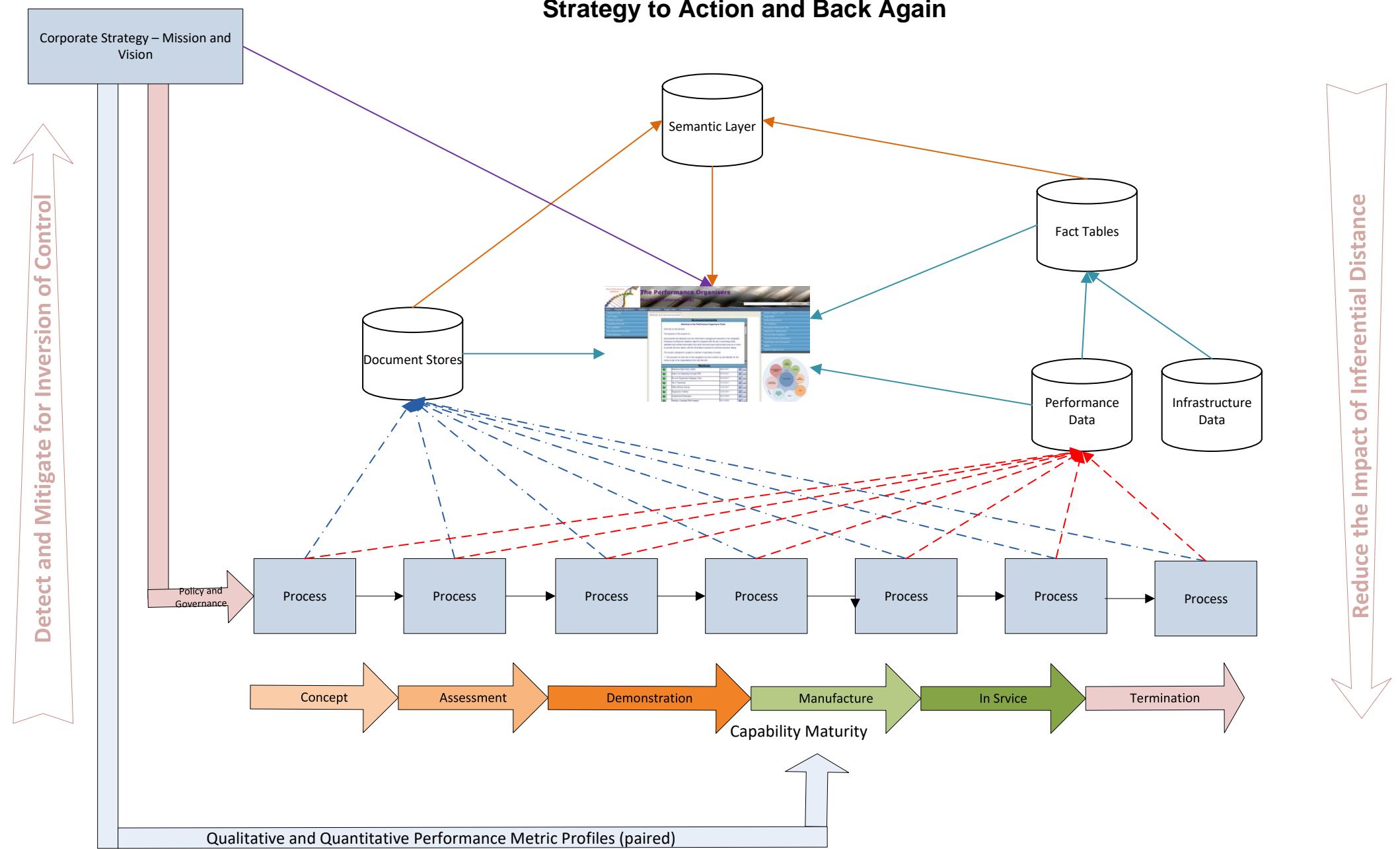
1. “The Puritan Gift” by William and Kenneth Hopper
2. “Living Systems” by James Grier Miller (worth it for the concept of “fray out” alone).
3. “Cognition and Autopoiesis” by Humberto Maturana
4. “The Privacy Engineers Manifesto” Michelle Dennedy et al.
5. “Power and Organization Development”, Larry Griener
6. “The Fractal Organisation” by Patrick Hoverstadt.
7. “Power to the Edge” by Richard Hays and David Alberts

It should be noted that the author of these schematics had a library of some 600 books and these are but a sample. Nevertheless, in the authors view, these are extremely useful books, as collective and comprehensive introduction to the way organisations evolve as systems.



Architecture – High Level Design Concepts	Strategy to Action	Page 58.
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 1.00
System/Project Name: General		Dated: 27/12/2016

## Strategy to Action and Back Again



Architecture – High Level Design Concepts	Strategy to Action	Page 59.
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 1.00
System/Project Name: General		Dated: 07/06/2021

## Strategy to Action

As indicated in the viability diagram, data, collected in linear procedural fashion will go through several transitions and alignments as part of the attenuation effort in order to bring data to the point where it can be made into useful, contextually sound information that can be proved or demonstrated to be linked to higher (and arguably more general) level reporting and lower (arguably more details) reports.

In order to achieve that, the aim should be to make the information management architecture reflect the way the organisation's strategy is defined. The structure applied, that provides the means to align strategy is to take this approach:

1. Define and write an organisation "Charter" or "Articles of Association", which sets out why the organisation was formed, what its operating environment is and addresses issues like the definition of capabilities it holds, its legal environment etc.
2. Define and write a long term "vision". The vision statement, long term being whatever time period fits the achievement of the organisation aim or purpose, being written in such a way that long term objectives can be derived.
3. Define and write a short term "Mission". Mission statements being written in such a way that short term objectives can be derived.
4. Define business unit level objectives, that can be demonstrated to be in support of corporate mission and vision, from which each business unit can in turn derive an action or campaign plan which can, in principle at least, be used to define processes.
5. Use the resulting campaign plan to define the nature of work to be executed using the following, general structure:

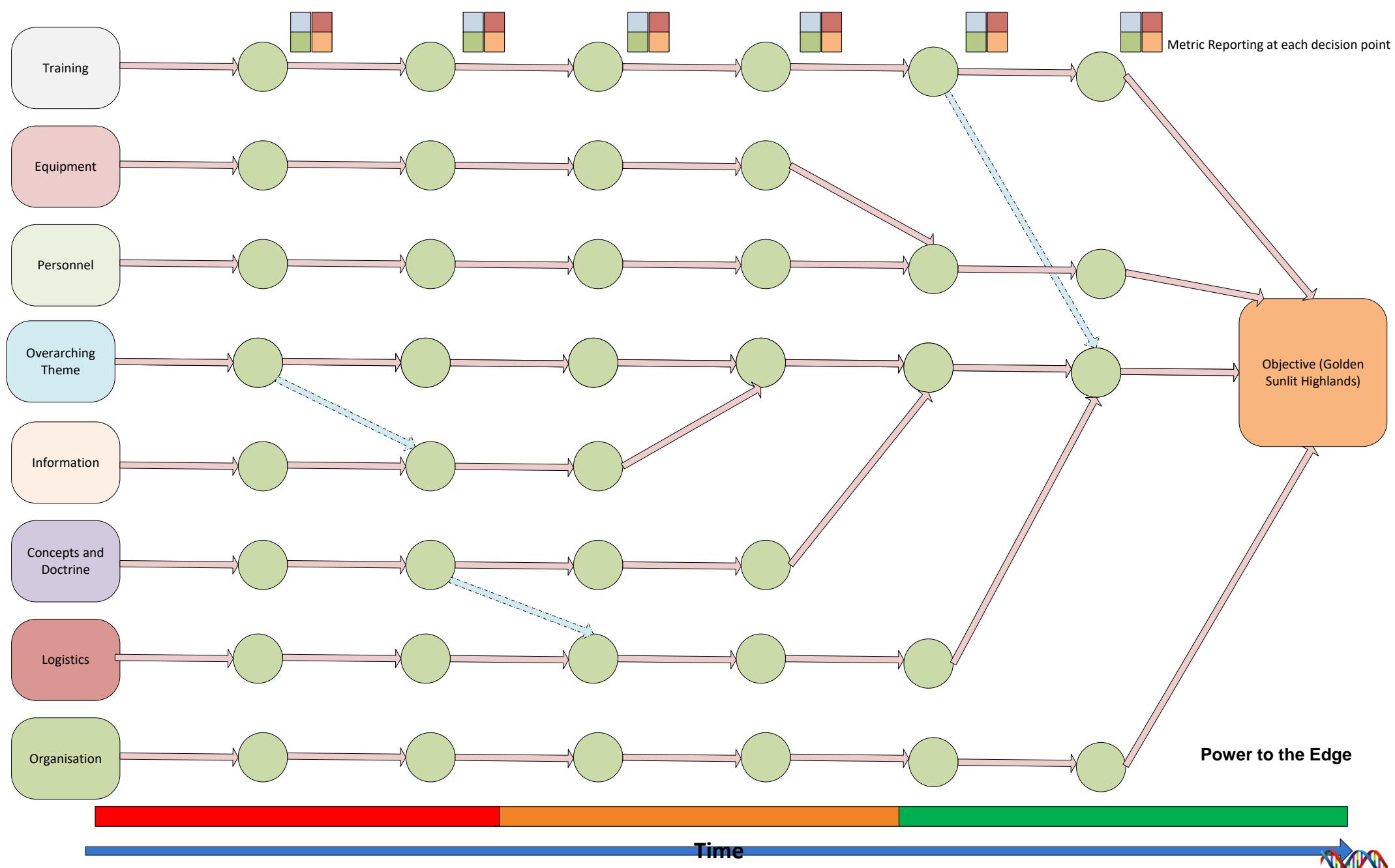
Process  
Procedure  
Task

All to be cross referenced and linked such that each can be demonstrated to be in support of the corporate Vision and Mission

The purpose of the structure above giving a means, business driven, to align, architecturally, the relevance of information delivery in the context of policy and governance.



## Capability Development Campaign Planning – Lines of Development



Architecture – High Level Design Concepts	Campaign Planning - TEPIDOIL	Page 61.
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 1.00
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## Lines of Development Notes

Campaign, or fan planning, recognises the idea that all types of work or programs of work are multi threaded and constrained by time. The threads can be classified along “mutually supportive lines of development (LOD’s). The UK Ministry of Defence uses the acronym “TEPIDOIL” as a means of indicating the purpose of each LOD. The acronym refers to

1. Training.
2. Equipment
3. Personnel
4. Information
5. Doctrine and Concepts
6. Organisation
7. Infrastructure
8. Logistics

To which the author adds:

9. Overarching Theme (which has a coordinating function)
10. Security

For each, there is a need to generate supporting policy documentation. It should be noted that each LOD, while mutually supportive, will introduce their own capability requirements, legislative compliance issues and more besides



The green circles indicate decisive points. Decisive points indicate “go/no go” decision making as opposed to PERT milestones which simply indicate progress



Indicate that decisions should be based on verifiable and validated decision support that is multi perspective and multi dimensional in nature, typically in dashboard form.

