Response: Towards a competitive South African Software Industry

This paper argues that the only useful strategy to scale the software industry lies in determining and addressing the right software market, that this software market is internal (being service delivery through software) and that solutions must not get mired in excessive adherence to process but rely on their ability to delight and inspire the end customer.

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1   Introduction

This response to the DTI's "Towards a Competitive South African Software Industry" [0] has been elaborated upon since it was submitted to The DTI in February 2011. It has been divided into 2 sections: one is our own contribution to the debate (§2), the second a direct response to the position paper (§3). The Appendix contains references (§4).

- Our initial and basic claim is to appeal to the simplicity of ordinary business – access to markets is crucial in building the software industry. Answering the question "how do we sell what to whom" is the primary task in addressing the issue of our software being competitive, and all its associated consequences being of derivative importance – this includes jobs, skills, taxes, quality.

- The second pillar of our position is that deployed software artefacts are the minimum stake to enter this industry. No amount of process or discussion of IP can trump product. Grandiose processes [6, 8 and 9] are not helpful due to the fact that the lack the lack of customer buy-in. (We are aware of the questions relating to determining a software product.)

- We need to elect to address the developmental problems of our society through software. This means formalising processes on a technological and business level for service delivery through the use of software, such as process automation, etc.

This author would welcome the opportunity to clarify points raised here further because the overall tenor of our response is not well calibrated: some of the ideas communicated in this paper are quite pragmatic and from experience; other sections are more a response or reaction to existing programs; and finally there are some visions. This paper is written from

the point of view of Software Development rather than broader IT.

Modern science has changed in the last 30 years in seemingly superficial ways, but with profound implications to society. Our African society has a very particular requirement of our R&D investment, being measurable consequences from goal orientated programs. This African reality is quite distinct from the Kennedy Space vision of "doing it because it is hard".

2   Need for Vision

The future lies with software – whether it is bill payments, social networking, airport management we would all agree that this is the case. But this statement comes nowhere close to the full implications of the importance of software – there is no doubt that the very bastions of our democracy[1], legal system, social systems, media, the distribution of electrical power, the delivery of services by government, education, environmental preservation and business systems are going to be automated through software. Issues such as privacy, corporate compliance, one's democratic right to vote, will all become animated through software.

Unless we grasp the importance of going all-in with regard to software we will become increasingly irrelevant as a country. To really understand the importance of software necessitates the requirement for South Africa to make a commitment to software of Marshall Plan proportions. The vision that Kennedy had of the "conquest" of space is of the order of this software vision. If we do not make this commitment, we will be drowned in the tide and time of history. Our children will look at us and ask "Why did our parents fail to act? Why are we as a nation the clerical assistants to the world?"

However token gestures will not suffice. We need to understand not only the technology but the dynamics of the industry and the response of consumers to the products. The only way we can be relevant is to act now.

Too many of our national programs are reminiscent of the Soviet space program in the 50s – the Russians built the world's best rockets, but where are they today? The answer is that they are merely, a footnote in history. Whereas the US space program, warts and all, hobbles along with a more commercial view.

Here is a recent quote from a journalist "It's that simple. For us to generate more work, we need to have something to sell. Money from minerals is nice, but it won't create enough jobs. Therefore, goes the argument, we must industrialise; we must learn how to make things and sell them to everyone else. [4]"

For South Africans to get "proper jobs" tough decisions need to be taken now. (For software to work co-operation between different role players is needed to a much larger degree than, say, mining. If one looks at the formulation of the GSM standard it was the cooperation of Nokia and Vodafone that drove the specification.)

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[1] This was written before the ousting of President Mubarak by the Twittering crowds in Cairo.

South African's overvalue ideas – access to market, scalability of solutions, skills are as critical as The Big Idea. Co-operation is more important than ideas. Picasso said that the idea is just the beginning. Ideas, validated in the harsh light of the market are valuable.

The workforce economies of India and China are not appropriate for South Africa. We do not have such large populations (prepared to work for so little [5]). But we do have access to resources, and so our advantage is surely putting in place mechanisms that allow us to add value **here**, rather than shipping our partially refined minerals off to Norway (for example) for further processing.

Moore's Law is the greatest creation of wealth the world has ever seen – but it will not continue forever. This is surely the biggest creator of value we have ever know? It is however inconceivable that the enabling environment for a thriving software environment can be created without government participating. This intervention must be negotiated in a collegiate and professional environment, free from ad-hoc processes, measured and systematic.

2.1   Further observations about government and co-operation

When developing a policy, no matter how insightful the executive vision, if the stakeholders (such as managers) have not brought into the program encapsulated by the policy, the policy is probably doing more damage than good.

An example is Outcome Based Education – there is no doubt that the aspirations and intentions of OBE were brilliant. But the stakeholders dragged their feet and the execution of the project failed – by stakeholder we mean pupils, parents, teachers, managers, etc. When referring to teachers (as opposed to 'educators') and students or pupils (as opposed to 'learners') you demonstrate that learning is not the mechanical transfer of information but a long term and personal commitment. Being a student is a privilege. One merely pays to be a learner.

When executing upon a proposed project, to depend upon jobs-worth civil servants is to commit the project to failure.

2.1.1. Innovators need the Push & the Pull

There are an out-of-proportion number of organisations in South Africa that manage "entrepreneur" resources to the workforce. What we mean is organisations whose stated raison d'être is to promote entrepreneurship. We call this the "push" side of the equation. Entrepreneurship seems to be at the seat of government policy. This policy goes under many names, even "Informal Sector". (It is ironic that the very people and institutions encouraging unskilled individuals to take on a high risk activity are salaried.)

It is our view that it is not good enough to manage just the "push" side – this also includes schools, universities, etc. It is also critical to manage the "pull" side of the equation – providing a market to sell stuff.

There have been a number of attempts to address the "pull" side, but they are not really recognised. The Cape IT Initiatives Hybrid Hollywood Production model is a leader in this regard.

On the negative side of the "pull" debate, "engineering" has held an excessive proportion of the debate. While engineering is absolutely critical – and by engineering we are including Computer Science and other scientific R&D activities – it does not contain answers to other crucial questions, such as how do we address the market.

We are not calling for less engineering – we are claiming that more work needs to be done in creating the market. While engineers should be involved in this process, access to markets is the primary question, not "quality". (In fact, we feel that it is a responsibility of engineers to ensure that business is comfortable with their innovation.)

In software there are many other aspects besides engineering – for example, the design community are absolutely critical in making the technology useable. While software may have its roots in electrical engineering and while software value depends upon engineering it is truly a cross disciplinary endeavour.

Modern software to a large extent is focussed on new distribution models – this is probably why "licensing" is so important to entrenched companies. "The cloud" and "Open Source" are just two aspects to this.

2.1.2. Scalability is the feature that makes software great

Software is not dependent on gravity. It can scale. It cannot be nationalized. The industry must be built to scale. Micro entrepreneurs must be able to scale into the enterprise.

