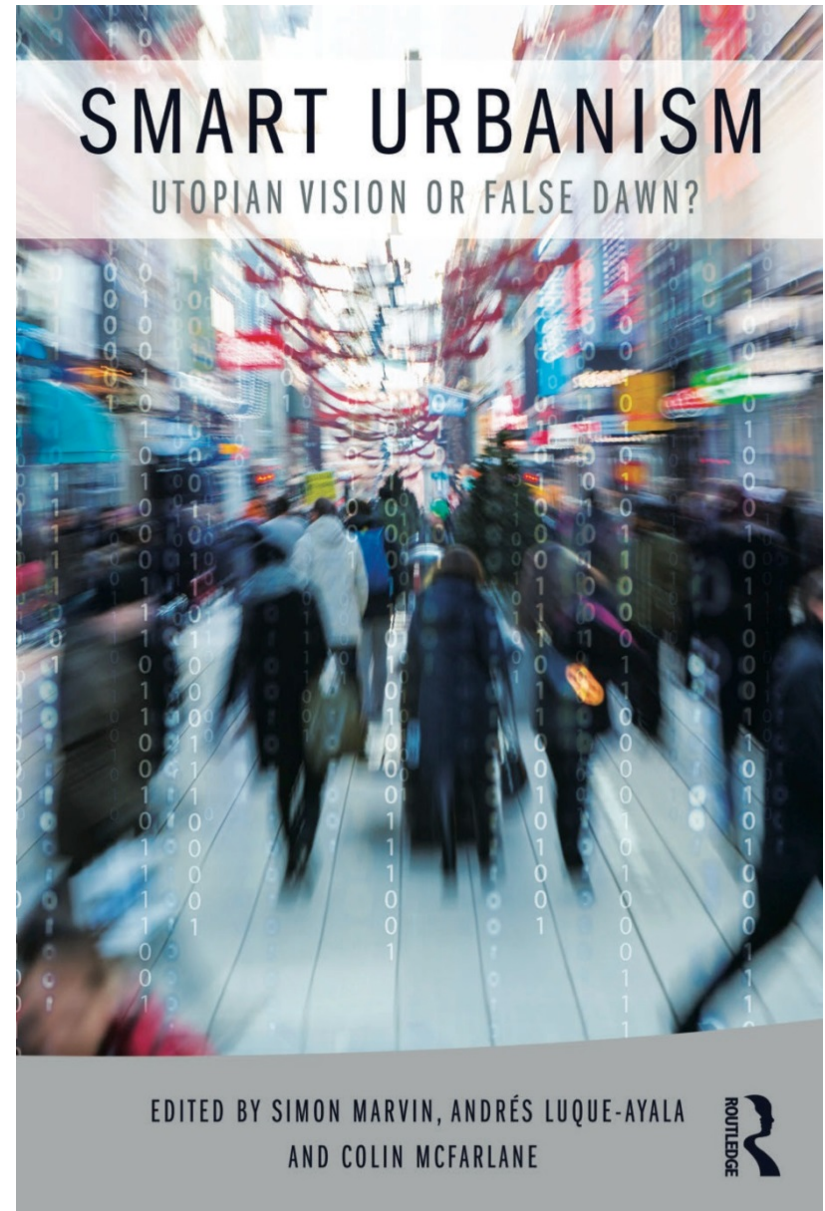
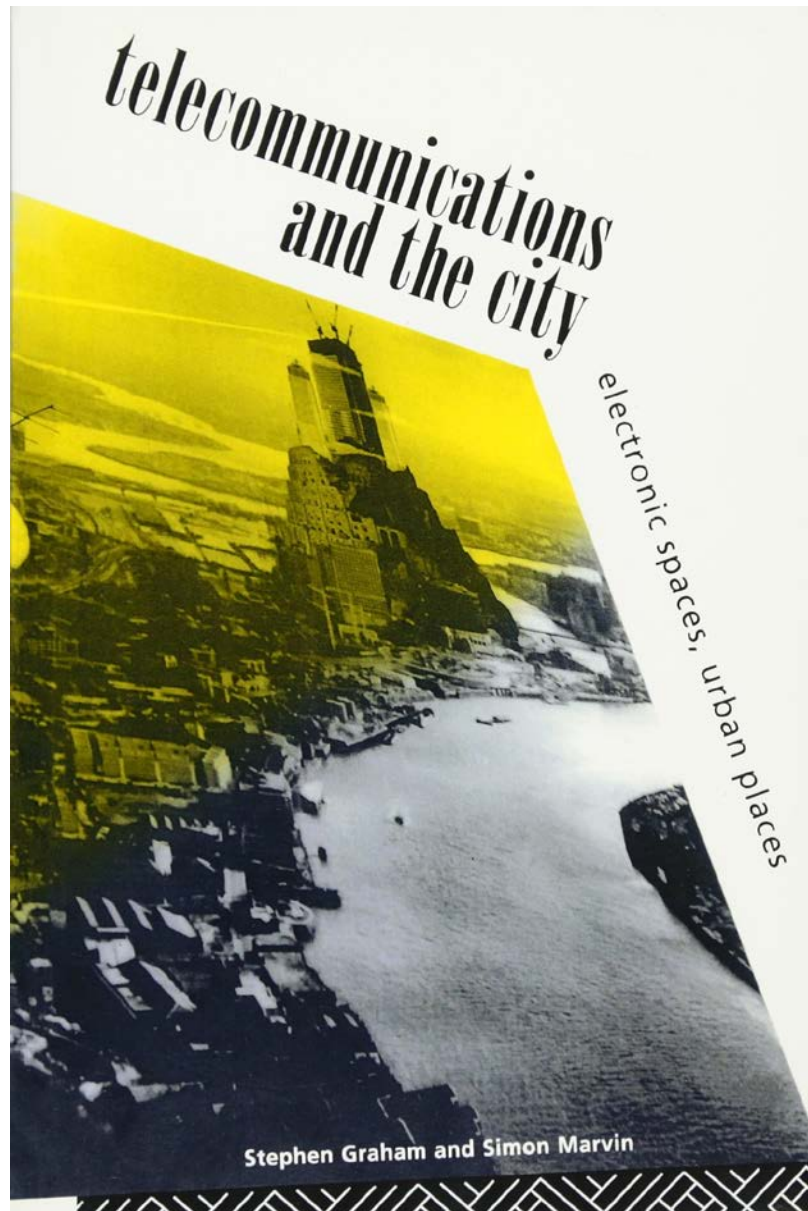




