

**Intellectual Asset Policy for the Promotion of Linux Business
- Investment into Open Invention Network, LLC**

With reference to the intellectual asset operations of the NEC Group, this article discusses intellectual asset policy aimed at the promotion of Linux business and introduces a summary of the activities of Open Invention Network, LLC (hereafter referred to as "OIN"), a company that includes NEC as one of its shareholders.

Background

Businesses utilizing open-source software such as Linux*¹ are rapidly expanding the range of their applications. Open-source software is used not only in computer servers but also by home electric appliances, cellular phones, control computers, communication station equipment and large-scale S&T computers and often without the user being aware of its presence. At NEC, too, open-source software is actively utilized in various domains that support the NGN, including communication equipment, embedded equipment, information servers and Internet front-end equipment. The attractive features of open-source software such as low cost, free application and vendor independence also contribute to innovations that help create new service businesses including Web2.0 and SaaS.

Nevertheless, while Linux is increasing in importance in the market every day, the fragility related to its intellectual assets that result from its characteristic of being open-source software, has become an important issue that cannot be overlooked in its business deployment. Specifically, the probability of copyright issues has been reduced thanks to the dissemination of the concept of GPL (General Public License). However the patent issues are still unclear with

GPL so that their solution has become an urgent problem*². As seen from the fact that several enterprises and organizations have pointed out the existence of third-party patents, the creation of a mechanism for avoiding patent-related disputes has become an important issue to be solved in order to support the promotion of Linux business in the future.

About Open Invention Network, LLC

OIN is an intellectual property company that was formed to promote and protect the Linux environment by acquiring patents and ensuring their availability. It promotes a positive, fertile ecosystem for Linux, which in turn drives innovation and choice in the global marketplace. Founded in the United States in November 2005, OIN has received investments from IBM, Sony, Redhat, Novell and Philips*³. Its activities are 1) to acquire and maintain patents related to the Linux by using the funds invested by shareholders, and 2) to make them available royalty-free to any company, institution or individual that agree not assert its patents against the Linux environment, in order to foster collaboration, promote innovation and grow the Linux ecosystem (See Fig. below).

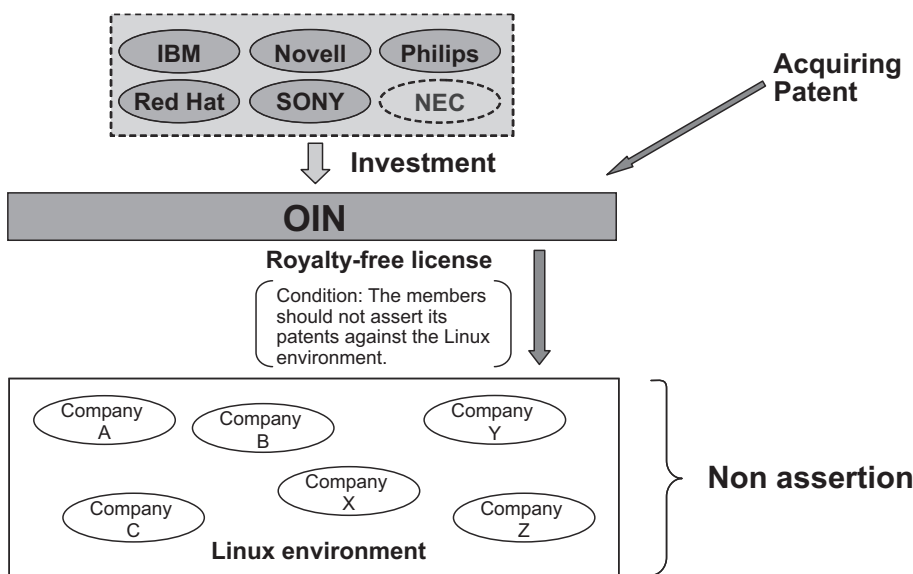


Fig. Scheme.

