Energising a Smart Nation

Challenges and Opportunities

Smart Nation SINGAPORE

ENERGY MARKET AUTHORITY

Smart Energy, Sustainable Future

NCCS NATIONAL CLIMATE CHANGE SECRETARIAT SINGAPORE

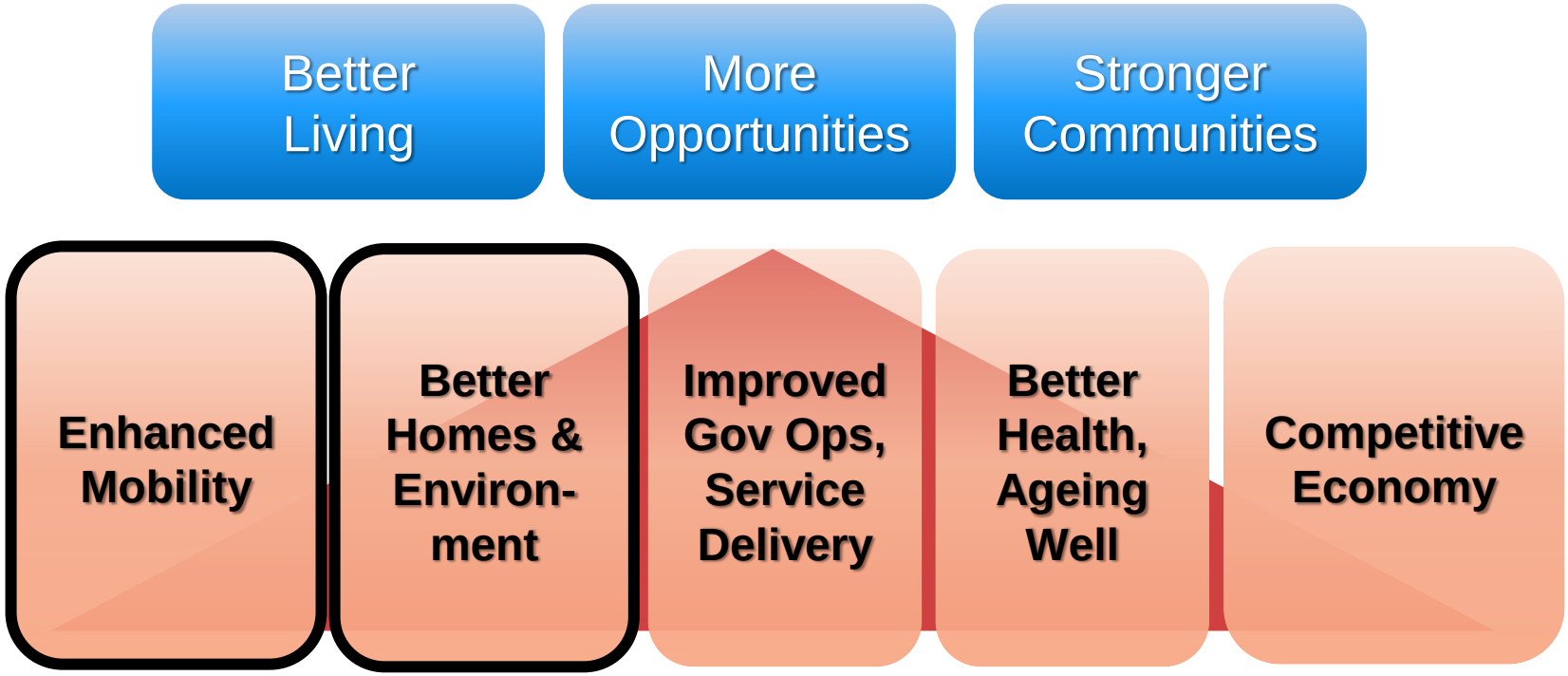
STRATEGY GROUP PRIME MINISTER'S OFFICE

Principles of Our Approach

- Leverage our strengths
- **Focus on people**
- **Prioritise key areas**
- Build enablers
- Adopt Whole-of-Nation approach

"Our vision is for Singapore to be a **Smart Nation**. A nation where **people live meaningful and fulfilled lives, enabled seamlessly by technology, offering exciting opportunities for all.**"

– PM Lee at the launch of the Smart Nation initiative on 24 Nov 2014



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Enhancing Mobility

Data and analytics

Empowering commuters

Optimising network

Business model innovation

On-demand shared transport

New technologies

Self-driving vehicles

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Smart Estates

Yuhua Estate
38 blocks
3,200 households

- Productivity
- Sustainability
- Security
- New Services

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Smart Technologies and Energy (1)

