For god's sake integrate man!
Is this what Winston Churchill would have said?

One of the key failures in the municipal environment today is the lack of integrated infrastructure planning and implementation. This results in severe capital inefficiencies and hampers growth and development. There are many factors contributing to this lack of integrated planning we witness: the business process in municipalities, lack of understanding of the concept of integration, poor understanding, awareness and management of various risks and simply bad advice from consultants are just a few reasons. In most cases, these factors indicate a failure of the **strategic planning** - and the **project preparation** processes.

What makes all of this even more perplexing is that integration is simple common sense and also makes so much business sense in the municipal environment. Why does it seem so difficult to achieve then? In this short paper I will discuss some of the reasons for this as well as some simple ways to rectify the situation.

To explore this further, let us first define two types of integration when it comes to municipal infrastructure planning and implementation ~

- **Horizontal integration**: this is integration between different types of services and the infrastructure through which the services are rendered.
- **Vertical integration**: this is integrating between various elements in the value chain of a single service.

Horizontal Integration

I think it is fair to say that there is growing awareness and focus on horizontal integration – although this seldom translates into actual integration. Not yet in any case….. In my own experience the lack of horizontal integration is primarily due to the business process in municipalities and more specifically how the planning function is conducted.

Firstly, the technical directorate – the division of the municipality responsible for building, operating and maintaining infrastructure – is typically structured into sub-divisions or silos. Each of these silos is responsible for a specific service i.e. water supply, sanitation, electricity supply, roads and storm water etc. Each sub-division conducts its own planning of future infrastructure requirements etc. This planning information is fed upwards to the planning division who is responsible for the

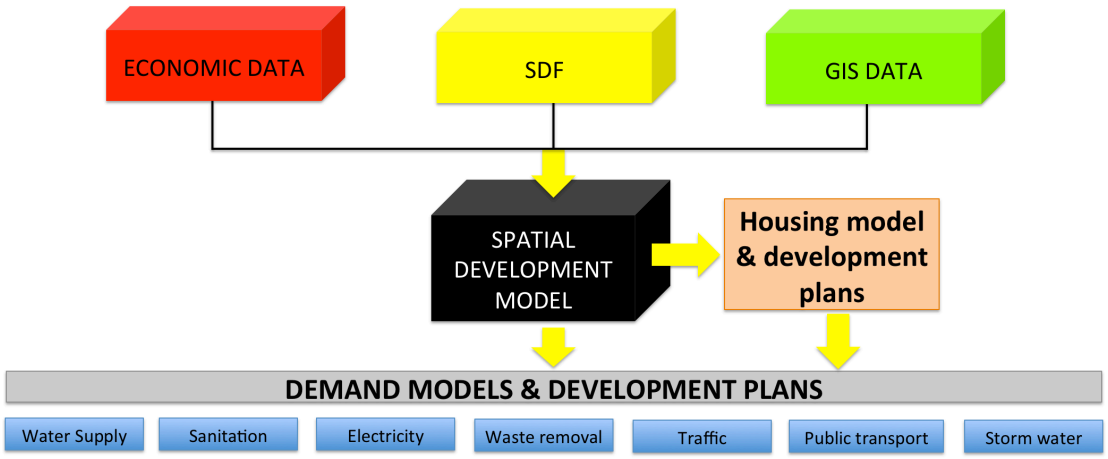
maintenance of the overall Integrated Development Plan ("IDP") of the municipality as well as to the finance department who takes care of budgeting for maintenance and capital investment requirements. So far so good and there is nothing wrong with this set-up - one would find a similar organisational structure in many private enterprises. The only problem is that this structure does not, of its own, facilitate integration. What happens in practice (and I have witnessed this first hand in a number of instances) is this ~

> *The person responsible for planning and budgeting for infrastructure in the water supply sub-division appoints a consultant to prepare a forecast of future demand for water supply in the municipal area. He uses this forecast in all his planning and budgeting reports. Just down the passage, the person responsible for planning and budgeting for infrastructure in the sanitation sub-division also appoints a different consultant to prepare a forecast of future demand for sanitation in the municipal area. This consultant uses a different basis to build his forecast that what the first consultant used. Just a little bit further down the passage the person responsible for planning and budgeting for infrastructure in the electricity supply sub-division appoints a consultant to prepare a forecast of future demand for electricity…..*

Can you see that right from the word go, these sub-divisions are probably diverging in their planning rather than integrating because of the different basis used for planning? The solution is very simple: *use a common database for this planning function*. But, what is that database? The database that should be used is one that represents the current and future spatial development of the municipal area. Demand for services is driven by spatial development. Spatial development determines how much of a service will be consumed and equally important where it will be consumed. That brings us to the solution to facilitate horizontal integration.

The planning function of what service delivery capacity (for each service) will be required at different locations in the municipal area and at different times in future must be centralised in the planning division. This planning function will be driven by: (i) the current spatial development of the municipal area and (ii) the spatial development framework ("SDF") of the municipality which will determine the future spatial development of the municipal area but which requires the right infrastructure at the right time in the right location to be realised. The diagram below illustrates

how key information, including the SDF, will inform the central Spatial Development Model, which will provide the common basis for all infrastructure planning.



Once the capacity required for each service in each location has been (centrally) determined, the responsibility to determine the best (engineering) solution to deliver that capacity will rest with the relevant technical sub-division.

From the figure above, it can be seen that the ability to model current and future spatial development and to translate such development into demand for the various services is key to this integration model. This functionality is provided by the *Claassens-Lijnes Demand Estimation Instrument,* which has been developed by my associate Jon Lijnes and myself over the past 10 years for this very purpose. You can get all the relevant detail of this valuable tool at www.claassens-lijnes.co.za.

Vertical Integration

If there is growing awareness of the concept of and need for horizontal integration, the same can unfortunately not be said of vertical integration. This is integration between various elements in the value chain of a single service and it is greatly neglected by municipal officials and their consultants alike.

The figure below provides a breakdown of various functions in the water services value chain as an example. These functions have been grouped together in three functional groups ~

- Statutory functions
- Revenue management functions

- Water services management functions

Statutory Functions	Bylaws
	Reporting
	Performance monitoring
Revenue Management	Billing
	Collection and credit control
	Tariffs and policies
	Indigent management
	Database management
	Consumption metering
Water Services Management	Operation
	Maintenance
	Planning
	Capital works

The relevant silo(s) responsible for water services will focus mainly on the Water Services Management functional group within the value chain. However, vertical integration requires that in executing its responsibilities the overall value chain must be considered. This can best be illustrated through a few examples ~

1. The engineering planning and design of capital works must be conducted in such a way that key risks are mitigated. Key risks in this regard include *Demand Risk* and *Recovery Risk*.
2. Tariffs and tariff policies must be designed to adequately price for key risks: *Demand Risk, Recovery Risk* and *Development Risk*.
3. Tariffs and tariff policies must be designed to manage demand (through the phenomenon of price elasticity of demand) and to extract maximum value from deferment and even elimination of new capital works.
4. Key infrastructure required for operations must be integrated with the Revenue Management and Statutory functional groups to facilitate enhanced risk management and performance monitoring.

From the above examples it is clear that achieving vertical integration is much more complex than horizontal integration. For one, it will require all of us to forsake a narrow focus on designing and building new infrastructure to a new paradigm of "a quest for value". The payback of successful vertical integration can be significant.

Think of the municipality that can defer capital expenditure of R200 million on an extension of a water treatment works simply be redesigning its tariff structure, thereby eliminating Over Consumption (for a definition and description of Over Consumption see the article: *A holistic approach in the analysis of and turn-around strategies for municipal water supply systems*). Vertical integration also requires an elevated skills set and superior tools to be deployed. As is clear from the examples above, risk identification, quantification and mitigation are key functions in vertical integration. From my own personal perspective the key tool that enables me to assist clients with vertical integration is the *Claassens-Lijnes Demand Estimation Instrument* (visit www.claassens-lijnes.co.za.), which provides quantification of the critical risks discussed above.

As the competition for capital between sub-divisions increase and as the cost of new capital works continue to increase, the ability to integrate vertically will mark the difference between successful municipalities that can continue to service their communities and those that cannot do so.

A leader like Churchill would have issued a simple but clear instruction in this situation.