Symposium on Innovative Technologies for Land Administration

Madison, Wisconsin USA
June 24-25, 2005

Simplifying the Business of Land Information Administration

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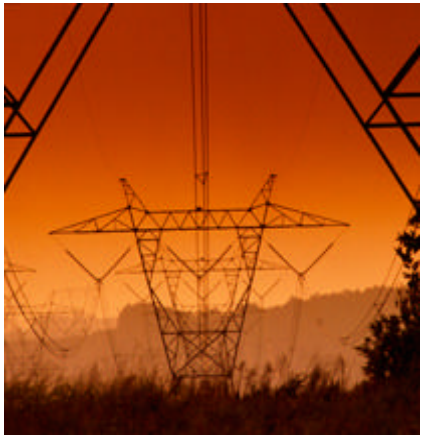


International Federation of Surveyors
Fédération Internationale des Géomètres
Internationale Vereinigung der Vermessungsingenieure
FIG COMMISSION 7
Cadastre & Land Management

INTERGRAPH

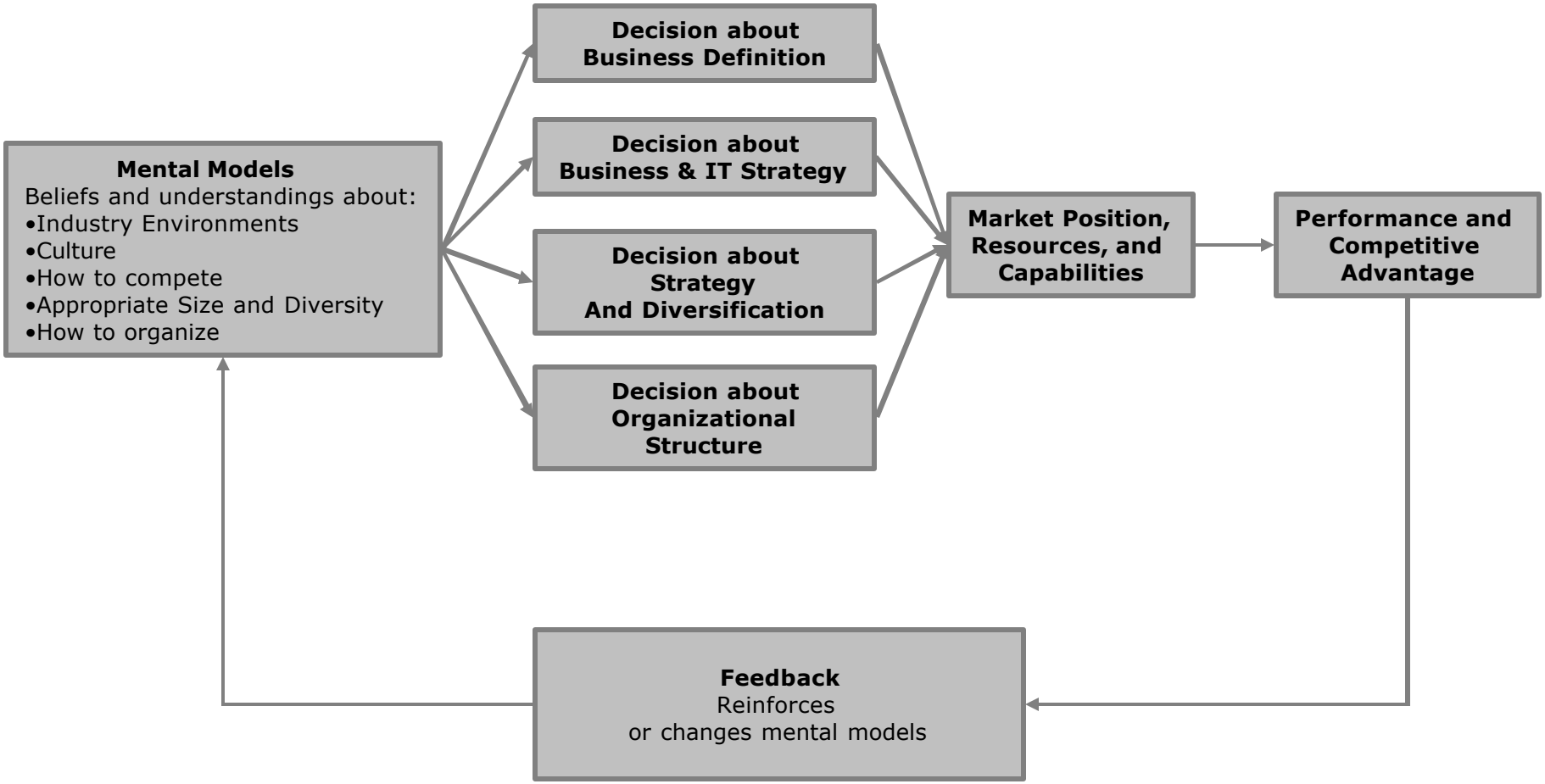
Institutional Impact

"If the technological innovation involved – whether new product or process - is radical, then substantial changes in the organizations involved will be required for successful development and use of these innovations."

John E. Ettlie (2000), Rochester Institute of Technology

How different ?

Mental Models & Value Systems



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Ignore context at your own risk ..

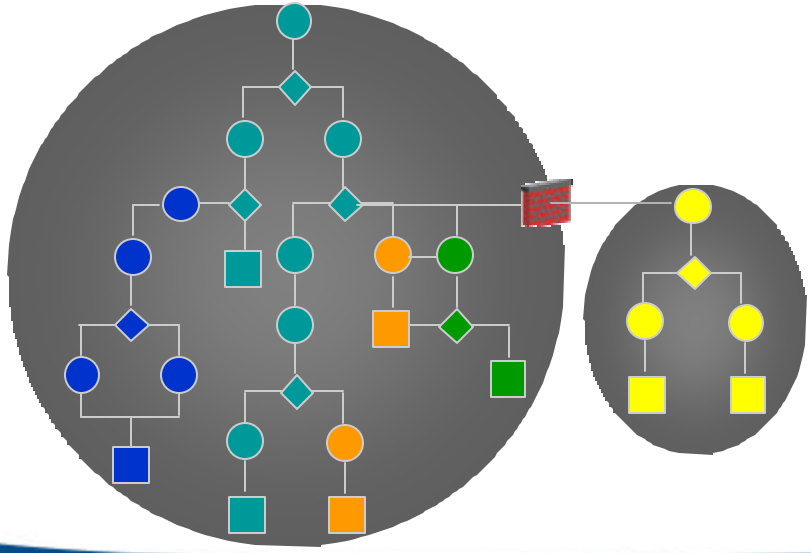
INTERGRAPH

Enterprise Challenges – Fundamental Issues

Efficiency and Profitability

Business Processes

- Differentiate one enterprise from another
  - Time-to-market
  - Profitability
  - Quality of service

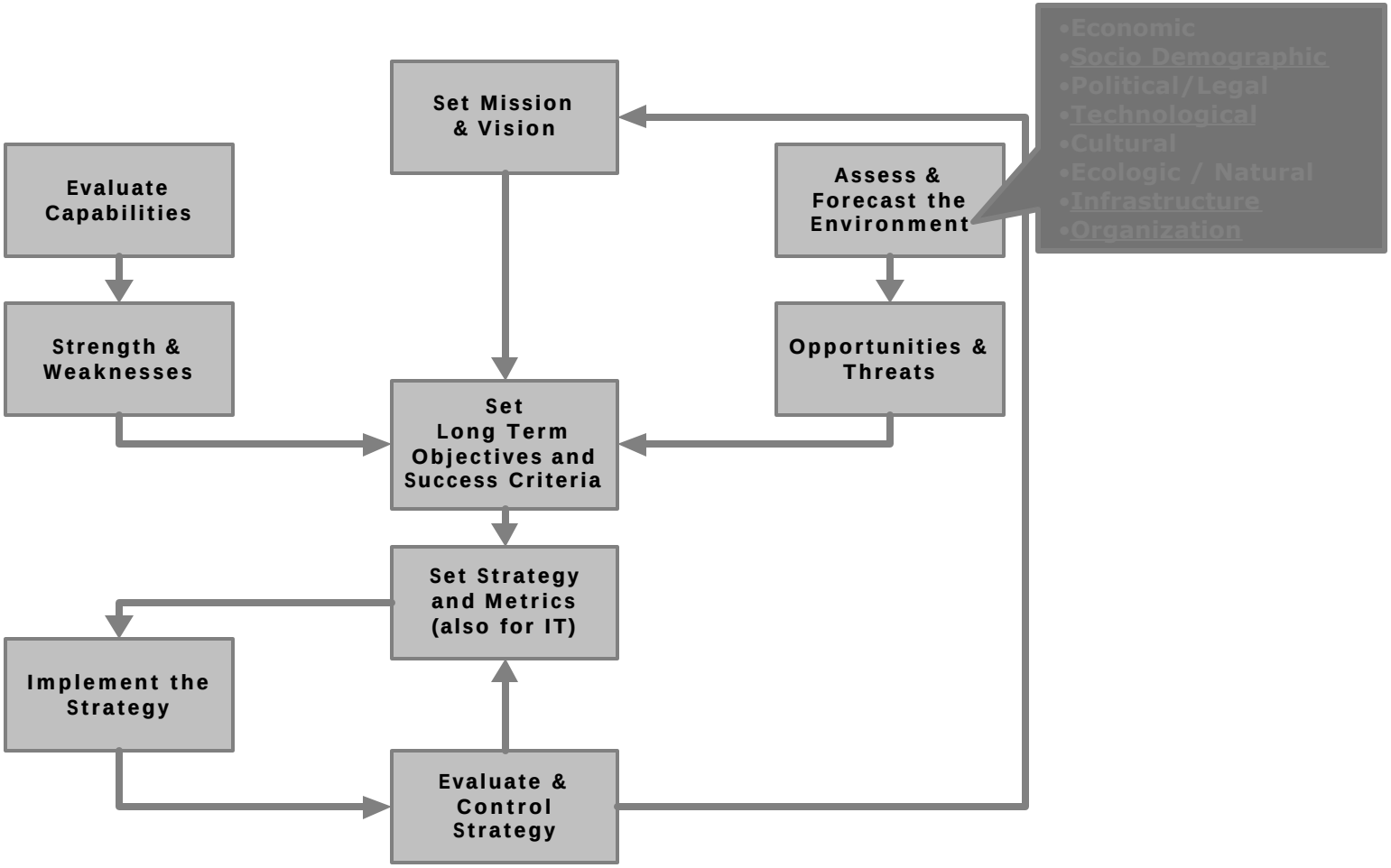


Integration

Enterprises continue to struggle

- Leverage existing systems
- Move from manual / batch uploads → real-time information
- Align IT support with business requirements

Strategic Management



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Increasing Complexity and Loss of Control

"Today's technology is intrusive and overbearing. It leaves us with no moments of silence, with less time to ourselves, with a sense of diminished control over our lives"

Donald Norman – The Invisible Computer

A lot of what is bought and paid for doesn't get implemented because of complexity."

