Institute for Laboratory Automation

Realizing the Potential of Automation & Information Technologies in Science

Vision Statement

Laboratory automation and computing are tools that enable:

- Scientists and technicians to do work that might be impossible or cost-prohibitive,
- Off-loading routine and repetitive task, allowing people to apply their creative talents more effectively,
- Reducing the cost of work,
- Increasing productivity,
- Improving the quality, organization, and consistency of lab work,
- Streamlining work flow, enabling lab operations to run more effectively,
- The development of more effective methods of achieving regulatory compliance.

To date these tools have not been applied as effectively as they should be. End-users look to vendors for products they can use, and vendors look to enhance their product lines with little regard for the laboratory as a whole. The result is automation and computing narrowly applied, silos of application rather than lab-wide application.

Our goal is the development of lab-wide ***Integrated Laboratory Automation (ILA)***. It is that broader perspective that differentiates our work from typical vendor usage. ***Integrated Laboratory Automation*** turns the collection of workstation in labs into a functioning, efficient, effective system that improves people's ability to work and achieve their goals.

We also take into account the point that "lab-wide ***Integrated Laboratory Automation***" will mean different things to people working in different types of laboratories and industries – there is no standard "kit", or one-size-fits-all solution.

In addition, the Institutes ILA program recognizes that labs work with other groups: other labs, process control, manufacturing units, and outsourcing facilities to name a few. The ILA program takes these connections into account as part of the planning work: who needs access to the knowledge, information, and data produced in a lab, does the lab get any of these elements from external sources, and, what is the most effective way of making those connections?

Our plan is to provide you with the education, planning, and technology management tools needed to plan, design, and implement an ILA system specific to your lab's needs.

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There are three elements needed to reach this **Integrated Laboratory Automation** goal:

- ***Connectivity*** - The development of data interchange / communications standards. Unless we address this issue and make the ability to move data between products in the lab as easily as we can in an office environment, our ability to reach an Integrated Laboratory Automation goal will be frustrated. This capability exists in computer-aided design, document preparation, and graphics design. It is the basis of consumer choice and connectivity in telephone systems, and consumer electronics in general. Why don't we have it in the lab? An attempt at data interchange standards for chromatography and mass spectroscopy was made by the Analytical Instrument Association in 1990's through the development of the *andi* program which has effectively stalled – the project had been transferred to the ASTM; the Army Corps of Engineers funded a similar project for ICP work. A new initiative with broad user support is needed.

- ***Education:***

  - Laboratory Management – and in some cases Senior Management at the Director level – taking on the responsibility for laying the policies and practices that provide the foundation for automation. This is on a par with the management oversight for any significant corporate information systems program. Once those policies and practices are in place, operational lab models can be developed that can be used as a basis of product selection and project design. The Institute for Laboratory Automation is working on this requirement by developing training courses and advisory services to work with corporate/ organizational management to meet this need.

  - The development of Laboratory Automation Engineers who are trained in the science and technology of laboratory automation systems. These people need to be able to understand the science that underlies the labs work, be able to translate it into functioning systems and, be able to coordinate those systems so that where needed, they function as an integrated information/informatics environment. Again, this is part of the work that the Institute for Laboratory Automation has undertaken.

- A ***conference program*** designed to look at technologies and technology management issues in depth so that vendors, end-users, and regulators can understand the potential these technologies offer, their application, and the implications for regulatory compliance.

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