

# ImagEDC – an open source, web services based EDC tool for imaging trials

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# What is ImagEDC?

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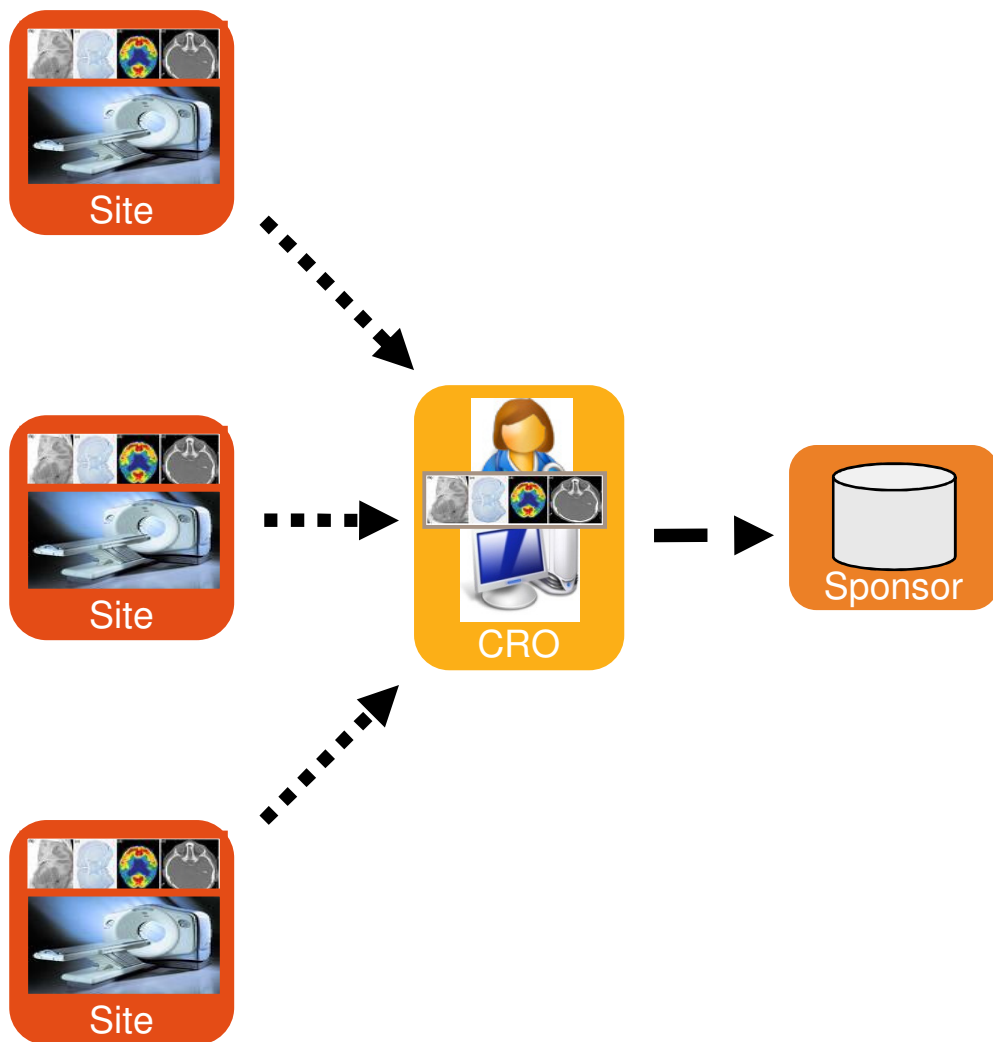
- An open source reference implementation of an electronic data capture tool and a web services model for image exchange in clinical trials.

