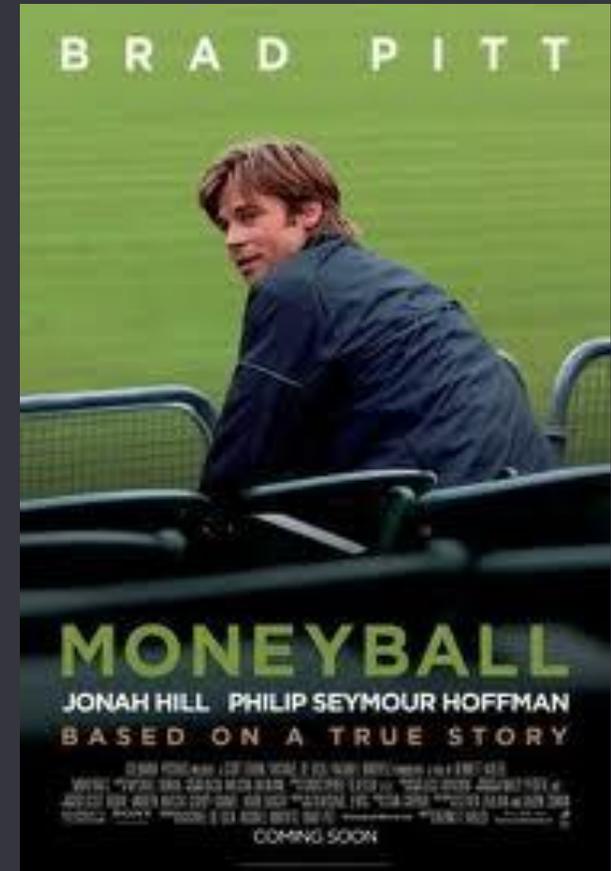
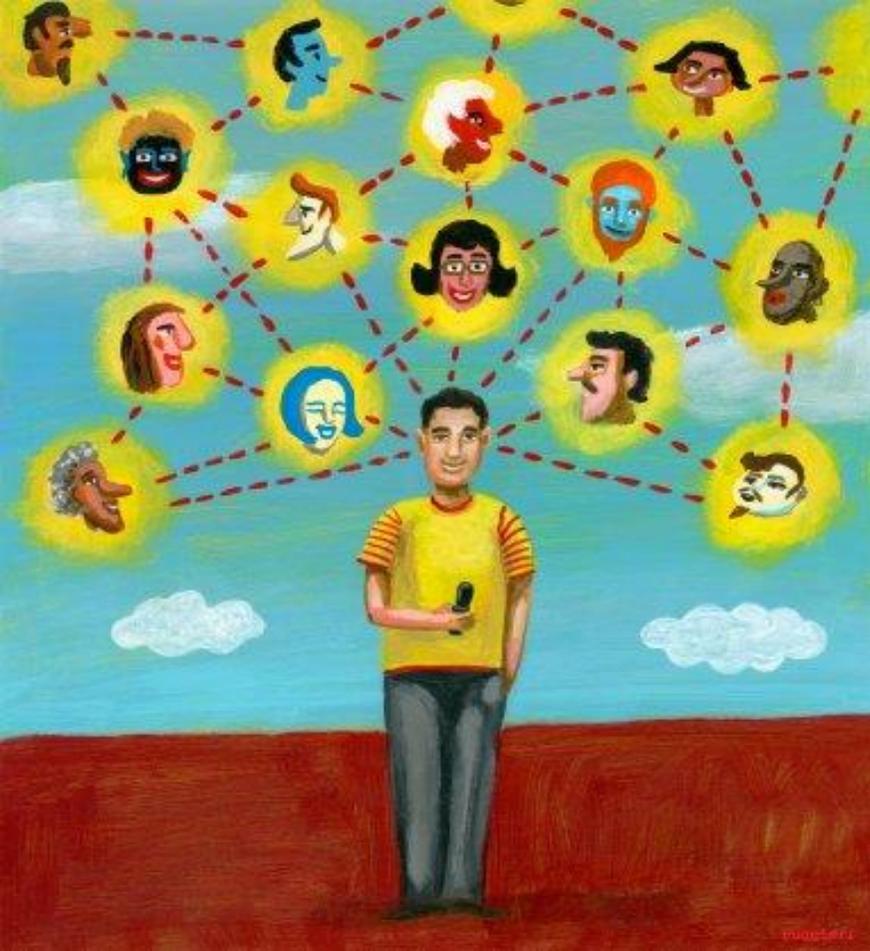


On measuring tourism: SMART Tourism and the challenges of big data

Jason Stienmetz
Daniel R. Fesenmaier
Professor and Director
National Laboratory for Tourism & eCommerce
Temple University





