

UNIVERSITY
OF TWENTE.



TIIM

USER MANUAL

**THE
BMS
LAB**

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1. Before you start

Before using TIIM:

- Make sure your study meets the BMS Lab requirements.
- Register your request with the BMS Lab and provide ethical approval.
- Make sure you have considered how your research data will be collected, stored and processed.

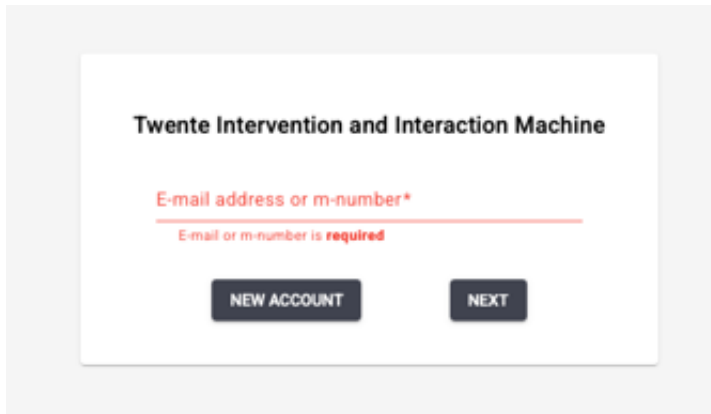
How to register your project:

1. Go to the **BMS Lab Request Registration** on the lab's website.
2. Select **Register your request**.
3. Log in with your UT account. Do not have a UT account? Please let us know.
4. Select **Create New Request**.
5. Complete the registration form.
6. Attach your ethical approval with positive advice by reviewer.
7. Under BMS Lab software needed, select **TIIM**.
8. Submit the request.

After approval, you will receive an email with directions on how to make an account on the Dashboard.

2. Create your Dashboard account

1. Open the Dashboard.
2. Select **New Account**.



Twente Intervention and Interaction Machine

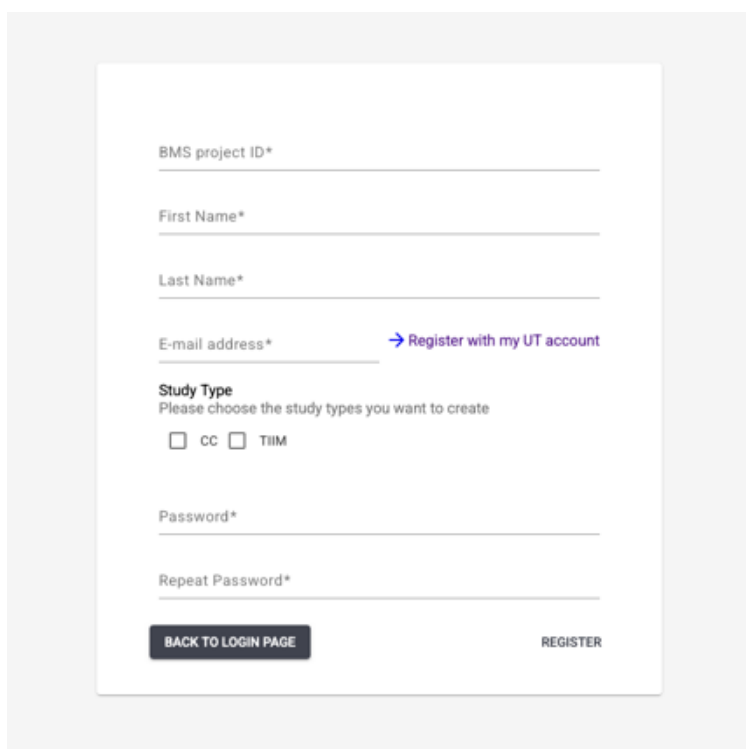
E-mail address or m-number*

E-mail or m-number is **required**

NEW ACCOUNT NEXT

3. Enter the request number you received during the request registration.
4. Enter your details.
5. Select **TIIM** as the study type.
6. Choose a password.
7. Submit your request.

Your account request may take up to 5 working days to process.



BMS project ID*

First Name*

Last Name*

E-mail address* → Register with my UT account

Study Type
Please choose the study types you want to create

☐ CC ☐ TIIM

Password*

Repeat Password*

BACK TO LOGIN PAGE REGISTER

3. Understand the TIIM study structure

A TIIM study consists of four levels:

Study → Intervention → Module → Item

Study – Your complete research study.

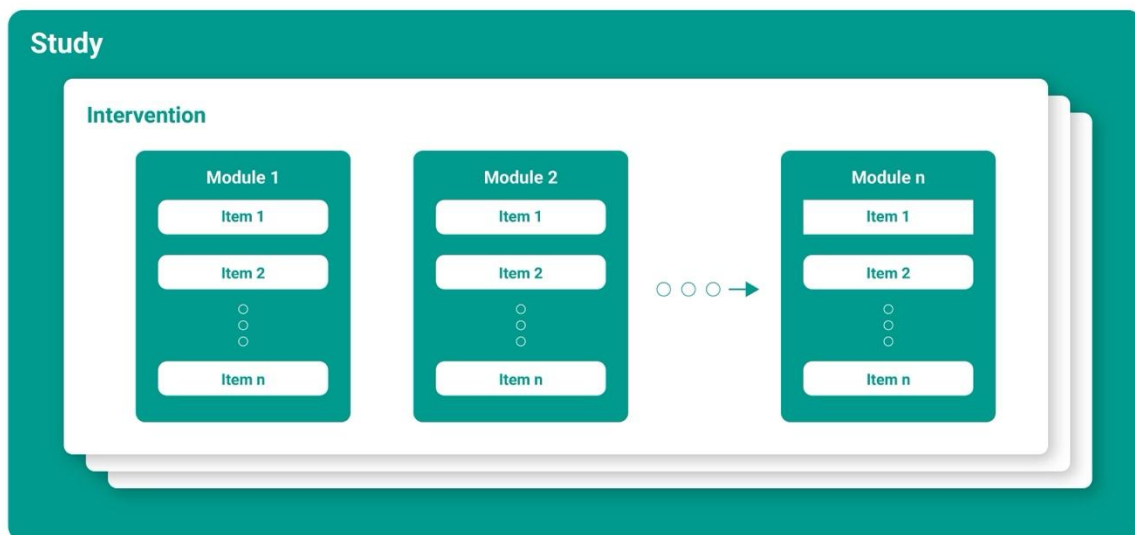
Intervention - A condition or participant group, for example:

