



OSWINDS
research group



Smart cities tales and trails

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Presentation Outline and emphasis

- ❑ Cities of today with people on the move
- ❑ Cities identity and cultural profiles
- ❑ City's content as an innovative asset
- ❑ CineMetro : an implementation for city stories and places interactions
- ❑ Impact potential and applications
- ❑ Conclusions – Future Work

“whatever the smart city might be, it will be acceptable as long as it emerges from the ground up”.

Intoduction

Cities have been **transformed to experimental platforms** at which data produced capture everyday **activities, pulse, and interactions**.

Placing **humans at the centre of smart cities** has motivated several efforts under the vision of having citizens at the forefront of the Internet of Everything.

The focus is placed on **people who navigate** in the city and who are enabled to act as **tales receptors & trails broadcasters**.



Cities of today with people on the move



People with **mobile** devices move on **public** spaces with a predefined view of the place, given recommendations and guidelines by others who also influence their opinions and sentiments. **Public or private authorities** and other stakeholders analyse and monitor social media communities as they emerge in **Local Based Social Networks (LBSNs)**

Digitization and heavy **hyper-connected reality in public spaces** has boost research and innovation relevant with the next major topics of :

- **LBSNs structure analysis**
- **Location-aware recommendations**
- **Sentiment analysis**



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LBSNs structure analysis ... basics

Li & Chen, 2009: employed unsupervised clustering for finding groups of: i) mobility patterns and ii) users based on their activities,

Scellato & Mascolo et al., 2010, 2011 :

- graph analysis on some well-known LBSNs studied the **correlation of geographic distance with the users' social network**, considering only one static location per user.
- analyzed the complete social network of Gowalla and identified the existence of the **small world phenomenon** and of a high clustering coefficient.

... analysis has indicated that as time goes by, the frequency of making checkins and visiting new places decreases much steeper than the frequency of making friends.

Location-aware recommendations ... an indicative case

GeoLife is an LBSN service which analyzes users' uploaded GPS trajectories off-line to provide:

a) **travel recommendations**, by identifying interesting locations and travel sequences using a method similar to HITS with experienced **users serving as hub** and interesting **locations as authority** nodes

b) **personalized location & friend recommendations**, combining **content-based** with **user-based** collaborative filtering and determining users' similarity from location history (Zheng et al., 2011). As GeoLife manages raw GPS trajectory data, it faces problems such as the identification of spatial areas constituting distinct landmarks.

Sentiment analysis .. in a nutshell

Humans throughout their everyday activities are experiencing a **wide range of emotions**.

Via considering sentimental knowledge expressed in **social media** (Twitter, Facebook), **arguments' extraction and policy making** processes can be better supported.

Text and opinion mining techniques for initially detecting the content generated in social media about a specific topic, and then analyzing the extracted content with respect to its opinion connotation.

Popular ed social media (Twitter, Facebook, Flickr, YouTube) content and applied sentiment and emotion detection approaches, **empower authorities** to increase their effectiveness when dealing with various issues and activities within a city.



Cities identity and cultural profiles : cinemas use case

Cultural and historic content has been closely related to cities.

European **cinemas** of the 20th century were primarily experienced as an **urban phenomenon**, which was both developed and consumed in an urban environment, as the majority of Greek movie halls were located in the cities.

Use case : the city's depiction as a **“cinematic city”** with its own distinct qualities

One of the most important issues raised by Greek popular cinema was the **representation of the city**, which reflected the **emerging urban character** of Greek society, the effects of economic reconstruction of the country, together with the rapid transformations of the cityscape.



*Thessaloniki
Film
Festival*

Cities identity and cultural profiles

Following the paradigm of the city's depiction as a “cinematic city” with its own distinct qualities, Greek popular cinema of the 1950s and the 1960s served as a thorough study of the cinematic Greek city, since the adulthood of Greek cinema coincided with Athens' rebuilding and urban renewal. Greek feature films were dealing with the historic present of their time and were mainly shot in big cities (Athens and Thessaloniki), where thousands of internal migrants who have abandoned the countryside were in search of a profession and a better life.

The idea of utilizing content, such as films archives

The cultural content exploitation in the city context was motivated by the use case of Greek cinema and the city's strong cinematic profile. The motivation of this work originates from the fact that Greek (as other European and International) film archives embed valuable city stories of long lasting impact on cities formation and transformation. The novelty of this work is justified by its reusing of films content to generate innovative cultural digital assets via Web or mobile applications.

