



E-TOLLING AT AN IMPASSE

TRANSCENDING THE MESS IN GAUTENG

27 February 2014

"Rather than to solve problems, it is clever to dissolve them¹"

Prof. Stafford Beer. Pioneer of Managerial Cybernetics, the science of organizational effectiveness.

EXECUTIVE SUMMARY

An evaluation of the e-tag based Gauteng Open Road Tolling (GORT) system against eight critical success factors distilled from international experience in Intelligent Transport Systems (ITS) shows that on every criterion the system is failing. If it fails completely, it will not only further burden the Treasury and compromise Sanral's international credit rating but also discredit the 'user-pay principle' from which Sanral derives its mandate.

The eight success factors are taken from research findings by University of Pretoria academics who found that ITS succeed thanks to "*strong advocates and public support; weak opposition; a single agency overseeing the project; a good public transportation system in place; simple and affordable pricing systems using proven technology; environmental monitoring and protection; and comfort factors that create confidence amongst users.*"

In the absence of such, Sanral executives are resorting to drastic measures to create the illusion of public confidence which, given the overwhelming opposition to the scheme, only serves to further exacerbate the crisis by inflaming hostility and distrust. The symptoms of a *self-deceiving organisation* are becoming evident. If Sanral is not to become a *defeated organisation* its leaders and managers must take seriously the precepts of a *learning organisation*.

Three burning issues are highlighted to focus the attention of higher level authorities (Sanral Board of Directors, Minister of Transport and Parliamentary Portfolio Committee

¹ Beer, S. (1966) *Decision and Control*. John Wiley and Sons. Chichester.

on Transport): the lack of a prudent, inclusive approach to deal with issues of **Information Ethics** in the planning and design stage has serious human rights implications; perceptions that e-tolling is an instance of **Odious Taxation** amplifies voices calling for a tax revolt; the criminalising of non-payment of e-tolls is seen as 'rule by law' which aggravates the **Crisis of Legitimacy** and erodes of the Rule of Law.

An Intelligent Transport System implies an ethically sound normative rationale, an effective medium to long range strategy to meet emergent complexities, and an exceptionally efficient operations management capability. That hierarchy of accountability is not evident in Sanral's handling of the GORT system.

GORT is no longer a problem to be solved but a mess that needs to be cleaned up. Nevertheless, that mess can be transcended and the problems dissolved if Sanral's leadership shows a genuine willingness and capacity to embrace error, shift the leadership paradigm to embrace a whole systems perspective, and become an authentic learning organisation.

1. INTRODUCTION: INVENTION OR INNOVATION?

This report argues that the decision to embark on the Gauteng Open Road Tolling (GORT) system to finance the Gauteng Freeway Improvement Project (GFIP) was a 'solution in search of a problem'.

Proper research, meaningful engagement with stakeholders, and reasoned attention to 'nuts and bolts' practicalities were forgone by the authorities in their ambition to solve Gauteng's escalating traffic congestion problem. This has led us into an impasse – a predicament with no obvious means of escape.

The Gauteng Open Road Tolling (GORT) system – also known as e-tolling - is the most ambitious and largest ever undertaken anywhere in the world. It pivots around the 'e-tag' to implement the "the user-pay principle", especially in situations where the Vehicle License Number (VLN) plate system can be manipulated or corrupted. Such applications presuppose sound and incorruptible governance systems, (good controls, efficient administration, consistent policing, and public confidence) if they are to succeed.

The management writer Peter Senge in his ground breaking book "*The Fifth Discipline: The art and practice of the Learning Organisation*,"² explains a crucial conceptual distinction between *inventing* and *innovating*. A new invention must of necessity have scientific validity and be capable of demonstration under laboratory conditions to work *intelligently*: it must be obedient to invariant scientific laws normally expressed in mathematical equations and terminology. However proven scientific validity is not sufficient for the invention to become an innovation. Only when it can be "replicated reliably on a meaningful scale at practical cost" and finds general public acceptance does it become an *innovation*. Senge illustrates with the example of the powered flight. Long before the Wright brothers achieved fame other inventors had solved some of the problems and demonstrated that a heavier-than air machine could be powered to fly. The Wright brothers crossed a critical threshold by succeeding to have a *manned*, controlled, heavier-than-air aircraft that flew under its own power. They showed that the timeless dream of humanity to fly like a bird was indeed possible. Nevertheless it took another

² Senge P, (1990) *The Fifth Discipline. The Art and Practice of the Learning Organisation*. Random House

three decades (and a World War) before air travel become a durable *innovation*.

This report argues that the prospect of the Gauteng Open Road Tolling - *Intelligent Transport System* (ITS) '*invention*' becoming an '*innovation*' are extremely bleak, given critical failures that occurred in the design and construction phase along with leadership and management failures that are now emerging since the system has commenced operations.

That there was a need for a bold initiative to address the traffic congestion problems of Gauteng after years of neglect of public transport infrastructure there can be no doubt. That bold decisions were taken to leverage whatever modern communications technology could offer is deserving of applause. However to innovate an Intelligent Transport System at the scale intended and with the considerable complexity that the GORT scheme embodied, required something beyond intelligence. It required *wisdom* borne out of prudent research, the careful testing of assumptions and above all an open, transparent accountability to all stakeholders, most especially the users who would be expected to pay for it.

This report is offered to all stakeholders with an open invitation to them to hold its authors accountable to these same standards, and to challenge and question us on every assertion we make. Paradoxically, it would come as great relief to be proved wrong in our overall assessment. We do not like to imagine the scenario that we fear will unfold if the authorities fail to act and our interpretation and predictions proves correct.

In the midst of intense emotions of anger, fear, anxiety and frustration that surround the implementation of e-tolling on Gauteng freeways, it has required a supreme effort of mental discipline to try to be dispassionate and objective. This is because sacrifices have been made, risks have been taken and reputations staked by determined and experienced leaders in Government, Business, Labour and Civil Society who have lined up and have developed an opinion on the matter, some for and a vast majority against. The bitter, intense and costly legal process has been suspended for the moment, but adversarial attitudes and distrust between the stakeholder's remains.

With the Gauteng e-tolling system now nearing its fourth month of operation, the focus has shifted from whether or not e-tolling has been proved *lawful* to whether or not it is proving itself *viable*. Ultimately, the viability of the system depends not only on fidelity to the laws of science, but the legitimacy of the authority who oversees and regulates its implementation. If the authority is perceived to be untrustworthy and lacking in compassion by inducing fear, they may succeed to force submission but will never inspire cooperation. No governance system can sustain an enforcement process that does not arise from a broad and deep social consensus. A State which enacts laws without ensuring the corresponding capacity to justly and impartially enforce them trembles dangerously on the edge of falling into an autocratic 'Rule by Law' scenario. A democratic society that cherishes the 'Rule of Law' with a constitution that entrenches a bill of human rights, ultimately has no excuse if it allows that to happen.

The GORT has become a *cause celebre* that has united Gauteng residents in protest against what they perceive to be an ominous shift toward 'Rule by Law'. Besides the ethical and moral appraisal, what lessons are there for the learning from elsewhere in the world? Can these perhaps help moderate the emotional content of the controversy by providing a tough minded interrogation of both the conceptual underpinning of the GORT and practical problems that are emerging?

In outline, our assessment is that:

- Of **eight critical success factors** which appear relevant to virtually all Intelligent Transport Systems (ITS) innovations globally, the GORT is in trouble on all counts;
- That the situation is consequently much more than a 'problem to be solved' but a mess that needs to be cleaned up; and
- That neglect to do so will bring further unintended consequences, the most serious being the further erosion of the legitimacy of the State and the problems that poses for peace, social stability and economic prosperity in the future.

The empirical data that has spawned the information to give shape to our knowledge base comes from complaints queries and comments from members of the public³; comments posted on online media reports; interviews with a cross section of members of the public; papers written by academics; interaction with journalists; and from the vast reservoir of attitude and opinion that bubbles up from social media cauldrons. OUTA has a FaceBook page that has over 28,000 'friends', who broadcast messages that have 'gone viral' with astonishing momentum.

Our interpretation and assessment of the situation has been greatly assisted by reading academic research, notably the work done by Ms Erin Hommes and Dr Marlene Holmner, to glean critical success factors from international experiences in the implementation of Intelligent Transport Systems. To distil some wisdom from the vast body of knowledge we have been inspired by the insights and conceptual thinking of leading Systems-Thinkers including Peter Senge, Russell Ackoff and Stafford Beer.

To attempt an explanation of Systems Thinking in the body of this report will lengthen it considerably. A brief overview is provided as an appendix (Appendix One: How we understand Systems Thinking).

³ At the time of writing these numbered 1894 individual complaints which OUTA has received since we offered on 3rd January 2014 to mediate these to the Public Protector.

2. DEFINITIONS AND CLARIFICATIONS.

THE SOUTH AFRICAN NATIONAL ROADS AGENCY LIMITED (SANRAL),

Sanral is a State Owned Entity (SOE) established in 1998 as a corporatized company accountable to a Board of Directors appointed by the Minister of Transport, as well as to the Companies Act which defines the fiduciary responsibility of board members.

Sanral's mandate is to ensure the National Road infrastructure is developed and maintained. It receives revenue from two sources, the National Treasury and from tolling, the latter being to implement the user pay principle. Sanral operates a number of long distance tolled roads itself by subcontracting the operation and management to service providers on a tender basis. Where traffic volumes and social economic circumstances justify it, tolling concessions may be awarded to commercial private sector consortia in Public Private Partnerships in *Build Operate and Transfer* (BOT) agreements to develop new road construction initiatives and to upgrade and maintain existing roads. Such Public Private Partnerships are justified as necessary to "harness the efficiencies of the private sector" so as to enable the State to satisfy the ever increasing demand for improved road infrastructure roads for all citizens, especially of those most vulnerable and disadvantaged. While Sanral has to be fair to the private sector road construction industry and to contractors and operators to whom it outsources, its overriding accountability must be to the State which in turn must be accountable to the Constitution with the expressed values of:

*"human dignity, the achievement of equality and the advancement of human rights and freedoms; non-racialism and non-sexism; supremacy of the constitution and the rule of law; universal adult suffrage, a national common voters role, regular elections and a multi-party system of democratic government to ensure accountability, responsiveness and openness"*⁴.

THE USER PAY PRINCIPLE AND INTELLIGENT TRANSPORT SYSTEMS (ITS).

We do not have any fundamental problem with the rationale for the "User Pays" Principle. The question is a matter of which of the available user-pay options are in the best interest of society. Neither do we oppose the logic of an ITS that uses available electronic tolling technology to more decisively implement the principle so long as it does indeed ease major urban congestion, address environmental and socio-economic challenges, and promote the integration of urban transport systems and a more productive urban economy overall. Advocates of ITS innovations espouse such goals as the normative intent⁵.

