The Organisation IS the System

An information management framework

Play It Again SAM..

Play It Again SAM..

About the Author:

- Allen Woods, retired several years ago….
- Ex British Army (1971 – 1995) Taught Arctic Warfare, Several Years On Operations, Funded Himself through College to Study IT
- Chartered Member of the British Computer Society for 20 years
- Member of the Chartered Status Interview Panel for BCS
- In 2010, Finalist of UK “Developer Of The Year” Competition for MOD HSIS
- Primarily Employed in UK Defence Supply Chain and Logistics IT since 1995 until 2019
- Credits: MoD Health and Safety Information System, Various Internal to Defence P&G Portals, CATMIS, IQB Oversight to Defence Voyager Programme IM Transformation and more…

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Caveats

This slide deck describes a Software Asset Management scenario in which the primary operating system across the architecture was Microsoft Windows

Some of the content of what follows may not be appropriate to the environment you work in, the devil will be in the detail… Nevertheless, the same principles will apply.

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Introduction

This slide deck focusses on the rather innocuous term “Software Asset Management” and is based on an exercise in software licence terms review carried out as part of one of the biggest IT outsourcing programmes the UK has seen.

The author of this deck was part of a small team whose task was to review, line by line, the licence and contract terms of software inventory that consisted of several hundred major logistics infrastructure management applications that were operated world wide.

The authors specific contribution, to review the “top 20” major applications in a suite of approximately 800 each of the “top 20” with a high six figure annual maintenance charge.

This deck constitutes a summary briefing pack of the issues raised……..

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At the core of SAM - Configuration Management

At the heart of Software Asset Management is disciplined, planned and properly documented configuration control.

CM applied over the life cycle of a system provides visibility and control of its performance, functional, and physical attributes. CM verifies that a system performs as intended, and is identified and documented in sufficient detail to support its projected life cycle. The CM process facilitates orderly management of system information and system changes for such beneficial purposes as to revise capability; improve performance, reliability, or maintainability; extend life; reduce cost; reduce risk and liability; or correct defects. The relatively minimal cost of implementing CM is returned manyfold in cost avoidance. The lack of CM, or its ineffectual implementation, can be very expensive and sometimes can have such catastrophic consequences such as failure of equipment or loss of life.

Wikipedia

Unfortunately, much of the need and justification for the effort involved tends to be obscured by the seduction of “it’s just a laptop” or “Agility”

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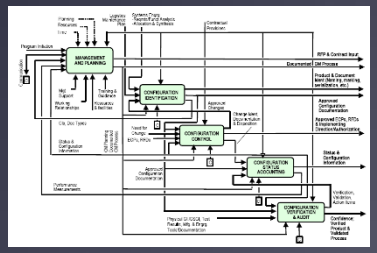
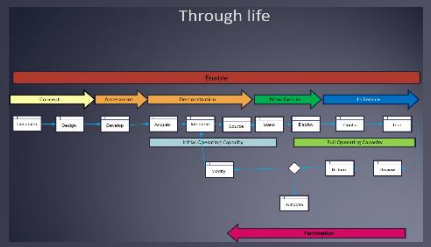
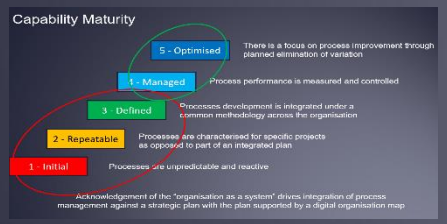
Configuration Management



Configuration management has always been one of the fundamentals of “systems”. There are multiple model forms of how to go about it



Configuration management is a “through life” activity from “factory to foxhole”



Configuration management is fundamental to capability maturity and its management as a result

Heads Up!

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Some SAM Operating Principles

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Operating Principles.. *Theirs, not yours…*

Software vendor terms and conditions are a contract between the vendor and the purchaser

The aims of vendor T&C are to:

Protect vendor intellectual property

Reduce vendor legal liabilities and responsibilities

Transfer as much legal liability and responsibility to subscribers

The main impact? End users have limited rights to use vendor products, but own very little…..

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Operating Principles.. *Theirs, not yours…*

It is the case that from the second a device is set live and registered, from that moment on, the vendor that owns the operating system will be aware of the existence of a device and how it is registered to.

