DIGITAL CITIES AND URBAN LIFE.
A framework for international benchmarking.

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Abstract
The design of digital environments can carry out major social and economic advancements. We observed that the places where people live and work have been largely ignored in virtual environments. The recognition of the importance of linking digital and traditional environments is to be examined further under consideration of uses and users. This should include research developments into methodological tools. Digital environments of our proposed perspective contribute to the increase of creativity and enable citizens to develop interaction and establish socio-economic forces at higher standards.

This article is concerned with the development of a framework for benchmarking digital cities based on previous general methodological and empirical research carried out by the authors and others by taking into account experience on a comparative international scale. The benchmarking results should be interpreted under consideration of the mutual learning and understanding of users and uses as well as the unique qualities of a location (urban identity) and their connection to specific places. The implications consider that one may select best features to learn and advance in ones own region, to experiment and to explore impacts in selected cities.

1. Research background and approach

Geographical literature has demonstrated the relationships between the production and consumption of internet contents and places (Kellerman, 2002). This also includes the apparent paradox of physical barriers in the real world which result in the creation of constraints and opportunities for the establishment of digital environments (Wilson, 2003; some cases studies and theoretical developments are discussed by Arai-Sugizaki, 2003, Lorentzon, 2003 and Hashimoto, 2003). In the discussion of methodological examples for the comparison of digital environments (West 2001, Assinform-Rur-Censis since 1998) and in our own surveys of digital environments we observed that the places where people live and work have been largely ignored in virtual environments.

The Stanford Conference "Connect 96" was the starting point for the international debate about "Digital Communities" (discussed by Einemann 1996, 1997). Different regions and cities developed different strategies. Even though there were different driving forces, the broader international analyses showed comparable factors of success (Einemann, 1998, 1999). The development of internet use and the implementation of applications grew rapidly and political institutions on all levels started to promote projects. The web presence of the cities (and even the municipalities and the counties) was analysed from different perspectives: Einemann, 2001 and 2002 mostly from a user-use perspective and empirical investigation; Paradiso/D'Aponte, 2003 from the overall aim of representing and investigating the interrelation between traditional and digital locations. Two benchmarking methodologies were created for this purposes and tested for the German cities (Einemann, 2002) and the Italian cities (Paradiso/D'Aponte, 2003) resulting in

the production of two different national qualitative-quantitative data bases. The question of the quality of the internet position of the cities gained in importance; broader investigations of the production, use and users for example in Germany showed the great difference between the cities. Munich was found to be the "internet capital of Germany" (Einemann, 2000).

Government was recognised not only as an enabler of new technologies and processes, but as a key player in the development of electronic communities (Corey, 1998, 2001); egovernment regional/national surveys were discussed to find out general trends and peculiarities (Einemann, 2003 for Germany, Paradiso, 2003b for Italy and specifically for the best practice of the Region of Campania). As Shiode and Torrens asserted (2003) very little attention has been paid to digital cities as urban spaces and the extent to which they resemble their world counterparts. The geographical representation of the interplay of digital and traditional environments is not only an interpretative tool but also a precondition for the integration of planning theory and processes as well as ICT dynamics and potential (Paradiso, 2003a). Corey and Wilson (2003) in particular raised clearly fundamental questions concerning the translation of ICT lessons for planning better conditions in distressed communities and proposing a coherent linkage between planning theory and a practical framework for the development of ICT potential.

