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# PIANO+: Photonic-based Internet Access Networks of the Future

**EUROPEAN COMPETITION FOR  
COLLABORATIVE R&D FUNDING**

**MARCH 2010**

**ANNOUNCEMENT OF A TRANSNATIONAL CALL FOR PROPOSALS  
ERA-NET PLUS**

# PIANO+: Photonic-based Internet Access Networks of the Future

## EUROPEAN COMPETITION FOR COLLABORATIVE R&D FUNDING

### General conditions

PIANO+ is a transnational call for collaborative research and development proposals under the European Commission's (EC's) ERA-NET Plus scheme<sup>1</sup>. The aim is to seek proposals to develop photonic technology and systems to enable widespread broadband access of at least 1 Gbit/s by 2015-20.

PIANO+ is a joint initiative by:

- Federal Ministry of Education and Research (BMBF), Germany
- VDI Technologiezentrum GmbH, Germany
- Technology Strategy Board, UK
- Israel-Europe R&D Directorate for the EU Framework Program (ISERD), Israel
- National Centre for Research and Development (NCBiR), Poland
- Austrian Research Promotion Agency (FFG) / Federal Ministry for Transport, Innovation and Technology (BMVIT), Austria, and
- co-funded by the EC's Directorate-General Information Society and Media (DG INFSO).

The table shows the national and European funds that have been allocated to fund research projects (these figures are the maximum amounts available).



The rules and procedures of this call have been developed and agreed by the participating national funding bodies (PIANO+ agencies) in strict consideration of the ERA-NET Plus scheme as defined by the EC. The call is organised as a competition for funding and will be implemented jointly by the national funding bodies.

The competition is open to participants from Austria, Germany, Israel, Poland and the UK (the participating countries). We expect to fund a mixture of small and large projects, with total costs typically in the range €0.5m to €3m. Projects must be bi- or multinational, collaborative, application-orientated and pre-competitive. Applications will need to satisfy general and national criteria to be eligible for funding.

The participants in a project to be funded through this competition will need to confirm that a consortium agreement is in place before the project starts.

Each national funding body will issue funding contracts (grant agreements) to individual project participants in accordance with its national law. Grants will be paid to the project participants solely by the national funding bodies. The reporting duties of individual project participants will be determined by the relevant national regulations.

Each project must attend an annual co-ordination meeting of all the PIANO+ projects to share progress and best practice as the projects develop. The project co-ordinator, on behalf of the consortium, must also submit an annual short standard report in English on the project's progress. For the final report, the project co-ordinator must summarise the results, accomplishments and impact of the project. The final reports must be suitable to be published by the participating countries and the EC.

This is a two-stage competition. It opens on 15 March 2010; the deadline for submitting stage 1 pre-proposals is 29 April 2010 (17:00 CET); and the deadline for submitting stage 2 full proposals is 16 June 2010 (17:00 CET).

### National and European indicative funding for PIANO+ projects

Country	Contribution from national funding bodies	Contribution from European Commission	Country Total
Austria	€0.30m	€0.15m	€0.45m
Germany	€8.00m	€4.00m	€12.00m
Israel	€1.00m	€0.50m	€1.50m
Poland	€0.60m	€0.30m	€0.90m
UK	€5.00m	€2.50m	€7.50m

<sup>1</sup> [http://cordis.europa.eu/fp7/coordination/eranet\\_en.html](http://cordis.europa.eu/fp7/coordination/eranet_en.html)



## Purpose

Ultra-fast broadband is recognised as becoming increasingly important as demands for bandwidth multiply. Investment in the development of next-generation optical access technologies will enable a future network to be deployed that will radically reduce infrastructure costs by removing local exchanges and potentially much of the metro network.

A joint transnational approach towards fibre access technology will harness the expertise and the resources of the relevant European institutes and companies, to encourage collaborative approaches and facilitate a common technology platform.

The challenge is to enable economic, ubiquitous broadband access of 1 Gbit/s (and beyond) for every subscriber by 2015-20, while meeting the shorter-term needs of system operators and users. We are seeking proposals to develop photonic technology and systems for the scalable, future-proof and energy-efficient access network and its extension to the customers' premises, including the home.

