

**TAF**

TECHNOLOGY  
ACADEMY  
FINLAND

Millennium Technology Prize

# Call for 2016 Nominations

# Dear member of the scientific community,

The Millennium Technology Prize has been awarded to great innovators, all of whom are now recognized internationally for changing our lives for the better. In delivering the Prize, Technology Academy Finland is dedicated to a rigorous and unbiased judging process by a distinguished International Selection Committee. The Committee comprises a broad scientific, geographical and gender spread of world-class scientists, who independently select the innovations most likely to benefit mankind by tackling our energy, environmental, health and other challenges.

As long as science prizes are rigorous and judged by scientific experts — and as long as they earn the respect of the scientific community — they can indeed stimulate innovation by inspiring leading scientists, attracting funding and raising public interest. For example, the Japanese physicist Shuji Nakamura was awarded the Millennium Technology Prize as early as 2006 for discovering the blue and white LEDs, and today LEDs are mainstream technology in several fields. Nakamura also received the Nobel Prize in Physics in 2014.

Looking back at the track record, Technology Academy Finland can be proud of the fact that the Millennium

Technology Prize has established itself as a trailblazer for other eminent science prizes. In doing so, we pride ourselves in a great jury being able to identify exceptional scientists at the peak of their career, delivering breakthrough innovations and accelerating further research and application development.

Top quality nominations are the basis for all that the Millennium Technology Prize achieves. The nomination period for the next Millennium Technology Prize opens on the 16th of March and closes on the 31st of July 2015. During the nomination period we rely on you as a member of the international scientific community. You will recognize the future stars of the scientific world today. We have received great nominations throughout the history of the Millennium Technology Prize, and we look forward to receiving them once again.

Juha Ylä-Jääski  
President & CEO

[www.millenniumprize.fi/cfn](http://www.millenniumprize.fi/cfn)

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## Nominate your candidate for the 2016 Millennium Technology Prize

*The Millennium Technology Prize is Finland's tribute to innovations for a better life, and winning scientists have already enhanced the quality of life for billions of people.*

*The aims of the Prize are to promote disruptive technological innovations and encourage further cutting-edge research and development. The prize is worth one million euros at minimum and it is awarded every two years.*

The Millennium Technology Prize is established to find innovations that are impressive now but have the potential to develop into even greater achievements in the future. The Prize is not intended as a reward for lifetime accomplishments, but for active scientists at the peak of their career. Many of the Millennium Technology Prize Winners have later received other

eminent scientific awards: Shinya Yamanaka and Shuji Nakamura won the Nobel Prize respectively in 2012 and in 2014. The Queen Elizabeth Prize for Engineering has been awarded to Sir Tim Berners-Lee in 2013 and Robert Langer in 2015.

The President of the Republic of Finland, Sauli Niinistö, is the Patron of the Millennium Technology Prize and presents the Prize to the Winner in front of a distinguished audience including academia, scientists, state representatives and policymakers as well as business leaders.

Now you have an opportunity to make your mark on who will be the next Millennium Technology Prize Winner by nominating the candidate you believe to be the most worthy to receive the Prize. The nominator of the Prize Winner will be invited to the prestigious Award Ceremony in Helsinki.

General principles of the Millennium Technology Prize:

- Awarded to groundbreaking technological innovations that enhance the quality of people's lives and promote sustainable growth.
- The innovations have been applied in practice and are poised to deliver extensive change now and in the future.
- The innovations stimulate further cutting-edge research and development in science and technology.

## How to nominate a candidate

The nomination period for the seventh Millennium Technology Prize begins on the 16th of March 2015 and closes on the 31st of July 2015. Nominations are sought from academies, universities, research institutes and industrial organizations all over the world. Every eligible organization has the opportunity to nominate candidates in all fields of technology except for military technology.

Citizens of all nations are eligible for the Millennium Technology Prize. It can be awarded to a single individual or to a team, and can be shared between a number of individuals who have made essentially equal contributions to the success of an innovation. Self-nominations are not accepted.