Ordinarily, the application of a user-pay system is a generally acceptable means to pay for infrastructure usage (electricity, water etc). We understand the efficiency benefits that modern electronic information technology can yield. It makes theoretical sense.

⁴ Constitution of the Republic of South Africa, 1996. Chapter 1, clause 1.

⁵ We use the term normative in the sense of what is intended, the ideal, based on a common value consensus, such as the above quoted first clause of the Constitution.

Combining radio communication technology to identify a vehicle fitted with a RFID e-tag and Automatic Number Plate Recognition (APNR) technology offers efficient automation possibilities. By activating electronic signals when passing within range of a receiver located on a gantry or cordon, data can be instantaneously transmitted to a purpose designed Operations Centre equipped with mainframe computer hardware to store vast volumes of information on data bases, enabling incoming data to be matched with stored data so that the registered owner of the vehicle can be promptly identified. The speed and efficiency makes for a compelling argument to justify the investment in the costly technology. But the vendors of the technology have to guarantee rather than just promise an efficient operation which is able to ensure users pay, and that those who don't, are efficiently sanctioned.

International experience with e-toll based revenue collection innovations suggest that if more than 15% of users default in payment and are not justly sanctioned, the system is heading for trouble. At this juncture, it appears that Sanral have realised their initial compliance level target of over 93% (as indicated during the court challenge) have now been abandoned and the have set their e-tag take-up threshold much lower, some purport to be around 60%, and thereby assume that sufficient of the 'alternate' users will make up the revenue shortfall through payment at the higher punitive tariffs. This approach, OUTA maintains, is an extremely worrying situation for Sanral to be in as it assumes that; (a) they will achieve 60% e-tag compliance; (b) the e-tag users will have high payment ratio and; (c) sufficient of the 40% non-tagged users will pay to make up the shortfall. It will be important that the Auditor General carefully assess this element of Sanral's GORT revenue and compliance situation. Furthermore, Sanral's claims that over 1,2 million e-tags have been 'issued.' OUTA believes this figure does not correlate with their research of the number of unique vehicles in use on the freeway network with e-tags and that the percentage of the traffic on the freeways which is tagged, vs that which is not tagged, is closer to OUTA's estimate of 30%.

Recent research by OUTA has found that Gauteng's freeway users are, by a large majority (roughly 70%), declining to install an e-tag. The media is awash with criticisms, complaints, angry protests, songs, jokes and polls which indicates a society uniting in disgust of the system. While the crescendo of rejection may bring a half-smile to concerned critics, the real issue is that Gauteng desperately needs an Intelligent Transport System to alleviate traffic congestion, reduce carbon emissions and generate a productive and efficient environment to get people and goods to and from their daily destinations, thereby promoting a long term solution for this region's transport problems.

We argue that the manner in which Sanral and the authorities have introduced the present ITS is robbing this economic powerhouse of the opportunity to introduce a potentially successful and acceptable ITS funding mechanism for the **viable** development Gauteng's integrated public transport system to address road congestion. Essentially the expected failure of the GORT system will not only leave Gauteng the poorer, but may also discredit Intelligent Transport Systems globally.

This paper will clearly explain why Sanral's leadership failure has exposed the public at large to serious and avoidable risk. The signs of failure now surfacing could have been foreseen. Why were they not?

3. GAUTENG'S E-TOLL CHALLENGE

From OUTA's conversations with many critics and detractors⁶ of the Gauteng e-toll project, although questions abound as to why the cost of the freeway upgrade escalated so dramatically, it is clear that they all understand and accept that the R20 billion upgrade has to be paid for. The hotly debated question is how? What method of raising funds is the most equitable? Which option would pose the least financial and other burdens on society, balanced against the long term need for the urban economy to become ever more productive? A truly 'intelligent' Intelligent Transport System would need to not only promise but guarantee the following:

- (a) Less costly alternatives for those who cannot afford to pay and therefore cannot have access to the road infrastructure. Satisfying that condition here would require:
 - i. A tangible improvement in the safety, efficiency and range / extent of existing bus and train public transport systems.
 - ii. A tangible improvement in the safety and efficiency of private mini-bus taxis.
- (b) An uncongested experience for users who can afford to pay for the use of the freeways so that the benefit bears the positive relation to the cost. The e-tolled roads remain public roads and must therefore be stewarded as a public asset for the long benefit of society and the common good. Satisfying that condition would require:
 - i. A transparent and decisive independent enquiry to investigate and assess to what extent the escalation of the construction was attributable to collusive and monopolistic practices in the construction industry, as opposed to the unavoidable escalation due to market forces that drove up the costs because of the global scarcity of professional engineering expertise (as claimed by Sanral).
 - ii. A prompt and durable solution to the chronic problem of malfunctioning traffic lights and deteriorating suburban road conditions, especially in the City of Johannesburg. The congestion currently experienced on the freeways is in large part due to congestion of tributary roads, causing traffic backups at off-ramps, freeway shoulders and exit lanes which extend onto the freeways.

This "idealisation" draws on the methodology of Interactive Planning developed by Ackoff which employs Systems Thinking concepts to imagine a desirable future, rather than the conventional reductionist approach of specialised problem solving⁷. It is a highly participatory process which aims to "dissolve tomorrow's crisis today" by seeking to continuously engage with stakeholders to close the gap between its current state and its desirable current state. We believe that had a meaningful and widespread interactive planning process occurred before the e-tolling decision was taken in 2007, Sanral and the Government may very well not be in the impasse it now finds itself in.

Furthermore, it is regrettable that in the two year legal battle over whether or not e-

⁶ Numerous statements on record from Labour unions; the Southern African Catholic Bishops Conference; the South African Council of Churches; Business formations; Opposition political parties; Academics; the Media and Civil Society leaders; Political Representatives and former Sanral executives,

⁷ Ackoff, RL, Magidson J & Addison HJ, (2006) *Idealised Design: Creating an Organisations Future*. Wharton School Publishing. The approach is "based on the belief that an organization's future depends at least as much on what it does between now and then, as on what is done to it".[1]

tolling was rational and whether or not the public consultation process had been adequate, the substantive meaning of the terms 'rationality' and 'adequate' were confined to narrow legal definitions. It is still more regrettable that so much money was spent arguing over legalities that could never 'solve' the problem, instead of calling all stakeholders together for an interactive re-planning process to 'dissolve' it. Had that happened, Sanral and the Executive Authorities may have learned of OUTA's members and other critic's views and potential problems with the e-toll decision. Government and business leaders (here and abroad) are unfortunately weaker in their position on matters when they fail to engage constructively with their critics.

Unfortunately, Sanral asserted that they had the mandate to go ahead, displaying excessive confidence in their own judgement and contempt for the advice or criticism of others, together with a loss of contact with reality. This has now left the public at considerably at risk. For Sanral board of directors to have allowed the Executive management to play the role of researcher, architect, advisor and planner of the scheme, must now be of serious concern as to whether they have failed in their fiduciary duty. This in turn leaves the higher level authorities facing a massive crisis of public confidence. We have the right to now hold the higher level authorities accountable to insist that Sanral explains why it failed to discharge its constitutional requirements of meaningful engagement with stakeholders along with impartial and thorough research.

Failure to have done so has left the following grounds to oppose the GORT decision.

GROUNDS FOR OPPOSITION TO E-TOLLING OF GFIP

1. The rationale for the decision of the e-Toll proposal was neither transparent nor convincing:

Hommel & Holmner refer to a report that was commissioned by Sanral some two years *after* the approval of the GFIP, by Standish, Boting & Marsay⁸ (2010), which emphasized that inadequate transport networks would constrain the economic development potential of Gauteng, and that an improved road network funded by a user-pay system may improve the long term economic development prospects while ensuring a more 'fair' system for road users⁹. While economic feasibility studies by transport economists have a contribution to providing theoretical underpinnings that are useful in the conceptual planning stage, Small and Verhoef (2007) as well as Button (1993) point out that the practical demands on urban road usage are more complex. They require a more grounded and intensive modelling analysis to test the validity of working assumptions made in the process of theoretical abstraction. This is especially important insofar as assumptions are made about probable impacts on those in the lower income bracket who have little or no disposable income, and cannot afford the costs of road transport, yet lack an adequate public transport network as an affordable alternative (Button 1993, Small

⁸ Standish, B.(2010). *An economic analysis of the Gauteng Freeway Improvement Scheme*. Report for Sanral

⁹ OUTA is grateful for the willing engagement of Andrew Marsay, who has educated us on the normative intent and logic of ITS's and e-tolling.

& Verhoef 2007). “The Poor” (and for that matter the rich) are reduced to an abstraction of financial measurement to fit the theoretical model rather than as people who are protagonists of their own development¹⁰.

Prior to the decision being taken in 2007/8, Sanral claims they followed due process required of them. We argue that by placing one advert in six regional newspapers in October 2007, allowing the minimum period of 30 days from 14 November to 14 December 2007 for the public to comment, was grossly insufficient, and as a result only 28 responses were received from 3.5 million motorists in Gauteng. This process was repeated again from April to June 2008 for the R21 section of the freeway, for which only 2 responses were received.

We remain astonished that Sanral could ever construe the above as being a successful and meaningful public engagement process, and why no thorough engagement sessions were held with large fleet management organisations, such as South African Vehicle Rental and Leasing Association (SAVRALA), Road Freight Association (RFA), the Retail Motor Industries (RMI), and other pertinent entities. SAVRALA members together form the biggest body of buyers of vehicles in the country. Neither the representative body nor their constituent members were ever meaningfully consulted on the plan. In addition, Sanral failed to meaningfully engage with organised Labour and organisations such as the QuadPara Association of SA (QASA), representing people with disabilities, who already experience a severe constraint on their right to freedom of movement, and rely on the tolled roads, who now feel unjustly discriminated against because the system is unable to accommodate exemptions for people with disabilities.

2. Inadequate Public Transport:

Gauteng’s public transport infrastructure is currently inadequate to cater as an alternative to even a small percentage of the current 2,5 million freeway users. According to the Gauteng City Region Observatory, a partnership between the City of Johannesburg and the two universities of Witwatersrand and Johannesburg, only 10% of commuters make use of bus and train services whilst 42% make use of the city’s Minibus Taxi system and 42% use cars. In addition, the current public transport network has been described as failing the users within Gauteng. Furthermore, President Jacob Zuma acknowledged this from first-hand experience when on 14 June 2012 he personally tested the Public Transport services by travelling on it for a day.