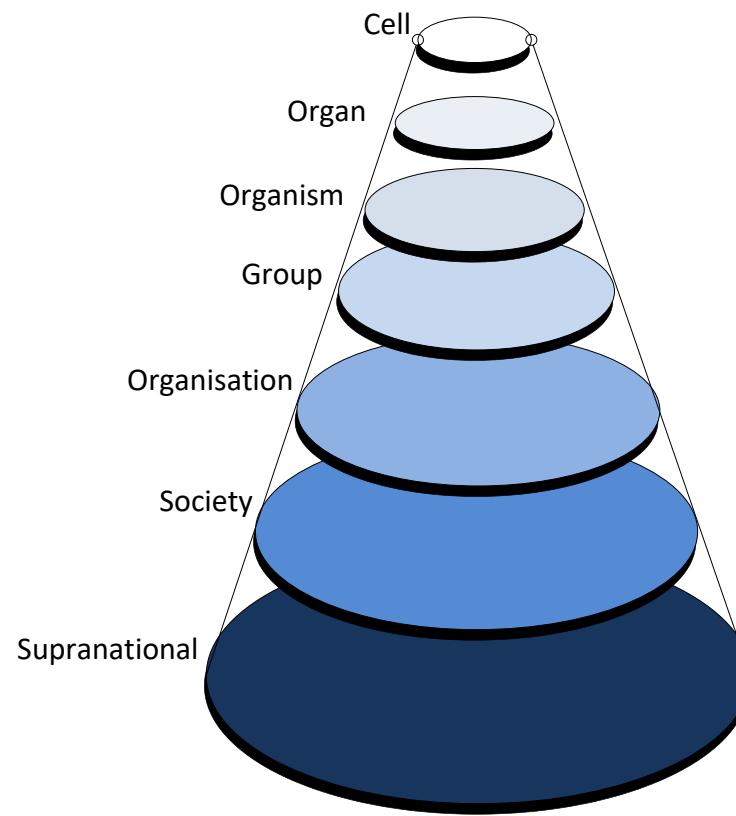


Indicates the nature of the objective. It should be noted that eventually, all LOD should converge on the objective. Where appropriate, objectives should be defined on a SMART basis.

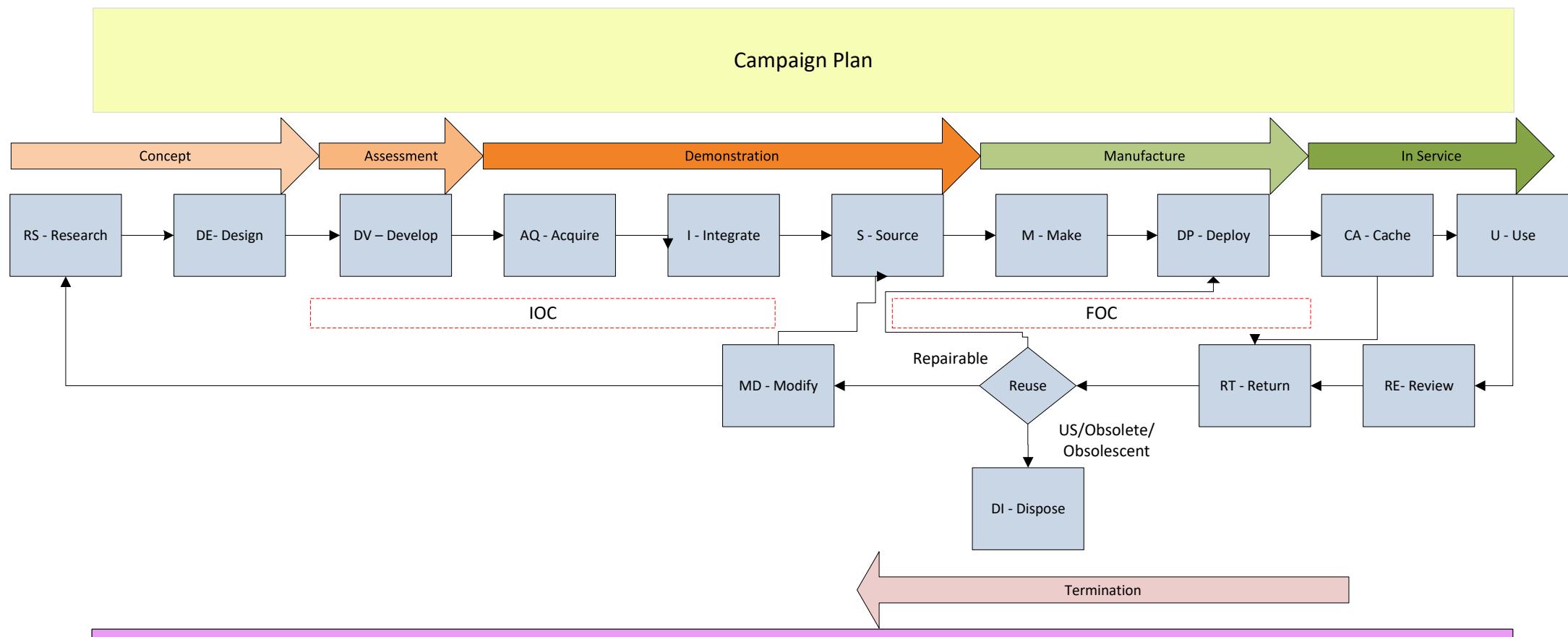


Architecture – High Level Design Concepts	Fray Out	Page 62.
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 1.00
System/Project Name: General		Dated: 27/12/2016

## Fray Out – Bottom Up



## Through Life Acquisition, End to End, Forward and Reverse Supply



### Enable

Charter

Vision

Mission



**Common User Interface**

Objective Catalogue

ISO

IFRS

Acquisition Operating Framework

Business Model(AQPC, EFQM)

**Legislative Context**



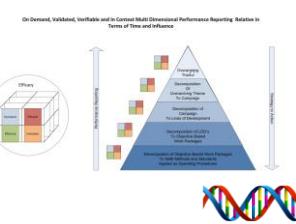
Higher Formations/Corporate Entities

Professional Standards

UK

SFIA

International Legislation



Architecture – High Level Design Concepts	Through Life, End to End, Forward and Reverse Supply	Page 64.
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## Through Life, End to End, Forward and Reverse Supply

Everything, regardless of origin, is lifed.

The great constraint, time, impacts on everything. Each of the lines of development (TEPIDOILS) will impact on each of the six through life management stages set out here.

Everything, given that all things are lifed, need to be managed on a through life basis, from cradle to grave, factory to foxhole or whatever. There is a need to structure through life management. What follows, based on the concept of “acquisition” is a way to organise through life management

1. Concept – Someone has a bright idea, or changes in operating environment generate a need for the means to bring the idea about or cope with the changing circumstances.
2. Assessment – The bright idea or change in circumstance is assessed to determine how to bring about the proposed changes in capability with which to cope with changing circumstances or innovation

*During steps 2 to 3 the primary aim is to reach an initial operating capacity that is, to all intents and purposes, “fit for purpose”. Additionally, a secondary, though nonetheless important aim will be to determine how a new acquisition may be made to fit within existing capabilities.*

*Initial Decisive Point – a go/no go decision on whether or not the proposed new capability is indeed fit for purpose*

3. Demonstration – Once the assessment is complete, a refined design specification will be one of the results. There may or rather will be some sort of prototype, test platform, or draft configuration of an available product to be built, executed and refined to the point of:

*During steps 3 and 4 the aim being to reach full operating capacity*

*Main decisive point – a go/no go decision on whether or not to proceed to manufacture and deployment*

4. Manufacture – The prototype, or pilot design is refined to the point where any new capability can be prepared for in service deployment.

*Refinement of the prototype must also include preparation and design of in service support on a “Lines of Development” basis down to process level that must include inservice policy and governance as a matter of course.*

5. In service – any new capability is deployed and used.

*At full operating capacity, supporting forward and reverse supply and maintenance infrastructure should be in place with the aim of extending the life time of a capability as far as is feasibly and affordably possible*

6. Termination/Disposal – The life expectancy of an asset is reached and the new capability is withdrawn from service/use.

Each step of through life management will have its own legislative, support and other management constraints to take into account as the requirements and capabilities to deliver each will be different. Each step should be capable of being demonstrated to be fit for purpose and capable of being shown to be in support of the short term mission and long term vision

***Information management architecture should be capable of supporting each of the six stages comprehensively, which will include the provision of a multi perspective reporting framework able to prove Efficacy and Viability along four perspectives or views of how well things are going on a through life basis. The perspectives are: Economic, Efficient, Effective and Evolve.***

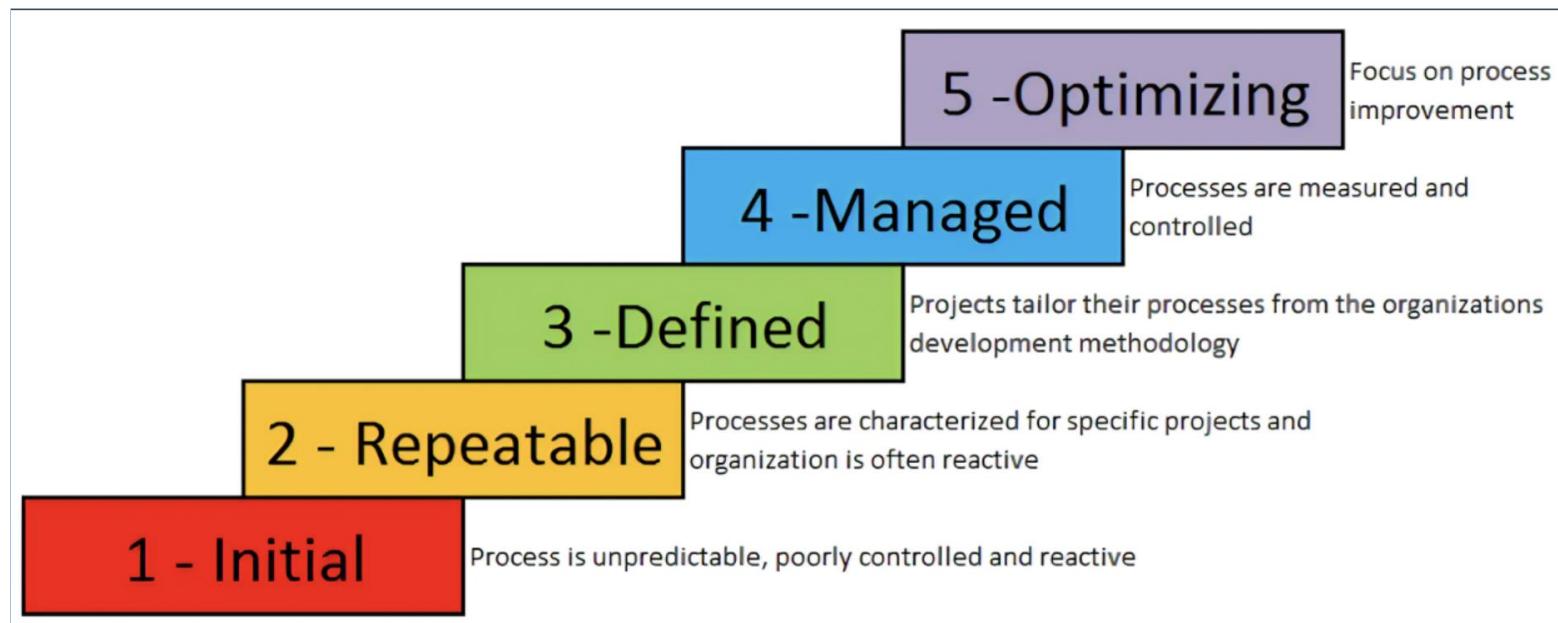


## Through Life, End to End, Forward and Reverse Supply Process Notes



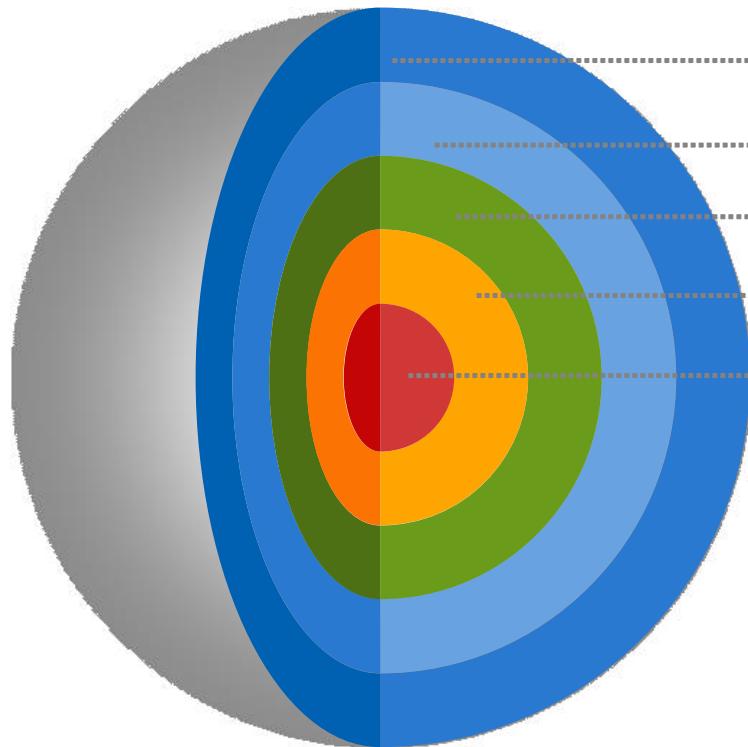
Architecture – High Level Design Concepts	Capabilities change as the organisation matures	Page 66
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 1.00
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## Capability Maturity