The re-thinking of our own contributions produced the idea of an integration of the perspective of internet production and use on the one hand and the digital city from a location planning perspective on the other in order to describe the internet position of cities further and carry out pilot field research on digital environments, impacts and the understanding of positive and negative performance.
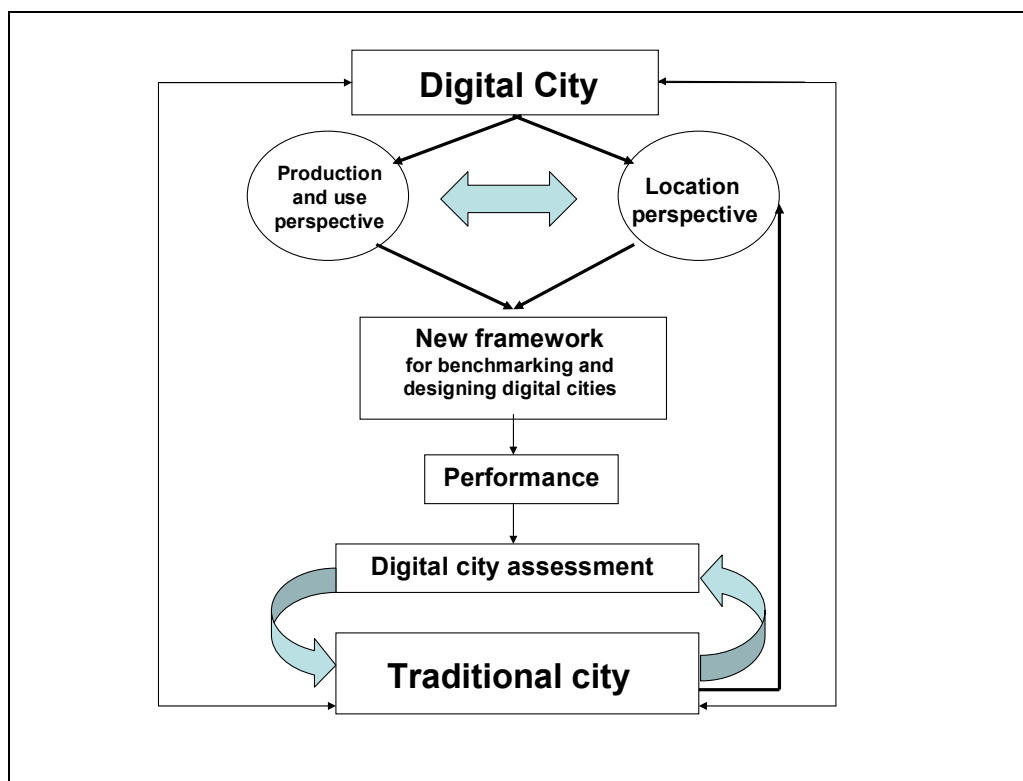

Fig. 1- Digital and traditional city interrelationship model

2. Methodological approach: basic aspects of the framework

In our new approach of analysing and conceiving digital cities as a habitat for improving creativity and developing the interrelationship between the digital and traditional environments, particular attention has been paid to urban life. How can this be represented? How deeply is this interconnected and why? How can it evaluated for improvements from an external and internal perspective? We can only outline some brief insights in this short paper. This will be discussed in more detail in a longer version to follow. Key elements are the user dimensions and their activities in terms of internet production of contents, use, communication, knowledge, interaction and participation for the development of creativity and quality of life in the city.
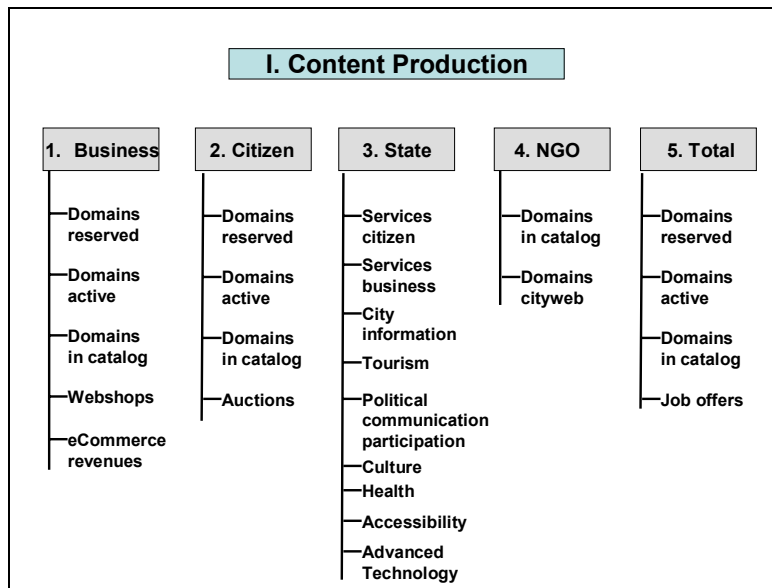