- Control group
- Experimental group
- Pre-test
- Post-test

Module – A collection of related questions or activities, for example:

- Baseline questionnaire
- Daily questionnaire
- Mood measurement
- Follow-up questionnaire

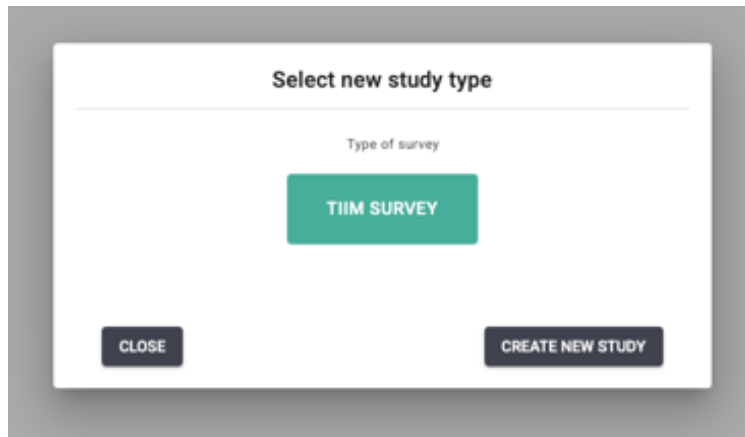
Item – An individual question, instruction, stimulus or activity.



4. Create a study

After your account has been approved:

1. Log in to the Dashboard.
2. Select **Start New Study**.
3. Select **TIIM Survey**.
4. Select **Create New Study**.



5. Enter the study title and description.
6. Select the language(s).
7. Enter the start and end dates.
8. Configure optional features such as:
 - study image
 - study colour
 - biometric data (heart rate, sleep, steps)
 - digital phenotyping (GPS, device battery)
 - e-portfolio

By enabling the e-portfolio, participants will be able to request a link to view their responses on a website, either in a table format for comparison across different dates or as individual entries per instance. Transcriptions of audio recordings can be viewed in the e-portfolio by participants too. The link expires within 7 days.

9. Select **Create Study**.

You can edit these settings later before data collection starts.



< STUDIES

Study Details

STUDIES > CREATE STUDY

Study details

Type of survey

TIIM SURVEY

CAREER COMPASS SURVEY

Study title

Short description

Languages

English

Image or logo

SELECT IMAGE

Study starts at
26-08-2026 09:38



Study ends at
27-08-2026 09:38



Select color of study

- ☐ Use biometric data collection (Google Health Connect & Health Kit)
- ☐ Use digital phenotyping data collection (Battery life & GPS)
- ☐ Allow participants to view answers in e-portfolio mode

5. Create an intervention

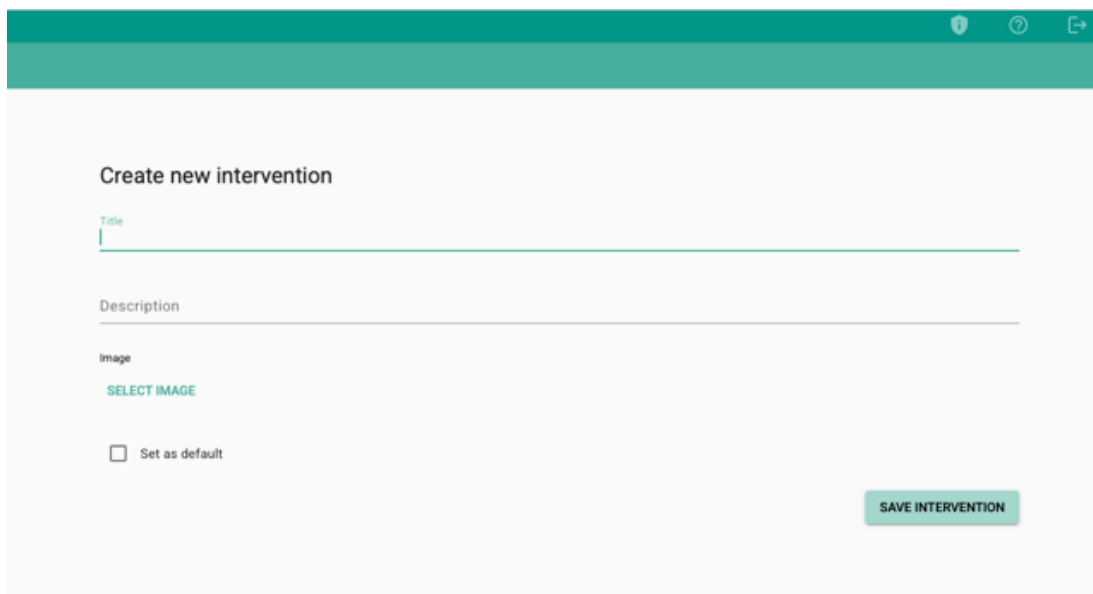
Use interventions when your study has different groups or conditions.

1. Open your study.
2. Select **Interventions** in the left menu.
3. Select **Create the First Intervention** or **New Intervention**.
4. Enter a title, for example *Control Group*.
5. Add a short description.
6. Add an image if required.
7. Select **Save Intervention**.

The title and description are used for organisation in the Dashboard and are not shown to participants.

Default intervention

You can select **Set as default** if participants should automatically be assigned to this intervention.

