respectively, i.e. in terms of "offers" and "demands" - interfere with potentially gainful negotiations that would otherwise occur in an ideal, perfectly functional and transparent marketplace. Because this situation is eventually detrimental to innovation and technological advancements, hindering the well functioning of economic transactions, this contribution values mechanisms and common practices, such as patent pools and clearinghouses, that may in different ways facilitate the conclusion of such transactions, by conveniently "matching" market's offers and demands, by ensuring non-discriminatory access to available key technologies.[567]

In this context and in order to explore the viability and convenience of such models, concrete examples of clearinghouses, particularly dealing with patented technologies in the field of life sciences,[568] will be provided in the following sections of this contribution.

B. Models and Applications

In the following section this contribution will explore and distinguish a certain number of IP collecting society models. Accordingly, we will provide some selected instances of actual or considered applications of such models dealing with patented technologies, as established in the field of life sciences.[569] The current different templates identified in the next paragraphs will be subsequently complemented by some concrete instances of how these have been implemented in practice.[570]

567 In this respect, clearinghouses have been effectively accredited for providing a "matching service" of varying degrees of sophistications between IP owners and users, ultimately by: Aoki R., *supra*, fn. 561, p. 202.

568 For a broad overview and analytical assessment on the matter, see i.a.: Hope J. et al., "Cooperative Strategies for Facilitating the Use of Patented Inventions in Biotechnology", In: Rimmer M., "Patent Law and Biological Inventions", Federation Press, 2006, Law in Context, vol. 24, p. 85 *et seq*.

569 For an overview, see i.a.: Rimmer M., "Patent Law and Biological Inventions" – "Clearing House Mechanisms", Science, The Federation Press, 2006, p. 93 *et seq.*: Graff G. *et al.*, "Towards an Intellectual Property Clearinghouse for Agricultural Biotechnology", Agricultural Biodiversity and Biotechnology in Economic Development, May 2006, vol. 27, p. 387 *et seq*.

570 For a detailed systematization of clearinghouses, refer to: Van Overwalle G., *et al.*, "Models for Facilitating Access to Patents on Genetic Inventions", Nature Reviews - Genetics, Nature Publishing Group, February 2006, vol. 7, p. 143 *et seq*. Moreover, for a complementary view, mainly distinguishing two bigger functional types of clearinghouses, namely "Informational Clearinghouses" and "Licensing Clearinghouses", depending on whether or not they provide licenses to IP users directly, see: Aoki R., "Promoting Access to Intellectual Property: Patent Pools, Copyright Collectives, and Clearinghouses", R&D Management, March 2008, vol. 38, issue 2, p. 196 *et seq*.

I. Information Clearinghouse

The first and simplest model we ought to take into consideration is the information clearinghouse, which provides a common platform for exchanging technical information and mostly includes data related to the IP status of the technologies involved, if they are covered by a patent or even a published patent application. Whereas said information mechanisms are relatively easy to set up, they require constant maintenance and updating, as is notoriously the case for all sorts of databases in order for them to be a truly valuable source of current information.

Although this type of clearinghouse represents the simplest form of IP administration and is quite limited in its purpose - mainly providing convenient access to a big variety of patent data, while leaving further contractual deals and business approaches to the free initiative of interested parties – in principle the value of its basic, fundamental role, namely enhancing the "visibility" of related data, shall not be undermined.[571] Nevertheless, taking a pragmatic approach, given the very defined scope of the model in consideration, its effective usefulness will greatly depend both on an extensive coverage of patent-related data and on the reliability of the status of the information provided.

1. Biosafety Clearing-House

Within the framework of the Convention on Biological Diversity (CBD),[572] signed at the Earth Summit in Rio de Janeiro in 1992 and entered into force on 29 December 1993,[573] whose main objective is to promote national strategies for the conservation and sustainable use of biological diversity, a noteworthy initiative was the establishment of a so-called "Clearing-House Mechanism" (CHM)[574] to ensure that governments world-wide are granted access to the information and technologies they need for their work on biodiversity.[575] Indeed, pursuant to Art. 18 of the Con-

571 On information clearinghouses, see i.a.: Skorohod O., "Biotechnology Transfers and Models Facilitate Access to Biotechnological Inventions", In: Friedman Y. "Best Practices in Biotechnology Business Development", Logos Press, 2008, p. 129.

572 Convention on Biological Diversity, 5 June 1992, complete text available at: http://www.biodiv.org/doc/legal/cbd-en.pdf ; for an overview of the articles, see: http://www.cbd.int/convention/convention.shtml

573 For the reference, see: http://www.cbd.int/history

574 For a complete introduction to the Clearing House Mechanism, see: http://www.cbd.int/chm/intro

575 On the issue of biodiversity from an IP perspective, see i.a.: Straus J., "Biodiversity and Intellectual Property", in: Hill K.M., Takenaka T. and Takeuchi K. (Eds.), Rethinking International Intellectual Property -Biodiversity & Developing Countries, Extraterritorial Enforcement, the Grace Period and other Issues, CASRIP Publication Series No. 6, Seattle, 2001, p. 141 *et seq.;* Straus J., "Biodiversity and Intellectual Property", Yearbook of AIPPI, 1998, IX, p. 99

vention,[576] its mission shall be the promotion and facilitation of technical and scientific cooperation within and between countries, also encouraging the participation of indigenous communities, by developing a global mechanism for exchanging and integrating information on biodiversity.[577]

