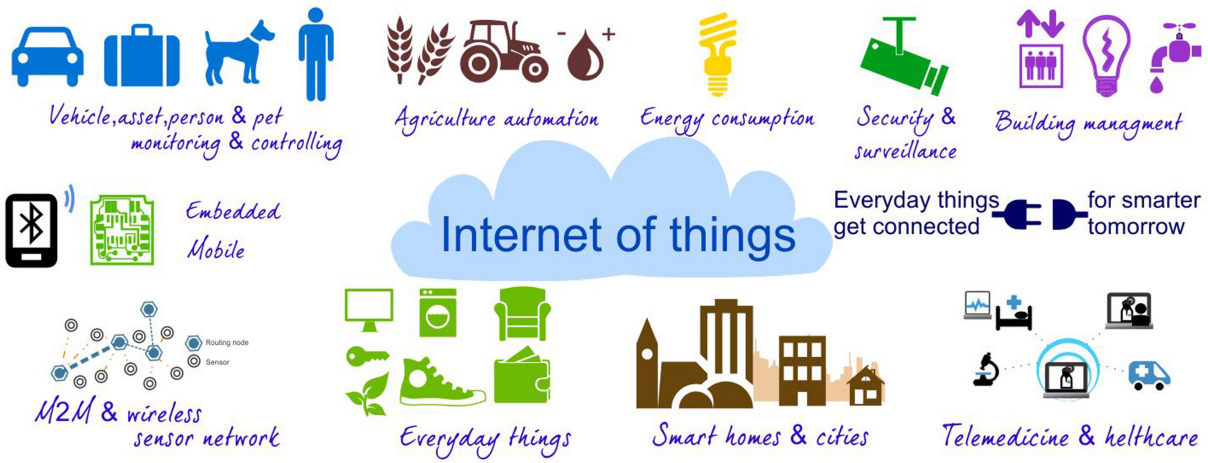
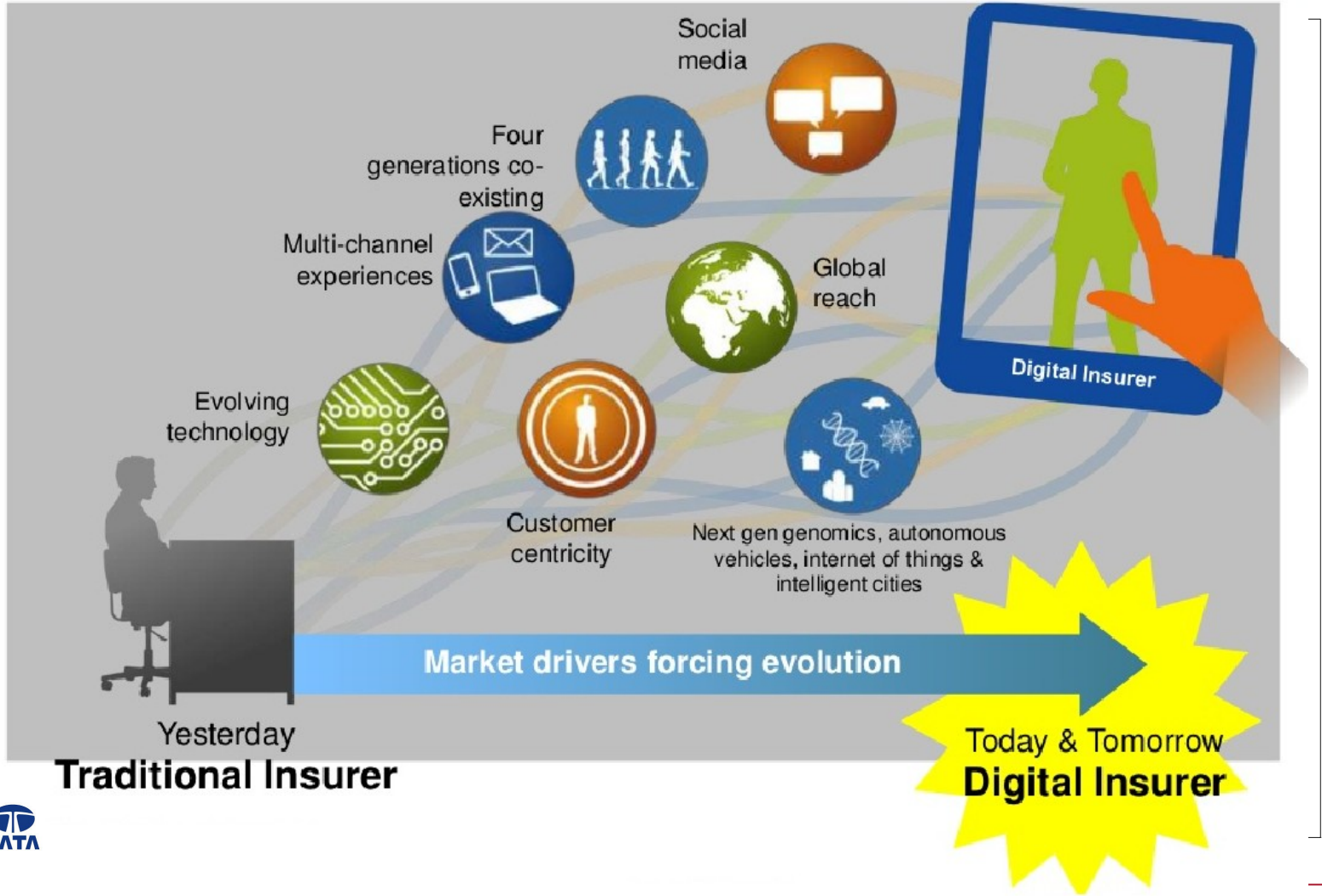
THE USE OF COGNITIVE MAPPING IN USER-BASED-INSURANCE