# What does that mean?

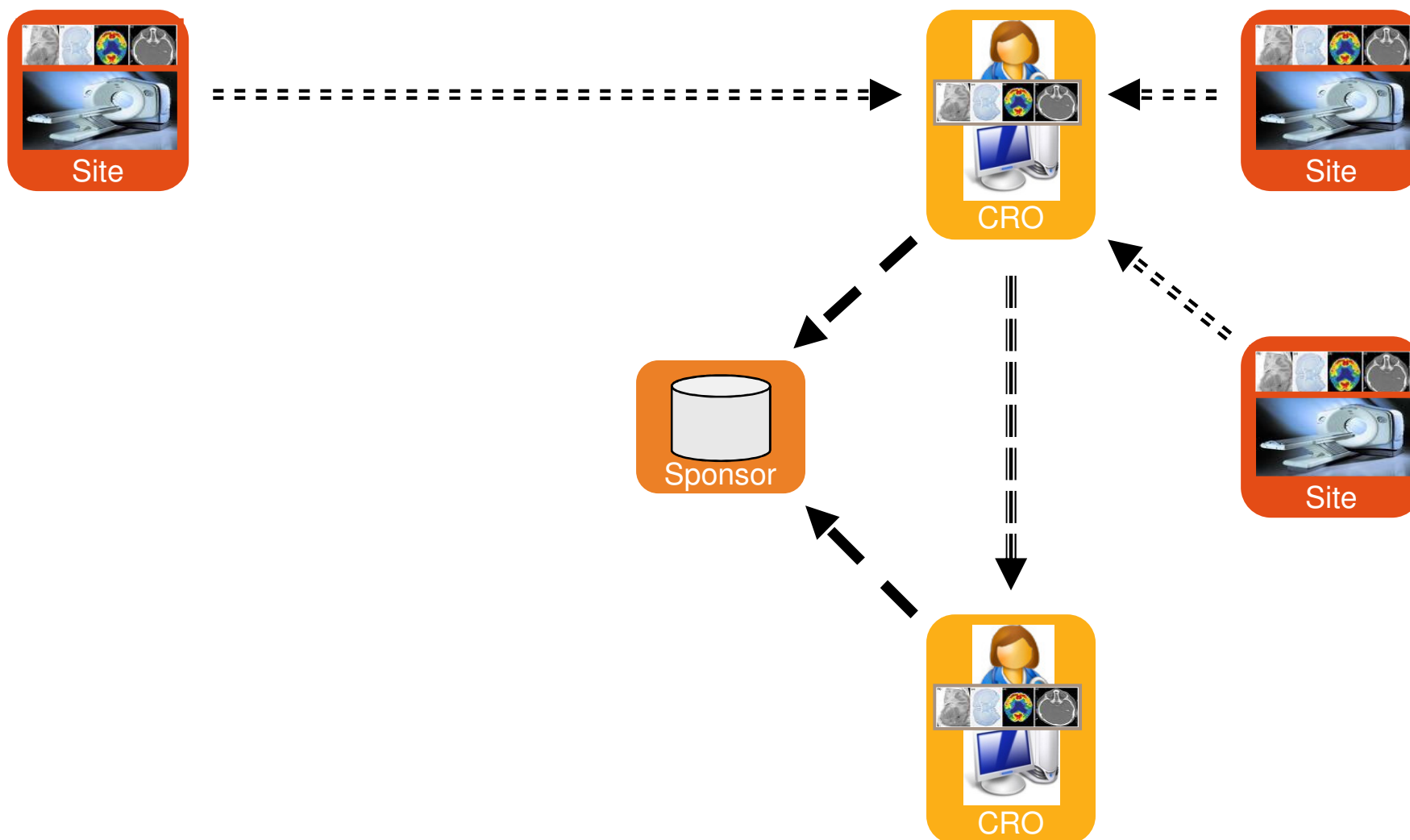
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- Business landscape
- Vision
- Action and outcome