In this context, an important step has been the creation of a central portal in order to support the Cartagena Protocol on Biosafety, adopted on January 2000 and entered into force on 11 September 2003, which integrates the CBD[578] by supplementing it with some special precautionary provisions about living modified organisms (LMOs) resulting from modern biotechnology.[579]

Accordingly, Article 20 of the Biosafety Protocol[580] established a Biosafety Clearing-House (BCH) as part of the Clearing-House Mechanism (CHM) of the Convention on Biological Diversity (CBD), in order to:

- Facilitate the exchange of scientific, technical, environmental and legal information on, and experience with, living modified organisms; and
- Assist parties to implement the Protocol, taking into account the special needs of developing country Parties, in particular the least developed and small island developing States among them, and countries with economies in transition as well as countries that are centres of origin and centres of genetic diversity.

The BCH fulfils its mandate by providing a dynamic platform where information is registered through the Management Centre and where it can be easily searched and retrieved.[581]

Therefore, the BCH well fits the role-model of an information exchange organism, providing for a "one-stop shop" where users can readily access or contribute relevant biosafety-related data. Nevertheless, a peculiarity is that BCH is organized in the form of a decentralized system, as the users themselves may effectively update information through an authenticated, online system to ensure timeliness and accuracy.[582]

et seq., also available at:
http://www.law.washington.edu/Casrip/Symposium/Number6/Straus.pdf

576 For the full text of Article 18, see: http://www.cbd.int/convention/articles.shtml?a=cbd-18

577 For more information, see: http://www.biodiv.org/chm/default.aspx

578 In particolar, Art. 19, para. 3 of the Convention provides that: "The Parties shall consider the need for and modalities of a protocol setting out appropriate procedures, including, in particular, advance informed agreement, in the field of the safe transfer, handling and use of any living modified organism resulting from biotechnology that may have adverse effect on the conservation and sustainable use of biological diversity". For the full text of the article, see: http://www.cbd.int/convention/articles.shtml?a=cbd-19

579 For a complete introduction on the Caratgena Protocol on Biosafety, see: http://www.cbd.int/biosafety

580 For the full text of the article, see: http://bch.cbd.int/protocol/text/article.shtml?a=cpb-20

581 For a complete introduction on the Biosafety Clearing-House (BCH) and its modalities of operation, see: http://bch.cbd.int/about

582 McLean K., "Bridging the Gap between Researchers and Policy-Makers: International Collaboration through the Biosafety Clearing-House", Environmental Biosafety Research, 2005, vol. 4, p. 123 *et seq.*

The Secretariat of the Convention, based in Montreal, Canada, has been established to support the goals of the Convention, as well as of its Protocol. One of its main tasks is to provide administrative assistance to member governments in the implementation of the various programmes of work, to coordinate with other international organizations and, eventually, to collect and disseminate information.[583]

On balance, some tangible, positive results have been shown through the establishment of so-called "National Focal Points" (NFP) to the CHM, who shall ensure the implementation of the Convention at different national-levels.[584]

Finally, allowing a more comprehensive, objective appraisal of the goals effectively attained by the organization, once a year the Secretariat reports on the operation of the Biosafety Clearing-House. In this context, primary data, such as the number and regional distribution of NFPs, as well as the account of records made available through the BCH, are made freely accessible through a public online platform. In particular, here detailed reports on the activities and partnership arrangements that have been entered into, as well as feedback provided by Parties and other Governments on their experiences with the operation of the BCH, are also available.[585]

This transparent approach permits an easy, straightforward appraisal of the usefulness and success of the clearinghouse mechanism in consideration, which - although certainly investing a mere "enabling role" towards third party organizations wishing to access relevant technological data or, eventually, to enter into profitable partnerships - shall be ultimately "measured" against the tangible results effectively attained.

2. CAMBIA's Patent Lens

As far as biotechnology matters are more closely concerned, there are specific life sciences search sites and databases, such as Patent Lens,[586] offering a platform to gather biotechnology-related information worldwide. Said platform has been established within the framework of the so-called CAMBIA's BIOS (Biological Innovation for Open Society) Initiative and provides a full-text searchable database of European, US and PCT based patents in the domain of life sciences, eventually complemented with educational and advisory services.

583 For an outline of the Secretariat of the Convention on Biological Diversity and its tasks, see: http://www.cbd.int/secretariat

584 The progress on the establishment of such national partnerships can be monitored on the BCH website at: http://www.cbd.int/chm/partners

585 The public portal on BCH's reports and reviews is freely accessible at: http://bch.cbd.int/about/reporting_bch.shtml

586 For related information, see: http://www.cambia.org/daisy/bios/50 or http://www.patentlens.com/daisy/patentlens/patentlens.html

CAMBIA (acronym for "Centre for the Application of Molecular Biology to International Agriculture")[587] is an international, independent, non-profit plant biotechnology research institute, founded in 1992 and based in Canberra, Australia, whose stated goal is to create new enabling tools to foster innovation in life sciences while maintaining a spirit of collaboration.[588] In fact, in Spanish and Italian, CAMBIA means "change", and it might be assumed that this meaning shall be at the very heart of its mission.

