

**FP7-318225**



**D7.2**

## **Project Dissemination and Exploitation Report and Web enabled public Project Showcase**

**Lead Partner:** BBK

**Contributing Partners:** UoA, IBM, Fraunhofer IAIS, TUD, Technion, DCC

**Status:** Final

**Scheduled Delivery Date:** 31/08/2015

## **Executive Summary**

This document presents the dissemination and exploitation efforts of the consortium during the three years of the project. The INSIGHT partners devoted significant effort in presenting the projects' results in multiple venues. The focus was not only concentrated on scientific conferences and journals but also on venues that attracted a broader audience. Moreover, a lot of activities involved disseminating the project's outcome to cities outside the consortium (like the city of Warsaw) and many potential stakeholders like organizations for disaster management and civic protection. The web site of the project and a set of social media accounts were the main tools of electronic dissemination and communication. Highlights of the dissemination effort are the two Mining Urban Data workshops and the Special Issue published by the scientific journal "Information Systems". With regards to exploitation, all partners have developed detailed individual plans. Finally, the consortium will exploit the knowledge and experience gained from INSIGHT in a new project that has already been accepted for funding.

## Document Information

<b>Contract Number</b>	FP7-318225	<b>Acronym</b>	INSIGHT
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<b>EU Project officer</b>	Ms Alina Lupu		

<b>Deliverable</b>	<b>Num</b>	7.2	<b>Name</b>	Project Dissemination and Exploitation Report and Web enabled public Project Showcase	
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<b>QA Partner</b>	UoA				
<b>Contact Person</b>	Ioannis Katakis		Dimitrios Gunopulos		
	<b>Email</b>	<a href="mailto:katak@di.uoa.gr">katak@di.uoa.gr</a> <a href="mailto:dg@di.uoa.gr">dg@di.uoa.gr</a>		<b>Phone</b>	+

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## 1 Objectives

This document constitutes the main deliverable of Work Package 7. The objectives of Work Package 7 are the dissemination and exploitation of the project results in order to ensure and maximize the visibility and sustainability of the project outcomes. Dissemination and exploitation activities (to be performed through traditional means and dedicated actions) aim to attract the interest of the public sector, industry and academia. Specific targets are professionals in charge of civil protection and disaster management. In particular, workgroups to be reached include relevant research communities, consortia from relevant EU and/or national projects and initiatives, user communities that are similar to the project's use cases, information and knowledge processing industries, and relevant professional bodies.

Work Package 7 included the following tasks:

- Task 7.1: Project Promotion, Website, and Fact Sheet (Months: 1-36, Task Leader: BBK, Participants: UoA, IBM, Fraunhofer, Dortmund, DCC).
- Task 7.2: Dissemination towards public sector and industry (Months: 1-36, Task Leader: BBK, Participants: UoA, IBM, Fraunhofer, Technion, Dortmund, DCC).
- Task 7.3: Exploitation (Months: 1-36, Task Leader: IBM, Participants: Fraunhofer, BBK, UoA, IBM, Fraunhofer, Technion, Dortmund, DCC).
- Task 7.4: INSIGHT Scientific Workshops (Months: 1-36, Task Leader: Fraunhofer, Participants: UoA, IBM, Technion, Dortmund, DCC, BBK).

Since Task 7.4 has its own deliverable (D7.3), this document will report on Task 7.1, Task 7.2 and Task 7.3 for the three years of the project.

## 2 Overall Progress

Dissemination and exploitation activities have been supported by the entire consortium of INSIGHT between months 1 and 36. Many activities of the project partners differ in target group, content and dissemination mode, but all share a common goal to maximize the visibility and impact of the INSIGHT project. The INSIGHT website was updated regularly to present the latest news, events and publications of the INSIGHT project, also the layout of the INSIGHT fact sheet was updated. In addition we printed a hand-out to share during the MUD workshop and other events.

At the end of the third period, INSIGHT project partners published more than 76 research papers. In addition to the research publications also 8 articles about INSIGHT were published via global news agencies, on websites and in professional journals for professionals of civil protection. The INSIGHT consortium has intensified their efforts to reach out to end-users, professionals and stakeholders. In over 51 oral presentations INSIGHT was presented to the public, stakeholders, industry and academia as well as professionals of civil protection. In the following table the reader can observe the main dissemination activities.

Table 1. Dissemination Activities

Type of Dissemination Activity	Number
Publications in Scientific Conferences & Journals	76
Oral Presentations	51
Invited Talks and Keynotes	53
Tutorials, Seminars	4
Workshops	2
Special Issues	1
Networking Events	3

### 3 Project Promotion, Website and Fact Sheet

The project website <http://www.insight-ict.eu/>), the basic medium for project promotion was maintained and updated throughout the second period of the project. Latest news, information about project meetings, events and workshops as well as new re-search publications were published and linked on the website. The fact sheet outlines the project's rationale and objectives, specify its technical baseline and intended target groups and application domains. The layout and content of the fact sheet was improved and re-printed. The relevant activities for this task are the development of a project logo, specification of the project website and a project fact sheet.



Figure 1. INSIGHT logo

The developed INSIGHT logo (see Figure 1) is built on a binary code using the colors orange and blue to indicate a triangle on a circle. A blue triangle on an orange circle is considered as the international sign for civil protection. In combination with the binary code the INSIGHT logo indicates the content of the INSIGHT project – using computer science for upgrading civil protection work. This logo is used by all project partners to promote the INSIGHT project.

The project website (<http://www.insight-ict.eu/>) is the basic medium for project promotion and was maintained and updated throughout the three-year period of the project. General information about the project (goal, current situation, challenges, and big data), project partners, contact person and news regarding the INSIGHT activities are displayed on the website. Moreover, LinkedIn and Twitter pages about the INSIGHT project were established. These social media appearance is dedicated to the project promotion as well as linking to existing expert group discussions for maximum promotion. These activities will also provide the basis for communication of the results and added value to the dissemination activities.

**Intelligent Synthesis and Real-time Response using Massive Streaming of Heterogeneous Data**

Home About News / Events Deliverables Publications Partners Contact

**NEWS**

- BEK meeting!
- TechnBat DEBS Audience Award Trophy 5th DEBS 2013 conference
- Paper: The INSIGHT Architecture: Detecting and Responding to Events in Real-Time with heterogeneous Sources
- Paper: Location Extraction from Social Networks with Commodity Software and Online Data
- Paper: Sample Complexity of Risk-averse Bandit-arm Selection. In: Proceedings UCAI 2013.

**CONTACT**

Dimitrios Gunopulos

See our group on [in](#)

Follow us on [t](#)

**LEAFLET**

**BIG DATA**

A large collection of data sets of different types ranging from Twitter to Traffic Flow Sensing and Mobile Phone Data will be investigated by the project partners. Their value will be enhanced by the development of novel data analysis and data fusion techniques. Geographically and socially correlated aspects will be taken into account by novel methods for streams, parallel data handling, and data analysis. Data will be enriched by pro-active social computing with incentives and prepared for different usages. INSIGHT aims at a participatory approach for the automated management of resources and to improve

**GOAL**

The goal of the INSIGHT project is to radically advance our ability of coping with emergency situations in smart cities by developing innovative technologies, methodologies and systems that will put new capabilities in the hands of disaster planners and city personnel to improve emergency planning and response. It brings together a strong group of researchers with domain experts in three representative case studies of urban transportation, food management, and emergency response. Test beds are for the local application of the findings the

Figure 2. INSIGHT Website

Also the fact sheet has its own download link on the project website. The fact sheet (see Figure 3) outlines the project's rationale and objectives, specify its technical baseline and intended target groups and application domains.

**Big Data**

A large collection of data sets of different types ranging from Twitter to Traffic Flow Sensing and Mobile Phone Data will be investigated by the project partners. Their value will be enhanced by the development of novel data analysis and data fusion techniques.

Geographically and socially correlated aspects will be taken into account by novel methods for streams, parallel data handling, and data analysis. Data will be enriched by proactive social computing with incentives and prepared for different usages.

INSIGHT aims at a participatory approach for the automated management of resources and to improve emergency response in smart cities and countries.

