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CentraBytes

Flexibility for the Future

Modularity and scalability in automated laboratory systems

*“The future depends on
what you do today.”*

Mahatma Gandhi

Today’s diagnostic labs operate in a dynamic environment; their operational and strategic needs are constantly changing, evolving, and expanding. Consolidations of facilities and merging of institutions are commonplace to take advantage of economies of scale. Additionally, labs must be able to readily respond to increases in volume, assay menu changes, and staffing challenges.

With so much going on, labs must be focused on a multitude of short-term goals, while not losing sight of what is coming down the road. Making the right decisions today for your automation, instruments, and IT helps ensure that they can grow and evolve with your lab so you are able to manage your future needs.

Be smart. Plan for change.

Your automation system is an investment in the ongoing success of your lab, so you need to think ahead 7 to 10 years or more. Smart planning means visualizing and supporting the requirements of your strategic roadmap and making the right decisions regarding your automation track, instruments, and IT, all of which are critical to your lab’s ability to not only adapt but flourish in the face of change.

Anticipating your needs and considering how to meet them can keep you from inadvertently imposing limitations that may create future problems, restrict growth, require unexpected investment, or otherwise hamper your ability to respond to changing circumstances.

No matter what your lab's situation—whether you're moving to automation for the first time, upgrading from an existing automation system to a new one, merging multiple labs, or simply expanding for increased capacity or capabilities—the solution you implement must be flexible. Flexibility can be derived from several sources, including a modular track, broad instrument and assay options, and scalable IT. In other words, you should be able to easily connect additional instruments for increased capacity and redundancy as well as add disciplines and expand your assay menu as your patient needs change and your lab continues to evolve.

CHwapi sees its future

How one lab planned for today and prepared for tomorrow

The Centre Hospitalier de Wallonie picarde (CHwapi) network includes four hospital sites and a clinic in Tournai, Belgium. Like many networks around the world, it faced pressure from rising demand, regulatory requirements, and the omnipresent mandate to reduce costs and turnaround time while increasing quality.

"We had two labs, one automated and one not, and we had to consolidate them into one with a single automation track," said Lab Director Dr. Jean-François Marchal, MD. "The combined lab needed a solution that could support 50% more activity with tube traceability throughout the lab. Connecting hematology, hemostasis, and immunochemistry to the main track was very important for maintaining workflow."

"Additionally, by adding task-oriented automation modules to manage bulk input, centrifugation, aliquoting, and archiving in refrigerated storage, we were able to better manage immunochemistry and reduce the need for technicians. This was especially important because year after year the reimbursement amount from INAMI (the Belgian health insurance agency) has been dropping, and we have to be more efficient with less personnel. We did this without layoffs by simply not replacing our retiring technicians."

A history of thinking ahead

CHwapi is accustomed to overcoming challenges and skillfully improving efficiency to support growth. "Years ago, the hospitals in this area ran five separate laboratories," said Dr. Marchal. "Then the CHwapi

network consolidated to two labs which are now merged down to one. The current laboratory footprint, at 750 square meters, is **approximately one-fifth what it once was**, yet our productivity has risen to 3000 tubes at peak hours."

But CHwapi won't be staying long in this new space. Over the next four years, a new hospital will be constructed, and the core lab will once again be relocated. But CHwapi is ready today. With forethought and insight, they took this into consideration when designing this new lab, implementing a modular solution that would move and grow with them instead of wasting money building an entirely new lab in the new space.

"The measure of intelligence is the ability to change."

Albert Einstein

Since their new hospital is not yet designed, they don't know what configuration might be required in the new lab. But with U-turns, T-turns, and customizable track sections instead of fixed lengths, the track can adapt to the floor plan.

"We also configured the track to have three open slots so it could evolve as needed," said Dr. Marchal. "For instance, within a few years we will have the option to connect our electrophoresis analyzer that will help eliminate the manual effort of making and sorting aliquots."

By including the open slots now, new instruments can easily be added with no need to take the track out of operation.

