STOPFAKE

With the financial support of the Prevention of and Fight
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European Commission - Directorate-General Migration and Home Affairs

The STOPFAKE information system against counterfeiting and organised crime

Guidelines for public and private stakeholders

Ministero dello Sviluppo Economico
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Università degli Studi di Trento
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EXPERT SYSTEM SEMANTIC INTELLIGENCE
INDICAM Istituto di Centromarca per la lotta alla contraffazione
Confcommercio Imprese per l'Italia Trentino

European project (HOME/2013/ISEC/AG/FINEC)
STOPFAKE – An ICT tool, to collect, monitor and analyse data
on counterfeiting and organised crime to support investigation and prevention

The STOPFAKE information system against counterfeiting and organised crime
Guidelines for public and private stakeholders

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Foreword

The Directorate-General for the Fight against Counterfeiting – Italian Patent and Trademark Office (DGLC-UIBM) of the Ministry of Economic Development has long been committed to in-depth research on counterfeiting and its related aspects. This comprehensive knowledge is a necessary starting point to implement public policies that are capable of both strengthening the sense of legality among citizens and protecting the economic fabric of the country. On the basis of its institutional mandate, the Directorate-General created the National Observatory on Counterfeiting with the aim of carrying out studies and analyses in cooperation with national and international partners. The goal of the National Observatory is to measure the economic and fiscal effects of counterfeiting on different production sectors, to gather data on the counteractivity of Italian police forces, and to analyse the quantitative and qualitative aspects of the consumption of counterfeit products, as well as the role of organised crime in this illegal market. In this context, the integrated database IPERICO (Intellectual Property – Elaborated Report of the Investigation on Counterfeiting) has been implemented to gather data on counterfeit products seized by the *Guardia di Finanza*, the *Agenzia delle Dogane* (i.e. Customs Agency) and other Italian police forces.

Thanks to the European project STOPFAKE whose main result is the information system presented in this document, which automatically processes and visualises data on counterfeiting and organised crime involvement, the Directorate-General continues its commitment in the field, through the close cooperation with the research group eCrime of the University of Trento and the support of Expert System, INDICAM – *Istituto di Centromarca per la lotta alla contraffazione*, and Confcommercio – *Imprese per l'Italia in Trentino*.

The project, co-funded by the European Commission, Directorate-General for Migration and Home Affairs, enhanced and enriched the integrated database IPERICO with quantitative and qualitative data (for example on possible consumers of counterfeit products, on businesses victimisation experience with counterfeiting, on socio-economic indicators, etc.) coming from different sources. These data are merged into an integrated database and they can be cross-checked as well as automatically visualised by the information system to understand the "where", the "how" and the "why" of counterfeiting and organised crime, thus optimizing efforts and resources. The Directorate-General can now use this tool to implement preventative, control and awareness-raising policies, wich are more effective and capable to interpret changes and dynamics of this illegal market. The information system also represents a tool that the Directorate-General makes available to the anti-counterfeiting public and private stakeholders in order to strengthen more coordinated actions both at the national and local levels.

The information system is not static. In the future, should we wish so, it can be updated with new data, also in real time and through dedicated applications. Our auspice is that the collaboration with the research group eCrime, as well as with the partners of this research, can continue.

Loredana Gulino
Director General
Directorate-General for the Fight against Counterfeiting
Italian Patent and Trademark Office (DGLC-UIBM) of the Ministry of Economic Development

The European project STOPFAKE on counterfeiting and organised crime

What it is

How is it possible to prevent and fight counterfeiting, also with reference to organised crime? It is necessary to have updated data, as well as methodologies and technologies, able to process and integrate these data in an automated way. The European project STOPFAKE – an ICT tool to collect, monitor and analyse data on counterfeiting and organised crime to support investigation and prevention (STOPFAKE) has addressed this need, by developing a method and an ICT tool (prototype) for the creation, collection, management and automated analysis of data on counterfeiting and organised crime with the purpose of enhancing the fight against these criminal phenomena, and with the ultimate goal of assisting public and private (public institutions, LEAs, businesses, no-profit organisations) stakeholders in the field.

STOPFAKE was coordinated by the Directorate-General for the fight against Counterfeiting – Italian Patent and Trademark Office (DGLC-UIBM) of the Ministry of Economic Development and was developed in partnership with the research group eCrime of the Department "Faculty of Law" of the University of Trento, Expert System and with the collaboration of INDICAM – *Istituto di Centromarca per la lotta alla contraffazione,* and Confcommercio – *Imprese per l'Italia in Trentino*. The project was co-funded by the European Commission under the ISEC program (2013) "Prevention of and Fight against Crime" of the Directorate- General for Migration and Home Affairs, and lasted 29 months from October 2014 to March 2017.

What it does

The applied research conducted within the European project STOPFAKE enhanced and enriched the integrated database IPERICO (Intellectual Property – Elaborated Report of the Investigation on Counterfeiting) of the Directorate-General for the fight against Counterfeiting – Italian Patent and Trademark Office (DGLC-UIBM) of the Ministry of Economic Development. The database gathers data on counterfeit products seized by the *Guardia di Finanza* and the *Agenzia delle Dogane* (i.e. Customs Agency). This experience represents a best practice at the national level (Italy) to prevent and fight counterfeiting. In particular, the integrated database IPERICO was enhanced by developing an ICT tool (prototype), composed of:

a. a centralised database (STOPFAKE DB) devised to integrate and store different data flows such as seizures of counterfeit products (IPERICO); data on the propensity to use counterfeit products by Italian residents collected through an *ad hoc* self-report survey; businesses victimisation experience with counterfeiting (i.e. real/perceived risk that products can be counterfeited gathered through an *ad hoc* victimisation survey; news on counterfeiting and organised crime collected form open sources on the web (COGITO); relevant socio-economic indicators (e.g. GDP *per capita*, relative poverty, unemployment, etc.).

b. an information system (STOPFAKE IS) supporting multiple inputs from STOPFAKE DB, with enhanced capabilities for automated generation of tables, maps, graphs and reports on counterfeiting and organised crime.

The information system (STOPFAKE IS) allows to integrate and visualise data from different sources, thus contributing to a comprehensive analysis and understanding of the counterfeiting market in Italy, also in regard to the involvement of organised crime. Furthermore, it allows the sharing of useful and reliable data among anti-counterfeiting key actors as to implement tailored measures for prevention, counter-action and sensitization, and integrated interventions within local territories. The ICT tool, tested at the national level and supporting multi-lingual interface, is transferable (with adaptations) to different EU national contexts, and these guidelines have been drafted to this aim.

Besides the authors of these guidelines, the following persons worked in the development of STOPFAKE IS (prototype): Vincenzo Falletta (eCrime - University of Trento); Gianluca Mameli, Giacomo Pasut, Nkonika Wa Nkonika, Guido Razzano and Alessandro Ercolani (Expert System).

Box 1. The commitment of the Directorate-General for the Fight against Counterfeiting – Italian Patent and Trademark Office (DGLC-UIBM) of the Ministry of Economic Development in the prevention and fight of counterfeiting

by Francesca Cappiello

The European project STOPFAKE allowed the Directorate-General to strenghten its commitment in the prevention of and fight against counterfeiting. The starting point was the integrated database IPERICO (Intellectual Property – Elaborated Report of the Investigation on Counterfeiting) that, on a yearly basis, gathers and harmonizes data on seizures of counterfeit products by the *Guardia di Finanza* and the *Agenzia delle Dogane* (i.e. Customs Agency), and other Italian police forces (e.g. *Carabinieri*, Local Police). Project STOPFAKE and its results (the centralised database STOPFAKE DB and the information system STOPFAKE IS) enriched and strengthened the integrated database IPERICO, which is a best practice at the national level, in line with both the aims of the Directorate-General and the research activities (studies and analysis) of the National Observatory on counterfeiting.

The Directorate-General, which is running since 1st January 2009 (DPR 28 November 2008), operates at the national and international levels to:

1. *Enhance the fight against counterfeiting, through*:

- Elaboration and development of studies on counterfeiting;
- Definition and implementation of policies and strategies for the fight against counterfeiting;
- Awareness raising campaigns addressed to consumers and businesses;
- Assistance and support to citizens and businesses;
- Implementation and management of databases on counterfeiting;
- Coordination with national and international competent authorities.

2. *Increase the awareness and use of Industrial Property rights, through*:

- Definition and implementation of policies and strategies to promote Industrial Property;
- Actions and initiatives to protect and maximise the value of Industrial Property rights (trademarks, patents, design and models);
- Management of databases and disclosure of patent information;
- Coordination with national and international competent agencies.

In particular, the National Observatory on counterfeiting, wich was established to deepen the knowledge on counterfeiting as to deliver accurate information to local administrators, is aimed at carrying out research and studies in the following fields:

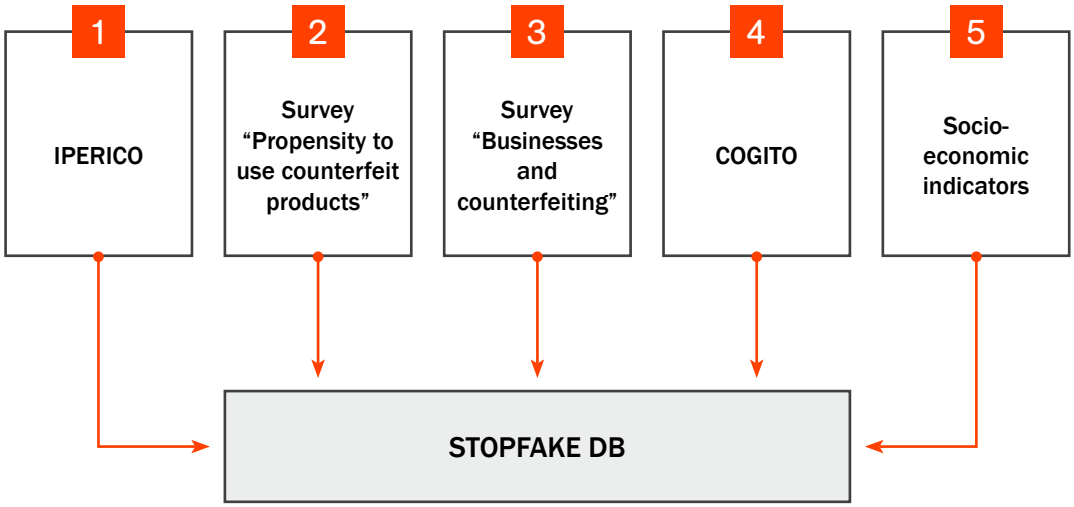
- Economic and fiscal impact of counterfeiting on the country;
- Analysis of counterfeiting in relation to specific sectors or territories;
- Organised crime involvement in counterfeiting;
- Analysis of data on seizures of counterfeit products in Italy (integrated database IPERICO);
- Surveys on the consumption of counterfeit products and on the perception of counterfeiting by consumers and businesses;
- Assessment of counterfeiting online as well as of its features on the web.

Project STOPFAKE provides new tools for the activities of the National Observatory, allowing both a detailed and integrated analysis of the multifaceted phenomenon of counterfeiting, through the cross-check of available quantitative and qualitative data. From a policy-maker perspective, STOPFAKE aims at supporting more tailored interventions and measures.

