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BIGGER AND SIMPLER

A guide to Europe's €80 billion Horizon 2020 innovation plan - and its journey through the EU legislature

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A guide to the EU's €80 billion Horizon 2020 innovation plan - and its journey through the EU legislature

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Horizon 2020: Europe's new €80 billion innovation plan

Science|Business follows the journey of Horizon 2020, as the legislation is debated by lawmakers in Brussels and starts to take shape. The European Union's new omnibus R&D programme promises less red tape, broader benefits, more jobs and economic growth - but is it too expensive?

EU Commissioners Tajani, Geoghegan-Quinn and Vassiliou unveil Horizon 2020 to the press in 2011

Richard L. Hudson

In November 2011, the European Commission proposed a simpler, more economically productive system for funding research and innovation over the coming decade as it formally launched what promises to be an 18- to 24-month political battle to raise its budget to €80 billion.

"A break from the past and an investment in our future" is what Máire Geoghegan-Quinn, Commissioner for Research, Innovation and Science, called Horizon 2020, the European Union's next seven-year plan, for 2014 to 2020, for research and innovation funding. The Commission's intention, she said, is to "support the best research ideas and provide major business opportunities that improve people's lives." And in case that isn't enough, "we're slashing red tape," she said.

The proposed €80 billion budget, if approved in 2012 or 2013 by the Council of Ministers and Parliament, would represent a major rise from the current €55 billion programme – and has already hit static from Britain, Germany, France, the Netherlands and other budget-conscious states. But the Commission is betting that its emphasis on simplifying the system, broadening the benefits and focusing more on economic return will by the end of the tortuous EU legislative process win support from all the member-states.

The proposal is "part of an exit strategy from the (economic) crisis," said Androulla Vassiliou, Commissioner for Education, Culture, Multilingualism, Sport, Media and Youth. The series of EU announcements in 2011 filled in many – but not all – of the details expected since the Commission first announced its broad, economy-driven 'Innovation Union' strategy in October 2010. The new plan includes big sums for the most politically appealing programmes.

Parliament's reponse

Before Horizon 2020 can kick into action in 2014, the EU Parliament and Member States represented in the Council of Ministers will have to agree on a final version of the Commission's proposal.

The European Parliament, which is becoming increasingly assertive in exercising its powers as part of the EU legislature, has released six draft reports from members of the Industry, Research and Energy committee (ITRE) in July 2012. The draft reports, which propose some significant changes, have sparked a fresh round of debate about the size and shape of Europe's next framework programme.

While major aspects of the programme have yet to be finalised, including the budget, the contribution from the ITRE committee does go a long way to shaping the programme, pointing out the strengths, weaknesses and questionable features within.

This Science|Business guide provides insight into the Commission's vision for Europe's new innovation funding plan, and gives a clear indication of the themes that will dominate the debate until Parliament and Council will sign Horizon 2020 into law - which they are expected to do in the summer of 2013.

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The Barroso II Commission occupying its seats in the European Parliament

Richard L. Hudson

The Horizon 2020 announcements were Brussels political theatre at its best, and worst. Not one, but three commissioners (Geoghegan-Quinn, Tajani and Vassilliou) vied to claim credit with the press – reflecting the months of internal argument among their respective directorates over who does what in the new plan. A barrage of interest groups, from university to corporate lobbyists, fired off pre-written press statements based on leaked versions of the plan that had been circulating, in numerous drafts, around Brussels for many months. A set of 11th-hour changes, ordered by the Commission, delayed the release of all the documentation.

The final version of the Commission's 2011 proposal includes some major changes, compared to its predecessor - Framework Programme 7:

- A 77 per cent jump to €13.2 billion for the basic-science European Research Council. The agency, modelled on the US National Science Foundation's no-politics method of awarding research grants based on scientific peer-review panels, has won wide praise for funding 'excellence' in science since it began in 2007. But even with the increase, annual grants by the ERC would be only about a third as much as at the NSF. And there has been some political backlash in eastern and southern Europe because most of the ERC grants to date have gone to science-rich northwestern Europe. The Commission's responses include several measures to reverse the brain drain from the poorer countries, including creation of 'ERA Chairs', funding special professorships to recruit "outstanding academics to institutions with a clear potential for research excellence."
- €5.75 billion for the Marie Curie Actions that provide opportunities to excellent researchers, such as fellowships and the possibility to gain experience abroad and in the private sector. In a further, typical Brussels act of political outreach, the Commission added the great scientist's Polish maiden name to the programme's title, rather than her French surname alone: Marie Sklowdoska Curie. (Similarly, in a nod to Italy, EU Vice President Antonio Tajani said a set of small-company support programmes is to be named COSME, after the Renaissance merchant-prince, Cosimo de Medici, whom he somewhat anachronistically called an "entrepreneur.")
- A Small Business Innovation Research programme – modelled partly on established UK and US initiatives – becomes part of a drive to mobilize more small and medium-sized companies to participate in the EU programmes. In all, Tajani said, up to 15 per cent of the budget is earmarked for SMEs. The plan includes providing SBIR seed funding, which SMEs can apply for singly rather than in the usual EU coalitions, and then helping connect them to the European Investment Bank and other public and private funders for expansion capital. A set of company-support efforts presently in the Competitiveness and Innovation Programme gets a new name (COSME) and a bigger budget (€2.5 billion). The expected impact: 39,000 firms a year assisted, creating 29,500 jobs and 900 new business products or services.
- An eye-popping rise, from €309 million to €2.8 billion, for the European Institute of Innovation and Technology. This Budapest-based organisation is a new EU model for getting industrialists, researchers and educators working together in specific sectors – so far, energy, climate change and ICT. The plan, though less than the €4 billion originally sought by the agency, would

permit it to add six more sectoral groups by 2020, in healthcare, food, raw materials, advanced manufacturing, security and urban mobility. The full expansion would be contingent on a mid-term review confirming the EIT is working properly. The objectives include 600 new companies started, and 25,000 masters and 10,000 PhD students trained by 2020.

- The biggest chunk of the budget, or €31.7 billion, will go to 'Societal Challenges' – a set of hot-button social and environmental issues that have risen high on the political agenda across Europe over the past five years. These are healthcare for an ageing population, food security, clean and secure energy, smart and green transport, climate action and resource efficiency, and inclusive and secure societies. The Commission left some details of these efforts to be filled in by the member-states and groups that want to propose solutions. Indeed, the Commission claims that the whole Horizon 2020 programme will be more flexible than its past research plans – which could not adapt quickly to changing political priorities.
- A further political issue appears likely to involve human embryonic stem-cell research, which heavily Catholic Poland in particular has opposed; on that point, Geoghegan-Quinn said the Commission won't fund any research in a country if the project's subject or ethics are contrary to the laws in that country.
- The future of ITER, a major international fusion-energy plant in Cadarache, France, will be in play; ITER, which long ago sailed past its original budget estimates, may end up competing with the separate Horizon 2020 budget.
- The plan may also prompt a collision among many of the EU's major constituencies. In the same time-frame, the EU will be arguing over reform of its most expensive programme, the Common Agricultural Policy: the Commission included in Horizon 2020 a big rise in food and soil research to buy support from France, Hungary and other CAP supporters – but a budget clash appears likely, anyway.
- The Commission is proposing more-active channelling towards innovation of Structural Funds – a type of regional-development funding that most member-states jealously guard as their own prerogative to control, not the Commission's.

The EU Parliament's first response to Horizon 2020

In July 2012, Members of the European Parliament released a number of draft reports proposing amendments to the Commission's Horizon 2020 plan

Shane McCollam

Following the release of six draft legislative reports from members of the Industry, Research and Energy committee (ITRE) in the European Parliament, a fresh round of debate has started about the size and shape of Europe's next framework programme, Horizon 2020. Science|Business had an in depth look at the reports and has identified six important areas: SMEs, the budget, excellence, the European Institute of Innovation and Technology (EIT), the Grand Challenges and simplification.

While major aspects of the programme have yet to be finalised, including the budget, the contribution from the ITRE committee does go a long way to shaping the programme, pointing out the strengths, weaknesses and questionable features within.

Horizon 2020: A larger role for SMEs

Horizon 2020 has been designed with the goal of enhancing the role of small and medium-sized enterprises (SMEs). Beyond the acknowledged need for SMEs to start playing a more vital part in economic competitiveness and growth, the Parliament has called for further simplification and additional measures to help ensure that SMEs have a more significant role under Horizon 2020. Members of the Industry, Research and Energy committee (ITRE) have made a number of key suggestions:

- Only SMEs may apply for calls listed under the new SME programme
- Calls under this instrument should be open calls that emphasise a bottom-up approach towards the topic
- The 'time-to-contract' under this instrument should not exceed six months
- The programme should provide SMEs with the ability to apply directly to phase two
- A single and dedicated budget linked to this instrument

A budget still in the balance

Perhaps the most striking feature of Horizon 2020 is its proposed budget of €80 billion. Yet, members of the ITRE committee in the European Parliament say this is not enough if Horizon 2020 is going to reach its goals.

Noting this budget represents a mere 6 per cent increase (in real terms) compared to the funding level of FP7 in 2013, MEPs have called for a total budget of €100 billion, as originally demanded. Beyond increasing the budget, are other key proposals put forward:

- Attracting additional funding from the Structural Funds, the European Investment Bank (EIB) and leveraging public and private sector investment
- The design of the reimbursement rate system
- A more explicit link between the Global Monitoring for Environment and Security (GMES) and Horizon 2020

Bridging the gaps towards excellence

Beyond increased funding for research and promoting innovation on a broader scale, Horizon 2020 has adopted

'excellence' as a guiding theme. This is defined as a move away from fragmentation, removing overlaps and the smoothing over the very tangible divide in the European innovation landscape.Some of the key programmes include:

- establishing 'European Research Area Chairs' to attract outstanding academics
- providing a 'seal of excellence' to project proposals that are ranked as outstanding but do not get funding because of budgetary limitations
- An online IPR marketplace where intellectual property can be bought and sold

EIT to scale-up with larger budget

The European Institute of Innovation and Technology is set to expand with the aid of funding from Horizon 2020. After receiving approximately €309 million under FP7, the institute is slated to receive a total of €3 billion under Horizon 2020.