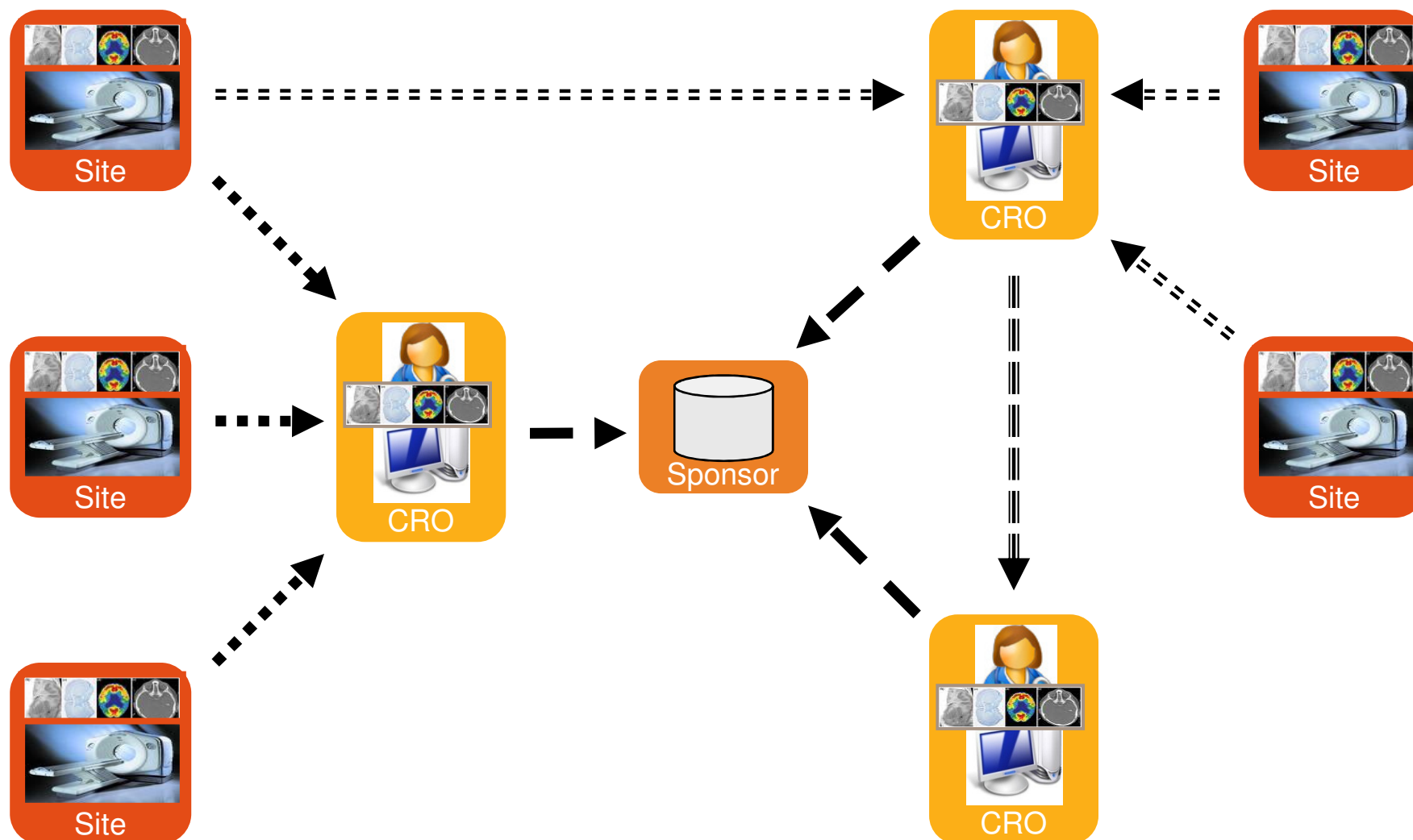
# Imaging trial process



## Another one



# All together

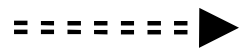


# Transfer mechanism

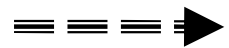
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Courier