CITY'S CULTURAL CONTENT AS AN INNOVATIVE ASSET

The **cultural content** exploitation in the city context was motivated by the use case of Greek cinema and the **city's strong cinematic** profile. The motivation of this work originates from the fact that Greek (as other European and International) film archives embed **valuable city stories of long lasting impact** on cities formation and transformation.

Delivering, re-using and enriching content collections and archives (such as film archives) through the use of new technologies in cities brings city's stories, locations, and facts at the forefront of today's city navigation.

The **novelty of this work** is justified by its reusing of films content to generate innovative cultural digital assets via Web or mobile applications.



... main objectives of the work are ...

- *propose* to the users/viewers an innovative form of interpreting and exchanging film/audiovisual data, with new perspectives for media content viewed in **new, attractive** ways
- *provide* a new outlet of promotion and propagation of film archive material, and highlight the value of a multi-layered audiovisual heritage about a European **cultural identity** area
- *emphasize* on film's unique significance as :
 - reflection and articulation of European cultural identities;
 - exploiting the fundamental relationship between seeing and understanding;
 - recognizing the centrality of visual images to the formation of a local identity.

This work's ambition is to proceed to the next advances

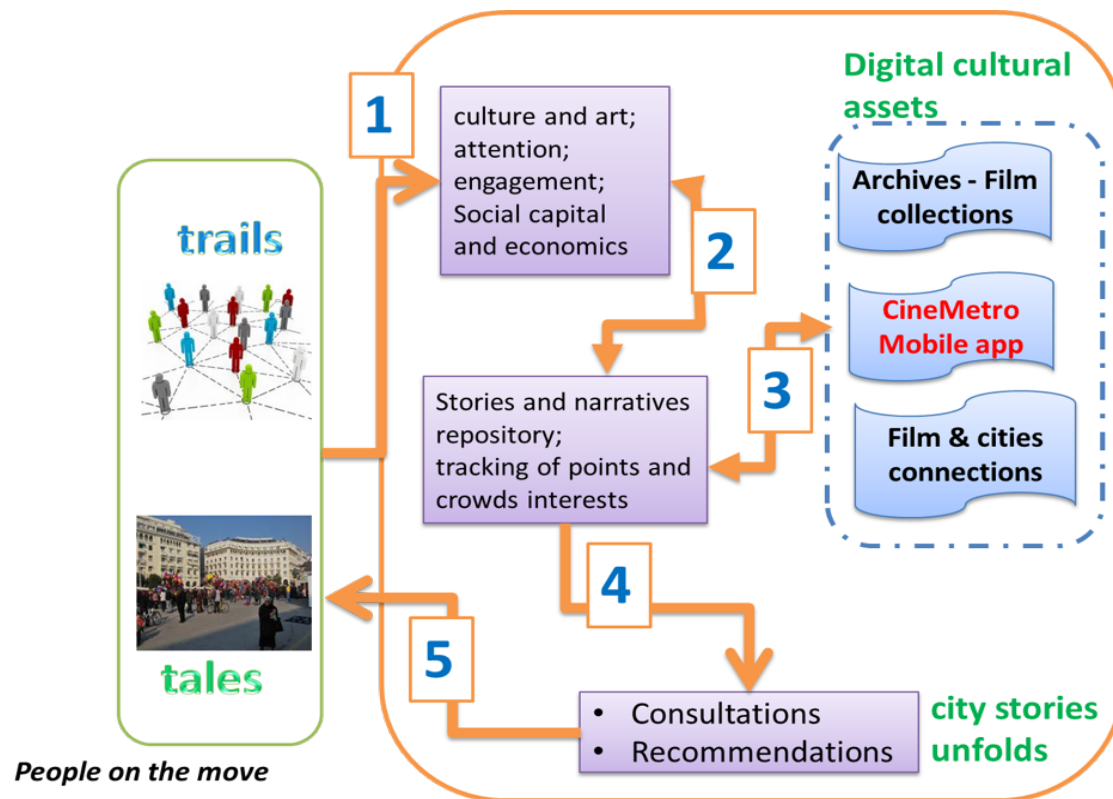
- advancing earlier approaches which have considered aspects of **time and location separately**, so propose an innovative new approach which will jointly consider the criteria of location, time, emotion and frequency of public spaces visiting.
- provide a methodology for detecting citizen emotions and phenomena as they emerge in LBSNs via exploiting public spaces culture and history similarities, comments, etc, in an enjoyable and organized manner. User communities as **they emerge in the real life experimenting** may leverage on recommendation processes at which they can also interact.
- provide an **easily-deployable apps toolkit** that enables both trajectory analysis as well as people emotional standing for the case of humans physically moving and interacting within public spaces, as well as appropriate tools for searching in longer-term analysis.