To date, the three Knowledge and Innovation Communities (KICs), Climate-KIC, EIT ICT Labs and the KIC InnoEnergy, operate in 12 EU countries and with around 200 partners. Under Horizon 2020, it is expected that the EIT will select three new KICs in 2014 and after an assessment, another three in 2017. The Parliament has offered a few more suggestions:

- Increase the number of KICs to be created
- Create a bottom-up and open approach in the selection of KICs
- Presentation of an annual report by the EIT Director to the Parliament
- Increasing the general involvement of the Council and the Parliament
- Push for the EIT to become a truly global brand of excellence
- Move the EIT headquarters to Strasbourg

Confronting the Grand Challenges

R&D focussed on social and environmental challenges will be the largest element of Horizon 2020, with around €31.7 billion of the total budget.

While there is general approval of the themes selected, two key recommendations put forward by the Parliament to ensure the budget is able to maximise its potential in addressing these challenges are:

- Establishment of Strategic Advisory Boards for each challenge
- A minimum of 15 per cent of the societal challenges budget should prioritise bottom-up research calls with no pre-defined topic
- Creating a new and seperate security challenge called "Protecting Freedom and Security in Europe"

Sometimes too simple and sometimes too complicated

Of all the changes from previous Framework Programmes to what is proposed in Horizon 2020, reducing the bureaucratic burden is the one for which there has been most clamour. The Commission has made a set of changes that aim to allow and encourage a broader and larger range of organisations to participate in open calls, with the promise of a simpler and more efficient process.

The entire structure of the programme has also been simplified and shaped towards three main goals: promoting excellent science, increasing industrial competitiveness, and finding answers to society's biggest challenges. While the Parliament welcomes these adjustments, they remain critical of a number of the key features:

- A general clause that allows funding bodies to depart from the single set of rules that is to apply to all funding bodies
- A single funding rate that does not take the specific cost structures of different participants into account
- A simplified programme dedicated to SMEs
- No proposal of a single electronic system or portal to have exchanges with participants or allow them to check their financial viability online
- No substantial improvement in shortening the "time to grant" under Horizon 2020
- Not doing enough to increase support for industry partners

Horizon 2020's legislative journey

Following the Commission's proposal in 2011, members of the European Parliament have released a number of draft reports in the summer of 2012, detailing their feedback and proposing amendments.

MEPs are expected to bring the final reports up for a committee vote in the autumn of 2012, after which parliament as a whole will have to agree on a position.

Parliament will have to reach an agreement with its co-legislator, the Council of Ministers, in time for Horizon 2020 to go live on the 1st of January, 2014. It is expected that negotiations will last well into the summer of 2013.

Commission vows to cut the red tape

The European Commission's Horizon 2020 plan - released in November 2011 - promises a big drop in paperwork and bureaucracy for grant applicants and recipients

Richard L. Hudson

Let's say you run a small technology company, and want to apply for a European Commission research grant specifically designed to help companies like yours. Get ready for some paperwork.

First, you have to prove to the Commission that your company really is small. And guess what? Its lawyers have written a precise definition for that, and created a series of forms you have to fill out to prove you meet the definition. Time for each small company to fill out the form: Easily, hours and hours. Time for the Commission to read and process the forms: Easily, hours and hours. In fact, handling these forms is the job of about 100 Commission staffers. And all this paperwork is just to prove you are legally eligible to apply for the grant; whether you get it is an entirely different review.

Bureaucratic madness? That's exactly what the majority of European Union leaders have been saying over the past few years - and in their new, seven-year, €80 billion Horizon 2020 research and innovation plans announced 30 November, they have made simplification of the bureaucracy a centrepiece. "We're slashing red tape," promised Máire Geoghegan-Quinn, Commissioner for Research, Innovation and Science. "We want our scientists and researchers to spend more time in the laboratory, and less time filling out forms."

Indeed, this top-level willingness to reform the EU research bureaucracy was immediately hailed as a step forward by university and industry groups. But the €80 billion question for them all is whether this top-level desire will in fact translate into lower-level action. And the first hints to that are scattered through the roughly 600 pages of detailed regulations and explanations that the Commission dumped on the research and innovation world 30 November as it submitted its formal legislative proposal for Horizon 2020 to the European Parliament and Council.

Before reading all that, a little history might help. The EU research programmes have gradually evolved and grown - first, from the 1957 Euratom Treaty that began funding nuclear-power research, and then from the early 1980s when the Commission began funding computer and telecommunications research. That gradually grew into the economy-wide Framework Programme which, already at an aggregate cost of €55 billion from 2007-2013, is the world's second largest civilian research programme, after the US National Institutes of Health. The next edition, renamed as Horizon 2020, runs from 2014 to 2020 and, if the Commission gets its way, grows to €80 billion.

But as it has grown, so has the bureaucracy to administer it - and so have the scandals that go with big money. The most traumatising of them all was the Cresson Affair in the late 1990s, when former French Prime Minister Edith Cresson, in a new job as EU Research Commissioner, was accused of hiring her dental surgeon as a 'visiting scientist' with EU funds. As more problems emerged in Brussels, the affair led to the 1999 resignation of the entire Commission - and since then, the Brussels vow has been 'never again.' The result was a rapid rise in audits, paperwork, review committees, monitoring reports, evaluations and - most controversial of all - so-called time sheets to document that scientists in a lab were really working on EU-funded projects when they said they were. Indeed, until recently, the Commission

had placed in charge of the bureaucracy one of its audit experts, who had been (and is again now) in charge of its massive farm subsidies.

Pressure for change began rising a few years ago - in part because of a confrontation between the Commission and the main French research agency, the Centre National de la Recherche Scientifique. The Commission tried to claw back about €20 million in research grants - not because of any proven fraud, but because the CNRS hadn't been doing the paperwork the way the Commission auditors wanted. At the same time, universities in northwestern Europe - the scientific core of the EU - began agitating against all the money they had to spend on staff to understand and comply with the EU grant rules. The European Parliament joined the no-red-tape bandwagon about 2010. The result was announced 30 November, with a proposed new set of financial regulations for Horizon 2020. Some of the main promises:

- A simpler structure overall - with the sub-programmes grouped into three main goals (promoting excellent science, industrial competitiveness, and solutions to society's biggest challenges) with one common set of funding rules.
- Simpler and standardised rules for reimbursement of direct and indirect costs of research. This, the Commission promises, entails reimbursing research expenses at one rate, instead of three at present, for all types of participants regardless of whether they are companies (big or small), universities, government labs or other entities. It also entails reimbursing 'direct' costs at up to 100 percent for most grants, and 70 percent for prototyping, demonstration and other closer-to-market work. Indirect costs (for instance, the electricity bill at a synchrotron) get a flat 20 per cent reimbursement rate - still leaving researchers to scramble for local funding for the rest.
- Time sheets go - for some. The new rules would let a grant recipient simply certify that the researchers on a project actually worked the time they claimed, rather than keep a time sheet for each one. But that only applies to full-time staff. Part-time and occasional workers on a project are still stuck with time sheets. Grant applicants can use average personnel costs in their forms, rather than individual rates for each type of worker.
- A greater move to online, simplified forms. The Commission has been struggling for years to bring its research paperwork into the Internet Age, but has already started letting repeat applicants re-use their old forms rather than fill out new ones for each grant. That 'paperless' approach will apply to the entire Horizon 2020 system. And the dreaded small-company forms will go.

But does the Commission really mean it? That's the question on the minds of most university and company grant administrators. The Commission promises to cut by 100 days the 'average time to grant'; that's about 350 days now. And it further vows that only 7 percent of grant recipients will get a post-grant audit - a paperwork nightmare, especially for small companies.

Parliament: Sometimes too simple and sometimes too complicated

In the summer of 2012, MEPs said work is still needed for Horizon 2020 to strike the balance between flexibility, coherence and reliability

Shane McCollam

The greatest clamour for change in Horizon 2020 has been for a simplification of procedures compared to the over-weaning bureaucracy of its predecessor FP7. In rising to this challenge, the Commission has made a set of changes that aim to allow and encourage a broader and larger range of organisations to participate in open calls, with the promise that they will be met by a simpler and more efficient process.

The entire structure of the programme has also been simplified and shaped towards the three main goals: promoting excellent science, increasing industrial competitiveness, and finding answers to society's biggest challenges. While the Parliament welcomes these adjustments, they remain critical of a number of the key features:

- A general clause that allows funding bodies to depart from the single set of rules that is to apply to all funding bodies
- A single funding rate that does not take the specific cost structures of different participants into account
- A simplified programme dedicated to SMEs
- No proposal of a single electronic system or portal to have exchanges with participants or allow them to check their financial viability online
- No substantial improvement in shortening the "time to grant" under Horizon 2020
- Not doing enough to increase support for industry partners

One of the most signalled aspects of the simplification process within Horizon 2020 was the announcement of a common set of funding rules that would apply across the programme. This is crucial, since the money for Horizon 2020 is distributed by range of funding bodies. Yet, in its proposal, the Commission has stated that "a funding body may establish rules which depart from those laid down." As MEP Christian Ehler points out, "allowing a funding body to create its own rules contradicts the idea of a single set of rules" and "there needs to be balance between appropriate flexibility, coherence and necessary reliability". During FP7, the 'average time to grant' was around 350 days. For Horizon 2020, the Commission has promised that they will reduce this period by about 100 days. For Ehler, this is not good enough: time to grant should not go beyond six months. The delay causes particular difficulty to industry. If Horizon 2020 expects to attract excellent research partners from all over the world, and to foster innovation, especially within SMEs, waiting times must be cut.

EU Parliament challenges Horizon 2020 funding rates

In their July 2012 response, MEPs say the European Commission's proposed flat rate funding scheme is an over-simplification that will favour industry over academics

Peter Koekoek

Influential Members of the European Parliament want a reimbursement model for Horizon 2020 that is more in line with the current Framework Programme 7 (FP7), decrying the European Commission's proposal for one flat rate, as an "oversimplification," which would favour industry over universities and discourage mixed research and innovation projects.

The Commission is proposing to replace FP7's many reimbursement rates with two flat rates, one for research and one for innovative, close to market, activities, regardless of the type of participant and not taking into account indirect costs. "We don't see the Commission's proposal as a simplification – we see it as a very political move, to just show one cost model," Christian Ehler MEP (EPP) told Science|Business.

Ehler, who is the rapporteur in charge of guiding the Horizon 2020 Rules of Participation through the European Parliament, says he suggested a different model in his draft report because the Commission didn't provide enough backup for its flat rate proposal, "We didn't have sufficient empirical evidence yet [when we issued the report], which was also the problem for the Council, it was pretty much a black box: it sounded nice – but it was a very political proposal. But now, the devil is in the details."

"We need more discussion and more empirical evidence from the Commission to find out what the strategy is behind their proposal," Ehler stressed.