STOPFAKE DB
The integrated database and its information flows

The first phase of project STOPFAKE developed a centralised database named STOPFAKE DB to store data and information to support public institutions, LEAs, businesses and no-profit organisations in the prevention of and fight against counterfeiting at the national level, also with reference to organised crime involvement (Fig. 1). This database gathers five data flows which refer to the geographical macro-areas (North, Centre, South-Islands), regions and provinces of the national territory. In particular: 1. Data on seizures of counterfeit products coming from the integrated database IPERICO on counterfeiting (Intellectual Property – Elaborated Report of the Investigation on Counterfeiting) of the Directorate-General for the Fight against Counterfeiting – Italian Patent and Trademark Office (DGLC-UIBM) of the Ministry of Economic Development; 2. Data gathered through the self-report survey "Propensity to use counterfeit products"; 3. Data collected through the victimisation survey "Businesses and counterfeiting"; 4. News on counterfeiting and organised crime involvement gathered from open sources on the web (COGITO); 5. Socio-economic indicators collected from the databases of the National Institute of Statistics (ISTAT). As for the surveys, all the collected data were processed in compliance with the Italian Data Protection Act (D.lgs. 196/2003) and aggregated for statistical purposes with guaranteed anonymity.

Figure 1. STOPFAKE DB. Data flows



Source: eCrime elaboration on project STOPFAKE data

1° data flow. Seizures of counterfeit products (IPERICO integrated database)

The first data flow that merges into STOPFAKE DB comes from the integrated database IPERICO on counterfeiting (Intellectual Property – Elaborated Report of the Investigation on Counterfeiting) of the Directorate-General for the Fight against Counterfeiting – Italian Patent and Trademark Office (DGLC-UIBM) of the Ministry of Economic Development. In particular, these data relate to the number of seizures of counterfeit products; the quantity of seized products; the commodity category of seized products (Clothing; Clothing accessories; Electrical equipment; ICT equipment; Footwear; CD, DVD, tapes; Toys and games; Glasses, Watches and jewels; Perfumes and cosmetics; Other goods)[1]; the type of product seized; the declared and estimated value of seized products. The integrated database IPERICO gathers and harmonizes data on seizures of counterfeit products by the *Guardia di Finanza* and the *Agenzia delle Dogane* (i.e. Customs Agency), and by other Italian police forces (e.g. *Carabinieri*, Local Police) since 2008 with reference to Italian regions and provinces. This information allows to understand the dynamics and trends of the counterfeiting market in Italy.

2° data flow. Data collected through the survey "Propensity to use counterfeit products"

The second data flow of STOPFAKE DB consists of data collected by the self-report survey on potential consumers of counterfeit products carried out in 2016 at the national level. These data were collected through a questionnaire delivered with CAWI and CATI methods (via Internet and telephone) to a representative sample of the Italian population (about 3,000 individuals) stratified by age, gender and geographical macro-area (North, Centre, South-Islands). The information of this data flow regards the possible consumption of counterfeit products by Italian residents and their intention to acquire such products in the future, together with their awareness (i.e. opinions of respondents) of the involvement of organised crime in this illegal activity. All this information allows to deepen the knowledge on dynamics and trends of the counterfeiting market in Italy, and offers indications to public and private stakeholders on preventative and awareness-raising measures.

[1] The category "Other goods" includes: automobile and motorcycle spare parts, labels, studs, stationery, hardware, containers, ornamental objects, instruments, equipment and devices (also medical).

Box 2. The centralised database STOPFAKE DB
Survey "Propensity to use counterfeit products" – focus

by Giuseppe Espa and Francesco Mariotti

The self-report survey "Propensity to use counterfeit products" [Propensione al consumo di prodotti contraffatti] was carried out in 2016 during project STOPFAKE as to collect data on the possible use of counterfeit products at the national level. For survey purposes, a counterfeit product was defined as "any product, including its packaging, featuring a non-authorized trademark that is identical to an officially registered one for the same type of product or, in any case, a trademark that cannot be distinguished from the other in its essential aspects (definition Reg. (EC) n. 1383/2003)". While, other products that violate intellectual property rights are those infringing those rights stemming from patents, geographical indications, industrial design and Complementary Protection Certificates.

Who?

Representative sample of Italian residents (around 3,000 individuals) with age ≥ 18, stratified by gender, age group (18-34 years, 35-54 years, ≥ 54 years) and geographical macro-area (North, Centre, South-Islands).

What?

Collecting information on the propensity of Italian residents to consume counterfeit products, on their opinions on the involvement of organised crime in both production and supply of counterfeit products, and on the most effective anti-counterfeiting measures to prevent the purchase and use of counterfeit products.

How?

CATI (Computer Assisted Telephone Interview) and CAWI (Computer Assisted Web Interview) methods, and administration of an *ad hoc* questionnaire developed by the research group eCrime in collaboration with the Directorate-General for the Fight against Counterfeiting – Italian Patent and Trademark Office (DGLC-UIBM) of the Ministry of Economic Development, structured in the following sections:

Box 2

Section 1. *General information* such as gender, age, region of residence within the national territory (Italy), marital status, nationality, last degree obtained, job qualification, family income.

Section 2. *Consumption of counterfeit products,* possible use of counterfeit products, willingness to acquire counterfeit products in the future, opinions on these type of products and perceived risk in purchasing and using counterfeit products.

Section 3. *Supply of counterfeit products,* knowledge on the supply of counterfeit products with reference to organised crime involvement based on direct or indirect (i.e. through family members, friends, acquaintances, mass media) experience.

Section 4. *Social and economic consequences of supply and consumption of counterfeit products*, opinions of respondents on social and economic consequences deriving from supply and use of counterfeit products.

Section 5. *Actions to prevent supply and use of counterfeit products,* anti-counterfeiting measures that, in the opinions of respondents, are the most effective to in preventing purchase and use of counterfeit products.

3° data flow. Data collected through the victimisation survey "Businesses and counterfeiting"

The third data flow that merges into STOPFAKE DB regards data collected via the victimisation survey on real/perceived risk of businesses to have their products counterfeited, carried out in 2016 at the national level.[2] These data were collected through a questionnaire delivered with CATI method (via telephone) to a representative sample of businesses active in Italy (around 2,000 units) stratified by number of employees, commodity sector, geographical macro-area (North, Centre, South-Islands). The information of this data flow concerns possible episodes of counterfeiting suffered by businesses and the related damage, the risk (real/perceived) that their products can be counterfeited, opinions (of respondents) on the role of organised crime in counterfeiting businesses' products, the anti-counterfeiting measures implemented as well as opinions on the measures considered to be the most effective to this aim. This data flow allows to understand which businesses are at risk (real or perceived victimisation) and to deepen dynamics and trends of the counterfeiting market in Italy. This information offers useful suggestions to develop measures aimed at protecting the "Made in Italy" label as well as preventative and counter-actions, in particular on the side of businesses.

[2] Both surveys carried during project STOPFAKE were conducted with the support of the Istituto Piepoli in regard to the sampling and data collection activities.

Box 3. The centralised database STOPFAKE DB
Survey "Businesses and counterfeiting" – focus

by Giuseppe Espa and Francesco Mariotti

The victimisation survey "Businesses and counterfeiting" was carried out in 2016 during project STOPFAKE as to collect data on the possible victimisation experience of businesses with counterfeiting at the national level. For survey purposes, the term counterfeiting refers to "the production and/or marketing of products in violation of intellectual property and/or industrial right (trademarks and other distinctive signs, patents for inventions, utility models, industrial design, geographical indications, denominations of origin, copyrights, diversion of genuine products into illegal supply chains, etc.).

Who?

The survey was delivered to a representative sample of businesses (around 2,000) active in Italy, and stratified by number of employees (up to 9 employees, from 10 to 49 employees, ≥ 50 employees), commodity sector (food products and beverages, clothing, footwear, jewels, ICT products, electrical products) on the basis of the ATECO2007 business classification, and geographical macro-area (North, Centre, South-Islands).

What?

Collecting information on possible episodes of counterfeiting suffered by businesses and the related damage, the risk (real/perceived) that their products can be counterfeited, opinions on the role of organised crime in the supply (production and sale) of counterfeit businesses' products, the anti-counterfeiting measures implemented as well as opinions on most the effective ones.

How?

CATI (Computer Assisted Telephone Interview) and administration of an *ad hoc* questionnaire developed by the research group eCrime in collaboration with the Directorate-General for the Fight against Counterfeiting – Italian Patent and Trademark Office (DGLC-UIBM) of the Ministry of Economic Development, structured in the following sections:

Box 3

Section 1. *General information* such as commodity sector, dimension (i.e. number of employees), turnover, location of the registered office (i.e. region of the Italian territory).

Section 2. *Products counterfeiting,* possible episodes of businesses' products counterfeiting.

Section 3. *Damage suffered,* extent of the loss encountered by businesses as a result of products counterfeiting.

Section 4. *Risk of products counterfeiting,* perceived risk that the products of businesses can be counterfeited.

Section 5. *Evaluation of counterfeit products,* opinions of respondents on the involvement of organised crime in products counterfeiting.

Section 6. *Anti-counterfeiting measures,* intellectual/industrial property measures and other anti-counterfeiting measures put in place by businesses and opinions on the ones considered most efficient to this aim.

4° data flow. News from open sources on the web (COGITO)

The fourth data flow of STOPFAKE DB regards the news on counterfeiting and organised crime gathered from open sources on the web, that is more than 50 Italian websites of news such as TGCOM, il Sole24Ore, Corriere della Sera, La Stampa, Corriere del Sud, l'Espresso. The contents of the news collected were analysed and structured in an automated manner applying the semantic technology COGITO and referred to relevant categories (for the project) such as counterfeiting and organised crime, and the commodity categories of the integrated database IPERICO. The data refer to the year 2016 and the regions and provinces of the national territory. In particular, this information allows to enrich the quantitative data stored in STOPFAKE DB. Media representation on counterfeiting, also in regard to organised crime involvement, offers knowledge on how this illegal market is developing in Italy (e.g. typologies of counterfeit products, modus operandi of actors involved, counteraction of police forces) and on the perception of counterfeiting with reference to the geographical areas of the national territory (regions/provinces). All this information is useful in order to support preventative actions and counterstrategies of public and private stakeholders.

Box 4. The centralised STOPFAKE DB
The semantic technology COGITO and the automated analysis of the news on counterfeiting and organised crime – focus

by Filippo Nardelli and Marta Spagnolli

What?

News on counterfeiting and organised crime integrated and stored into STOPFAKE DB was searched and gathered from more than 50 open sources on the web (OSINT) through the use of a dedicated platform for semantic search and analysis. The collected open source database composed of about 500,000 pages, was tagged with the metadata of interest and integrated into STOPFAKE DB with this structure.

How?

The open source database obtained from the web was analysed and tagged with the metadata of interest, which in turn are delivered to users as search filter or informative data. In order to assign the metadata to the documents in an automated way, software for semantic analysis was developed through the semantic technology COGITO, to attribute the following information to the texts:

- theme "counterfeiting", only the pages tagged with this theme were inserted into STOPFAKE DB;
- theme "organised crime", assigned as metadata to the document related to this theme;
- commodity categories (derived from the integrated database IPERICO), if the theme was present in the document;
- names of locations and type of location (i.e. nation, region, province) and other relevant entities in the page (e.g. names of individuals, organisations, main concepts, currencies, etc.).

5° data flow. Socio-economic indicators

The fifth data flow that merges into STOPFAKE DB regards socio-economic indicators, such as: 1. Saving capacity and capacity to sustain unexpected expenses; 2. Opinion on the economic perceived condition; 3. Relative poverty; 4. GDP *per capita*; 5. Unemployment; 6. Mafia presence. Data were collected from the databases of the National Institute of Statistics (ISTAT) and with reference to the Italian geographical macro-areas (North, Centre, South-Islands), regions and provinces. These indicators were included into STOPFAKE DB since they regard variables that may be correlated to counterfeiting.

