

# IBM and Accelrys: streamlining translational imaging

*A complete image management and analysis solution that enables researchers to consolidate images and data, automate processes and enhance efficiency*



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## Highlights:

- Creates a unified, web-based environment for accessing and analyzing data and images
  - Allows researchers and partners to collaborate using the same interface and workflows
  - Integrates, automates and standardizes analysis for all data types
  - Makes it easy for researchers to link pre-clinical research with clinical image data
  - Streamlines conventional processes to reduce the risk of errors and costly delays
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To facilitate target and biomarker identification in early research, pharmaceutical and other life sciences research teams rely on images of clinical tissue biopsies that are stained for molecular markers. Unfortunately, the knowledge required to conduct this research is widely distributed.

The clinical team knows how to evaluate disease severity and outcomes. Histologists know how to quantify biomolecule levels. The target identification group understands pathways, including which targets could be used as biomarker diagnostics. Enabling collaboration among these groups is a tremendous challenge. It requires a secure, shareable image repository capable of handling terabytes of data along with demographics and image analysis result data.

This is precisely the problem IBM and Accelrys are solving. Together, the two industry leaders offer a groundbreaking solution for translational image informatics that redefines how images, data and analysis are delivered, processed and shared throughout the life cycle of a study.

## Solution overview

Because of the complex differences between images captured in clinical and pre-clinical settings, there is a distinct lack of integration between research and development. Separate image repositories not only block opportunities to use de-identified clinical data in statistics and modeling, they lead to expensive, redundant experiments and poor trial design.

To succeed, translational research must reach across traditional boundaries. As pharmaceutical and life sciences organizations outsource more research and development work, collaboration will become even more critical. The inability to share images and data effectively among multiple stakeholders in all phases of research and development will be a serious barrier to developing companion diagnostics and imaging biomarkers.



IBM and Accelrys are working together to help research organizations and their partners overcome these challenges. Designed for scientists who perform translational drug research for life sciences companies, the solution from IBM and Accelrys enables complete image management and analysis for clinical and pre-clinical research. It empowers scientists to apply clinical insight to research activities more rapidly in order to demonstrate the safety and efficacy of drug candidates. The solution has two major components.

The first is the IBM Medical Image Management Solution (MIMS), which provides a centralized, web-based, collaborative environment for the acquisition and management of clinical and pre-clinical images. MIMS accepts DICOM images from a broad array of modalities, and the MIMS environment can be implemented on-site or delivered via the cloud.

The second major component is the Imaging Collection from Accelrys. This Collection is part of the powerful Accelrys Enterprise Platform that integrates, automates and standardizes scientific analysis for all types of data, enabling researchers to explore, visualize and report research results much more rapidly. The Imaging Collection is also available for use with Accelrys' Pipeline Pilot scientific authoring application providing customized, web-based workflows supporting image analysis, annotation and many other tasks. The Accelrys Enterprise Platform supports a harmonized data vocabulary and can integrate with MIMS data as well as other master data systems. Ultimately, the Accelrys Enterprise Platform makes it easier for researchers to extract more value from existing data by facilitating connections with additional platform technologies and third-party tools, such as those used for advanced data modeling.

The power of this solution is its ability to dramatically streamline the conventional process for sharing images and data. One important difference is that researchers at core labs, imaging centers, business partners and other sites are all interacting with the same web-based interface to upload images, perform analyses and move workflow forward.

With all stakeholder workflows connected to an environment that is available anywhere, the solution improves consistency. It standardizes image formats and associated metadata for streamlined searches. Image series can be uploaded in bulk for easy identification and retrieval. Many formerly manual steps — such as de-identification, quality assurance/quality control (QA/QC) and subject registration — can be automated to speed the process. Most important, images that once took six weeks to be available can be accessed immediately.

The solution from IBM and Accelrys greatly enhances analytical power. Instead of dealing with errors, delays, format conversions, and disparate analysis and annotation tools, researchers can find exactly what they need, exactly when they need it. Search results can be returned in any way researchers prefer, such as an interactive web page or a multiple-file thumbnail document view. Instead of managing multiple applications and platforms to complete one task, researchers can consolidate image access and analysis in a single solution. Reporting is equally improved because researchers can search across metadata, documents and saved queries.