**Contact and Information**

**Dimitrios Gunopulos**  
 Professor  
 Department of Informatics and Telecommunications  
 University of Athens  
 Panepistimiopolis, Athens, Greece  
 e-mail: dg@di.uoa.gr

Project website:  
[www.insight-ict.eu](http://www.insight-ict.eu)

**Partners**

HELLENIC REPUBLIC  
 National and Kapodistrian  
 University of Athens

IBM

Fraunhofer  
 IAIS

tu technische universität  
 dortmund

TECHNION  
 Israel Institute of Technology

Comhairle Cathrach  
 Bhaile Alpha Cluich  
 Dublin City Council

Federal Office  
 of Civil Protection and  
 Disaster Assistance

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SEVENTH FRAMEWORK  
 PROGRAMME

**Intelligent Synthesis and Real-time Response using Massive Streaming of HeTeroogeneous Data**

[www.insight-ict.eu](http://www.insight-ict.eu)

Figure 3. INSIGHT Fact Sheet

The fact sheet was updated at the second year of the project.



### 3.1 PowerPoint template

The consortium has established a PowerPoint template to be used for all dissemination activities. All partners use the template for providing presentations within the consortium, for the presentation of the reviews and for every other oral dissemination activity. A Microsoft PowerPoint and LaTeX template were prepared. For an example, please see Figure 4.



Figure 4. PowerPoint Presentation Template

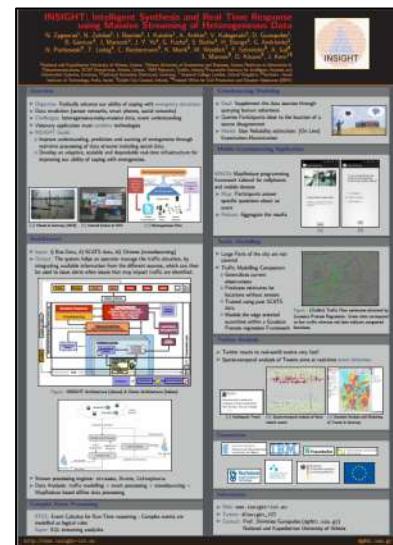
### 3.2 Poster Presentation

For the needs of the project we have prepared a poster that enabled the dissemination of the project in various venues. The first use of the poster was at the European Data Forum 2014. The poster presents the basic elements of the INSIGHT architecture as well as contact information.

## 4 Dissemination towards the Public Sector

Task 7.2 “Dissemination towards public sector and industry” seeks to disseminate activities of the INSIGHT project in order to ensure a substantial outreach of the project both at European level and also internationally. The dissemination actions that create identity, consistency and awareness of the project included presentations, event participations and publications. Within BBK’s training center and facilities (attendance over 10000 people per year) dissemination efforts about INSIGHT were conducted. Research papers were produced for scientific and technical journals and also for industrial and scientific conferences of recognized value and impact within the project’s domain of work.

During the second year of the project, The INSIGHT team was present the *European Data Forum* in March 19 & 20 in Athens, Greece (<http://2014.data-forum.eu/>). The European Data Forum (EDF) is an annual meeting place for industry, research, policy makers, and community initiatives to discuss the challenges and opportunities of data in Europe, especially in the light of recent developments such as Open Data, Linked Data and Big Data. The forum balances technical (the technology and infrastructure needed to master the volume, heterogeneity and dynamicity of today’s data), application (new products and services that are now possible due to Open Data, Linked Data and Big Data), and socio-



economic issues (social impact, legal issues, government policies and regulations, business models, commercialization and innovation in this new era). INSIGHT had a booth in the European Data forum with a prototype demonstration and a poster (see Figure 5).

INSIGHT also participated in the TCE Big Data in the Making event (Technion Computer Engineering Event) where Francois Schnitzler from Technion presented an overview of the project (Figure 6). To extend the reach and impact of INSIGHT we also presented the INSIGHT big data stream architecture, first solutions (using simple prototypes) and general concepts at the main symposia for civil protection in Germany, among others we presented INSIGHT at the German Bundestag to raise awareness of the project and also discuss challenges (e.g. privacy) and opportunities leveraged by the INSIGHT project.



*Figure 5. INSIGHT Team at EDF 2014*



*Figure 6. Francois Schnitzler (Technion) at TCE Big Data in the Making event*

During the third year of the project the consortium participated in the Re-Think Big meeting (Figure 8). The RETHINK Big project is a Roadmap for European Technologies in Hardware and Networking for Big Data. The purpose of the meeting was to investigate future Big Data application requirements from a wide spectrum of application domains that make use of Big Data. The INSIGHT project participated in the working group Future Internet and Social Networking (see Figure 7).



*Figure 7. Working Group "Internet and Social Networking" where INSIGHT member Ioannis Katakis participated*



*Figure 8. Participants of the RRETHINK Big Meeting*



## 4.1 Lists of First Year Dissemination Activities

### 4.1.1 Oral presentations

- 01.** Informal presentation of INSIGHT project at EU Smart Cities conference, Dublin
- 02.** Research presentations at IJCAI conference, National University of Singapore, IBM Research China, IBM Research Collaboratory Singapore
- 03.** Wissensforum BBK, Bonn
- 04.** Führungs und Stabslehre für Leitungskomponenten der unteren Katastrophenschutzbehörden 2 within BBK's training center
- 05.** Führungs und Stabslehre für Leitungskomponenten der unteren Katastrophenschutzbehörden 2, County of Gießen BBK's training center
- 06.** Federal Office of Communication Technology (BIT), Germany
- 07.** Crisis Prevention Symposium, Kassel "Nutzung von Social Media in Notfällen": Title of the talk „Crisis Management using Real-time Data Sources“
- 08.** CeBIT: public safety, crisis management course of Fraunhofer, presentation to members of the state parliaments, press, public, Hannover
- 09.** Berliner Fachtagung 2013 - Nationale Sicherheit und Bevölkerungsschutz: title of the talk “Social Media als Schnittstelle zur Bevölkerung - Strategische Nutzung und Herausforderungen“, Berlin
- 010.** Zukunftsforum Öffentliche Sicherheit: Reality Monitoring - New tools for civil protection in networked societies", Berlin
- 011.** Invited Talk, D. Gunopulos: “Analyzing Large Heterogeneous Datasets”, Center for Geospatial Intelligence, George Mason University, Feb. 15, 2013.
- 012.** Invited Talk, D. Gunopulos: “Analyzing large heterogeneous data (and a new computing model for computational sustainability)”, International Workshop on Spatial and Spatiotemporal Data Mining (SSTD-12), In Cooperation with IEEE ICDM 2012, 10 Dec. 2012.

### 4.1.2 Research publications

(☼: Collaborative Paper, ★: Award)

- R1.** Andrienko, G.; Andrienko, N.; Bosch, B.; Ertl, T.; Fuchs, G.; Jankowski, P.; Thom, D. (2013): Discovering Thematic Patterns in Geo-Referenced Tweets through Space-Time Visual Analytics. In: Computers in Science and Engineering, v.15(3), pp.72-82.
- R2.** Andrienko, N.; Andrienko, G.; Fuchs, G. (2013): Towards Privacy-Preserving Semantic Mobility Analysis. In: EuroVA, International Workshop on Visual Analytics (2013) Proceedings, EuroGraphics. Pre-print: <http://geoanalytics.net/and/papers/eurova13.pdf>
- R3.** Andrienko, N.; Andrienko, G. (2013): Visual Analytics of Movement: an Overview of Methods, Tools, and Procedures. In: Information Visualization, vol. 12(1), pp.3-24. Published version: <http://dx.doi.org/10.1177/1473871612457601>

