

CSD&MAsia 2016

2nd Asia-Pacific Conference

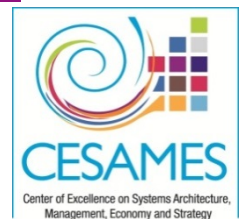
« Complex Systems Design & Management »

February 24-26, 2016 – Singapore University of Technology & Design

Challenges of Understanding & Creating
Operational Concepts for a Smart City



Event created and organised by



A Few Definitions...

Smart City – the ability to integrate multiple technological solutions in a secure fashion to manage the city’s assets

Wikipedia



OR are we just making any city SMARTER utilising existing assets in a more integrated fashion?

OR are we just trying to live SMARTER?

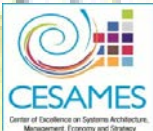


Panel Presenters

- Serge Landry
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- Bill Parkins
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Complexities & Dependencies

Serge Landry



Growing Complexity

*“I think the next century (21st) will be the **century of complexity.**”*

Stephen Hawking

“194 Asian cities with populations of more than one million.”

http://www.citymayors.com/features/largest_cities.html

“The combined outcome of demographic growth, global economic reorganization and changes in state–society–capital relations in parts of Pacific-Asia is leading to hyper-urbanization never before seen in world history”

http://www.citymayors.com/society/asian_cities.html

Complexity and Interdependence

Stakeholder Expectations Drive System Trends

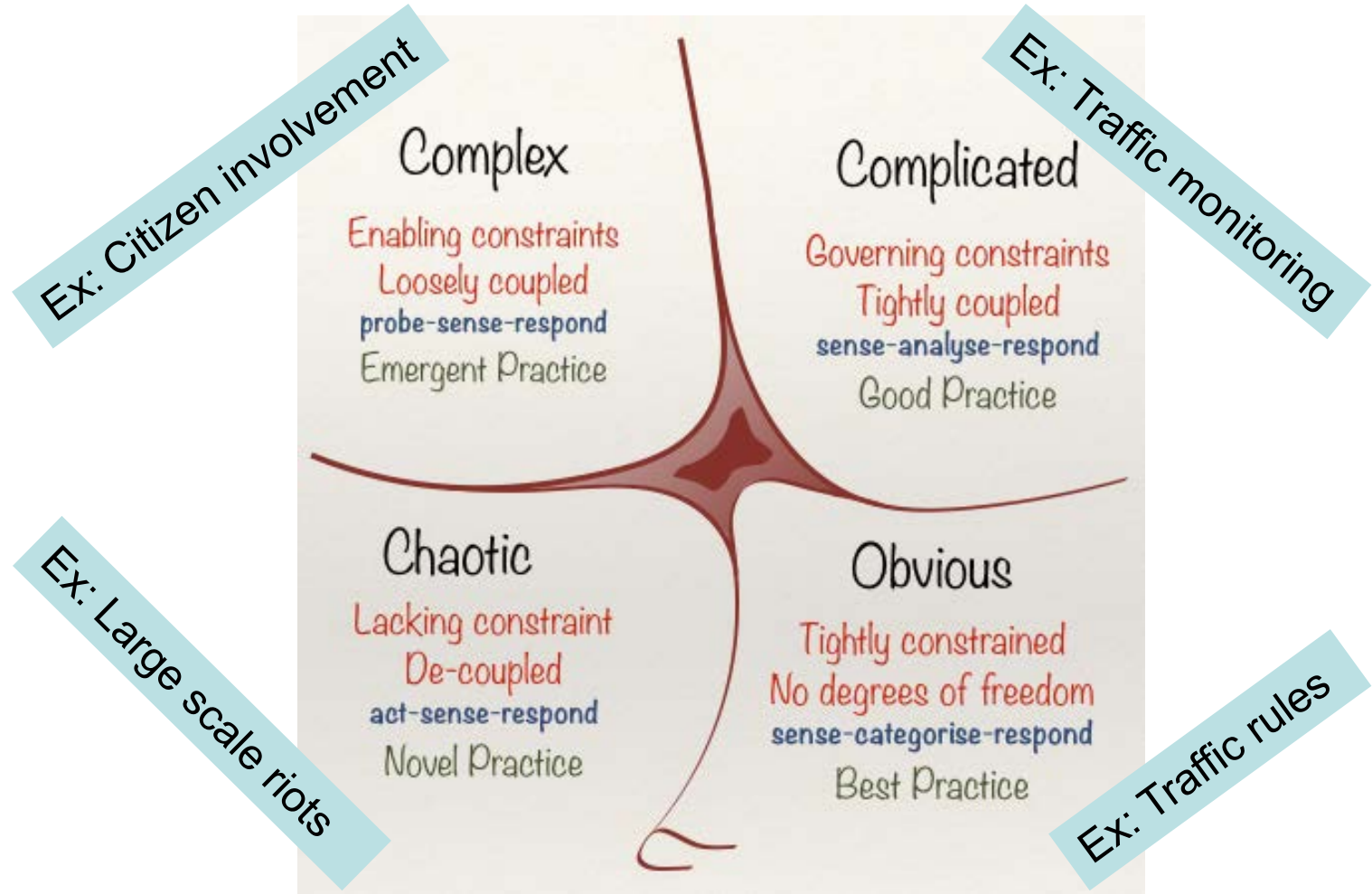
*“.....In maximizing value to stakeholders, systems engineers have to cope with **greater levels of complexity and interdependence** of system elements as well as cost, schedules and quality demands.”*