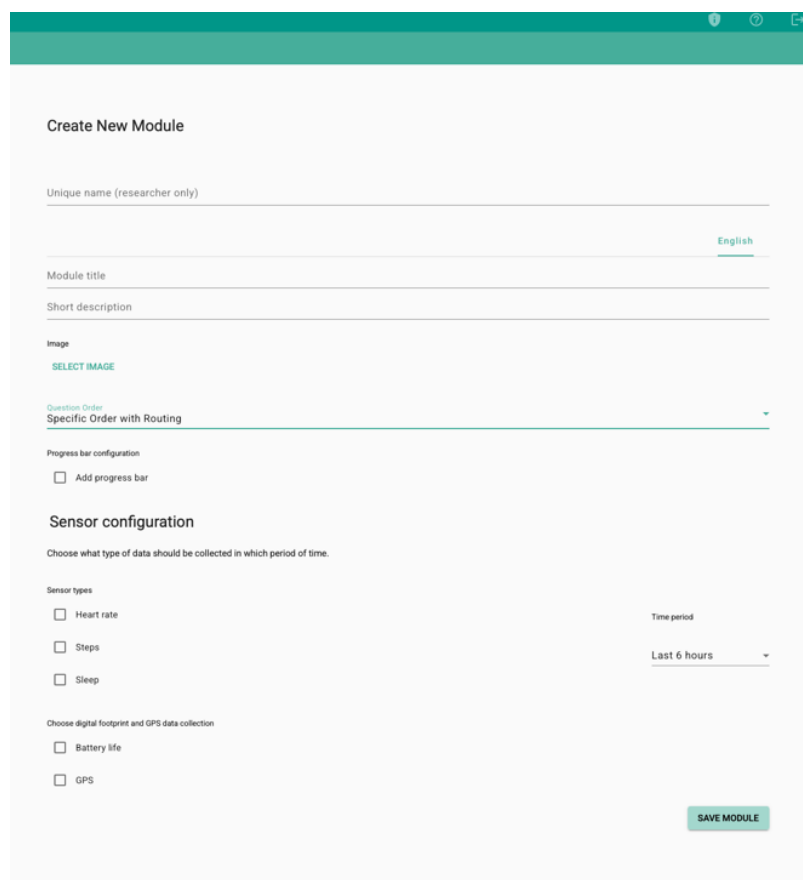


The screenshot shows a web application interface for creating a new intervention. At the top, there is a teal header bar with three icons: a shield, a question mark, and a square with an arrow. Below the header, the main content area is light gray. The title 'Create new intervention' is centered at the top of the form. Below the title, there are three input fields: 'Title' (with a teal underline), 'Description' (with a gray underline), and 'Image' (with a teal underline). Below the 'Image' field, there is a teal button labeled 'SELECT IMAGE'. Below the 'Image' field, there is a checkbox labeled 'Set as default'. At the bottom right of the form, there is a teal button labeled 'SAVE INTERVENTION'.

6. Create a module

A module contains a group of questions or activities.

1. Select **Modules** in the left menu.
2. Select **Create New Module**.
3. Enter a Unique Name.
4. Enter the Module Title and Short Description.
5. Choose how questions should be presented:
 - **Specific order with routing**
Questions follow the order you define.
 - **Randomisation per module**
The questions are shown in a different random order for each participant.
 - **Randomisation per category**
Questions are randomised within categories.
6. Optionally enable a **Progress Bar**.
7. Configure sensor or device data if your study uses this.
 - You can indicate which type of data and for what period you would like it to be collected. The data is collected once the participant sends their answers.
8. Select **Save Module**.



The screenshot shows the 'Create New Module' form. It includes fields for 'Unique name (researcher only)', 'Module title', and 'Short description'. There is a language dropdown set to 'English' and a 'SELECT IMAGE' button. Under 'Question Order', 'Specific Order with Routing' is selected. The 'Progress bar configuration' section has an unchecked 'Add progress bar' checkbox. The 'Sensor configuration' section prompts to 'Choose what type of data should be collected in which period of time.' It lists 'Sensor types' (Heart rate, Steps, Sleep) and a 'Time period' dropdown set to 'Last 6 hours'. At the bottom, there are checkboxes for 'Battery life' and 'GPS' under the heading 'Choose digital footprint and GPS data collection'. A 'SAVE MODULE' button is at the bottom right.

7. Add items

1. Select **Modules**.
2. Open the module you want to edit.
3. Select **Content Items**.
4. Select **Add Module Item**.
5. Choose an item type.

TIIM provides different item types (see Appendix A for detailed explanation):

Item type	Use it for
Single-line input	Short text answers
Multi-line input	Longer open answers
Dropdown	Selecting one option from a list
Yes/No	Simple binary questions
Multiple choice	Selecting from several answers
Number input	Entering a number
Number slider	Selecting a number on a scale
Number dropdown	Selecting a number from a list
Number choice	Choosing a displayed numerical value
Likert scale	Rating agreement, satisfaction, etc.
Statement	Showing instructions or information
Video/Audio	Presenting media to participants
Camera image	Asking participants to take a photo
Audio recording	Asking participants to record audio
Emotion quadrant	Recording an emotional response
Drag and drop	Categorisation tasks
Graph	Showing participants their data in a graph

6. Enter the question, statement or content.
 - If needed, you can use dynamic text to call back other information provided by the participant to personalise the item. For example: their name or answers to previous questions (e.g. *Dear [user-firstname], as you have selected [yes/no], you will be assigned to focus group [number].*)
 - For numerical items, you can mark an item for use in numeric calculations, allowing its response value to be used later in a Calculated Variable.
7. Configure the available options.
8. Check the Preview on the left.
9. Select **Save**.

Statement

Module item

Statement

English

Statement

B I Dynamic text

This is an item.

Description

B I Dynamic text

Image

SELECT IMAGE

Video

English

Button label

CANCEL

SAVE

8. Add routing (optional)

Routing lets you navigate questions based on an earlier action.

For example:

Do you smoke? → No → skip the questions about number of cigarettes.

To add routing:

1. Open the relevant item.
2. Select **Routing**.
 - Routing will only work if there are at least two items following the selected item that the user can be directed towards. Make sure that you have added all items before you start routing.
 - Only use routing when you need conditional questionnaire paths.
3. Select **Enable Routing**.
4. Choose the condition.
5. Enter the value or answer that activates the route.
6. Select which item the participant should continue with.
7. Add additional routes if needed.
8. Select **Save Routing**.

×

PREVIEW

ROUTING

Route 1

If

1. This is an item.

is equal to

Your answer here...

Jump to

3. This is an item.

+

ADD ROUTE

Otherwise, jump to

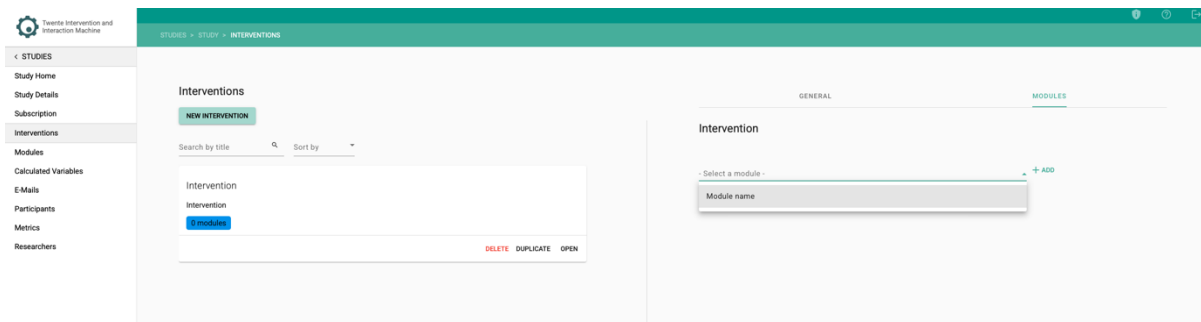
3. This is an item.

