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Center of Innovation (COI)
Japan's Industry-University-Government Cooperative Program

The Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) announced the results of the Center of Innovation (COI) program selection process on October 30, 2013. Twelve COIs were selected within the three MEXT-established Blue-Sky Visions: **1: Health in Aging Society; 2: Quality of Life; and 3: Sustainable Society** (these are provisional summary translations of the original Japanese)**.** Each COI will involve industry-university-government collaboration and will conduct challenging and high-risk basic research that will hopefully lead to commercialization of the research within 10 years.

MEXT established in April 2013 a COI Governing Board comprising five members from industry and two academics to oversee the COI program. MEXT then solicited innovative ideas for Visions for the COI program. Based on the ideas submitted, the COI Governing Board decided on three Blue-Sky Visions. The Board then formed three Visionary Teams with three members for each Vision.

Having established the Visions and the Visionary Teams, MEXT solicited proposals for the COI program to be submitted between June 11 and August 12, and received 190 submissions. The nine Visionary Team members (three for each Vision) selected 12 projects out of the 190 proposals; they were subsequently approved by the seven COI Governing Board members. Each COI will receive up to Yen 1 billion ($10 million) for R&D and up to Yen 100 million ($1 million) for administrative costs annually for up to nine years.

The full name of the COI program is the **C**enter **o**f **I**nnovation **S**cience and **T**echnology-based **R**adical Innovation and **E**ntrepreneurship Progr**am** (**COI-STREAM**). The COI-STREAM is complex. In addition to the 12 Centers of Innovation (COI), MEXT selected 11 COI-Satellites (COI-S). COIs with one or more COI-Ss will share grants; no COI-S will be funded directly by MEXT. MEXT also selected 14 COI-Trials (COI-T) that, although not selected as COIs, were evaluated as being good and possibly will be

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selected as COIs in the next solicitation round in two years' time. A COI-T will receive up to Yen 100 million ($1 million) per annum for R&D (but not for administration) for up to two years. Five COI-T Satellites (COI-T-S) also selected will share the award with COI-Ts.

MEXT also selected two COI A-STEPs (COI-AS). A-STEP is a technology transfer program that has been administered by the Japan Science and Technology Agency (JST) since JFY2011. MEXT selected two of the COI proposals for funding within the A-STEP program. One example of each of the selected COIs, COI-Ss, COI-Ts, COI-T-Ss and COI-ASs for each Vision is listed in the tables below. The overall COI STREAM budget for JFY 2013 is Yen 10.8 billion ($108 million).

The COI-STREAM is a unique program in that it was designed to contribute to three blue-sky visions, rather than focus research on specific target technologies.

Vision 1: Health in Aging Society:
5 COIs, 3 COI-S, 7 COI-Ts, 2 COI-T-Ss, and 2 COI-ASs were selected
One Example each for COI, COI-S, COI-T, COI-T-S, and COI-AS is as follows:

	Center Concept	Project Leader and Research Leader	Project Participants	Research Outline
COI	Sensing and daily physical checking for self-fulfillment and family ties	Takuzo Takayama, Toshiba Tomokazu Suenaga, Tohoku U.	Toshiba, Tohoku U., Toshiba Solution, Toshiba Medical Systems, Nippon Kohden	To develop food sensors using state-of-the-art MEMS, spintronics, ICT, energy, materials, and medical technologies; to manage big data obtained from individual behavior patterns, health, and environment with genomic information stored in the cloud
COI-S	Smart life-sensing innovation	Kazuaki Utsumi, Waseda U. Tetsuya Oosaka, Waseda U.	Waseda U., RIKEN Genesis, Toppan Printing, Shimadzu	To develop field-effect transistor-based super-small-sized disposable biosensors for rapid cancer diagnosis, infectious diseases, Alzheimer's disease to extend healthy life
	Biosensor system	Hiroyuki Ogawa, Microbio Shin Yabukami, Tohoku Gakuin U.	Microbio, Tohoku Gakuin U., Sogen Mfg., Intelligent Cosmos, Ideal Star, Tohoku U.	To develop sensors for studying microorganisms
	Biomarkers	Takuzo Takayama, Toshiba Healthcare Tadashi Yamamoto, Niigata U.	Toshiba, Niigata U.	To develop biomarkers for biological liquids
COI-T	International center for healthy life of the next generation	Masanori Yoshino, Hitachi Consumer Electronics Hiroyuki Tsutsui Hokkaido U.	Hokkaido U., Sapporo Medical U., ADEKA, Ihara Fisheries, Ushio Electric, Ezaki, Cosmo Foods, J-MAC System, Shimadzu, Tsuruha Holdings, Nissei Bio, Nitto Denko, Bio Sensor, Hamanasu Information, Hitachi, Morinaga, Life Science Res. Inst., Wako Chemical, Hokkaido Prefecture, Hokkaido Comprehensive Res. Inst., Hokkaido Comprehensive S&T Promotion Center, Hokkaido Comprehensive Food Industry Promotion Inst.	Evidence-based R&D for improving health; early-stage detection of diseases; to work with Tsukuba U. and establish a center in coordination with local governments and companies
COI-T-S	Innovative quality control for aging	Hiroko Isoda, Tsukuba U.	Tsukuba U., Tsukuba Prefectural Health and Agriculture Association, Comprehensive Res. Inst. for Agriculture-Food Industry Technologies, Kyushu & Okinawa Agricultural Res. Center, Nippon Flour, Fuji Film, Kyowa Hakko Bio, Tanita, Yasuka	To develop scientific evidence-based exercise programs; to decrease visceral fat by next-generation functional foods; to counter Alzheimer's disease; to develop equipment to evaluate satisfaction
COI-AS	Nutritional supplements that have functional components to strengthen muscles by simulating exercise		Tohru Takemasa, Tsukuba U.	Coordinator: Hidetoshi Horibe, Tsukuba U.

