

## Ypso-Facto

# Optimizing (Bio)chemical Process Development through Predictive Simulation



**T**oday, digital transformation has become a key focus for businesses around the globe. Among the various sectors that are in need of a technological optimization of their processes, the life sciences industry is one area where the challenges require sharper and more comprehensive tech-based tools. Despite the existence of dedicated software programs for specific processes or tasks, there is an enormous gap between user expectations and software solutions in the industry's manufacturing process development.

Ypso-Facto is offering solutions that are helping companies streamline their process development and facilitating the design and creation of smarter and more efficient operations. Ypso-Facto offers consulting services and simulation solutions that assist clients in the design, development, optimization, and operation of their chemical and biochemical processes.

In an interview with CIO Applications, Roger-Marc Nicoud, Founder and CEO of Ypso-Facto discusses the company's inception, growth, milestones, and research and development in the field of biotechnology.

### **Can you give us an overview of Ypso-Facto?**

Since our inception in 2014, we have grown to about 20 highly skilled employees and 50 clients. We have contributed to the design, improvement, or debottlenecking of close to 50 processes in Europe, the U.S., and Asia.

At Ypso-Facto, our goal is to build and provide a range of services and tools that are dedicated to obtaining (bio)molecules. We create disruptive scientific solutions that comply with the most demanding technical and industrial constraints. We also offer scientific and technical consultation services to address isolated issues or assist businesses to gain a better understanding of the complete process development and design.

### **Please elaborate on your simulation software solutions.**

Currently, we have two offerings: ChromWorks™ and Ypso-Ionic®. ChromWorks is a chromatographic simulator that can maximize the value of users' experimental data, optimize system performance, assess robustness, and simulate complex processes. Ypso-Ionic was developed to enhance the simulation of "classical" chromatographic processes with the simulation of ion interaction processes including acid-base reactions, complexation equilibria, and more. The resulting software package addresses a myriad of chemical processes, such as amino acid purification.

### How do your clients leverage the benefits of Ypso-Facto's offerings?

Being involved in the development of biomolecules as well as synthetic molecules, we have a diverse range of clients. Our customers mainly serve the life sciences market, which includes pharma, cosmetics, and nutraceutical companies. We are also working with companies in other fields such as the petrochemical, construction, and white biotechnology industries.

The life sciences industries make limited use of mechanistic modeling. The primary application of our offerings is to predict behaviors in experimentally non-explored areas, minimize the number of experiments,

bottlenecks have been identified, they can be addressed specifically, in a very targeted manner.

With our software, we aim at building a virtual representation of a process based on minimum experimentations. Using this model, our clients can easily test, train, and explore operating conditions without the time and cost induced by "real-life" experimentation.

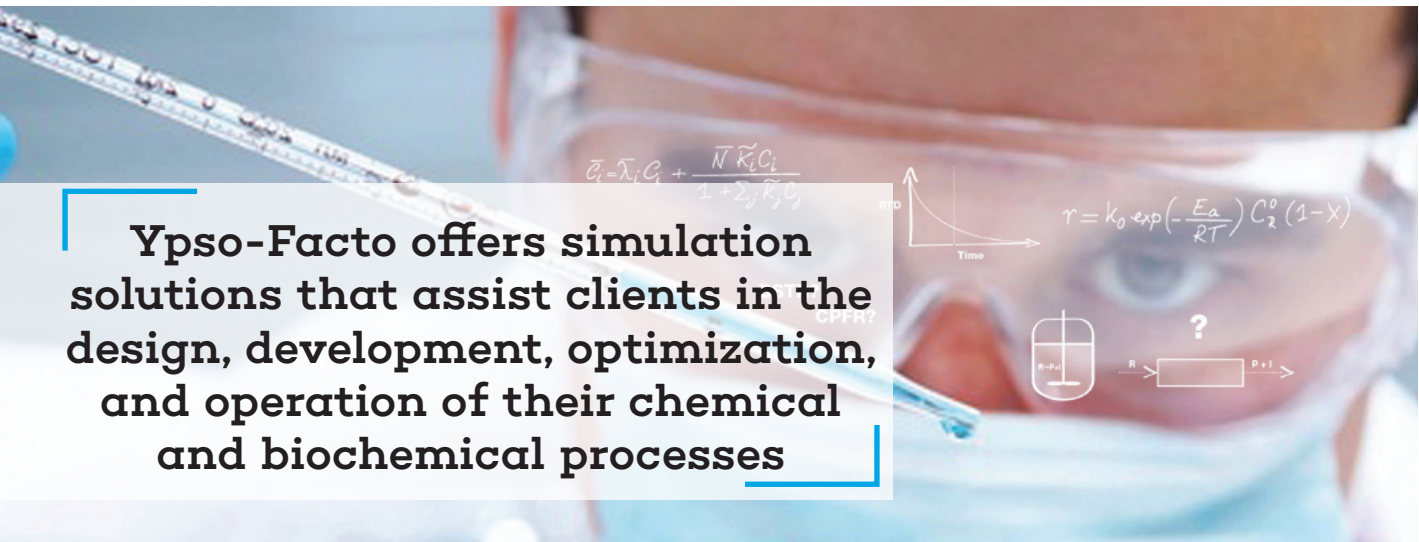
### Could you elaborate on any of the ongoing projects at Ypso-Facto?

Recently, we have been working on the development of a new, disruptive software package—Ypso-Proxima®—which we will launch in 2019. The

precision. This disruptive approach of Ypso-Proxima opens up the possibility for individuals with a diverse set of expertise and skills to collaborate through the utilization of a common tool. We believe that the launch of Ypso-Proxima will usher the chemical and biochemical industries in a new era for the development and manufacturing of products.

### How does Ypso-Facto envision the future of the fine chemicals industry?

Today, the main concern in the industries that we serve is the optimization of expenses, raw materials, and time spent in streamlining their process development, while managing the uncertain future of their molecules. These issues are further



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assess costs and safety, and determine the most optimized process. Our software tools help businesses gain the agility they require in a sector characterized by strong uncertainties, in which getting the maximum out of limited experimental information is critical.

We at Ypso-Facto follow a "zoom-in approach," which involves viewing a client's processes from a bird's-eye perspective in order to identify their core challenges. Once the

aim of Ypso-Proxima is to maximize the PROXIMity within a project team, and between laboratory work and production scale. It brings together molecular specialists, simulation experts, industry engineers, scientists, and cost controllers with a shared vision of developing the best possible processes.

Additionally, the software allows clients to work with different levels of apPROXIMations based on the level of detail available and the user's needs for

pronounced in life sciences companies, owing to the industry's trial and error approaches, direct scale-up, and the use of tedious statistical methodologies. We envision an evolution similar to the automotive and aerospace industries happening in our industries. We are convinced that the life sciences industries will evolve toward more digitally designed processes, and believe that smart and flexible process modeling and simulation is the key to designing robust bio-processes. CA