Box 5. The centralised STOPFAKE DB
Socio-economic indicators – focus

by Andrea Di Nicola and Fiamma Terenghi

The socio-economic indicators and the other data flows contained into STOPFAKE have been drawn from the databases of the National Institute of Statistics (ISTAT). More in detail they concern:

1. **Saving capacity and capacity to sustain unexpected expenses**. The related indicators are: percentage incidence of households reporting difficulties in saving part of the money earned during the year and the percentage incidence of households that report their ability to use their own resources to deal with unexpected expenses equal to about 800 euros. Territorial level of aggregation: regional; Years: 2008-2015; Source: ISTAT Survey on the living conditions (EU-SILC).

2. **Opinion on the economic perceived condition**. This indicator is related to the percentage distribution of households according to the declared consideration on their perceived economic situation. Territorial level of aggregation: regional; Years: 2008-2015; Source: ISTAT Survey on the living conditions (EU-SILC).

3. **Relative poverty**. This indicator is related to the incidence of households' relative poverty. A household is defined poor in relative terms if its consumption expenditure is equal or below the poverty line, calculated on the basis of the data of the Survey on Families' consumption. The intensity of poverty indicates the percentage level of the monthly average expenditure of households classified as poor with respect to the poverty line. Territorial level of aggregation: regional; Years: 2008-2013; Source: ISTAT survey on household consumption.

4. **GDP *per capita***. This indicator is related to the value of the *per capita* gross domestic product at market prices. The *per capita* values result from the average values obtained by matching economic aggregates (for example, the gross domestic product, household consumption, added value, income from employed work) to the number of inhabitants or to labour input variables. Territorial level of aggregation: regional; Years: 2012-2015; Source: The ISTAT survey on national accounts (based on the new European Account System – SEC 2010).

5. **Unemployment**. This indicator is related to the unemployment rate out of 100 subjects and it measures the ratio of the number of unemployed individuals vs. the workforce. Territorial level of aggregation: provincial and regional; Years: 2008-2015; Source: ISTAT survey on the workforce.

6. **Mafia presence**. This indicator measures the presence of the mafia in the country. It has been built considering three variables linked to the number of mafia-related crimes reported by police forces to the judicial authorities: conspiracy, murders and assassination attempts. These variables have been transformed into *per capita* rates and then standardized in the [0-1,000] interval. The index related to the presence of the mafia has been finally obtained as a mean of the three standardized variables. Territorial level of aggregation: provincial and regional; Years 2012-2015; Source: ISTAT – Crimes reported by police forces to the judicial authorities and ISTAT – Municipal resident population by gender, year of birth and civil status.

Box 6. The centralised STOPFAKE DB
ISTAT sources of the socio-economic indicators – focus

by Andrea Di Nicola and Fiamma Terenghi

The social and economic indicators come from specific ISTAT sources and have been used to build the STOPFAKE information system. These sources are:

1. **Saving capacity and capacity to sustain unexpected expenses and opinion on the perceived economic situation**. The EU-SILC project is one of the main sources of data for the European Union periodical reports on the social and poverty conditions in its member countries. The indicators are based on income and social exclusion and on a multidimensional approach to the issue of poverty, with a particular emphasis on material deprivation. This survey provides reliable estimates at the regional level and has been conducted on a sample of about 26,000 households (a total of about 70,000 individuals), across about 700 Italian municipalities with different population sizes.

2. **GDP *per capita***. The ISTAT survey on national accounts (based on the new European Accounts System– SEC 2010). The target variable used is the *per capita* Gross Domestic Product at market prices (referred to 2010).

3. **Mafia presence**. Offences reported by police forces to judicial authorities. They concern offences and offenders reported, at the moment when they are communicated to judicial authorities by law-enforcement agencies (*Polizia di Stato, Arma dei Carabinieri, Guardia di Finanza, Corpo Forestale dello Stato, Polizia Penitenziaria*). Fines and offences reported to judicial authorities by other public organizations or by private sources are excluded.

Box 6

Data trasmitted to ISTAT in aggregated form, extracted from the *Sistema di indagine* of the Ministry of the Interior (SDI), with reference to type of offence, place of committed offence (region/province) and reported persons. ISTAT – Municipal resident population by year of birth and civil status. This survey focuses on the municipal resident population by gender, year of birth and civil status on December 31st of each year.

Box 7. The centralised STOPFAKE DB – technical specifications

by Walter Da Col

The centralised and integrated database STOPFAKE DB is built using two different open source technologies: MongoDB (a non-relational database with dynamic schemas) to manage all the contents retrieved from the news on counterfeiting and organised crime, and MySQL (a relational database) to store all the remaining data types. MongoDB allows the management of document-oriented information (a collection of data using the same format/encoding to store information composed by a non-homogenous set of elements) using a dynamic schema based on the key-value concept (values that can be retrieved using unique identifiers) and JSON encoding. This technology removes the necessity of a pre-defined data structure without undermining the possibility of making simple interrogations. On the other hand, MySQL requires the definition of a schema with a fixed number and type of fields but allows the execution of complex interrogations using the relationships that can be created through either the definition of specific common fields or the construction of additional dynamic views.

Those relationships have been designed to exploit the existence of common temporal, spatial and product groups attributes. All the data stored inside STOPFAKE DB can be searched, extracted and aggregated through the *ad hoc* developed web interface (STOPFAKE IS).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part 2
part 3

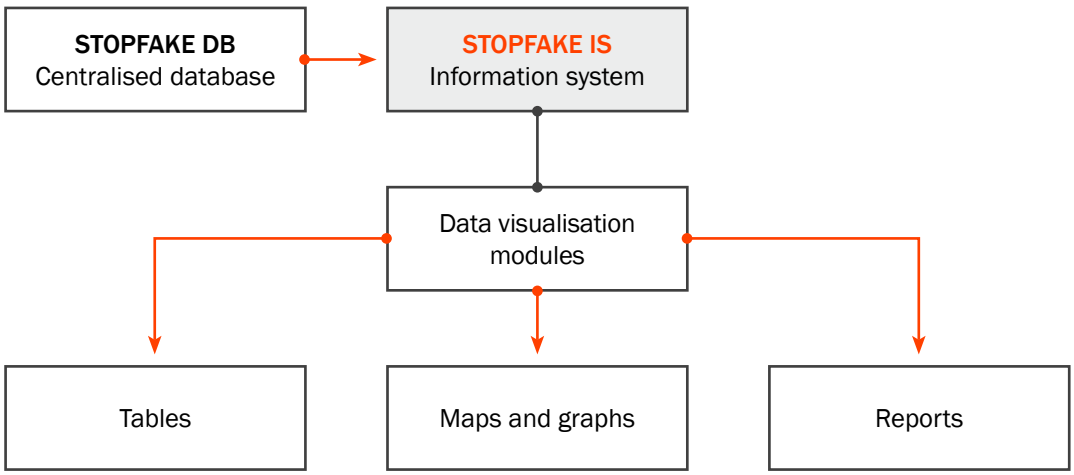
STOPFAKE IS
The information system on counterfeiting and organised crime

The core of project STOPFAKE is the information system STOPFAKE IS, an ICT tool (prototype) developed to analyse and process the data extracted from STOPFAKE DB, and to automatically generate tables, maps, graphs, and reports on counterfeiting and organised crime involvement, through data visualisation modules. The information system (prototype) is conceived as a user-friendly and intuitive tool for public and private stakeholders (public institutions, LEAs, businesses, no-profit organisations) since, within the national territory, it allows to:

1. Define, map, visualize, integrate different data flows on counterfeiting, also with reference to organised crime involvement, propensity to use counterfeit products, businesses victimisation experience with counterfeiting (real/perceived risk that their products can be counterfeited);
2. Gaining interpretations on the causes of counterfeiting.

STOPFAKE IS automatically produces graphic representations and trends related to counterfeiting. Furthermore, it also allows to automatically visualise data, maps and graphs on the propensity to use counterfeit products, as well as on the risk (real/perceived) that businesses' products can be counterfeited, as to provide public and private stakeholders with a tool for more effective preventative interventions, counterstrategies and awareness-raising actions.

Figure 2. STOPFAKE IS. How it works



Source: eCrime elaboration on project STOPFAKE data

Box 8. The STOPFAKE IS information system – technical specifications

by Walter Da Col

The information system STOPFAKE IS (prototype) supports multiple inputs from STOPFAKE DB with enhanced capabilities for automated generation of tables, maps, graphs and reports on counterfeiting and organised crime involvement. This prototype (http://project-stopfake.it) can be described as a web-based dashboard developed, with open source technologies, according to the Single-page application paradigm (a set of techniques that provides a user experience similar to that of a desktop application within a single web page) and supported by a server side application for STOPFAKE DB management.

The design and implementation of the main STOPFAKE IS components follow the principles of the software development model called 3-tier architecture. This particular type of architecture organises all system components into three distinct layers: one layer dedicated to data management (data tier), one layer covering the functional process logic (business logic tier) and one layer for user interaction (presentation tier).

The main elements of data tier layer are the two database servers (MySQL and MongoDB) that allow to store all the information collected from the five data flows and to maintain the data safe and unaltered. Databases access and data aggregation are performed by the server side application which is developed using Java/Scala language (using the Play framework) and lies inside the business logic tier. This application is also responsible for managing all the requests used by the web interface to safely manipulate data, which are made available through standardised methods over a RESTful API.

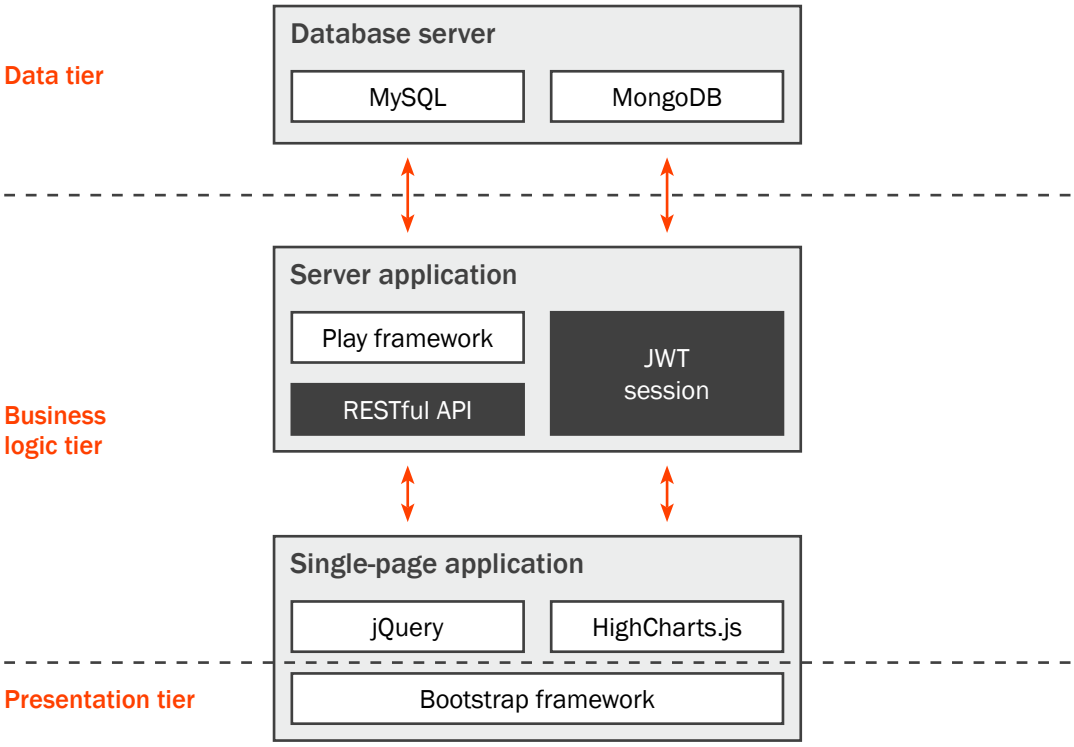
According to the Single page application paradigm, the information system (prototype) STOPFAKE IS web interface has to be considered as two separate macro components which lie, respectively, inside business logic tier and presentation tier. The first component, developed with JavaScript, is dedicated to retrieving the data from the server side application using asynchronous calls (AJAX) and to elaborating the information in a way that they can be represented graphically. This component includes also all Data visualisation algorithms and the last version of HighCharts.js library, a set of functionalities used to build maps and graphs from given data. While, the presentation tier component has been developed using HTML, CSS and JavaScript, and takes advantage of Bootstrap framework to ensure a responsive and user friendly interface. This solution provides an intuitive and smooth experience on both desktop and mobile devices (e.g. smartphone) using any modern web browser (e.g. Google Chrome, Safari, Microsoft Edge).

