

Co-operation Report 2021

Annex to the Annual Review

Executive summary

Co-operation has been one of the EPO's core values since the Office was founded nearly five decades ago. Today, with new technologies emerging faster than ever, co-operation with other IP offices is crucial to ensuring that the global patent system can adapt to meet users' rapidly evolving needs. Co-operation is therefore deeply embedded in Goal 4 of the EPO's Strategic Plan 2023 (SP2023) and remains a top priority.

This first ever annual report on co-operation aims to offer deeper insights into the Office's multifaceted activities in this area. The report highlights the EPO's efforts to build a stronger, more harmonised patent system in Europe and beyond that protects innovation for the benefit of all interested parties.

Through the European Patent Network (EPN), the Office connects the 38 member states of the European Patent Organisation and two European extension states, facilitating the exchange of IP knowledge and expertise. 2021 saw a flurry of co-operation activities in the network, resulting in the signature of 24 bilateral co-operation agreements over the course of the year, with the remaining ones in the pipeline for 2022.

On the IT front, rapid progress was made in developing tools that support the filing of applications at national offices. This led to the successful launch of national e-filing services in Lithuania and Spain. By the end of 2021, over 100 examiners at national offices in the EPN were also piloting a new prior-art search tool, a cloud-based version of the EPO's inhouse search tool ANSERA.

2021 also marked the launch of a new policy for the working agreements on search co-operation, signed by 15 national offices. The policy introduced two key elements: a single search fee for all participating member states and stronger financial support for national searches performed by the EPO of patent applications filed by individuals, small and medium-sized enterprises, universities and research centres. In total, the EPO performed well over 27 000 searches for national patent applications in 2021, including 2 240 (8%) that were eligible for financial support.

Under SP2023's convergence programme, the working groups proposed common practices on the "accordance of a priority date" and "re-establishment of rights" which were adopted by the European Patent Organisation's Administrative Council in March 2022. This marked a further historic milestone on the path to a more robust, harmonised IP system in Europe.

Another aspect of co-operation involves supporting innovation with high-quality patent information. With its network of 325 patent information centres (PATLIBs), the EPO helped users and potential patent applicants understand the patent system and, crucially, boosts technology transfer across its member states. To amplify its positive impact, the PATLIB network was upgraded in 2021, with the first fully digital Patent Knowledge Week held in November 2021, attracting over 2 200 participants from 90 countries.

The EPO continued to expand its geographical reach last year, with the signature of a Reinforced Partnership agreement with the Saudi Authority for Intellectual Property in November. Since the adoption of SP2023 in June 2019, the European Patent Organisation's geographical coverage has increased substantially. By the end of 2021, it covered an area inhabited by 2.02 billion people spanning the 38 member states, as well as two extension states, four validation states and 11 Reinforced Partnership offices. Moreover, a total of 24 bilateral co-operation agreements were signed last year.

2021 was also a momentous year for the Unitary Patent package, which is now on the verge of becoming a reality. The launch of the Unitary Patent is set to mark the biggest change to the patent system in Europe in the EPO's history. More importantly, it offers significant potential for innovation, investment and technology transfer at a time when they are needed more than ever. The EPO worked hard on preparations for the Unitary Patent in 2021 and will make every effort to promote its early uptake once it is launched.

Contents

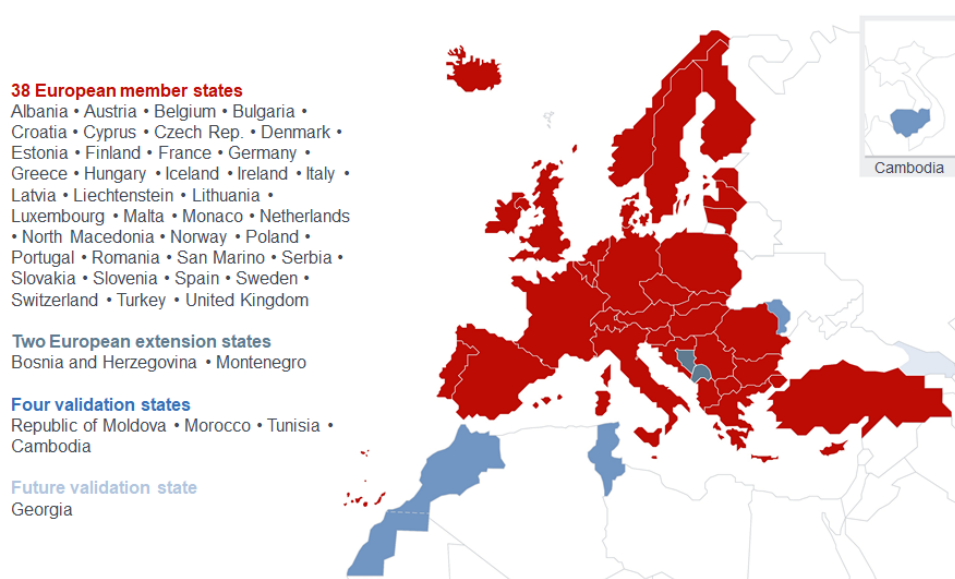
Executive summary	2
1. Background, aims and infrastructure of co-operation	5
1.1 Introduction	5
1.2 Infrastructure of co-operation at the EPO	6
2. Co-operation during the pandemic – how we adapted, and benefits gained	6
3. Co-operation and sustainability	7
4. European co-operation	9
4.1 Who do we collaborate with in Europe?	9
4.2 Co-operation with member states and extension states	10
4.3 Enhancing co-operation with European institutions and user associations	26
5. International co-operation	27
5.1 Expanding geographical outreach	28
5.2 Multilateral co-operation	37
6. Partnership and dialogue with users	39

1. Background, aims and infrastructure of co-operation

1.1 Introduction

The European Patent Office (EPO) is the second largest intergovernmental institution in Europe and is responsible for examining patent applications and granting patents that have legal effect in the 38 member states¹ of the European Patent Organisation as well as two European extension states and four validation states.

Figure 1: Map showing the geographic coverage of European patents



Source: EPO

The European Patent Organisation was created through co-operation to maximise the benefits of innovation for its member states, civil society and inventors. This ethos has been central to the Office's success over the past 50 years. Co-operation with other IP offices in Europe and beyond, with users, academia and other stakeholders has evolved over the years, while joint efforts with our partners have also grown in ambition and in terms of tangible benefits. Underlying these activities is the desire to keep the patent system fit for purpose, to support innovation and to enhance legal certainty for the benefit of patent applicants and society.

This is the EPO's first comprehensive report on co-operation, and it aims to provide insights into its activities in this area, highlighting the Office's policy approach and the results achieved in 2021 for users, inventors and the general public.

¹ During the course of 2022, the Republic of Montenegro (currently an extension state) will accede to the European Patent Convention and become a full European Patent Organisation member state.

1.2 Infrastructure of co-operation at the EPO

Effective co-operation requires commitment from all participants in a joint effort. To this end, the European Patent Network (EPN) serves as an effective platform for information exchange, co-operation and the promotion of interoperability. It is a unique network that brings together the EPO, the national patent offices (NPOs) of the 38 contracting states to the European Patent Convention (EPC), the two extension states Bosnia and Herzegovina and Montenegro, as well as the European Union Intellectual Property Office.

Together with the NPOs, the EPO holds a dedicated co-operation meeting every year. However, the 13th Annual Meeting on Co-operation in Kilkenny in May 2019 marked the beginning of a new era of co-operation with new principles and priority areas, for a different shape and approach to co-operation.² These discussions also fed into the EPO's Strategic Plan 2023 (SP2023) and resulted in a new co-operation policy³ that aims to build a more effective European patent system and network with a positive global impact.

2. Co-operation during the pandemic – how we adapted, and benefits gained

From the outset of the pandemic, the EPO's main priority was to maintain business continuity in all its activities, including co-operation. The new virtual environment inspired imaginative and effective solutions, such as fully digital meetings of the Administrative Council and Council bodies, digitalisation in the patent grant process including oral proceedings and many online conferences which yielded an extraordinary increase in outreach.

Although the travel restrictions associated with the pandemic reduced possibilities for face-to-face meetings, the use of constantly improving digital tools allowed European and international co-operation to continue unabated.

Online learning and collaboration, for example, increased substantially via various digital platforms. The EPO's European Patent Academy adapted many of its courses for online availability and in addition, the EQE was held online in 2021. EPO events such as the European Inventor Award also took place in an online format, which enabled them to reach a substantially wider and more geographically diverse audience.

In addition, a new bilateral agreement builder tool was created to facilitate co-operation, enabling teams at the EPO and NPOs to work together digitally in real time on preparing and negotiating the bilateral agreements, which are the basis for all European co-operation activities.

Thus, despite the challenges posed by the pandemic, creative solutions were adopted that greatly enhanced co-operation within the EPN, a responsive network.

² https://www.epo.org/modules/epoweb/acdocument/epoweb2/394/en/CA-65-19_en.pdf, p 108

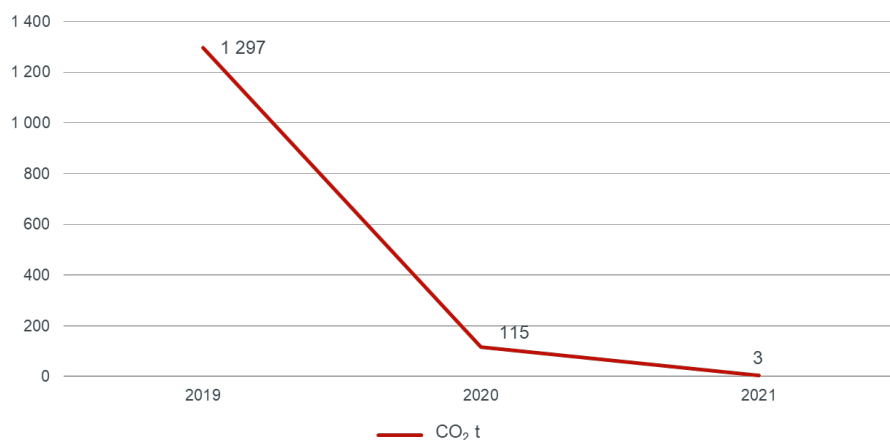
³ https://www.epo.org/modules/epoweb/acdocument/epoweb2/454/en/CA-27-20_en.pdf

3. Co-operation and sustainability

Sustainability is key in implementing the EPO's co-operation activities. At the strategic level, the EPO's environmental sustainability ambitions include the goals to reach carbon neutrality by 2030 and to achieve zero net emissions of greenhouse gases by 2050. Therefore, it is of the utmost importance that co-operation activities align with the EPO's sustainability efforts.

