Chapter 17
Digital Cities: Towards Connected Citizens and Governance

Leonidas Anthopoulos
TEI Larissa, Greece

Panos Fitsilis
TEI Larissa, Greece

ABSTRACT
The digital cities, from their online forms such as America-On-Line and Kyoto cases, to their ubiquitous forms such as Beijing, Hull (UK) and Trikala (Greece) cases, have achieved in simplifying citizen access to Local and Central Government services. Early digital cities succeed in delivering improved public services to citizens even with no digital skills, closing digital divide and establishing digital areas of trust in local communities. This chapter presents the evolution of the digital cities, from the web to the ubiquitous architecture, which can deliver multiple services to different target groups and can behave as a common “interface” between citizens and all kinds of public agencies. The chapter will focus on the latest digital city architecture, and on the experiences from the digital city of Trikala (Greece), in order to present how digital city impacts local attitudes regarding e-Government. Moreover, the chapter will attempt to evaluate digital city’s progress and its performance concerning citizen contacts to e-Government.

INTRODUCTION
Multiple approaches have been given to the digital city: digital environments collecting official and unofficial information from local communities (Wang & Wu, 2001) and delivering it to the public via web portals are called information cities (Sairamesh, Lee, & Anania, 2004; Sproull & Patterson, 2004; Widmayer, 1999); networks of organizations, social groups and enterprises located in a city area are called digital cities. These definitions were given by major case studies such as the America-On-Line, the Kyoto’s and the Hull’s etc., which are analyzed in this chapter in order to present the ubiquitous environment that is generated in many areas all over the world.

Although digital cities were initiated as information based platforms (web portals, databases,
virtual reality applications etc.), they soon evolved
to wide(metro)-area information systems (IS) that
deliver different kinds of services to the local commu-
nities. Their infrastructures concern network
equipment (fiber optic channels and wi-fi networks
in the city area), service oriented information
systems (e.g. e-Government IS, e-Democracy
portals, public Agency web applications etc.),
public access points (e.g. wireless hotspots, info
kiosks etc.), and social service systems (e.g. intel-
ligent transport systems, tele-care and tele-health
networks etc.). These environments composed
a recent digital city definition (Anthopoulos &
Tsoukalas, 2005): *city-area infrastructures and
applications aiming to cover local needs and
support local community’s everyday life.* This
definition evolved to the ubiquitous city or U-city
(Wikipedia, 2009): *a city or region with ubiquitous
information technology. All information systems
are linked, and virtually everything is linked to an
information system through technologies such as
wireless networking and RFID tags.*

Both recent digital city and U-city approaches
face various challenges: the opportunity for the
digital city to become a) a common interface for
public transactions in the city area, b) an area-
of-trust for the citizens where they can exchange
opinions, they can support decision making and
they can describe their real needs to the political
leadership. These approaches can develop a “global
e-Government environment” in city areas, where
citizens can access both local and central public
services. This global environment can be called
“Metropolitan e-Government environment” and
its main targets concern: a) the collection of local
information, b) the use of local information for
the sustainable development of the city and c)
the continuous evaluation and improvement of
the architecture, and of the quality of the offered
services.

In the Background section of this chapter the
evolution of the digital city from the web to its
recent ubiquitous architecture is presented. We
mainly focus on the latest architecture of the digital
city, in order to present how it affects social attitudes
in local communities, concerning e-Government.
We applied a recent evaluation framework –the
Software Project Observatory Framework (SPoF)-
(Fitsilis and Anthopoulos, 2008) in the digital city
of Trikala (Greece), in order to investigate whether
the Metropolitan e-Government environment can
support the diffusion of the ICT and of the digital
public transactions in a city area.

**BACKGROUND**

Since the early 90s different digital cities were
implemented all over the world (Table 1). The
first case was the *America-On-Line cities* (Wang
and Wu, 2001), where web environments offered
digital transactions and chatting options. America-
On-Line simulated a city via grouping services
according to civilian logic. The digital city of *Kyoto
(Japan)* (Ishida, 2002; Ishida, Aurigiri & Yasuoka,
2001) and the digital city of *Amsterdam* (Lieshout,
2001) were web environments simulating the city
and its local life (streets, enterprises, malls etc.).
This version of the digital city offered virtual meet-
ing rooms for specific common interests, inviting
citizens to participate. These web approaches were
evolved to virtual reality environments (Van den
Besselaar & Beckers, 1998) operating beyond the
physical boundaries of a city.

Some unique cases that exploit Information and
Communication Technologies (ICT) for the social
development were implemented: the *Copenhagen
Base* (Van Bastelaer, 1998) was a public database
containing useful local information. People could
initially access the database via the Internet and
via text-TV. Today the Copenhagen Base is open
to people for data supply and entry. Moreover,
the *Craigmillar* city of Scotland (Van Bastelaer,
1998) used the ICT to structure groups of citizens
who shared knowledge and offered social services
to the local community. In Craigmillar –an ex-
industrial area-, citizens collaborated in order to
handle local needs.