Vendors can and will exercise their contractual rights to ensure that licence terms are being followed by means of remote and local audit of end user platforms if the need arises

For more than a few of the majors, license term infringement is a revenue generator of significant proportions given illegal/accidental copying.

Licence term infringement often happens because of customer level process or procedural disjoints related to software asset management that vendors are aware of and know how to detect.

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Operating Principles.. *Yours Not Theirs…*

The software used to capture, store and manipulate data is licensed, usually through subscription. Unless of course your organisation owns software in its entirety.

Software, owned or licensed, is an asset with value and should be treated as such

Software that is licensed has very specific constraints in respect of installation that is monitored by the vendors.

The reality is, in terms of “data” your organisation does not own much.

Most only find out how little they own when..

A merger and Acquisition event happens
A decision is made to move product or platform for whatever reason

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The nature of software acquisition

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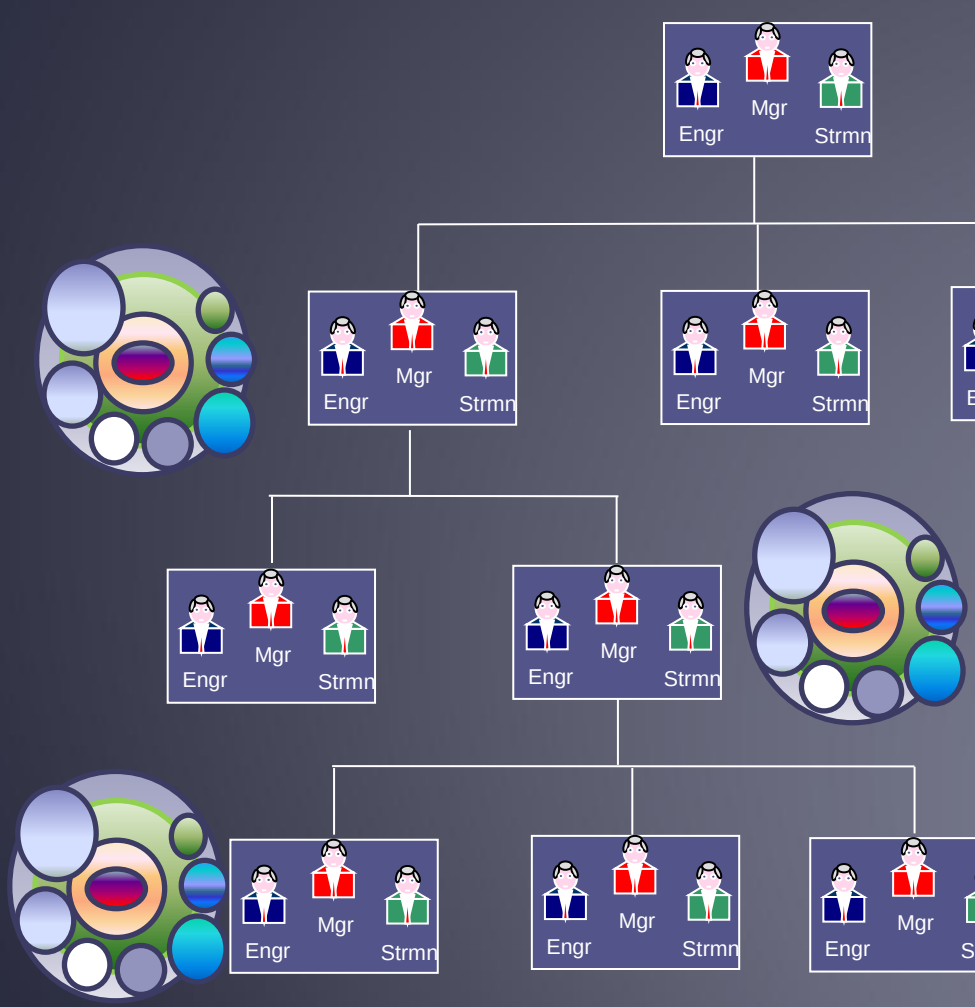
Operating Principles.. *Yours Not Theirs…*

Your organisation has many moving parts, each with their own specialised software inventory



It will need some form of inventory management.

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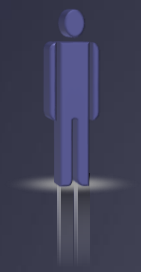
Acquisition Disjoint



Requirement

On the customer side, in complex organisations, there are often procedural boundaries, that are traditional and difficult to cross.

Acquisition

The person who needs a software solution

May not be the same as the person that buys it

Installation

Who may not be the same person who installs, configures and maintains a product

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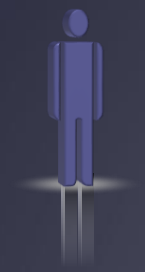
Acquisition Disjoint



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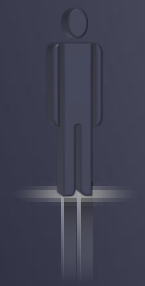

Installation

Who may not be the same person who installs, configures and maintains a product

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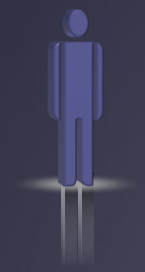
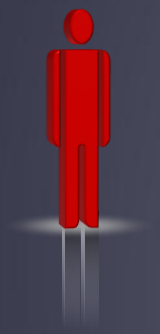
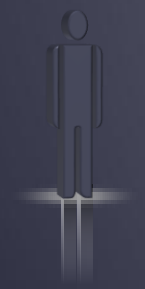
Commissioning Disjoint



Requirement



Acquisition



Installation

The boundaries often mean that there is no top down, through life, managerial control or visibility of what has been bought against what has been installed against what SHOULD have been installed

In such circumstances, any external vendor audit will see any unauthorised installation as tacit acceptance of use and will charge accordingly.

The vendors will know what has been supplied and will know, in detail what the internal configuration of their product will look like.

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The vendor expertise on the other hand…

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What you are up against…

Be under no illusion, if they see the need, vendors WILL seek to exercise audit rights…

Microsoft: Left click here

Amazon: Left click here

IBM: Left click here

Oracle: Left click here

ALL vendors will exercise similar rights if they see the need.

Their product architecture may be one of many components or products, each with different processing capabilities that may be metered in respect of how they are used.

In other words, your organisation will need to have some idea of product architectural functionality, your own and that of the vendors

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If you don’t know where stuff is, then it may as well not be there…..

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The need for asset management

In the event that a vendor SAM audit is carried out, be certain that they will know how to execute such an exercise using tools designed specifically for that purpose. They will check:

Hardware configuration, in short what is installed where

Software configuration, both of their product and things like operating system configuration

Usage rates, often recorded inside their product data structures

Software configuration, both of their product and supporting infrastructure like device operating system configuration

They will contrast and compare all of the above against the sales and support history of your organisation as a customer of theirs.

It is prudent therefore for your organisation to do the same given that licence compromise, over time, is expensive for you and a lucrative revenue stream for the vendors

So……

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SAM Preparation – Benchmark Device Configuration

1. Take a brand new machine, with no other software installed on it then catalogue all of the files it contains. Keep the audit machine clean is possible.

2. Take another brand new machine and install each software package the organisation is known to hold. Catalogue all of the files it contains.

3. Assuming a Windows environment, catalogue the registries of both machines

The purpose of the two machines mentioned above is to provide clear, clean evidence of what a “vanilla” device operated by your organisation holds

These two machines provide a master against which an audit can be executed against all other machines held by the organisation

It should be noted that the cataloguing will require specialist software, or a lot of patience..

Caveat, this kind of cataloguing should be done for each device type

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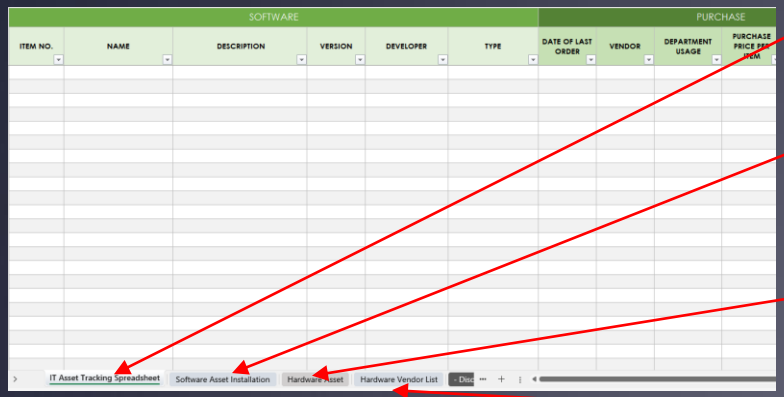
SAM Preparation – Build An Asset Register.