But how does the system work? STOPFAKE IS was conceived as a user-friendly and intuitive tool (Fig. 3). After accessing the dedicated website, the user (e.g. local administrator, chief of police, law enforcement agent, business manager, representative of no-profit organisations) needs personal credentials to enter the reserved area (username and password). After the login, the interface allows easy browsing within the system. More specifically, the area is structured into two sections:

1. **Data flows.** This is the area containing the catalogues of STOPFAKE DB data divided into five data flows: 1. Seizures of counterfeit products (IPERICO); 2. Data on consumers (CONSUMATORI); 3. Data on businesses (IMPRESE); 4. News from open sources on the web on counterfeiting and organised crime (COGITO); 5. Socio-economic indicators (ISTAT). For each data flow, a window named "Metadata" is available to users containing more detailed information on the types of data.
2. **Data flows integration.** This is the area in which it is possible to compare the five data flows through the automated production of maps (MAPPE) and graphics (GRAFICI).

Once accessed STOPFAKE IS, the user can start exploring and visualising data using the menu on the left, selecting respectively the year or more years (in regard to the availability of the data), the geographical macro-area and the commodity categories, and subsequently the data flow of interest. The data are displayed clicking on the "go" button.

Figure 3. STOPFAKE IS. System components, back-end, front-end and middleware



Source: eCrime elaboration on project STOPFAKE data

STOPFAKE IS. The data flows

This section of the information system STOPFAKE IS reports in table form the data in regard to:

1. IPERICO

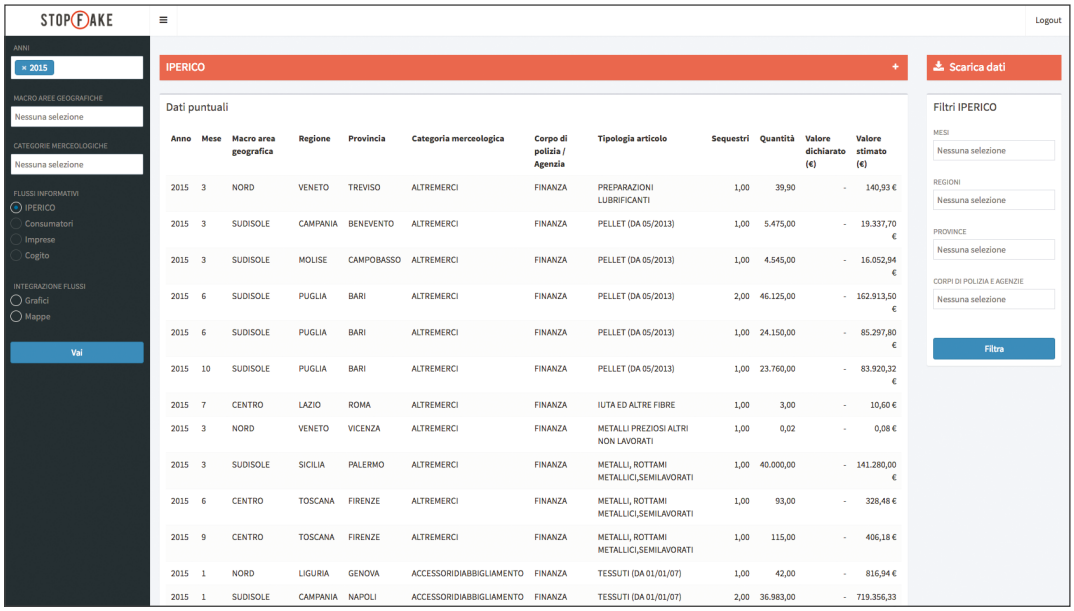
Data on seizures of counterfeit products made by the *Guardia di Finanza* and the *Agenzia delle Dogane* (i.e. Customs Agency) at the national level, coming from the integrated database IPERICO (Intellectual Property – Elaborated Report of the Investigation on Counterfeiting) of the Directorate- General for the Fight against Counterfeiting – Italian Patent and Trademark Office (DGLC-UIBM) of the Ministry of Economic Development which, more in detail, regard:

- Month of the seizure;
- Region/province of the national territory where the products were seized;
- Police force/control agency carrying out the seizures;
- Commodity category of seized products;
- Type of products seized (name of the item);
- Number of seizures of counterfeit products;
- Quantity of seized products;
- Declared and estimated value of seized products.

The menu on the left of the interface allows the user to visualise the information selecting more years among the ones available (from 2008 to 2016); the geographical macro-area (North, Centre, South-Islands) and the commodity category (Clothing; Clothing accessories; Electrical equipment; ICT equipment; Footwear; CD, DVD, tapes; Toys and games; Glasses, Watches and jewels; Perfumes and cosmetics; Other goods). While, through the option "Filter" on the right, the user can explore the data in respect to the month of seizures, the location (region/province) where the seizures have occurred and the police force/control agency in charge of the seizures. Tables are automatically produced according to the selection made by users from the menu on the left and the option "Filter" on the right, and can be exported into Excel format clicking on the "Download data" button at the top right.

Example 1. STOPFAKE IS. Data flows: Seizures of counterfeit products

Seized counterfeit products by year, month, geographical macro-area, region, province, commodity category, police force/control agency, type of product, number of seizures, quantity of seized products, declared and estimated value of seized products. Absolute number. Year 2015

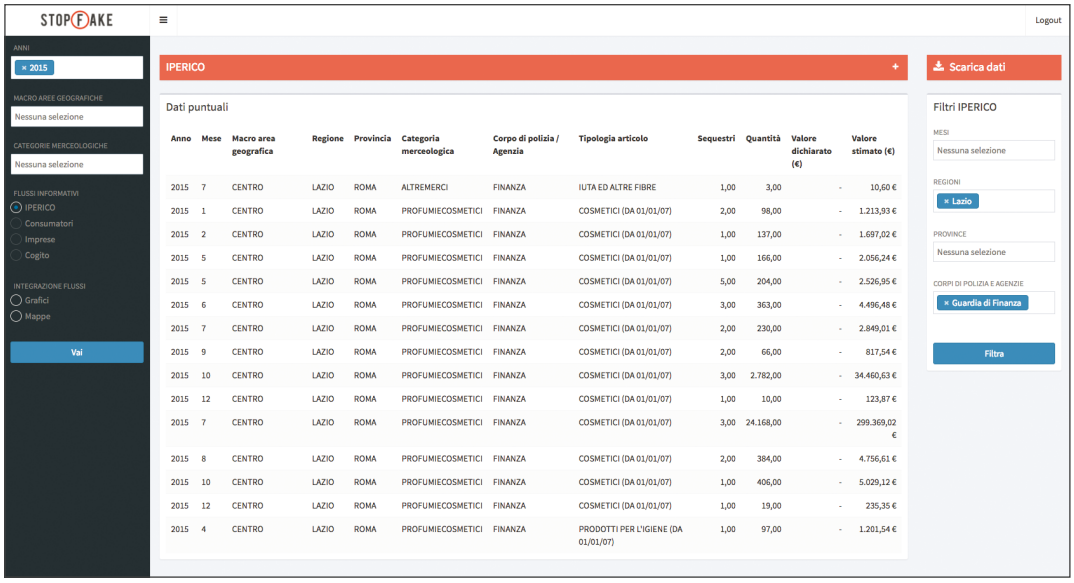


Anno	Mese	Macro area geografica	Regione	Provincia	Categoria merceologica	Corpo di polizia / Agenzia	Tipologia articolo	Sequestri	Quantità	Valore dichiarato (€)	Valore stimato (€)
2015	3	NORD	VENETO	TREVISO	ALTREMERCI	FINANZA	PREPARAZIONI LUBRIFICANTI	1,00	39,90	-	140,93 €
2015	3	SUDISOLE	CAMPANIA	BENEVENTO	ALTREMERCI	FINANZA	PELLET (DA 05/2013)	1,00	5.475,00	-	19.337,70 €
2015	3	SUDISOLE	MOLISE	CAMPOBASSO	ALTREMERCI	FINANZA	PELLET (DA 05/2013)	1,00	4.545,00	-	16.052,94 €
2015	6	SUDISOLE	PUGLIA	BARI	ALTREMERCI	FINANZA	PELLET (DA 05/2013)	2,00	46.125,00	-	162.913,50 €
2015	6	SUDISOLE	PUGLIA	BARI	ALTREMERCI	FINANZA	PELLET (DA 05/2013)	1,00	24.150,00	-	85.297,80 €
2015	10	SUDISOLE	PUGLIA	BARI	ALTREMERCI	FINANZA	PELLET (DA 05/2013)	1,00	23.760,00	-	83.920,32 €
2015	7	CENTRO	LAZIO	ROMA	ALTREMERCI	FINANZA	IUTA ED ALTRE FIBRE	1,00	3,00	-	10,60 €
2015	3	NORD	VENETO	VICENZA	ALTREMERCI	FINANZA	METALLI PREZIOSI ALTRI NON LAVORATI	1,00	0,02	-	0,08 €
2015	3	SUDISOLE	SICILIA	PALERMO	ALTREMERCI	FINANZA	METALLI, ROTTAMI METALLICI,SEMILAVORATI	1,00	40.000,00	-	141.280,00 €
2015	6	CENTRO	TOSCANA	FIRENZE	ALTREMERCI	FINANZA	METALLI, ROTTAMI METALLICI,SEMILAVORATI	1,00	93,00	-	328,48 €
2015	9	CENTRO	TOSCANA	FIRENZE	ALTREMERCI	FINANZA	METALLI, ROTTAMI METALLICI,SEMILAVORATI	1,00	115,00	-	406,18 €
2015	1	NORD	LIGURIA	GENOVA	ACCESSORIDIABBIGLIAMENTO	FINANZA	TESSUTI (DA 01/01/07)	1,00	42,00	-	816,94 €
2015	1	SUDISOLE	CAMPANIA	NAPOLI	ACCESSORIDIABBIGLIAMENTO	FINANZA	TESSUTI (DA 01/01/07)	2,00	36.983,00	-	719.356,33

Source: eCrime elaboration on project STOPFAKE data

Example 2. STOPFAKE IS. Data flows: Seizures of counterfeit products

Seized counterfeit products in the region of Lazio by *Guardia di Finanza* per month, geographical macro-area, commodity category, type of product, number of seizures, quantity of seized products, declared and estimated value of seized products. Absolute number. Year 2015



