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Industrial applied research needs to remain a major cornerstone of Framework Programme 9 (FP9), if Europe is to be consistent about the EU's industrial strategy

Executive summary:

Orgalime welcomed the publication of the European Commission Communication on a “renewed EU Industrial Policy Strategy”. We have long been vocal in calling for a modern and forward-looking strategy at EU level, one that focuses on the EU policy tools that can deliver real added-value to a jobs and growth agenda. The EU's research and innovation policy is one such tool underpinning the broader goal of boosting employment and economic prosperity in Europe. As such, Orgalime considers that the present Horizon 2020 European Research Framework Programme (FP) makes a significant contribution to the competitiveness of European industry – and, as a result, to sustainable socio-economic development more generally.

Research and innovation are key drivers of industrial competitiveness and should be supported at both national and European level. Horizon 2020 – and Public Private Partnerships (PPPs) in particular – fosters cooperation at the European level among all actors throughout the innovation chain. It is an excellent way to increase risk-taking in research and innovation, and has helped companies remain at the leading edge of the global marketplace.

Orgalime wants to see the Industrial Pillar maintained and developed in the future Framework Programme 9 (FP9). We believe that reinforcing the Industrial Pillar in the next programme would be a logical and consistent next step following on from both the Commission's new industrial strategy and the recent conclusions of the Competitiveness Council. The ‘Lab-Fab-App’ report produced by the High-Level Group on maximising impact of EU Research and Innovation Programmes touched only on some aspects of competitiveness and has not sufficiently elaborated on its importance.

The European engineering industry is in favour of a successor programme to Horizon 2020 that concentrates on collaborative industrial applied research (not on single beneficiary schemes) and innovation projects. In this position paper, we explain in detail which elements of the Lab-Fab-App report we support and which are currently missing or not sufficiently considered. We urge the European Commission, the European Parliament and the Council to take into account our views when shaping the future Framework Programme 9 – in order to bolster the competitiveness of European industry and, by extension, the prosperity of the EU economy as a whole.

Orgalime, the European Engineering Industries Association, speaks for 42 trade federations representing the mechanical, electrical, electronic, metalworking & metal articles industries of 23 European countries. The industry employs nearly 11 million people in the EU and in 2016 accounted for some €2000 billion of output. The industry represents over a quarter of the output of manufactured products and over a third of the manufactured exports of the European Union.

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Connecting the dots: Industrial Strategy and consistency of different EU policy areas contributing to the jobs and growths agenda

Orgalime represents the interests as a whole of the EU's mechanical and electrical engineering, electronics and metalworking industries, which in the EU employ some 11 million staff and generated a turnover of 2000 billion euro in 2016. The industry whose exports out of Europe reached an estimated 500 billion euro in 2016 is also Europe's leading manufacturing exporter. Orgalime's industry has seen modest, but steady, growth in both employment and output over the last four years and this year is predicting a sharp upturn in the industry's figures for this year, with output up 4% (3% in 2018), exports up by 6% (4% in 2018), investment by 6% (likewise in 2018) and, last but not least, employment up by 0.7% (rising to +0.9% in 2018).

In its follow-up to the recently issued Communication on a "renewed EU Industrial Policy Strategy", Orgalime wrote to European Commission President Juncker making concrete proposals for the way forward on a modern forward-looking EU industrial strategy, focusing on those EU policy tools where we believe that the EU can provide real value added to promote a jobs and growth agenda. Among the policy and funding tools which we cited was the EU's research and innovation policy which we believe has been supportive of what is the main driver of our industry's growth, the rapid digitisation of our manufacturing base.

Indeed, Orgalime considers the present Horizon 2020 European Research Framework Programmes (FP) as a positive and significant policy contributing to the competitiveness of the European industry and consequently for socio-economic development, as well as for a sustainable society in the European Union.

The EU Framework Programmes play an important role in encouraging cross-border cooperation between companies of different sizes, research and technology organisations (RTOs) and universities in creating European networks, new knowledge, and opening new market possibilities.

Orgalime supports a forward looking, ambitious and pragmatic EU wide framework programme for research and innovation. Framework Programmes are a key asset of the European Union that should be further developed and substantially increased in budget after 2020.