PIANO+ consolidates public funding activities in the participating countries and supports the best possible exploitation of R&D resources. We expect the competition to provide a strong incentive for European companies to co-operate in strategic research; this is a unique opportunity for them to benefit from a more efficient use of their R&D resources and from comprehensive expertise made available by a variety of research institutes.

## Scope for applications

All proposals must be based on photonics. The technology development should focus on components, modules, subsystems, systems and network architectures to enable the next generation of access networks of 1 Gbit/s and beyond. This includes transceivers, amplifiers, switching and routing components, systems, passive and active components, and manufacturability to achieve the required performance and yield.

Solutions must be energy efficient, robust, resilient, future-proof and scalable, and work towards or achieve symmetrical transmission. We are seeking projects that reduce significantly the operational and/or capital costs of ultra-fast broadband to ensure that future solutions do not exceed the price customers currently pay for ADSL2+<sup>2</sup> access. Projects may include intermediate technology steps if appropriate.

Proposals should address one or more of the following:

- seamlessly linking access, backhaul and core network architectures, including the evolution of network topology for convergence with the radio access network and radio over fibre
- the development of technologies to enable ultra-high-speed transmission (including coherent technologies), with the capacity to deliver robustness, resilience, reach and bit rate/capacity with transparency and wavelength agility; ie multi-level coding, lasers, routers, switches, multiplexers, amplifiers, filters and splitters
- cost-effective access and home networks based on optical fibres to provide 1 Gbit/s and beyond, including the optical/physical layer of next-generation networks plus protocols and management applications to ensure Quality of Service when developing new hardware

- key switching and component technologies, and designs to enable the above, including thermal management, control aspects and optical hybrids, eg polarisation handling and phase discrimination, integrated and hybrid technologies including InP<sup>3</sup>, polymers, OPLLs<sup>4</sup> and VHDWDM<sup>5</sup>, and low energy subsystems.

The main technical focus of this competition is the optical access network; however, projects can include other areas such as backhaul and wireless technical developments, management and architectures, and protocol evolution, as long as they solve an optical access-related issue. Software development work packages to support protocols and management applications can be included where applicants can show that these are necessary to solve photonics and access-related issues.

For guidance, we expect the 'centre-of-gravity' of any project to relate to optical access, with no more than a third of the total eligible project costs allocated to other developments. This means that projects that focus mainly on software, wireless or very-high-capacity core transmission are out of scope.

Projects may address standardisation, although this is expected to be at the level of the basic components such as laser diodes and detectors, rather than trying to have a significant impact on European network design standardisation. Projects solely on FTTC<sup>6</sup> and FTTK<sup>7</sup> are out of scope.

We will consider projects that include the development of photonic materials, but only where applicants can show that this is an essential part of component or system development and it does not account for more than one-quarter of the total project cost.