Anno	Mese	Macro area geografica	Regione	Provincia	Categoria merceologica	Corpo di polizia / Agenzia	Tipologia articolo	Sequestri	Quantità	Valore dichiarato (€)	Valore stimato (€)
2015	7	CENTRO	LAZIO	ROMA	ALTREMERCI	FINANZA	IUTA ED ALTRE FIBRE	1,00	3,00	-	10,60 €
2015	1	CENTRO	LAZIO	ROMA	PROFUMIECOSMETICI	FINANZA	COSMETICI (DA 01/01/07)	2,00	98,00	-	1.213,93 €
2015	2	CENTRO	LAZIO	ROMA	PROFUMIECOSMETICI	FINANZA	COSMETICI (DA 01/01/07)	1,00	137,00	-	1.697,02 €
2015	5	CENTRO	LAZIO	ROMA	PROFUMIECOSMETICI	FINANZA	COSMETICI (DA 01/01/07)	1,00	166,00	-	2.056,24 €
2015	5	CENTRO	LAZIO	ROMA	PROFUMIECOSMETICI	FINANZA	COSMETICI (DA 01/01/07)	5,00	204,00	-	2.526,95 €
2015	6	CENTRO	LAZIO	ROMA	PROFUMIECOSMETICI	FINANZA	COSMETICI (DA 01/01/07)	3,00	363,00	-	4.496,48 €
2015	7	CENTRO	LAZIO	ROMA	PROFUMIECOSMETICI	FINANZA	COSMETICI (DA 01/01/07)	2,00	230,00	-	2.849,01 €
2015	9	CENTRO	LAZIO	ROMA	PROFUMIECOSMETICI	FINANZA	COSMETICI (DA 01/01/07)	2,00	66,00	-	817,54 €
2015	10	CENTRO	LAZIO	ROMA	PROFUMIECOSMETICI	FINANZA	COSMETICI (DA 01/01/07)	3,00	2.782,00	-	34.460,63 €
2015	12	CENTRO	LAZIO	ROMA	PROFUMIECOSMETICI	FINANZA	COSMETICI (DA 01/01/07)	1,00	10,00	-	123,87 €
2015	7	CENTRO	LAZIO	ROMA	PROFUMIECOSMETICI	FINANZA	COSMETICI (DA 01/01/07)	3,00	24.168,00	-	299.369,02 €
2015	8	CENTRO	LAZIO	ROMA	PROFUMIECOSMETICI	FINANZA	COSMETICI (DA 01/01/07)	2,00	384,00	-	4.756,61 €
2015	10	CENTRO	LAZIO	ROMA	PROFUMIECOSMETICI	FINANZA	COSMETICI (DA 01/01/07)	1,00	406,00	-	5.029,12 €
2015	12	CENTRO	LAZIO	ROMA	PROFUMIECOSMETICI	FINANZA	COSMETICI (DA 01/01/07)	1,00	19,00	-	235,35 €
2015	4	CENTRO	LAZIO	ROMA	PROFUMIECOSMETICI	FINANZA	PRODOTTI PER L'IGIENE (DA 01/01/07)	1,00	97,00	-	1.201,54 €

Source: eCrime elaboration on project STOPFAKE data

2. Consumers

This database contains the information gathered through the self-report survey "Propensione al consumo di prodotti contraffatti" [Propensity to use counterfeit products], carried out in 2016 on a sample of Italian residents (around 3,000 individuals) with age ≥ 18. The data are presented in aggregated form and regard:

- eventual purchase of counterfeit products during the last 12 months;[3]
- willingness to buy counterfeit products in the next future;
- opinions on counterfeit products and their spread in Italy;
- opinions on the role of organised crime in the supply (production and selling) of counterfeit products and anti-counterfeiting measures.

The menu on the left of the interface allows the user to visualise the information by selecting the year 2016 and the geographical macro-area (North, Centre, South-Islands). While, through the option "Filter" on the right, the user can explore the data with respect to gender and age group (18-34 years, 35-54 years, ≥ 54 years) of respondents. Tables are automatically produced according to the selection made by users from the menu on the left and the option "Filter" on the right, and can be exported into Excel format clicking on the "Download data" button at the top right.

The data are displayed with reference to the sections of the questionnaire, elaborated *ad hoc* during project STOPFAKE, and can be selected by the user clicking on the buttons at the top of the page. Furthermore, information are visualised in relation to the questions used to collect the data. More in detail:

Section 1 – General information

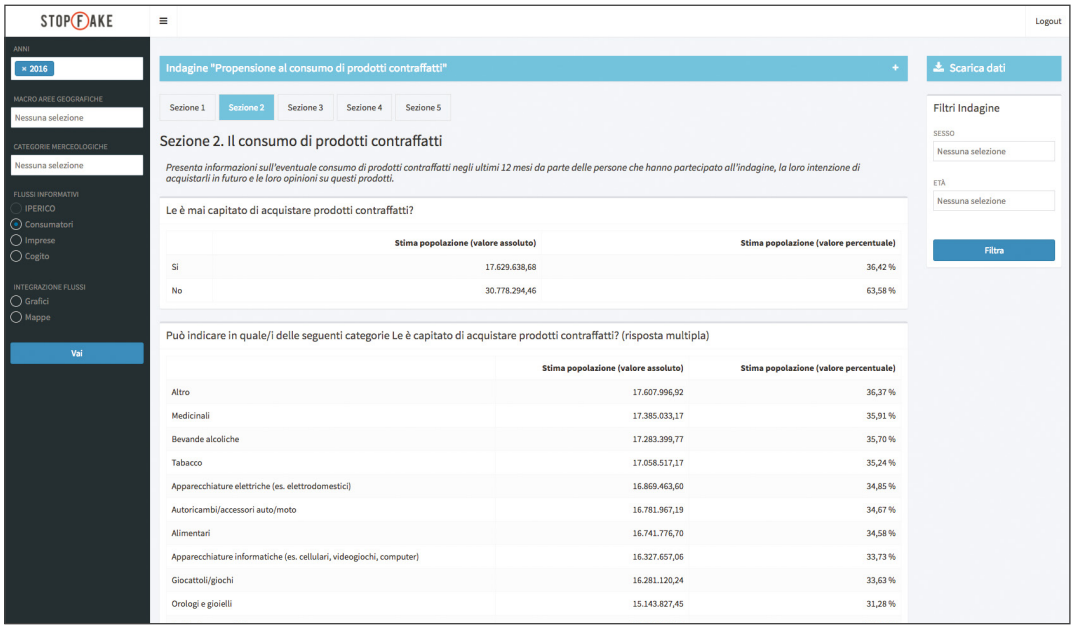
This section provides information on respondents such as gender, age, region of residence, marital status, nationality, last degree obtained, job qualification, family income.

Section 2 – Consumption of counterfeit products

This section collects information on the possible use of counterfeit products by respondents, willingness to acquire counterfeit products in the future, as well as their opinions on such products and the perceived risk due to the purchase and use of counterfeit products.

[3] As for the surveys on potential consumers of counterfeit products and businesses victimisation, the "last 12 months" and the "next 12 months" are intended starting from the data collection period in January 2017.

Example 3. STOPFAKE IS. Data flows: Consumption of counterfeit products

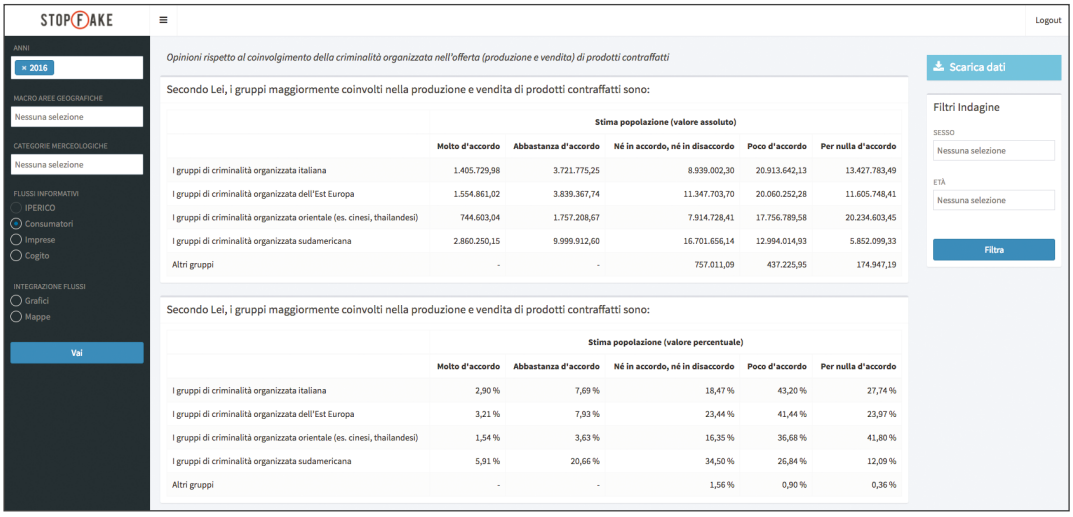


Source: eCrime elaboration on project STOPFAKE data

Section 3 – Supply of counterfeit products

This section provides information on the knowledge of respondents on the supply of counterfeit products and organised crime involvement, on the basis of their direct or indirect (i.e. through family members, friends, acquaintances, mass media) experience.

Example 4. STOPFAKE IS. Data flows: Organised crime groups mostly involved in the supply of counterfeit products



Source: eCrime elaboration on project STOPFAKE data

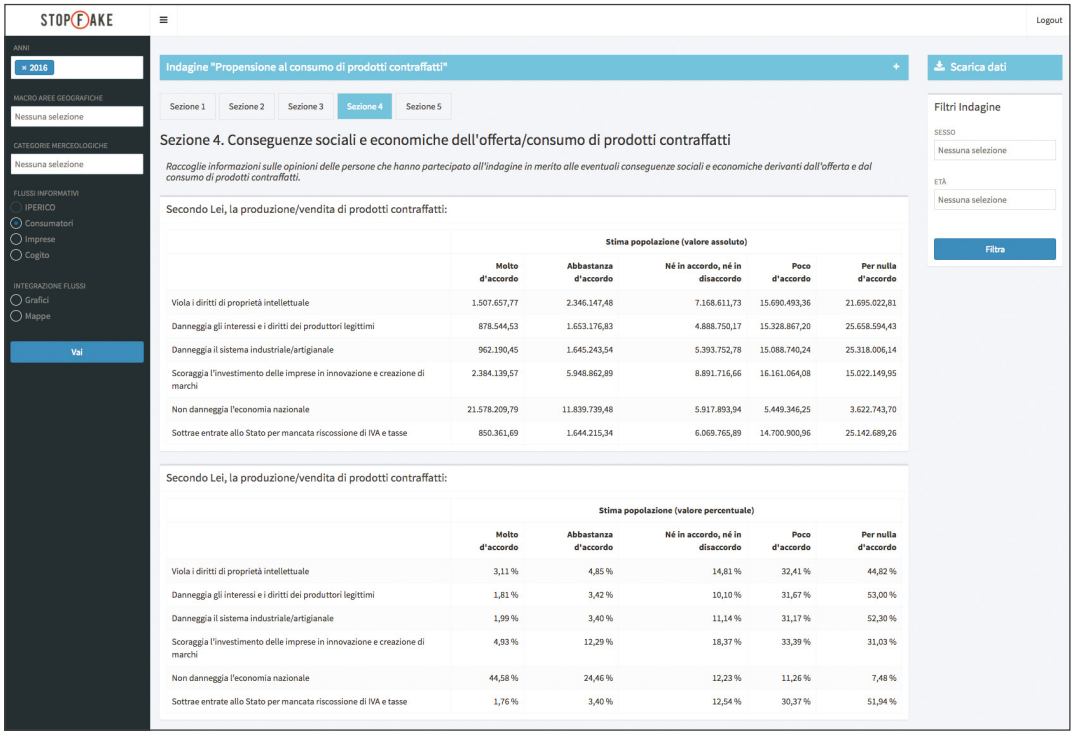
Section 4 – Social and economic consequences of supply and consumption of counterfeit products

This section gathers information on the opinions of respondents on social and economic consequences arising from the supply and use of counterfeit products.

