Lab Automation Set-Up, Creating a Lean Lab

Workshop 8

Thursday 21st January, 2016

- What is the importance of laboratory information system (LIS) integration in laboratory automatization?
- Is it worth the investment to enable LIS and lab automation software to exchange the results of the analyses?
- Which parameters in laboratory automisation are often overlooked?

Henry Ford - Taiichi Ohno

- Eyes wide open: take a walk
- Selecting a team and a process
  - Guidelines for working with the team:
    - Clearly define the scope of the task at hand.
    - Choose one process and begin there.
    - Include how success will be measured.
- Go after “low-hanging fruit” first
- Automation as a way of improving processes
- Transportation of samples

Lean lab

- F - find a problem that needs attention
- O - organise a team knowledgeable in the process
- C - clarify the current knowledge of the process - how it is and how it should be
- U - understand the causes of the variation
- S - select the potential process improvement

- Sometimes things are running as best they can, but it is impossible to know until you try to improve them

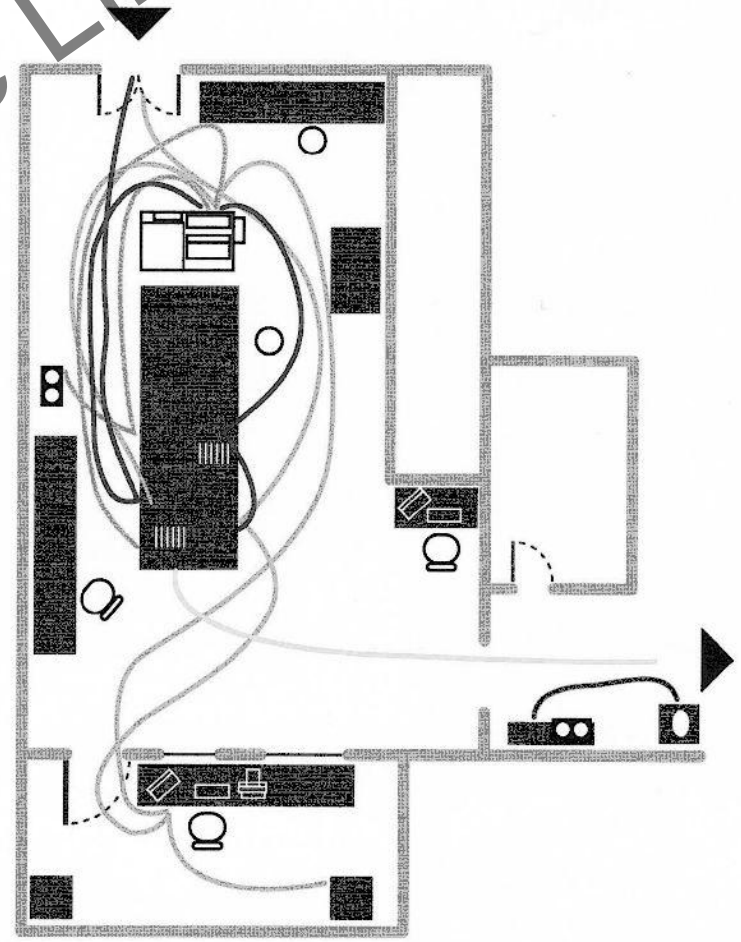
- Strive for improvement rather than perfection

Lean lab: Levelling and flow

- In labs there is a link between levelling and flow. You cannot flow samples through a lab unless the short interval workload is level, and you generally can't level volatile workloads unless you flow the samples.
- In most labs, short-term volatility in overall workload is imported directly into the testing process. This causes low productivity during troughs and poor lead time performance during peaks.
  - Very often the capacity of the lab is not well understood, and no mechanism exists to level the workload.
- Levelling a volatile workload or mix is perhaps the single most valuable thing that can be done when leaning a lab—it enables flow that changes how a lab operates and performs and it significantly reduces "fire fighting."
- Typically, analyst travel time (to gather materials, etc.) is a much smaller proportion of the overall task time than it is in manufacturing. This means that the '"movement" waste is less significant, and lean tools such as "spaghetti diagrams" are less important.

Lean lab

- What about spaghetti diagrams?
  - Basically help to visualise movement of people, specimens etc.
  - Can be useful if infrastructure is variable



Lean lab

- Labs are different
- A complex mix of routine and non-routine testing, other tasks and project work all share the same resources
- There is often a significant additional GMP/GLP compliance burden.
- For many tests the effort required to set up a test is significant compared to the sample run time—this makes “one piece flow” unfeasible and some grouping of samples essential.
- Individual daily roles usually have a higher degree of variety and complexity.
- Many standard lean tools such as line balance charts, value stream mapping, takt time, etc., work differently in the lab (if at all)