

The poster for the event "La ville intelligente au service du citoyen" held at the Amphithéâtre Becquerel, École polytechnique, Palaiseau on Wednesday, April 15, 2015. The poster features the Aristote logo on the left, a central illustration of a smart city on a tablet, and logos for EDF, Loria, and CAPTECH. It also lists scientific coordinators David Merys (EDF) and Anne-Cécile Lamballe (INRA) and provides a QR code and website for more information.

Amphithéâtre Becquerel  
École polytechnique, Palaiseau

**La ville intelligente  
au service du citoyen**

**Mercredi 15 avril 2015**

Coordination scientifique:  
• David Merys (EDF)  
• Anne-Cécile Lamballe (INRA)

edf Loria CAPTECH

Renseignements, programme... <http://www.association-aristote.fr>

**Pr. Claude ROCHET**  
**La ville intelligente: Un défi tout aussi  
politique que technique**

Palaiseau, 15 avril 2015

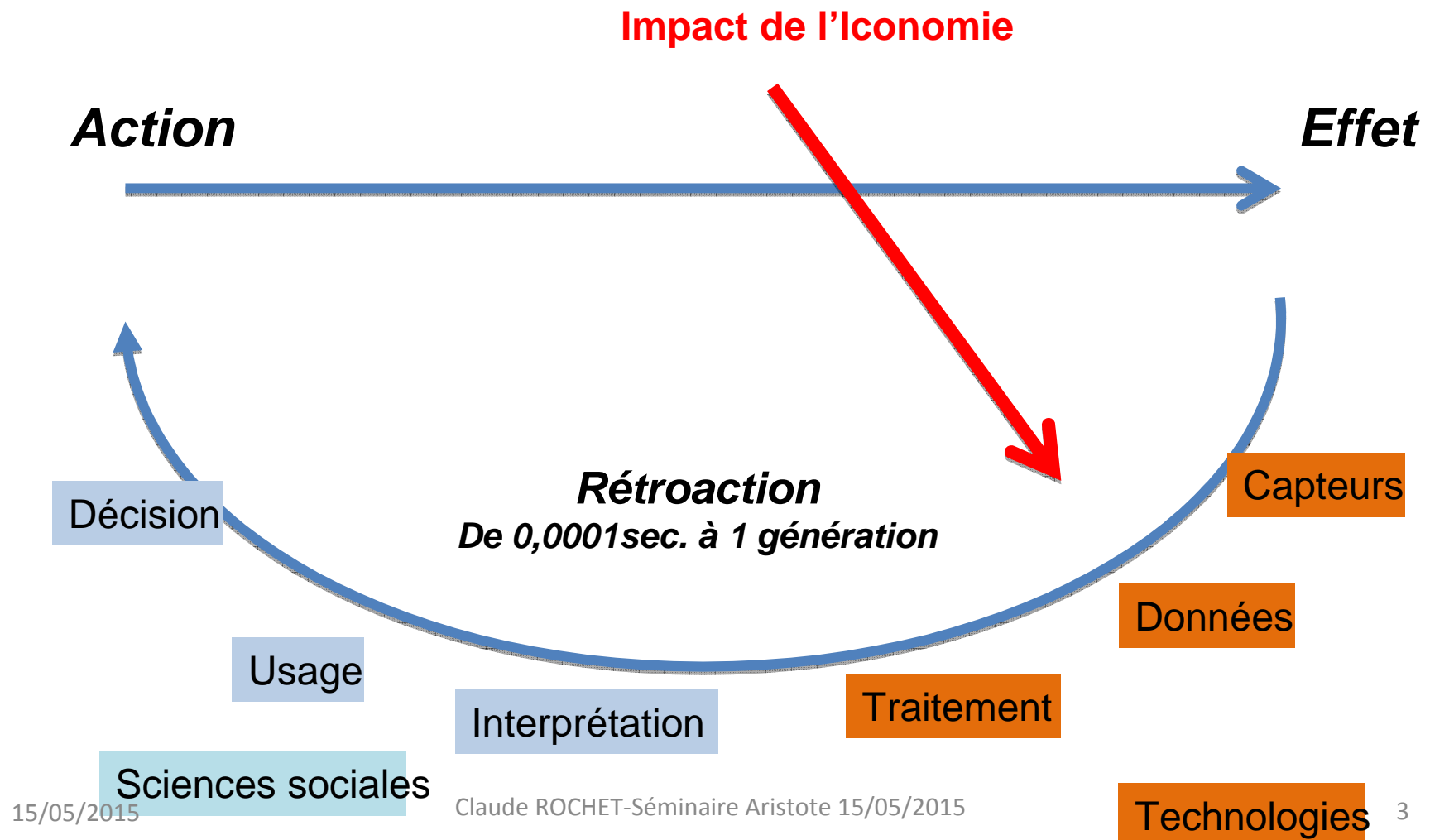
[Claude.rochet@univ-amu.fr](mailto:Claude.rochet@univ-amu.fr)  
[Claude.rochet@finances.gouv.fr](mailto:Claude.rochet@finances.gouv.fr)



Claude ROCHET-Séminaire Aristote 15/05/2015



- **Ce qu'« intelligent » veut dire?**
- **L'enjeu géopolitique et commercial**
- **La conception de la ville comme système complexe**
- **Le cas de la sécurité routière**
- **Comment avancer?**
- **Conclusions pour l'action**