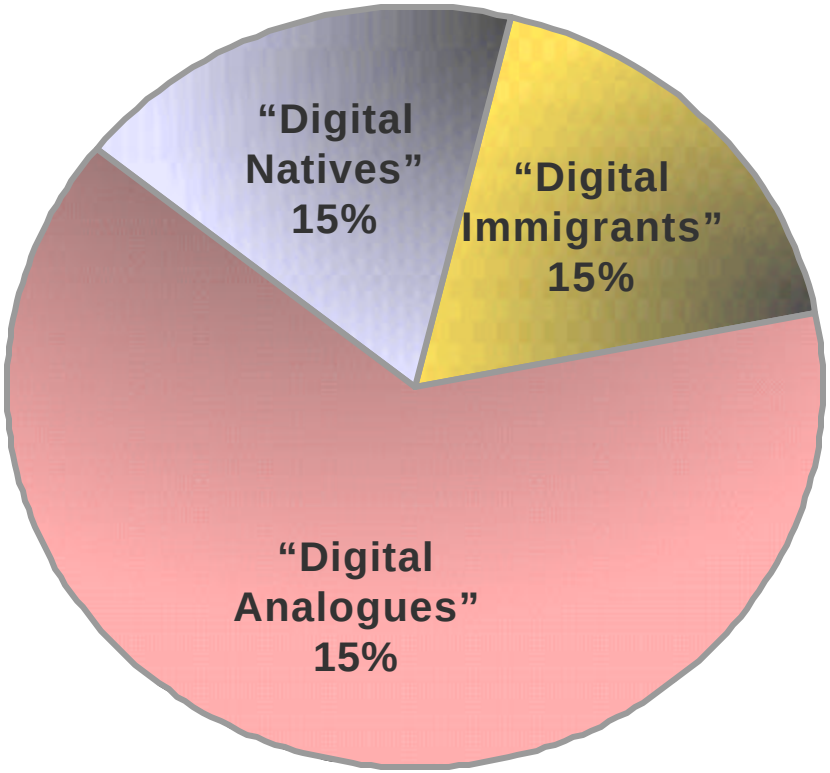
"Maybe this is the industry's biggest challenge."

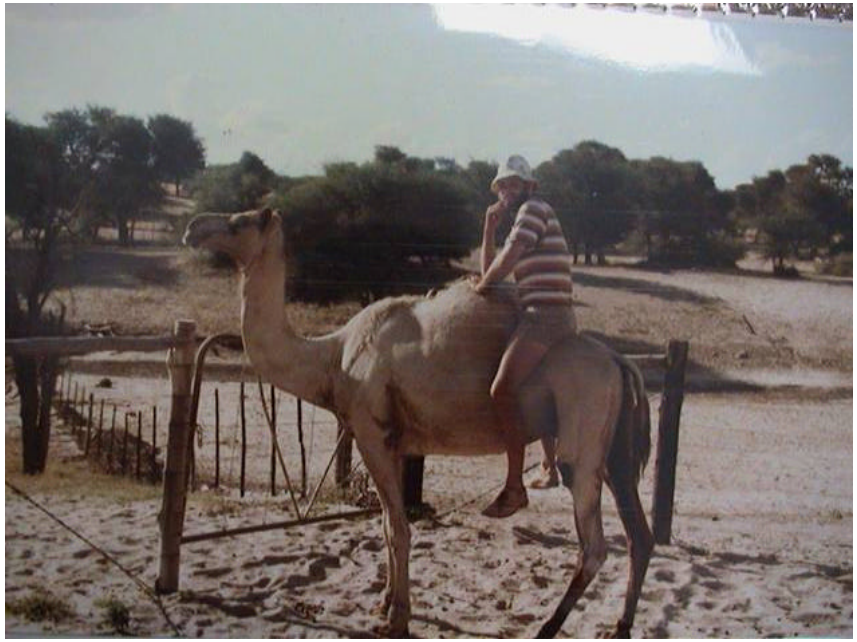
Ray Lane, Venture Capitalist

IT today is "in a state that we should be ashamed of; it's embarrassing."

Greg Papadopoulos – Sun MS

IT/Digital Demographics

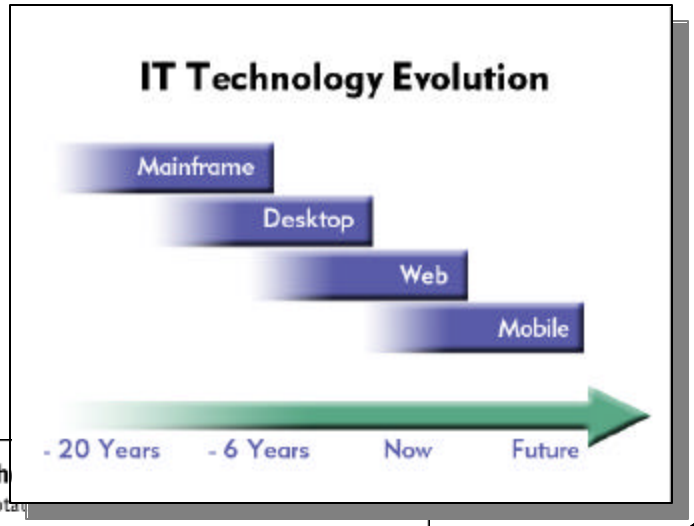


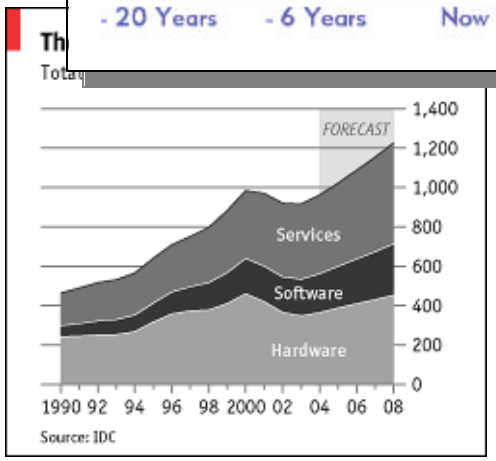


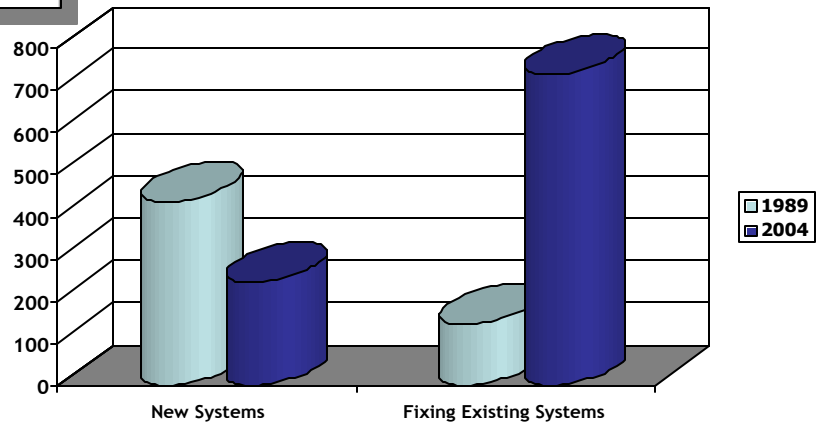
Non Digital Citizens ..