FP9 needs to be a magnet for global research and innovation forces and contribute to transforming Europe into the world's innovation centre, based on a strong and solid manufacturing sector. In doing so, we must bring industry's share of the EU GDP back to 20%, as had been underlined in President Juncker's Political Guidelines. To do so, we need to continue building a strong foundation. Effective and efficient collaborative applied research in TRLs 3-5 will catalyse these global energies needed to support the engineering industry create a leap in value for its customers and society, all the while staying highly competitive.

With this in mind, Orgalime urges the European Commission, when preparing its FP9 proposal, not to follow all the recommendations of the "Lab-Fab-App" Report published by the High Level Group on maximising the impact of EU research and innovation programmes, since this report does not take into account the EU's recently published industrial strategy communication. In Orgalime's view, it is essential that the European Commission, in a spirit of Better Regulation, should focus on joining up the dots between different policy areas in support of its core jobs and growth agenda so as to provide real EU added value to publicly funded policies.

Concrete Orgalime comments on the “Lab-Fab-App” Report and Orgalime suggestions for FP9

In this position paper, we would like to express which parts of the “Lab-Fab-App” report are supported by the engineering industries and which parts of the report in our view treads in the wrong direction.

Orgalime believes that the Lab-Fab-App report has identified many valuable and good points on how the current Horizon 2020 Programme can be further improved. However, we believe that there is a fundamental flaw in the Report concerning the recommendation for FP9. Today, Horizon 2020 is composed of three pillars:

1. The Basic Research Pillar, in which scientists set the agenda,
2. The Industry Pillar, in which industry sets the agenda,
3. The Societal Challenges Pillar, in which politics sets the agenda based on what is judged as relevant for society.

The Industry Pillar – with its focus on industrial technologies and with contractual PPPs, JTIs and collaborative projects as its implementing tools – is crucial for industry and research institutes and universities that focus on applied research. The “Lab-Fab-App” Report proposes not only to change the current pillar structure, but to introduce two new elements: firstly, a European Innovation Council which would be central to a new ‘innovation pillar’, and secondly, the introduction of large scale missions that would be central to a ‘global challenges’ pillar. Orgalime views this move as a step in the wrong direction and fears that industry will lose interest in a future Framework Programme 9 if such an approach is chosen. It also threatens the programme’s outstanding reputation.

Orgalime is not per se against the European Innovation Council (EIC), as outlined later in this paper and also in past position papers. However, it should not be created at the expense of the Industry Pillar and at the expense of industrial applied research. The “Lab-Fab-App” report recommends this and we urge the European Commission not to follow this recommendation. Instead of “either - or”, we should aim at “and”. We are in favour of a Framework Programme 9 which allows cooperation between all organisations that are part of the innovation system.

Overview of elements of the “Lab-Fab-App” report which Orgalime supports:

- The importance of research and innovation, and of the conversion of knowledge into innovation,
- The doubling of the budget to €160 billion
- The vision on the inclusion of national and regional levels,
- That the EU has world-leading manufacturing industries,
- That industry – academia collaboration is important and should be further developed,
- That skilling people is crucial,
- The finding that Horizon 2020 strengthened industrial competitiveness.

Overview of elements of the “Lab-Fab-App* - report which Orgalime would have liked to see:

- Support & Reinforcement for the industrial pillar (LEIT pillar) in FP9
- Clearer and more ambitious messages and actions towards industry,
- That EU added value is fostered through collaborative industrial research and not by single beneficiary schemes,
- Send a clear signal to global investors that Europe is still serious about innovation for its core strength: manufacturing. Indeed, 2/3 of companies’ R&D takes place in manufacturing,
- Advanced manufacturing enables productivity gains in companies, which is crucial for jobs and growth in Europe,
- Public Private Partnerships (PPPs), whether Contractual PPPs (cPPPs) or Joint Technology Initiatives (JTIs), are very valuable instruments that should be continued and further developed.