The new co-operation policy defines sustainability as one of the principles for successful co-operation with our member states and the wider EPN. This aim also applies to co-operation with our international partners. Joint projects must therefore be *"pursued in adherence to their financial, operational and environmental sustainability. Sustainability will be a key factor in determining the priority of a project and in the design and method of implementation"*.⁴ Consequently, the Office has made a commitment, as far as possible and where appropriate, to hold meetings, consultations, working groups and any other category of interaction by virtual means. Furthermore, this is linked to our overarching goal to reduce CO₂ emissions and encourage staff to use alternative means of collaboration. For instance, when business trips are necessary, travel by train is encouraged. In 2019, CO₂ emissions for employees travelling for business and training-related purposes were 1 297 t. In 2020, this dropped to 115 t, declining further to 3 t in 2021.

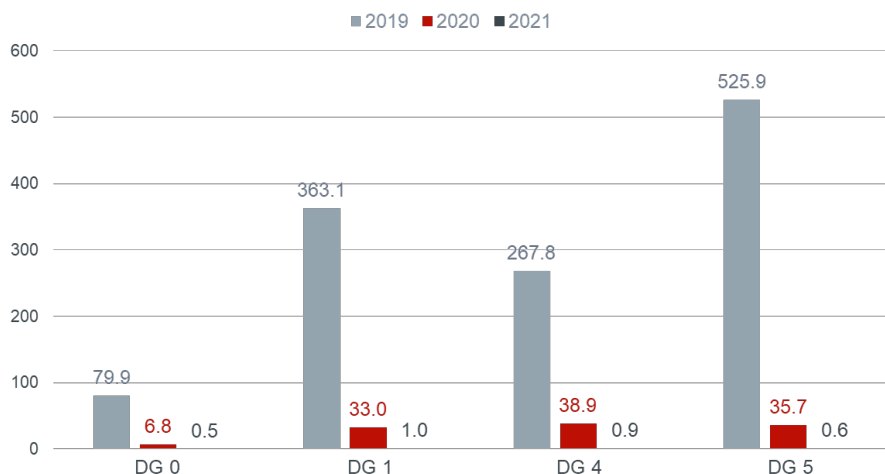
Figure 2: Travel emissions 2019-2021



Source: EPO

⁴ https://www.epo.org/modules/epoweb/accdocument/epoweb2/454/en/CA-27-20_en.pdf

Figure 3: Travel emissions (CO₂ t) – organisational overview 2019-2021



Source: EPO

2021 saw a drastic drop in CO₂ emissions within the EPO, largely thanks to a 95% decrease in duty travel compared to 2019. While this was primarily related to the pandemic, it has accelerated a positive trend, proactively supporting changes to the EPO's travel policy in favour of online meetings.

Moreover, the Office encourages online and hybrid meetings for oral proceedings in examination and opposition, which are simultaneously interpreted as necessary, thereby ensuring business continuity and access to justice, while reducing the number of trips to our premises. By providing regular information on the level of greenhouse gas emissions caused by business travel, the Office aims to gain the support of all stakeholders in terms of reducing the number of business trips. To offset the climate impact of unavoidable flights of our staff and bodies, the EPO compensates for the corresponding greenhouse gas emissions by purchasing recognised emission certificates.⁵

5

[https://documents.epo.org/projects/babylon/eponet.nsf/0/F4C0940727D3C283C12586A40054450F/\\$FILE/environmental_policy_en.pdf](https://documents.epo.org/projects/babylon/eponet.nsf/0/F4C0940727D3C283C12586A40054450F/$FILE/environmental_policy_en.pdf)

Figure 4: The contribution of co-operation to reducing CO₂ emissions under the EPO's Environmental Policy



Source: EPO

Finally, co-operation itself is a vehicle for harmonisation of approaches not only on the corporate and political levels, but also in terms of environmental and social governance. Through increased co-operation with our member states and stakeholders, we are disseminating our precautionary approach to environmental challenges and promoting greater environmental responsibility.

We are proud of our commitment to sustainability, transparency and co-operation, and of our users' readiness to embrace new, more sustainable ways of working during these times of crisis and beyond.

4. European co-operation

4.1 Who do we collaborate with in Europe?

The Office has established a comprehensive co-operation programme with a variety of stakeholders. In addition to our member states and extension states, these include:

- the European Commission (EC)
- the European Union Intellectual Property Office (EUIPO)
- other European Union agencies, as well as European and national organisations and institutions
- European and national user associations, such as the Institute of Professional Representatives before the European Patent Office (epi) and BusinessEurope

While the intensity of interaction between the Office and these different stakeholders varies, our aim with all partners remains the same – to provide high-quality, patent-related services for users of the European patent system, particularly European industry, and promote interoperability among the offices of the EPN.

Regular contact with policymaking organisations like the EC and the European Parliament are essential in ensuring alignment with applicable legislation, such as the EU Directive on the legal protection of biotechnological inventions (98/44/EC), while meetings with representatives of national governments help co-ordinate approaches, measures and policies, thereby raising awareness of the EPO's work.

Similarly, close relations with an extensive network of user associations give the Office a better understanding of applicants' needs and requirements. Through bilateral meetings, surveys and consultations, these interactions are vital for obtaining feedback that can initiate improvement efforts.

4.2 Co-operation with member states and extension states

4.2.1 The impact of co-operation, and defining and prioritising co-operation activities

As with other aspects of SP2023, co-operation between the Office and NPOs aims to generate a significant positive impact for our users. To this end, the Office and the NPOs focus on activities that will result in improved patent products and services as well as an enhanced patent system in Europe. These joint activities address key aspects of our work and are grouped under four pillars:

Figure 5: Four key pillars of co-operation

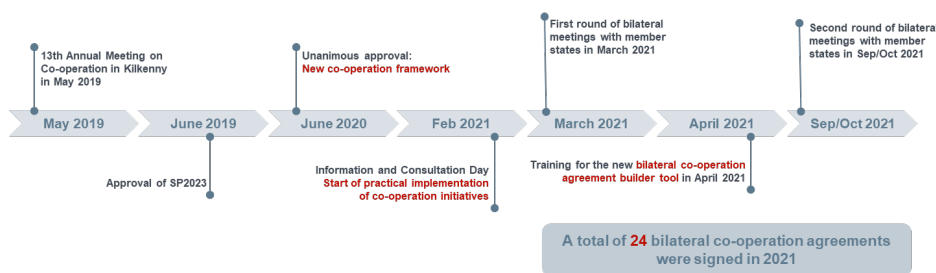


Source: EPO

Based on the groundwork laid in 2020, co-operation initiatives began to be implemented in 2021 under the new co-operation framework. Preparations included consultations with NPOs on co-operation projects, developing a new catalogue of co-operation projects, drafting the respective project cards and establishing a new policy for the working agreements on searches.

Practical implementation of the co-operation initiatives started with the Information and Consultation Day for member states in February 2021. This was followed by a first round of bilateral meetings with NPOs in March 2021, marking the beginning of negotiations of the bilateral co-operation agreements, based on the new co-operation catalogue. A second round of co-operation meetings in September/October 2021 informed national offices about the status of projects and involved discussions on co-operation agreements, including the prioritisation of co-operation activities. A new tool facilitated the drafting of bilateral co-operation agreements that enabled teams at the EPO and NPOs to work together digitally in real time. A total of 24 bilateral co-operation agreements were signed in 2021.

Figure 6: Timeline of co-operation efforts until conclusion of bilateral co-operation agreements



Source: EPO

Figure 7: Member states and extension states that signed a bilateral co-operation agreement in 2021



Source: EPO

These agreements provide the framework for co-operation activities to be undertaken between the EPO and each NPO, addressing the following topics.

- Building expertise at NPOs and related institutions through participation in training events with the EPO
- Facilitating knowledge transfer through participation in working groups and collaboration on work-sharing activities

- Developing learning platforms that encourage innovative small and medium-sized enterprises (SMEs), research organisations and universities to use the patent system by increasing their IP awareness and understanding
- Assisting in the convergence of practices and facilitating discussions on specific topics of interest
- Developing IT tools to ensure all NPOs are supported in creating modern and effective IT systems for patent processing

In addition to specifying joint projects and other work to be carried out while the agreements are in force, the agreements also outline the financial commitments from both parties that are subject to review and renewal on expiry.

4.2.2 Co-operation activities with member states and extension states and progress made on implementation

This chapter provides an overview of all activities that are part of the co-operation catalogue and reports on progress in implementing the respective initiatives in 2021.

In total, NPO participation in co-operation projects reached 76% in 2021, exceeding the target of 70%.

4.2.2.1 Pillar 1: Knowledge and quality

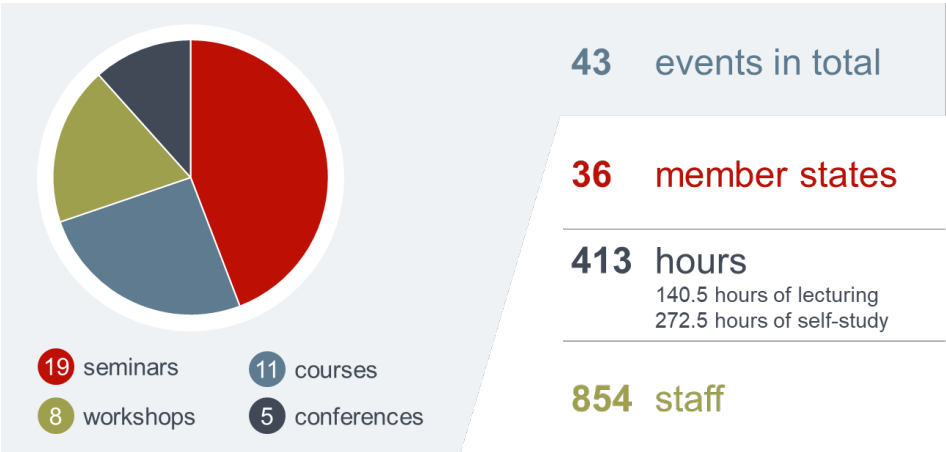
Build expertise at NPOs and related institutions

The EPO has a long tradition of providing capacity-building support to NPOs and this has evolved from sharing purely technical knowledge to include courses on soft skills, for example. Training is provided by the European Patent Academy on the basis of an annual training catalogue.⁶ Prompted by the constraints of the pandemic and a desire to increase flexibility and conciseness, the 2021 training courses were revised and adapted to combine self-study and interactive events.