Although the new high speed **Gautrain** now links 9 stations between the two cities of Pretoria and Johannesburg with OR Tambo International Airport in a narrow North / South corridor, and serves around 45,000 commuters a day, this is only between 12-15% of the daily road commuter traffic between the two cities¹¹ and less than 3% of the total freeway users. Although since e-tolling has commenced there has been an expected increase in passengers using the Gautrain

¹⁰ See Smith P, and Max-Neef M, (2011) *Economics Unmasked: From Power and Greed to Compassion and the Common Good*. Green Books. Devon. For a six minute introduction of Manfred Max-Neef’s thinking see this YouTube lecture <http://youtu.be/jjTvd0Yg2hk>

¹¹ Business Report. 17 December 2013.

(approximately 10% according to Business Report), until the rail network expands to cater for West and East corridors, and unless the tariffs are reduced to serve a larger portion of the population, the Gautrain cannot be regarded as an affordable or convenient public transport alternative for the majority of citizens who currently rely on minibus taxis and private cars to commute to and from work.

Moreover the Gautrain is not currently meeting revenue targets to meet its obligations and as another embodiment of the “user pay principle” appears to be way below the requisite number of users who can pay the fares to make it profitable. The Gautrain fell short of its revenue targets by over R800m in 2012 and R500m in 2013.

3. Economic equity of e-tolls vs the fuel levy in South Africa.

With a significant reliance on vehicle usage for daily commuting, the question arises as to how social infrastructure should then be funded in this context of pressure being placed on the national fiscus for broader and pressing challenges. To date in South Africa, urban road ‘social’ infrastructure has been paid through national treasury allocations (currently boosted by over R45bn per annum directly from motorists through a user pays fuel levy), while a number of long distance road upgrades have been subject to “stop-pay-go” (or boom down) tolling (N3, N1, N4 etc). In some instances, these boom down toll-booths have crept closer to the urban peripheries (such as the Bakwena Toll Plaza North of Pretoria).

The introduction of a purely open and free flow tolling system is a new concept to South Africa and its success will rely on a number of factors, the most important of all being:

- High degree of compliance through a willing and committed public participation.
- Workability – from very efficient administration systems.

Standish *et al* (2010)¹² acknowledge that the fuel tax is the most efficient in terms of an immediate cost to benefit relationship, because no additional collection costs are necessary to fund the admin & operations of tolling. There is uncertainty and debate surrounding Gauteng’s e-toll administration costs, from Sanral’s R12bn (or 17%) over the 24 year period to OUTA’s estimates of R1,3 bn per annum, based on the tender awarded to the Electronic Tolling Company JV (ETC) at over R10bn for a five year operational period with eight years to write off some of the capital ITS costs.

Standish *et al* argue however that a quantum of short term efficiency can legitimately be sacrificed in the interests of a greater equity for the poor in the long term, since the poor cannot afford private cars, and therefore do not stand to benefit from expensive road infrastructure if funded by the fuel levy. They do however stand to benefit from investment in public transport, which they assume will result if roads are paid for at the point of use. Their argument is that payment at the point of use pays long term dividends by promoting investment in public transport and the overall integration of urban transport systems.

Furthermore, since the fuel levy would have to be applied uniformly to all

¹² Standish B. (2010). *An economic analysis of the Gauteng Freeway Improvement Scheme*. Report for Sanral, see www.nra.co.za.

motorists it is assumed that non-Gauteng motorists would be unfairly paying toward the upgrade and maintenance of Gauteng roads that they do not use.

However this assumption does not take account of the fact that, because the entire country stands to benefit from a more productive and efficient Gauteng economy, it translates to the benefit South Africa as a whole. The Organisation for Economic Co-operation and Development (OECD), in a 2011 report states that the Gauteng region contributes 34% to South Africa's Gross Domestic Product (GDP). In addition, 52.2% of national research and development takes place in the province. As a result 75% of Gauteng's tax contributions to Treasury flow out of this region for the benefit of other provinces. Clearly the rest of the country benefits from Gauteng's productivity.

Moreover increase costs of business transport from e-tolls will add to the price of commodities and consumer goods, a matter already surfacing in the results of large business entities, just three months after e-tolls launch. The poor will most certainly experience the effect of negative economic pressures from e-tolling the most.

4. Road expansion induces demand for roads:

A study conducted on Intelligent Transport Systems in transitional and developing countries by Shah and Dal (2007)¹³ found that construction of ever more efficient road networks leads to "induced demand". In systems-thinking terms this is referred to a loop of self-reinforcing "positive feedback". Extending and expanding existing road networks invites further motorization, which in turn leads to increased congestion and greater safety issues, and the need for yet further extension projects. The ever increasing burden leads to the increasing demand for non-renewable natural resources, increasing pollution and fossil fuel emissions, moving the society further away from the desired need of an integrated public transport system. Besides the burden on the natural environment, the quality of life suffers.

Using data for 24 California freeway projects across 15 years, Robert Cervero¹⁴ found that; *Roadway investments spur new travel and in effect, fail to relieve traffic congestion, known as induced demand. Traffic increases are explained in terms of both faster travel speeds and land-use shifts that occur in response to adding freeway lanes and simple mode structures have often been used to reach the conclusion that road investments provide only ephemeral congestion relief, with most added road capacity absorbed by increases in traffic. Based on model outputs, it generally takes 2 to 3 years for development activity to respond to the addition of lane miles, and another 3 years for urban business and residential development activity to take place along new nodes or improved traffic corridors.*

¹³ See Shah, A.A. and Dal, L.J. 2007. Intelligent transportation systems in transitional and developing countries. IEEE. August 2007: 27-33.

¹⁴ Cervero, R. (2001). University of California Transportation Center *Road Expansion, Urban Growth, and Induced Travel: A Path Analysis*.

Dr Roelof Botha, an academic economist and strong advocate of e-tolling has argued that the time saved by users of a decongested road network has a significant productivity benefit that he quantifies in financial terms as R2.1 billion annually. The long term boost to the SA economy would by his calculation be some R26.5 bn over 20 years, (assuming 5% inflation), "which is 32 percent higher than the total cost of the project". He assumes that this economic productivity from value of time saved computes at a benefit to cost ratio of 8,4:1. This return has been downplayed by many other reputable economists (Chris Hart and Azar Jamine and others) as well as being widely questioned by members of the public who comment on online articles on the subject. Sanral has also had the benefit of two years of GFIP in full operation to measure and confirm Botha's cost to benefit ratio claims for freeway users, but alas they have not as yet done so. The validity of such projections rely on assumptions that the public transport system will provide a viable alternative to keep the e-toll roads uncongested and that users will pay.

Dr Botha's needs to respond to the problem of induced demand with a more convincing case and Sanral needs to be held accountable to a more credible and impartial authority, lest they simply respond to the induced demand by putting up the e-toll fees to finance an additional lanes to Gauteng's freeways every 5 to 8 years, which will serve the interests of the road construction industry very well, but not the greater good of society or the planet.

With the above controversies and concerns in mind, one can accept that society (particularly in Gauteng), has entirely plausible and legitimate grounds for their rejection of the GORT scheme. Their views cannot be 'solved' by science and engineering, and neither can it be 'absolved' by excusing whatever wrong-doing may have occurred. Sanral's executives only rarely admit to errors and are quick to excuse themselves when these occur. If we hold fast to the aspiration for an Intelligent Transport System the problems can only be '*dissolved*'. Integral to such will be the genuine display of a good quality of leadership and one that sincerely has the capacity for learning. Sanral claims to it is a *learning organization*. We have yet to see this behaviour displayed by the executive management and question why the Board of Directors have never apparently insisted that the organisation practice what it preaches.

4. THE SUCCESS FACTORS OF ITS

"Some documented success factors for the implementation of Intelligent Transport Systems, include the presence of strong advocates and public support; weak opposition; a single agency overseeing the project; a good public transportation system in place; simple and affordable pricing systems using proven technology; environmental monitoring and protection; and comfort factors that create confidence amongst users (Carnevale & Crawford 2008; Jarašūniene 2010)¹⁵." Dr. Marlene Holmner and Ms. Erin Hommes. University of Pretoria Department of Information Sciences.

¹⁵. Hommes, E and Holmner, M, June 2013. Intelligent Transport Systems: privacy, security and societal considerations within the Gauteng case study. In *Innovation: Journal of appropriate librarianship and information work in Southern Africa*. Issue 46, UKZN.

From the academic literature on Intelligent Transport Systems, University of Pretoria researchers Hommes & Holmner, have identified eight success factors, which OUTA take to be critical for any e-tolling venture to successfully innovate the conceptual invention of an Intelligent Transport System in any context. Based on Hommes and Holmner's abbreviated listing OUTA has amplified them into eight affirmative statements of importance.

1. Public support needs to be extremely high with strong advocates promoting acceptance.

OUTA's findings are that public support for GORT is extremely low. This we attribute to a dismal and meaningless public engagement program conducted in 2007/8 compounded by Sanral's recent lack of transparency, obvious falsehoods and embarrassing PR blunders which have compounded the lack of trust. The signs of negative public sentiment toward the scheme were clearly displayed during the three public engagement sessions held by Sanral and the Department of Transport in November 2012 to try and win over support. At the time, the Government Gazette (#35756 & 35755) published the proposed tariffs and exemptions and invited public comment. More than 12,000 submissions were made. This is one of the highest public submission responses ever to a notice in the Government Gazette.

Given that the system relies on personal information of users it is especially important that any threats to the right to privacy is countered by strong advocates from academic and civil society circles. Only a few academic economists and consultants have been willing to endorse the GORT. The impartiality and objectivity of some have been questioned because they have been briefed and remunerated by Sanral for their input. As Upton Sinclair once said "it is hard to understand something if your pay-cheque depends on you not understanding it."¹⁶

2. Oppositional forces must be weak.

When the tolling decision was taken in 2008 the opposition was indeed weak. A mere 28 comments were apparently recorded when the decision was gazetted. However this was due to Sanral having avoided any substantial debate by only placing the regulatory notices out of plain sight of the public. From 2010 when the Gantries started to appear, questions that ought to have been asked and answered three years previously, began to surface and opposition mobilised.

Besides OUTA's opposition, the GORT has been heavily opposed by COSATU, the SA Chamber of Commerce & Industry, Business Unity SA, the Southern African Catholic Bishops Conference, the SA Council of Churches, the Southern African Faith Communities Environment Institute, the Black Management Forum, the SA Local Government Association, the QuadPara Association of SA, and other civil society organisations. Even strong opposition within the governing party was evident. The

¹⁶ Quoted by Al Gore in "An Inconvenient Truth."