Section 5 – Actions to prevent supply and use of counterfeit products

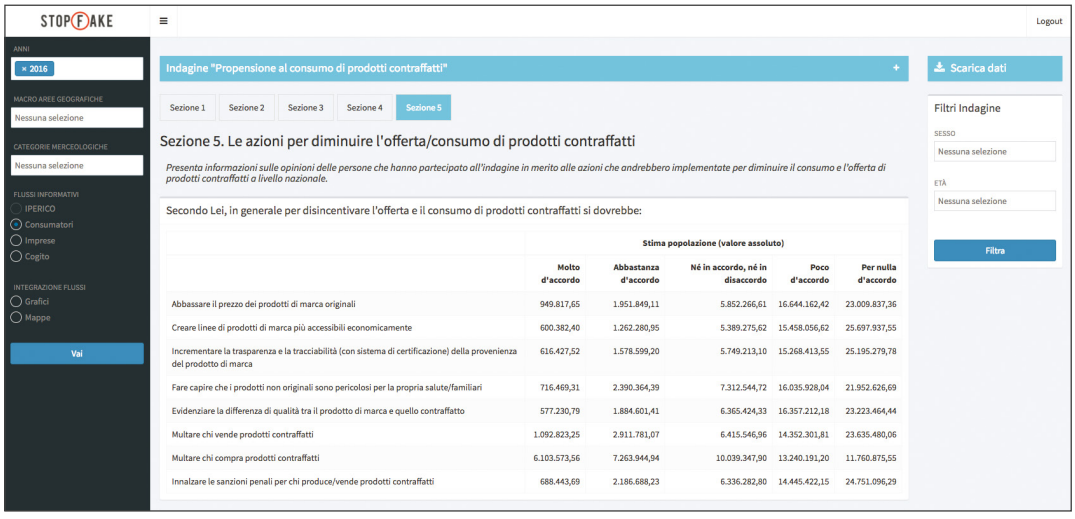
This section provides information on the anti-counterfeiting measures that, according to the opinions of respondents, are the most effective to prevent the purchase and use of counterfeit products.

Example 5. STOPFAKE IS. Data flows: Social and economic consequences of the supply of counterfeit products



Source: eCrime elaboration on project STOPFAKE data

Example 6. STOPFAKE IS. Data flows: Actions to reduce the supply of counterfeit products



Source: eCrime elaboration on project STOPFAKE data

3. Businesses

This database contains the information collected through the victimisation survey "Businesses and counterfeiting" [*Imprese e contraffazione*] on the (real/perceived) risk that businesses' products can be counterfeited, and carried out in 2016 on a representative sample of around 2,000 businesses active in Italy. Data are presented in aggregated form and regard:

- Counterfeiting episodes suffered by businesses and related damage;
- Perception of the risk that the products of businesses are counterfeited;
- Opinions on the role of organised crime in products counterfeiting;
- Anti-counterfeiting measures implemented by businesses;
- Measures believed to be the most effective in protecting products from counterfeiting.

The menu on the left of the interface allows the user to visualise the information by selecting the year 2016 and the geographical macro-area (North, Centre, South-Islands). While, through the option "Filter" on the right, the user can explore data with respect to the commodity sector. Tables are automatically produced according to the selection made by users from the menu on the left and the option "Filter" on the right, and can be exported into Excel format clicking on the "Download data" button at the top right.

Data are displayed in regard to the sections of the questionnaire, elaborated *ad hoc* during project STOPFAKE, and the user can select them by clicking on the buttons at the top of the page. Furthermore, information are visualised in relation to the questions used to collect the data. More in detail:

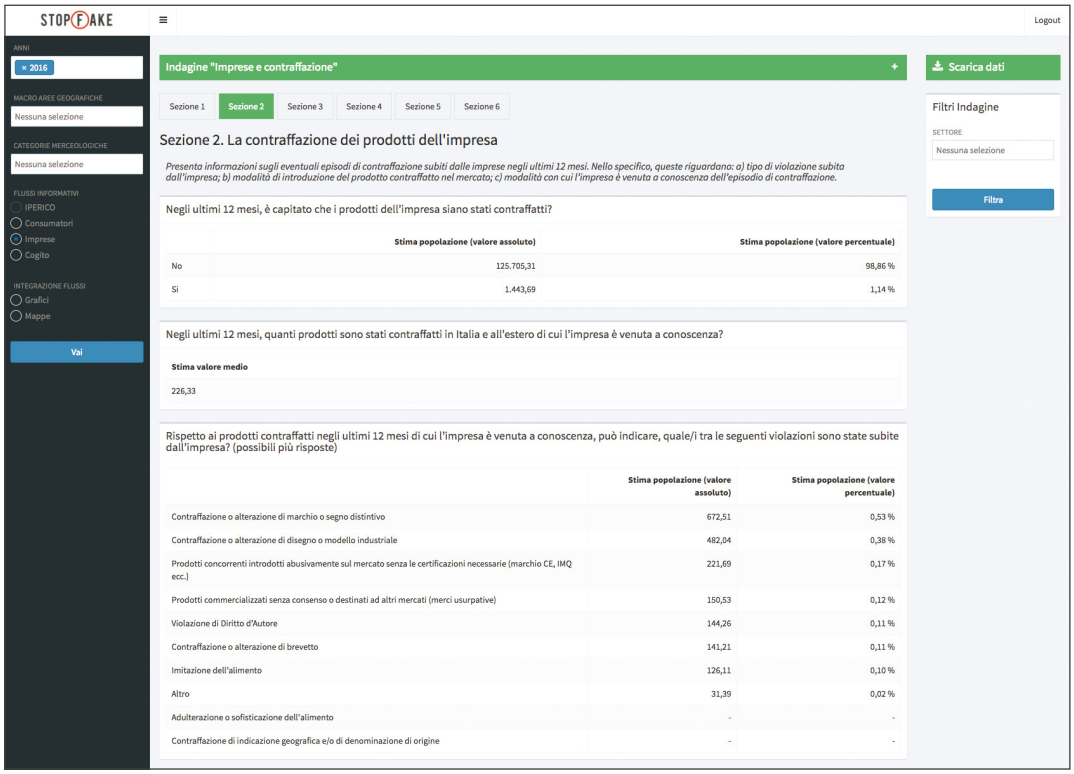
Section 1 – General information

This section provides general information such as commodity sector, dimension (i.e. number of employees), turnover, location of the registered office (i.e. region of the Italian territory).

Section 2 – Products counterfeiting

This section collects information on the possible episodes of businesses' products counterfeiting. In particular, these regard: a) type of violation suffered; b) modality through which the counterfeit products were introduced into the legal market; c) modality through which businesses become aware of products counterfeiting.

Example 7. STOPFAKE IS. Data flows: Violations suffered by businesses



Source: eCrime elaboration on project STOPFAKE data

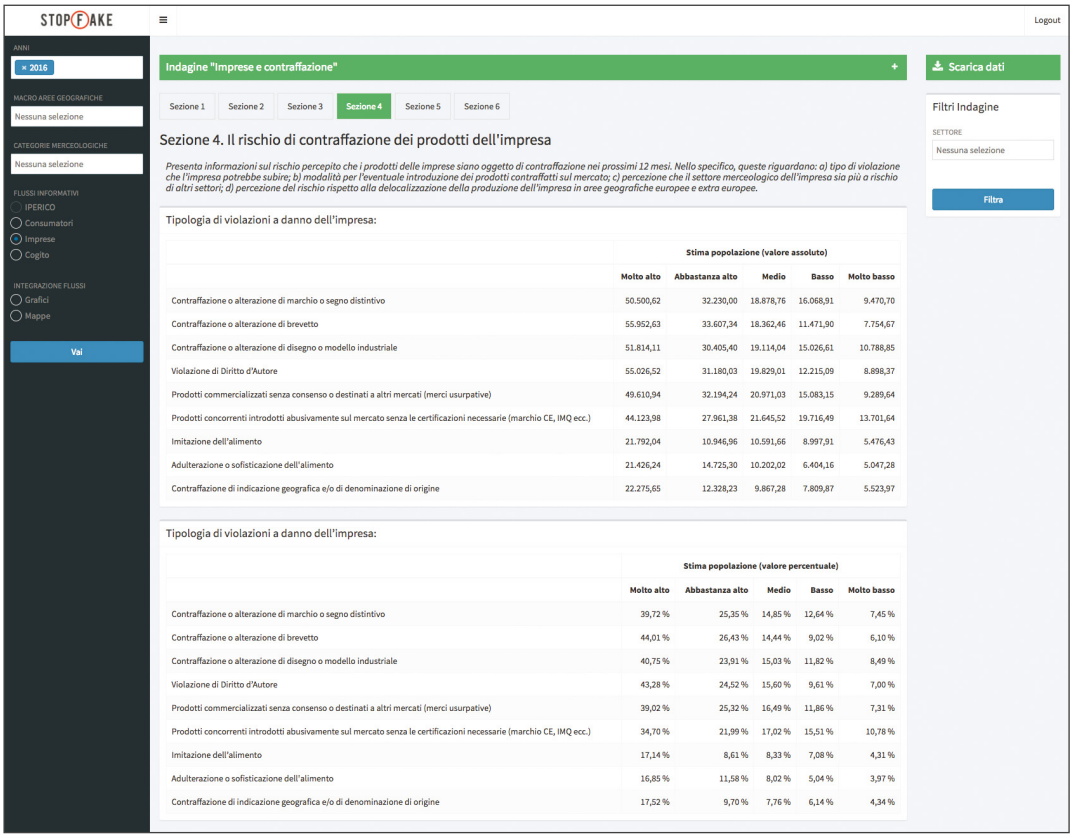
Section 3 – Damage originating from products counterfeiting

This section gathers information on the damage suffered due to products counterfeiting in the last 12 months. In particular, these concern: a) percentage estimation of the extent of loss with reference to the turnover and sale volumes; b) percentage estimation of the eventual cost for security and damage mitigation and/or legal assistance with reference to the turnover; c) extent of the damage suffered in regard to some typologies.

Section 4 – Risk of businesses' products counterfeiting

This section provides information on the perceived risk of products counterfeiting in the next 12 months. In particular, these regard: a) type of violation that the business could suffer; b) modality for the eventual introduction of products into the legal market; c) perception that the commodity sector of the business is more at risk than other sectors; d) perception of risk related to the delocalisation of production in European and extra European geographical areas.

Example 8. STOPFAKE IS. Data flows: Possible violations suffered by businesses

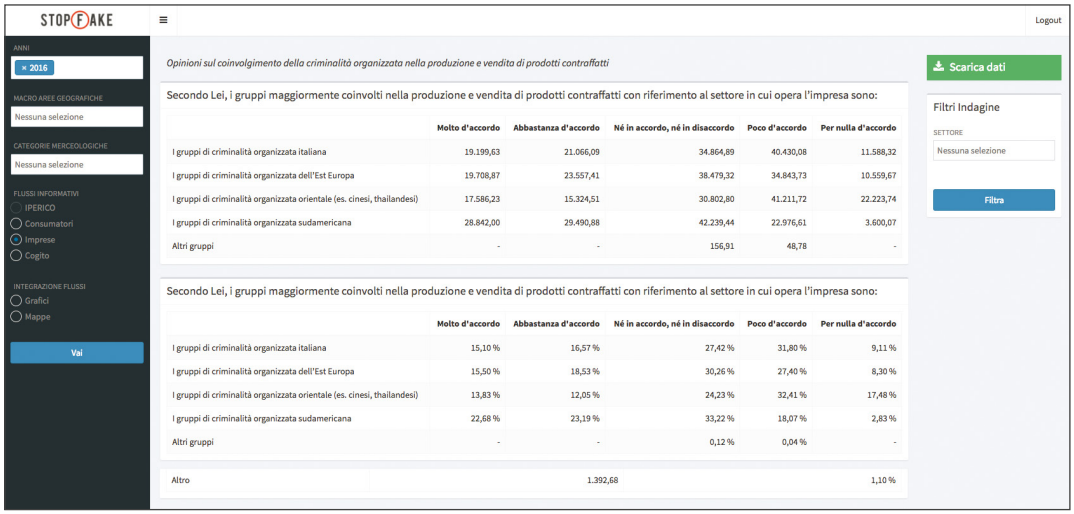


Source: eCrime elaboration on project STOPFAKE data

Section 5 – Evaluation of counterfeit products

This section collects information on the evaluation of counterfeit products belonging either to the business of respondents or other businesses (which were displayed by other managers, colleagues, or police forces, etc.) in regard to the following proxy indicators: a) commodity category; b) product appearance; c) product functionality; d) level of complexity required to counterfeit products; e) initial investment needed to counterfeit products. Furthermore, this section gathers information on the opinion on organised crime involvement in the production and sale of counterfeit products with reference to the commodity sectors of businesses and the economic sectors in which profits are reinvested.