SAVE ROUTING

9. Add modules to an intervention

Creating a module does not automatically add it to an intervention.

1. Select **Interventions**.
2. Open the intervention.
3. Select the **Modules** tab.
4. Choose a module from **Select a Module**.
5. Select **+ Add**.
6. Repeat for any additional modules.



10. Calculated variables (optional)

Calculated Variables allow TIIM to calculate a value based on participants' answers to numerical items. You can use mathematical operations and conditions to create scores or other derived values (see detailed explanation in Appendix B).

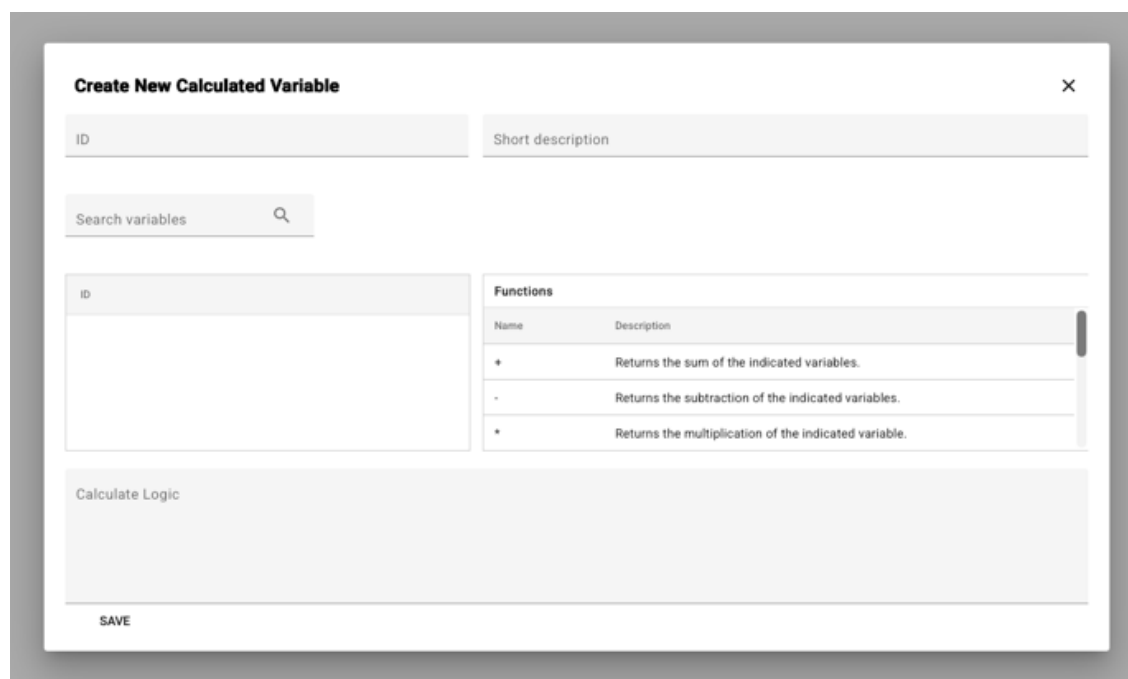
For example, you could:

- calculate a total or average score from several questionnaire items;
- create a score based on participant responses;
- use the calculated value to provide feedback to participants;
- use a calculated value as a condition for opening a module.

To create one:

1. Select **Calculated Variables** in the left menu.
2. Create a new calculated variable.
3. Give it a clear name (**ID**) and a short description.
4. Select the numerical items you want to use.
5. Drag and drop the ID (i.e., calculation names) and functions to the **Calculate Logic** field. You can also type it manually in the **Calculate Logic** box.
6. Save the variable.

Once created, the calculated variable can be used elsewhere in the study, for example in **Timing Rules**.



The screenshot shows a 'Create New Calculated Variable' dialog box with a close button (X) in the top right corner. It contains the following elements:

- ID** and **Short description** input fields at the top.
- A **Search variables** input field with a magnifying glass icon.
- A list of **Functions** on the right side, including:

Name	Description
+	Returns the sum of the indicated variables.
-	Returns the subtraction of the indicated variables.
*	Returns the multiplication of the indicated variable.
- A large **Calculate Logic** text area at the bottom.
- A **SAVE** button at the bottom left.

11. Decide when modules become available

By default, modules become available when the intervention starts.

Use **Timing Rules** if a module should open or close at a particular time or under a particular condition.

1. Open the intervention.
2. Open the **Modules** tab.
3. Select the **timer icon** next to the module.
4. Select **Enable Timing Rules**.
5. Choose what you want to control:
 - **Open Module**
 - **Close Module**
 - **ESM Module**
 - **On demand Module**

A simple way to decide is to ask: What should determine when this module becomes available?

What you want	Timing Rule
Open X hours/days after the participant starts	Relative time after intervention started
Open X hours/days after another module is completed	Relative time after a module has finished
Open depending on an earlier answer	Based on an answer in a module item
Open for everyone on the same date	Fixed date
Open depending on a calculated score of past answers*	Based on a calculated variable
Close depending on an earlier answer	Based on an answer in a module item
Close for everyone on the same date	Fixed date
Give participants only X hours after starting a module	Relative time after module started
Repeat a module on specific calendar dates	ESM – fixed date
Repeat according to each participant's own start time	ESM – relative to intervention start
When the participant needs one	On demand

* Before you can use this Timing Rule, you first need to create the required variable under Calculated Variables in the study menu.

6. Select the timing rule.
7. Enter the required settings.
8. Select **Save**.

Examples include:

- open a module two days after the intervention starts;
- open a module after another module has been completed;
- open a module on a fixed date;
- open a module depending on an earlier answer;
- close a module after a specified period;
- repeatedly make an ESM module available.

You can combine multiple conditions if necessary.