ANC Youth League denounced e-tolling in 2011 and again in 2012¹⁷. While today the Premier of Gauteng is supporting e-tolling, on 18th February 2011 the Gauteng Provincial Secretary of her party, David Makhura on 18 February 2011¹⁸ voiced strong criticism. While internal party discipline now obliges ANC members to abide by the party decision it is an open secret that the Gauteng ANC are resentful toward e-tolling.

Numerous polls conducted show the greater majority of the public (some upward of 90%) reject the system. Even enquiries conducted with motorists who have fitted e-tags exclaim they are not happy and have done so under duress.

3. Tangible comfort factors must be immediately felt to create confidence.

Users who pay for a decongested traffic experience need to experience satisfaction. If they don't, their complaint may or may not be heard by Call Centre staff, but it will nevertheless travel by word-of-mouth. Social media further accelerates the spread of bad news. The Automobile Association recently tested the comparative experience of using the freeways and alternative routes and concluded in a recent article concluded:

Every time we tried a different route we kept coming to the same conclusion – in off-peak hours there is less case for using toll roads than one might believe. And in peak traffic, the freeway gridlock makes it a no-brainer – you need to decide whether to pay Sanral to sit in their traffic or sit in town traffic for free? Perhaps there may be exceptions and we look forward to hearing members' experiences comparing routes. But from what we can see, the exceptions will only end up proving the rule. And the rule is that restricting access to roads by financial means is just plain wrong¹⁹.

Not only are the comfort factors absent, but many e-tag users have become very uncomfortable because of failure by Sanral to reassure them of the security of personal information. The following link to an article by Jon Tullet, a seasoned Information Management journalist writing for IT Web, reflects three security breaches having occurred in the Sanral e-toll website before and since e-tolling commenced:

http://www.itweb.co.za/index.php?option=com_content&view=article&id=70981, .

4. Alternative public transportation systems should be adequate and reliable.

This is not the case in Gauteng and the research conducted by Hommes & Holmner clearly indicates that good public transport alternatives should exist for an ITS to work, and revenues of ITS's substantially channelled toward investment in the further improvement of their integrated public transport systems. It would have been prudent in terms of the logic of an ITS for the State to have borrowed money to initially finance a sound integrated urban transport system to meet Gauteng commuter needs, whereafter the introduction of an ITS / e-toll system could have been contemplated.

¹⁷ See <http://www.ancyl.org.za/show.php?id=8235>,

¹⁸ See <http://www.iol.co.za/news/south-africa/gauteng/toll-costs-reveal-two-faces-of-anc-1.1027432#.UwzIXuOSySo>,

¹⁹ <http://www.aa.co.za/about/press-room/press-releases/rediscovering-the-road-less-travelled.html>,

5. The pricing systems should be simple and the billing system user friendly.

The fact that the GORT system has failed on this criterion is now self-evident, given the scolding Sanral has received from both President Zuma and Minister Peters. This was in response to public outrage. OUTA has received a steady stream of complaints from vehicle owners and have tested these perceptions against random interviews to gauge the general understanding of the various elements of tariff calculation (vehicle classifications, time of day and week discounts, high use additional discounts, payment methodologies etc). The pricing system is so complicated especially for 'alternative users' that it has led to the suspicions that this was a deliberate ploy to manipulate users to sign Sanral's Terms and Conditions and buy an e-tag. One respondent (a highly respected human rights attorney) believes that the combination of a 'very juicy carrot' (substantial discounts for tagged users) with the 'very big stick' (a punitive tariff of 4.8 times the discounted tariff) was "idiotic" especially given the lack of widespread support. "People may have responded to the threat of a penalties for late payment, but it would have had to be reasonable. The penalty tariff is so exorbitant many people will simply refuse to pay. Sanral is creating the very scenario it is trying to avoid. Widespread civil disobedience."

Sanral has made little effort to explain the tariff structure to vehicle owners residing in townships and who are generally not densely connected to the internet and do not live close to or shop where the Sanral Customer Service Centres are located. It appears they have focused their messaging on middle class urban residents and companies for the bulk of their revenue. This is borne out from OUTA's e-tag counts which are generally higher in the Johannesburg Northern Suburb on and off ramps and very much lower at off-ramps closer to poorer suburbs. This raises questions of a possible discriminatory practice. If the poorer sectors of the public perceived a benefit from the discrimination it might have been justifiable, but in the absence thereof, Sanral is risking further allegations of human rights infringements.

6. The soundness of the technology and data needs to be extremely reliable.

Sanral CEO Nazir Alli has himself admitted that the data base has "let us down". This contradicts his repeated assurances over the past three years that the system was technologically sound and ready for business. He has apologised to the public and asked for patience. He has not apologised for his mistaken assurance nor explained why he was so confident before the system commenced, and why he did not use the two and a half year delay to conduct data integrity tests and systems trials.

7. Environmental benefits and costs must be monitored and managed.

A major justification for the cost of ITS's lies in the promise of not only reduced traffic congestion (because people move to public transport options) but the consequent reduction in greenhouse gas emissions to combat global warming. A major complaint from users concerns the waste of paper and colour printing resources in printing invoices and statements for small amounts that bear no relation to the estimated cost of

the printing. The impression left by this wastage is that Sanral only pays lip service to environmental consciousness.

8. A single agency with unquestioned legitimacy and authority should be responsible for implementation.

At the outset of the GFIP upgrade, Sanral was indeed regarded as a strong and credible agency and this is probably the only factor they had in their favour. Today, their strength, both in public perception and that of Ratings agencies is questionable. Furthermore since it is a 'roads agency' staffed with civil engineers and specialists in road construction, and since the key rationale of an ITS lies in the necessity to ultimately constrain road transport in favour of other less environmentally burdensome transport systems, it is logically perverse to place a roads agency in charge of an ITS. Moreover, since the problem of traffic congestion is a Gauteng issue, the only rationale for a National agency whose mandate extends beyond provincial problems, is that there are synergic benefits that accrue. These have not been adequately explained.

5. INTERNATIONAL ITS EXAMPLES & CASE STUDIES

Other cities with similar challenges have made progress in overcoming urban traffic congestion, from which South Africa can learn. At the turn of this century Enrique Peñalosa, former mayor of Bogotá, Colombia redefined a successful, developing and productive city on the basis of the approach that *'developed urban environments are not those where the poor travel by car, but where the rich make use of public transport.'* He transformed a city with a reputation as one of the crime capitals of Latin America into a city which loves itself for what it could be, rather than hates itself for what it had become. He showed the humility to learn from the experience of other cities, notably Curitiba in Brazil. We urge readers to view this short video clip of his vision and outcomes at this link: <http://youtu.be/hPf4s2oFnp0>.

Sanral claims to be a learning organisation. When Sanral set out to introduce this ambitious plan, why did the Board not insist upon the conduct of significant research of international examples of successful and failed systems, as one would expect given their risk management responsibilities. Had they learned from the grounded wisdom of a people-centred developing country in South America, we may have had a transport system that was not only 'intelligent' but 'wise'. Furthermore, it appears that whilst ITS implementations in London, Stockholm and Singapore are shining examples of e-tolling success stories, the wisdom behind the successes of these ITS implementations has never been assimilated into Sanral's GORT plans. Case studies of failed, failing or troubled ITS initiatives provide still richer lessons, but it appears that Sanral never applied their minds to these either. Edinburgh, Manchester, Hong Kong, Detroit, California, Australia and more recently Portugal have all attempted to innovate ITS schemes. Some have failed and others are in difficulty.

The preliminary review by Hommes and Holmner of these experiences usefully pinpoint the advantages and the limitations of Intelligent Transport Systems. From this international experience we have already presented what we consider to be the eight most critical success factors in planning and implementing an e-toll based ITS system. Hommes

and Holmer cite three examples of successful e-toll user pays ITS systems which raise doubt over the short to medium term success of Gauteng's e-tolling system. The London Inner City Congestion Charge of 2003, (once referred to by Mr Nazir Alli as the success story on which the GORT-ITS is modelled); the Stockholm Congestion Charge system of 2011; and the Singapore road pricing scheme introduced to cut congestion and carbon emissions in 1975.

In summary the following characteristics were very prevalent:

- a. These cities had well-developed and reliable public transport systems before the 'user pays' system was introduced, which gave citizens cheaper alternatives so as not to impose financial constraint on their right to freedom of movement.
- b. The primary purpose of the ITS was to reduce congestion, i.e. to discourage road use during peak times. Charges were free outside peak and on weekends.
- c. The revenues from the collection process were used to further improve public transport and other congestion easing, and NOT to upgrade existing motor ways.
- d. Prior public engagement programs were exemplary, inclusionary and conducted extensively, to respect the international bench mark principle of prior free and informed consent insofar as the ITS implied any limitation of citizen rights. Because the citizens were very involved in the requirements, solutions and even pricing of the system, the levels of public confidence were high. In Stockholm, a six month trial period was adopted to give citizens real experience, after which a referendum to gauge the level of acceptance by society to proceed was held. Seventy percent voted in favour and the revenue flow financed improved public transport as well as the construction of a new bypass to further ease congestion.
- e. Strong, transparent and participatory leadership was exercised to gain public trust and support, resulting in high levels of compliance from the very outset.

Virtually none of the above steps were taken by Sanral before implementing the GORT.

Turning to the problematic instances Hommes and Holmner found that ITS innovations failed to gain the requisite momentum for success when restrictions were imposed by suddenly charging users for the use of roads when they had become accustomed to free passage. Threats to civil liberties and suspicions of a "stealth tax" left citizens distrustful.

Hommes & Holmner cite the following examples where ITS innovations ran into trouble:

- **Greater Manchester** – 2008. Despite being based on the very same principles and technology that had succeeded in London, and despite having the same stated intent to use revenues for development and funding of improved public transport systems (bus rapid transport and rail), citizens nevertheless were sceptical. They rejected the system because of affordability and a weakened economy at the time. Stephen Glaister of the RAC Foundation (Transport Research Body for the UK) stated its failure was due to negative public perception *'on the basis of no compensating reductions in taxes or any other charges and a lack of confidence that anything would be different, or that the authorities could be trusted to do what they said they were going to do.'*²⁰.
- **Edinburgh** – A Congestion Charge by way of e-tolls was proposed in 2002 to relieve inner city congestion with the stated intent to use re-invested revenues to improve the public transport system. Notwithstanding, after intense political lobbying and public

²⁰ Report on Governing and Paying for England's roads for the RAC Foundation by Stephen Glaister – July 2010

debate, 75% of citizens rejected the proposal. An investigation into the reasons for the rejection attests to the critical importance of avoiding unnecessary complexity. (Gaunt and Rye: 2005)²¹

- In **Hong Kong** in mid 80s, congestion charging using e-tags and CCTV was rejected twice, due mainly to pricing, economic climate and privacy issues, despite an initial pilot program and a massive Government communication campaign. The road users also objected to taxi's being exempted from paying the toll.