Methodology for city content & its dynamics management

The proposed work is based on the need to capture real, virtual experiences and interactions in public spaces by primarily involving a methodology which will be used to leverage on archival cultural content (such as films) and at the same time it will enable data collecting and gaining input from citizens who are on the move and who can rate, interact, gain information, etc.

The below figure summarizes the methodology which can operate on some specifically defined building blocks which involve five specific flows inline with the objective to exploit city (past) stories with today's actual city navigation and experiencing.

A framework for cities tales unfolding



step-by-step methodology proposed to :

- leverage on archival cultural content (such as films);
- enable data collecting and
- gain input from citizens on the move, who can rate, interact, receive recommendations, etc.

CINEMETRO : AN IMPLEMENTATION FOR CITY STORIES AND PLACES INTERACTIONS

Unfolding city stories enabled :

- correlations and integration of existing city spaces,
- city relevant cultural content unfolds inline with city trails.
- create new ways of reading our cultural heritage in terms of history, memory and identity

an innovative application was developed which merges past city tales with today's real experiencing trails.

Cinemetro application principles and implementation

The application developed **visualized** the so called **CineMetro** to

- deliver a familiar real metro-like experience with stops, hubs and people on the move trails.
- The virtual metro-like app informs and familiarizes the public about Thessaloniki's rich cinematic history through a modern navigation experience in the city.
- Various city's landmarks, which are linked to films shot in Thessaloniki, are used as “**stations**”, where citizens can step by in order to see what's available (e.g. photos, texts, videos, podcasts, etc). At those stops virtual spaces people on the move can deliver their experience (posts), their rating, their own suggestions, etc. Social media interactions are enabled with connections to most popular social media **check ins** (in an LBSNs manner of interacting).

Exploiting film and city innovative application

The “**CineMetro**” app visualizes the rich cultural heritage of Thessaloniki’s film history, which is represented in three major “metro”-like lines and their respective routes that pass through the city’s historical centre:

Line 1 (films urban scenery). It deals with films that were shot in Thessaloniki and it thus promotes Thessaloniki through fiction film

Line 2 (cinemas locations). It includes references to old and new cinemas (movie halls) in Thessaloniki