Anet Potgieter, Cognitive Systems
Daniel Stone, Stone Actuaries

Internet of Things

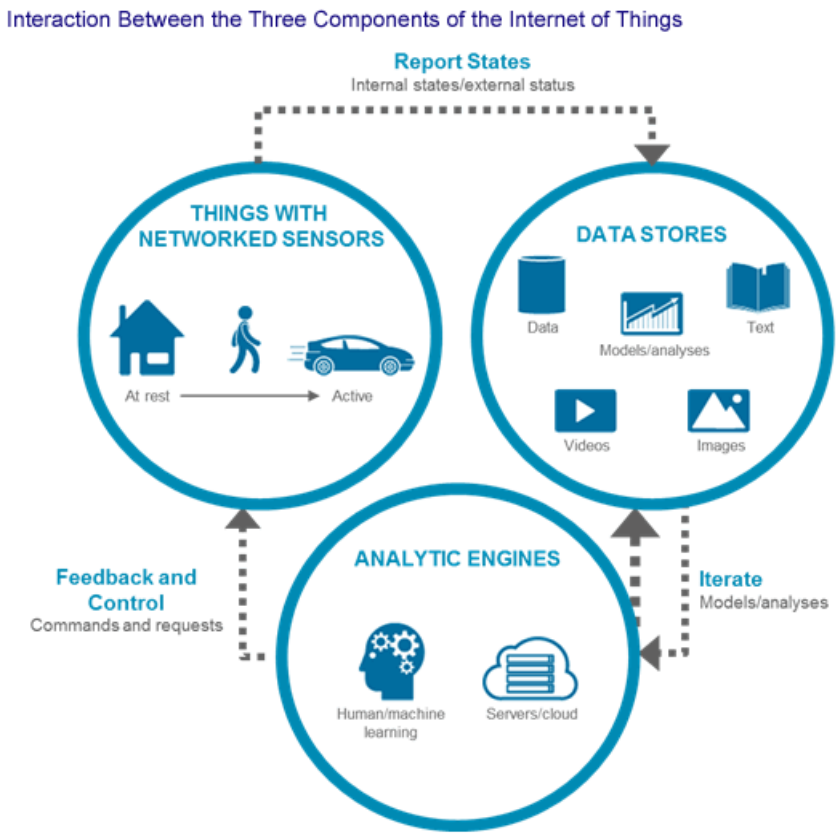


Evolution in Insurance

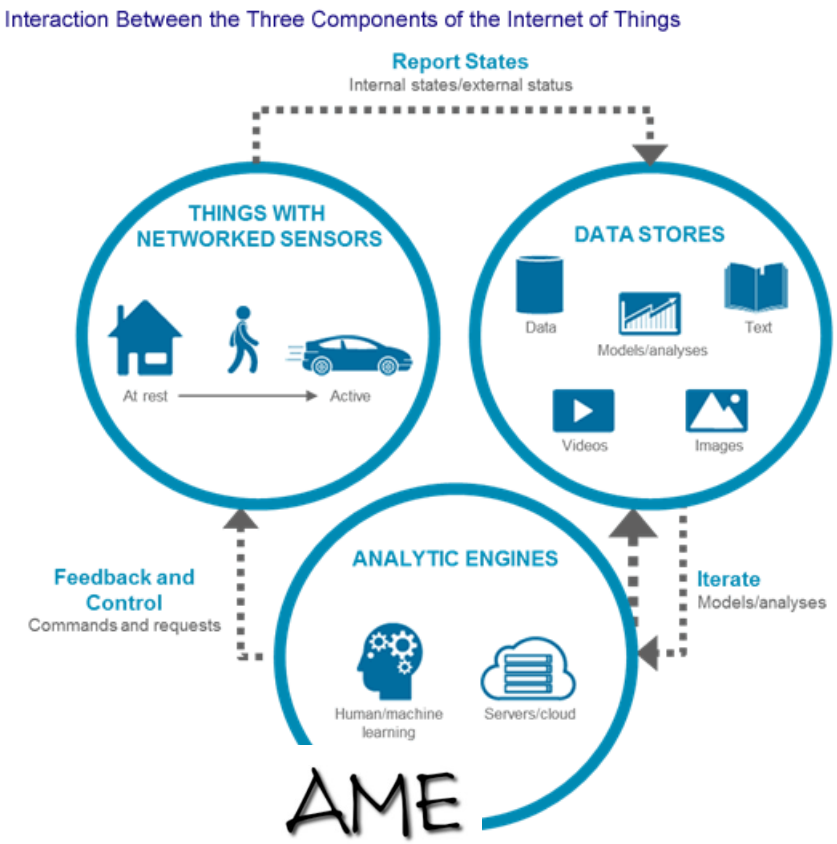


Context-Aware Insurance