Additional to the above examples cited by Hommes & Holmner, OUTA's research has found other failed or failing cases of ITS implementation across the globe:-

- **Portugal:** Launched in 2012, by Mid 2013 the SCUT (previously free roads) has shown "signs of failure" according to Estradas de Portugal (EP) roads chief António Ramalho²². The report states that 19% of road users were not paying their tolls and 29% of the revenue was being channelled toward collection costs, with revenues falling well below initial study indications.
- **Australia:** According to Paul Grad and Peter Kenyon, Correspondent at Australia's, TunnelTalk discussion forum, on 16 July 2013 they stated that

*"Australia has some of the finest highway tunnels in the world, but for the private investors who trusted traffic usage projections from leading and respected consultancy firms the story has been a tale of insolvency and disappointment. Most of the privately owned toll highway projects constructed in the last 15 years in Australia have fallen into receivership or administration within a short time of opening to traffic when it became clear that toll revenue from actual traffic usage would be well short of covering its contribution to the construction costs. Class action lawsuits are now being initiated by investors who believe they were misled by overly optimistic usage forecasts, and construction companies are becoming wary of bidding future concession projects. Not all toll tunnels in Australia have failed financially. Some have been highly successful. But for all cases of failure, the traffic forecasts were two or three times higher than the actual traffic usage when opened. This has led to the conclusion that there was something wrong with the procurement concept and the financial structure of the toll concessions"*²³

A Public Private Partnership approach was adopted by the Brisbane State Government to seek private investment in a costly scheme to build a tunnel to enable motorists to get to the Brisbane International Airport more efficiently. It was assumed the users would pay. However traffic volumes have proved woefully short of projected estimates and the private sector consortium is in financial trouble. The lesson to be learned from the Australian experience is that if the State has to bail out a failed PPP

²¹ Allen S, Gaunt M, and Rye T. 2006. *An investigation into the reasons for the rejection of congestion charging by the citizens of Edinburgh*. [O]. Available at http://www.openstarts.units.it/dspace/bitstream/10077/5896/1/Allen_Gaunt_Rye_ET32.pdf.

²² The Portugal News on Line. (2013) *Dead Loss Reported* to journalist Brendan de Beer

²³ Article in Tunnel Talk by Paul Grad – 16 Jul 2013 - <http://www.tunneltalk.com/Discussion-Forum-16Jul13-Australia-PPP-toll-tunnel-crisis.php>

with tax revenues, it ends up with a greater injustice: non-users paying still more.

- **California:** In a paper written by D Arduin and W Winegarden²⁴ in April 2013, the “Foothill/Eastern Transportation Corridor Agency (FETCA) these toll roads presently appear to be unsustainable and likely have been unworkable from their inception”. The roads are deeply in debt. The recent reviews “clearly raises significant concerns about the toll roads’ sustainability, cost to taxpayers, and ability to relieve traffic congestion.”
- **Taipei & India** and other countries also have examples where e-tolling has been under pressure or has failed.

In all the examples of ITS failures, the following factors were prevalent:

- Lack of acceptance / approval by the public leading to lower than required compliance.
- Projected revenues were not met – initial revenue targets and calculations of compliance and / or usage was too high and not achieved.
- Public distrust and concern about invasion of privacy.
- High proportionate collection cost.

According to an article²⁵ dated 10 September 2013, the **Fitch Ratings Agency** explains:

“Public private partnerships can provide public value, but need to be carefully crafted to address all stakeholder concerns. When public private partnerships are viewed to have failed, the issue is often inappropriate transaction design and application.” They indicate *“a number of failed projects around the world that suffered from overleveraged assets”*.

6. HISTORICAL OVERVIEW

To understand how we can get out of the impasse, we need to understand how we got into it.

Following years of positive economic growth and migration from other parts of the country and Africa, the Gauteng freeway network required upgrading and expansion to address the growing problem of congestion. In 2004²⁶, SANRAL, even though it was primarily responsible for the national roads network that links all the major urban centres, claimed/obtained a jurisdictional mandate from the Gauteng Provincial and Metropolitan authorities to address the need for Gauteng’s freeway upgrade, referred to as the “Gauteng Freeway Improvement Plan” (GFIP).

GFIP went through initial stages of planning and the Cabinet gave the go ahead in 2008 for an upgrade of 187 km’s of public freeways that linked Johannesburg, Pretoria and

²⁴ Arduin, D and Winegarder W. (2013) *Orange County Toll Roads: Serious Concerns Should Lead to Significant Review by State and Local Officials*. Pacific Research Institute.

²⁵ Newspaper.com, The. (2013). *Credit Rating Firm Catalogues Toll Road Woes*. [0]. Available at: <http://www.thenewspaper.com/news/42/4228.asp>

²⁶ Sanral Declaration of Intent 2005-2008 Pg 27 (<http://www.nra.co.za/content/Declaration.pdf>)

Ekurhuleni. The initial ambition was to complete the work in time for the 2010 FIFA World Cup, but this proved impossible, given the demand on the construction industry to construct soccer stadia and open the first line for the high speed *Gautrain* between Sandton and OR Tambo International Airport. Nevertheless by dividing the overall work plan into sections, tenders were awarded to different contractors and consortia and a start was made in the latter half of 2008. Construction progressed through to 2011, with a three-month break taken in mid-2010 because of the demands of the FIFA World Cup. The initial capital cost in 2006 was estimated to be R6 billion, but over the five year life of the project, increased by 200% to around R18bn for the road upgrade itself, excluding an additional R2,5bn or so for the e-tolling infrastructure and other incidentals.

To date, society awaits the detailed news of SANRAL'S compelling and stringent plan of action to retrieve the overcharges from the construction companies who worked on the GFIP – estimated to be several billions of Rands. We believe SANRAL is too close to the problem and that a strong and independent enquiry is needed to investigate if over-charging occurred and set in motion a process to recover the monies, in the interest of public accountability to taxpayers and users of the roads. It is also important to note here that had the GFIP construction costs been contained to a substantially lower sum of around R12bn, by more stringent management of a construction industry that has already shown itself to be collusive, perhaps the decision to implement a complex, expensive and onerous ITS based collection system, such as we now have, may never have been taken by the Executive.

From the outset, mitigating against the success of e-tolling in Gauteng was the practical reality that the public transport alternatives simply did not exist as a viable alternative; the congestion problem was untypical of situations where it has worked in other cities, in that it Gauteng's e-toll plan was never intended to solve an inner city congestion problem; and that it did nothing to reduce the sovereignty of the four-seater, high speed, wasteful motor car. It in fact further elevated it by providing wider roads and (supposedly) faster intersections, and further enriched the already prosperous road construction industry and making it more attractive to entice more vehicles onto the widened freeways.

Sanral's initial launch date of Gauteng's e-toll system was April 2011, which was postponed following a public outcry at the concept and tariffs proposed. The GFIP Steering Committee²⁷ was set up in April 2011 to engage with various stakeholders and assess the objections. Following a rushed (some labelled it farcical) after-the-fact engagement process, the GFIP Steering Committee reported back in June 2011 by announcing that e-tolling would continue, however they would reduce the tariff from 50c/km to 40c/km for light passenger vehicles. Minibus Taxi's were set at 11c / km. In their view, this tariff reduction should have placated the public anger and negative sentiment.

A further two launch dates during 2011 were postponed and in February 2012, Treasury announced that e-Tolling would continue and an allocation of R5,8bn made toward the GFIP project, to reduce the (light vehicle) tariff to 30c / km and that Public Transport, along with privately owned Minibus Taxis who would also receive 100% exemption. Some maintain the move by SANRAL to exempt the Minibus Taxis was to avert a clear confrontation by this largely unregulated industry, who had expressed their dissatisfaction toward the authorities on other matters by conducting drive-slows and disruptions to freeway traffic. Recently (February 2014), Sanral's ability to provide the

²⁷ GFIP Steering Committee Report – 30 June 2011

Taxi's with full exemption has come under pressure and the National Taxi Alliance has denounced the e-toll plan as a result of its maladministration.

In February 2012, Sanral announced the launch date, 30 April 2012, against stiff and militant opposition from Cosatu who saw no benefit to their members and cash poor families. In parallel with the political mobilization by Cosatu, an alliance of business associations formed the Opposition to Urban Tolling Alliance – OUTA²⁸ to mount a legal challenge to seek a judicial review of the lawfulness of e-tolling. While court proceedings to obtain an interdict to suspend the commencement of e-tolling were underway, Cosatu and the ANC (represented by Minister of Transport Mr Sibusiso Ndebele) agreed to suspend the launch by two months.

OUTA's legal challenge was to initially seek a temporary interdict on the launch of e-tolling, which it did on 29 April 2012, followed by a judicial review of the decision to implement the system on the basis that far too many transgressions of citizens' rights and seemingly inappropriate decisions had occurred. In short, OUTA's members believed the system being introduced was not being conducted in the best interests of society. With E-tolling on hold, behind the scenes moves were afoot to broker an out of court discussion and possible agreement between Minister Ndebele and OUTA chair Wayne Duvenage, in the hope that sufficient common ground might be found to cancel the court battle and go back to the drawing board. A week after the court granted OUTA the interdict to halt the launch of e-tolls, on the 8th May 2012 Sanral CEO Mr Nazir Alli tendered his resignation, setting the stage for a negotiated solution. However this was abruptly terminated when a few weeks later, the Executive declined to accept Mr All's resignation and President Zuma redeployed Minister Ndebele and Deputy Minister Cronin out of the Transport Ministry. Mr Ben Martins was appointed in his stead and a year later, Minister Dipuo Peters took over.

An Inter-ministerial task team was formed under Deputy President Kgalema Motlanthe in May 2012 to conduct another retrospective consultation process with civil society organizations, to try and placate criticism. Urgent recourse was also taken to obtain a Constitutional Court ruling to overturn the interdict. The Deputy Chief Justice handed down a unanimous judgement finding that the North Gauteng High Court had trespassed on the domain of a legitimate exercise of Executive powers, and rescinded the interdict (but did not interfere in the judicial review process). OUTA had no quarrel with the principle that the Court wished to underscore, being the necessary separation of powers between the Executive, Judicial and Legislative arms of government. Even though OUTA disagreed with the Executive decision to introduce e-tolling in the first place, they never questioned the prerogatives and powers of the Executive to execute. Now, nearly two years later, it has become clear that the pre-conditions for a successful introduction of e-tolling the GFIP were not present, and that it would have been prudent for the Executive to have exercised its powers to instead follow a less risk-prone alternative.

