Data File Acquisition Software Architecture

The Data File Acquisition software has 3 layers to provide interaction and interface with external data source or data storage. The architecture is designed with consideration of Agile practice as well project measurability and manageability.

1. Process Controller

Features:

Control the process and work flow. Interact with the modules and make sure all working properly.

Process Diagram: Appendix 1.

2. Components

Components will interact with user interface or other systems.

Screen Notifier

Features:

1. Present a pop up text on screen
2. Present an indicator icon during processing

Communication Adapter

This component will provide interface to communicate with other system through internet.

Features:

1. Interface EXCHANGE Calendar and email
2. Interface Research Master
3. Interface ISILON Share
4. Interface DRO

3. Module

Modules have their own logic and will focus on a particular task.

Data File Monitor

Find, identify new data file and match with research project.

Features:

1. Monitor a list of directories for new file creation ("raw data file")
2. Validate file name against naming rules
3. Interface ISILON Share to avoid duplication
4. Monitor the completion of data writing
5. Interface EXCHANGE Calendar to retrieve booking information
6. Interface Research Master for research project information

Export Macro Scheduler

Communicate with crystal microscope software, convert native raw data file to text-based data files.

Features:

1. Determine running context and environment, identify which macro to execute
2. Simulate keystroke to export text data file via crystal microscopy softwares

Crystal Converter

Crystal Converter provides functionality to convert data files between text-based formats.

Features:

1. Convert between .ANG and .CTF data files
2. Extract technical meta-data to a temporal data file

Data File Storage

Uploading data files to ISILON share.

Features:

1. Get project information from Research Master
2. Interface ISILON to transfer raw data file and converted text data files
3. Interface ISILON Share to setup access control for new files
4. Generate ISILON URL for public access to data files
5. Send email to data owner

Meta Data Upload

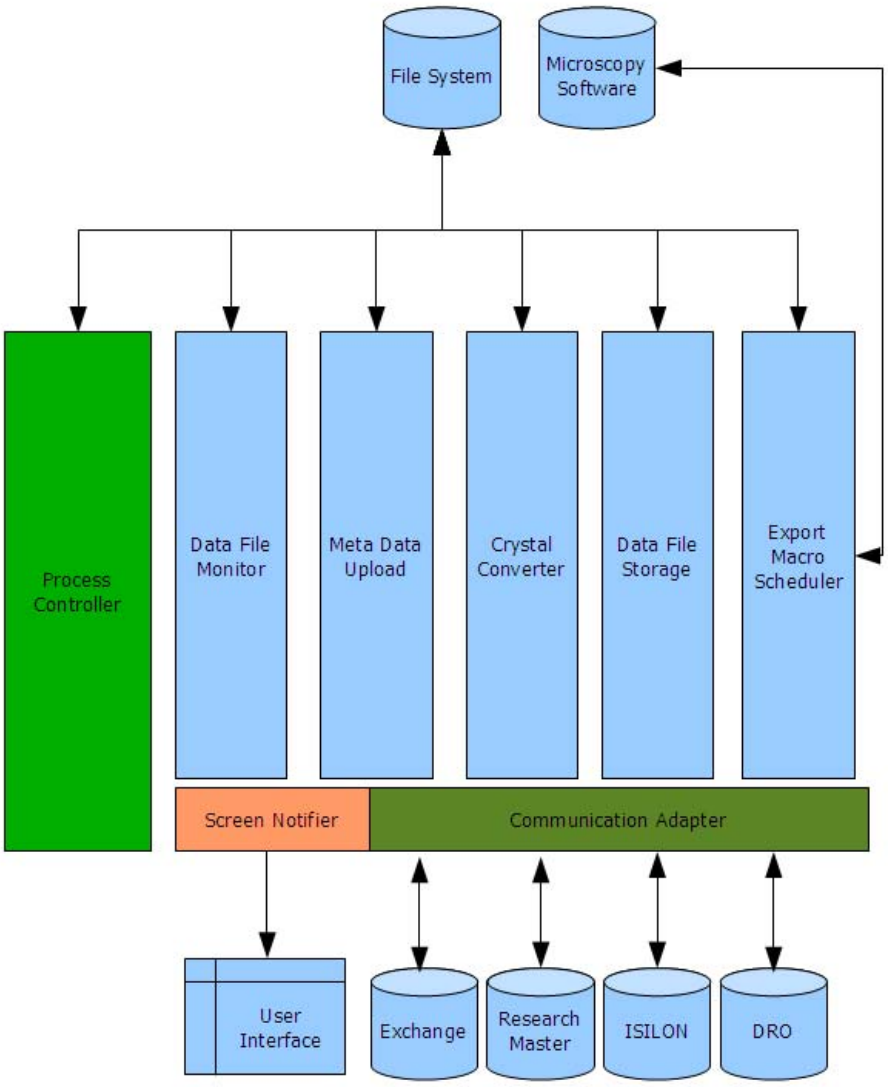
Uploading Meta-data to DRO for each data collection

