

Feature/Dicom-Anonymiser Generic Wrapper Microservice

1. Docker (Container)

Initiate Essential Services (RabbitMQ, MSSQL, MongoDB, MariaDB, Redis)

```
1 git clone https://github.com/SMI/SmiServices.git
2 cd SmiServices/utils/docker-compose
3 docker-compose -f linux-dotnet-arm.yml up
```

2. RDMP (Application)


Setup RDMP (Github)

```
1 git clone git@github.com:HicServices/RDMP.git
2 cd RDMP/Tools/rdmp
3 dotnet clean
4 dotnet build
5 cd bin/Debug/net7.0
6 ./rdmp install localhost RDMP_ -e -D -u sa -p "YourStrongPassw0rd"
```

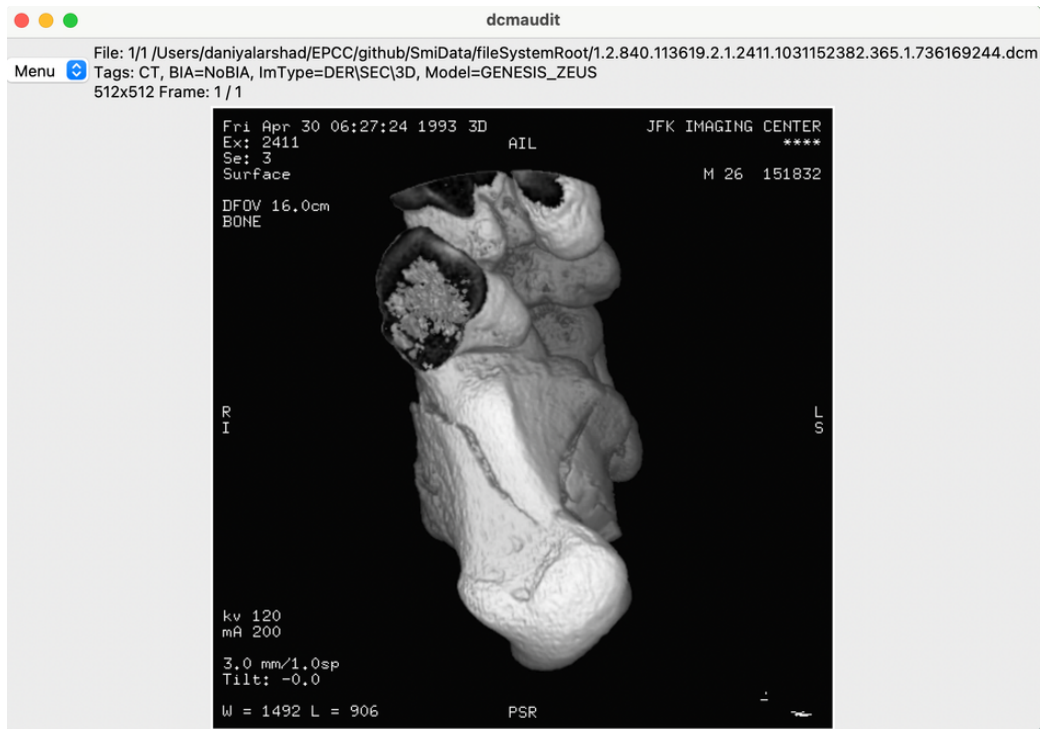
Update Databases Connection (.yaml)

```
1 cd RDMP/Tools/rdmp
2 cat > Databases.yaml << EOF
3 CatalogueConnectionString: Server=localhost;Database=RDMP_Catalogue;User ID=sa;Password=YourStrongPassw0rd;Trust
4 DataExportConnectionString: Server=localhost;Database=RDMP_DataExport;User ID=sa;Password=YourStrongPassw0rd;Trus
5 EOF
```

3. Extract Images (Application)

 [ExtractImages](#): Reads UIDs from a CSV file and generates [ExtractionRequestMessage](#) and audit message [ExtractionRequestInfoMessage](#).