SFTP



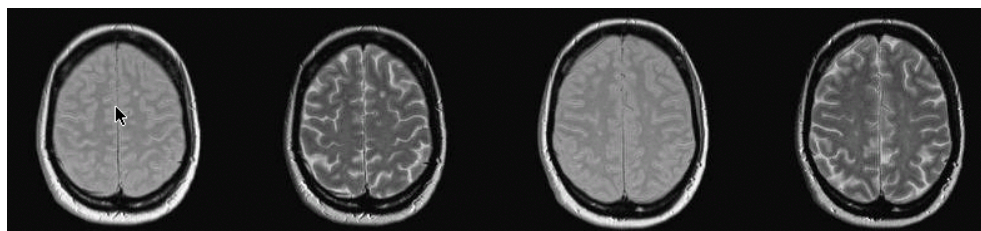
Proprietary tool

# Business object

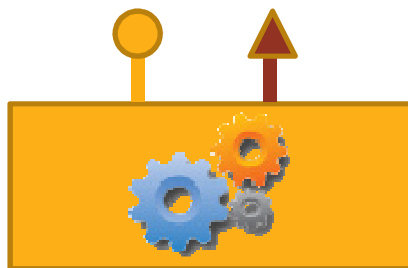
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↓ DICOM



↓ ??