- Energy landscape is being transformed - shaped by disruptive energy trends, driven by technology innovations, and responding to climate change challenges
- Examples of application of smart technologies

Digitisation

E.g. Two-way communications, substation automation, cybersecurity

Decentralisation

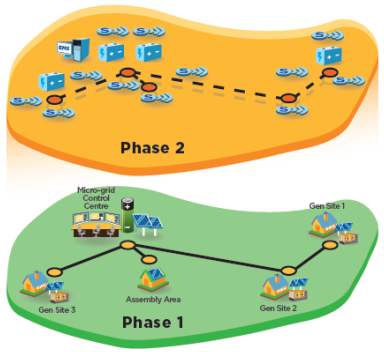
E.g. Micro-grids, distributed solar-storage

Efficiency

E.g. Sensors to detect unauthorised excavation, corrosion of pipes underground, district cooling

Smart Meters

Distributed Energy Resources



Solar Forecasting

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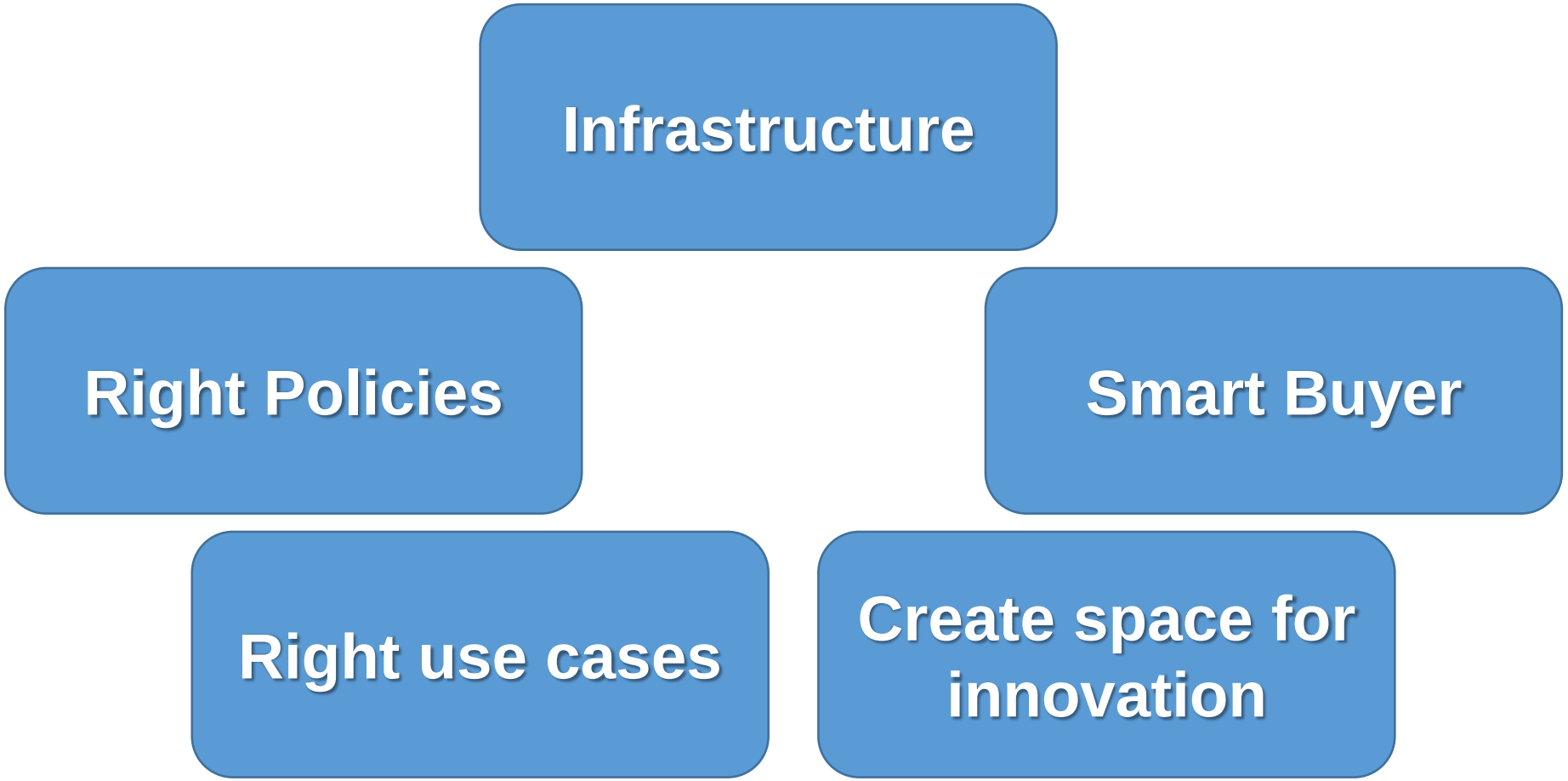
Smart Energy, Sustainable Future