Consequently, our opinion on the eleven recommendations of the report is expressed hereafter:



The European Engineering Industries Association

Orgalime aisbl | BluePoint Brussels | Boulevard A Reyers 80 | B1030 | Brussels | Belgium
Tel: +32 2 206 68 83 | e-mail: secretariat@orgalime.org
Ass. Intern. A.R. 12.7.74 | VAT BE 0414 341 438

Recommendations	
<p>1- Prioritise research and innovation in EU and national budgets, including a doubling of the budget of the post-2020 EU research and innovation programme</p>	<ul style="list-style-type: none"> • Orgalime welcomes the High-Level Group proposal to double the budget of the post 2020 EU research and innovation programme. Orgalime would like that this doubling of the budget enables research and innovation in industrial research, in particular, to continue and be strengthened. Moreover, it would be desirable for the increase of the FP budget to be realised by shifts in the Multiannual Financial Framework (MFF) (increase the share of the EU’s budget that is allocated for the FP budget) or by the increase of the EU’s own resources. • Oversubscription is hindering industrial partners from participating in Horizon 2020. The doubling of the budget could help overcome this challenge of oversubscription. Without industrial participation, Framework Programmes’ targets of more economic growth and more innovation, that is increased impact on competitiveness as foreseen in the EU Treaty, are simply unreachable, as would the subsequent growth in jobs. • A stronger focus in the scoping of single calls and more two-stage evaluation procedures should be considered – assuming that there is a very selective stage one, resulting in a somewhat higher probability of success in stage two. Also, more industry engagement (higher number of industry evaluators) in the evaluation phase should be foreseen. Remote consensus meetings, a more attractive setup which could attract more industry experts and not only academia, more time for the evaluators, more interactions among evaluators – these are ideas that should be further explored and implemented. • We welcome the High-Level Group’s call for increasing national investment in R&I. Orgalime invites the European Commission and Member States to think long term and to invest more, and more consistently in industrial research and innovation. Many Member States are decreasing their national funding in research, development and innovation. This gives rise to serious doubts about their capacity and will to reach the target of 3% GDP spending in Research & Development (R&D) by 2020 as stated in the Europe 2020 strategy, or to the stated aim of manufacturing output representing 20% of EU GDP. • FP9 should, like its predecessors, focus on civil research, development and innovation. It is important that defence research is funded separately for two reasons: firstly, to avoid any negative financial impact on the civil funding; and secondly, to keep FP9 indiscriminately open to all applicants in all topics.

Recommendations	
<p>2- Build a true EU innovation policy that creates future markets</p>	<ul style="list-style-type: none"> • Orgalime welcomes the recommendation of fostering innovation ecosystems. We believe that Europe’s crucial strengths lie in its innovation ecosystems where SMEs, mid-caps and large companies, start-ups, academics and RTOs work together. • A crucial element lies in the virtuous circle of collaboration between large and small companies: this speeds-up the innovation process and therefore helps in identifying the most promising companies. Similarly, such collaboration enables start-ups which are not succeeding to fail fast and thereafter, where feasible, to work further on their business model. Indeed, some larger companies have their own venture capital arm which invests in start-ups that are active in promising development areas. Furthermore, large companies already have a network of customers, innovative offerings can thereby be spread both across and outside Europe more easily and quickly than for start-ups with a less developed network. As demonstrated by Orgalime industry’s employment growth figures, innovation led output, is strongest in the industry’s SMEs. • Orgalime believes that the proposed European Innovation Council (EIC) should be the vehicle to promote innovative ecosystems focusing on making the EU more competitive and therefore attractive for investment. We welcome the forward-looking approach to foster future markets; however, we also need to maintain and improve the level of performance of our existing manufacturing companies and value chains. With an EIC focused on ecosystems, knowledge and innovation, companies would find a fertile ground to help maintain and develop jobs and growth in Europe. • We recommend that the proposed EIC also include activities related to test and demonstration facilities. The EIC should duly integrate expert know-how from industry and not only focus on actors from start-up ecosystems. The proposed EIC indeed needs to understand innovation processes and embrace innovation whether it is considered disruptive or incremental. • The proposed EIC should not be directing industry research agendas in a top-down manner but should instead act as a powerhouse of excellence, leaving industrial researchers the freedom to innovate while pushing for projects of high risk and impact. • Orgalime believes that breakthrough and incremental innovation should be considered as equally important and not be seen as rivals in the Framework Programmes. Orgalime does not agree that the post-

