Consultation on WP 2014 Software and Services. Cloud

Contributions

Contribution state(s): published

Total contributions: 43

Migration to (Mobile) Cloud

Contribution by [redacted] (TECNALIA)

Description

Legacy software, deployed through the traditional models, is still majority of all sold applications in EU. The potential of cloud computing and mobile cloud computing is not being totally unleashed. Europe is losing competitiveness and software sales are decreasing compared to the numbers of the US, China or other countries that have accepted much faster the opportunities that the (mobile) cloud offers.

However, there is too much effort put in those legacy applications, the core of many business lay precisely on those applications and cannot be discarded that fast without even trying to evolve them and prepare them for the next revolution, be it mobile cloud or parallel computing. But this modernization is not straightforward. One cannot take an application and put it as it is on the cloud. There are certain architectural patterns that need to be fulfilled in order to leverage the full potential of the cloud but with the current (proprietary) tools this is not so easy. Additionally, the ubiquituous usage of multiple devices to access to the very same application implies a burden not considered before: optimization patterns, efficient applications that perform at the top level without consuming too much battery or too many data and thus increasing the costs, security and privacy concerns that need to be considered, etc...

All the above make necessary the development and provision of open and innovative tools that allow software developers modernize, design, develop, and deploy (legacy) software on the (mobile) cloud while at the same time ensuring low battery consumption, low data transfer, security and privacy issues and the possibility to select the most

convenient cloud provider for that kind of application being able to port it (automatically) shall the provider not behave as specified in their SLA's.

ID: 10205 - elapsed ms: 938

Semantic description and discovery of Cloud Resources and Services for multicloud Portability and Interoperability

Contribution by [redacted] (University of Campania (Second University of Naples))

Description

Cloud vendor lock-in and interoperability gaps arise (among many reasons) when semantics of resources and services, and of Application Programming Interfaces is not shared.
Standards and techniques borrowed from SOA and Semantic Web Services areas might help in gaining shared, machine readable description of Cloud offerings (resources, Services at Platform and Application level, and their API groundings), thus allowing automatic discovery, matchmaking, and thus supporting selection, brokering, interoperability end even composition of Cloud Services among multiple Clouds.

ID: 10210 - elapsed ms: 1241

Comment to Orientation Paper - Work Programme 2014 Software and Services. Cloud - Contribution to the Draft

Contribution by [redacted] (University Medical Center Göttingen)

Description

Objective 1:
Aim:
It's missing the national law factors of the eu-contries
What:
managing of big data without consideration of owner rights
Objective 2
Aim:
It's missing the provisioning for use in science
Tools and Methods:
here is the place for offer workflow management tools with simple description language of application and resources

ID: 10211 - elapsed ms: 1568

SaaSplus Inversion of control less administration more power over custom software features

Contribution by [redacted] (Fly by Wire)

Description

Software as a Service (SaaS) seems to take away something from the organizations seeking custom software support. In reality the organizations usually do not program software themselves, they just manage custom software made for them by software companies. When we now take their servers away and reduce management the feel of loosing even more control is eminent. Our approach is to empower the SaaS using organization with control, a different type of control then they expect but one with which we reduce the overall cost of software and reduce augmentation time, at the same time we increase the degree of customization.

Software as a Service (SaaS) reduces cost in the delivery of the software as well as in the programming because of its architecture.
To reach the goals of the digital agenda for Europe, rolling out SaaS alone is not enough. I suggest to look at “Innovative tools and methods for software development” with people at the center, but departing from the new Standard (SaaS) with a twist:

Standard:

The approach; The cloud inclusive SaaS addresses mostly the software delivery in a new way. Able to reduce cost to a degree

The people; To get custom software made faster we have to engage more programmers to deliver more custom software with advanced

software tools.

The tool; A tool with which software programming can be done faster is essential.

The twist:

The approach; The cloud inclusive SaaS addresses mostly the software delivery in a new way. Able to reduce cost to a degree; until SaaS is paired with a software

The people; To get custom software made faster we have to engage not only more programmers but a much larger group of professionals to take a proactive role in software creation and programming. To make current software programming methods more efficient alone will not reach the goals we have set forth.

The tool; A tool with which software programming can be done faster is essential but not THE solution, the tool has to enable a much larger group of people to integrate the creation and programming of software in a new way amongst professionals in the target knowledge domains.

I have been researching how custom software can be made and provided to customers for less cost in less time.
The result is a SaaS platform programmable through diagrams accessible from multiple type of devices.

Disadvantage: It is innovative and goes against conventions.
Advantage: It will help us archive the goals that we have set forth to achieve.

I will talk about the hurdles and the benefits and invite others to join me in this quest to make pilot projects to test this approach.

ID: 10215 - elapsed ms: 1932

Formal Methods for Cloud Computing Security

Contribution by [redacted] (CEA LIST)

Description

Cloud computing is becoming more and more important, driven by the growth of online and mobile devices. A growing amount of data, including security-critical data, is either stored or processed in the cloud. It is thus necessary to deliver reliable, safe and secure cloud environments, as identified in the Cloud Computing, Software and Services Work Programme 2014. Hereafter are some thoughts on how to achieve these objectives on an industrial scale.

A complete software system remains vulnerable as long as it contains a single exploitable vulnerability. However traditional techniques - manual review, testing, or simulation - are only able to ensure the most basic needs in terms of security. Take for instance code auditing. An error-prone activity, it is not exhaustive and therefore cannot guarantee that all software faults are discovered. Therefore if a system is security-critical, a systematic analysis of its components might be required. Such an exhaustive analysis, when automated and applied at implementation-time, also has the advantage of turning cyber-security into a preventive rather than reactive action.

This idea borrows heavily from the verification methods used in safety-critical domains to guarantee the reliability of control systems. They rely on analyses grounded in mathematical techniques, known as formal methods. Tools and processes built upon such solutions can be applied to most of the aforementioned security vulnerabilities, so that whole classes of them can be proven nonexistent. Abstract interpretation, deductive verification, concolic testing, model checking

are examples of formal methods that have been successfully deployed on industrial software. They provide varying degrees of automation and assurance, for both reliability and security properties. Applied to the Cloud infrastructure, they can help guarantee the strict enforcement of many security policies, including confinement and confidentiality in a multi-actor environment. They can also form the basis of next-generation tools for software development, improving both its cost-effectiveness and its reliability.

Adoption of formal tools and methods could alter the cyber-security landscape for Cloud Computing. They could supply the means to thoroughly analyze the design and implementation of software-intensive systems, guide the vulnerability search, and ultimately provide strong guarantees that entire classes of security faults have been eradicated.

ID: 10217 - elapsed ms: 2289

out of the box thinking on cloud computing

Contribution by [redacted] (Alcatel-Lucent)

Description

First of all, I do not see a lot of new elements [redacted]

I also get the feeling that the topics mentioned are rather incremental on top of current practice, and do not have the potential to radically change the status quo.

So, as a challenge, a number of slides in attachment illustrating how state of the art cloud practice falls short of (at least my) expectations...

ID: 10218 - elapsed ms: 2577

Risks from Third Countries of political and foreign intelligence mass-surveillance of Clouds

Contribution by [redacted] (Independent Privacy Advocate)

Description

There has been widespread consternation about the report to the European Parliament on "Fighting Cybercrime and Protecting Privacy in the Cloud". The report explains how a 2008 United States law (FISAAA 1881a, aka FISA 702) permits mass-surveillance (without a particular warrant) of data about non-US persons, for reasons of political and foreign policy interest (i.e. unrelated to internationally recognized "law enforcement" purposes). This law appeared to be unknown to EU policy-makers prior to 2012, and could technically and legally bypass other reciprocal arrangements and treaties such as MLAT.

Surprisingly, not only do most Data Protection Authorities already allow transfers into Clouds under the jurisdiction of Third Countries with such explicit political mass-surveillance powers, the Commission's intention is to streamline such transfers in future through the mechanism of "Binding-Corporate-Rules for data processors". DPA policy materials do not recognize risks of continuous mass-surveillance, but instead refer to discrete "requests" to access data. The Art.29 WP is fatally ambiguous about whether such risks can or should be part of the threat model of private-sector security auditors (in the face of extreme state secrecy provisions).

There is plausible evidence from whistle-blowers of both intent and capability, and relevant official US policy materials have offered no refutation (or even mention of the relevant law) before or since the publication of the EP Report. Instead a political public relations campaign has been mounted to portray European laws as lacking US standards of due process, standards which in fact are irrelevant because they may only apply to US citizens.

Meanwhile EU-sponsored research programs on Cloud "trust" address questions of data integrity and dependability, but have no answer to the problem of guaranteeing confidentiality against state adversaries employing national security laws in secrecy. Although encryption may protect remotely stored data, all Cloud services which offer parallel processing power as a scalable commodity must operate with decrypted data, and hence are vulnerable [pace marginal cases suitable for searchable encryption and other fringe techniques]

These geopolitical issues are currently neglected in the EU technological and regulatory debate on Cloud policy. In contrast to the controversy over 'ECHELON' 1999-2001 which only concerned data-on-the-wire, US FISAAA 1881a presents categorically graver risks to EU data sovereignty because any data formerly processed on-premise in the EU becomes vulnerable when migrated into Clouds subject to US jurisdiction.

This contribution to the workshop will :

a) review recent policy studies and materials, practitioner legal advice, and regulatory opinions from EU institutions on Cloud privacy and DP, seeking to understand how mass-surveillance risks could have been so comprehensively neglected

b) review the duty of EU institutions to guarantee Fundamental Rights, and positive obligations of Member States to give effect to the ECHR Art.8 right to private life.

c) review the state-of-play of these issues under the new proposed Regulation

d) sketch an agenda for new directions in EU Cloud security and policy research which may create effective deterrence against such risks

(Tried to supply original link to EP Report but this portal incorrectly rejected link as invalid http://www.europarl.europa.eu/committees/en/libe/studiesdownload html?languageDocument=EN&file=79050)

ID: 10221 - elapsed ms: 2887

Data-Powered Clouds: Comments on Work Programme "Cloud Computing, Software, and Services"

Contribution by [redacted] (University of Copenhagen)

Description

In this contribution, we comment on the role that data will play on cloud computing, software, and services. We discuss important ways in which data will provide new value for cloud platforms, and affect the production of software.

ID: 10224 - elapsed ms: 3236

A Hybrid Cloud Computing Approach for Intelligent Processing and Storage of Scientific Data

Contribution by [redacted] (Plataforma Oceánica de Canarias)

Description

Cloud Computing provides a revolutionary model for the deployment of enterprise applications and Web services [1]. The term Cloud Computing is currently being used with several concepts behind it. One of the most accurate definitions is the one provided by The National Institute of Standards and Technology of the United States Department of Commerce [2]:

“A model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.”

Most of the Cloud Computing infrastructures known nowadays are based on the concept of public clouds, where commercial providers sell part of this infrastructure in a service model. One of these examples is Amazon Web Services, where Elastic Compute Cloud (EC2) instances are sold for as low as $0,080 [3]. Unfortunately, this kind of clouds are not yet fit for all use cases, especially when dealing with security issues or cost-effectiveness in high data transmission environments. As a consequence, the concept of private clouds raises.

The primary aim of these private cloud deployments is not to sell capacity over the Internet through publicly-accessible interfaces, but to provide local users with a flexible and agile private infrastructure to run

service workloads within their administrative domain [4]. Moreover, private clouds have also several constraints regarding flexibility, scalability and robustness compared to most available public clouds.

For this matter, we will use a mixed approach, called Hybrid Cloud, where we will combine both public and private clouds to solve specific use cases needed in processing and storing scientific data.

Some of these use cases include:

- Big Data
- Ability to transfer high amounts of data with a low latency and high bandwidth in short periods of time.
- High availability of data for scientific consultation.
- Scalability in order to provide enough bandwidth for short bursts of data consultation.
- Data Backup for long-period storage.
- Disaster Recovery

References:

[1] Benson, Theophilus at al. “A first look at problems in the cloud”. In Proceedings of the 2nd USENIX conference on Hot topics in cloud computing, 15–15. HotCloud’10. Berkeley, CA, USA: USENIX Association, 2010. http://dl.acm.org/citation.cfm?id=1863103.1863118.

[2] Mell, Peter et al. “The NIST Definition of Cloud Computing”. In Recommendations of the National Institute of Standards and Technology. Special Publication 800-145, September 2011.

[3] Amazon Elastic Compute Cloud (Amazon EC2) in Amazon Web Services. http://aws.amazon.com/ec2/ Retrieved 6th February 2013.

[4] Borja Sotomayor, Rubén S. Montero, Ignacio M. Llorente, and Ian Foster. “Virtual Infrastructure Management in Private and Hybrid Clouds”. IEEE Internet Computing 13, n.º 5 (September 2009): 14–22.

ID: 10228 - elapsed ms: 3557

Decision Support for adaptive business performance

Contribution by [redacted] (TNO)

Description

The aim is to strengthen EU business by optimal organizing collaboration of available resources (persons, business, ‘things’) to meet a goal of an individual customer. Instead of mass production, each customer’s goal results in a unique offer. Collaboration of customers, producers, designers/architects, suppliers and logistics needs to be supported dynamically based on situational awareness of available capabilities. Situational awareness not only considers ‘things’ (e.g. 3D printers as sensors/actuators part of the Internet of things), but also capabilities of individuals and business. Big -, open data are prerequisites for establishing collaboration to support transactions in a cloud environment serving the many SMEs of the EU.
In this contribution we propose to align business with innovative cloud solutions and services.

ID: 10232 - elapsed ms: 3872

HP Response- Consultation on WP2014 Software, Services, Cloud

Contribution by [redacted] (Hewlett Packard)

Description

HP supports the aim of outlined for Objective 1 in pushing the timeframe for impact out to 2018 addressing new computation and data management models. This is in line with the recommendations of the Cloud Expert Group which recognised advances in cloud and data management technology and cloud capability driven by industry globally and stressed that European research must build on and get ahead of these advances.

Achieving such a shift will be difficult and must look beyond the current technical programmes to new and ambitious targets and go beyond a network-centric view of the cloud – focussing on federation, interoperation, and networking per-se may not lead to the desired innovation outcomes. The topics identified under the heading 'What' are couched in the language of previous programs and may not achieve the 'leapfrogging' that objective 1 aims for. HP encourages a more ambitious approach that might include

• Ambitious and measurable performance and scale targets for advanced cloud infrastructures that aim for challenging step-changes in results

• Integrating across elements of the work programme – specifically Security, Data, and Cloud Infrastructures to ensure that we do actually get secure and trustworthy clouds

• Open calls for new approaches to tackling some of these problems that would allow new technological approaches to be developed.

In summary, HP believes that the direction outlined for Objective 1 is very much the right direction and with the right ambition but to succeed (and to be attractive to industry) every element of this programme

should be identify and target ‘leapfrog’ developments that are a step change in capability for the cloud. “Advanced” should mean big advances, not incremental movement.

With regard to Objective 2, HP believes that software engineering tools have advanced in the past five years in the directions outlined in the paper; but industry and software developers still need better tools to build competitive and secure software products and services. This area is advancing rapidly and activities must target unmet needs. For example, a quick canvas of software developers in the HP Labs found disagreement with the statement that “current technology of software engineering does not allow simulating and testing realistically of a complex software system” but on the other hand strongly supported the notion that software testing is a constantly moving target and good software test tools infrastructures and services that address new cloud and data based programming paradigms can make a real difference to productivity and effectiveness in the development phase, and to cost reduction and flexibility throughout the lifecycle. Some areas that deserve attention in software testing include

• User Interface testing for software and services that operate in varied and heterogeneous environments

• Software and data are increasingly integrated in systems and services. It will be increasingly difficult to test services that exhibit complex data-driven behaviours.

• Security testing and software testing are tightly linked and programmes that exploit synergies between them may yield good results.

Software engineering tools are a constantly moving target. To ensure relevancy of tool development the programme should seek to understand the emerging product, open source and community developments in software engineering tools and actively engage with industry and practitioners in the field to ensure that RTD programmes address unmet needs or push forward the state of the art.

ID: 10236 - elapsed ms: 4152

Data Streaming and SaaS

Contribution by [redacted] (ETH Zurich)

Description

We suggest two improvements to the call, one for each objective.

1. Advanced Cloud Infrastructure and Services: Streaming Data

The biggest challenge in cloud adoption for business and research remains the management of large amounts of data. The network infrastructures and also the cloud storage platforms are not yet competitive enough in terms of performance and also pricing to in-house solutions and restrict cloud adoption. Also, concerns of data localization in remote clouds stopping wide-scale adoption of this technology.
Therefore, further development of network and data technologies for streaming not only of media but also business and research data in a structured fashion needs to be added to one of the main goals of this program. New streaming data analysis methods can provide much higher performance and security to many applications.

2. Innovative Tools and Methods for Software Development: SaaS

The text of the call makes it sound like software complexity is something desirable. It is not. Complex software is difficult to maintain and even more difficult to evolve. The most promising approaches all make use of compartmentalization, ie. a service oriented approach to software engineering, making sure that each component communicates with each other over well defined but extensible interfaces. Complexity may arise from simple building blocks and simple components, but the software itself must remain simple and easy to maintain.

The biggest value in this domain can be brought by the focusing on

enabling the Software as a Service paradigm. By providing platforms and tools for the easy deployment of SaaS, Europe can have a true impact in the virtual marketplace of the next decade.

ID: 10237 - elapsed ms: 4452

France Telecom Orange contribution

Contribution by [redacted] (Orange Labs)

Description

France Telecom contribution on:

- cloud networking
- cloud application lifecycle management
- real-time performance
- resiliency
- openess
- service management over the cloud

ID: 10238 - elapsed ms: 4757

Services with a smile

Contribution by [redacted] (IFIP)

Description

Much research on Cloud Computing is concerned with data and data transmission. This is a significant part of Cloud-related research and raises issues of concern such as capacity, storage and, lately of great concern, security and privacy of information. These are all worthy areas of research. However, the real benefit of the Cloud will be in the provision of services (albeit using large databanks) that must be timely, efficient, scaleable, and that respect privacy of information and secure that information appropriately. Such services will necessarily change over time. Great emphasis must be placed on ensuring the security and privacy of information while affording that change does not corrupt data and that when critical services are provided the evolution of services does not put these at risk even if the evolution is done while services are still operational. The field of Evolving Critical Systems is an important field of research for future Cloud development.

ID: 10244 - elapsed ms: 5044

VTT: Cloud Plays a Vital Role in the Future Growth

Contribution by [redacted] (EIT ICT Labs)

Description

This paper focuses on research challenges related to the Localised Distributed Cloud (LDC) and Cloud/IoT integration. In this research area there is nothing predictable about the rate of new innovations except that the unexpected happens faster than we expect. The impact of the research on European competiveness requires fast adoption of the research results and application of the knowledge. Therefore, in addition to the research challenges described in this paper, there is also an urgent need for more effective research approaches that go beyond traditional project management models. The research should be closely integrated to the business with a focus on the business and scientific benefits as well as support for an iterative and rapid sharing or deployment of the results.

ID: 10246 - elapsed ms: 5405

The paradigm shift from software licensing to software as a service

Contribution by [redacted] Legal)

Description

As pointed out in another contribution (“Migration to (Mobile) Cloud”), legacy software, deployed through traditional distribution channels, currently still constitutes the majority of all applications sold. This simple fact not only begs the question of how such legacy software can be deployed into and adapted to the cloud and which tools are needed to accomplish this task, but could also seriously hamper the success of cloud computing services in the European Union due to the legal hurdles that have not yet been resolved. Contrary to common beliefs, legacy software often cannot be adapted freely to the particular requirements of cloud computing services without the consent of the licensor. Even if specific legacy software can be used in the cloud without any changes to its source code, current license models often do not permit this because they only allow for the use of such software in conjunction with a particular CPU or do not permit its use outside a specific (member) state. Until today, these licensing hurdles remained largely unnoticed because the discussion of cloud computing primarily focused on data protection and data security issues. With the advent of Saas and multi-tenant (one to many) provisioning services, however, the use of ERP applications and other software is shifting from traditional software purchases and licensing models to subscription models which can only be implemented technically if the legal implications are taken into consideration.

Submitted by: [redacted] Legal, Germany)

ID: 10247 - elapsed ms: 5715

Stronger industrial focus

Contribution by [redacted] (XLAB)

Description

Reading the document I'd like to comment on the SLAs and automated composition. Both of these were already researched over the years with no tangible outcomes (in the industrial sense). I strongly support standardisation of SLAs and standardisation of composition possibilities, however, as it currently stands, these topics are lead with (business) innovation overseas. This thus means that we should support the so-called large STREPs (as discussed in the Expert Group document) where enough of EU-based companies commit to putting the research in practice (by end or shortly after the end of the project).
On the other hand, federation, federated identity management and also security in general should be addressed with utmost perseverance. There is an immediate (short-term) need for such mechanisms (and compliant providers). The R&D, performed in this area should be put to practice and, as the draft suggests, continued for at least next 3 years. However, again, the findings should be supported by strong commercial uptake.
Final comment is towards the possible outcomes of the research. We think that EC should make it explicit that the outcomes shouldn't be “yet-another-framework” but rather continuation of the existing work, upgrades, additions. The final goal should thus include “making the new research compatible with the older systems” (and not further fragmentation!).

ID: 10248 - elapsed ms: 6260

Challenges and issues of next cloud computing platforms at INRIA

Contribution by [redacted] (INRIA)

Description

We provide a list of major scientific challenges and issues dealing with Cloud and Service Computing addressed by researchers at INRIA.

This paper has been written with contributions of [redacted]

ID: 10250 - elapsed ms: 6540

Suggestions to the draft document Cloud Computing, Software and Services

Contribution by [redacted] (University of Santiago de Compostela)

Description

We mostly agree with the draft "Cloud Computing, Software and Services", but there are several topics in Objective 1 that, due to its relevance and future impact on the cloud technology, should be emphasized. More precisely, we propose:

a) To split the item "Cloud infrastructure (virtual/physical)" into three items named "Cloud infrastructure (virtual/physical)", "Optimization of usage of Cloud hardware resources" and "New programming models for clouds"

- Cloud infrastructures (virtual/physical): cloud networking and virtualisation of data centres, platforms and tools to develop cloud-based services (SaaS, PaaS, IaaS). Activities include the development of advanced tools and mechanisms for the management of distributed, heterogeneous physical computing resources, automatic management of elasticity and storage resources, and provisioning of virtualised resources according to pre-defined SLAs.
- Optimization of usage of hardware resources. One of the main advantages of Cloud Computing is the reduction in energy consumption and the associate reduction in costs and the carbon footprint. If a European wide cloud ecosystem want to be build, some R&D related with the optimization of resource utilization

and energy efficiency is required. Research in Green Cloud technologies is the key to set Europe in the lead of cloud usage.

- New programming models. For the success of Cloud Computing, new programming models have to be defined to help the porting from multicore to the cloud, having into account performance issues. Conventional programming styles are not appropriate in a dynamic, heterogeneous, distributed Cloud environments. This implies not only the definition of these new models, but also the adaptation of legacy software to this new paradigm. This adaptation will permit the users to easily migrate from their conventional cluster based resources to the Cloud, with minimum effort and reducing cost by means of better utilization of the available systems. These methods and tools must enable compliance with cloud provisioning business concerns, including policies and QoS.

b) To rewrite the item "Automated service compositions"

- Automated service compositions. Tools for dynamic reallocation of services to platforms to achieve availability, sustainability, flexibility, elasticity. Development of new and fast algorithms that deal with repositories containing huge amount of services, including dynamic and transparent service substitution, taking into account the quality of service restrictions of the required service and the conditions in which them are executed. New techniques for managing big data taking into account integrity and state aspects.

ID: 10253 - elapsed ms: 7029

Lean Research Approach

Contribution by [redacted] (EIT ICT Labs)

Description

The impact of the research on European competiveness requires fast adoption of the research results and application of the knowledge. Therefore, in addition to the research challenges and topics, there is also an urgent need for more effective research approaches that go beyond traditional project management models. The research should be closely integrated to the business with a focus on the business and scientific benefits as well as support for an iterative and rapid sharing or deployment of the results.

Constant change and new innovations in Cloud have created the need for more effective approaches that go beyond traditional project management models. Cloud Software Program (2010-2013, 60M€) is the largest collaborative research initiative in the context of cloud, software and services in Finland.

The Cloud Software Program's adoption of Lean Research Approach, new planning and project management approaches for the research efforts, have allowed the program to be more agile, more collaborative and more transparent. In addition, the program has been more successful in achieving its primary goal of developing enablers for globally successful businesses.

Drawing from the Cloud Software Program experiences we propose the Lean Research Approach to be applied in the context of Cloud, Software and Services research in EC's programs and projects.

ID: 10254 - elapsed ms: 7334

LEET SECURITY response - Consultation on WP2014 Software and Services. Cloud

Contribution by [redacted] (LEET SECURITY)

Description

In addition to technical mechanisms that contribute to reduce lock-in and to improve interoperability, cloud services need a efficient way to negotiate security conditions of services between users and providers.

Traditional ways of audit and certification have shown to be necessary but not sufficient to build trusted relationships (they are expensive, complicated and not compatible between users).

One option could be a security labeling system that helps users to understand the security measures implemented by the providers, and to the providers to show what security measures are they implementing.

That system should be:
· Clear
· Simple (easy-to-understand by non-technical people)
· Service specific
· Reusable
· Objective / verifiable

In brief, it should be as common language for users and providers to define security conditions as a kind of metrical system, instead of define how many "units of security" are needed, leaving it to the agreement between parts (this is perfectly compatible with the definition of a minimum [certifiable] requirements for provide cloud services).

In fact this kind of systems have been proposed by the recent EU

Cibersecurity Strategy. Other considerations for this kind of this system could be:
· Consider different needs for different security dimensions (confidentiality - integrity - availability)
· Not limitate to only preventive system; it should include resilience conditions of services.
· General conditions related with the service provider (long term strategy, quality of staff, financial solvency, insurance...)

In LEET's opinion, EU should foster the definition and adoption of this kind of security systems that helps to build up trusted relationships between users and providers and that could also help Government's to simplify their role in cloud environment.

This security labeling system role in the cloud environment should serve to solve the information asymmetry regarding security that today we face between users (that do no have any o very few information) and providers (that have all the information) --> This is further explained in the presentation linked.

leet security, rating agency

ID: 10255 - elapsed ms: 7601

EIT ICT Labs Comment for the Public Consultation on Cloud Computing, Software and Services

Contribution by [redacted] (Aalto University)

Description

Cloud Computing is one of the key technology areas in the present focus of EIT ICT Labs. Therefore, we have read the draft document with considerable interest, in particular the part on Objective 1. Unfortunately, due to our own internal event on April 17, we will not be able to participate in the consultation meeting.

The work of EIT ICT Labs in cloud computing focuses on data intensive clouds, technology innovations especially for time-critical applications with hard deadlines, real-time data processing and media-intensive applications in the cloud, and the interaction of cloud technology with novel Internet architectures such as SDN. This work is largely motivated and driven by emerging needs from our action lines in various application domains.

In this light, we are somewhat worried at the application-neutral formulation of the first objective. The interesting things in cloud computing happen at the boundaries with application domains and at the moving boundary with networking. Will such themes be in the scope of the work? If not, there is a clear danger that its real impact is diminished. On the other hand, the complementary role of EIT ICT Labs might reside precisely in these interactions.

Objective 2 resides further away from the scope of our present interest which puts more emphasis on innovations in specific application domains than generic software engineering methods and tools. We

nevertheless were surprised that the text does not even mention clouds or data intensity as drivers of future software engineering. We find little in the text that could not have been written 10 years ago.

ID: 10256 - elapsed ms: 8192

FUTURE TECHNOLOGIES FOR CLOUD COMPUTING

Contribution by [redacted] (CESGA)

Description

Cloud computing is an evolution of computing that is evolving very fast. Some of them are clear evolutions of 90's concepts (Software as a Service is very close to Application Service Provider concept; IaaS is related to the Utility Computing). Some of the well-known services (as Amazon EC) were released only few years ago, and now are consolidated being really a revolution for Cloud. Usage of some technologies as tablets exploded suddenly in the last two-three years, improving the mobility of the final user. So, to assess which technology will be important in the next 5-10 years, we must define scenarios for the usage of these technologies.

The scenario for the future of Cloud computing when the research executed on the H2020 program can be applied to Cloud commercially, is that the regulatory issues regarding privacy and property of the virtual assets have been solved. So companies and people can trust in the Cloud services. We assume that data and virtual appliance will belong to the final user who could move them around providers freely. Secondly, Cloud will be an important option for the final consumer, not only for using applications if not for having a Virtual Personal Computer (VPC) which can be accessed from any device (mobile phone, tablet, TV, laptop, etc.), at any time from any location. This means that beyond 2020, millions of people will store their data on the Cloud, will have their own VPC in some provider and will demand instant access to it. Companies, especially SMEs and micro, will use these virtual services to reduce the initial investment and fixed costs.

Finally, taking into account the Internet of Things, billions of small devices can generate an explosion of data to be stored and analysed on Clouds.

Based on this scenario, it is possible to identify some priorities for the next H2020 program, which are included in the attached document.

ID: 10257 - elapsed ms: 8505

Cloud increase distance and introduce problems

Contribution by [redacted] (University of Copenhagen)

Description

The objectives currently says little about how to address the problems, arising from increasing distance between user and data.

Use of cloud infrastructure increases the distance between user and data. When clouds were originally introduced (in the 50s) with mainframes, communication was on a LAN. Today, communication is on the open Internet. As a consequence, communication is limited by the capacity on Internet links. In addition, increasing the distance between users and data leads to increase in latency and packet loss, the combination of which limits throughput for standard Internet communication protocols. Finally, over the last decades industry has been building CDN's, which have focused on edge caching to minimize distance between user and data, in order to overcome the above mentioned distance problems.
Without solutions to these problems, the Cloud business will be limited. The solution includes algorithmic approaches to making data compact, combining edge caching with cloud technology, utilizing P2P technologies, among others.

ID: 10258 - elapsed ms: 8811

High Performance Computing (HPC) in the Cloud

Contribution by [redacted] (Metis Baltic)

Description

Importance of High Performance Computing (HPC) is growing as its usage is extending beyond pure science applications and becoming a key competitive differentiator in many industrial sectors. Industrial HPC applications are used, for example, in the design of products like aircrafts and cars or in the discovery of new oil and gas reserves. European industry is leading in these market segments and it is vital to keep Europe in the forefront of industrial HPC applications. HPC is also opening new market opportunities that were not possible in the past by making HPC systems and applications accessible to innovative European SMEs. It is important to develop pay-per-use applications permitting access of these SMEs to design and simulation software.

HPC Cloud Benefits

Today's rapidly advancing cloud technology presents significant opportunities for HPC sites to maximize return on investment. Adding HPC cloud capabilities to HPC systems improves workload management, increases system utilization and makes the HPC system accessible to a wider community. HPC cloud benefits include:
• Scalability to better support application and job needs
• Simplified self-service access for a broader set of users
• Accelerated collaboration or funding by extending HPC resources to community partners without their own HPC systems.
• Pay-per-use with showback and chargeback reporting for actual resource usage
• Workload bursting using commercial HPC service providers

• Higher efficiency without the cost and disruption of ripping and replacing existing technology
• Interfacing with external components using Web services that allow seamless integration into existing business processes

HPC Cloud Challenges for the Future
As HPC grows, it needs serve a wider audience who are not familiar with these technologies. To help these users, four key areas need to be addressed:

1.Simplifying the user experience
HPC Cloud users, be they scientists, engineers, system administrators or developers, all need a simpler user experience. The toolsets and user interfaces need to be more consistent and intuitive.

2.Supporting the growing range of applications and operating systems
Hardware and software developers need to match their capabilities to the wide and deep range of HPC workloads. HPC cloud's success depends on being able to run most of these HPC workloads, including those that significantly tax the compute and I/O resources.

3.Supporting big data and higher I/O demands
With the exponential growth of data being created, HPC workloads are often I/O bound. Big data workloads are commonplace and stretch the I/O capacity of HPC cloud systems. More progress must be made on this front in order to truly exploit the value of HPC cloud for big data.

4.Continuing cost reduction
HPC cloud costs have been declining more rapidly than traditional HPC costs. However, this trend must continue to make it economical to move more workloads to the HPC clouds.
Conclusion
HPC cloud technology presents significant opportunities for HPC sites to maximize flexibility and return on investment. Adding HPC cloud capabilities to existing HPC systems improves workload management, increases system utilization, and makes the HPC system accessible to a wider community. This development is very significant for the

European economy; it should be properly addressed by ICT Work programmes, bringing together the best researchers and practitioners of this field.

[redacted] is a small innovative company based in Vilnius, Lithuania, focusing on HPC/Cloud solutions for business, public sector and academia.

ID: 10259 - elapsed ms: 9095

Tool suites completely covering an extended and incremental software lifecycle

Contribution by [redacted] (University POLITEHNICA of Bucharest)

Description

Comment regarding Objective 2 Innovative tools and methods for software development

There are currently many disparities between existing information systems of public bodies from different European states, and between their financial capacities to support change. Sometimes, legislation does not allow one to make available certain categories of data across national borders, like in natural resource management. One can neither ignore the difficulties to modify working styles, or organizational cultures, e.g. for automating cross-border services in e-government. Yet, the long-term objective is to integrate these systems and to make them interoperate seamlessly. This requires modernizing legacy applications - which may need time, money and organization transformations. Therefore, the only realistic approach is to support an incremental transition towards operation in Cloud environments, and to offer methods and tools for developing hybrid solutions, i.e. not only by mixing private and public Clouds, but by supporting systems built up from highly heterogeneous parts: legacy and new components; proprietary and third-party services; reused or developed from scratch code; co-existing new and old versions of services; various composition mechanisms.

Therefore, we are confronted with a big challenge: changes are not only

caused by rapidly evolving external factors, but also by well-established internal plans for long-time, progressive modernization. With this narrow line between initial development and maintenance, business decision and evolution get integrated into the software lifecycle. We need support for the definition of intermediate steps towards the adoption of an “ideal” solution based on advanced Cloud infrastructures and services, as well as tool suites to cover the entire software lifecycle, not just parts of it.

ID: 10260 - elapsed ms: 9413

Distributed and user-centered local cloud computing

Contribution by [redacted] (SUPSI)

Description

The presented draft on "Cloud computing, Software and Services" positions itself very well as a driver to novel cloud computing in Europe. In order to further strengthen this, we propose to also explicitly acknowledge the desired role of SMEs in cloud computing, which are undoubtedly the real novelty and innovation drivers in ICT.

Additionally, we suggest to add a new objective into this call, which we preliminary call "Distributed and user centred cloud computing". We present a draft for this objective as follows:

Objective 3: Distributed and user-centered local cloud computing

Aim
This objective aims to foster the innovation in the cloud computing sector. Activities should include the implementation of novel applications, services, middleware and architecture, which make explicit use of distributed heterogeneous resources (e.g. end-user devices, embedded sensors, internet of things, local computing resources, etc.). New metrics and evaluation techniques will be needed, as well as identification of novel application scenarios and services. The position of innovative SMEs in Europe should be strengthened further through this objective.

Why
The current approach to cloud computing is to centralise resources and available services into large data and computation centres. While this approach is still in development itself and has already achieved great

efficiency and user friendliness, it is not the only possible approach to agglomerating resources. Many others remain still under exploited, such as end user devices, locally available servers and PCs, embedded sensor devices and the internet of things.

What
The following challenges need to be addressed in order to fully take advantage of distributed resources:

- Architectures and Middleware for massively distributed local cloud computing
- Communication protocols and algorithms for massively distributed local cloud computing
- Reliability and availability concepts, metrics and evaluation tools
- Application and service scenarios, including real user validation
- Modelling and simulation for highly distributed clouds
- Security and privacy

Authors: and

ID: 10261 - elapsed ms: 9712

Telefónica comments on research priorities in Cloud computing

Contribution by [redacted] (Telefónica)

Description

Telefónica wishes to summarize our main comments regarding the EC orientation paper on future research priorities in cloud computing, software and services ahead of the H2020 ICT Work Programme 2014-2015.

ID: 10263 - elapsed ms: 9989

Helix Nebula – The Science Cloud:A catalyst for change in Europe

Contribution by [redacted] (CERN)

Description

As we approach the end of the second full year of the Helix Nebula initiative, and of the first full year of its associated EC FP7 Project, we are on course to deliver the goal of enabling a federated cloud service across Europe. So far, the initiative has:
• Deployed and validated three high-profile flagships in high energy physics, life sciences and earth science, on commercial cloud services hosted by multiple suppliers
• Made use of network connectivity to the commercial data centres utilising GÉANT, DANTE and several NRENs
• Defined a federated cloud architecture, in conjunction with EGI.eu
• Identified further use cases and flagships for deployment in the second half of 2013
• Developed sustainable business models for cloud services, based on current supply-side and demand-side procurement practices, that withstand comparison to in-house approaches
• Expanded the consortium from 20 to 34 members and extended the public-private governance model to address the need for a comprehensive ecosystem of services

The initiative has enjoyed high visibility at a number of trade, academic and EC events. The next stage is to take Europe from “cloud-active” to “cloud-productive”, a transition identified at the Digital Agenda Assembly in June 2012.

To kick-start the up-take of cloud computing in Europe’s research community, Helix Nebula has started by addressing the needs of big

science as represented by the inter-governmental research organisations such as CERN, EMBL and ESA. Having proved that these flagship use-cases can be supported by Helix Nebula, work is now in hand to implement and exercise the simplified interfaces required, and lay the ground for wider adoption and use.

The preparation now in hand includes activities at a number of layers – policy, business, services and technology – and now is the time to expand the engagement to include national participants.

In this document, we propose and explain a number of acceleration themes to make this happen:
• Federating multiple commercial cloud service suppliers into an open, standards-based platform
• Using data-intensive science to bolster the data-driven economy
• Building the hybrid cloud, putting together public and private cloud services
• Adhering to open standards that encourage uptake of a federated cloud
• Providing network access to cloud services
• Introduce a financial incentive model to encourage a rapid uptake of cloud services.

ID: 10265 - elapsed ms: 10269

Trust Enabling Mechanisms for Cloud Service Markets: A Dual Perspective

Contribution by [redacted] (Fortiss GmbH / An-Institut TU-München)

Description

fortiss - An-Institut Technische Universität München / Chair for Information Systems

In the market for cloud services providers still struggle to cope with problems of acceptance which inhibit the widespread adoption and diffusion of cloud computing. Especially small and medium-sized enterprises (SMEs) have concerns regarding e.g. data security and privacy, potential lock-in situations, or switching costs. The ICT Work Program addresses these issues from a technological perspective by means of supporting the development of technologies and tools geared towards improving interoperability, security, and distributed development of cloud services.
fortiss supports the aim of the program. However, from our point of view, solving the technology related challenges associated with cloud computing is a necessary but not a sufficient precondition for supporting growth and innovation in the cloud services market. One reason why SMEs hesitate using cloud services is information asymmetries. These asymmetries pose significant challenges for both, potential users and cloud providers. From the users' perspective, benefits and risks associated with cloud services are difficult to evaluate. From the providers' perspective, information asymmetries make it hard for providers to align their service offerings to the needs and expectations of potential users. Promoting the exchange of information between cloud providers and cloud users is therefore a prerequisite for

both the diffusion and development of competitive cloud offerings. These challenges need to be researched and addressed in order to strengthen the competitive position of the European industry. We propose to support (small and medium-sized) users as well as their providers in assessing the quality of cloud services in order to promote trust in the services offered. In addition, cloud providers need to be assisted in tailoring their service offerings towards customers' needs. This requires removing not only technical but also structural, organizational, and economic barriers to the widespread use of cloud services.

From our viewpoint this might include research on the following market supporting services:

- Information services: Clients who want to obtain IT services as cloud service have to gather all relevant information for decision making their selves. This is quite a difficult task. Prerequisite for the widespread use of cloud services are unified cloud service descriptions covering all information required in order to compare and select cloud services. Information services are needed which allow for the systematic identification, selection, and procurement of cloud services through a unified classification system and feature catalog.
- Services for quality assessment and benchmarking: Services for quality assessment and benchmarking need to be developed to aid transparency regarding the assessment of cloud service quality perceived by users and independent third-parties (e.g. technical control boards, and research institutes).
- Trust supporting services: Services need to be developed which help to establish trust in the initial phases of transactions between users and providers in the cloud service market.
- Tools to support Open Services Innovation: Cloud providers' customers are a potential sources of innovation. In order to integrate their ideas into the service development process, tools to support open service innovation are needed. We propose to investigate open innovation methods as they allow cloud services

providers to use the knowledge of their users and external partners.

ID: 10266 - elapsed ms: 10583

Indra Company contributions: The Interoperability between Cloud layers

Contribution by [redacted] (Indra Sistemas)

Description

The paradigm change towards the information systems open access (where, when and through the user chosen device), necessarily implies a Cloud concept evolution to its finest. This change involves a high specialization degree among the players, allowing them to compete, according to their positioning as solution providers (SaaS), platform providers (PaaS) or even as infrastructure providers (IaaS).
In order to make this model work, it is necessary the decoupling in between layers through the global standards generation to enable independent Cloud solutions development of the platform as well as building platforms that are supported by infrastructure regardless of its vendor.
Just like the specification of J2EE/JEE drew a line on the before and after of software development, the definition of new standards for interoperability between the layers that make Cloud models is the necessary revolution to enable players specialization in each Cloud levels: SaaS, PaaS and IaaS, to compete in the Cloud solutions future market for the global user.

ID: 10268 - elapsed ms: 10864

CloudSigma - Defining research priorities for H2020

Contribution by [redacted] (CloudSigma AG)

Description

We would like to see research projects address technical and nontechnical challenges that stimulate development into new value chains and networks in order to deliver improved cloud services that ultimately increase cloud adoption.

A common Service Level Agreement model

CloudSigma believes a standardised Service Level Agreement framework that goes beyond simple availability will provide a meaningful reflection of value to consumers and promote growth in the industry. Europe can lead the way in implementing this and thereby provide competitive advantage to industry as well as value to customers.

We believe the following steps would help define common SLA terms:

- Define standard measurement terms of availability both in terms of qualifying downtime and also infrastructure level measured (for example, at virtual machine level, downtime exceeding 10 minutes etc.)
- Standardised measurement points for networking latency from cloud virtual machine to these standard measuring points
- Implement performance aspects to SLAs by defining standard performance measurements
- Allow independent measurement of standardised performance metrics to gain compliance (for a cloud provider)
- Define and implement standard compute units based on different work-loads (there is no standard work-load, one measurement will

not be successful)
- Avoid Vendor lock in at any layer (eg. hardware, network, image type, VM definition)
- Expose computational power as commodity resource - freely trade on commodity markets

Openness and interoperability

This will help to avoid vendor lock-in and create a healthy and competitive cloud computing market in Europe. Standard interfaces and open software will lower barriers for service and technology providers in this new service market. Its adoption will provide significant business opportunities to the ICT Industry, including SMEs, helping them play a more active role both in adopting cloud computing, in shaping the development of European cloud technology, and in bringing to market interoperable cloud solutions and services.

Independent performance verification of the cloud

There is growing interest among enterprises in independent, third-party performance verification services. We encourage development of this kind of service as we believe it will achieve greater quality assurance among enterprises in the cloud as well as boost uptake of cloud services. Independent performance verification can be effective in reducing maintenance costs and may even alleviate security issues both perceived and real. These advancements will undoubtedly help to increase cloud adoption.

Operating systems that are more cloud aware

We have seen massive technological transformation in recent years, partly due to the increased use of cloud computing. However, most operating systems are merely stripped-down versions of existing operating systems that have been customised or optimised for web use. We see enormous benefit in the development of operating systems that are more cloud aware. We would like to see more effort into the development of cloud-specific operating systems that incorporate

features like true vertical scalability, that ultimately increase performance, reliability, and security.

ID: 10269 - elapsed ms: 11158

NESSI Recommendations on Cloud Research and Innovation Priorities for WP2014

Contribution by [redacted] (Nokia)

Description

NESSI, the European Technology Platform for Software and Services, hereby responds to the Public Consultation that aims to define future research priorities in Cloud Computing, Software and Services, ahead of the H2020 ICT Work Programme 2014-15. NESSI puts forward a number of research recommendations, based on the priorities identified in the NESSI White Paper on Cloud (July 2012) as well as in the NESSI Strategic Research and Innovation Agenda (March 2013).
On an overarching level, NESSI advocates four areas for future research and innovation in Cloud Computing. These areas include (i) product and service innovation through Software & Service Clouds, (ii) advancing agility in design and operation of Software and Services Cloud, (iii) transforming ICT and (iv) adaptive Cloud infrastructures. As a result, NESSI promotes driving innovation in Cloud environments, through well aligned research initiatives from industry and public bodies, with the following key recommendations:
• Direct significant EU efforts at investing in Cloud research to enable the EU Software and Service Industry to provide innovative Cloud platforms, services, and solutions for building healthy business ecosystems.
• Shift the focus from mainly infrastructure / IaaS related research towards an integrated research approach with a strong software and services perspective.
• Support application-domain driven cloud research projects with strong

involvement from Software and Service Cloud stakeholders and domain stakeholders such as end users and providers in order to accelerate the uptake of Software & Service Clouds in a variety of sectors.
• Comprehend open source as a specific instrument that can support innovation along well-defined business strategies and use it (or do not use it) in public funded research projects accordingly.
• Develop a strategy for using standardization and open source as instruments to improve the competitive position of Europe, not necessarily for achieving innovation but rather to commoditize in areas where Europe is behind competition or to establish interoperable platforms.

With regard to the H2020 ICT Work Programme 2014-15, NESSI has identified more specific research and innovation priorities structured into seven focus areas. In particular three areas, “Quality in cloud based heterogeneous service scenarios”, “Services benefiting from programmable networks” and “Service usage in a fast changing business world” are relevant to the consultation. The area quality in cloud-based heterogeneous service scenarios pays specific attention to advanced SLA handling, integrated cloud resource management and agile cloud service development and deployment. The second area proposes to investigate the take up of programmable network interfaces in deploying services in heterogeneous cloud environments and in providing optimized mobile access to services and data in the cloud, as well as the development of common service models for the orchestration and software defined access to cloud and networking resources. NESSI also suggests priorities for service usage in a fast changing business world, with focus on scalability and elasticity in the PaaS and SaaS layer, platform strategy for new business services and creating ecosystems of innovative companies.

NESSI also comments on the initial thoughts in the draft orientation paper on how the work program 2014-15 could address the future research and innovation challenges.

ID: 10271 - elapsed ms: 11453

EuroCloud - The value chain of supporting and financing R&D

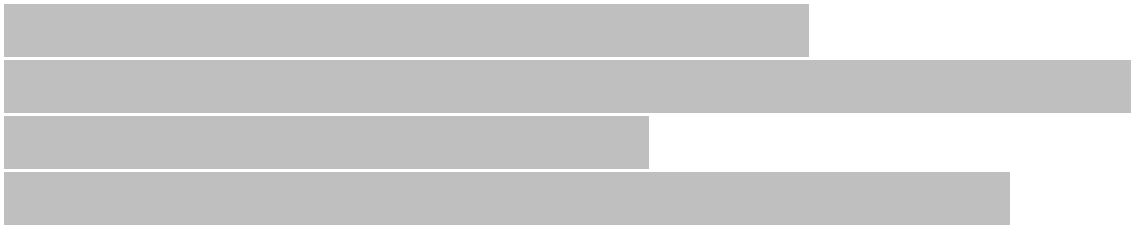
Contribution by [redacted] (EuroCloud)

Description

As presented by EuroCloud in the “16 Action Point Plan for Cloud Computing in Europe”1, in 2010, a culture of innovation, based on structured R&D plans, should be promoted and encouraged. Despite the fact that the majority of companies have the goal of continuing to improve and develop their products and solutions by investing in research and development (R&D), they have difficulties to clearly identify the value chain of R&D. Companies are also having difficulty to identify the most efficient methodology to incorporate the results of R&D in their products, maximizing investments in product differentiation and innovation. Implementing the right strategy to support R&D is even a more difficult tasks for small and startup companies, which usually works under high demanding budget constraints.

As it’s also presented by the recent report “ENTREPRENEURSHIP 2020 ACTION PLAN”, presented by the European Commission, EuroCloud position is that in order to bring Europe back to growth and higher levels of employment, Europe needs more entrepreneurs. This goals are full aligned also with the European Commission's strategy for "Unleashing the potential of Cloud Computing in Europe", which expects that Cloud increased adoption delivers a net gain of 2.5 million new European jobs, and an annual boost of EUR 160 billion to EU GDP (around 1%), by 20203. At the pace Cloud Computing model evolves and the major obstacles and technical challenges are being address, it’s urgent to create measuresto ensure the sustainability of the Cloud

Computing market for years to come and the leadership of Europe by through innovation of cloud products within existing industries and most important, by fostering a close collaboration with R&D institutions, reference and well established companies, and clusters of young entrepreneurs.



ID: 10272 - elapsed ms: 11720

Numergy - EU (consultation on WP 2014)

Contribution by [redacted] (Numergy)

Description

As a native digital energy provider Numergy is more than others conscious of the need to bring simplicity to enforce Cloud Computing adoption. Numergy is therefore deploying a three-pillar strategy:

1) First, Cluster by Numergy, a Cluster Deploying Tool;

2) Second, Big Data by Numergy, an Hadoop PaaS On Demand;

3) Third, Application PaaS by Numergy, a PaaS for developers allowing them to easily deploy SaaS applications.

Those 3 projects are Numergy's answer to the European Union "Public Consultation on Cloud Computing, Software and Services"

ID: 10273 - elapsed ms: 12068

Further research options on large scale data management, software engineering and collaborative development

Contribution by [redacted] (Symantec Corporation)

Description

The development of high performing data centres and cloud services in Europe will mean that data management and processing tasks expected by cloud users will need to be carried out much more efficiently, at much larger scales than currently done. This will raise new challenges and call for new functionalities and capabilities in areas like the preservation of confidentiality, notably through advanced homomorphic cryptology, or storage management and optimisation, including aspects such as data structuring, classification and prioritisation, to allow for efficient and flexible replication and deduplication of massive amounts of information according to fluctuating needs.

As for software development, in parallel to efforts to improve engineering, alternative paradigms should also be explored to research the possibilities of building reliable systems on unreliable components. Meanwhile, the promotion of collaborative development will need to integrate incentives and facilitating measures that will be appealing to developers from all over the EU and beyond to the platforms and tools developed in Europe in a context where many other regions compete to attract the same talents.

ID: 10275 - elapsed ms: 12346

How to improve trust in the cloud: has the EC focused on the most important issues?

Contribution by [redacted] (Cloud Industry Forum)

Description

It appears generally accepted that there are a number of trust factors inhibiting the faster adoption of cloud computing, especially for SMEs. But which trust factors can be addressed most cost-effectively to drive faster uptake of cloud computing? Is it ‘standards’ in general; standards for security or data protection in particular; being able to certify against these standards; education; transparency; or capability? There are differences of opinion about which are the most important factors. Focusing resources on the wrong priorities can be not only wasteful, but counterproductive. This submission proposes that pragmatic market research and trials are needed to clarify what are the most easily achieved trust requirements both for cloud consumers and for cloud providers, with a focus for each on SMEs.

This submission is being made so that research into trust factors can be added to the research agenda for cloud computing under Horizon 2020. There is repeated recognition from the EC and its advisory bodies about the importance of non-technical issues in driving the uptake of cloud computing. Yet the research agenda for cloud computing as currently drafted appears to focus exclusively on technical issues and not on broader commercial-type issues such as trust.

The proposed research into trust factors may also be important for the European Cloud Strategy. This states that ‘There is a need for a chain of confidence-building steps to create trust in cloud solutions. This chain

starts with the identification of an appropriate set of standards that can be certified in order to allow public and private procurers to be confident that they have met their compliance obligations and that they are getting an appropriate solution to meet their needs when adopting cloud services.' This view gives standards the leading role in creating trust, which is arguable. Moreover, it is hard to achieve standardization so early in such a dynamic and innovative sector. The EC's NESSI itself diplomatically questions the position taken in the European Cloud Strategy by stating that 'when it concerns Cloud, standardisation is of value first in the later stages of the innovation cycle…'

This submission proposes that the EC should dedicate some of its research towards clarifying pragmatically which are actually the most important trust factors, both for cloud consumers and for cloud providers, in driving faster uptake of cloud computing. This should not be based on 'wish-lists', but on clarifying the explicit short-term developments which would drive adoption of cloud computing for individual SMEs. It is suggested that one of the most important factors is likely to be transparency, which is often mentioned in passing, but seldom addressed head-on. Consider the comparison with the financial world: there is considerable transparency in financial matters because of accounting standards, which are primarily standards for recording and presentation. Different companies may do things differently, but financial disclosure requirements make the companies comparable for investors. Disclosure may also be the most appropriate solution for the world of cloud computing. Disclosure might cover provisions for data migration, data recovery, data sovereignty, use of model terms, certifications and their scopes, and more. Consumers will not need the same level of assurance about such issues from all providers. But if consumers are given the right information with which to make a decision about these issues, the adoption of cloud computing should accelerate.

ID: 10276 - elapsed ms: 12636

CRP Henri Tudor - software engineering is not isolated from enterprise's other activities

Contribution by [redacted] (Luxembourg Institute of Science and Technology)

Description

In order to foster innovation in product and services, software development needs to be considered as an integral part of the product and service development: the development of the software supporting the innovative product and/or service is only a specific activity within the complete innovation process. The software development activity cannot be managed independently of the innovation process; and in the other way round, the innovation process cannot remain blind to the continuously growing set of legacy software. Strategic decisions taken during initiation phase might be very relevant during the development of the software system. Giving the importance of software in most businesses, software evolution and understanding the legacy is of paramount importance, and not only from a technical perspective: the technical aspect of software system might indeed impact strategic decisions. As software is everywhere, the environment in which software systems are now developed make intervene more and more stakeholders: from the classical technical experts and end-users to the service designers, quality assurance experts and investors (interested in an economically viable business model around the developed software system). To summarize, software development is an activity that cannot be considered isolated from the other activities of the enterprise, and beyond the boundaries of the enterprise, through the network of enterprises. This is another factor explaining the rising complexity in

software development: increasing number of concerns from increasing number of stakeholders need to be integrated in the development process.
This complexity factor requires new approaches to software engineering. Techno-centric (or software-centered) development tools and methods, as well as specific software concerns (security, testing, formal validation, etc.) are not the only challenges to overcome. The variety of stakeholders, the needs of communications, the support of ideation and decision making call for dedicated representations and abstraction. Systemic software engineering (engineering of the software system in its economic, social and technological environment) requires modelling tools and methods that are

- Flexible in terms of models and languages supported: information from many kinds of models are required to design and implement the high-quality software system, from very informal to semi-formal and formal; this includes the ability for these tools and supported processes to be adapted to the various contexts of use. Furthermore, such tools must be able to smoothly (e.g. not enforcing formally) integrate the wide variety of models.
- Highly collaborative and participative: many stakeholders participate to the design of the system that the software supports, in many locations, with multiple relevant viewpoints; the stakeholders should be able to construct collaboratively their own shared viewpoint, language to reason about the system.
- Stakeholder-centric: the infrastructure should lower the barriers to modelling and allow any stakeholder to express its relevant viewpoint in its own language, including dedicated representations and manipulation of models. The tools and methods should allow them concentrating on the software problem to solve and not on the language specification.

ID: 10277 - elapsed ms: 12933

CRP Henri Tudor - Security metrics and monitoring as an instrument to support trust in cloud computing

Contribution by [redacted] (Luxembourg Institute of Science and Technology)

Description

The lack of trust regarding cloud services is not to be demonstrated anymore, especially when the customer intends to store and manage critical data in the cloud. For cloud computing to become widely adopted, the question of security requires special attention and several issues have to be solved, amongst which:

- the difficulty to define security metrics: cloud service consumers and providers should be able to agree on metrics that can be monitored and used as meaningful indicators of the security situation for both of them in an outsourcing context;
- the restricted Service Level Agreement: the concept of Service Level Agreement needs to evolve and become more flexible and adaptable to the needs than simple standardized engagements related to few criteria like availability or response time;
- the difficulty to monitor security: cloud service providers should be able to dynamically monitor the security of their services and to make results transparent to the customer, allowing him to verify the compliance to the SLA;
- the inability to be guaranteed that the cloud provider offers a end-to-end protection: in an outsourcing model like cloud computing, solutions must be designed to allow the management of security risk, and therefore the gathering and the analysis of security information, throughout the whole chain of

provider(s)-sub-provider(s)-consumer(s).

ID: 10278 - elapsed ms: 13206

Public Consultation on Cloud Computing, Software and Services

Contribution by [redacted]

Description

Input for the Public Consultation on Cloud Computing, Software and Services from [redacted], SAP AG

ID: 10280 - elapsed ms: 13476

Public Consultation on Cloud Computing_PT

Contribution by

Description

Contribution for the Public Consultation from , Portugal Telecom

ID: 10286 - elapsed ms: 13757

Complex Systems

Contribution by [redacted]

Description

Contribution from the University of St Andrews, UK

ID: 10288 - elapsed ms: 14017

FEEDBACK OF GRADIANT

Contribution by

Description

FEEDBACK OF GRADIANT TO THE PUBLIC CONSULTATION ON THE WP 2014 ON CLOUD COMPUTING, SOFTWARE AND SERVICES

ID: 10304 - elapsed ms: 14313