Containing Something like…



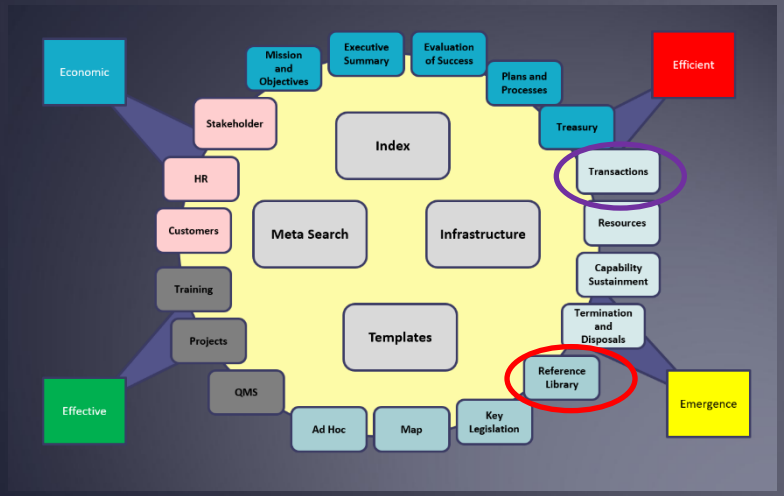
Inventory Catalogue by product

Installation catalogue detailing which machine a software product is installed on and why

A vendor list , cross referenced to purchase orders

A hardware catalogue

A Reference Document Repository



A Technical Documentation Library (not necessarily all, but certainly containing a master of reference copy of support documentation)

A Purchase order catalogue detailing what was bought, when and why, which should include license terms

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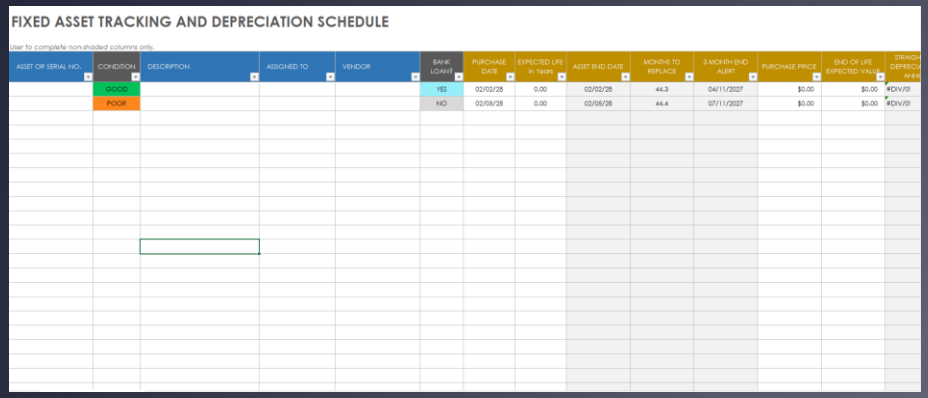
SAM Preparation – Through Life Cost

As an asset, both software and hardware should be subject to financial modelling



FIXED ASSET TRACKING AND DEPRECIATION SCHEDULE

User to complete non-shaded columns only.

ASSET OR SERIAL NO.	CONDITION	DESCRIPTION	ASSIGNED TO	VENDOR	BANK LOANS	PURCHASE DATE	EXPECTED LIFE in Years	ASSET END DATE	MONTHS TO REPLACE	3 MONTH END ALERT	PURCHASE PRICE	END OF LIFE EXPECTED VALUE	STRAIGHT DEPRECI ATION
	GOOD				YES	02/02/26	0.00	02/02/26	44.3	04/11/2027	$0.00	$0.00	#DIV/0!
	POOR				NO	02/06/26	0.00	02/06/26	44.4	07/11/2027	$0.00	$0.00	#DIV/0!