Smart Technologies and Energy (2)

- Challenges and opportunities exist across the entire spectrum of activities to plan, design, operate, manage and optimize the energy system and energy businesses – from *supporting* to ***enabling***
- Challenges and opportunities increase with higher levels of *complexity, uncertainty, diversity, flexibility, constraints* and *trade-offs/co-benefits, e.g.*
  - Energy trilemma and more – security, costs, environmental sustainability, and efficiency, resilience, economic/industry development
  - Integration of Variable renewable energy and grid
  - Advent of the energy prosumer, energy sharing and multi-directional flows
  - Multi-dimensional considerations and matching – temporal, spatial and quality/form
  - Data standards, ownership, privacy and cyber-security challenges

Spare slides

ROLE OF GOVERNMENT



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VIBRANT ENERGY ECOSYSTEM

Decentralisation

E.g. Micro-grids, distributed solar-storage

Solar Aggregators, Integrators and Micro-grid Operators

Construction

Electrical Contractor

Digitisation

E.g. Two-way communications, substation automation, cybersecurity

Demand response aggregators, electricity retailers, e-mobility solution providers, software developers, cloud service providers.

Large local enterprise

Efficiency

E.g. Sensors to detect corrosion of pipes underground, district cooling

Battery fabricators, energy management systems, systems integrators

Robotics

Large local enterprises

Close engagements between government and industry are crucial in understanding the challenges faced, and to scope the projects to best benefit the end users.