Sanral however succeeded in November 2012 to also persuade the High Court to find against OUTA's review application, despite OUTA's assertion that Sanral had "deliberately deceived" the public when the Minister proclaimed the relevant roads as toll roads. Sanral's Counsel hit back calling for a crippling costs order to punish OUTA for alleged "vexatious motives" in making such an allegation. The High Court obliged and awarded a

²⁸ See www.oua.co.za

punitive costs order against OUTA.

A year later the Supreme Court of Appeal heard OUTA's appeal. The punitive costs order was set aside, but the Court ruled that it could not, in law, condone the late application and therefore was not authorized to rule on arguments of alleged unlawfulness. Having already once had the expense of funding a round in the Constitutional court, OUTA could not afford to match Sanral's litigation by attrition strategy and opted not to seek further recourse to the Constitutional Court. Instead, since evidence was mounting which pointed to the likely failure of the scheme for reasons already explained, OUTA's management committee decided it would better serve the public interest by a watch-dog monitoring role to challenge Sanral's propaganda and fabrications and empower citizens to assert their constitutional rights to freedom of expression, access to information, privacy and other rights entrenched in the Constitution. This approach would in turn have the impact of providing society with information to inform their consciences before deciding whether or not to buy e-tags, in a spirit civil courage. By reminding citizens that human rights do not belong to government OUTA sought to promote a human-rights culture. As one journalist coined OUTA's change of strategy, "When a shovel is no longer working, it is time to use a pick".

The e-toll system eventually started on 3 December 2013, some 15 months after the Constitutional Court lifted the interdict (20 September 2012) at which time Sanral was given the green light to launch e-tolls, which they claimed they were ready and able to do 'within two weeks'. However, the fifteen months leading up to the launch was filled with regulatory changes and preparations as a result of Sanral's failure to initially conduct a proper Regulatory Impact Assessment (RIA). How Sanral could have claimed readiness for an April 2012 launch, let alone 2011, is now patently nonsensical. In hindsight, OUTA's legal challenges and delays to the e-toll launch had done Sanral a favour.

Another major complexity Sanral faces concerns the confusion over the regulatory framework for dealing with people who don't pay. The system was initially designed on the assumption that defaulters would be sanctioned under the Administrative Adjudication of Road Traffic Offences Act (AARTO), but when it became clear that this regulatory framework had not been adopted by all three municipal jurisdictions affected (Johannesburg, Tshwane and Ekurhuleni) and left problems of inconsistency the only valid legislation that has uniform application is the Criminal Procedure Act (CPA). This meant that non-payment of e-tolls was implicitly regarded as criminal rather than civil matter. This heralded the same complications that Prohibition faced in the United States of America in the 1920's: criminalising behaviour that cannot be sanctioned by due legal process is to invite greater problems. Legislation was passed to make the criminalisation of the non-payment of e-tolls not only implicit but explicit.

Believing that since the Legislature had passed a law, Sanral asserted that since the prerogatives of Executive Power had also been affirmed by the Constitutional Court, any further challenge to its determination to proceed would amount to disrespect for the rule of law. However, OUTA continued to assert that since its main legal argument (that the original tolling decision was unlawful) has not been ruled upon - having gathered significant evidence thereof throughout the earlier legal case - it would prepare for that argument to be brought as a defence when the first user of the e-tolled pays was criminally prosecuted for refusing to pay e-tolls. The fact that legal challenges are currently being filed, planned or mentioned by political parties, civil society and the public, means that litigation (and a further escalation of legal bills) is far from over, if the authorities do not

intervene to hold Sanral accountable, and suspend e-tolling.

Believing that all necessary and sufficient conditions for the system to succeed were in any event not present, OUTA cautiously monitored the launch and commencement of the e-tolling process to see if its predictions of the unworkability of the system would prove valid. It is important to note here that one of OUTA's main members, SAVRALA (South African Vehicle Renting and Leasing Association), had engaged with Sanral over numerous months during 2010 and 2011, during which time they pointed out a myriad of expected administration challenges that both society and Sanral would encounter, namely incorrect data from e-Natis and incorrect / cloned VLN issues along with their complicated and onerous dispute resolution mechanism. At the time, Sanral denounced SAVRALA's concerns, implying that these matters would all be in hand by the time e-tolling got underway. Needless to say, we were not surprised when Sanral listed these exact same issues as being problematic for the system this February. To excuse them as "teething problems" is disingenuous.

Since the launch of e-tolling on 3 December 2013 in Gauteng, a significant volume of freeway users have refrained from registering with the system or fitting e-tags to qualify for the discounts. Going into the third month of operation, OUTA puts this number at over 1,7 million of the 2,5 million freeway users, indicating a serious rejection of the system by the public. Sanral's multi million rand advertising drive throughout 2013, coupled with an offensive campaign to intimidate non-tagged users with threats of criminal records and errant credit ratings, and the prospect of facing a Sanral official in a special patrol vehicle stopping defaulters, compelled users to pay outstanding bills and saw a number of road users begrudgingly purchase e-tags. But SANRAL's arrogant and offensive strategy also served to widen the divide between the people and the state over this issue whilst massive errors, inconsistencies, hacked databases and faults in the billing system left users astonished, angry and bemused, leaving Sanral with a mounting credibility problem. In February 2014, President Zuma scolded Sanral for the errors and told them to sort them out fast.

OUTA and the media had also previously exposed Sanral's blunders of misinformation over e-tag penetration made by their spokesman, Vusi Mona in July 2012.²⁹ In OUTA's opinion, as of Mid February 2014, over two thirds of the Gauteng Freeway users had evidently exercised their right to freedom of choice to be regarded as 'alternate users', and to risk whatever consequences followed. OUTA furthermore projects that the e-tag penetration rate for Gauteng will not exceed 50% of the freeway users over time, a far cry from the numbers they need to make the system viable.

Minister Dipuo Peters has since added her stern voice to also scold Sanral for the billing problems during a special sitting of the Parliamentary Portfolio Committee on Transport. Sanral CEO Nazir Alli admits to problems and thereby contradicts his assertions made during the 2012 court process at which he repeatedly assured the public that Sanral was ready to efficiently commence e-tolling, barring a few "teething problems". This is a further indication of serious maladministration by SANRAL executives and a matter for the Sanral Board and higher level Transport Authorities to urgently address, because it signifies how little research was done to assess the impact of (the well-known inaccuracies of) the e-Natis system on the e-tolling process. Sanral executives cannot now blame their problems on e-Natis inaccuracies. They had been warned of this problem. As a State

²⁹ http://www.itweb.co.za/index.php?option=com_content&view=article&id=65332

Owned Enterprise, the 'owner' must now hold them accountable, especially since they had over 30 additional months to assess the implications thereof and iron out problems.

Furthermore, the seriousness of this lack of data integrity, together with threatening messages and wasteful billing has affected tens of thousands of people from all over the country. During February 2014, large logistic companies and other businesses started to add their voices. They have condemning the fiasco and complained of the additional administrative burden which has necessitated redirecting vital resources toward pricing challenges and more complex fleet management. These issues had also been pointed out to Sanral by SAVRALA in 2011.

It is this outline assessment that has prompted OUTA to the conclusion that an emergency intervention is required by the Transport authorities to arrest what has become an embarrassing fiasco for the country.

Nevertheless, to encourage rather than condemn we are reminded that Gauteng did not become the largest urban economy in Africa without extraordinary resourcefulness and innovation. OUTA believes we can still tap into that latent creative synergic potential to get out of the e-tolling impasse.

7. THREE BURNING ISSUES

From the mess of history, and the wisdom from other case studies of success and failure, we have distilled the following three burning issues that we consider to be the most incendiary.

INFORMATION ETHICS

Since OUTA undertook to channel public complaints to the Public Protector the steady stream of complaints received over the past two months have helped us come to the realisation that what is at stake is much more than a operational efficiency problem, but a human rights challenge, particular with respect to the right to privacy. Besides the 1849 individuals who have put their concerns and complainant in writing to us (to date), we estimate that tens, if not hundreds of thousands of motorists have simply not as yet been notified of any e-toll invoice or amount due by them, due to the maladministration surrounding the GORT system.

Hommes and Holmner caution in their paper on Intelligent Transport Systems³⁰;

"The advancements in Information and Communication Technologies (ICTs) together with the ability of ICTs to capture and store vast amounts of personal information has amplified the risk of this technology being used unethically (Reynolds 2011). These risks necessitated the application of a new set of ethical rules to an intangible world (Capurro 2006). This type of ethics is known as

³⁰ Hommes, E and Holmner, M, June 2013. Intelligent Transport Systems: privacy, security and societal considerations within the Gauteng case study. In *Innovation: Journal of appropriate librarianship and information work in Southern Africa*. Issue 46, UKZN

information ethics. To achieve a better understanding of information ethics, the origin and concept of ethics needs to be evaluated.

The word ethics stems from the Greek word Ethos implying the character and spirit with fixed moral attitude/culture that informs the beliefs and socially acceptable practices of a person or society (Britz 1996; Whitman & Mattord 2010). By extension, information ethics is concerned with the moral norms and justice, socially acceptable practices and beliefs concerning information use (Fallis 2007; Britz 2008). This field of ethics has received more attention with the increased development and capabilities of technology as well as enhanced access to information through the growing internet infrastructure (Molnar Kletke & Chongwatpol 2008).

Ordinarily given South Africa's internationally regarded constitution, with a bill of rights which explicitly sets out the normative principles to formulate a properly contextualized information ethics, it is regrettable that Sanral was not deliberately proactive to secure a broad and durable consensus between stakeholders, fleet organisations, faith-based organisations, academics, political parties and civil society organisations, before proceeding with the ITS of the Gauteng Open Road Tolling plan. Had it done so it could have conceivably avoided the present impasse.

Jon Tullett, a senior editor for ITWeb, appealed to OUTA to raise the alarm stating;

"It is coming up on 8 weeks since the last major incident was demonstrated, leaking customer details, and Sanral apparently has yet to establish how many user accounts were compromised, never mind which accounts they were. More to the point, it has neither notified compromised account holders of the crime, nor notified its user base as a whole that their personal data may have leaked."³¹

In a follow up interview he said that he has *"never in his career as an internationally experienced specialist IT journalist, come across the same level of defensiveness that Sanral executives have shown during his interviews with them."*

This may sound ominous, but it is perhaps indicative at a subconscious level that Sanral executives are beginning to realize that they are now in *impasse*.