In 2021, the Academy's educational activities in the area of patent granting that specifically addressed NPOs were as follows:

⁶ <https://www.epo.org/news-events/news/2022/20220126.html>

Figure 8: The Academy's educational activities in 2021⁷

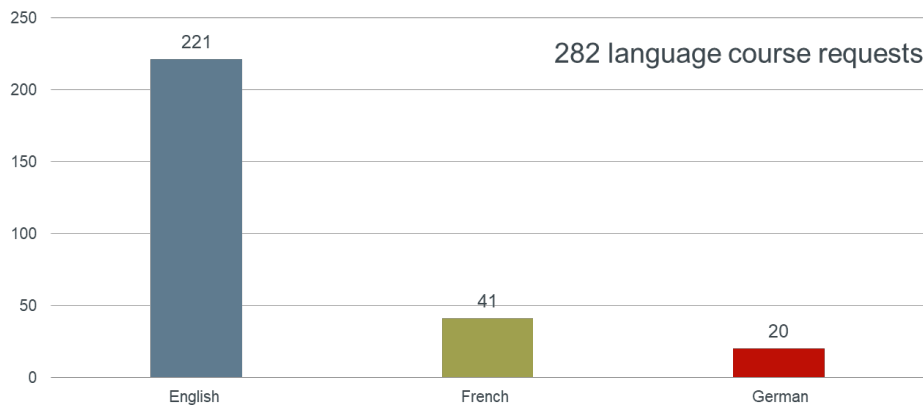


Source: EPO

Language training and support

The language training programme was redesigned under SP2023. It now aims to improve the language skills of NPO management and staff in the three official languages of the EPO to facilitate professional, barrier-free interaction and co-operation in any of these languages. Of the 24 bilateral agreements signed in 2021, 17 NPOs opted to include the language training project, representing a 71% participation rate.

Figure 9: Language course requests from 12 national offices in 2021



Source: EPO

⁷ Not counting the Online Filing 2.0 conference in DE, EN and FR.

Determining the systematic demand for e-learning and training

The "IP calendar" activity⁸ is part of the project on "e-learning demand and quality analysis". Its aims are twofold: first, to establish an IP training landscape at the European level and promote a better understanding of user segmentation and stakeholder requests; second, to identify IP events organised in Europe and consolidate them in a single IP calendar, thereby helping end users make informed decisions in relation to their participation and alerting them to events that will best serve their needs.

Figure 10: IP calendar interconnections



Source: EPO

The collection and publication of EPO and EUIPO events has been established, with events being announced regularly since Q4 2021⁹.

Several NPOs have requested the inclusion of their events in the IP calendar. Information is already available for those offices providing such details.

PATLIB 2.0

PATLIB¹⁰ is a network of some 325 centres in 37 member and extension states,¹¹ offering IP advice and services to local industries, SMEs, researchers and individuals. The range of their services varies. Some provide advanced services, such as patent analysis, business analysis and technology transfer services whereas others function as simple IP information centres.

⁸ <https://www.epo.org/learning/training.html>

⁹ <https://www.epo.org/learning/training.html>.

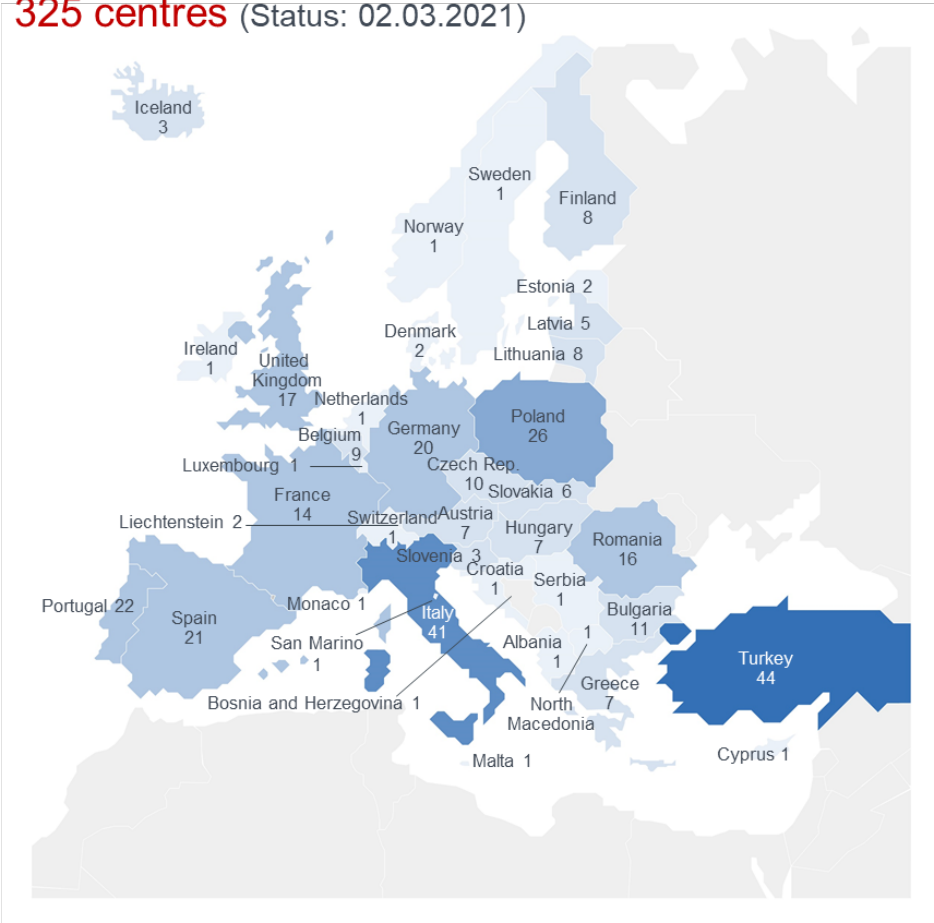
¹⁰ <https://www.epo.org/searching-for-patents/helpful-resources/patlib.html>

¹¹ Including the PATLIB centre in Bosnia and Herzegovina.

Figure 11: Map showing the geographic coverage of the PATLIB network¹²

PATLIB network today

325 centres (Status: 02.03.2021)



Host organisation

University	<div></div>	40%
National patent office	<div></div>	18%
Chamber of commerce	<div></div>	16%
Institute/association	<div></div>	7%
City library	<div></div>	4%
Other	<div></div>	14%

PATent LIBrary = network of patent information centres in Europe providing advice and guidance on IP/patents to the public

Source: EPO

¹² The number of active PATLIB centres may fluctuate. To ensure accuracy, data are collected from the same source: the table with the list of centres' IDs and levels, which is updated daily.

The PATLIB 2.0 project aims to fully revamp the network, following the recommendations in the Porto Paper¹³ and the vision embodied in SP2023 for a solid, international network of PATLIB centres. Efforts therefore aim at improving the quality and range of IP services offered to innovators.

An enhanced PATLIB network will allow PATLIB centres to offer state-of-the-art services to innovators, patent applicants and support institutions, with emphasis placed on promoting practical, useful skills. Overall, by boosting PATLIB centres' capabilities, the project will result in better informed innovators and patent applicants, consequently leading to higher-quality patent applications.

Several milestones throughout 2021 helped strengthen the PATLIB network and improve the quality of its services.

Notably, the May PATLIB2021 conference launched PATLIB 2.0. More than 1 100 participants registered for both days, around six times as many as in previous editions of the conference. Similarly, the PATLIB team co-ordinated the first edition of the online event Patent Knowledge Week in November 2021. With more than 2 200 participants from over 90 countries, the event also included sessions for SMEs, universities, IP professionals and PATLIB centres.

Also in May 2021, and in close co-operation with the Office, PATLIB centres embarked on a self-assessment process during which they were assigned to one of three levels, according to the number, quality and type of services provided to their clients at the time of the self-assessment. Depending on the level assigned to them, the Centres are now entitled to a specific training package to be provided by the EPO. These can include patent search-related training, soft skills, patent analytics and the business use of patent information and other relevant measures. The tailor-made training packages are designed to help PATLIB centres acquire the skills necessary to create new services so that, over time, they can move to a higher level, based on the established criteria. As of December 2021, 137 centres were assigned to Level I, 93 to Level II and 47 to Level III.

Furthermore, to empower the centres as creators, the PATLIB 2.0 project now offers tailored service packages to enable PATLIB centres to teach effective use of patent information and patent tools (train-the-trainers), perform analytics and statistics based on patent data and draw conclusions on trends in specific technical fields. In 2021, in the framework of the PATLIB exclusive learning path, the European Patent Academy offered the PATLIB network 21 courses. Training was complemented by additional events throughout the year, such as quarterly introduction packages for new centres or new staff in these centres.

An updated directory¹⁴ of all centres, currently 325, showcasing their service portfolios, has been made available and a list of network experts, currently 99, has been published. The Office benefits from this expert network through constructive feedback on EPO tools and patent information services.

¹³

[https://documents.epo.org/projects/babylon/eponot.nsf/0/616998F32F3188FEC1258423003529DC/\\$FILE/porto_paper_en.pdf](https://documents.epo.org/projects/babylon/eponot.nsf/0/616998F32F3188FEC1258423003529DC/$FILE/porto_paper_en.pdf)

¹⁴ <https://epn.epo.org/patlib/directory>

Finally, a digital platform went live in 2021 to facilitate knowledge sharing between the centres and with the EPO, by means of co-operation tools such as document sharing and a discussion forum.

EQE support

Initiated in 2012, the candidate support project (CSP) aims to increase the number of EQE-qualified professional representatives in countries currently considered underrepresented (i.e. having fewer than five qualified European patent attorneys), thereby establishing a body of professionals able to offer reliable, accurate advice on the European patent system in all member states.

Under this project, 20 tuition places are available to each eligible country, following which 10 extended support places per year are awarded, for which material support is available.