Example 9. STOPFAKE IS. Data flows: Organised crime groups mostly involved in the production and sale of counterfeit products with reference to the commodity sectors of businesses

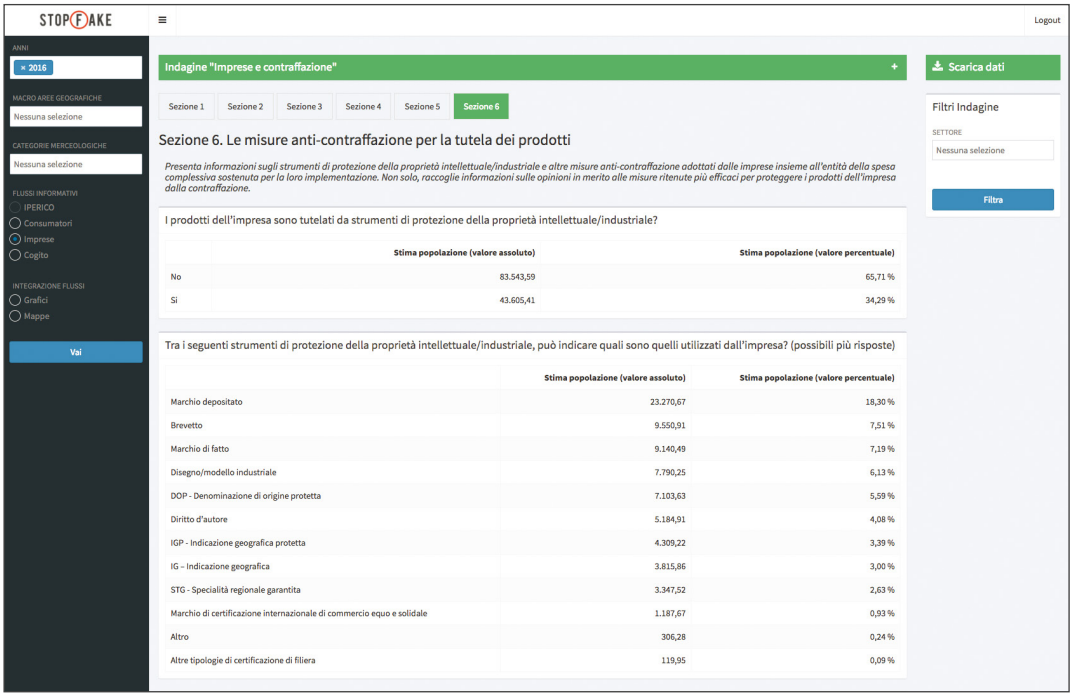


Source: eCrime elaboration on project STOPFAKE data

Section 6 – Anti-counterfeiting measures for the protection of businesses' products

This section provides information on the intellectual and/or industrial property measures and other anti-counterfeiting measures developed by businesses, and on the total amount spent for implementation. It also contains information on the measures considered to be the most effective in protecting products.

Example 10. STOPFAKE IS. Data flows: Measures implemented by businesses to protect intellectual and industrial property



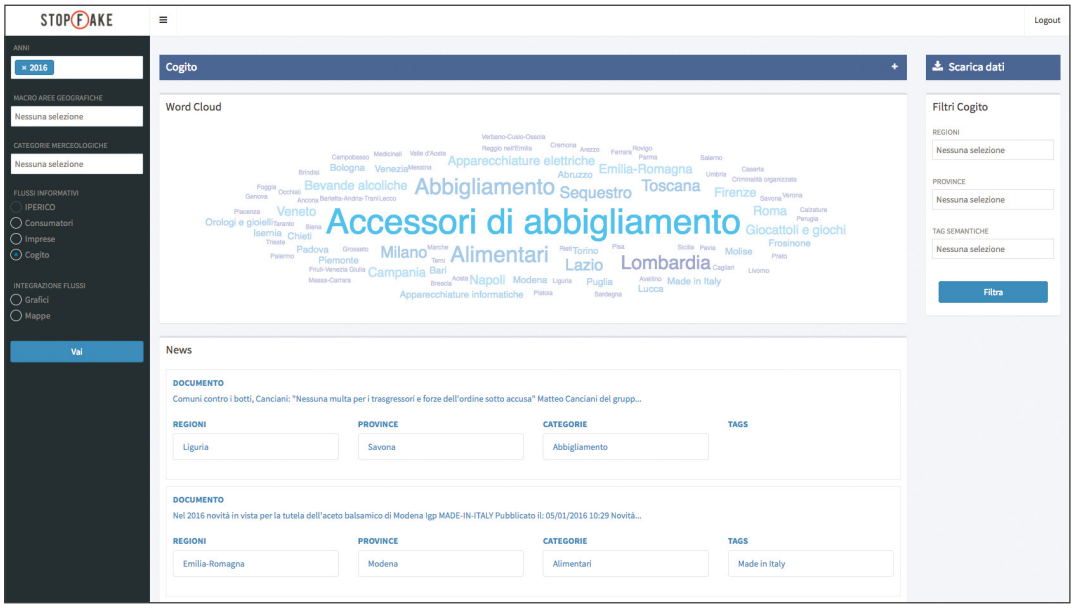
Source: eCrime elaboration on project STOPFAKE data

4. COGITO

This database gathers news on counterfeiting and organised crime analysed and structured in an automated manner applying the semantic technology COGITO (see Box 4) and extracted from more than 50 Italian websites of national, regional and local news (e.g. TGCOM, Il Sole24Ore, Corriere della Sera, La Stampa, Corriere del Sud, l'Espresso, etc.). The user can visualise news by selecting from the menu on the left the year 2016, the geographical macro-area (North, Centre, South-Islands) and commodity category. The information is available through word clouds (graphical representations of the more frequent semantic entities) and individual news.

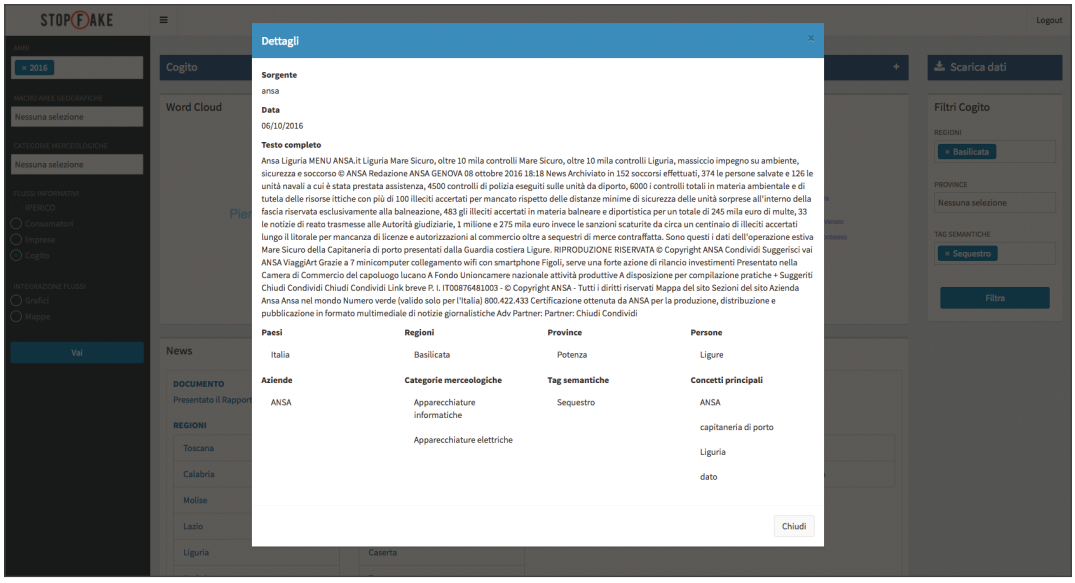
Through the option "Filter" on the right, the user can also explore news by location (region/province), and other categories of interest (semantic tags) such as "seizures" (news on counteractivity of police forces), "Made in Italy" (news on products with a brand particularly relevant to counterfeiting); "organised crime" (news on involvement of organised crime groups in counterfeiting).

Example 11. STOPFAKE IS. Data flows: More frequent semantic entities



Source: eCrime elaboration on project STOPFAKE data

Example 12. STOPFAKE IS. Data flows: News on counterfeiting and organised crime



Source: eCrime elaboration on project STOPFAKE data

By clicking on the news, the user can visualise a window containing the following details of the news: source and date; the complete text; the location (nation, region, province, city); persons, businesses/organisations quoted; commodity categories of reference; categories of interest (semantic tags), and main semantic concepts. The news (not filtered) can be downloaded by clicking on the “download data” button at the top right.

STOPFAKE IS
Data analysis and data flows integration

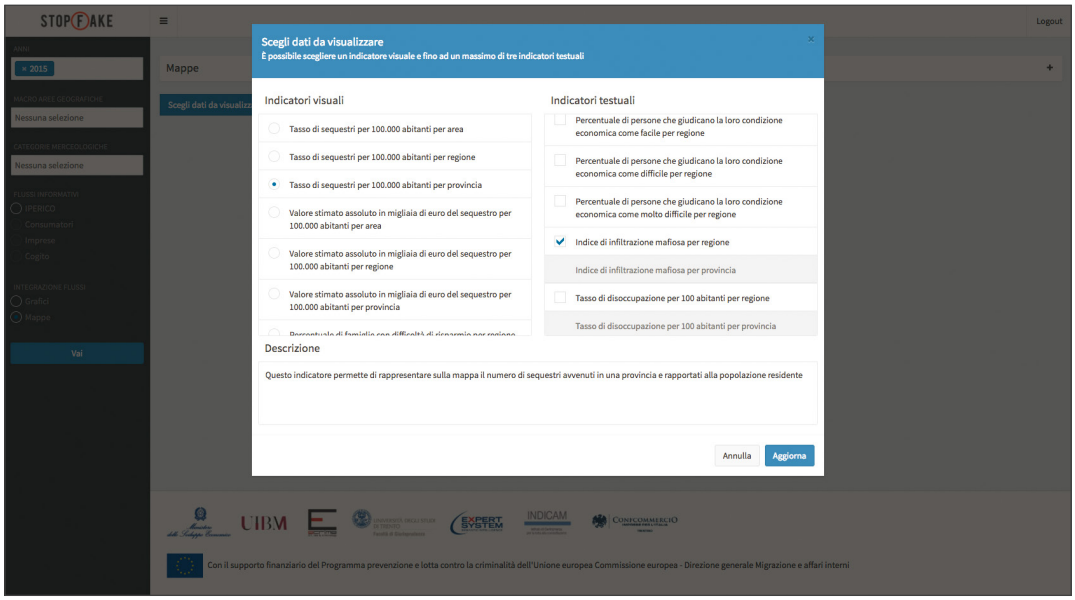
This section of the information system STOPFAKE IS allows the automated production of descriptive analysis also in the form of maps and graphs of each data flow stored into STOPFAKE DB: IPERICO (seizures of counterfeit products); Consumers (propensity to purchase counterfeit products); Businesses (risk real/perceived of products counterfeiting); COGITO (news on counterfeiting and organised crime from open sources on the web); 5. Socio-economic indicators, as well as the integration of data flows. The user can decide the form of data visualisation, maps or graphs, by selecting it from the menu on the left of the page and by clicking on the “go” button. From the same menu, the user can also select one or more years, the geographical macro-area and the commodity category.