3 indium phosphide

4 optical phase locked loop

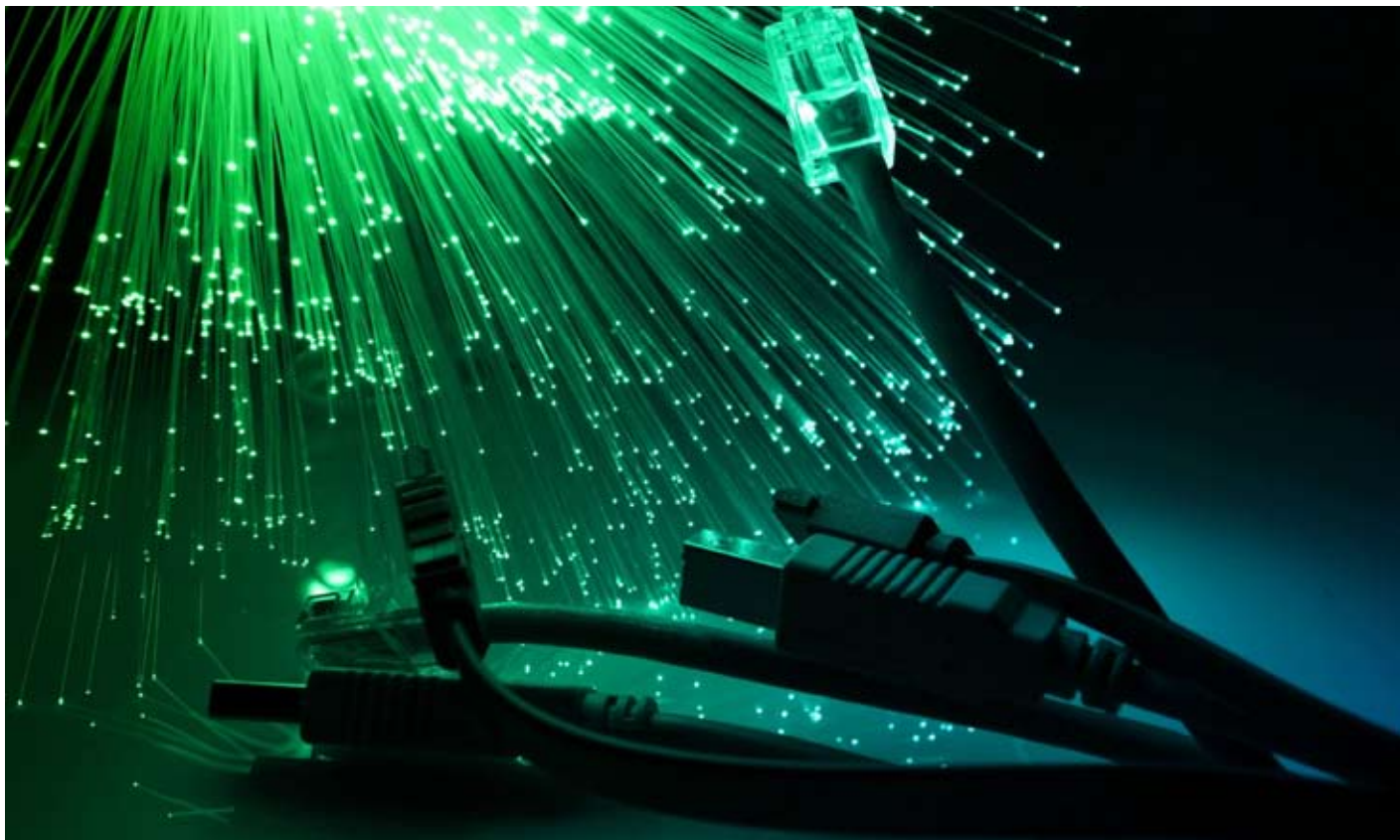
5 very high density wavelength division multiplexing

6 fibre to the cabinet

7 fibre to the kerb

2 Asymmetric Digital Subscriber Line 2+





## General rules of participation

The competition will be open for participants from Austria, Germany, Israel, Poland and the United Kingdom (the participating countries). In exceptional circumstances, partners from additional countries may be involved in the project. However, they will not receive any funding from the PIANO+ agencies and their role must be clearly defined and justified.

In order to be considered eligible and to be admitted to the independent transnational evaluation in the 2nd stage, applications must meet the following eligibility criteria:

- The application must be written in English and it must have been received duly and complete in its entirety before the deadline given in this call announcement.

- At least two independent partners/ organisations from at least two participating countries<sup>8</sup> have to be involved in the project.
- Not more than 75% of the total eligible project costs shall be incurred by any single organisation or by the organisations from a single participating country.
- Project duration shall be between 24 and 36 months.
- All applications must align with the technical scope defined in section 3.
- The project results have to be exploitable in the participating countries.

In addition, the national eligibility criteria which apply to the participants of a project proposal must be met. For the national eligibility criteria see Appendix A 'Criteria for eligibility and evaluation'.

