

What Do We Want from Our Automated Core Lab?

*Is Stand-alone or Connected
Front-end the Solution?*



Brenda Jackson

Technical Director Laboratory Operations



AACC Lab Automation
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Who We Are



- LifeLabs is a Canadian company, operating as a division of Borealis Infrastructure, an OMERS company
- We are the largest clinical diagnostic laboratory in Canada
- Operating in British Columbia and Ontario for nearly 50 years
- We employ approximately 5,400 professionally-trained staff
- Each year, we perform over 100 million laboratory tests, supporting over 19 million patient visits.
- We have 360 collection centers and 21 laboratories



Disclosure



I'm not an expert on automation!

I'm not going to solve your problems for you, hopefully I will give you some insight from my experience.

An expert is someone who tells you why you can't do something.

*Alec Issigonis
(Engineer/Developer of the "Mini")*

Agenda

- ? Why automate
- ? Where to start
- ? Questions to ask
- ? Available options



WHY AUTOMATE?



"The electronic arm just punched
the electronic eye."

What is automation?

Laboratory automation is a multi-disciplinary strategy to research, develop, **optimize and capitalize on technologies in the laboratory that enable new and improved processes**. Laboratory automation professionals are academic, commercial and government researchers, scientists and engineers who conduct research and develop new technologies **to increase productivity**, elevate experimental data quality, **reduce lab process cycle times**, or enable experimentation that otherwise would be impossible.

The most widely known application of laboratory automation technology is laboratory robotics. More generally, the field of laboratory automation comprises many different automated laboratory instruments, devices, software algorithms, and **methodologies used to enable, expedite and increase the efficiency and effectiveness** of scientific research in laboratories.

Wikipedia Sept. 2014

Purpose of Laboratory Automation?

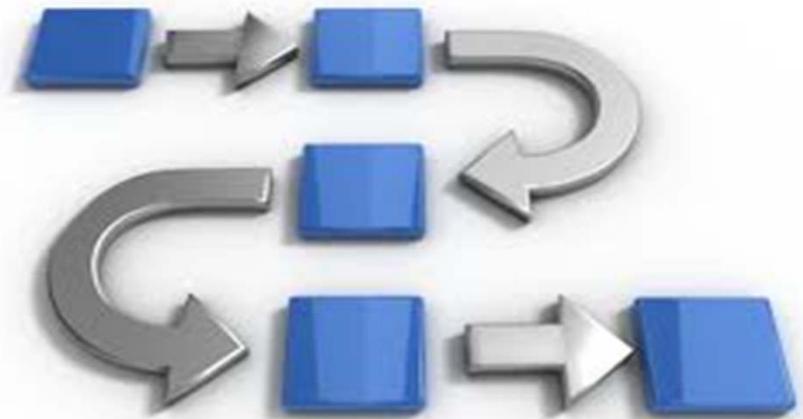
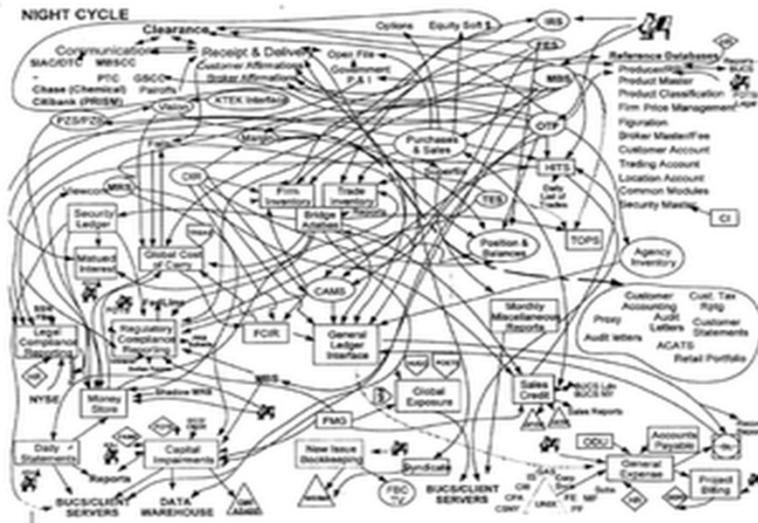
In my words,



To become as efficient and productive as possible without compromising on quality.

