



## Development of a software solution for a range of liquid chromatography equipments

CASE STUDY | APPLICATIONS | LIFE SCIENCES

### Highlights

MphasiS developed a market-leading software and instrumentation for Automated Liquid Handling, Liquid Chromatography for a leading manufacturer of specialized analytical instrumentation for the pharmaceutical and biotechnology industry

### Client Type

Manufacturer of specialized analytical instrumentation for the pharmaceutical and biotechnology industry

### Industry

Life Sciences

### Type of Work

Developed a new control system

### Skill Set

.NET, Oracle

### Client quotes

"The service that you have and are providing us, are much appreciated and we look forward to a strong relationship with MphasiS into the future."

**MphasiS designed and developed a single software solution for an entire range of liquid chromatography instruments, which eliminated many limitations in the previous application**

### The Client

A leading manufacturer of specialized analytical instrumentation for the pharmaceutical and biotechnology industry

### Objectives

- To improve performance in comparison with existing software
- To have a cleaner and scalable architecture with minimum upgrade effort
- To be made configurable to any of the new liquid handling equipment that client may develop and support with minimum effort
- To create a completely innovative user friendly interface

### Challenges

To build controlled software using agile methodology in parallel with hardware development

### Solution

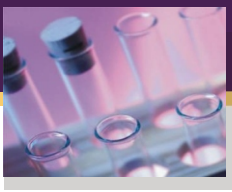
MphasiS designed and developed a new software application for controlling Liquid Chromatography and Liquid Handling processes. The software was developed simultaneously in parallel with hardware development at the customer location.

The product was developed using VB.NET with the customer's SIOC (Serial Input/Output Channel) Server and was developed using the agile development methodology. Agile techniques used, and included Pair Programming.

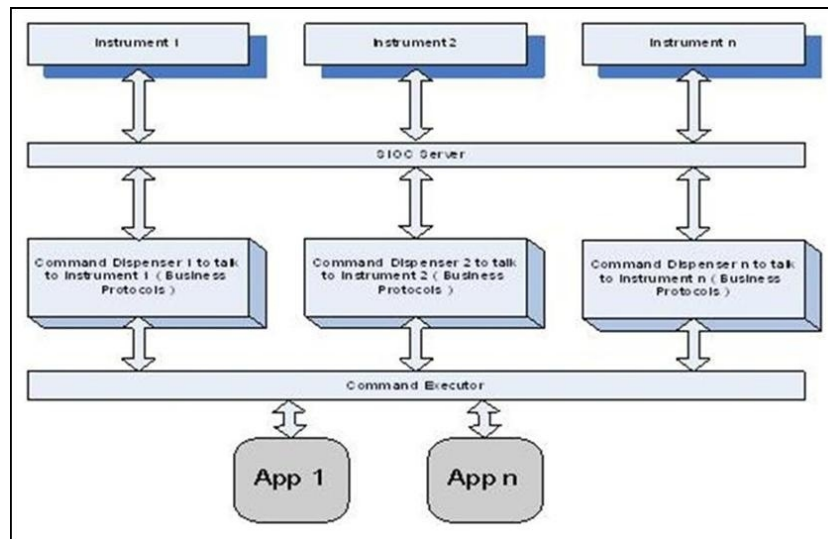
To address these needs MphasiS started the project with 21 programmers developing a new product that replaced the old software. The product was developed using .NET Framework Development Platform with C# (2003 Edition) and Oracle 9i database.

MphasiS was involved in the entire product development life cycle involving requirement study, design and development, testing, user manuals and installation of this product.

Changes or updated specifications were received via e-mail / VTR almost on a day-to-day basis, and were incorporated on an almost real time basis



### High Level Architecture



The diagram above reveals that the application talks to the Instrument via SIOC server. Each instrument has a Command Dispenser, which communicates to the instrument via SIOC Server.

#### The solution can be classified into two layers :

##### a) Control Layer

- This layer contains ActiveX controls. One ActiveX control was assigned for each piece of hard ware
- External systems control the H/w by making use of the properties and methods of these ActiveX controls

##### b) Application Layer (GUI – Graphical User Interface)

- This is the external system/application that uses the control layer for conducting the Liquid Handling and Liquid Chromatography
- Application communicates to the Control Layer
- The users use this application to create and run a Liquid Handling and Liquid Chromatography Application

#### Benefits

- Flexible design
- Task creation/editing and method development made easy
- Improved performance
- Greater end user control of the system
- Prototype marketed on time

#### About Mphasis

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