- 1 introductory remarks
- 2 technology and measuring tourism
- 3 important areas for measuring tourism
- 4 challenges to measuring tourism
- 5 concluding remarks

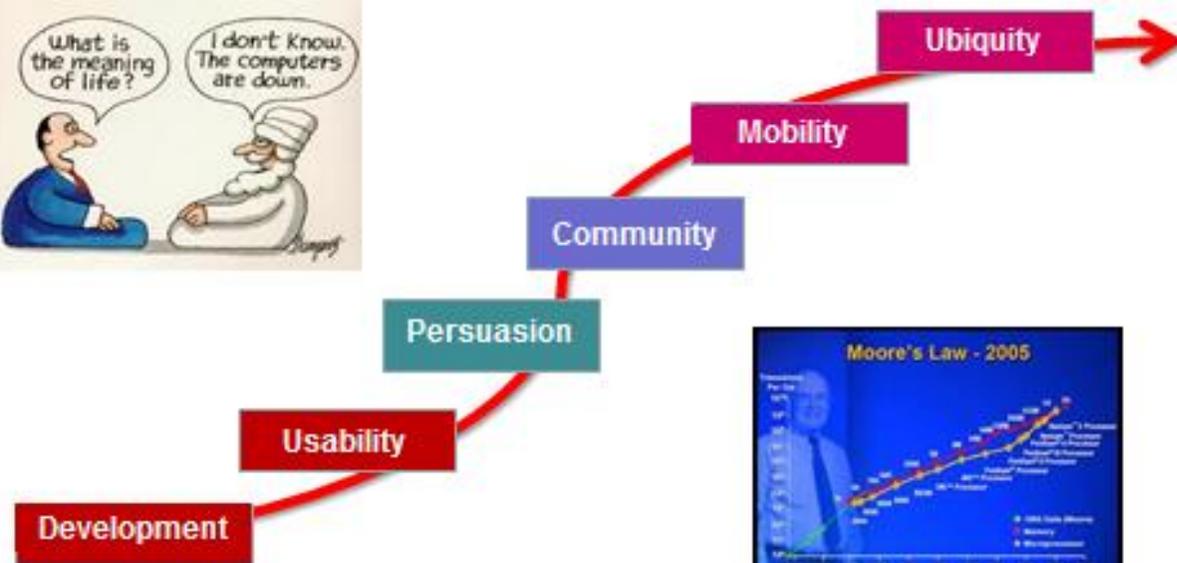
presentation outline

Dominance of technology



Dominance of technology

Technology: Six generations of Internet development



Emergence of data and tools

Blogs, tweets, likes, etc.

