

Setting up your Data collection with GemsTracker

After having arranged a working Gemstracker (GT) environment and a coupled questionnaire environment (e.g. Lime Survey or Open Rosa), you will be ready to set up your data collection together with your GT consultant. Setting up your data collection involves four steps: 1. Build your questionnaires in your questionnaire package 2. Sync the questionnaires to GT and set the characteristics of the questionnaires 3. Built a track using the available questionnaires 4. Deploy your tracks

1. Built your questionnaires

Most documentation on building questionnaires can be found on the site of Lime Survey or Open Rosa

Lime Survey:

- [https://manual.limesurvey.org/How_to_design_a_good_survey_\(guide\)](https://manual.limesurvey.org/How_to_design_a_good_survey_(guide)) (guide)
- https://manual.limesurvey.org/LimeSurvey_Manual
- https://manual.limesurvey.org/Creating_surveys_-_Introduction

After you are done building your questionnaires activate each of your (LimeSurvey) questionnaires separately. Activate the access control by clicking 'Switch to closed-access mode' for each questionnaire. More information can be found here:

- http://gemstracker.org/wiki/doku.php?id=userzone:userdoc:importing_questionnaires_in_gemstracker

Open Rosa:

- <https://enketo.org/openrosa>
- <https://opendatakit.org/> (Open Data Kit uses the OpenROSA 1.0 API)
- <https://bitbucket.org/javarosa/javarosa/wiki/OpenRosaAPI>

2. Sync and set questionnaires

After having activated the questionnaires, they need to synced to GT. This way, they will be available in the GT software so you can set their properties and compose them into tracks. Synchronization is done in the track builder (synchronize all questionnaires). After synchronization, also in the track builder menu you have to set some properties of your questionnaires, such as:

1. Activate the questionnaire in GT
2. Which group of respondents should fill in the questionnaire (Should be a clear group of people with a specific role. E.g. patient, therapist, secretary, or healthcare professional)
3. Whether there are calculations should be performed after the questionnaire is filled in
4. Whether there are special things that need to be done before the questionnaire is filled in (e.g. fill in answers if the questionnaire was filled in by respondent before)

5. Upload a pdf with a paper version of the questionnaire

3. GemsTracker track building form

Now you are ready to build your own measurement tracks with Gemstracker (GT). The tables below will help you specify how your data collection should be structured and help you and your GT consultant to efficiently implement your measurement track in the GT software. First, some core concepts to remember:

- What are tracks? Tracks are sequences of one or more questionnaires that are distributed to respondents at specific points in time.
- What are questionnaires? Questionnaires are a bunch of questions grouped together that are offered to a respondent to be filled in.
- A respondent can be anybody, a patient, a doctor, a nurse, etc. A questionnaire can thus also be a form to be filled in about a patient.
- Every time a questionnaire is offered to a respondent within a track, we call this a round (of the track).

In order to set up your data collection you have to fill in three tables:

1. Provide some basic info about your data collection
2. Specify track fields
3. Specify the rounds contained in your track and how they should be linked together

1. Basic information

Name of your track: e.g. treatment x, study Z, keep it as short and compact as possible and clearly describing what is measured

Goal of the data collection: Shortly describe what the reason is for the data collection. The aims, some requirements and/or constraints.

Valid-from and valid-to date: From which date can the track be assigned to a patient and till what time is this possible. Note that the track can be active long after the last track has been assigned. Asap or unknown at this time is also ok

Organization: For which organization(s) should the track be active? In case you have more than one organization on your GT site, this is important

2. Track fields

Track fields are tags that can be assigned to a track to make them more recognizable during the data collection process and enrich the track with contextual information. For instance when multiple treatments are performed and for each treatment the same track is assigned, you can tag the track with a track field: 'treatment x' or 'treatment y'. Other examples are track fields that show whether the treatment is primary or recurrent, on left or right side of the body, surgical or conservative, in other words relevant contextual information. Track field information can be exported with the questionnaire answers of your track and thus provide relevant information to filter/ select these answers. On the other hand, track fields are just tags to recognize the track and should be relevant across the whole data collection process. They should not be used to replace information gathered within the questionnaires within the track.

There are several types of track fields:

1. Drop down, single choice: manual input by user
2. Multiple choice: manual input by user
3. Date input: manual input by user
4. Appointment: when appointments

are imported from another system into your GT site, or are created on your GT site you can use the appointment information to fill a track field 5. Activity: consult, control, treatment, etc. Track field belonging to an appointment (only possible if you also have an appointment as a track field first) 6. Procedure: treatment procedure, track field belonging to an appointment (only possible if you also have an appointment as a track field first) 7. Caretaker: the doctor, track field belonging to an appointment (only possible if you also have an appointment as a track field first) 8. Sedation: narc, sedation, plexus, local anesthesia, etc. Track field belonging to an appointment (only possible if you also have an appointment as a track field first) 9. Location: name of clinic, department, etc. Track field belonging to an appointment (only possible if you also have an appointment as a track field first) 10. Free text input: manual input by user

TIP: Always try to make fixed choices (type 2-4), free text input as a last resort. Working with track fields is rather complex, so for now it is only necessary that you make a list of possible track fields that you need and the answer options you need: Name track field type (see list above) answer options (separate options with a semicolon ;) e.g. side multiple choice left; right

3. Rounds

Rounds are the distribution of questionnaires within a track. So in order to build your track you have to specify which questionnaires are offered to whom, when they will be offered and when the questionnaire will be closed. So for every round a valid-from and a valid-to date needs to be specified; the time period the questionnaire will be active/ can be filled in. The nice (or complicated) thing about GT is that these valid-from and valid-to dates can depend on dates either specified by 1. a date as specified in a track field (if available) 2. a previous rounds or 3. from answers to questions filled in in previous rounds. This way you can intelligently link questionnaires (rounds) together to follow a specific study design or healthcare process. Also questionnaires can be used in multiple rounds. First some explanation and an example before you fill in the table below for your own data collection.

