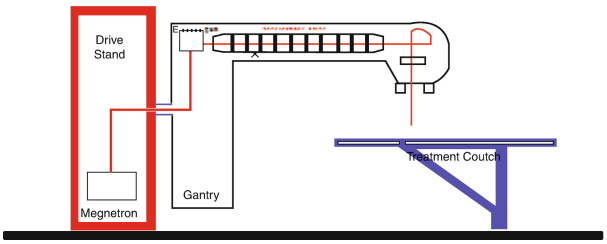
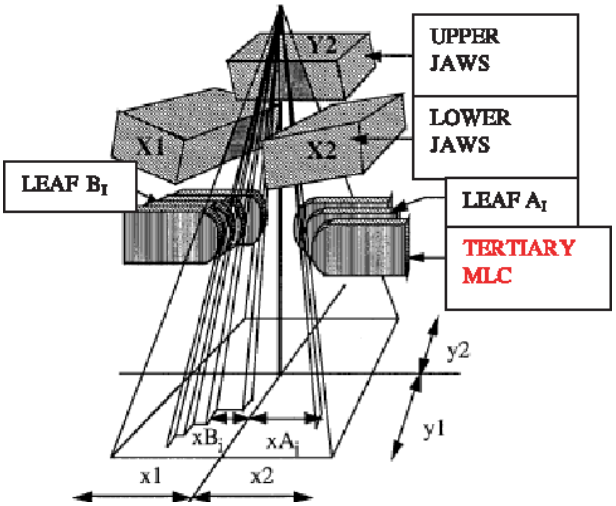
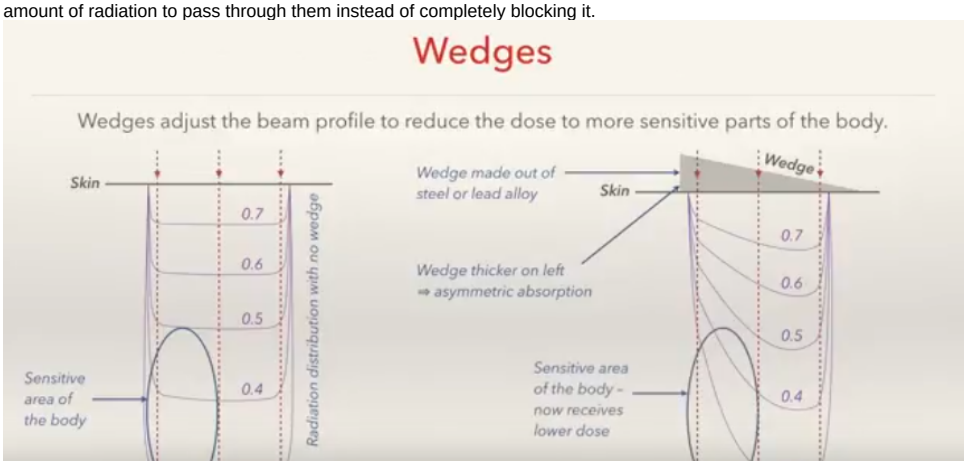
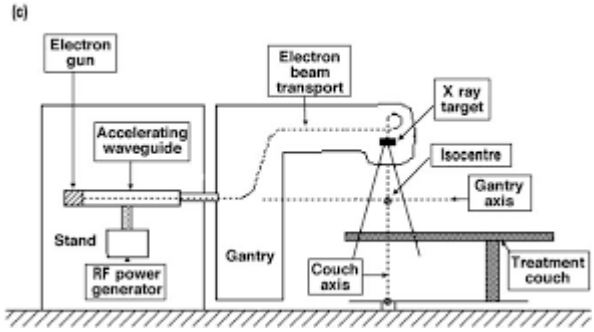
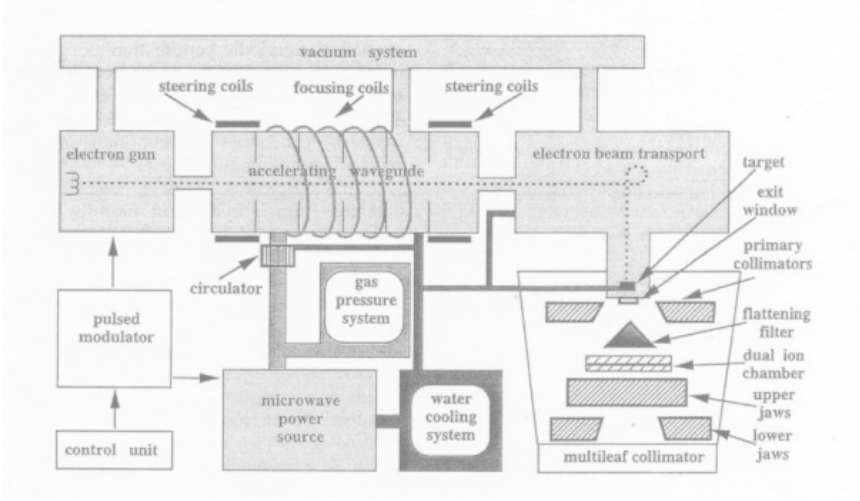
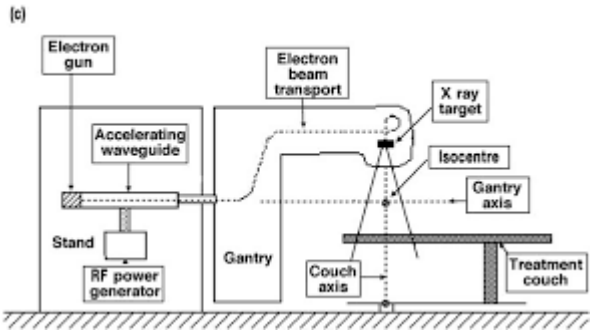
Parameter Information

