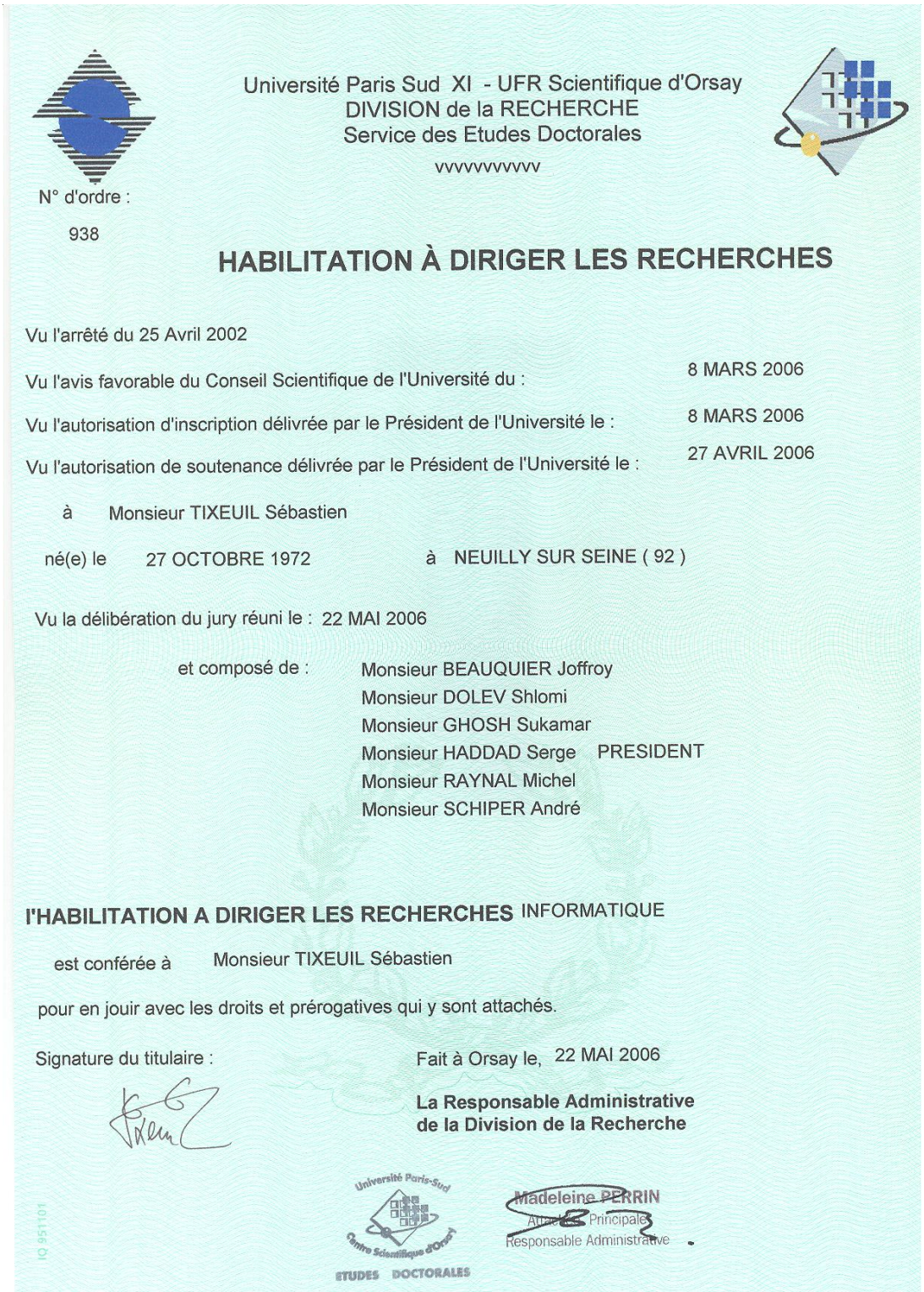
Pièces Additionelles

Sébastien Tixeuil

29 mars 2007

Table des figures

FIG. 1 – Copie de la pièce d'identité



Université Paris Sud XI - UFR Scientifique d'Orsay
DIVISION de la RECHERCHE
Service des Etudes Doctorales
vvvvvvvvvv

N° d'ordre :
938

HABILITATION À DIRIGER LES RECHERCHES

Vu l'arrêté du 25 Avril 2002

Vu l'avis favorable du Conseil Scientifique de l'Université du : 8 MARS 2006

Vu l'autorisation d'inscription délivrée par le Président de l'Université le : 8 MARS 2006

Vu l'autorisation de soutenance délivrée par le Président de l'Université le : 27 AVRIL 2006

à Monsieur TIXEUIL Sébastien

né(e) le 27 OCTOBRE 1972 à NEUILLY SUR SEINE (92)

Vu la délibération du jury réuni le : 22 MAI 2006

et composé de : Monsieur BEAUQUIER Joffroy
Monsieur DOLEV Shlomi
Monsieur GHOSH Sukamar
Monsieur HADDAD Serge PRESIDENT
Monsieur RAYNAL Michel
Monsieur SCHIPER André

L'HABILITATION A DIRIGER LES RECHERCHES INFORMATIQUE

est conférée à Monsieur TIXEUIL Sébastien

pour en jouir avec les droits et prérogatives qui y sont attachés.

Signature du titulaire :

Fait à Orsay le, 22 MAI 2006

La Responsable Administrative
de la Division de la Recherche

Université Paris-Sud
Centre Scientifique d'Orsay
ETUDES DOCTORALES

Madeleine PERRIN
Attachée Principale
Responsable Administrative

IQ 951101

FIG. 2 – Copie de l'habilitation

Université Paris Sud XI - UFR Scientifique d'Orsay
DIVISION de le RECHERCHE
Service des Etudes Doctorales

Numéro d'ordre

938

HABILITATION A DIRIGER LES RECHERCHES
(arrêté du 25 Avril 2002)

Spécialité : INFORMATIQUE

Le : 22/05/06 22 MAI 2006

Nous, Membres du Jury (ayant désigné M HADDAD comme président de jury.)

Monsieur BEAUQUIER Joffroy
Monsieur DOLEV Shlomi
Monsieur GHOSH Sukamar
Monsieur HADDAD Serge
Monsieur RAYNAL Michel
Monsieur SCHIPER André

En exécution de l'arrêté du 25 Avril 2002, relatif à l'Habilitation à diriger les recherches.

