Poznańskie Centrum Superkomputerowo-Sieciowe
Poznan Supercomputing and Networking Center

Data Management Plan implementation

Towards Python and FastAPI (R&D)

Comparison of solutions

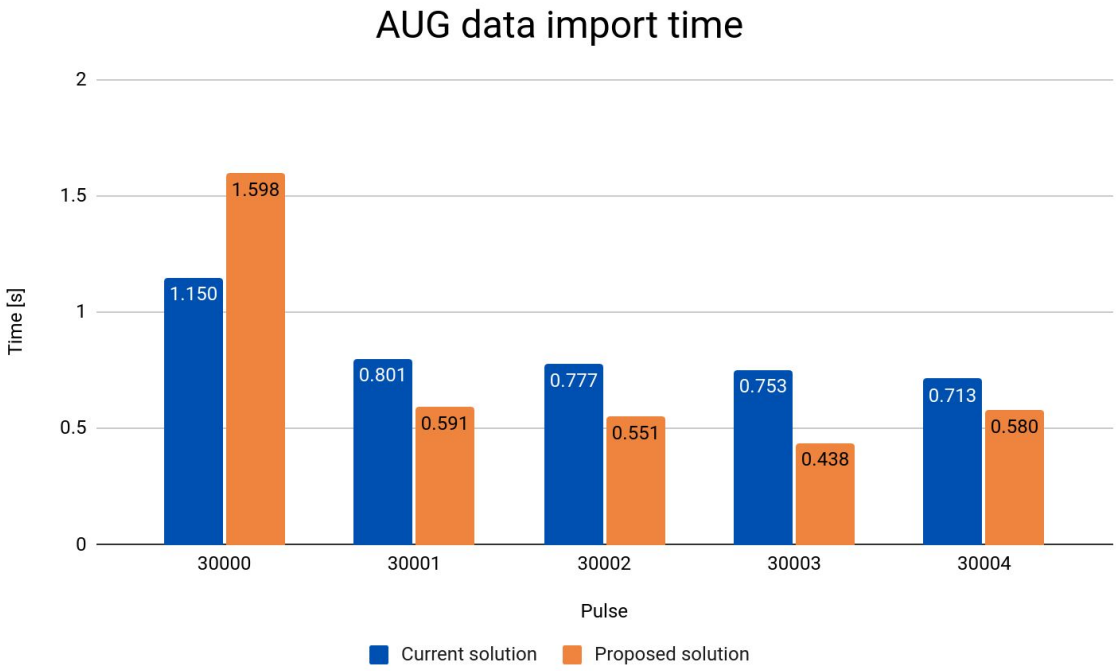
	Current solution	Proposed solution
Dominant language	Java	Python
Web framework	Spring	FastAPI
Database	MariaDB	PostgreSQL
Database connection	Blocking	Non-blocking
IMAS library	Java HLI	IMAS-Python
Project complexity	High (legacy code)	Low (from scratch)

Potential benefits

	Proposed solution	Benefits
Dominant language	Python	• Faster feature development • Easy integration with tools like IMAS-Validator and IMAS-Python • Faster build and deployment • More convenient cli applications
Web framework	FastAPI	• Great support for non-blocking code • Very “light”; freedom in choosing packages
Database	PostgreSQL	• JSON binary (JSONB) column • “more” open source than MongoDB; full support for transactions and ACID • large community; mature driver for non-blocking I/O in Python
Database connection	Non-blocking	• Very fast for large number of requests
IMAS library	IMAS-Python	• Up to date with IMAS trends
Project complexity	Low (from scratch)	• Faster development, build and deployment

Performance concerns?

- **local** UDA server
- aug-dmp summary data
- first pulse - DD parsing by IMAS-Python (time overhead)
- lower bound - waiting for I/O (UDA)
- REST API vs DB



Potential issues

- insufficient time resources
- end of support for some Python packages
- performance issues

Current status

✅ Authentication & Authorization

✅ Data import (80%)

❌ Data filtering

❌ CSV export

❌ Annotations

❌ Extra URIs

❌ CLI client

❌ Frontend adjustments

❌ CI/CD

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THE END