# Many Layers, All Mutually Supportive And Dependent Top Down Bottom Up

Information “Onion”



Strategy – Articulation of Vision and Mission

Objectives

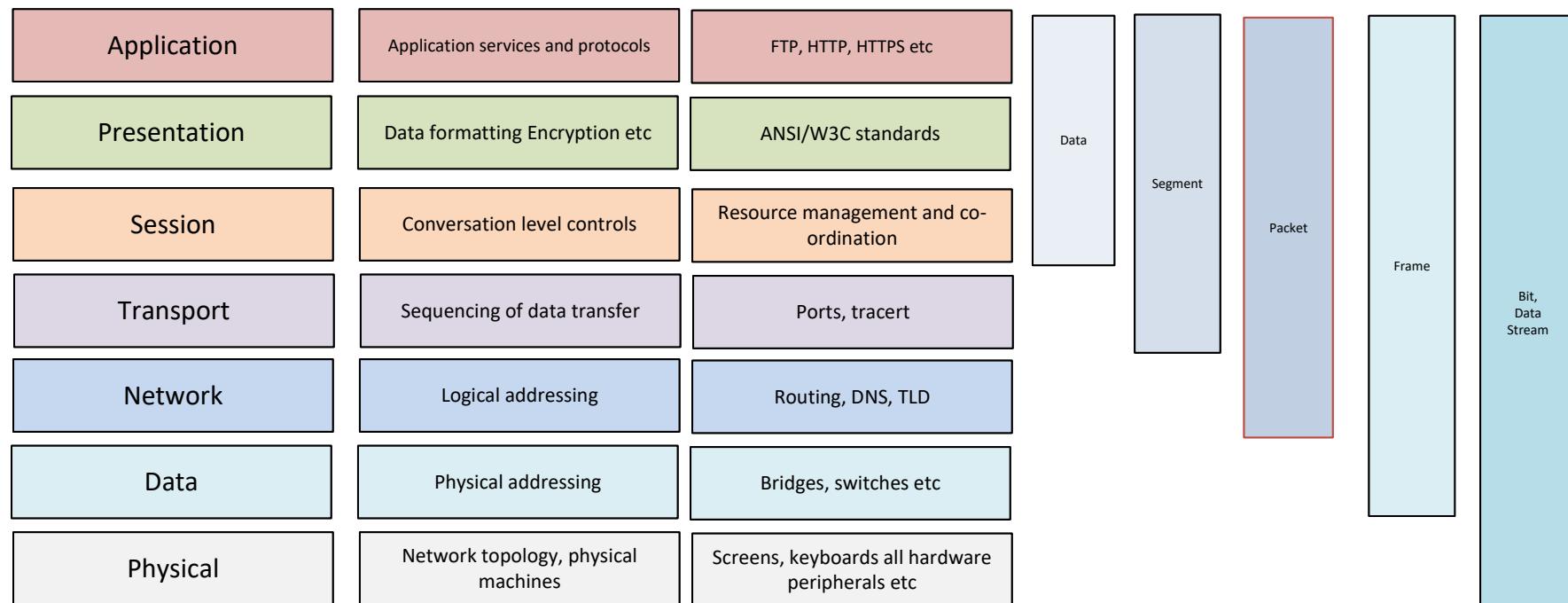
Process, Procedure and Task

Thing (Product, Deliverable, Service)

Ontology, Taxonomy, Meaning, Context



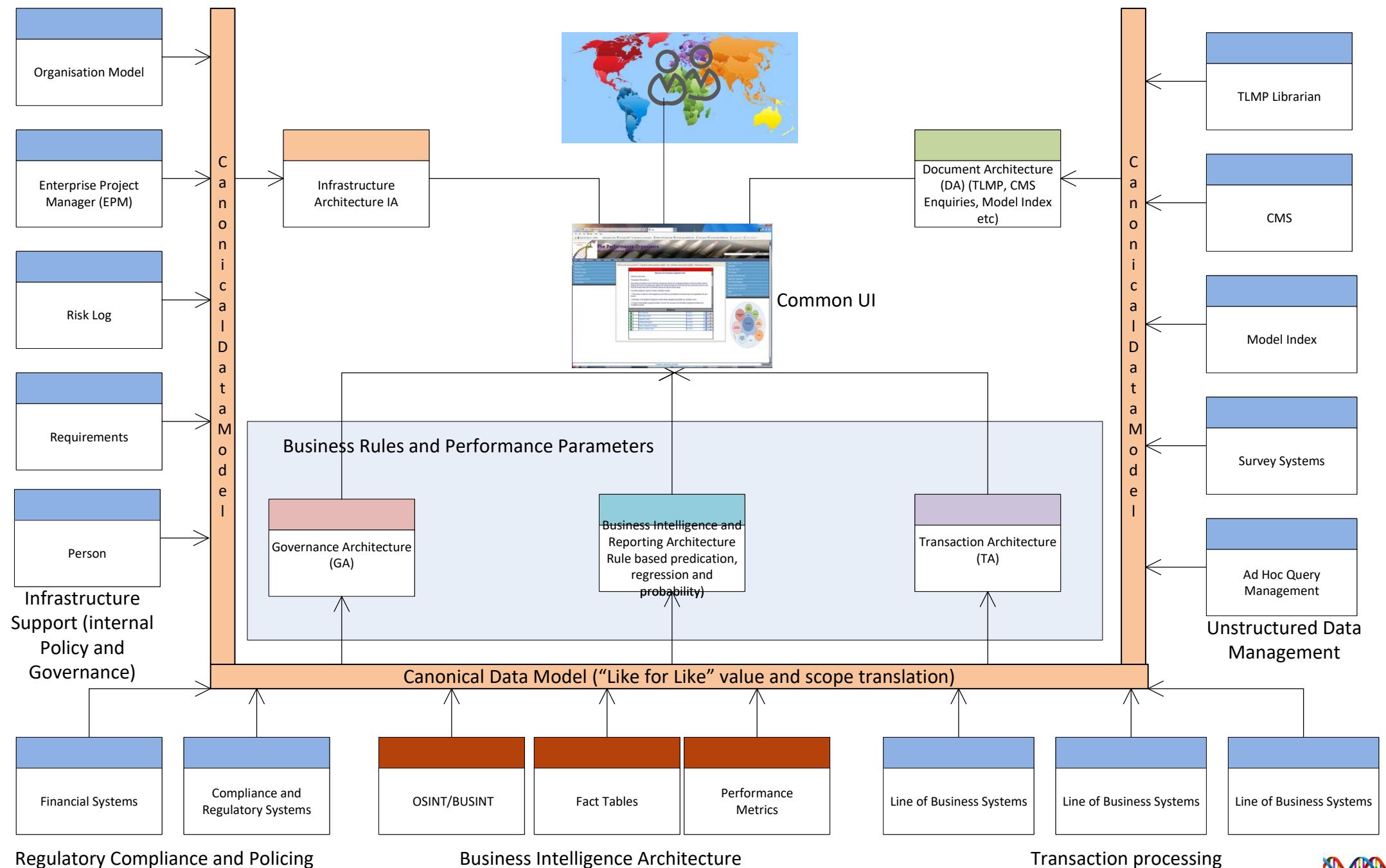
# The OSI 7 Layers



The OSI model is old now, invented by the telecoms industry to provide a means to make sense of the nature of technical complexity involved in the engineering of complex telecommunications. This model is, in the authors view, still applicable. This is “the stack”, a means of illustrating granularity from what is seen on the screen, down to the design of micro-circuits through the use of Karnaugh maps and similar techniques.

**NO ONE IS EXPERT IN ALL 7 LAYERS!**





Architecture – High Level Design Concepts	Database Federation Notes	Page 70.
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 1.00
System/Project Name: General		Dated: 07/06/2021

## Database Federation Notes

In the authors view, as a direct result of the paradigm “people, process and technology” it is typical that the majority of information technology architectures are focussed on solving problems related to data capture, at the level of “process”, which, again typically, is detached from organisation form function and purpose. An understanding of organisation form, function and purpose is essential for the construction and delivery of verifiable and properly validated evidence based decision support.

It should also be understood that as a matter of storage, many federations may contain data held in various forms such as:

1. Relational databases
2. “Fact” tables
3. Resource Description Frameworks
4. Index Sequential Access
5. And more...

All of them (to reiterate – and more) designed to support different forms of information delivery. Each will have different design constraints as either advantages or limitations. Each therefore will, or rather should, have carefully documented definitions of things like table structure, relationships, source data and how it is collected, reporting purpose and so on. Documentation, from the perspective of full life cycle management, will, in documentation terms, explain the transition from logical design to physical implementation.

Unfortunately, it is the case that OEM’s in particular will see the kind of documentation referred to above as a matter of intellectual property and therefore do not release it in as much detail as may be necessary to address issues of things like alignment and attenuation which in turn can make legislative compliance more difficult than it needs to be.

On compliance, there are a few fundamental techniques (normalisation, indexing strategy, though life for example) that all dat management personnel should be aware of and be trained on. It is difficult, if not impossible, to write documentation like “Records of Processing Activity” and to carry out sufficiently detailed risk assessment unless and until the nature of data design and implementation is understood, at least in overview.