1st Rule of Automation

DO NOT automate a bad process!



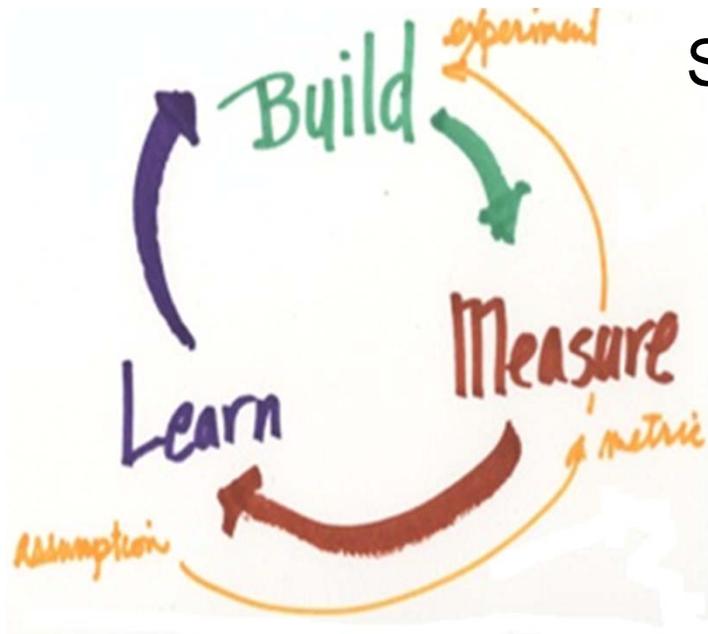
What is Lean?



Lean is a customer-centric methodology used to *continuously improve any process through the elimination of waste* in everything you do; it is based on the ideas of “Continuous Incremental Improvement” and “Respect for People.”

From: Lean For Dummies, 2nd Edition by
Natalie J. Sayer, Bruce Williams

Using a tool like Lean, understand your constraints and bottle necks:



Streamline the process first by,

- ✿ Removing the excess waste
- ✿ Understanding inputs and outputs then,
- ✿ Run the new process and improve where necessary **BEFORE** you think about automation

Preparation to be done

Requirements gathering

- ✓ Understand your specimen arrival patterns
- ✓ Understand your specimens/volumes
- ✓ Understand your turnaround time requirements
- ✓ Understand your analyzers
- ✓ Understand your LIS or middleware
- ✓ Understand your space constraints
- ✓ Understand your financial constraints



Specimen arrival times and patterns

Do your specimens



Trickle in all day?



Arrive in large batches?



Peak times and what are they?



Come by courier?



Specimens



Are your specimens

-  Spun?
-  Entered and accessioned in your LIS?
-  Aliquots or need to be aliquoted?
-  In multiple tube types?
-  Going to multiple analyzers?
-  Is your volume consistent yr/yr or is growth expected?

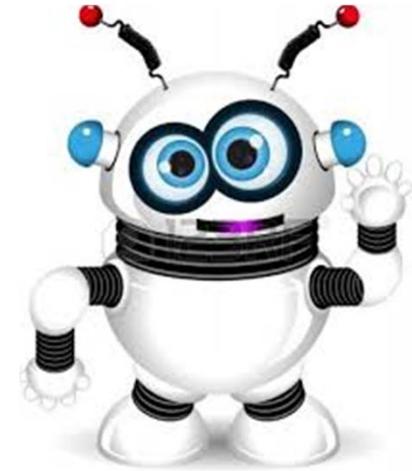
Turnaround time requirements

Do you

- 🕒 Perform STATs?
- 🕒 What are your STAT requirements?
- 🕒 Perform same day testing?
- 🕒 Have routine TAT requirements or service level agreements with customers?