Discussions around scalability should be at the heart of any debate.

2.1.3. Tax and Government

The software industry has no effective tax stimuli. In contrast, the Irish software industry was built through tax concessions. Our company, Korwe Software, have been involved in at least 4 government programs and they have all proven to be of dubious value: the Innovation Fund (now TIA), the DST 150% tax rebate, SPII and Savant. The reason for the malaise in government funding is the unresponsive nature of government managers. They are absolutely unable to make judgements.

This inability of government and academia to be sensitive to industry sounds almost back to front. It also sounds as though it is impossible, given the analysis paralysis or excessive bureaucratic nature of existing programs.

As a company, in accepting government funding, we were effectively subject to the strictures of the Public Finance Management Act – by this we mean that we are expected to produce the paper trail the PFMA requires due to the back-to-back nature of the funding.

The sad thing is our experiences are not unique, but runs consistently through our peers.

The whole process of government funding needs to be replaced by a lottery, akin to the US Green Card program. There is no justification to attempt to secure "experts" who can understand propositions that have been years in developing. These "consultants" have no new insights. The process should be that clerical staff applying mechanical entrance procedures to ensure bona fide applicants. There should be similar exit requirements w.r.t. payment. There should be no opportunity for a clerk to insinuate themselves in the process.

The US Green card process seems to favour people with PhD's – the internal selection process can carry this bias. The current process is there to confound applicants with a pseudo-scientific process with no timeline.

2.1.4. Being mesmerised by the scaffolding

If there is one true thing in software development it is that she who gets tangible products out the door, into the market, wins. IP is worth nothing (in software) unless it is built around a product. Even then it may be of dubious value – but one can write as many patents as one wants – without products to back up the patent claim it is worthless.

There is an army of alarmists who claim that you need to have the right systems and processes etc. to make software work. This is broadly speaking correct. But to become fixated on the process of manufacture instead of responding to market needs is a massive impediment in delivering software solutions. Apple is successful because Mr Jobs develops his products with the intention to delight his customers – while he does use superb systems and processes, these are merely scaffolding.

Chinese manufactured goods were notorious 15 years ago for the lack of quality – but people bought them anyway due to the attractive price. With market share comes quality due to the need to develop support efficiencies. So it is with software – to focus on merely nice-to-have-quality and ignore the market is corporate suicide.

The phenomenon of the Silver Bullet is as prevalent now in software as it was 30 years ago. The Agilist approach to software is probably right in its regard for keeping the customer in focus and the software production lines rolling – software is all about delivering working code regularly. While we all recognise the importance of 5-Sigma compliance in certain industries, this is not a universal requirement in software. 5-Sigma compliance will not guarantee software sales, so we must turn to determining this.

The question is: do you want to make a better cookie cutter or market your cookies better?

2.1.5. Getting the cart before the horse

Frequently the industry bemoans the lack of "skills". While skilled proponents of the art are critical to the success of projects, the software industry cannot be based on the heroics of these individuals. The simple observation is that if there is money in the industry the question of our skills deficit becomes self-healing. If companies have a strong customer, they will be able to pay for top mint for staff with the right skills. Ditto with students: if there was money in the industry they would be attracted to it.

If you focus on the metaphor of building the software industry, it straightens out some of the age-old chestnuts. How many times and for how long can we wrestle with the same issues?

The "skills issue" is a Trojan debate for more profound malaise in our society. Without going into this the issues at stake are lack of Innovation and Opportunities.

The lack of Innovation contributes to the skills deficit because when people learn things by rote, they do not really get to understand things, and hence become de-skilled.

Opportunity is part of the skill crisis, because if companies were making money they would simply buy skills, as they do when they have confidence and money. What we see instead is companies saying they need to reduce cost of acquiring skills.

The wrong solution is to turn the skills crisis for solution over to teachers (e.g. universities) because they are beneficiaries of a broken pipeline (having no reason to ensure people's skills are relevant or used). Instead they are remunerated on the number of people they pump out of their institutions.

The skills debate is located around the practice of software. Let's face it – writing software is not hard. Admittedly there is some hard software, e.g. being an Apache contributor. But 90% of software is not hard. In fact complexity is a design smell. Again, look at Apache – simple and beautiful, once you have got their weird C arcana behind you. Being a productive member of a business is harder than the monkey tricks of coding.

2.1.6. Creation of work

While the government is wishing to create work, our companies retrench people due to bizarre and onerous government processes. This is surely exactly what should not happen.

On the other hand many small companies have no problem being able to employ people with the right skills, because as part of an informal network, pay is quite high due to the nature of that engagement model.

Further, many small companies have never had a problem employing junior staff – should these junior candidates survive the initial interview process, small companies are quite prepared to commit time and effort mentoring these interns.

Software is in theory a brilliant career for women (flexibility) and the future of software in South Africa lies with black people – this will become the biggest provider of quality jobs in years to come and software *must* be used to deliver services (to their communities).

We have observed the phenomenon of underemployed people – this is where senior people are forced to do menial clerical jobs. There have been interesting observations about this.

2.1.7. Being sceptical is not destructive

The fact that one develops a theory around production of software that is upsetting to people thinking in terms of civil engineering or accountancy should not be surprising. Software does not labour under their gravity. Due to the nature of software a new model is

needed to build the industry to answer the question: how are you going to sell what to whom?

In South Africa, where cash is in short supply, accountants frequently dictate the 4 variables of software: functionality, cost, time and quality. However, as in the parable where in the land of the blind the one-eyed man is king, so it is in software. Accountants may control the purse strings: but the dark in the kingdom of the blind obviates the advantage of sight as much as the dearth of creativity is stifled in this by monied accountant-kings.

Any software program needs to communicate its values publicly and objectively. There are many claims by many organisations about different facets of software – but the fact of the matter is that these "surveys" are frequently nothing more than a marketing ploy. Claims need to be published and peer reviewed.

2.1.8. Labour brokers

It is our opinion that labour brokers have done immeasurable damage to the software industry by firstly depriving people of the right to choose where they work through restraint of trade and secondly through holding companies hostage to the fact they have the skills under their control.

We are extremely aware that in all our activity around building software engineering, labour brokers have never contributed to the debate. We also know that they still use 2 year restraints of trade.

The influence of labour brokers in South Africa must not be underestimated.

In theory the Labour Relations Act defends people, but in practice companies use their superior financial weight to obliterate these rights. We feel that punitive sanctions should be imposed by the court when they find that companies are overstepping their mark, rather than just pro-forma compensation.

2.1.9. Banks and Capital

Banks do not lend money any more. They lend money even more reluctantly to Software Companies.

It is absurd to think that we as an industry are expected to compete on behalf of our political policy wonks with absolutely no resources. All we are doing as an "industry" is grooming the local market on behalf of multinational companies.

We have taken to laughing at discussions which are predicated with "apart from access to capital, what do you need".