How to Harvest Context in IoT



The Artificial Mind Engine



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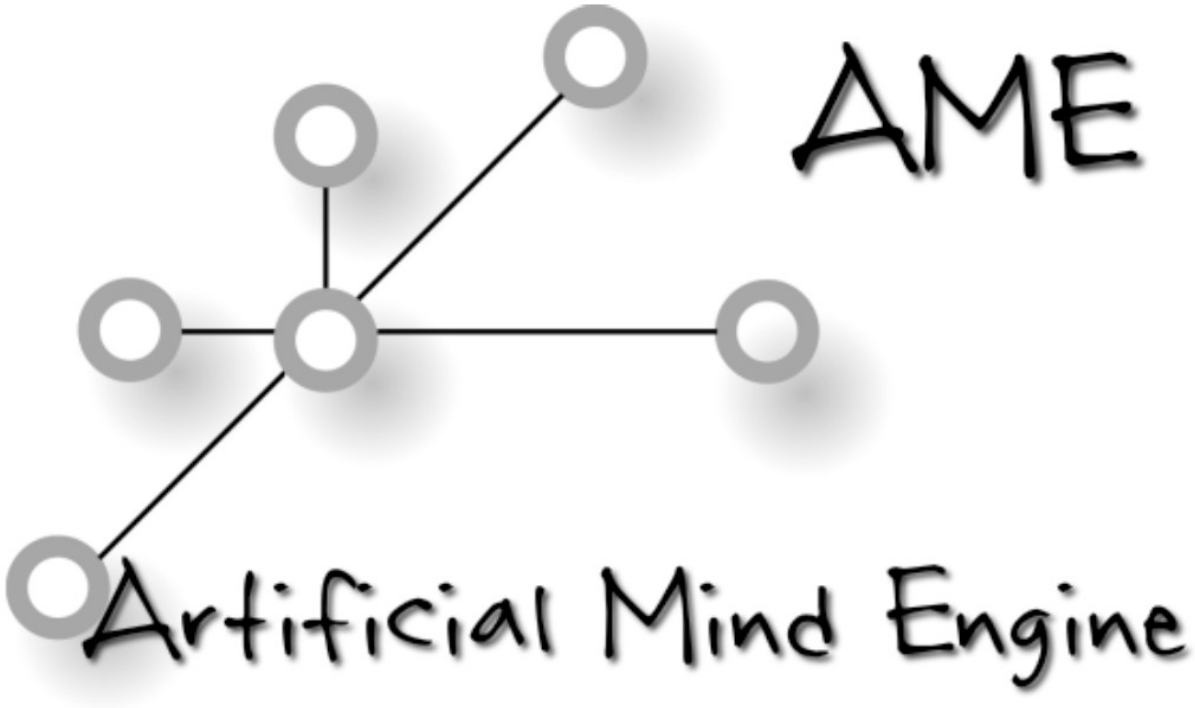

The Artificial Mind Engine

Integrated suite of **agent-based** components and utilities.