- R4.** Andrienko, N.; Andrienko, G. (2013): A Visual Analytics Framework for Spatio-temporal Analysis and Modelling. In: Data Mining and Knowledge Discovery, vol. 27(1), pp.55-83. Published version: <http://dx.doi.org/10.1007/s10618-012-0285-7>
- R5.** Artikis, A.; Weidlich, M.; Gal, A.; Kalogeraki, V.; Gunopulos, D. (2013): Self-Adaptive Event Recognition for Intelligent Transport Management. In: Proceedings of the IEEE International Conference on Big Data (IEEE Big Data'13), Santa Clara, CA, USA, October 6-9, 2013. 🌸
- R6.** Boutsis, Ioannis; Vana Kalogeraki; Dimitrios Gunopulos, Efficient Event Detection by Exploiting Crowds, The 7th ACM International Conference on Distributed Event-Based Systems (DEBS 2013), Arlington, TX, USA, June-July 2013.
- R7.** Boutsis, Ioannis; Vana Kalogeraki, Mobile Stream Sampling under Time Constraints, 14<sup>th</sup> IEEE International Conference on Mobile Data Management (MDM 2013), Milan, Italy, June 2013.
- R8.** Boutsis, Ioannis; Vana Kalogeraki, Privacy Preservation for Participatory Sensing Data, IEEE International Conference on Pervasive Computing and Communications (PerCom 2013), San Diego, CA, March 2013.
- R9.** Daly, Elizabeth M.; Freddy Lecue; Veli Bicer. Westland row why so slow?: fusing social media and linked data sources for understanding real-time traffic conditions. In Proceedings of the 2013 international conference on Intelligent user interfaces, IUI '13, pages 203–212, New York, NY, USA, 2013. ACM.
- R10.** Gal, A.; Keren, S.; Sondak, M.; Weidlich, M.; Blom, H.; Bockermann, C. (2013): Grand Challenge: The TechniBall System. In: Proceedings of the 7th ACM International Conference on Distributed Event-Based Systems (DEBS'13), pp. 319-324. **Grand Challenge Audience Award** 🌸 ★
- R11.** Schnitzler, François; Jia Yuan Yu; Shie Mannor, Towards Active Crowdsourcing for Smart Cities, The 11th European Workshop on Reinforcement Learning (EWRL 2013), 2013. 🌸
- R12.** Stange, H.; Bothe, S. (2013): Reality Monitoring - Sicherheitswerkzeuge vernetzter Gesellschaften. In: Crisis Prevention, vol. 2/2013 (1), pp. 25-27.
- R13.** Valkanas, G.; Gunopulos, D.; Boutsis, I.; Kalogeraki, V. (2013): The INSIGHT Architecture: Detecting and Responding to Events in Real-Time with Heterogeneous Sources. Conference: BigMine 2013 @SIGKDD 2013.
- R14.** Valkanas, G.; Gunopulos, D. (2012): Location Extraction from Social Networks with Commodity Software and Online Data. Conference: SSTDM @ ICDM 2012
- R15.** Valkanas G., Gunopulos D., "How the Live Web Feels About Events", ACM CIKM 2013
- R16.** Valkanas G., Gunopulos D., "A UI Prototype for Emotion-Based Event Detection in the Live Web", SS-HCI-KDD @ SouthCHI'13
- R17.** Yu, J.Y.; Nikolovay, E. (2013): Sample Complexity of Risk-averse Bandit-arm Selection. In: Proceedings IJCAI 2013.

#### 4.1.3 List of publications on websites and magazines

- P1.** InnoVisions: Frühwarnung aus dem Netz - Twitter und Netzdaten erleichtern schnelle Katastrophenhilfe. Published: <http://innovisions.de/mobile/beitraege/fruehwarnung-aus-dem-netz>
- P2.** BBK website: Massendaten für den Bevölkerungsschutz nutzbar machen: das INSIGHT Projekt. Online: [http://www.bbk.bund.de/DE/TopThema/TT\\_2013/TT\\_INSIGHT\\_Projekt.html](http://www.bbk.bund.de/DE/TopThema/TT_2013/TT_INSIGHT_Projekt.html)

**P3.** Unizet 6/13 Nr.435. Warnung und Hilfe im Katastrophenfall – TU Dortmund entwickelt Algorithmen zur Analyse von Datenströmen



## ***4.2 Lists of Second Year Dissemination Activities***

### **4.2.1 Oral Presentations**

- 01.** "Command and Control" seminar within BBK's training center (we had 6 such seminars)
- 02.** Open day presentation of BBK's training center
- 03.** "Workshop for future manager of safety and security prevention" within BBK's training center
- 04.** Lecturer meeting of BBK's training center
- 05.** Seminar "New Media within crisis communication" within BBK's training center
- 06.** Professional panel "Web 2.0", Heidelberg/ Germany
- 07.** "Legal questions within the civil protection system" within BBK's training center
- 08.** "Symposium big events" within BBK's training center
- 09.** Meeting with social media experts of German Telekom, Bonn
- 010.** "Disasters and imminent danger of disasters; Collaboration of the police and non-police organizations which ensure public safety and health", Munster/Germany
- 011.** Meeting of the crisis management group Darmstadt, Darmstadt/ Germany
- 012.** Meeting with a delegation of Switzerland, Bonn/ Germany
- 013.** Disaster prevention forum, Hamburg / Germany
- 014.** Online presentation within a university collaboration project
- 015.** "Emergency prevention energy and economy II" within BBK's training center
- 016.** Meeting with DHS Delegation (Department of Homeland Security of the USA) delegation
- 017.** Meeting with a delegation of the "Wacken" festival
- 018.** "Emergency prevention nutrition II" within BBK's training center
- 019.** "Social media and police work", Munster/ Germany
- 020.** "Social media and civil protection" within BBK's training center
- 021.** "Command and Control I" within BBK's training center
- 022.** Meeting with a delegation of the United Arab Emirates at the BBK
- 023.** Seminars about social media and new technologies in Civil Protection
- 024.** Data Protection and the INSIGHT DCC use-case, 07/01/13, Dublin City Council, Dublin, Ireland
- 025.** INSIGHT Presentation, 30/04/14, Dublin City Council, Dublin, Ireland
- 026.** Invited talk at the Future Forum on Public Security (Zukunftsforum öffentliche Sicherheit), Berlin: "Social Media in der Früherkennung und Kommunikation von Krisenereignissen", 9/2013
- 027.** Hendrik Stange, talk at the Web 2.0 & Social Media in Disaster Management symposium, Heidelberg: "Die Jahrhundertut im Strom der Tweets", 10/2013

- 028.** Hendrik Stange, invited presentation at the Berliner Fachtagung: "INSIGHT – Reality Monitoring for a safer planet", 11/2013
- 029.** Hendrik Stange, invited talk at the Deutsche Wetterdienst forum, Offenbach: "Social Monitoring extremer Wetterereignisse", 2/2014
- 030.** Hendrik Stange, Invited industrial presentations of INSIGHT: Deutsche Bahn, Deutsche Post / DHL (risk management)

#### 4.2.2 Research Publications

(☼: Collaborative Paper, ★: Award)

- P1.** T. Liebig, N. Piatkowski, C. Bockermann, and K. Morik, "Predictive Trip Planning "Smart Routing in Smart Cities", in Proceedings of the Workshops of the EDBT/ICDT, 2014 Joint Conference (EDBT/ICDT 2014), Athens, Greece, March 28, 2014, 2014, pp. 331-338.
- P2.** A. Artikis, M. Weidlich, F. Schnitzler, I. Boutsis, T. Liebig, N. Piatkowski, C. Bockermann, K. Morik, V. Kalogeraki, J. Marecek, A. Gal, S. Mannor, D. Gunopulos, and D. Kinane, "Heterogeneous Stream Processing and Crowdsourcing for Urban Traffic Management", in Proc. 17th International Conference on Extending Database Technology (EDBT), Athens, Greece, March 24-28, 2014, 2014, pp. 712-723. ☼
- P3.** F. Schnitzler, A. Artikis, M. Weidlich, I. Boutsis, T. Liebig, N. Piatkowski, C. Bockermann, K. Morik, V. Kalogeraki, J. Marecek, A. Gal, S. Mannor, D. Gunopulos, D. Kinane: "Heterogeneous Stream Processing and Crowdsourcing for Traffic Monitoring: Highlights", ECML PKDD 2014, Part III, LNCS 8726 proceedings, p520-523 ☼
- P4.** Dermot Kinane, Francois Schnitzler, Shie Mannor, Thomas Liebig, Katharina Morik, Jakub Marecek, Bernard Gorman, Nikolaos Zygouras, Yannis Katakis, Vana Kalogeraki and Dimitrios Gunopulos. Intelligent Synthesis and Real-time Response using Massive Streaming of Heterogeneous Data (INSIGHT) and its anticipated effect on Intelligent Transport Systems (ITS) in Dublin City, Ireland. In Proceedings of the 10th ITS European Congress, Helsinki, 2014. ☼
- P5.** D. Kotsakos, P. Sakkos, I. Katakis, D. Gunopulos, '#tag: Meme or Event?', The 2014 IEEE/ACM International Conference on Advances in Social Network Analysis and Mining (ASONAM 2014), Beijing, China, August 17-20, 2014
- P6.** T. Liebig, N. Piatkowski, C. Bockermann, and K. Morik, "Route Planning with Real-Time Traffic Predictions", in Proceedings of the 16th LWA Workshops: KDML, IR and FGWM, p83-94
- P7.** Jia Yuan Yu, Jakub Marecek, Albert Akhriev, Risk-averse Routing, 2014 SIAM Conference on Optimization, San Diego, CA, May 19-22, 2014
- P8.** Dimitrios Kotsakos, Ted Lappas, Dimitrios Kotzias, Dimitrios Gunopulos, Nattiya Kanhabua and Kjetil Narvag, "A Burstiness-aware Approach for Document Dating" at SIGIR 2014, Gold Coast, Australia.
- P9.** George Valkanas, Antonia Saravanou, Dimitrios Gunopulos: A Faceted Crawler for the Twitter Service. Web Information Systems Engineering - WISE 2014 (2), 2014: 178-188
- P10.** George Valkanas, Dimitrios Gunopulos: Event Detection from Social Media Data. IEEE Data Eng. Bull. 36(3): 51-58 (2013)
- P11.** G. Valkanas, I. Katakis, D. Gunopulos, A. Stefanidis, Mining Twitter Data with Resource Constraints, The 2014 IEEE/WIC/ACM International Conference on Web Intelligence, 11-14 August 2014, Warsaw, Poland
- P12.** Valkanas G., Papadopoulos N.A., Gunopulos D. Skyline Ranking a la IR , in Proc. of ExploreDB, workshop of EDBT, Athens, Greece, Mar 2014, pp. 182-187

