Commissioner Carlos Moedas

Meeting with ▆▆▆▆▆▆▆ **,** ▆▆▆▆▆▆▆ **Intel**

Wednesday 25 May 2016

14:30 – 14:45

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KEY MESSAGES

- Your work with DG CNECT in the context of the EU's Open Innovation Strategy and Policy Group is impressive and very relevant for my agenda. It is a good basis for working together better in the future, notably to advance my "Open Innovation" priority.

- In the context of the Digital Single Market, the European Open Science Cloud is an initiative that responds to the needs of Data Driven Science and expectations of the scientific community.

- Intel, as an important global player in cloud computing and IoT, participates in many Horizon 2020 projects. I hope you will consider future calls for proposals and funding opportunities, including through public private partnerships.

- Supporting the merge of digital and physical worlds will be a strong orientation in future Horizon 2020 work programmes. What are expectations of Intel in this regard?

- Europe does excellent science, but we need to do more to support disruptive, market-creating innovation, which is essential for turning our best ideas into new jobs, businesses and market opportunities. So I am exploring whether we can put in place, via a European Innovation Council (EIC), an improved support mechanism for Europe's top innovators. Preparatory steps in the form of a pilot EIC could be put forward in the context of the mid-term review of Horizon 2020.

KEY FIGURES	FP7	Horizon 2020
Total number of participations	59	29
Total number of signed grant agreements	59	29
Marie Sklodowska-Curie – Number of grantees	2	1
EU total financial contribution to participation	€15.25m	€12.52m

1. STEERING BRIEF

1.1 Scene setter

You will meet ████████████████████████ of Intel █████████ Intel Labs Europe, the company's network of more than 40 research labs, development centres and open innovation collaborations spanning the European region.

Intel Corporation is the world's largest semiconductor manufacturer, producing computer, networking and communications products with annual revenues exceeding $50bn. Intel R&D and innovation in Europe is driven by a network of research, product development and innovation labs spanning the region as well as a variety of Intel business units. Intel Labs Europe (ILE) was formally established as a means of coordinating activities across this diverse and extensive network, and to strengthen Intel's alignment with European R&D. Today it consists of more than 50 locations employing more than 4500 R&D professionals.

Intel has been an active participant in EU R&I framework programmes – it counts 59 participations in FP7 with EC funding of about €15m, and 29 participations in Horizon 2020 with EC funding of €12.5m. Prominent projects in which Intel participates include:

- Superfluidity – a super-fluid, cloud-native, converged edge system(H2020),
- OrganiCity – Co-creating smart cities of the future (H2020),
- EXDCI - European eXtreme Data and Computing Initiative (H2020), and
- UNIFY - Unifying Cloud and Carrier Networks (FP7).

Many of these projects include a cloud computing component. Intel and Oregon Health and Science University also launched last year the Collaborative Cancer Cloud, which enables hospitals and research institutions to share patient genomic, imaging, and clinical data securely; hence an interest in the European Open Science Cloud may be expected. Intel's business model is increasingly based on revenues from data centres. All this reflects the growing interest of Intel for Cloud Computing technologies. According to research firm IDC, Intel controls 99 percent of the market for chips that drive computer servers. **Intel's big goal is to spur the creation of tens of thousands of private and hybrid clouds**, going well beyond today's huge public cloud providers (Amazon Web Services, Microsoft and Google) and massive private clouds (Facebook, China's Alibaba…). In the recent announcement of the new vision of Intel, five core beliefs were emphasized: connected things, memory, Moore's Law, connectivity and cloud. The CEO of Intel recently stated that "The cloud is the most important trend shaping the future of the smart, connected world - and thus Intel's future".

2. SPEAKING POINTS

Open Innovation Platforms, Open Innovation Strategy and Policy Group

- Open innovation platforms and hubs will play a crucial role in building a European wide innovation ecosystem. It is important that public R&I policies are geared towards providing support for creating such regional and local innovation ecosystems.

- I am interested to hear your views on these platforms and your experience from the Open Innovation Strategy and Policy Group.

DSM

- As we are moving from a global economy to a global digital economy most innovations will be enabled by digitalisation. Common standards for digital technologies are the foundations of an effective Digital Single Market. We need to speed up the current standard setting pace in Europe and the creation of common open standards. Horizon 2020 funds will have an important role in supporting this goal.