IT Past …Present … Future

There will always be legacy systems …

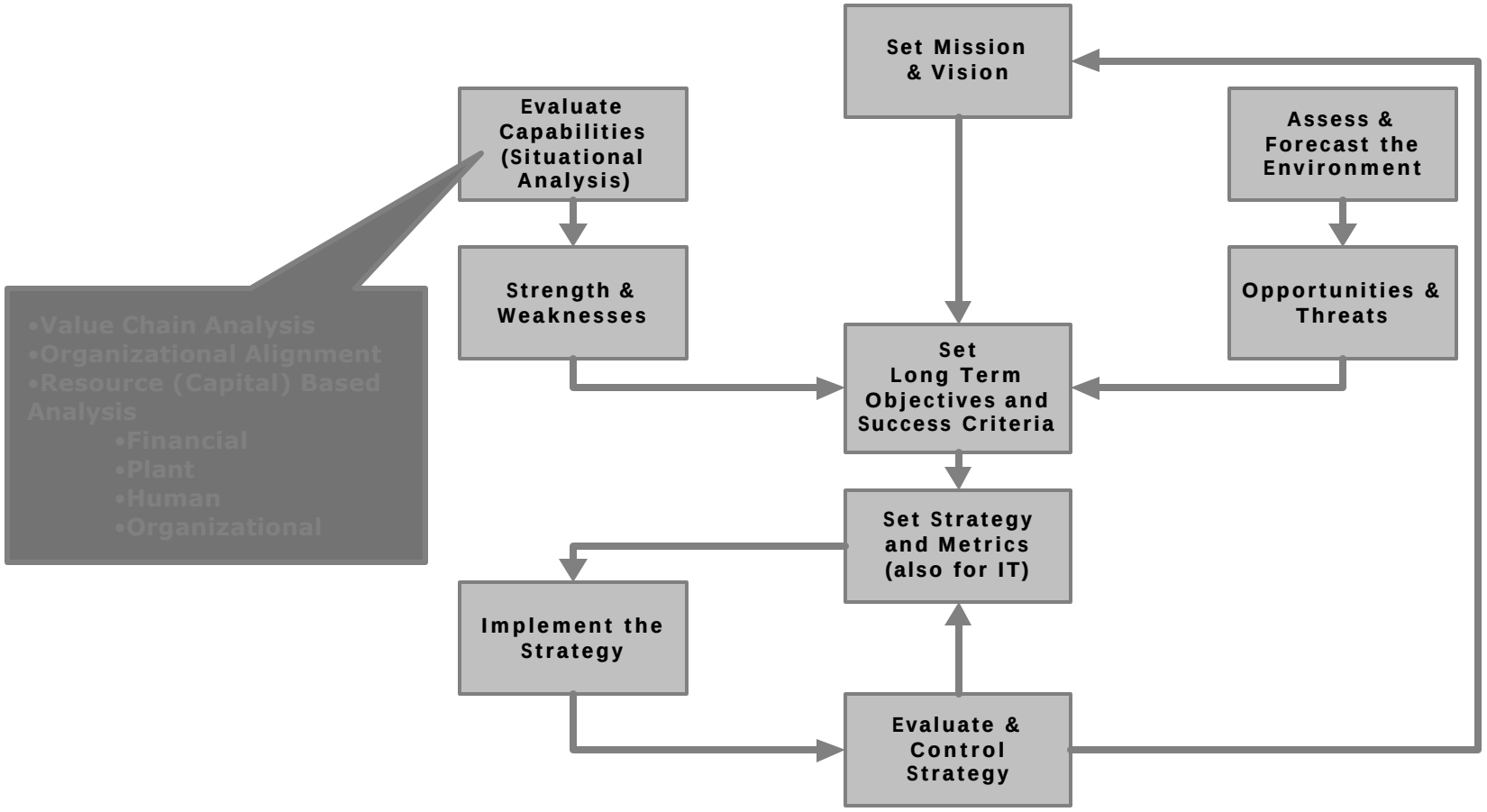






Source: IDC

Strategic Management



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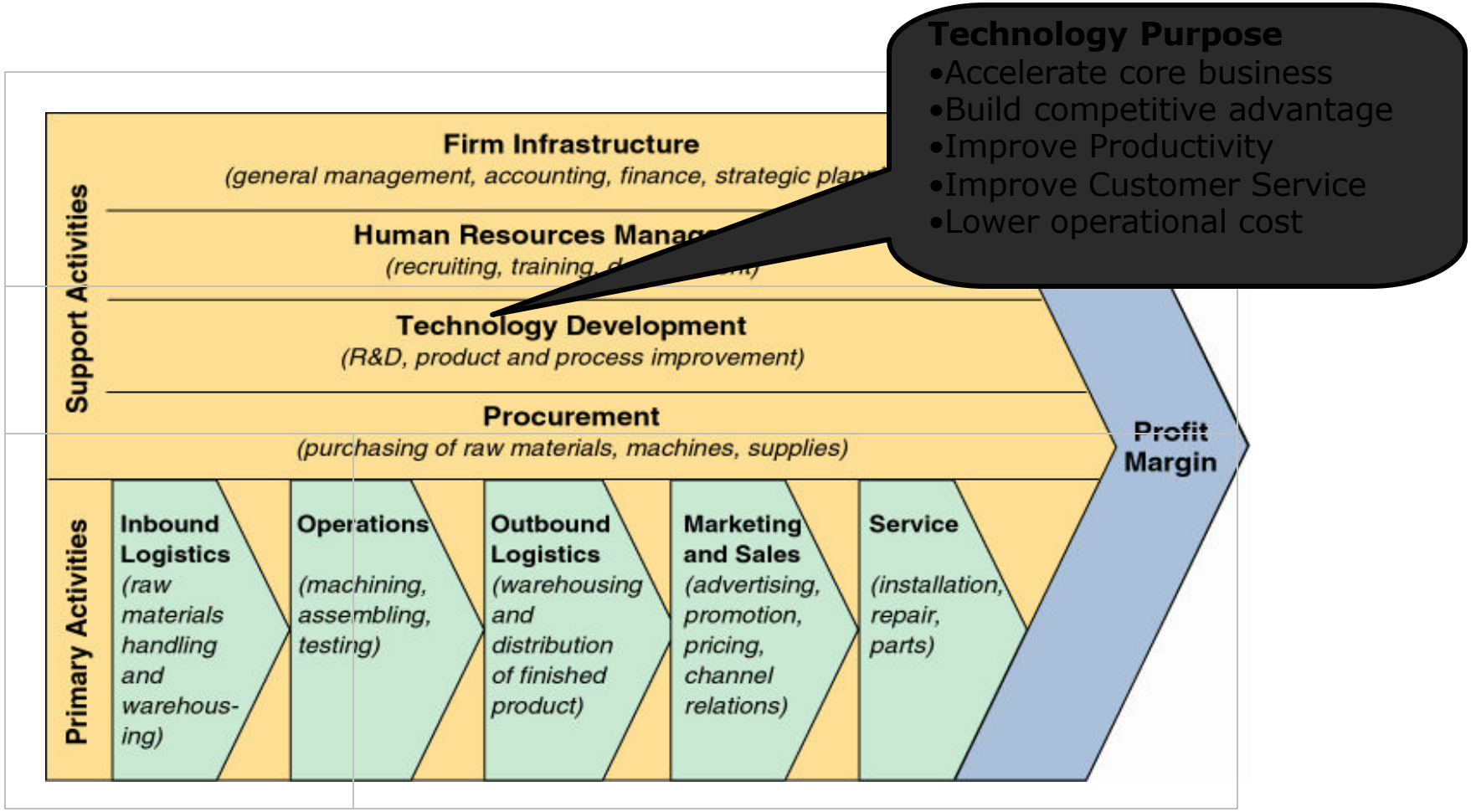
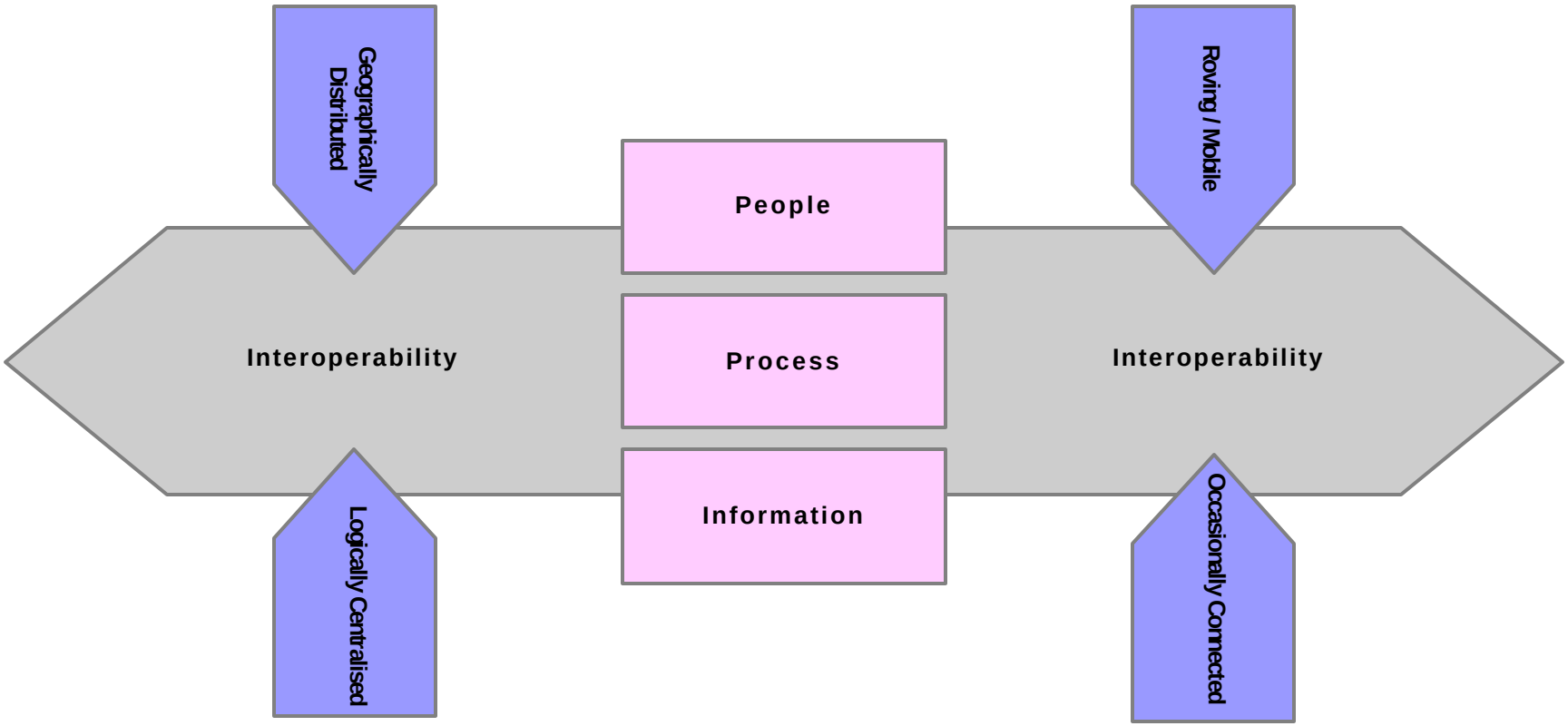
Porter's Value Chain Analysis Model



Distributed, Occasionally Connected Enterprise



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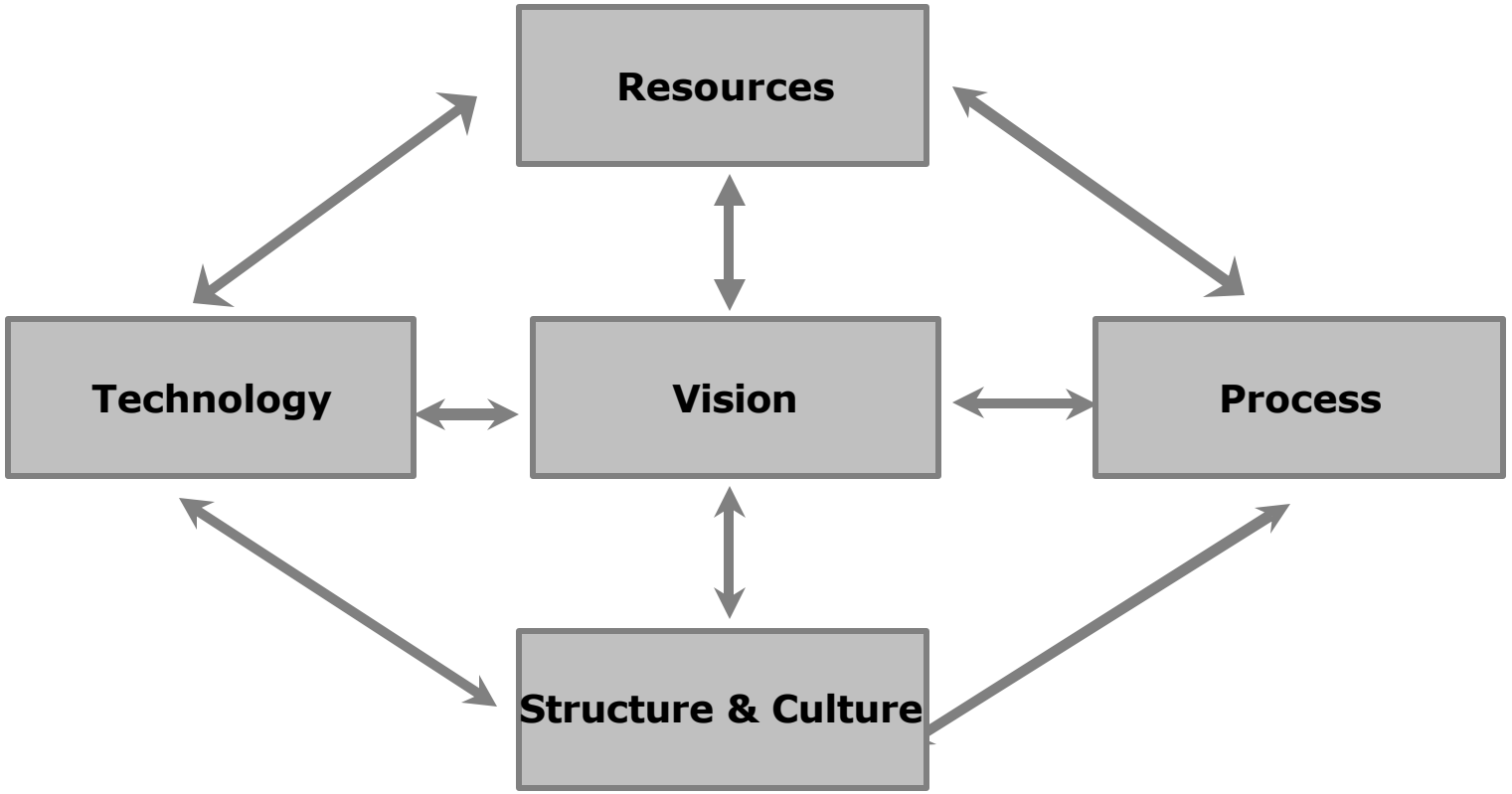
Resource / Capital Analysis

- **Financial**
  - Little or None for non-important issues
  - A lot for important projects -> Align with / or attach to these.
- **Plant/Equipment/Software**
  - Cannot replace all legacy at once
  - IT / Technology Strategy Required for an evolutionary / incremental improvement strategy.
- **Human**
  - Labor is highest cost
  - Cannot attract and retain skilled staff
  - Gear towards this these realities
- **Organizational**
  - Existence of Vested interests
  - Reform / Reorg may often not be possible.
  - Implement Solutions that take this reality into account.