*Les villes intelligentes actuelles réalisent ces connexions par le numérique*

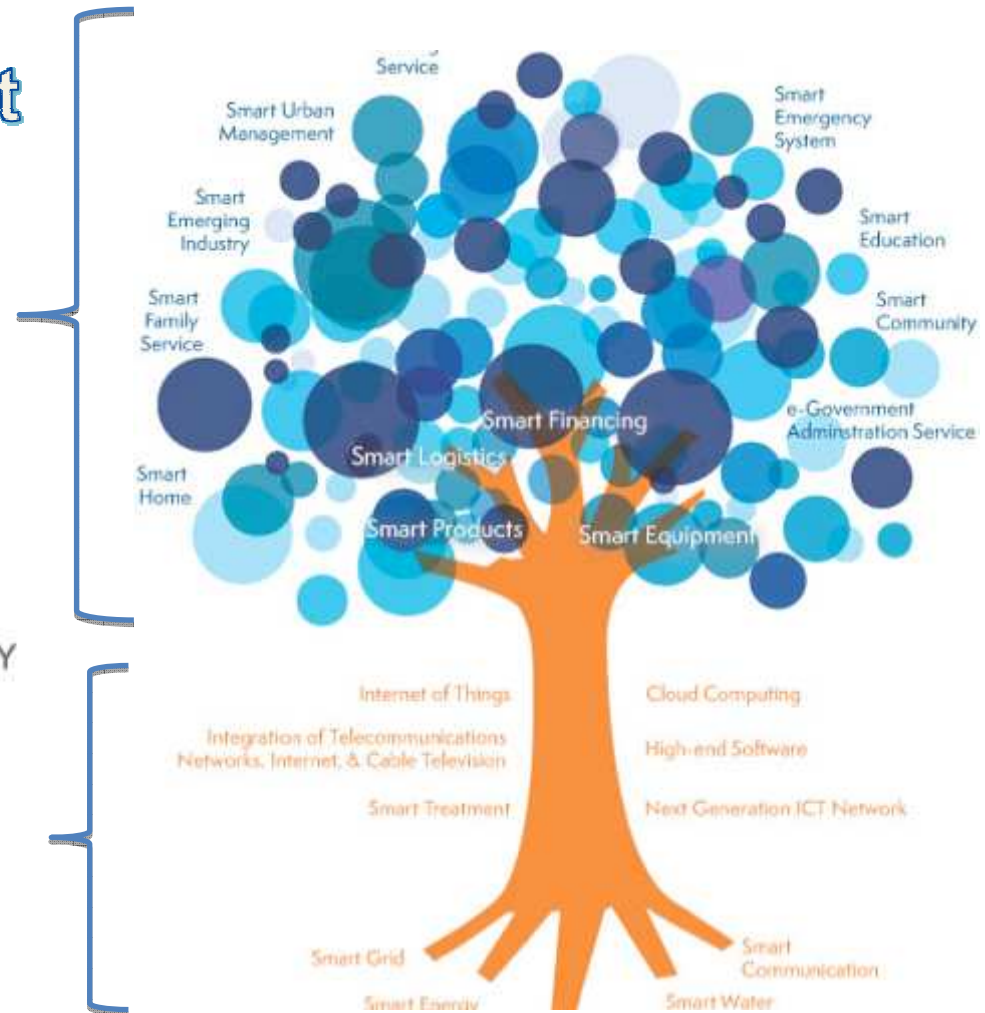
Un système adaptatif et apprenant

Systèmes humains vivants



SINO-SINGAPORE  
GUANGZHOU KNOWLEDGE CITY  
中新广州知识城

Systèmes physiques





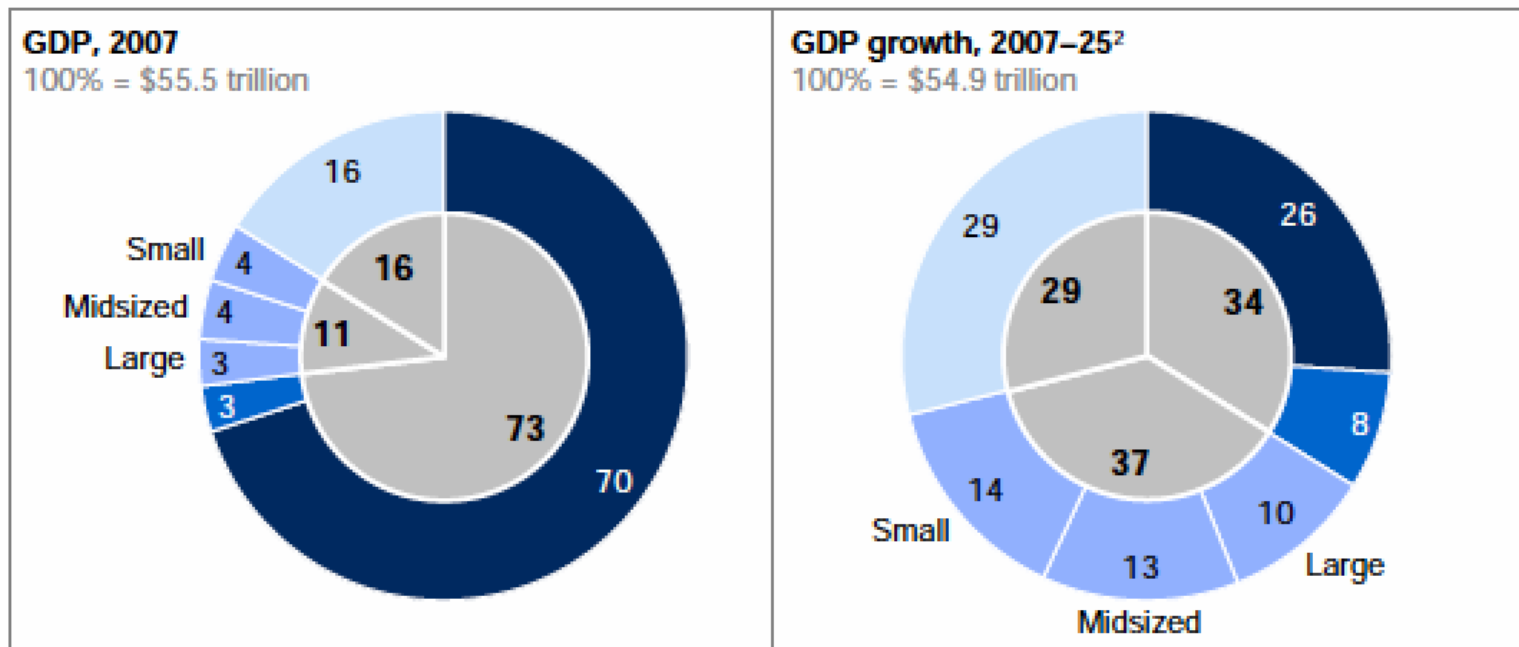
## *Sommaire*

- Ce qu'« intelligent » veut dire?
- L'enjeu géopolitique et commercial
- Les défis à relever
- Le cas de la sécurité routière
- Comment avancer?
- Conclusions pour l'action

**Middleweight cities in emerging markets are poised to deliver nearly 40 percent of global growth by 2025, more than the entire developed world and emerging market megacities combined<sup>1</sup>**

Contribution to GDP and GDP growth by type of city %

- Developed economies
- Emerging market megacities
- Emerging market middleweight cities
- Emerging market small cities and rural areas



<sup>1</sup> Megacities are defined as metropolitan areas with ten million or more inhabitants. Middleweights are cities with populations of between 150,000 and ten million inhabitants.

<sup>2</sup> Real exchange rate (RER) for 2007 is the market exchange rate. RER for 2025 was predicted from differences in the per capita GDP growth rates of countries relative to the United States.

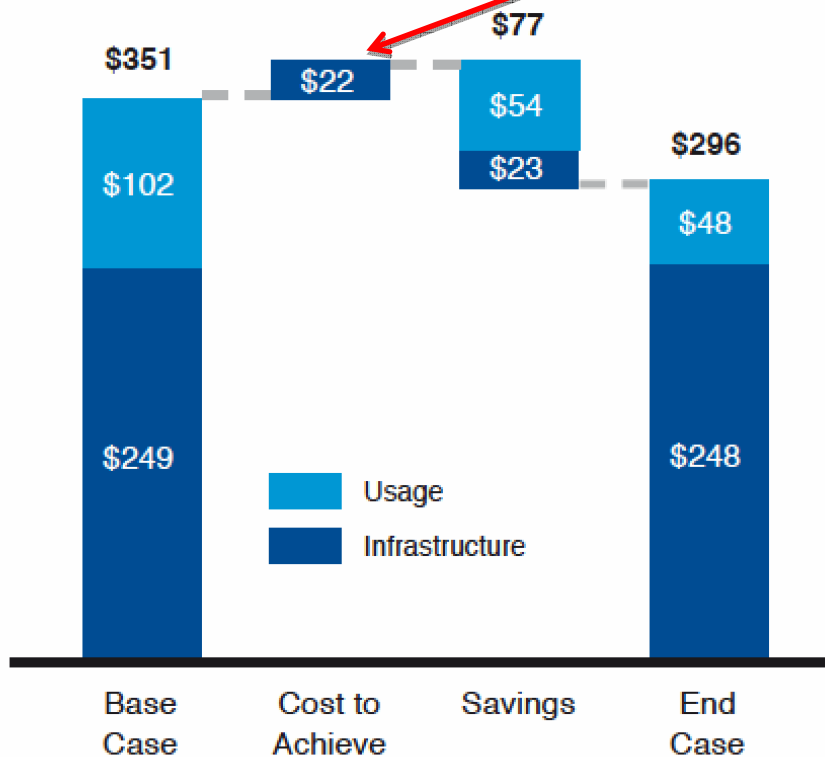
SOURCE: McKinsey Global Institute Cityscope 1.0



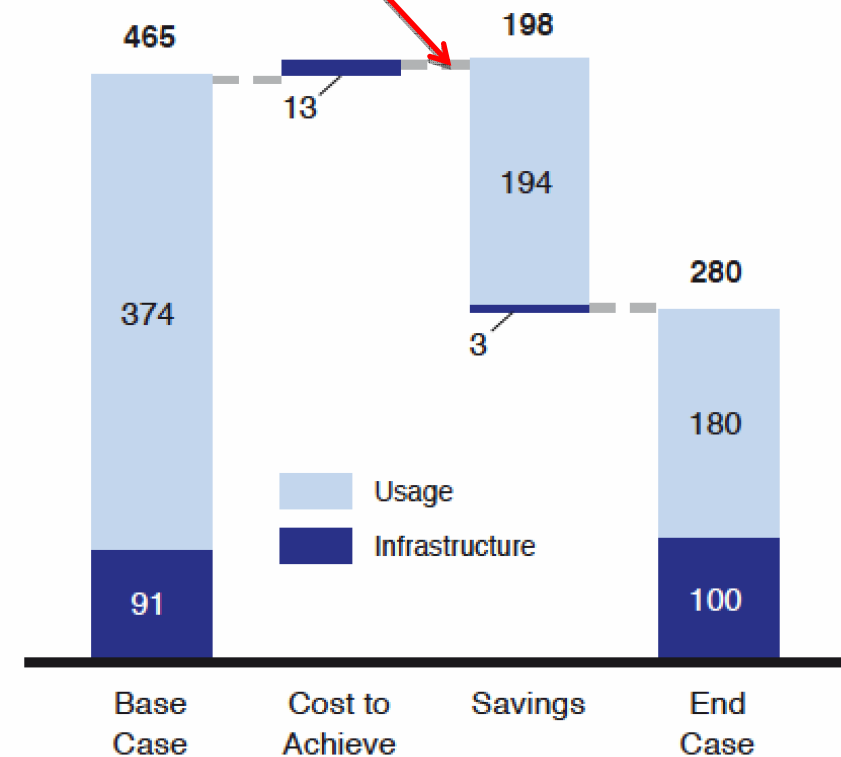
Un marché de plus de 350 000 milliards US\$

Effet de levier de l'investissement marginal

30-Year Cumulative Urban Expenditure (Aggressive Case, in Constant US\$ Trillions, Year 2000)



30-Year Cumulative Urban Emissions (Aggressive Case, in Gigatons CO<sub>2</sub>)



Note: Totals may not be exact due to rounding.  
Source: Booz & Company analysis



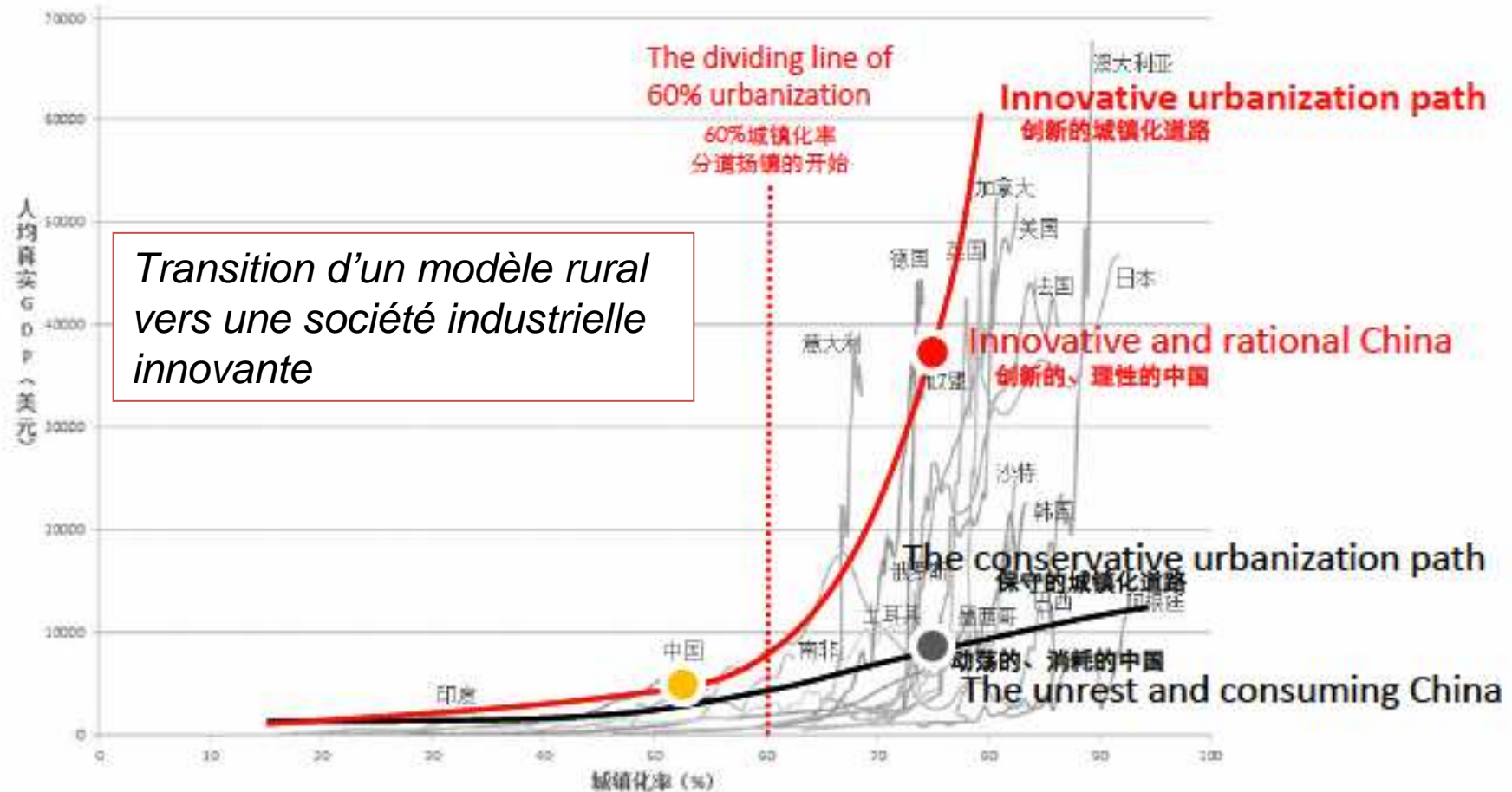
**There will be a major shift in urban economic weight from the United States and Western Europe toward Asia**

Top 25 cities by GDP, 2007 and 2025<sup>1</sup>

- Dropout—included in 2007 but not in 2025
- Top 25 in both 2007 and 2025
- Newcomer—absent in 2007 but included in 2025



<sup>1</sup> Predicted real exchange rate.



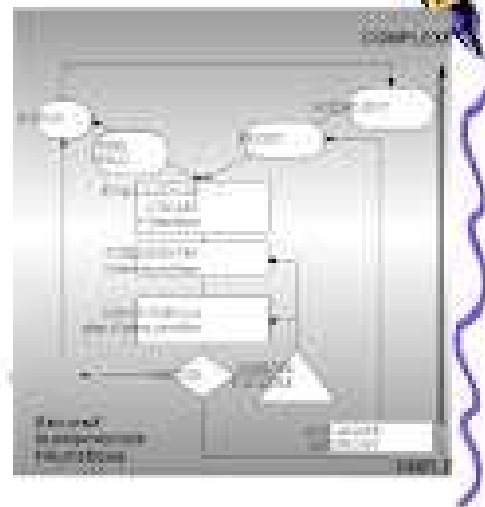
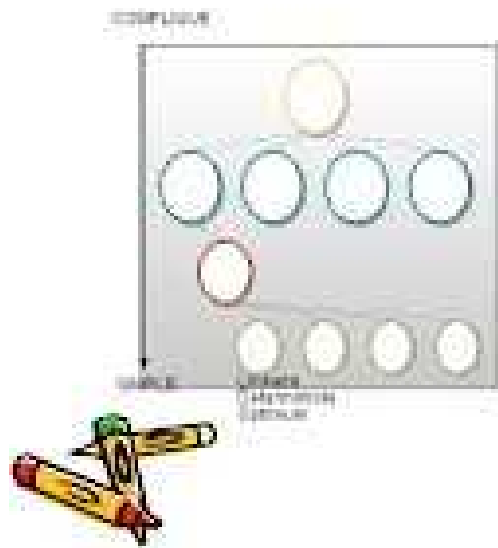
Transition d'un modèle rural vers une société industrielle innovante

Urbanization Path for China: Two Choices

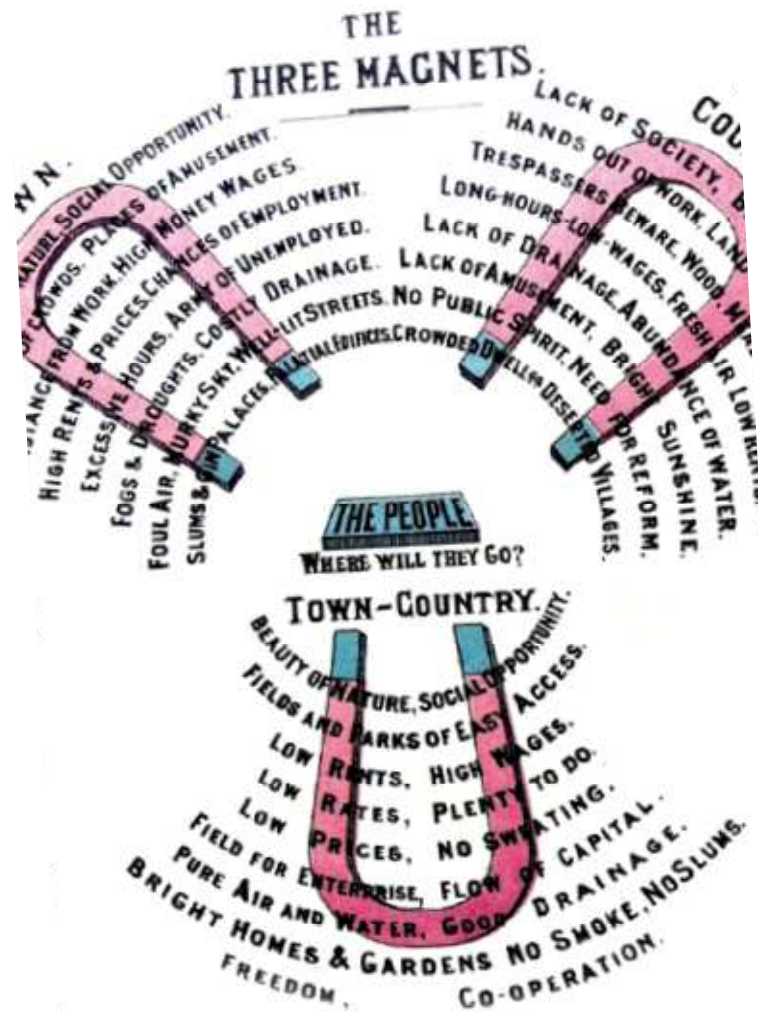
中国城镇化率的道路选择

- Ce qu'« intelligent » veut dire?
- L'enjeu géopolitique et commercial
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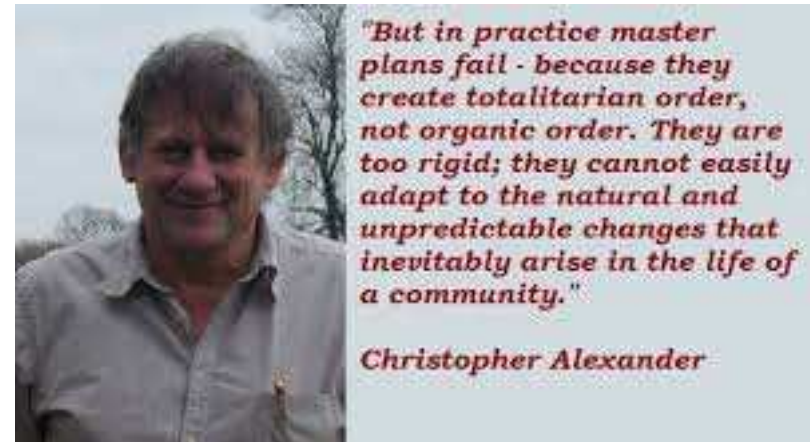
Le compliqué se décompose  
Le complexe est arborescent