Urban Operating Systems (Urban OS): Re-diagraming the City?

Simon Marvin, Urban Institute, University of Sheffield.





1. URBAN OS A CRITICAL AGENDA

- Research objects and sites
 - **Urban Operating Systems**
IBM, Cisco, Hitachi, Urbotica...
 - **Datafication**
Chicago, London and New York
 - **Control**
Rio de Janeiro's Operations Centre
 - **Prediction**
Chicago's SmartData Predictive Analytics
 - **Resistance**
Pro-democracy hacking in Hong Kong
 - **Sensing**
Barcelona's sensing platforms (Sentilo)
 - **Standardization**
Urban politics of interoperability



Apps for Amsterdam

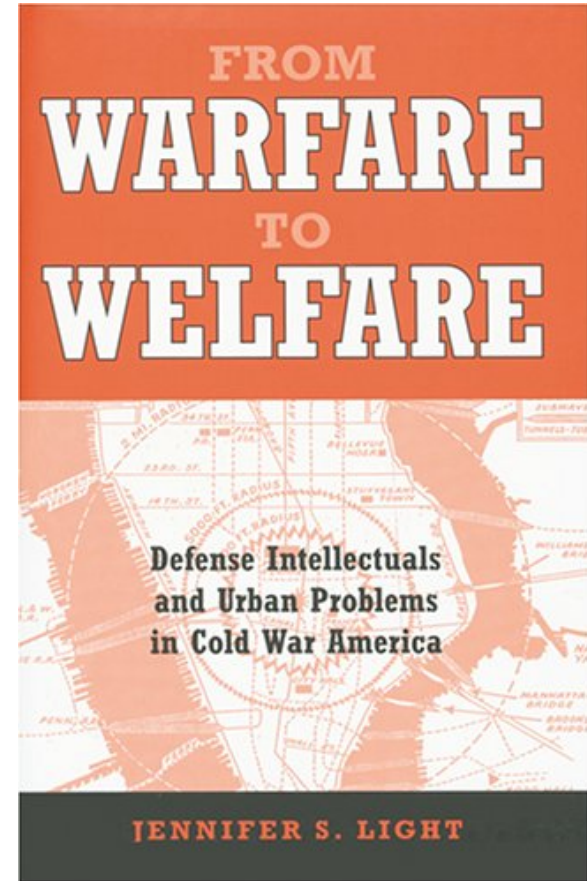
Apps for Amsterdam 2 was the second open data contest of the municipality of Amsterdam in 2014.

