

Project Profile

Technology for a sustainable cloud ecosystem

A better cloud for both consumers and providers

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Cloud computing, or the use of computing resources delivered as an on-demand service over a network, is not only a passing fad, but a paradigm switch that is already transforming markets and creating new business opportunities for industries and especially SMEs. However, barriers for adoption remain: availability, security, privacy, vendor lock-in... are still recurring concerns. The ITEA 2 EASI-CLOUDS project proposes solutions enabling new business models for the benefit of both cloud consumers and providers.

Cloud computing may be more an evolution than a revolution, but it is definitely here to stay. Software architects and IT departments embrace it because of the technical flexibility of easily deploying, cloning and scaling virtual infrastructures and workloads using APIs. Decision-makers adopt it mainly for the convenience of switching from investment in hardware and

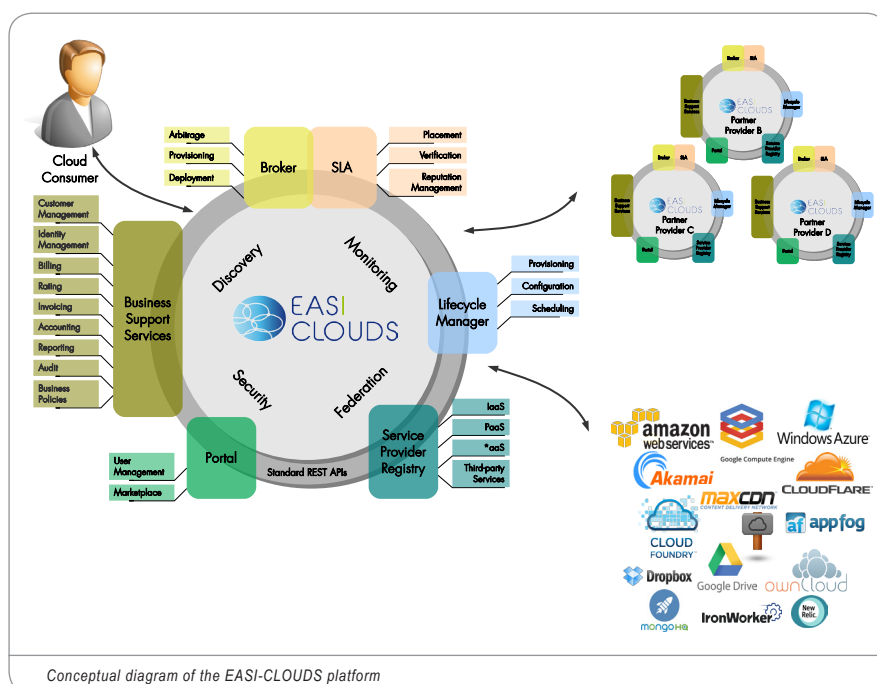
software to a 'pay as you go' paradigm, which lowers the entry cost into new solutions.

However this cloud does not have a silver lining, for the cloud computing market faces a serious problem – lack of customer confidence. IT customers and general users like the cost and agility advantages of cloud computing but have serious concerns about issues such as security, availability, vendor lock-in and standards.

The objective of EASI-CLOUDS is to enable current players to fully embrace cloud computing through technology that overcomes such market barriers and helps the emergence of a new Europe-centred market.

BENEFITS FOR CLOUD CONSUMERS

The main benefit that EASI-CLOUDS will bring to cloud consumers, whether they are businesses or developers, is the simplicity to adopt cloud technologies and run



EASI-CLOUDS (ITEA 2 ~ 10014)

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Nile University
Orga Systems
Prosynt
Seoul National University
Tampere University of Technology
Thales Communications & Security
Thales Services
University of Evry
University of Helsinki

Countries involved

Denmark France
Egypt Germany
Finland Republic of Korea

Project start

September 2011

Project end

August 2014

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applications on top of hybrid (private/public) or multi-cloud architectures, instead of relying on a single provider. Using several cloud service providers at the same time has many benefits: increased availability (services replicated across providers are less likely to fail simultaneously), better data privacy (e.g. by processing only a fragment of confidential data in each provider) and reduced costs (by switching workloads to cheaper providers, either manually or automatically depending on price fluctuations). In turn, a more competitive market will emerge from the ability to switch providers and easily migrate workloads, just like it did when users got the right to retain their mobile telephone numbers when changing from one mobile network operator to another.

Another phase in the lifetime of a software project where cloud computing can play a significant (and often underestimated) role is in the link between the development and the production phases. Current approaches where clearly distinct teams are responsible for each phase are not adapted for the fast software update cycles required by the Web market. EASI-CLOUDS will build on top of open-source Platform-as-a-Service approaches to automate the deployment of standardized runtimes (e.g. Java or .NET web containers) and services (e.g. database, billing, authentication) that developers can use to set up production-grade architectures for well-known patterns.



This disruptive approach does not only simplify the creation of development, build and test environments; it also bridges the gap between developers and operators by providing the tools for an emerging 'DevOps' role to manage the development, deployment and operation of online applications.

OPPORTUNITIES FOR CLOUD PROVIDERS

EASI-CLOUDS will deliver technology for cloud providers to negotiate, monitor, measure and maintain technical Service-Level Agreements. Its aim is to build consumer trust through quality, openness and transparency, e.g. by notifying consumers of downtimes, informing about data placement, facilitating security audits, etc.

The European market is so far mainly composed of small players, whether it is public IaaS providers struggling in the competition against American giants, or industries that manage their own private cloud. For both cases, EASI-CLOUDS will simplify the use of services from other providers, whether part of a federation or third-party commercial providers, thus increasing availability, reliability and greater market visibility at a lower exploitation cost.

UNDERPINNING NEW MARKETS

This ITEA 2 project expects to achieve a cloud software stack simplifying the management of cloud applications and supporting dynamic coordination among different cloud service providers – at the Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS), and Software-as-a-Service (SaaS) layers.

EASI-CLOUDS will migrate to the cloud real applications in a number of domains, such as medical image processing, bioinformatics, e-learning, dynamic content delivery using edge nodes, photo stitching and a number of open-source SaaS applications, to ensure usability in the real world.

In the longer term, the use of EASI-CLOUDS will raise the level of adoption and trust in cloud computing by consumers while creating an ecosystem of interoperable providers with a critical mass to compete in the global market.

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- ITEA 2 – Information Technology for European Advancement – is Europe's premier co-operative R&D programme driving pre-competitive research on embedded and distributed software-intensive systems and services. As a EUREKA strategic Cluster, we support co-ordinated national funding submissions and provide the link between those who provide finance, technology and software engineering. Our aim is to mobilise a total of 20,000 person-years over the full eight-year period of our programme from 2006 to 2013.

- ITEA 2-labelled projects are industry-driven initiatives building vital middleware and preparing standards to lay the foundations for the next generation of products, systems, appliances and services. Our programme results in real product innovation that boosts European competitiveness in a wide range of industries. Specifically, we play a key role in crucial application domains where software dominates, such as aerospace, automotive, consumer electronics, healthcare/medical systems and telecommunications.

- ITEA 2 projects involve complementary R&D from at least two companies in two countries. We issue annual Calls for Projects, evaluate projects and help bring research partners together. Our projects are open to partners from large industrial companies and small and medium-sized enterprises (SMEs) as well as public research institutes and universities.



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