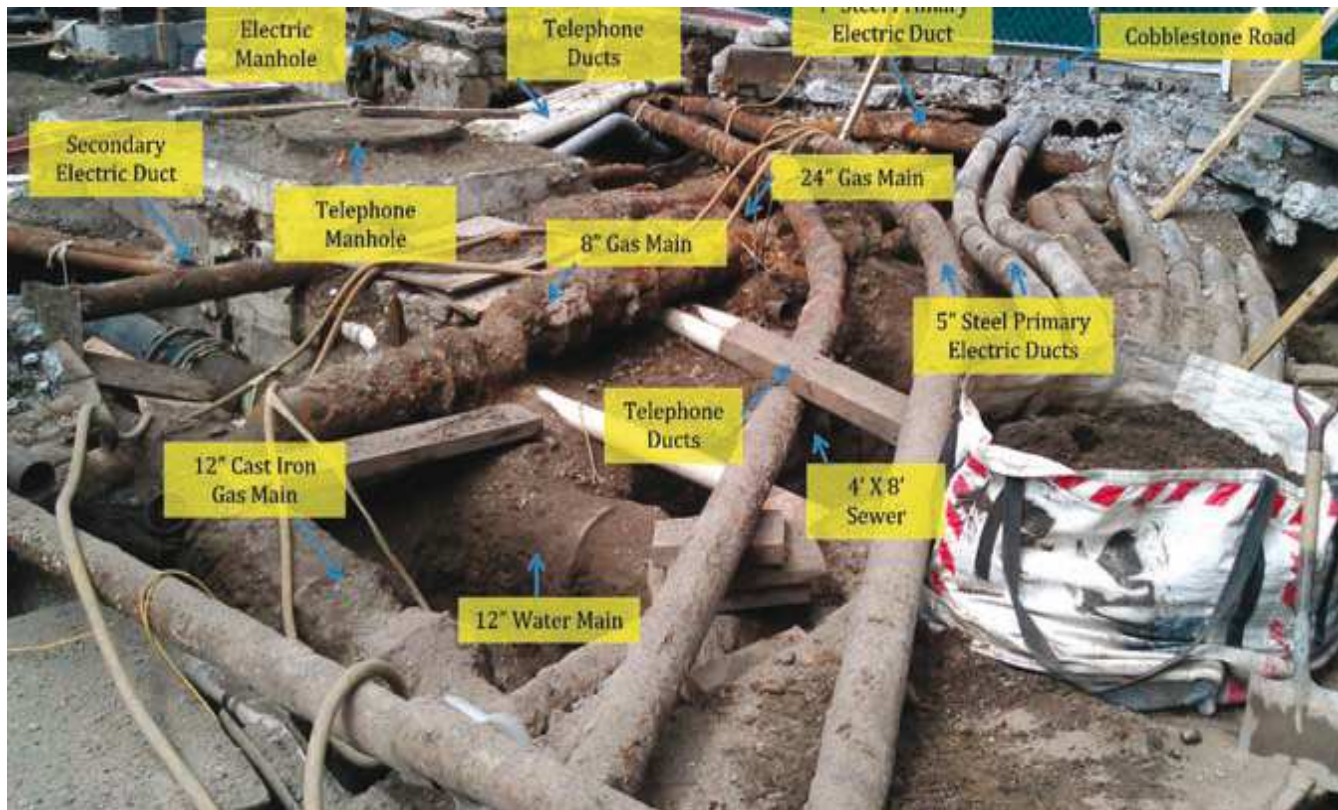


- *Quand c'est pas complexe ça devient vite très compliqué !*



- Les cités jardins:
  - Une conception hiérarchique non systémique
  - Pas d'interactions avec l'environnement et le territoire



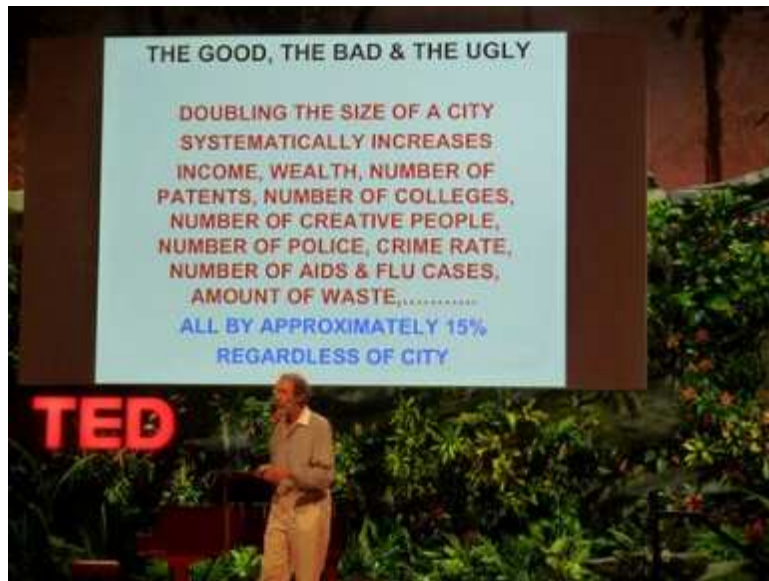


L'accumulation  
couche par  
couche  
d'infrastructures:  
exemple de  
New-York

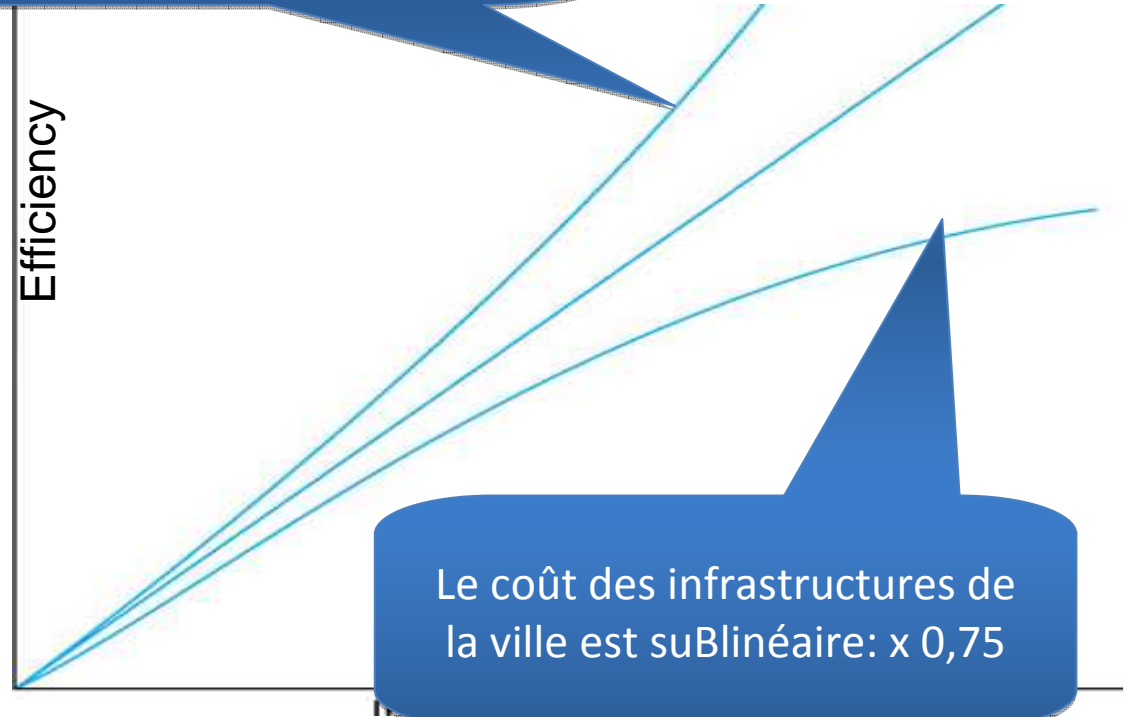
# L'efficiency de la ville croît avec sa taille... et ne meurt jamais!

L'efficiency de la production de la ville est suPRAlinéaire en TOUT:  $\times 1,15$

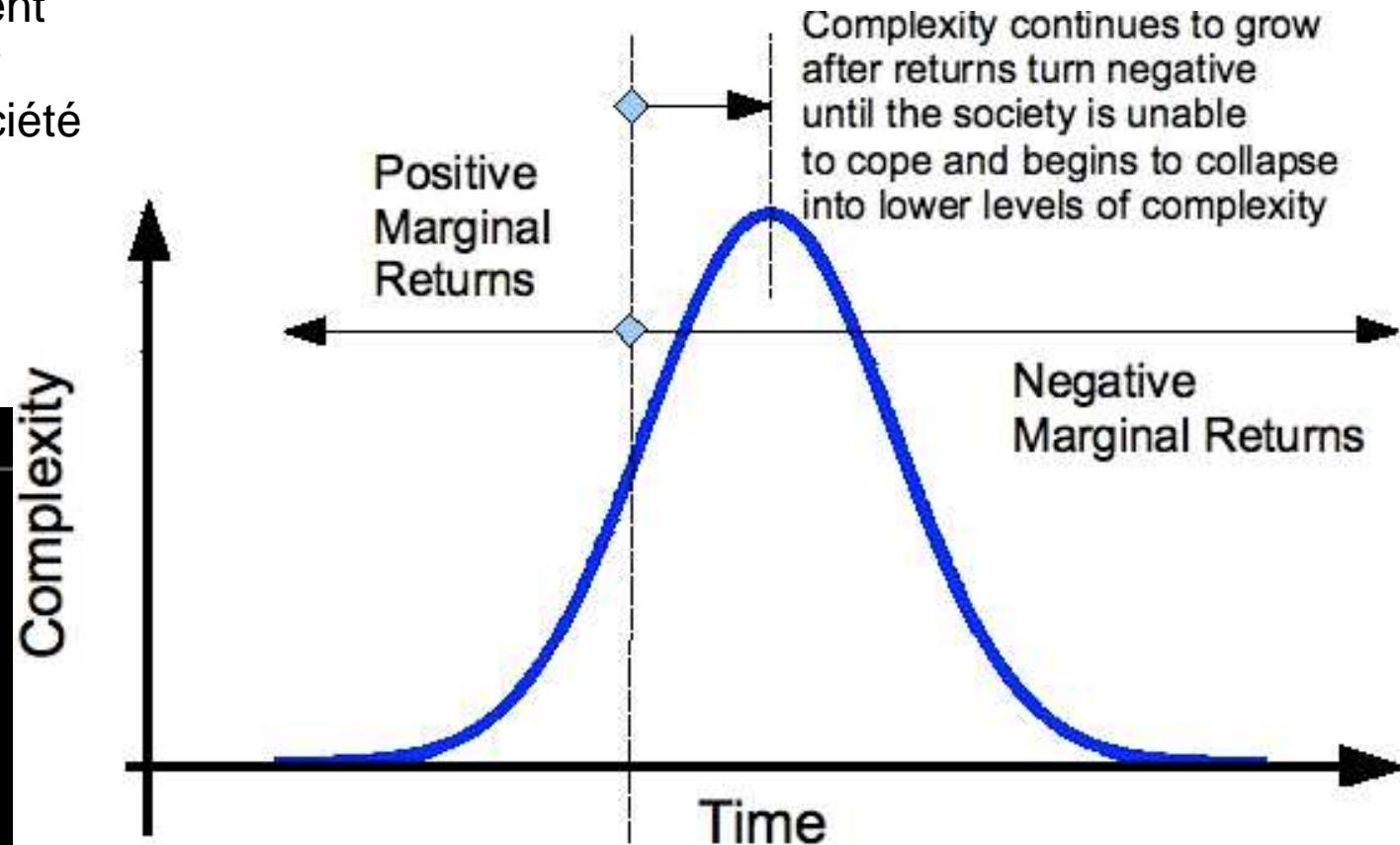
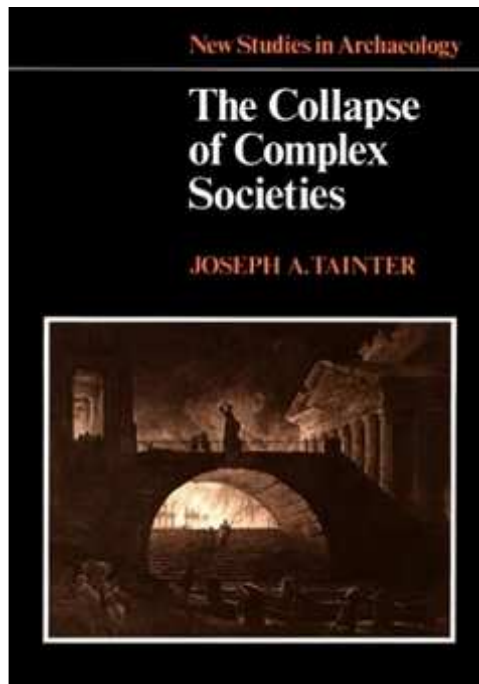
Geoffrey West:



La question de la frontière (dedans ⇔ dehors) est primordiale en ingénierie système des villes



L'effondrement devient alors la solution pour décomplexifier la société

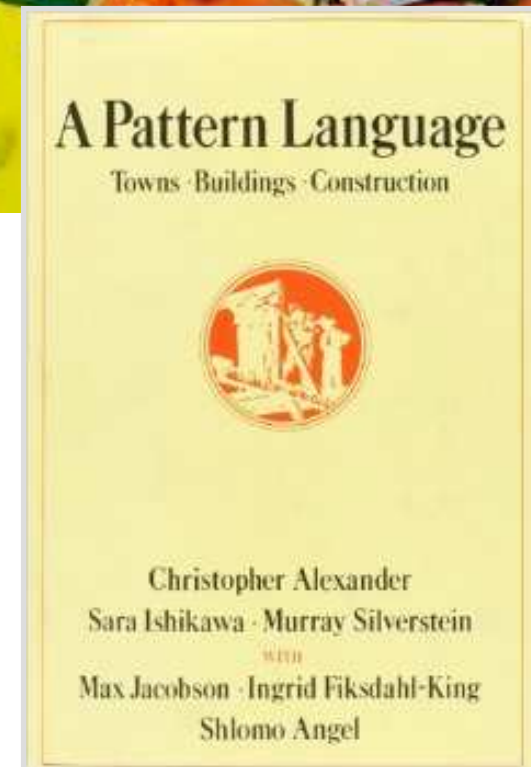
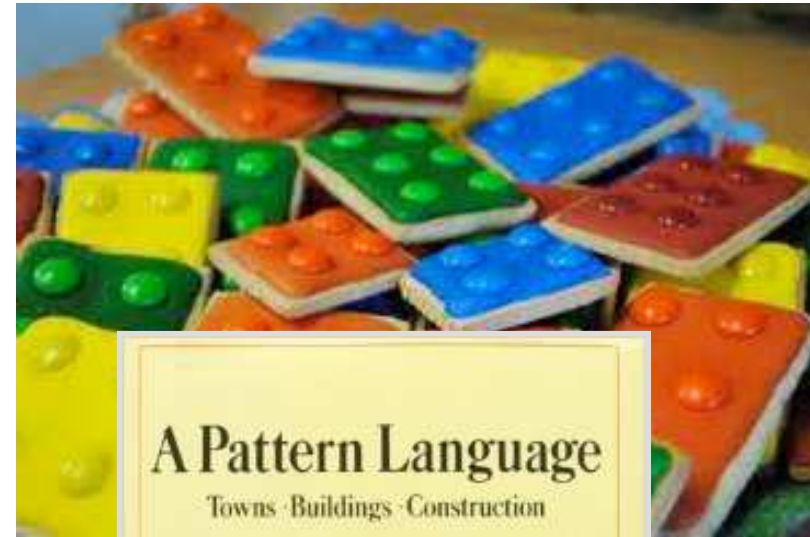




## Que veut dire « modéliser »??

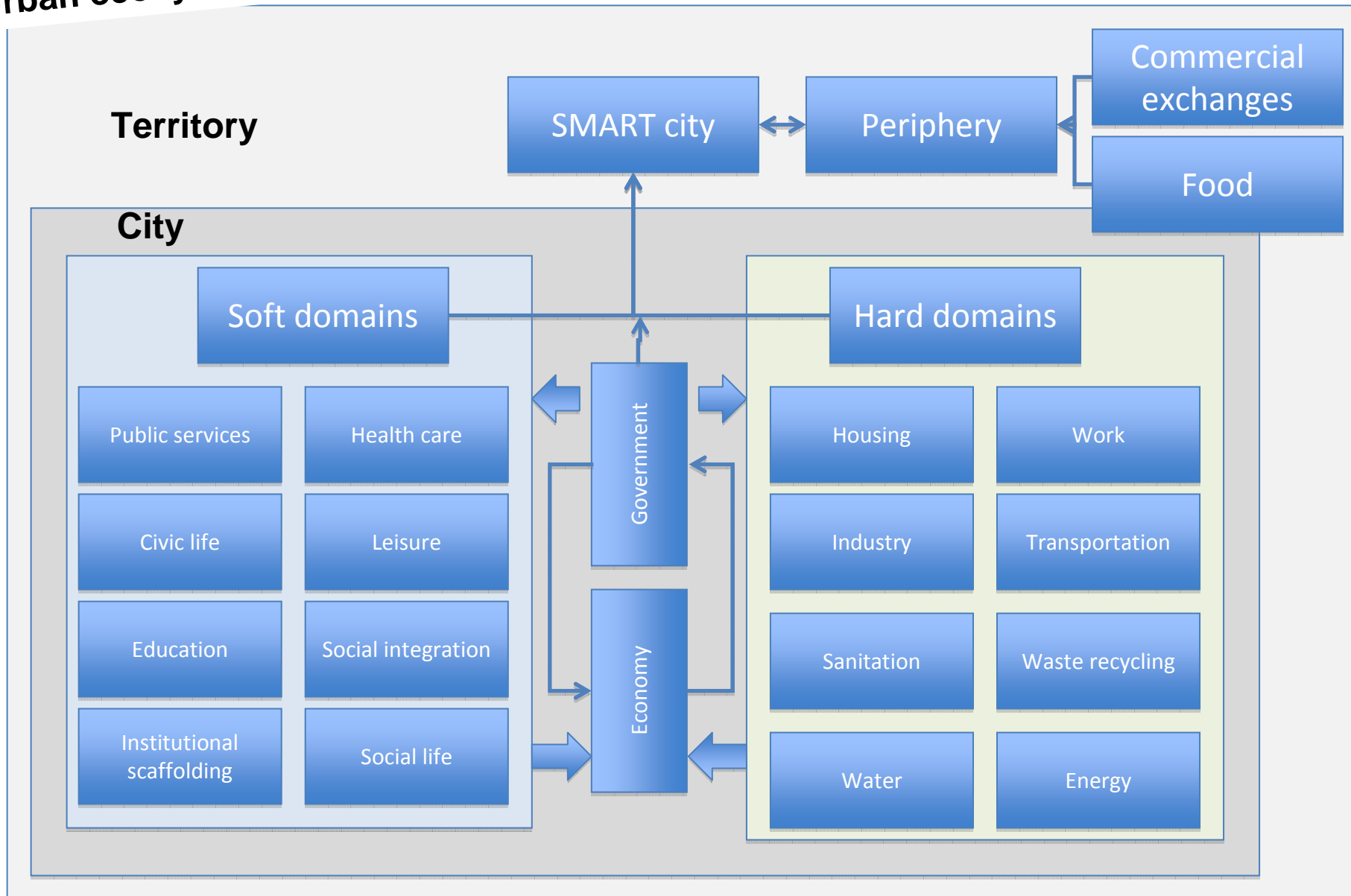
Le jeu de Lego :

