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Delegations will find attached Commission document SWD(2013) 142 final **(Part 2 of 3)**.

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Part 2 of 3

COMMISSION STAFF WORKING DOCUMENT

Strengthening the environment for Web entrepreneurs in the EU

COMMISSION STAFF WORKING DOCUMENT

Strengthening the environment for Web entrepreneurs in the EU

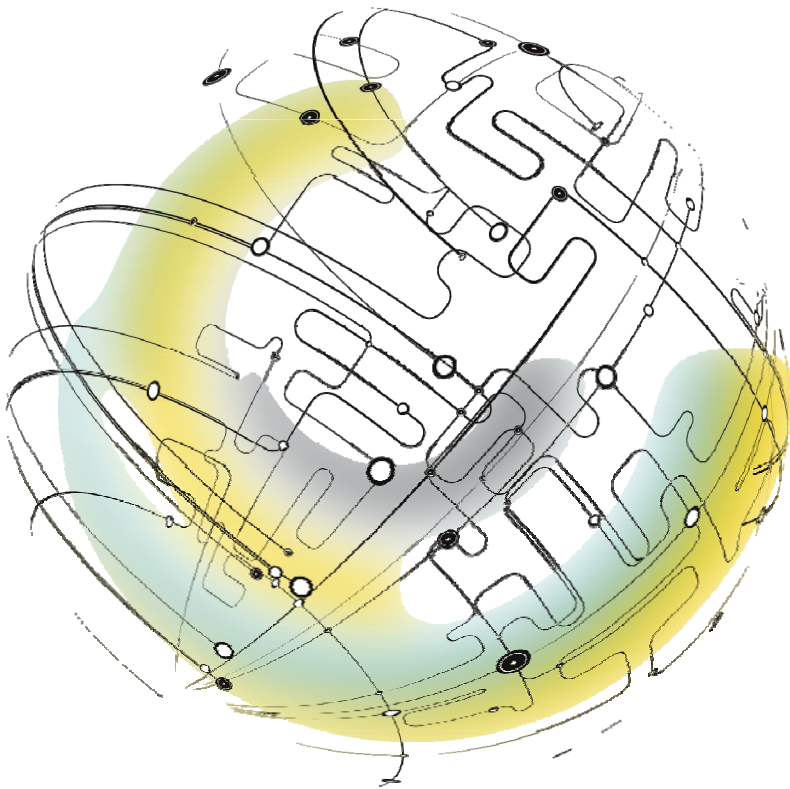
ANNEX III - STUDY ON "OPEN PLATFORMS FOR WEB-BASED APPLICATIONS AND SERVICES IN EUROPE, ENLARGING THE STAKEHOLDERS COMMUNITY"

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ANNEX III (Part 1)

OPEN PLATFORMS FOR WEB-BASED APPLICATIONS AND SERVICES IN EUROPE, ENLARGING THE STAKEHOLDERS COMMUNITY



FINAL REPORT

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Executive Summary

Acknowledging the link between ICT and Economic Growth, the commission made the Digital Agenda¹ a key pillar of its strategy for growth, Europe 2020². Action 54 of the Digital Agenda Europe (DAE 54) specifically aims at enabling the new generation of web-based applications and services. However, *its implementation requires a deep knowledge of the current web ecosystem and its foreseen evolution, including the identification of stakeholders involved, as well as the identification of technical, policy and economic challenges posed by future web platforms*. This report presents the findings of a study on web platforms and stakeholders commissioned by the EC in response to DAE 54.

Emergent web platforms drive value creation and growth across the economy in intricate and unforeseen ways, creating and reinventing markets and business models. Since 1995 more than two billion people joined the Internet, half of them in the past 5 years. Web platforms played a central role in this mass migration. It allowed successful web businesses such as Google and Facebook to turn garage start-ups into billion dollar global brands in a matter of years. App platforms such as the Apple App Store created a total market estimated to be worth up to 35 Billion in 2014³. Numerous other successful businesses build on top of the new platforms or create entirely new ones in a wide range of domains from ecommerce to health, from entertainment to finance. The biggest and most successful of these companies, controlling entire platform ecosystems, are non-European, mostly US based. Our study includes an analysis of the web-services economy in Europe, including a forecast of growth and a technology roadmap for 2020. In addition we reviewed the hindrances European entrepreneurs perceive when doing business on the web and the possible remedies that can be conceived at European level. It arrived at the following findings.