Sample Image (.dcm)



Sample Image (with burned in text)

Generate UIDs List (.csv)

```
1 cd SmiData/extractRoot
2 cat > extractme.csv << _EOF
3 SeriesInstanceUID
4 1.2.826.0.1.3680043.2.1125.1.78969117856457473538394301521877227
5 _EOF
```

Update smi-dataExtract (.yaml)

```
1 cd SmiConfig/smi-dataExtract.yaml
2 CatalogueConnectionString: 'Server=localhost;Database=RDMP_Catalogue;User ID=sa;Password=YourStrongPassw0rd;Trust
3 DataExportConnectionString: 'Server=localhost;Database=RDMP_DataExport;User ID=sa;Password=YourStrongPassw0rd;Tru
```

Run Extract Images (.smi)

```
- default.yaml
ExtractImagesOptions:
  ExtractionRequestProducerOptions:
    ExchangeName: "RequestExchange"
  ExtractionRequestInfoProducerOptions:
    ExchangeName: "RequestInfoExchange"

defaultExtractConfig.json
"bindings":
[{"source": "RequestExchange",
  "vhost": "smi_extract",
  "destination": "RequestQueue",
  "routing_key": ""}
{"source": "RequestInfoExchange",
  "vhost": "smi_extract",
```

```
"destination": "RequestInfoQueue",
"routing_key": ""}]
```

```
1 cd /SmiServices/src/applications/Applications.SmiRunner/bin/net7.0
2 ./smi extract-images -y /Users/daniylarshad/EPCC/github/SmiConfig/smi-dataExtract.yaml -p "Project-001" -c /User
```

```
(base) daniylarshad@MBP-DA net7.0 % ./smi extract-images -y /Users/daniylarshad/EPCC/github/SmiConfig/smi-dataExtract.yaml -p "Project-001" -c /Users/daniylarshad/EPCC/github/SmiData/extract/extractme.csv
Bootstrapper -> Main called, constructing host
2023-11-22 13:12:27.8411 INFO[SmiLogging] Logging config loaded from /Users/daniylarshad/EPCC/github/SmiServices/src/applications/Applications.SmiRunner/bin/net7.0/Smi_MLog.config|
2023-11-22 13:12:27.8501 INFO[ExtractImagesHost] Host logger created|
2023-11-22 13:12:27.8515 INFO[ExtractImagesHost] Starting ExtractImages (Host=MBP-DA PID=31900 User=daniylarshad)|
Bootstrapper -> Host constructed, starting aux connections
Bootstrapper -> Host aux connections started, calling Start()
2023-11-22 13:12:27.9488 INFO[Applications.ExtractImages.ExtractionMessageSender]
ExtractionJobIdentifier: ba5450f-4a7e-4f8b-b5df-89b081cc574d
ProjectNumber: Project-001
ExtractionDirectory: Project-001/extractions/extractme
SmiInstanceID:
IdentifiableExtraction: False
INMPFilterExtraction: False
ExtractionModality: unspecified
UserName: daniylarshad
KeyValCount: 1
ExtractionRequestMessage count: 1
[]
Confirm you want to start an extract job with the above information
[y/n]: y
2023-11-22 13:12:29.3723 INFO[Applications.ExtractImages.ExtractionMessageSender] Created extraction directory and jobid file|
2023-11-22 13:12:29.3727 INFO[Applications.ExtractImages.ExtractionMessageSender] Sending messages|
2023-11-22 13:12:29.4586 INFO[Applications.ExtractImages.ExtractionMessageSender] All messages sent|
2023-11-22 13:12:29.4586 INFO[ExtractImagesHost] Host stop called: Completed|
2023-11-22 13:12:29.4711 INFO[ExtractImagesHost] Host stop completed|
Bootstrapper -> Host created and started.
MicroserviceHostBootstrapper exiting. Service will exit when consumer threads are joined
```

Terminal Output: Extract Images

4. Cohort Extractor (Microservice)

i [CohortExtractor](#): Looks up SeriesInstanceUIDs in [ExtractionRequestMessage](#) and does relational database lookup(s) to resolve into physical image file location. Generates [ExtractFileMessage](#) and audit message [ExtractFileCollectionInfoMessage](#).