	<p>2020 EU R&I programme should focus on achieving breakthrough, disruptive innovation only. Incremental improvements play an important role for companies to increase productivity and keep up with competition; most innovations are created with incremental progress. In addition, disruptive market innovation is often based upon rather incremental technological progress. This is what at large contributes to sustained industrial growth and new market opportunities.</p>
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Recommendations	
<p>3- Educate for the future and invest in people who will make the change</p>	<ul style="list-style-type: none"> • Orgalime welcomes this recommendation on skills and education. • Skilled staff is the most valued asset for the engineering industry as our companies are highly exposed to global competition from regions with lower wages, cheaper raw materials and lower energy costs. It is for this reason that companies in our industry are increasingly investing resources into upskilling (and re-skilling) staff. • The main challenge for our industry in the EU is to acquire and/or to (re-train) electrical or mechanical engineers and technicians with ICT and transversal competences (like business skills). • Moreover, fostering an entrepreneurial mind-set is crucial to transforming technical knowledge into valued products and services. This requires new curricula to be developed by education providers with the advice of industry where relevant (for example in vocational training). • Education for the future must start with a transformation of the teaching of science, technology, mathematics, and computer science in primary and secondary schools. Mathematics should make sense to children; active learning can be a way to achieve this and foster interest. Particular attention should be given to girls in primary schools, as the “I do not belong here” syndrome starts very early. Curricula should be re-thought at all education levels, and be able to attract and retain young people and women, and to retrain unemployed and elderly workers, all of whom are needed as Europe’s demography is declining. • Orgalime supports the relaunch by the European Institute of Innovation and Technology of a call for proposals on a new Knowledge Innovation Community (KIC) on “Added-Value Manufacturing” (AVM). This KIC could indeed train relevant engineers and create ventures that will help deliver a competitive edge to the European manufacturing industry.

Recommendations	
<p>4- Design the EU R&I programme for greater impact</p>	<ul style="list-style-type: none"> • Orgalime is certain of the lighthouse effect of keeping the industrial pillar named that way. We believe that the added value of the three-pillar structure lies in its LEIT pillar, not in the number of pillars itself. Moreover, we would also like the test and demonstration facilities to play an important role in the industrial pillar of FP9. These facilities are crucial for companies, and especially for SMEs, to test ideas and inventions and identify innovations. High quality test and demonstration facilities in areas where Europe has particular strengths would attract research departments of non-European companies to Europe and benefit our knowledge economy. • We believe that the EU should be very careful with financial instruments within the Framework Programme. We see a tendency towards using more financial instruments for the R&I activities. However, grants and loans do not fulfil the same goals and are not exchangeable. Indeed, grants are needed as a boost for excellent research, development and innovation; this applies to demonstration and development activities, as well as to basic research. Loans and third-party equity are important sources for financing close to market projects, however at another stage (above TRL 8). Orgalime expresses reserves concerning the blending of financial instruments and from different financial sources, because we believe that it will introduce a significant degree of complexity which would act as disincentive to companies, in particular SMEs to participate in FP9. Such an approach would undermine much of the welcome simplification that the European Commission has introduced through Horizon 2020 in a spirit of better regulation. • Loans make it almost impossible to finance a consortium whereas grants enable research and innovation in a consortium. • Financial instruments, like loans and equity, are important and we agree that some entities need more capital to expand their activities but this is a business issue not a research and innovation one. • Orgalime believes that organisations should be equally treated. Start-ups should play by the same rules as other new companies and companies that are not competitive enough should not survive through the injection of public money. This will not help them face the realities of global markets. Conversely, developing ecosystems will also help start-ups grow and scale up. Start-ups leaders and