For detailed information, nomination criteria and nomination documents, please visit the Millennium Technology Prize website [www.millenniumprize.fi/cfn](http://www.millenniumprize.fi/cfn). Nomination material must be provided in English and delivered to Technology Academy Finland by the 31st of July 2015 through a web based system.

For specific guidelines and enquiries regarding the submission of nominations, please contact D.Sc. (Tech.) Juha Ylä-Jääski, President and CEO of Technology Academy Finland, at: [juha.yla-jaaski@taf.fi](mailto:juha.yla-jaaski@taf.fi)

16 March to 31 July 2015

Organizations nominate candidates for the Millennium Technology Prize.

Fall 2015 – Winter 2016

The International Selection Committee assesses the nominations and makes a proposal for the Prize Winner to the Board of Technology Academy Finland.

April 2016

The Prize Winner is selected and announced by the Board of Technology Academy Finland in April of the Millennium Technology Year. The selection is based on the recommendation of the International Selection Committee.

May 2016

The Award Ceremony takes place during May of the Millennium Technology Year

[www.millenniumprize.fi/cfn](http://www.millenniumprize.fi/cfn)

# Winners



2014 WINNER

**STUART  
PARKIN**

Increased data storage density  
Spintronic devices, which rely on the magnetic spin angular momentum of electrons, have enabled a thousand-fold increase in the storage capacity of magnetic disk drives. This has led to an explosion of storage capacity, underpinning the evolution of large data centers and cloud services, social networks, music and film distribution online



2012 WINNER

**SHINYA  
YAMANAKA**

Ethical stem cell research  
Stem cells can hold the key to effective new treatments for illnesses and building spare parts for our bodies. Mature human cells can be reprogrammed to revert into a more basic form and stem cells. Thus, stem cells can be produced without using human embryos. Scientists all over the world are pushing forward stem cell research with the promise of huge advances in the treatment of illnesses like cancer and motor neuron disease as well as personalized regenerative medicine.



2012 WINNER

**LINUS  
TORVALDS**

Linux kernel open source operating system  
Open source operating systems are the basis of many smartphones, tablets, digital television recorders and supercomputers all over the world. Today millions of people are using devices with Linux at their core that make their work and social lives much easier and more pleasurable. The open source movement sparked by the Linux operating system evolved as a collaborative effort making it available for the general public free of charge.



2010 WINNER

**MICHAEL  
GRÄTZEL**

Dye-sensitized solar cells  
The dye-sensitized solar cell is often described as 'artificial photosynthesis' and is a promising long-term alternative to standard silicon photovoltaics. It is made of low-cost materials and does not need an elaborate apparatus to manufacture.



2008 WINNER

**ROBERT  
LANGER**

Controlled drug release  
The development of increasingly sophisticated drug release systems promises improvements in the way we treat illnesses. These systems can control the delivery of carefully measured doses of medicine precisely where and when needed.



2006 WINNER

**SHUJI  
NAKAMURA**

Blue and white LEDs  
LEDs are highly energy-efficient, emit little heat, and last for a very long time. Today LEDs are mainstream technology in several fields: high-brightness blue and white LEDs are used in lighting, computer displays and new generation DVDs.



2004 WINNER

**TIM  
BERNERS-LEE**

World Wide Web  
The World Wide Web is now an irreplaceable tool for all Internet users. It has revolutionized the way in which we interact with each other, acquire information and communicate. Thanks to HTTP protocol, HTML language and URLs, web users can access information in a variety of formats using just a web browser.

## High standards of judging

*With many nominations received from very different fields within science and technology, a rigorous, thorough, fair and unbiased judging process is crucially important. The International Selection Committee comprises eight scientists from academia and industry. They are selected both for their eminence and for the wide range of their collective scientific interests which include life sciences, material technologies, information technology and digitalization, energy, environment and water.*

The International Selection Committee members have access to all materials prepared by the nominators and carry out additional research on the most promising candidates.

The Committee members are selected by the Board of Technology Academy Finland based on proposals made by Aalto University, a strategic partner of the Millennium Technology Prize.

