**Create PresentationContext-Class tailored to each Perspective**Priority : 8 ID: 21230 Status :Accepted!Create PresentationContext-Class tailored to each Perspective
\* define a class specifically for each perspective
\* avoid inheritence : composition over inheritence
\* create perspective specific listeners
\* Newly created PresentationContext classes are instantiated and assigned to a Perspective in PerspectiveHelper

**Instantiate perspectives through ApplicationModel and not snippets**Priority : 8 ID: 21137 Status :Refined!1 Instantiate perspectives through ApplicationModel and not snippets
\* Depending on [ISSUE:21136]
\* Currently these are instantiated through snippets. This should be removed.
\* Instead instantiate the perspectives when ApplicationModel is started
\* Perspectives will contain their window layouts, but otherwise be empty until a treatment is selected
\* (?) \_\_Question\_\_ : when a treatment is selected, then a change is published to the perspectives through the service. Should all parts then be populated or just those belonging to the currently selected perspective?
\*\* Since perspectives are already open, listeners are listening to changes to the treatment -> all parts are populated at the time the treatment changes
\*\* OR populate perspective when switching to specific perspective, deactivate all the others -> no listener for selected treatment needed
\* Why?
\*\* At the moment, perspectives are disposed every time a treatment changes, this is resourceful since all UI elements have to be disposed and reinstantiated when opening a new treatment
\*\* With the proposed solution, UI elements are not disposed everytime the treatment changes, but listen to the changed content

**Update perspectives in reaction to treatment change**Priority : 8 ID: 21138 Status :Refined!1 Update perspectives in reaction to treatment change
\* Depends on [ISSUE:21136]
\* Register to treatment selection topic in specific perspective IEclipseContext
\* Handle lifecycle of CacheContext (dispose when treatment selection changes)
\* Handle change of treatment in all perspective related contexts (e.g. PartContexts) on the perspective IEclipseContext

**Improve Resource management**Priority : 8 ID: 21232 Status :Refined!1 Improve Resource management
\* trigger to clean up should be closing an open patient on a new patient load
\* add functionality to dispose objects from object store
\* handle disposal of resource intensive (vtk) objects
\* investigate whether this can be an asynchronous process

**Database update process**Priority : 8 ID: 21129 Status :Unrefined!1Database update process
!2 Tool evaluation
\* (?) Can diff scripts be generated independently of sql dialect
\* looking for a tool which can perform following tasks:
\*\* automatic generation of migration scripts
\*\* automatic setting of database version
!2 Database versioning
\* do not complete until tools have been evaluated
\* introduce Database versioning without entity
\* directly with sql commands in setup
\* EntityManager check valid version compatibility using sql query

**Add setup to IDE virgo plan**Priority : 7 ID: 21199 Status :Accepted!1 Add setup to IDE virgo plan
\* use propoerties file for switching configurations
\* add spring nature to setup bundle
\* make setup launchable through virgo

**Experiment with eclipse rcp TT**Priority : 7 ID: 20273 Status :Refined!!!Experiment with eclipse rcp TT
[https://www.eclipse.org/rcptt/documentation/userguide/getstarted/]
\* works quite well .
\* was not able to connect it to FTPP. Only to a 'normal' eclipse ide.
\* possibly to do with the login screen.
[https://www.eclipse.org/forums/index.php/t/1068163/]

**Seperate GridData from DataArray to speed up access of information about grid**Priority : 7 ID: 20964 Status :Refined!1 Seperate GridData from DataArray to speed up access of information about grid
\* Grid information and data array are on same hierarchial level in model
\* Change this so that accessing grid parameters does not require full image data.

