FITCE Forum

www.fitce.org Newsletter of Federation of Telecommunications Engineers of the European Union June 2012

51st FITCE Congress in Poznan, Poland - on track.

Poznan FITCE 2012; www.fitce2012.pl

Message from the President.

Dear Fitce friends,

The congress that our Polish colleagues are preparing in Poznan is coming quickly in sight. We had our management committee meeting in Poznan end of April and from our own experience we can tell you that Poznan is a dynamic and interesting city with a lot of cultural heritage. I would certainly stimulate our members to go there. Once there, the costs of living and staying are very friendly. I hope to see many of you !! The overall program looks very attractive and the technical program will be released soon.

Jos Gerrese FITCE President

During the board meeting we discussed and decided on a number of topics related to the future of Fitce. We still believe that Fitce has a great future and we are very committed to realize that positive future.

One of the important steps we took is the change of the Board of Officers (BOO). We always had two vice-presidents: the past congress organizer and the incoming congress organizer. We changed the past VP for a new function the VP-Marketing, which will be a semi-permanent function.

We also approved the installation of a liaison Officer to support the BOO. That task will be building a effective relation with the "outside World" like for instance the European Commission, new countries, other related organizations.

This has to do with the fact that we want to achieve a stronger Fitce and therefore must create an attractive value package for our members to keep them on board and to attract new members. Our marketing working group, chaired by the VP marketing also plays a key-role

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Welcome to Poznan.

Dear Friends,

Organization of this year 51st FITCE International Congress was entrusted to our Association of Telecommunication Engineers (SIT), the Polish branch of FITCE. We are delighted to invite you to the beautiful city of Poznań, the capital of the Great Poland region, the historical birthplace of Polish state history. Here, in VII/VIII centuries the first duchy of Polan people were recognised and in the year 1000 historic convention in the city of Gniezno took place, were German Emperor Otto III and Polish King Bolesław Chrobry created the first Archbishop's base in Poland. In our tradition this date became a symbolic date of the birth of over 1 thousand years of Polish history. We do believe, this region of our important historic meeting will be the interesting place for us today to follow FITCE's tradition to support international co-operation throughout the European community.

Wojciech Hałka President of SIT Poland.

The subject of the 51st FITCE Congress "Everything in the Net – IPv6 and Internet of the Future Prospects" will open challenging space for professional discussion on future prospects of telecommunication. We invite all interested professionals to present their achievements in several topics: access infrastructure and networks, communication systems and signal processing, multimedia applications and services, Internet and Next Generation Networks, wireless and mobile networks, quality of service, reliability and performance testing issues.

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Fitce Greece Report.

Annual Symposium. 20th of December 2011.

An annual event took place in Athens Greece on the 20th of December whose target was to inform its FITCE members with all the activities of the Greek FITCE Organization that took place in 2011. The event was accompanied by presentations from key persons of the industry and professors from Universities.

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in this activity.
Our initial contacts with the EU directorate INFSO are very positive and stimulating so we hope to see some workable results in the near future.
We also made some funding available to support the new activities around marketing and liaison. This funding comes out of our financial reserves with the argument that creating a new life costs effort and money. If that is successful the money will come back. The membership and contribution structure will hopefully be decided in September and will together with a number of other subjects be explained during the general assembly in Poznan.
I am looking forward to Poznan and expect a lot of you to see there!!
Jos Gerrese,
FITCE President.

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Congress Centre

All Congress' meetings and presentations will have place in the Conference Centre of Technical University of Poznań, located on the nice banks of the Warta river. This is modern, well equipped and comfortable location for the conferences and big lectures, the place of many technical conferences and international meetings, life students and academic forum. We are grateful to the Chancellor of the University and our colleagues from Poznań branch of our Association SIT for giving us their support and professional preparation of this site for FITCE Congress purposes.

Location of Congress.

Dear friends, first we do expect your professional satisfaction from the visit in Poznań in September this year, but else, we do expect your staying in this city will be pleasant and interesting because of many touristic attractions also. We invite you for 51st FITCE Congress in Poznań and appreciate very much the possibility of hosting you this year in our country.

See you shortly in Poznań!

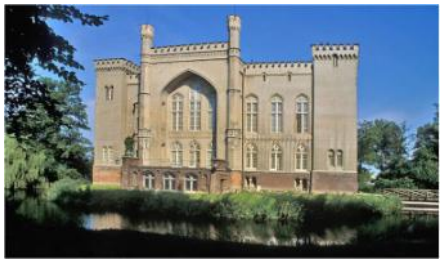
Wojciech Hałka.
President.
Polish Association of Telecommunication Engineers.

Partners Program. FITCE 2012.

The partners program for Poznan promises to be an exciting one. There are two days of events alongside a Welcome Reception and the Gala Dinner.

Thursday September 6th.

There will be a one day tour of two Castles Kornik and Rogalin within 25km of Poznan.



Kornik Castle was built in the 14th century, and rebuilt in the 18th century in neogothic style. It houses one of the most famous Polish libraries, founded in 1828, which today is one of the largest libraries in Poland.

Rogalin Castle is situated on the Warta river, 19 km of the city of Poznań. It is famous for its 18th century baroque palace of the Raczynski family and for Raczynski Art Gallery housing a permanent exhibition of Polish and international paintings. It is also known 1000-year-old oak trees. The surrounding area forms a protected area known as Rogalin Landscape Park.

Friday September 7th.

There will be a guided walking tour of the old Poznan City. This will include a visit to the town Hall, the Raczynski Library, and the old Jesuit College. The Gala Dinner will be held in the Balcerowo Palace.

Jesuit College

Raczynski Library

Town Hall

Balcerowo Palace

Draft Program FITCE 2012 Poznan.

Thursday 6th September.

09:15 - 10:15 FITCE 2012 General Assembly

10:45 - 12:00 Opening Ceremony

Technical Session 1: Finding an answer to the changes in Telecommunications

13:15 Challenges and Constraints in Mobile Network Consolidation Projects *Arkadiusz Wisniewski (NetWorkS! Sp. z o. o., Poland)*

13:45 'A new orientation of Telcos on networks and services' *Huib Ekkelenkamp (Atos, The Netherlands)*

14:10 Cloud Computing: A Great Revenue Opportunity for Telecommunication *Industry Christos Tselios (University of Patras, Greece); Ilias Politis (University of Patras, Greece); Tasos Dagiuklas (Technological Educational Institute of Mesolonghi, Greece); Stavros Kotsopoulos (Wireless Telecommunications Laboratory, Greece)*

14:35 Towards Coordinated Innovation: A Path to Successful Convergence of Ongoing Telecommunication Revolutions. *Mauro Ugolini (Roma Tre University, Italy); Jonathan Buschmann (Ericsson Telecomunicazioni S.p.A., Italy)*

Technical Session 2: Wireless evolution

15:30 Is LTE a solution for Ultra-fast broadband in rural areas in Spain? *Catalina Ovando (Universidad Politecnica de Madrid, Spain); Zoraida Frias (Universidad Politecnica de Madrid, Spain);Jorge Pérez (Universidad Politecnica de Madrid, Spain)*

15:55 Wireless at the "Connected Games". How the London 2012 Olympic Games will utilise the latest Wi-Fi communications technology. *Peter Leonhardt (BT & BT, United Kingdom)*

16:20 Reliable and high QoS Wireless communications over harsh environments *Josu Bilbao (IKERLAN Technological Research Center, Spain); Aitor Calvo (Ikerlan, Spain); Igor Armendariz (Ikerlan Technological Research Center, Spain)*

16:45 Can crowdsourced WiFi be a viable strategy to provide open internet access in a municipality? *Simon Evenepoel ,Sofie Verbrugge; Bart Lannoo; Didier Colle ; Mario Pickavet (All speakers from Ghent University,Belgium)*

17:10 A value network approach for the evaluation of emerging internet services on-board of trains. *Bram Naudts (University of Ghent, Belgium); Jan Van Ooteghem (Ghent University - IBBT, Belgium); Bart Lannoo (Ghent University - IBBT, Belgium); Walter van Brussel (Nokia Siemens Networks, Belgium); Sofie Verbrugge (Ghent University - IBBT, Belgium); Mario Pickavet (Ghent University, Belgium); Didier Colle (IBBT - Ghent University, Belgium)*

19:00 Welcome Reception.

Friday 7th September.

Panel Discussion on Telecom Developments in Poland.

09:00 Panel Speakers to be announced.

Technical Session 3 : How to model and analyse new networks

10:30 Keynote speech 1 – Speaker to be announced.

11:00 The Goals and Benefits of Network Modelling in a Commercial Environment (QoS, Reliability and Performance Modelling Track) *Edward A Smith (British Telecom, United Kingdom)*

11:25 Platform IT for an Analysis of Systems in Telecommunications: propagation computation,electromagnetic compatibility and optimization of wireless telecommunication networks. *Dariusz Wypiór; Bartłomiej Gołębiowski ;Pawel Winkel; Dariusz P. Wiecek (All speakers from National Institute of Telecommunications, Poland)*

11:50 Network based measurement of QoE in mobile data networks: challenges and Perspectives. *Stefan Rugel (Velocent Systems Inc., Germany)*

Technical Session 4: Measuring and evaluating Performance in new networks

13:30 Evaluating VoIP QoS performance at IMS next generation network. *Yiannis Kordoulis (Research and Development, Greece); Dimitrios Kabilafkas (Hellenic Telecommunications Organization S.A., Greece); George Heliotis (Hellenic Telecommunications Organization S.A., Greece)*

13:55 FTTC/VDSL2 NGA networks: Performance measurements, noise impairments and mitigation strategies. *George Heliotis (Hellenic Telecommunications Organization S.A., Greece); Lowell-Panayotis Dimos Hellenic Telecommunications Organization S.A., Greece); Yiannis Kordoulis (Research and Development, Greece); George Agapiou (Hellenic Telecommunications Organization, Greece)*

14:20 Performance Evaluation of Broadcast Data Dissemination over VANETs "A Case Study in the City of Rome". *Francesco Lupi (University of Roma TRE, Italy); Veronica Palma (University of ROMA TRE, Italy); Anna Maria Vegni (University of ROMA TRE, Italy)*

Technical Session 5:Future Developments

15:15 IPv6 preparation and deployment in datacenter infrastructure. *Marco van der Pal (FITCE NL & Capgemini Netherlands BV, The Netherlands)*

15:37 Connecting for surgery - Legal aspects of the digital operating room. *Niels Vandezande (Katholieke Universiteit Leuven, ICRI, IBBT, Belgium); Griet Verhenneman (Katholieke Universiteit Leuven, ICRI, IBBT, Belgium)*

16:00 Irregular Cellular Learning Automata-based Method for Intrusion Detection in Mobile ad hoc Networks. *Amir Hosein Fathy Navid (Islamic Azad university, Hamedan branch, Iran); Amir Bagheri Aghababa (Computer Engineering Department Islamic Azad University East Tehran Branch, Tehran, Iran)*

16:22 An indoor positioning method and its use in a cognitive environment George Agapiou. *(Hellenic Telecommunications Organization, Greece); George Heliotis (Hellenic Telecommunications Organization S.A., Greece); Stelios Agapiou (National Kapodistrian University of Athens, Greece); Roi Arapoglou (National and Kapodistrian University of Athens, Greece); Nancy Alonistioti (University of Athens, Greece)*

Technical Session 6:Technical Papers

15:15 Cross Layer Fairness Scheduling Strategy for Heterogeneous Traffic in OFDMA Systems. *Maryam Basly, M. (ENIT, Tunisia)*

15:40 Paper to be announced.

16:00 Paper to be announced.

20:00 Gala Dinner.

Updates to this program will be available on the website.

Poznan Prices (incl Vat)

Prices	FITCE/IEEE Member	Before July 15th 2012	Before August 15th 2012	on site
Full Congress	Yes	475	550	600
	Author	275	350	400
	No	675	750	800
One Day	Yes	180	230	280
	No	280	330	380
Accompanying Person	Yes (Partner)	190	240	290
	No (Partner)	290	340	390
Student	Two days	120	170	220
	One day	80	130	180
Additional Invitation	GALA DINNER	50	60	70

Social APIs – linking machines and people

Simon G. Thompson, Marcus Thint, Hamid Gharib (BT, UK)

Many thanks to the UK Institute of Telecommunications Professionals (ITP) for allowing publication of this paper in the FITCE Forum.

Social networking sites have made programmatic interfaces to the data streams generated by their users available to developers. This has led to a burst of innovation and activity enabling some novel applications. In this article interfaces are described, types of data illustrated, the use cases that can be developed with them and the techniques that are used to process the extracted data and how this is used to create valuable applications for business use are all examined. The wider implications of linking groups of people to computers, places, abstract concepts (like projects) and objects are subsequently described and discussed.

Introduction

Providing a machine-friendly interface to an online resource isn't a new idea; Common Object Model and Common Object Request Broker Architecture were developed in the 1990s to provided standard (if incompatible) remote procedure call mechanisms that could be used to remotely invoke functionality available at a well known address. However, these attempts were tied to specific abstraction mechanisms for distributed programming and commitments such as conversion to bit strings that were made because of constraints in network and processing capacity. Other mechanisms like Remote Method Invocation in Java provided similar capabilities in proprietary or language-specific environments. The web services movement of the early 2000s developed Extensible Markup Language-based interfaces that used a simpler programming model and a higher level wire-line protocol which was more inefficient, but easier (at least in theory) to debug and develop. Simple Object Access Protocol and Extensible Markup Language-Remote Procedure Call were implemented to provide access to all kinds of resource – e-commerce sites, databases and even telecommunications networks [1].

A great deal of work was undertaken to enable wide area / cross organisational collaboration and co-ordination, and a plethora of standards for data exchange, management, authentication, security and co-ordination were created. By 2011 there were over 70 recognised web-services standards [2], and these techniques were widely used in the enterprise and for cross-enterprise development.

In parallel, the development of web server technology and the relative ease of deployment and development that the web server stack provided for small scale applications, led to a focus on a new style of interface known as Representational State Transfer (REST).

The evolution of REST

REST interfaces provide an address at which a data item can be read or written into a shared resource. They are intended to be simple to use and simple to deploy and support from commodity hardware. Initially very little consideration was given to authentication or security mechanisms. REST interfaces were intended to provide an easy way for machines to access open online resources programmatically. This simplicity arguably drove uptake of the REST-style of interface – it is so easy to implement a naïve REST interface that it became almost de rigueur for new web start-ups to provide one.

Very rapidly REST providers discovered that simple password exchange mechanisms of authentication were insecure. The cost of providing unauthenticated and insecure interfaces in terms of account recovery and public relations costs. This, coupled with the limitations in functionality that unauthenticated interfaces necessarily imposed given privacy and data protection concerns, was unacceptable [3]. The OAuth standard mechanism was developed and standardised to provide a straightforward simple authentication system that did not rely on simple password exchange [4]. REST Application Programming Interfaces (APIs) were easy to implement, easy for application developers to utilise and provided an excellent infrastructure for the development of Social APIs.

Social APIs

There is no widely used definition of a Social API, so we define a Social API as a programmatic interface that enables data about the relationships between people to be extracted. This view sits well with the generally accepted idea of Social APIs accessing data from social networking sites but without excluding services that present reprocessed forms of that data. It also does not exclude cross-site efforts like Open Social [5] and the Graph-API [6], nor APIs to sites or data stores that don't feature social networking as a core activity – like Flikr for example.

The use of these APIs has not been limited to the collection and interpretation of data about people's relationships and views. The availability of Social APIs has allowed creation of information feeds from machines to individuals and communities of people. Washing machines, coffee machines, buses, bridges and rivers all have identities which are mediated by sensors interacting with various APIs to provide data feeds or informative messages for consumption either by other machines or people, allowing them to co-ordinate and collaborate. Salesforce.com have launched "Chatter" which extends these concepts into an enterprise architecture. Instead of washing machines and cat-flaps interacting with consumers, Chatter allows corporate infrastructure entities such as databases and web sites to update and interact with developers and executives.

The rest of this article will provide an overview of the technical aspects of using Social APIs, the principal methods of consuming and using the data provided and the applications enabled. The potential future evolution of Social APIs is outlined, and the impact of widespread and wide area human-machine-thing (where things create data via sensors) interaction is also discussed.

How are social APIs invoked?

The very simplest Social API is implemented via an unauthenticated Rich Site Summary (RSS) or Analysis Tools for Object Modification feed across all the content generated on a site. This is a text file that is kept at a well known location and periodically queried by clients who can check for differences or new entries.

For more sophisticated functionality, Social APIs use different architectural styles; for details see side panel.

REST APIs provide call and response data interfaces which are used to retrieve data that enable applications to manage their interaction with the data-providing sites. Originally these interfaces provided the main data retrieval function for Social APIs but have been somewhat superseded by Stream APIs

A Stream API is a long-lived subscription to a data source that provides updates as events occur in that source. Stream APIs lower the overhead on an API pro-

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vider because servicing stream requests is managed by the provider (as opposed to the requester making calls at arbitrary times). Once established a stream request can be optimised as a query; the request is a known quantity until terminated.

REST vs Streams in Social APIs

Social APIs provide two styles of interface and their operation is governed by a set of implicit rules of the road.

REST is a very simple call and response interaction (see Figure A), one call will result in one response from the target.

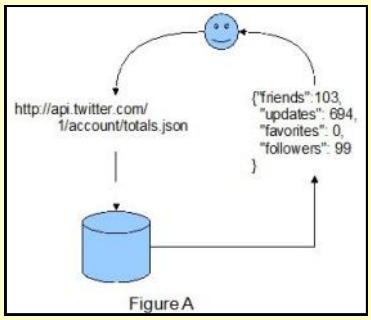

Figure A

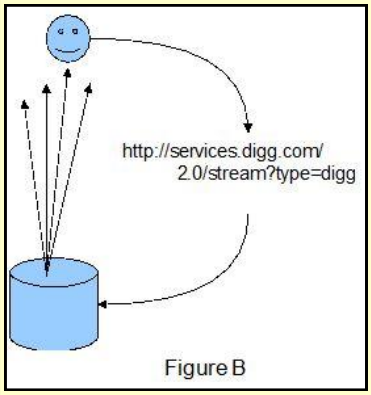

Figure B

target data is specified in the same way that a resource or document would be specified on a web server – using a directory reference. The calling application is expected to behave within a prescribed set of rules for calling and subscribing to the API; failure to meet this contract will result in the application being refused access. Typically a REST API is used to retrieve data that the application requires to function effectively.

A steam API (shown in Figure B) provides a subscription-based mechanism for gathering data from a social network. A request is made to the API, acknowledged and a socket is maintained over which data requested by the subscription is streamed until there is an interruption, at which point the client is expected to detect that the stream has failed and to take steps to reinstate it.

Both API styles utilise the OAuth standard to provide authentication, manage the utilisation of the data resource and secure the Social APIs interaction with the requesting application. (see Figure 1). Authenticated requests are used to provide the core functionality of the API for manipulating a users experience of the service, the messages sent and received by the user, the identities of the people followed or following the user, messages mentioning the user, and the ability to send messages using the authenticated users identity.

Eco-system APIs

Scale in Social APIs seems to be governed by the same sort of power law distributions that characterise web traffic – a few sites dominate the scene at any time. One can speculate that this is because the social ties that underpin activity on these sites are hard to break, and harder to duplicate than other web experiences like search or cheap books, but the corollary of this observation is that there is a long tail of niche sites and content-orientated sites that make up the "dark *matter" of the Social API universe.*

These sites can be classified as follows :

"Smaller" community sites - social communities that are either has-beens or never-weres in comparison to the big players.

Content orientated sites - with a social element; almost every news site has a comments area.

Support or special interest communities such as game forums.

In some cases these sites have chosen not to implement APIs, or even RSS feeds for their content because their business model is driven by page views. In other cases the site owners view the possibility of external development of their offer as positive but have had to accept that no developer can justify the time or investment required to implement bespoke interfaces to a host of small-scale sites.

This has led to aggregation services being created [7], defacto standardisation (for example the common conventions in Uniform Resource Identifier parameter names) and the development and utilisation of actual standards for Social APIs such as Open Social [5].

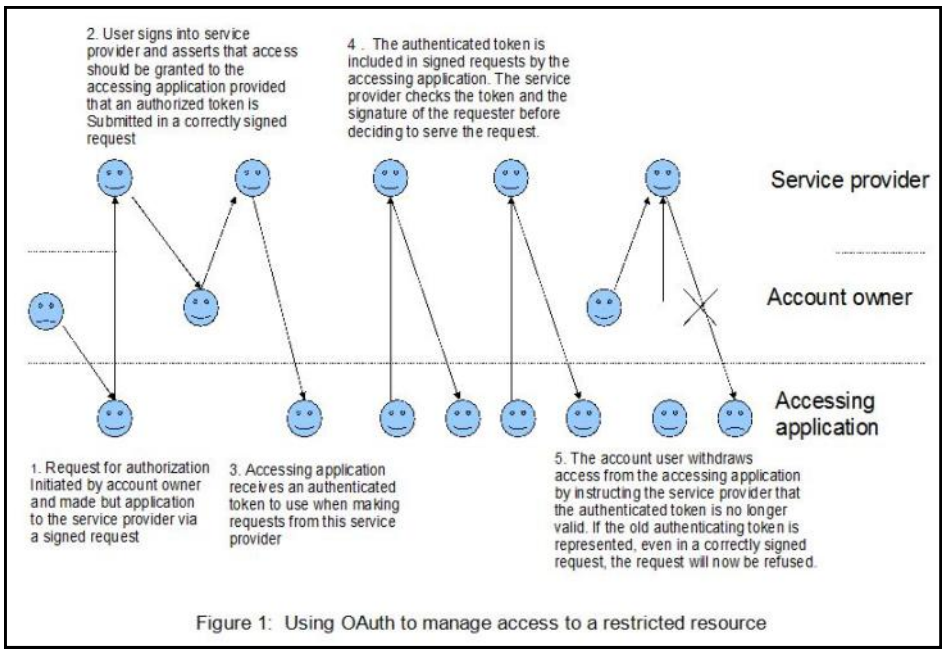

Figure 1: Using OAuth to manage access to a restricted resource

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Facebook has attempted to leverage its current dominance in social networking by developing the Open Graph API [6] which is a proprietary API controlled by Facebook that enables external information providers and communities to syndicate with Facebook in various ways, most prominently enabling Facebook account owners to "like" an external object.

Information processing

In the previous sections we have outlined the mechanisms by which content is acquired from Social APIs and discussed some of the simple use-cases for them (adding value to an existing platform or linking to a platform). However, there is a class of applications that can be created that depend on more sophisticated ingress and processing of social data (see Figure 2).

In the next sections of this article we describe the approaches to data processing (Natural Language Processing (NPL) and Social Network Analysis (SNA)) and then discuss some example applications that utilise these techniques.

Canonical NLP Approach

Typically, text analytics of documents/news articles employ standard processes including: stop-word removal, extraction of n-grams or key phrases, sentence chunking, grammatical parsing and parts-of-speech tagging, entity recognition, and subsequent application specific tasks such as event identification, query analysis, topic classification, semantic role labelling, or deductive reasoning based on an ontology. Anaphora resolution (clarification of pronouns referring to preceding entities) may also be performed when a narrative needs to be better understood in terms of 'who did what to whom'. Since natural language permits many different ways to express the same message, and since many words have multiple meanings/senses, results of the NLP processing steps are not error-free, even for formally written news articles and documents. Standard NLP tools have been developed as proprietary commercial modules or are made publicly available from academic institutions or open-source organisations such as Stanford [8], University of Sheffield [9], openNLP [10], LingPipe [11].

Issues with social updates

For short messages and microblogs in social media, there is an added degree of challenge in applying standard NLP routines due to misspellings, improper grammar and punctuations, emphatic/emotional expressions (e.g. "help pleeease!"), use of 'chat speak' and emoticons (e.g. omg, lol, :-O), slang and acronyms, expletives, and sarcasm. Semantically, they are also more difficult to understand due to limited context provided within limited message lengths. These characteristics usually degrade the performance of standard NLP tools to the extent that the overall/final analysis becomes unreliable. For example, if sarcasm is not properly detected, negative comments would be erroneously identified as praises, and if rhetorical questions are not recognised, they would be misclassified as actionable items.

In recent years, interest in academia has risen to tackle the new challenges of social media text analytics and specialised methods to process microblogs are being researched at universities internationally. Examples include: pre-processing and 'cleaning' of anticipated patterns [12,13], part-of-speech tagging [14,15], detecting sarcasm [16,17], detecting events and questions [18,19], named entity recognition [15,20], topic clustering [21, 22], augmenting context using Wikipedia and other external sources [15], semantic role labelling [23, 24], and sentiment analysis [25]. The latest research targets the specific challenges mentioned for social media microblogs and extends standard NLP methods to recover lost accuracy and reliability. Although some are 'brute force' approaches (Dent and Paul [19] "wrote hundreds of rules to account for hash tags, repeated letters and other linguistic features") they appear to be an effective way forward. On difficult problems such as differentiating between rhetorical and bona-fide questions or detecting sarcasm, state-of-the-art accuracy is below 70%, indicating substantial opportunities for improvement and research.

Social Network Analysis (SNA)

While approaching the data that can be extracted from a Social API as a text processing challenge has been an exciting and useful area of research, the defining characteristic of Social APIs is the capability they offer to obtain information on the content sharing preferences of users. The dimension of relationships and communities, which is fundamental to the social stream, offers opportunities for

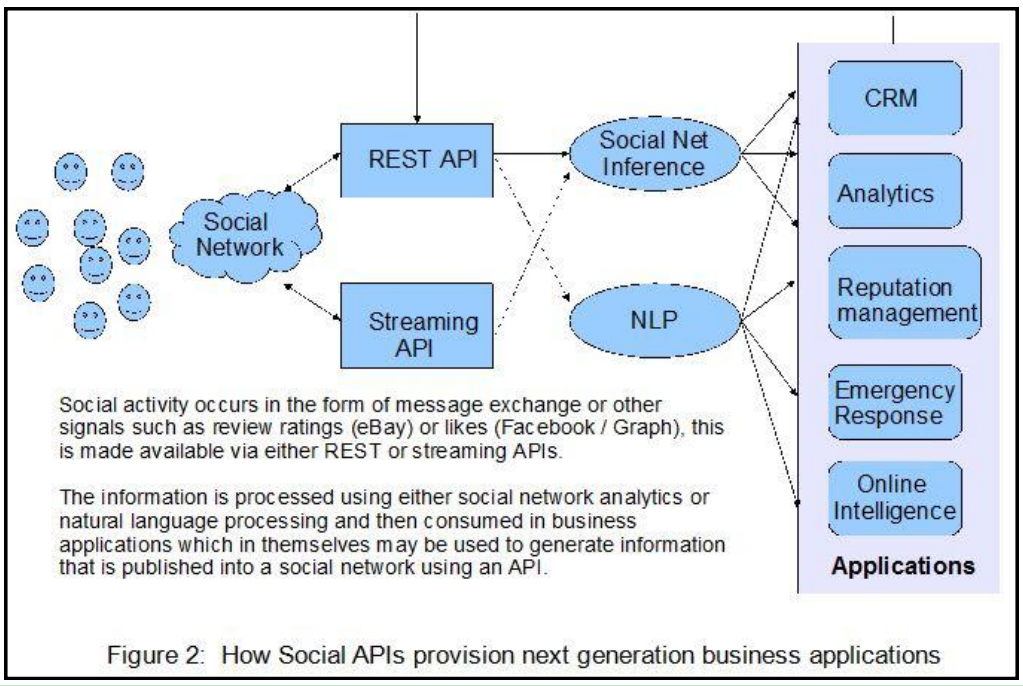

Figure 2: How Social APIs provision next generation business applications

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inference and discovery that are useful in their own right, can be used to create datasets for text analytics or can supplement text analytics with additional insights.

SNA, or the analysis of the relationships between actors in a communication system, relies on the existence of small-world networks generated by the constraints of time, geography and human cognition in the communities that we interact with. The existence of these small-world networks in human social structures was first indicated experimentally by an experiment done by Stanly Milgram [26] in 1969; the work and idea entered popular culture as six degrees of separation and has been investigated in diverse settings and fields unrelated to communications since then. Further investigations by Robin Dunbar [27] have analysed the dynamics of social interactions in humans and presented evidence for patterns and constraints on these dynamics which have then later been supported by data from Social APIs [28].

One of the commonest types of SNA is to derive and improve the information distribution capability of subscribers to a social network. Influence analysis can be performed by counting the number of responses or other actions generated by a user's interaction with the network (for example Klout seems to work this way) or it can be calculated from the reach and quality of the network that the user regularly interacts with and interacts with the user. Alternatively the members of the "real network" in which the user participates may be identified as significant for the communication objective.

Another type of analysis attempts to predict the action of a user based on the actions of the network that she has. In telecommunications this technique can lead to improved prediction of customer churn (and therefore present the possibility of intervention and churn prevention) [29].

Applications

The availability of processing techniques that can handle the data produced by Social APIs enables the creation of applications that are hydrated from them as illustrated in Figure 2.

In addition to using the data that is extracted and then processed, these applications are able to use the functional commands in the APIs to interact with the data sources and their human users directly.

Brand analytics

Early Twitter analytics tools [30, 31, 32, 33] focused on extracting trends and statistics from the overall content in the 'twitterverse' – e.g. viewing the frequency of a keyword or product name being mentioned during a specified time period on a graph, or activity analysis of a Twitter user based on social media metrics such as influence/popularity score, propensity to retweet, update velocity, and clout. Twitter itself performs a real-time analysis about how users' tweets are spreading (mentions & retweets) and the number of 'followers' in their network. There are even twitter analytics for the smart phones [34]. Many Twitter analytic tools have been developed and marketed, and some are supplied for free [35].

Social Customer Relationship Management (CRM)

As well as consuming social data, companies have a strong interest in interacting with online communities. In the past these interactions have been confined to social sites or forums provided and run by the company. Often these sites have had a role of community self-help, but they are confined to the customers of a particular company. So these sites cannot provide the platform for a company to communicate its customer care values to potential customers that large open social networks can. Twitter in particular has become a key channel for many companies for the provision of support and help in public.

At the time of writing there are many social CRM solutions available - tools from Lithium, Salesforce.com and Jive can fill this role by using text analytics to analyse and classify social content for action by customer service personnel. We developed a proprietary tool called Debatescape to provide BT with the capability to manage a social CRM presence and have explored the potential to use various forms of analysis to supplement and enhance the experience that can be offered to customer service advisers using this kind of interface. The widespread use of 'bt' as an abbreviation for 'blu-tooth', 'bittorrent' or even 'but' has presented us with a particular challenge in deciding the relevance of a post for action by an advisor.

A simple approach to dealing with this challenge has been to work closely with the user community in our contact centres to develop a workflow and interface that allows rapid triaging and removal of items identified as spam by our filters. Beyond this we have investigated mechanisms, including the combination of inference about social network membership and text analytics, based on the behaviour of the author and (more innovatively) of those associated with her network.

Conclusion : Social APIs and The Internet of Things

In this article we have described how Social APIs evolved, how to use them to get data, how that data is processed to produce insight and information and the types of application that have been developed to consume these insights and generate value.

Initially Social APIs emerged as a platform "play" by various social networking sites. They enabled the development of an eco-system of interfaces and add-ons which enhanced the core offering and user experience of social networks without requiring internal investment and focus.

As the market and technology of online social networks has evolved and the data generated by social updates has become richer and more valuable, there has been an improvement in both the mechanisms that have been provided to acquire and extract the data and also the mechanisms that are available to process and represent it to users.

This has led to some interesting phenomena. News stories are broken and disseminated via Twitter trending; but also real world information is generated propagated and processed via the Social API; for example [36] reports the detection of an earthquake via Twitter. Today the output of sensors that represent rivers, weather stations, bridges and buses (not to mention catflaps and washing machines [37]) is published and consumed in the open via Social APIs and used by people and machines to make decisions on topics as diverse as epidemic monitoring, civil unrest or simply whether it would be sensible to take washing down to the laundry room or not.

Social APIs, allow machines to query and publish information about and to communities of people online. They enable a feedback loop: people use machines to communicate - the machines monitor this communication - humans then use the result of this monitoring to inform their decisions and activities. Figure 3 is a schematic of this process. Things create data, machines sense and transmit this data via social APIs and this is then consumed either by other machines or, as information, by humans who (uniquely) are able to process it into knowledge and pass

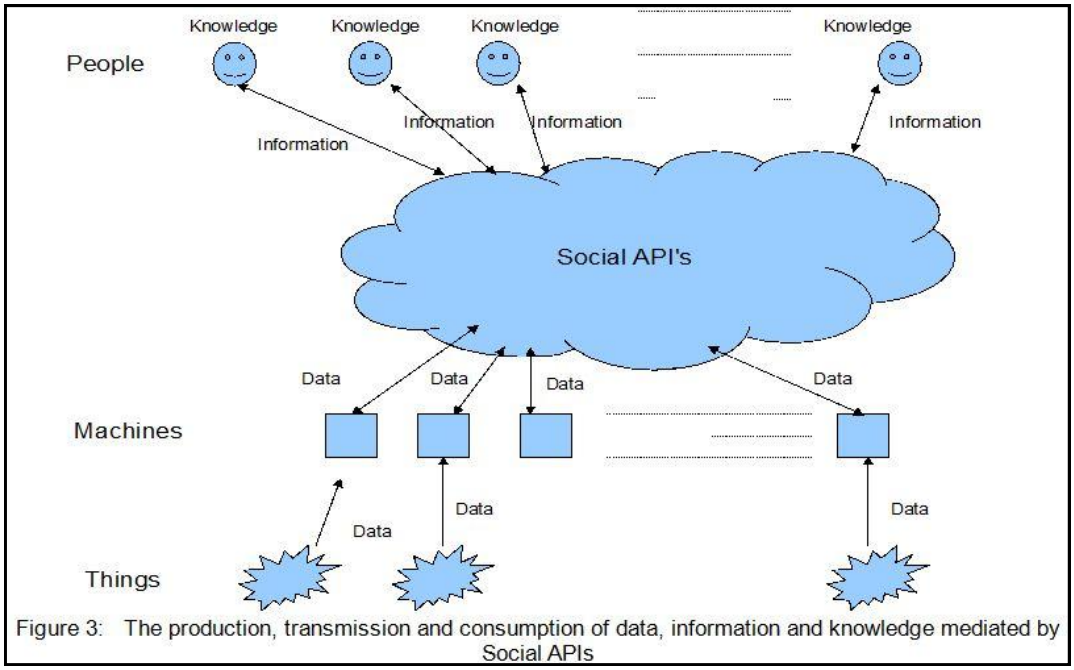

Figure 3: The production, transmission and consumption of data, information and knowledge mediated by Social APIs

(Continued from page 8)

it on to one another. The activity of the humans is perceived as data by the machines and reprocessed and possibly republished in a transformed state by the machine.

This kind of open collaboration between global networks of humans, global networks of machines and physical objects and even places is quite new. It is striking that it seems to have come into existence with so little notice and fanfare. We don't believe that anyone is able to make accurate predictions as to where it will lead or what its impact on our society, economy or sense of self will be. However a number of more prosaic implications are clear to us.

Firstly, corporate architectures should learn from the internet-scale experiments of the social providers and adopt the architectural elements that make their success possible. Rate limiting, open authentication and access (potentially within the firewall only) and sophisticated and meaningful monitoring of service liveness and availability are crucial to allowing the provision of service to unknown and possibly infinitely demanding users. Within the firewall this has been traditionally handled by refusing access or implementing complex and expensive management systems – the Social APIs have demonstrated that there is another way.

Secondly, data about what people want, what they are doing and what is happening around them is much more easily available now than in the past. This should enable companies to develop offerings underpinned by personalisation and context awareness.

Thirdly, the real lesson is that enabling easy access and easy information publication across a social network, enables information use and redistribution but more importantly it enables curation, collection, editing, repurposing, validation, criticism and actual use. This is the lesson of the internet so far, and as simple as it is, and possibly as frightening to many in the corporate world as it is, openness is productive. In the world of Social APIs information not only wants to get free, but it is destined to have no real (human) owner.

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Abbreviations

API	Application Programming Interfaces
CRM	Customer Relationship Management
NPL	Natural Language Processing
REST	Representational State Transfer
RSS	Rich Site Summary
SNA	Social Network Analysis

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About the authors

Simon Thompson has a BSc in Computer Science and a PhD in Machine Learning at the University of Portsmouth. He started work at BT Labs, initially on intelligent agent technology and on a number of collaborative projects with UK universities and the EU's framework programs, and is now engaged in developing the social media technologies that allows BT to interact with and understand the communities that its customers see as important.

Marcus Thint is a principal research scientist in the Future Customer Experience Practice at BT Innovate & Design. His recent research focuses on information extraction and text analytics from unstructured data, including social media. He has over fifteen years experience in the development of artificial intelligence and soft computing technologies to problems in information management, personal agents and user modelling, intelligent control, computer vision, and pattern recognition. Prior to joining BT Laboratories, he delivered system prototypes for sponsored research to the US Navy, IBM, Bay Area Rapid Transit, and National Science Foundation in the USA. He gained a PhD. from Duke University with a speciality in machine intelligence and robotics.

Hamid Gharib holds a BSc (Hons) in Computing and Information Systems, an MSc and a PhD both in Computer Science and has several patents and publications to his name. He has been engaged in a variety of R&D projects since joining BT, initially, participating in the design and development of a LAN network management system as part of BT's Concert project. He also engaged in the standardisation and implementation of the ISO MHEG (Multimedia and Hypermedia Expert Group) standard. Later on, in his work on network management research, he participated in EURESCOM's "Inter-domain IP QoS Management" project and has represented BT at IETF on network operations and management. More recently, he was engaged in developing a social CRM platform, DebateScape, which is currently in use in BT.

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The event started with a welcome talk from the president of the Greek FITCE organization Mr. Konstantinos Sidiropoulos.

Mr. Panos Exarchos and Mr. George Bafas, outlined the key issues and results of the FITCE Congress event that took place in Palermo Italy. Dr. George Agapiou outlined the presentations and results of the FITCE mini event that took place in Pisa Italy on 15th of April 2011 and was co-organized by the Italian-Greek FITCE organizations. This event was concentrated on presentations in access and core technologies and in energy efficient systems that were given by key industrial and academic professionals.

Smart embedded systems were presented from a Professor of the technical Engineering University who emphasized that the speed in microprocessors has reached its limit and now the efforts are devoted to the energy improvement of batteries in different user terminals including laptops. Mrs Dimitra Vali from the Greek telecom operator, OTE, presented the key features of the IP Multimedia Systems (IMS) platform.

Professor Gregoris Yovanof presented the results of a mini event that was organized by the Greek FITCE organization in cooperation with the Intracom company. This event featured different advances in all sectors of telecommunications.

Professor Stathis Chatziefthimiadis presented key issues on sensors, semantics, and gave a thorough presentation on advanced services.

The workshop closed with buffet, while some further discussion continued on various contemporary topics.

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