

EW-Shopp Project Showcase: Supporting Event and Weather-based Data Analytics and Marketing along the Shopper Journey

Extended Abstract

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ABSTRACT

EW-Shopp is an innovation project, the aim of which is to build a platform for support of data linking, integration, and analytics in companies from the e-commerce, retail, and marketing industries. The project consortium joins several business partners from different sectors of e-commerce including marketing, price comparison, and both web and brick-and-mortar stores. The project is developing several pilot services to test the platform and inform its further development.

CCS CONCEPTS

•**Computing methodologies** → **Machine learning**; *Semantic networks*; •**Applied computing** → **E-commerce infrastructure**; •**Human-centered computing** → *Visual analytics*;

KEYWORDS

machine learning, data integration, e-commerce, visual analytics

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1 PROJECT PRESENTATION

EW-Shopp¹ aims at providing support to companies operating in the fragmented European e-commerce ecosystem in order to connect, transform and integrate their data with external sources and use analytics to gain insights into their business. It is an innovation action project funded within the H2020 research and innovation program of the European Commission (ICT-14-2016-2017, Big Data Public-Private Partnership: cross-sectorial and cross-lingual data

¹<http://www.ew-shopp.eu>

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integration and experimentation). With its start in January 2017, we are now at the mid-point of its three year duration.

2 GOALS

EW-Shopp aims to support businesses by building a platform which will deliver an end-to-end solution to work with consumer and market data. Enriching the data with weather and event information, and running powerful analytical services will achieve novel customer and market insights. As a result of operating in a multi-lingual multi-market environment, European e-commerce companies commonly produce large amounts of data in multiple languages acquired from different sources and sectors.

To compete with international e-commerce giants, these companies must increasingly leverage this business data using modern analytics technologies to power and improve their services. Furthermore, their businesses are strongly impacted by external factors such as weather and global, as well as local events. Unfortunately, managing and integrating this heterogeneous data is prohibitively costly and time consuming for a large number of companies. This is especially true for smaller companies. Language barriers, lack of common models and shared systems of identifiers to interlink data, make these data integration tasks even more challenging.

The EW-Shopp platform attempts to simplify and streamline these tasks and level the playing field. For example, by using a predictive model built on top of integrated data about click-through rate of products, weather, and events, we can design a service that is able to increase advertising of top-gear sport equipment in the days before a sunny weekend during the Tour De France.

3 PARTNERS

The majority of the consortium consists of private companies from various sectors of e-commerce, covering the entire shopper journey from advertising and market research to sales and customer relations management for both online as well as brick-and-mortar stores. This includes: Ceneje Ltd. (SI), the manager of the largest price comparison shopping platform in Slovenia, Croatia, Serbia, and Bosnia and Herzegovina; BrowseTel Limited (UK), a provider of multi-channel communication services for customer relation management; GfK Eurisko (IT), the Italian branch of the fourth largest market research company in the world; Big Bang Ltd. (SI), the largest electronics retailer in Slovenia; Measurence (IR), a provider

of sensor-based analytics solutions for physical locations; and JOT Internet Media (SP), a digital marketing solutions company.

Providing the technical and research expertise for the development of the platform the consortium includes: Engineering Ingegneria Informatica S.p.A (IT), the leading Italian software and services group; University of Milano-Bicocca (IT), focusing on semantic and interactive technologies for data linking; SINTEF (NO), the leading Norwegian research institute supporting data integration through their DataGraft² platform, and Jožef Stefan Institute (SI), the largest research institute in Slovenia overseeing all project analytics efforts and providing the event data source through the Event Registry³ global media monitoring platform.

4 INNOVATION

The data sources combined in the project offer numerous possibilities for innovative applications of knowledge discovery and data mining methodology, bringing it well in the scope of interest of the KDD community. By linking and integrating the datasets of business partners and external data sources regarding weather and events, we can construct models that power real-time responsive services for digital marketing, reporting-style services for market research, advanced data and resource management services for retail and e-commerce companies and their technology providers, as well as enhanced location intelligence services.

To guide the development of the platform and provide a basis for its evaluation, several pilot services are in development:

- **Pilot I - Enrichment of purchase information for web platforms:** By building a predictive model of user interaction on an online shopping portal in relation to external weather and event factors, we will enable the portal to run a reactive sense-of-urgency information service. For example, before a heatwave we inform consumers that air conditioning sales commonly spike in such conditions and delivery could be delayed significantly.
- **Pilot II - Integrated platform for category and marketing optimizations:** By combining data from a price comparison platform and a retailer will enable analysis and modeling of business actions such as marketing campaigns and discounts. This analysis will power a business-to-business service that will allow a retailer to use the wider market view of the price comparison platform to inform its category and marketing management.
- **Pilot III - External data access API and decision-making systems supporting customized campaigns:** Using weather and event based predictive models for predicting customer response rate in a call center and managing marketing campaigns.
- **Pilot IV - Location Intelligence:** Modeling seasonal dependencies of visits to physical store locations for supporting of activity planning and management.
- **Pilot V - Campaign-driven purchasing intentions:** Modeling the dynamics of web search engine keywords (e.g. Google Adwords) with respect to weather and event factors for supporting of marketing campaign management.

All the pilot services will be tested by business partners in the scope of their regular operations. Their feedback will guide development in the second half of the project.

As it is still under ongoing development, we are unfortunately not able to show a full end-to-end interaction with the platform. For the demonstration, we will present a selection of analytics results from the pilots and show the business insights they offer. These results will be presented with a strong focus on interactive visualizations as one of the guiding principles of the project is an emphasis on intuitive and interactive visualizations in platform reporting services. Because they contain sensitive business information, we are unable to share these visualizations publicly before the conference.

5 CONCLUSION

The EW-Shopp project is building a platform for supporting data linking, integration, and analytics in European e-commerce companies. It is developed in cooperation with businesses from all stages of a shopper's journey and will be tested in several pilot services to ensure that it addresses actual business needs. The project showcase will focus on selected analytics results collected during pilots' development and present them using rich interactive visualizations.

²<https://datagraft.io>

³<http://eventregistry.org>