It should also be understood that data has a life cycle. Usually the focus is on “currency” which in turn drives minimisation to maximum effect. However, it is the case that from time to time, organisations will seek to re-platform and therefore integrate data held in databases in different ways for different reasons from initial acquisition of a database. Mergers and Acquisition is one such reason the implications of which are rarely understood but should, as a matter of practical issue solving, be included in any value assessment. Why? **Because the physical designs of, say, a Customer Relationship Management (CRM) database, especially the more sophisticated products, will contain, as a matter of design, tens of thousands of data entities (tables) and relationships between them, optimised for query execution purposes by the use of an indexing plan, that are often complex issues to address in their own right. In addition, if and when data is moved from one such product to another, it is often the case that those doing the transfers find out that they only own the data, but definitely not rights to the underlying design.**

**HEADS UP.**

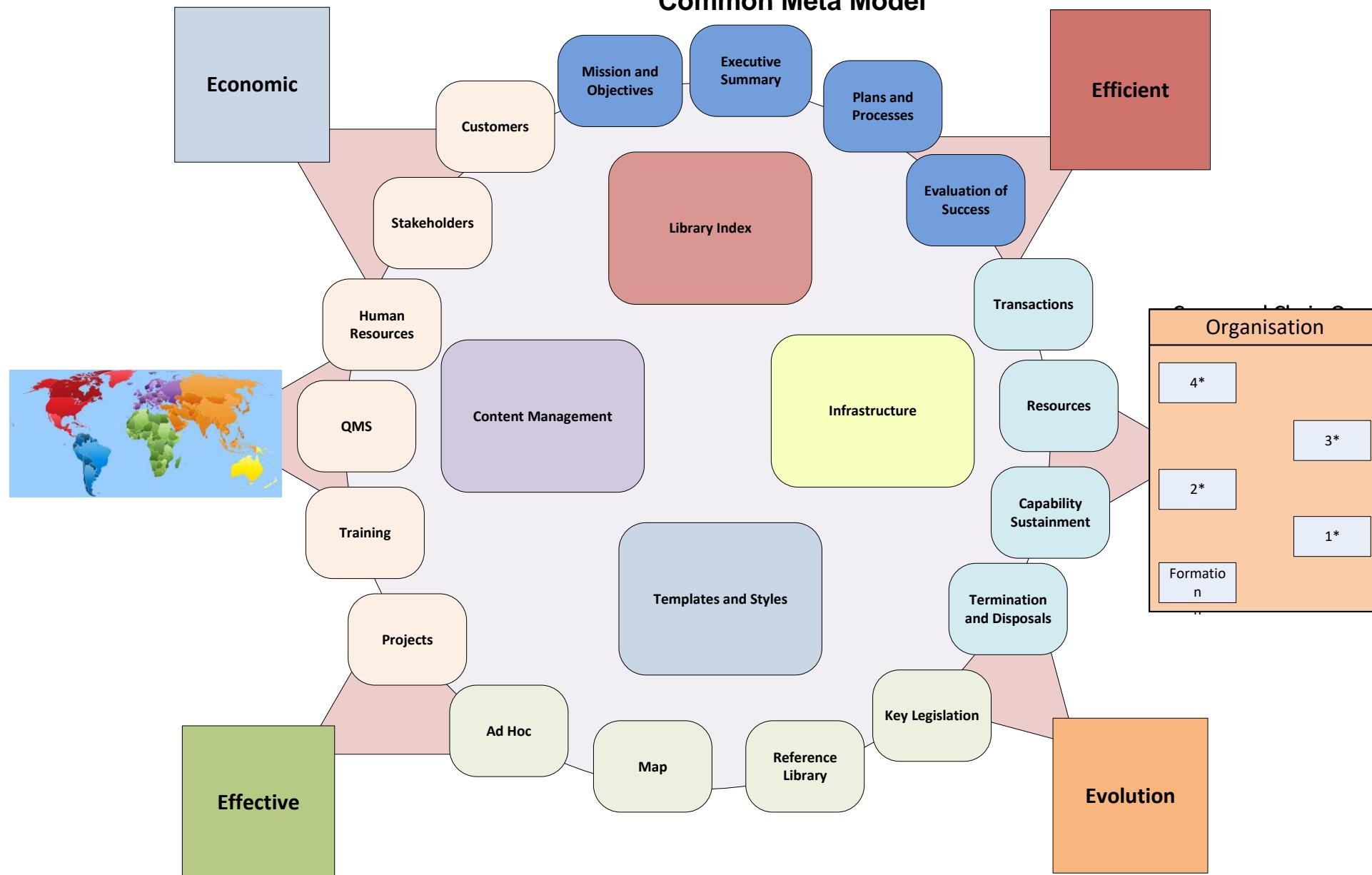


Architecture – High Level Design Concepts	Unstructured Data Management	Part 5
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 1.00
System/Project Name: General		Dated: 07/06/2021

# 5. Unstructured Data Management



## Librarianship – Control and Management of Location of Unstructured Documents and Files – A Common Meta Model



Architecture – High Level Design Concepts	Unstructured Data Management	Page 72.
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 1.00
System/Project Name: General		Dated: 07/06/2021

## Why “Unstructured Data Management”? A Common Meta Model

If two or more people are asked to write a document on the same topic, it is extremely unusual for both to write precisely the same words in precisely the same order. Nevertheless, both will, hopefully, write about the same thing. Both documents will be further limited by the nature of the limitations of each authors observations on the subject matter, their own biases and more besides. It is also likely too, that each will file and index their contribution in different ways to each other. From a data management perspective, that presents a few problems that must, or rather should, be addressed. For the purposes of these schematics, the following data management issues apply (there will be more no doubt).

1. The management of location (even in a sharepoint or other centralised document storage systems there will still be local stores on local devices).
2. Point one, also implies that document management capabilities should be available across any organisation from desktop to servers and that in turn implies an architectural foundation with the aim of ensuring a coherent end to end document management regime which in turn means the provision of easy to use tools, of an integrated nature that are deployed both client side and server side.
2. The concept of ownership. Organisationally the nature of ownership is, all by itself, of fundamental importance. Ownership includes the maintenance of version control, change tracking, a common naming convention and more besides
3. Unstructured data has a life. Document files in particular “have legs”.
4. Document files are perhaps the great untapped business intelligence resource and therefore there is real business benefit in being able to tap into that resource.
5. Aside from data protection, it is often the case that documents should only be seen in whole, or in part, by those authorised to see them
6. That document files “have legs” is one of the major causes of “my numbers are not your numbers” type debates.
7. The provision of the means to allow “freedom of expression” in document files, but also the means to search content, in respect of “relevance”

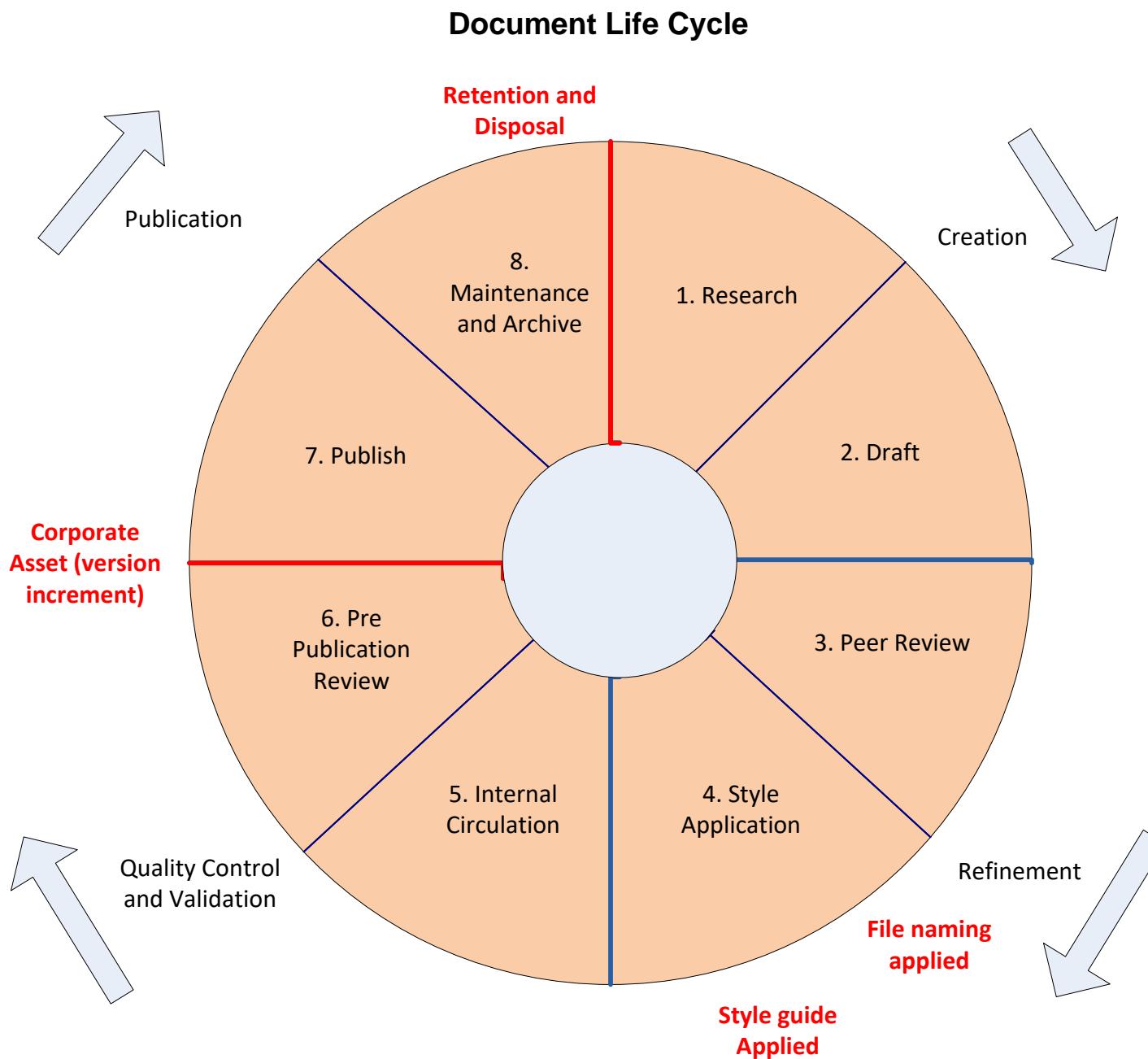
As a consequence, it makes sense, in order to address those problems, to organise the management of documents on the same basis (as near as possible) that other data forms are organised, that is to say as “data records”. And by that, that is to say to be in a position to search, or mine document files on a similar basis to, say, a SQL server database and to be able to link any search results against both structured and unstructured data in order to provide decision takers with more complete evidence.

As with all other aspects of data management, the management of document files should, in principle, be treated to the same kind of design discipline as, say a relational database, as far as possible. The following schematics provide an overview of the design approach the author applied over many years that had the disturbing impact of working in the vast majority of cases.

As to whether or not the design and implementation effort is worth it, the author has available a case study related to the safe use, storage and transportation of lithium batteries and how the principles set out in the following schematics were applied to the activities that surround lithium batteries which is available on request for those who wish to have some idea of the business benefit, other than data and privacy protection, that can be gained if the operating principles set out in the following pages are applied.

Bear in mind that what follows is not “the” way to do anything. Just a way that works.





Architecture – High Level Design Concepts	Document Life Cycle Notes	Page 74.
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 1.00
System/Project Name: General		Dated: 11/06/2021

## Document Life Cycle Notes

### Gaining Control of Ownership and Location (1)

All data is “lifed”, it is created, stored, analysed and eventually deleted. Time is the great constraint and document files are impacted by its influence. Above all, the life cycle illustrated should be applied as a matter of quality assurance. For the purposes of these schematics, the following stages of document management assurance are:

2. The definition and design of a common folder structure the aim of which is to control location of all document files whether locally or centrally stored
3. Structured document design such that document management infrastructure related to ownership can be “built in” such that documents can be identified as corporate assets
4. In due course, once ownership and location are sufficiently well controlled, enhancements to desktop office automation tools like word processing can be implemented such that the look like an integral part of the parent applications but can be used by desk operators as a means to ensure that adherence to corporate document management rules is easier to achieve.
5. That automation of key infrastructure (cataloguing of location, corporate dictionary building and more) can be automated both server side and locally.
6. Ultimately, that document files form part of a verifiable and validated information architecture and be treated in much the same way from query, security and other perspectives as a database container.