- Vu l'avis favorable du Conseil Scientifique de l'Université du : 8 MARS 2006
- Vu l'autorisation d'inscription du Président de l'Université du : 8 MARS 2006
- Vu l'autorisation de se présenter devant le jury du : 27 AVRIL 2006

Avons examiné les travaux de :

à Monsieur TIXEUIL Sébastien

Né(e) à NEUILLY SUR SEINE (92) Le 27 OCTOBRE 1972

et l'avons déclaré(e) **HABILITE(E) A DIRIGER LES RECHERCHES**

Les Membres du Jury :

La Présidente de
l'Université de Paris Sud XI

A. BERSELLINI

Fait à ORSAY, le 22 MAI 2006

Le Secrétaire Général
P/O La Responsable Administrative
de la Division de la Recherche

FIG. 3 – Copie du rapport de soutenance (1/3)

UFR SCIENTIFIQUE D'ORSAY

VVVVVVVVVV

HABILITATIONS A DIRIGER DES RECHERCHES

(arrêté du 25 Avril 2002)

N° d'ordre :

938

RAPPORT DE SOUTENANCE

établi par le Président du Jury

INFORMATIQUE

de : **Monsieur TIXEUIL Sébastien**

Date de soutenance : 22 MAI 2006

Date et Signature des membres du jury

Shlomi Dolev

Michel RAYNAL

SUKUMAR GHOSH

André Schiper

Serge Haddad

Joffroy Beauquier

le 22 mai 2006

FIG. 4 – Copie du rapport de soutenance (2/3)

Le travail de Sébastien Tixeuil se situe dans le domaine de l'algorithmique répartie et plus particulièrement dans celui de l'auto-stabilisation et des systèmes à grande échelle. Il s'agit d'une approche ambitieuse et théorique pour la gestion des pannes dans les systèmes distribués.

S. Tixeuil a contribué de manières décisive à ce domaine en s'attaquant à des problèmes difficiles tels que le routage dans les réseaux unidirectionnels ou la prévention des collisions dans les réseaux de capteurs, obtenant le plus souvent les meilleures bornes de complexité connues à ce jour. La qualité de ses résultats est attestée par des communications et des articles dans les conférences et les journaux de référence.

Lors de son exposé, S. Tixeuil a couvert les différents aspects de sa recherche en montrant clairement son positionnement dans la communauté. Les perspectives qu'il nous a présentées sont à la fois d'ordre théorique (bornes de complexité inférieures, langage de programmation auto-stabilisant, etc.) et d'ordre pratique avec la conception de réseaux de capteurs et le calcul autonome.

Le nombre et la qualité de ses co-auteurs, ses collaborations internationales, les projets européens et internationaux qu'il anime témoignent de sa reconnaissance et de sa visibilité.

Les membres du jury qui ont eu l'occasion de travailler avec lui tiennent à souligner le plaisir issu de ces collaborations.

Il a encadré de nombreux étudiants en master et deux étudiants en thèse tout en les associant aux publications.

Pour toutes ces raisons, le jury accorde l'habilitation à diriger les recherches à S. Tixeuil et tient à souligner qu'il a tous les éléments requis pour diriger une équipe de recherche au meilleur niveau.

FIG. 5 – Copie du rapport de soutenance (3/3)

COLLEGE OF
LIBERAL ARTS & SCIENCES
Department of Computer Science
14 MacLean Hall
Iowa City, Iowa 52242-1419
319-335-0713 *Fax* 319-335-3624
www.cs.uiowa.edu

April 25, 2006

To: The Members of the Habilitation Review Committee of Dr. Sébastien Tixeuil

Dear Review Committee Members:

It is a pleasure for me to write this evaluation report. supporting Dr. Sébastien Tixeuil' s bid for Habilitation. I have known Dr. Tixeuil for the past few years as an active researcher in the area of self-stabilizing distributed systems that happens to be my primary research area too. I have also carefully studied Dr. Tixeuil's current vita and future plans. In the following paragraphs, I will summarize my observations:

(Research contributions) Dr. Tixeuil's primary contributions are in the theory and applications of self-stabilization in distributed systems. Several of his research papers made significant impact and enriched the field. For example, Dr. Tixeuil addressed the problem of scalable recovery of self-stabilizing systems where minor failures have the potential to cause system-wide perturbations, and proposed several elegant solutions for local recovery from such failures. In another paper jointly authored by Ted Herman, he formulated the problem of collision avoidance in sensor networks by reducing it to a version of graph coloring. A good number of his papers improved upon the time and space complexity metrics of the currently known solutions, and these are valuable contributions to the research community. Recently, Dr. Tixeuil broadened his research by addressing problems of fault-tolerance in large-scale applications: these include computational grids, peer-to-peer networks, and Internet routing. I strongly believe that this is a move in the right direction, and it will help him identify new and challenging research problems.

(Grant) Dr. Tixeuil has a solid record of attracting research funding. His philosophy of designing reliable large practical systems via the principles of stabilization and related techniques has earned the credibility of the funding agencies, and I am positive that this trend will continue.

FIG. 6 – Copie du rapport de Sukumar Ghosh (1/2)

(Student supervision) Dr. Tixeuil has supervised a good number of students at the Master of Science level. He also helped with the supervision of a couple of Ph.D. students. This fact, combined with this solid publication record, his participation in top conferences, and his collaboration with numerous peers bear evidence that Dr. Tixeuil is well qualified to independently supervise Ph.D. students, and capable of infusing them with new ideas.

(Committee membership and journal editorship) Dr. Tixeuil has already been a PC member of some top conference in our area – these include DISC, ICDCS, ICPADS, SSS and OPODIS. He did an excellent job of co-editing the SSS2005 proceedings (published by Springer). It is heartening to note that since 2005 he started serving in the Editorial board of a journal. These re-affirm his visibility in the community and the value of his contributions.

(Future plans) Dr. Tixeuil has a credible research plan. On the theory side, he continues to work on improved performance guarantees of self-stabilizing systems under various models of computation. To me, far more significant is his desire to tackle stabilization and fault-tolerance problems at the software engineering level and in embedded systems. Despite beautiful theories, our Achilles heel has been the credibility of scale. Dr. Tixeul's FAIL-FCI project and his participation in sensor network related activities confirm his desire to address the issue of scale.