- As you know, the Commission sent a clear political signal in this domain through its ICT Standardisation Communication adopted on 19 April (as part of the DSM technology package). We welcome the involvement of Intel in standard setting in areas such as cloud computing and IoT.

European Open Science Cloud

- Another important component of the DSM technology package adopted last month is the European Open Science Cloud, which will provide the whole range of services necessary for scientific activities in the digital age ('data-driven science'), from easy data storage and retrieval to advanced data analytics and high-performance computing.

- Industry is expected to contribute to the development of the underlying European Data Infrastructure (integrating data centres, communication networks and computing facilities) and data analytics solutions.

- The upcoming Horizon 2020 calls related to the Science Cloud are INFRADEV-04-2016 (closing in June 2016) and EINFRA-12-2017 (opening Dec 2016). More support should be provided in the next work programmes of Horizon 2020 (2018-2020). I trust Intel will keep a close watch on these developments and funding opportunities.

Horizon 2020 and Intel

- Horizon 2020 has proven very attractive so far, with 92,000 full submitted proposals to date, for a total requested funding of € 289 billion of EU contribution. I congratulate Intel on its current record of 29 participations for the total sum of €12.52 million.

- Merging the digital and physical worlds will be a strong orientation in future Horizon 2020 work programmes. The application of digital technologies in all areas of life offers huge opportunities for generating additional growth, thereby creating hundreds of thousands of new jobs, and addressing societal challenges. What are expectations of Intel in this regard?

European Innovation Council

- Europe does not yet have a world class scheme to support the best innovations; to address this we are working on establishing a European Innovation Council in the context of the mid-term review of Horizon 2020.

- I envisage making proposals following our 'call for ideas', for which we received an impressive number of responses- more than 1000 in total - including many position papers.

- Our analysis of the responses points at a widespread view that we need to do more in Europe to foster disruptive (breakthrough) innovation, take further

steps to cut red tape, especially in SME-targeted programmes, help more young high growth innovative firms to scale up and improve framework conditions for R&I in Europe.

- I am curious about your views on this and would welcome your advice in view of providing the most effective support to innovators.

3. DEFENSIVE POINTS

3.1 Open Innovation Platforms and Open Innovation Strategy and Policy Group

Open Innovation Strategy and Policy Group has worked on Open Innovation issues for many years with DG CONNECT – how does this work link up to your work, especially under the "Open Innovation" priority?

I am aware of and I acknowledge the great work carried out by OISPG with DG CONNECT. We are open to discuss potential ways for us to learn from this cooperation and work together on this topic. Under my mandate, I have identified three main objectives under the "Open Innovation" priority: boosting private investment (including use of EFSI, financial instruments and support for the VC sector), maximizing impact (most importantly through European Innovation Council and Policy Support Facility) and pursuing regulatory reforms (most importantly through InnovREFIT and Innovation Deals). All these measures facilitate the emergence of better framework conditions for innovation, conducive to Open Innovation. I am open to discuss some more specific ways to bring about the open innovation model that you may be familiar with.

Are you involved in any initiatives supporting Open Innovation platforms, including in Horizon 2020?

The importance of open innovation platforms for building innovation ecosystems is acknowledged in the community and accepted by ourselves. Numerous initiatives have been tested to find the most effective model for stimulating this type of cooperation on EU level – we have established European Innovation Partnerships and sectoral Joint Undertakings, with the intention that they can serve that role. The EIT KICs are another model implementing this principle. Based on the experiences gathered through these experiences we will try to find the best model to support open, collaborative innovation. If you have any further ideas on this we would be very happy to learn from you.

Intel and Horizon 2020

How is the EU supporting industrial competitiveness and innovation?

Research and Innovation is one of the key investment sectors under Commission President Juncker's European Fund for Strategic Investments. Horizon 2020 will devote nearly €80 billion over the 2014-2020 period (an increase of 30% over FP7). A similar amount will be available through the Structural and Investment Funds.

Horizon 2020 is much more focused than in the past on getting ideas from the lab to market. In addition, the Commission identifies the barriers to innovation and address them by appropriate policy measures and instruments (e.g. public-private partnerships, standards, innovation procurement).

What instruments are available in Horizon 2020 for Cloud services with industry?

In particular, the contractual public-private partnerships (cPPPs) established under Horizon 2020 provide an excellent platform for research collaboration with industry. There are cPPPs directly targeting the digital value chain, such as the High-Performance Computing, which focus on capacity building and enabling Cloud infrastructure in Europe. Other cPPPs reflect

the industrial users of Cloud services, such as the Factories of the Future, which develops high value added manufacturing where digital interfaces, and real-time control and analysis are directly dependent on Cloud technologies.