Translational researchers will appreciate the solution's unique ability to connect pre-clinical research results to clinical image data. No longer will teams miss opportunities to use de-identified data in large population statistics and modeling. Instead, the solution provides seamless connectivity between clinical and early assay exploration. Custom interactive reports show image data with links to metadata graphics, as well as links to published research and drill-down capabilities about related information found in other data silos.

Researchers can also use the solution from IBM and Accelrys to deploy work requests and web applications to track projects. Commenting, editing and annotation can be performed at any stage of workflow. In addition, researchers can rapidly develop and deploy custom access, archiving and reporting interfaces.

## Solution benefits

Using the solution from IBM and Accelrys, translational researchers can derive four game-changing benefits:

- **Save time.** MIMS significantly reduces image transfer time from sites and other labs to the central repository. Many of the manual steps required to transfer and register images and data can be automated for further gains in efficiency. Pipeline Pilot takes these images and data and makes them accessible through customized web-based workflows that keep projects moving and help avoid delays. At this stage, many common image analysis and re-analysis tasks can be automated, allowing researchers to spend more time on core activities.
- **Reduce costs.** MIMS helps standardize workflows, which reduces the total cost of clinical trials and speeds time to market for new products. Pipeline Pilot integrates drill-down reporting to help researchers make more informed decisions that protect the budget. Eliminating these formerly manual processes also helps reduce human resource costs.

- **Increase quality.** MIMS incorporates electronic workflows for QA/QC to reduce the risk of errors that can occur during manual data entry. The Accelrys Enterprise Platform provides the ability to integrate with other clinical and pre-clinical data sources, ensuring that researchers can easily access all of the images and data required to proceed with confidence and optimize the quality of results.
- **Ensure compliance.** With MIMS, researchers gain assurance of data ownership and enable compliance with 21 CFR Part 11 and GCP. At the same time, MIMS remains flexible enough to support the needs of research and GLP. Similarly, Pipeline Pilot offers a standardized process for pre-clinical collaboration, as well as notification, reporting and tracking of progress.