On the state of play in the European Web economy

A significant and growing portion of economic growth in Europe and elsewhere can be attributed to the Internet with some countries such as the UK and Sweden leading the way internationally with over 5% of GDP coming from the Internet. With an estimated Internet population reaching nearly half the world population in 2016, the importance of the Internet for European Economies will only grow. Software and Content based services, the business of web entrepreneurs, represent a small but fast

¹ COM(2010) 245 final/2, Brussels, 26.8.2010

² <http://ec.europa.eu/europe2020>

³ Compilation of figures listed here <http://appmuse.com/appmusing/how-big-is-the-app-market>

growing segment of the Internet Economy. Web services in Europe exhibit double digit growth in terms of the number of businesses, users, revenues and offerings. Direct revenue growth is highest in eBooks, paid services for Social Networks and mobile apps. However, with the exception of games, the EU is still trumped by the US in nearly all segments of the Internet Economy in the revenue generated with web applications and services.

On how web entrepreneurs create value

Developers appear to create value with Apps in three main ways: exploiting the platform ecosystem, App developers create services that build on a combination of functions and features provided by multiple software and device platforms; creating solutions by matching supply and demand of two-sided markets in novel or more efficient ways; creating combinations of products and services with enhanced value through social and physical integration. In-depth case studies show that highly dynamic ecosystems of web entrepreneurs are capable of generating high revenues and high employment, jointly rivalling big players even in the most competitive and innovative of industries. Beyond 'black-box' models, richer accounts are needed of web services impacts and how the economy at large is affected, taking into account firm-level data, demand and sector-specific aspects, aggregation effects, IT-related spill-overs, and negative impacts.

On the future web economy

Under the current regime the US will continue to lead in the Internet Economy between 2014 and 2020. It will overtake Europe in access based revenues, both fixed and mobile. China will gain ground in all areas moving towards 2020. In advertising revenues the US will extend its dominance while in paid services and applications Europe may actually gain ground. Our 'business as usual' scenario estimates that web services revenues in Europe will increase five-fold to over 100B in 2020, mostly from fast growth in paid services and applications. Advertising revenues will double in that period to 30B. However, as disruptive transformations are likely in the emerging web arena the outcome will be more pronounced. Driving such disruptions in the web arena in the short term are Security/Privacy Technologies and Data Analytics (such as Big Data). Beyond 2015 web companies expect Artificial Intelligence, Sensor technology and Human Enhancement to impact heavily on web services.

On the perspective of Web entrepreneurs

The three most important challenges web entrepreneurs face relate to *finance*, *innovation culture*, and *human resources and education*. The main reason given for financial impediments is the lack of understanding in the European financial world of the dynamics of web entrepreneurship. There are relatively few web savvy venture capitalists and investment angels in Europe compared to the United States, so they are not sure what they are investing in. The biggest hurdle is first round investments, when there is no proven track record. As regards *education*, entrepreneurship

knowledge and skills should be more embedded in engineering studies. The current entrepreneurship studies are not sufficiently hands-on. In the EU, more than in the US, talented employees avoid “risky” start-ups, although they would contribute more to economic growth in the long term. Web entrepreneurs from Greece, for example, already see the web entrepreneurship as key in targeting youth unemployment.

The findings of the study suggest the following lines of action for the Commission when stimulating web based growth and welfare in Europe.

On access to financial and other resources

There is a clear role for the Commission in enhancing access to finance and other resources such as to facilitate early stage and second stage funding for Startups. Measures on the European stage that could address the main hindrances include the following: inform and educate EU investors on the critical importance of investing in web entrepreneurship; promote re-investment by successful European and international web entrepreneurs; and enhance web entrepreneur access to European R&D facilities under H2020.

On Innovation Culture and Talent development

Possible measures to boost a dynamic web entrepreneurship culture at European level include: creating an intuitive one-stop-shop at EU level for all rules and regulation affecting web Startups; linking entrepreneurship programmes including mentoring programmes to engineering faculties for example by promoting interaction between accelerators and universities; placing more emphasis on teaching emerging rather than traditional technologies. Invite tech and business entrepreneurs to teach on emerging topics; and celebrating the achievements and opportunities of web entrepreneurship to raise its status among graduates and investors.

