

Database for the clinical validation of INSIDE

Status update

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Meeting INSIDE

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Schedule as planned in the last meeting

- December 2017: survey SW development companies (→done)
- January 2018: definition of development specification and company collaboration kick-start (specification almost complete, no suitable offers received, →canceled)
- March 2018: production of the first software prototype (to be done with internal resources, early demo by May 2018, new deadline June 2018, →early demo available on 1st of June 2018, next iteration 29 of June)
- April 2018: software test and validation (to be done with internal resources + additional resources, new deadline to be decided, → work in progress)

Development status

- Data insertion
 - Administrator UI
 - Data upload
 - Machines network
- Sharing and publication
 - Data protection policies
 - Authentication and authorization
 - Synchronization with INFN-PI server
 - Sharing and publication software

Administrator UI

INSIDE DB administration

Home > Insidedb

Insidedb administration

INSIDEDB

Acquisition logs	+ Add	Change
Acquisitions	+ Add	Change
Calibration files	+ Add	Change
Dicoms	+ Add	Change
Patients	+ Add	Change
Phantoms	+ Add	Change
Targets	+ Add	Change
Treatment reports	+ Add	Change
Treatments	+ Add	Change
Users	+ Add	Change

Add treatment

Short description:

Target: +

Dicom images: +

Hold down "Control", or "Command" on a Mac, to select more than one.

- The Administrator UI is a starting solution for data insertion
- The main insertion point is the "**Treatment**" model from the site home
- Treatments and patients have a 1-to-1 relationship: "Target" may be or not a useless model in this scheme
- Each treatment can have one or multiple fractions
- We eventually decided that the fraction DATA model must include all the data acquired with the INSIDE system
- A new model will be added for simulated data and analysis
- DICOM data files from a single folder will be uploaded in batch
- Other minor modifications as discussed in the last t-con with EF, FP and AS

FRACTIONS

SHORT DESCRIPTION	FRACTION TYPE	DATE FRACTION	DOSE DELIVERY DATA	TPS DATA DIR	DELETE?
<input type="text"/>	monoenergetic	Date: 2018-06-18 Today 📅 Time: 18:39:47 Now 🕒	Choose File No file chosen	Choose File No file chosen	
+ Add another Fraction					