- in a state-of-the-art **streaming cognition engine.**

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The Artificial Mind Engine

Integrated suite of **agent-based** components and utilities.

- in a state-of-the-art **streaming cognition engine.**

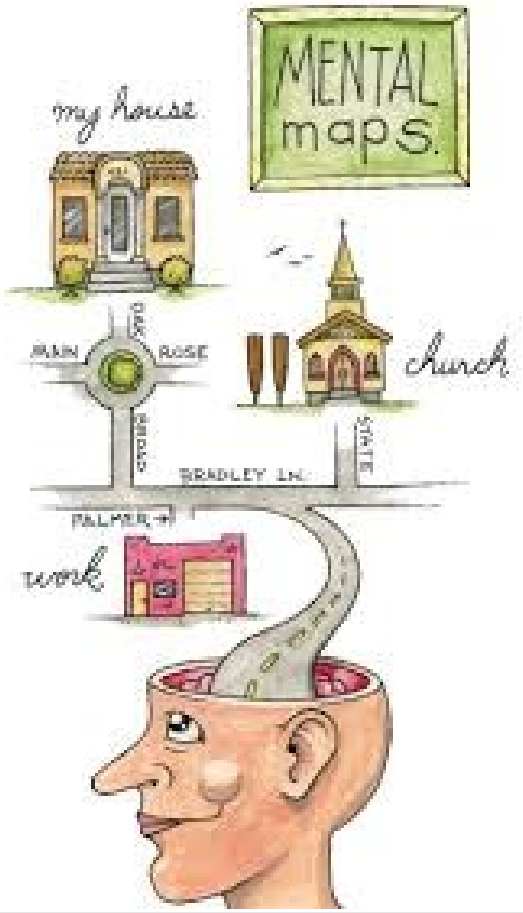
- empowering users in the **Internet of Things.**

- by making environments and objects able to **behave as agents**, with minimum human intervention.

- take intelligent decisions on behalf of users.

Cognitive Mapping

A cognitive map encompasses a wide variety of mental processes that humans use to store and recall spatial information.