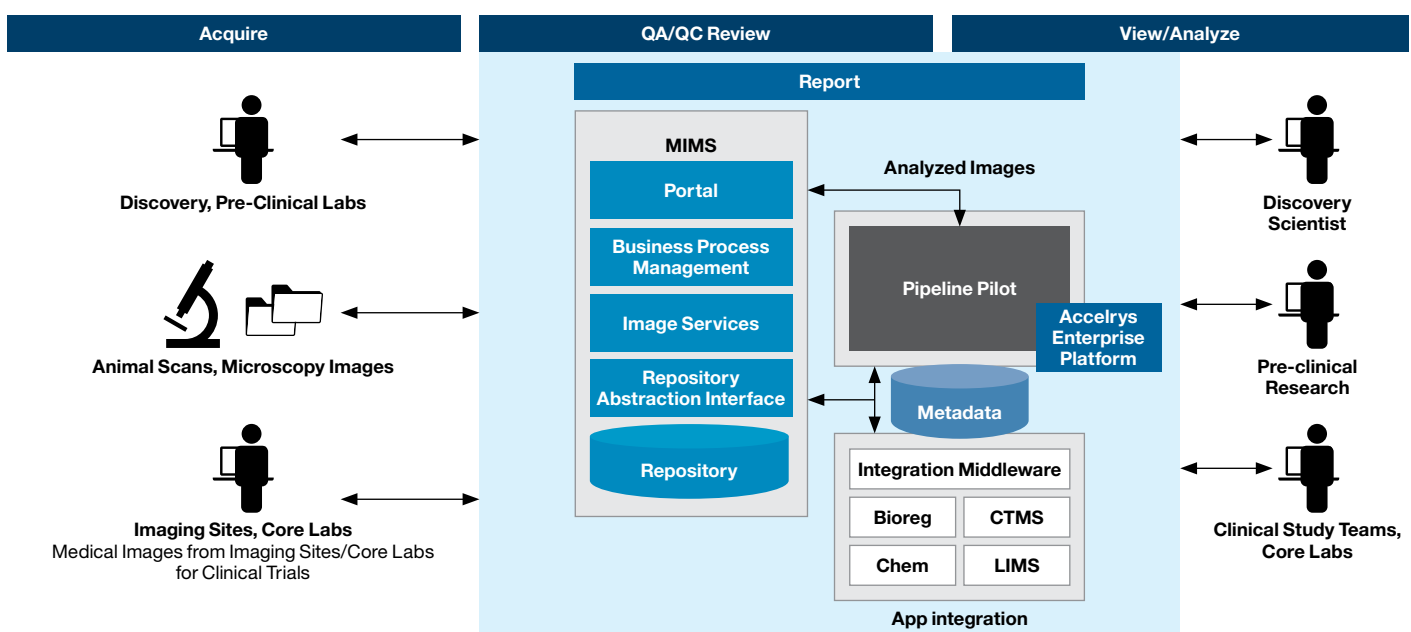
### Accelrys and IBM: a closer look

In addition to MIMS, IBM delivers an extensive portfolio of smarter computing systems, storage and software to make sure the complete solution delivers high reliability, data protection and superior performance.

- **IBM System x®.** The IBM System x3550 M4 builds on the latest Intel Xeon processor technology with extreme processing power plus superior energy-management and cooling features to meet demanding workloads at a lower cost per watt.

- **IBM BladeCenter®.** This highly integrated system helps reduce management complexity, increase performance and energy-efficiency, and significantly reduce costs. The IBM BladeCenter HX5 enables unprecedented performance and utilization in a blade form factor for database and virtualization.
- **IBM storage solutions.** These innovative storage technologies include IBM Scale Out Network Attached Storage (SONAS), which is designed to embrace and deliver cloud storage in the petabyte age. SONAS provides extreme scalability to accommodate capacity growth for up to 21 petabytes, and manages multiple petabytes of storage and billions of files in a single file system. The IBM General Parallel File System™ is a high-performance enterprise file management solution that enables seamless capacity expansion and high reliability/availability. IBM also offers a wide variety of tape and disk-based storage technologies.
- **IBM DB2®.** This database software is optimized to deliver industry-leading performance across multiple workloads while lowering the cost of administration, storage, development and servers. Features include pure XML, industry-leading deep compression, and multi-temperature data management.

### Accelrys and IBM Solution Architecture



The image management and analysis solution from IBM and Accelrys redefines how research teams approach translational studies, providing access to all images and data in a unified, web-based environment.

- **IBM FileNet® Content Manager.** IBM FileNet Content Manager is a content, security and storage management engine with ready-to-use workflow and process capabilities. It helps organizations meet the growing challenge of managing enterprise content.

## Accelrys and IBM: empowering researchers

### Accelrys

Accelrys, a leading scientific enterprise R&D software and services company, supports industries and organizations that rely on scientific innovation to differentiate themselves. The industry-leading Accelrys Enterprise Platform provides a broad, flexible scientific solution optimized to integrate the diversity of science, experimental processes and information requirements across the research, development, process scale-up and early manufacturing phases of product development. By incorporating capabilities in applications for modeling and simulation, enterprise lab management, workflow and automation, and data management and informatics, Accelrys enables scientific innovators to access, organize, analyze and share data in unprecedented ways, ultimately enhancing innovation, improving productivity and compliance, reducing costs and speeding time from lab to market. Among the organization's 1,300 customers are 29 of the top 30 pharmaceutical and biotechnology companies.

### IBM

IBM is committed to helping researchers generate insight rapidly and support the ultimate mission of translational research. IBM has a long history of active collaboration with leading life sciences applications developers and researchers. The company's industry-leading portfolio is used throughout the life sciences industry for bioinformatics, biochemistry, medical imaging and analysis, as well as clinical development.

### For more information

To learn more about IBM in life sciences, contact your IBM sales rep or visit:

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To learn more about Accelrys, please visit:

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