Investors in start-ups give a "generous" timeline of 5 years. This is bizarre if one considers the average housing mortgage is 25 years, yet even after this latest financial crisis – precipitated by housing – there is absolutely no concept of quality investment.

Stakeholders are mesmerized by the few organisations that defy gravity, such as Microsoft, Oracle, Facebook and Google. (And that is more or less the entire list) and ignore the more

mundane aspects of tech that actually does lead to long term value such as IBM, Amazon, HP, etc.

If one takes the slightly less grandiose view of capital flow to tech companies in the US (the IEEE Spectrum magazine has a number of classic info-graphics in this regard) then South Africa does not appear that much different from the US in many respects. When you ignore the few Google's etc, and look at the rest of the tech market, things are as tough there as here. The main difference is the absence of a "tech market" for investors to be able to buy the Googles. (The JSE is moribund in that regard, listing defunct companies in that sector such as VIAM from the late 80's).

2.1.10.   Universities

We are frequently reminded of the vast amount of money that goes into South African universities (literally billions of Rand) through for example surveys that show South African academics have an equivalent purchasing power second to none [13]. While we have a considerable amount of respect for some academics we need to point out

1. The university cash flow far exceeds that of most SME's
2. Their fixed assets are in the order of billions
3. They get a huge amount of money from government
4. The have a marketing brand second to none – everyone wants to send their kids to Uni.

So when we hear plaintive cries from universities with regard to academic freedom being challenged we take a jaundiced view of their predicament. While we support their right to be autonomous it must not be to the detriment of the broader society. We are well aware of their ability to invent cottage industries that they support via (peer review) of their friends.

As usual in this essay we have an almost contradictory observation: Universities are a critical component of the innovation equation. But their relationship with SMME's is uncalibrated (as mentioned above) and there is no respect. We have been told by academic staff that people with PhD's working in industry are failed academics. We would dissent.

Only universities have the resources to focus on R&D. But rather than academics indulging in a cottage industry with their friends, academic endeavour needs to be responsive to companies.

2.1.11.   Just Franchises

The local operations of many multinational companies in this country are little more than franchises. The fact that they have a big logo on their door hides the fact that they do not have any R&D capabilities. They are nothing more than a consulting service and marketing shell.

However, there is a tendency in government to defer to the marketing budget of these companies in determining policy. We have seen this alarming tendency with monotonous regularity. Beware strangers bearing gifts.

2.1.12. Telecommunications is not software

By this we mean that telecoms, being big and well-funded in South Africa have dominated the software landscape. But this is not the only game in town.

Software has been thrown under the wheels of ICT. As leaders in convergent technologies (specifically software defined radio) we would claim the need to be more careful in regard to policy in this direction. The term should be IT & C and even then, software is a subset of IT. It is only the wonks of the ITU that consider ICT.

2.1.13. Certification and Accreditation

We define Certification as a process in recognising individuals and Accreditation to be bestowed on an institute.

While we all recognise the importance of skilled people, accreditation brings to the fore a host of issues in software. To deal with these is actually a series of papers in their own right. Professor Moshe Kam of the IEEE recently when through a number of scenarios.

However, we would propose that any accreditation program has all 4 of the following:

(1) There must be buy in from industry from the outset

(2) Accreditation must not become an indirect Tax on business

(3) SMME's should benefit from Accreditation programs

(4) Accreditation should look at the software industry not as just engineers but also scientists, designers, DBA's, etc

2.1.14. Green IT

Vendors are spending considerable effort to reduce the carbon footprint of their products. This section is a placeholder for further debate around the need for our community to use IT in a way that is more conducive to preventing wasteful practices.

2.1.15. South African Software Society – SASS

We need a national representative Software Society body. While there are many software bodies in South Africa – IEEE, CSSA, SAIEE, BITF, BMF, etc. These tend to represent quite specific markets. While there have also been quite a few attempts to represent the IT industry into government – these have all come to naught. It is really important that the IT industry in general and the software industry in particular speak with one voice.

2.1.16. Net Neutrality / Security / Privacy

In the age of Facebook and Wikileaks important questions have been raised. As a community we need to be more rigorous about these issues.

3 Response

The following section contains the original DTI document in italics, and our response.

"The range of ICT-related concerns facing policy makers has increased dramatically in recent years: communications infrastructure, procurement for government automation and e-government programmes,

intellectual property, government sponsored research programs, incubators and technology parks, engineering education, foreign investment and of course, the potential for export revenue. It is usually in this last area, the potential for dramatic economic growth like India's or Ireland's that first brings software to the forefront as a separate issue within ICT"[2]. This paper further argues that every software-exporting country has evolved a unique industry, shaped by its own resources, situation and by the particular global opportunities presented at the time. For example, Japan exports software games, India exports primarily software services to large software development shops, Ireland exports software products and Israel mostly exports software technology which is subsequently productized by firms in the US and Europe. Unfortunately, this reflection on export-specialisation can hardly be said about South Africa. A clear analysis of the state of the industry in any particular country, regardless of the state of economic development, will determine the role to be played by government in industry development. Below is an attempt to reflect on the South African software industry, status, opportunities, challenges and possible plan of action to contribute in industry development. This plan of action (developed in workshop with industry stakeholders) is informed by the need for both Industry and Government's roles in maximising the potential of the industry to contribute in job creation and fighting poverty.

Introduction: "the potential for export revenue" – this is a thorny issue as to what constitutes software export. The IP act around R&D done at universities may or may not be right, but it has been communicated very badly. Any "restriction" around exporting software and IP needs to be carefully communicated to retain value.

Companies in advanced, "high-cost" economies are increasingly looking to contract out software and IT services work to companies in "low-cost" nations or regions that can offer a skilled workforce and high quality solutions. According to Gartner (2009), South Africa is ranked as the top 30 software outsourcing destination in the world, with 2007 research putting it on par with Israel in the Europe, Middle East and Africa region, and next to Australia and India globally. Business Monitor International (BMI) forecasts the SA software industry at around US$1.8bn in 2010 and is projected to have a CAGR of around 11% over the 2010-2014 period. South Africa's software market is growing, despite the problem of software piracy, which still counts for around 36% of the software market. DATAMONITOR forecasts the value of the South African software market at US$3Bn in 2014, an increase of 61% from 2009.

Para 1: Licencing and Digital Rights and Copyright and Piracy are important issues, and as local software companies we need to be aware of the issues. However the simple fact of the matter is that incumbents bring in emotive and aggressive arguments to defend their position and dominance at the expense of smaller and later players and the consumer.

Last year the BSA opened up an offensive at what they called software licencing [1]. Statistics by the IDC were bandied about, that claimed that "trimming the piracy rate by 10 percentage points over four years would add an additional 1 181 IT jobs and $819 million to the economy". These figures are absolutely without justification and were shot down in forums across the Internet. In the barrage of press, organisations were asked to weigh in who directly benefit from the BSA's point of view. This was an incredibly simple minded and blatant attack on the credulity of the public.