**Make Parts listen to treatment selection changes**Priority : 7 ID: 21180 Status :Refined!1 Make Parts listen to treatment selection changes
\* Make parts listen to posted root treatment (everywhere where EntityPresentationModel.getEntity() is called)
\* All parts need to be creatable with null treatment because parts will be created before treatment is set when perspectives are modelled in eclipse ApplicationModel and not snippets anymore
\* When finished with everything: get rid of EntityPresentationModel
\* Parts with listener methods must be injected through EclipseContext
\* [WIKIPAGE:325177]
!2 Example :
\* topic is called ApplicationRootEntityChanged
\* Used in Details Part

**(automatize) Mavenize / Jenkinize Database Setup**Priority : 7 ID: 20294 Status :Unrefined!1 (automatize) Mavenize / Jenkinize Database Setup
!2 Problem
\* ftpp-storage (CT blobs) need to be copied manually to other applications
\* These Files are created during DB Setup, which is currently launched from Eclipse IDE
\* check length of database identifiers automatically
!2 Possible Solutions
\* Possible (part) solution
\*\* Create different products for every enviroment (local, DEV, TST, PRD)
\*\* Create maven script to scp files to remote servers
\* Possible (whole) solution
\*\* Do all the above stuff
\*\* Create Jenkins Jobs to run stuff (at least to DEV, because this is done regularly, and DB is copied from DEV when using TST afterwards..)
\*\* How can DB deletion be done?
!2 Advantages
\* Possibility to go back to versions / tags easily
\* Independence of local environment
\* Less error prone (wrong database selection, etc.)
!2 Links
!3 DB Migration
\* [https://flywaydb.org/getstarted/java]
\* [https://blog.codinghorror.com/get-your-database-under-version-control/]
\* [http://erdalkaracade.blogspot.com/2014/03/a-general-approach-to-migrating-emf.html]
\* [https://www.liquibase.org/databases.html] freeware for migration scripts
\* [http://www.eclipse.org/eclipselink/documentation/2.4/jpa/extensions/p\_ddl\_generation.htm#BABHEJJI] eclipselink tables-create-or-extend
\* [https://www.nominet.uk/improving-our-database-deployment-process-for-the-oxford-flood-network/] deployment process with DBs

**Refactor a G2 Model Bundle**Priority : 7 ID: 20344 Status :Unrefined!1 Refactor a G2 Model Bundle
\* Think about a G2 Model Bundle, because Leadmarks and CT Offsets are only used with G2

**Automate pulling GPU docker files to asm/home folder**Priority : 7 ID: 20984 Status :Unrefined!1 Automate pulling GPU docker files to asm/home folder
!2 Current status
\* each user must pull files needed for GPU calculation to their asm/home folder manually so that they can be used on the GPU server when the GPU calculations are performed
!2 Desired status
\* Prefer for this to be either be no longer necessary or automated

**Refactor Wizards**Priority : 7 ID: 21041 Status :Unrefined!1 Refactor Wizards

**Extract configurations from PresentationContext Part III**Priority : 7 ID: 21078 Status :UnrefinedRemove currentDoseLUT (set/get) from PresentationContext & Listener
\* handle setting in show difference
\* should this be a global setting?

**Make sure default values are updated with p2 auto update**Priority : 7 ID: 21084 Status :Unrefined!1Make sure default values are updated with p2 auto update

**Refactor Client/fragment UI monolith**Priority : 7 ID: 21085 Status :Unrefined!1Refactor Client/fragment UI monolith
\* client UI bundle is a monolith and needs to be refactored into multiple bundles

**Send data from app server to GPU server**Priority : 7 ID: 21091 Status :Unrefined!1Send data from app server to GPU server
\* currently the data are retrieved from the database and given to the client, where they are sent to the GPU server for calculation
\* rearrange this so that the data are retrieved by the app server when needed and sent only to GPU server.
\* this reduces number of times data is sent through the network
\* it also reduces memory usage on the client stations .
\\
\* this holds for many different types of data
\* beam data, ct calibration data ,
\* potentially raw CT image data

**Analyse client memory consumption with visual VM**Priority : 7 ID: 21329 Status :Unrefined!1 Analyse client memory consumption with visual VM

**Make Group Size configurable through file on GPU server**Priority : 6 ID: 21098 Status :Refined!1Make Group Size configurable through file on GPU server
\* tweeking the group size can improve performance
\* make these parameters configurable to allow experimentation and optimisation