3.2 European Innovation Council

Do your ambitions to create a European Innovation Council mean that the current schemes are not working?

We have made significant progress in integrating innovation into the Horizon 2020 programme. But there is scope to further improve our offer to Europe's top innovators, to make it more visible, more accessible and is fit for purpose for different types of innovation – tech and non-tech; incremental improvements and radical breakthroughs. One specific area we think we could improve is the support for disruptive (breakthrough) innovations that have the potential to create new markets, safeguard our future prosperity and secure new jobs.

Why so much focus on disruptive innovation?

Europe is relatively strong in incremental innovation and in implementing strategic research agendas. It is important for competitiveness and we do a good job in supporting it through Horizon 2020. But we need to raise our game in disruptive, market-creating innovations which will be vital for future prosperity, growth and new jobs. The leading companies of today's digital economy – Google, Apple, Facebook and Amazon (GAFA) – all resulted from this game-changing type of innovation. Such innovations will become even more important as digitisation lowers entry barriers to traditional sectors (transport, health, food, energy etc), enables disruption to existing business models (taxi services, room rentals); and puts users in the driving seat. Europe, with its strengths in traditional sectors and diversity of users, must do better in this next wave. It should be stressed that an EIC will in no way undermine the Commission's broad-based innovation policy. What we need are the right framework conditions and instruments to support <u>all</u> forms of innovation.

What is the timetable?

Discussions with Parliament/ITRE Committee and Council are foreseen during summer 2016. Preparatory work on the EIC will form a major element of the interim evaluation of Horizon 2020, and it is hoped to test elements of an EIC in the 2018-20 Work Programme of Horizon 2020 (i.e. using the existing legal framework). A fully-fledged EIC would likely need to form part of the legislative proposals for the successor programme.

What might an EIC 'pilot' look like?

It is too early to go into specifics. Nonetheless different scenarios could be envisaged, possibly in combination, for example the enhancement of key instruments (e.g. SME instrument and FET Open) with respect to fostering disruptive innovation, improved administrative procedures and marketing of the schemes, as well as the setting up of a high level group to advise on the remit of an EIC and/or on overall framework conditions for innovation.

What would success look like?

It is too soon to say what the specific success indicators of an EIC would be. Iluustrative examples might include:

- More 'scaled up' (€1 billion plus) innovative firms founded over the previous decade
- Increase in number of innovative firms
- Increase in proportion of Europe's largest firms founded over the last 20 years
- Increase in proportion of European GDP and jobs from newly formed industries/sectors over 10 years

3.3. DSM Cloud Initiative

What is the European Open Science Cloud?

The European Open Science Cloud will offer European researchers a virtual environment to store, manage, analyse and re-use research data across disciplines and borders. The initiative will be science-specific.

It is not a 'cloud made in Brussels'. It will rather federate scientific data infrastructures under a common governance to offer dedicated data services to the wider scientific community. The initiative aims to leverage and co-ordinate the significant public investment that has been ongoing for more than two decades.

The initiative will also ensure that the scientific community can re-use the enormous amount of scientific data that Horizon 2020 projects generate.

How much will Horizon 2020 contribute to the costs of the European Cloud Initiative?

Over its entire lifetime, we estimate that Horizon 2020 may contribute **over €2 billion** to the European Cloud Initiative. This includes relevant actions in 2014-15, direct actions foreseen in 2016-17 and preparations for future actions under the 2018-20 Work Programmes. The drafting of the Horizon 2020 work programmes for 2018-20 and the input of Member States will help fine-tune the financial requirements of all actions foreseen in the Communication for the European Cloud Initiative.

What are the potential benefits for the industry from the European Open Science Cloud?

To answer this, we need to take note that the 'industry' in fact includes very different players in terms of size, needs and capacity. There may be different benefits for differ**ent stakeholders. Some examples include for instance the fact that t**he initiative will foster a much better flow of research data that is directly relevant for R&I cooperation and partnerships between academia and industry. Industrial data will assist scientists (e.g. emissions), while scientific data will help industry **(too many to list). Moreover, i**n specific industrial sectors, the industry may help with the definition of standards of data interoperability (e.g. IoT data). The industry is very important for on the job training of data scientists - that cannot end with formal higher education, and to address the current EU data skills shortage. A constant and 2-way flux of data competences is needed between the two.