By the beginning of 2021, five of the initial 23 participating states had filled their student quotas and now benefit from extended support. 67 students had passed the EQE via the CSP. During 2021, an additional 21 CSP students passed the EQE and two new students were admitted to the course.

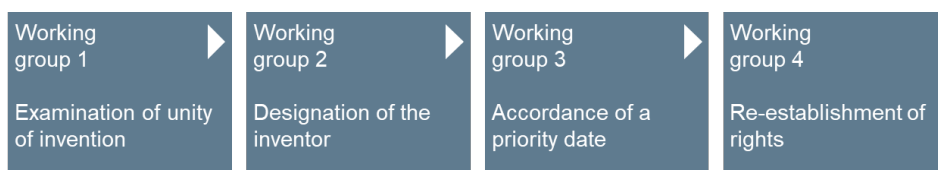
4.2.2.2 Pillar 2: Convergence of practices

In accordance with the EPO's SP2023 commitment to strengthen the EPN, the project "Convergence of Practice" aims to identify a single common practice across identified areas where a more uniform approach is likely to deliver the most tangible benefits for end users and NPOs across the EPN.

A key benefit of aligning practices between the EPO and the NPOs is the potential cost saving for patent applicants active across the EPN. For example, aligned practices may facilitate the extension of patent protection by SMEs from national to European level. Overall, the Convergence of Practice project enables a more uniform service across the EPN for end users, ensuring that innovators benefit from higher-quality services no matter where they are based and leading to efficiency and quality gains alongside cost savings.

After the successful conclusion of Working Groups 1 and 2 (Examination of unity of invention and designation of the inventor) and the adoption of the respective common practices, Working Groups 3 and 4 were established in early 2021 in the areas "Accordance of a priority date" and "Re-establishment of rights".

Figure 12: Convergence of Practice Working Groups 2020-2021



Source: EPO

Participation in the two working groups was again remarkably high with more than 20 contracting and extension states in each group. Both groups agreed on a recommendation for a common practice. In addition to representatives of the national offices, representatives from industry and the patent profession (epi and BusinessEurope) are now also participating in the working group discussions as observers.

Furthermore, the Office organised the second virtual platform on convergence in September 2021, which was attended by over 100 participants from more than 30 NPOs. For those NPOs without a representative in the working groups, it was an opportunity to obtain a detailed progress report on the groups. Additionally, at the request of the Patent Office of the Republic of Poland, a special online event (discussion platform on topics related to convergence of practices) was organised in September 2021 to present the first two approved convergence practices to Polish examiners and users.

4.2.2.3 Pillar 3: Work-sharing

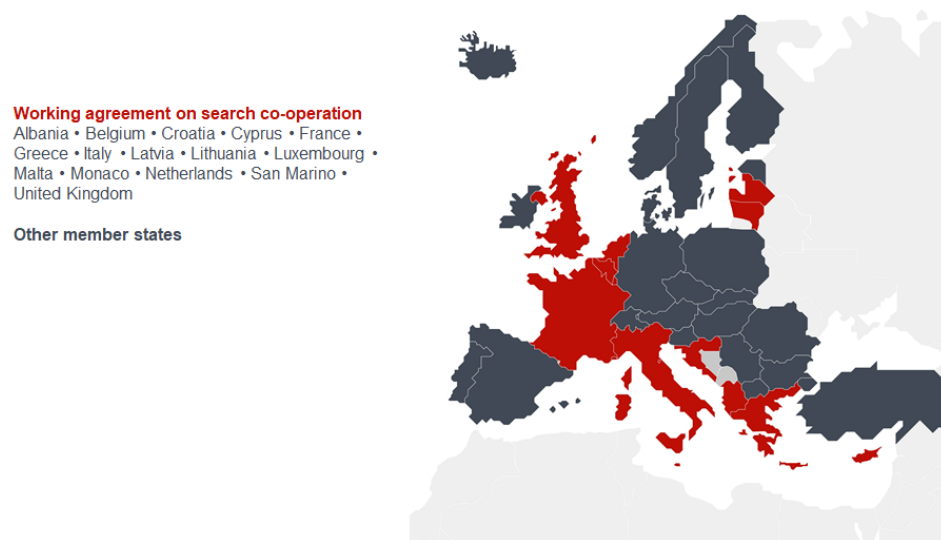
New policy related to the working agreements on search co-operation

This activity was intended to develop a new policy related to the working agreements on search co-operation, which would entail a single search fee for all participating member states. It also aims to provide stronger financial support for national patent applications submitted by small entities (natural persons, universities, research centres and SMEs). The new policy¹⁵ was approved by the Administrative Council in December 2020.

In 2021, the Office introduced the new policy on the working agreements on search co-operation, requiring the signature of the amended working agreements (Article 11) for harmonizing the search fee across all participating member states. Additionally, the related administrative agreements earmarked financial support for patent application originating from small entities, to be made available to all interested member states.

¹⁵ https://www.epo.org/modules/epoweb/acdocument/epoweb2/484/en/CA-51-20_en.pdf

Figure 13: Member states that have signed a working agreement on search



Source: EPO

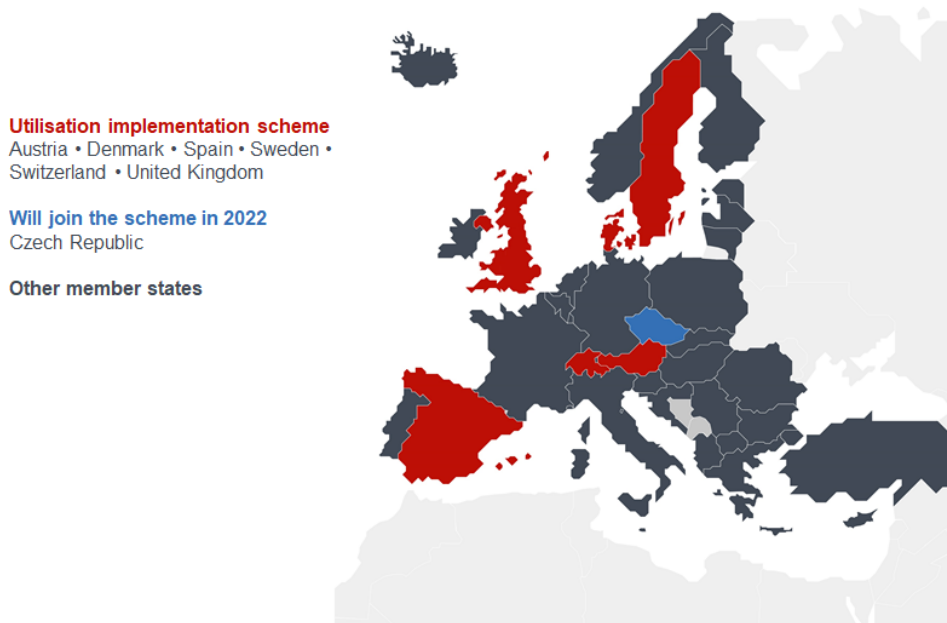
2021 was the first year that the new policy was implemented, according to which a maximum of 400 national patent applications from small entities per participating member state were eligible for financial support. A total of 1 790 small entities benefited from financial support in 2021, of which 805 were natural persons, 819 SMEs and 166 universities. In total, the Office performed 27 282 search requests for national searches from the 15 offices that had signed a working agreement on search co-operation.

Utilisation implementation scheme

The project aims to increase efficiency and avoid duplication of work by facilitating the transfer of national office search, examination and classification results to the EPO as the office of second filing, prior to publication of the respective application. The utilisation scheme further contributes to reducing applicant burden in view of Rule 141 EPC.

Given the positive results and efficiency gains achieved under the Office initiative, the member states agreed to reinvigorate the utilisation scheme and include this project as one of the initiatives under the work-sharing pillar of the new co-operation framework in SP2023.

Figure 14: Member states participating in the utilisation scheme



Source: EPO

Search/classification/examination results that are available at the time EPO examiners conduct the search are automatically included in EPO pre-search routines and made available to the examiner. EPO examiners are free to decide whether and how to use such prior results, however.

The Swedish Intellectual Property Office joined the scheme in 2021, while the Industrial Property Office of the Czech Republic is in the testing phase; it will join the scheme in 2022. Two further NPOs have expressed interest in implementing the scheme in their bilateral agreements.

IP outreach to foster innovation

The project aims to encourage innovative SMEs, research organisations and universities to use the patent system by increasing their IP awareness and their understanding of the benefits and impact that IP protection can have. Furthermore, within the EPN, the project aims to support the exchange of knowledge and raise awareness of European patenting practices and procedures as well as their harmonisation.

To achieve these goals, the Office provides support by organising national awareness-raising events, training events or conferences that focus on promoting the European patent system. The Office supported five events either financially or by providing EPO speakers in four countries (Greece, Lithuania, Portugal and Serbia).

Discussion platforms between the EPO and NPO examiners on patenting procedures in certain technical fields were organised with four offices in 2021. These events serve to exchange information and disseminate knowledge on the latest developments in patenting practices and procedures. As with other activities, they became "virtual" during the pandemic.

In the framework of this project, a working group consisting of 31 representatives of national offices and six observers (Slovenia, EC, EUIPO, European Parliament, the World Intellectual Property Organization (WIPO) and BusinessEurope) was established to stimulate strategic discussion on support measures for small entities. The initial meeting of the working group took place in May 2021.

4.2.2.4 Pillar 4: IT co-operation

Front Office

The Front Office project aims to modernise the core filing applications that enable inventors and representatives to file patents and subsequent actions in participating NPOs. It will eventually replace the eOLF system, which is now over 20 years old. The project plans to deploy the Front Office software either locally in the NPO infrastructure or the appropriate cloud infrastructure to which they have access, rather than offering a central solution from the EPO.

During 2021, the project continued to gain momentum, with 12 participating NPOs, epi WIPO and EUIPO in the working group offering ideas and solutions for design and implementation, as well as beginning technical pilot work. Initial surveys and hands-on testing were carried out with end users; for the first time, substantial work was undertaken with pilot countries to co-create a front office capable of being widely deployed.

This detailed analysis and development led to the successful delivery of two national first filings in Lithuania and Spain; piloting work started with Greece at the very end of the year.