Elements of Organizational Alignment



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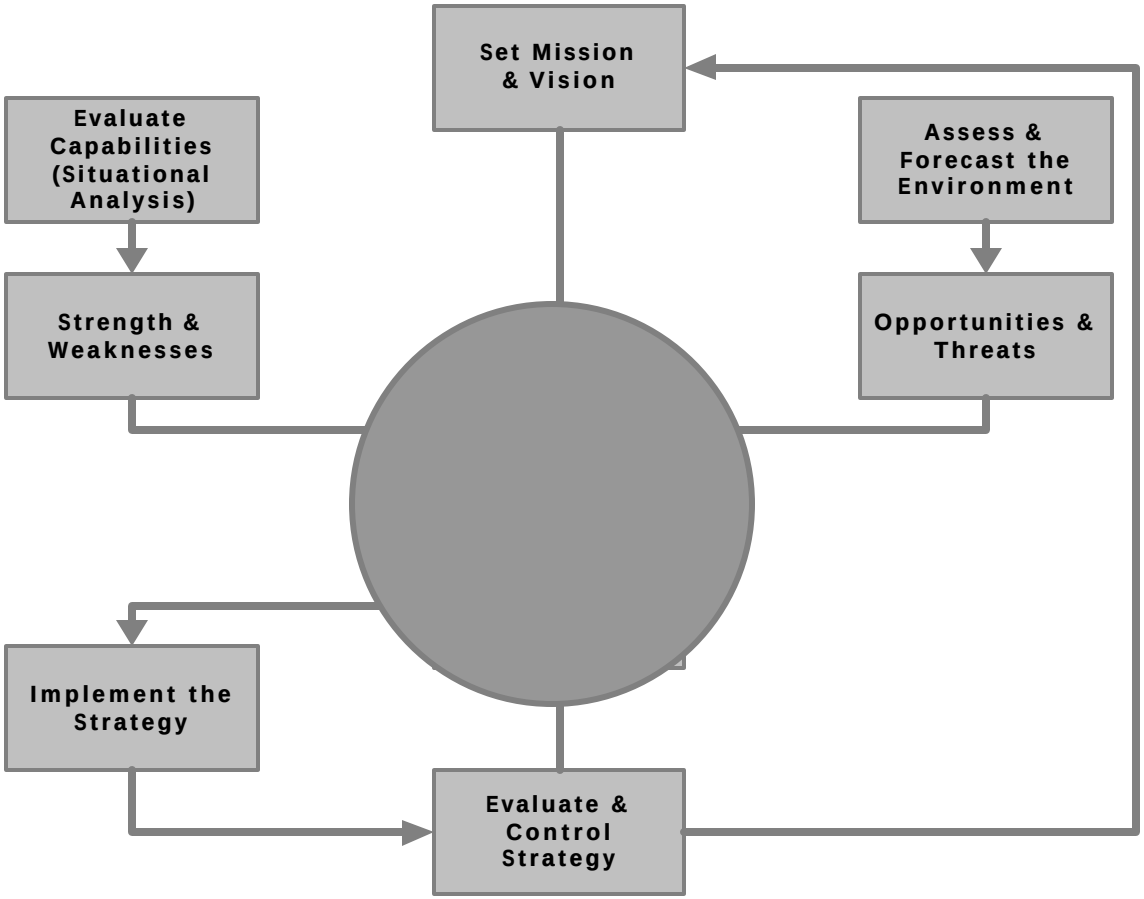
Strategic Management



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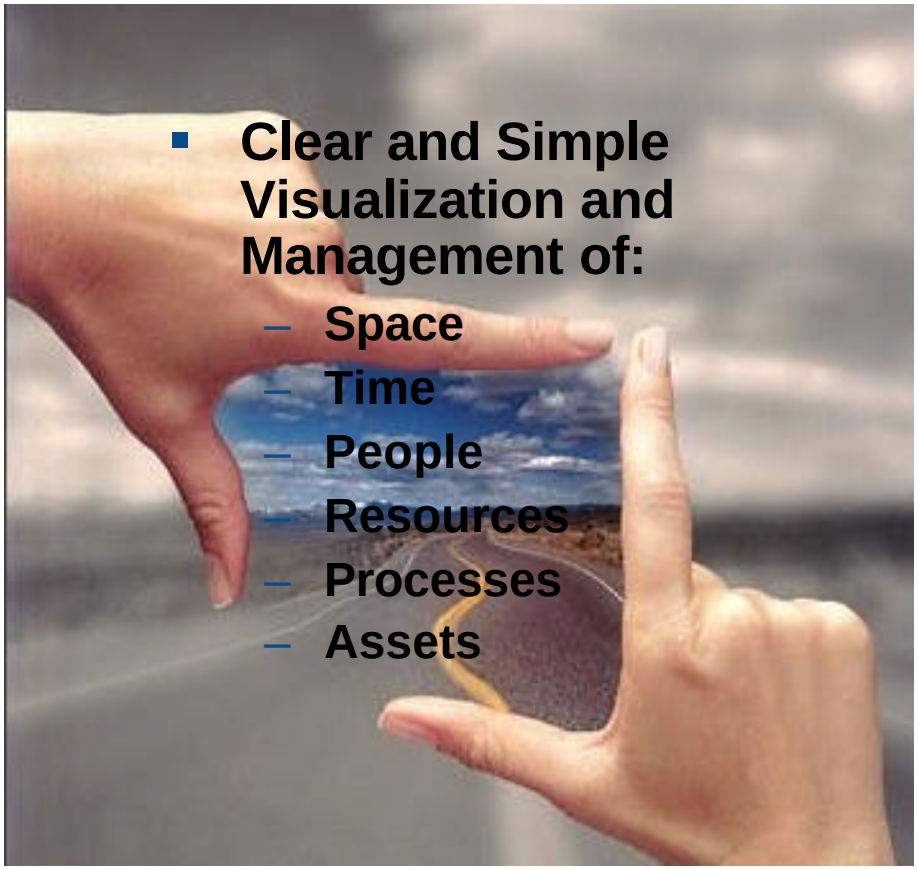
What “Business” should we be in ?

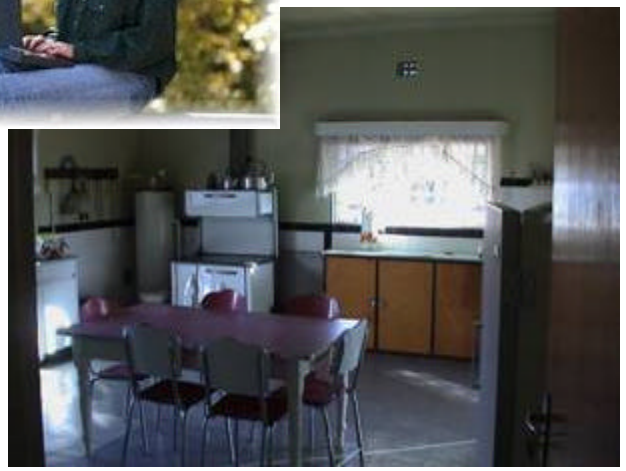


- Sustainable Context-based Solutions that
  - Help you to *see your world clearly*
  - Enable you to make *better and faster operational decisions.*
  - Enable you to *increase productivity & service* and thus *improve ROI.*

Lessons from History …

Then and now

Simplify ….in Context



- "People are analogue, not digital; biological, not mechanical. It is time for human-centered technology [and solutions], a humane technology." - Norman.

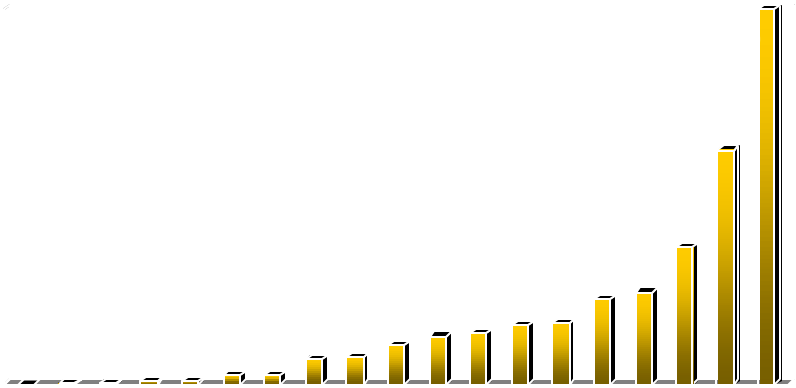
Lessons Learnt - Food for thought …

- “ The ideal multi-purpose cadastre can only be afforded in countries with relatively high urban land values at the outset……”
- “However, the more typical countries can realize the benefits of tying together the several components of such a system long before they have reached the ideal levels of completeness and accuracy, that is creating something less than the ideal records system”

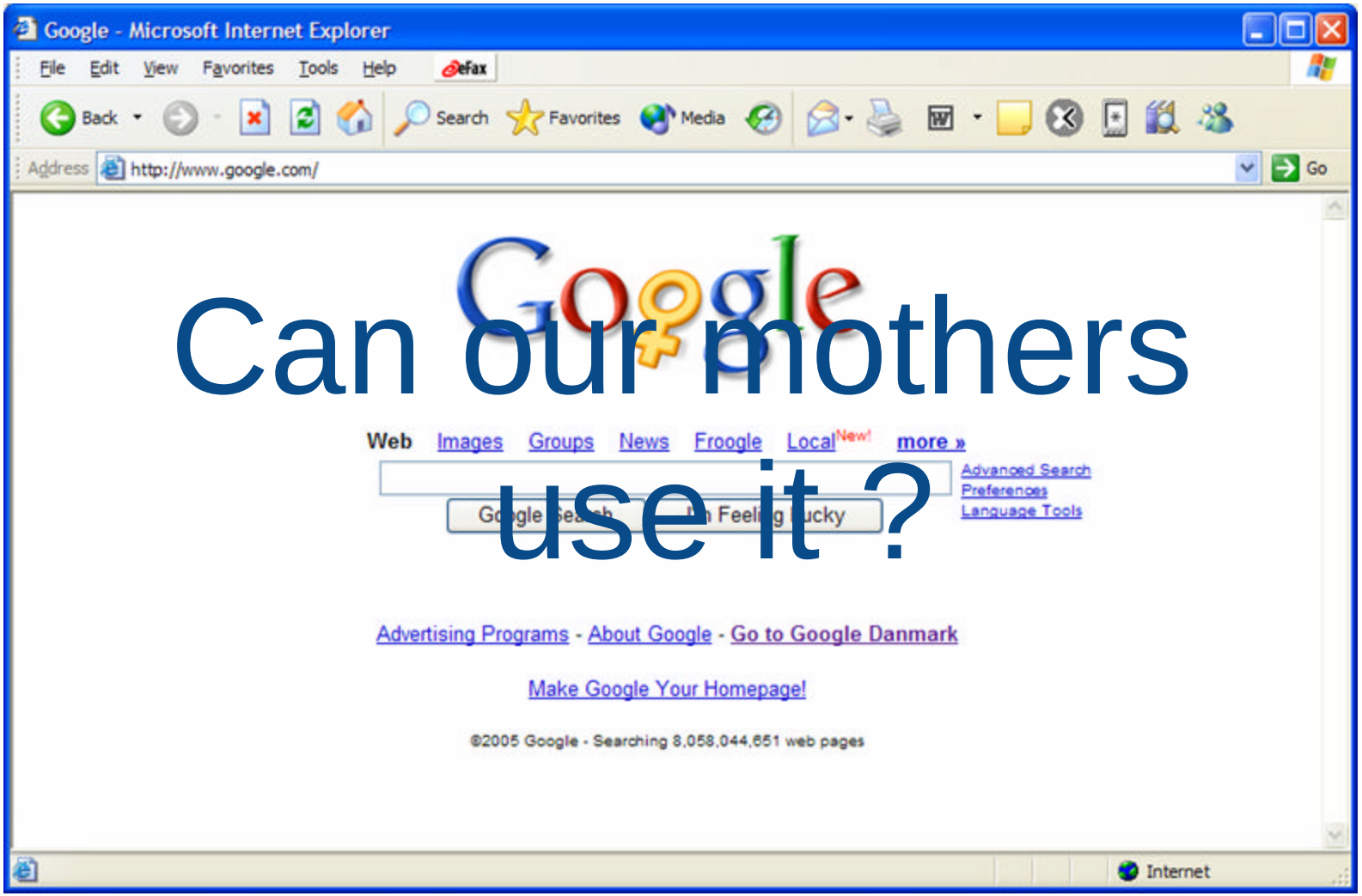
Sustainability Benchmark

- Requires that infrastructure can rapidly adjust, adapt and respond to its influence factors whilst maintaining continuity in operations and service delivery.
  - Continuity in the availability of skilled human resources
  - Continuity in financial and logistical resources
  - Information and Information Management Infrastructure
- Designed such that it can be **“maintained at length without interruption, weakening, or loss of efficiency, functionality or quality”,** given the following**:**
  - There is a real possibility that the first two components above will – from an “in-house” availability point of view - change for the worse in the future, and
  - The technologies underlying the Information Management Infrastructure will change rapidly and on a continuous basis.

Time and Cost to Register



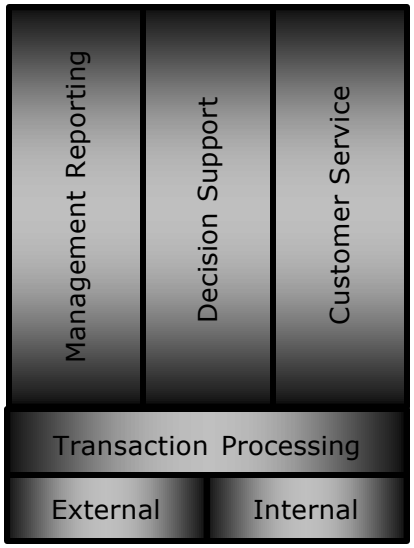
Usability Benchmarks



Can our mothers use it ?