The 8 stage, circular life cycle illustrated in the preceding schematic also indicate a growing maturity in respect of how document files are created and maintained. The key elements of information management discipline that should be applied as a matter of governance are indicated in bold red type in the document life cycle schematic.

**It should be noted that in the life cycle model set out in the life cycle schematic, there is a clear point when a document becomes a corporate asset and is subject to version control number increment. The preferred numbering, or other form of version incrementation is a matter for each organisation.**

There are case studies available from the author that illustrate and describe real life implementations of the conceptual architecture design described in this section of the schematics

Sample policy definition documents are available. It should be noted that the tools and techniques described here were implemented. The “Document Management Common Meta Model” graphic was used as a gateway interface into the wider information architecture and several hundred templates, inert and “location aware” were developed and used operationally.



Architecture – High Level Design Concepts	Management of Document Location	Page 75.
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 1.00
System/Project Name: General		Dated: 27/12/2016

## The Control and Management of Location

- 01 Executive Summary
- 02 Mission and Objectives
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- 21 Security Policy
- 97 Archive
- 98 Left
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- 100 Infrastructure

### Gaining Control of Ownership and Location (2)

The top level folder structure presented here is based on the concept of the management of through life acquisition of capabilities and doing so on the basis of being used from “concept” through to “termination”.

A full list of the complete folder structure and how each may be used, is available on request from the author.

It should be noted that the reasons why a common folder structure should be established as a matter of policy to be monitored as a matter of governance include:

1. It is the case that while there may be a common and central document store, it is the case that on a decentralised basis, computer operators will have their own, local stores, that they may operate which may and probably will, have their own material stored in them. There is a need to establish ownership and part of that is to control location.
2. The possibility for spidering and corporate dictionary building becomes easier if location of document files is managed
3. Compliance in respect of legislation, of all kinds, becomes easier to address.
4. A standard, or common folder structure becomes easier to protect.
5. A standard folder structure forms part of a searchable architecture which can be treated in a similar way, from a data management perspective, as a database table in the document management database. Database tables are designed, so should document folder structures.



Architecture – High Level Design Concepts	Document Template Design	Page 76.
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 1.00
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## Document Template Design – The Key to Establishing the Principle of Ownership

<p>The Performance Organisers Created/updated 11/06/21 </p> <p><b>General Template</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Main Title:</td> <td>Date:</td> <td>Release:</td> <td>Draft/Live/Final</td> </tr> <tr> <td>Author:</td> <td colspan="3"></td> </tr> <tr> <td>Owner:</td> <td colspan="3"></td> </tr> <tr> <td>Client:</td> <td colspan="3"></td> </tr> <tr> <td>Version:</td> <td colspan="3"></td> </tr> <tr> <td>Release Classification</td> <td colspan="3"></td> </tr> <tr> <td>Document Number:</td> <td colspan="3"></td> </tr> </table> <p>Note: This document is only valid on the day it was printed</p> <hr/> <p><b>Revision History</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2"></th> <th colspan="2">Date of next revision:</th> </tr> <tr> <th>Revision Date</th> <th>Previous Revision Date</th> <th>Summary of Changes</th> <th>Changes Marked</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <hr/> <p><b>Approvals</b></p> <p>This document requires the following approvals. A signed copy should be placed in the project files.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Name</th> <th>Signature</th> <th>Title</th> <th>Date of Issue</th> <th>Version</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <hr/> <p><b>Distribution</b></p> <p>This document has been distributed to:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Name</th> <th>Title</th> <th>Date of Issue</th> <th>Version</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Main Title:	Date:	Release:	Draft/Live/Final	Author:				Owner:				Client:				Version:				Release Classification				Document Number:						Date of next revision:		Revision Date	Previous Revision Date	Summary of Changes	Changes Marked													Name	Signature	Title	Date of Issue	Version																Name	Title	Date of Issue	Version													<p><b>General Template</b></p> <p>Created/updated 11/06/21 Internal </p> <p><b>References</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Internal</th> <th>Location</th> </tr> <tr> <th>Ser</th> <th>Description</th> <th></th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">External</th> <th>Location</th> </tr> <tr> <th>Ser</th> <th>Description</th> <th></th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <hr/> <p><b>Location Details</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Original Path on Development</td> </tr> <tr> <td>TLMP Folder Location</td> </tr> </table>	Internal		Location	Ser	Description																							External		Location	Ser	Description																							Original Path on Development	TLMP Folder Location
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### Gaining Control of Ownership and Location (3)

## Document Design Notes

In order to take control of documents, in all forms, as an exploitable decision support resource, it is necessary to regularise the way documents are structured from the perspective of layout, but to do so in a way that the layout does not inhibit freedom of expression. There are a number of considerations to be made when considering document design, they include:

1. Style (the use of fonts, logos etc)
2. Quality assurance (the use of external document properties, version control and more besides).
3. The clear establishment of ownership of documents.
4. The management location.
5. File naming conventions
6. Visibility marking
7. Support for content cataloguing and referencing for, say, a corporate dictionary with the attendant advantages in respect of search that are possible.

### Developing a Style Guide

In respect of development of design, for pathfinder purposes, it is recommended that this link to the UK Defence writing guide is reviewed on a pathfinder basis in respect of the attention to detail it contains. While such a detailed guide may not be seen as desirable or feasible, readers may like to consider the difficulties they have with document management in their organisation in the light of difficulties with compliance generally. If document files are to be used as an information resource, there is a need to design layout etc.:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/940304/20201201-DCDC\\_Writers\\_Handbook\\_Sept\\_2020-O.pdf#:~:text=%20Joint%20Service%20Publication%20%28JSP%29%20101%2C%20Defence%20writing,2019%202%20and%20follows%20the%20plain%20English%20principles. Or, alternatively, search for "JSP101".](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/940304/20201201-DCDC_Writers_Handbook_Sept_2020-O.pdf#:~:text=%20Joint%20Service%20Publication%20%28JSP%29%20101%2C%20Defence%20writing,2019%202%20and%20follows%20the%20plain%20English%20principles. Or, alternatively, search for )

### A File Naming Convention

It is also recommended that a file naming convention is defined. A suitable file naming convention should, within the constraints of file naming limits, include a date group, the file name, an indication of version number and an indication of sensitivity, one of the spin off benefits being that the order that files are listed in directory or folder listing can be predicted. A sample convention may look like the text below:

20210614 – A file name - 1 – U

### The Opportunity for Automating Document Management

More importantly, if as a matter of design, file history, version control and so on is placed as a matter of design, in a known place, then it becomes easier to programmatically catalogue text content (see supporting document infrastructure) to establish and consequently maintain, as a matter of general data management, a relationship between the organisation vocabulary, document files content and where such content is stored in a known library folder structure. The image file preceding these notes illustrates the fontispiece of the formal document styling the author implemented.



Architecture – High Level Design Concepts	Document Management Desktop Toolkit	Page 78.
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## Document Management Desktop Toolkit

### Gaining Control of Ownership and Location (4)

#### Office Automation Toolkit

An office automation toolkit was developed that provided the following facilities for use within MS Office apps that went beyond what was normally offered given that inevitably given each organisation is different, standard desk top menu ribbons needed some additional capabilities. Briefly the facilities provided included:

#### Controlled Link Management

The means to link, directly, to reference web sites, whatever they may be. In the authors case that means being able to connect directly national and international primary legislation authorities

#### Controlled Links to the Web Portal (see “Implementation”)

Each ribbon could access a common set of web tools (risk register, asset manager, legislation librarian and more) designed for internal policy and governance delivery use.

#### Enhanced File Management Utilities

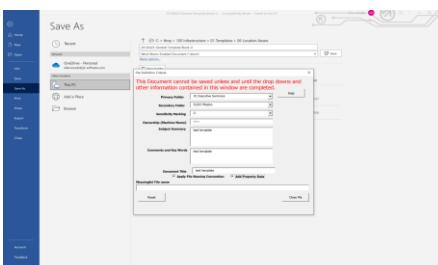
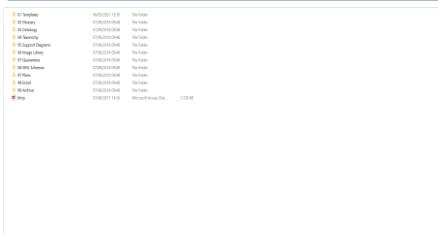
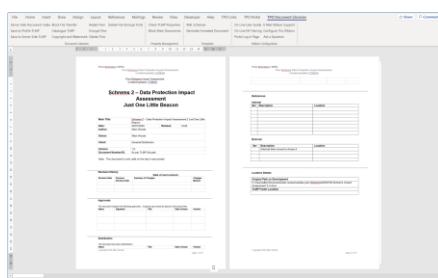
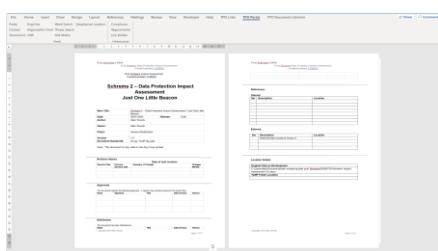
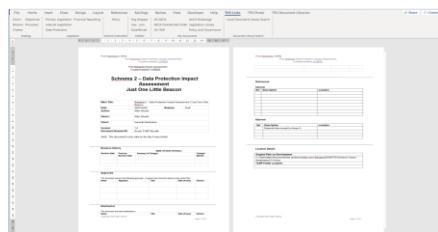
The provision of the means, at the desk top, to configure the ribbons, layered document deletion (normal delete, encrypt first, then delete and absolute disk deletion), redaction, layered encryption and more besides

#### A Template Library

For each and every implementation, on the basis of “through life” management of unstructured data, document templates for the ISO 9000 and ISO 27001 were created on a proof of concept basis. Subsequently, using the same document design structure, templates for other purposes could be and were created. The template library consisted of some 200 document types, again as POC

#### Smart “Location Aware” Templates

Assuming management of documentation can be applied, then it is feasible to construct programmable templates that will be location aware both client side (in a known, planned and governable location) and server side (again into known, planned and governable location), smart templates can also be made location aware (capable of watermarking content as a “copy” for example) and more besides. The image shows the “actions on” the use of “File, Save As” feature



Architecture – High Level Design Concepts	Supporting Document Management Infrastructure	Page 79.
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## Supporting Document Management Infrastructure

### Gaining Control of Ownership and Location (5)

In addition to desktop tools that could be seen and operated at the desktop, there were other infrastructure components built that could be actioned through the desktop ribbons or as a silent hours process or were built in to the portal with the aim of providing enhanced search capabilities that included access to both structured and unstructured data. The two major elements of the supporting infrastructure were:

#### A Dictionary

The average corporate dictionary is somewhere in the region of 100,000 unique words (in any language). That single fact meant that developing a corporate word search capability, that could be tapped into using well understood query infrastructure like Structured Query Language became possible on issue to do with ownership and location management could be solved (largely).

The dictionary provided the following capabilities :

1. The means to catalogue words by spelling, type (verb etc) and meaning (particularly for technical terms) and word ownership (based on the organisation map and its ability to plot or draw the relationship between organisation and process).
2. The means to establish a link between the appearance of individual words in one or more documents.
3. The means to establish the location of the documents within the through life folder structure in relation to each dictionary word.
4. The means to store the “score” of word value on the basis of phonetic value and frequency of occurrence in the TLMP folder structure. The scoring and maintenance of location relationships being maintained by a document spider (see below)

#### A Document Spider

The second most important piece of supporting infrastructure was the building of a document spider to execute the kind of cataloguing requirements set out above. The conceptual basis for making the spider was that document files in an MS Office world are “packages” which consist of a number of classes of data that include things like images, text and formatting (styles fonts etc) that are rendered, browser like, in MS Office applications when requested by MS Office users.