Data Quality

With the aim of improving front file deliveries of patent data, the Data Quality project collaborates with member states to realise a technological platform and support data transfer between the member states and the Office. The automation of this data flow aids this exchange and creates opportunities to increase data quality by structuring data to the standardised XML format. Additionally, in terms of correctness and completeness of data, automation is of superior quality. To uphold this high level, the Data Quality project also supports the objective of completeness by improving back file data for national offices in member states. In tandem, the team provide quality assessments of current data files for member states.

In 2021, the project made advances in terms of delivering an authority file tool for member states to use for regular delivery. In addition, the project delivered quality assessments of current data files to all participating member states and improved prior-art deliveries for 18 NPOs. With regard to data exchange automation, the project increased efforts to deliver the tool in 2021 and managed to launch pilots with 5 of 11 working group members. This included web-based tooling to which data files can be delivered and an automated approach with machine-to-machine options for data exchange with the EPO.

Co-operation Search

In the process of the end-to-end patent lifecycle, using search tools is vital to ensure the novelty of a patent. The aim of the Co-operation Search project is therefore to ensure up-to-date, modern search tools and subsequent data to enable patent examiners to carry out assessment work for new patent filings. The project will achieve this by creating and making available an adapted form of ANSERA that NPO examiners can use.

Based on the technology demonstrator delivered in 2020, a working minimum viable product was successfully built in April 2021. During the year, this was upgraded to an improved version of ANSERA with greater stability, hosted on a private cloud.

Following the successful experience at this level and extensive working group testing, the project inspired a major discussion with NPOs and industry on the cloud. This led to the deployment of the software on a major cloud platform using public data only, which was successfully delivered in December 2021.

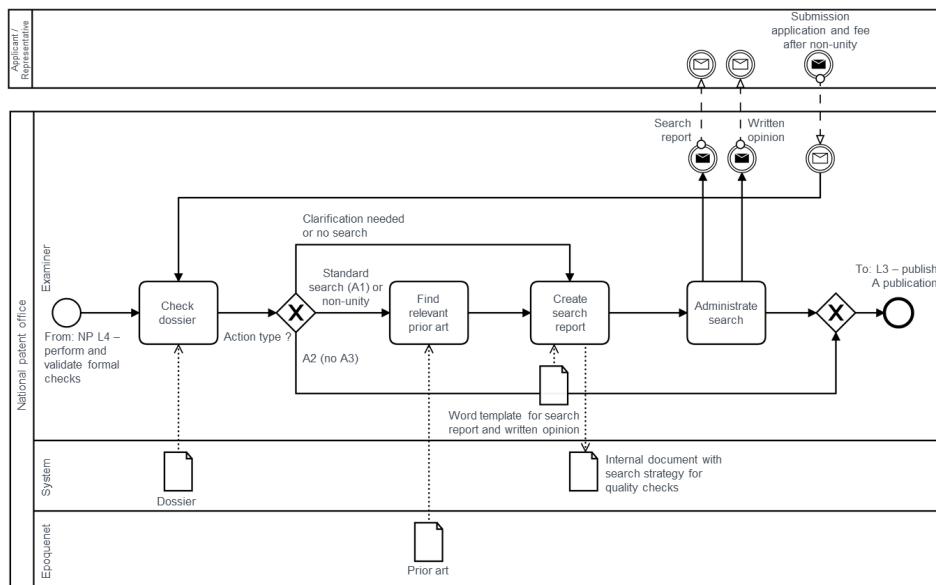
Since the start of the pilot phase in October 2021, the Co-operation Search project has been regularly used by more than 100 patent examiners of various NPOs, together with several others on a more occasional basis.

Quality Management and Process Mapping

The Quality Management and Process mapping project seeks to model the current key patent processes in each member state to establish a foundation for common software development and identify potential opportunities to streamline and simplify processes. In addition, the project aims to create a "blueprint" derived from all mapped processes, highlighting potential best practices and incorporating the definition of process metrics (quality indicators) for all NPOs. The result of these analyses and knowledge gained will be shared with NPOs.

Over the course of 2021, the project continued mapping key patent processes for all ten participating NPOs. The mapping for each of the five procedural processes was created for each NPO, enabling a generic process flow or blueprint to be created for each process. In turn, this served to distinguish and analyse the key differences between NPOs. Based on this comparison, the relevant analyses have been compiled in the process books, which will be made available in 2022 via the technical co-operation module in the single access portal. The efficiency of creating new process maps was improved by defining a step-by-step plan to map the processes with each NPO and re-using previously developed maps. In collaboration with the Slovenian Intellectual Property Office, an additional step was taken towards mapping desired future processes in order to design and model adapted process steps for a new back office system at the Slovenian office. Based on the methodology applied in mapping existing processes, the project team applied the mapping approach developed for the working group to produce the adapted process maps.

Figure 15: Example process map for search (blueprint)



Source: EPO

Modular Back Office

The Modular Back Office project sets out to compile knowledge from NPOs seeking to build or upgrade their back office, that is, non-customer facing software for patents, in support of NPOs' efforts to modernise their workflows and internal tooling. As NPOs face increasing pressure to achieve seamless digital transformation, this has been a major challenge for several administrations, including the Office.

During 2021, the working group developed a joint "blueprint", which sets out key areas for offices to consider when managing or embarking on similar projects, and exchanged further artefacts and information. The blueprint will be published in early 2022, before the project closes.

One early outcome of this is the successful initial deployment of several technical experts in 2021.

Cooperative Patent Classification

The Cooperative Patent Classification (CPC) project develops and supports a unified classification for patents, building IT tooling to realise it. The project aims to extend use of the CPC system in the EPN and encourages international co-operation to achieve greater availability of prior art for European Patent Organisation member and non-member states.

Throughout 2021, several patent offices joined the CPC standard, including those in Morocco, Romania and Bulgaria. The use of CPC in EPO publications was achieved for the European Patent Register, European Publication Server, EP bibliographic data and the European Patent Bulletin in 2021. Successful deployment of the External Classification Portal in the test environment in early November 2021 offered an opportunity to test the Contact Information Service tool and the CPC Reclassification Service. This portal was integrated into the single access portal in December 2021 and moved into production with these two services. The pilot phase is currently ongoing with the seven working group members.

Single access portal

The single access portal (SAP) project is modernising the services the EPO offers to stakeholders of national offices and other actors in the EPN.

The project aims to simplify these interactions between them and the EPO by establishing one single platform on which all services are brought together. The SAP is modern and user-friendly, creating potential savings in time and costs to retrieve information. Also, more secure access may open up new collaboration opportunities between national offices and the Office. Introducing multiple services on the SAP will offer seamless access to EPO information and services, reducing time-consuming searches and administrative burden.

Over the course of 2021, the SAP project gained momentum by introducing multiple services such as the bilateral agreement builder tool for member states and the integration of the PATLIB module in May 2021. In addition, a technical co-operation module was introduced, making knowledge exchange possible in the various projects described above.

4.2.3 EPN strengthening: EPN responsive network

The EPN is a joint endeavour of the Office and its member states in building a modern, efficient and high-quality patent system across Europe. Moreover, the EPN responsive network was built to address topical subjects that are of particular interest to all stakeholders.

Information and Consultation Day with member states

In February 2021, over 100 representatives from NPOs, extension states and the EUIPO joined forces with the Office for the digital co-operation information and consultation day. As the first meeting following the adoption of the EPO's new co-operation policy,¹⁶ discussions focused on preparation of the bilateral agreements and clarified issues relating to specific projects. The recently developed prototype of the bilateral agreement builder tool was demonstrated and attention was drawn to the transformation process of the European Patent Academy and the planned EPO Observatory.

¹⁶ https://www.epo.org/modules/epoweb/acdocument/epoweb2/454/en/CA-27-20_en.pdf

15th Annual Meeting on Co-operation

The 15th Annual Meeting on Co-operation with member states took place virtually on 11 May 2021, attended by all 40 NPOs and the EUIPO. The NPOs were represented by a total of 80 participants, including 26 heads of office. The meeting focused on two main objectives, namely to discuss the progress achieved in the first year of the new co-operation framework and collect feedback on some of the Office's key proposals, such as the Academy Blueprint and the new normal.

EPN cloud event

Under SP2023, the Office has designed a digitalisation strategy and embraced state-of-the-art technological developments, including cloud technologies. The use of cloud services is directly related to the Office's sustainability, as outlined in SP2023.

Rapid progress in the digital transformation of the EPO and the accompanying IT co-operation projects prompted the Office to hold its first EPN cloud event on 15 September 2021. The event attracted a great deal of interest among member states, selected user associations and EPO staff. In total, 70 people from 38 NPOs and about 100 EPO staff participated. High-calibre external speakers from the world's three leading IT companies, Google, Microsoft and AWS, provided insights into the state of the art in security during the event. In turn, this prompted extensive discussion between all participants on the opportunities, challenges and requirements of cloud computing. This successful event represented our first attempt to find common ground on key cloud issues, such as cloud security, cloud providers and cloud operations, and kicked off a series of similar events.

4.2.4 Unitary Patent and Unified Patent Court

The Unitary Patent package is a core project stemming from the co-operation between the countries participating in the Unitary Patent scheme and the EPO. This was once again underscored in 2021.

Transitional arrangements were implemented to support users in an early uptake of the Unitary Patent, namely early requests for unitary effect and the possibility of requesting a delay in issuing the decision to grant a European patent.

Regarding the national accompanying measures, in co-operation with the participating member states, the Office continued to collect information on the national law relating to the Unitary Patent to prepare a dedicated publication on the EPO website. In terms of technical co-operation, the focus was on facilitating the circulation of Unitary Patent-related information and data between NPOs and the Office.

As to the communication and awareness campaign, the decision was taken in 2021 to hold a dedicated workshop for communication experts from the EPO and the national offices of the contracting states within the framework of the EPN and the Communication Correspondents Network to discuss the awareness and communication plan as well as the products and services related to the Unitary Patent package.

The existing fruitful co-operation between the national offices of the participating states and the EPO is an important aspect in finalising the remaining tasks before the entry into force of the Unitary Patent system.

4.3 Enhancing co-operation with European institutions and user associations

Our activities in this area aim to promote innovation and competitiveness for the benefit of Europe, making our extensive technological knowledge available for the purposes of informed public debate and policymaking. These activities also focus on collaborating closely with users of the European IP system by listening to their concerns and taking them into account to further improve communication, tools, products and services, and to raise awareness of intellectual property rights.