Networks – facebook, 4square

Search, logfiles, purchases, surveys

Scanner data - RFID tags - QR codes

Mobile devices - systems

Cameras

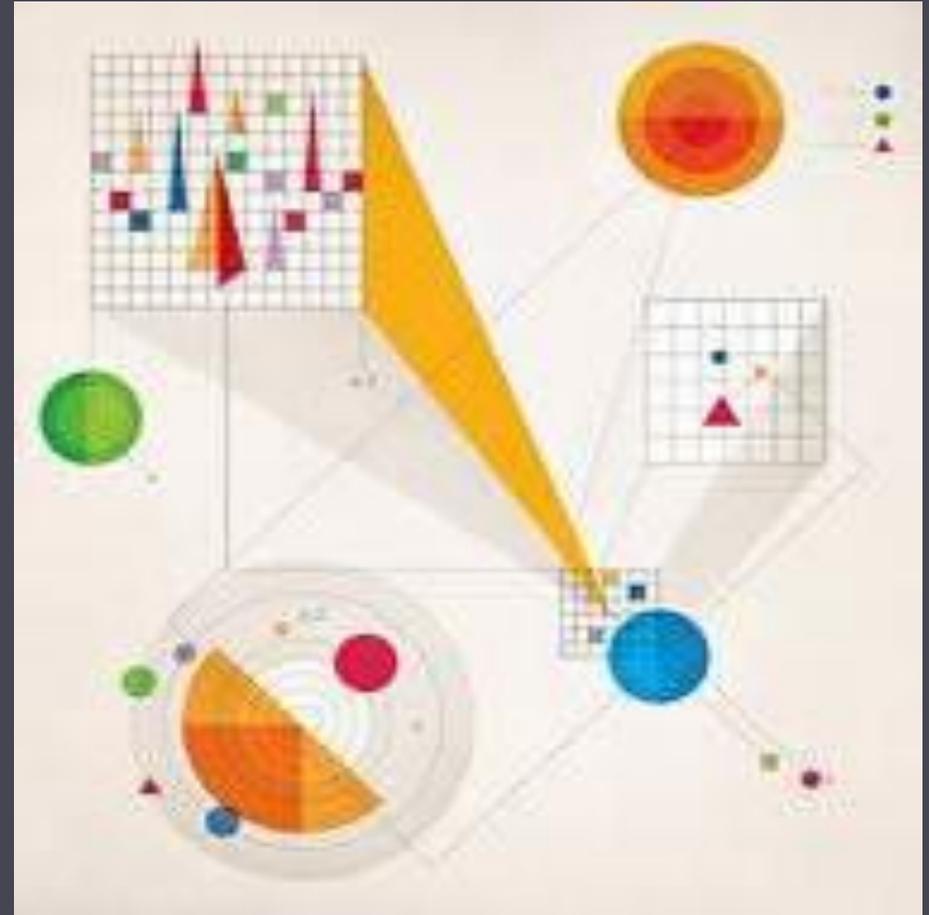
Internet of things

Data mining tools

Emerging analytics – sentiment analysis

Age of Big Data

“It’s a revolution,” says Gary King, director of Harvard’s Institute for Quantitative Social Science. “We’re really just getting under way. But the march of quantification, made possible by enormous new sources of data, will sweep through academia, business and government. There is no area that is going to be untouched.”



Are you an IBMer?

The screenshot shows the IBM Smarter Planet website. At the top, the IBM logo is on the left, and navigation links for Solutions, Services, Products, Support & downloads, and My IBM are in the center. A search bar is on the right. Below the navigation, the 'Smarter Planet' logo is displayed. The main heading is 'What 'smarter' means', followed by the subtext 'And why it's vital to our future' and a link '→ See how we're looking ahead'. To the right is a large image of a stylized Earth with blue and white segments. Below this, there are three featured sections: 'Sustainability' with the text 'How businesses gain by reducing', 'Smarter energy' with a city skyline at night and the text 'If these walls could speak, you'd save', and 'Smarter computing' with a colorful geometric pattern and the text 'IBM PureSystems'.

This screenshot shows a page for the 'Smart Thinking in Barcelona' event. The page has a blue header with the event title. Below the header, there is a 'Fact sheet' section, followed by 'Conclusions', 'Speakers', 'Exhibitors', 'Exhibitors' search', 'World Smart Cities Awards', 'Partners', 'News', and 'Press Section'. A video player is embedded in the page, showing a person using a laptop. The video title is 'Smart City Expo World Congress In Images'.

This screenshot shows the 'Smart Tourism' website. The page has a white header with the title 'Smart Tourism' and a search bar. Below the header, there is a 'Home' section. The main content area features a large image of a castle with a QR code overlay. To the right of the image, there is text about the use and application of technology in the tourism sector, referred to as 'digital' or 'smart' tourism. The text mentions that tourism plays a large part of the cultural and economic benefits of Scotland and is predicted to grow significantly over the next 5 years with technology playing a key role in enabling this growth. It also mentions that the Smart Tourism programme brings together university, academic and competing science research from across SICSA, tourism organisations, and industry to address some of the key challenges in the sector. The page also mentions that the programme has been identified by the Scottish Government as a key area for investment and has identified a set of generic needs. The page also mentions that the programme has been identified by the Scottish Government as a key area for investment and has identified a set of generic needs.

the coming together of
Henry Centre | Leadlight/Vision
and Yenkelevich

the
future
company

AMADEUS
Your technology partner

a **From chaos to collaboration**
How transformative technologies will herald a new era in travel



IBM Global Business Services
Executive Report

Todd

IBM Institute for Business Value

**Travel 2020:
The distribution dilemma**
*Enhancing collaboration is critical to traveler experience
and improve profitability*



today...

**2012
MOBILE
FUTURE IN FOCUS**



Key Insights from 2011 and What They Mean for the Coming Year

comSCORE.