Two flat rates

Under the European Commission proposal, a university, research institute or company would get one hundred per cent of eligible direct costs for a Horizon 2020 research project reimbursed. On top of that, participants would receive a flat rate of twenty per cent of the total eligible direct costs, to finance any indirect costs.

The rate for innovative projects would be set at seventy per cent of eligible direct costs, and again twenty percent of that as a flat rate for indirect costs.

"It is more a simplification for the Commission, than it is a simplification for the participants," said Ehler. In comparison to FP7, the Commission's proposal would benefit industry by doubling the reimbursement for its direct project costs, says Ehler. But any participant with large R&D facilities facing high indirect costs will lose funding, compared to FP7.

Christian Ehler MEP (EPP)

In his report, Ehler argues that while the Commission's proposal would lead to a 7.2 per cent overall increase of the total EU contribution per project when compared to FP7, the extra money would mainly go to industry. Reimbursement rates for industry participants would rise by 46.8 per cent, and for SMEs by 7.7 per cent, while slightly reducing the rates for universities and research institutes.

The Commission's proposal to increase industry funding, states Ehler, would merely provide a "cosmetic boost" to industry participation in the EU's research programmes, while failing to address the "real needs of industry participants" such as a shorter period between applying and receiving an EU research grant.

Full cost

The model Ehler is proposing instead would mean that rather than two maximum rates, Horizon 2020 would have twelve separate funding rates – much to the horror of the Commission. "All of a sudden, just by proposing this, we see

Rates: The Commission's proposal

Research and Development (R&D)	Direct costs + flat rate	100% + 20%
Close to Market (CtM)	Direct costs + flat rate	70% + 20%

the figures coming out of the Commission," said Ehler, satisfied by the impact of his report, and pointing to the "empirical evidence" the Commission had initially failed to provide.

Ehler's scheme, which he says is still simpler than FP7's model, is based on whether a participant is a university or research institute, an SME or an industry participant, while suggesting different rates based on whether actual indirect costs are reimbursed or the Commission's proposed fixed amount is used to cover indirect costs.

Rates: Proposals by Christian Ehler MEP (EPP)

		Uni/RTOs/Other	SME	Industry
R&D	Direct costs + flat rate	100% + 20%	100% + 20%	70% + 20%
	Full costs	70%	70%	50%
CtM	Direct costs + flat rate	100% + 20%	70% + 20%	30% + 20%
	Full costs	70%	50%	35%

"All big research universities in Europe advocate a full cost model, as does the majority of industry," says Ehler, whose model contains higher reimbursement rates for funding universities and research institutes than for SMEs and industry participants.

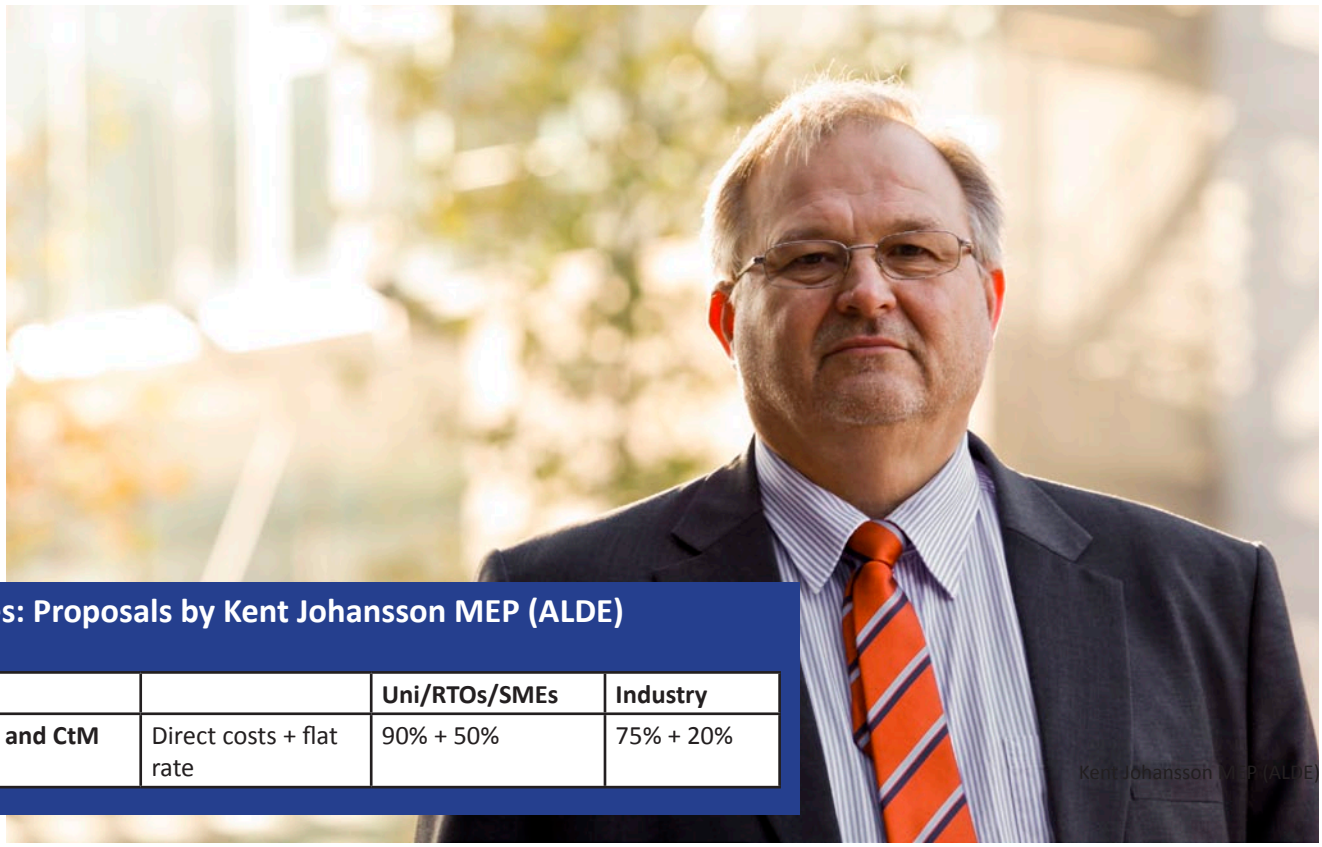
Ehler also proposed raising the level of funding for innovative close to market projects, in a move to encourage research centres and universities to mix research and innovation activities – something that would be discouraged under the Commission's Horizon 2020 proposal, Ehler said.

Alternative

While Ehler indicated that Parliament's final proposal – to be determined after the summer – is likely to be different from his initial twelve rates scheme, Kent Johansson MEP (ALDE) has put forward an alternative scheme, aiming for a model somewhere between the Commission's proposal and Ehler's idea.

Johansson, who serves on the ITRE committee as ALDE's shadow rapporteur for the Horizon 2020 package, told Science|Business that he would propose Horizon 2020 keeps two funding rates, but would want to differentiate based on participant type, rather than activity type – scrapping the difference between research and innovative activities and introducing two new rates, one for universities and SMEs, and one for industry participants. Johansson proposes a higher indirect costs flat rate for universities and research institutes instead of reimbursing actual indirect costs, like Ehler.

Johansson believes it makes sense to hold off discussing actual reimbursement percentages at the moment, as the amount of funding that will be available for Horizon 2020 is still unclear. Joking that there currently seems to be "a competition between the rapporteurs about who can create the best rules of participation," Johansson said his proposal is, "to start talking about what the funding model should achieve."



Kent Johansson MEP (ALDE)

Rates: Proposals by Kent Johansson MEP (ALDE)

		Uni/RTOs/SMEs	Industry
R&D and CtM	Direct costs + flat rate	90% + 50%	75% + 20%

Small is beautiful, according to Horizon 2020

The Commission's 2011 proposal is said to make a big splash for small companies - they are set to attract at least €6.8 billion

Richard L. Hudson

Wanted: Young, technically educated entrepreneur, with a yen to start a cutting-edge technology-based business that could one day grow into a multinational Google or Facebook. A plus: A passion for using the business to solve society's grandest environmental or social challenges. A necessity: Patience with bureaucracy.

If you fit that job description, you may be in luck. The European Commission's new, €80 billion, seven-year plan for research and innovation is stuffed with new initiatives for research, finance, and networking at small and medium-sized enterprises (SMEs.) Indeed, support for SMEs is supposed to hit at least €6.8 billion - and it underpins a dominant theme of the plan, called Horizon 2020: Using research and innovation funding to create economic growth and jobs.

Horizon 2020 aims to make Europe "a better place to do business and create jobs," said Máire Geoghegan-Quinn, EU Commissioner for Research, Innovation and Science. And "SMEs are the backbone of the European economy."

According to the Commission, SMEs number about 99 per cent of all companies in Europe, provide 67 per cent of jobs, and generate 58 per cent of total company turnover in the European Union. They are also politically popular: In contrast to the early days of EU research programmes, when mammoth 'national champions' like Philips, Siemens and Alcatel were viewed as the most important beneficiaries, today most European politicians would rather be photographed visiting a scrappy garage start-up that hopes to be the next Apple. In truth, big companies will still get a big share of the EU research and innovation budget under Horizon 2020. The Commission said €17.9 billion of the total €80 billion budget would go to 'industrial leadership' - a phrase covering all kinds of participants, but likely to be disproportionately important to Europe's leading technology, pharmaceutical, energy and transport companies. Of that category, €13.78 billion goes to a new set of 'key enabling technologies' such as microelectronics, nanotechnology, photonics, advanced materials, advanced manufacturing, biotechnology and aerospace. The Commission also plans many 'demonstration' projects, which usually involve big budgets and big corporate co-investors. And as in past years, the main beneficiaries from the programme overall will be universities and government labs, which in 2009 received 76 per cent of the Commission's R&D spending.

But SMEs are in. The R&D plan follows passage in 2008 of the first EU Small Business Act. And the Commission likens some of its Horizon 2020 proposals to the Small Business Innovation Research programmes in the UK and US - though when you read the fine print in the approximately 600 pages of documentation released by the Commission, you find the main similarity appears to be in the kind of companies targeted, rather than in the programme details of how they get the money.

Among the initiatives announced by the Commission 30 November:

- A new 'SME instrument' to finance innovative companies. The idea is to let SMEs in all fields of science, technology and innovation apply for funding singly, or in groups. The support is to "cover the whole innovation cycle" from research

to market. It begins with funding for technical feasibility and proof of concept studies, and continues to a second phase of funding for development, prototyping and other demonstration work. In the final, commercialisation, phase the Commission won't directly fund work, but will help connect the SMEs to other programmes that might.