Vision 2: Quality of Life:
2 COIs, 3 COI-Ss, and 2 COI-Ts were selected.
One example each for COI, COI-S, and COI-T is as follows:

	Center Concept	Project Leader and Research Leader	Project Participants	Research Outline
COI	Analyses of emotion and satisfaction	Takahide Nozawa, Mazda Shigeto Yamawaki, Hiroshima U.	Mazda, Hiroshima U., U. of Tokyo, OIST, Hiroshima City U., KDDI, Chugoku Electric, Mitsubishi Rayon, Andersen Bakery, KOBELCO, Sharp, AIST, Hiroshima Prefecture	To develop Brain Emotion Interface (BEI) that enables visualization of emotion, bio-sensing, and remote reproduction, using brain science and optical and information technologies
COI-S	Smart brain harmonic innovation	Yoshinori Yamakawa, NTT Management Innovation Center Keiji Imoto, Nat. Inst. of Pathological Sciences	NTT Data Management Res. Inst., National Institute of Pathological Sciences, Applied Brain Science Consortium, National Yokohama University, Shimane University, Iwate Medical University	To visualize information in the brain, including perception and emotion; to develop infrastructure for brain information, and enable the application of visualization technologies
	Optical innovation center	Tsutomu Hara, Hamamatsu Photonics Shoji Kawato, Shizuoka University	Hamamatsu Photonics, Shizuoka U., Hamamatsu Medical U., Optical Industry Creation U., U. of Tokyo. Brookman Technology, Yamaha, NHK	R&D on technologies and equipment that enable bio-sensing and remote reproduction by controlling lights; optical paradigm shift for sustainable society with high quality life
COI-T	Tokyo University of Art-synesthesia innovation center	Haruo Kawahara, JVC Kenwood Masaaki Miyasako, Tokyo U.of Art	JVC Kenwood, Tokyo U. of Art, NHK Engineering System, NICT, NHK Enterprise, NHK Promotion, Wakayama U., T. of Tokyo	To create "impressions" through hybrid of art and S&T; to incorporate state-of-the-art imaging technologies in comprehensive art-music-body expression

Vision 3: Sustainable Society
5 COIs, 5 COI-Ss, 5 COI-Ts, 3 COI-T-Ss were selected
One example each for COI, COI-T, COI-T-S is as follows:

	Center Concept	Project Leader and Research Leader	Project Participants	Research Outline
COI	Establishment of next-generation infrastructure system to realize a safe and secure society	Seiichi Ikehata, Daiwa House Kiyoshi Uzawa, Kanazawa Institute of Technology	Daiwa House, Kanazawa Inst. of Technology, Kanazawa U., Toray, Nissan Chemical, Hitachi Chemical, Komatsu, Mitsui Marine Development, Ishikawa Prefecture, Gifu Prefecture, Ishikawa Prefectural Industrial Test Lab., Gifu Prefectural Industrial Res. Inst., Ishikawa Industry Creation Support Organization	To develop innovative materials that are highly functional (with light weight, long-term durability, fault tolerance, incombustibility), showing excellent environmental performance, enabling flexible design, and being easily handled at the time of relocation and recycling.
COI-S	R&D Center for Advanced Nano-carbon Complex Structural Materials	Project Leader: TBD Koji Matsuura, Okayama U.	Okayama U.	To test advanced nano carbon (ANC) complex structural materials; to apply ANC to social infrastructure including houses and cities, and marine infrastructures like marine wind turbines by decreasing weight and increasing strength and life span
	Innovative Materials/Structure Reliability Evaluation	Toyoaki Miyagawa, Kyoto U. Koichi Tsuchiya, Nat. Inst. of Materials Science	National Institute of Materials Science, Kyoto U., Public Works Research Institute, and others	To evaluate reliability of innovative materials and estimate their life span by using state-of-the art nano-analysis and metrological analysis technologies
COI-T	Next-generation Hydrogen Energy Society	Eiji Yamashita, Fuji Chemical Nobuo Kamiya, Osaka City U.	Fuji Chemical, Osaka City U., Sharp, Daiwa House, Nippon Steel & Sumitomo Metal, Cosmo, KMO, Adachi New Industry, Kaneka, Osaka Pref. U., Osaka U. Kansai U., Kwansei Gakuin U., Kinki U., Tezukayama Gakuin U., RITE, AIST, ITAC	To test technologies for a hydrogen generating system based on artificial photo conversion; research on innovative catalysts and systems for hydrogen generation and storage; to establish strategy for hydrogen-based social infrastructure.
COI-T-S	Next-generation Hydrogen Energy Society	Hirokazu Tanaka, ESPEC Tohru Yamazaki, Hyogo Pref. U.	ESPEC, Hyogo Pref. U., Glory, Nihon Gaishi, Kansai Electric, RIKEN, JASRI, NIRO	To apply hydrogenase to bio-electrodes and develop catalysts to generate metallic hydrogen with super-high specific surface area, using super fine fabrication technologies