(Overall assessment) Dr. Tixeul is a rising star in the field of distributed systems with a strong potential for being a long-term player. I enthusiastically support his bid for Habilitation. Please feel free to contact me for further clarification of this report.

Sincerely,

(Sukumar Ghosh)
Professor, Department of Computer Science
University of Iowa, USA
Tel: (319).335.0738
Fax: (319).335.3624
Email: ghosh@cs.uiowa.edu
Web: http://www.cs.uiowa.edu/~ghosh

FIG. 7 – Copie du rapport de Sukumar Ghosh (2/2)

IRISA

IRISA • Campus universitaire de Beaulieu • 35042 Rennes Cedex France • Tél. : +33 2 99 84 71 00 • Télécopie : +33 2 99 84 71 71 • Internet : www.irisa.fr

Rapport sur le document soumis par Monsieur Sébastien Tixeuil en vue de l'obtention de la HDR (*Habiltation à Diriger des Recherches*)

Dans ses travaux Sébastien Tixeuil s'intéresse au "calcul réparti" en présence de fautes, et plus particulièrement à l'auto-stabilisation. Un algorithme est auto-stabilisant s'il est capable de retourner dans un état sain, en un nombre fini d'étapes, après la survenue d'une faute transitoire qui a modifié l'état de ses variables.

Les techniques d'auto-stabilisation classiques s'adaptent mal (voire pas du tout) au facteur d'échelle. Plus précisement une faute dans un processus peut entrainer tous les processus à participer au rétablissement d'un état sain. C'est là que se situent les apports de Sébastien Tixeuil. Il a investigué des domaines de calcul réparti auto-stabilisant pour lesquels il est possible de développer des solutions qui résistent au facteur d'échelle. Dans cette optique, il a developpé trois nouvelles techniques d'auto-stabilisation : une technique pour laquelle le temps requis par l'auto-stabilisation dépend du nombre de fautes et non du nombre de processus formant le système, une technique adaptée au maintien de prédicats, et une technique conçue pour l'auto-stabilisation locale.

Tout ceci est décrit dans le document remis par Sébastien Tixeuil. Ce document, très agréable à lire, est d'une excellente facture et son contenu démontre, s'il en était besoin, la profonde maitrîse du sujet que possède son auteur. On pourrait résumer la problématique de l'auteur avec la métaphore de l'adversaire qui tente de contrecarrer les actions de l'algorithme réparti. Pour mieux appréhender les techniques d'auto-stabilisation dans un contexte "grande échelle", Sébastien Tixeuil s'est par ailleurs intéressé à l'injection de fautes, au routage dans Internet et aux réseaux de capteurs.

Sur le plan de la qualité du travail, les travaux et les résultats de Sébastien Tixeuil sont de tout premier ordre. Il suffit pour s'en convaincre de regarder la liste des publications, tant dans les journaux de référence que dans les meilleures conférences internationales. Peu d'enseignants-chercheurs (ou de chercheurs à temps plein) de son âge ont une aussi longue liste de publications de qualité internationale. (A titre d'exemple, je note qu'il a publié dans *Distributed Computing*, qui est le journal de référence de la communauté, journal édité conjointement par l'ACM et Springer ; ce journal est extrêmement sélectif et publie moins de vingt articles par an !).

A coté de son apport scientifique, il est important de noter que Sébastien Tixeuil est parfaitement intégré

UNIVERSITÉ DE RENNES 1 INSA CNRS INRIA RENNES

FIG. 8 – Copie du rapport de Michel Raynal (1/2)

dans les communautés scientifiques nationale et internationale. Lorsque l'on ajoute tous les mois qu'il passés à l'étranger en qualité d'invité (Japon, USA, Europe, Israël) on arrive à un total de plus d'une année, ce qui est remarquable pour son âge. Il a de plus participé très activement à l'organisation de conférences internationales, a été (et est) responsable de plusieurs actions recherches en liaison avec des pays européens, et a encadré des diplômes de fin d'études et deux thèses.

Pour conclure je dirai simplement que, dans le domaine du calcul réparti, Sébastien Tixeuil est l'un des meilleurs parmi les jeunes chercheurs français de sa génération. Pour l'avoir vu exposer ses travaux, je tiens également à faire remarquer qu'il sait faire passer ses idées dans ses présentations.

Je donne donc un **avis très favorable** à la présentation de ses travaux par Sébastien Tixeuil en vue de l'obtention de l'Habilitation à Diriger des Recherches.

le 30 mars 2006

Professeur Michel Raynal
Université de Rennes 1
http://www.irisa.fr/michel.raynal/

FIG. 9 – Copie du rapport de Michel Raynal (2/2)

DISTRIBUTED SYSTEMS LABORATORY
SCHOOL OF COMPUTER AND COMMUNICATION SCIENCES

Prof. André Schiper
EPFL – LSR – IIF – I&C
Bâtiment INF
CH 1015 Lausanne

Téléphone : +4121 693 42 48
Fax : +4121 693 67 70
E-mail : andre.schiper@epfl.ch
Site web : lsrwww.epfl.ch/schiper/

ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

Université Paris Sud
Centre d'Orsay
Service des Etudes Doctorales
Bâtiment 301
91405 **ORSAY CEDEX**
France

Lausanne, le 24 avril 2006

Habilitation à diriger des recherches

Sébastien Tixeuil
Vers l'auto-stabilisation des systèmes à grande échelle

La recherche de Sébastien Tixeuil aborde le problème de la tolérance aux fautes dans les systèmes répartis, un domaine d'une grande importance et d'une très grande actualité. Plus spécifiquement, Sébastien Tixeuil s'intéresse aux techniques dites « auto-stabilisantes » qui permettent à un algorithme de démarrer dans un état initial quelconque. Dans ce contexte, le mémoire se concentre sur l'aspect « grande échelle » de ces algorithmes (plusieurs dizaine de milliers de nœuds). Le manuscrit comporte quatre chapitres, dont un bref chapitre d'introduction (chapitre 1).