- New equity and loans for innovation at the European Investment Bank. While not exclusively for SMEs, these finance mechanisms are intended to help remedy the lack of venture and growth capital from private investors in Europe. The bank and its European Investment Fund will have two programmes for investing indirectly in companies, funding early-stage VCs and mezzanine capital that would, in turn, go to individual SMEs. Also, the bank is to set up an 'SME window' to loan money directly to research-driven SMEs and small mid-cap companies. And it will also continue a loan-guarantee programme that has been widely praised among EU policy makers.
- A collection of initiatives, totalling €2.5 billion, to help SMEs find funding, network, and grow. The Programme for Competitiveness of Enterprises and SMEs, or COSME in Euro-speak, will have a €2.5 billion budget and complement the new bank facilities, continue operating a network of offices throughout Europe that are intended to be one-stop-shops for assistance, and promote entrepreneurship training and entrepreneurial attitudes. A major problem, the Commission says, is that EU surveys show just 45 per cent of Europeans want to be self-employed, compared to 55 per cent in the US. The COSME programme will also include service industries, such as tourism.

EU Industry and Entrepreneurship Commissioner Antonio Tajani

Parliament: Make it easier for SMEs

In their July 2012 feedback, Members of the European Parliament push to increase participation and success rates of SMEs in Horizon 2020

Shane McCollam

Horizon 2020 has been designed to increase the role of small and medium-sized enterprises (SMEs). Beyond the acknowledged need for SMEs to contribute to economic competitiveness and growth, the Parliament has called for further simplification and additional measures to give SMEs a more significant role under Horizon 2020.

Members of the Industry, Research and Energy committee (ITRE) have made a number of key suggestions:

- Only SMEs may apply for calls listed under the new SME programme
- Calls under this instrument should be open calls that emphasise a bottom-up approach towards the topic
- The 'time-to-contract' under this instrument should not exceed six months
- Provide SMEs with the ability to apply directly to phase 2
- A single and dedicated budget linked to this instrument
- A voucher given to SMEs applying directly to the second phase that would enable them to work individually or with a research partner of their choice from a member state

Both the Commission and the Parliament are satisfied with the new programme for SMEs. It is designed to promote a greater role for SMEs in research and innovation by providing broader and simpler access to funds. To pay for this, around 15 per cent of the budget of the "Societal challenges", and a portion of the "Industrial Leadership" have been proposed by the Commission, with the Parliament arguing for 15 per cent to be the absolute minimum and the setting of single budget.

The new instrument is built mostly on the US Small Business Innovation Research Programme (SBIR) which uses Federal funds to fill gaps in funding and encourages small domestic business to engage in research and development which has potential for commercialisation and is critical to US economic priorities.

Opportunities will be offered to SMEs of all stripes, including those that are high-tech, research driven, social and service oriented. Like SBIR, the dedicate SME instrument will cater to SMEs over the three main phases of the innovation cycle, while making it simple for them to have a seamless transition from one phase to the next after a review of progress.

Bridging the gaps towards excellence in Horizon 2020

More needs to be done to promote synergies between Europe's various funding programmes, say MEPs

Shane McCollam

Beyond enhanced funding for research, and promoting innovation on a broader scale, Horizon 2020 has adopted 'excellence' as a guiding theme. In this context, excellence is defined as a move away from fragmentation, whilst reducing overlaps and working to bridge the still very tangible inequalities in the European innovation landscape.

Some of the key programmes include:

- establishing 'European Research Area Chairs' to attract outstanding academics
- providing a 'seal of excellence' for positively evaluated project proposals that have not been able to achieve funding because of budgetary limitations
- An online IPR marketplace where intellectual property can be advertised in order to bring together the owners and users of IPR

In addition to an enhanced role for bottom-up research, the guiding principle of excellence is expected to bolster what already exists in the European research and innovation communities via consolidation and complimentary activities.

"Spreading excellence and widening participation in Horizon" is the title under which it is expected that Horizon 2020 can increase the competitiveness of Europe by means of social, territorial and economic cohesion.

In their review of the Commission report, both MEP Maria Da Graça Carvalho and MEP Teresa Riera Madurell argue that while the two programmes have different objectives "both Horizon 2020 and the Cohesion Policy are extremely important to reach the objectives of Europe 2020, and as such, synergies and complementary agendas between them are essential." These synergies are explained as bridges that are to be built in both directions, thus linking the two programmes. In practice, these bridges are to be made up of a number of programmes that are complimentary and create interoperability between the two funding schemes.

In addition to the creation of new programmes to bridge the divide between Horizon 2020 and Structural Funds, there is also an expectation that independent committees and the Parliament will have more say in decision making through annual reviews. Both Carvalho and Madurell have called for the creation of dedicated Strategic Advisory Boards, made up of independent high-level experts, to contribute by defining research and innovation programmes, and address fragmentation in each of the societal challenges.

Parliament in push to open up Horizon 2020

Key MEPs are calling for specific measures to widen the horizon of the EU's flagship research programme and ensure there is more participation from member states with less-developed R&D systems

Peter Koekoek

Leading members of the European Parliament are pushing for new initiatives to spread Horizon 2020's proposed €80 billion in EU research and innovation funding more equitably across Europe, without abandoning its core principle of excellence.

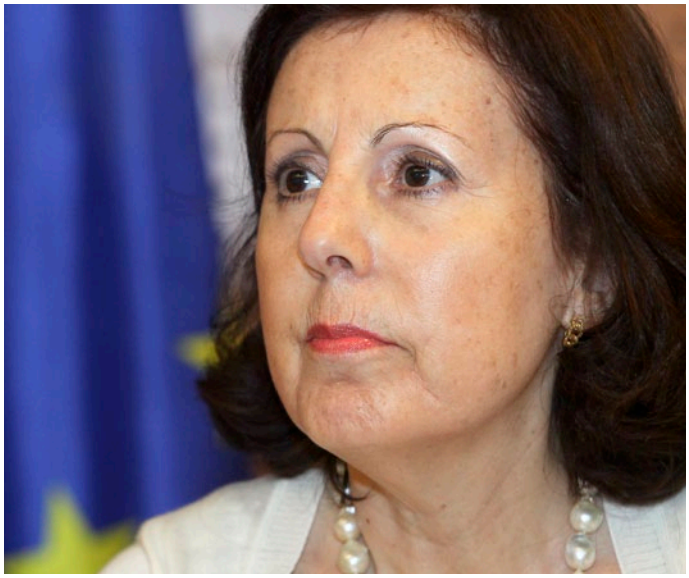
Suggested measures for achieving this include matching richer universities with less well-off counterparts to apply for funding together in a new 'twinning' scheme, creating a grant programme for researchers who return to less-developed member states, and improving coordination between Horizon 2020 and Europe's structural funds.

The proposals put forward in a draft report published today (31 May) by Maria da Graça Carvalho MEP (EPP), a member of the Industry, Research and Energy (ITRE) committee, are intended to make Horizon 2020 funding more accessible to smaller research institutes and projects that find it hard to compete with some of Europe's richest research organisations.

Currently, the lion's share of EU R&D funding ends up in wealthy member states, like the UK, France and Germany. This has long been a source of contention between less-developed, newer, member states and the richer countries in the north and west of Europe, which have so far resisted calls to create geographic quotas. Carvalho now argues that Europe does not have to abandon the principle of excellence in order to spread R&D money more equally across the continent.

Parliament's new proposals are being made as European research ministers reached an agreement on the overall structure of Horizon 2020. Talks about the more specific programs will continue into next year, indicated Danish research minister Morten Østergaard: "The next step is that the Cypriot and Irish Presidencies will continue the negotiations on Horizon 2020 with the European Parliament," he said at today's meeting. Cyprus is set to take over the Council presidency from Denmark in July, to be succeeded by Ireland in 2013.

"We have now to hear the opinion of the European Parliament on Horizon 2020," said EU research Commissioner Máire Geoghegan-Quinn at the same meeting, promising research ministers to "help the current and incoming presidency to deliver on the other Horizon 2020 legislative proposals, namely the Rules for Participation and Dissemination, the Specific Programme and Euratom."



Maria da Graça Carvalho MEP (EPP)

Formulating amendments

Carvalho is the Parliamentary rapporteur for the "Specific Programme Implementing Horizon 2020," making her responsible for formulating the Parliament's amendments to the European Commission's legislative proposal for Horizon 2020 that will be included in the final version of her report. In this position, Carvalho will lead the formal discussion of the Parliament's position with research ministers in the Council, and with the European Commission. Her report is one of a series of formal responses on the seven-year plan for funding research, development and innovation, going from the Parliament to the Commission this week. Final decisions on the exact shape of Horizon 2020 won't be made until 2013.

"It is not only the well-established institutes that put out excellent research," Carvalho told Science|Business. Many smaller research groups and projects based in newer member states don't have the resources to apply for EU research grants, as things stand today – even though they may produce excellent research. Carvalho outlined her proposals in an interview with Science|Business.

1. Create a twinning scheme for universities

The European Commission should allow universities in richer countries and those in less-developed member states to team up and apply for Horizon 2020 funding together. This would be a "win win situation," Carvalho said, allowing a less-developed institution to benefit from the expertise and good name of its more-renowned counterpart, which would in turn have the benefit of attracting excellent students from its partner, and an increase in scientific publications.

Carvalho had first-hand experience of such partnerships as a researcher from the Technical University of Lisbon working at Imperial College London. The collaboration was beneficial for both institutions, she said. It also spurred further development of Portugal's R&D system, since after Imperial College, Carvalho went on to become a professor in Lisbon, and later held the post of science, innovation and higher education minister in the Portuguese government under then prime-minister José Manuel Barroso.

Horizon 2020 should provide funding for travel and infrastructure to support this twinning scheme, proposes Carvalho.

2. Reward researchers who return to less developed regions

The European Research Council (ERC) – the EU's main basic research funding mechanism - should reward researchers who return from a career in a highly-developed member state to conduct research in one of the EU's less-developed regions, says Carvalho. The grants would also apply to researchers currently working outside Europe.

This suggestion aims to help reverse the brain drain from eastern Europe to the West and to the US.

3. Include science in the FET funding scheme

Carvalho proposes including basic science in the Commission's Future and Emerging Technologies (FET) programme and renaming it Future Emerging Science and Technologies (FEST). Currently FET funds ICT-related basic research only.