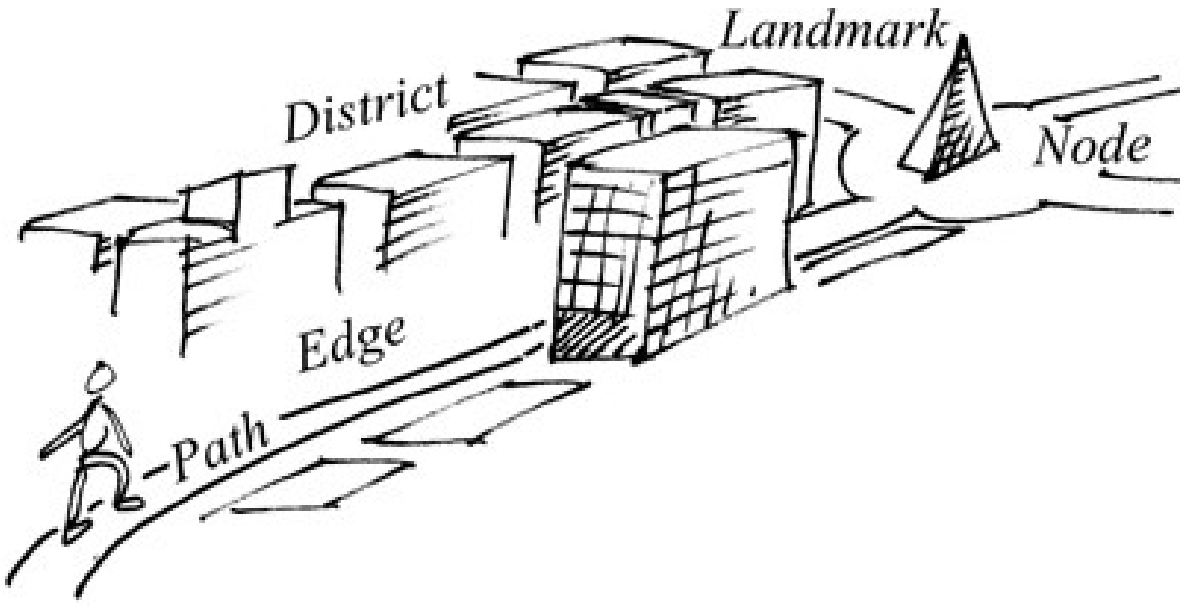


Cognitive Mapping

Long been part of Urban Planning and Design

- People interact with their surroundings

- Encode these interactions into Mental Maps



Cognitive Map

A Cognitive Map includes:

WHERE
- Landmarks,Routes,Nodes,Edges,Zone

Cognitive Map

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“WHEN”

Cognitive Map

A Cognitive Map includes:

WHERE
- Landmarks,Routes,Nodes,Edges,Zone

“WHEN”

“HOW” - e.g. location-aware sensor readings

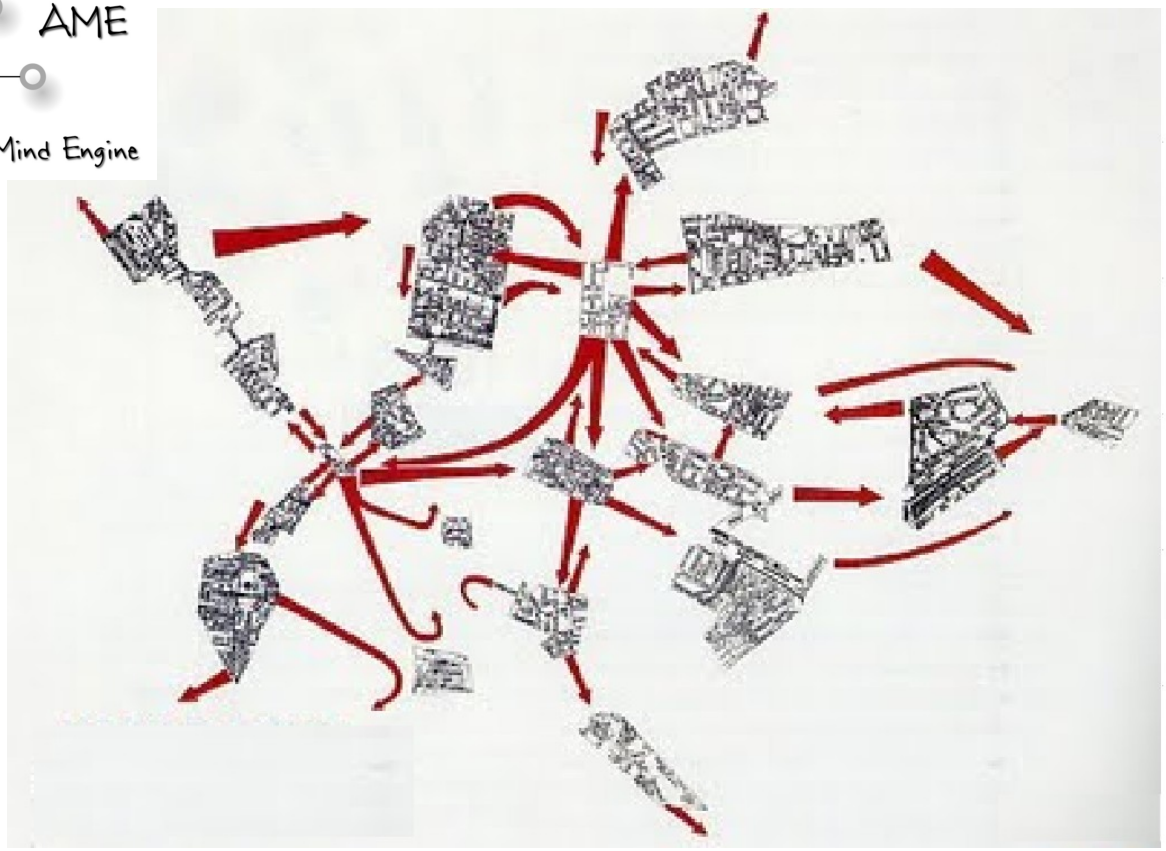
Cause-effect Mapping above to concepts e.g. risk, reward