ODIOUS TAXATION

It would appear from the significant resistance across all sectors of society within Gauteng and other parts of the country, that the introduction of e-tolling on an existing urban freeway system that has already been paid for amounts to double taxation, especially as it is being applied to social infrastructure on which citizens rely to commute daily to work and back, so as to earn a living, and has no clear and demonstrable influence to achieve on a more integrated urban transport system that boasts ever improving public transport alternatives. They pay taxes on their earning and have the right to benefits. Urban roads are not the occasional routes one takes on holiday or to visits other cities. This factor alone is a strong motivator for urban commuter road development to be funded

³¹ Personal correspondence. 9th February 2014 & Sanral in denial" – IT Web, Jon Tullett, 14th February 2014 .

using general and fuel levy taxation.

Furthermore, this logic is supported by the recommendations in the Presidential Review Committee Report on State Owned Entities in mid 2013, which stated in recommendation #21 that “*Funding of social infrastructure, including roads, should have less reliance on the ‘user pays’ principle, and more on taxes.*” This approach not only allows for people to commute to and from work, but also places of worship, sports, schools and recreation without being constrained by affordability and onerous conditions which detract from their quality of life, prosperity and productivity in the urban environment - the precise purpose of social infrastructure.

CRISIS OF LEGITIMACY

In a constitutional democracy the all-important ingredient of *public acceptance* must, of necessity, embody the meaningful pro-active commitment to human rights by political representatives and senior officials. When people in authority (the governors) want the rest of society (the governed) to behave, it matters first and foremost how they themselves behave³².

It is a matter of the adherence by the State (and any state owned enterprise such as Sanral) to what sociologists and criminologists term the **Principle of Legitimacy**. In essence this means that the legitimacy of any authority derives from three interrelated warrants:

1. the extent to which people subject to that authority are listened to and respected;
2. a reasonable consistency over time in the laws imposed by the authority;
3. the fair and impartial application of the laws without fear, favour and prejudice. (Discrimination between people may only legitimately occur, if it is manifestly in the interests of the most vulnerable people of society.)

Any shortcoming in the above three warrants is indicative of social injustice which the State, under a democratic constitution such as South Africa’s, must address. Under conditions where a tendency toward de-legitimization exists any recourse by an otherwise legitimate authority to the use of inappropriate threats, force and coercion to impose authority on any person who is perceived to be disobedient to its law only serves to further delegitimize its authority. Accordingly, what might otherwise be considered sound measures to bring about law and order in society and foster respect for the rule of law and good citizenship, become precisely the opposite - the cause of further resistance, instability and disorder.

International evidence (and common sense) indicates that for an e-tolling system to work best, *every* user must pay. The current manual toll plaza boom based collection system achieves this even though the manual collection process lacks the instantaneous efficiency of an automated electronic toll system. However if the users do not buy into an automated system (for whatever reason), and the State lacks either the legitimacy or the practical capacity to impose sanctions that encourage (not threaten) compliance, the system will be neither financially sustainable nor systemically viable.

³² See the latest bestselling book by Malcolm Gladwell, *David and Goliath: Underdogs, misfits and the art of battling giants*. Little Brown and Co. 2013.

In the case of the Gauteng e-tolling system, the Criminal Justice system would never be able to cope with more than 15% of road-users defaulting, let alone a level of well over 50% (or some 1,3 million), which is where it is headed. In our view, when studying the systems that fail, even at 80% compliance, those paying become irate with the fact that too many (the other 20%) are not paying and the system starts to spiral downward, slowly at first, but gradually the problem worsens and the collection process quickly becomes too difficult and costly to manage.

If the projected output of the system falls far short in meeting the contractual obligations Sanral has set for the Electronic Tolling Company, the financial subsystem will in turn be under strain, and the ramifications for society immense. Sanral will fail to achieve revenues to meet the administration and the interest portion, let alone the capital repayment of the loan. In their court affidavits, Sanral mention their initial expectations to achieve 93% compliance rate, which today can be construed as grossly out of touch with reality. It is clear to OUTA that the present executive leadership of Sanral cannot see it is ultimately in Sanral's best interest to be transparent with the exact details of the e-tag penetration rate achieved. It appears that they are terrified of facing the awkward truth that public acceptance is far short of viability or workability in the medium to long term.

Most critically for any system to be or remain viable, the purpose of the system must withstand scrutiny in terms of **ethical legitimacy**. Unfortunately for Sanral, the GORT system finds itself on an even steeper hill, amidst a broader Government legitimacy crisis because of persistent questions about Nkandla, the Spy Tapes, Marikana, the Gupta Wedding Scandal, the Auditor General's report on wasted taxes etc.. These factors have been further compounded by an ailing economy, high fuel prices and a weaker rand, all of which adds more troubled waters to their dilemma, as large numbers of society begin to openly boycott the system in an irate display of defiance against Government and Sanral, for failing to take the users of the system into their confidence.

Minister Peters' may order Mr Alli to fix the operational efficiency problem and cut the wastefulness. However, it will take a lot longer to do than Sanral is prepared to concede, and it will require a quality of leadership that is not prone to self-deception. Apologies will simply not suffice at this late stage. Moreover Sanral does not help itself by being cagey about the information sought by its critics. That pattern of denial was evident when problems began to surface in 2010 and has not abated. Sanral has no commercial competitor and its critics are not the enemy: they are the people that Sanral is supposed to serve. The continuous lack of transparency displayed by Sanral executives has eroded the very quality that is needed from the human/behavioural subsystem: trust.








The operational and strategic viability problems ultimately depend on what happens at the Normative level. Without a sound, incontestable and inclusive normative ethical rationale for e-tolling, solving the strategic and operational problems will ultimately be an exercise in futility, and the impasse will continue.

8. WHAT NEXT?

Peter Senge specifically cautions against recourse to command and control type of management and leadership strategies to force people to submit. To express it colloquially, you can force people to submit, but you can never force them to cooperate.

Leaders inspire people with a vision for what could be. The e-tolling system uses impressive and sophisticated technology, the gantries have architectural design merit, and the roads that have been built are world class. So why the lack of enthusiasm from Gauteng motorists?

This continuum helps explain why.

Opposed	Negatively compliant	Neutral	Compliant	Positively compliant	Enrolled	Committed.
						

The prudence of public participation programs is to give stakeholders the opportunity to interrogate a proposed plan or vision so that they move as far along from the left to the right, before the scheme comes into operation. It is only to the extent that a critical mass of stakeholders are clustered in the right half of the spectrum that any ambitious innovation can hope to succeed. There will always be some followers who are reluctant to follow, and some who might be violently opposed to it. But if the majority are supportive the administrators can concentrate on sanctioning the reluctant and the opposed, knowing that the greater public interest is being served, because the greater public are clustered densely along the right side of the continuum.

The fact that the enthusiasm levels of users is so low means that it cannot be sustained without considerable application of negative sanctions by the authorities. Even then, if there is lack of moral sanction and ethical underwriting, it will become impossible for the required levels of enforcement to be sustained. South Africa cannot return to being a police state.

Thus with empirical evidence from both successful and failed ITS e-tolling cases and the conceptual analysis conducted by OUTA and other critics, the message ought to be clear that the Gauteng e-toll system was in trouble before it started.

Whereas the examples of success in London, Stockholm and others reflect excellent public engagement programs which garnered the support of society to enable their positive outcomes, those that are in trouble (Manchester, Edinburgh, California, Portugal, Hong Kong, Australia and others) suffered from poor public acceptance, or high collection costs and shortfall in revenues anticipated. In some cases, these systems started out at well over 80% compliance and still fell short. The GORT system started out with only 15% of users with e-tags fitted.

We cannot see how the Gauteng's e-toll compliance will ever manage to achieve the required levels for success. If Sanral Executives have indeed lowered their sights to 60% penetration as rumoured, they are only fooling themselves. If their higher level authority allows them to perpetuate the self-deception they too become complicit.

E-tolling has proved a highly divisive and controversial issue, partly for reasons that lie outside and beyond the internal logic and rationale of the system. Paradoxically one of the unintended benefits it has brought is to unify Gauteng residents across historical race, class and ideological divides, but alas not in support of the system but in *opposition* to it.

The time is over for excuses and rationalisations. The reality is that Gauteng is now a province prone to significant societal conflict over the e-toll decision and this does not bode well for success with the project.

OUTA proposes the following process to ‘dissolve’ the problem.

1. A suspension of e-tolling and an invitation to stakeholders to engage in a facilitated process to imagine what a truly integrated urban transport and congestion management system for Gauteng would look like.
2. During the suspension of e-tolling, the national fuel levy is increased appropriately (estimate 10c per litre) to raise the revenues to meet the GFIP financial commitments. (If indeed a National fuel levy is a bridge too far for the authorities to accept, an inland fuel levy, such as was adopted to finance the fuel pipeline, will concentrate the charge to Gauteng motorists. Government has ring-fenced levies on fuel and we see no reason that this cannot be applied in this instance.)
3. A multilateral and multi-party working group of government, business, labour and civil society representatives is established to examine options for raising the necessary funds to repay the bonds and interest for GFIP, over 20 years.
4. The Gantry and infrastructure remain in place on loan to the Gauteng Provincial Traffic Authorities for used for traffic monitoring and law enforcement (speeding, identification of cloned number plates, etc). If indeed at some stage in the future, when good public transport alternatives are in place, an ITS tolling system may become possible, but only after a thorough public engagement and approval process has been conducted.

We believe a collaborative effort and approach by all stakeholders on this matter will stave off any further credit rating downgrades for Sanral and will achieve the best possible result for both citizen and the state.

9. CONCLUSION.

In 1893 the government of President Paul Kruger in Pretoria angered the *Uitlanders* who had flocked to Johannesburg to dig for gold by erecting tollgates on the seven major entrances into the Johannesburg gold fields. The diggers complained that these were punitive taxes to provide revenue for the near bankrupt Zuid Afrikaanse Republic, not to maintain the roads. To travel from the one city to the other was a time consuming expedition. One needed a good reason to do so. On the rare occasions that President Kruger did so it made headline news. *The Star* newspaper at the time was filled with angry editorialising and letters complaining about the injustices of the Boer Government on the matter of tolling and a host of other grievances. Seven years later war broke out, that cast an exceedingly long shadow over the entire century that followed.

But for the fact that they are protesting against e-tolling of motor vehicles rather than against toll gates for charging for animal drawn wagons, today *the Star* and other media contain sentiments of anger and outrage that are not too different in substance to what appeared in the 1890's.

Whereas the residents of Pretoria and residents of Johannesburg were in opposite camps in the 1890's today residents from both Tshwane and Johannesburg are united in their opposition to the 'tax' of e-tolls. Fortunately, in contrast to then, today they are able to do so backed by a non-racial constitution which guarantees their freedom of expression and a host of other fundamental rights which empower the citizens to hold Government accountable.