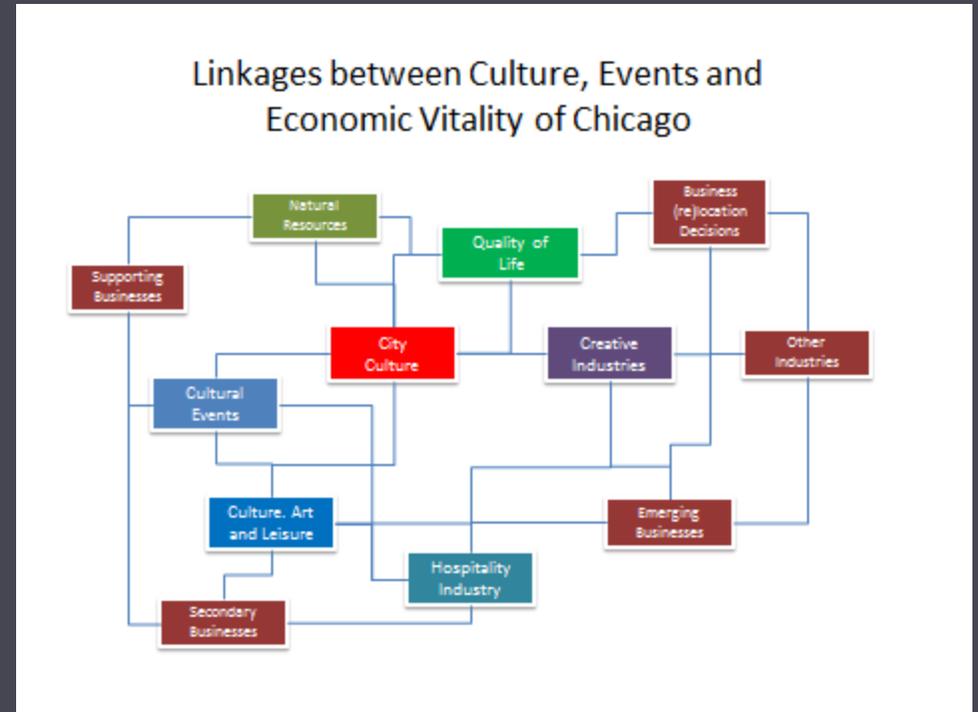
February 2012



today...

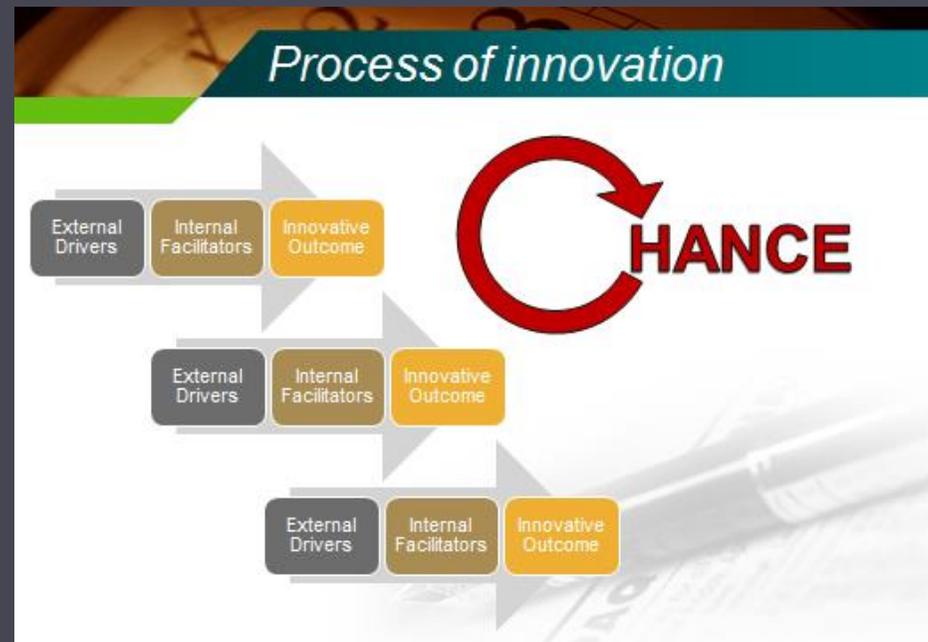
Application in tourism – mapping the economy