Innovation

- Applied Management Science
- Technology:
  - Security
  - Business Intelligence – (Valid Time) !!
  - Interoperability & In place Integration
  - Work, Task and Workforce Management
  - Fusion of the natural and built environment.
- Focus on Distributed Enterprise Operations
  - Business Process Fusion
  - Legacy systems – a constant
  - Spatial Integration “disappears” within Enterprise Applications
  - Focused & Robust Context Aware Industry Solutions
  - Embedded with MIS
- Benchmarking & Metrics



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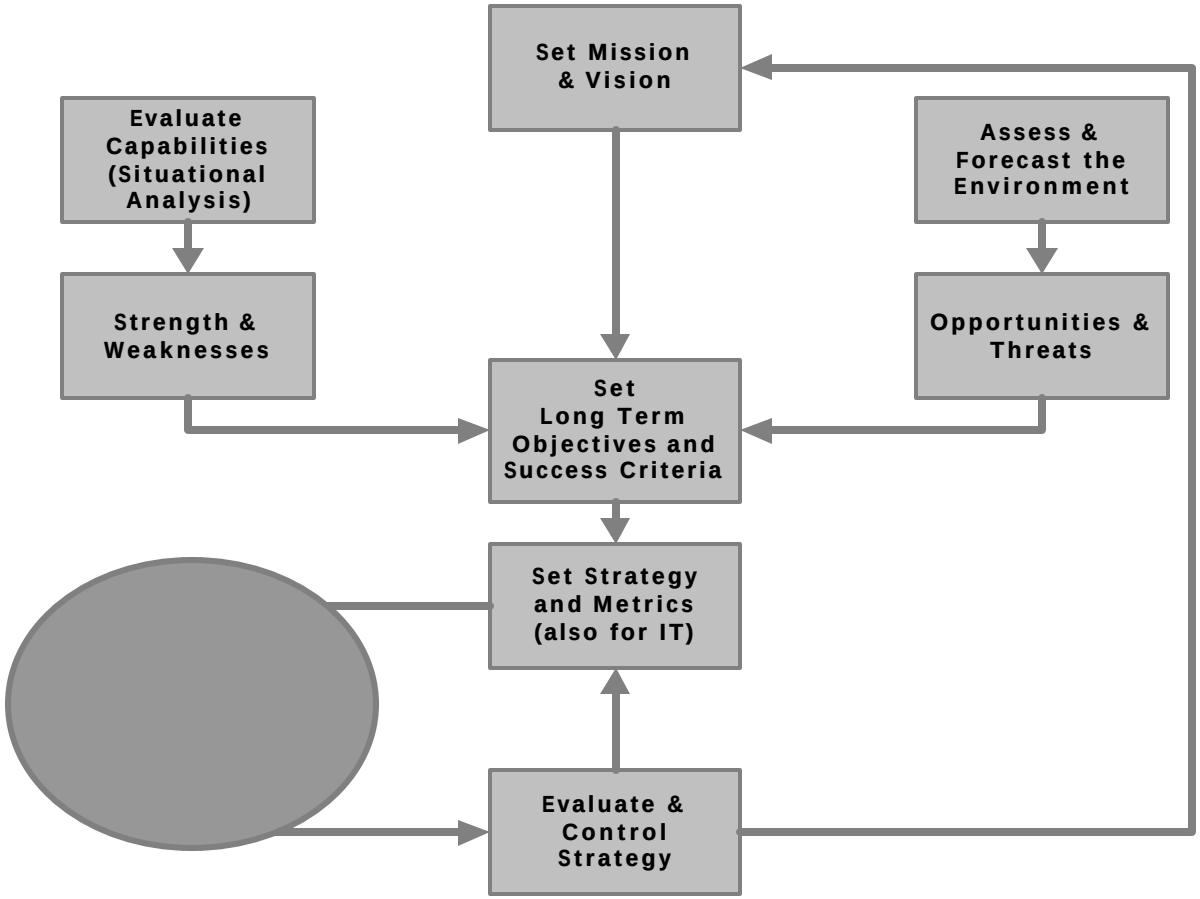
Strategic Management



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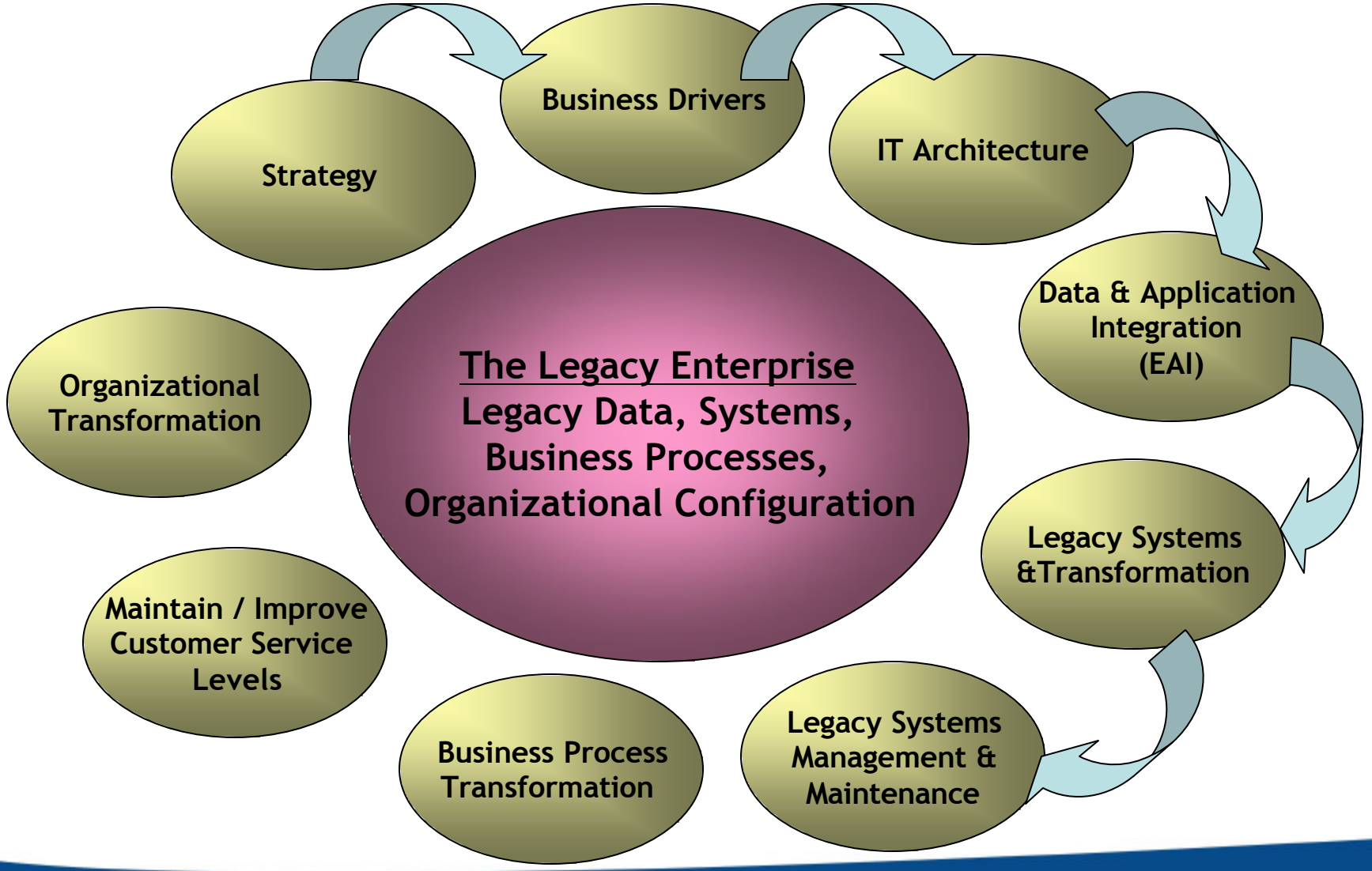
- “ The complete development and implementation of any comprehensive land information system should proceed gradually”…Fully implementing or phasing in the system within any region or state may take several decades”

The improvement of your environment is not an event – it should be a never ending managed process !!

Property Records Workbench



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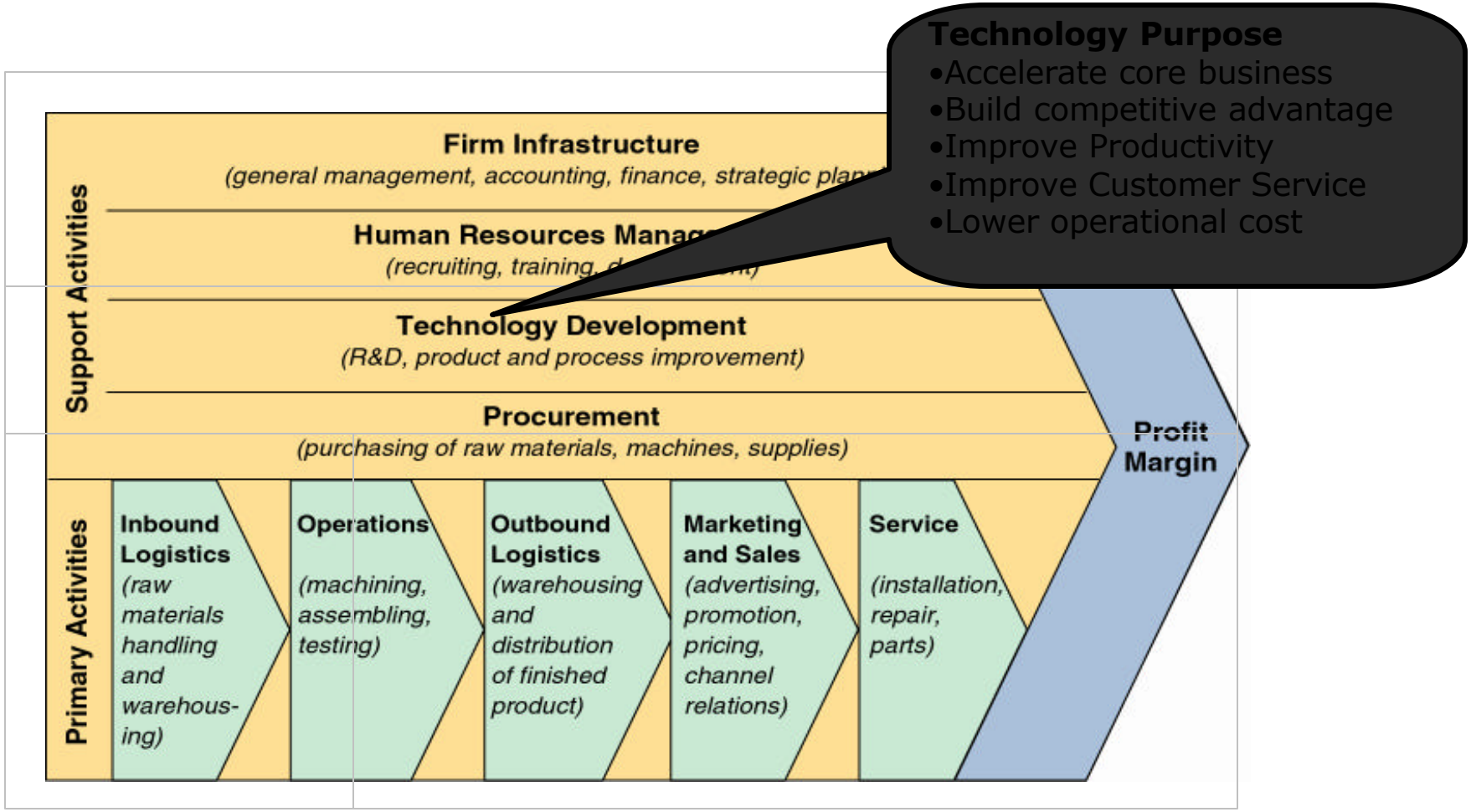

