Responses from Leaders in Automation Research

Most competing journals on Automation focus on manufacturing, often with a particular application (Electronics) or methodology (Controls). The new *T-ASE* will provide a central archive for high-quality research that applies multiple methodologies to a broad array of applications. Initial feedback suggests that the new Transactions would attract many researchers from outside IEEE and many new industrial members. Selected leaders in automation science and engineering were asked about the need for a flagship journal in automation. The responses were overwhelmingly positive.

Sample excerpts:

"As a long standing member of the Automation community (with a focus on manufacturing processes and systems, precision manufacturing, design-manufacturing automation, semiconductor manufacturing, etc.), I think you have hit upon a solid idea. The current journals do not really provide a suitable fit for a lot of innovative work in the Automation areas....
"The result for a lot of us is a 'second choice' archival journal that is broad enough to publish the work but for which the readership is likely to be in other areas.... I also think that any IEEE journal that is successful only enhances the other field and close field journals."

- David Dornfeld
Will C. Hall Family Professor of Engineering,
ME, University of California, Berkeley
Past Editor-in-Chief
ASME Journal of Manufacturing

"To date, the field of automation research has been defined rather narrowly. By offering T-ASE, a new journal devoted to automation science and engineering, the IEEE has an opportunity to provide a forum for research on a much broader set of automation related topics and to engage new members from the groups currently working on these topics.

"Design, construction, and operation of automated systems are complex tasks, requiring integration of knowledge and experience from many domains.By assembling the best work from these many domains, the new journal will contribute significantly to the integration of knowledge and consequently will support a stronger research community."

- Warren Seering
Weber-Shaughness Professor
MIT

"I have been involved in Automation for 30 years and am now GM's Chief Scientist for Manufacturing. I fully support the proposal to establish the new Transactions on

Automation Science and Engineering (T-ASE). Expanding the scope to create two Transactions will better serve both fields, I think it will be a much needed addition. As a technology user, I am personally most interested in the visionary and application oriented papers but I also recognize the importance of basic research contributions as well."

- Steve Holland
Chief Scientist for Manufacturing
General Motors

"The broader Automation community includes the control community, manufacturing, mechanical engineering... a journal on Automation (not automatic control) can attract people like myself who already belong to IEEE.

" For example, many papers from the Japan-USA Symposium on Flexible Automation will be highly relevant to T-ASE."

- Masayoshi Tomizuka,
Cheryl and John Neerhout, Jr., Distinguished Professor of Mechanical Engineering
University of California, Berkeley

"*It is my pleasure to endorse the creation of a new IEEE journal dedicated to Automation Science and Engineering.*

"As a Senior Technical Fellow at Boeing, I have been leading company efforts in gaining the technical excellence and enabling technology.

"Currently, Boeing is focusing on several important issues such as lean manufacturing, enhanced quality with cost reduction initiatives.

"I believe that Automation research is extremely important for the success of the aerospace industry and industry as a whole.

"I am pleased to learn that the IEEE Robotics and Automation Society is considering a new journal, which intends to capture the latest advancements in Automation.

"This journal will cover both theoretical mathematical modeling and practical applications.

"I strongly believe that such a journal will be tremendously beneficial to the industries in term of automation advancement.

" I am interested in applying Automation research to enhance our manufacturing processes.

“I believe that Automation has a great potential to be applied in the areas of material synthesis, parts assembly, Internet-based manufacturing, and supply chain management. I enthusiastically endorse the creation of IEEE T-ASE.”

- Peter Wu
Senior Technical Fellow
The Boeing Company

"There is a need for more 'Automation' thinking in Operations Research.

“As it is, a majority of OR models assume a fixed structure for the system (including system parameters) and develop algorithms for optimizing its performance.

“ In a realistic setting the system structure and parameters are continuously changing. We should focus on developing self checking models and adaptive algorithms for simultaneous parameter estimation and optimization (providing the possibility of Operations Research Automation)."

-Prof. George Shanthikumar
IEOR, UC Berkeley

"I endorse most strongly the proposal of the IEEE Robotics and Automation Society vote to establish a new Transactions on Automation Science and Engineering (T-ASE).

“ I have long felt the need for such a Journal and wish that the IEEE Governing Body approve it as soon as possible.

“Modern Robotics had its origin in industrial automation but has moved far away from the initial focus as new scientific and engineering challenges in robotics have emerged, in robots for hazardous environments, in space robotics, in mobile and autonomous, in hyper-redundant robots in vector field robots etc.

“ The new journal is aimed at emphasizing the Automation Sciences and will kindle activity in the science and engineering problems that proved so hard in the work done under the original emphasis.

“The emphasis on the robot itself was evident even in the early days. In the 1960's and 1970's, when I started and managed IBM's research effort in robotics, I noticed and used to comment on the fact that the robot in an automation application only contributed 20% of an application, the main expense was in understanding and solving the automation aspects.

“This observation was confirmed when the product was taken to market. It was further confirmed when I was Director of Hewlett-Packard Company's Manufacturing Research Center in HP Labs.

“These automation problems were deep problems in orienting, feeding and presenting parts to the robot, in scheduling jobs through multiple robot stations, through systems for recovering from errors while maintaining 6-Sigma production.

“There was no Journal where a practitioner could go for archived material, nor a place where solid scientific discoveries in the area could be published. Patenting was the only publishing option. This situation is not different today. There is significant need for a journal where the depth and breadth of Automation work can be published and archived.

“For a time in the 1980's the National Science Foundation recognized the needs of Manufacturing and Automation. I am proud to have been Chairman of several NSF Advisory Committees on the Design Manufacturing and Computer Engineering during that time.

“There is no such focus today. It will come however when the field is more fully recognized for its excellence in published work. The good work in Automation Science today, if published at all, is spread over a wide variety of journals.

“The scientist and engineer are forced to publish in the closest discipline to the subject of the work. This, though possible, destroys the synergy possible in publishing in a peer Journal, and precludes building a community.

“The proposed Transactions on Automation Science and Engineering first fulfills the need of the automation scientist and engineer for a specialist journal; but second,, it will also serve to show workers in other disciplines the applicability of their work in the domain. Such synergy will be good for both domains.

“I am happy to give my fullest endorsement to the proposed Transactions."

- Peter Will
Research Professor in Industrial and Systems Engineering,
University of Southern California
Chair, National Academy Study on Information Technology in Manufacturing