## Evaluation criteria

Projects will be expected to focus on critical issues in the areas defined above, explaining why they are critical, and exactly what impact the successful completion of the project will have. Proposals should also be explicit about their future path to commercialisation.

In the 2nd stage the full proposals will be judged against the following evaluation criteria<sup>9</sup>:

- scientific and/or technological excellence
- relevance to the purpose and the objectives of this call
- the potential impact through the development, dissemination and use of project results
- the quality and efficiency of the implementation and management.

<sup>9</sup> The European Commission's FP7 evaluation criteria (and sub criteria) will be applied. For details see 'Annex 2: Eligibility and Evaluation Criteria for Proposals' of the 'FP7 Cooperation Work Programme: Information and Communication Technologies': [ftp://ftp.cordis.europa.eu/pub/ftp7/docs/wp/cooperation/ict/c\\_wp\\_201001\\_en.pdf](http://ftp.cordis.europa.eu/pub/ftp7/docs/wp/cooperation/ict/c_wp_201001_en.pdf)

<sup>8</sup> Participating countries: Austria, Germany, Israel, Poland, UK.

## Process

All proposals must be submitted online by one of the partners, acting as the project coordinator on behalf of the consortium. Application forms (including national annexes) are available for download from the PIANO+ website at [www.pianoplus.eu](http://www.pianoplus.eu)

For applicants looking to build collaborations, visit the 'Find partners' section of the PIANO+ website. Your National Contact Point may also be able to help (visit [http://cordis.europa.eu/fp7/ncp\\_en.html](http://cordis.europa.eu/fp7/ncp_en.html)).

There are two stages to the competition:

### Stage 1: pre-proposal

Applicants must submit a **four-page 'light' proposal** containing a description of the consortium, an abstract of the work plan including technical details, and a finance plan. Budgetary figures shall be included in the proposal so that participating countries can plan their national budgetary commitments at an early stage.

The national funding bodies will check these pre-proposals against the **general and national eligibility criteria** (see Appendix A, sections A1 to A3).

Consortia whose proposals cannot for any reason be funded by one or more of the participating countries will be warned at this early stage. Letters will be sent to the project coordinators, with comments and advice about eligibility (general and national), technical scope, and finances and budget.

No applicants will be formally excluded at stage 1. The relevant funding bodies may give additional oral feedback; for example, to the other participants in a consortium. This may include advice about how the project can become eligible for funding.

### Stage 2: full proposal

All of the members of an R&D project consortium must jointly submit a **30-40 page full proposal**, containing a structured description of the proposed work (objectives, state-of-the-art technology, work plan and resources, impact and exploitation) and a list of the partners.

Along with the full proposal, each consortium partner must also submit a **national annex** relating to their country of origin, where requested. The national annexes address the eligibility criteria of each participating country (see Appendix A, sections A2 and A3). We will use the full proposal and the national annexes to determine if the project and the partners are eligible for funding.

The project coordinator must collect **signed commitments in writing from all the partners** and send them to their national PIANO+ contact (see Appendix B) within 30 days of submitting the full proposal.

The full proposals will be evaluated in two steps:

**Evaluation step 1:** Each participating country will assess proposals that include project partners from their country, and perform a final check against the national eligibility criteria. Proposals that do not meet each participating country's eligibility criteria will be rejected, and a letter will be sent to the project coordinators explaining the reasons for rejection.

**Evaluation step 2:** Proposals that are accepted by the participating countries will then be assessed by independent international experts. The experts will check the proposals against **general evaluation criteria** (see Appendix A, section A4) which will result in a ranked list of how well they meet the criteria.

The available funds will be allocated to the projects on the ranked list in descending order. To ensure that the projects can be funded according to the final ranking, 20% of the EC funds will be reserved in a common 'balancing pot'. The balancing pot will be used to fund eligible consortium partners who cannot otherwise participate because their country has allocated all of its funds to the projects ranked above, while funding for other partners in the consortium is still available.