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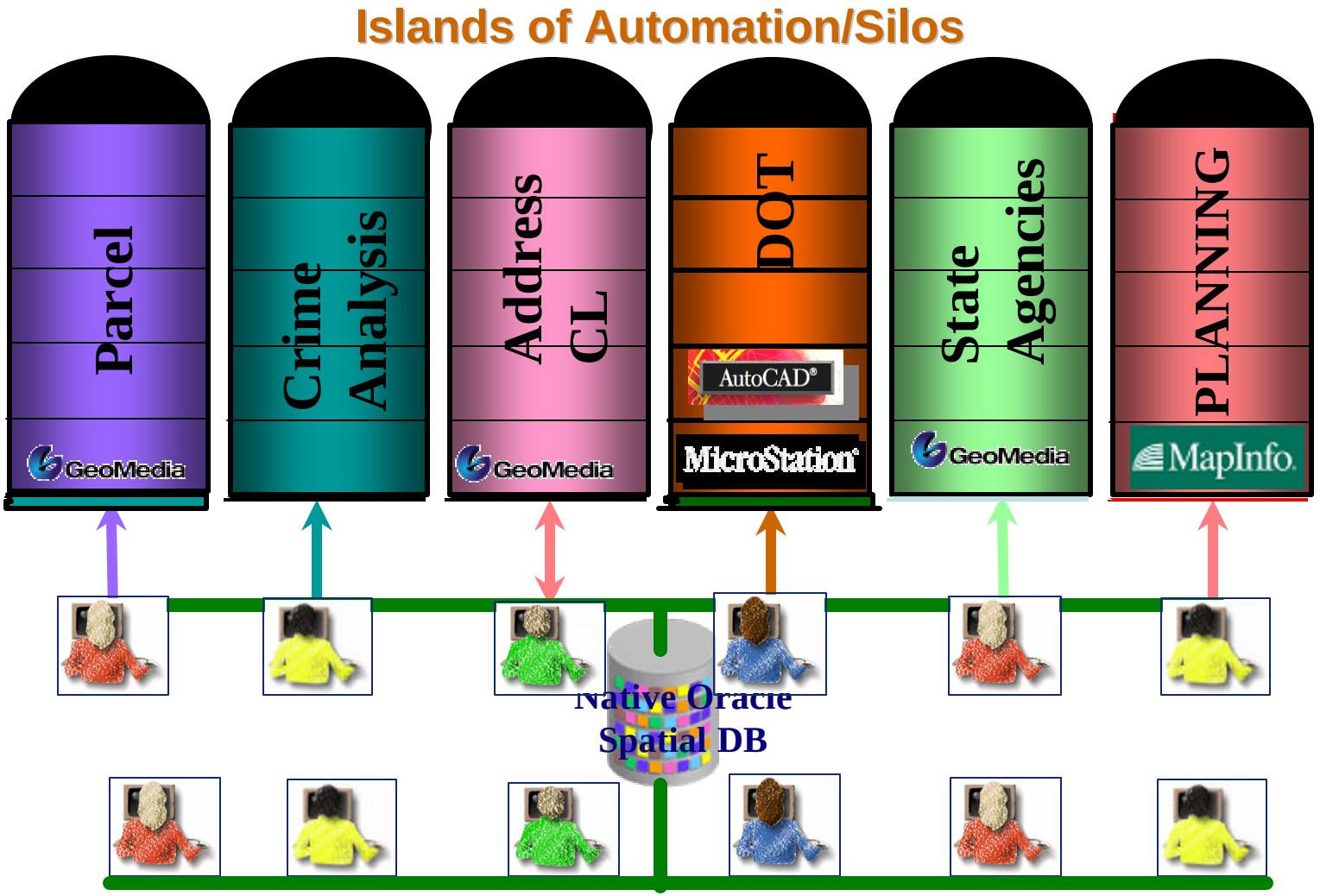
City of San Jose CA

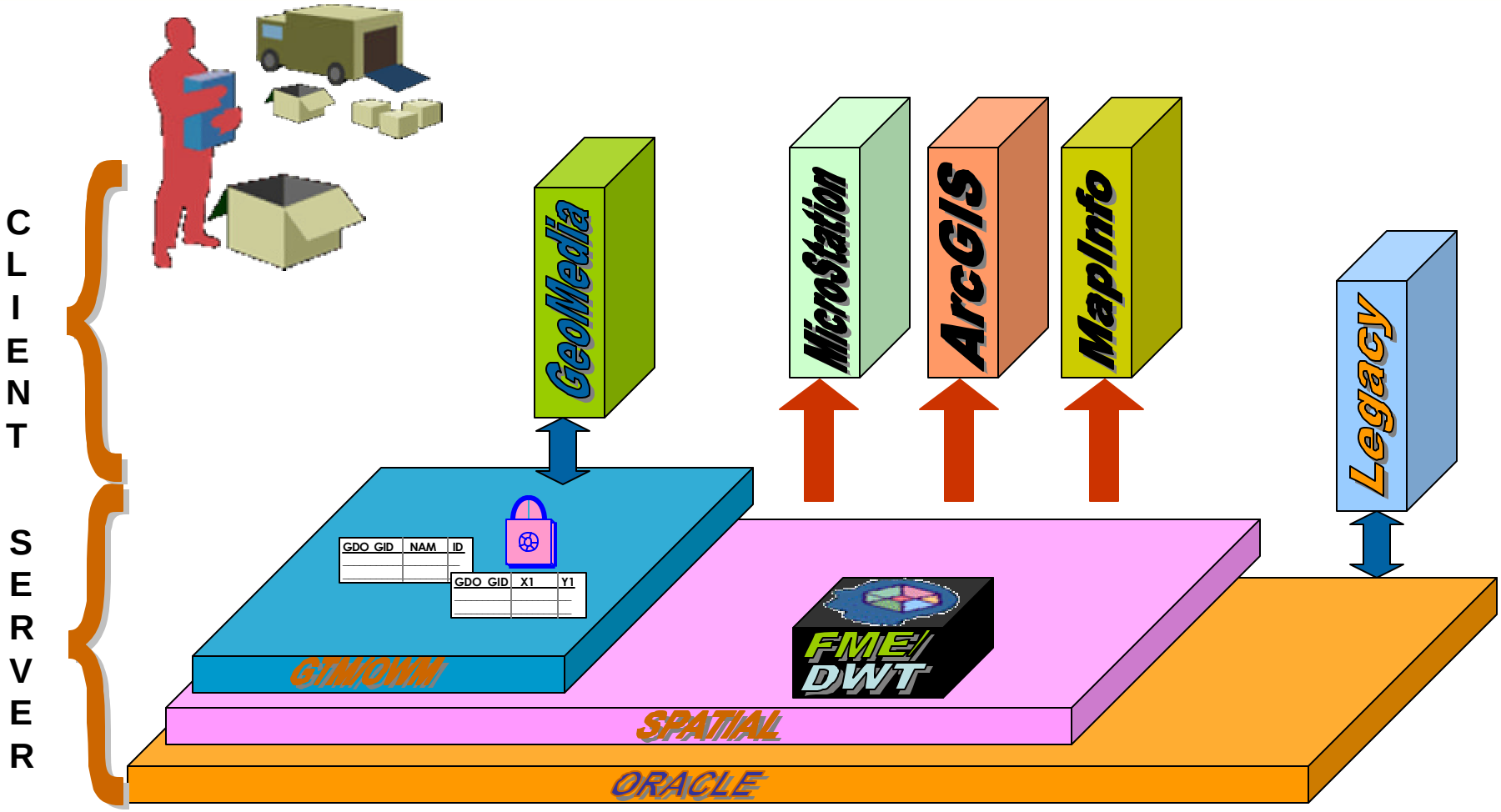
- Cadastral/Assessment Integration
- Project, GIS-E911 Integration, Street Centerline/Addressing
- Data modeling and Systems Integration

- Recent Accolades:
  - Oracle 2005 Spatial Integrated Enterprise Award
  - Departmental 2005 Director's Award (Internal)