4. CURRICULUM VITAE

5. BACKGROUND INFORMATION

5.1 Open innovation platforms

There are many examples of successful Open Innovation platforms in Europe, with different models for supporting open innovation either in more conceptual or more practical ways. As a way of example:

The Demola platform is an international organization that facilitates co-creation projects between university students, companies and researchers, both locally and internationally. Demola is a co-creation concept that is geared to solving real challenges. Every project has an outcome – be it a new concept, a demo, or a prototype. If the partner company finds the outcome useful, the company can license or purchase the outcome, and take it for further development. Each partner has a clear role, and the work is guided by simple procedures.

Contracts, intellectual property rights, licensing models, and other legal requirements are in place and meet international business standards and practices.

High Tech Campus Eindhoven in the Netherlands brings together more than 140 companies, start-ups and institutes. Some 10,000 researchers, developers and entrepreneurs are working on developing future technologies and products that will affect the lives of billions of people. The ecosystem of open innovation helps Campus-based companies to accelerate innovation, by offering easy access to high tech facilities and international networks.

Campus companies (including Philips, NXP, IBM and Intel) strategically decide what knowledge, skills and R&D facilities they share in order to achieve faster, better and more customer-oriented innovation in the fields of health, energy and smart environments. High Tech Campus Eindhoven reports that Campus companies are responsible for nearly 40% of all Dutch patent applications.

5.2 The Open Innovation Strategy and Policy Group

The EU's Open Innovation Strategy and Policy Group (OISPG) unites industrial groups, academia, governments, and private individuals to support policies for open innovation at the European Commission. The OISPG philosophy embraces the Open Innovation 2.0 paradigm: creation of open innovation ecosystems where the serendipity process is fully-fledged. OISPG believes that involving citizens directly in the innovation process allows rapid prototyping in real life. Building a prototype is the fastest, most effective way to push an idea forward. Prototyping will foster entrepreneurship in Europe, will create jobs and will boost sustainable economic and societal growth. Therefore, the OISPG suggest various open innovation actions and approaches to industry and to other innovation partners in order to stimulate and strengthen competitiveness. The connections at institutional, as well as at industrial level gives the OISPG a focal point role in the field of Open Innovation 2.0. The OISPG bases their thinking on Quadruple Helix Innovation Model where government, industry, academia and civil participants work together to co-create the future and drive structural changes far beyond the scope of what any one organization or person could do alone. This new generation of open innovation leads to stronger economic impact and better user experience in Europe.

OISPG organises and attends several events to implement and enhance the idea of Open Innovation 2.0. Organised in Amsterdam, on 23-24 May the Open Innovation 2.0 Conference is a key event in the European Network of Living Labs (ENoLL) and living lab calendar for discussions focusing on open innovation, open living labs and smart cities.

The OI2 Conference is held under the label of the Dutch EU Presidency, and co-organised by OISPG, DG CONNECT, the European Committee of the Regions, the City of Amsterdam, the Amsterdam University of Applied Sciences and Intel Labs Europe. The conference is expected to gather more than 350 people and discuss topics like European Innovation Living labs; Innovation Ecosystems; OI2 funding opportunities under Horizon 2020; Online Engagement Platforms (Big Data, Cloud, IoT, participatory design), etc.

5.3 European Open Science Cloud

On 19 April 2016, the Commission adopted Communication on the 'European Cloud Initiative'. The Communication presents the Commission vision and blueprint for cloud-based services and world-class data infrastructure to ensure science, business and public services reap benefits of big data revolution.

The European Cloud Initiative aims to develop a **trusted, open environment** for the scientific community for storing, sharing and re-using scientific data and results: the European Open Science Cloud (EOSC). Underpinning this, the European Data Infrastructure (EDI) aims to deploy the super-computing capacity, fast connectivity and high-capacity cloud solutions required by the EOSC.

- The public and private investment needed to implement the European Cloud Initiative is estimated at **€6.7 billion**.

- The Commission estimates that, overall, **€2 billion** in Horizon 2020 funding will be allocated to the European Cloud initiative, to federate key infrastructures, to create the 'cloud' layer and to make scientific data open by default.

- The estimation of the required additional public and private investment for the European Data Infrastructure is **€4.7 billion** in the period of 5 years.

The European Cloud Initiative will make it easier for researchers and innovators to access and re-use data, and will reduce the cost of data storage and high-performance analysis.