INCOSE Vision 2025 page 10

Inter-connected Megacities challenges:

Slums, Crime and Terrorism, Homelessness, Traffic congestion, Urban sprawl, Air pollution, Energy and Material Resources

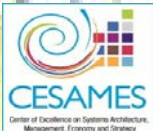
Cynefin Framework – categorizing problems



By Snowded (Own work) [CC BY-SA 3.0 (<http://creativecommons.org/licenses/by-sa/3.0>)], via Wikimedia Commons

Key Performance Indicators & Measures of Effectiveness (MOEs)

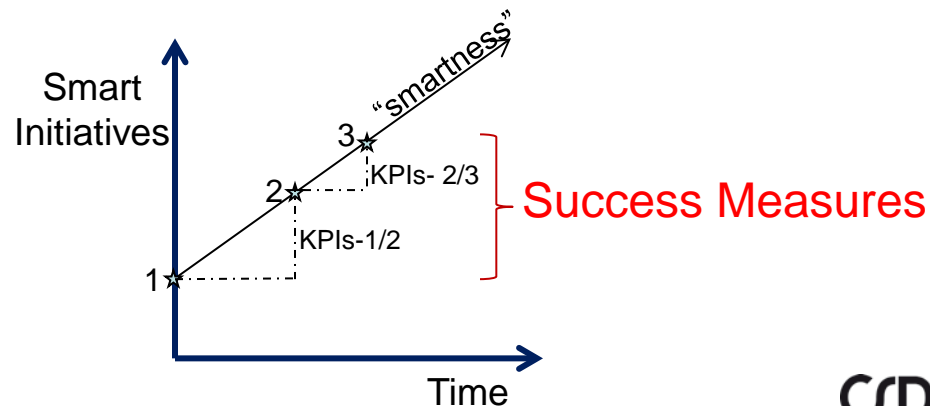
Bill Parkins



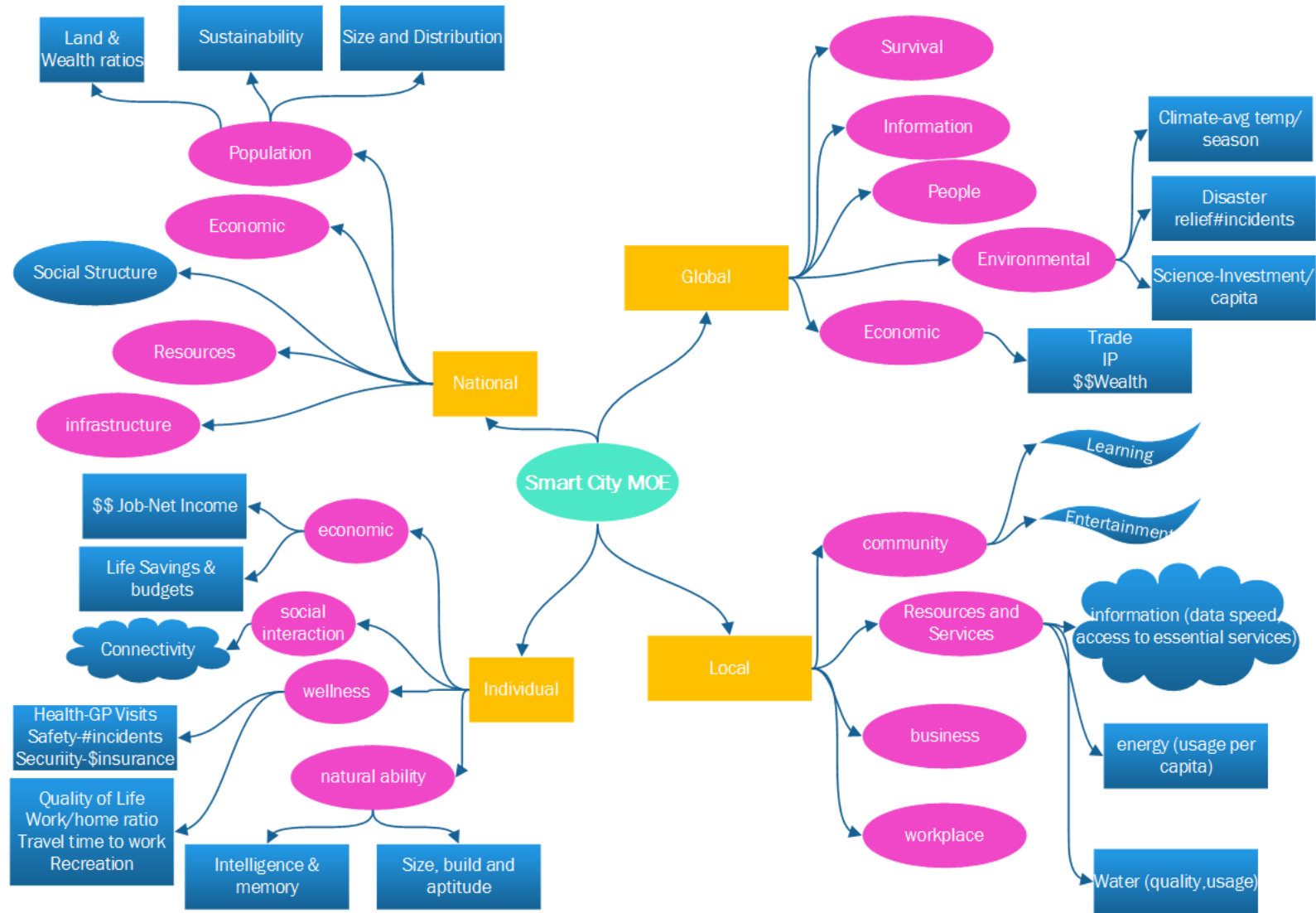
Smart City Key Performance Indicators

- Identification of important OC factors
- Metric definition and validation of use cases
- Assessment model for decision making

Performance measurement is critical for “smartness” assessment of operational capability



Smart City MOE Examples



OCs - Assessment of Factors

- Decision model required to:
 - Balance important operational factors
 - Address community of interest
- Systems engineering approach
 - Trade-off alternative solutions, scenarios and use cases
 - Sensitivity analysis to test limits
- Program management approach
 - Cost-benefit and risk analysis

Case Study - India

Nikhil Joshi



India – Smart Cities Mission

- Goal – 100 smart cities by 2018 !
- Proposals called from City Municipalities
- Proposals evaluated
 - Existing service levels
 - Capabilities
 - Execution Plan
- 20 cities for Phase 1
 - SPVs to be created
- But any OCs developed?



<http://bricksnwoods.in/index.php/2015/11/04/smart-cities-mission-a-step-towards-smart-india/>

Issues

- Conflicting stakeholder needs
- Suitability to the context
- Unintended emergence



<https://garsidej.files.wordpress.com/2014/06/conflict-original.jpg>



<http://icare4pune.com/Home.aspx?p=articles&news=411&title=Who%20shoud%20be%20blamed%20for%20BRTS%20lane%20accidents?>



"Your recent Amazon purchases, Tweet score and location history makes you 23.5% welcome here."

<https://www.linkedin.com/pulse/20141106142557-23409355-talent-shortage-or-misuse-of-people-analytics-in-hiring>

ICT Adoption

Success and Challenges

- UID based subsidy
- Townships with “smart” amenities
- Local circles, public services on phone



Open Discussion Time

Kerry Lunney



Thank You

www.incose.org

