

# Enhancing Data Accessibility: Strategies and Tools for Effective Metadata Management in High-Throughput Science

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In today's world of high-throughput bioinformatics and advanced experimental techniques, researchers are generating enormous datasets. Consider of cryo-electron microscopy data or the complex images produced by nuclear magnetic resonance and light microscopy—they're all rich in scientific value. Not just for the researchers who generate them, but for the entire scientific community. The key to unlocking their potential lies in making them accessible, and that's where metadata comes into play.

This contribution dives into the techniques and steps needed to handle metadata effectively. We'll explore how to extract metadata from the data sources themselves, organize it using ontologies (structured frameworks for knowledge), and seamlessly incorporate it into commonly recognized metadata standards. We'll also look at the development of a powerful system and language that can unify metadata from different sources, making it clear and easy to work with.

In response to these challenges, our team is in the final stages of creating a groundbreaking toolset. This toolset will empower scientists to add and manage metadata according to specific guidelines (FAIR principles and EOSC recommendations).

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