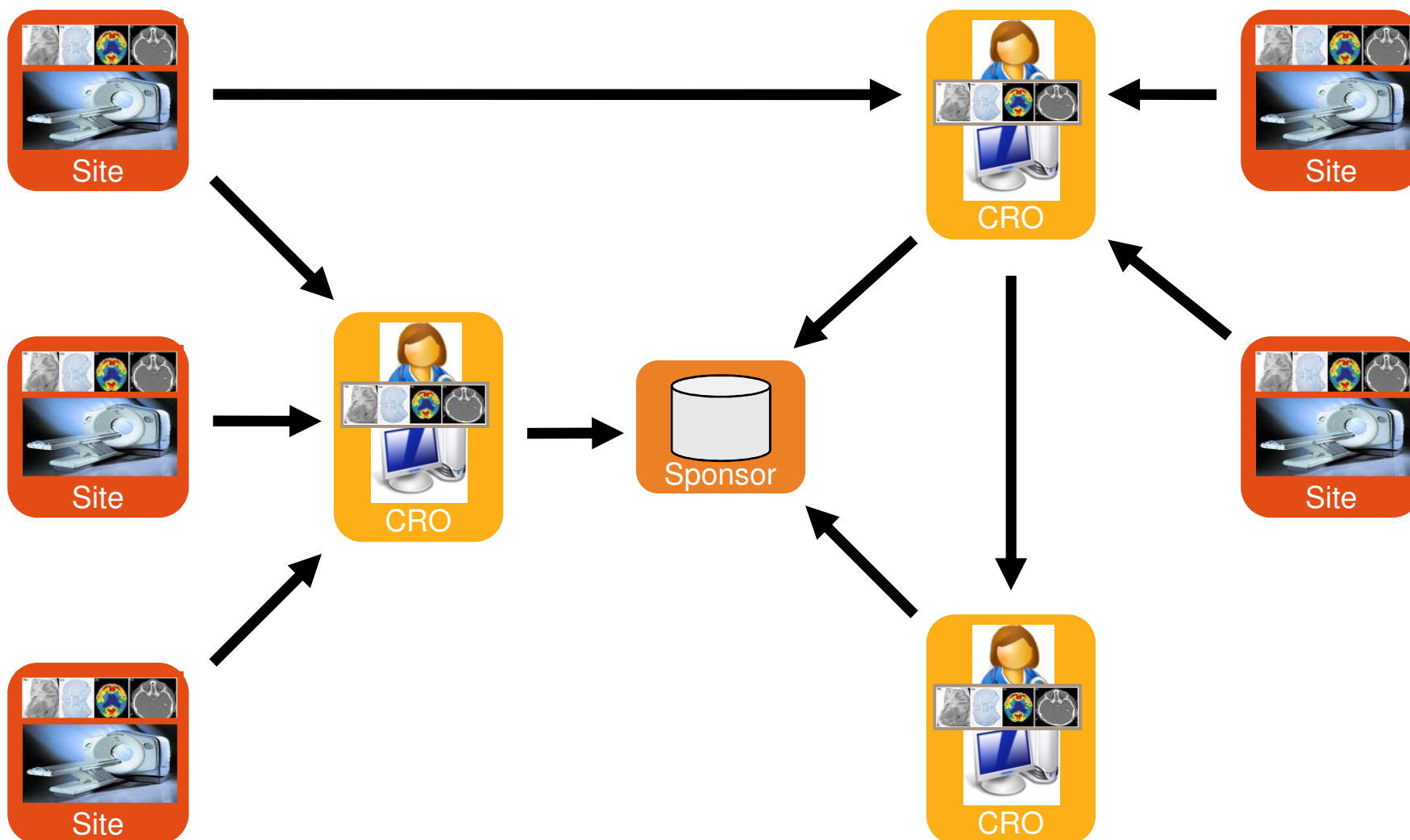


# Imaging trial process

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- Not standardized
- Distributed across vendors
- Manual data exchanges
- How can we best automate this in a reusable way?

# Vision



## Service oriented architecture

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- Our vision is to achieve a service oriented architecture for image trials across organizations, where data exchanges are mediated by web services and data objects are clearly described by the service APIs.

## Where to start

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- The scope of the end vision is too large for one project or organization to achieve.
- We need to solve one use case and build from there. Our project goals need to include:
  - Shared use case
  - Leverage community
  - Working product
  - Open source
- We selected the EDC, or site to CRO transfer use case due to its high use and well defined requirements.

# Product Implementation

- Consists of client and server applications.
- The client is a Java Web Start tool which implements the standard site technician workflow:
  - De-identification
  - Metadata entry
  - Transmission

ImagEDC

Enter an empty directory path to output a local copy (optional)

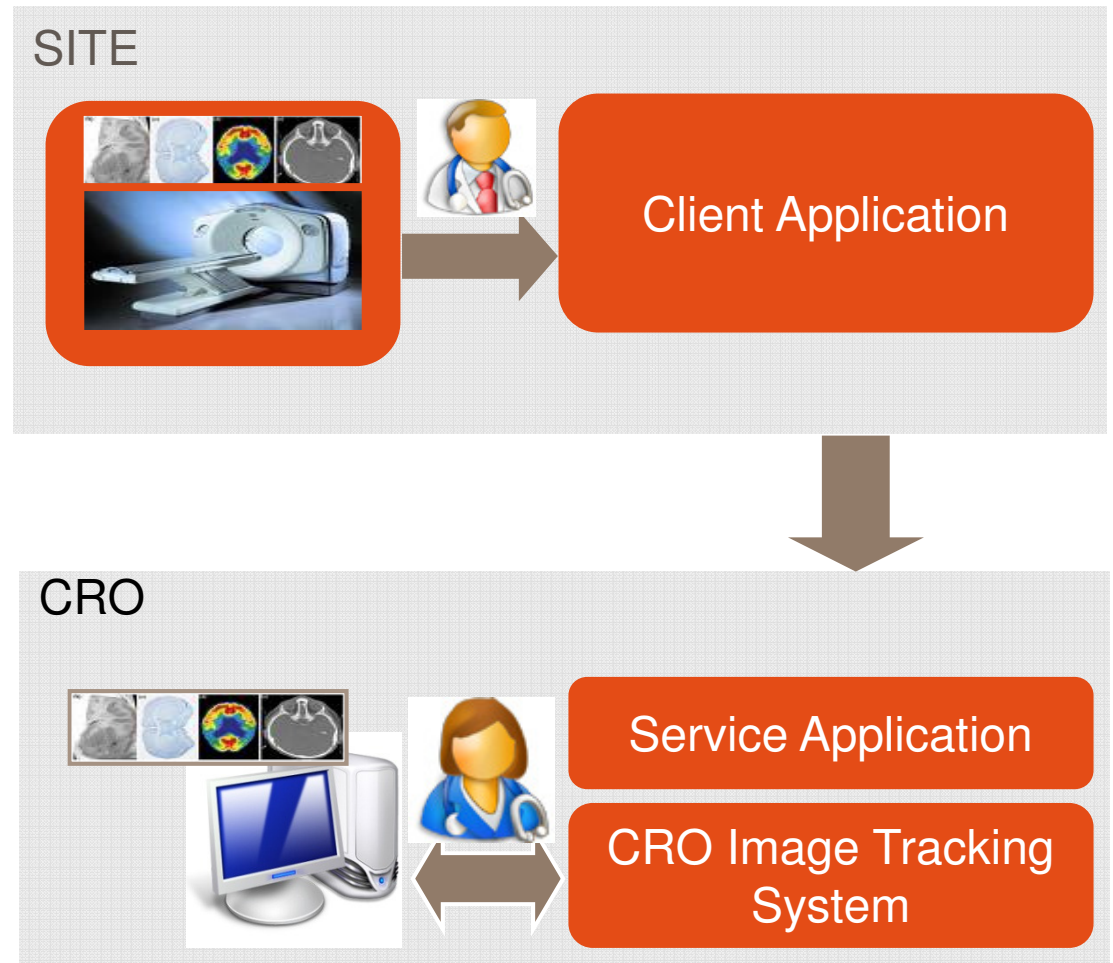
Enter scan identifiers in the table below. Each row represents a collection of images forming a single scan. Uncheck the rows you don't wish to submit, and enter additional data as needed. All columns headed in bold contain fields where you may add or edit clinical trial identifiers. The fields highlighted in orange are required and must be filled before you can continue. By clicking "Confirm", you verify that de-identified versions of the image files will be submitted with the identifiers in the table, and the data transfer will start.