Tracking the flow of economic wealth through the economy



Application within tourism – organizational innovation

Supporting innovation
and organizational
change



Applications with tourism – social relations

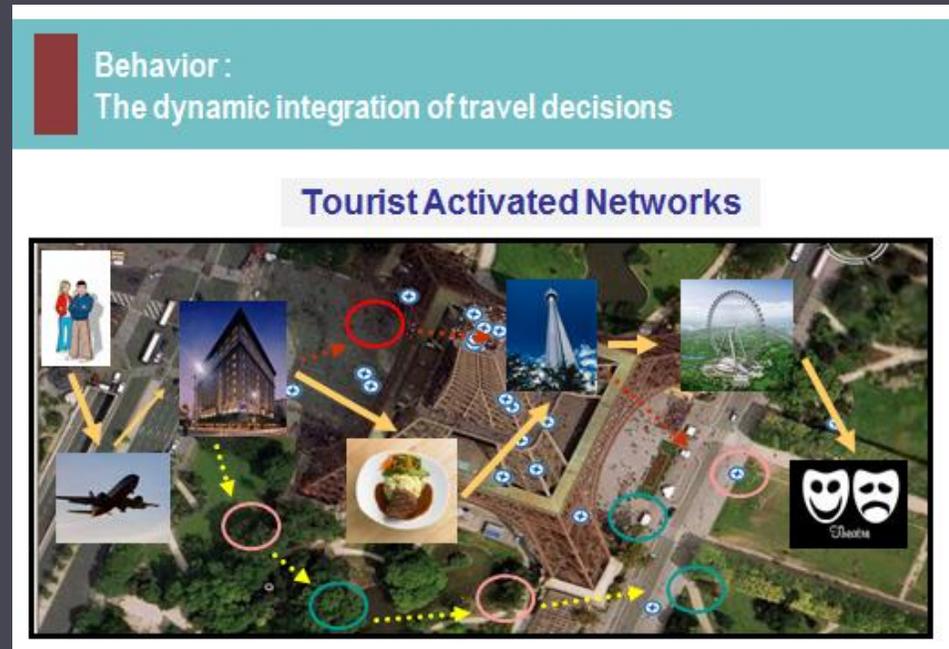
Social communities and
Social change



The screenshot shows the website for tnooz, with the tagline "innovation to drive customer loyalty". The navigation menu includes Home, News, Events, Advertise, Nodes, About, and Blog. The main content area features a blog post titled "Social-led trip planning travel startups – more questions than answers", dated November 15, 2011, by Kevin May, with 13 comments. The post text asks, "What is it about the idea of social media, trip planning, content-filled sites that seems to attract dozens of bright young things to the travel industry?". Below the text are two rows of colorful, stylized cartoon figures holding hands, representing a social community.

Application in tourism – connecting travelers

Understanding travel behavior and designing recommendation systems to support travel



Applications in Tourism - capturing experiences



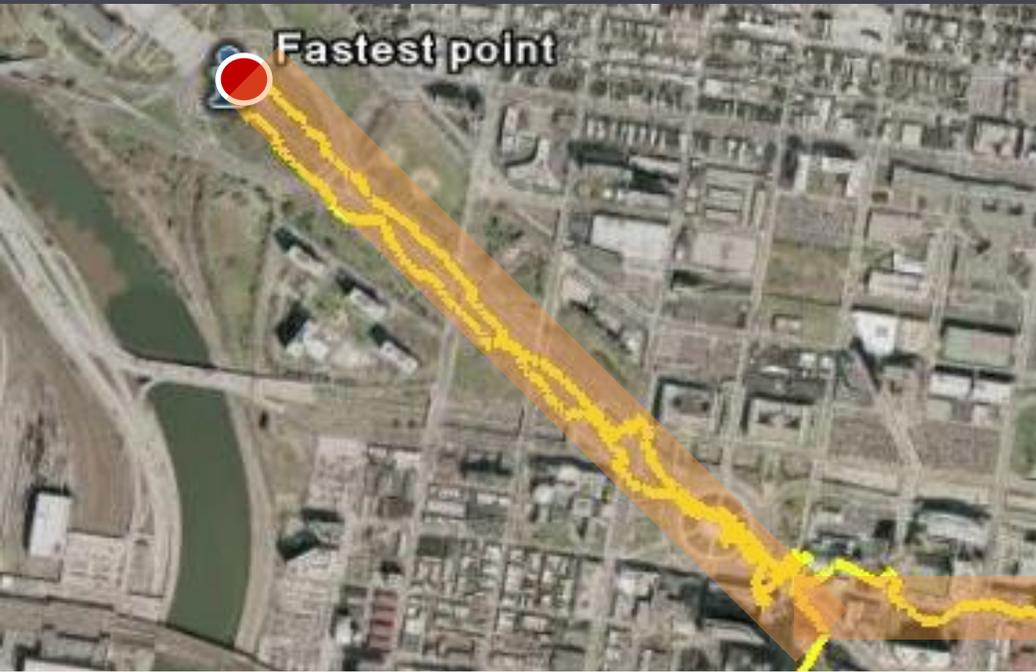
Sara

time-interval survey

Sara's experience reported hourly



Sara's Philadelphia experience



"The architecture of the buildings... so gorgeous."

sights

"Green! ...is lush and bountiful out here."

colors

sounds

"Buses, motorcycles, cars... traffic..."

smells

"a little like exhaust..."

"I'm in front of a giant statue... in front of the rocky steps..."

place

"I'm still with Becca & Jessica."