Screenshot of the Amsterdam Smart City website announcing the 2nd Apps for Amsterdam contest, "in which developers were challenged to build apps based on municipality's data"

Historical problematisations of the city through the use of IT

- 1960s-1970s - The cybernetic turn: the city as a system of systems.
- Control systems developed in the military sector are tested in local government.

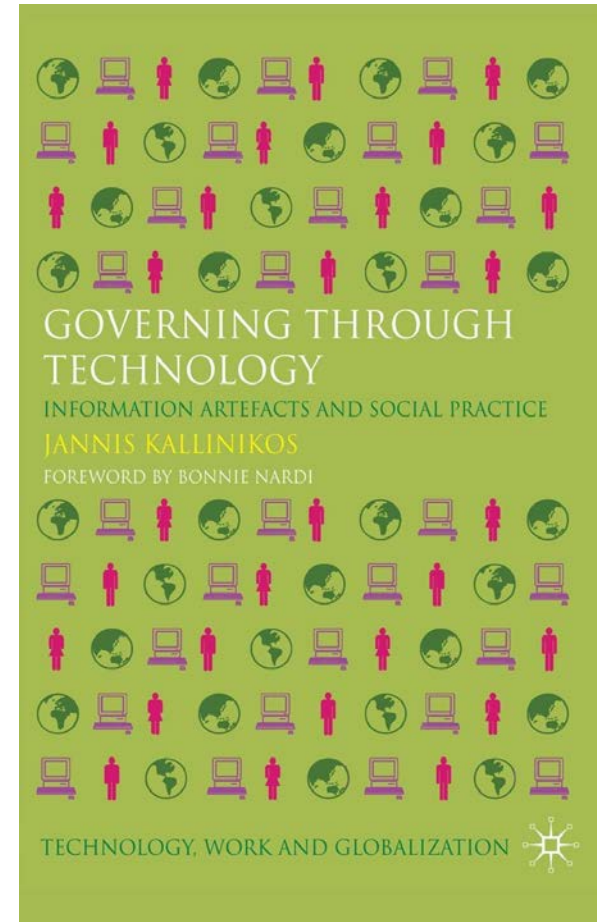
“The history of cybercities is better understood through an appreciation of simulations in the context of military war games at RAND and MIT...”



(Light, 2003: 8)

Coding behaviour: modes of 'IT-thinking'

- 1980s-1990s: IT knowledge moves from the city to the corporation.
- Enterprise Resource Planning (ERP) software: functional integration of corporates
- IT becomes the biggest capital expenditure in US businesses.
- Forms of software programming enable the standardisation, exchangeability and transferability of IT knowledge.
- Technology establishes a regulative regime.



(Kallinikos, 2011)

2. DIAGRAMMING

THE CITY

- Diagrams ‘abstract machines’ and ‘piloting devices’ (Deleuze 2006).
- Does not operate exclusively within the realm of the visual. Rather, maps and shapes the relationships between forces, imposing a form of conduct through spatio-temporal composition and serialization.
- “These diagrams are neither models nor Weberian ideal-types but operative rationales. Each diagram depicts and projects a certain 'truth' of the city which underpins an array of attempts to make urban existence both more like and less like a city...” (Osborn and Rose 1999: 738)

3. URBAN OS

EMERGING URBAN DIAGRAMS

- Urban Operating Systems: integrated information packages targeting the urban market
- IBM, Hitachi, Microsoft, Cisco, Urbotica and PlanIT.
- In 2013 the BSI (British Standards Institution), publishes 'The Role of Standards in Smart Cities'