	<p>entrepreneurs can then invest their energy and time in developing their business thus contributing to economic growth.</p> <ul style="list-style-type: none"> • The excellence principle should be kept. The European Commission has many other programmes to, for example, support capacity building. Only with excellence can we ensure that future products and solutions can compete globally, allowing companies to continue growing and creating jobs in Europe.
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<p>Recommendations</p> <p>5- Adopt a mission-oriented, impact-focused approach to address global challenges</p>	<p>Orgalime welcomes the statement by the High-Level Group that partnerships with industry should be taken forward. Working in Public-Private Partnerships (PPP) is an efficient way to tackle challenges affecting industry and society. Orgalime firmly believes that the PPP concept is an efficient and effective model which has demonstrated strong European added value:</p> <ul style="list-style-type: none"> • Through collaborative research on topics highly relevant for industry, companies of all sizes work in partnership with research actors to develop solutions that make sense. • Public funding acts as a multiplier of the money that companies invest into R&D. • Companies can make bolder investment choices based on contractual PPPs and Joint Undertaking project results, as these projects are developed with and for industry. • PPPs create a space where ideas can circulate, swap and evolve into something of value. It helps organisations reach out and exchange ideas. PPPs are the perfect vehicle for knowledge and innovation creation and diffusion. • Industry cooperates with the European Commission and we appreciate the joint risk-sharing and long-term view on important topics. <p>Orgalime believes that cPPPs and JUs should continue to be the core of a dedicated industrial pillar as:</p> <ul style="list-style-type: none"> • Advanced manufacturing (Factories of the Future PPP - FoF cPPP) is a major enabler of productivity and growth. • Electronic Components and Systems for European Leadership Joint Undertaking (ECSEL JU) for micro - and nanoelectronics is strategically and excellently positioned to have strong impact on strengthening European industry in key application domains which generate high economic value and jobs.
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- A European innovation advantage is its Industry-academia collaboration.
- If there is no financial incentive for researchers to listen to the companies and no incentive for the companies to do things together in long-term visionary way, the contribution of EU funded research to competitiveness will falter.
- PPPs would also be an adequate vehicle for upskilling employees and training students better.

Missions and PPPs:

PPPs (cPPPs and JTIs) serve different goals and should not be reshaped just to fit into a fashionable concept.

The focus on global challenges and missions could be attractive if it captures the objective of prioritising investments in areas with a clear EU added value.

Nevertheless, clarification is necessary on what should be understood as a mission, on the implementation in FPs, on who decides what constitutes a mission, on the timeframe for deliverables and on how to measure the impact

If the EU wants to create dedicated technological missions, in addition to PPPs, Orgalime can support it. However, these technological missions should go along the following principles:

- Avoid distortion of competition (be pre-competitive)
- Focus on addressing market failures with a clear intervention logic
- Aim to have a broad impact, potential for sufficient spill-overs
- Be flexible so as to accommodate future developments
- Provide EU-added-value
- Be relevant to supporting the EU's overall industrial strategy including at the level of digitalisation and the Single Market

It is also essential that research on key enabling technologies (KETs) is strengthened, since KETs provide the building blocks for mission-driven technical innovation. Significant investment is needed to maintain or enhance European competitiveness in such technologies.

There is also a need for systemic innovation to transform research, development and innovation systems as a whole through an interdisciplinary approach. Indeed, a mission-driven research and innovation objective (like e.g. CO2 neutral cities) will require interdisciplinary cooperation between many diverse types of technology and stakeholders.

Recommendations	
<p>6- Rationalise the EU funding landscape and achieve synergy with structural funds</p>	<ul style="list-style-type: none"> • Orgalime understands the concern raised by the High-Level Group about companies and innovators that do not easily know where to look among the different instruments. However, the High-Level Group expresses the need to review the funding landscape and to eliminate one third of R&I funding schemes, instruments and acronyms. We believe that if instruments are useful they should be kept, even if they are different in their nature. They address different needs and different targets. This does not exclude that each instrument is assessed and improved or discarded if it is no longer relevant. • One of the biggest challenges of Horizon 2020 is oversubscription and the low success rate. There is a mismatch between interested applicants and available calls, leading to a situation that industrial companies are losing interest in H2020 calls. We welcome any reasonable attempt to overcome this situation; The idea of a one-stop-shop concept and an increased role of National Contact Points (NCPs) should be further analysed. NCPs may need increased training and resources to guide participants better so that they do not apply in non-relevant areas creating extra work and burden to evaluators. • We believe that “Infodays” are useful and that the EC (and Member States) could do more here as Infodays enable participants to network and get information. The information provided should be crystal clear so that people apply to relevant calls. • A more coordinated approach and streamlining research and innovation into other EU policies are essential: we have welcomed the fact that this European Commission has sought to join the dots between different policy areas in order to focus these towards its core stated jobs and growth policy. For our industry, which has seen consistent and now accelerating growth every year for the last four years, our focus remains on developing an EU industrial strategy where R&I policy and funding pay a core role: we would wish to see this clearly reflected in FP9. Moreover, we believe that the Framework Programme should focus on its core aim to address issues related to research and innovation and competitiveness and not be diluted by trying to compensate for issues in other policies. Making citizens vote for Missions looks to us as an attempt to achieve a political quick fix. As we stressed in our answer to the EU’s Industrial Strategy Communication, what we need is a long-term vision applied in different policy areas. Short term solutions are not the answer to the citizens’ decreasing support of the EU. It is only through achieving the core jobs and growth policy and communicating this achievement clearly that the EU will seem fully relevant to citizens.