This offensive was seemingly international, being driven by their principal, Microsoft. However, industry bodies such as BUSA endorsed this.

It must be noted, the US Government's Accountability Office (GAO) has said that claims of lost revenue are baseless. Also they are strongly critical of the BSA and MPAA for

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[2] Nagy Hanna (World Bank) & Shirley Tessler and Avron Barr (Aldo Ventures) - National Software Industry Development: Considerations for Government Planners

suggesting... that there is a set and provable link between piracy and "lost" sales of content such as CDs and DVDs. "Three widely cited U.S. government estimates of economic losses resulting from counterfeiting cannot be substantiated due to the absence of underlying studies... Each method has limitations, and most experts observed that it is difficult, if not impossible, to quantify the economy-wide impacts." [3]

The world cannot rely on companies who use their market dominance to keep consumers stuck with inferior solutions. But worse, modern software companies are prevented from participating in the software economy due to these spurious arguments.

We strongly endorse the existence of Intellectual Property, the need to adhere to software licences and consumer choice. However, models based on reducing choice, limiting freedom must be rejected.

Despite the predominance of Small, Medium and Micro Enterprises (SMMEs) in the ICT sector, power in the industry is highly concentrated among few large established indigenous companies (such as Dimension Data, Business Connexion, Gijima, Altech, etc) and Multinational corporations (such as Microsoft, IBM, SAP, Oracle, etc)[3]. There has been a very high failure rate in the SMMEs, despite government's support systems such as exemption from certain labour legislation and preferential treatment for funding and tenders, key challenges continue to hamper SMME development. These challenges include lack of access to venture capital, high cost of telecommunications, insufficient levels of both soft and quality skills and high training costs.

Para 2: We have commented on the fact that government's policy with regard to software is "Come to us and tell us what you want". This is not communicated to SMME's. Then when we do speak to them, they ignore us, change the arguments, palm us off on other departments, lecture us about the virtues of open source or fail to remunerate us. And then we are expected to compete with the best companies in the world.

South Africa consumes approximately $US 2.5 Billion per annum of software products and related services. A proportion of this is imported from global brands (e.g. Microsoft, SAP, Oracle, IBM, etc) and from the offshore developers in countries like India[4]. Computer Society of South Africa (CSSA) further argues that however, much is locally developed, although there are almost no verifiable sources to quantify this. The development ranges from enterprise solutions to website creation and messaging. In terms of market segmentation, according to DATAMONITOR (2010), about 50% of the revenues go to general business productivity and home use applications (26.3%) and cross-industry and vertical applications (23.6%).

Para 3: It is depressing that in Para 1 the development industry is valued at a miserable $1.8 bil, but as a country we consume $2.5 bil (please note these quantities should be converted into ZAR). We should be making at least one bit of software for every piece we consume – therefore the industry should be $18 bil.

South Africa has become an important player in the number of areas such as pre-payment systems, revenue management and fraud prevention systems, access control and e-security systems, Radio-Frequency Identification systems, embedded software, software development in financial services as well as mobile technologies. In terms of trade, including the areas mentioned above, Africa Analysis argued that the structure and value chain of the import and export trade in the software industry is different from most other industries,

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[3] According to BMI-T and the census done by Cape IT Initiative (2007),

[4] According to the Computer Society of SA – responding to a questionnaire

because of lack of tangible products comprising the industry e.g. software as a service[5]. The export market revenue constitutes less than 6% of the total domestic software market.

Para 4: we feel that the Africa Analysis work is definitive, but probably dated and possibly wrong.

Most of the exporting companies (76%) export their software products or services to African countries, others trade with Europe and North America. Very few companies export to South Asia, the Far East and South America. South Africa imports a number software products and services, especially from the Multinational companies operating in the country. Most products are imported for resale by local companies which then pay the Multinationals royalties based on sale revenues or licence agreements.

Para 5: see the receding remark about merely franchises.

Skills shortage is one of the major inhibitor for the effective software industry development in South Africa. Scrumsense (in Cape Town) argues that literature review seem to reveal that there is a major challenge on quality skills required in the industry and a persistent zero respect for the standard of tertiary education and qualifications in the ICT sector. It continues to argue that a general consensus is that a new graduate can offer little value to the software development environment. Employers eager to grow their staff count, but faced with severe skills shortage often opt for a reduction in search criteria under the auspices of future training and skills development. Unfortunately the follow-up training and skills development is seldom implemented. The net effect is an overall reduction in skills level and by extension, quality.

The research findings reflect the fact that, in terms of forecast, the demand for both technical and business skills will continue to outstrip supply in the foreseeable future, if nothing is done to address this challenge. There is substantial number of graduates and professionals who are possessing generic skills that they use to implement and support imported products but, a few possess the advanced software development skills. Both research findings by IDC (2006) and Department of Labour (2007) on ICT skills demand in South Africa provided very scanty information on the actual demand for skills in software industry. The recent 2009 survey by Johannesburg Centre Software Engineering (JCSE) and ITWeb reflects the demand for skills (software engineering) in project management, business intelligence, knowledge management, architects etc and is currently conducting another survey on skills in the software industry together with ISETT SETA to understand the extent of skills shortage in the industry and in other economic sectors that employ ICT practitioners.

Para 6 and 7: These two paragraphs surely contradict each other? [11] But if you look at who is making the claim it is not surprising the claims are being made. [We have asked but have not received these surveys.]

There is no confirmed figure of ICT professionals/practitioners employed in the ICT sector and other vertical sectors and the same goes for the software industry sub-sector. Africa Analysis estimated (in 2005) a figure of about 15 000 software developers in South Africa. The current ISETT SETA's career guide makes an estimate of about 600 software engineers and developers as required in the period of 3 years by companies paying levies to the SETA. Most of the skills required are vendor specific competences such as MCSE, J2EE and C++ programmers, Software Application specific certification, etc. The 2009 scarce/critical skills list of Bank SETA reflects a demand of 48 EE candidates possessing skills in software development e.g. software programmers, architects, testers, etc.

Para 8: 15 000 software developers must surely be too low.

The web survey report (not published) on the South African Software Development Capability conducted by the Innovation Lab on behalf of DST and Meraka Institute reflects a need to address the skills shortage in the

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[5] Africa Analysis – South Africa Software Market 2005 – Market overview and Value proposition analyis

industry if the country wants to maximise its potential. There are a number of uncoordinated skills development initiatives by different institutions e.g. Cape IT Initiative, Cisco Systems, Microsoft SA, Oracle, Moses Kotane Institute, Meraka e-Skills Institute and others. This can largely be attributed to the fragmentation in the industry and government's tendency to work in silos.

Para 9: The survey by Meraka[6] has to be statistically discredited due to the low number of respondents. [We have asked but have not seen the responses to the survey. However we have seen an executive summary.]

It is a tragedy that the African Advanced Institute of ICT was watered down to becoming some hybrid open source department of the CSIR. (Of interest it needs to be noted that the CSIR competes against the very industries it should be supporting.)