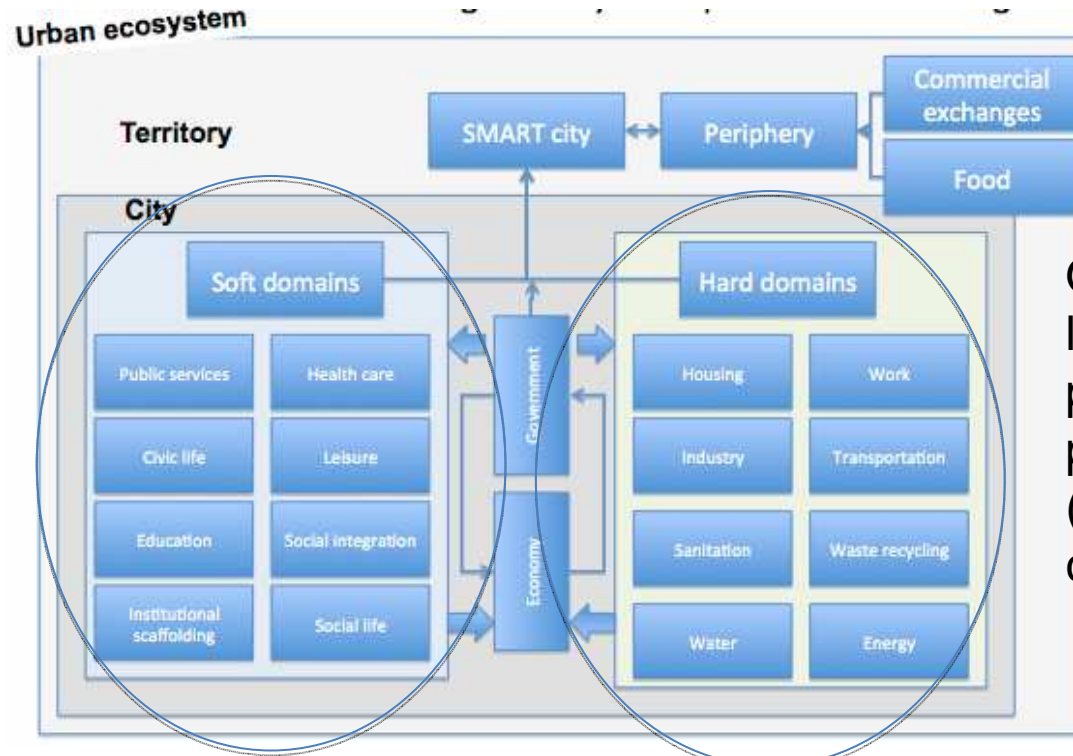
- La construction est basée sur des building blocks standards
- Pas deux figures identiques
- On construit en utilisant des patterns: règles d'intégration, sémantique et syntaxe
- Le résultat final est une intégration de ces blocs qui est spécifique aux besoins et aux spécifications



# L'intégration systémique de la ville intelligente

## Urban ecosystem





On ne peut pas modéliser les systèmes humains par les lois de la physique (systèmes dissipatifs)



- Sciences sociales
- Big data

On peut modéliser les systèmes durs par les lois de la physique (systèmes conservatifs)



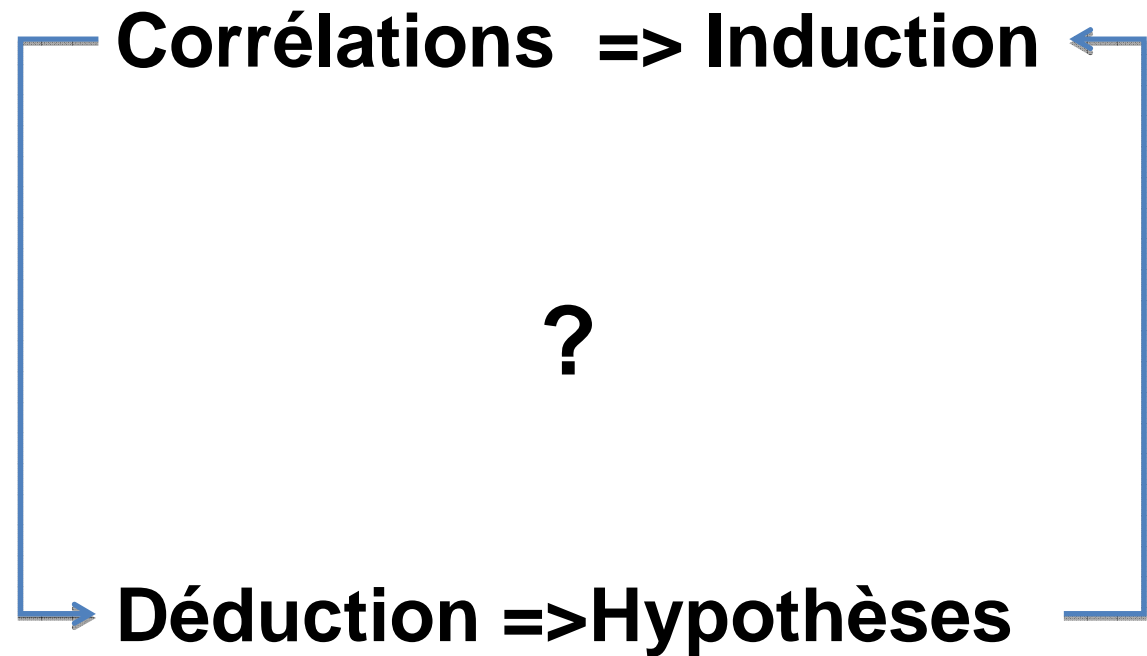
- Modélisation mutli-agents

La clé du succès est là...

... alors que le business est ici



**L'intégration système, une compétence à développer pour réussir!**



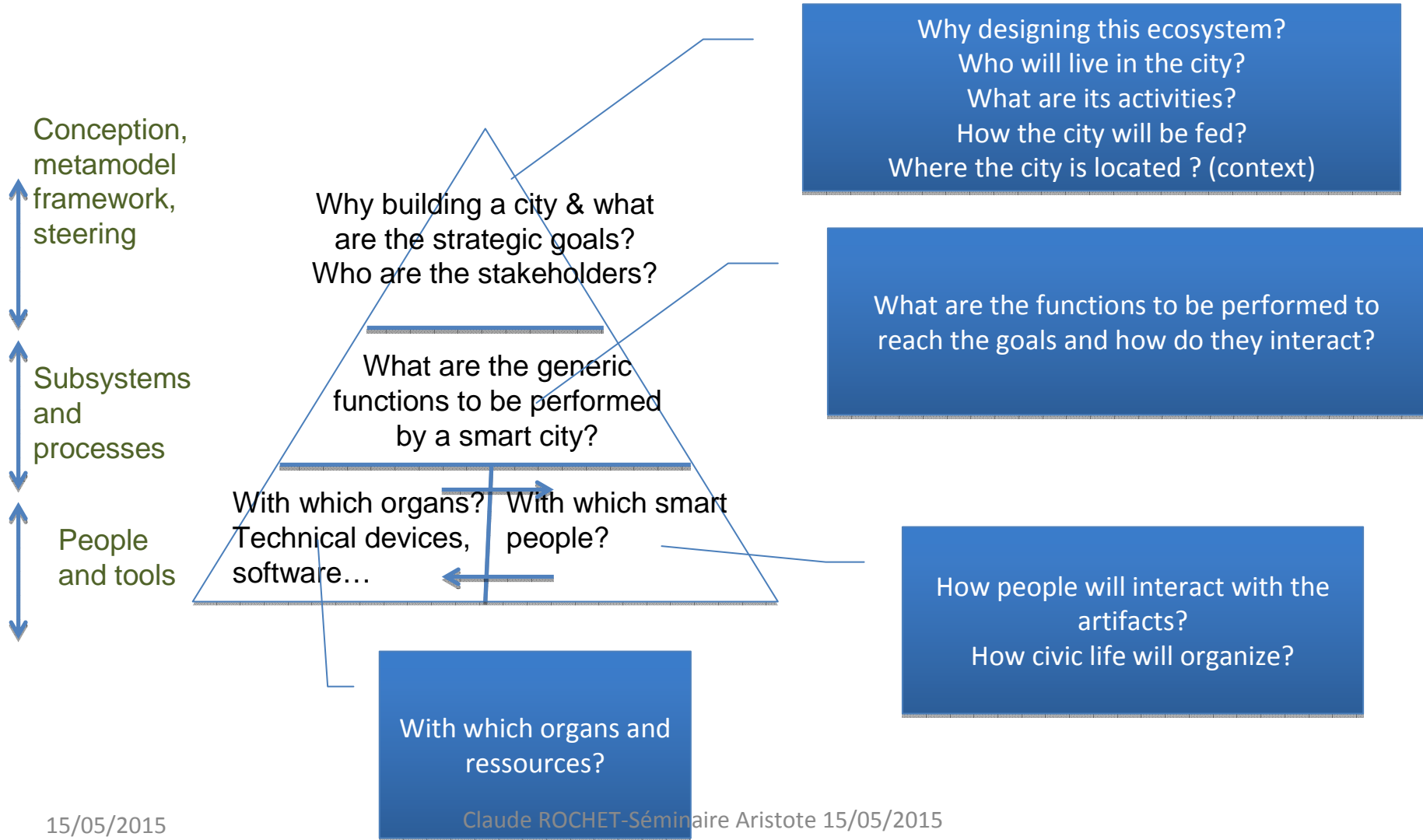
**Corrélation n'est pas causalité!**



© HACKERPHOTOS.COM / WIN MCNAMEE

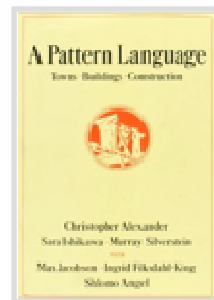
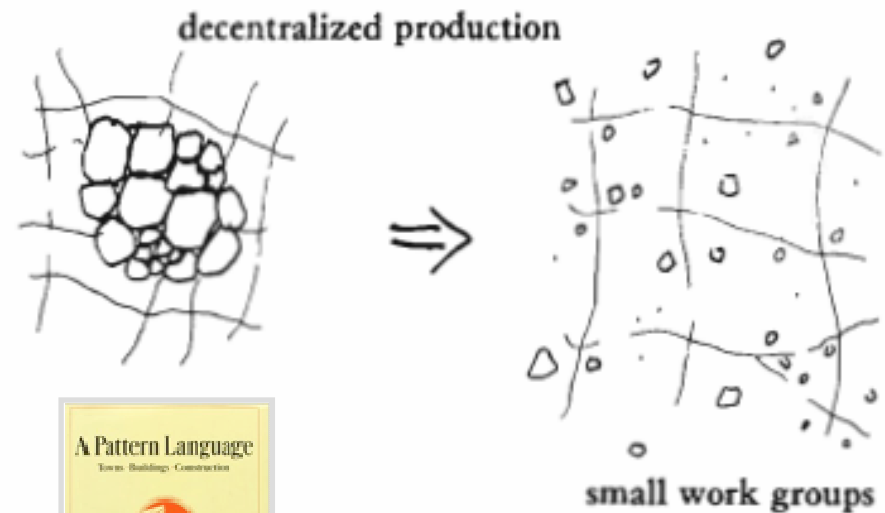