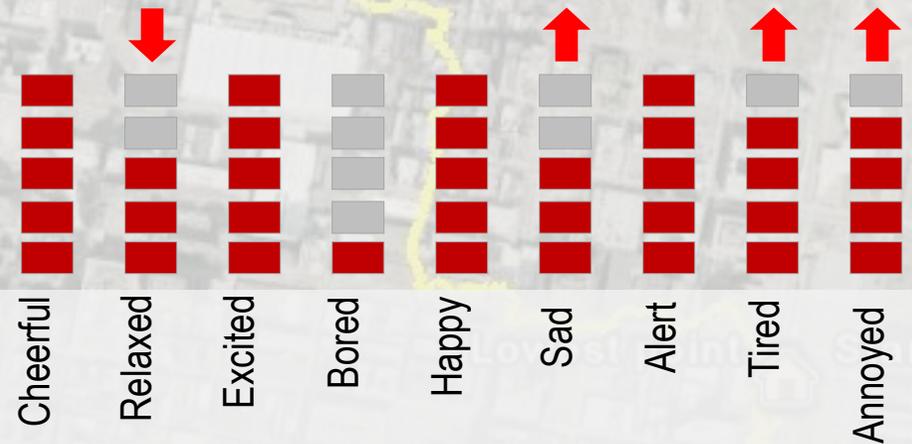
people

"We're taking pictures (of the statue)... posing..."

activity

things

"The map we've created & printed before we came..."



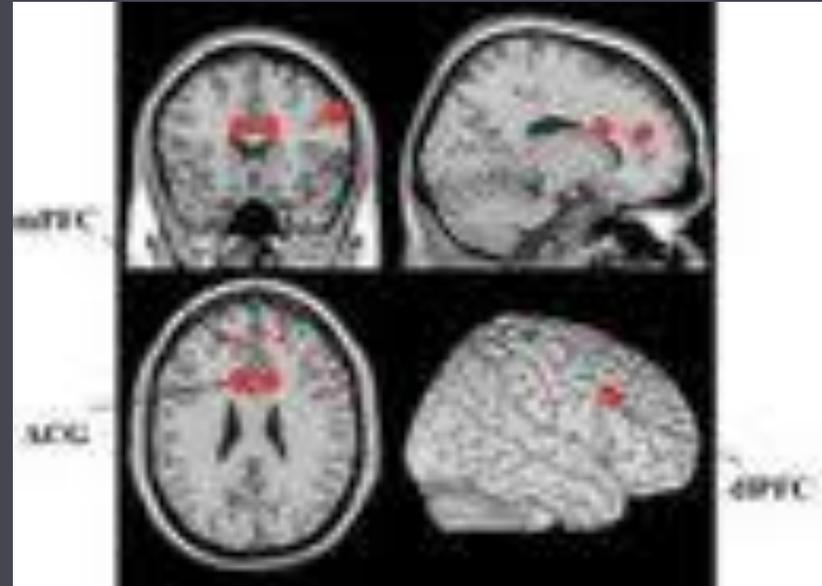
Applications within tourism – experience design

Understanding the nature of experience and the role of design



Applications within tourism – neural marketing

The linkages between information, experiences and the biology of human mind



Applications within tourism – distribution of knowledge

Technology, learning
and scientific
knowledge

MODUL VIENNA UNIVERSITY
UNIVERSITY OF APPLIED SCIENCES

EXPANDING HORIZONS

The Web Is Changing How We Consume Scientific Content

- Readers want to get interesting content at little cost (this is particularly true for the micro-structured tourism industry!)
- Authors want to make their work visible
- Universities want their faculty to become 'famous'
- Attention becomes increasingly important

Applications within tourism – education

The nature of
education and its role
within society



THE TEFI VISION

TEFI seeks to provide vision, knowledge and a framework for tourism education programs to promote global citizenship and optimism for a better world.

www.tourismeducationsfutures.org

Challenges with computational social science

Measurement

Indexes

Scales



Challenges with computational social science

Ecological Fallacy

Making conclusions about one level of analysis basis analysis of another



Challenges with computational social science

Measuring the right thing

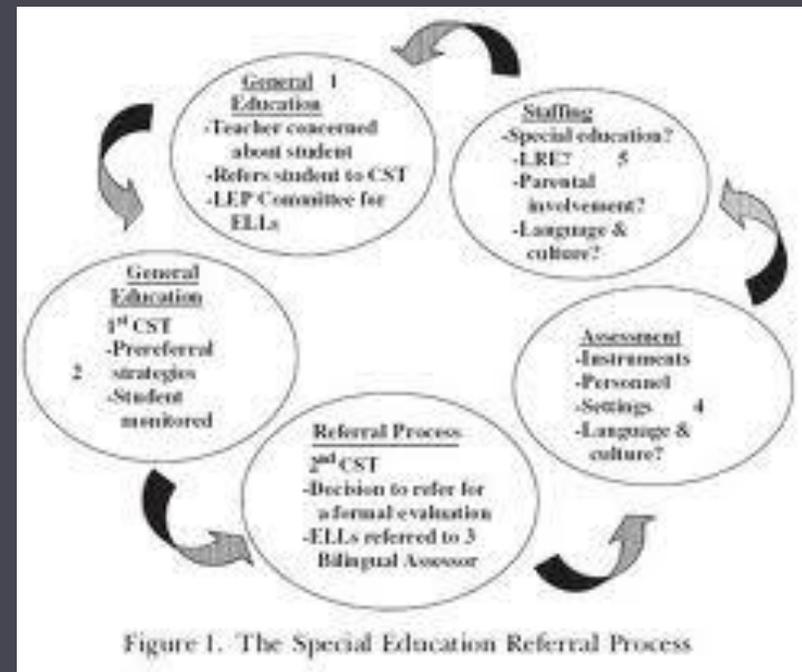
Understanding the systems that underlie the 'behaviors' that you are measuring what you think you are measuring.