- P13.** Tiakas E., Valkanas G., Papadopoulos N. A., Manolopoulos Y., Gunopulos D., "Metric-Based Top-k Dominating Queries", EDBT 2014, pp. 415-426
- P14.** Ioannis Boutsis, Vana Kalogeraki, "On task assignment for real-time reliable crowdsourcing", The 34th International Conference on Distributed Computing Systems (ICDCS 2014), Madrid, Spain, June-July 2014
- P15.** Iouliana Litou, Ioannis Boutsis, Vana Kalogeraki, "Using Location-based Social Networks for Time-Constrained Information Dissemination", 15th IEEE International Conference on Mobile Data Management (MDM 2014), Brisbane, Australia, July 2014
- P16.** Nikos Zaheilas, Vana Kalogeraki, "Scheduling Real-Time Skewed MapReduce Jobs in Heterogeneous Environments", 11th International Conference on Autonomic Computing (ICAC 2014), Philadelphia, US, June 2014
- P17.** Iouliana Litou, Ioannis Boutsis, Vana Kalogeraki, Efficient Dissemination of Emergency Information using a Social Network, Mining Urban Data (MUD) - EDBT/ICDT 2014 Workshop, Athens, Greece, 2014.
- P18.** Dimitrios Kotzias, Theodoros Lappas, Dimitrios Gunopulos: Addressing the Sparsity of Location Information on Twitter. EDBT/ICDT Workshops 2014: 339-346
- P19.** F. Schnitzler, T. Liebig, S. Mannor, and K. Morik, "Combining a Gauss-Markov model and Gaussian process for traffic prediction in Dublin city center", in Proceedings of the Workshops of the EDBT/ICDT 2014 Joint Conference (EDBT/ICDT 2014), Athens, Greece, March 28, 2014, 2014, pp. 373-374. 🌟
- P20.** Bernard Gorman, Jakub Marecek, and Jia Yuan Yu, Track Management using RTEC in OWL 2 RL, the International Semantic Web Conference (ISWC), 2014.
- P21.** Francois Schnitzler, Thomas Liebig, Shie Mannor, Gustavo Souto, Sebastian Bothe and Hendrik Stange, Heterogeneous Stream Processing for Disaster Detection and Alarming, Proceedings of IEEE BigData 2014 conference 🌟
- P22.** M. Mevissen, E. Ragnoli, and J. Y. Yu. Data-driven Distributionally Robust Polynomial Optimization. In Proceedings of NIPS, 2013.
- P23.** G.Fuchs, N.Andrienko, G.Andrienko, S.Bothe, H.Stange, Tracing the German Centennial Flood in the Stream of Tweets: First Lessons Learned. Proceedings of GeoCrowd workshop at ACM SIGSPATIAL 2013, Orlando FL, November 2013
- P24.** Natalia Andrienko, Gennady Andrienko, Georg Fuchs, Hendrik Stange Detecting and Tracking Dynamic Clusters of Spatial Events, IEEE Conference on Visual Analytics Science and Technology, 2014.

### 4.2.3 Keynotes, Invited Talks, Tutorials

- I1.** Dimitrios Gunopulos, "Exploiting Heterogeneous Data Sources: A Computing Paradigm for Live Web and Sustainability Applications", ICAA 2014, Kolkotta, India, Jan. 2014.
- I2.** Dimitrios Gunopulos, "Analyzing massive streaming heterogeneous data: towards a new computing model for computational sustainability", MEDI 2013, Amantea, Italy, Sept 26, 2013
- I3.** Dimitrios Gunopulos, "Analyzing spatiotemporal document collections", Twitter, San Francisco, CA, Jan. 28, 2014
- I4.** Dimitrios Gunopulos, INSIGHT: Real-time Synthesis of Massive Streaming Heterogeneous Data, IBM AMEA Academic Days Conference, May 6, Milan, Italy
- I5.** Avigdor Gal, Uncertain Entity Resolution: Entity Resolution in the Big Data Era" in VLDB 2014 (Tutorial - Hangzhou, China, September 2014). The tutorial used Dublin transportation data as a case study.



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- I16.** Katharina Morik, "Data Analytics for Sustainability", Kolloquiumsvortrag Cornell University, Ithaca, USA, 23.5.2014
- I17.** Katharina Morik, "Data Analytics for Sustainability", Kolloquiumsvortrag University of Maryland at Baltimore, USA, 22.5.2014
- I18.** Katharina Morik, "Resource-Aware graphical models and spatio-temporal predictions", Vortrag Google, Mountain View, USA, 27.5. 2014
- I19.** Katharina Morik, "Data Analytics for Sustainability", Vortrag NASA Ames Research Center, Moffet Field, USA, 28.5.2014
- I10.** Katharina Morik, "Resource-Aware graphical models", Vortrag Viglink, San Francisco, USA, 29.5.2014
- I11.** Katharina Morik, "Big Data and Small Devices", Keynote at 3rd Int. Workshop on Big Data, Streams and Heterogeneous Source Mining: Algorithms, Systems, Programming Models and Applications BigMine 14", KDD 2014, New York City 24.8.2014
- I12.** Katharina Morik, "Resource-Aware Data Analysis", Eingeladener Hauptvortrag DATA Conference, Wien, 29.-31.8.2014
- I13.** Thomas Liebig, "Stream Processing and Crowdsourcing for Urban Traffic Management", at Dagstuhl Seminar 13512, Schloss Dagstuhl, Germany, Dec. 15-19, 2013
- I14.** Thomas Liebig, "Big Data Architekturen und Entwicklung von Streaming Algorithmen zur Prognose und Gefahrenwarnung in Echtzeit-Datenstrmen", Esri GeoDev Meet-up Cologne, 3.4.2014
- I15.** Francois Schnitzler, Gauss-Markov modeling and online crowdsensing for spatio-temporal processes, Technische Universitat Dortmund, 2014-05-16
- I16.** Smart Disaster Monitoring: Intelligent Synthesis and Real- Time Response using Massive Streaming of Heterogeneous Data, Francois Schnitzler (Technion), Haifa, Israel, March 26, 2014
- I17.** Assaf Schuster, "Big Data". Invited talk, Israel Machine Vision Conference (IMVC). Tel Aviv, February 2013.
- I18.** Assaf Schuster, "Huge data collection and fast decision". METRO450 conference. Technion, January 2014. Plenary talk.
- I19.** Assaf Schuster, "On-the-Fly Processing of Big, Distributed, Streaming Data". International Conference on Applied Algorithms. January 2014. Kolkata, India. Keynote.
- I20.** Assaf Schuster, Keynote. "Monitoring Distributed Streaming Data". 14th International Conference on Runtime Verification. September 2014. Toronto, Canada.
- I21.** Assaf Schuster, Invited talk. "Privacy Preserving". Conference on Embedded and Micro-processors by New-Tech Magazine. Tel Aviv. September 2014.
- I22.** Gennady Andrienko, "Visual Analytics of Movement", Keynote at Interdisciplinary workshop on visual analytics, communications, privacy, security and economy, Darmstadt, Germany, 25/11/2013
- I23.** Gennady Andrienko, "Visual Analytics of Movement", Keynote at Mobile Tartu 2014 conference, Tartu, Estonia, 01/07/2014
- I24.** Gennady Andrienko, "Visual Analytics of Movement", invited lecture, eBISS summer school, Berlin, Germany, 09/07/2014
- I25.** Natalia Andrienko, "Visual Analytics of Movement", invited talk at GI Forum, University Muenster, Muenster DE, 05/11/2013