<input checked="" type="checkbox"/>	Include	Patient Name	Patient ID	Modality	Series Descr...	Acquisition ...	Acquisition ...	Study ID	Site_Subject...	Visit Name	Scan Name
<input checked="" type="checkbox"/>		Joe^Smith	BW-2001	MR	localizer	Nov 14, 2007	2:24:19 PM	CXXX000X...			Unidentified
<input checked="" type="checkbox"/>		Joe^Smith	BW-2001	MR	pd+t2_tse...	Nov 14, 2007	2:26:48 PM	CXXX000X...			PD_T2
<input checked="" type="checkbox"/>		Joe^Smith	BW-2001	MR	t1_se_tra	Nov 14, 2007	2:35:03 PM	CXXX000X...			T1SE
<input checked="" type="checkbox"/>		Joe^Smith	BW-2001	MR	t1_mpr_ns...	Nov 14, 2007	2:51:47 PM	CXXX000X...			T1Sag
<input checked="" type="checkbox"/>		Joe^Smith	BW-2001	MR	t1_mpr_ns...	Nov 14, 2007	2:38:32 PM	CXXX000X...			T1Sag
<input checked="" type="checkbox"/>		Joe^Smith	BW-2001	MR	flair tra	Nov 14, 2007	2:29:27 PM	CXXX000X...			FLAIR
<input checked="" type="checkbox"/>		Joe^Smith	BW-2001	MR	localizer sag	Nov 14, 2007	2:23:55 PM	CXXX000X...			Unidentified
<input checked="" type="checkbox"/>		Joe^Smith	BW-2001	MR	t1_se_tra	Nov 14, 2007	2:48:26 PM	CXXX000X...			T1SE

Representative images from the selected scan are shown below.