Challenges with computational social science

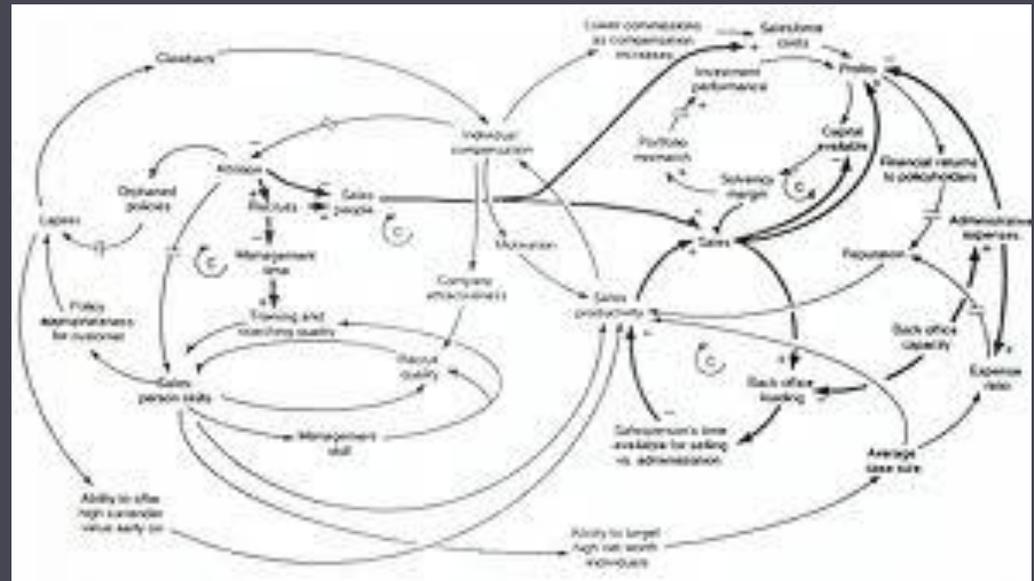
Nature of system structure

Embedded systems



Challenges with computational social science

Conclusions regarding causal mechanisms



Example – Visitor tracking system

Integrating multiple systems

Matching three levels of data:

1. logfile data
2. web survey data, and
3. visitor behavior data...

Tell me it isn't so!

Searching for Corpus Christi, Texas



An analysis of www.visitcorpuschristitx.org Users

Example – Visitor tracking system

Three different systems and the processes that link them

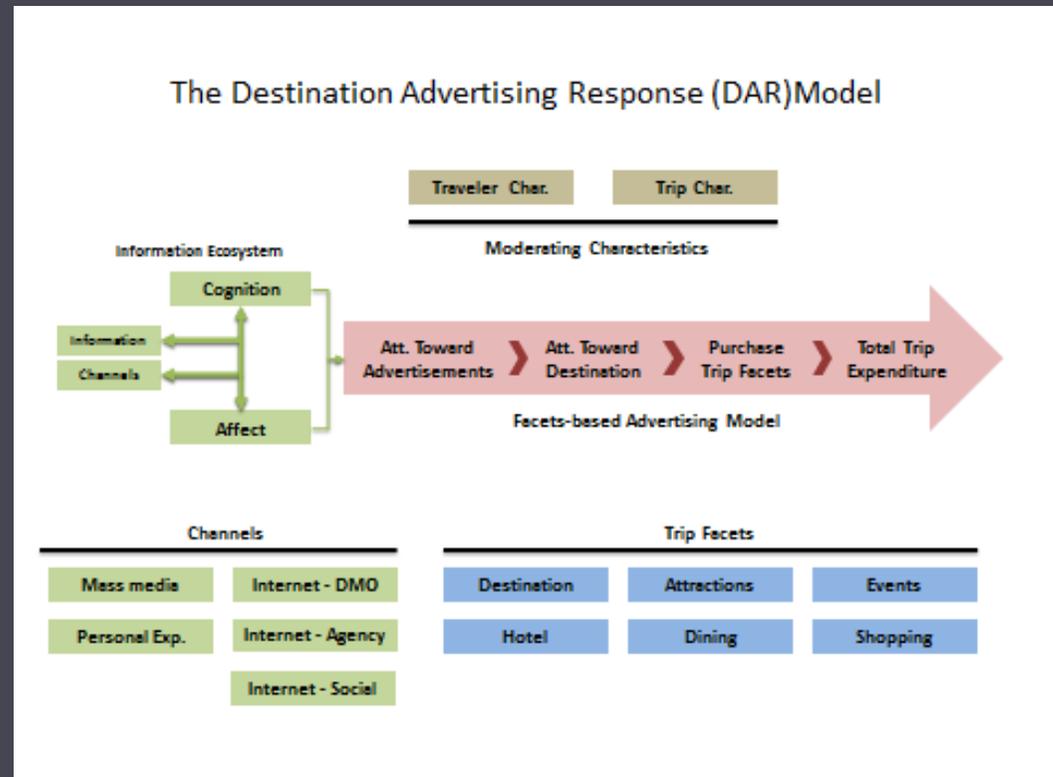
1. Online search
2. Perceptions and evaluation
3. Actual travel decisions