**Version check on start up**Priority : 6 ID: 19885 Status :Unrefined!!!Version check on start up
\* Perform a check on start up of a client to see if it is compatible with the current version of the server
\* Extend this check to see that the client and server combination is also compatible with the database model version

**Stress Tests on medium scale: Power Users simultaneously**Priority : 6 ID: 19999 Status :Unrefined!!!Stress Tests on medium scale: Power Users simultaneously
\* Organise all power users to access and run FTPP simultaneously to try to provoke conflicts on the server and measure its robustness

**Move constants/configurations to config file**Priority : 6 ID: 20411 Status :Unrefined!!!Move constants/configurations to config file
\* Constants e.g. DVH bin size
\* Configurations, e.g. algorithm extensions

**Database indexing for look up speed**Priority : 6 ID: 20629 Status :Unrefined!1Database indexing for look up speed
\* indentify slow transactions
\* identify candidates which can benefit from indexing
\* index them in ecore model

**Reuse CalculateFieldJob in Setup**Priority : 6 ID: 20693 Status :Unrefined!!! Reuse CalculateFieldJob in Setup
\* Reuse CalculateFieldJob in Setup
\* Use in plugin test

**Mechanism to show / store (in memory) warnings / errors and propagate them to QA reports**Priority : 6 ID: 20908 Status :Unrefined!1Mechanism to show / store (in memory) warnings / errors and propagate them to QA reports

**Cancelable Application Exit**Priority : 5 ID: 20341 Status :RefinedWhen exiting the FTPP Client using the cross in the title bar, a save dialog is opened (ApplicationShutdownAddon.java) but the 'Quit' operation is not cancelable.
\* Find another event, before exiting application (QuitHandler?)
\* Look for an event which allows unsaved changes to be detected on an operating system restart

**Replace createContextMenu (e3) with e4 ApplicationModel**Priority : 5 ID: 20677 Status :Refined!3Replace createContextMenu (e3) with e4 ApplicationModel
\* in SeriesTable
\* in ImptConstraintsTable
\* in OptimizationGroupDefinitionPage
\* in VerificationPreparationTree

**More test patients**Priority : 5 ID: 19683 Status :Unrefined!!! Create more test patients in more diverse states
\* more test patients in different states
{{{
A set of test patient cases typical treatment sites and indication shall be planable in a safe and efficient way with FTPP. This set of test cases shall include at least:
- Opt. techniques: SFUD, SFO, MFO,
- Treatment consisting of multiple series
- Specialities: SIB, patches fields, rescanning, field with centre of field shifted, different normalizations (mean of PTV, techPTV, median?)
- Sites: Head, H&N, Sacral/Cervical Spine, Nasal cavity, CSA, Eye , Others (Thorax, Abdomen, Extremeties)
}}}

**Stress Tests on large scale: Simulate department wide access to server**Priority : 5 ID: 20000 Status :Unrefined!!!Stress Tests on large scale: Simulate department wide access to server

**Avoid double book-keeping between IDE-ftpp.plan - and pom deploy plan definition**Priority : 5 ID: 20742 Status :Unrefined!1Avoid double book-keeping between IDE-ftpp.plan - and pom deploy plan definition

**Move image resources to server e.g. icons**Priority : 5 ID: 20800 Status :Unrefined!1Move image resources to server e.g. icons

**User login to be limited to CPT users**Priority : 5 ID: 21288 Status :Unrefined!1User login to be limited to CPT users
\* adjust login procedure so that the user must be a member of CPT and not PSI

**Create virgo docker image with two plans**Priority : 4 ID: 21124 Status :Refined!1 Create virgo docker image with two plans
\* This is needed to automate / assist database re-build.
\* The dockerized virgo should have two plans
\* A shell script should determine which plan to start by passing an arugment to the application server
\* launches not as product
\* clear / drop in eclipselink insteaed of create schema

**Dicom Connectivity Test**Priority : 4 ID: 19408 Status :Unrefined!!!Dicom Connectivity Test
\* The automated test which runs locally to test the dicom connectivity to Velocity needs to run in the automated test environment

**RMI / SSL encryption for RemoteObject-Connection**Priority : 4 ID: 19702 Status :UnrefinedProblem:
\* By now only the RMI-Registry-Lookup-Connection is secured using SSL/TLS ...
\* Every Method call on remote objects carry the username and password in clear text ...