It should be noted however that different forms of financial modelling may apply:

The value of hardware depreciates rapidly and the financial implications of that should be modelled

Software costs usually rise over time:

There is an initial purchase cost

There is often an additional support cost (TEPIDOIL may apply)

There may be an annual subscription cost

Increasingly, certainly for Cloud service delivery, some form of usage metering is applied

Maintenance costs of an IT system can be complex and need careful study and assessment

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SAM Preparation – Develop and Internal Audit Mechanism

Regularly and frequently, audit the installed software against:

1. The device operating system installation

2. For each device, benchmark the installed software against the asset register

3. For each device, vendor product installed components against revised license terms

4. Where anomalies are detected, either:

Seek approval to confirm the installation and then update the asset register

Or,

Remove any and all anomalies

Remove from end user accounts any associated installation rights and capabilities

Internal audit should become a matter of routine housekeeping as part of organisation quality assurance

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SAM Preparation – A lot of work….

Internal audit looks like a lot of work..

Initially, like all data and information gathering exercises, it is, however..

Once the base data (what is operated and installed, by who and why) has been gathered, then automation can be implemented

The actions set out in the previous three slides will pay for themselves given that vendors WILL back date license fees associated with failure to comply with purchases from the original purchase date.

The bottom line? Caveat Emptor.

You have been warned!

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The Nature of the Business Risk

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Vendor Considerations (1)

Additionally, because (arguably) the market place for the major vendors to sell in to major purchasers is almost at saturation point, there are internal commercial and financial pressures on major vendors in particular to optimise revenue either through diversification or by maximising existing revenue streams.

A relatively inexpensive means of increasing revenue (and therefore profits) is the policing of license compliance, through the means of audits (usually written in to license terms and enterprise agreements). Accounts submitted to US authorities indicate that for one major vendor, policing license compliance has (as a revenue stream) increased by some 45% over the past few years

A means of increasing licensing revenue to establish a pricing and licensing regime that recognises that modern software is increasingly component based and that of themselves, components are often complex pieces of tools in their own right that can reasonably be described as separate products.

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Vendor Considerations (2)

The combination of factors described mean that it is often the case that from an IPR and revenue optimisation perspective, a single installation doing a single task or the “As a book” views of establishing license terms are increasingly meaningless.

- Improvements in technology, particularly in processing capability
- Virtualisation
- Enterprise Architecture and System of Systems Concepts
- The “Cloud” (revenue generation through usage metering)

Changes in business operating and technical environments are bringing about changes in the way that commercial software is being licensed and sold.

There is a real business imperative to keep abreast of vendor license terms

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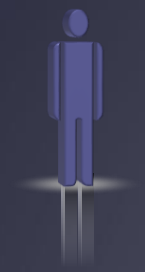
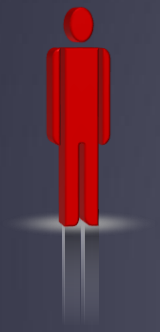
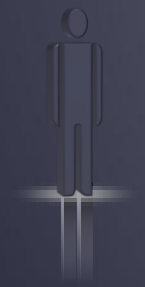
Vendor Considerations (3)



Requirement



Acquisition



Installation

A further opportunity for vendors, but one that is unintentional, is procedural/administrative disjoints in the procurement process the implication of which are often not fully understood by purchasers…

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How Does a SAM Audit Work….

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The Basis of the Audit

What follows describes an audit review process as applied by one of the primes (now known collectively as GAFAM's in some circles) and how to use the results. It should be stressed that the company concerned was behaving as it entitled to do when an audit is requested ***by either side***.

For the company concerned licensing was on a per user or per processor basis. However, with virtualisation, multi core processors and multithreading, expect their licensing terms to reflect changes in ***processing capability***

Licensing was also component based with core and non core products. Non core products (OLAP, Real Application Clustering etc) often attract a separate license fee.

Licensing was described as a "set" of documents for which there is the license to use, coupled with a support agreement. For both, contractually, a purchase ID code or number was issued to identify any given customer.

It should also be noted that failure to maintain any ongoing support agreement may invalidate the license itself and re-registration may attract significant financial penalties.