A model more like AIMS for the AAICT would have been infinitely preferable.

There are opportunities for South African software developers in the vertical markets such as financial services, mining, etc and emerging technologies such as mobile and wireless technologies. The opportunities relate to customised solutions such as Customer Relationship Management (CRM), Enterprise Resource Planning (ERP), Business Intelligence (BI), Web-based applications as well as smart packaged software and mobile applications. As the country continues to modernise its economy and government services, this presents a good opportunity for the local industry to fully participate as it understands the local demands and environment. Compared to hardware production, software production has much lower entry barriers because it is less capital-intensive, more labour-intensive, with a lower rate of obsolescence, and (at least for certain types of software) it has far fewer economies of scale[7]. All of these factors work in South Africa's favour, and software's labour-intensity of production combined with low African labour costs offer a clear opportunity. If these opportunities are well grasped by the local industry, supported by government and industry at large in terms of skills and enterprise development, there is a huge potential for decent jobs creation in both short and long term.

Para 10: this has to be one of the most important paragraphs in the document. [However we have never heard of, met or spoken to Mr Heeks.]

There is a need to master and effectively service the local market before South Africa explores becoming a major international competitor in the software industry. The systematic reliance on foreign or imported software packages by the SA market is further proof that all is not well and a lot must be done to help local industry to grasp this opportunity. The SA software industry will continue to grow as forecast by several research institutions but, the questions is: should the status quo on revenues remain as it is? Where multinationals and few large indigenous companies take more than 80% of revenues whilst they constitute only less than 10% of industry players. Can this status quo positively contribute to the new growth path?

Para 11: Yes software can make a difference but is being held back by old models.

For South Africa to be an important and competitive player in software industry, a certain number of challenges that hamper the potential of the sector (to service both the domestic and international markets) need to be addressed by both the industry and government. The challenges outlined below are those that have been reflected during the engagements with the industry and its associations. It has been argued that the growth in the ICT industry has been due to market imperatives and not because of a well-structured partnership between government and industry to develop the sector. The envisaged partnership has a potential to realise the objectives of the state in using the SMMEs to fight unemployment and positively contribute to socio-economic development.

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[6] It is ironic that the creators of Meraka had not read [7]

[7] Richard Heeks – Building Software Industries in Africa.

Para 12: Yes

*Critical issue raised by the industry is about **exchange controls**: inability to freely move currency and IP across borders, costs of receiving small foreign currency payments and inability to price goods in a foreign currency for credit card merchant transactions are discouraging the uptake of international contracts.*

Para 13: Yes

***Skilling or re-skilling** of professionals in the industry: Since software capacity is correlated directly with the size and skill of the available workforce, there is no important element of a country's efforts to increase software capacity than the development of its corps of software professionals[8]. The demand for skilled software engineers and developers in South Africa is very high and outstrips the demand. The university graduates are not ready for the software development environment. There exist a need to find a solution that supplements the education system/University training supported by both the industry and government. The shrinking pipeline in terms of matriculants with both maths and science subjects plus the declining interest in these matriculants taking up programmes such Information systems and computer science has been raised by the industry as a challenge that will compel the country to look outside for skilled human resources. This has a potential to increase the cost of doing business in the industry. A model to help develop the critical and scarce skills as required by the industry through SETAs must be conceptualised and agreed to by government, industry and education & training institutions.*

Para 14: No. Skilled people go where money flows. Also, the reference to pipeline is hugely important due to the fact that a pipe has a beginning (pupils) and an end (producing value in the job market). The fact that the pipeline currently ends with the spewing of vast number of jobs into barren desert is the problem.

Accessibility of standards by small businesses: Competition and the continuous demand for new and better products, as well as the possibility for international trade, have compelled South African industry to produce and sell better and compatible products more quickly and cheaply. Progress in the industrial field depends to a large extent on the availability of standards information. It is therefore important that industry has effective access to standards information[9]. At issue here (for the SA software industry) is not so much about how much a standard document costs but, how easy is it for a small business to understand the content, especially technical content in order to comply. These standards will range from security to interoperability standards as widely accepted by the users of software products and systems. Linked to this challenge are the costs associated with process improvement standards such as CMMI, PSP and TSP for small businesses. The unsatisfactory participation (or lack of) of South African companies is a course for concern.

Para 15: Yes standards are important. But more useful standards are technical standards – the ETSI 3GSM standard underpins the whole GSM. There are open government standards, etc., etc. The IEEE for example has a very good Software standard called the Certified Software Development Associate and Certified Software Development Professional (CSDP).

***Enterprise development** support: Apart from financial support in the form of venture capital funding as outlined below, small businesses, especially those that are part or have been through incubation programmes are only subjected to certain types of support e.g. communication and business skills development and not the technical support that is crucial for sustainability and remaining competitive in the software industry. The costs attached to software platforms required to develop these technical skills are unaffordable to most of small*

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[8] Nagy Hanna (World Bank) & Shirley Tessler and Avron Barr (Aldo Ventures) - National Software Industry Development: Considerations for Government Planners

[9] Accessibility of standards information in South Africa – Retha Snyman (UP) and Archie van Rensburg (SABS)

businesses, especially black-owned companies. Due to the cost of bandwidth and unreliable connections, it is difficult for those wanting to apply methods of self-education such as video-based tutorial to build their technical skills. There is no focused support for creation and incentivising companies that develop software and create meaningful products.

Para 16: We can state that state funding of software is not worth any penny of the billions that has flowed. We have been through the Innovation Fund, Technological Innovation Agency, IDC, SPII and Savant. Please see earlier anecdotes of interaction with the so-called Innovation Fund – however, the depressing thing is that our bad experiences with government funding vehicles are not combined to the IF.

Venture capital funding: A frequently cited complaint in South Africa's economic development is the lack of seed capital and development finance for small software development companies. It is argued that DFIs and commercial banks are not doing enough to support emerging businesses, thus creating a great need for further specialized funding. South Africa has plenty of would be entrepreneurs, wanting to start their own businesses and demand for Capital is high. However any fund set up for the financing of Small and Medium Businesses in South Africa faces the challenge of the large amount of failures currently experienced amongst start-up and existing businesses. The potential for innovation in South Africa has not been realised, with most participants in the industry operating as vendors rather than innovators. This can be attributed to, among other things, the failure to adequately bridge the commercialisation gap since many innovators lack knowledge, resources and/or do not possess the skills necessary to drive the commercialisation of their innovations.

Para 17: Professor Wynand Coetzee of Stellenbosch perhaps has the most definitive view of funding. (He does not believe in it). He instead has a model of building reference sites. "Crowd funding" is an interesting idea, but smacks of being a pyramid scheme. For us the maths does not work.