The screenshot displays a configuration window titled "Module name" with a teal header and a close button (X). Inside, there are two tabs: "Timing Rules" (active) and "Notifications". Under the "Timing Rules" tab, there is a section for "Timing rule 1" with a dropdown menu. The dropdown is open, showing four options: "Open module" (selected with a blue checkmark), "Close module", "ESM module", and "On demand module". To the right of the dropdown is a text input field with the placeholder "Select a type of open rule" and a red close button (X). Below the dropdown, there is a green button labeled "ADD CONDITION". In the center of the rule configuration area, there is a green button labeled "ADD TIMING RULE". At the bottom right of the window, there is a green button labeled "SAVE".

12. Configure notifications

Notifications can remind participants that a module is available.

1. Open the module's **timer settings**.
2. Select **Notifications**.
3. Choose the type of notification (**open or reminder**).
4. Configure what it should state and when it should be sent.
5. Save the notification.

Participants must have the app installed, be logged in, and push notifications must be enabled in the app and on their device for notifications to work.

The screenshot shows a 'Module name' dialog box with a teal header and a close button (X). Inside, there are two tabs: 'Timing Rules' and 'Notifications'. The 'Notifications' tab is active. Below the tabs, there's a section for 'Open Notification' with a dropdown arrow. A language selector shows 'English'. The main text area contains the following instructions: 'When the module becomes available for the participant, a open notification will be sent. If you want to add custom text to the open notifications, fill in the details below. Otherwise leave blank.' Below this is a text input field labeled 'Open notification text in English'. At the bottom right of the dialog is a 'SAVE' button. A red 'X' icon is visible in the top right corner of the notification configuration area.

13. Prepare participant enrolment

Before participants can join the study, configure the Subscription section.

1. Select **Subscription**.
2. Enter the title participants will see.
3. Set the subscription start and end dates.
4. Select **Save**.

TIIM generates an:

- enrolment/voucher code, and
- QR code.

You can share either of these with participants.

You must create at least one information page before the enrolment code will work.

The screenshot shows the 'SUBSCRIPTION' configuration page in the TIIM system. The breadcrumb trail at the top is 'STUDIES > STUDY > SUBSCRIPTION'. The page has two tabs: 'GENERAL' (active) and 'PAGES'. Below the tabs, there is a 'Subscription page title' field. Two date pickers are visible: 'Subscription opens' set to '26-08-2026 09:39' and 'Subscription ends' set to '11-01-2030 00:00'. The main section is titled 'Enrolment Codes' with the instruction: 'These voucher and QR-codes are enrolment codes. Share these codes with participants, such that they can enrol for your study.' It displays a 'VOUCHER CODE' 'hROXi' and a QR code. A link 'Download QR Code as Image' is located at the bottom right of the enrolment codes section.

14. Create participant information pages

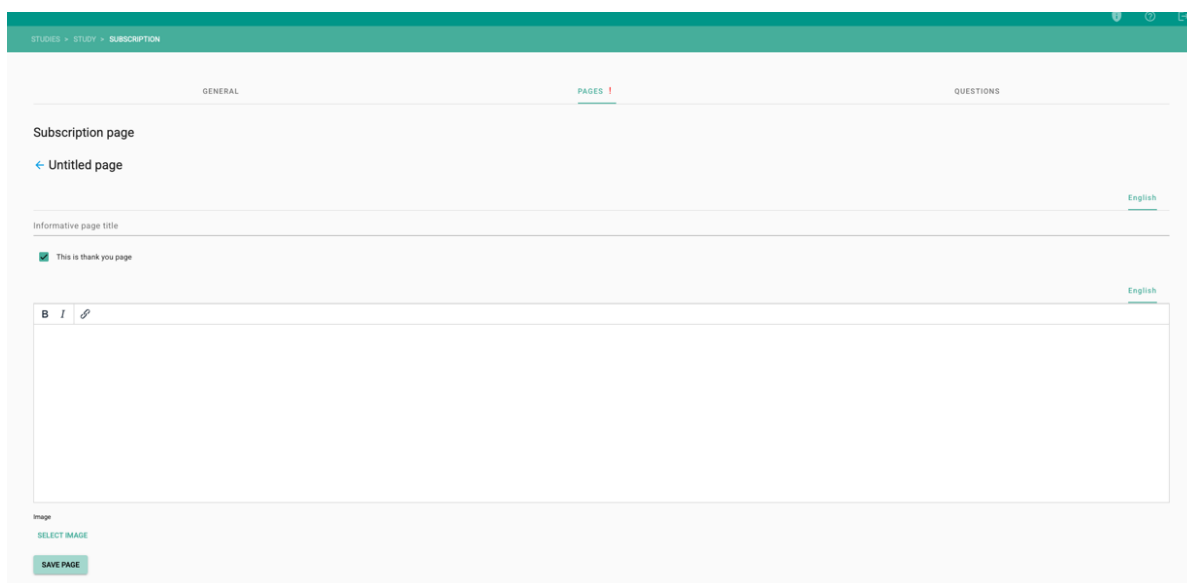
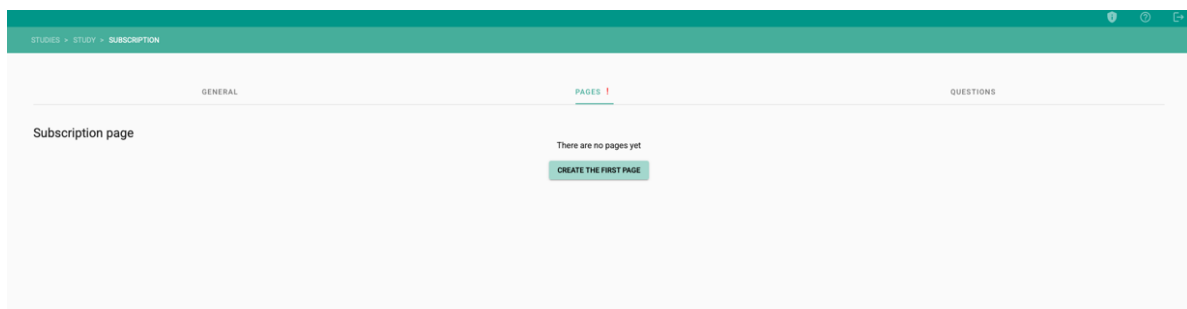
Use pages for information participants should see when joining the study, such as:

- welcome information;
- instructions;
- study information;
- ethical or consent-related information;
- a thank-you message.

To create a page:

1. Open **Subscription**.
2. Select **Pages**.
3. Select **Create the First Page**.
4. Enter the title.
5. Enter the text.
6. Indicate whether it is an **informative page** or a **Thank You Page**.
7. Select **Save Page**.