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The Audit Method

When an audit of products is requested, by either the vendor or the customer, vendors would provide a series of scripts the results of which when read into an external data form like a spreadsheet, will give the vendor means to identify any license liability. But the script results will return much more and in fact will give a comprehensive description of the nature of the information management architecture being reviewed

The scripts were executed on each and every product host across the organisation network

The output of the scripts generated a number of comma separated value files divided into the following function areas

Installed Product Features
Installed licence details
Installed and operational “optional features”
A system “parameters” file
A system functional segments file detailing operation use records
A system “sessions” file detailing per user session use
A summary file
A version description file

Copies of the output and the scripts were made available to the operating organisation who could then run their own analysis of the output

Other vendors operated their audits in a similar way but each audit output required different forms of analysis

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The Audit Output

In the first instance, the combined audit script output was read into a spreadsheet

DB Options Used			Status Dev Prod DR, Test etc	Application Name	Application Vendor	License Metric Applied to Environment NUP Processor	Date of Install	Declared Number of users (named not concurrent)	Architecture Client/Server Three Tier Internet/Intranet etc	Web/App Server Name	User Ids at DB Level Generic Unique	Server Model	Total No. of Processors	Total No. of Cores per Processor	Proc. Speed (MHz)	Operating System	CSI Number if known	Batching To/From	Standby/ Failover Server Name(s)	Da & I
Partitioning	RAC	Other see Options tab																		
Yes	No	OLAP, DM, P, F										PRIMERGY TX600 S3 Rack	8	2	3192.081	Linux 2.6.16.46-0.12-smp				
Yes	No	S, OLAP, P, DM										PRIMERGY TX600 S3 Rack	8	2	3192.081	Linux 2.6.16.46-0.12-smp				
Yes	No	OLAP, RAT, S,										PRIMERGY TX600 S3 Rack	8	2	3192.081	Linux 2.6.16.46-0.12-smp				
Yes	No	DM, OLAP, P, S										.	4	0	.	Unknown as at 10/02/2011 11:25:59				
Yes	No	RAT, OLAP, DM										PRIMERGY TX600 S3 Rack	8	2	3192.208	Linux 2.6.16.60-0.21-smp				
Yes	No	RAT, P, DM, OL										PRIMERGY TX600 S3 Rack	8	2	3192.208	Linux 2.6.16.60-0.21-smp				
No	No	DM, OLAP, RA		.								ProLiant DL380 G5	0	0	3333.518	Linux Release: 2.6.18-164.el5PAE				
Yes	No	S, OLAP, DM, F										IBM/S390	1	0		Linux Release: 2.6.16.60-0.21-default				
No	No	P, OLAP, S, DM		.								ProLiant DL580 G5	0	0	2933.513	Linux Release: 2.6.18-164.el5PAE				
Yes	No	RAT, P, OLAP,										IBM/S390	1	0		Linux Release: 2.6.16.60-0.21-default				
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No	No	DM, OLAP, P, S		.									0	0		HP-UX Release: B.11.11				

OSW - DB / OSW - iAS / Server List / Server Manifests / Spare / Spare2 / Spare 3

The combination of audit spreadsheet output and held license documentation was used in tandem to establish the difference between license procurement activities ***AND*** the true liability indicated by the content of the audit spreadsheet.

Interpretation of the output of each of the audit script output could be and was used to determine what was installed

From the vendor perspective, because they may not know which elements were installed *and set live but not being used*, they will determine their view of license liability from the "installed view"

If unlicensed components are identified, then vendors may choose to backdate license fees for such software to the date of original purchase or installation of any other product on the assumption that installation indicates intent to use and therefore a license liability.

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Lessons Learned

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Lessons Learned

The aim of the vendors is to sell product. They are not your friends. Once they sell product, they build a dependency which increasingly is hard to disengage from.

Software in particular, is not an “asset” in the traditional sense. It is something you are allowed to use, but in a very controlled way unless you write software yourself..

Software Asset Management is another of those skills that cross functional boundaries. The role involves legal, technical and asset management skills that in combination, usually has to be learned.

Join up the acquisition process. It is the case that there are often several procedural disjoints between those who ask for a software tool, those who acquire it, those who install it and those who operate it

When vendors request an audit, it is probably not smartest decision to submit a set of audit files without first doing some internal analysis first, then act on the analysis results to reduce any discovered liability

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Lessons Learned

When audited… Keep copies of scripts and review tools and use them internally, regularly.