**Only activate generate steering files button if service is available**Priority : 4 ID: 19819 Status :Unrefined!!!Only activate generate steering files button if service is available
\* requires ability to check SFGen service

**Vtk Structure Actor Cacheing**Priority : 4 ID: 20105 Status :Unrefined!!Problem:
In the current state of FTPP the StructuresViewListener caches the vtkActors of the contours. If one switches the ViewDirection of a NewVtkPart, the structures needs to be recalculated again.
!!Solution:
Move the cacheing of the actors to a shared object (somewhere in VtkPresentationContext)

**Investigate why Java streams do not work on server side**Priority : 4 ID: 20659 Status :Unrefined!1Investigate why Java streams do not work on server side
\* may be related to IDList

**Create own ActiveMQ docker image to not rely on external url**Priority : 4 ID: 21007 Status :Unrefined!1Create own ActiveMQ docker image to not rely on external url
\* Is this still necessary ?
\* Will it be a spike instead?

**Investigate whether Preferences ini-file is updated with p2 update**Priority : 4 ID: 21116 Status :Unrefined!1Investigate whether Preferences ini-file is updated with p2 update

**Replace UI forms with CSS**Priority : 4 ID: 21192 Status :Unrefined!1 Replace UI forms with CSS
\* UI forms is e3 and is outdated
\* find suitable replacement for example CSS
\* understand how much work is necessary to make this change.

**Improve Enum initialization (TypeTypes)**Priority : 3 ID: 20147 Status :Refined!!! Improve Enum initialization (TypeTypes)
!! Problem description
\* TypeTypes have a map
\* The maps are initialised in the main thread
\* Otherwise there is an assertion error "Realm cannot be null"
\\
!! Potential solution
\* Centralise and automate enum initialisation

**Auto Deployment**Priority : 3 ID: 19373 Status :Unrefined!!!Auto Deployment
\*timeline config bundles

**Traffic light display for dependent services**Priority : 3 ID: 19397 Status :Unrefined!!!Traffic light display for dependent services

**Refactoring clean up on code level of Dose Calculation**Priority : 3 ID: 19435 Status :Unrefined!!!Refactoring clean up on code level of Dose Calculation

**Deployment Cleanup - Client P2 Update**Priority : 3 ID: 19721 Status :Unrefined!1 Deployment Cleanup - Client P2 Update
!2 Description
\* After starting a FTPP Client from a local installation, there is a check for new bundles & features
\* These bundles are renewed after every new FTPP release (all the bundles and features are set to the new version)
\* New Features are downloaded and old ones are deleted, new bundles are downloaded but old one remain in the folder
\* A lot of 'old' bundles are found in the client folder
\* There is the concept of garbage collection for P2
\* The specific flag has already been turned on but does not seem to work (not working for E4?)({{{/ch.psi.ftpp.rcp.app/plugin\_customization.ini}}})
!2 Steps to be done
\* Check if garbage collection does work after more releases
\* If not, find another solution
\* see
\*\* [https://wiki.eclipse.org/Equinox/p2/FAQ]
\*\* [http://www.eclipse.org/forums/index.php?t=msg&goto=132454]
!2 Acceptance Criteria
\* Knowledge about P2 garbage collection mechanism
\* Solution how to delete 'old' plugins in client installations