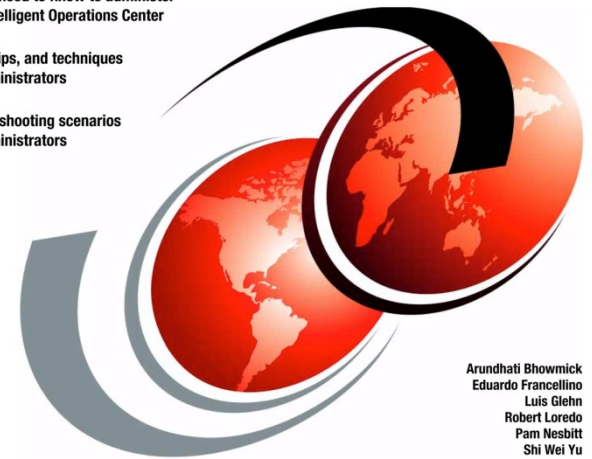
IBM

IBM Intelligent Operations Center for Smarter Cities Administration Guide

All you need to know to administer
IBM Intelligent Operations Center

Tools, tips, and techniques
for administrators

Troubleshooting scenarios
for administrators



Arundhati Bhowmick
Eduardo Francellino
Luis Glehn
Robert Loredo
Pam Nesbitt
Shi Wei Yu

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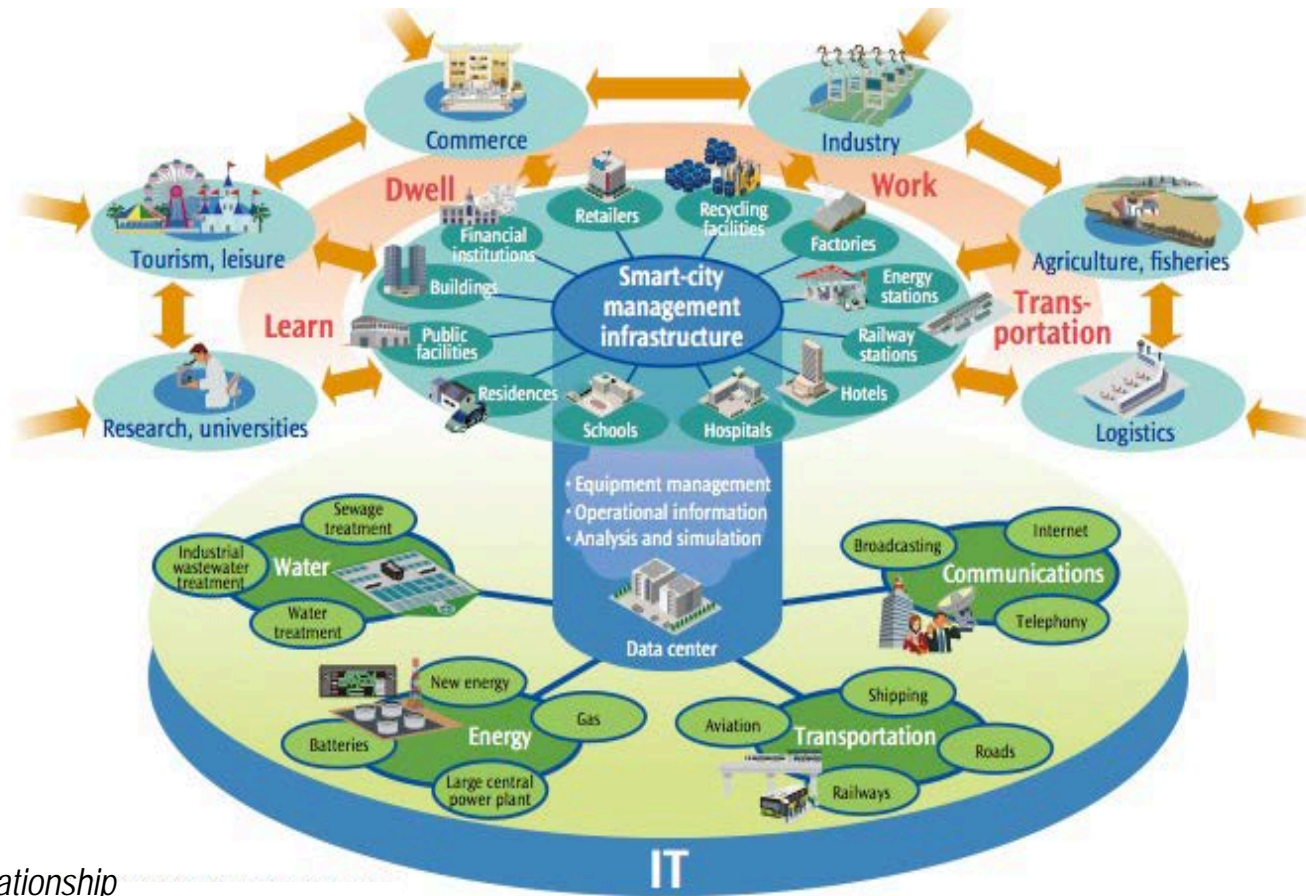
*IBM's 250 page manual for Intelligent Operations
Center for Smarter Cities*