Analyzers



Are your

-  Analyzers able to connect to a line?
-  Analyzers already automated? (3 or 4 connected together)
-  To be replaced? (Due to age or volume growth.)

LIS or Middleware

Will your automation/middleware

- ⌚ Need to have connectivity to the LIS?
- ⌚ Need to be able to host/query the LIS?
- ⌚ Need to be able to perform complex algorithms?
- ⌚ Is there current middleware that can connect automation to analyzer?



Space constraints



Does your lab

-  Have room for track?
-  Have room for a command centre?
-  Have room for a large stand alone?
-  Have room in front or behind current analyzers for tracking hook up?
-  Have the ability to change your current configuration? i.e. Can you move anything?



Financial

Do you

- 💰 Have budgetary constraints?
- 💰 Need to have a certain ROI or NPV before continuing?



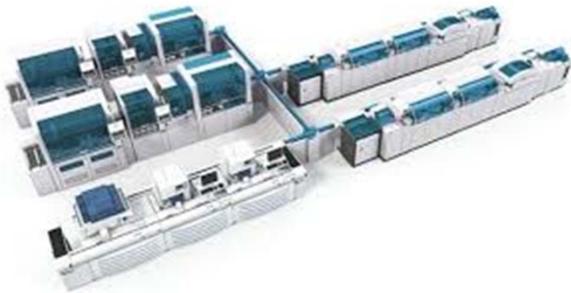
The many types of automation



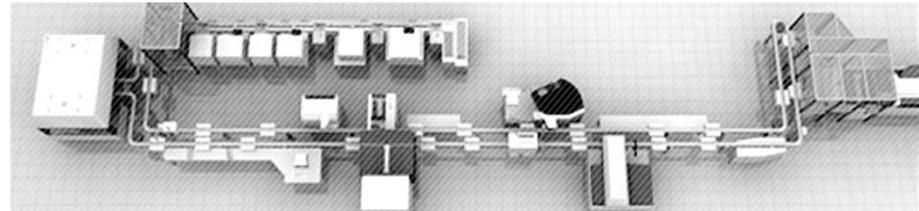
Connected (with track) TLA



Abbott Accelerator



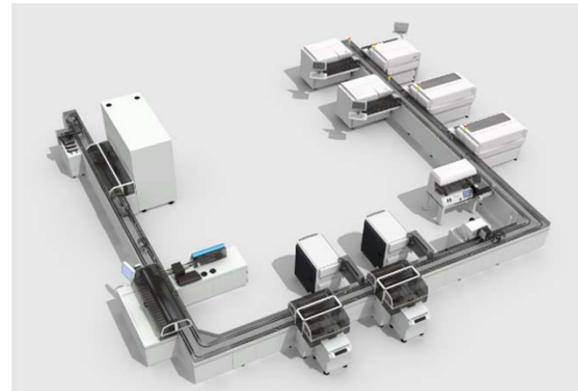
Roche cobas (8100)



Labotix RRUSH



Siemens Aptio



Inpeco FlexLab



Beckman Power Processor

Stand-alone (Task Targeted)



Motoman AutoSorter III



Tecan FE500pro™



Beckman Automate



- ① Centrifuge
- ② Input area & camera
- ③ Decapper
- ④ Aliquoter
- ⑤ Barcode labeler
- ⑥ Output sorter & recapper

Roche cobas p system

Automated analyzers



You have now gathered the requirements to be able to work with the various Laboratory Automation providers to get the right solution for your lab!

