CASE
STUDY

HTS DATA MANAGEMENT SYSTEM HELPS SPEED DECISION-MAKING IN DRUG DISCOVERY

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With over two centuries of experience in pharmaceuticals, the client provides innovative healthcare solutions that address the evolving needs of patients and communities across the world. Its diversified portfolio of products spans over-the-counter drugs, preventative vaccines, cost-saving generic pharmaceuticals, and new and emerging medicines.

THE CHALLENGE: STREAMLINE HTS & PROFILING DATA QUALITY ASSURANCE

In drug discovery, High Throughput Screening (HTS) is an automated process that enables scientists and researchers to quickly analyze the biochemical or biological activity of a large number of drug-like compounds. To optimize its processes in HTS and Data Profiling, the client enlisted EPAM to develop a streamlined solution for data quality assurance that automates computation and visualization tasks on large data sets.

TECHNOLOGIES

- Server: Java, Apache Tomcat, Spring framework
- Data: Oracle RAC, Binary files
- Client: C#, DevExpress, TeeChart

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THE SOLUTION: AUTOMATE COMPUTATION & VISUALIZATION OF ASSAYS

EPAM developed an application that merges the best features from various client subsystems in HTS and Profiling to create a coherent system that can fulfill the future needs of a global screening organization. Comprised of new, scalable technologies, the HTS Data Management System offers the following functionality to help speed decision-making in drug discovery:

- Definition and configuration of assays, including:
  - Core data entry and relationship to research programs
  - Defining assay structure
  - Setting up the calculation procedure to be conducted
  - Quality Control indicators

- Plate readout visualization

- Support for publishing from operational database to warehouse

- Support for reporting and export

- Calculation methods for primary HTS data processing (data analysis and data reduction), such as pre-transformation, transformation, normalization, pattern modeling, correction, and quality control

- Various curve-fitting methods for secondary data screening

- Support of flags, masks, and annotations to provide "companion" information about the validity, reliability, or degree of belief that the system or a scientist associates with a particular numerical value

- Scatterplot/trendplot display of summary statistics; QC indicators for the selected plate/readout group

- Heatmap displays of the readout values of the plates/readouts

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THE RESULT: MORE INFORMED DECISION-MAKING WITH INCREASED DATA QUALITY ASSURANCE

After launching in late 2007, the HTS Data Management System implemented by EPAM went on to win an award for innovation within the client's organization. As a modular, flexible solution that allows organizations to make more informed decisions as a result of increased data quality assurance in drug discovery, the application is currently used in the following capacities by the client:

- Number of users: about 800 worldwide

- Number of geographical sites: 4 (U.S., Europe, Asia)

- Number of concurrent users: about 50

- Number of servers: 2 (1 in Europe, 1 in U.S.)

- Database size: over 1 TB per server

Today, EPAM continues to improve the system's functionality in close cooperation with the client's project team. This lasting relationship with the client speaks to EPAM's value as a long-term technology partner for any Life Science organization, and we look forward to exploring a similar solution to speed up your drug discovery process. To learn more, please contact us today!

QUESTIONS?
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(i) For more information,
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