	<ul style="list-style-type: none"> • The funding of FP9 and European Structural and Investment Funds (ESIF) has to be streamlined to ensure complementarity and interoperability, and to leverage synergies. The ESIF successor should focus a major share of its budget on funding R&I and digital infrastructures to create an ecosystem that helps to achieve the objectives of the new FP9.
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Recommendations	
7-Simplify further, privilege impact over process	<ul style="list-style-type: none"> • Orgalime welcomes the simplification efforts already made under Horizon 2020 as this has demonstrably led to increased company participation in many programmes. Further steps to simplify access to and the management of programmes will no doubt facilitate companies' participation in the programme. This is an important step forward to increase the industrial participation in transnational R&I activities, crucial for a positive development in Europe. • We welcome the flexibility to adapt work plans according to possible new circumstances along the projects lifetime. Research and innovation can take unforeseen paths. • We can also understand that there might be cases where projects need to be stopped if not performing according to expectations. However, all involved parties need to have a common understanding of the criteria that could be used to stop their project, before initiating a project. This has to be a part of a mutual dialogue between the European Commission and stakeholders so that the rules of the game are very clear. Hence, organisations may choose to not take "the risk" to participate in FP9 if payment would be made against the fulfilment of activities, as suggested by the High-Level Group.

Recommendations	
8-Mobilise and involve citizens	<ul style="list-style-type: none"> • Orgalime understands the need to get the support from citizens on why the European Union should invest in research, development and innovation. Nevertheless, it seems to us essential that the EU institutions should not abdicate their responsibility to develop and implement core policies such as R&I. • Supporting industrial research will have long term benefits for citizens. Manufacturing companies are nested in a local environment where they have responsibilities towards local citizens and local economic life. We trust that the EU understands this and should ensure

European citizens can continue to have jobs in a sustainable society by supporting innovation in industry.

- Citizens are also important as customers and consumers of products and solutions developed by companies in Europe. Notwithstanding this, the idea that “citizens” should define missions raises some concerns around the long term strategic vision of Europe to tackle large challenges. Unfortunately, it presents the wrong image, suggesting that citizens’ interests are not taken into accounts. On the contrary, they are also taken into consideration within the scope of Horizon 2020, both in the Societal Challenges Pillar (health, energy transition, etc.) and in the Industry Pillar (as increased competitiveness leads to job creation).

The question is whether citizens should be directly involved in agenda-setting and the selection of research and innovation priorities. We believe R&D-conducting entities and European industry should continue to have the substantial and leading role in defining future missions.

- It is of course important to carefully keep in mind Europeans’ concerns and needs for the future. However, if a “citizens voting” system were to be the predominant way to define missions and consequently calls, we fear that this would lead to that only a few topics with rather short-term objectives being included, which could thereby call into question the level of funding requested by the EU for its R&I policies. It is obvious that public R&I must finally create benefits for citizens, but the level of communicability of a topic must not become a selection criteria. Complex challenges such as advanced manufacturing risk being overlooked. 99% of citizens use products (cars, trains, medical devices, textiles...) that are made from hundreds or thousands of components without people necessarily either understanding or being aware of the complex the technology behind the goods they use in their daily lives.
- Co-design and co-creation are already necessary elements for our industry to be able to offer competitive solutions to our customers. In fact, many of our companies in the Business to consumers (B2C) sector/segment are leading in developing new ways of capturing customers (citizens) needs. Without this, they could not stay competitive. When considering (Business to Business) B2B, or very technical issues (even seemingly simple operations such as the cutting of a metal sheet) citizens’ implication is less relevant. In addition, one should not overlook that innovation in industry is always generated by citizens in their role as employees and workers.