1. Maps

In this subsection, the user can start exploring data clicking on “Choose data to visualise” button. From here, the user can access a window where the user can select one or more indicators related to the data flows stored in STOPFAKE DB. The indicators are divided into “visual” (displayed through a coloured scale on the basis of the continuous value of the indicator) and “textual” (with labels indicating the value of the indicator, for example number, percentage, rate, etc.). With some limitations, due to the availability and comparability of data, the user can select one visual indicator and a maximum of three textual indicators. In the lower part of the window, a description of the indicators is provided when selected. The map is visualised by clicking on the “update” button.

The maps screen also allows to enlarge the areas of interest (by clicking on the zoom function at the bottom left), to visualise the related data (by clicking on the “data” button on the top left) and to export the image of the selected map (by clicking on the “three lines icon” on the top right) in PNG, PDF, JPEG and SVG formats.

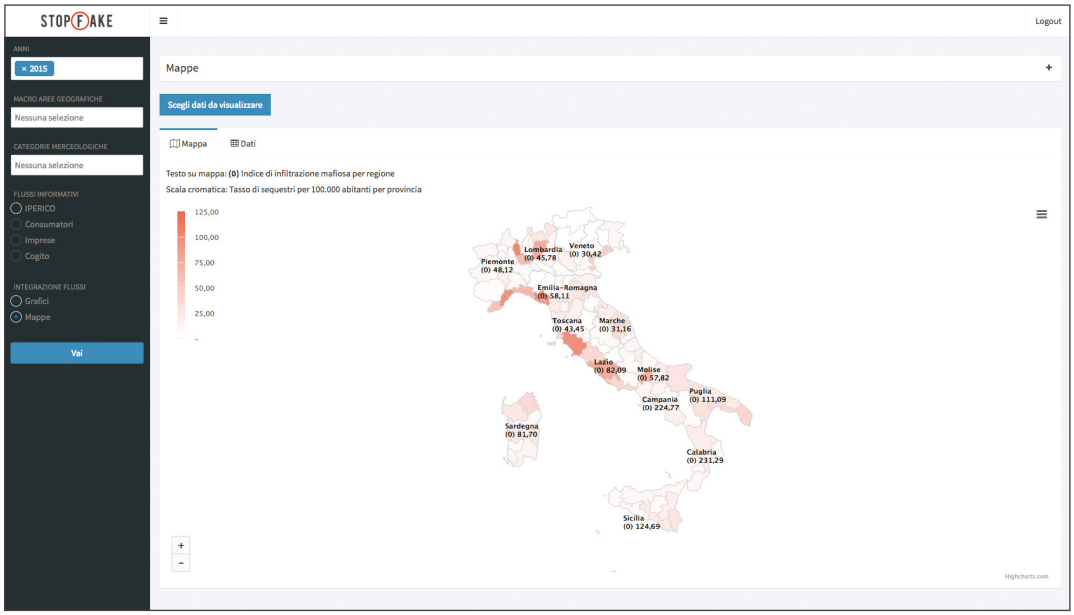
Example 13. STOPFAKE IS. Analysis and comparison of data flows. Selection window



Source: eCrime elaboration on project STOPFAKE data

Example 14. STOPFAKE IS. Integration of data flows: maps of comparison

Number of seizures (rate per 100 inhabitants) and index of Mafia presence by region. Year 2015. Map

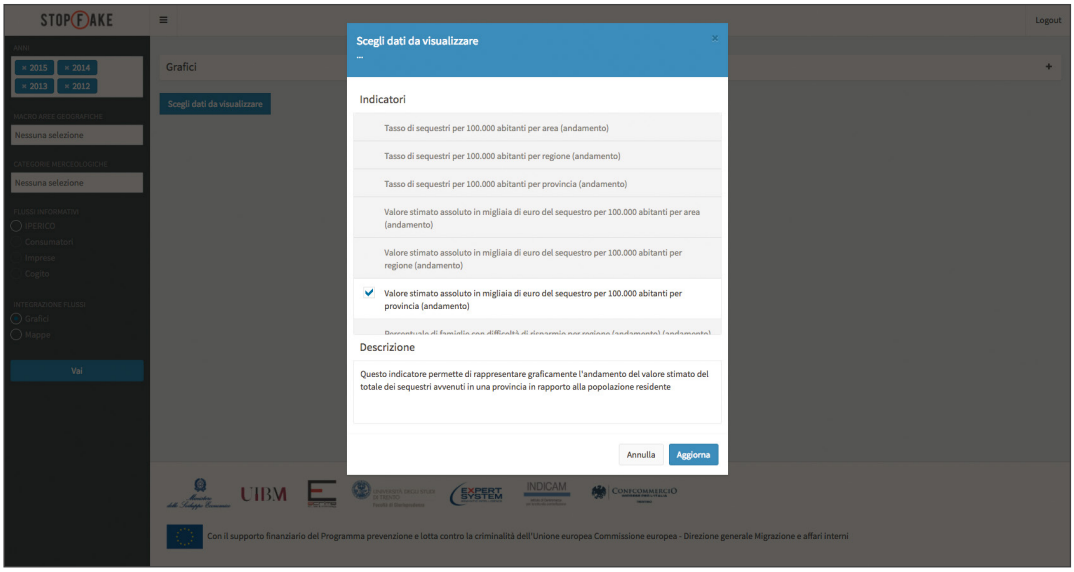


Source: eCrime elaboration on project STOPFAKE data

2. Graphs

In this subsection, the user can start exploring data by clicking on the “Choose data to visualise” button. From here, it is possible to access a window where the user can select one or more indicators related to the data flows stored in STOPFAKE DB, with some limitations due to the availability and comparability of data. In the lower part of the selection window, a description of the indicators is provided when selected. The map is visualised by clicking on the “update” button. The graphs screen also allows to visualise the related punctual data (by clicking on the “data” button on the top left) and to export the image of the selected map (by clicking on the “three lines icon” on the top right) in PNG, PDF, JPEG and SVG formats.

Example 15. STOPFAKE IS. Analysis and comparison of data flows. Navigation screen

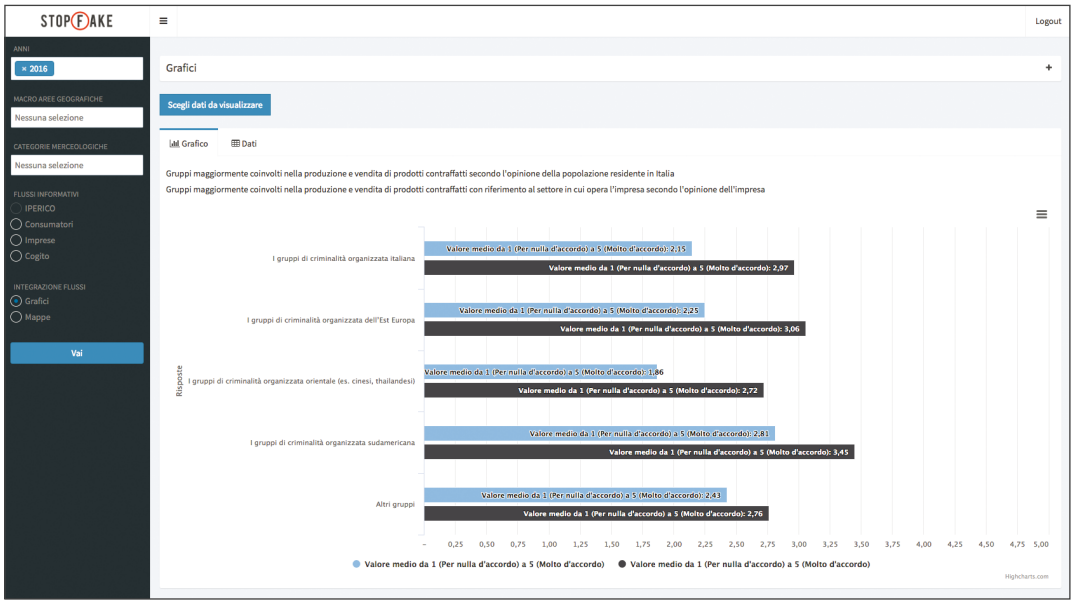


Source: eCrime elaboration on project STOPFAKE data

Once the user has selected the data flow and related indicators, data are displayed through bar or line graphs. The value of the indicator is visualised by browsing the bars or lines of the graphs. The user can highlight the line/bar of interest by clicking on the legend items.

Example 16. STOPFAKE IS. Integration of information flows: comparative chart

Organised crime groups mostly involved in the production and sale of counterfeit products for consumers and for businesses with regard to the commodity sector in which are active. Year 2016. Graph



Source: eCrime elaboration on project STOPFAKE data

Conclusions

How is it possible to strengthen the fight against counterfeiting, also with reference to the involvement of organised crime in this illegal market? In order to answer this question, project STOPFAKE developed a method and an ICT tool to create an updated knowledge which is available to anti-counterfeiting public and private stakeholders, and which can be shared enhancing their cooperation.

Key tools STOPFAKE DB and STOPFAKE IS. The first, a centralised database, that integrates information from multiple sources: data on seizures of counterfeit products (IPERICO), data on the propensity to purchase counterfeit products, data on businesses victimisation (risk real/perceived that products can be counterfeited), news on counterfeiting and organised crime from open sources on the web and socio-economic indicators (GDP per capita, relative poverty, mafia presence) that may be correlated to counterfeiting. The second, an information system (prototype) that automatically elaborates all these data. STOPFAKE IS produces static and automated risk analyses that can be visualised through tables, maps and graphs, and that allow to understand the extent and characteristics of counterfeiting in Italy and the role of organised crime. A comprehensive knowledge which is available to the Directorate-General for the Fight against Counterfeiting – Italian Patent and Trademark Office (DGLC-UIBM) of the Ministry for Economic Development, but also to public institutions, LEAs, businesses and no-profit organisations in their preventative, counteraction and sensitization activities.

The information system STOPFAKE IS is a user-friendly application, adaptable to different needs as well as other EU contexts, which enables:

1. **Public institutions to** understand the extent of counterfeiting, its causes and the role of organized crime and to develop more effective policies and actions to fight this phenomenon and to evaluate and monitor their results; in particular, it can be used to design and implement preventive and awareness-raising actions also in collaboration with non-profit organizations;
2. **Police forces** to identify critical areas on the national territory, to best allocate efforts and resources and to intervene with targeted actions against counterfeiting and the involvement of organized crime;
3. **Enterprises** to understand the counterfeit market trends, its supply and demand and the risk factors linked, for example, to the market sector where they operate; evaluate and implement the best anti-counterfeiting strategies to protect their products;
4. **Non-profit organizations** to understand the extent of counterfeiting and its causes, in particular with respect to consumers of counterfeit goods and their choices and work out more effective and targeted awareness-raising measures also in cooperation with national and local public authorities.

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