# MS Image Viewing Application

This document describes the design, software architecture and implementation overview of the mass spectrometric image viewing application named *MSImageView*.

## Background

Mass spectrometric imaging is an emerging technology allowing label-free molecular imaging of flat samples, e.g. biological tissue sections, enabling scientists to visualize the spatial distribution of molecular compounds.

## Functional Requirements

The application described in this document - *MSImageView* - is expected to serve the following main purposes:

1. Acquire mass spectrometric data from an AB Sciex MS device (FlashQuant) by reading the specific data files (‘wiff’ files), process this data and format the linescan information into a corresponding mass spectrometric image.
2. Present the image data to the user by generating a computer image and allow the user to customize the image presentation as well as save the image as a bitmap file.
3. Convert the image data to and from other MS-Imaging file formats (e.g. Analyze format (BioMap / TissueView), imzML format (Data Cube Explorer)).
4. Optionally operate in command line / batch mode to be integrated in the given mass spectrometry lab automation process.

## Prerequisites

* It was determined that the software is to be implemented using the programming language c# and the .NET framework. Windows Presentation Foundation (WPF) was elected for the implementation of the graphical user interfaced.
* Windows 7 was chosen as the runtime environment (actually the software runs on any Windows System from Windows XP onwards, provided the presence of .Net-Framework 3.5 SP1)
* Since AB Sciex ‘wiff’ file format is proprietary, libraries from the AB Sciex are used to read these data. Those libraries are provided with the installation of the
  + ‘Analyst 1.4.2’ software
  + ‘FlashQuant Components’ for the ‘Analyst 1.4.2.’ software

and are accessed via COM-Interop mechanism.

## Design Requirements

Beside the functional requirements detailed above there were some more general demands to be met by the software: