

InternetScopy: Current state, problems and perspectives

Rasim Alguliev¹, Rahid Alekberli²

^{1,2}Azerbaijan National Academy of Sciences, Institute of Information Technologies Baku, Azerbaijan
¹director@iit.ab.az, ²ralekberli@gmail.com

Abstract — We present a new concept and a new instrument – InternetScopy that allows observing remote objects by collecting big data and visualize the situation in multipurpose and multileveled government applications. Although practically useful and simple to implement, the proposed new concept enables to government heads to monitor a government situation on national and international scales and in multipurpose sectors, as customs, foreign diplomatic relations, healthcare, economy, ecology, education and other areas.

Keywords - InternetScopy, Network Tomography, e-government, e-governance, Smart Government

I. INTRODUCTION

The big data challenge is one unique opportunity for both data mining and governance. A vast ocean of data collected from network components in real time on a daily basis, and useful knowledge is usually buried in data of multiple industrial platforms, from different sources, in different formats, and with different types of organizations. Internet is growing and covering the entire planet. Today, in most states, the formations of information society have been identified as a strategic issue, and the integration of modern information technology has become a factor reflecting the level of economic development of the country. To learn Internet, it is necessary to visualize it and track dynamics for related horizontals and verticals.

IP Network platforms, Internet Backbones, Data Center and other Content hosting infrastructures should be a good source for collecting data, integrating with the Business Intelligence (BI) applications to make necessary analytic analysis, reporting, visualizing and tracking with the graphical interfaces. All these Integrally Systems are combined under the new term – InternetScopy.

Methodology for analyzing analogical researches investigated works under InternetScopy or similar terms. In this thesis international scientific-theoretical and practical methods' research is underway. Completely different and a new concept – InternetScopy is presented and initial approaches is described from scientific, theoretical, practical and technological perspective.

II. CURRENT STATE OF THE INTERNETSCOPY RESEARCH

The InternetScopy research study investigated under different names. In 1996, the first traces were found under the Network Tomography title and the initial research [42] was carried out by Y.Vardi. Our study, in contrast, the IP protocol range and is intended to be a new concept. Certainly, the development of network technologies in the 90s, and the urgency of the problem at that time were not important.

Next close research works was provided under name Network Tomography [1], [11], [14], [30], [33], [38] and continues under multiple institutions. A main approach has been focused recently on the topic of complex behavior. Some convergences were on multiple source, multiple destination tomography. On our new InternetScopy Concept we paid attention to the Dynamic Reports and Dashboards. Our visualizations are designed for government officials or chief officers as BI Reports and Dashboards, which is described in business performance readings.

Next research activities were encountered under the title NetScope in 2000. The research [41] was concentrated on traffic measurement on IP networks. In contrast with InternetScopy concept, the investigation has been focused on traffic measurement and traffic engineering purposes.

The paper [39] published in 2001 is closer to the new InternetScopy concept integrating with the DSS. It is limited within set upping INFOSHOPs and targets wasn't extended to governmental or enterprise areas as we proposed.

Next approach was under the DSS for more than 14 years of development [19], [20], [23], [26], [28], [29], [31], [34], [37], [44] and under different environmental issues like water management, waste management, Intelligent DSS, governance, [30] a fuzzy multi-criteria decision-making procedure and other management support purposes, it is close to InternetScopy concept and useful in the application of the concept in joint research activities.

In 2001 next publication [40] using the term “Internet Tomography” was published the paper studying a class of problems. Other researches [1], [1], [27] under “Internet Tomography” were observed. Next paper [43] touching to the problems of Internet Tomography and opening new window to the field was found under Internet Tomography title.

The paper [46] published in 2004 is touching new term “network telescope”, to get the opportunity to view remote network security events, to identify common traffic profiles [32] for security analysis, [13] text analytics, [15] been used for predicting new links in evolving networks, [8] Routing-as-a-Service (RaaS), [48] public policy decisions governance, [25] an agriculture data has been taken, [16] the Intelligent Transport Management researches traced. Other approaches investigated under multiple names like [7] Environmental Virtual Observatory pilot (EVOp), [36] Socioscope, [35] Digital divide, [24] ‘virtual’ folksonomy research activities were observed.

InternetScopy can be strategic, principled support for e-government and e-governance applications. From this approach some research activities were investigated on e-Government services [22], Recommender systems [28], [17] indications

about the correlation between IT governance models and ICT functions, [45] Internet governance and [7] Web science subject.

During research we observed approaches under Web Observatory [7], [9], [12], [49] Recommender Systems for Big Fast Data and [11] Social Media Observatories as important components of a web observatory framework.

Learning all related research activities, we developed research activities for InternetScopy for last 20 years. Fig. 1

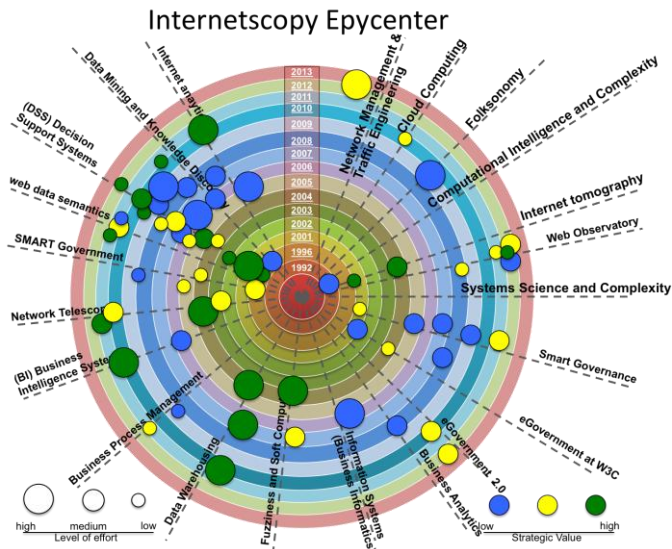


Fig. 1. InternetScopy Research Epycenter

III. INTERNETSCOPY – CURRENT PROBLEMS

In this section of the paper we present the main problems of the new InternetScopy Concept. Internet network is growing and is manifested in our lives. It gives a chance to have more data about our real life activities. One of the goals and purpose of the InternetScopy concept is that the issue of transparency in society using this data is able to be solved. Conceptual research is needed to examine the issue of the following problems:

- BIG Data problems – we would like to describe it as an example, collecting data from Internet about online news and categorize per country and political status. We generate a map showing political tensions including the Historical data per country.
- National wide Data Warehouse collection - Trends in the Internet are characterized by dynamic changes. The Internet of Things is a high-growth market, significant changes in the new raising trend is observed in the growth of Internet users.
- Connections and Collection Data – The selection of the correct indicators keeps the essence of the InternetScopy
- Web data mining and visualization problems are one of the key points of the InternetScopy concept. Collection, analytical processing on the web and visualizing with attractive interfaces is important for users of concept.

- Integration and Interoperability - the InternetScopy concept becomes to infrastructure. Interoperability is the capability to communicate, execute programs, or transfer data among various functional units, integration between components of the Infrastructure.
- BI and DSS integration – the new InternetScopy Concept requires intellectual systems to get integrated. BI and DSS Systems are the key set of techniques and tools for the InternetScopy for transformation of raw data into meaningful and useful information for business analysis purposes and visualizing required information based on indicators.
- Legislation, Social, Political problems – The InternetScopy concept is one of the best tool for a social society and the most powerful and legitimate tool to create transparency in governance.
- Legal problems – InternetScopy concept is the most appropriate in order to create transparency in governance. In order to implement this concept in the form of the relevant legal issues to be resolved.
- Technological problems - the realization of the concept can be examined in light of modern technological trends.
- Geographical and scales problems – The application of the proposed concept is taken into account in a country geographically. The application of the countries, the adoption of international standards, with the use of the different countries, and even can be improved up to the level of roaming.
- Conceptual and Historical issues - thanks to the proposed research, a large number of indicators, based on data collected through various resources, valuable information is obtained.
- Ecosystem issues – Transparency is a good opportunity for one of the factors necessary for the implementation of the InternetScopy concept. Favorable environment for the implementation of the concept is formed by the following terms and conditions:
 - Performances in the interests of transparency
 - Formation of Information Society
 - Advanced Internet Infrastructure
 - Development of dynamic Internet Applications and large number of Internet users in country
 - State support for the development of the social society
 - A governmental support to the globalization process
 - State government initiatives and visions for the future of Information Society
 - State support for the development of ICT
 - Keep up-to-date global technological trends
 - Management decisions are driven based on collected information from society
 - Interactive and operative management principles based on Situation Centers
- Other problems for new systems – the approach and some other problems, which are not listed here.

IV. INTERNETSCOPE – PERSPECTIVES

As the Internet plays an ever-larger role in our lives, it is imperative that to learn, monitor, visualize, discover and investigate this virtual life. We study the depth of the network, visualizing this virtual Internet planet according established indicators, doing research on the Internet, and trying to discover the Internet galaxy. We explain the prospects for the future of the InternetScope concept:

- Any government support – the solution should be ready for deploying for any government
- National Data Collection – InternetScope should be a chance to have collected national data, chronology and analytics
- Internet of Things – The new InternetScope Concept is an ideal tool for the Internet of Things for the collection and processing of statistical data
- BIG Data - Current trends are showing that the Internet of Things, BI Systems, e-government platforms, Big Data and latest supercomputer platforms are providing enough capabilities to process these data to visualize related indicators.
- Multipurpose and Multiplatform Systems are one of the subjects of prospects.
- Centralized and Decentralized Management strategy is supporting by the system.
- Web based application and enable to future integrations
- Ready for next generation e-government.
- Dynamic analytical DATA generation and visualization
- DSS and feedback systems services – InternetScope may be applied to a wide range of automation in the control routine processes.
- Centralized key tools for e-government – as DSS for smart governance
- Technological advanced platform
- Repeatable for any government, expandable, roaming and interoperable solution
- Building new Ecosystem for transparency
- Covering global trends of Information Society

V. EXPLORING AND NEW APPROACH

According to the results of a preliminary study of the proposed InternetScope, in learned researches it is not any study processed directly under InternetScope subject. Studies conducted for other purposes have been observed, the objectives and methodology subjects do not overlapping with InternetScope. It is planning to implement InternetScope solution within a pilot government in the foreign policy, diplomatic affairs, foreign relations based on real readings,

import-export relations, e-trade, e-customs, e-taxes and other areas of the state by applying the real data proposing new monitoring capabilities on real-time monitoring system based on the proposed establishment. It is proposing to build based on proposed establishment new monitoring system concept – Situation Centre for tracking and monitoring of the dynamics, visualizing current trends per horizontals and verticals, and principles of providing predictions for related dynamics.

Modest strategy of Information Society, next generation e-governments, e-governance concepts, technological trends, growing dynamics of civil society, current state of Information Communication Technologies projects, strategic state development programs of developed and developing countries, improvement of legislation, foster the capacity of governance institutions, civil society development and strategic steps towards e-governance on the eve of the modern concept of the information society and Internet governance has always attracted our attention, and we think it is important to work with a new concept of Internet governance. Fig. 2.

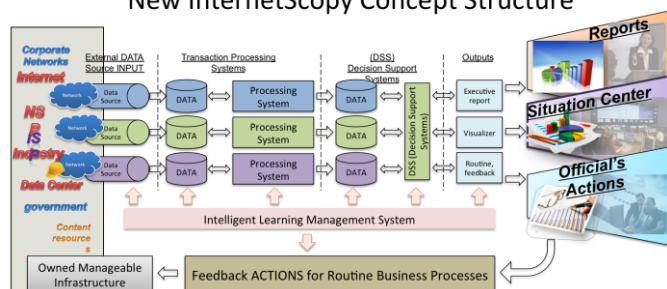
Geneva, 2003–Tunisia, 2005 the World Summit on the Information Society (WSIS) Declaration of Principles and Action Plan frameworks, Malaysia, 2006-Global Alliance for ICT and Development (GAID) creation, Athens, 2006 - The Internet Governance Forum (IGF I) for the establishment and IGF II-Rio de Janeiro, 2007, IGF III–Hyderabad, 2008, IGF IV-Sharm el-Sheikh 2009, IGF V-Vilnius 2010, IGF VI-Nairobi 2011, IGF VII-Baku 2012, IGF VIII-Bali 2013 regular discussion meetings the Internet security, governance principles and the protection of civil society, legal aspects, protection of human rights, and other discussion of problems like this, strengthen the capacity of the network, taking into account the perspective of the Internet. In addition to establishing the relevance of the InternetScope today, we consider that along with the prospect of development of InternetScope as an infrastructure, it is important to constantly improve as priority area.

Development of Information Society in Azerbaijan [50] has been accepted as one of the main priorities of the state policy. The main objectives for the establishment of the information society are the legal foundations for the Information Society, human resource development, information of citizens, and the right to disseminate and use rights. Transparent government and local self-government, e-government, e-trade, the country's economic, social and intellectual potential, information and knowledge-based, competitive economy, information, and knowledge of the market, historical, literary and cultural legacy, modern information and communication infrastructure, a single national electronic information space ingredients of establishing Information Society. Information security, integration in the global information space, production of National ICT products is a key point of modest life. Increasing attention to the development of the e-country and other important issues as the main coordinator of the Information Society, the Internet has consolidated the position of the InternetScope at a time and in a timely considers fundamental development.

The process of globalization and the emergence of integrative relations between countries are of great importance in the development of the Information Society.

E-governance and the Internet governance are based on data for a more realistic and cost-effective platform – InternetScopy for the development and implementation of the concept is needed. Thanks to the use of InternetScopy improvements on the efficiency of e-government and e-governance, modern technologies, new platforms, effective strategic management and centralized management principles will allow the new management mechanisms.

New InternetScopy Concept Structure



InternetScopy Structure

As a result, we introduce new e-government public administration concept for each governmental organization, ministries, cabinets and head of states.

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