On Monitoring and Evaluation

All existing studies on the impact of the web economy highlight a severe lack of consistent aggregate, firm level data on web entrepreneurship across Europe. To inform policy actions implementing the Digital Agenda a serious effort is needed to improve monitoring of web entrepreneurship activity. This should include an EU level data campaign towards an observatory that harmonizes, aggregates and expands on data already collected by VCs, Accelerators and Techmedia and the web entrepreneur community. The data should fulfil the requirements of a more comprehensive model of web entrepreneurship impact.

1. INTRODUCTION

In response to a European Economy in crisis, the Commission is implementing a new agenda for growth: EUROPE 2020. The aim is to exit the current crisis while addressing long-term realities - globalisation, pressure on resources, aging and technological innovation - in order to pave the way towards growth that is both sustainable and fiscally responsible. A key pillar of growth is the Digital Agenda⁴. There is a strong consensus on the link between ICT and Economic Growth. The current market in ICT is estimated to be worth around 660 billion Euro, however, Europe only owns a relatively small share (23%) of the World Market. More importantly, the ICT sector has a strong influence on all other sectors of the economy, on public services and on the social system.

Europe continues to underinvest in ICT related research and development – in absolute terms total EU R&D spend is only 40% of US R&D spend. Key bottlenecks are weak and dispersed public R&D spending, market fragmentation and slow rates of ICT adoption. To address these bottlenecks the Commission presented several new initiatives. The Innovation Union is the flagship programmes intended to focus and pool R&D resources. Public Private partnerships and stakeholders will be stimulated to develop joint technology roadmaps and to share research results through open channels in an effort to further the single European Market. Finally, there will be new EU funded programmes to support industry lead initiatives around open standards and open innovation. Action 54 of the Digital Agenda (DAE 54) specifically aims to promote joint standard setting to develop of a new generation of web-based applications and services. *The implementation of DAE Action 54 requires a deep knowledge of the current web ecosystem and its foreseen evolution, including the identification of stakeholders involved, as well as the identification of technical, policy and economic challenges posed by future web platforms.* This report presents the findings of a study of web platforms and stakeholders commissioned by the EC in response to DAE 54.

Emergent web platforms drive value creation and growth across the economy in intricate and unforeseen ways, creating and reinventing markets and business models. Since 1995 more than two billion people joined the Internet, half of them in the past 5 years . Web platforms played a central role in this mass migration. It allowed successful web businesses such as Google and Facebook to turn garage start-ups into billion dollar global brands in a matter of years. Consumer ICT powerhouse Apple served the consumer and developer audience with the App store concept designed on top of the hugely popular iPhones and iPods through which millions of developers could create, share and sell small mobile applications (Apps). Other App platforms have since emerged creating a total market estimated

⁴ COM(2010) 245 final/2, Brussels, 26.8.2010

to worth up to 35 Billion in 2014 according to IDC⁵. In their wake followed numerous other successful businesses building on top of existing platforms or creating entirely new ones in a wide range of domains from ecommerce to health, from entertainment to finance. Unfortunately the biggest and most successful of these companies and more importantly the ones controlling entire platforms are non-European, mostly US based. With its large domestic market China is also growing large web companies⁶.

1.1. What is a web platform?

For the past five years, researchers in the theory of industrial organization have been showing an increasing interest in the economics of “platforms” and “two-sided markets”. GAVER (2009) provides a useful definition of “platforms”: “*Industry platforms are products, services or technologies that are developed by one or several firms, and which serves as foundations upon which other firms can build complementary products, services or technologies*”. When describing platform businesses, EISEMANN, PARKER & VAN ALSTYNE (2009) show the relationships in a platform-mediated network (Figure 2). *Platform sponsors* are responsible for the design and evolution of the platform system. *Platform providers* (who may also be sponsors) interact directly with *platforms users*. Supply-side users are the application developers who build on top of the core platform to expand its functionality. Demand-side users consume platform and application resources, and interact with application providers via the platform.

