Press Release

June 1, 2006

T-Engine Forum
Japan Embedded Systems Technology Association
TRON ASSOCIATION

Establishment of the Certification Examination System for Embedded System Software Engineers

-First Certification Examination Proposed by the Embedded Systems Industry-

The three organizations to represent the embedded software[4] industry, T-Engine Forum[1] (Shinagawa-ku, Tokyo, Chair: Ken Sakamura), Japan Embedded Systems Technology Association[2] ("JASA", Chuo-ku, Tokyo, Chair: Takanori Matsuo) and TRON ASSOCIATION[3] (Minato-ku, Tokyo, Chair: Katsumasa Shinozuka) have agreed to establish the certification examination for the embedded system software engineers and will start the examination sequentially from October 2006.

1.Background of the establishment of the certification examination system for embedded systems technology

Embedded systems (equipment with embedded computers such as mobile phones, home appliances, automobiles and industrial equipment) implemented with embedded software are becoming exponentially larger and complex with the improvements in hardware performance and the sophistication of required functions. We can say that embedded software engineers are required to develop high-quality software in a relatively short time and the standard of embedded software technology determines international competitiveness and the manufacturing standards of Japan.

Also, for the ubiquitous computing environment (an environment where everything contains a computer and is connected to the network), which heavily influences the social infrastructure and human life in the future, the asset of the embedded software engineers is the key to that realization.

While the demand for software engineers increase, the current shortage of embedded systems software engineers is a major problem. According to the "Reinforcement Measures for Software Development Capabilities" released by the Ministry of Economy, Trade and Industry in November 2005, it is estimated that there are currently around 175,000 engineers. However, there is still an estimated shortage of about 70,000 engineers.

In this situation, T-Engine Forum and TRON ASSOCIATION, which disseminated "ITRON", and the next-generation OS "T-Kernel", which is the de facto standard OS for embedded technology (Operating System- the basic software for the embedded system), in Japan have been offering a wide range of technological education. Based on past activities, they have come to the conclusion that it is effective to show the technology standard that TRON engineers should master and certify the qualification by setting goals for engineers and it is important to promote engineering education by making such

exam available as a part of this education.

Independently, JASA is concerned about the reinforcement of human resource development and the shortage of engineers within the industry, and as a result of more than two years of discussion concerning human resource development, they have proposed the policy to “provide a standardization index of high-quality education and technological criteria to promote revitalization of the entire industry”. Therefore, they have been pursuing the engineer exam as a specific measure to back up their policy.

With this background, T-Engine Forum, JASA and TRON ASSOCIATION have agreed to establish the framework for the embedded engineer certification examination and start the first examination system proposed by the embedded systems industry. These three organizations will start the examination from this fall.

These three organizations will develop this examination, and aim to widely use it for enhancing the motivation in engineers, and as the skill index of engineers in outsourcing development work, procuring engineers and planning of projects. Also, they intend to develop the certification examination by urging other embedded systems technology industry organizations and envisage it as an international engineer certification examination and expand it overseas such as Korea, China, India and Vietnam in the future.

2 Outline of the Embedded Engineer Certification Examination

Certification examination for embedded system engineers (hereinafter referred to as the “Exam”) complies with ETSS [5] and will be implemented within the following framework;

2-1 Structure of Exam

The Exam will consist of the following examinations. Also, those who pass each examination will receive the certification from the organization that prepares the examination.

(1) Embedded Software Engineer Examination (JASA Certification examination)

1.Embedded Software Engineer Level 2 (entry level)

It certifies that the engineer has the knowledge and ability as an ETSS entry-level engineer.

It recognizes that the engineer can program under the guidance of a senior engineer. This level is assumed to be reached by students who receive the embedded software education at colleges and career schools, and embedded software programmers with about three year experience, who enter companies without any programming experience.

2.Embedded Software Engineer Level 1 (middle level)

It certifies that the engineer has the knowledge and ability as an ETSS middle level engineer.

It recognizes that the engineer can do programming independently. This level is assumed to be reached by engineers who have 4-5 years of experience in

embedded software programming.

(2) TRON Engineer Examination (Certification Examination of T-Engine Forum and TRON ASSOCIATION)

It recognizes that the engineer is sufficiently competent of using T-Kernel and ITRON. This engineer is more competent than a level 1 JASA-certified engineer, as well as having the ability to proficiently design and create a system using T-Kernel and ITRON. This is the level which a practicing engineer must achieve.

(Certification of TRON Embedded Specialist)

Those who pass both the TRON Engineer Examination and Level 1 of the Embedded Software Engineer Examination will be certified as TRON embedded specialists.