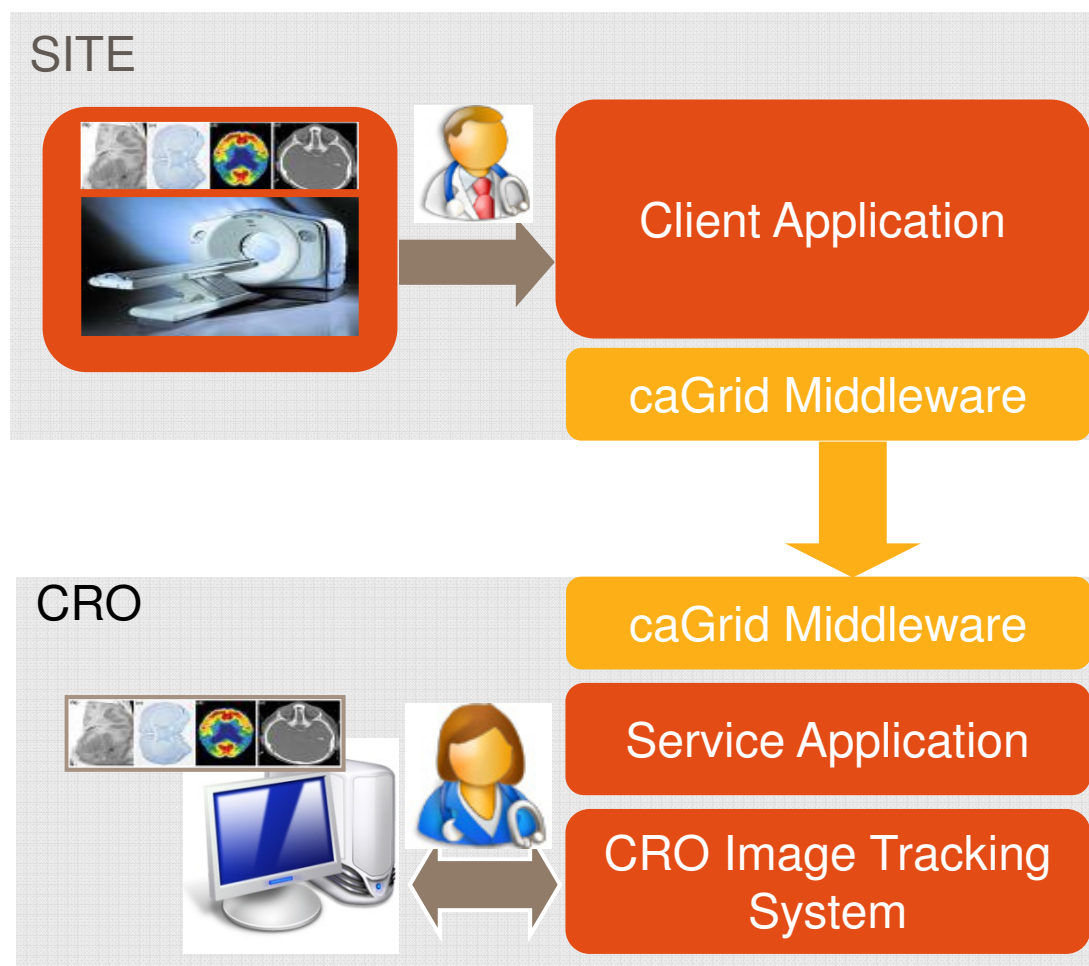
# Architecture

- The client is the image sender.
- The server is the receiver. It's a reference implementation with an API for plugging into one's own backend system.



# caGrid transport

- An open source middleware product providing a web services and grid platform for application developers
- Provided by the Cancer Biomedical Informatics Grid®, an initiative of the NCI to enable sharing of data and research tools across institutions



# Open Source

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- New BSD License – one of the least restrictive license models
- Code and documentation available at <http://imagedc.googlecode.com>



## In use

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- We have a pilot underway with a CRO who has taken the tool, validated and deployed it, and will be operating it production for a clinical trial with us.

# Outcome

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- The ImagEDC tool is not unique in its functionality
- What it brings is
  - Web services architecture for image exchange
  - Potential to leverage additional services and tools from the caGrid framework and community
  - Open source license and distribution model
- A first step toward the SOA vision
- Stefan Baumann and Kenneth Buetow presenting on the Novartis and NCI collaboration Thursday at 11:30 in the Drug Discovery Informatics track.