4. Establish ERC grants for groups of researchers

The ERC should expand a current pilot project - called Synergy Grants – in which it hands out grants to groups of researchers, rather than individuals, in an attempt to make basic research funding more accessible for smaller, "less well known," research groups, said Carvalho.

The measure would make more room in the ERC projects for researchers in newer member states who don't have access to the resources provided to scientists employed by more renowned institutions in well-developed member states, said Carvalho. The ERC's main focus, however, should still be on individual researchers, she added.

5. Link the structural funds and Horizon 2020

Carvalho's report calls for a formal link between the EU's structural funds – which are intended to reduce disparities in wealth between different regions and member states in Europe – and Horizon 2020.

Structural funds should be used to prepare countries for participation in Horizon 2020 by financing new equipment, developing human resources and creating clusters in Horizon 2020's priority areas. The funds could also provide small grants to support the preparation of Horizon 2020 research proposals, says Carvalho.

Once Horizon 2020 research projects are completed, structural funds could be used to complete the innovation cycle by funding for pilot schemes and demonstration projects.

The Horizon 2020 budget

There's some suggestion the Commission's €80 billion proposal could face rigorous trimming by a Council hung up on austerity, but Carvalho indicates the European Parliament will resist this saying, "I don't believe the European Parliament should agree with anything less." If the Council wants to focus on growth and jobs, "they can't cut Horizon 2020," she said.

Carvalho foresees a delay in the adoption of the overall Horizon 2020 programme, indicating that there would not be a provisional agreement between the Council and Parliament before spring 2013. The delay would mean the Irish presidency in the first sixth months of 2013 will play a major role in the Horizon 2020 negotiations.

A timely agreement is essential to give the Commission enough time to prepare for the first calls for proposals that are set to be announced in January 2014, when the current R&D scheme, Framework Programme 7, expires.

For the EIT, more is better

The European Commission's 2011 plan projects a tripling of the new agency's innovation networks

Education Commissioner Androulla Vassiliou

Richard L. Hudson

One of the biggest beneficiaries of the European Commission's new research plan is everywhere and nowhere at once: The widely distributed networks of the European Institute of Innovation and Technology. The EIT's seven-year budget is to rise to €2.8 billion, from €309 million presently.

The EIT is an EU experiment in trying to get universities, companies and policy makers working together to promote more innovation and enterprise.
It has a small headquarters staff in Budapest, from which it supports three scattered clusters of partners - so-called Knowledge and Innovation Communities - in technologies for climate change, energy and ICT. Each KIC has about 30 core partners led by five or six 'co-location centres' - in essence, hubs for the lab work, teaching and marketing of innovations that the KICs were formed to do. But beyond these centres, there is no single place that the EIT lives - and that distributed structure is set to grow.

The 2014-2020 plan for the EIT proposed by the Commission 30 November envisions the number of KICs growing from three to nine, adding six new themes: healthy living, raw materials, food security, added-value manufacturing, online security, and urban mobility. Partners for the first three would be selected in 2014, and the last three in 2018 - provided that a mid-term review of the EIT is favourable. Indeed, the way the Commission has structured the plan, the review promises to be more than the usual bureaucratic benediction: The EIT's budget is coming out of other EU programmes that have a stake in the review, and the final tranche of funding will have to be voted separately by the European Parliament when the time comes.

That reflects the EIT's painful birth. It began in a 2006 speech by EC President José Manuel Barroso that there should be a 'European MIT' - which promptly got the hackles up of leading European universities that already felt there were several: them. A few years of political manoeuvring followed to win allies, and the distributed no-bricks-and-mortar approach appeared, involving the universities as part of the system rather than competitors to it. In 2010 the first three KICs were begun, after prolonged negotiations among the partners about how they would work and fund it (about 25 per cent of the money comes from the EIT; the rest is from other government or private funders.)

The results have started to appear. In a year, the Commission says, 700 masters students have begun or completed KIC-branded courses, six start-up companies have been formed, and 50 more are planned. Scaled up, the Commission expects by 2020 that the EIT will have fostered 600 start-ups and provided training for 10,000 PhDs and 25,000 other students.

But with the growth is supposed to come tighter management, according to a Commission submission to the European Parliament and Council. The difficulty of setting up the first KICs was "underestimated by all parties," it said, and "involved a substantial 'learning by doing.'" It calls for "clearer guidance" for future KICs, more coordination and cross-fertilisation among the KICs, regular evaluation of the KICs' progress, a "true EIT 'corporate identity' around a set of shared values," and a shrinking of the EIT's 22-member Governing Board to 10.

Parliament: Global recognition for the EIT

The EIT needs to do more to be seen as a global brand of excellence, say MEPs in their July 2012 reply to the Commission's proposals

Shane McCollam

Following its formation in 2008, with a mission to consolidate the knowledge triangle of higher education, research, and innovation under a single roof, the European Institute of Innovation and Technology has received €309 million from FP7. Under Horizon 2020 the institute is slated to receive a total of €3 billion to further its work in closing the gap between research, education and entrepreneurial activities by creating Knowledge Innovation Communities (KICs) across Europe.

To date, the three KICs, Climate-KIC, EIT ICT Labs and the KIC InnoEnergy, operate in 12 EU countries and with around 200 partners from the three corners of the knowledge triangle. Under Horizon 2020, it is expected that the EIT will select three new KICs in 2014 and after an assessment, another three in 2017. The Parliament has offered a few more suggestions:

- Increase the number of KICs to be created
- Create a bottom-up and open approach in the selection of KICs
- Presentation of an annual report by the EIT Director to the Parliament
- Increasing the general involvement of the Council and the Parliament
- Push for the EIT to become a truly global brand of excellence
- Move the EIT headquarters to Strasbourg

The Commission has put forward that the "EIT shall launch the selection and designation of KICs according to the priority fields and time schedule defined in the Strategic Innovation Agenda (SIA).The new KICs that are expected to be established are: healthcare, food, raw materials, advanced manufacturing, security and urban mobility.

In their review of the Commission's proposals, MEP Marisa Matias and MEP Philippe Lamberts have encouraged an alternative approach. While Matias and Lamberts acknowledge that the EIT should have the autonomy to organise future KICs based on general themes fitting with the grand challenges and that this list is neither closed in terms of theme selection, nor the number of KICs to be established within a certain timeframe, they suggest that the SIA is too rigid and that the proposed thematic areas have been selected prematurely.

The MEPs encourage the EIT to move beyond its current model of only selecting KICs once a certain level of critical mass already been achieved. They should designate as many KICs as financially feasible and whose scope falls within specific objectives of either the grand challenges or the "leadership in key industrial technologies" pillar of Horizon 2020, or are at the interface between those objectives. Furthermore, in the process of designating the KICs, the EIT should take into account that not all KICs would have the same financial needs, some being more capital-intensive than others.

In line with pushing the EIT to become a global brand of excellence, the draft reports from the Parliament also point towards a desire for an increased role for the Parliament and Council. While it is agreed that "the SIA shall define the long-term strategy for the EIT within the EU innovation landscape and shall include an assessment of its impact and its capacity to generate innovation added-value for the Union ", the Rapporteurs believe that in order for an enhanced bottom-up approach and diversity linked with the grand challenges, it is necessary for the EIT and Commission to engage in a yearly dialogue with the Parliament and Council.

The MEPs want the EIT to be subject to a review procedure not just by the Commission, but also the Council and the Parliament. An aspect of this would involve the Director of the EIT giving an annual report to the Parliament.

The expectation of the EIT under Horizon 2020 is that it moves beyond simply being a sum of its parts, and establishes itself as a global brand of excellence in innovation. This needs to be done through long-term strategic planning and increasingly multi-disciplinary collaboration that serves to foster not just technological innovation, but systems and public sector innovations, to increase impact and reshape the European innovation landscape. According to Matias, if the EIT is to truly become a European institute, it needs to scale up, adopt a more holistic approach within the grand challenges and exploit its flexibility to push for simplification.

Philippe Lamberts MEP (Greens)

MEPs propose moving the EIT to Strasbourg (and Parliament to Brussels)

Strasbourg should become the EU's innovation capital, say MEPs in their first official reply to Horizon 2020. The proposal is an attempt to break the deadlock with France about the seat of the European Parliament

Peter Koekoek

MEPs have managed to slip one of the European Parliament's main disputes with the Member States – the location of its seat - into the discussion about the EU's next R&D funding programme, Horizon 2020. EU deputies are proposing to relocate the European Institute of Innovation and Technology (EIT) to Strasbourg - saying its presence could help Strasbourg become the EU's innovation capital. This in turn would make up for the loss in prestige and the negative economic impact that a move of the European Parliament to Brussels would cause.

Alexander Alvaro (ALDE), Vice President of the European Parliament, told Science|Business the idea to base the EIT – which is set to receive a massive boost in funding under Horizon 2020 - in Strasbourg, first surfaced in 2005, when the EIT was being set up. Alvaro, one of the leaders of the 'Single Seat' campaign which aims to end Parliament's monthly expensive trip to Strasbourg says there was no majority for it at the time, but notes that times have changed, pointing to a recent string of "absolute majority votes for a single seat."

Marisa Matias MEP (GUE/NGL) is now proposing the relocation of the EIT headquarters from Budapest to Strasbourg in her Horizon 2020 draft report. Matias, one of the MEPs responsible for guiding the EIT legislative proposal through Parliament as rapporteur in the Industry, Research and Energy (ITRE) committee, says the Parliament's buildings in Strasbourg – which are deserted for most of the month - would provide the EIT with the space, "to host big conferences, seminars, training programmes and courses, as well as technology or science exhibitions."

Strasbourg as the EU's innovation hub

Apart from a strong university culture, Alvaro believes that Strasbourg has the right ingredients to become the EU's innovation capital. "Since the regional border areas between France and Germany, Luxembourg and Belgium already profit from a closely interlinked network combining efforts in the business sector, infrastructure projects and not least higher education, there would be plenty of fertile ground for the EIT to take root and prosper."

Phillipe Lamberts MEP (Greens) – who is responsible for guiding the EIT legislation through Parliament, together with Matias – told Science|Business that in addition, he would welcome the relocation from Belgium to Strasbourg of the College of Europe, a prestigious postgraduate institution set up by some of the EU's founders. The College, "could then be expanded with the EIT," he said, as a further step to help Strasbourg deal with the departure of the EU Parliament.

"Strasbourg is already a university city, the place where the French have located their famous National School of Administration, and its European department. I see potential for synergies there," said Lamberts. "Strasbourg would

European Parliament's redundant Strasbourg premises

be a good place for a university focused on Europe-wide issues."