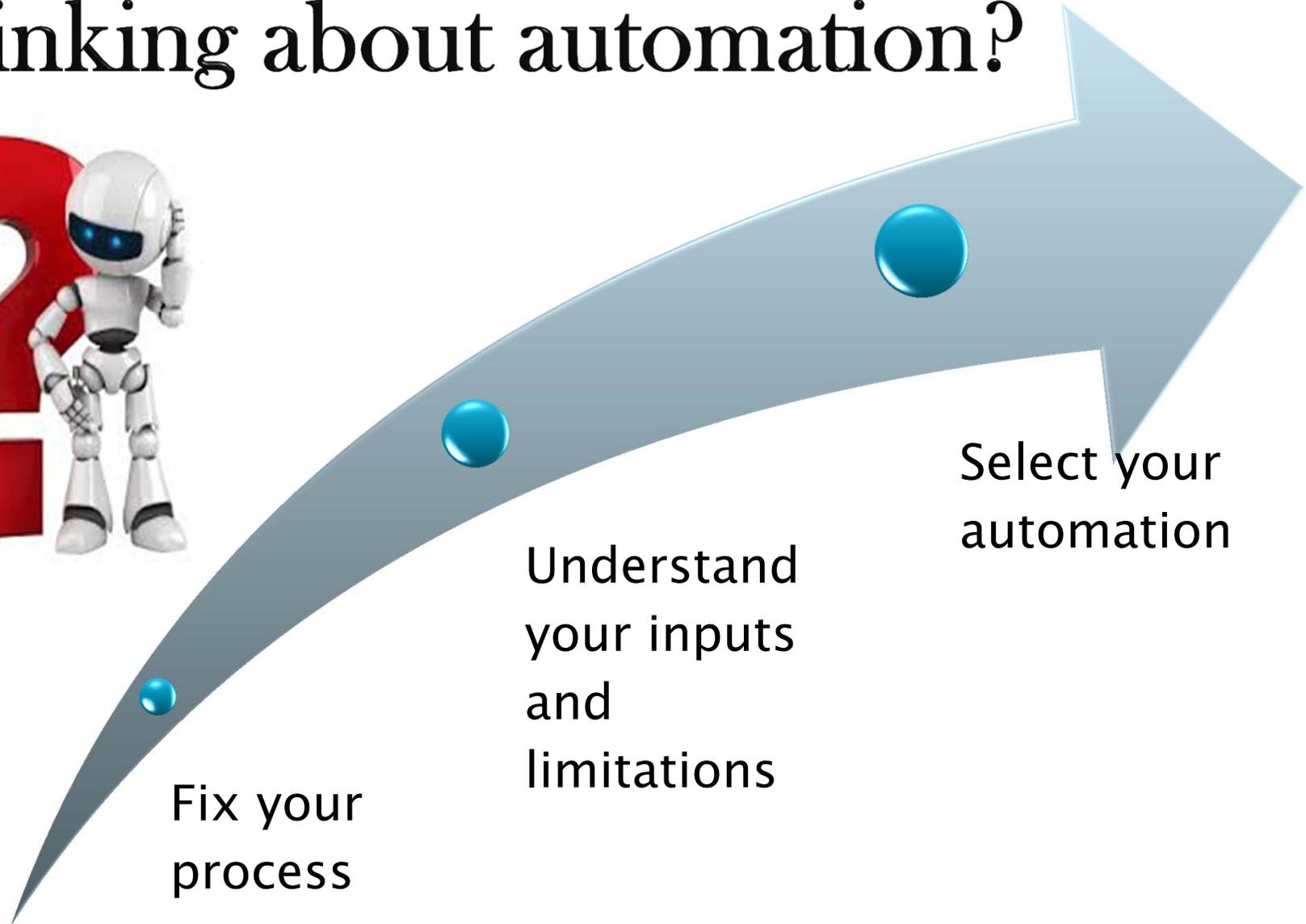


Benefits of automation...

- ✔ Reduces manual handling time of specimens
- ✔ Reduction of human errors
- ✔ Resources dedicated to high value added tasks
- ✔ Increases employee safety
- ✔ Reduced number of sample/aliquots per patient
- ✔ Creates steady work flow process
- ✔ Process streamlining
- ✔ Increased operator productivity
- ✔ Predictable and adjustable Turn Around Time
- ✔ Full traceability



Thinking about automation?