IBM Red Book (Emphasis added - IBM, 2012: 3)

“Today’s cities are based on separate domains with no real ability to be managed as an entire entity. City managers have no single place to get real-time status or historical reports of city events. Older systems are domain-specific and are not concerned with the consequences on other domains. Daily operations of cities generate vast amounts of data from many different sources but cities often lack the ability to visualize and extract meaningful information.”

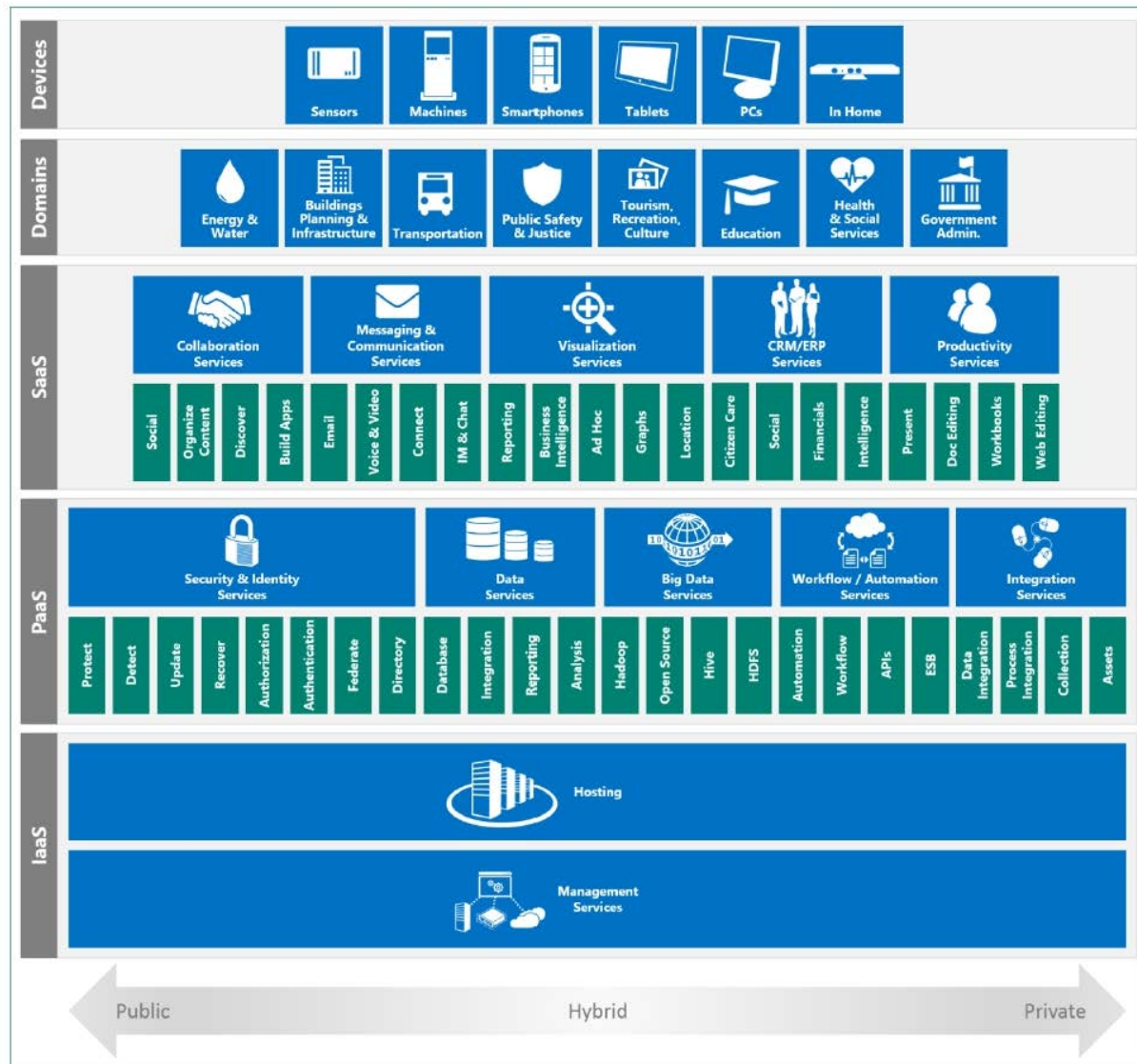
IBM Integrated Operations Centre addresses these and many other challenging issues by providing insight, management, and oversight capabilities for any city or enterprise (as they both face many of the same issues)”