The EIT may have originally been envisaged as Europe's version of the Massachusetts Institute of Technology, but at present it is a relatively small, administrative body. The EIT coordinates programmes, and does not – yet - directly "deliver education," Lamberts said. However, "[in the same way as] the College of Europe offers postgraduate programmes, you might think of research and innovation postgraduate programmes [being] run in this facility - which is actually huge, and pretty well adapted to being an educational establishment."

"If we can save tax payers' money by reducing administration costs of the EU institutions, [by replacing the Strasbourg seat of the European Parliament with something else] - not least by making use of the existing buildings - with something that will benefit both the regional and the EU's economy in turn, then so much the better," said Alvaro.

"A lot of infrastructure is already in place, as the EP's buildings are not fundamentally tailored to a parliament, but could just as well be used as conference centres or educational facilities," said Alvaro. The financial impact of running another institution would be relatively minimal, though there would need to be an investigation to see if there would be any "significant" or "damaging" effect on the EIT if it were moved from its current setting.

Absolute majority

Although based mainly in France until the nineties, MEPs now spend most time in Brussels, where the Parliament's counterpart in the EU legislature, the EU council of ministers, as well as the European Commission are located. Every month however, MEPs, staff, journalists, administrative personnel and truckloads of legal documents make a long and expensive four day trip to Strasbourg, where Parliament is obliged by a protocol annexed to the EU treaties in 1992 to hold a monthly plenary session. It is estimated the trips to France cost European tax payers at least €180 million a year.

"The Member States will not be able to avoid the question of Parliament's seat in Strasbourg forever"
Alexander Alvaro, Vice-President, European Parliament

On 4 July 2012, in the latest of a series of absolute majority victories for the Single Seat lobby, MEPs voted in favour of a proposal which said, "The EU, not least in the context of the austerity policies being implemented in the Member States, must show responsibility and take immediate, concrete measures to establish a single seat for Parliament."

To date, France has blocked any discussion about entirely abandoning Strasbourg as a parliamentary seat. "But the Member States will not be able to avoid the question of Parliament's seat in Strasbourg forever," says Alvaro - who heads up the Single Seat campaign with Edward McMillan-Scott (ALDE), another Vice-President of the European Parliament. Alvaro stressed, "If a discussion on the location of the EIT can help in that decision making process, I know a large majority of MEPs won't complain."

Every month MEPs, staff, journalists, administrative personnel and truckloads of legal documents make a long and expensive four day trip to Strasbourg.

Alexander Alvaro MEP (ALDE), Vice-President of the European Parliament

Parliament wants more democratic control over Horizon 2020

Horizon 2020 might play a much bigger role in the public arena than its predecessor, Framework Programme 7. EU lawmakers want leading figures in Europe's research and innovation programmes to make regular appearances before Parliament

EU Research Commissioner Geoghegan-Quinn answering Questions in the European Parliament

Peter Koekoek

The European Parliament will demand more oversight of the EU's research and innovation programmes – currently being brought together in the new Horizon 2020 programme - by requiring key figures from the European Commission, and relevant agencies and committees to give regular progress reports in Parliament, influential MEPs tell Science|Business shortly before Parliament's 2012 recess.

"It is necessary to follow Horizon 2020 throughout its seven year lifespan, not only during the mid-term evaluations," Teresa Riera Madurell MEP (S&D) who is in charge of guiding the main Horizon 2020 proposal through Parliament, told Science|Business. At present there are no formal subpoena powers, and MEPs want to table an amendment to the Commission's proposal for Horizon 2020 to boost democratic oversight by obliging officials to appear before the Parliament.

Madurell, who sits on the Research, Industry and Energy (ITRE) committee, explains how in the mid-term review of Framework Programme 7, and in the run up to its successor, Horizon 2020, she has heard many stakeholders in Parliament, but says "Now we want something more systematic."

Phillippe Lamberts MEP (Greens) – one of two MEPs on the ITRE committee in charge of steering European Institute of Innovation and Technology (EIT)-related legislation through parliament as Horizon 2020 rapporteur - told Science|Business that Parliament will demand the Director of the EIT appears before Parliament once a year. This should be, "The example of a more structured oversight of the research and innovation policy of the EU. I think we should have those kinds of meetings with all major players of the programme."

Hearings

According to Lamberts, Parliament is considering setting up a sub-group of MEPs from the ITRE and the Education committee that "would take as its mission to hear – on a regular basis - the key stakeholders from the Commission but also from agencies who run the programmes."

Lamberts, who is also a member of the Economic and Monetary Affairs committee, points out that R&D programmes are running behind on democratic oversight compared to other policy areas, "Every quarter, we discuss with the European Central Bank president, and we have very regular exchanges with the Economics Commissioner and the head of the European Investment Bank. And that's natural - that is part of the normal dialogue that allows the committee to perform."

Lamberts points out that the current situation – seven year plans with a one-time mid-term evaluation, which he calls a "rather superficial exercise" – stimulates last minute lobbying by stakeholders in the programmes to convince Parliament of their value, saying, "If they convince MEPs along the way that they have a good programme, it will a piece of cake for them to be prolonged."

Backroom deals

Relations between Parliament and Member States are going through a rough patch, with Member States trying to undermine Parliament's new co-

legislative powers on several occasions recently. The latest row is about a backroom deal in which European heads of state deleted three clauses from the proposed EU single patent law, leading a defiant Parliament to refuse to vote on the proposal.

In another major blow to the Member States, Parliament struck down the international Anti-Counterfeiting Trade Agreement (ACTA) on 4 July, saying the text was too vague, and the intended benefits of the agreement "are far outweighed by the potential threats to civil liberties. (…) the European Parliament cannot guarantee adequate protection for citizens' rights in the future under ACTA."

The call for more say on Horizon 2020 comes at a time when the European Parliament – as the EU's only directly-elected body - is gaining in influence, following the increased legislative powers and full control over the EU budget granted to the representatives by the Lisbon Treaty in 2009.

MEPs want a more bottom-up approach for Horizon 2020

Brussels should deal only with the broad overarching strategy of the EU's R&D agenda, with new scientific steering committees appointed to see to the details, key MEPs tell Science|Business

Peter Koekoek

The European Commission should determine the direction of EU's overall long-term R&D policy, but new scientific steering committees should have more influence on the detailed implementation, according to MEPs in charge of steering the proposal for the Horizon 2020 programme through Parliament.

The European Parliament also wants the Governing Board of the European Institute of Innovation and Technology (EIT) to be able to set its own strategic agenda, in a major push for a more bottom-up approach to EU innovation policy.

Currently, bureaucrats in the European Commission draft the yearly work programmes that govern the European Union's R&D policy, with overall strategy set in a seven year plan, the next installment of which - Horizon 2020 - is due to kick off in 2014. Parliament is now set to propose that the yearly "strategic research and innovation coordination" of issues such as energy security and health be opened up to a more bottom-up approach, in a move that is in line with the EU assembly's demand for more democratic accountability of Horizon 2020's leading figures.

Christian Ehler MEP (EPP), one of the group of six MEPs in charge of steering the Horizon 2020 legislation through Parliament, believes the Commission intends to draw up too many details of Horizon 2020 behind closed doors by leaving them up to the yearly implementation programmes, "Although we agree that we really want to back up the proposal for simplification, it is politically just unrealistic that we would accept that they set up a governance structure, without a rooting in a legal proposal," he says.

Yearly programmes

Teresa Riera Madurell MEP (S&D) would like to see the European Research Council's (ERC) peer-review method applied to more aspects of Horizon 2020, saying, "It has been very successful - and one of the characteristics is bottom-up. It comes from the foundations, from the scientists," says Madurell. She proposes that scientific steering committees should be set up to help draft the yearly work programmes.

Teresa Riera Madurell MEP (S&D), one of the European Parliament's Horizon 2020 rapporteurs

Madurell suggests these steering committees could be based on the ERC model, saying they could be composed of "people with a recognised scientific record, in the line of the ERC's scientific council," stressing that, "this is absolutely necessary." Madurell, a member of the Industry, Research and Energy (ITRE) committee, is the MEP responsible for guiding the Horizon 2020 legislative package through Parliament as rapporteur.

Brussels should set the general direction, says Phillipe Lamberts MEP (Greens), after which it is up to a "bottom-up,

competition-driven process to get to good proposals. The top-down part is Horizon 2020, which defines research and innovation priorities such as the social challenges and the leading enabling and industrial technologies." Lamberts is one of the MEPs responsible for steering new EIT legislation through Parliament as a member of the ITRE committee.

EIT self-governance

Lamberts believes the topics handled by the EIT's Knowledge and Innovation Clusters (KICs) –in which companies, academics and research institutes collaborate on specific themes - should be decided through an open procedure, and not in backroom deals by the Commission. "What made me even more suspicious of that approach, is that some consortia were already claiming on the internet that they would be selected as the KIC," he said.

Instead, Lamberts has introduced an amendment that would shift the responsibility for selecting new KICs to the EIT's governing board. "That's an act of trust in the [board], but then again: as long as there's transparency and accountability I'm okay with that," he says, "I believe that open competition will help the quality of the projects."

Governing Board

In order to keep the process open, Lamberts - who says the EIT's Director should appear before Parliament on a yearly basis – proposes changes to the way the EIT is governed. "I want a smaller board where we have a better representation of different stake holders. Not just industry - but industry, academia, research centres and civil society."

"We want the agendas to be – at least – open to input from civil society, if not open to scrutiny from civil society," emphasises Lamberts.

If the overall strategy is already set out in Horizon 2020, "then why do we need another strategic agenda?" Lamberts asks, referring to the EIT's Strategic Innovation Agenda (SIA) that determines the themes and the number of KIC partnerships that should be funded. "If I have it my way, the SIA is redundant," Lamberts said.

"The European co-legislators [Parliament and Council] determine the direction – the societal challenges and EIT initiatives," he emphasised.

Ehler made it clear that Parliament is serious about its drive for more openness and more bottom-up input to Horizon 2020, "We won't decide on a legal text where there are black boxes left on what the governance model is, what the interactions between the different funds are - and that would also be related to the financial instruments, " he warned.

Horizon 2020: 'The devil is in the details'

In the spring of 2012, Science|Business polled some of the main stakeholders of the EU's next research funding programme about the proposed simplifications. The verdict: Nice try, but let's work on the details

Peter Koekoek

A major objective of the Commission's new €80 billion Horizon 2020 research programme is to cut the red tape. It promises to simplify its grant-writing procedures so the average 'time to contract' accelerates to 100 days from a year at present, time sheets are no longer required for full-time researchers, and a simplified two-step reimbursement procedure begins.