Dr. Jekyll and Mister Hyde? The military and the IT sphere already affiliated, as you may see in the person of one of the most powerful men of the world: Keith Alexander, Director of the NSA, recruiting hackers at Defcon 2012, wearing a t-shirt of the civil rights organisation „Electronic Frontier Foundation“; in service uniform on the right



- Les patterns sont des configurations tirées de l'expérience, des configurations stables réutilisables qui définissent des exigences de conception.
- Un langage commun entre les parties prenantes qui embarque une syntaxe et une grammaire.

Use zoning laws, neighborhood planning, tax incentives, and any other means available to scatter workplaces throughout the city. Prohibit large concentrations of work, without family life around them. Prohibit large concentrations of family life, without workplaces around them.





# 中国智慧城市顶层设计架构

## Top-Level Design of Smart Cities in China

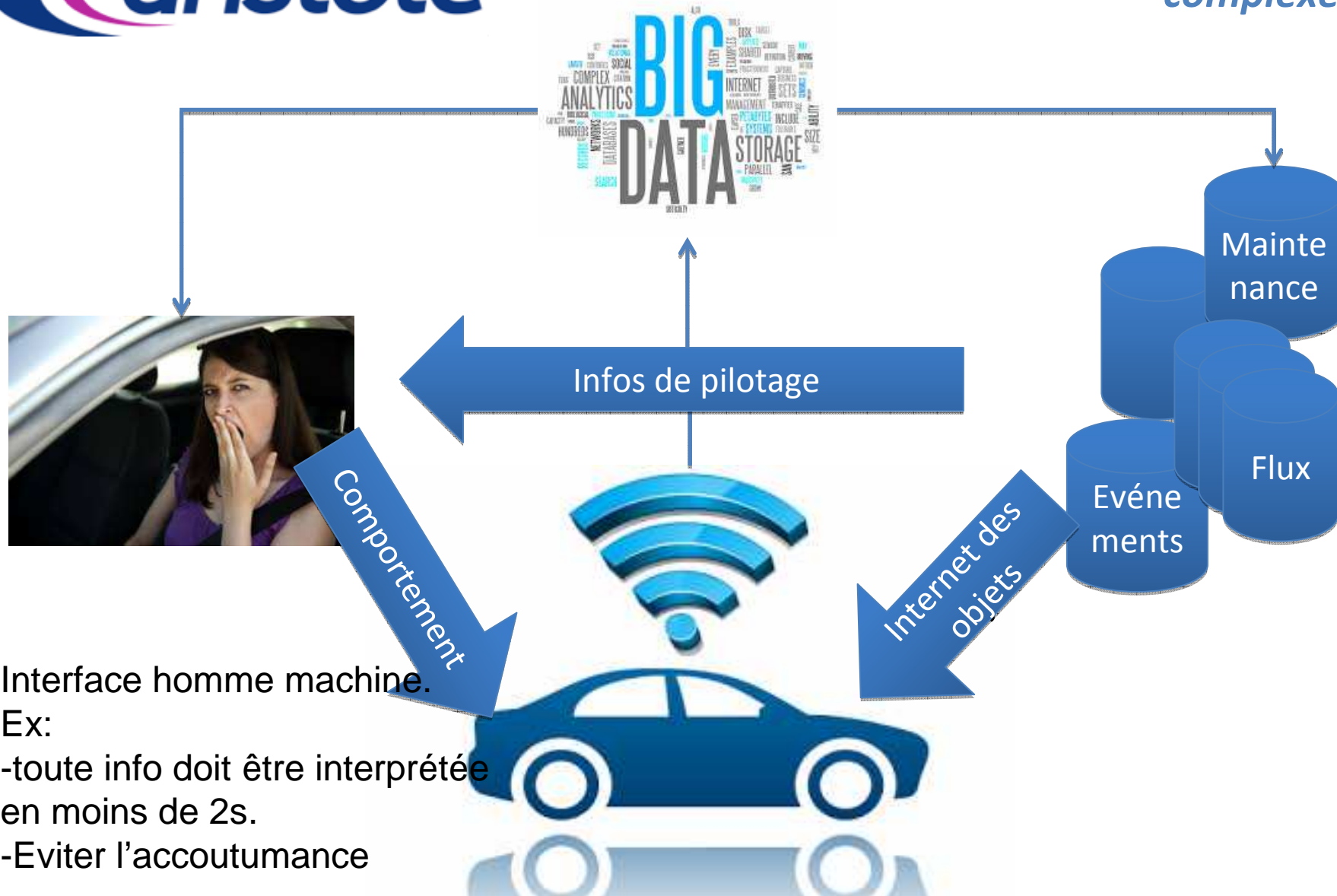
To promote the ability of livelihood



To improve the quality of survival carrier

来源：发改高技[2014]1770号《关于促进智慧城市健康发展的指导意见》  
Source: National Development and Reform Commission(NDRC) file number.(2014)1770

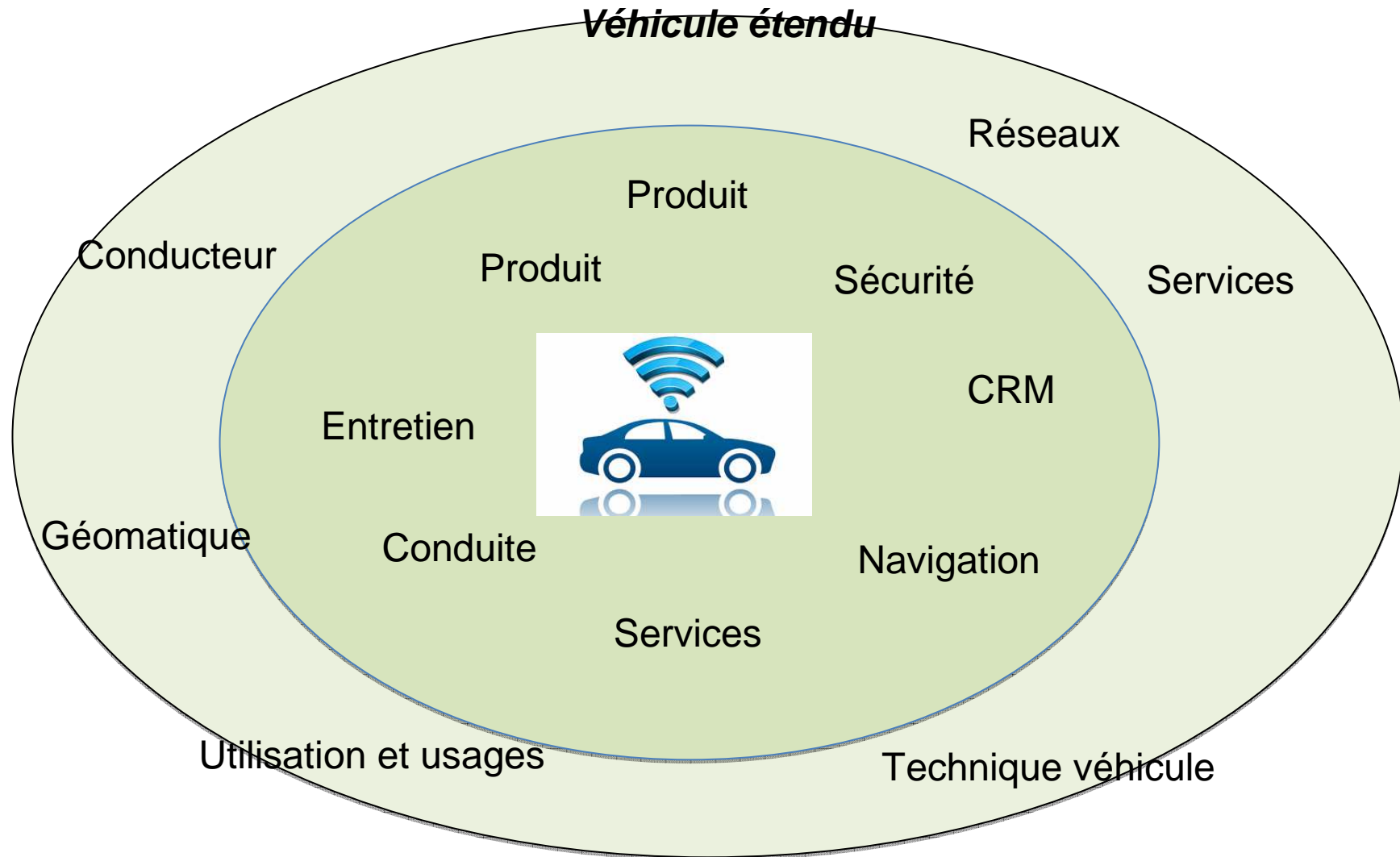
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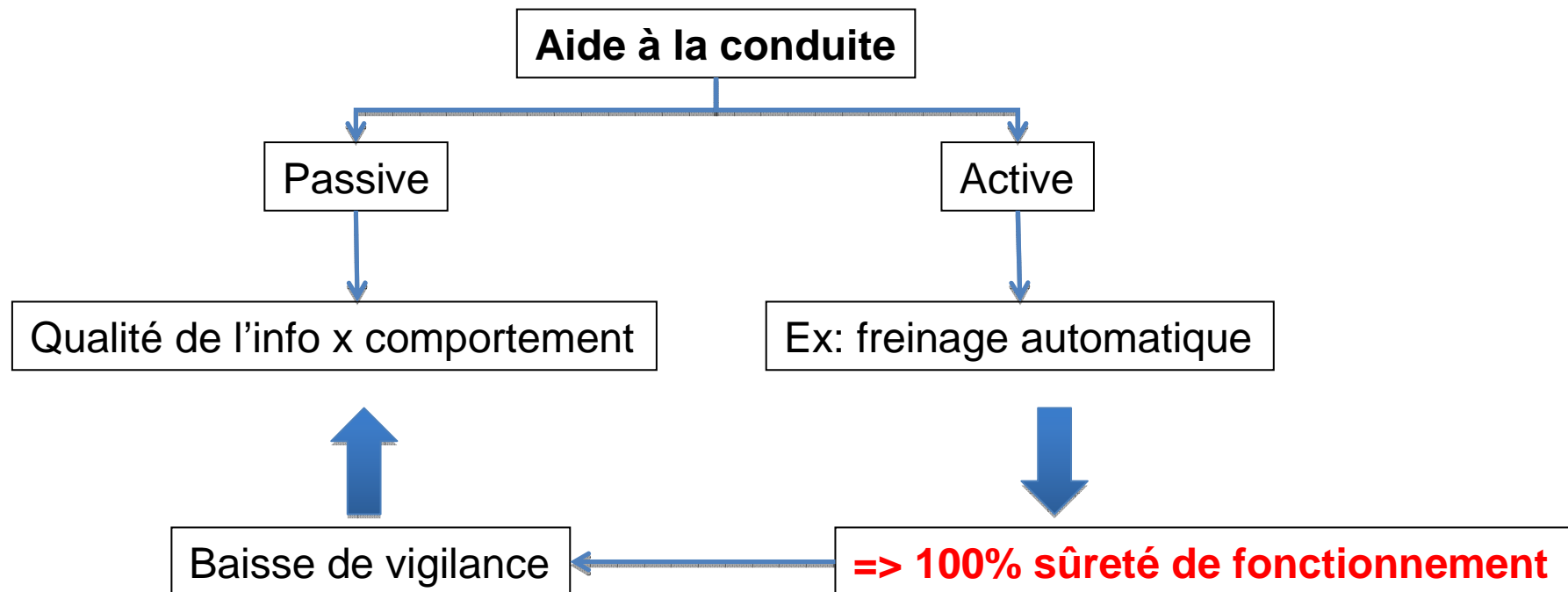
Interface homme machine.