Intellectual property protection: Lack of adequate IP protection in the South African market has been raised as one of the issues resulting in the lack of confidence on the part of potential foreign investors. IP laws have had an important impact on the global software industry's success. IP protection has given software developers the incentive to invest in developing and marketing new programs by providing a legal mechanism through which developers can capture at least some of their software's value in the marketplace. International investors consider this as a major deterrent to investment in local innovation, as they do not feel secure about their future ability to generate profits from ICT development[10]. The 35% of software piracy in South Africa is the manifestation of the weak IPR environment in country and costing the economy[11]. This paper further argues that reducing piracy by 10% can result to approximately 1600 direct jobs in four years.

Para 18: South Africa does not need to fall into the trap of "licencing software". In fact we have a perspective on IP that is different by virtue of the fact that we are not based in the US or Europe. We need a licencing regime that allows us to address our challenges as a society.

South Africans are famous for thinking that ideas are valuable; Ideas are only valuable insofar as they can be encapsulated in a product and commercialised. The excessive focus on the value of ideas leads to lack of communication, fragmentation within the industry and trivially small companies.

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[10] E.g. Rubicon, a South African company that developed a highly sophisticated modularised ERP system, set up a holding company in Ireland to obtain development funding in the US and was forced to export its R&D base.

[11] How to Reduce Software Piracy in the Middle East and Africa: The Case of South Africa

This must be opposed.

3.1 POA

This plan of action is necessitated by a need for government action working together with the industry to help maximise the potential of the SA software industry to service both the local and international markets. It is well documented that the advocates of free markets discourages the involvement of government in industry development but, as argued by Richard Heeks, the free market will never provide a software industry for Africa without government's involvement in addressing key challenges faced by local industry[12]. Below is the plan of action for both the government and industry to address the challenges in order to realise the key objectives of government i.e job creation and fighting poverty using this influential industry in the economy:

3.2 Skilling and re-skilling

- Market the sector at high school level
- Initiate a soft-skills training programme for University undergraduates
- Existing educational initiatives to partner with MNCs for skill-based programmes
- Facilitate the establishment of an umbrella software industry association
- Top up investments in projects with skills development
- Facilitate the participation of SMMEs in skills development
- Facilitate the skilling of unemployed graduates
- Facilitate the re-skilling of those wanting to do development than support
- Match the development of skills with job opportunities

3.3 Standards

- Ensure accreditation and compliance with international standards
- Make accreditation or certification affordable for small businesses
- Facilitate awareness and education campaigns on standards

3.4 Enterprise development

- Create incentives for small enterprises to undertake innovative activities
- Support small businesses in producing quality products that can be packaged and sold
- Increase the number of small business getting support through incubation programmes
- Recognise the value of small enterprises when working as sub-contractors
- Government procurement should support local industry
- Encourage the corporates to "onshore"
- Avail funding to finance high risk activity in projects
- Software industry experts should be involved in procurement decisions
- Avail and simplify tax incentives for companies to invest in applied R&D work
- Make labs available for local companies to demonstrate their products

3.5 Venture Capital funding

- Government (through institutions such as SEDA and IDC) must make funding available, practical to obtain and accessible
- TIA to have special focus on industry and to support commercialisation of products

3.6 Intellectual Property protection

- Legislate against software piracy
- Facilitate awareness and education campaigns

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[12] Richard Heeks – Building Software Industries in Africa

◆ Facilitate enforcement and training

We do not agree with the "free market" approach – the South African development community needs a specification and standards process akin to ETSI say around delivery government services through IT.

However the absolute horror of "work to rule" will kill any innovation just as surely as the lack of resources.

Here are some direct responses:

- High school – yes
- Soft-skills – yes. But it must not join the BIS (Commerce), SE (Engineering), IT department (Admin) and CS (Science) departments studiously not speaking to each other.
- Do not know what an MNC is.
- Yes – we have made various proposals to the BITF, SAIEE and IEEE.
- Investment can be related to skills. Care is needed though.
- SMME and skills – yes, but care is needed. Putting a whole lot of green students in a room by themselves to attract government grants is an old tactic.
- There is an awesome amount of underemployed and unemployed graduates in our experience who are forced to live in rapture of mindless bureaucratic processes
- We do not believe that the mechanical matching of skills and jobs can happen. People must be sufficiently well trained in generalised skills that they can follow the market. Thus an MCSE is not really that helpful in our opinion, while superficially a BSC Comp Sci is useless, the basically skills, thinking processes and template is there.
- Standards are good
- Making accreditation is good. But we pay SIL and cannot be bothered reclaiming it due to excessive admin
- Incubation programs are vital. But there are too many simple minded and trivial programs.
- SMME's as subcontractors is good too
- Government procurement is the first step towards creating a local software industry
- Corporates need to be heard w.r.t. to skills.
- Funding risk should be mitigate through engineering and formal marketing by aggregating risk like Y-Combinator
- Software industry experts must be involved in procurement – a simple example would be the CHPC where international experts were appointed and who gave good advice. At some point, late in the process, a management team was put in place who seemingly disregarded 5 years of advice.
- We can attest to the fact that for example the DST 150% Tax rebate does not work. Our accountants have sat down with SARS and DST officials to address deficiencies in the process. We will get there, but it has almost been a year. To compound matters, companies do the most unpleasant tax things without sanction – we had a customer who elected to withhold PAYE from a contract in flagrant contradiction of evidence to the contrary. At the end of 12 months that asked for a 3 month extension w.r.t. their PAYE reconciliation. It then took an additional 6 months for SARS to map this

PAYE from Companies Tax to our PAYE bill. Thus, despite the fact that we had paid PAYE, despite the fact we had a contract and that everyone in this company was contrite and chastened, we had a 30% hole in our cash flow for 2 years.

- Labs would be very useful.
- We simply do not believe that entrepreneurship can be managed by state functionaries
- The TIA has no insight into what is commercialiseable. In actual fact their belief that random research can be commercialised is rubbish. Please see our comments about why they should operate as a lottery.
- We agree that we do not want our software stolen. But we feel that the 2 alternatives are worse, namely safeguarding the status quo of entrenched players and preventing the free exchange of information between entrepreneurs in order to protect their IP. (See comments regards ideas are cheap.)
- Ditto
- Ditto

Herewith we propose the following additions to the plan:

- The state must elect to address the social agenda through the use of software – this includes automating social services, etc. The list of possibilities here is endless, but the inclination should be resisted to fall back on manual processes.

- The state elects to create an internal market for software through purchasing local solutions and products. The open source agenda is NOT an alternative way of saying buy ZA.

- The state must start developing frameworks for privacy and compliance that are simultaneously compliant with our constitution and also capable of interfacing with similar systems of our peers.

- Creation of a Software Market where people can purchase software products, property, services and so. This market may resemble a working laboratory.

- The need to create a national service standards association for interoperability between micro vendors and government. This should be a formal process like [12]

- Intellectual Property is different in Africa from the rest of the world. We must not ape US "software patents" but develop our own system.[10]

- Collaborate between developing countries.