The following provides an overview of the general co-operation with governmental and non-governmental organisations in Europe in 2021.

4.3.1 Memorandum of understanding and work plan with EUIPO

The Office established its formal co-operation with EUIPO in a memorandum of understanding (MoU) in 2011, which was renewed in 2019. The two offices agreed to pursue the following co-operation objectives:

- Enhance the effectiveness of the European IP system and improve its accessibility for users
- Promote a modern IP culture in Europe
- Achieve stronger protection of European businesses abroad

The MoU is translated into work plans outlining the specific projects and activities to be jointly implemented in areas such as European and international co-operation, training, exchange of human resources and best practices, as well as awareness-raising and promotion of the IP system.

Good progress was made in implementing the EPO's annual work plan with EUIPO for 2021. Due to the pandemic, the work plan was expanded to include the activities envisaged in the 2020 work plan. A series of joint online seminars was held and the first joint meeting of the Academy of National Focal Points' contact persons for both offices was organised. Online knowledge sessions and co-ordinated activities continued within the Communication Correspondents Network. In addition, exchanges and knowledge sharing were carried out in the field of convergence of practices, IT tools and data protection.

A high-level meeting took place in July 2021 between the President of the Office and the Executive Director of EUIPO to share the latest developments in both offices, take stock of co-operation activities and discuss the main priorities for 2022. On this basis, a new two-year work plan was drawn up for the period 2022-2023.

4.3.2 Co-operation with other European agencies and institutions

During 2021, the EPO and the Community Plant Variety Office (CPVO) continued their regular exchange with a joint workshop on working methods during pandemic conditions and the impact of G 3/19 (non-patentability of plants/animals obtained by means of essentially biological processes). Over the course of 2021, the Office and the CPVO focused on renewing the existing administrative arrangement between the two institutions. The new arrangement will focus on data exchange and improving EPO examiners' access to CPVO records.

In 2021, the EPO and European Space Policy Institute jointly prepared and published two patent insight reports in collaboration with the European Space Agency. The first investigated the development of technology for space travel and provided a patent-based analysis on technology trends, spacefaring countries, companies and public organisations. The second report provided insight into patenting activities for quantum technologies, particularly in the context of the space sector.

The EPO and the European Investment Bank (EIB) signed a letter of intent to formalise their co-operation in a study focusing on SMEs that are innovating in technologies of the Fourth Industrial Revolution. A more detailed MoU on co-operation is under preparation to extend the co-operation between the EPO and EIB beyond this first study.

5. International co-operation

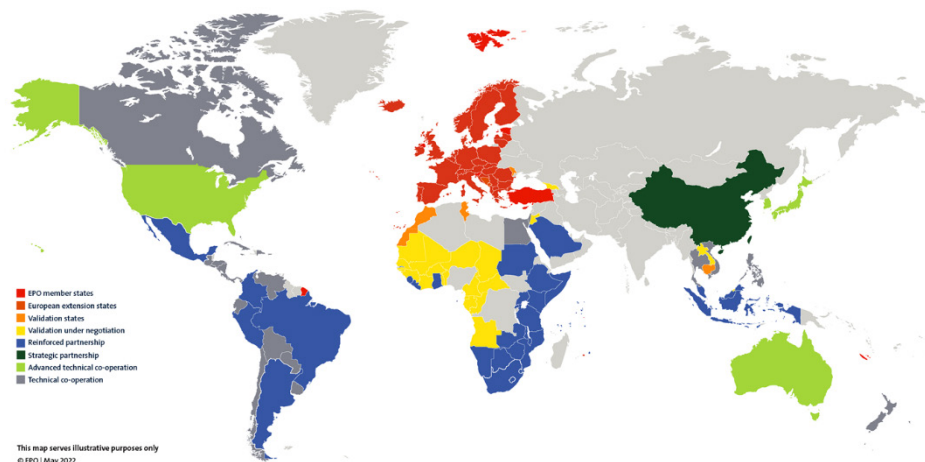
The attractiveness of the European patent system is explained primarily by two factors: the quality of the products and services delivered by the EPO under the EPC and their geographical outreach. SP2023 includes two related programmes under Goal 4 ("Build a European patent system with a global impact") that address the attractiveness of the Patent Cooperation Treaty procedure at the EPO and the coverage of the EPO's search and examination products.

The PCT is a key procedure at the EPO with Euro-PCT applications entering the European phase representing nearly 60% of all EPO filings. Furthermore, as the main tool for applicants seeking patent protection for their inventions in multiple jurisdictions, it is a vital procedure for users.

As part of SP2023, it was decided to implement and reinforce a three-tier co-operation framework based on the pillars of technical co-operation, Reinforced Partnership and validation.

5.1 Expanding geographical outreach

Figure 16: International bilateral co-operation activities



Source: EPO

Technical co-operation plays an important role in international co-operation as it facilitates the institutional exchanges that improve the patent granting processes; it is also instrumental in creating the foundations for a more strategic form of future co-operation, such as the evolution of the technical co-operation between the China National Intellectual Property Administration (CNIPA) and the EPO.

Users of the European patent system benefit substantially if they can reach a larger geographical area based on their application with the EPO. In parallel, they also benefit from the high quality and legal certainty provided by the EPO patent grant process and can obtain a high-quality patent in a region otherwise not covered by the EPC.

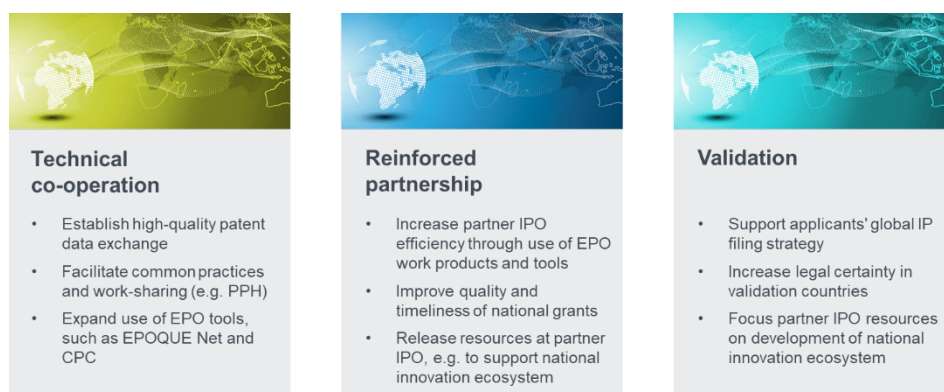
Consequently, it is of strategic interest that the EPO further enhance its geographical outreach, particularly through validation agreements and Reinforced Partnerships, which extend the EPO's coverage beyond Europe and provide for the dissemination of European best practices, tools and quality standards globally.

Validation agreements pursue the extension of the geographical coverage of European patents and offer the most advanced strategic co-operation model for both the EPO and the partner country. The EPO's centralised granting procedure reduces the administrative and financial burden for applicants, who can easily obtain patent protection in a non-European country by simply requesting the validation of the granted European patent instead of repeating the whole patent procedure in a new office using the Paris or PCT route. Shifting foreign second filings from the national route to the validation route allows the validation country to focus its tasks on national first filings – should its national patent system envisage the substantive examination of national applications – and support local innovation.

The EPO's Reinforced Partnership programme seeks to establish deep and wide-ranging partnerships with the intellectual property offices of the world's emerging innovation hubs. The aim is to further integrate and strengthen the global patent system by extending the network of partner offices that increase their capacity, productivity and quality through systematic use of the EPO's work products (search and examination), tools and practices. The programme thus offers better conditions for applicants filing patent applications internationally and fosters innovation by supporting partner offices in providing improved services to local applicants.

Since the adoption of SP2023 in June 2019, the European Patent Organisation's geographical coverage has increased substantially, reaching a total of 2.02 billion people at the end of 2021, through 38 member states, 2 extension states, 4 validation states and 11 Reinforced Partnership offices.

Figure 17: Bilateral co-operation: one policy, three options



Source: EPO

A total of 78 international co-operation agreements (memoranda and work plans) are in force: 20 in technical co-operation, 17 in the context of Reinforced Partnership, 8 in validation, 3 in multilateral co-operation, 18 Patent Prosecution Highway agreements, 10 CPC agreements (with non-member states) and 2 agreements relating to the strategic partnership with China.

With its educational activities, the European Patent Academy has contributed to implementation of the bilateral work plans that include training activities with several co-operation partner offices. Thus, in 2021, staff from national offices of non-member states participated in the Academy's educational activities; a total of 723 participants attended conferences, seminars, courses and workshops in the area of institutional strengthening.

5.1.1 Technical co-operation

The building blocks of technical co-operation programmes with partner offices such as Australia, Canada, China, Israel, Japan, the United States and so on are usually data exchange in various forms, the use of common standards and tools for classification, search and examination, such as the CPC and EPOQUE Net, the exchange of best practices on key topics of mutual interest and work-sharing schemes such as the Patent Prosecution Highway (PPH). Promoting the EPO as a PCT Authority among users from these jurisdictions is also a general objective.

Operational actions in co-operation have adapted to the requirements of virtual events. Bilateral and multilateral high-level interactions have been maintained at a good pace and virtual exchanges, which were already in place, have been extended to a broader spectrum of activities. Most co-operation partners swiftly adopted services to conduct virtual co-operation and the implementation of technical co-operation continued to pave the way for greater schemes.

In 2021, following a path recently taken with the Superintendence of Industry and Commerce (Colombia), the Saudi Authority for Intellectual Property and the National Institute for the Defense of Competition and Intellectual Property Protection (Peru) decided to upgrade their co-operation with the EPO from technical co-operation to Reinforced Partnership co-operation.

Technical co-operation also continued with the Jordanian Industrial Property Protection Directorate, progressing to the acquisition of national patent records and supporting the consultations conducted with domestic stakeholders on adopting the validation system.

Moreover, the Peruvian office and the Moroccan Office of Industrial and Commercial Property (OMPIC) decided to adopt the CPC and formalise the decision by signing a memorandum of understanding. By the end of 2021, a total of 33 patent offices had joined the CPC.

In the last few years, particularly since 2020, PPH agreements have been made permanent on renewal, for instance with Canada, China, Japan, Korea, Malaysia, Peru, the Philippines and Singapore.