Ex:

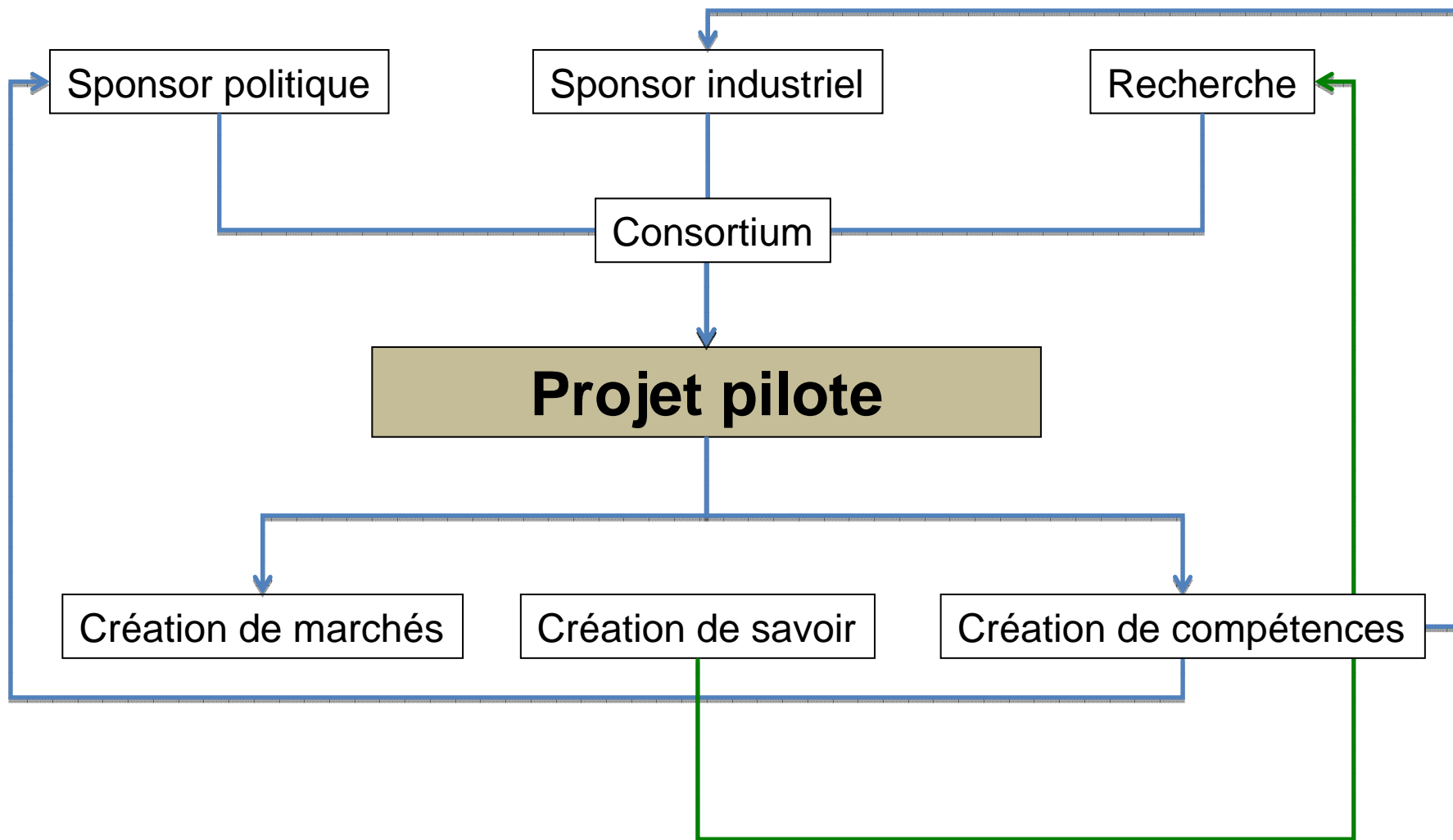
- toute info doit être interprétée en moins de 2s.
- Eviter l'accoutumance



- Ex: L'aide à la conduite va-t-elle réduire les accidents
- 90% des accidents sont dus à des erreurs humaines



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The government's response was to establish a single body, the Canterbury Earthquake Recovery Authority (Cera). It was solely responsible for managing the rebuild. "If you look around the world at cities which have experienced disasters, it is single-purpose organisations that are the most efficient," said Cera's chief executive, Roger Sutton.



The city's newly installed mayor, Lianne Dalziel, hopes to usher in a new era of governance that focuses on empowering community organisations to do things for themselves. "Building a resilient city starts at the grassroots, so that bottom-up meets top-down halfway," she wrote recently.





## *Christchurch: le pari sur les données et la contrôle citoyen*

### What is Sensing City?

The Sensing City is a social enterprise driven by three core values which must be present for the whole system to be viable. They are:

1

#### **Open**

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The information must be open. This means that the same information that is available to the City Council will also be available to the public. This not only creates total transparency, it also creates an innovative ecosystem where a two-person start up company has the same advantage with the information as a multi-

2

#### **Individual freedom**

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Individuals will not be tracked. Sensing City believes there is more value in tracking flows of things across the city (water, traffic etc) than tracking individuals. Arguably the technology to track an individual is already widely accepted by society, with cellphones carried by the majority of the population.

3

#### **Measure everything**

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The real value of the concept is reached when anything that can be measured is measured. The value of measuring a certain variable may not be fully understood at the implementation stage, but is likely to be discovered at a later date from an unexpected source.

### Objectives

The objectives for the Sensing City initiative are:

To be the catalyst in the creation of new information-based services and solutions to benefit citizens, improving quality of life and enhancing the way people live and the way business is done in Christchurch.

To position Christchurch at the very forefront of future cities by kick starting a new information-focused export industry in New Zealand. We will encourage inward investment, help stimulate growth, foster the development of local expertise and attract talent to the region.

Working with key partners, we will create and manage a city-wide data service platform and world first data unification model to integrate and provide access to a range of city data sets from multiple sources.

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- **La ville intelligente doit être un projet politique pour ne pas être un enfer**
  - Intégrer sciences sociales et technologie
  - Des défis techno-politiques: sécurité des systèmes et des données
  - Des défis politiques : la démocratie directe et le contrôle sur les systèmes technologiques

Panoptique



15/05/2015

La cité pour le Bien commun



Claude ROCHET-Séminaire Aristote 15/05/2015

35