3.7 Funding

The success in the implementation of this plan will depend on the availability of resources to support initiatives emanating from this plan of action. It is very imperative that both Government and the private sector commits into availing resources (financial and non-financial) in order for the country to realise the state of the software industry that is envisaged by all stakeholders. Institutions such as TIA, SEDA and IDC have a special role in the development of this industry and their full participation is very critical and important. Leveraging on National Industrial Participation Programme (NIPP) obligations involving ICT companies to support skills and enterprise development needs to be prioritised by both Government and the private sector.

Tie Innovation Funding into the PFMA is not useful.

3.8 Expected Outcomes

The expected outcomes should be micro-projects to provide services such as Metrorail timetables on mobile; information w.r.t. ID books on the web; etc. These projects should be financed by municipalities and should use local resources. These projects should be joined up technically, and need to tap into national standards and facilitating processes, whereby a successful Metrorail info service can be rolled out nationally, for example. We think that grandiose outcomes are destructive, just are lots of trivial projects operating independency.

Thinking needs to adopt the pipeline metaphor. PR should be controlled centrally w.r.t. to their project and the DTI needs to lead the DoHE, DST, SITA, DoC and others in ensuring that the fundamental business drivers are in place.

Oversight to this project needs to be given on a board level, not through elaborate strategic objectives but through a CIO type dashboard that is visible to all. The board must elect to improve w.r.t. to certain well determined indices. These indices need to be revisited annually.

While failure must not be rewarded, failure should not be condemned either. This is a challenge in a commercially grinding world. We would as a community need to push out the boats in a measured and controlled way. The other alternative (mastery of the trivial and the known) helps no-one.

The vision of the delivery of services through software needs to be sold to our community not through brash press releases but through tangible successes.

In order for the country's software industry to succeed, it requires software skills, a home market, a country brand and a clearly competitive advantage that sets that country from its competitors[13]. Given this set of factors, many developing countries and some developed countries have established national software strategies to grow their software industries. While not suffering from a 'me-too' syndrome, South Africa requires a strategy that identifies the role of the local industry in economic sectors development and its contribution to job creation. Failure to do that, South Africa will continue to import skills (lack of skills drive up salaries and this has a potential to contribute in driving up inflation), import solutions that are not relevant for the country's challenges, lag behind the developing nations in taking advantage of the industry in its contribution to job creation and overall support for development of economic sectors.

4   INDUSTRY FORUM

In the absence of the legislated body to develop the software industry or ICT industry in general, an industry forum formed by the representatives of key industry institutions needs to be established guide the execution of this plan of action. Institutions such as CITI, Durban SmartXchange, Innovation Hub, TIA, IDC, ITA, BITF, CSSA and Academics need to be represented in the forum.

5   Conclusion

he 4th Software Engineering Colloquium is designed to build the software development community in South Africa. The title of the colloquium is "Made in South Africa": here we will be looking at creating value through software development. We wish to systematically address the technical and business impediments to create a long lived industry that makes

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[13] Africa Analysis – South Africa Software Market 2005 – Market overview and Value proposition analysis

us competitive internationally, addresses the needs of our people and creates shareholder value.

The interaction of science, engineering, the design community and business are crucial elements in making useful and useable software: science because for anything to succeed it needs to be new and different; engineering, because we need to be able to systematically build the products; design because the products need to delight and business because the systems required when removing ore from the ground are different to selling software in 2011.

Software is often seen as the poor brother of telecommunications: as a sub-discipline of Computer Science (by computer scientists); as engineering in Engineering Faculties; as a necessary evil by business; as a Business Information Systems by Commerce. It is used by all but embraced by none.

This year the Black IT Forum has elected to embrace software as business owners of SE11.

We are authors of our own salvation – to rely on multinational vendors are mysterious process is useless.

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6   Appendix

We have included the following as an illustration of FUD thrown into the discussion.

6.1 Appendix 1

2.1.17. Piracy is not a crime

By Nicola Mawson, ITWeb senior journalist, Johannesburg, 13 Apr 2010

The Business Software Alliance's (BSA) efforts are being thwarted by a three-decades-old law, as the organisation tries to clamp down on piracy and stop money leaking out of the economy.

As the law stands, end-user piracy is not a crime and is difficult to enforce as an infringement of copyright law. This law dates back to 1978 and the maximum fine that can be imposed on someone selling pirated software is R5 000 per ripped copy.

The BSA says this is not enough, and penalties need to be harsher in order to trim the amount of piracy in SA. The latest figures from the IDC show that piracy went up a percentage point in SA between 2007 and 2008, which amounted to R3.1 billion in industry losses.

Not important

ICT lawyer Lance Michalson, founder of Michalsons Attorneys, says piracy is a copyright violation, but it is not a crime. As a result, the owner of the copyright can only enforce a claim of copyright infringement.

The reason that piracy is not a crime, which makes offenders difficult to fine and penalise under South African law, is because there is no relevant law in place. This has been the situation for several years, he adds.

Under current law, Michalson explains, it is an offence to knowingly infringe a copyright, but many people who do this are not aware that they have. In addition, the will to prosecute people who rip off software is not a focus area for the authorities, he says.

On its Web site, the Electronic Law Consultancy spells out the issue: "The big secret is out: software piracy is not a crime when done for private or individual use, and the worst that can happen to the software pirate is he or she may be sued for the value of the licence he or she should have paid... Piracy is not theft, because theft is a crime, piracy is a copyright violation, and only under certain circumstances is this copyright violation a crime."

Warren Weertman, at Bowman Gilfillan, who acts on behalf of the BSA, says the current Act does not sufficiently spell out piracy, and requires some interpretation in order to be enforced.

He explains that end-user piracy for personal use is not a crime in SA. If someone has pirated software for personal use, in most cases it is arguable that this does not amount to copyright infringement, Weertman says. "It would make life a lot easier if piracy was a criminal offence."

Weertman says the legal firm is engaging government, and has been doing so for the past 10 years, to make piracy a crime. He says the Act has not gone through any real changes since its inception.

However, Weertman says, government has other priorities, such as violent crime. "We don't even have a draft Bill on the table."

Economic cost

According to the IDC, trimming the piracy rate by 10 percentage points over four years would add an additional 1 181 IT jobs and $819 million to the economy. The IDC's research

is, however, based on a 2008 piracy rate of 35%. These are the latest available figures, and numbers for 2009 should be out in two months.

BSA chairperson Charl Everton says the out-dated R5 000 fine per pirated copy is "no deterrent to companies and does not set the right precedent on how SA views copyright".

BSA was set up to protect the rights of its members, which include Adobe, CA, Cisco, Dell and Microsoft. The entity is present globally, and has an active – or 'online' – presence in SA. The organization enforces its members' copyright on people found pirating software.

It is present in more than 80 countries, with dedicated staff in 11 offices around the globe: Brussels, London, Munich, Beijing, Delhi, Jakarta, Kuala Lumpur, Taipei, Tokyo, Singapore, and São Paulo.

Everton concedes that the BSA only enforces the law – with assistance from outside counsel – on behalf of its members, but argues that clamping down on piracy indirectly aids the entire industry.