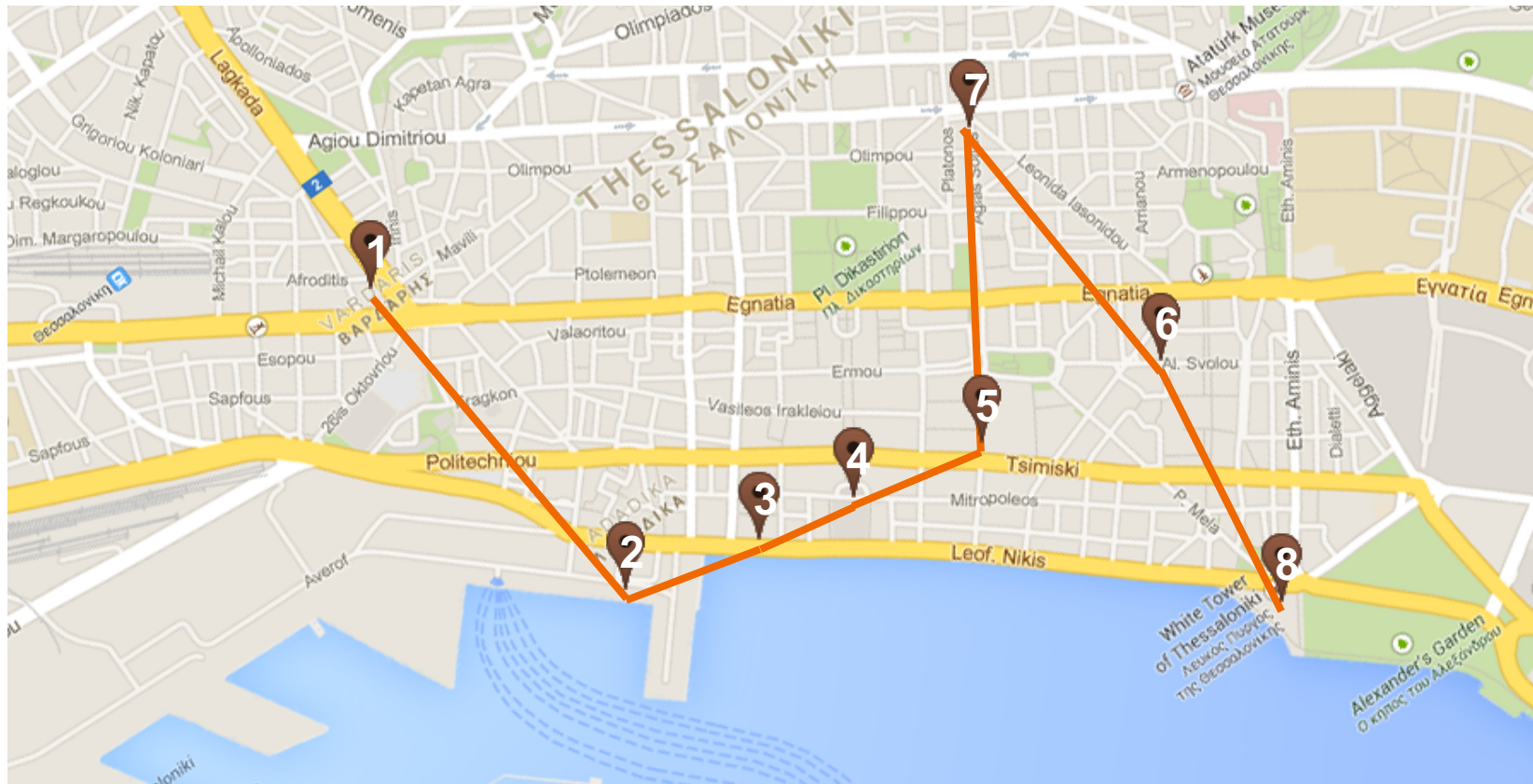
Line 3 (film festival timeline). It is exclusively dedicated to the Thessaloniki International Film Festival and its history since its foundation in 1960 as a local film festival until today.

Consequently

The “Cine Metro” app could easily be employed as an innovative digital tool for an extensive exploration of the “city-cinema” relationship established by Greek popular films, in which Thessaloniki maintained such a key role as highlighted by Milonaki and Y. Grosdanis (2012).

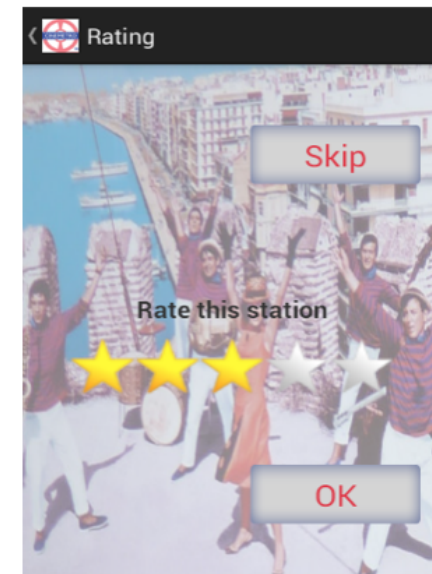
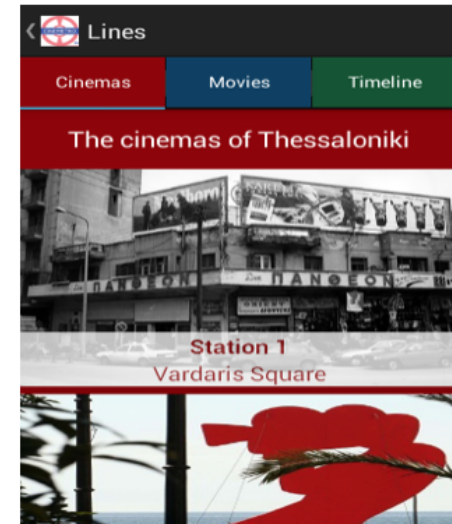
It could also pinpoint an extensive consideration of specific historical and cultural contexts, in which “Greek film production as a whole could be considered as a database, as an audiovisual archive, which is a significant source of the city’s urban memory, regardless of any other cultural values it might possess”

Cinemetro App on the map ...