THE CYBERNETIC CITY: A SYSTEM OF SYSTEMS (DIAGRAM #1)



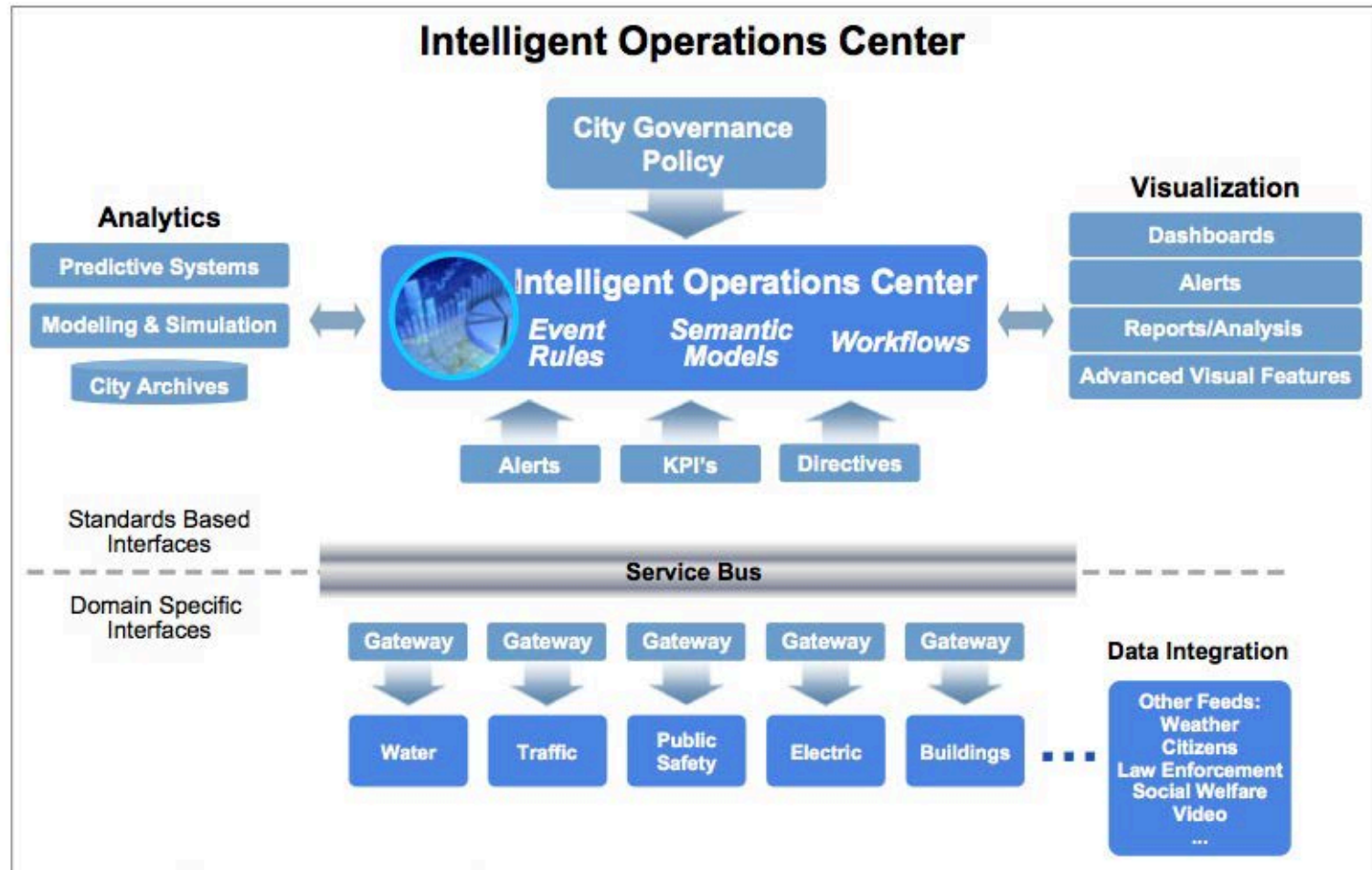
*Hitachi – the relationship
between the Smart City and IT*