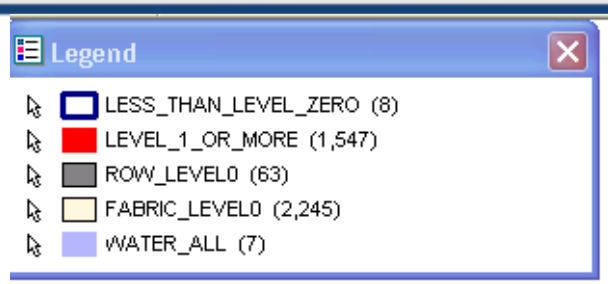
Multi-Disciplinary Work Environment



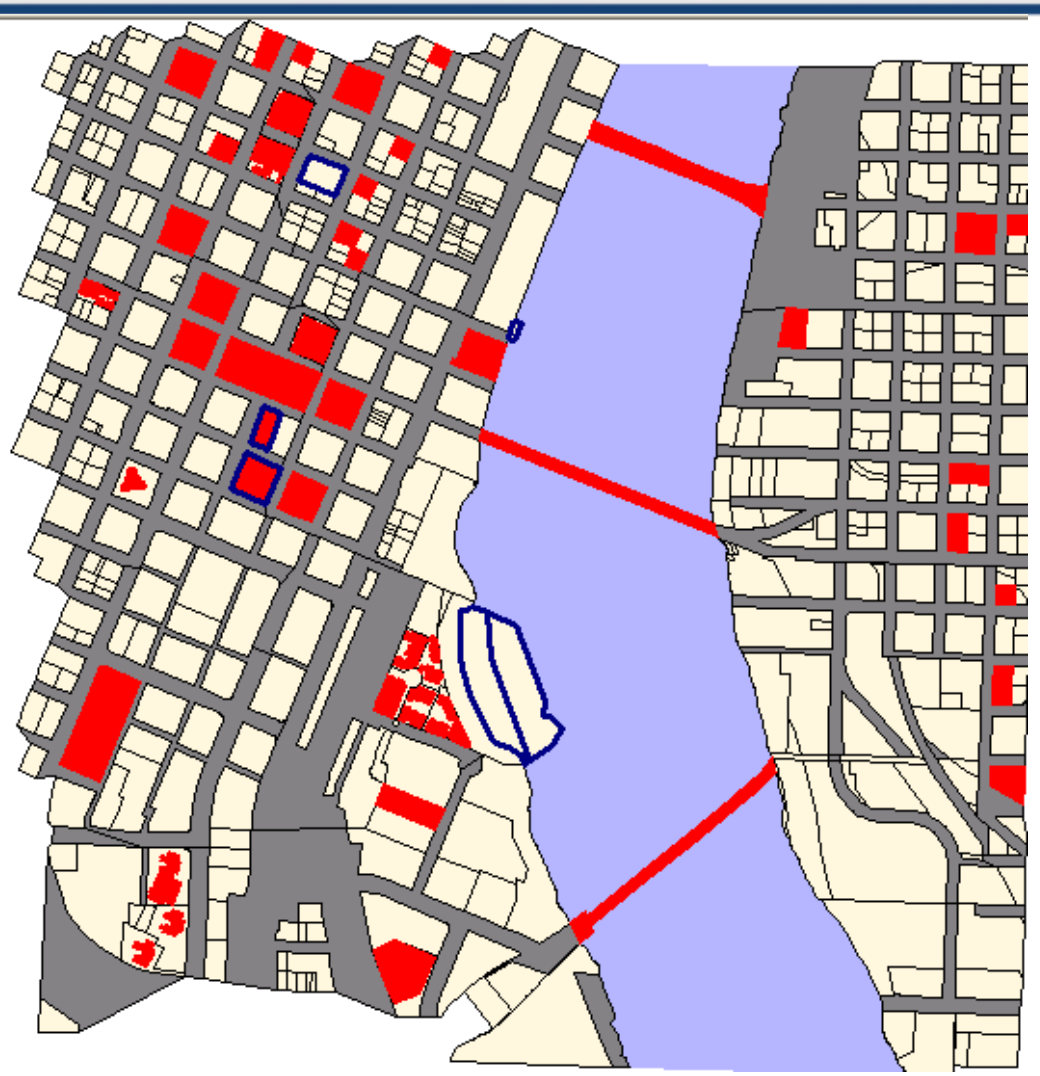
Putting the Pieces Together



Multi-Dimensional Model

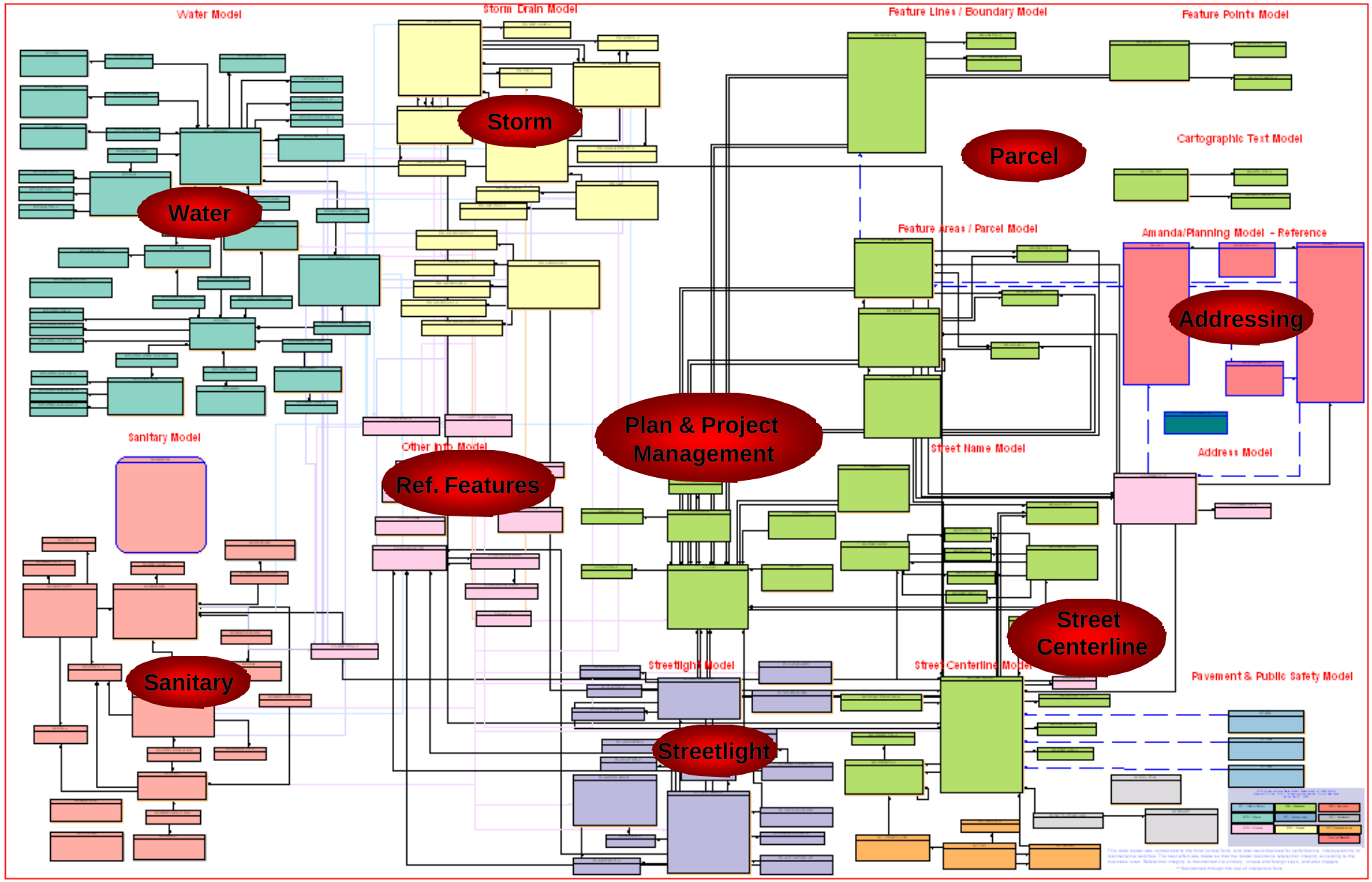


- **Bridges, docks, and condos that are represented on Fabric level <> 0.**
- **Red +levels**
- **Blue Outline - levels**
  - **Note that the water under the dock is on level –1. The dock is assigned level 0 in this system.**
- **Valid Time: System and Effective Dates**
- **Lineage**

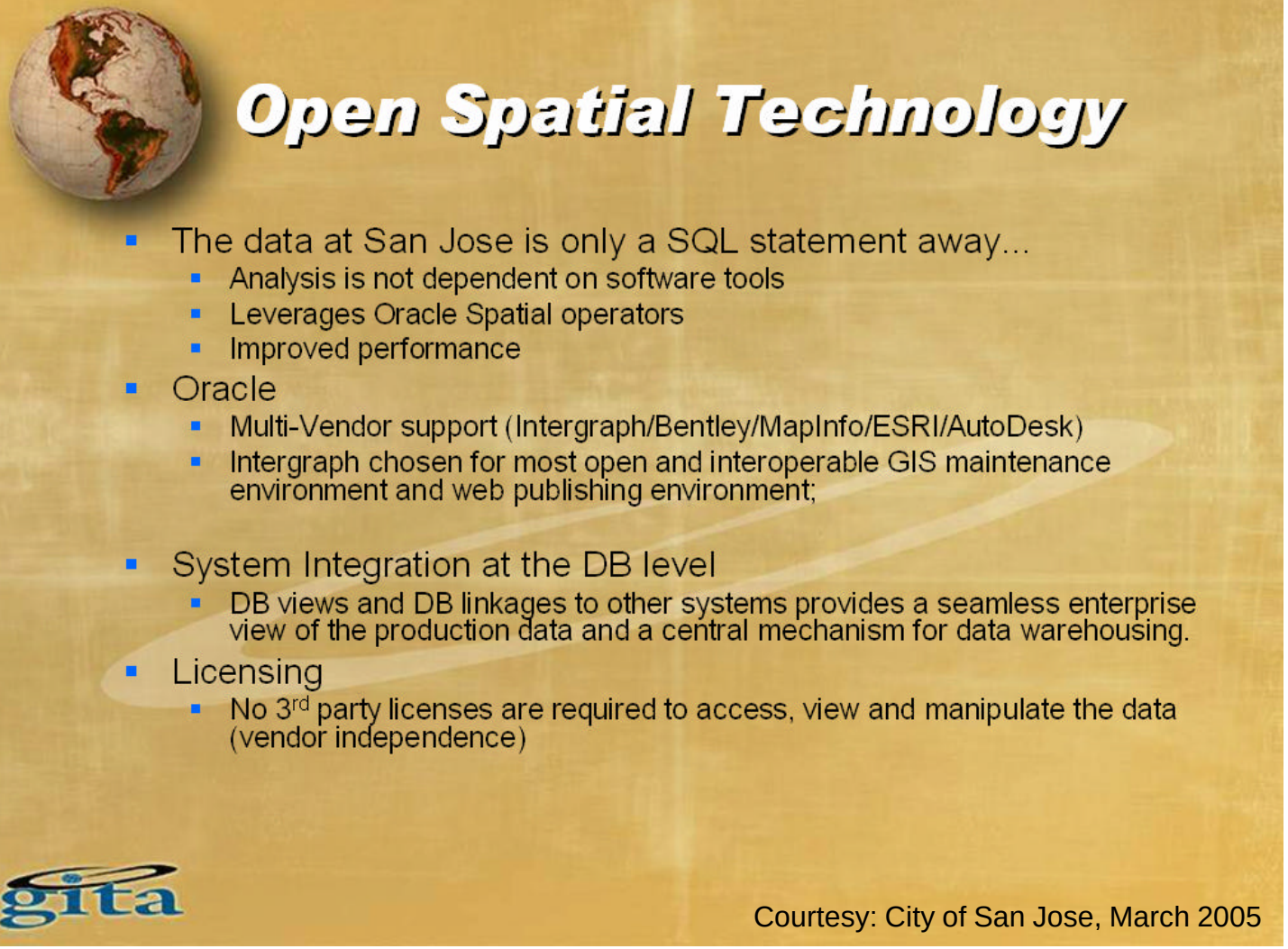


Integrated Data Models – Using Standard Tools and DBAs

INTERGRAPH

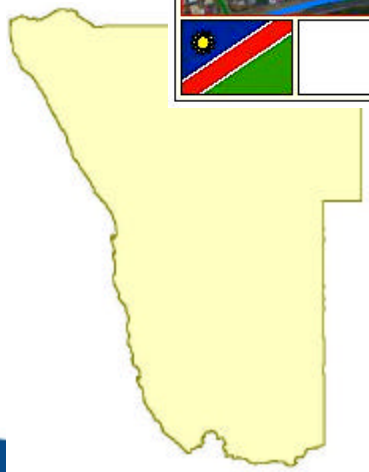


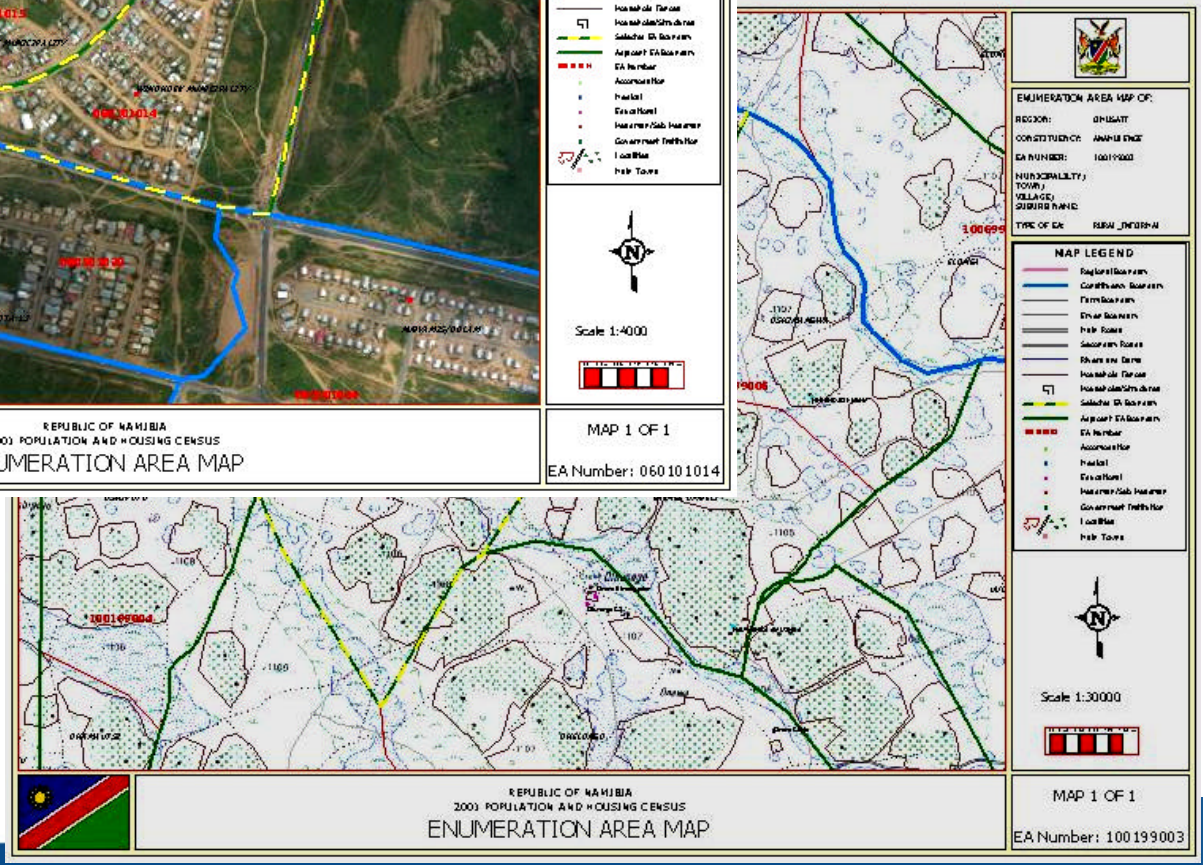
Open Architecture – A Client's Perspective