Le chapitre 2 présente une taxonomie des pannes : (1) pannes dans le temps (pannes transitoires, pannes définitives, pannes intermittentes) et (2) nature des pannes (panne d'état, panne de code). Il rappelle également les deux principales classes d'algorithmes tolérants aux fautes : les algorithmes basés sur la redondance (qui masquent les défaillances, mais dont l'état doit être correctement initialisé) et les algorithmes auto-stabilisants (qui ne masquent pas les fautes, mais dont l'état initial peut être quelconque).

Le chapitre 3 discute les problèmes liés à la grande échelle. Le chapitre commence par discuter le problème du point de vue des hypothèses sur le système, puis le problème du point de vue des applications. Dans le cadre des applications, les problèmes *statiques* (typiquement les problèmes sur les graphes) sont d'abord discutés, puis les problèmes *dynamiques* (essentiellement l'exclusion mutuelle). Il est montré que ces deux classes de problèmes souffrent de mauvaise performance lorsque le nombre de nœuds augmente.

Le chapitre 4 présente plusieurs pistes de techniques, dérivées de l'auto-stabilisation, pour le passage à l'échelle. Une première technique suggérée est la restriction de la nature des fautes, notamment la super-stabilistation (auto-stabilisation uniquement si les changements de topologie surviennent dans une configuration légitime). Une deuxième piste est la restriction de l'étendue

FIG. 10 – Copie du rapport de André Schiper (1/2)

géographique des fautes, notamment la *k*-stabilisation, qui restreint les configurations de départ aux configurations qui sont à distance au plus *k* d'une configuration légitime. Finalement, la restriction des classes de problèmes à résoudre est mentionnée. L'idée est ici d'étudier les problèmes localisés, dont la correction dans une partie du système ne dépend pas de celle des autres parties du système.

Le chapitre 5 conclut le mémoire en distinguant de manière très judicieuse les perspectives théoriques de l'auto-stabilisation et les perspectives pratiques (dans le contexte des réseaux de capteurs sans fils).

Je trouve le mémoire d'habilitation vraiment très bon. Il réussit de manière synthétique à faire un bilan des travaux sur l'auto-stabilisation (en y incluant les travaux du candidat) sans se perdre dans des détails techniques, mais tout en abordant les problèmes techniques. Le bilan montre de façon intéressante les succès de l'auto-stabilisation, mais pointe également ses limitations, et dégage des directions d'exploration. Le très bon manuscrit, avec le très bon dossier de publications comprenant des publications dans des conférences et des journaux sélectifs, ainsi que la visibilité internationale du candidat, atteste que du point scientifique Sébastien Tixeuil est incontestablement apte à diriger des recherches. La structure et la rédaction exemplaire du manuscrit montre en plus des qualités pédagogiques indéniables, qui font assurément de Sébastien Tixeuil un excellent enseignant.

Si l'on regarde l'ensemble du dossier soumis, on constate un bon niveau d'encadrement de thèses de doctorat et de master, de bonnes responsabilités administratives locales, une bonne intégration au niveau de la recherche nationale, et une participation croissante à des comités de programme de très bonne conférences internationales.

En conclusion, le dossier soumis est très solide, et je suis tout à fait favorable à autoriser la soutenance de l'habilitation à diriger des recherches.

André Schiper
Professeur EPFL

FIG. 11 – Copie du rapport de André Schiper (2/2)

Prof., J. Beauquier
LRI, Université de Paris XI
Tél : 01.69.15.67.96
email : jb@lri.fr

Orsay le 11 décembre 2006

Lettre de recommandation pour Sébastien Tixeuil

Sébastien Tixeuil présente un dossier de candidature à un poste de Professeur complet et de qualité.

L'activité de recherche est attestée par de très nombreuses publications, aussi bien dans des revues que des conférences internationales. Il est à noter une très grande activité de publications ces deux dernières années, qui correspondent à une délégation à l'INRIA, que Sébastien a mise à profit pour soutenir son habilitation et pour publier. Les sujets qu'il aborde sont variés et les articles réunissent de nombreux co-auteurs, français et étrangers.

Cette capacité d'ouverture est aussi mise en lumière par les nombreux encadrements de stages ou de thèses passés et en cours.

En quelques années Sébastien a acquis une visibilité internationale, qui s'exprime par les nombreux comités de programmes auxquels il est invité et aussi par ses nombreuses responsabilités ou participations contractuelles. Sa disponibilité est exceptionnelle et il a une activité d'animation de groupes et de projets tout à fait remarquable.

Du fait de son affectation à l'IUT d'Orsay en tant que MdC je n'ai pas eu l'occasion de participer à des enseignements avec lui. Cependant je peux dire que tous les collègues de l'IUT avec qui j'ai pu discuter sont unanimes sur son investissement en matière d'enseignement, son sérieux et ses qualités.

Je soutiens donc très vivement sa candidature à un poste de Professeur.

J. Beauquier
Professeur à Paris XI

FIG. 12 – Lettre de Recommandation de Joffroy Beauquier

iUT ORSAY
INSTITUT
UNIVERSITAIRE
DE TECHNOLOGIE

UNIVERSITÉ DE PARIS-SUD (XI)

DÉPARTEMENT INFORMATIQUE

Orsay, le 13 décembre 2006

Recommandation

Sébastien Tixeuil est maître de conférences au département d'informatique de l'IUT d'Orsay depuis septembre 2000. Depuis cette date il effectue une moitié de son service d'enseignement au département d'informatique de l'IUT et l'autre moitié à l'IFIPS (Institut de Formation d'Ingénieurs de Paris Sud), l'école d'ingénieurs de Paris Sud avec laquelle l'IUT a un accord de partenariat. Au département d'informatique, Sébastien a enseigné :

- les langages C++ et Java,
- l'algorithmique et la programmation,
- la programmation Client/Serveur Web,
- le système d'exploitation et les réseaux,
- la sécurité
- et il a encadré des projets de fin d'études de DUT.