Features:

1. Interface DRO to create record for new data collection
2. Interface DRO to assign ISILON URL
3. Interface DRO to update technical meta data for new data collection

4. Data File Acquisition Architecture

This diagram defines the layer of software and internal connection, as well as interaction with other systems.



5. Task Division

Tasks in DPP are defined according to the modules and components in architecture design. The sequence also reflects the dependency between each individual part.

1. Design and Architecture
    - 1.1. Architecture Documentation
        - 1.1.1. Software architecture document
        - 1.1.2. Test cases and test plan
        - 1.1.3. Communication interface with Exchange/ISILON/DRO/ResearchMaster
    - 1.2. Development Environment
        - 1.2.1. Set up develop environment
        - 1.2.2. Set up test automation tools, test report tools
2. Development and Build
    - 2.1. Component: Screen Notifier
        - 2.1.1. Present a pop up text on screen
        - 2.1.2. Present an indicator icon during processing
    - 2.2. Component: Communication Adapter
        - 2.2.1. Interface EXCHANGE Calendar and email
        - 2.2.2. Interface Research Master
        - 2.2.3. Interface ISILON Share
        - 2.2.4. Interface DRO
    - 2.3. Module: Data File Monitor
        - 2.3.1. Monitor a list of directories for new file creation ("raw data file")
        - 2.3.2. Validate file name against naming rules
        - 2.3.3. Interface ISILON Share to avoid duplication
        - 2.3.4. Monitor the completion of data writing
        - 2.3.5. Interface EXCHANGE Calendar to retrieve booking information
        - 2.3.6. Interface Research Master for research project information
    - 2.4. Module: Export Macro Scheduler
        - 2.4.1. Determine running context and environment, identify which macro to execute
        - 2.4.2. Simulate keystroke to export text data file via crystal microscopy softwares
    - 2.5. Module: Crystal Converter
        - 2.5.1. Convert between .ANG and .CHL data files
        - 2.5.2. Extract technical meta-data to a temporal data file
    - 2.6. Module: Data File Storage
        - 2.6.1. Get project information from Research Master
        - 2.6.2. Interface ISILON to transfer raw data file and converted text data files
        - 2.6.3. Interface ISILON Share to setup access control for new files
        - 2.6.4. Generate ISILON URL for public access to data files
        - 2.6.5. Send email to data owner
    - 2.7. Module: Meta Data Upload
        - 2.7.1. Interface DRO to create record for new data collection
        - 2.7.2. Interface DRO to assign ISILON URL
        - 2.7.3. Interface DRO to update technical meta data for new data collection
    - 2.8. Process Controller
        - 2.8.1. Integrate modules and work flow
        - 2.8.2. Setup running context and environment with a configuration file
3. Testing
    - 3.1. Testing with Crystal Microscopy software
    - 3.2. UAT

Appendix 1. High-Level Process Diagram