CHwapi carefully considered which would be the right instruments for their needs. Because their new track supports open connectivity, it gave them a range of options including Siemens' systems as well as third-party analyzers. This flexibility enabled them to move some of their existing instruments to the new track. This not only saved money but also provided a level of comfort and continuity because their staff had experience using the analyzers and would not need to be retrained.

Ready for expansion

"Beyond adapting the track to fit the lab in the new hospital, we are already considering how to take advantage of the larger space to improve workflow, placing the hematology analyzers after the sample input, because those tubes do not need to be routed for centrifugation. That is something our current space constraints did not allow, but once done, it will further improve hematology TAT," said Dr. Marchal.

“With technology evolving, it is quite possible we’ll be able to add microbiology and urinalysis to the automation. We anticipate we’ll need 1200 square meters to include future tests.”

Adaptable, compatible, intelligent middleware

CHwapi went through a similar process of analysis in deciding whether to keep or replace its IT systems. “Our middleware is the heart of our lab, connecting automation, analytical systems, and other IT,” said Dr. Marchal. “We chose to stay with the CentraLink™ Data Management System for several reasons. Most importantly, it was able to manage the combined volume of the previous labs and supported and integrated our pre-analytic and post-analytic processes. Its intelligent routing supports multiple, identical analyzers so we can scale to meet demand.”

CHwapi designs against obsolescence

- Merged two labs into one
- Deployed automated pre- and post-analytic modules to eliminate manual tasks
- Broadened capacity with open connectivity to an extensive range of new analyzers and modules
- Designed track to be able to add instruments without disrupting operations
- Planned automation for expansion to new hospital

“Only you can control your own future.”

Dr. Seuss

Clinical Biologist Jean-Jacques Parez added, “Our IT was already customized for our previous track, with our autoverification and QC rules refined extensively over the years. Since these were compatible with the new track, 90% of the configuration of the system was already completed. The only thing that had to be added was any additional rules for routing the tubes on the new track. Keeping the same IT also saved us money, allowing us to pay only for a single connection to the LIS, whereas before we paid fees for each analyzer.”

Your lab’s future starts now

Labs such as CHwapi are truly visionary in planning a solution that meets their current requirements yet prepares them for growth and challenges ahead. Although every lab has unique needs, there are common considerations for any lab seeking to automate for the first time or expand or upgrade their automation system:

1. **Know your goals:** What are your clinical, strategic, and operational objectives for the current project and for the years to come?
2. **Visualize your roadmap:** What must be done to achieve these goals?
3. **Plan your roadmap:** What do you need from your automation, instruments, and IT to support your roadmap?
4. **Design against obsolescence:** Maximize the value of your technology investments and make the choices that will serve you now while providing the flexibility to grow and adapt as needs change.



Jean-François Marchal, MD
Lab Director, CHwapi
Tournai, Belgium

Dr. Jean-François Marchal graduated as candidate in medicine from the University Notre Dame de la Paix in Namur, Belgium. He completed his doctorate in medicine at the Université libre de Bruxelles, followed by specialization as clinical biologist. Dr. Marchal then served as a clinical biologist in the Laboratoire Mesure and later in the Laboratoire Médical du Sud, in Namur, Belgium. He joined the Centre Hospitalier de Wallonie picarde (CHwapi) in 1998, and serves as the director of the clinical biology laboratory and hospital hygienist.



Jean-Jacques Parez
Clinical Biologist, CHwapi
Tournai, Belgium

Jean-Jacques Parez graduated with a degree in pharmacy from the Catholic University of Louvain in Belgium, where he continued to specialize in laboratory medicine at the university. Mr. Parez worked for 15 years in a private lab before joining the Regional Hospital of Tournai, Belgium in 2006, which later became part of the Centre Hospitalier de Wallonie picarde (CHwapi) network. He is responsible, with his colleague Pierre Struyven, for the clinical chemistry lab of CHwapi since 2009.

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