Making research data openly available can help boost Europe's competitiveness by benefitting start-ups, SMEs and data-driven innovation, including in the fields of medicine and public health. It can even spur new industries, as demonstrated by the Human Genome Project.

5.4 European Innovation Council

Your ambition to set up a European Innovation Council (EIC) as a 'major element of the Horizon 2020 mid-term review' falls under the 'maximise impact' strand of the open innovation component of your 3'O's priorities.

There is growing interest in the EIC concept among stakeholders. The online Call for Ideas generated 1003 responses in total and numerous position papers. RTD are currently analysing the responses, with a view to publishing online a factual 'feedback statement' in June 2016.

Prior to developing a full concept for a European Innovation Council as part of the package of legislative proposals for the next Framework Programme, it is proposed to launch an experimental pilot in the latter stages of Horizon 2020 (i.e. in the 2018-20 strategic programming period), following its interim evaluation. A pilot would exploit the flexibilities

provided by the current legislation, avoiding a need for formal proposals requiring lengthy co-decision procedures.

The key policy objective of an 'EIC pilot' would be to test new approaches that would foster disruptive, market-creating innovations. The scope of a pilot could cover four broad action lines:

1) awareness and information for innovators;
2) specific support for disruptive innovation, notably by adapting the SME instrument and inclusion of inducement prizes;
3) support for scaling-up (especially through InnovFin products); and
4) expert external advice on policy.

Facts and Figures on Call for Ideas

- 1003 responses in total

  - [30%] from businesses and [47%] from research stakeholders

  - [80%] agree that disruptive market - creating innovation is an issue the EIC should do something about; [75%] agree that there are gaps in current EU support

Some excerpts from replies:

"[The lack of disruptive market-creating innovation] is a fundamental problem in Europe. There needs to be more and better routes to innovation."

"… I think the main problem is accessing and knowing about the help that already exists."

"Reduce paperwork and admin load on SMEs/Start-ups."

"Better information for the different schemes, a way people can learn if a specific instrument is for them, remove the obstacle of "hidden information" behind rules or calls."

"It remains difficult for the private sector, especially SMEs, to get involved in EU funding opportunities. Minimising bureaucracy would help."

"Have intuitive and simple programs across various accelerators and hubs in Europe, using a step-by-step approach."

"Work closer with entrepreneurs rather than with governing bodies. Entrepreneurs know the harsh realities of innovation..."

"….we need to foster and widely disseminate a culture of innovation, entrepreneurship and failure-acceptance to the industry, universities and pupils. We need to give them as early as possible in their learning age an appealing vision of what technology, engineering and science is about…"

"There are far too many different EU finance channels."

5.5 ICT Standardisation Priorities for the Digital Single Market

Standardisation is a critical element of the digital single market, and by its facilitating role in interoperability it is inevitable for the successful merger of physical and digital. However, the current standard-setting pace in Europe is a major barrier for digitally-enabled innovation and the creation of new markets. Despite this unfavourable situation the EU contributes to standard-setting funding with €20M on an annual basis against industry funding of €1B. The low level of normative EU contribution is somewhat balanced by Horizon 2020 support: in the Work Programme 2016-17 the overall ratio of topics explicitly promoting and/or mentioning standardisation activities among topics under LEITs and Societal Challenges is approximately 25%.

Most of the EU's main trading partners, and notably some large emerging economies, have recognised the importance of standard-setting as a means to achieve market access and to boost the competitiveness of their industrial players. By publishing a Communication on Priorities of ICT Standardisation on 19 April the EU is also developing political signal.

The Communication identifies six priority domains for the next wave of standardisation: 5G Communications, Cloud Computing, the Internet of Things (IoT), Big Data technologies, Cybersecurity and digitalisation of industry. Three sectoral domains: health care, connected vehicles and smart energy have been suggested as areas that could substantially benefit from standardisation.