**Deployment Cleanup - Docker Registry**Priority : 3 ID: 19722 Status :Unrefined!1 Deployment Cleanup - Docker Registry
!2 Description
\* At the moment, after every FTPP deploy, a new image is build and published to the docker registry
\* These images contains a lot of data (virgo image is 500+ MB)
\* Old version images are not needed anymore if they are not tagged by a specific environment (ftpp-dev, ftpp-prd, ..)
!2 Steps
\* Find a way to clean the docker-registry and not holding to many 'old' images
\* Possibilities:
\*\* [https://www.johnsonabogados.com/ohermosa/cleanup-docker-registry/src/master]
\*\* [https://github.com/ricardobranco777/registry\_view]
\*\* docker-compose file of docker-registry:
{{{
environment:
- REGISTRY\_STORAGE\_DELETE\_ENABLED=true
}}}
!2 Acceptance Criteria
\* Knowledge about docker registries garbage collection & delete stragety
\* Solution how to deal with 'old' docker registry images

**Deployment Cleanup - Nexus Repositories / Maven artifacts**Priority : 3 ID: 19723 Status :Unrefined!1 Deployment Cleanup - Nexus Repositories / Maven artifacts
!2 Description
\* At the moment, after every FTPP deploy, the new FTPP bundles are sent to the nexus repository manager (maven m2 repositories, client p2 repositories, possibly .m2 directory of cpt-ci)
\* A lot of unused data is saved
!2 Steps
\* Find out which artifacts are stored where (possibly .m2 maven directory of the cpt-ci for the maven artifacts AND in the nexus release or snapshot maven repository)
\* Find a way to tell maven where to store data (distributionManagement in parent pom.xml, repositories in settings.xml, ...)
\* Possibilities:
\*\* Clean nexus with tasks in Nexus UI
\*\* Clean nexus with script over API [https://gist.github.com/oliverdaff/2233777]
\*\* Bring maven to only deploy on nexus repository, or only in filesystem
!2 Acceptance Criteria
\* Knowledge about artifacts locations and what is created in which maven step
\* Solution how to deal with 'old' nexus and m2 repositories

**Consider hierarchical modification context**Priority : 3 ID: 20802 Status :Unrefined!1Consider hierarchical modification context
!2 Problem description
\* FTPP client application has one modification context
\* This modification accumulates with changes until the user triggers a save action
\* Temporary changes made in a dialog should not be part of this (main/parent) modification context in case 'Cancel' is chosen
!2 Question
\* is it worth considering prompting the user to save before opening a dialog ? - This would 'clear' the modification from previous changes.

**Replace listeners with eventbus**Priority : 3 ID: 21231 Status :Unrefined!1 Replace listeners with eventbus
\* VtkContextListener : replace Listener --> e4 eventbus\*
\* CompareListener : replace Listener --> e4 eventbus
\* ISeriesSelectionListener : replace Listener --> e4 eventbus

**Improve configuration of object store**Priority : 2 ID: 20034 Status :Accepted!!!Improve configuration of object store
\* Object store contains a ring buffer which may be overflowing with high number of entities
\* Investigate realstically required object store and re-configure

**Setup infrastructure for tests involving DB**Priority : 2 ID: 19624 Status :Refined# Setup in memory DB
# Generate sample data blobs (in binary files) to avoid calculation in setup
# Bring DB initializer up to date (Patient, Treatment, PlanningDataSet, Plan, Fields etc.)
# Apply DB initialzer to in memory DB
# Initial use-case test locking process (use locking service to lock a plan and test if all required entities are locked)
# Test cascade delete on entity cleanup

**Test database indexing on patient search query**Priority : 2 ID: 20747 Status :Refined

**Live Entity Handling**Priority : 2 ID: 19322 Status :UnrefinedLive Entity Handling

**Docker registry on continuous integration server**Priority : 2 ID: 19454 Status :Unrefined!!!Docker registry on continuous integration server
\* with user and password
\* with secure registry
\* TLS certificate
\* nexus not working with insecure registries

**Define automatic tests of a full plan**Priority : 2 ID: 19477 Status :Unrefined!!!Define automatic tests of a full plan
!! Additional information
\* Commissioning tests for Gantry3 are defined [here | DOC:248381]
\* Example of annual psiplan QA tests, which are candidates for UnitTest automation is available on G-Disk (and attached)
{{{G:\ASM\_Groups\_Users\Groups\Medizinphysik\QA\Gantry 2\Yearly\2016\System\_release\June\reports\YQA-7370\_results\_june2016.xls}}}

**Testing of configuration management**Priority : 2 ID: 19480 Status :Unrefined!!!Testing of configuration management
\* test that different bundles (PRD, DEV , TST ) work to configure different types of deployment
\* This needs different test systems to be available.