**I26.** Natalia Andrienko, "Visual Analytics of Movement", invited presentation at VRVis center, University Wien, Vienna, Austria, 24/04/2014

**I27.** Sebastian Bothe, "Real-time INSIGHTs from Massive Streams of Heterogeneous Sensor Networks", Sebastian Bothe, invited talk at the Intelligent Sensor Networks conference, Eindhoven, Netherland, 11/2013

#### **4.2.4 List of Articles on Websites, Magazines and News**

**W1.** Kern, J.; Zisgen, J. (2014): Neue Informationsquellen, neue Herausforderungen Erste Ansätze zur Integration von Massendaten und Sozialen Medien in den Bevölkerungsschutz. Bevölkerungsschutz, 19. Kern, J.; Zisgen, J. (2014): Social Media im Bevölkerungsschutz: Erfahrungen Abwagungen Tools. Public Security, 1.

**W2.** Kern, J. (2014): "Vor die Lage kommen!"- Echtzeitanalyse von Social Media zur Entscheidungsunterstützung. In: Katastrophenvorsorge zwischen alten Strukturen und neuen Herausforderungen. Dokumentation 13. Forum Katastrophenvorsorge, 11.-12. Dezember 2013, Hamburg.

**W3.** Incident Detection, Street Smart, An article about INSIGHT at Traffic Technology International, DCC, June/July 2014.

**W4.** Interview with the Deutsche Welle (DW) - <http://www.dw.de/digitale-katastrophenhilfe-auf-dem-vormarsch/a-17266667> 2nd Year Report, Version 1.0

**W5.** Article published in the Public Security magazine (target group: politicians, employees of disasters management and civil protection agencies). This article has been published just before the 21st international Security in Essen 2014 ([http://www.security-essen.de/impetus\\_provider/review-2014/exhibitors-opinion/](http://www.security-essen.de/impetus_provider/review-2014/exhibitors-opinion/)) with more than 1.000 participants from Germany, Great Britain, Ukraine, USA, Italy, etc. The magazine was available to each of the 40.000 professional visitors of the fair.



### ***4.3 Lists of Third Year Dissemination Activities***

#### **4.3.1 Oral Presentations**

- 01.** "Legal questions within the civil protection system" within BBK's training center
- 02.** 2nd BBK Social Media Congress
- 03.** "Emergency prevention energy and economy II" within BBK's training center
- 04.** "Emergency prevention nutrition II" within BBK's training center
- 05.** "Social media and police work", Munster/ Germany
- 06.** "Social media and civil protection" within BBK's training center
- 07.** Seminars about social media and new technologies in Civil Protection
- 08.** EU Symposium, ISCRAM 2015 Conference, 05-2015
- 09.** Future Forum Public Security

#### **4.3.2 Keynotes and Invited Talks**

- I1.** Gennady Andrienko, "Space, Time and Visual Analytics", TU Munich, 18-12-2014
- I2.** Gennady Andrienko, "Space, Time and Visual Analytics", Luxembourg Institute of Science and Technology, Luxembourg, 28-04-2015
- I3.** Gennady Andrienko, "Visual Analytics of Urban Data", UrbanNet2015 Workshop, NetSci'2015 Conference, Zaragoza (Spain), 01-06-2015
- I4.** Gennady Andrienko, "Space, Time and Visual Analytics" at IV conference in Barcelona (Spain) 24-07-2015
- I5.** Natalia Andrienko and Gennady Andrienko, "Space, Time and Visual Analytics", China Vis Conference, Tianjin (China), 17-07-2015
- I6.** Natalia Andrienko and Gennady Andrienko, "Space, Time and Visual Analytics", Tsinghua University, Beijing (China), 16-07-2015
- I7.** Dimitrios Gunopulos, "Analyzing spatiotemporal document collections", Computer Science Dept, Stanford University (USA), 9-12-2014
- I8.** Dimitrios Gunopulos, "Analyzing spatiotemporal documents and data streams", Twitter Inc, 15-01-2015
- I9.** Dimitrios Gunopulos, "Analyzing spatiotemporal document collections", Dept of Computer Science Colloquium, UC Santa Barbara, 17-02-2015
- I10.** Dimitrios Gunopulos, "Analyzing spatiotemporal document collections", Information Systems Group Seminar, UC Irvine, 24-04-2015
- I11.** Avigdor Gal, Plenary Speaker of "Big Data Integration", 4th International Conference on Electronics, Communications and Networks (CECNet'2014), Beijing (China), 12-2014
- I12.** Avigdor Gal, Guest Speaker of "Big Data Integration", Theme Making Sense of Big Data, 12th edition of the annual Symposium of TECHNION FRANCE, Paris (France) 12-2014
- I13.** Avigdor Gal, Guest Speaker of "Big Data in a Research Environment", 30th Info Annual Conference & Exhibitions, Tel-Aviv (Israel) 05-2015

- I14.** Avigdor Gal, Guest Speaker of “Uncertain Entity Resolution”, Database & Information Retrieval Day, Microsoft R& D Center, Tel-Aviv (Israel) 05-2015
- I15.** Avigdor Gal, Invited Speaker of “Big Data Make Cities Smart”, Safe & Smart Cities 2015, Tel-Aviv (Israel) 05-2015
- I16.** Avigdor Gal, Keynote Speaker of “When Processes Rule Events”, 1st Workshop on the Role of Real-world objects in Business Process Management Systems, Stockholm (Sweden) 06-2015
- I17.** Avigdor Gal, Invited Speaker of “When Processes Rule Events”, 9th International Web Rule Sym-posium (RuleML’2015), Berlin (Germany), 08-2015
- I18.** Avigdor Gal, Joint Keynote Speaker of “Big Data Integration”, International Conference on Open and Big Data (OBD’2015) & The 12th International Conference on Mobile Web and Intelligent Infor-mation Systems (MobiWis2015), Rome (Italy), 08-2015
- I19.** Thomas Liebig, "Social Media, Crowd sourcing und Informationsgewinnung", 2nd Congress Social Media und Bevölkerungsschutz, German Federal Office for Civil Protection and Disaster Assistance (BBK), Bad Neuenahr-Ahrweiler (Germany), 06-07-2015
- I20.** Jakub Maracek, “Coordinate Descent and Challenges therein”, Fields Institute for Research in Mathematical Sciences, Toronto (Canada), 11-02-2015
- I21.** Katharina Morik, “Big Data – Small Devices”, 3rd Westfalenkongress, Dortmund, 6-11-2014
- I22.** Katharina Morik, “Resource-Aware Data Analytics“, National University of Taiwan, Taipeh, 2.4.2015
- I23.** Katharina Morik, “Data Mining, Big Data und Prognose“, ABB, Ladenburg, 20-4-2015
- I24.** Katharina Morik, “Resource-Aware Graphical Models“, Int. Workshop Advances in Interactive Knowledge Discovery, Banff Intern. Research Station, Canada, 24-7-2015
- I25.** Hendrik Stange, 2nd Congress Social Media und Bevölkerungsschutz, German Federal Office for Civil Protection and Disaster Assistance (BBK), Bad Neuenahr-Ahrweiler (Germany), 06-07-2015
- I26.** Sylvia Steenhoek, “A New Way to Face Disasters: Using Social Media for Situational Awareness”, 7th BBK Summer Academy, Bad Neuenahr-Ahrweiler (Germany), 29-07-2015