More specifically, CAMBIA's BIOS Initiative aimed at exploring new R&D paradigms, practices and policies for addressing neglected priorities of disadvantaged communities by fostering local commitment to achieve long-lasting solutions for the challenges of food security, agricultural productivity, human and animal health and natural resource management.[589]

Because open innovation starts with and depends on "transparency" in the patent system, CAMBIA's Patent Lens intend to provide tools to make the patent landscapes more intelligible, eventually to help focusing paths that lead to freedom of co-operation. Indeed, these tools include an independent, public good global resource which points to patent documents from the EPO, the USPTO and the PCT, covering more than 5,5 million documents in a format that is fully integrated and searchable, and receiving regular updates of additional patent applications by subscriptions also from national offices and the WIPO.

In the context of CAMBIA's broader mission, Patent Lens ought to be integrated and coordinated with other important services offered by its umbrella organization in the biotechnology domain, such as BioForge and BiOS Licenses, to which we will dedicate the proper attention in the following.[590]

Nevertheless, endorsing a certain dose of pragmatism, it is clear that the effective utility of this sort of initiatives, based on the exchange of information, greatly depends on the quality and on the level of accuracy of the information collected, as well as on its coverage, both in terms of relevant technologies gathered and, eventually, of active users appealed. Unfortunately, on this fundamental level, it is difficult to make a comprehensive assessment, missing a reliable feedback.[591]

587 For the official website, see: http://www.cambia.org

588 The BIOS (Biological Innovation for Open Society) Initiative has been supported by public-oriented institutions, *in primis* the Rockefeller Foundation.

589 For a critical assessment of the underlying business model, see i.a.: Elkington J. et al., "Leading Sustainable and Scalable Change", "Democratizing Technology", In: "The Power of Unreasonable People: How Social Entrepreneurs Create Markets that Change the World - Leadership for the Common Good", Harvard Business Press, 2008, p. 137 *et seq*.

590 For a descriptive overview, see: http://www.cambia.org/daisy/cambia/home.html

591 This evaluation follows a personal attempt to gather tangible, practical evidence by specifically addressing the representatives of the organization in order to provide for reliable references supporting the institutional goals proclaimed. Regrettably, the feedback received has been evasive and non-satisfactory in this respect.

II. Technology Exchange Clearinghouse

The second model identified is the so-called technology exchange clearinghouse, representing a more advanced stage with respect to the paradigm of a simple information clearinghouse and basically inspired by the widespread Internet business-to-business (B2B) basic scheme. B2B stands for transaction activities between two business entities, as generally opposed to B2C, i.e. business-to-consumer, involving a transaction between a business, on the one hand, and a consumer, on the other hand.[592] Although the term B2B could also be used for conventional commerce, it normally refers to the exchange of goods or services between companies over the Internet, mostly in connection with e-commerce and advertising, when targeting businesses rather than end-consumers. B2B platforms may encompass not only commodity exchanges and wholesale supplies on the Internet, but virtual auctions, as well.

In fact, a technology exchange clearinghouse represents a sort of further development of the previous model, as described above.[593] Indeed, such entity not only administers the collection and exchange of current information on available technologies in a given domain, so as to facilitate access and retrieval of relevant IP data, but also actively encourages the partnering between technology holders and prospective licensees by providing the input and professional counsel in order to initiate negotiations to reach a licensing agreement, coupled by optional more comprehensive mediating and managing services - thus reproducing a business-to-business (B2B) scheme, as outlined above.[594]

1. BirchBob

An example of global technology exchange model is BirchBob,[595] an Internet platform established in 2003 that seeks to bring together offers and demands for innovative technologies, complemented by specific services devoted to tracking and facilitating contacts between patent holders and interested third party investors. The aim ultimately pursued is to assist corporations in identifying the innovations and

592 For an outline on the B2B business method in as cooperative business model, see i.a.: De Maio H., "B2B and Beyond: New Business Models Built on Trust", John Wiley and Sons, 2001.

593 For a clear outlook on the model at hand, see i.a.: Skorohod O., "Biotechnology Transfers and Models Facilitate Access to Biotechnological Inventions", In: Friedman Y. "Best Practices in Biotechnology Business Development", Logos Press, 2008, p. 127 *et seq.*

594 For a broader analytical assessment on the model adopted, see i.a.: De George R., "The Ethics of Information Technology and Business", Foundations of Business Ethics, 3, Wiley-Blackwell, 2003.

595 The name "BirchBob" shall be a tribute to Birch Bayh and Bob Dole, authors of the Bayh-Dole Act (USA, 1980), as reported in: http://www.birchbob.com/corporate.htm. For the official home page, see: http://www.birchbob.com/index.asp