A new work plan was also signed with the State Enterprise "Ukrainian Intellectual Property Institute" (UKRPATENT) in 2021, with the original aim of fostering convergence of patenting practices with the EPO, adaptation of the implementing regulations and examination guidelines, and the supply of patent documentation.

Turning to Asia and Oceania, technical co-operation with the Association of Southeast Asian Nations (ASEAN) offices proceeded with the issuance of a comparative study report summarising patent practices and procedures for the ten ASEAN offices. The study was taken as the reference to further produce ASEAN Common Guidelines for Formalities Procedures, which are being submitted for endorsement to the ASEAN Working Group on IP.

With Australia, activities were implemented on the technical and IT infrastructure, the CPC and outreach activities; a new comprehensive work plan was signed in 2021, covering a wide number of topics such as the adoption of artificial intelligence (AI) in classification, AI inventorship, customer experience, quality and risk management.

In view of a consistent, high-impact project scheme, the Office co-operates at bilateral level with each of the IP5 offices. In this context, the bilateral exchange of priority documents was migrated from the Priority Document Exchange system to the WIPO Digital Access Service as of January 2022, providing a transition period for pending applications until 30 June 2023.

On the occasion of the EPO-Japan Patent Office (JPO) heads of office meeting in November 2021, the two offices launched the latest edition of their "Comparative study on computer-implemented inventions/software-related inventions". First published in 2018, the new update includes case studies from the rapidly growing areas of AI and machine learning, as well as a further new example of graphical user interfaces. The publication aims to promote a better understanding of EPO and JPO legal requirements and working practices, with a view to supporting applicants drafting AI-related applications.

Figure 18: Comparative study on computer-implemented inventions/software-related inventions – EPO and JPO



Source: EPO

The traditional examiner exchanges between the EPO and JPO were conducted in virtual format in March 2021. As the new virtual format proved useful, the 2022 EPO-JPO virtual examiner exchange also took place virtually, with short sessions spread over several weeks (in February); it involved examiners in the fields of autonomous vehicles and glass/ceramics.

Bilateral co-operation with the United States Patent and Trademark Office (USPTO) has been intense, with meetings held on quality-related topics, training matters, initiatives related to the digital transformation of the offices and using AI for classification. These discussions have been beneficial and inspirational on both sides as similar issues are faced by the two offices in many cases, sometimes with different solutions.

On the specific topic of the CPC, collaboration with the USPTO, our partner in this endeavour, has also been intense. We succeeded in replacing the CPC Electronic Forum with a new tool in the form of a minimum viable product hosted in the CPC collaborative environment. Our efforts in further harmonising our classification practices are also progressing well, with 212 subclasses completed or partly completed to date. This represents about one-third of the whole CPC scheme.

At a bilateral meeting of the heads in December 2021, the EPO and the Korean Intellectual Property Office (KIPO) released their joint study on computer-implemented inventions (CIIs), which serves as a reference for applicants seeking to compare the respective approaches to examining CIIs.

Throughout 2021, the EPO and CNIPA progressed with the implementation of their bilateral co-operation plan and exchanged notes on several technical topics including examination guidelines, legal frameworks, practices and procedures, tools and services, academies and the Boards of Appeal.

There were also specific training sessions and exchanges on CPC classification, a topic of major importance for the EPO in view of the extensive Chinese documentation. A total of 7 million documents have already been classified in the CPC by CNIPA, 1.37 million in 2021 alone.

5.1.1.1 EPO-CNIPA pilot on PCT ISA

During the EPO-CNIPA annual heads meeting, which took place in December 2021, both offices acknowledged the success of the project in which the EPO acts as International Searching Authority (ISA) for Chinese applicants. In the scope of this pilot, nationals and residents of the People's Republic of China can select the EPO as their ISA when filing their PCT applications in English with the receiving Offices of CNIPA or the International Bureau of WIPO.

The pilot was launched in December 2020 and is set to run until the end of November 2022. By the end of February 2022, more than one thousand applications from more than 200 companies had been filed, the majority in the ICT sector, followed by healthcare, biotechnology and chemistry, and mobility and mechatronics.

It is interesting to note that first filings account for more than 60% of all pilot filings and that not just Chinese companies are taking advantage of this pilot. On the contrary, many international companies make use of this pilot when filing PCT applications in China at their branches in the country.

The pilot has been running smoothly since the launch with timely file transmission and processing. A joint survey carried out by the EPO and CNIPA among potential users of the pilot helped identify their main preferences with regard to its functions, starting by making it possible to pay the international search fee in Chinese renminbi at CNIPA; such requests will be addressed in bilateral co-operation this year.

5.1.1.2 Bilateral co-operation with WIPO

Co-operation with WIPO was renewed with the signing of an MoU in November 2021. The three-year memorandum establishes a wide-ranging, flexible mechanism for guiding and fostering co-operation activities between the two partners with a view to further developing the international patent system. The agreement covers co-operation on the PCT system, data exchange, classification, automation procedures and patent information.

At the operational level, the activities in the annual work plan are well advanced. The EPO has been working with WIPO and the Spanish Patent and Trademark Office to improve data exchange with the national offices in the Latin American region, an initiative that is extended operationally to data exchange in the ASEAN region.

One highlight of the joint activities implemented by the EPO and WIPO was the integration of ePCT in the new EPO tool Online Filing 2.0 for the filing of PCT applications with the EPO.

Another important outcome of EPO/WIPO co-operation was the proposal by the EPO and four member states (CH, ES, FR, GB) to strengthen the PCT legal framework by adding a new provision that would allow offices to automatically extend PCT time limits in the event of force majeure such as a pandemic. The proposal was adopted by the PCT Assembly in October 2021 and the new Rule 82^{quater}.3 PCT will enter into force in July 2022.

In 2021, the EPO continued to lead the PCT MIA task force on PCT minimum documentation in close co-operation with the USPTO, which leads the special topic of non-patent literature. The aim is to update and streamline PCT search processes.

Finally, a revised and modernised MoU has been concluded with WIPO and the Spanish Patent and Trademark Office on the LATIPAT programme. With this memorandum, the three partners will work with the national offices in Latin America to further extend the status of data delivery and access to patent documentation from the region. Initiated in 2003, these efforts have since been reaffirmed. Over the period of validity of the previous MoU, between 2017 and 2021, LATIPAT co-operation doubled the number of patent publications issued by Latin American offices available in our databases.

5.1.1.3 Participation in the patent activities of the IP Key projects

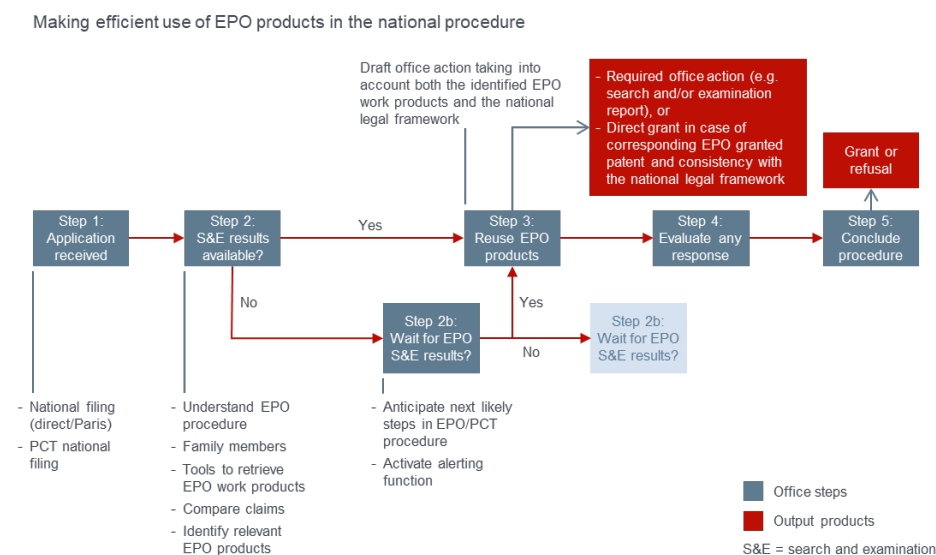
Technical co-operation also continued by supporting activities in the patent field being implemented in the different IP Key projects carried out by EUIPO. In particular, training in patent practices and specialised technology areas, and the development of common references, were conducted in the IP Key projects Latin America and South East Asia. LATAM and SEA.

5.1.2 Reinforced Partnership

In many countries, the share of non-resident applications is extremely high: over 80% in some cases. Most non-resident applications are filed in more than one country and claim the priority of an earlier application. Although corresponding foreign applications may contain different claims and the substantive patentability criteria differ from country to country, prior-art searches and decisions to grant or refuse from other countries often provide valuable information for search and examination.

The crux of a Reinforced Partnership is to distinguish operationally between national first and second filings. Intellectual property offices generally need to prioritise first filings in terms of resource allocation, as a first office action is ideally issued within six to nine months of the filing date. Furthermore, first filings usually require examiners to carry out a full search and arrive at their own conclusions on patentability as there are no corresponding applications to consult. In the case of second filings, examiners are able to consult and, where applicable, reuse the work products for the prior filing, either partially or, in some cases, completely.

Figure 19: Reuse of EPO work products



Source: EPO

The EPO and the partner office agree to implement a scheme for the systematic reuse of EPO work products, enabling the partner office to enhance and expedite the processing of national/regional patent applications with the same priority date. The partner office is expected to reuse Office work products to the maximum extent practicable under its applicable legal framework. The main EPO products to be reused are the European search opinion, the written opinion of the EPO as International Searching Authority, the international preliminary examination report and the decision to grant.

In contrast to other work-sharing arrangements that are applicant-driven, requiring the submission of additional forms and sometimes payment of fees, the reuse scheme is office-driven and occurs by default. The reuse of EPO work products is embedded in a streamlined workflow and examination practices are standardised as far as possible. It is therefore particularly effective in assisting the partner office to increase its search and examination capacities by avoiding unnecessary duplication of work, thereby maximising its quality and efficiency.

In respect of implementing the reuse component of the Reinforced Partnership agreements, the activities of the geographical outreach programme have been prolific in terms of numbers and the variety of partner offices participating.

Mexico, the African Regional Intellectual Property Organization (ARIPO) and Malaysia are already fully operational with regard to providing constant reuse data, participating enthusiastically in the regular expert review meetings. The exceptional success of the review meeting with the Mexican Institute of Industrial Property (IMPI) is worthy of special mention, where more than 100 IMPI examiners attended and took active part.