You can add additional pages with the + button.



15. Add screening questions (optional)

Screening questions can help you determine whether a participant is eligible or which intervention they should join.

1. Open **Subscription**.
2. Select **Questions**.
3. Select **Add Module Item**.
4. Choose a question type.
5. Enter the question-and-answer options.
6. Select **Save**.

Screening questions are optional, and their **answers cannot be downloaded**.

Please choose a module item



17. Emails

In the **Emails** section of the Dashboard, you can prepare the emails sent when a participant starts the study or is rejected. These emails are sent after you assign or reject the participant.

1. Open **Emails**.
2. Under **Study starts**, enter the **email subject** and **content** that participants should receive when they are assigned to an intervention.
3. Under **Participant is rejected**, enter the **email subject** and **content** participants should receive if they are rejected from the study.
4. Select **Save**.

The emails are sent from the **BMS Lab email account**, but participants see the email as coming from the researcher who created the study and can reply to the researcher.

The screenshot shows the 'Emails' configuration page in the BMS Lab dashboard. The page has a teal header with the breadcrumb 'STUDIES > STUDY > EMAILS'. Below the header, the page is titled 'E-Mails'. There are two main sections: 'Study starts' and 'Participant is rejected'. Each section has a language dropdown menu set to 'English', an 'E-mail subject*' field, and an 'Email body' field. The 'Email body' field includes a rich text editor with bold (B), italic (I), and link (🔗) icons. The 'Study starts' section is currently active, showing its respective fields.

16. Test the study before inviting participants

Before sharing your study:

1. Open **Study Home**.
2. Preview the study.
3. Check all questions.
4. Test routing.
5. Check module order.
6. Check timing rules.
7. Check notifications.
8. Check the participant information pages.

Testing the complete participant journey before starting data collection is strongly recommended.

17. Invite participants and the Twente Panel

Participants need the TIIM app on their smartphone.

They should:

1. Download TIIM from the Apple App Store or Google Play Store.
2. Create a TIIM account.
3. Log in.
4. Scan the study QR code or enter the voucher code.
5. Complete the subscription steps.

After they subscribe, they will appear in your Participants page.

Twente Panel

The Twente Panel is a participant pool available to UT researchers to supplement participant recruitment for TIIM studies. To use the panel, **indicate this when registering your study through the BMS Lab request system**. The request will be reviewed by the panel administrator.

Before inviting the panel

- Keep the study short and focused.
- Use a single default intervention so participants can start immediately.
- Make sure the informed consent is included in the study.
- Prepare the study description carefully: it will be used in the standard panel email and notification and cannot be freely changed.
- Use clear Dutch or English at approximately A2 level.
- Consider the time required from participants and, where appropriate, offer a raffle or other token of appreciation.
- Remember that no reminders are sent to panel participants.

Sending the study to the panel

Before contacting the panel administrator, make sure the study is completely set up and tested, including questions, scheduling, notifications, reminders and participant emails. Then contact the administrator with your **study ID** (the four numbers in the study URL) and indicate when during the week you would like the invitation to be sent. The administrator will then distribute the study to the panel.

18. Assign participants

1. Select **Participants**.
2. Open an unassigned participant.
3. Check their details.
4. If you use screening questions, check their answers under **Screening**.
5. Either:
 - assign the participant to an intervention
 - reject the participant.
6. If assigning them, choose when they may start.

When assigning a participant to an intervention, you can choose when their participation starts: either when the intervention starts, or at a specific date and time. This start moment is important because any relative Timing Rules are calculated from it.

19. Monitor participants

Open **Participants** to check participant progress.

You can see which intervention they joined, which modules they completed, their progress through the study, screening answers, app permissions and participant history. You can send an individual push notification from **Send Notification**.

The screenshot shows the 'Epicon participant' details page. At the top, there's a breadcrumb trail: STUDIES > EPICON 2026 > PARTICIPANTS. Below this are four tabs: PARTICIPANT DETAILS (active), SCREENING, PARTICIPANT HISTORY, and SEND NOTIFICATION. The main content area has a back arrow and the title 'Epicon participant'. There are four radio button options: 'No Action', 'Reject Participant', 'Assign to Survey for different schedule', and 'Assign to Survey' (which is selected). To the right, there are two more radio button options: 'Let this participant start when intervention starts' (selected) and 'Let this participant start on a custom date'. A 'SAVE' button is at the bottom right. Below the options, there's a 'Device info' section with a 'Last active' timestamp of '10:05:23 26-06-2026' and a list of permissions: 'Push notification: On', 'Email notification: On', 'Health data: On', and 'Phenotyping data: Off'. At the bottom, there's a 'Participant progress' section with a green progress bar and the text 'Of all modules, the participant completed 100%'. A green checkmark icon and the text 'Example - M-40163' are at the very bottom.

Participant History gives you a detailed view of how an individual participant progressed through the study. It shows which modules and module instances were made available, when notifications were sent, and when the participant completed them. For **ESM and on-demand modules**, each instance can be inspected in a colour-coded overview:

- **yellow** means the instance is currently open,
- **green** means it was completed
- **red** means it was not answered.

This makes Participant History useful for checking adherence, identifying missed measurements, and understanding the participant's actual journey through the study.

The screenshot shows a table titled 'Example (OnD)'. The table has seven columns: 'Iteration', 'Available', 'Open Notification', 'Reminder', 'Closing Notification', 'Answered', and 'Closed'. There is one data row with the following values: '1', '10:20:19 26-06-2026', '10:25:04 26-06-2026', '-', '-', '10:15:38 26-06-2026', and '-'. The row is highlighted with a green background.

Iteration	Available	Open Notification	Reminder	Closing Notification	Answered	Closed
1	10:20:19 26-06-2026	10:25:04 26-06-2026	-	-	10:15:38 26-06-2026	-

20. Add another researcher

If several people are working on the study:

1. Select **Researchers**.
2. Add the researcher by clicking the + button.
3. Choose which parts of the study they may access.
4. Select **Update Researcher**.

Access can be configured for areas such as study details, interventions, modules, participants and metrics.