Investment by NEC

NEC joined OIN as an investor in October 2006. NEC believes that NEC's investment and participation will strengthen OIN's ability to acquire patents and make them available royalty-free to licensees. NEC also believes that such OIN's activities protect and support NEC's Linux business, and grow Linux environment by: 1) allowing Linux developers to promote innovation freely by exercising patents owned by OIN; 2) allowing Linux users to reduce a danger to patents related to the Linux; 3) giving support to the Linux environment that are expected to make further developments in the future in order to reduce opportunities for patent-related disputes.

OIN's Situation

As of November 2007, a number of OIN's licensees have increased in number to 17 companies, including Google and the total number of members including shareholding companies such as NEC currently stands at 23. OIN will increase its abilities further by purchasing necessary patents and by increasing the licensees.

*1 Linux® is the registered trademark of Linus Torvalds in the U.S. and other countries.

*2 An explicit definition of the licensing of patents was given at section 11 in GPL Ver.3 publicized June 29, 2007.

*3 For more information go to <http://www.openinventionnetwork.com>

A “Demodulator Having an Auto Quadrature Control Function” Received the “JPAA Chairman Encouragement Prize” of “Kanto District Invention Award”

A “demodulator having an automatic quadrature control function”^{*1} invented by NEC Mobile Wireless Network Division received the “JPAA (Japan Patent Attorneys Association) Chairman’s Encouragement Prize” of the “2007 Kanto District Invention Award” of the Japan Institute of Invention and Innovation. Following the announcement in our previous issue, this issue details this award as a typical case in which our intellectual asset operations were evaluated highly by an external body.

*1 In Europe the device is also called a “Demodulator with an automatic quadrature control”.

Prize Summary

● Prize name

JPAA (Japan Patent Attorneys Association) Chairman’s Award,
FY2007 Kanto District Invention Award.
“Demodulator having an automatic quadrature control function”

● Prize winner

Takaya Iemura, Engineering Manager,
2nd Wireless Access Development Group,
Mobile Wireless Network Division, NEC Corporation

● Prize subject

Demodulator having an automatic quadrature control function
(Japanese Patent. No. 3371876)



(Left) Engineering Manager, Mr. Iemura,
(Right) Division Director, Mr. Koizumi
(attended substituting for Mr. Yano, the President of NEC)

Summary of the Invention “Demodulator Having an Automatic Quadrature Control Function”

This invention aims at compensating for quadrature errors. When quadrature errors are produced in the modulator section of a multi-level quadrature modem, they are compensated in the demodulator section of another multi-level quadrature modem by receiving them from the former modem.

Large-capacity wireless transmission systems often employ a multi-level QAM (Quadrature Amplitude Modulation) system. However, the analog processing tends to cause errors and ageing, which lead to degradation of various characteristics, including the error rate and the signal acquisition characteristics of the demodulators.

This invention allows the demodulator to execute quadrature compensation digitally and adaptively, thereby providing guarantees of stable performances without adjustment and ageing over a long period.

NEC has already shipped a large number of PASOLINK devices applying this invention. The PASOLINK devices support the backbone of cellular phone systems and fixed communication networks and contribute to improvements in the reliability of these communication systems.

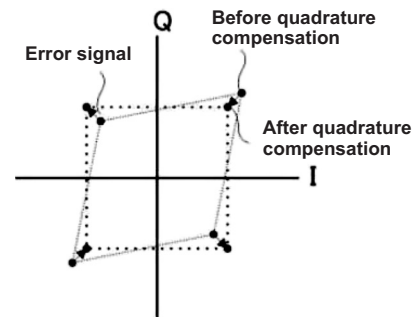


Fig. 2 Effects of quadrature compensation.

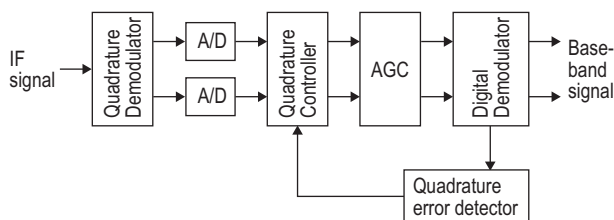


Fig. 1 Block diagram of the invention.



(a) PASOLINK ODU



(b) PASOLINK IDU

Photo External view of PASOLINK.