It is recommended that readers look up and study the “Open Office XML standard for more details of how the “package concept is implemented once understood, it is relatively straightforward to either take advantage of a document package structure, or the MS Office object library through the use of tools like “Visual Studio Tools for Office” to build the kind of components referred to above. In respect of the spider, it was implemented as a dynamic link library and therefore could be executed as a silent hours scheduled process or, on a key press within the office ribbons.

The creation of the dictionary, as a database as briefly described above, meant that access to the dictionary could be implemented as an integral portal search facility that was relatively easy to implement across the portal bringing a contextually sound search capability across it.

There are two supporting documents “Documents are packages.pdf” and “lithium.pdf” that go into both the nature of document packaging and the search capability that is possible if the architectural principles set out in this section of the schematics are applied, that will be supplied on request if the author is asked.



Architecture – High Level Design Concepts	5. Implementation	Part 6
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 1.00
System/Project Name: General		Dated: 27/12/2016

# 6. Implementation

Associated with this section is document ID : 20180627-Product Architecture-1-U



Architecture – High Level Design Concepts	To Cloud or not to Cloud - Considerations	Page 80.
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 1.00
System/Project Name: General		Dated: 07/06/2021

## To Cloud or not to Cloud - Considerations

To cloud or not to cloud, that is the question nowadays. The following considerations should be taken into account when considering the use of cloud hosting and services (it should be noted that these notes and the preceding diagram are indicative, no two organisations work the same way and no two organisations have the same form function and purpose):

1. Beware of geeks bearing gifts. In particular the often paired seductions of “free” and “simple”. Open source, for example, is not free of responsibility and liability

### 2. DO NOT JUST DO STUFF

3. If, as the EU Eprivacy Directive states, there is a sphere of privacy for the individual, there is also a sphere of privacy for the organisation. Failure to properly defend the organisation sphere of privacy is an existential commercial risk.

4. Read, carefully, the licence and other terms and conditions of the service provider. In particular take account of the following:

a. **The cloud provider is usually not responsible for the security of the hosting services they provide to the organisation or cloud user.**

b. Cloud services are usually metered by matters like bandwidth and the nature of processing. As an example, run a complex query over just two data sets with 500k records in each is processor intensive. That kind of thing can be detected and charged for.

c. Cloud provider terms and conditions can and do under some circumstances place restrictions on the use of third party components and tools.

d. **Make absolutely certain that the organisation knows where the physical machine is located. The location of the physical machine will often introduce the legislative and compliance constraints of countries other than your own.**

e. **Make absolutely certain where any domain associated with the use of cloud services is maintained in your own country**

f. Plan on a through life basis, including an exit or termination plan.

g. Key operating principle is “ownership”, almost ALL software and other licensing terms do not grant ownership and instead allow minimum use rights. In effect, the organisation owns nothing and therefore surrenders commercial control to a significant degree.

h. Understand the nature of your code and data “supply chain”. The web is not called the web by accident and using the web is, in effect, opening several windows to the world.

i. Understand the nature of the business intelligence gathering potential of just visiting a host provider machine. The host will know the nature of your organisation's business and therefore will know, because of the nature of metering, when your visitors access your cloud services.

k. On the terms and conditions, bear in mind that the terms and conditions often reserve the right to audit your platform

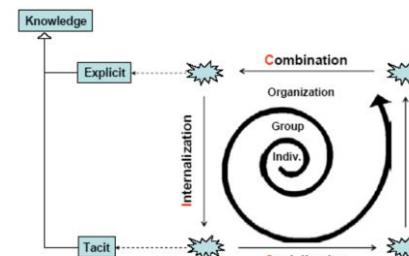
L. Any data stored on any second or third party device is at risk. Therefore store data outside your boundary for the minimum period of time consistent with operational need. ALL data to be used for analytical purposes should NEVER be held on third party devices. ALL data that involves the movement of money should only be stored for the absolute minimum time on third party devices

**There will be other concerns and considerations related to the use of cloud services of any kind. The ones listed here are simply openers for 10 to be considered before installing software and collecting data. Consider it all as a matter of existential risk and plan accordingly. None of this is simple.**

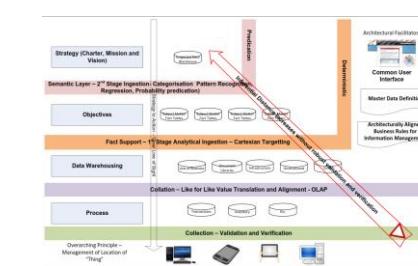
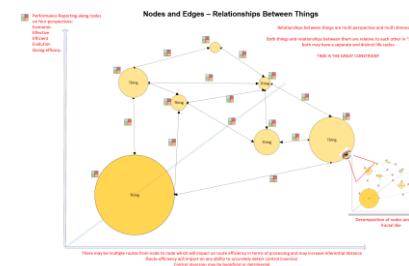
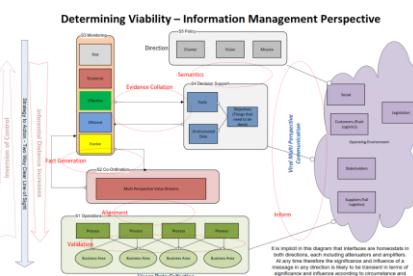


## On AI, Trees and Rules

There is and always will be, some consternation about the nature of “artificial intelligence”. The authors view of AI is that it is mis named to say the least and is neither intelligent, nor as omnipotent as claims seem to suggest.



There are a number of paradoxes involved with AI illustrated in part by the two images above. On the left, the DIKW pyramid invented by a western mind, structured along strict geometrical lines, on the right the “knowledge spiral” invented by eastern minds. In the authors view, both represent a cultural conflict in the way intelligence is perceived. Note that of them, only the DIKW mentions “wisdom” and if anything, intelligence can only be demonstrated with the accumulation of knowledge coupled with the ability to judge on the basis of self interest (usually) how to use the acquired knowledge. Knowledge being constrained by limits of observation and time in all its glory.



A further set of paradoxes are illustrated above. The left image illustrating the concept of data transition from collection (which tends to be linear and procedural) through to various alignments and transitions for reporting purposes. Reporting being viral, organic and contextual reflecting the “need to know” in various parts of a system. The second illustrating the fractal nature of data collection, which drives the iterative nature of all software development with the iterations starting about 2 seconds after someone asks a question like “what if”. And finally, the third image indicating the impact of inferential distance from data collection through a reporting structure. Inference inevitably affecting the detail of reporting.

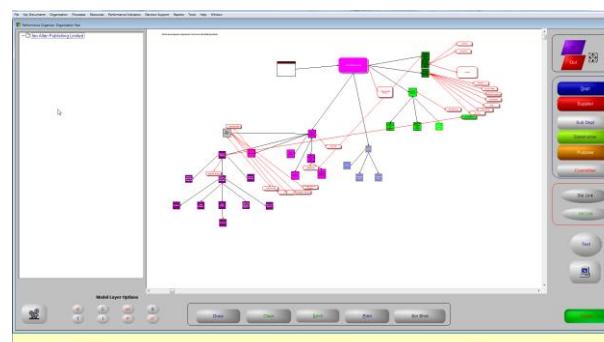
All of which will be impacted by “Bias” which too, is multi layered and multi perspective and limited or rather generated, by the scope of observation.

In the author view, much of AI is about the application of non deterministic analysis techniques (regression and probability testing) based on rules that are, by definition, a constraint on observation. The use of tree like structures, based on a taxonomical view of structuring data, tending to ignore the nature of relationships between things, which are themselves constrained by time, are limited by observation and are multi dimensional.

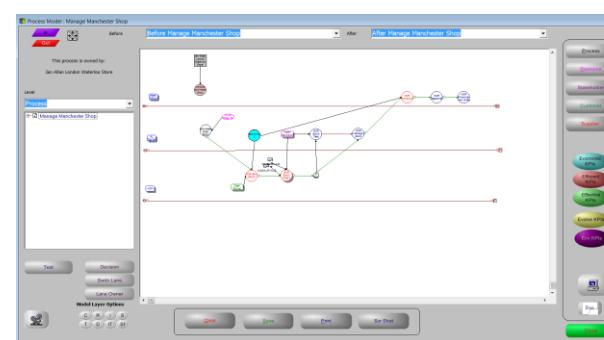
In short, on AI, beware of geeks bearing gifts. Associated with this page is an essay on the limits of AI which is available on request.



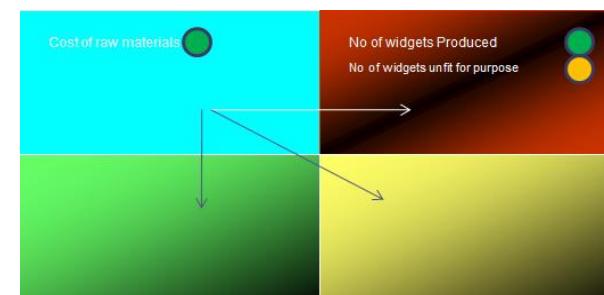
Map the organisation management structure. Plot relationships, formal and informal, between “Departments”, “Stakeholders”, “Customers”, “committees”. Plot information delivery interfaces.



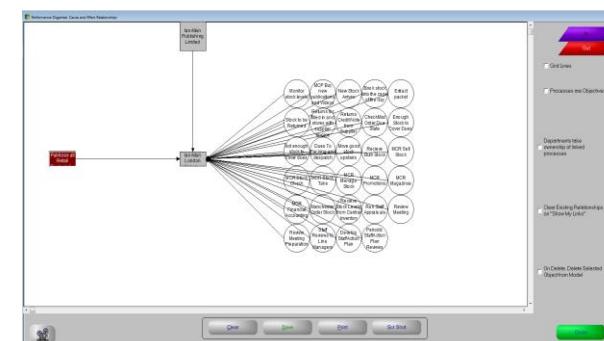
Plot and map process flows. Identify transaction measurement points and define as performance metrics. Include data collection points, associated documents and resource profiles. Establish process ownership and process operation



Position metrics in dashboards in the four E perspectives as performance dashboards to test viability and determine efficacy. Determine relationships between metrics across multiple organisation elements, processes etc.



Identify, investigate and plot relationships between organisation elements (Departments, external influencers, metric profiles, process steps and more besides.



The map is stored in a relational database and forms a digital description of organisation form, function and purpose. Behind each drawing pad is the means to describe attributes of each element in text form or as numerics.

The map fills a key meta data level gap that is usually present.

The process maps, again, digitised, form an process catalogue that is consistent with general business quality assurance initiatives like ISO 9k, ISO 27k and more besides.

The dashboards, as a matter of design, can capitalise on relationships, at the perspective level, between metrics.

The icing on the cake? TO be able to explore and therefore exploit relationships between key organisation elements as an application of graph theory. Any of the mappable elements can be selected as a start point in any exploratory exercise.

Each element in a graph map can be linked directly to its own dashboard.

***The icing on the cake? Change the diagram, change the information flow can be implemented making the organisation map a change agent in its own right, or providing the means to test various configurations of organisation form, function and purpose.***



Architecture – High Level Design Concepts	Change the Diagram, Change the Information Flow	Page 83.
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## Change the Diagram, Change the Information Flow

The following notes describe some of the history of the organisation mapping software the author developed based on the operating concepts set out in the previous sections of this document. The tool, called “The Performance Organiser”, took some 10 years to reach the state of maturity it got to before stopping development. The primary reason for ceasing development was that the author is no salesman and needed to concentrate on making a living.

Using it, the author was able to map the entire UK armed forces management and command structures from 3\* to platoon level, a large US vehicle manufacturer (for experimentation purposes) and a niche book seller specialising in the world wide publication of specialist books on things like science and transport infrastructure.