The Communication proposes a high level process to guarantee the impact of prioritised actions. This has 5 elements:

- validation of priorities and raising efficiency of the standard-setting process in Europe,
- regularly reviewing and monitoring progress,
- better leveraging the EU support to ICT priority standardisation,
- ensuring fair and non-discriminatory access,
- fostering the EU presence in the international dialogue and cooperation on ICT standards.
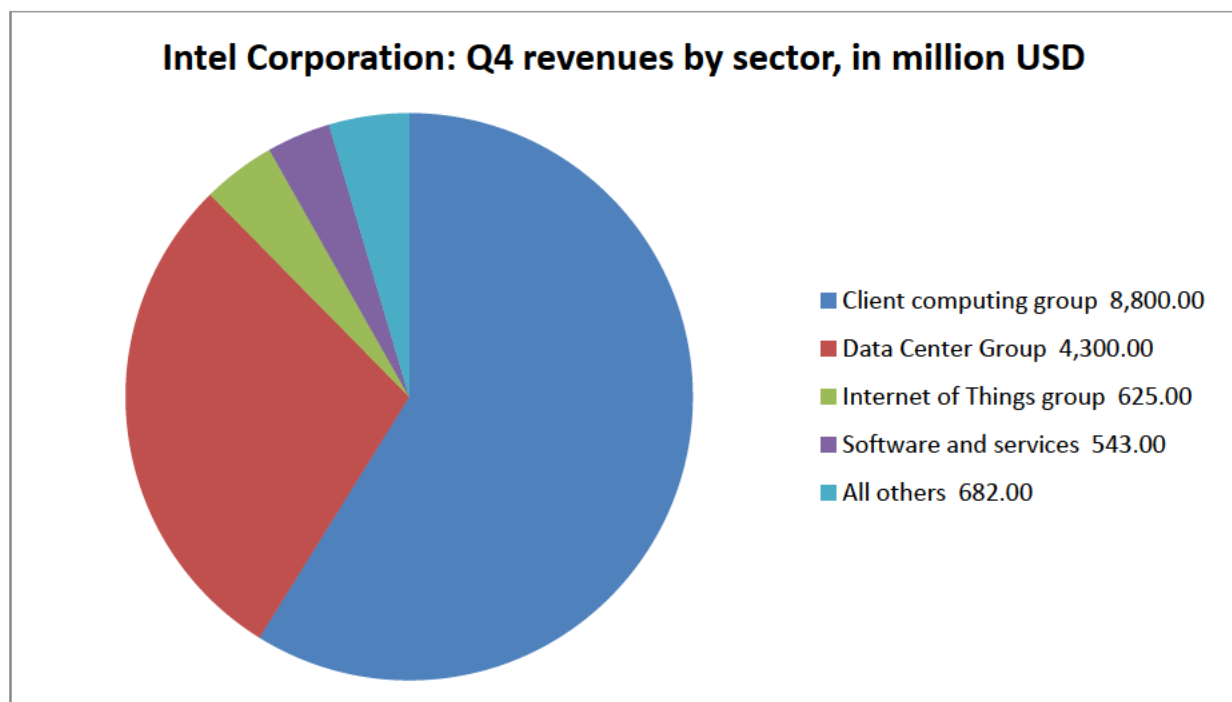
6. FACTS AND FIGURES

6.1 Intel Facts and figures

Intel Corporation is the **world's largest semiconductor manufacturer**, producing computer, networking and Communications products with **annual revenues exceeding $50bn**.

The recently published figures on **Intel's results for first quarter of 2016 include GAAP revenues for Q1 at $13.7 billion**. These results are Intel's first under a new financial reporting structure that plays up new revenue streams after client computing, the company's largest business, suffered declines. Intel's client computing group posted revenue of $7.5 billion in the first quarter, down 14 percent sequentially and up 2 percent year-over-year, the company said. Alongside announcement of results, Intel declared it would cut 12,000 jobs, or 11 percent of its workforce, by 2017 as the company restructures toward more high-profit areas like cloud.

The distribution of revenues by sector (below – for Q4 2015) reveals persisting reliance on client computing group, which has been in decline. Emerging revenue streams of Intel lie in its Data Centre Group (av. Growth rate in 2015 around 15%).

Intel Corporation: Q4 revenues by sector, in million USD

- Client computing group 8,800.00
- Data Center Group 4,300.00
- Internet of Things group 625.00
- Software and services 543.00
- All others 682.00

Intel Labs Europe (ILE) was formally established as means of coordinating activities across this diverse and extensive network, and to strengthen and improve Intel's alignment with European R&D. Today consists of more than **50 locations** employing more than **4500 R&D professionals**.

7. SOCIAL MEDIA

Intel Labs Europe: @IntelLabsEurope

Open Innovation Strategy and Policy Group: @OISPG

European Open Science Could: #EOSC

#openinnovation

#EU_EIC

Discussing European Open Science Cloud #EOSC and #EU_EIC with ⬜⬜⬜⬜ , @IntelLabsEurope @OISPG

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