Recommendations	
9-Better align EU and national R&I investment	<ul style="list-style-type: none"> • Orgalime calls on Member States to pursue the objective of the Lisbon strategy and provide sufficient national and regional funding for research. FP9 must not replace national Research and Innovation budgets but act as a multiplier. • FP9 must focus on activities with a substantial European added value and not compensate for insufficient national funding. Support to single beneficiaries should predominantly be done at national/regional level through funds coming from Member States. However, results from national/regional support could be scaled up to European level at the next stage. • We do not support a vision on full alignment between Member States priorities and the idea of Missions in FP9. The Missions may miss on important research areas especially if chosen by citizens Who are not generally able to master the complexity of the matter. We welcome ideas to optimise research to avoid doubles in research and innovation areas, but Member States should have their freedom to support research in areas other than the ones of the Missions.

Recommendations	
10- Make international R&I cooperation a trademark of EU research and innovation	<ul style="list-style-type: none"> • Orgalime welcomes the opening-up of R&I programmes on condition of reciprocity in funding however we would have welcomed reciprocity most importantly in protection of intellectual property (IPR). Just as President Juncker said in his State of the Union Speech “we are not naïve free traders”, so we should add “we are not naïve open innovators”. • If companies cannot protect the ideas and knowledge they have created, this may strongly hamper their participation in FP9 projects. Particularly in activities of industrial research, IP protection is important. Open Access should not apply by default to data from private-sector R&D&I in public programmes (cofounded or not by industry). • European engineering companies are still maintaining, and even developing, their market shares in many market segments globally; however, competition, in particular from Asia and North America, is challenging. The high level of investment in intangibles and in manufacturing, driven by their manufacturing strategies, in these regions puts European engineering and manufacturing industries under high pressure. To be justified and make sense, European funds need to firstly support excellent research being developed in Europe and the competitiveness of European industry.

	<ul style="list-style-type: none"> • We would welcome the continuation of cooperation with United Kingdom researchers post Brexit as they bring essential knowledge to consortia. Of course, they would need to abide by the same rules as, for example, Switzerland. • Sustainable Development Goals (SDG) could indeed be relevant to frame international cooperation. We would welcome work around SDG n°9 (industrialisation). Large-scale R&I missions (that we understand as different to the Missions) should be driven by the EU nonetheless.
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Recommendations 11- Capture and better communicate impact	<ul style="list-style-type: none"> • Orgalime agrees that communication of results and their impact is important and can be improved. However, measuring impact is a challenging subject. We welcome the fact that the High-Level Group brought up the topic of criteria beyond GDP. Indeed, a research project inherently contains many uncertainties about the impact it will have. Research, development and innovation can have a quick, direct and tangible impact, or a huge indirect impact several years later, or it can just be a failure. Measuring impact with a much longer timeframe than the one of the project itself would be an option to explore. • We would welcome a debate on the definition of impact beyond GDP. Orgalime anticipates the expected impact of projects to be substantial if the focus is put on competitiveness and on supporting industry. • Equally important, the impact measurement process should be in practice easy to implement and not lead to a huge administrative effort. • Finally, it should be borne in mind that research must not be risk averse. Playing too safe for guaranteed impact must be avoided. Instead, the Framework Programmes must encourage risk-taking, creativity and entrepreneurship.
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In conclusion then, in the Communication “a renewed EU Industrial Policy Strategy” the European Commission wrote “*The industrial transformation provides enormous opportunities, but reaping them will require substantial investment in advanced manufacturing, people's skills and talents, as well as intangible assets like research and innovation.*” Orgalime would like to see this political aim translated into reality in FP9.

For more information, please contact:

Željko Pazin,

Director Trade, Legal, R&D&I Email: first name.second name@orgalime.org

Rozenn Maréchal,

Adviser R&D&I, E&S, MSSI-Electrical. Email: first name.second name@orgalime.org

The European Engineering Industries Association