Keep production installations entirely separate from development/test suites. If you must use live data for test dev and test purposes, completely and securely delete such data when it is no longer required.

Do not take any special offers on volume licensing. If you need forty licences (say) only buy 40 licenses. Future support agreements almost always ignore the idea that a “free gift” was given and any“free” licenses will inevitably end up being seen as an integral part of the IT estate but outside of any purchase order.

As a matter of financial prudence, run a financial forecast exercise for a minimum 5 year period to assess whole life cost…… Allow for external factors like inflation and others as you see fit. The results will be an eye opener..

Play It Again SAM..

Lessons Learned

License allocation should be by role rather than to named individuals

Regular confirmation of “need to use” should be carried out. Where a license against a role exists and it is not being used, then access to an application or component should be withdrawn

Robust cleansing of redundant use should be applied to training suites in particular. When training courses are finished, all training accounts should b deactivated and deleted.

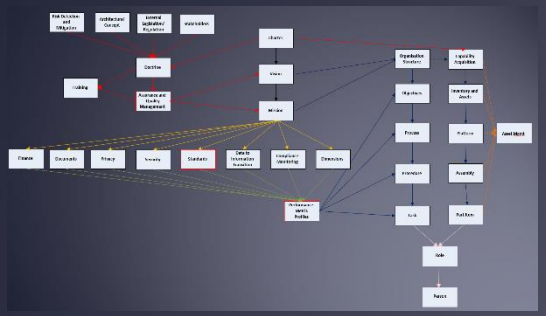
Monitor application use, there may be opportunities for license optimisation (and therefore a cost reduction) in the concept of license pooling.

Avoid “Bring your own device” (BYOD). Inevitably, BYOD will involve added complications related to audit rights.

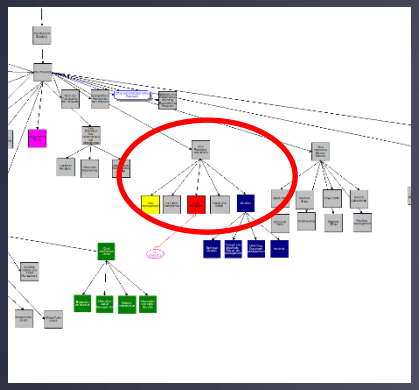
Internal and external computer audits should be seen as commercially sensitive matters with release of information being treated on an “eyes only” basis.

Play It Again SAM..

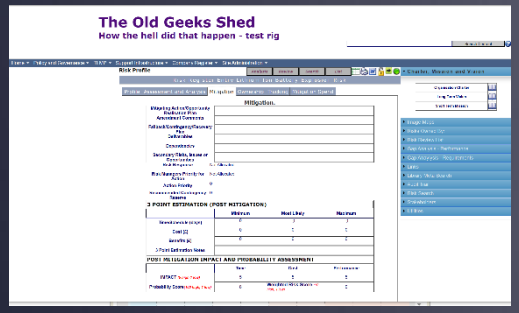
Lessons Learned



Software asset management is a matter of policy and governance associated with the maintenance of organisation viability



As a consequence software asset management, given it is a cross organisation issue, requiring ongoing monitoring, is probably a quality assurance matter

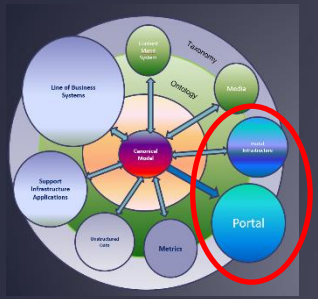


Software asset management, if not executed properly represents a considerable financial and legal risk

Play It Again SAM..

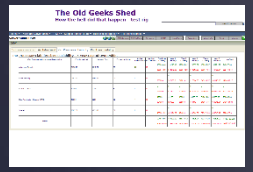
Lessons Learned

Needless to say, SAM can be automated and that requires task specific tooling. The following components were built and deployed as a result of the external audit exercise these slides are based on.



All designed and constructed to common architectural principles

An internal software and hardware asset register



A SAM financial modelling component

Device scanning components for both registry, file cataloguing

Play It Again SAM..

Summary

The bottom line? Caveat Emptor.

You have been warned!

Play It Again SAM..

That's all folks…..

The original deck and others, are available on request, free, using any of these means to get in touch:

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