Update smi-dataExtract (.yaml)

```
1 cd SmiConfig/smi-dataExtract.yaml
2 RequestFulfillerType: "Microservices.CohortExtractor.Execution.RequestFulfillers.FakeFulfiller"
```

Run Cohort Extractor (.smi)

```
default.yaml
CohortExtractorOptions:
  QueueName: "RequestQueue"
  ExtractAnonRoutingKey: anon
  ExtractIdentRoutingKey: ident
ExtractFilesProducerOptions:
  ExchangeName: "ExtractFileExchange"
ExtractFilesInfoProducerOptions:
  ExchangeName: "FileCollectionInfoExchange"

defaultExtractConfig.json
"bindings":
[
  { "source": "ExtractFileExchange",
    "vhost": "smi_extract",
    "destination": "ExtractFileAnonQueue",
    "routing_key": "anon"},
  { "source": "ExtractFileExchange",
    "vhost": "smi_extract",
    "destination": "ExtractFileIdentQueue",
    "routing_key": "ident"},
  { "source": "FileCollectionInfoExchange",
    "vhost": "smi_extract",
    "destination": "FileCollectionInfoQueue",
    "routing_key": ""}]
```

```
1 ./smi cohort-extractor -y /Users/daniylarshad/EPCC/github/SmiConfig/smi-dataExtract.yaml
```

```
(base) daniylarshad@MP-DA net7.8 % ./smi cohort-extractor -y /Users/daniylarshad/EPCC/github/SmiConfig/smi-dataExtract.yaml
Rootstrapper -> Main called, constructing host
2023-11-22 13:13:16.3021 INFO [SmiLog] Logging config loaded from /Users/daniylarshad/EPCC/github/SmiServices/src/applications/Applications.SmiRunner/bin/net7.8/Smi.Log.config[]
2023-11-22 13:13:16.3716 INFO [CohortExtractorHost] Host logger created[]
2023-11-22 13:13:16.3716 INFO [CohortExtractorHost] Starting CohortExtractor (Host-MWP-DA PID=31955 User=daniylarshad[])
Rootstrapper -> Host constructed, starting aux connections
Rootstrapper -> Host aux connections started, calling Start()
Rootstrapper -> Host created and started...
2023-11-22 13:13:17.6189 INFO [Smi.Common.Helpers.MicroserviceObjectFactory] Successfully constructed Type "Microservices.CohortExtractor.Audit.NoIlauditExtractions[]"
2023-11-22 13:13:17.6191 INFO [Smi.Common.Helpers.MicroserviceObjectFactory] Successfully constructed Type "Microservices.CohortExtractor.Execution.RequestFillers.FakeFiller[]"
2023-11-22 13:13:17.6191 INFO [Smi.Common.Helpers.MicroserviceObjectFactory] Successfully constructed Type "Microservices.CohortExtractor.Execution.ProjectPathResolvers.DefaultProjectPathResolver[]"
Rootstrapper -> Host created and started...
2023-11-22 13:13:17.6641 INFO [ExtractionRequestQueueConsumer] Received message: ExtractionJobIdentifier=64515bf-4a74-4f8d-85df-89681cc376d, ProjectNumber=Project-001, ExtractionDirectory=Project-001/extractions/extractme_30Submitted-2023-11-22T13:13:17.6641Z, IdempotencyKey=ExtractionFileKey, LmaP [ExtractionFileKey, KeyType=IDempotencyKey, Modality=ExtractionFile, IdempotencyKey]
2023-11-22 13:13:17.6661 INFO [ExtractionRequestQueueConsumer] Accepted 1 and rejected 0 files for KeyValue 1.2.848.113619.2.1.2411.1031152382.365.1.736169244.dcm[]
2023-11-22 13:13:17.6809 INFO [ExtractionRequestQueueConsumer] All messages sent and acknowledged for 1.2.848.113619.2.1.2411.1031152382.365.1.736169244.dcm[]
2023-11-22 13:13:17.6809 INFO [ExtractionRequestQueueConsumer] [Finished processing message]
^C2023-11-22 13:14:38.4379 INFO [CohortExtractorHost] Stop called: Ctrl+C pressed[]
MicroservicesHostBootstrapper exiting. Service will exit when consumer threads are joined
2023-11-22 13:14:38.4721 INFO [CohortExtractorHost] Host stop completed[]
```