For anyone who has had to struggle with the red tape of a typical EU grant, that should sound like paradise. But will it work? That's one of the topics the European Parliament will address today (20 March) in a public hearing about Horizon 2020. Science|Business went ahead, and has asked some of the programme's main stakeholders from industry and academia that same question over the past few weeks.

The answer: Well, not necessarily. It depends on the specifics that the Commission develops over the next 18 months as the proposal wends its way through the torturous EU legislative process.

"The devil is very much in the details," says Paul Boyle, president of Science Europe, the association of Europe's national research funding organisations.

Europe has to wait and see if the Commission can deliver on its promises, said also Volvo's executive vice president Jan-Eric Sundgren: "Certainly the Commission has not gone too far, they should be commended for their high ambition. However, the proof is still in the pudding."

If that sounds inconclusive, well, welcome to Brussels. But for just proposing the changes, the Commission gets credit from many. Horizon 2020 represents a 46 per cent funding increase from the current R&D plan, Framework Programme 7 – and would constitute more than 5 per cent of all European-wide public research funding. So putting a cut in red tape high on the agenda, alongside that €80 billion, has plenty of fans.

"Science moves very quickly and anything that the Commission can do to speed up its procedures is welcomed. We support simplification which does not compromise on scientific quality and good governance," said Richard Bergström, Director General of the European Federation of Pharmaceutical Industries and Associations (EFPIA).

Kurt Deketelaere, secretary general at the European League of Research Universities (LERU), believes the potential for success is there: "Streamlining common rules for all parts of Horizon 2020 will facilitate and stimulate much higher participation in a wider variety of programmes and will lead to more efficient project administration, not only for the European Commission, but also for the beneficiaries."

The proposed changes show the Commission sees its role differently, believes Leontios Hadjileontiadis, Professor at Aristotle University of Thessaloniki: "It was about time for the Commission to realize that by no means is there a lack of excellent researchers and innovative enterprises around Europe, but a lack of effective liaisons that actually bring together these innovation sources with the financial support," he said.

The Horizon 2020 plan is in itself a paperwork mountain – more than 600 pages of bureaucratese poured forth

from the Commission on the day, 30 November, it unveiled it. But with the benefit of a few months of study, the main lobby groups involved have come to some conclusions on some of the specific questions. And the Commission is already engaged in a series of meetings with them, to hear their analysis and make some changes in the plan. At the same time, meetings are going on with the European Parliament, and the individual member-states, to arrive at a consensus.

The Danish Presidency of the EU has set 31 May as a deadline to agree on some broad principles for how Horizon 2020 will work. Then comes the serious work, next Autumn and Winter, of arguing about the budget for it all. Few expect all €80 billion to get through unscathed, at a time of austerity across most of Europe – but a considerable increase is politically probable.

Here is a run-down of views on some of the key issues.

1. Yes to the 'trust-based approach'

An emphasis on trust is important in order to tackle complex procedures, argues Sundgren of Volvo: "Particularly for small and medium sized companies it is of paramount importance that the present bureaucracy is cut. Instead we need more focus on a trust and risk based approach."

Deketelaere of LERU is also strongly in favor of a more trust-based approach, "We strongly hope that Horizon 2020 will continuously, effectively and completely implement this trust-based philosophy in all control and audit procedures."

Bruno Pedrotti, senior advisor at employers association Business Europe, adds some specific advice for the Commission: "To encourage a trust-based approach, Business Europe calls on the Commission to elaborate guidelines for EU officials dealing with project financing as a clarification for the provisions on personal financial liability in the Financial Regulation and Staff Regulations."

"This could possibly be done by drawing on the experience of member states on the matter and should incentivize a more proactive and risk taking attitude in full compliance with Commission internal regulations," said Pedrotti.

2. A 'flat rate' is great – but at what rate?

The Commission has proposed that Horizon 2020 should have one funding rate per project, instead of the three different rates in the current framework programme. Furthermore, the Commission proposes one single flat rate covering indirect costs, instead of the four methods in FP7 to calculate indirect costs.

Science Europe's Boyle says it remains to be seen whether the new reimbursement proposals will help achieve simplification: "There will be in fact two reimbursement rates: one for 'pure' research projects set at 100 per cent and one for projects 'close to market' set at 70 per cent."

"Coupled with the relatively low flat rate for indirect cost of 20 per cent, this could create a disincentive to coordinate projects, especially in projects with an innovation component and industry involvement where reimbursement will be lower," says Boyle.

John Smith, deputy secretary general of the European University Association (EUA), agrees with Boyle: "The proposed lowering of the indirect costs flat rate to 20 per cent in comparison to 60 per cent in FP7 is not a simplification but rather a clear step backwards," he said.

Smith believes the proposal sends a negative signal to universities and public authorities across Europe "as to the importance of moving towards funding on a full cost basis to support a sustainable research funding base. The FP7 indirect costs flat rate should be maintained and a simplified procedure introduced to recognize universities who have the capacity to identify and calculate all direct and indirect costs of their institution's project activities."

Pedrotti of Business Europe warns against non-standard calculation of direct and indirect costs: "For industrial companies, usually maintaining an analytical accounting system, it is very important to be able to charge direct and indirect project costs that are determined according to their usual accounting principles and management practices. If rules require them to do otherwise, they would have to establish and maintain a parallel system to determine their projects costs. Such a situation has to be avoided."

"Business Europe demands that the participant's usual accounting principles are widely accepted. Consequently, the application of the flat rate on direct eligible costs to determine indirect eligible costs should not be mandatory," Pedrotti says.

"The provision for indirect costs is particularly disappointing," said Boyle, "as it does not adequately cover the level of these costs incurred by institutions, and moves the Commission away from the full costing model which it has been encouraging for several years."

Boyle points out the importance of possible changes to the regulation that contains detailed rules for the European Union's budget: "It remains to be seen whether significant progress will be made on the complexities surrounding eligible costs, as these are dependent on forthcoming revisions to the EU's Financial Regulation."

With regard to a single reimbursement rate of eligible costs, CESAER, the association of technical universities, is against fixing the maximum rate in the work programme or work plan: "Leaving the final rates to be defined in the Work Programmes would mean a substantial drawback for the intended simplification since different programme lines will define different rates which will present new complications for applicants," CESAER said in a statement.

CESAER said it "[…] would welcome a clear statement that the Horizon 2020 grant will be 100 per cent of the total eligible costs for R&D and mixed projects."

"For actions exclusively consisting of activities such as prototyping, testing, demonstration, experimental development, piloting, market replication CESAER proposes that the Horizon 2020 grant shall be seventy per cent of the total eligible costs for the corresponding actions."

"There is a need to devote further considerations to the level of such a flat rate," says CESAER, whose members complain that co-financing of participation in EU projects is becoming more and more a problem for many universities. "For large projects, such as the activities under the Future and Emerging Technologies (FET) scheme, the co-financing problems have reached untenable levels," warns CESAER.

"For many universities of technology overhead costs - including costs of research infrastructures - are relatively higher than for general universities; therefore many of them charge actual cost already. The funding gap opened by the Horizon 2020 proposal of a twenty per cent flat rate is much larger for universities of technology than for general universities that have less overhead and less costs for research infrastructures."

"Offering different options for funding might reduce the effects of simplification. Therefore, in order to take into account the problems described above CESAER proposes, as a compromise, to apply a flat rate higher than twenty per cent for indirect eligible costs."

3. A shorter 'Time to Grant' would be great, but there's lots more to fix, also

"While the target of reducing time to grant is welcomed, the focus of simplification must be on making processes simpler and more straightforward for participants, not just for the Commission itself," warns Science Europe's Boyle.

"Reduction of the average 'time to contract' is welcomed," said Smith of the EUA, "and it is a positive move that full time researchers will not require time sheets. But it needs to go further to accept both the usual accounting practice of the beneficiaries and other time allocation mechanisms which reflect good practice in the university sector."

Anna Voseckova, head of the Czech Liaison Office for Research and Development (CZELO), is hopeful that the time to grant will decrease: "The reduction or time to grant from approximately a year to 100 days will be especially reached by the introduction of a two-step evaluation procedure. The Commission and the evaluators will then have only the best few proposals in the second round to deal with. There is no doubt that this will accelerate the negotiations and reduce the time to grant."

But Voseckova calls for more transparency in the selection procedures: "But what we have seen now in the FP7 calls that already use this procedure […], is simply not correct: the proposals that were not selected for the second round, received a very vague evaluation summary report - in fact copy and paste text - from which the consortia had no idea why their proposal was not OK and what they should do better."

4. Kill the time sheets

Deketelaere is pleased with the proposed reduction in time recording requirements for those working exclusively on projects funded by the EU, but doesn't think the proposal goes far enough: "[..] as we have emphasized previously, we believe time recording should be removed for all staff working on an EU project," he said.

CZELO's Voseckova disagrees: "The issue of no timesheets will be an advantage for a limited group of participants. But I would not in fact support the removal of this obligation in general, as I do not think it is such a burden for the researchers working on more projects or for more employers to record their work hours, according to my view, it is quite useful."

5. Simplify the rulebook, too

Voseckova points to the EU's Financial Regulation that is currently being revised: "It is necessary to bear in mind that Rules for Participation (RfP) in Horizon 2020 are closely linked to the Financial Regulation that is now being revised. In order to have a common set of rules for all EU funding programmes, the Financial Regulation took over a lot of articles from RfP."

"This does not make things easier for the users," warns Voseckova, "as they have to study in fact three documents: the Financial Regulation, the RfP and the future Model Grant Agreement, to have a clear picture of their obligations and rights. This is not a simplification and is quite user-unfriendly."

"If real simplification is going to be achieved it will much depend also on the design of the subsequent rules and how these rules are implemented and interpreted which remains one of the major problems with FP7," said Smith of the EUA. "Stakeholders and practitioners need to be included in shaping these more detailed rules."

Bergström of EFPIA agrees: "The Commission's proposals are going in the right direction but we know from experience that the best intentions can still lead to an unnecessary and excessive administrative burden for researchers, if they are not implemented in an effective manner, taking into account the particular nature of the project."
"One size does not necessarily fit all: when keeping the necessary level of control and competition, the processes should be adapted to the type of collaboration and nature of projects," said Bergström, "What is essential is that those participating in the various collaborative research and training programmes and instruments to be supported by the Commission under Horizon 2020 are made fully aware of the procedures well in advance."