The rise and proliferation of the web meant that one of the key data management infrastructure requirements, that is to suggest that an information architecture should provide provable evidence based decision support, can only be made to work if it accurately reflects organisation form, function and purpose. The need for information management to reflect organisation form function and purpose made more significant because of the need to demonstrate and prove more complex regulatory compliance.

Organisation maps, digitised into a queryable database form were built for and used on the following tasks:

1. The development of the UK MoD health and Safety Information System (HSIS)
2. The Management of the Joint Deployed Inventory (MJDI) portal for the UK Defence Support Chain
3. A performance reporting proof of concept exercise to prove the viability of a multi dimensional multi perspective logistics reporting framework.
4. The development of a catering management information system covering some 1500 separate business units world wide.
5. The authors web site portal, used to demonstrate the nature of forward and reverse supply chain operations and the nature of a GDPR DPO role

The key benefit of each of the map being to fill in one of the common meta level gaps in many information management platforms, the provision of the means to describe how an organisation works in a digital form, stored as a relational database that could be plugged in to a wider database federation of specialist applications (a risk register, a web publishing capability and more besides) and linear data collection platforms with the aim being to facilitate coherent data transduction and attenuation.

The maps formed the basis for the development of a wider portfolio of web based and desktop applications (stand alone executable and other application add ins) which are described, in overview, later in this schematic set. Additionally, the maps gave the means to reference on the basis of ownership, unstructured data, both from the perspective of the management of location and the establishment of corporate ownership.

In 2010, the author was a finalist in the British Computer Society “Developer of the Year” award for HSIS which, in the competition submission, the utility of organisation mapping was highlighted.

In the authors view, the construction of an organisation map is made more powerful because the concept of “change the map, change the information flow” could be successfully applied and a spin off benefit was that the construction of things like ISO 9000 quality assurance documentation required little or no specialised effort.

The Performance Organiser, as a piece of software, was started in 1995. Development stopped in 2005 or thereabouts. It was used throughout the authors time in UK Defence and gave the means for the author to punch above his weight. There is still nothing like it in the market place.



Architecture – High Level Design Concepts	The Portal	Page 84.
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The screenshot shows the homepage of 'The Performance Organisers' portal. At the top, there's a banner with the title 'The Performance Organisers' and 'Structured Coherent Design'. Below the banner is a navigation menu with links like 'Home', 'Integrated Applications', 'Utilities', 'Organisations', 'Data', 'Print', and 'Online Report'. The main content area has a 'Announcements' section with a message about the portal's purpose and a 'Notices' section listing various items with dates. To the right is a circular diagram divided into segments representing different organizational components. At the bottom, there's a footer with links for 'Company Registration Details', 'Contact', 'Copyright Notice', 'Using Business Web', and 'Local Area Networks'.

## The Portal

The portal was the main gateway into the wider information reporting management platform deployed by the author.

The portal was designed for purely internal use as a gateway and not for public consumption, though to demonstrate operating principle an active portal formed the authors web site.

The portal provided the means to distribute information designated as “corporate” and, through the permissions model, for each organisation element and supporting application to expose associated documents, performance reports and more besides.

The portal (and all other site pages), made provision for the cross architecture delivery of key policy and governance documentation

This screenshot shows a desktop environment with multiple windows open. One window is titled 'The Old Geeks Studio' and displays a complex interface with various charts, graphs, and data tables. Another window shows a similar interface. A third window at the bottom shows a line graph with data points over time. The overall theme is technical and analytical.

## Traffic Analysis

Internal site traffic analysis, both in respect of volume and feature use (similar to heat maps) was provided.

The screenshot shows a configuration page for 2FA authentication. It features a grid of checkboxes for selecting users or groups to apply 2FA profiles to. The header of the page includes the 'The Performance Organisers' logo and the text 'Structured Coherent Design'.

## 2FA Authentication

2FA authentication at the site level was built in, as was the means for site admins and desktop officers to configure profiles globally (for admins) and locally, for desk officers

This screenshot shows a configuration interface for site management. On the left, there's a sidebar with a 'Global Menu' section containing a table of items. The main area shows a preview of a website page with a logo and some text. The overall design is clean and modern.

## Site Configuration

Layered site configuration, from global menu management, to header logo control was also provided.

The screenshot shows a desktop publishing or HTML editor window. It has a toolbar at the top and a large central area for editing content. The interface is designed to look like a standard web browser or desktop application.

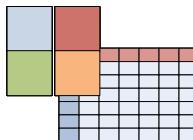
## Desk Top Publishing

A full blown HTML editor was built in that could be accessed by page owners to alter their own content in the centre column



Architecture – High Level Design Concepts	Dashboards	Page 85.
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 1.00
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## On Dashboards.....



A dashboard should be capable of providing multi perspective reporting. Lets say there is a **financial allocation of 100k** to recruit a senior engineer. And a matter of **evolution**, the recruiting exercise should be reported on and when he or she is recruited, then improvements in internal **efficiency** should be able to be detected and once those improvements come on stream, then it should also be able to illustrate improvements in external **effective** customer and stakeholder requirements are being met.

And to take into account, as appropriate, the impact of CONOPS, CONEMP and CONUSE as a matter of capability sustainment



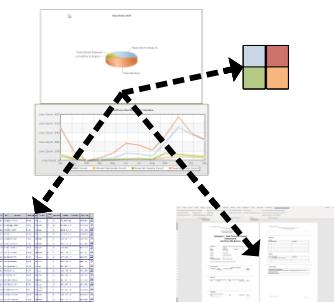
A common interface should be developed that provides the means to display supporting information like the content of a risk register



A first page, reductionist in nature with key facts. No traffic lights, they are counter productive. But multiple tabs dimension based with multiple charts to reflect differing perceptions of value



Time, the great constraint and its impact should be reflected. Bear in mind the need for probability and regression testing will, by and large, be time driven.



Each and every data point, on any chart, should provide the means to investigate, drill down if you like. And investigate should give access to:

1. Lower level, lower dimension dashboards, or, as appropriate and sensitivity allows, higher level reporting that may rely on alternative logic forms.
2. Supporting documents
3. Where appropriate, validated and verifiable tabular data for more ad hoc and local review

As a minimum!



## An Integrated Portfolio of Applications



Document Library  
Gateway



Compliance  
Survey and  
Auditing



Legislation  
Librarian



Influencer  
Analysis



Active Image  
Mapping



Perspective  
Driven Metric  
Definition



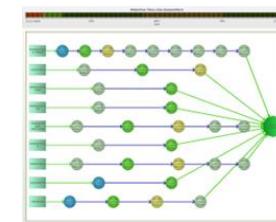
"Orange Book"  
compatible risk  
reporting



Key Publication  
Linking and  
Rating



Desktop  
Publishing



Fan or Campaign  
Planning



Performance  
Dashboards



Dimension  
Definition

Schematics illustrate the architectural approach, based on organisation form, function and purpose, that the author applied over many years. Providing the means to map organisation form function and purpose provided the means to fill in a number of meta level related to describing how an organisation works. The second key issue, the nature of data transition maturity to the point where evidence based decision support could be provided was addressed through the concepts associated with testing viability made possible by planned and structured transition and attenuation of diverse data sets such that multiples of data sets could be used in a co-ordinated way to provide business intelligence. Arguably the last design phase involved identifying functionality that was general in design, but could be used locally on a consistent basis to tailor data in various forms to reflect departmental or other influencer reporting needs. Net result, the means to develop a portfolio of web based applications, similar in look and feel to each other (with a resulting reduction in training requirement). The images above give an idea of the scope of the resulting portfolio. A copy, in MS Word or PDF form is available on request.



Architecture – High Level Design Concepts	Desktop to Server	Page 87.
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## Desktop to Server Integration

The final set of deliverables was to produce desktop level office automation add ins for each of the following office automation applications:

- MS Word
- MS Excel
- MS Project
- MS Visio
- And MS Outlook

There were multiples of reasons for that decision amongst them:

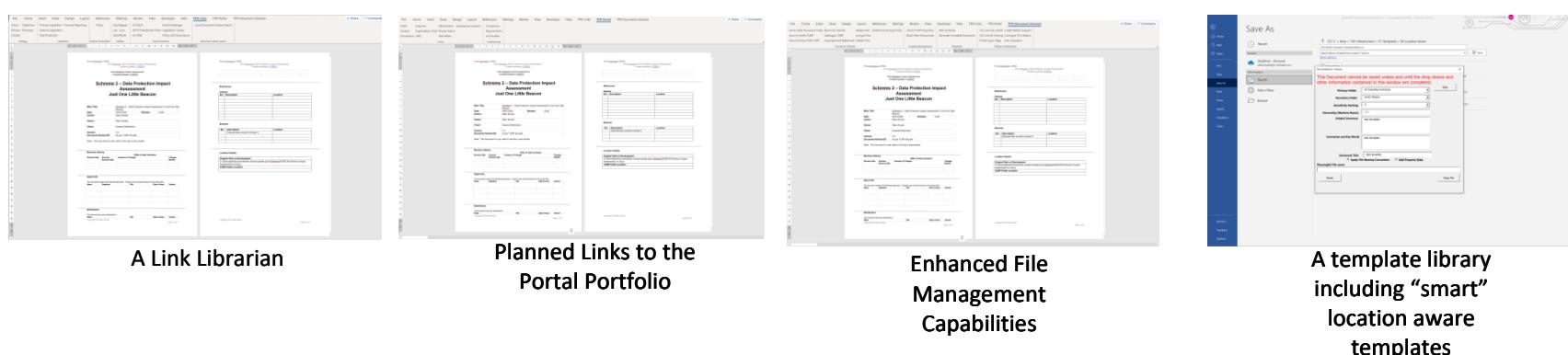
Even with sharepoint, there usually isn't a single document store, there are multiples

There is a need to ensure that documents and other data are placed in the right location, therefore there is a need to establish and maintain easy to use means, on a point and click basis, to access them.

Where possible, any such linking exercises should be automated

And more besides.

The office automation toolkit, contained the following components:



Each manifested itself as a native part of the main application by means of placement as add ins on the main application menu ribbon. In addition, supporting “silent running components were built to do support operations like document content spidering.

The overall advantage of the organisation mapping, the building of the portal and the desktop components being an integrated information management architecture.



Architecture – High Level Design Concepts	5. Implementation	Part 6
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 1.00
System/Project Name: General		Dated: 27/12/2016

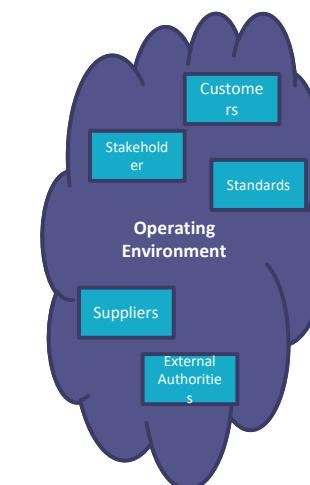
# 7. The “S” Word

Associated with this section is document ID : 20180627-Product Architecture-1-U



# The Organisation Boundary

**A Fortress is only as strong as its gateways.**



The  
Organisation  
Boundary

Nothing should cross the organisation boundary without the full knowledge and consent of the organisation

Nothing should cross into an end user device without full knowledge and consent of the end user.