Sébastien Tixeuil est un enseignant extrêmement compétent, très respecté par ses collègues et ses étudiants pour cette raison. Il a su introduire et tester des nouveaux sujets et de nouvelles notions à l'IFIPS et en faire profiter, dans la mesure du possible, les étudiants de l'IUT. Comme chef de département, j'ai particulièrement apprécié qu'il prenne l'initiative de monter un projet BQP (Bonus Qualité Pédagogique) pour faire financer par l'Université une grande partie d'une salle de TP destinée aux enseignements de Systèmes Répartis Hétérogènes. Il a aussi toujours été disponible auprès des chefs de départements pour nous faire profiter de son expertise et de sa maturité dans les domaines de la programmation avancée, de la programmation répartie, des matériels modernes, du système et des réseaux aussi bien pour définir de nouveaux programmes que pour aquérir de nouveaux matériels.

Je soutiens donc chaudement la demande de qualification de Sébastien Tixeuil et je le recommande sans reserve pour un poste de professeur.

Dominique Gouyou-Beauchamps
Professeur d'informatique
Chef du département d'informatique de l'IUT d'Orsay

PLATEAU DE MOULON 91400 ORSAY
TÉL. 01 69 33 61 00 - TÉLÉCOPIE : 01 69 33 61 10

FIG. 13 – Lettre de Recommandation de Dominique Beauchamps

UNLV
UNIVERSITY OF NEVADA LAS VEGAS

March 27, 2007

To Whom It May Concern

Subject: Recommendation for Dr. Sébastien Tixeuil.

It is a great pleasure for me to write a support letter for Dr. Sebastien Tixeuil who is a candidate for a "Professeur des Universites" position in your institution.

Let me start this note by saying a few main qualities of this young man. Sebastien is one of the smartest people in our community — the community that intersects with several communities, like Distributed Computing, Networking, Autonomic Computing, Fault-Tolerant Computing, etc. Even at this young age, he became very prominent in his field. I am a senior member of the stabilization community. I am also on the Steering Committee of that community. Due to his prominence and exceptional professional activities, we chose him as one of the Program Co-Chairs for the upcoming International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS). It is solely due to his presence that we (the Steering Committee) chose the venue of SSS 2007 to be Paris. Although the research in stabilization started in France in early '90's, this is the first time, SSS is moving to Paris. So, one can easily observe that Sebastien's research and professional contributions not only helped himself, but made a very positive impact on the distributed and fault-tolerant computing community in France as well. Sebastien has clearly demonstrated another big positive thing — collaborating with anyone anywhere on this planet. He has very successfully collaborated with many researchers (including very well-known people in the community) around the globe. He has helped professors (including myself) in other universities guide graduate students. His quickness, smartness, intellectual ability, breadth and depth in the field, and personality made him so successful in all these collaborations.

His research interests mainly focus on fault-tolerance in distributed systems, with an emphasis on self-stabilization. Self-stabilization is a versatile technique, based on sound mathematical foundations, that permits to withstand any kind of transient failure. This technique has strong practical impact in many computer networks, such as sensor networks, and related areas, sometimes characterized by the general term of "autonomic computing" that received a tremendous level of attention from both the academica and industries in the past few years. The number and frequency of citations he gets for his publications shows his impact in the field. There are certain problems where we must cite his work.

Department of Computer Science
4505 Maryland Parkway • Box 454019 • Las Vegas, Nevada 89154-4019
(702) 895-3681 • FAX (702) 895-2639

FIG. 14 – Lettre de Recommandation de Ajoy K. Datta (1/2)

His research record, despite his young age, is impressive, with several book chapters and journal publications. He publised in very reputed international journals like Distributed Computing and Theoretical Computer Science. He was also successful in publishing in very good conferences in our area like DISC, ICDCS, OPODIS, and of course SSS, which are leading conferences in the area of Distributed Computing.

Although I never had an opportunity to see Sebastien teaching a class, I can guess his ability as a successul teacher/professor. Sebastien presented many papers at very important international conferences. He also gave talks at various universities around the globe. I had the opportunity to attend many of them. He prepares his talk very well, presents very clearly and precisely with plenty of examples, and can make a very abstract topic a lot more interesting. He also has a good track of graduate student supervision in various Universities, including outside of Europe, which is quite unusual for a French scientist. He can communicate with the students very well both in person and via emails.

Dr. Sebastien Tixeuil has many deep theoretical results, such as his work on systematic self-stabilization via r-operator or path algebra, as well as the optimal solution to self-stabilizing token passing (published in DISC 2004) that closed a problem that has been open since 1992. Also, he recently published a few papers that are closer to the real (practical) world. They deal with dependability benchmarking for actual distributed applications. Those practical results are promising and worthwhile, as attested by the several grants that Dr. Sebastien Tixeuil obtained in connection with this new research. Those grants demonstrate the ability of Dr. Sebastien Tixeuil to lead research projects involving several international research groups.

In summary, Dr. Sebastien Tixeuil has a tremendous potential to lead a strong research group at the international level. I have worked with at least 15 researchers from France. I can confidently say that Sebastien has the strongest ability to lead big, innovative, and cutting-edge projects, and supervise students at any level. I strongly support his application as a "Professeur des Universites" at your institution. Should you have any further questions, please do not hesitate to contact me.

Sincerely,

Ajoy K. Datta
Professor
Email : datta@cs.unlv.edu
Phone : (702) 895-0870
Fax : (702) 895-2639

FIG. 15 – Lettre de Recommandation de Ajoy K. Datta (2/2)

BEN-GURION UNIVERSITY
OF THE NEGEV

DEPARTMENT OF COMPUTER SCIENCE
Shlomi Dolev
Rita Altura Professor of Computer Sciences
dolev@cs.bgu.ac.il, www.cs.bgu.ac.il/~dolev
BEER-SHEVA, ISRAEL 84105
TEL +972-8-6472715, FAX +972-8-6477650

February 4, 2007

To whom it may concern

Dear Committee Head,

I am writing to you in strong support for the promotion of Dr. Sebastien Tixeuil for the rank of full professor.

I know Dr. Sebastien more than ten years, first meeting him during mutual visits here in Israel and in LRI. His research record since then, is impressive, including at twenty or so journal and book chapter publications and fifty or so conference papers, some of which got awards. Dr. Tixeuil is also advising master and PhD students and leading a few granted projects.

The research directions Sebastien is involved in are broad and the results are deep, elegant, and important. His interest focus is fault-tolerance, in particular self-stabilization, in the scope of distributed systems and communication networks. In particular I had a chance to collaborate with Sebastien on a joint research paper. It was a pleasure experience, Sebastien is highly motivated, sharp researcher, that collaborates very nicely with others.