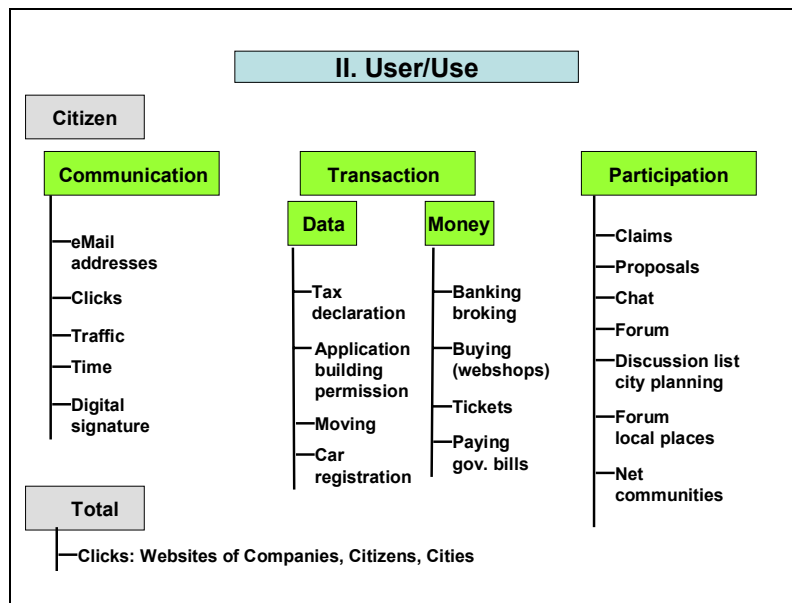Fig. 2 - Framework categories: I. Content Production

Fig. 3 - Framework categories: II. User/Use

The interrelation between traditional and digital places is represented using additional indicators describing the place perspective:

- **High speed access (wired/wireless)**
- **Location of internet companies**
- **Employees: ICT industry**
- **Universities: staff/student information technology**
- **Internet research institutions**
- **School networks**
- **International cooperation (Telecities, Global Cities Dialog,…)**
- **Urban life: human mobility, events, attractions, amenities, security, social services**

The following categories are to be examined for the measurement of the level and quality of web content (especially from the user point of view) and the opportunity of distinguishing between more or less advanced digital cities:

- **Information**
  (addresses and service description, project planning, hotel information,…)
- **Interaction**
  (using email to send messages, asking for a hotel room, …)
- **Transaction**
  (online reservation, paying bills,…)
- **Participation**
  (chat, forum for horizontal communication,…)

3. Future research and policy relevance

We have dealt with the problem of benchmarking and the assessment of digital cities in an integrated research perspective for the consideration of digital human concepts of places and user behaviour in digital environments. This basic shaping consideration enhances the understanding of impacts in regional and local development and the way in which the redesign of both digital and traditional cities can be addressed for a better life. The methodological framework is carried out in two pilot countries, namely Germany and Italy, which can be supplemented for other countries.

The proposed measurement framework is broad enough to accommodate available data and empirical research findings and flexible enough to be reduced and easily adapted to any context and need.

Open questions for future research include:

- gaining a thorough understanding of the impact of digital cities on traditional locations and uses
- understanding the driving forces behind best performance
- analysis and evaluation of digital and traditional communication under consideration of the interaction of different actors in cooperative decision making in a restricted time network within an interrelated planning process.

One tool addressing the last question could be envisaged in a software environment supporting the framework for regional and local development and planning purposes (for an overview of cooperative tools from a software engineering perspective refer to Cimitile/De Lucia/Gall eds., 2003). This distributed tool can be accessed from any possible location and by any user through the internet, based on the user's profile. It is firstly conceived to be used as a structured means for the collection and evaluation of quantitative information concerning the digital city under consideration. It can furthermore be utilised as a discussion tool for qualitative changes and maintenance needs and can be adapted for improved opportunities in a kind of participative planning cycle of digital cities.

A database for the analysis and benchmarking of digital cities for city ranking and the self-evaluation of city-web presentations (developed by Einemann/Böhme at Hochschule Bremerhaven) should be developed to meet the requirements of the new envisaged framework.

The political relevance for this research programme also considers the strategic European scenario of existing networks of cities and regions aimed at developing the "Information Society".

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