Energy Market Authority

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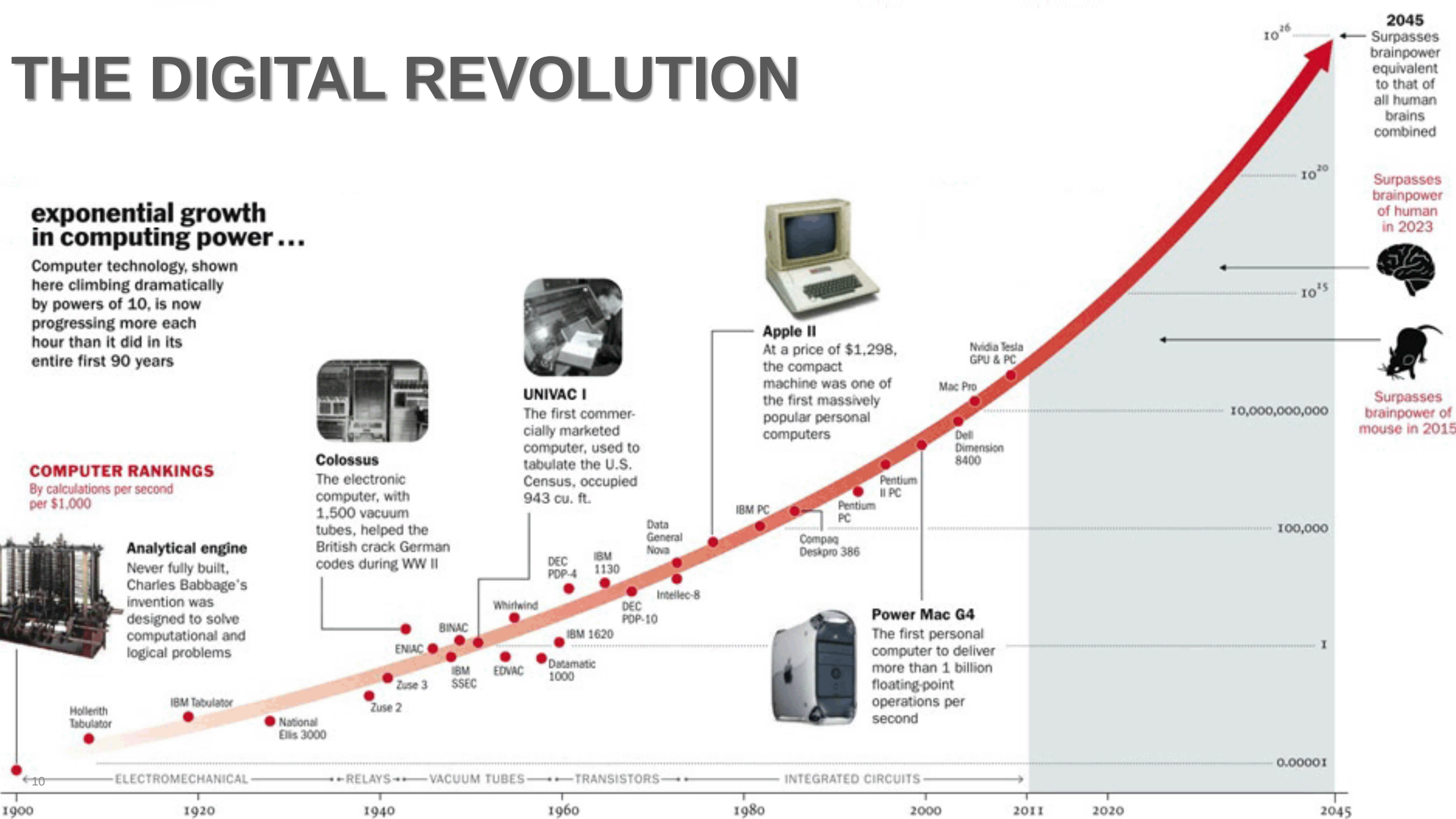
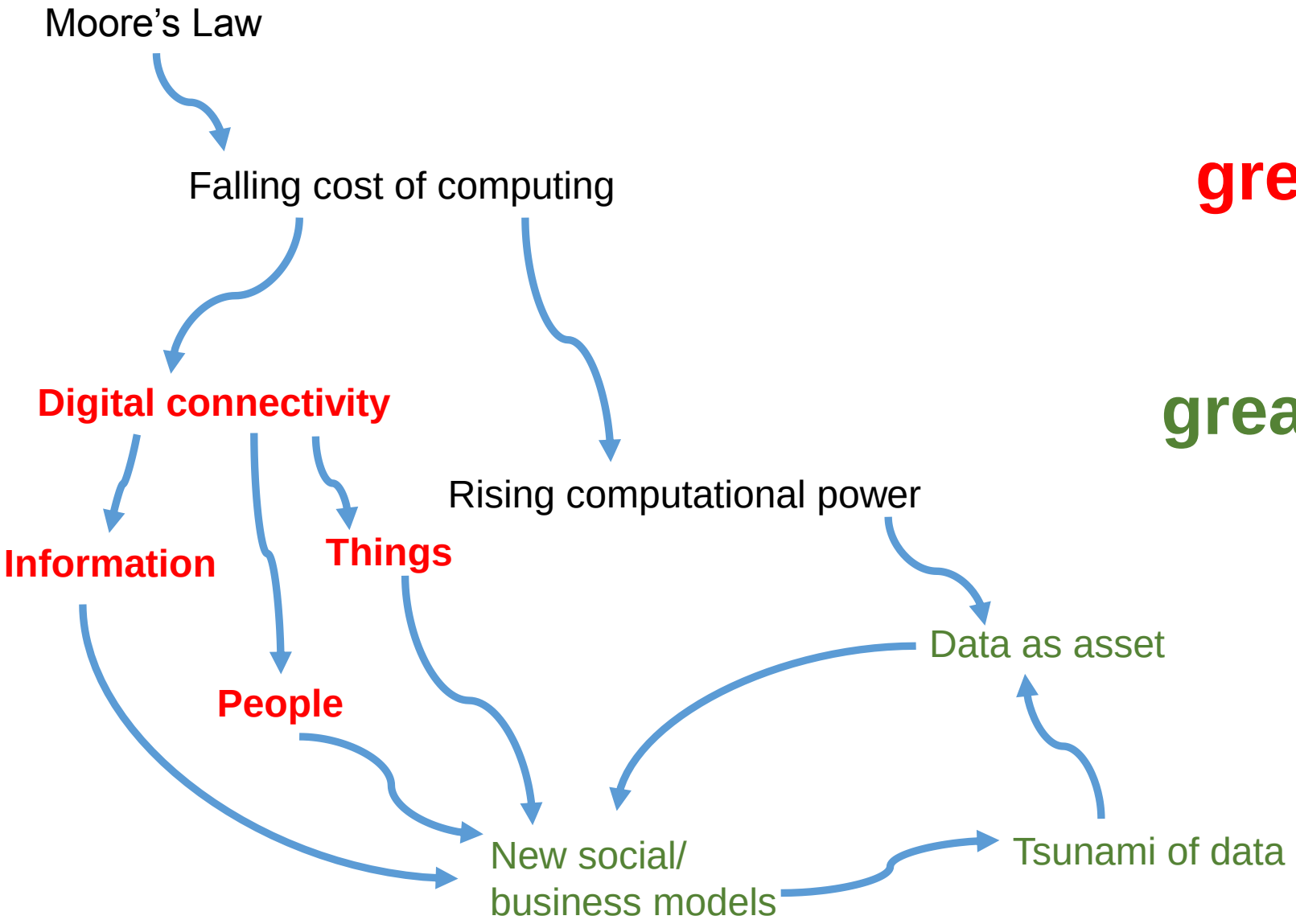
THE DIGITAL REVOLUTION