"It's very challenging when the legislation is the way it is... It cripples our ability to enforce it in the market," argues Everton. The BSA has been lobbying government for stricter laws for about a decade and is also working closely with other industry players, such as the Southern African Federation against Copyright Theft (Safact).

Everton says government can assist the BSA by making sure it enforces intellectual property laws internally. She adds that the issue of software piracy needs continued enforcement and education.

Bleeding

James Lennox, CEO of Safact, says the courts are not imposing strict enough penalties and, even if legislation had penalties that were sufficient to deter criminals, it is not a given that these would be handed down.

However, Safact, which represents the broader industry and has members including Nu Metro, Ster Kinekor and Sony, is making progress in getting counterfeiting cases to courts and having perpetrators found guilty, he says.

Lennox says legislation has not kept pace with technological changes, and needs to be updated. SA also needs to ratify various treaties that it has signed, and this will require changes to the law, he adds.

Piracy does not just impact the economy directly through lost jobs and revenue. eBlockwatch founder Andre Snyman says he has heard anecdotal tales from tracking companies that they find pirated DVDs in the same chop shops as hijacked cars being cut up for resale.

Everton confirms this, saying there is a correlation between counterfeit goods and organised crime, with pirated copies providing operating cash for the rest of the syndicate.

Weertman adds: "There is a whole knock-on effect on the economy... assuming everyone purchases legal software and does not use open source."

6.2 Appendix 2

Here is a response from a well-known industry watcher. What is important are the relative dates.

2.1.18. US content industry lobbyists caught with their estimates up and their pants down

By Martyn Warwick , 16 April 2010

Well, knock me down with a feather! Vested interests in the content provision sector have been caught out wildly over-egging the pudding. It seems that their claims of countless billions of bucks being lost to piracy and copyright infringement are just so much poppycock. And that's official - the US Government Accountability Office says so.

The remit of the Government Accountability Office (or the GAO as it is more usually called) is to provide to the US Congress "timely information that is objective, fact-based, non-partisan, non-ideological, fair and balanced".

It has done just this with it's latest report catchily entitled, "Intellectual Property: Observations on Efforts to Quantify the Economic Effects of Counterfeit and Pirated Goods." Sounds as dull as ditchwater doesn't it? But despite the dry academic style the report blows wide open the unobjective, unbalanced and highly partizan claims being made by content provider lobbying bodies such as the Business Software Alliance (BSA) and the Motion Picture Association of America (MPAA).

The GAO report was commissioned by the Congress as a countervailing measure to help rebalance the obvious political bent of a bill that rejoiced in the title of "The Prioritising Resources and Organization for Intellectual Property Act of 2008".

The leading initials of of the legislation spell PRO-IP Act - exactly what the Bill was - and is another example of the recent penchant for American legislators to package in the title of a bill an in-your-face, don't-mess-with-me precis of what it's about - even if it pushes the use of English well-beyond breaking point.

Probably the most notorious example to date is the "Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism Act of 2001 - otherwise known as the USA PATRIOT act.

What the Patriot Act actually did was to massively increase the powers of various law enforcement agencies to access private telephone and e-mail communications as well as health, finance, and other records and drove an entire wagon train through the restrictions on foreign intelligence gathering within the US that had been law since earlier, less illiberal, times.

The new GAO report is all the more devastating because, right off the bat and with no beating around the bush, it admits that intellectual property rights are a good thing. "The importance of patents and other mechanisms to enable inventors to capture some of the benefits of their innovations has long been recognized in the United States as a tool to encourage innovation", it says.

The GAO also acknowledges that piracy, unauthorized downloading and copyright theft have a negative impact on companies but then rejects outright the veracity of the figures that vested interests have adduced to support their argument that the sky is falling and fortunes are being lost.

These vested interests are powerful and their lobbying to have the policing and prosecution of intellectual property right infringements made a major plank in US political platforms is remorseless. Nonetheless, they will have been taken aback by the GAO's bald assertion that, "Three widely cited U.S. government estimates of economic losses resulting from counterfeiting cannot be substantiated."

The report says that the industry, media, and government publications parroting an FBI "estimate" that US corporations lose US$200-$250 billion per annum to piracy are guilty of not checking sources because the FBI paper (issued as far back as 2002 and therefore totally out of date in any event) doesn't have any source data to back it up. In other words the FBI report is a scare story without credibility because it cannot be corroborated.

Secondly, the GAO says a 2002 figures in a press release by the US Customs and Border Protection Agency stating that US businesses will lose $200 million and 750,00 jobs a year to counterfeiting and piracy "has been discredited" and agencies were told as long ago as March 2009 to stop using the data. However, pro-content industry lobbyists still refer to them as established fact and so does the US Department of Homeland Security.

Thirdly, the Motor and Equipment Manufacturers Association says an estimate that the nation's spare parts sector has lost $3 billion to counterfeit goods originates from a report by the Federal Trade Commission (FTC), but FTC officials admit that no such report exists and is, in fact, a myth.

In other words the three main sources quoted by the lobbyists to support their financial loss contentions are either out-of-date rubbish or simply don't exist.

The GAO is also strongly critical of the BSA and MPAA for suggesting, without any empirical evidence to back up the assertion, that there is a set and provable link between piracy and "lost" sales of content such as CDs and DVDs.

The truth of the matter is that music and movie industries are in denial. They are struggling to come to terms with the fact that ante-deluvian copyright laws (that do little for the writers, musicians and lyricists who actually create original content but do keep studios in the style to which they have become very much accustomed and to which they believe they are inherently entitled) have had their day and are irrelevant in the age of the Internet. A new business model is needed. It will come and it will mean that studios and record companies will have to rein-in their greed and learn to live in the real world. Unsurprisingly they don't want to do that but they don't help their case by gilding the lily in such a blatant way.

The use of spurious, fake, imagined, fictional and/or unsubstantiated and out-of-date reports and statistics to back up a dubious argument so riddled with holes as to be laughable is no way to attract popular sympathy for a deeply unpopular cause.

And, bye-the-bye, isn't it ironic that a hundred years or so ago the nascent US movie industry fled New York and set up in California not because of the weather but to escape the attentions of the police who were chasing them with the intent to fine them and close them down for non-payment of patent fees due to the Edison company?

Yup, Thomas Edison reckoned he owned all the rights to the entire cinematic process and that no-one could make any film without paying him for the privilege. Much good it did him.

So, once again poachers have turned themselves into gamekeepers. And now they are the establishment they are determined to hang on an archaic business model of the sort they once reviled, fought against and defeated.

They are going to have to learn to listen to the demands of consumers who are sick of being taken for an expensive ride and they are going to have to restructure their entire approach to media production and distribution.

If they won't or can't do so voluntarily it will be imposed up them by the very nature of the World Wide Web itself. Block up one means of so-called "illicit" distribution and another 10 will spring up to take its place. That's the way the Internet works. Why don't they get it?