Graphical Cognitive Maps

Probabilistic Relationships are mined from Driver Behaviour

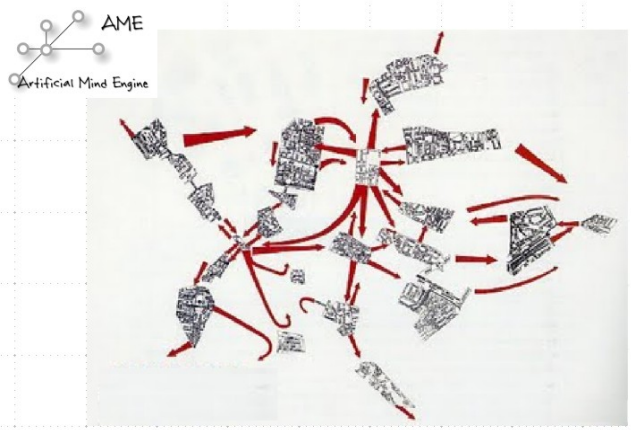
AME

Artificial Mind Engine



WHERE

Probabilistic Relationships are mined from Driver Behaviour



Spatial Bayesian Behaviour Networks

WHERE

Nodes:

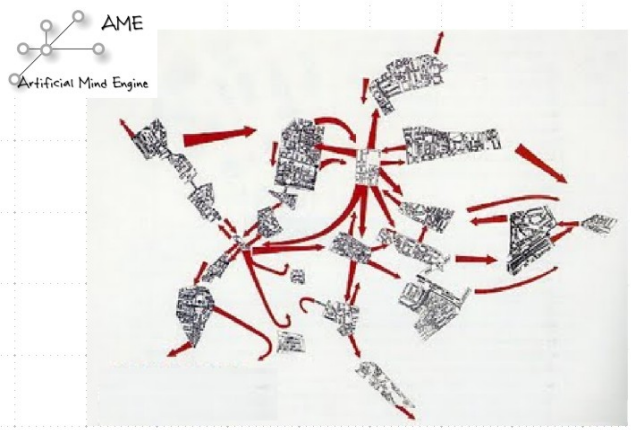
- Points of Interest
- Ways
- Waypoints

Edges

-Trips

AS,WHEN,WHERE,HOW,WHY

Probabilistic Relationships are mined from Driver Behaviour



Spatial Bayesian Behaviour Network
WHERE
Nodes:
- Points of Interest
- Ways
- Waypoints

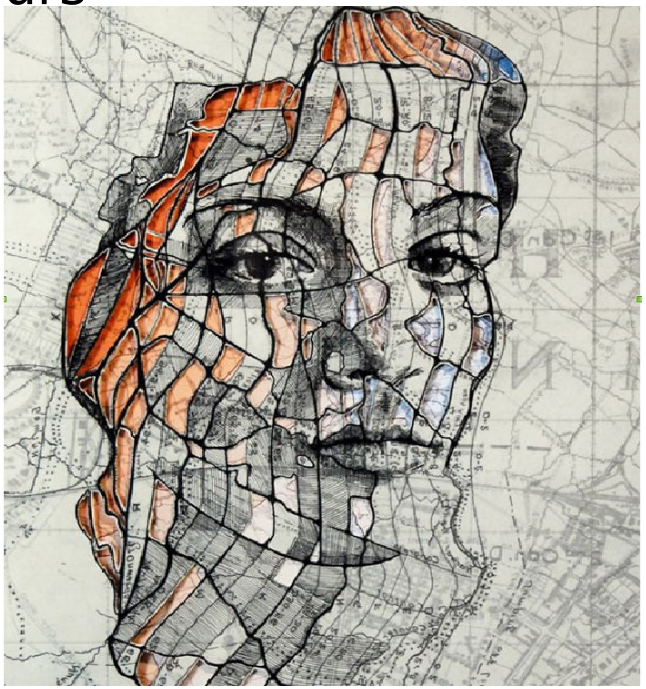
Edges
- Trips

In-stream Cognition
AS, WHEN and **WHERE** and **HOW**
- Continuous Monitoring
- Early Warning