2-2 How the examination is implemented and the quality assurance of the examination quizes

(1)How the examination is implemented

The examination will be given in the CBT (Computer Based Test)method. Examinees can apply for the examination through the web, fax, support centers, etc. Also, the examination can be taken anytime at any of the venues that have been arranged throughout the country. The examinees will have their identification checked at the venue and then they must answer on the computer to questions provided on that computer.

(2)Certification

Those who pass the examination will later be issued a certification by each organization. Those who did not pass may take the examination again after a certain period of time.

(3)Quality Assurance of the examination quizes

College professors with a wide range of insights in each field involved in the preparation of the examination questions. Prof. Ken Sakamura, the chair of T-Engine Forum will be the chair for the preparation of all the examinations to ensure the quality of the questions and control the validity of the evaluation levels of the exam.

3 Future Schedules

The examinations will be implemented as the schedule below.

(1) Embedded Software Engineer Examination (JASA Certification Examination)

Mid-June Release of examination schedule
July Implement Beta examination
August Release of the procedures for the actual examination
October Examination begins

(2) TRON Certification Engineer Examination (Certification examination by T-Engine Forum and TRON ASSOCIATION)

Mid-August　Release of examination schedule
September　Implement Beta examination
October　Release of the procedures for the actual examination
December　Examination begins

4 System for implementing the examination

T-Engine Forum, TRON ASSOCIATION and JASA will establish the following system to implement examinations;

(1) Examination Council (tentative name)

A new council will be established to examine and operate the examination framework. This council will widely urge for the participation of embedded system-related organizations.

(2) Examination System Committee and Examination Questions Preparation Committee

An organization to examine the implementation of the examination and an organization to prepare examination questions will be established within T-Engine Forum, TRON ASSOCIATION and JASA.

(3) Secretariat

The Secretariat will handle the operation and promotion of itself, question preparations and certification, and other management will be outsourced to an external organization that specializes in implementation of certifications to improve efficiency and speed.

[1] T-Engine Forum

ITRON, the real-time OS developed by Prof. Ken Sakamura (Professor of Graduate School of Interdisciplinary Information Studies, the University of Tokyo)is the most widely used OS in the embedded software field. T-Engine Forum is an organization established to promote the standardization of development environment and platforms of the embedded system such as T-Kernel, which has evolved from ITRON and its development platform T-Engine. It also performs various standardization activities such as uID to promote the ubiquitous computing society.

URL　http://www.t-engine.org/japanese.html

[2]Japan Embedded Systems Technology Association (JASA)

It changed its name from Japan System House Association this fiscal year. It is an organization of the embedded systems industry and holds the ET show every fall. It promotes improving the technology in the industry and aims to empower companies and engineers in the industry by acting as the platform of the industry.

URL　http://www.jasa.or.jp/top/

[3]TRON ASSOCIATION

It is an organization for disseminating and developing TRON-related technology with the project leader, Prof. Ken Sakamura (Professor of Graduate School of Interdisciplinary Information Studies, the University of Tokyo). Especially ITRON, which was developed for embedded system, is widely used as the de facto standard

of the embedded OS.
URL http://www.tron.org/

[4] Embedded software

It is software incorporated in computer-applied equipment and peforms the various functions of the equipment. It is incorporated in many things such as TVs, DVDs, mobile phones, automobiles, car navigations, digital cameras, and it is not an exaggeration to say that without embedded software, nothing can be manufactured and sold these days.

[5] ETSS: Embedded Technology Skill Standards

The Embedded Technology Skill Standards is the framework defining and systemizing the skill necessary for embedded software development. It is the system establishing useful “criteria” (common standards) for the development and utilization of embedded software developers. They provide “Skill Standards”, “Career Standards” and “Education Curriculum”, etc.

URL http://sec.ipa.go.jp/download/200504eb.php

<Contact for Enquiries>

Japan Embedded Systems Technology Association (JASA)
Planning manager: Mr. Tsutomu Sawada
TEL:03-5821-7973 FAX:03-5821-0444

T-Engine Forum Secretariat
(c/o YRP Ubiquitous Networking Laboratory)
28 Kowa Building, 2-20-1, Nishi-gotanda, Shinagawa-ku, Tokyo

Contact: Mr. Hakuta & Taguchi
TEL:03-5437-2270 FAX:03-5437-2271
E-mail:press@www.t-engine.org

TRON ASSOCIATION
Katsuta Building, 1-3-39, Mita, Minato-ku, Tokyo
Contact: Mr. Ohashi
TEL:03-3454-3191 FAX:03-3454-3224
E-mail:info@assoc.tron.org