THE CITY AS (DISCONNECTED) STRATA: HOMOGENEOUS LAYERS (DIAGRAM #2)



*Microsoft – CityNext
ICT capabilities*

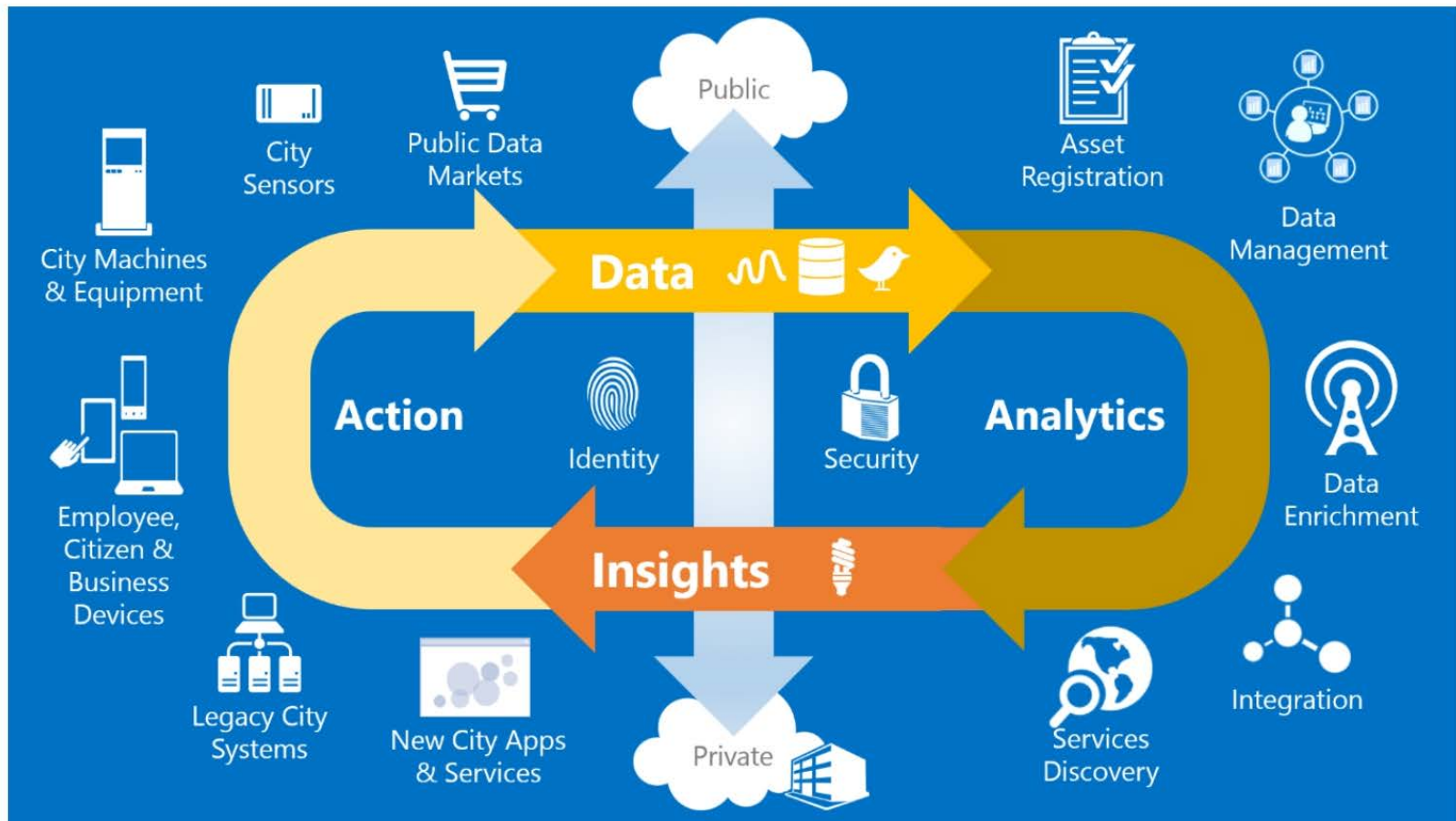
URBAN ECOSYSTEM: ASSEMBLING CONNECTIONS (DIAGRAM #3)