The screenshot shows a web application interface for adding a researcher to a study. The breadcrumb trail at the top is 'STUDIES > STUDY > RESEARCHERS'. The page title is 'Add researcher to study'. Below the title is a text input field containing 'test@email.com'. Underneath are two input fields for 'First Name' and 'Last Name', both with red error messages stating 'First Name is required' and 'Last Name is required'. The 'Privileges' section contains a table with six rows: 'Study Details', 'Interventions', 'Modules', 'Researchers', 'Participants', and 'Metrics'. Each row has two radio buttons for 'Not Visible' and 'Visible'. To the right of these buttons, a column lists the permissions for each 'Visible' selection: 'Visible - Create, Edit, Delete'. At the bottom right of the form is a green button labeled 'ADD RESEARCHER'.

Privileges	Not Visible	Visible	Permissions
Study Details	☐	☐	Visible - Create, Edit, Delete
Interventions	☐	☐	Visible - Create, Edit, Delete
Modules	☐	☐	Visible - Create, Edit, Delete
Researchers	☐	☐	Visible - Create, Edit, Delete
Participants	☐	☐	Visible - Create, Edit, Delete
Metrics	☐	☐	Visible - Create, Edit, Delete

21. View and export your data

To inspect collected data:

1. Select **Metrics**.
2. Choose an Intervention.
3. Optionally filter by: **Module** or **Participant**
4. Download and review the responses.

For ESM modules, results can also be viewed by individual iteration.

The screenshot displays the 'Metrics' section of the application. It features a table with columns for Participant ID, Language, and various survey questions. The 'Example (on demand)' section is expanded, showing detailed responses for two participants (10284 and 13495) across multiple iterations. The table includes questions like 'How would you rate your overall health?' and 'In the past month, how often have you experienced ...'. The 'Download' button is visible in the top right corner.

To export the complete dataset

1. Open **Metrics**.
2. Select the **Download** tab.
3. Find the intervention you want.
4. Select **Download** next to **Module Answers**.
5. Choose the required export format.
6. Download the CSV file (can be opened or imported into programs such as Excel, SPSS or R)

The screenshot displays the 'Download' tab of the application. It features a list of modules with 'Download' buttons next to them. The 'Module Answers' section is expanded, showing a list of modules with 'Download' buttons next to them. The 'Summary report' section is also expanded, showing a list of modules with 'Download' buttons next to them.

Appendix A – Item Types Reference

TIIM offers 19 item types. Most items are configured in a similar way: select Add Module Item, choose the item type, enter the question or statement, configure any additional options, preview the item, and save it. The main difference between item types is how participants respond and what kind of data is collected. This appendix focuses on those differences.

Text answer items

Input type	Use it for	Options / features
Single-line input	Short open-text answers, such as a name, occupation, or short response.	Participants enter text in a single-line field. You can set a maximum number of characters.
Multi-line input	Longer open-text answers, explanations, or comments.	Participants can enter and view text across multiple lines. You can set a maximum number of characters.
Dropdown	Selecting one text option from a list.	Choices are defined by the researcher and can be randomized. Useful when there are many options and you want to save screen space.
Yes/No	Questions with two possible answers .	Both button labels can be customized; they do not have to be “Yes” and “No”.
Multiple choice	Selecting one or more answers from a list.	Define answer options; set minimum/maximum selections; allow an Other answer; randomize option order. Use Dropdown instead when only one answer is allowed and a more compact layout is preferred.

Numerical answer items

Input type	Use it for	Options / features
Number input	Entering an exact numerical value, such as age, number of hours, or number of occurrences.	Participants type a numerical value. You can define a minimum and maximum valid value.
Number slider	Selecting a number along a scale when the exact value is less important than the position within a range.	Define the minimum and maximum values, step size, and labels for both ends of the scale.

Number dropdown	Selecting an exact numerical value from a predefined range.	Define the minimum, maximum, and step size. Participants select a value rather than typing it.
Number choice	Selecting a numerical value displayed directly on the screen.	Step size and labels can be configured. The response can be used in Calculated Variables .

Note: All of these item types collect numerical values. Responses can be marked **Used for Numeric Calculation** so they can later be included in **Calculated Variables**.

Rating and information items

Item type	Use it for	Options / features
Likert scale	Rating scales, such as agreement, satisfaction or frequency.	Participants choose one option from an ordered set, for example: Strongly disagree – Disagree – Neutral – Agree – Strongly agree. The scale labels are defined by the researcher. Likert responses can also be marked for use in numeric calculations.
Statement	Showing information without asking a question. For example: instructions, introductions, explanations, transitional text or feedback.	Participants read the information and press a button to continue. You can include an image or a video hosted on YouTube or Vimeo and customize the button label.
Video/Audio	Presenting an uploaded audio or video file as the main purpose of the item.	Unlike a Statement item, where video is linked from YouTube or Vimeo, a Video/Audio item allows you to upload the media file directly. Participants do not provide an answer; they acknowledge the item by pressing a button.

Participant media input

Item type	Use it for	Options / features
Camera image	When participants should take or upload a photograph using their smartphone.	You can provide a question, description or additional image/video as part of the instructions.
Audio recording	When participants should record an audio response.	Optional transcription can be enabled. If transcription is used, participants select the language and number of speakers. The manual currently lists

		English, Dutch and German as supported transcription languages. Participants can listen to the recording, delete it and record again before continuing. Researchers can later access the transcription in the downloaded data.
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Visual and interactive items

Item type	Use it for	Options / features
Emotion quadrant	Use this when participants should indicate an emotional state on two dimensions, typically: • positive ↔ negative; • low arousal ↔ high arousal.	Participants drag a pointer to a position in a quadrant, and TIIM records values based on its coordinates. The background image can be customised and should be square.
Orbits	Use this to measure how participants position predefined people, objects or concepts relative to a centre point.	Participants place items on concentric circles and can also provide a perceived “warmth” value. Researchers define the items and their icons beforehand. Up to 10 concentric circles can be used and configured item sets can be reused elsewhere in the study.
Network	Network is like Orbits, but here participants define the items and their labels themselves rather than choosing only from predefined researcher-created items.	Participants can: • enter a label; • indicate a “warmth” value; • position the item within the network. The researcher can limit the number of items, up to 10. Main distinction: Use Orbits when the researcher defines the objects in advance. Use Network when participants create or identify the objects themselves.
Specialised Drag and Drop	Use this when participants should categorise an object by dragging it into a target area.	The researcher defines which zone represents the valid answer. Zones can have their own labels, colours and audio feedback. This item is intended

		for interactive classification tasks rather than standard survey questions.
Graph	Use this to show participants their own data or calculated results visually.	A Graph item can display data collected over time or values resulting from a Calculated Variable. Participants do not provide a new response; they view the graph and press a button to continue.