I thought it might be good to document some of the domain knowledge we have learned while developing so far. A lot of the difficulty is in understanding these parameters rather than the code for extracting them, so it will help new/future developers a lot. So, the audience is future developers like us who don't know about radiotherapy. Some parameters remain incomplete as of the end of the last sprint, so they do not have any information. Some parameters have a standard reference on innolitics dicom standard browser, but more complex parameters do not.

User Story ID	User Story	Parameter Name	Description	Further resourc
07	(Parameter) I want to know the angle of the machine gantry	Gantry Angle	Gantry is a part of the radiotherapy machine which holds the components used to generate and shoot the radiation beam.  It can be rotated in a circle over and under the treatment couch in the diagram above; what we are finding is the angle that is is rotated to.	innolitics
08	(Parameter) I want to know the angle of the beam limiting device (aka collimator)	Collimator	Collimators are metal blocks which block radiation. By default the beam has a certain size and shape, however treatments might require a smaller beam or particular shape. In the diagram below, the jaws are collimators, and the "Teritary MLC" (containing multiple leaves) is also a collimator.  Multi-leaf collimators (MLC) consist of multiple smaller blocks of metal combined to give more granular control over the end beam shape.	innolitics
09	(Parameter) I want to know the SSD (source to skin distance)	SSD	The distance from the beam source to the skin of the patient. In the collimator diagram above it would be the peak of the beam pyramid to the imagined skin of a human below.	innolitics
10	(Parameter) I want to know the total amount of radiation dose planned	Prescription Dose	Radiation dose in Grays (Gy) to be applied to the target location	innolitics

11	(Parameter) I want to know the number of fractions the dose will be split up into	Number of Fractions	Associated with Prescription Dose. Sometimes the dose is split into fractions. e.g. a 50 dose with 25 fractions means the patient will get 25 doses of 2 Gy.	innolitics
12	(Parameter) I want to know the wedge angle (s)	Wedge Angle	Like collimators, wedges are metal blocks used to partially block the radiation beam. However, they allow a reduced amount of radiation to pass through them instead of completely blocking it.  The wedge angle refers to the angle of the wedge diagonal against the skin.	youtube video innolitics
13	(Parameter) I want to know the machine energy	Energy	Energy refers to the level of electrical energy in megavolts (mV) that is used to accelerate particles. This energy would come from "RF Power generator" in the diagram below. 	innolitics
14	(Parameter) I want to know the fluence mode of the radiation beams	Fluence Mode	For this project, the client particularly wished to know whether the Machine Energy (above) is Flattening Filter Free or not. This is optionally captured in the Fluence Mode according to DICOM standard. Flattening Filter is shown in the diagram below (lower right corner). 	innolitics Introducti of this pa introduce FFF

15	(Parameter) I want to know the field size of the radiation beam	Field Size	Collimator jaws are square, and will shape the beam into a smaller or larger rectangle. The size of this rectangle is the field size, which we are retrieving as (X centimeter, Y centimeter) pairs. For this project, fields of multi-leaf collimators are not considered. The shapes would become more complex with MLC.	innolitics
16	(Parameter) I want to know the modality of treatment [imrt, vmat, 3dcrt, dcat, tomo, f-cone, hyp-arc, g-knife]	Modality	Modalities are names for some of the methods of treatment. For the current state of the project we are interested in differentiating IMRT and VMAT for cases 6-8 in the truth table. We have been told by the client that IMRT uses 5 static gantry positions, whereas VMAT has a moving gantry(hundreds of positions).	-
17	(Parameter) I want to know the isocenter point (i.e. where the gantry, collimator and couch axis align)	Isocenter	 The isocenter is the intersection of various axis of rotation in the machine, labeled in the diagram above (mid-right). For the purposes of the client, it should be specified as the body part that is located at the isocenter. e.g. Soft Tissue, Spine, Lung or other 'structures' defined in a RT structure file.	-
19	(Parameter) I want to know the prescription point (i.e. where the radiation dose will be applied) using its supplementary information	Prescription Point	The point where the radiation dose is to be applied. Should be specified as a structure in a RT structure DICOM file.	-
21	(Parameter) I want to know the override using its supplementary information	Override	n/a	

23	(Parameter) I want to know the measuring points /beam names using its supplementary information	Measuring Points/Beam Names	n/a	
25	(Parameter) I want to know the couch using its supplementary information	Couch	n/a	
26	(Parameter) It would be useful to also find the value of the meterset	Meterset	Also known as monitor unit, or MU. see wikipedia page for some common definitions.	