It is never too late to halt the journey down a dangerous path and embark along a safer and more prosperous route that garners the support of ones people. Persisting and pursuing with the current e-toll journey will further driving a wedge between this Government and its people. The unintended consequences of innocent people being caught up in this mess will pose problems far too serious to contemplate.

There are simply too many factors loaded against Sanral on this GORT project. The examples on the international stage are there to clearly see why this scheme has an extremely high probability of failure. Furthermore, Sanral's conduct and poor public engagement process at the outset has robbed this society of a wonderful opportunity to have explored the introduction of a world class ITS system, which may have replaced the wider freeway network with a much needed and vastly improved integrated public transport system, or a combined variation / hybrid outcome thereof.

With the real possibility of a meaningful public participation program and collaborative approach to the dilemma, we believe that it is not too late to achieve a genuine and committed societal support of a new plan to settle the debt on the GFIP loans, whilst addressing the broader issues of Gauteng's traffic congestion going forward.

In publishing this assessment OUTA has gone a step further than simply complaining that those rights and opportunities have been infringed. We have indeed 'cursed the darkness', but have sought to light a candle by exercising responsibility to show due respect for the complexity of the issues, and to suggest a way forward, in the hope that the Minister of Transport and President Zuma will exercise the necessary leadership to lead Gauteng out of the impasse.

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APPENDIX ONE. HOW WE UNDERSTAND SYSTEMS THINKING.

“In times of change, those who are ready to learn will inherit the world, while those who believe they know, will be marvellously prepared to deal with a world that has ceased to exist.”
Eric Hoffer³³

Ten years before Peter Senge popularised the notion of the Learning Organisation, Dr David Korten reflecting on a number of case studies of development programmes from different places around the world, concluded that if one was not managing a learning organisation one was managing either a *self-deceiving organisation* or a *defeated organisation*³⁴. These were the only three options, and the third type was usually a logical consequence of the second if interventions toward organisational learning were not adopted.

What does it take to transform the two less desirable types of organisations into viable, learning organisations? The ability to make a ‘paradigm shift’ toward Systems Thinking.

The ability to think systemically presupposes the willingness to heed the famous dictum of Albert Einstein. “The problems we face cannot be solved by the same level of thinking that created them.” Unfortunately politicians and corporate executives, who have to deal with issues of power and wealth, command and control on a daily basis, invariably lack the patience, the courage and the self-confidence required to master systems thinking. It presupposes the ability to risk trials and embrace errors, and patience to allow for both vicious and virtuous cycles to manifest themselves, and the ability to work productively in teams. Systems thinking aspires for the ideal of ‘a whole that is more than the sum of the parts’ but that is rarely achieved, especially when an organisation is blessed with many well-educated, highly intelligent and ambitious professionals such as we find within Sanral. The Wright Brothers managed to achieve their breakthrough before well-resourced government research laboratories because they paid close attention to birds in flight and eventually cottoned on to the concept of “wing warping”, which by installing movable wing flaps thus enabled the pilot to control the horizontal movement of the plane.

Systems thinking seeks to understand complex, non-linear relationships by synthesis and exploration. Analysis (breaking things down into their component parts to see how things work in a mechanical sense) remains vital, but if that is the only tool in the conceptual toolbox it is impossible to understand why things are the way they are. Disassembling a motor car into ever smaller pieces will never yield an explanation as to why vehicles in South Africa have the steering wheel is on the right and why it is the opposite for vehicles in France and the United States.

More salient to this report, by simply *analysing* the properties of a car, it is impossible to explain why in rush hour traffic on Gauteng freeways we find long queues of cars, designed

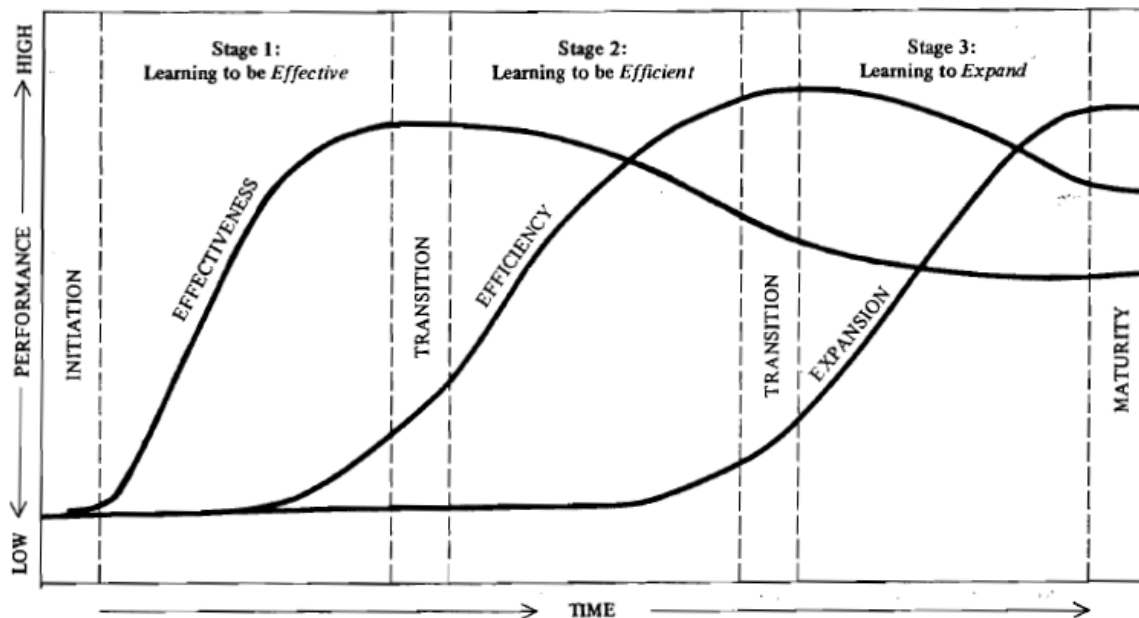
³³ Hoffer E (1976) *The Ordeal of Change* (1976). Interestingly, Hoffer, a Los Angeles Longshoreman, received no formal higher education, yet has influenced some of the most learned writers.

³⁴ Korten D (1980) *Community Organization and Rural Development: A Learning Process Approach* in Public Administration Review. See, <http://livingeconomiesforum.org/sites/files/pdfs/Community%20Organization%20and%20Rural%20Development.pdf>.

for high speed wasting fuel, inching forward in congested traffic most of which have only one occupant whereas there is space for at least three more. The advocates of Intelligent Transport Systems need to reach for something beyond mere intelligence: they need *insight*. This implies a whole systems perspective, and the wisdom to understand the complexities that come from connecting and modelling the interplay of different systems simultaneously influencing one another.

To explain how this works in practice, David Korten proposes a developmental progression over time whereby an organisation must, if it is to survive, first embark on a learning curve *to be efficient*, at least more so than its competitors. The more commonplace *analytical* thinking is enough to get by in the quest for efficiency. However once the cash starts flowing steadily, innovators need to develop their conceptual skills to embark on the learning curve *to be effective*, by investing in research and development with an eye for the future so that when it arrives they are ready for the challenges it brings. Some measure of efficiency must of necessity be sacrificed by the apparent wastefulness that comes from experimental trial and error. Strict efficiency-minded operations managers tend to regard R&D budgets as indulgent frivolling-away of hard earned resources, but equally, a complacent disregard for the reality of change leads to the “buggy whip syndrome”. In an era where horse and carriage transport dominated, buggy whip manufacturers competed on price. The more efficient manufacturers could offer cheaper buggy whips, for as long as customers were driving horse drawn buggy’s. Once the motor car was successfully innovated they had no need for buggy whips.

FIGURE 4
Program Learning Curves



Note: It should be expected that some effectiveness will be sacrificed in the interest of efficiency and expansion. With expansion efficiency will likely suffer due to trade-offs with the requirements of expansion.

Assuming an innovator does successfully learn to be effective and assuming they have ambitions to go further, Korten adds a third learning curve, *learning to expand*. Expansion brings with it a level of complexity that requires a very different skills set than either efficiency-learning or effectiveness-learning require. Managing large corporatized entities requires well developed technical, interpersonal and conceptual skills. If such an

organisation is also to be a *learning* organisation it needs a special quality of leadership as well. Leading and managing are qualitatively different but obviously inter-dependent. Wherever greater efficiency is the goal an organisation can get by with good managers. Leadership comes into play when *effectiveness* measures become pressing. The leader needs to hold together the 'operational efficiency' team and the 'strategic effectiveness' teams to maintain a working discipline to simultaneously ensure the enterprise doesn't squander money and is proactive and responsive to change to improve the quality of its offerings and satisfy customer expectations. If an enterprise needs to expand, the quality and style of leadership needs to develop accordingly.

A question often debated in Business Schools is the difference between management and leadership. In the context of organisations that are large, or have aspirations to be large, leaders will recognise this insight to be valid. "A manager solves problems. A leader deals with the unintended, often perverse, usually complex and occasionally surprising consequences of previous solutions"³⁵.

This is because issues of power, wealth and influence become ever more pertinent as the organisation expands. Consequently its executives need to learn and develop special conceptual and interpersonal skills to deal with previous 'solutions' gone wrong, and managing reputations. Paradoxically the skills that may have worked for an efficient operations manager to be promoted to become an effective leader and strategist tend to be less relevant, and perhaps even a liability, when size and expansion bring proliferating complexity. Learning thus may mean unlearning ingrained habits. Doing so is never comfortable, for the leader may have earned due respect for having become "learned", yet such knowledge may obstruct the ability to see things in a new light. The skills and ability to lead a large complex organisation so that it effectively responds to rapidly changing circumstances while continuing to satisfy its customers is not something that can be normally learned in text book based learning institutions. It requires an ability to learn from that which is endogenously generated from *within* the organisation. Korten suggests *learning organisations* can be distinguished from *self-deceiving* and *defeated* varieties by the leaders of learning organisations having the *ability to embrace error*. While this characteristic is undoubtedly necessary, it is not sufficient to overcome denial and steer the organisation away from defeat. Authentic learning organisations also need their leaders to be explicitly life-affirming, which comes from taking a whole systems perspective, and the insights of complex living systems theory.

The rapidity of change has considerably accelerated since Eric Hoffer's words were spoken in the mid-20th Century and the priority of *learning* above being *learned* has become ever more important. For as Korten observed after his evaluation of the programs,

"A look at the successful programs in relationship to their learning curves highlights an important feature of their success. They were not "designed and implemented." They, and the organizations that sustained them, "evolved and grew."

³⁵ Clarke JGI, (2001). *Leading and Learning for Organisational Transmogrification in a Cybernetic Age*. Olive Publications, Durban.