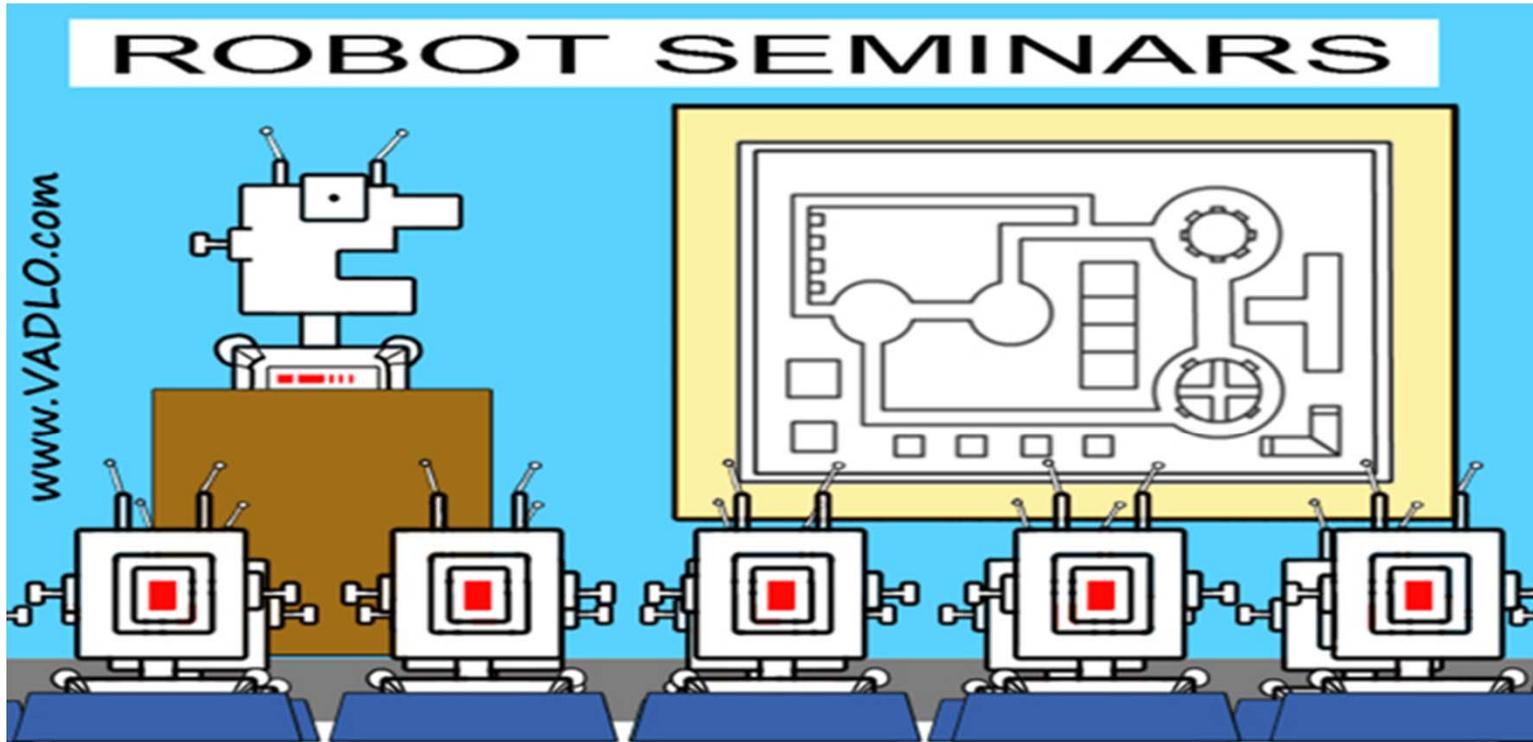


Fix your
process

Understand
your inputs
and
limitations

Select your
automation

Questions?



“As we have just five mins left,
I will take just 3 million questions.”

Thank you

**BUILDING A
HEALTHIER
CANADA**



LifeLabs[®]
Medical Laboratory Services