I know closely his excellent works titled: Self-Stabilizing with r-operators, self-stabilization with path algebra, a distributed TDMA slot assignment algorithm for wireless sensor networks. In fact I know almost every of his publications, they document very high quality research.

His ability to be part of a team and to lead research projects is excellent. Sebastien collaborated (among others) with Pierre Fraigniaud, Sergio Rajsbaum, Mikhail Nesterenko, Toshimitsu Masuzawa, Ajoy K. Datta, Ted Herman, Colette Johnen, Franck Petit, Shay Kutten, Maria Gradinariu, and (his PhD advisor) Joffroy Beauquier. All listed researchers are active and bold in the distributed computing and self-stabilization research community. It is an indication of academic curiosity and drive.

FIG. 16 – Lettre de Recommandation de Shlomi Dolev (1/2)

Prof. Tixeuil contributes to the research community also in participating in many important program committees and reviewing papers submitted to journals. In particular, he is co-charing the next main conference on self-stabilization. I have no doubt that he will be a valuable member of any department. Thus, I highly support the promotion of Dr. Tixeuil, he deserved it!. Please do not hesitate to ask more if needed.

Sincerely,

Shlomi Dolev

FIG. 17 – Lettre de Recommandation de Shlomi Dolev (2/2)

COLLEGE OF NATURAL SCIENCES
THE UNIVERSITY OF TEXAS AT AUSTIN
Department of Computer Sciences • 1 University Station C0500 • Austin, Texas 78712-0233 • (512) 471-7316

February 16, 2007

Mohamed G. Gouda
Mike A. Myers Centennial Professor
Department of Computer Sciences
The University of Texas at Austin
1 University Station (C0500)
Austin, Texas 78712-0233
U. S. A.

Email: gouda@cs.utexas.edu
Phone: 1-512-471-9532
Fax : 1-512-471-8885

To Whom It May Concern,

I am writing this letter to recommend Dr. Sebastien Tixeuil for a position with the rank of "Full Professor" in your institution. I have known Sebastien for almost ten years since he started his publication career in the area of Self-Stabilization, which also happens to be one of my research areas. During those ten years, I have run into Sebastien in several professional meetings, I have read many of his papers, and I have acted as a referee and editor for some of his submitted papers. My overall impression of Sebastien is that he is well qualified to join prestigious institution.

It is an accepted fact that France is one of the most visible nations in the world in the area of Self-Stabilization, thanks to four French researchers: J. Beauquier, C. Johnen, V. Villain, and Sebastien. In this group of active researchers, Sebastien is clearly the most creative and most daring. He is never afraid of inventing new research problems and never shy of exploring new scientific directions.

To my taste, Sebastien's best work is a sequence of three journal papers, co-authored mostly with Bertrand Ducourthial. These three papers are:

"Self-Stabilization with r-Operators",
"Self-Stabilization with Path Algebra", and
"Self-Stabilization with r-Operators Revisited"

These three papers introduce the general concept of r-operators, show how to combine r-operators to form self-stabilizing networks, and argue that several routing protocols in the Internet can be viewed as self-stabilizing networks of r-operators. The ideas in these three papers are not only technically interesting, but they are also useful and relevant.

I also like Sebastien's paper on "Optimal Randomized Self-Stabilizing Mutual Exclusion on Synchronous Rings". This paper addresses one of the most studied problems in the area of Self-Stabilization, and it presents a sequence of four randomized protocols for solving this problem that are optimal in memory requirements, stabilization time, and service time. These protocols are much

FIG. 18 – Lettre de Recommandation de Mohamed Gouda (1/2)

better than the many protocols that were proposed earlier to solve the same problem. But more importantly, as optimal as these protocols are, they are also quite simple and elegant.

More recently, Sebastien has cut loose from the confines (and safe familiarity) of Self-Stabilization, and started to investigate the issue of fault injection during the testing of distributed applications. In his paper "FAIL-FCI: Versatile Fault Injections", Sebastien and his coauthors describe a tool that can be used to inject three types of faults (into a distributed application): fault load, qualitative faults, and workload patterns. Also in this paper, the authors describe the results of of using their tool to inject faults into (and test) XtremWeb platforms. This nice system paper is a very good first step in what promises to be a successful and important investigation of fault injection during system testing.

Sebastien's papers cover a wide variety of topics. Their topics range from the theoretical to the applicable, from concepts to tools, and from self-stabilization to fault injection. There is no doubt in my mind that Sebastien is a worthy addition to your prestigious institution.

Sincerely

Mohamed G. Gouda
Mike A. Myers Centennial Professor.

FIG. 19 – Lettre de Recommandation de Mohamed Gouda (2/2)

Osaka University
Graduate School of Information Science and Technology
1-3 Machikaneyama, Toyonaka, 560-8531, Japan
Phone: +81-6-6850-6580; FAX: +81-6-6850-6582
E-mail: masuzawa@ist.osaka-u.ac.jp

March 28, 2007

To whom it may concern,

Recommendation letter for Dr. Sebastien Tixeuil, an applicant to "Professeur des Universites"

It is my pleasure to write this letter for supporting Dr. Sebastien Tixeuil in his application to the "Professeur des Universites" at your institution. I have known Sebastien for about ten years. We met many times at various international conferences. And in these years, we are carrying on collaborative research and visiting each other a few times.

This letter describes my impression of his research activity from attending his talks, reading some of his papers and discussions we made. I will describe my impression about his research achievements first, and later write my impression about his research activities and potentials.

As you see in the followings, I strongly recommend him as a "Professeur des Universites" at your institution.

My impression about his research achievement:

Sebastien Tixeuil published several excellent papers on distributed systems. His main contributions are in the areas of self-stabilization, which is a promising paradigm for realizing dependable distributed systems. I am very familiar with Sebastien's work because my research interests greatly overlap with his. I am convinced that his research has a great influence on the current status and the future direction of research in self-stabilization as stated in the followings.