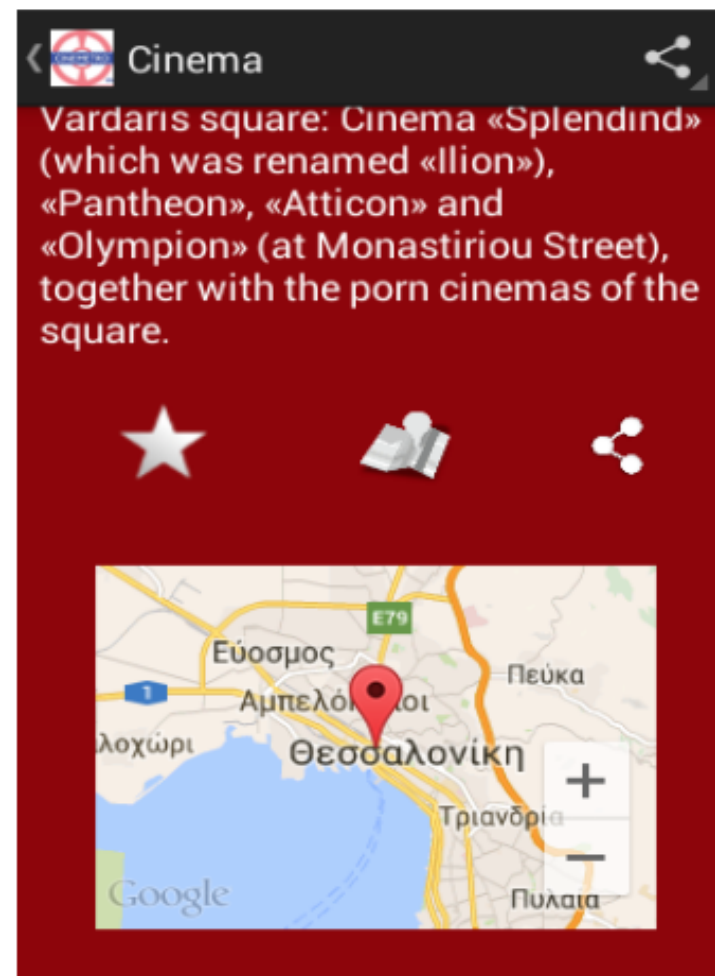


<http://oswinds.csd.auth.gr/CineMetro/english.html>

Cinemetro App screen shots (I)



Cinemetro App screen shots (II)



IMPACT POTENTIAL AND ADOPTION FEASIBILITY

CineMetro is primarily addressing the **interaction of citizens** with a mobile app and ICT experiencing, but it further builds on the impact of cultural digitized content exposing in the ways people behave and interact in public spaces.

City virtual spaces and leveraging trails by using simple and user friendly software modules design, enables future development of tools for data collection, various data threads integration, new smart cities installations cross-referencing etc.

CineMetro stakeholders impact

	Cities Services	City apps	U r b a n planning	ICT apps
SMEs	**	*	*	**
Startups	**	***	*	***
Entrepreneurs	**	***	*	***
Authorities; Policy Makers	***	**	**	*

CineMetro

Aristotle University's groups OSWINDS has implemented CineMetro, maintains close connections with other local non-academic organizations who promote innovative city experimenting and practices. As a proof of concept, In terms of its impact and future adoption, CineMetro has already been communicated to the next two Thessaloniki's popular SMEs/startups which are involved in the CineMetro dissemination plans :

- **Thessaloniki Walking Tours** team to discover the city of Thessaloniki, its history, its gastronomy, its people and their habits, its secrets and legends.
- **Parallaxi** during the 24 years of its creative presence in the editing landscape of the country organized and continues to organize big events that alter the everyday life of the city.

CONCLUSIONS & follow up

CineMetro application materializes an approach which reveals city's film content relevance with city's spaces.

... citizen ground up groups have already addressed the need to proceed on more humanizing the city efforts, integrating cultural **content**, today's **actions**, and people's **perceptions**.

In the collaborative economy, innovative ICT applications, tools, and services for smart cities have a strong societal and business potential, and increase research and innovation for :

- **Social media monitoring and semantics analysis**
- **Crowdsourced real time data collection**
- **sensing technologies and data integration**



<http://oswinds.csd.auth.gr/>