IBM: Intelligent Operations Center architecture

CALCULATION AND CLOSED LOOPS (DIAGRAM #4)

Microsoft – data loops feeding a continuous cycle of insight and action



DIS- AND RE-ASSEMBLING URBAN CIRCULATIONS (DIAGRAM #5)

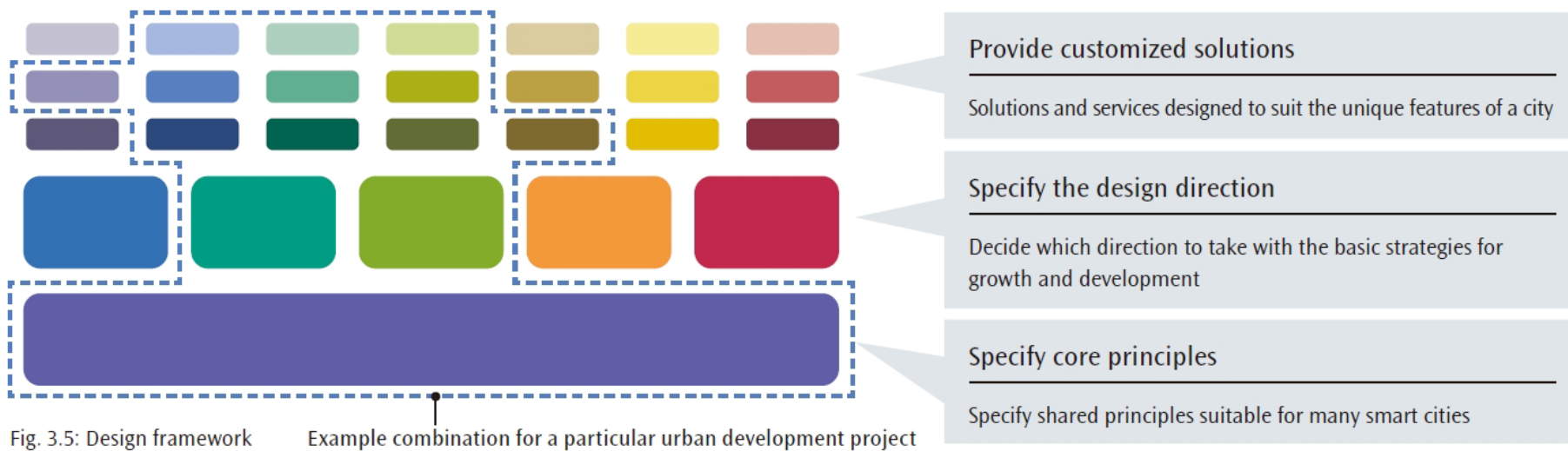


Fig. 3.5: Design framework Example combination for a particular urban development project

Hitachi – design framework

Conclusion - “Closed world” of UOS

1. The code is closed, the logic and conditions of its production cannot be questioned - strategic priorities and other forms of knowledge are subordinated to the logic.
2. Concern for functional simplification and transactional mechanics to produce interconnectedness prioritises internal focus on predictable and controllable relations.
3. Operational rationalities developed in corporate enterprises are transmuted into urban contexts – re-engineering (dis-re assembling), modularity, efficiency, continuity, security – city as responsive logistical enterprise.

Further Information

- Marvin, S. and Luque-Ayala, A. (2017) '**Urban Operating Systems: Diagramming the City**', International Journal of Urban and Regional Research, 41, (1).
- Luque-Ayala, A. and Marvin, S. (2016) '**The maintenance of urban circulation : an operational logic of infrastructural control.**', Environment and planning D : society and space., 34 (2). pp. 191-208.