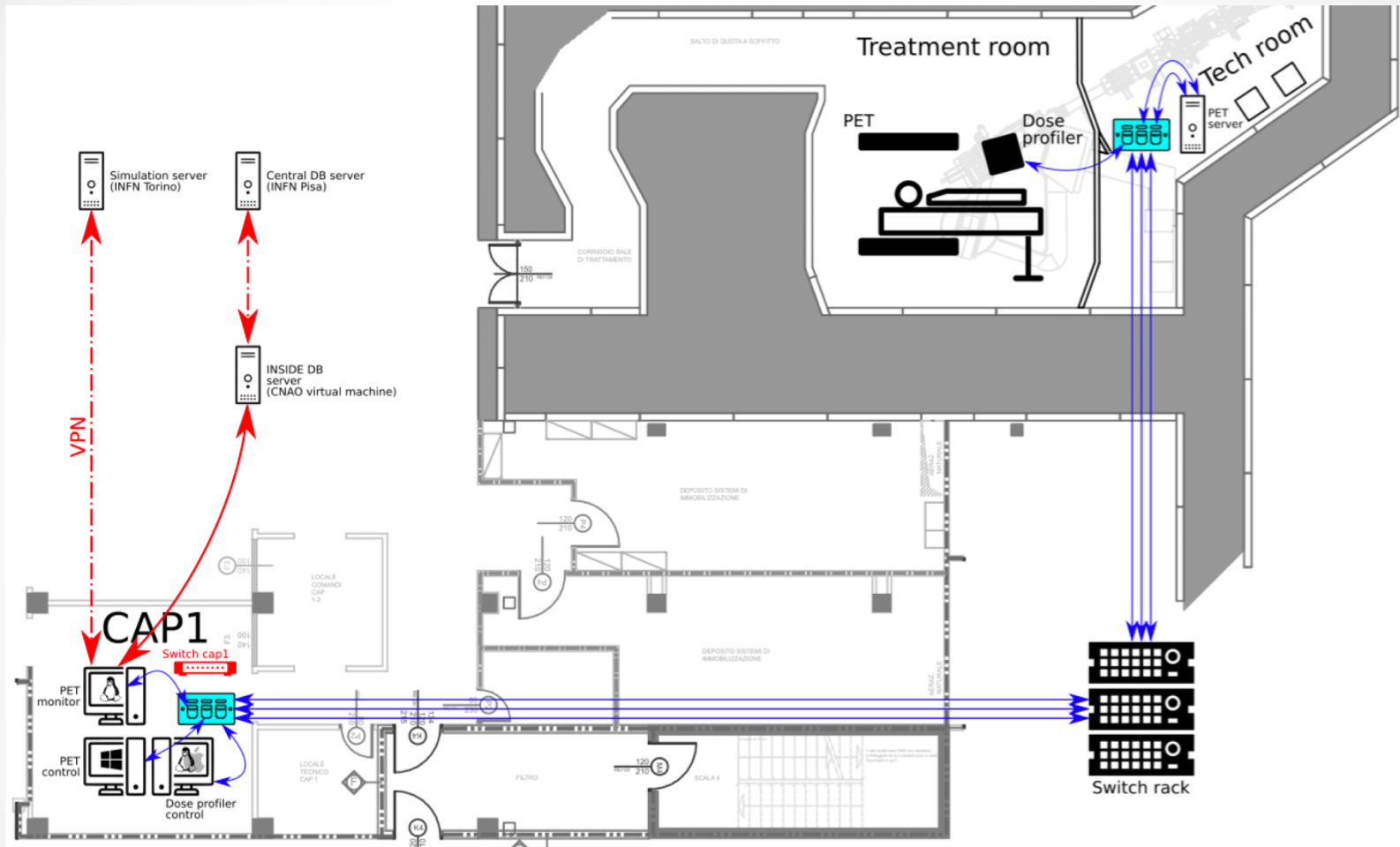
ACQUISITIONS

SHORT DESCRIPTION	ACQUISITION TYPE	TEMPORAL START	TEMPORAL LENGTH	CALIBRATIONS	ACQUIRED DATA	DELETE?
<input type="text"/>	measured	<input type="text"/>	<input type="text"/>	Test calibration 1	Choose File No file chosen	
+ Add another Acquisition						

Data upload

- All the data is gathered in a single folder with the following structure:
 - NewAcquisition
 - DDS
 - DP
 - PET
 - NewAnalysis
 - PET
 - NewCalibration
 - NewSimulation
 - NewPatient
 - Boost
 - Treatment plan
 - Re-plannings
- The UI will facilitate upload of multiple files from a single folder (useful, e.g., for DICOM)
- Folder recursion is not technically possible
- Whenever needed, we will use an external zipping utility and upload the zipped folder

Machines network



- Blue arrows are pseudo-point-to-point connections through a fast switch located somewhere in between the tech and CAP1 rooms
- Red arrows need to be confirmed

Data protection policies

- New sections have been added to the project specification document, as asked by CNAO, including:
 - Computing resources
 - An implementation proposal for access control security (to be further discussed, see next slide)
 - Data security (supported by GARR-CERT)
 - Data transfer between CNAO and INFN-PI (to be further discussed)
 - DICOM anonymization tool + description of sensitive data removed from the patient's DICOM files

Authentication and authorization

- In the current proposal (to be revised with CNAO)
 - Authentication and authorization will be done at application level (OSI-7), i.e., using https connections (Apache 2) + database user management (Django-based app)
 - The user will have to provide https credentials to the proxy + database credentials to our custom developed software
 - HTTPS encryption will be handled by INFN IT staff by setting up a proxy which loops back to our database software inside the private INFN LAN
 - DB user management will be designed by us and will be used to assign different roles to each user
- The encryption standard at the proxy level is X.509 (state of the art)

Synchronization and sharing

- We are developing a fully custom UI for data collection and submission to the central server at INFN-PI
- This UI and its back-end software require all the security policies to be satisfied, which may impact also the way of implementing its features
- This process will require more time, therefore, synchronization and sharing will not be ready when the clinical trial will start

Schedule for the next two months

- End of June next iteration of the Administrator UI with batch file upload
- End of June agreement with CNAO on the internal network resources
- Mid-July agreement with CNAO on the security policies for data transfer to INFN-PI
- Mid-July first prototype of the custom UI with data submission within a same LAN
- End of July (depending on support from INFN IT staff!) first prototype of remote back-end server