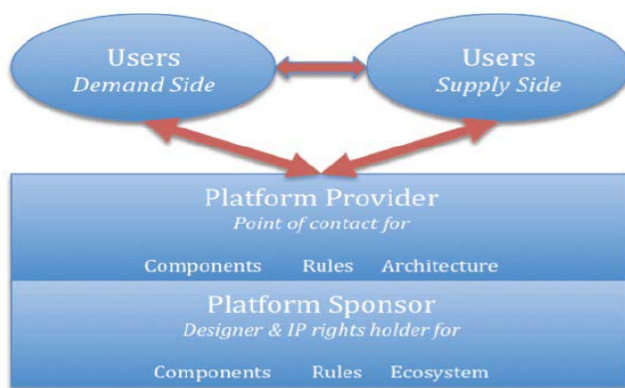


Figure 1. Elements of a platform business network (Source: Eisemann, Parker & Van Alstyne)

⁵ Compilation of figures listed here <http://appmuse.com/appmusing/how-big-is-the-app-market>

⁶ One of these is TENCENT, the Chinese online gaming and instant messaging company with a market cap of over 40B, rivaling that of Facebook.

There can be many sponsors and many providers for a given platform, open or closed:

	One provider	Many providers
One sponsor	Proprietary (AppStore, Wii)	Licensing (Windows)
Many sponsors	Joint Venture (Orbitz)	Shared (Linux, OpenSocial)

The “platform” is not neutral. Its existence allows interactions between firms and/or consumers. Much has been written about the economics of these two-sided markets. For EVANS (2004), and REISINGER (2003), a market is said to be two-sided if: “at any point in time there are (a) two distinct groups of customers, (b) the value obtained by one kind of customers increases with the number of other kind of customer and (c) an intermediary is necessary for internalizing the externalities created by one group for the other group”.

There are many examples of industries that are two-sided in nature: media markets with interaction between readers and advertisers, dating sites, credit card industry, estate agencies, etc. A particular feature of the economics of a two-sided market is the way that prices are set. Because one of the groups may be more sensitive to prices than the others, and make a greater contribution to externalities, for a platform to generate equal revenue we may find one side of the market subsidising the other. *This point is especially important for helping to understand the “new economy”, where business models afford a considerable role to giving things away for free on the Web, but also when discussing the issues surrounding competition policies.*

A recent OECD study⁷ evaluated the role of Internet *intermediaries* in the current economy. The study proposes different categories of stakeholders presented in figure 3 below. In practice the boundaries between these sets of stakeholders are not clear cut with blurring boundaries between categories and many stakeholders assuming more several roles.

⁷ Economic and social role of Internet intermediaries (2010), OECD.

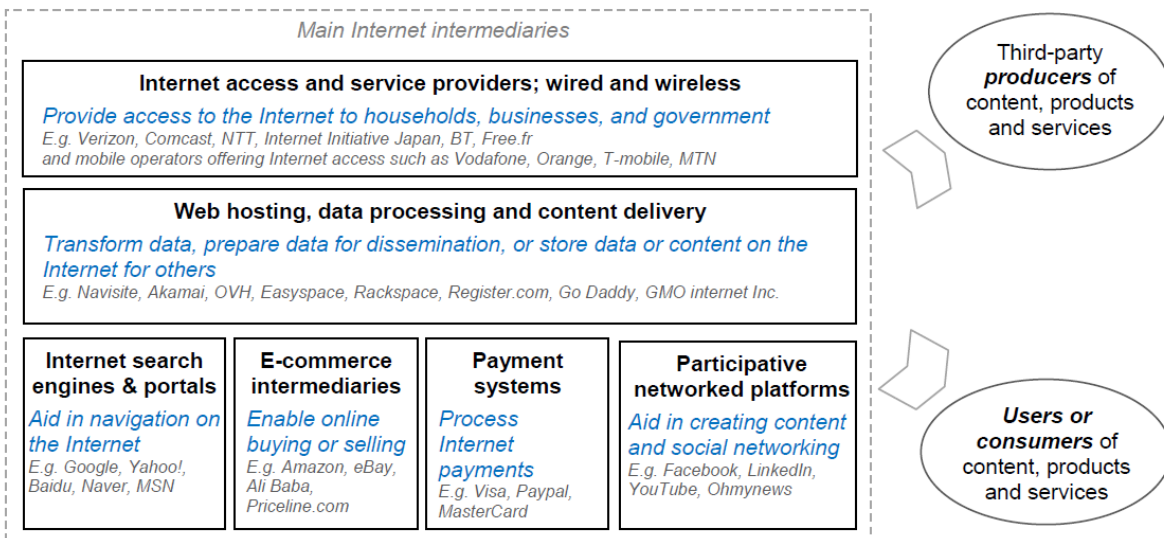


Figure 2. Stylised representation of Internet intermediaries. Source OECD Economic and Social role of internet intermediaries