## Zero Trust

Date range: From January 2021		
\$11,914,892,503 has been lost to hacks, scams, and fraud since January 1, 2021.		
Event	Date	Amount
Africrypt exit scam	April 13, 2021	\$3,600,000,000
Thodex exit scam	April 21, 2021	\$2,000,000,000
Axie Infinity bridge hack	March 29, 2022	\$625,000,000
Poly Network hack	August 11, 2021	\$600,000,000
Binance bridge hack	October 6, 2022	\$570,000,000
FTX hack	November 11, 2022	\$370,000,000
Wormhole bridge hack	February 2, 2022	\$328,000,000
BitMart hack	December 4, 2021	\$200,000,000
Nomad bridge hack	August 1, 2022	\$190,000,000
Beanstalk Farms hack	April 17, 2022	\$182,000,000
Wintermute hack	September 26, 2022	\$160,000,000
Compound Finance bug	September 30, 2021	\$147,000,000
BXH exchange hack	November 1, 2021	\$139,000,000
Vulcan Forged hack	December 13, 2021	\$135,000,000
C.R.E.A.M. hack #3	October 27, 2021	\$130,000,000
BadgerDAO hack	December 1, 2021	\$128,000,000
Mango Markets attack	October 11, 2022	\$116,777,488
Maiar exchange hack	June 5, 2022	\$113,000,000
Freeway rug pull	October 23, 2022	\$100,000,000
EmpiresX ponzi scheme	June 30, 2022	\$100,000,000
Horizon Bridge hack	June 23, 2022	\$100,000,000
Finiko Ponzi scheme	July 31, 2021	\$95,000,000
Liquid Global hacked	August 19, 2021	\$90,000,000
Mirror vulnerability	May 26, 2022	\$88,000,000
Fei Protocol hack	April 30, 2022	\$80,000,000
Qubit Finance hack	January 27, 2022	\$80,000,000
EasyFi hack	April 19, 2021	\$80,000,000
Ascendex hacked	December 11, 2021	\$77,000,000
Pixelmon flop	February 25, 2022	\$70,000,000
AnubisDAO rug pull	October 29, 2021	\$60,000,000
bZx hack	November 5, 2021	\$55,000,000
Cashio hack	March 23, 2022	\$52,000,000
Uranium Finance hack	April 28, 2021	\$50,000,000
PancakeBunny hack	May 19, 2021	\$45,000,000
FBI warns of malicious crypto apps	July 18, 2022	\$42,700,000
Bo Shen wallet compromise	November 10, 2022	\$42,000,000
C.R.E.A.M. hack #1	February 13, 2021	\$37,500,000
IRA Financial hack	February 8, 2022	\$36,000,000
"Crypto King" scam	September 20, 2022	\$35,000,000
Scream bad debt	May 16, 2022	\$35,000,000
Vee Finance hack	September 21, 2021	\$35,000,000
Crypto.com hack	January 17, 2022	\$34,000,000
BlueBenz hack	August 14, 2022	\$32,000,000
MonoX hack	November 30, 2021	\$31,000,000
Ich1 hack	April 11, 2022	\$30,000,000
Grim Finance hack	December 18, 2021	\$30,000,000

# Cost to the UK of Cyber Related Crime - £27bn a year

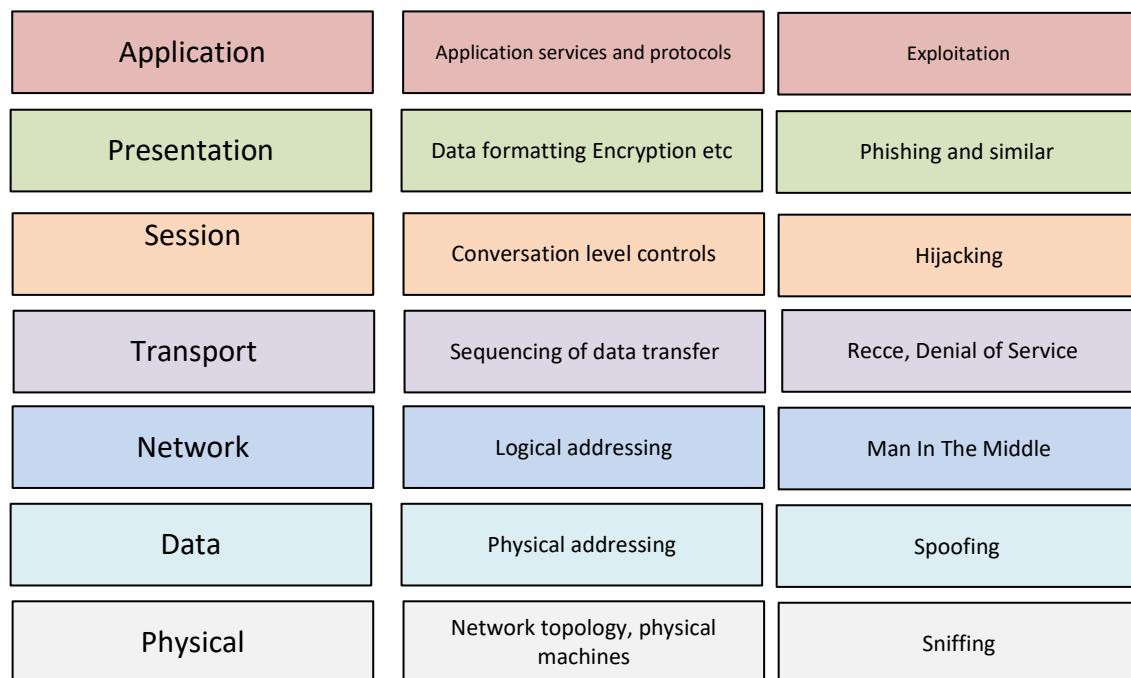
20160605-Solarwinds Briefing Paper-1-U

UK Government – Understanding the cost of cyber crime

US DoD Zero Trust Strategy



## The Stack, Hacked



The stack, all of it, is vulnerable to incursion/attack. It is unlikely that any one person knows all there is to know about “the stack”. It follows therefore that no one person knows how to defend against all forms of attack!



Architecture – High Level Design Concepts	All Files Are packages - Steganography	Page 88.
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# All Files Are Packages - Steganography

## Original form



When decompressed...  
Breaks down to this...



## Folders contain...



## Which looks like...

Architecture – High Level Design Concepts	The Key Decision – Operating System	Page 88.
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 2.00
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## **The Key Decision – Choice of Operating System**



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Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 2.00
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## **Key Operating System Components of Concern**

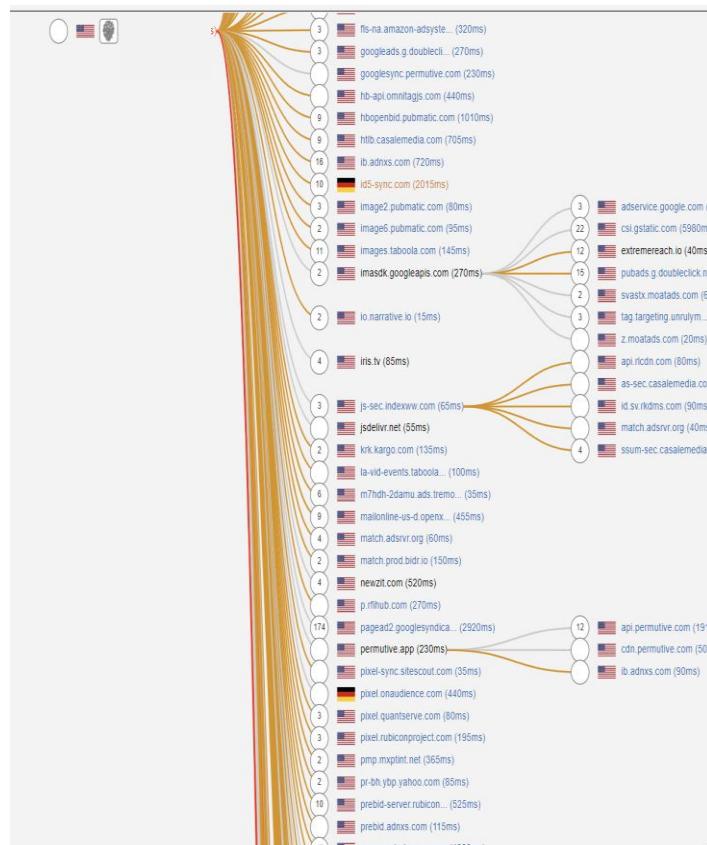


Architecture – High Level Design Concepts	The Key Operating System Components Of Concern	Page 88.
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## **Key Operating System Components of Concern**



## Open Source – A Control Issue



Architecture – High Level Design Concepts	ISO 27001	Page 88.
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## ISO 27001



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## Useful Organisations



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## Useful Organisations



Architecture – High Level Design Concepts	Exit Plan	Page 88.
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## Exit Plan



Architecture – High Level Design Concepts	Final Observations	Page 88.
Author: A P Woods	Document Location TLMP/05 Plans and Processes/05 Business Continuity Plan/	Version: 2.00
System/Project Name: General		Dated: 20/01/2022

## Final Observations

Please treat this document as pathfinder, but most definitely not gospel. The aim of this document is to help. The reason for its writing is that when the author first read the GDPR, he got to article 17 (the right to erasure) and started smiling as his initial reaction was “not a cat in hell’s”. Over the previous three years (2018 – 2021) that initial reaction has been demonstrated to be correct. Reason, erasure is about the right to request the final and irrevocable deletion of data, on random request, across ALL data forms, both hard and electronic copy form across an organisation.

And just erasure is a highly technical and complex matter to resolve, properly, not least because data protection legislation like the GDPR must “fit” into a wider legislative and professional standards operating environment with the GDPR not being, in any meaningful way, “primus inter pares”. As a result, erasure is what the authors systems thinking friends would describe as a “wicked” problem.

It should also be noted that as many, many organisations now commission web sites, that a site, even a single page site, is, to all intents and purposes a window into the innards of an organisation, particularly so if the site does forward data collection. That raises several major concerns including but not limited to:

1. Searching “privacy law” on wikipedia lists dozens of countries that have no implemented privacy and data protection legislation with each claiming world wide jurisdiction over the protection of its citizens data protection and privacy.
2. Increasingly the nature of interaction between site visitors is conversational in nature and a maturing conversation at that.
3. And while that conversation, in data collection terms, is largely procedural and linear, the use of such data is organic, viral and contextual.
4. Garbage in Garbage Out (GIGO) rules.

As a consequence, the management of data and its transition to exploitable information is about solving complex issues in a way that mirrors the adaptive nature that an organisation must adopt in order to maintain its viability which in turn must be drawn and based on the articulation of strategy but a strategy that is flexible enough to cope with “emergence”. That is to say support the organisations ability to deal with “what if”. Inevitably, that means that data management is architectural in nature and endlessly quoting rules will not change that. Not one iota.

The author therefore is confident that the kind of exercise this document is about, is something each and every person will end up trying to do. However, simply trying this kind of thing is a complex task in itself and this document therefore is designed to show one mans view of the architectural nature of it all. On its complexity, readers are referred to the work of Patrick Hoverstadt and his two books, “The Fractal Organisation” and “Patterns of Strategy”, both are that rare thing, coherent guides on how to go about writing strategy in an information age with from the outset, the definition of strategy, that recognises that there are internal and external patterns of behaviour on which the organisations existence is based that are ignored at the organisations peril. There are books of a similar nature, but the reason for mentioning those two is the idea of “the organisation as a system”..... Because that is what an organisation is and the organisation exists in a wider operating environment in which the ability to deal quickly with emergent issues can and will be an existential matter.

I would suggest many will not agree with what has been produced here, which is fine and those who disagree will end up writing their own schematic library and as a consequence will end up writing your own schematics if only to get a handle on where things “fit” in your operating world. Hopefully this lot will come in useful as a pathfinder.

Take care and good luck

Allen