In total, 13 expert review meetings were organised in 2021, reaching around 400 patent examiners across all Reinforced Partnership offices.

In 2021, implementation of the reuse process commenced with the IP offices of Indonesia, Ethiopia, Brazil and South Africa.

Following completion of the comprehensive training programme for some 45 patent examiners from the Companies and Intellectual Property Commission (South Africa) (CIPC) in June 2021, the EPO and CIPC have entered the final preparatory phase before the anticipated launch of substantive patent search and examination in South Africa, to replace the current registration system. As part of the Reinforced Partnership programme, the EPO assists the CIPC in implementing a proof of concept whereby CIPC examiners issue legally non-binding search reports and written opinions, and a group of local patent attorneys respond.

Within the scope of Reinforced Partnership agreements, the intensified co-operation with partner offices in Africa includes the EPO-ARIPO launch of the Regional Patent Examination Training Programme (ARPET). Training extends to examiners of the ARIPO member state offices and the national patent offices of Angola and Ethiopia. ARPET is the most comprehensive training programme undertaken by the EPO with a non-member state. The programme will create capacity in the region to examine patent applications in line with EPO procedures in respect of first filings, while ensuring maximum use of EPO work products when handling second filings. A key initiative is the train-the-trainer module, which will develop a sustainable pool of staff as future trainers of newly recruited examiners.

In view of its long-term, far-reaching potential, emphasis should also be placed on the pilot project to develop search capacity in universities using Espacenet. Some 26 universities in the ARIPO member states of Angola, Ethiopia and Nigeria will participate in the project. The project aims to enable universities in the region to use the patent system and patent information to enhance their research, protection and commercialisation activities.

5.1.3 Validation agreements

To date, nine countries and one IP organisation have initiated or completed negotiations on the validation system. While Morocco, the Republic of Moldova, Tunisia, Cambodia and Georgia have already signed a validation agreement with the European Patent Organisation (with the entry into force of the validation agreement with Georgia pending parliamentary approval), Angola, Brunei Darussalam, Jordan, the Lao PDR and the African Intellectual Property Organization (OAPI) have officially requested the commencement of negotiations with the European Patent Organisation.

Morocco was the first non-member state of the European Patent Organisation to validate the legal effects of a European patent on its territory. The agreement entered into force on 1 March 2015.

The validation agreement with the Republic of Moldova, which became effective on 1 November 2015, has entered a steady state of maturity as far as the number of both validation fees and national validations is concerned.

As of 1 December 2017, it has been possible to validate European patents in Tunisia. The National Institute for Standardization and Industrial Property (INNORPI) emphasised that the agreement underpins Tunisia's efforts to bring its national market into line with the European market and dovetails with the letter and spirit of the 2016-2020 National Development Plan, which aimed to transform a low added-value economy into a regional hub.

Cambodia was the first Asian country to recognise European patents on its territory. The validation agreement entered into force in March 2018. Cambodia sees this agreement as an incentive for owners of European patents to consider investing in Cambodia, thereby strengthening the country's economic development.

In quantitative terms:

- The number of validation fees paid reached a **steady state in 2021** and is back to the pre-pandemic 2019 figure.
- The number of patents validated after grant is still growing: **420 in Morocco, 110 in the Republic of Moldova**; a steady state should be reached in two to three years, with an anticipated **500-600 validations in Morocco, 200-300 in the Republic of Moldova and Tunisia, and 100-150 in Cambodia**.
- The percentage of validations after grant is in **the range of 10% to 25%** of the patents granted with a validation fee paid.
- **29 patents** have been validated in Cambodia, **17 (60%) relate to pharmaceutical products**, which are excluded from protection. In October 2019, Georgia signed a validation agreement with the European Patent Organisation. Government officials stressed that it would contribute to further supporting the development of innovation in the country. The agreement will enter into force once it has been ratified in parliament and the necessary legal provisions have been incorporated into Georgian law.

OAPI is pursuing the necessary steps towards validation: following the entry into force of the revised Bangui agreement at the end of 2020, OAPI is now actively preparing for the introduction of a new search and substantive examination procedure to replace the current registration system. The Office is supporting OAPI by providing dedicated training to the five OAPI examiners, covering the fundamentals of patent examination in 2021 and preparing for training on advanced examination elements during 2022.

Furthermore, the Office provides support in drafting the patent examination guidelines and on outreach activities, together with the AfriPI project. In this area of co-operation, the EPO will also supply trainers in the academic programme of the new patent engineer master's degree, in co-operation with OAPI and the Institut National Polytechnique Félix Houphouët-Boigny in Yamoussoukro (Ivory Coast).

In supporting all validation offices, the EPO has provided two different train-the-trainer schemes to an audience of IP operators. Regarding co-operation with each validation office, the EPO was particularly active in Morocco, Tunisia and the Republic of Moldova.

In more detail: with the Moroccan office, activities are designed to address the promotion of innovation with the local WIPO TISC network and support SMEs and green technologies, as well as the ongoing modernisation of the Office's IT capacities.

We worked with the Tunisian office to enhance data exchange, which has been resumed after several months of interruption. A two-day seminar on patent drafting was held for an audience of 50 people from the innovation field, contributing to building further capacity in the country.

Concerning the Moldovan office, the work plan aims to develop patent processing capacity and infrastructure through a wide range of activities based on the results of a joint analysis of the innovation landscape in the country. Other measures target applicants' awareness of the validation agreement and the prominence of the Republic of Moldova as a validation state.

5.2 Multilateral co-operation

Through ongoing multilateral co-operation efforts, in which the EPO has played a leading role since 1983, the Office has been able to eliminate unnecessary duplication of work and align procedures among the world's largest patent offices. Under SP2023, the EPO aims to build on its success; to this end, it has dedicated a programme to fostering multilateral co-operation under Goal 4, Broaden the European patent system and network impact. This will help the EPO develop an efficient and effective global IP system and ensure a positive impact for European users and the Office.

5.2.1 Fostering the impact of multilateral co-operation

The EPO's strategic programme aspires to improve the functioning of the global patent system through technical and procedural convergence and by seeking joint responses to global challenges, such as new emerging technologies and AI, via the IP5 co-operation frameworks.

The Office stands to benefit from this programme in a number of ways. Efficient multilateral co-operation with major IP offices will help us master the challenges of growing volumes of prior art, obtain access to global patent information, disseminate this data and offer our users more new services. Aligning our practices will bring significant gains in the quality and validity of patents, and in the predictability of the granting process.

Developing synergies in multilateral co-operation in the fields of patents, designs and trademarks, referred to as the IP5, ID5 and TM5 co-operation frameworks, will help us and our partner offices advocate a strong pro-IP agenda. Moreover, it will mean a number of efficiency gains for offices and bring benefits to stakeholders in industry handling bundled IP. For examiners, increased co-operation will foster further procedural alignment with other leading IP offices and open up new work-sharing opportunities.

5.2.2 IP5 co-operation

In the scope of IP5 co-operation, the JPO hosted the annual IP5 heads meeting in virtual format in June 2021. The heads of office took stock of progress in IP5 co-operation, endorsed the IP5 new emerging technologies (NET)/AI roadmap and approved new projects to further align and improve patent practices and procedures among the IP5 offices.

The product of the EPO-KIPO co-sponsored IP5 NET/AI task force, the IP5 NET/AI roadmap was established to collectively address challenges in the field of NET and AI. The roadmap suggests a blueprint of potential co-operation opportunities in the areas of statistics, classification, IT and legal. These co-operation opportunities are intended to enhance operational efficiency and services by using NET and AI, as well as resolve challenges concerning the patenting of these technologies.

In the area of patent practices and procedures, under the lead of the USPTO and KIPO, the IP5 offices agreed to work on global assignment to streamline procedures for the transfer of rights. Additionally, under the lead of the JPO, the IP5 offices will endeavour to promote the harmonisation of allowable features in drawings in order to standardise requirements regarding size, colour and so on.

A separate meeting between the IP5 heads of office and IP5 Industry, that is, the user associations from the IP5 regions, focused on co-operation between the IP5 offices and users in the post-pandemic era, such as digitalisation in patent prosecution, online communication and sustainable development goals. The IP5 Industry associations expressed their support for the IP5 offices' initiatives and confirmed that they will continue to engage in dialogue and co-operate with the IP5 offices.

5.2.3 Trilateral co-operation

Trilateral co-operation progressed along the path defined in November 2020. At that time, Trilateral Industry proposed that the Trilateral Offices should work together in their Covid-19 response by leading the way on the issue of e-signatures, thereby helping the user community address the challenges it faced with having documents signed and authenticated during the pandemic. At the IP5 heads of office meeting in July 2020, the offices had received a similar suggestion from IP5 Industry. IP5 Industry encouraged the IP5 offices to consider harmonised standards for electronic alternatives to signatures and authentication processes.

Following discussions with Trilateral Industry in November 2020, the JPO organised Trilateral expert discussions via videoconference on the topic of electronic signatures in the first half of 2021. In addition, the JPO surveyed IP5 Industry following the high-level IP5 meetings in June 2021. At the meeting with Trilateral Industry on 16 November 2021, the JPO presented the findings of the Trilateral expert exchanges on the topic of e-signatures in the form of a comparison table. The JPO also reported that an expansion of e-signatures was ongoing in all offices but that standardisation or harmonisation seemed extremely difficult.

6. Partnership and dialogue with users

The EPO has always engaged actively and frequently with user representatives from all IP5 regions (business associations and patent professional groups), particularly with representatives of European user associations.

In recent times, we have used virtual communication means to increase the opportunities to work with users worldwide, to discuss and exchange frequently with them on how to improve our products and services. Regular meetings offer the chance to consult with users on key matters related to a rapidly evolving European and global environment.

As to the year 2021, we continued to have regular online bilateral meetings with the epi and BusinessEurope, and with international user associations such as the International Association for the Protection of Intellectual Property and the International Federation of Intellectual Property Attorneys.

Focusing on providing users with the best quality of products and services makes it possible for the EPO to remain agile and responsive to their needs in a rapidly evolving international patent landscape. A dedicated SACEPO (Standing Advisory Committee before the EPO) Working Party on Quality, which was recently restructured and strengthened, undoubtedly contributes to this constant endeavour.