Terminal Output: Cohort Extractor

5. Dicom Anonymiser (Microservice)

Run DICOM Anonymiser (.smi)

```
default.yaml
DicomAnonymiserOptions:
  AnonymiserType: "GenericAnonymiser"
  AnonFileConsumerOptions:
    QueueName: "ExtractFileAnonQueue"
    QoSPrefetchCount: 1
    AutoAck: false
  ExtractFileStatusProducerOptions:
    ExchangeName: "ExtractedFileStatusExchange"
    MaxConfirmAttempts: 1
    RoutingKeySuccess: verify
    RoutingKeyFailure: noverify
    FailIfSourceWriteable: true
```

defaultExtractConfig.json

```
"bindings":
[
  {
    "source": "ExtractedFileStatusExchange",
    "vhost": "smi_extract",
    "destination": "ExtractedFileToVerifyQueue",
    "routing_key": "verify",
  },
  {
    "source": "ExtractedFileStatusExchange",
    "vhost": "smi_extract",
    "destination": "ExtractedFileNoVerifyQueue",
    "routing_key": "noverify"
  }
]
```

```
1 ./smi dicom-anonymiser -y /Users/daniylarshad/EPCC/github/SmiConfig/smi-dataExtract.yaml
```

```
(base) daniylarshad@MP-DA net7.8 % ./smi dicom-anonymiser -y /Users/daniylarshad/EPCC/github/SmiConfig/smi-dataExtract.yaml
Rootstrapper -> Main called, constructing host
2023-11-22 13:15:55.1689 INFO [SmiLog] Logging config loaded from /Users/daniylarshad/EPCC/github/SmiServices/src/applications/Applications.SmiRunner/bin/net7.8/Smi.Log.config[]
2023-11-22 13:15:55.1775 INFO [DicomAnonymiserHost] Host logger created[]
2023-11-22 13:15:55.1775 INFO [DicomAnonymiserHost] Starting DicomAnonymiser (Host-MWP-DA PID=32853 User=daniylarshad[])
Rootstrapper -> Host constructed, starting aux connections
Rootstrapper -> Host aux connections started, calling Start()
Rootstrapper -> Host created and started...
INFO: AnonFileConsumer /Users/daniylarshad/EPCC/github/SmiData/filesystemroot/1.2.848.113619.2.1.2411.1031152382.365.1.736169244.dcm to /Users/daniylarshad/EPCC/github/SmiData/extractRoot/Project-001/extractions/extractme/2/3/1.2.848.113619.2.1.2411.1031152382.365.1.736169244.dcm
INFO: Output: Wed Nov 22 13:15:55 GMT 2023 dicom_pixel_anon.sh Running OCR on /Users/daniylarshad/EPCC/github/SmiData/filesystemroot/1.2.848.113619.2.1.2411.1031152382.365.1.736169244.dcm
Wed Nov 22 13:16:49 GMT 2023 dicom_pixel_anon.sh Redirecting
INFO: Return Code: 0
^C2023-11-22 13:16:14.8663 INFO [DicomAnonymiserHost] Host Stop called: Ctrl+C pressed[]
MicroservicesHostBootstrapper exiting. Service will exit when consumer threads are joined
2023-11-22 13:16:14.9019 INFO [DicomAnonymiserHost] Host stop completed[]
```

Terminal Output: Dicom Anonymiser

View Anonymised DICOMS

Assuming you have the NationalSafeHaven repository

```
1 export SMI_ROOT="/Users/daniylarshad/EPCC/github/NationalSafeHaven/SmiServices"
2
```

```
3 cd github/NationalSafeHaven
4 source venv/bin/activate
5 cd dicompixelanon/src/applications
6 ./dcmaudit.py -i <file-path>
```



Anonymised Sample Image