## Key dates

Competition opens	<b>15 March 2010</b>
Deadline for receipt of stage 1 pre-proposal (mandatory)	<b>29 April 2010 (17:00 CET)</b>
Feedback to applicants of stage 1 eligibility	<b>20 May 2010</b>
Deadline for receipt of stage 2 full proposal	<b>16 June 2010 (17:00 CET)</b>

# Appendix A: Criteria for eligibility and evaluation

## A1 General eligibility criteria

**Participating countries:** The competition is open to participants from Austria, Germany, Israel, Poland and the UK (the participating countries). In exceptional circumstances, partners from other countries may be involved in the project. However, they will not receive any funding from the national funding bodies and their role must be clearly defined and justified.

**Language:** All applications, contractual documents and reports at consortium level must be written in English.

**Minimum number of participants:** At least two independent partners or organisations from at least two participating countries must be involved in the project.

**Balance:** Not more than 75% of the total eligible project costs shall be incurred by any single organisation or by the organisations from a single participating country.

**Project duration:** Projects must last between 24 and 36 months.

**Scope:** All applications must align with the technical scope (see section 3, 'Scope for applications').

**Exploitation:** The project results must be exploitable in the participating countries and the EU. The full proposal must clearly demonstrate the plan to exploit, apply and/or commercialise the results of the project.

## A2 National eligibility criteria

### Austria

The following legal entities are eligible for funding:

- enterprises
- research organisations (universities and other not-for-profit research institutions)
- associations.

Entities that are part of the Austrian federal administration are excluded.

Funding intensity:

- large enterprises receive a public subsidy of up to 40% of eligible costs
- medium enterprises receive a public subsidy of up to 50% of eligible costs
- small enterprises receive a public subsidy of up to 60% of eligible costs
- research organisations receive a public subsidy of up to 75% of eligible costs.

Austrian participants are not allowed to be the project coordinator.

Detailed information for the establishment of National Grant Agreements is available from the FFG at [www.ffg.at/pianoplus](http://www.ffg.at/pianoplus)

The national rules on eligible costs for Austrian participants are available from the FFG at [www.ffg.at](http://www.ffg.at)

### Germany

Project consortia with German participants must include at least one industrial partner based in Germany.

The national regulations AnBest-P, BNBest-BMBF 98 and/or NKBF 98 apply. The documents can be found at [www.kp.dlr.de/profi/easy/formular.html](http://www.kp.dlr.de/profi/easy/formular.html)

### Special regulations for German universities of applied sciences ('Fachhochschulen')

Universities of applied sciences that have been successful in the PIANO+ evaluation and selection procedure will have the option to receive additional funding. This advanced funding can be formally requested for an additional (secondary) research project within a qualification/profiling category of the BMBF funding scheme 'Profil - Neue Technologien (ProfilINT)'.

The topic and the work to be performed in the additional project must relate to the subject matter of the primary project. At the same time, it must include advanced or new research issues while varying significantly in terms of the tasks in order to avoid duplication. The work plans and the personnel resources of the primary and secondary project must not overlap.

The extra funding shall enable the university of applied sciences to develop an additional research profile and extended expertise by a project team (bachelor/master/doctorate; publications; research marketing). The evaluation of the secondary projects and the granting of the ProfilINT funds will be subject to a separate selection procedure.

The funding agency responsible for the implementation of the ProfilINT funding scheme on behalf of the BMBF is:

Arbeitsgemeinschaft industrieller Forschungsvereinigungen „Otto von Guericke“ e.V. (AiF)  
Projekträger Forschung an Fachhochschulen  
Bayenthalgürtel 23  
50968 Köln  
Germany

Contact person: Michael Grünberg  
Tel: +49-221 37680-28  
Fax: +49-221 37680-27  
E-mail: [ProfilINT@aif.de](mailto:ProfilINT@aif.de)

Further information (legal basis, eligibility, hints for applicants, etc) and guidance is available on the internet at the AiF homepage ([www.aif.de/fh/12-0-profilint.html](http://www.aif.de/fh/12-0-profilint.html)) or at the BMBF homepage ([www.bmbf.de/de/1956.php](http://www.bmbf.de/de/1956.php)).