Census

ENUMERATION AREA MAP OF:
REGION:
CONSTITUENCY:
EA NUMBER:
MUNICIPALITY / TOWN / VILLAGE / SUBURB NAME:
TYPE OF EA:
MAP LEGEND
Scale 1:4000
REPUBLIC OF NAMIBIA
2001 POPULATION AND HOUSING CENSUS
ENUMERATION AREA MAP
MAP 1 OF 1
EA Number: 060101014




ENUMERATION AREA MAP OF:
REGION:
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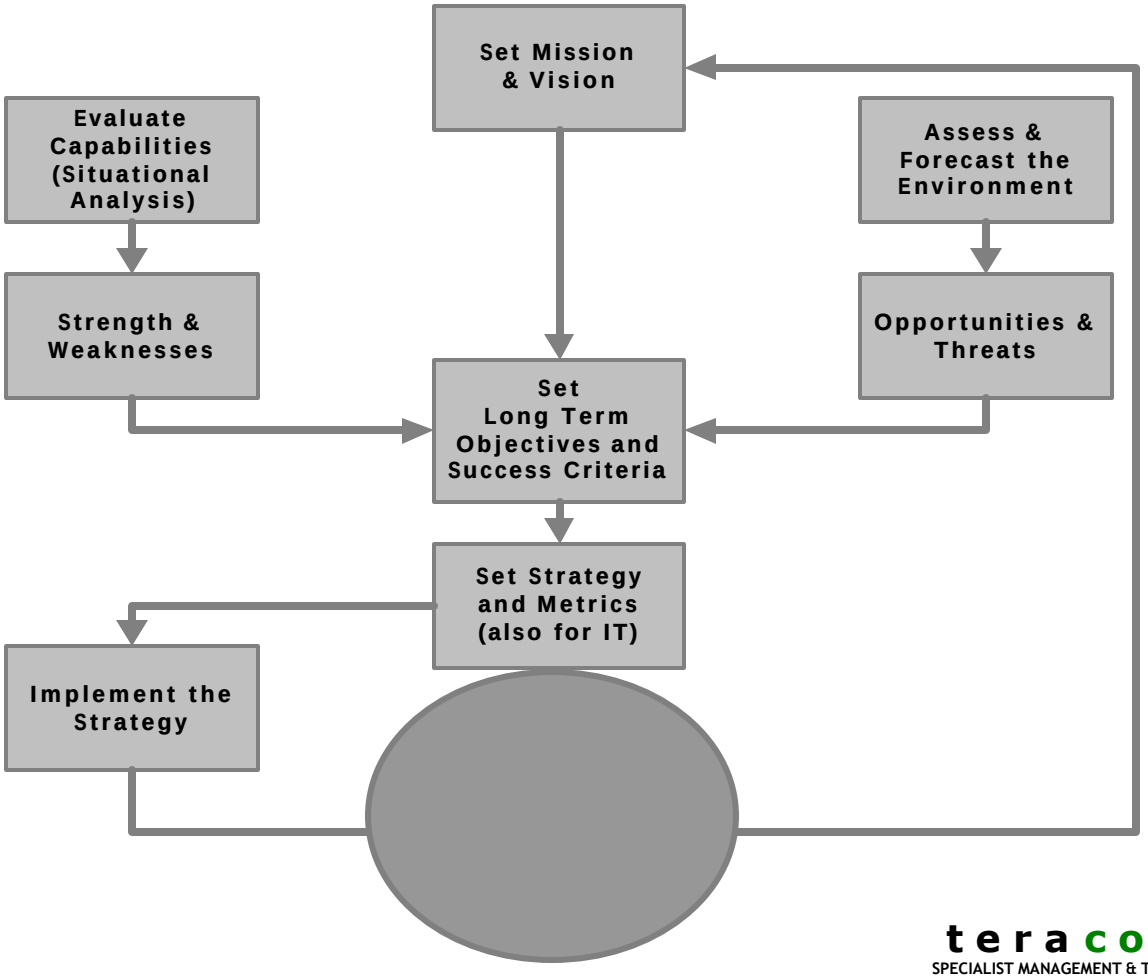
EA NUMBER:
MUNICIPALITY / TOWN / VILLAGE / SUBURB NAME:
TYPE OF EA:
MAP LEGEND
Scale 1:30000
REPUBLIC OF NAMIBIA
2001 POPULATION AND HOUSING CENSUS
ENUMERATION AREA MAP
MAP 1 OF 1
EA Number: 100199003

Census

Nelson Mandela HIV/AIDS Sample Survey

Czech Land Survey Office

Strategic Management



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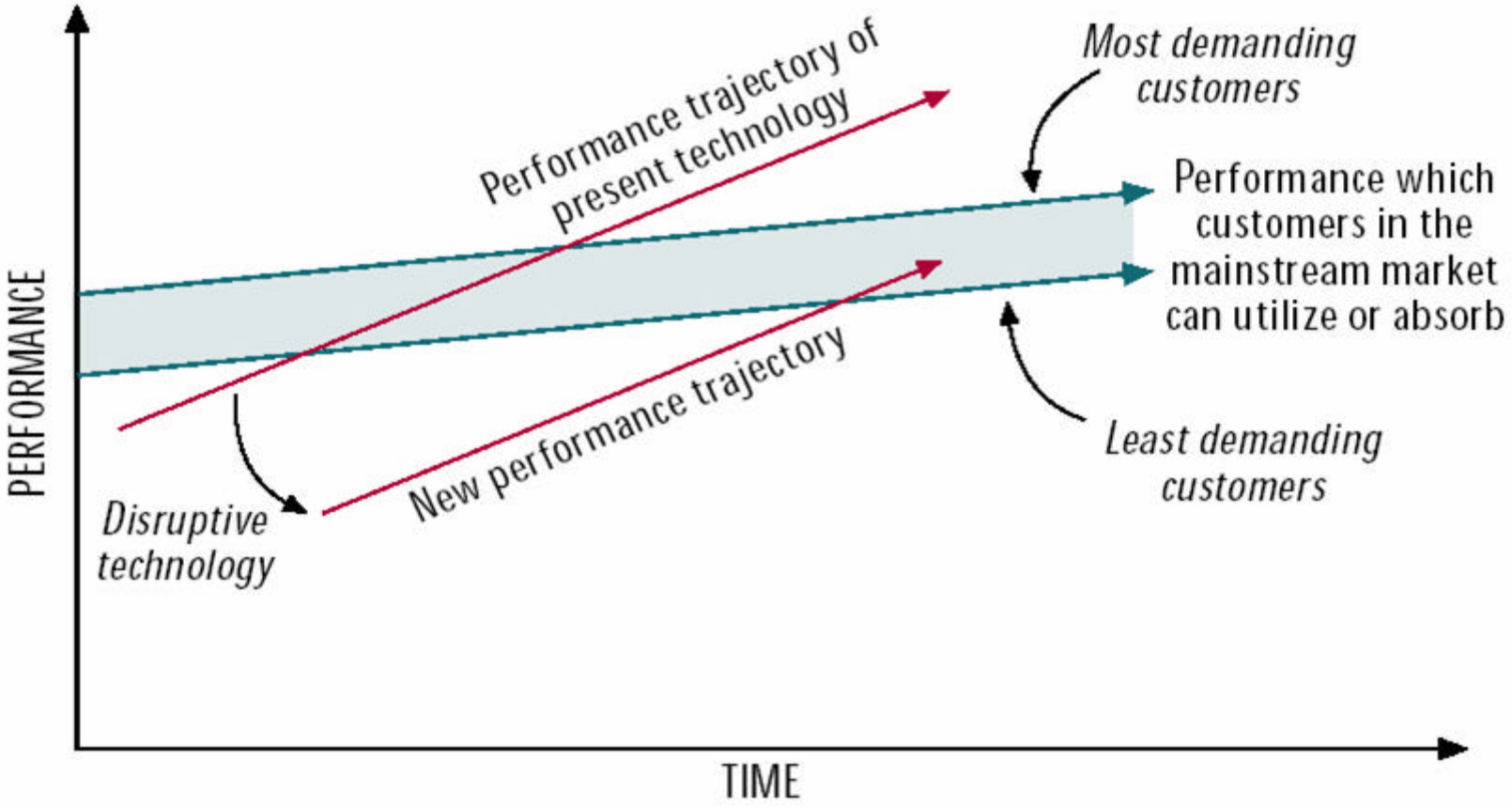
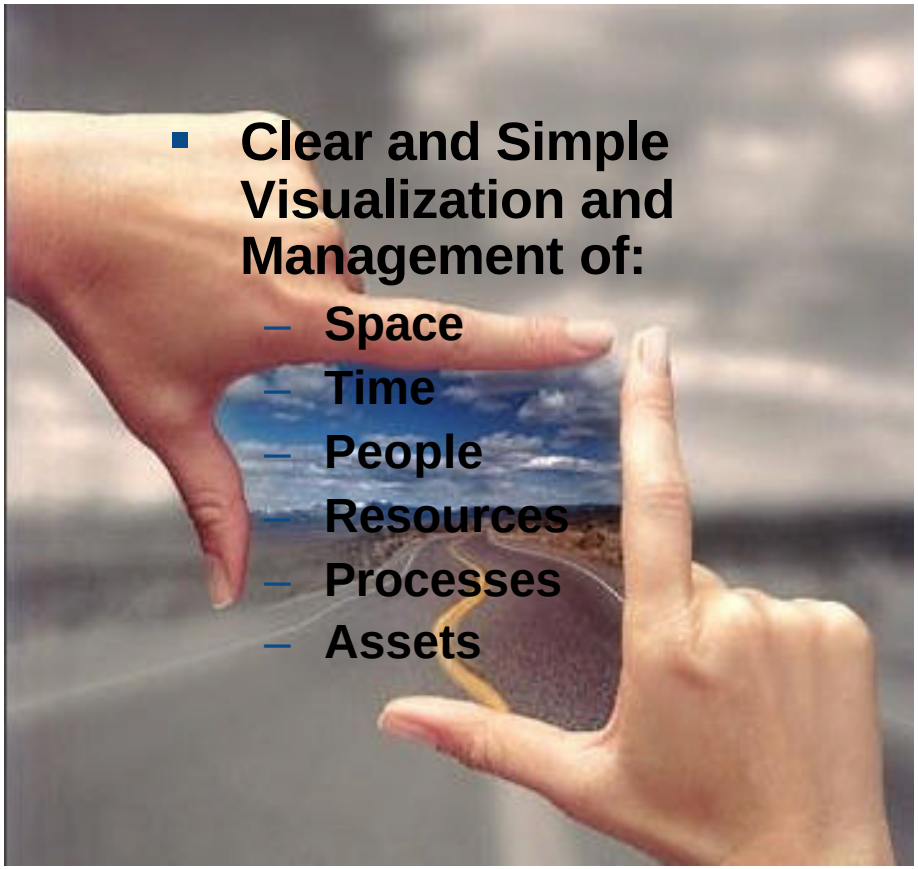
Our Joint Challenge



Sustainable Solutions



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