Exploitation of novel concepts for improving scalability

The first main contribution Sebastien Tixeuil made in this area is that he introduced and investigated novel concepts of self-stabilization such as time-adaptability, local stabilization, strong stabilization and predicate-preservation. These concepts are developed by him to overcome

FIG. 20 – Lettre de Recommandation de Toshimitsu Masuzawa (1/4)

Osaka University
Graduate School of Information Science and Technology
1-3 Machikaneyama, Toyonaka, 560-8531, Japan
Phone: +81-6-6850-6580; FAX: +81-6-6850-6582
E-mail: masuzawa@ist.osaka-u.ac.jp

weakness in scalability of "classical" stabilization. By focusing on behavior of self-stabilizing systems in real environments, he developed these concepts with the aim of strengthening self-stabilization for practical use. Thus, these concepts are very important not only from a theoretical view point but also from a practical view point. It is worthwhile to notice that these concepts gave new research directions and many research works are now following his pioneering works.

Investigation of fundamentals

Sebastien Tixeuil always tackles essential and fundamental problems in the research area of self-stabilization, and obtained excellent solutions to the problems. The problems he considered contain synchronization, mutual exclusion, routing, sorting and so on. His solutions can play important roles as building blocks in designing highly dependable distributed systems. Another important point I should mention is that these problems capture different aspects of difficulties distributed systems inherently have. Thus his research results make contribution in clarifying several essential aspects of highly dependable distributed systems and in establishing fundamentals.

Formal approaches to system design

Sebastien Tixeuil pioneered novel formal approaches to design of self-stabilizing systems such as path algebra and r-operators. Self-stabilization has to meet a severe requirement that self-stabilizing systems have to recover from any transient faults. This severe requirement makes design and correctness proof of self-stabilizing systems very difficult. Thus, formal approaches to design of self-stabilizing systems are highly desired to remedy the difficulty. His proposals based on path algebra and r-operators are seminal approaches and highly expected to play a critical role in effective design of self-stabilizing systems.

Practical application to a large scale of dynamic sensor networks

In these years, Sebastien Tixeuil is offering a challenge to apply self-stabilization to sensor networks, a quite new field of large scale dynamic distributed systems. Sensor networks will play an important role in realizing ambient networks (or post-ubiquitous networks), so it is greatly desired to establish theoretical and practical fundamentals of system design. Since sensor networks are inherently dynamic and vulnerable, application of

FIG. 21 – Lettre de Recommandation de Toshimitsu Masuzawa (2/4)

Osaka University
Graduate School of Information Science and Technology
1-3 Machikaneyama, Toyonaka, 560-8531, Japan
Phone: +81-6-6850-6580; FAX: +81-6-6850-6582
E-mail: masuzawa@ist.osaka-u.ac.jp

self-stabilization for realizing high dependability is confidently expected. The theoretical and practical researches Sebastien Tixeuil is recently carrying on make contributions in establishing a design methodology of dependable sensor networks.

I want to summarize this part: as stated above, he succeeded in finding good practical problems, introducing novel concepts, and also developing new solutions by deep and detailed discussions. The remarkable feature of his research is that his research achievements have not only theoretical contributions but also practical contributions.

My impression about his research activities and potentials:

I am convinced that he will be one of the leading researchers in the field of distributed systems from the following evidence.

Undoubtedly he has a brilliant ability at theoretical research and great creative potential. His high productivity in publication in recent years is an evidence of this fact. I should stress that he succeeded to get Habilitation to supervise research from Universite Paris Sud last year.

I am convinced that Sebastien Tixeuil has a strong potential to make great contributions in practical aspects of distributed systems as well as theoretical aspects. His research achievements I described in the above are mainly theoretical ones. But he also has a broad and advanced knowledge about real distributed systems and produced achievements in development of practical distributed systems. From the several discussions I made with him, I always think that the combination of his theoretical and practical knowledge brings him novel and brilliant ideas in his theoretical research works. I believe that this is also true for practical works and that he has a strong potential to make great contributions in practical aspects of distributed systems as well as theoretical aspects.

Sebastien Tixeuil has maturity and ability to supervise research projects. Actually, he is succeeding to manage some national and international research projects in the field of distributed systems such as the FRAGILE project and the French-Norwegian collaborative project. He is

FIG. 22 – Lettre de Recommandation de Toshimitsu Masuzawa (3/4)

Osaka University
Graduate School of Information Science and Technology
1-3 Machikaneyama, Toyonaka, 560-8531, Japan
Phone: +81-6-6850-6580; FAX: +81-6-6850-6582
E-mail: masuzawa@ist.osaka-u.ac.jp

also succeeding as the group leader of his research group in Universite Paris Sud. He has also been successful in advising many MS and PhD students.

Another important point to note is that he has been able to successfully collaborate with many researchers (including some from outside France). He is now serving as a Program Committee co-Chair with me in SSS'07 (The 9th International Symposium on Stabilization, Safety, and Security of Distributed Systems) and is showing the greatest devotion to the symposium.