BOX1. Key Findings from OECD 'Internet intermediaries' (2010)

'Internet intermediaries' provide economic growth with new businesses and productivity gains through their contribution to the wider ICT sector as well as through their key role within the Internet ecosystem. They operate and maintain most of the Internet infrastructure, which now underpins economic and social activity at a global level, and are needed to help ensure there is continued sufficient investment in both physical and logical infrastructure to meet the network capacity demands of new applications and of an expanding base of users.

'Internet intermediaries' also stimulate employment and entrepreneurship by lowering the barriers to starting and operating small businesses and by creating opportunities for 'long-tail' economic transactions to occur that were not previously possible, whereby businesses can sell a large number of unique items, each in relatively small quantities. Internet intermediaries enable creativity and collaboration to flourish among individuals and enterprises and generate innovation. User empowerment and choice are considered to be very important and positive social side effects of the access to information that Internet intermediaries provide, as well as improving purchasing power with downward pressure on prices. A critical role of Internet intermediaries is to establish trust, including through protection of user privacy.

By enabling individuality and self-expression, they also offer potential improvements to the quality of societies in terms of fundamental values such as freedom and democracy⁸.

Observation on web services from available data:

- Data processing and web hosting providers also face strong competition and this competition may originate from anywhere in the world. Growth areas include shared web hosting and software as a service, offered on subscription basis, that are also known as 'cloud computing', i.e. scalable and often virtualised resources provided over the Internet.
- Internet search engines and portals are now highly concentrated, with advertising as the primary source of revenue. They continue to experience very high growth resulting from demand for more efficient search functions and for the expanding array of services they offer on one side, and from demand for online advertising, on the other. Competition continues apace, particularly in developing markets.
- The emergence of participative networked platforms, including virtual worlds, is a comparatively recent development and online advertising is seen as a main future source of revenue for this sector. In addition, ancillary linked products – in particular mobile – drive traffic, revenue, engagement, and overall value.

The study quotes data from the United States census bureau (2008), showing that in total, Internet intermediaries identified represented at least 1.4% of total GDP value added; with 'information sector' Internet intermediaries – ISPs, data processing and web hosting providers, and Internet search engines and portals – accounting for 0.6% of GDP value added.

In addition to their direct and growing contribution to GDP, internet intermediaries, stimulate employment and entrepreneurship and drive innovation.

1.2. What are web entrepreneurs?

On a high level, the description 'Web entrepreneurs' is an umbrella term that covers startup founders who build innovative and often disruptive businesses on top of the Internet, mobile and various cloud-based technologies, programming interfaces and platforms.

⁸ See also <http://www.isoc.org/pubpolpillar/docs/internetmodel.pdf>

Successful Web start-ups can grow from a team of 2 people to 200 people in less than a year, and increase revenues tenfold in the same period from customers worldwide. Most categories of entrepreneurs in other sectors do not design or intend for their business to ever reach that kind of scale. This is what earned successful Web entrepreneurs the title of 'gazelles' - because of their rapid-growth potential. It is also what sets them apart from entrepreneurs who start restaurants, open candy stores or gardening service firms.

The present report presents a first assessment of how the ecosystem of web platforms and web entrepreneurs contributes to growth in the EU, now and in the future, knowing full well that the business models and technologies that constitute this ecosystem are still in full flux.

The report is divided into two parts. Chapter two presents a macro-analysis of the web-services economy in Europe, including a forecast of growth and a technology roadmap for 2020. It concludes with a more in-depth analysis of the ways in which web businesses add value. The second part, described in Chapter three, concerns the stakeholder consultation. Here we review the hindrances European entrepreneurs perceive when doing business on the web and the possible remedies that can be conceived at European level. The aim is to arrive at a shared understanding on the ways to grow a globally competitive European ecosystem of web services businesses. This understanding may inform the formulation of possible lines of action for the Commission to consider when stimulating web based growth and welfare in Europe.