A minimum of two Committee members change in every prize round. The maximum term of a member is four rounds, or eight years. The International Selection Committee is chaired by a Finnish member.



Professor  
Jarl-Thure Eriksson,  
Finland

Chairman of the Selection Committee  
Professor at Åbo Akademi University;  
formerly Rector of Tampere University  
of Technology  
Expertise: Superconductivity, complex  
systems and neural networks



Professor  
Jaakko Astola,  
Finland

Professor of Signal Processing at  
Tampere University of Technology  
Expertise: Signal processing,  
information theory and statistics



Dr. Craig R. Barrett,  
United States  
of America

Ex CEO/Chairman of the Board of  
Intel Corporation; Associate Professor  
at Stanford University; chairs Change  
The Equation, Achieve Inc., Dossia,  
and the Skolkovo Foundation Council  
Board of Directors  
Expertise: Improving educational  
standards in the United States and  
around the world



Dr. Hans-Joachim  
Freund,  
Germany

Scientific Member and Director at the  
Fritz Haber Institute of the Max Planck  
Society in Berlin. Adjunct Professor  
with the three Berlin Universities, heads  
the Department of Chemical Physics  
Expertise: Physical Chemistry of Surfaces,  
Interfaces and Nanostructures, in particular  
in relation to Heterogeneous Catalysis



Academician  
Riitta Hari,  
Finland

Distinguished professor and Director  
of the multidisciplinary Brain Research  
Unit of the O.V. Lounasmaa Laboratory  
at Finland's Aalto University  
Expertise: Neuroscience and  
neuroimaging



Professor  
Sir Peter Knight,  
Great Britain

Senior Research Investigator in the  
Physics Department at Imperial College,  
Senior Fellow in Residence at the  
Kavli Royal Society, and science advisor  
to the Government of Great Britain  
Expertise: Quantum optics and  
quantum information science



Professor  
Merja Penttilä,  
Finland

Research Professor in Biotechnology at  
VTT Technical Research Centre of Finland  
Expertise: Engineering of microbes for  
the production chemicals, materials and  
fuels from renewable resources using  
molecular biology and systems and  
synthetic biology.



Dr. Ayao Tsuge,  
Japan

President of the Japan Federation of  
Engineering Society, Member of  
the Science Council of Japan and  
Vice President of the Engineering  
Academy of Japan  
Expertise: Energy, environment and  
economy, innovation, the management  
of technology and international relations



Secretary of the  
Selection Committee:  
Dr. Juha Ylä-Jääski,  
Finland

President and CEO at Technology  
Academy Finland (TAF). Since 1988  
Ylä-Jääski has acted as an adjunct  
part-time faculty member and lecturer  
on medical image analysis at Aalto  
University.

# TAF

TECHNOLOGY  
ACADEMY  
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Technology Academy Finland (TAF) is an independent foundation that awards the Millennium Technology Prize and runs associated events.

TAF promotes innovations that improve the quality of people's lives in a sustainable manner. TAF also promotes Finland as a high-tech Nordic welfare state by actively participating in global networks within the scientific community, business and governmental organizations.

One of TAF's strengths is the tripartite cooperation between industry, governmental organizations and the scientific community and its extensive network in all these sectors. The three sectors are also represented in the TAF Board and the Executive Committee.

TAF incorporates the Finnish Academy of Technology, the Swedish Academy of Engineering Sciences in Finland and the Industry Council, which represents leading Finnish companies.

TAF is a member of the International Council of Academies of Engineering and Technological Sciences (CAETS), the European Council of Academies of Applied Sciences, Technologies and Engineering (Euro-CASE) and a cooperation partner of the World Economic Forum (WEF).



NESTE OIL

NOKIA

Outotec

SEB

VAISALA



MILLENNIUM  
TECHNOLOGY  
PRIZE

Detailed information and  
nomination documents:  
[www.millenniumprize.fi/cfn](http://www.millenniumprize.fi/cfn)  
2016 PRIZE  
Call for Nominations

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