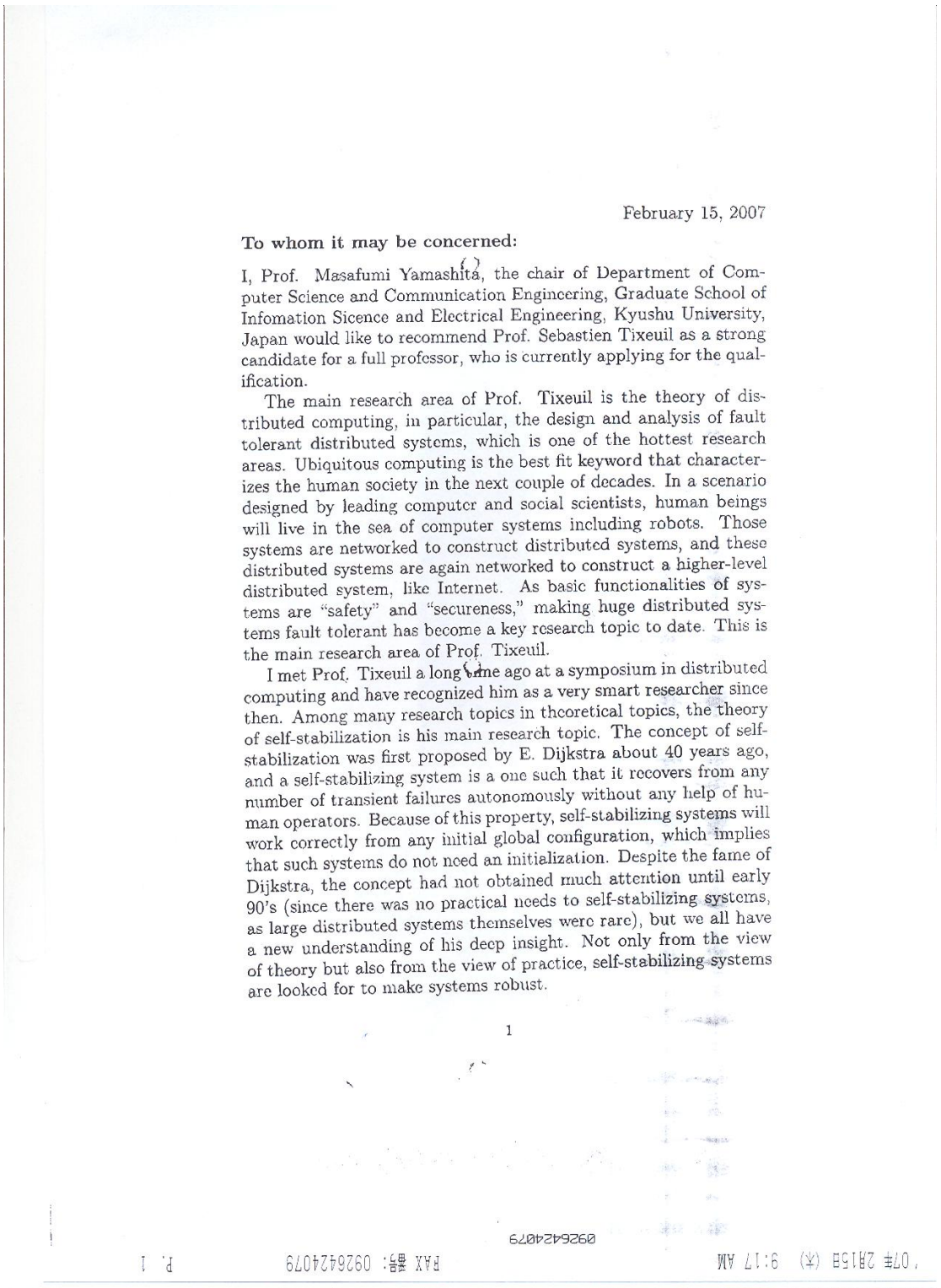
As a conclusion, from the ability and potential Sebastien Tixeuil has, I undoubtedly believe that if Sebastien continues at the current pace, he has a strong potential to become one of the leading researchers in the field of distributed systems and to make a notable contribution in this field.

Sincerely yours,

Toshimitsu Masuzawa

Professor
Graduate School of Information Science and Technology
Osaka University

FIG. 23 – Lettre de Recommandation de Toshimitsu Masuzawa (4/4)



February 15, 2007

To whom it may be concerned:

I, Prof. Masafumi Yamashita, the chair of Department of Computer Science and Communication Engineering, Graduate School of Infomation Sicence and Electrical Engineering, Kyushu University, Japan would like to recommend Prof. Sebastien Tixeuil as a strong candidate for a full professor, who is currently applying for the qualification.

The main research area of Prof. Tixeuil is the theory of distributed computing, in particular, the design and analysis of fault tolerant distributed systems, which is one of the hottest research areas. Ubiquitous computing is the best fit keyword that characterizes the human society in the next couple of decades. In a scenario designed by leading computer and social scientists, human beings will live in the sea of computer systems including robots. Those systems are networked to construct distributed systems, and these distributed systems are again networked to construct a higher-level distributed system, like Internet. As basic functionalities of systems are "safety" and "secureness," making huge distributed systems fault tolerant has become a key research topic to date. This is the main research area of Prof. Tixeuil.

I met Prof. Tixeuil a long time ago at a symposium in distributed computing and have recognized him as a very smart researcher since then. Among many research topics in theoretical topics, the theory of self-stabilization is his main research topic. The concept of self-stabilization was first proposed by E. Dijkstra about 40 years ago, and a self-stabilizing system is a one such that it recovers from any number of transient failures autonomously without any help of human operators. Because of this property, self-stabilizing systems will work correctly from any initial global configuration, which implies that such systems do not need an initialization. Despite the fame of Dijkstra, the concept had not obtained much attention until early 90's (since there was no practical needs to self-stabilizing systems, as large distributed systems themselves were rare), but we all have a new understanding of his deep insight. Not only from the view of theory but also from the view of practice, self-stabilizing systems are looked for to make systems robust.

FIG. 24 – Lettre de Recommandation de Masafumi Yamashita (1/2)

Prof. Tixeuil considers self-stabilizing systems taking three different approaches; time-adaptive stabilization, predicate-preserving stabilization, and local stabilization. These concepts were proposed to make self-stabilizing systems more practical. For example, in general, a self-stabilizing system does not guarantee an upperbound on the time to recover from a failure, but only guarantees that the system eventually converges to a legitimate configuration. In a time-adaptive stabilizing system, the recovery time from a failure depends on the number of faults that hit the system, so that a time- adaptive stabilizing system can converge to a legitimate configuration faster than a general self-stabilizing system. He is an author of many journal and conference papers on the topics mentioned above and is considered to be a representative researcher in this field. Indeed, he is the co-programming committee chair of the the 9th International Symposium on Stabilization, Safety, and Security of Distributed Systems, which will be held in Paris in November 2006. This is the main symposium dedicated to the self-stabilzation studies and was called the symposium on self-stabilization.

Prof. Tixeuil has a thick pipe with Prof. Masuzawa, Osaka University, Japan, and visited Osaka University many times. I also plan to invite him to Kyushu University to make the connection with the European distributed computing society stronger hoping his influence on the society.

As a conclusion, I would like to recommend Prof. Tixeuil as a full professor, since his research area is one the most important and desired areas to do research and he has gathered the respect of researchers in the area (because of what he did). He is also very popular because of his character and am wishing to have a stronger connection with him and his society.

Sincerely yours,

Masafumi Yamashita
Chair, Department of Computer Science and Communication Engineering, Graduate School of Information Science and Electrical Engineering, Kyushu University

FIG. 25 – Lettre de Recommandation de Masafumi Yamashita (2/2)