Example - Destination advertising evaluation model

New model of destination advertising response that incorporates:

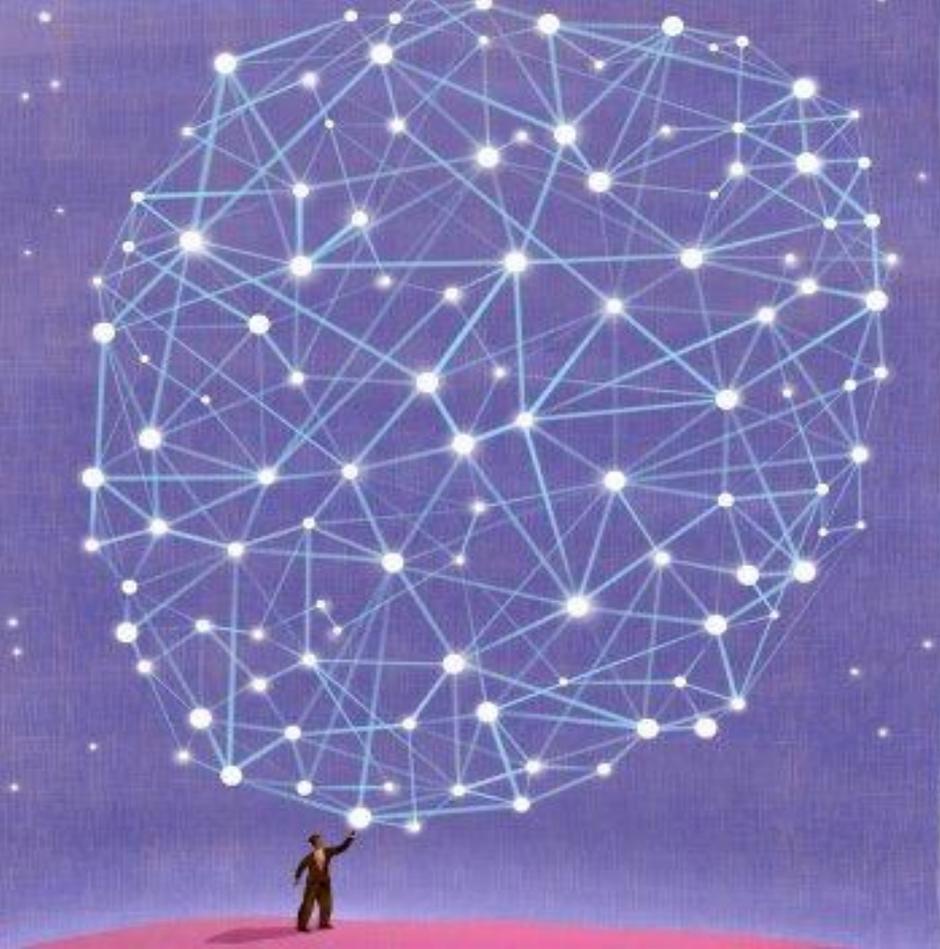
1. Info. processing
2. Ad response
3. Travel facets
4. Context factors
5. Channels



Future of big data and tourism

- 1) New world and exciting world
- 2) New tools and unparalleled access to data
- 3) Huge challenges for theory, measurement, analysis and practice
- 4) Data is about something – it has ethics





Thank you...

Questions or comments?

www.temple.edu/nltec