Field Description Explanation

Order Number 10....n Order of the rounds, a number used for reference (in the software numbers are automatically assigned)

Questionnaire Name of questionnaire You have built your questionnaires in Lime Survey or another questionnaire package, specify the exact name of the questionnaire (TIP for Lime Survey: keep it a short, clear name, GT uses this name)

Round description Description of the moment the questionnaire is active E.g. Baseline, intake, 6 weeks, 3 months, 1 year, long term follow up, control, treatment day, day3, etc. The Round description is useful information to chronologically order the data collection process, therefore also round description information is also exported with the answers to questionnaires within a track.

Respondent Role or group of person Who fills in the questionnaire? This is set at the level of the individual questionnaire (step 2, p2). Handy here to just get a good overview of what data is collected by whom in the track. Valid from date Source Choose from:

1. Track: a date specified at the track level, for instance, when the track is assigned to the patient, or the date specified in a track field (type: date). 2. Round/ Token: a date specified by the same or a previous round (give round order number). The date can be the valid-from, the valid-to date or the date the previous round (the questionnaire) was filled in (the submit date). 3. Answer: a questionnaire in a previous round can contain a question in which a date is filled in.

Specification 1. Track: specify the date, and if needed add or subtract days, weeks, months

2. Round: Specify round number and either specify the valid-from, the valid-to date or the date of the same or the previous round (the questionnaire) was filled in. If needed also specify added or subtracted days, weeks, months. 3. Answer: specify which round (number and questionnaire name) and which question contains the date. If needed also specify added or subtracted days, weeks, months. TIP: if you add or subtract an amount of time use the same unit across all rounds for valid from and valid to dates. So either days or weeks or months, do not mix. Valid to date Source Same as valid-from date

Specification Same as valid-from date

Note: for the first round you add to your track, there is of course no 'previous' round. Valid-from date of the first round can thus only be specified at the track level.

Example: Below a track with 6 rounds describing a treatment process of a patient by a doctor and a nurse. Treatment info (round 1) is a small questionnaire, that amongst other questions, has a question about what the date is of the treatment. The questionnaire is filled in by the nurse after the doctor has filled in the medical intake questionnaire (round 2) on the patient and the patient is scheduled for treatment. The patient fills in an effect measurement questionnaire twice before (round 3) and after (round 5) the treatment. To monitor the pain just after treatment a pain questionnaire is send to the patient 1 day (round 4) after the treatment. Also the patient fills in a questionnaire (round 6) on long term outcomes of the treatment (quality of life, satisfaction with result).

Example of a round description of one track: Round order Questionnaire name Round description
Respon- dent Valid from date Valid to date

	Source	Spec.	Source	Spec.
10 Treatment info intake nurse track	When track assigned	track	When track assigned	plus 1 yr. 20
Medical Intake intake doctor track	When track assigned	Answer Round 1, question	treatment date	30
Effect measurement intake patient track	When track assigned	Answer Round 1, question	treatment date	40
Pain day 1 day 1 patient	Answer Round 1, question	treatment date +1 day	Round 4	Valid from date plus 3 days
50 Effect measurement 6 weeks patient	Round 4	Valid from + 6 weeks	Round 4	Valid from + 8 weeks
60 Long term outc. 1 year patient	Round 4	Valid from + 12 months	Round 6	Valid from + 3 weeks

Let's go thru the different rounds and see how the valid-from and valid-to dates are set in order for this track to function properly. Round 1: The treatment info questionnaire is the first round and will be active as soon as the track is assigned to the patient. The questionnaire will remain open for one year (ample time for the treatment to start). Round 2: The medical intake questionnaire will also be active as soon as the track is assigned to the patient. The valid from date is however depend on the answer to the treatment date question in the first round. Round 2 will thus have a valid-to date equal to the treatment date. Note, as long as the nurse does not fill in the treatment date, the Medical intake questionnaire will remain open. Round 3: Same as the medical intake questionnaire the effect measurement questionnaire will also be active as soon as the track is assigned to the patient. The valid-to date will also be equal to the treatment date, which is good as round 3 quantifies baseline health status. Round 4: Pain is assessed one day after the treatment, the valid from date is thus equal to the answer to the question in round 1. The valid-to date is the valid-from date from the same round

(the day the questionnaire became active) plus three days. Round 5: The effect measurement questionnaire is offered again 6 weeks after the treatment. The valid-from date is 6 weeks after the valid from date of round 4. In fact, the questionnaire thus opens 6 weeks plus one day after the treatment. The valid-to date is 8 weeks after the valid-from date of round 4. The questionnaire will be active for 14 days. Round 6: The long term outcome questionnaire is active 12 month after the pain questionnaire became active and will remain open for 3 weeks. Note that round 4, 5, and 6 are not offered to the patient if the treatment date is not set in the questionnaire of round 1. The reason Treatment info questionnaire is set as round one is because the valid-to date of subsequent rounds can then depend on this round, while the valid-from date of round 1,2 and 3 are the same.

Below you can fill in the description of the track of your study or data collection: Roundorder
Questionnaire name Round description Respon-dent Valid from date Valid to date

	Source	Spec .	Source	Spec .
10				
20				
30				
40				
50				
60				
70				
80				
90				
100				
110				
120				

If you have questions about filling in this form please contact your GT consultant.

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