### 4.3.3 Research Publications

(☼: Collaborative Paper, ★: Award)

- P1.** N. Andrienko, G. Andrienko, G. Fuchs, H. Stange, “Detecting and Tracking Dynamic Clusters of Spatial Events”, IEEE VAST 2014
- P2.** N. Andrienko, G. Andrienko, G. Fuchs, H. Stange, Chapter 25 “Visual Analytics Methodology for Scalable and Privacy-respectful Discovery of Place Semantics from Episodic Mobility Data”, ECML PKDD 2015, Part III, LNAI 9286
- P3.** N. Andrienko, G. Andrienko, G. Fuchs, H. Stange, Chapter 38 “Real Time Detection and Tracking of Spatial Event Clusters”, ECML PKDD 2015, Part III, LNAI 9286
- P4.** N. Andrienko, G. Andrienko, G. Fuchs, H. Stange, Chapter 43 “Visualization Support to Interactive Cluster Analysis”, ECML PKDD 2015, Part III, LNAI 9286
- P5.** L. Brink, R.Shorten, J. Y. Yu, “Signaled Queueing”, AAMAS 2015
- P6.** I. Boutsis, S. Karanikolaou, V. Kalogeraki, “Personalized Event Recommendations using Social Networks”, MDM 2015, Pittsburgh, Pennsylvania, USA, June 2015
- P7.** Y. Chow, J. Y. Yu, “Real-time Bidding-based Vehicle Sharing”, AAMAS 2015

- P8.** M. Corless, C. King, R. Shorten, F. Wirth, "AIMD Dynamics and Distributed Resource Allocation", SIAM, 2015
- P9.** E. Daly, F. Schnitzler, M. Berlingerio, "Crowd Sourcing, with a Few Answers: Recommending Commuters for Traffic Updates", in Proceedings of 9th ACM Conference on Recommender Systems (RecSys 2015) 🌟
- P10.** A. Gal, A. Mandelbaum, F. Schnitzler, A. Senderovich, M. Weidlich, "On Predicting Traveling Times in Scheduled Transportation (Extended Abstract)", Proceedings of the 2nd International Work-shop on Mining Urban Data, p. 88-89, 2015
- P11.** I. Katakis, D. Gunopulos, "Integrating Heterogeneous Urban Data for Emergency Response: The INSIGHT project into Dublin's Traffic Control Room", European Data Forum (EDF 2015), Luxembourg, 16-11-2015 (to appear)
- P12.** I. Katakis, F. Schnitzler, T. Liebig, "2nd International Workshop on Mining Urban Data (Preface)," in Proceedings of the 2nd International Workshop on Mining Urban Data (MUD2), CEUR-WS, 2015, vol. 1392, pp. 7-9 🌟
- P13.** I. Katakis, F. Schnitzler, T. Liebig, D. Gunopulos, K. Morik, G. Andrienko, S. Mannor, "Proceedings of the 2nd International Workshop on Mining Urban Data", co-located with 32nd International Conference on Machine Learning (ICML 2015), Lille, France, July 11th, 2015. CEUR Workshop Proceedings 1392, CEUR-WS.org 2015 🌟
- P14.** N. Larios, C. Mitatakis, V. Kalogeraki, D. Gunopulos, "Evaluating Distance Measures for Trajectories in the Mobile Setting", MUD 2015, Lille, France, July 2015
- P15.** T. Liebig, "Privacy Preserving Centralized Counting of Moving Objects", AGILE 2015, F. Bacao, M. Y. Santos, and M. Painho, Eds., Springer International Publishing, 2015, pp. 91-103
- P16.** T. Liebig, "Analysis Methods and Privacy Aspects in Spatio-Temporal Data Mining", AI: Philosophy, Geoinformatics & Law, M. Jankowska, M. Pawelczyk, S. Allouche, and M. Kulawiak, Eds., War-saw: IUS PUBLICUM, 2015, (to appear)
- P17.** T. Liebig, S. Storandt, P. Sanders, W. Othman, and S. Funke, "Report from Dagstuhl: Socio-Paths – Multimodal Door-to-Door Route Planning via Social Paths", Proceedings of the 2nd International Workshop on Mining Urban Data (MUD2), CEUR-WS, 2015, vol. 1392, pp. 90-94
- P18.** T. Liebig, M. Stolpe, and K. Morik, "Distributed Traffic Flow Prediction with Label Proportions: From in-Network towards High Performance Computation with MPI," in Proceedings of the 2nd Inter-national Workshop on Mining Urban Data (MUD2), CEUR-WS, 2015, vol. 1392, pp. 36-43.
- P19.** J. Marecek, R. Shorten, J. Y. Yu, "Signaling and obfuscation for congestion control", International Journal of Control, 2015
- P20.** A. Saravanou, G. Valkanas, D. Gunopulos, G. Andrienko, "Twitter Floods when it Rains: A Case Study of the UK Floods in early 2014", Social Web for Disaster Management (WWW'15 Workshop), 05-2015 🌟
- P21.** F. Schnitzler, J. Y. Yu, S. Mannor, "Sensor Selection for Crowdsensing Dynamical Systems", Proceedings of the 18th International Conference on Artificial Intelligence and Statistics (AISTATS), p. 829-837, 2015 🌟
- P22.** H. Stange, S. Steenhoek, S. Bothe and F. Schnitzler, "Insight-driven Crisis Information - Preparing for the Unexpected using Big Data", Proceedings of the ISCRAM 2015 Conference, 05-2015 🌟
- P23.** D. Tomaras, I. Boutsis, V. Kalogeraki, "Travel Time Estimation in Real-Time using Buses as Speed Probes", IQ2S 2015, St. Louis, Missouri, USA, March 2015

**P24.** G. Valkanas, A. Saravanou, D. Gunopulos, "A Faceted Crawler for the Twitter Service", 15th International Conference on Web Information System Engineering, 12-10-2014

**P25.** F. Wirth, S. Stuedli, J. Y. Yu, M. Corless, R. Shorten, "Asynchronous Algorithms for Network Utility Maximisation with a Single Bit", ECC 2015

**P26.** N. Zacheilas, V. Kalogeraki, "A Framework for Cost-Effective Scheduling of MapReduce Applications", 12th IEEE International Conference on Autonomic Computing, 2015 (to appear)

**P27.** N. Zygouras, N. Panagiotou, I. Katakis, D. Gunopulos, N. Zacheilas, I. Boutsis, V. Kalogeraki, "Towards detection of faulty traffic sensors in real-time", Mining Urban Data (MUD) - ICML 2015 Workshop, Lille, France, 2015

**P28.** N. Zygouras, N. Zacheilas, V. Kalogeraki, D. Kinane, D. Gunopulos, "Insights on a Scalable and Dynamic Traffic Management System", EDBT 2015: 653-664, March 2015

**P29.** M. Stolpe, T. Liebig, K. Morik (2015): Communication-efficient learning of traffic flow in a network of wireless presence sensors. In Proceedings of the Workshop on Parallel and Distributed Computing for Knowledge Discovery in Data Bases held at the ECML/PKDD, 2015, Porto, Portugal (to appear)

#### 4.3.4 Journal and Magazine Publications

**J1.** D. Kotsakos, P. Sakkos, I. Katakis, D. Gunopulos, „Language agnostic meme-filtering for hashtag-based social network analysis”, Social Netw. Analys. Mining 5(1): 28:1-28:14 (2015)

**J2.** A. Kotsifakos, I. Karlsson, P. Papapetrou, V. Athitsos, D. Gunopulos, "Embedding-based subsequence matching with gaps-range-tolerances: a Query-By-Humming application" VLDB J. 24(4): 519-536 (2015)

**J3.** S. Steenhoek, G. Adrienko, N. Adrienko, I. Katakis, A. Saravanou, G. Valkanas, D. Gunopulos, G. Fuchs, H. Stange, "Stürme und Hochwasser in Social Media", Crisis Prevention, 11-2015 🌸

**J4.** J. Zisgen, S. Steenhoek, R. Fathi, N. Bernstein, S. Martini, S. Voßschmidt, A. Karsten, Risikound Krisenkommunikation – Herausforderungen einer veränderten Kommunikationskultur im Zeitalter der Social Media", gesammelte Literatur INKA Projekt,