great uncertainty

+

great opportunities

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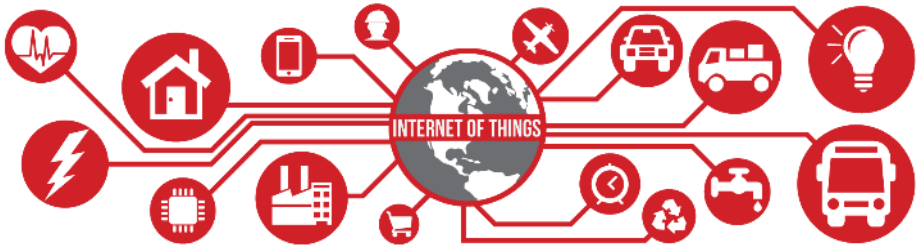
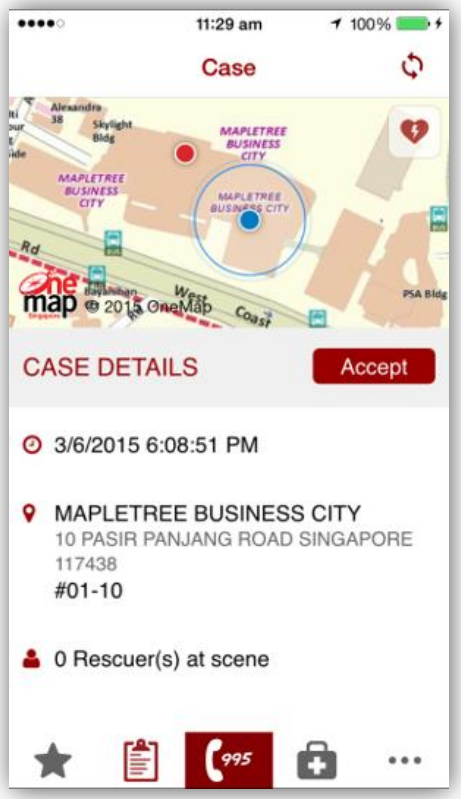
IMPROVED PUBLIC SERVICES

A one-stop service for citizens to provide feedback on municipal issues



Enhancing operational intelligence



myResponder
SCDF
The Life Saving Force

Crowd-sourcing assistance for cardiac arrest cases

Citizen-centric services
E.g. OneService App

Next-generation platforms
E.g. Nationwide Sensor Network

Experimenting with new models
E.g. MyResponder

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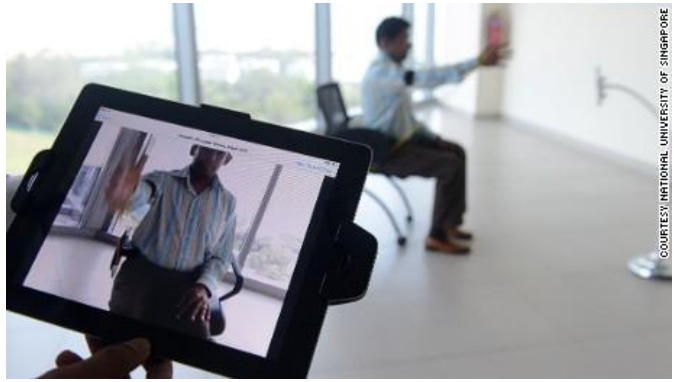
HEALTH