**Investigate Nexus**Priority : 2 ID: 19482 Status :Unrefined!1 Investigate Nexus
!2 Starting point
\* The configuration of Nexus (different repositories) is currently not stored which means that when setting up a new server, all configuration has to be done manually
\* There is no user handling (one user)
\* There is no TLS
!2 Possible steps
\* Nexus into Docker or Nexus configuration export?
\* add different users with different rights
\* SSL key for TLS

**First dose distribution reference test**Priority : 2 ID: 19523 Status :Unrefined!!!First dose distribution reference test
\* move setup code into a test bundle
\* revise set up code in test bundle to bring test patient up to date
\* trigger this code from the setup bundle and perform the persistence there
\* use these data as a starting point for some initial tests
\* use the dicom imports and exports to evaluate the results of this test
\* initial test : one test dose calculation compared to a previously stored/ exported dose distribution

**Assisted Database migration using Jenkins**Priority : 2 ID: 19715 Status :Unrefined!!!Assisted Database migration using Jenkins

**Deployment Cleanup - Virgo Docker Build should have same image ID with same versions**Priority : 2 ID: 19724 Status :Unrefined!1 Deployment Cleanup - Virgo Docker Build should have same image ID with same versions
!2 Description
\* If a docker image contains exactly the same files in the image build directory, docker recognizes the image build as the same image, so the image IDs are equivalent (no new image is stored)
\* The FTPP virgo build generates all artifacts from scratch for every deploy, so these artifacts have the same content but are not the same files
\* The FTPP publish job deploys a SCM tag, so new artifacts are built and the files differ from the old deployment
\* Because of this, every time a virgo image is built, a new image is created with a different ID, this should not be the case, since the content of these images are equivalent
!2 Steps
\* Possiblities:
\*\* Take the artifacts from the nexus repository (make sure they are only built once for one version - important for SNAPSHOTS)
\*\* Find another way to publish virgo, e.g. by jenkins pipeline, so the images are not built for every deploy, but only tagged
!2 Acceptance Criteria
\* Docker Virgo Images have the same Image ID when contain the same version artifacts

**Investigate Jenkins Jobs**Priority : 2 ID: 19761 Status :Unrefined!1 Investigate Jenkins Jobs
!2 Description
\* Currently, all Jenkins Jobs are implemented using the interface of Jenkins itself (not Jenkins Pipeline)
\* Using the Jenkins Pipeline, it is more clear what is done when, and is easier to maintain because the script can be written offline
!2 Steps
\* Investigate how Jenkins Pipeline works exactly and which benefits there would result from

**Prepare go-live and configurations**Priority : 2 ID: 19902 Status :Unrefined!!!Prepare go-live and configurations
!! Description
\* The productive system (ftpp-prd) has been prepared ready for live clinical releases ([TASK:19762])
\* The configuration is not ready for first clinical release
!! Steps
\* Review configuration and other settings ready to clinical go-live

**Refactor entity class**Priority : 2 ID: 19903 Status :Unrefined!!!Refactor entity class
\* Entity class has grown large and needs refactoring

**Migration SVN to git**Priority : 2 ID: 20296 Status :Unrefined!1 Migration SVN to git
git > SVN
!! separate passwords/credentials/docker-compose.ymls from codebase before migration

**Rebuild VTK for startup speed (part 2)**Priority : 1 ID: 19320 Status :UnrefinedRebuild VTK for startup speed (part 2)

**quick access through web-application**Priority : 1 ID: 19919 Status :Unrefined!!!quick access through web-application

**Refactor Navigator Trees**Priority : 1 ID: 20621 Status :Unrefined!!!Refactor NavigatorTrees
Navigator trees (for planning, comparison, etc perspective), their selection listeners and comparators have become quite cumbersome. Refactoring required