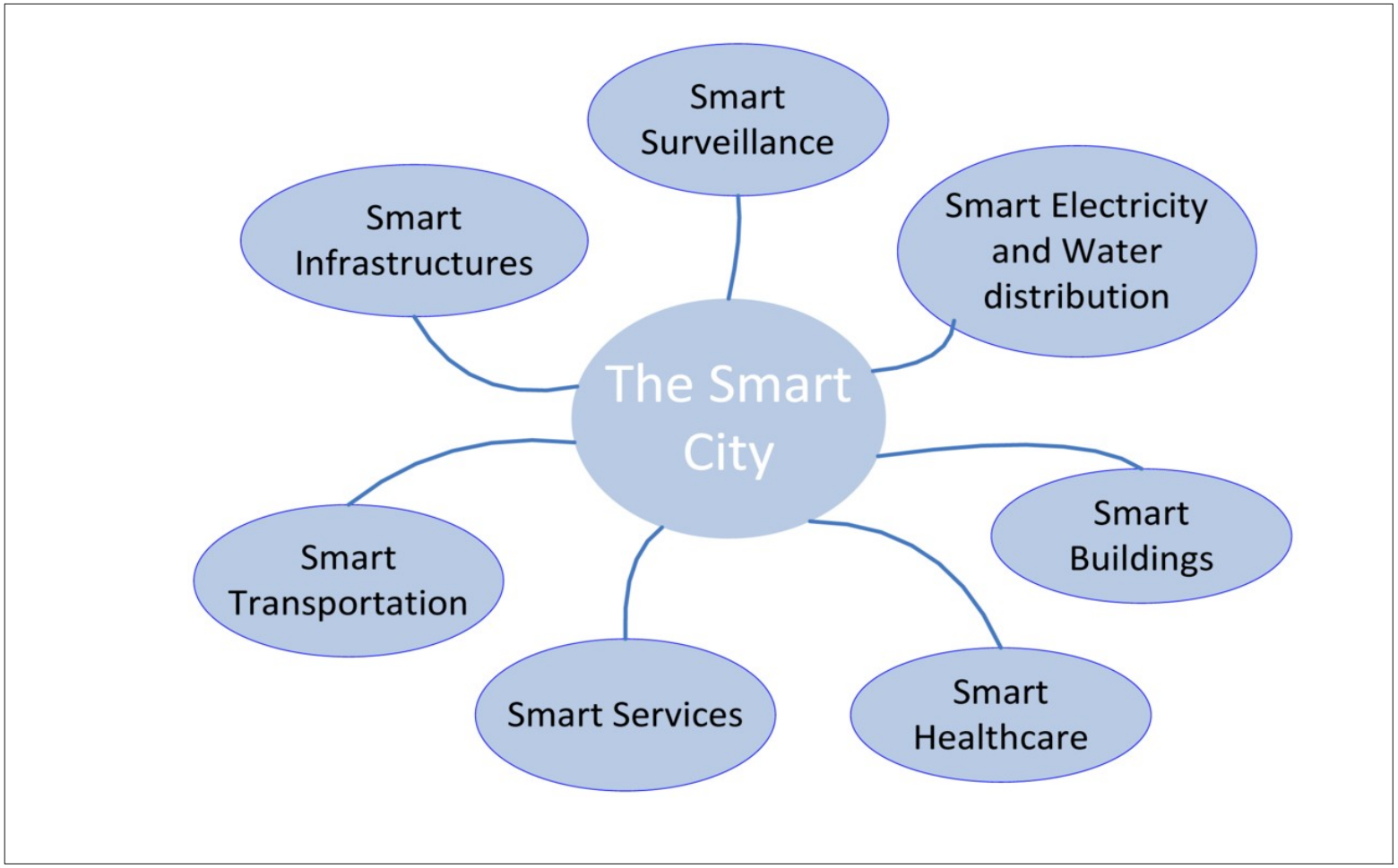
Adaptive Feedback (**WHY**)

Cognitive Maps – Individual "Footprints"

People interact with their surroundings in unique ways
- Individualised Cognitive Maps
- Actionable Insights into anomalous or risky Cognitive
- Maps of Individual Behaviours