Nudging behavior through gamification

Improving hospital productivity

SMART HEALTH

Empowering individuals by pushing medical information to mobile devices



Moving care out of the hospital

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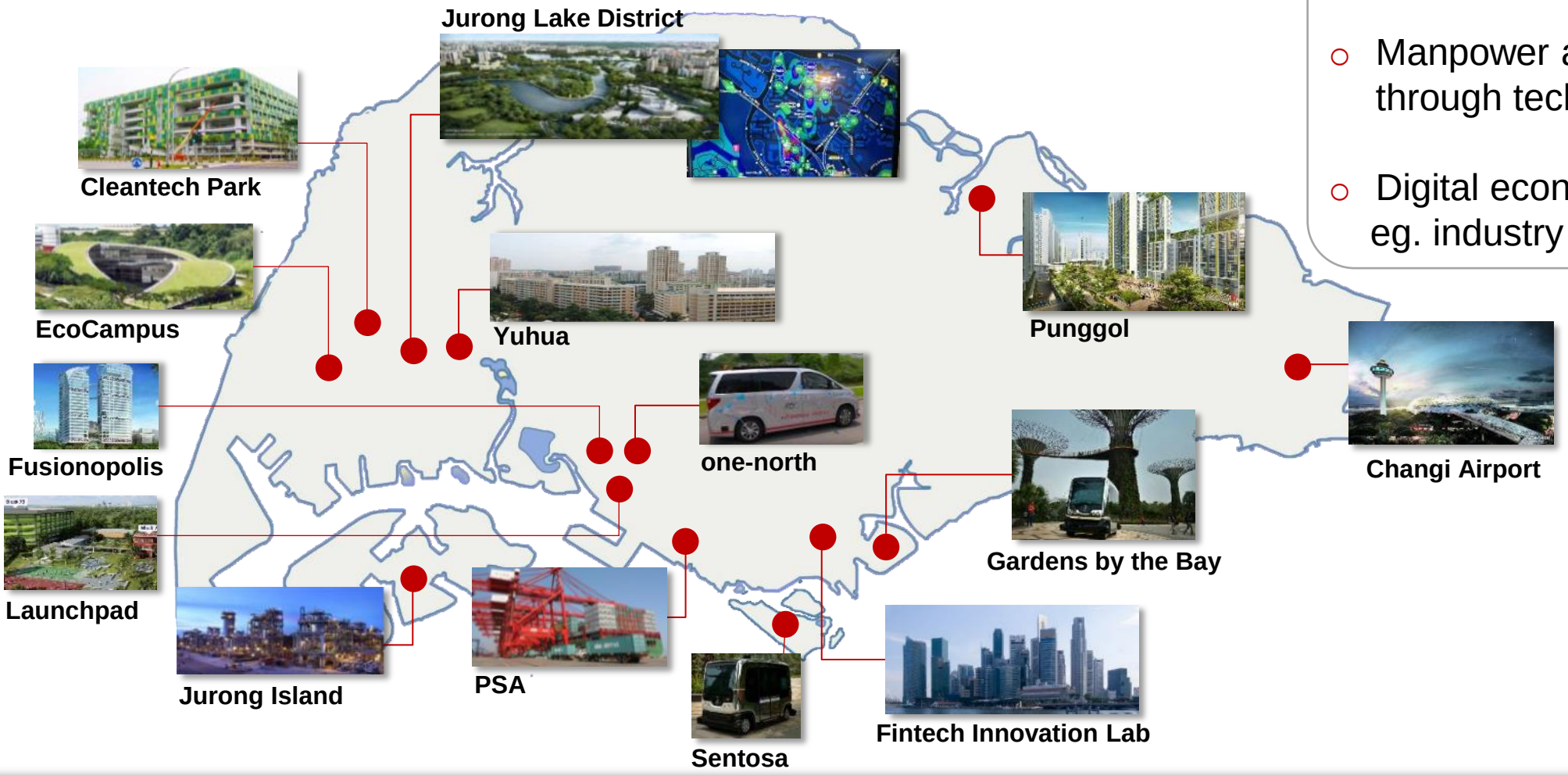
COMPETITIVE ECONOMY

- Living test-bed for developing & prototyping innovative solutions
- Manpower and land productivity through tech adoption
- Digital economy jobs eg. industry 4.0



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