## Israel

Only industry partners are eligible for funding.

Proposals must include a single or multi-year programme that will provide know-how, processes or methods for the manufacture of a new product or the significant improvement of an existing product, or a new process or a significant improvement in an existing process. The product must have a sizeable potential for export sales.

The support is in the form of a conditional grant amounting to 20%, 30%, 40% or 50% of the approved R&D budget.

Application forms in Hebrew are available from the website

[www.moital.gov.il/madan.htm](http://www.moital.gov.il/madan.htm)

## Poland

Two categories of organisation are eligible for funding:

1. Public and non-public universities, institutes established by the Polish Academy of Sciences, R&D units (branch research units), and research institutes (including international).

For this category the funding quota is up to 100% for any type of research.

2. Enterprises (including small and medium-sized enterprises [SMEs]) with R&D status according with national programmes. Enterprises must be registered in Poland.

Funding for this category depends on the type of research and the size of the enterprise.

Requested percentages of the total budget for industrial research are:

- up to 80% for micro and small enterprises
- up to 75% for medium enterprises
- up to 65% for large enterprises.

Requested percentages of the total budget for experimental development are:

- up to 60% for micro and small enterprises
- up to 50% for medium enterprises
- up to 40% for large enterprises.

## UK

The following types of organisation are eligible for funding:

- National industry – SMEs (up to 60%)
- Large companies (up to 50%)
- Academics and universities (80% of full economic costs [FEC]). Funding must not exceed 50% of the overall UK grant.

Eligible projects must include at least one UK industrial partner.

All UK project participants must be separate legal entities.

50% of the research must be carried out by the industry partner(s).

Subcontracting will be capped at 25% of the UK budget.

## A4 General evaluation criteria

The stage 2 proposals will be judged against the following criteria:

- scientific and/or technological excellence
- relevance to the purpose and the objectives of this competition
- the potential impact through the development, dissemination and use of project results
- the quality and efficiency of the implementation and management.

## A3 Summary of eligibility of participants

	HE	RES	IND	Specific conditions
<b>Germany</b>	Yes	Yes	Yes	Must include at least one German industrial partner
<b>UK</b>	Yes	Yes	Yes	Must include at least one UK industrial partner
<b>Israel</b>	No	No	Yes	Only industry with R&D activities
<b>Poland</b>	Yes	Yes	Yes	
<b>Austria</b>	Yes	Yes	Yes	Austrian participants are not allowed to act as the coordinator

**HE = higher education, RES = research, IND = industry**

## Appendix B: National Contact Points

We strongly encourage all participants to communicate with their National Contact Point to determine eligibility before submitting an application. Details are as follows:

### Austria

**Funding agency:**

FFG

**Contact:**

Doris Vierbauch

**E-mail:**

Doris.Vierbauch@ffg.at

**Tel:**

+43 (0)5 7755 – 5024

### Germany

**Funding agency:**

VDI Technologiezentrum GmbH  
(on behalf of the BMBF)

**Contact:**

Sebastian Krug

**E-mail:**

krug@vdi.de

**Tel:**

+49-211-6214-472

### Israel

**Funding agency:**

The CSO fund

**Management agency:**

ISERD

**Contact:**

Aviv Zeevi Balasiano

**E-mail:**

aviv@iserd.org.il

**Tel:**

+972-3-5118121

### Poland

**Funding agency:**

NCBIR

**Contact:**

Jacek Pardyak

**E-mail:**

j.pardyak@ncbir.pl

**Tel:**

+48 22 58 30 501

### UK

**Funding agency:**

Technology Strategy Board

**Contact 1:**

Graham Mobbs

**E-mail:**

graham.mobbs@tsb.gov.uk

**Tel:**

+44 (0)1793 442763

**Contact 2:**

Mike Biddle

**E-mail:**

mike.biddle@tsb.gov.uk

**Tel:**

+44 (0)1793 442700

### Further information

To find consortium partners and details of PIANO+ events and national information days, please visit the PIANO+ website at [www.pianoplus.eu](http://www.pianoplus.eu)