Settings shared by many item types

Several options appear across different item types:

Dynamic Text

Allows information from participant details or other responses to be inserted automatically into the item.

Images and video

Many items can include an image or a video as supporting information. For these standard item types, video is linked from YouTube or Vimeo rather than uploaded directly.

Used for Numeric Calculation

Available for relevant numerical items and Likert scales. Enable this when the response needs to be used later in a Calculated Variable.

Preview

Always preview an item before using it in your study to check how it will appear to participants on their smartphone.

Appendix B – Calculated Variables Reference

Calculated Variables allow TIIM to calculate a new value from numerical responses collected earlier in the study. The result can be used to show feedback to participants or as part of a Timing Rule. They are particularly useful for combining questionnaire scores, calculating values from previous responses, counting or summarizing repeated responses, providing personalized feedback, and opening a module based on a calculated result.

Before creating a Calculated Variable

The items you want to use in a calculation must first be enabled for numeric calculations. For supported numerical items and Likert scales:

1. Enable **Used for Numeric Calculation**.
2. Give the item a unique calculation name.
3. Save the item.

This calculation name is what you will use when building the formula.

Creating a Calculated Variable

1. Select **Calculated Variables** in the left menu.
2. Select **Add Calculated Variable**.
3. Enter an **ID** and a **short description**.
4. Build the formula in **Calculate Logic**.
 - You can drag variables and functions into the field.
 - You can also type the formula manually.
5. Select **Save**.

You can see the variables and functions while you create the calculation.

Basic operations

The following mathematical operators are available:

Operator	What it does
+	Adds values
-	Subtracts values
*	Multiplies values
/	Divides values
^	Calculates an exponential value

These operators can be combined with the calculation names of your numerical items.

Choosing the right operation

If you want to...	Use
Add two or more values	+
Calculate a difference	-
Multiply values	*
Divide one value by another	/
Calculate an exponential value	^
Add responses for a variable	SUM_ANS(N)
Obtain the response count described by TIIM	NUM_ANS(N)
Find the most frequently reported value	MODE_ANS(N)
Count how often one specific value occurs	COUNT_ANS (VAR, VAL)

Example: If two numerical items have the calculation names: Stress1 and Stress2, you could create Stress1 + Stress2 to calculate a combined value.

Functions

Function	Description	Example / use
SUM_ANS(N)	Returns the sum of the numerical responses for the indicated variable.	Example: SUM_ANS(StressScore) Use this when you want to add together the recorded responses for that variable.
NUM_ANS(N)	Returns the total number of participants for the indicated variable, according to the TIIM function description.	Example: NUM_ANS(StressScore) Use this when your calculation needs the number associated with the responses to that variable.
MODE_ANS(N)	Returns the most frequently reported numerical value for the indicated variable.	Example: MODE_ANS(MoodScore) If the recorded values are: 2, 4, 4, 5, 4, the mode is: 4 .
COUNT_ANS (VAR, VAL)	Counts how often a specific value occurs in the responses to a variable.	Example: COUNT_ANS (MoodScore, 5) This counts how many times the value 5 was recorded for MoodScore.

Showing a Calculated Variable to participants

A Calculated Variable does not have to remain hidden in the background. You can insert its result into an item and show it as feedback.

1. Open the module where you want to show the result.
2. Open **Content Items**.
3. Create or open an item.
4. In the question or description field, select **Dynamic Text**.
5. Select the **Calculated Variable**.
6. Select **OK**.
7. **Save** the item.

In the editor, TIIM initially shows a code for the Calculated Variable. Once the participant has completed the items required for the calculation, that code returns the calculated value.

Using a Calculated Variable in Timing Rules

A Calculated Variable can also be used to determine whether a module should become available.

For example: Calculated score meets the selected condition → Open follow-up module

First create the Calculated Variable, then select **Based on a calculated variable** when configuring the Open Module Timing Rule.

Appendix C – Timing Rules Overview

Timing Rules determine when a module opens, closes, or repeats for a participant.

There are three types:

- Open Module – determines when a module becomes available.
- Close Module – determines when a module stops being available.
- ESM Module – determines when a module repeats.

Open Module

Timing rule	What it does	Best used for
Relative time after intervention started	Opens the module after a specified amount of time has passed since the participant started the intervention.	Day 2, Day 7 or other follow-up measurements based on each participant's own start date.
Relative time after a module has finished	Opens the module after a specified amount of time has passed since another module was completed.	Follow-ups that should depend on actual completion of an earlier module.
When a module hasn't been finished	Opens a module in relation to another module that has not been completed.	Alternative or follow-up study paths when a previous module remains unfinished.
Based on an answer in a module item	Opens the module when a participant gives a specified answer in an earlier item.	Conditional or personalized study paths.
On a fixed date	Opens the module at a specific calendar date and time.	When all participants should receive access at the same moment.
Based on a calculated variable	Opens the module when a condition involving a previously created Calculated Variable is met.	Score-based or adaptive study designs.

The original manual defines these as the available Open Module timing-rule options.

Close Module

Timing rule	What it does	Best used for
Based on an answer in a module item	Closes the module when a specified answer condition is met.	Ending access when a participant's earlier response makes the module no longer relevant.
On a fixed date	Closes the module at a specific calendar date and time.	Fixed deadlines.

Relative time after a module has started	Closes the module after a specified amount of time has passed since the participant started it.	Giving participants a limited response window.
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ESM Module

Use ESM Timing Rules when the same module should be made available repeatedly.

Timing rule	What it does	Best used for
Repeat module on a fixed date	Repeats the module on predetermined calendar dates, regardless of when an individual participant started the study.	Studies where everyone follows the same calendar schedule.
Repeat module relative to intervention start	Repeats the module according to the participant's own intervention start time.	Rolling enrolment or studies where each participant follows the same relative schedule.

On demand module

An **on-demand module** can be opened and completed by the participant when needed, rather than being released according to a fixed or repeating schedule. Repeated instances of an on-demand module can be viewed in **Participant History**, where you can see when each instance was made available and completed.

Fixed date or relative time?

This is the most important distinction:

Fixed date - Everyone is linked to the same calendar moment. *Example: 15 October at 09:00*

Relative time - The timing depends on an individual participant's start or completion time. *Example: 7 days after intervention start*

Participants may therefore receive the same module on different calendar dates.

Combining rules

For Open and Close Module rules, TIIM allows you to add another condition to the same rule or create an alternative Timing Rule.

A rule that evaluates as true is triggered for that participant.