**J5.** J. Zisgen, S. Steenhoek, S. Voßschmidt, Miteinander reden, Bericht zu den Pilotseminaren: Social Media, Spontanhelfer / Ungebundene Helfer und Bevölkerungsschutz in der Lage – Diskussionsworkshop, Bevölkerungsschutz Magazin, 09-2015

#### 4.3.5 Tutorials & Seminars

**T1.** N. Andrienko and G. Andrienko, "Visual Analytics" at PKU Summer School, Beijing China, 14.07.-15.07.2015

**T2.** A. Gal, 40th International Conference on Very Large Databases (VLDB 2014), September 1-5, 2014, Hangzhou, China, "Uncertain Entity Resolution"

**T3.** A. Gal, 18th International Conference on Extending Database Technology (EDBT'2015), March 23-27, 2015, Brussels, Belgium, "Entity Resolution in the Big Data Era: Probabilistic DB Support to Entity Resolution" (jointly with Benny Kimelfeld)

**T4.** F. Schnitzler, "Smart Traffic Monitoring: Intelligent Synthesis and Real-Time Response using Massive Streaming of Heterogeneous Data", Technion Electrical Engineering Faculty, 21-06-2015

## 4.4 Mining Urban Data Workshops

The consortium organized two workshops on the scientific topic of INSIGHT. The two workshops were the “1<sup>st</sup> International Workshop on Mining Urban Data (MUD)” and the “2<sup>nd</sup> International Workshop on Mining Urban Data (MUD2)”.



### 4.4.1 1<sup>st</sup> International Workshop on Mining Urban Data

MUD was co-located with the “17th International Conference on Extending Database Technology (EDBT’14)” and “17th International Conference on Database Theory (ICDT’14)” both organized in Athens in March 24-28, 2014. We received 18 submissions and accepted 15 papers (9 full papers and 6 short papers).

The organizers of the workshop were: Gennady Andrienko (Fraunhofer IAIS and City University London), Dimitrios Gunopulos, (National & Kapodistrian University of Athens), Vana Kalogeraki (Athens University of Economics and Business), Ioannis Katakis (National & Kapodistrian University of Athens), Pedro Jose Marron (Universitat Duisburg-Essen) Katharina Morik (TU Dortmund), and Olivier Verscheure (IBM Research).



Figure 9. MUD Workshop at EDBT'14



Figure 10. MUD Workshop Web Site

We had some papers from the INSIGHT consortium but most of the papers were from researchers working on similar fields or similar projects. The accepted papers can be seen in the following list:

#### *Papers Accepted at the Mining Urban Data Workshop*

- Alexandros Efentakis, Sotiris Brakatsoulas, Nikos Grivas and Dieter Pfoser, “Crowdsourcing turning restrictions for OpenStreetMap”
- Indre Zliobaite and Jaakko Hollmen, “A case study in preprocessing mobile sensing data for urban mobility analysis”
- Marcus Handte, Muhammad Umer Iqbal, Stephan Wagner, Wolfgang ApolinarSKI, Pedro, Jose Marron, Eva Maria Munoz Navarro, Santiago Martinez, Sara Izquierdo Barthelemy and Mario Gonzalez Fernandez “Crowd Density Estimation for Public Transport Vehicles”
- Akira Kinoshita, Atsuhiko Takasu and Jun Adachi, “Traffic Incident Detection Using Probabilistic Topic Model”
- Thomas Liebig, Nico Piatkowski, Christian Bockermann and Katharina Morik, “Predictive Trip Planning Smart Routing in Smart Cities”
- Dimitris Kotzias, Ted Lappas and Dimitrios Gunopulos, “Addressing the Sparsity of Location Information on Twitter”
- Corrado Loglisci, Donato Malerba and Apostolos N. Papadopoulos, “Mining Trajectory Data for Discovering Communities of Moving Objects”

- Tae Hong Park, Jonathan Turner, Michael Musick, Jun Hee Lee, Christopher Jacoby, Charlie Mydlarz and Justin Salamon, “Sensing Urban Sounscapes”
- Iouliana Litou, Ioannis Boutsis and Vana Kalogeraki, “Efficient Dissemination of Emergency Information using a Social Network”
- Simona Citrigno, Sabrina Graziano, Francesco Lupia and Domenico Sacc , “Smart Applications for Smart City: a Contribution to Innovation”
- Jaakko Rantala and James Culley, “Analysis of relationships between road traffic volumes and weather: exploring spatial variation”
- Andreas Weiler, “SiCi Explorer: Situation Monitoring of Cities in Social Media Streaming Data”
- Md. Mostafizur Rahman, Atsuhiko Takasu and Hafiz Md. Hasan Babu, “A Cascading Wavelet-Feed Forward Neural Network Approach for Forecasting Traffic Flow”
- Francois Schnitzler, Thomas Liebig, Shie Mannor and Katharina Morik, “Combining a Gauss-Markov model and Gaussian Process for traffic prediction in Dublin city center”
- Roberto Trasarti, Barbara Furletti, Lorenzo Gabrielli, Mirco Nanni and Dino Pedreschi, “Big data analytics for smart mobility - a case study”

The proceedings of the workshop are available at the following URL:

<http://ceur-ws.org/Vol-1133/>

We also had three invited talks in the workshop by distinguished researchers in relevant fields.

#### *Invited Talks*

- Fransesco Calabrese (IBM Research), “Understanding and Optimizing Urban Dynamics from Digital Traces”
- Demetris Zeinalipour-Yazti (University of Cyprus), “Crowdsourcing Urban Data with Smartphones”
- Filia Makedon (The University of Texas Arlington), “Urban Challenges for Sensitive Populations”

#### **4.4.2 2<sup>nd</sup> International Workshop on Mining Urban Data**

The second version of the Mining Urban Data workshop was co-located with the International Conference on Machine Learning (ICML 2015) in Lille July 10<sup>th</sup> 2015.



*Figure 11. MUD2 Workshop at ICML 2015, Lille, France.*

We received similar number of submissions as the first MUD workshop (18 papers) and had 3 invited speakers. During the workshop the INSIGHT partners had the chance to interact



with researchers and practitioners that work on similar areas. The purpose of this version of the workshop was to engage the Machine Learning community into working with Urban Data. The accepted papers were the following:

(full papers)

- Joelle Pineau and Pierre-Luc Bacon, “Analyzing Open Data from the City of Montreal
- Lidia Contreras Ochando”, Cristina I. Font Julián, Francisco Contreras Ochando and Cesar Ferri, Airvlc: An application for real-time forecasting urban air pollution
- Albrecht Zimmermann, Mehdi Kaytoue, Marc Plantevit, Céline Robardet and Jean-François Boulicaut, “Profiling users of the Velo’v bike sharing system”
- Nikolaos Zygouras, Nikolaos Panagiotou, Nikos Zacheilas, Ioannis Boutsis, Vana Kalogeraki, Ioannis Katakis and Dimitrios Gunopulos, “Towards detection of faulty traffic sensors in real-time”
- Indre Zliobaite, Michael Mathioudakis, Tuukka Lehtiniemi, Pekka Parviainen and Tomi Janhunen, “Accessibility by public transport predicts residential real estate prices: a case study in Helsinki region”
- Thomas Liebig, Marco Stolpe and Katharina Morik, “Distributed Traffic Flow Prediction with Label Proportions”
- Axel Schulz, Petar Ristoski, Johannes Fürnkranz and Frederik Janssen, “Event-based Clustering for Reducing Labeling Costs of Incident-Related Microposts”
- Boris Chidlovskii, “Improved Trip Planning by Learning from Travelers’ Choices”
- Stefan Funke, Robin Tibor Schirrmeyer and Sabine Storandt, “Automatic Extrapolation of Missing Road Network Data in OpenStreetMap”

(short papers)

- Ali Ziat, Gabriella Contardo, Nicolas Baskiotis and Ludovic Denoyer, “Car-traffic forecasting: A representation learning approach”
- Maxime Sangnier, Jérôme Gauthier and Alain Rakotomamonjy, “Early frame-based detection of events in acoustic scenes”
- Avigdor Gal, Avishai Mandelbaum, Francois Schnitzler, Arik Senderovich and Matthias Weidlich, “On Predicting Traveling Times in Scheduled Transportation”
- Thomas Liebig, Sabine Storandt, Peter Sanders, Walied Othman and Stefan Funke, “Report from Dagstuhl: SocioPaths - Multimodal Door-to-Door Route planning via Social Paths”
- Martin Sykora, Colin Robertson, Ketan Shankardass, Rob Feick, Krystelle Shaughnessy, Becca Coates, Haydn Lawrence and Thomas W. Jackson, “Stresscapes: Validating Linkages between Place and Stress Expression on Social Media”
- Christian Pölit, “Modelling Time and Location in Topic Models”
- Nikolaos Larios, Christos Mitatakis, Vana Kalogeraki and Dimitrios Gunopulos, “Evaluating distance measures for trajectories in the mobile setting”

As in MUD, in MUD2 we also had a set of invited talks, which were the following:

- Kristian Kersting (Fraunhofer IAIS and Technical University of Dortmund), “Poisson Dependency Networks: Gradient Boosted Models for Multivariate Count Data”
- Eleni Pratsini (Lab Director, Smarter Cities Technology Center, IBM Research – Ireland), “Using Big Mobile Data to Analyze Social Events in Cities”
- Sharad Mehrotra (University of California, Irvine), Towards “on the fly” data cleaning

The proceedings of the second MUD workshop are available here:

<http://ceur-ws.org/Vol-1392/>

This year the consortium worked towards the collection of data that will be made available to the public. After some first contacts with the authors of the MUD2 workshop we have collected and published the first datasets at the following URLs:

www.insight-ict.eu/mud2/data

The workshop was attended by approximately 40 people. Many of them expressed interest for the next installment of the workshop. The consortium agreed to study the potential of organizing the 3<sup>rd</sup> International Workshop on Mining Urban Data in the immediate future.

#### 4.5 MUD Special Issue

Based on the positive feedback of the Mining Urban Data Workshops and the observation that there is an emerging community within this topic, the INSIGHT consortium decided to organize a special issue on the subject of Mining Urban Data. The special issue was



organized in a well-known and prestigious journals in the area of data management: “Information Systems”<sup>1</sup> published by Elsevier.

The guest editors were the following INSIGHT members: Ioannis Katakis (UoA - Managing Guest Editor), Gennady Andrienko (Fraunhofer), Dimitrios Gunopulos (UoA), Vana Kalogeraki (UoA), Katharina Morik (TU Dortmund), and Olivier Verscheure (IBM). The Editorial team teamed up with Yannis Ioannidis (Area Chair of Information Systems).

Figure 12. Call for Papers of the MUD Special Issue at the Elsevier Portal

The MUD special issue was advertised in many major relevant mailing lists with an open call for papers. However, the authors of the MUD workshops were encouraged to substantially extend and submit their papers. The editorial team collected a record number of 44 submissions. This obviously underlines the emergence of a new research field. Most of the papers were high quality. Due to the number of submitted papers and their quality, the special issue will be published in separate parts in different volumes of Information Systems. Currently the first part (Part A) is under publication and will include the following papers:

- “Dynamics of the Urban Lightscape”, by G. Dobler, M. Ghandehari, S. E. Koonin, R. Nazari, A. Patrinos, M. S. Sharma, A. Tafvizi, H. T. Vo, J. S. Wurtele.
- “CrowdPulse: a framework for real-time semantic analysis of social streams”, by C. Musto, G. Semerano, P. Lops, M. de Gemmis
- “Mining Citizen Emotions to Estimate the Urgency of Urban Issues”, by C. Masdeval, A. Veloso
- “Mining Moving Patterns for Predicting Next Location”, by M. Chen, X. Yu, Y. Liu
- “Real-time traffic incident detection using a probabilistic topic model”, by A. Kinoshita, A. Takasu, J. Adachi.

## 5 INSIGHT Video Tutorials and YouTube Channel

For dissemination and educational purposes, the consortium has developed a set of videos that explain the main features of INSIGHT and can serve as an instruction guide. These videos were also exploited in the evaluation of the DCC prototype (see deliverable D6.2).

<sup>1</sup> <http://ees.elsevier.com/is/>

The videos present the desktop user interface and the mobile application. All videos can be found in our YouTube video channel, at the following URL:

<https://www.youtube.com/channel/UCORvM9dn5fz6ZQoEtg-glzg>

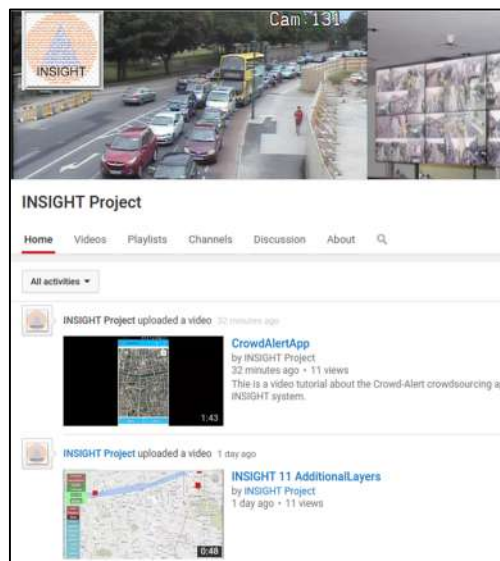


Figure 13. INSIGHT's YouTube channel

## 6 Exploitation Activities

This task will create a credible exploitation strategy based on a market analysis; it will identify the tactical steps required for implementing the exploitation strategy and will identify the major INSIGHT results and describe how these results are exploited by the consortium. More details about the Exploitation Plan of INSIGHT can be found in Deliverable D7.4 "Exploitation Plan".

### 6.1 Individual Partners Exploitation Activities

IBM plans to use the SCATS ISA (part of WP2) in its smart transportation software solutions (Video Presentation: <https://www.youtube.com/watch?v=3yVe1DL2qjs>). Internal discussions have already taken place in this direction. The SCATS ISA currently combines the data from real-time measurements and periodically updated setting files into a format usable by other (high-level) analytics components of the INSIGHT system, stores it in a NoSQL (JSON) database. IBM also plans to use the distributed optimization algorithm developed as part of WP4 in its Internet of Things solutions (<http://www-01.ibm.com/software/info/internet-of-things/>). IBM will roll out the INSIGHT project in other test cities on the basis of a commercial project. IBM is leveraging its world-wide Sales Network to position INSIGHT in its "Smarter Cities" Initiative and the developed components as plug-ins in its products around Traffic Prediction and Stream Computing.

### 6.2 Application to other cities – City of Warsaw

During the second and third year of the project, the consortium moved forward with potential applications of the INSIGHT project to other cities. More specifically, the consortium discussed the potential of applying the INSIGHT platform to the City of Warsaw in Poland. INSIGHT members discussed the data available in Warsaw and how INSIGHT could be utilized. The IT department in City of Warsaw expressed interested for a future collaboration. This discussion lead to the submission of a new proposal at the ICT-16 Big

Data Research call where City of Warsaw will be one of the uses cases. For more details please see next sub-section.

### **6.3 H2020 Project Proposal Submitted**

Almost all members of the INSIGHT consortium participated in a preparation and submission of a H2020 proposal in the call ICT-16 Big Data Research. Four additional partners were added in order to meet the ambitious goals of the new project.

Please find more exploitation actions taken in deliverable D7.4: Exploitation Plan.

## **7 Conclusions**

This document includes all information regarding the dissemination and exploitation activities of the INSIGHT consortium. The partners have made every effort to disseminate the research results of the project. On top of that special emphasis was given to the dissemination of the outcome to potential users and stakeholders. That way the consortium not only maximized the impact of the project's results but was able to collect valuable feedback in order to adapt to the requirements and special attributes of other organizations and users.

The dissemination and exploitation outcome was impressive consisting of a large number of published scientific papers, oral presentations to relevant venues, invited talks, tutorials, seminars, interviews in the radio and TV. Many of these research efforts were the result of collaborative work and led to best paper awards. Highlights of dissemination activities are the two successful International Workshops on Mining Urban Data and the Special Issue on Mining Urban Data.

Regarding the exploitation activities, the consortium initiated discussions with external cities like the City of Warsaw. This effort actually lead to new successful project proposal.

All partners are committed to disseminating the projects' results even *after the completion of the project*. A discussion on the 3<sup>rd</sup> International Workshop on Mining Urban Data is pending and all partners have detailed exploitation plans. Strong research collaborations have been initiated through INSIGHT and will be continued after the project ends.