CESAER also stressed the importance of clear procedures: "[…] we propose more clear formulations in the proposal for the Rules for Participation which is important for ensuring university participation."

Of course, the ultimate goal is getting more research and innovation accomplished – and Leontios Hadjileontiadis, a professor at Aristotle University of Thessaloniki, is hopeful: "Coming from academia and from a country - Greece - that every day faces the austerity threat, I can assure you that even under such extreme circumstances, there is a strong effort for creative thinking and innovation."

But for researchers today, he said, the EU programmes are just too complicated. "With the Horizon 2020 initiative, this seems much simpler and gives hope for wider participation," concludes Hadjileontiadis. It could, he says, help steer research towards more pragmatic problems and reduce the distance between research and real-life.

Horizon 2020: First impressions

Right after the EU Commission published its Horizon 2020 proposals in November 2011, Science|Business asked key members of the innovation community for a first response

Peter Koekoek

The European Commission released its official proposal for the EU's new €80 billion R&D funding programme: Horizon 2020. It promises less red tape, broader benefits, and more jobs and economic growth. But before the proposal becomes reality, it will have to pass through the EU's legislature. Science|Business presents a roundup of the very first reactions from the European Parliament, and some of the interest groups that will be influencing the process.

More Jobs, less Einstein

Lambert van Nistelrooij, the European People's Party's (EPP) coordinator for regional development in the European Parliament and advocate of using structural funds for innovation, is pleased to see the significant budget increase. Van Nistelrooij told Science|Business he believes this will give a powerful sign that Europe is "willing to invest and work hard to become a world leader in knowledge." He also welcomed the simplification measures: "The bureaucratic burden has been much too heavy for researchers in recent years, and with this new programme it really is time to make significant changes."

Maria da Graca Carvalho, an EPP member of the European Parliament who has been in the forefront of the campaign for simplification of the EU research funding programmes, believes the proposal forms a good basis, but says the Commission should be wary of oversimplification. "It should not be simpler than necessary. We don't need any unnecessary red tape, but sometimes reality is complex. We have different institutions and different member states, and that has to be translated somewhere in the rules," Carvalho told Science|Business with regard to the new simplified rules for funding applications. The Liberals and Democrats group (ALDE) in Parliament also welcomed the steep budget increase: "In times of budget cuts, we should not forget about our future growth needs. Investing in R&D is money well spent," said Jens Rohde, ALDE coordinator in the ITRE committee. Rohde supports a shift in focus towards the commercialisation of research results: "If we are to truly improve European competitiveness we must eliminate the research to retail gap." Judith Merkies, a member of the Socialist and Democrats group in the European Parliament (S&D) and the ITRE committee's Innovation Union rapporteur believes the Commission's Horizon 2020 proposal lacks an emphasis on job creation. Merkies said that even though Europe wants sustainable growth and jobs, the new proposal mainly focusses on research: "The EU is already good in Einstein, but not yet in Jobs," she said.

Reimbursement of costs

The League of European Research Universities (LERU), an association of leading research-intensive universities released a statement saying the new scheme could boost employment at universities: "A reimbursement of a 100% of direct costs will mean a true simplification for the participants […]The new rules should enable universities to recruit staff specifically to work on Horizon 2020 projects and thus enhance and build up the next generation of researchers in Europe."

John H. Smith, Deputy Secretary General of the European University Association (EUA) told Science|Business that although happy with the Commission's continued commitment, he is strongly critical of one particular last minute change which would see indirect costs reimbursed at only twenty per cent. "[The] proposal in earlier drafts of Horizon 2020 of a 75%/75% reimbursement rate with the retaining of the possibility for real indirect costs would have constituted a further step forward […] The new proposal, on the contrary, will be seen as a step backwards and inconsistent with the European policy agenda concerning the modernization of universities," Smith said.

Industry participation

In a statement, BusinessEurope says it welcomes "the streamlining of the EU research and innovation funding instruments introduced with Horizon 2020 and the substantial increase in funding proposed". But BusinessEurope, which represents small, medium sized and large businesses at a European level, believes that ultimately Horizon 2020's success will depend on whether it will be able to attract more industrial stakeholders in EU research and innovation projects: "Continued simplification of the procedural rules for participation is needed in order to increase industry's participation rate." The pharmaceutical industry federation EFPIA praised the plan's emphasis on public-private partnerships (PPPs), and said it wants to build on its existing PPP with the Commission in healthcare research, the Innovative Medicines Initiative. "The European Commission should be commended for their intention to further develop public-private partnerships (PPP). There is shared understanding that private companies and public bodies must collaborate more and to think about new business models which allow us to work much more quickly to meet unmet needs", said Richard Bergström, Director General of EFPIA.

Nathalie Moll, Secretary General of the European Association for Bioindustries (EuropaBio) is content the Commission has listed biotechnology as one of the six key areas that research and innovation funding should focus on: "Research and innovation coupled with coherent and workable legislation will ensure Europe and its innovative industries such as biotechnology strive for the enhancement of quality of life, knowledge, innovation, job creation and productivity that we so clearly need. We hope that the European Parliament and the European Council will back the Commission's proposal so as to help Europe realise its potential as a world leader in excellence in science and innovation."

A BUDGET STILL IN THE BALANCE

With the final budget still unknown, the European Parliament has to make provisions for getting the most of what may come

Shane McCollam

Perhaps the most striking feature of Horizon 2020 is its proposed budget of €80 billion. Yet, members of the ITRE committee in the European Parliament say this is not going to be enough for Horizon 2020 to reach its goals. As part of Science|Business' analysis of ITRE's reports on Horizon 2020, this article summarises the Parliament's position on the Commission's expectation for the budget in Horizon 2020.

Noting the budget represents a mere six per cent increase (in real terms) compared to the funding level of FP7 in 2013, MEPs have called for a total budget of €100 billion, as originally demanded. Beyond increasing the budget to meet the goals set out in Horizon 2020, there have been other key proposals put forward:

- Attracting additional funding from the Structural Funds, the European Investment Bank (EIB) and leveraging public and private sector investment
- The design of the reimbursement rate system
- A more explicit link between the Global Monitoring for Environment and Security (GMES) and Horizon 2020

In keeping with the theme of increased investment throughout all of Europe, MEP Maria Da Graça Carvalho gave examples of where Horizon 2020 may leverage investment from the Cohesion policy funds, and attract public and private sector funding. These include the establishment of regional centres of excellence, twinning schemes and providing seals of excellence so that projects which have not been able to receive money from Horizon 2020 as a result of lack of funding, have access to alternative funding schemes.

Another concern is that because the final sum of the Horizon 2020 budget has yet to be fixed and could still drop below the Commission's proposal of €80 billion once the final vote is taken, the impact that the design of the reimbursement rate system could have on the number of projects that receive funding is significant. MEP Christian Ehler stressed that too high a reimbursement rate, would limit the number of projects that could be supported, which would, in return, limit the impact of the programme.

For this reason, Ehler suggests that should be final budget drop below the propose €80 billion, Horizon 2020 should maintain the average level of EU contribution per project that was granted in FP7 so that the total number of projects will not have to be reduced.

Doling out the money

How the commission's Horizon 2020 budget is split

(In millions of euros)

I Excellent science, €27,818

1. The European Research Council €15,008
2. Future and Emerging Technologies €3,505
3. Marie Curie actions on skills, training and career development €6,503
4. European research infrastructures (including eInfrastructures) €2,802

II Industrial leadership, €20,280

1. Leadership in enabling and industrial technologies* €15,580 of which €500 for EIT
2. Access to risk finance** €4,000
3. Innovation in SMEs €700

III Societal challenges, €35,888

1. Health, demographic change and wellbeing; €9,077 of which €292 for EIT
2. Food security, sustainable agriculture, marine and maritime research and the bio- economy; €4,694 of which €150 for EIT
3. Secure, clean and efficient energy €6,537 of which €210 for EIT
4. Smart, green and integrated transport €7,690 of which €247 for EIT
5. Climate action, resource efficiency and raw materials €3,573 of which €115 for EIT
6. Inclusive, innovative and secure societies €4,317 of which €138 for EIT

European Institute of Innovation and Technology (EIT) €1,542 + €1,652***
Non-nuclear direct actions of the Joint Research Centre €2,212

TOTAL €87,740

(Total takes account of estimated inflation through 2020. In current terms, the total is about €80 billion.)

* Including €8,975 million for Information and Communication Technologies (ICT) of which €1,795 million for photonics and micro-and nano electronics, €4,293 million for nanotechnologies, advanced materials and advanced manufacturing and processing, €575 million for biotechnology and €1,737 million for space. As a result, €6,663 million will be available to support Key Enabling Technologies.

** Around €1,131 million of this amount may go towards the implementation of Strategic Energy Technology Plan (SET Plan) projects. Around one third of this may go to SMEs.

*** The total amount will be made available through allocations as foreseen in Article 6(3). The second allocation of €1,652 million shall be made available pro-rata from the budgets of the Societal challenges and Leadership in enabling and industrial technologies, on an indicative basis and subject to the review set out in Article 26(1).

Source: European Commission, Proposal for a Regulation of the European Parliament and of the Council establishing Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020)

Official documents: www.sciencebusiness.net/horizon2020

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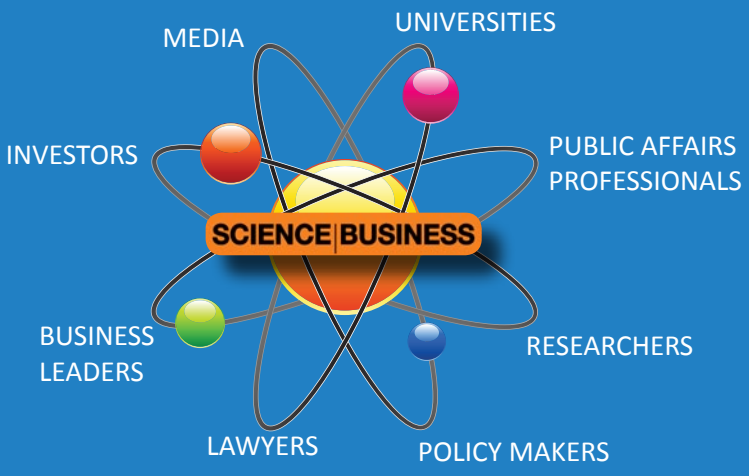

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ParisTech (association of 10 Grandes Ecoles), France
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