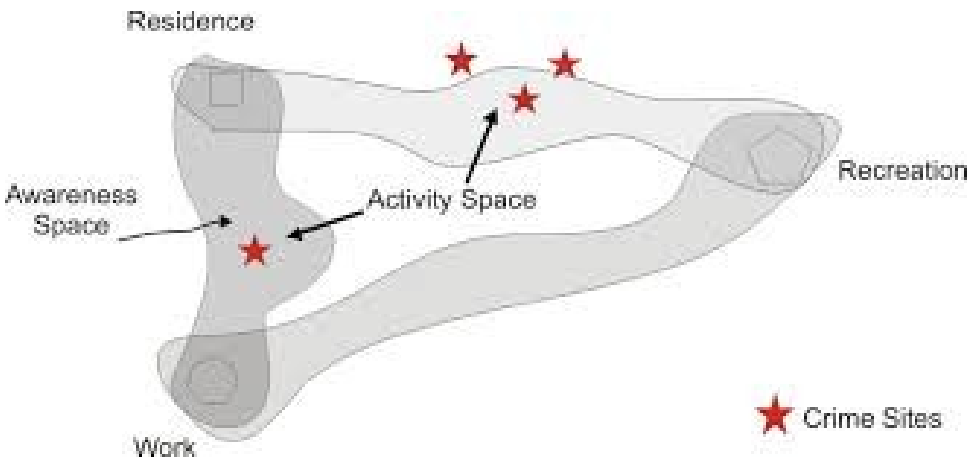
Smart Cities – Connecting the Environment



Situational Awareness - Attractors

The environment determines behaviours

Crime Attractors



Situational Awareness - Attractors

The environment determines behaviours

Chaos Theory

Perishable Insights (Extreme Events)

14 October, 2015, M1 Bridge which collapsed on Grayston in Sandton, Gauteng

Actionable Insights – Continuous Monitoring

Adaptive Feedback – Continuous Learning

Cognitive Maps are evolving all the time

Adaptive Feedback – Continuous Learning

ACTUARIAL SOCIETY OF SOUTH AFRICA

Cognitive Maps are evolving all the time
- Continuous Monitoring of changing environment

Adaptive Feedback – Continuous Learning

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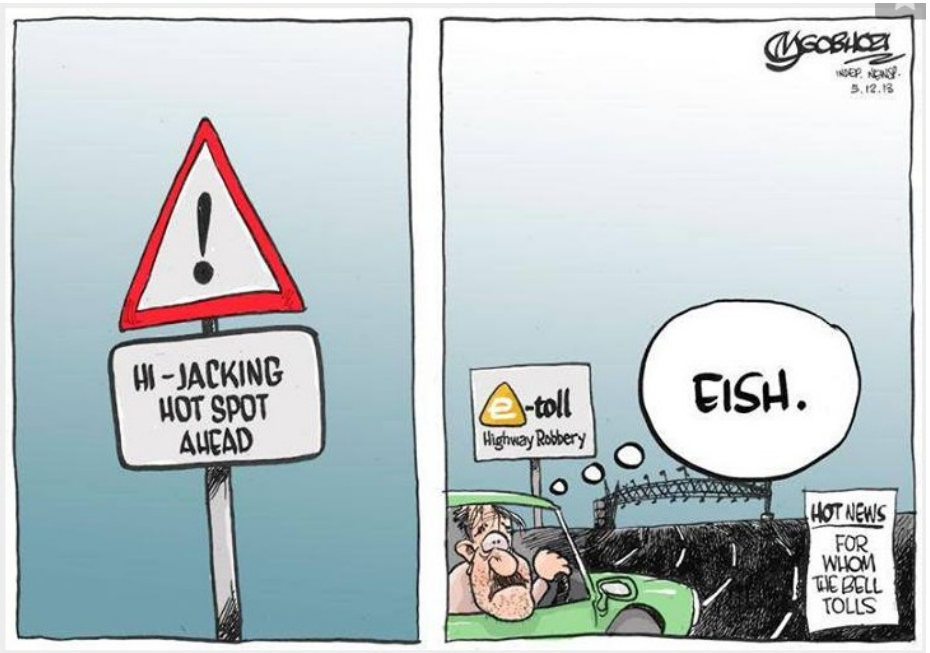
Adaptive feedback – True causes of Risk (WHY)

Reward Schemes - can change behaviour of individuals to mitigate risk

Questions?


HI-JACKING HOT SPOT AHEAD
e-toll
Highway Robbery
EISH.
HOT NEWS
FOR WHOM THE BELL TOLLS