

# Inhabitants Crowdsourcing App

*Training material*

DEMO Consultants – Jos Noordzij

21-4-2021



# Table of contents

- Short description
- Who can use the tool
- Main topics overview
- Explanation of the most important topics
- *This presentation only uses slides. For detailed video instructions please refer to the Inhabitants App video, which can be found on the bimspeed training website*

# SHORT DESCRIPTION

*Inhabitants Crowdsourcing App*

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The aim of the Inhabitants Crowdsourcing App is to collect data of existing buildings from inhabitants. Questionlists can be defined and distributed from the backoffice. Inhabitants can respond to questionlists using a freely downloadable mobile app.

## Who can use the tool?

The Inhabitants Crowdsourcing App can be used by stakeholders involved in renovation projects, who need to collect data of existing buildings in order to perform any kind of analysis and define renovation strategies.



# MAIN TOPICS

## *Inhabitants Crowdsourcing App*



Used by housing corporation or other stakeholders

### Questionnaire Management

- Accessing the tool
- Creating questionlists
- Creating units for distribution
- Creating inhabitant useraccounts
- Coupling a BIM model
- Releasing questionlists
- Working with the results

Used by inhabitants



### Mobile Inhabitants App

- Download, configure, login
- Questionnaire Overview
- Observation Page
- Question Type UI's
- BIMViewer
- Storing Results

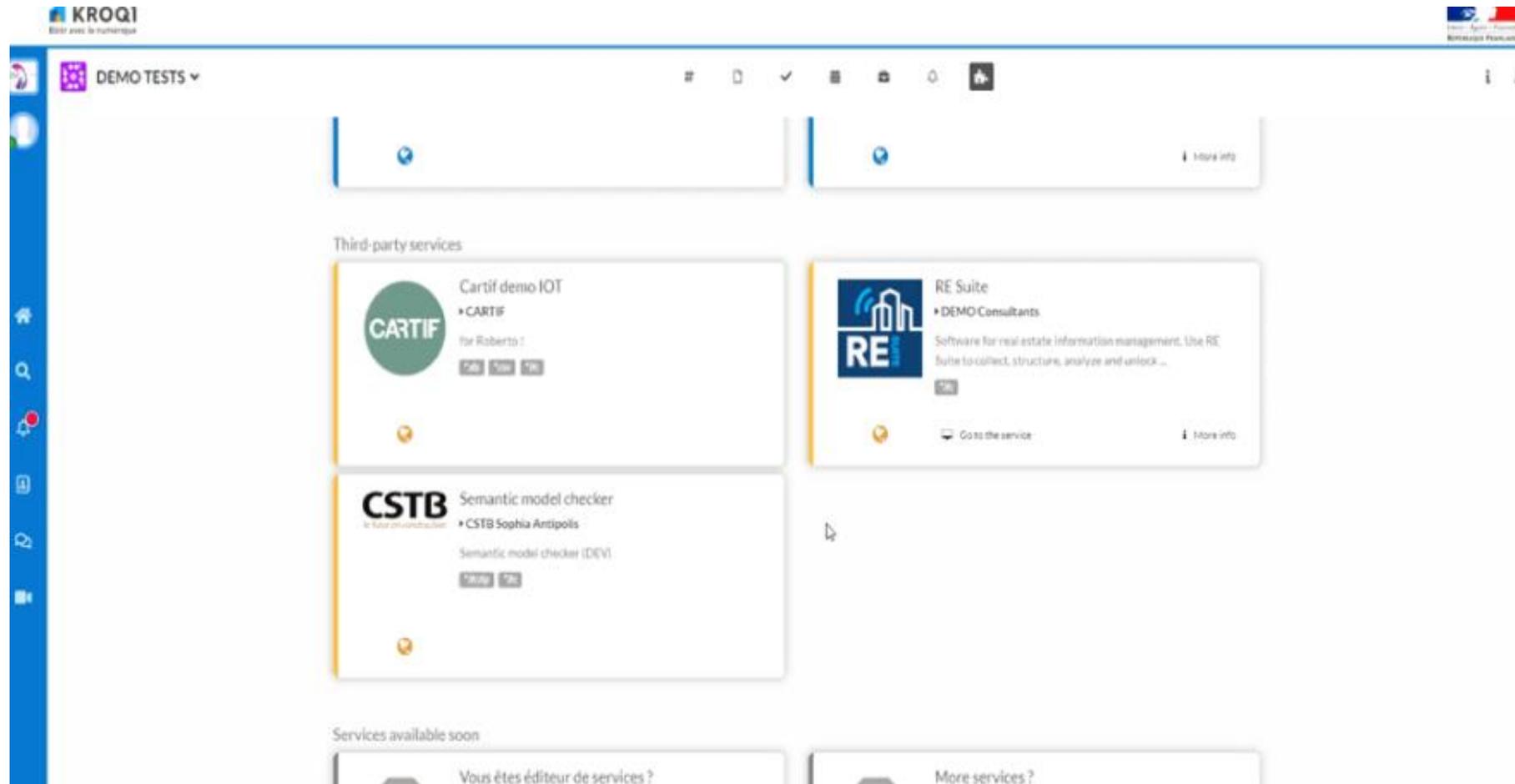


# QUESTIONNAIRE MANAGEMENT



- Accessing the tool

# Connect from BIMSpeed platform



# Or connect from training website

BIM Maturity tool

Learn More ▶

BIM-SPEED Inhabitants Crowd-Sourcing App

Watch later Share

## Inhabitants Crowdsourcing App

Training material

DEMO Consultants



## INHABITANTS CROWD-SOURCING APP

The aim of this App is to collect data on existing Buildings from inhabitants. Question lists can be defined and distribute from the back office. Inhabitants can respond to the question list using a freely downloadable mobile app.

The application can be used by anyone involved in a renovation project, who need to collect data on existing buildings in order to perform any kind of analysis.

Watch the video to learn how to use the app.

Access the app [here](#).



BIM-Speed methodology toolkit

Learn More ▶

Methods for surveying and diagnostic of HVAC systems in existing buildings

Learn More ▶

# Reaching the DEMO SAAS page

- Login with:
- Username “BIMSpeed”
- Password “Renovation”



# Reaching the application / login with personal useraccount

- In order to use the app you will need a personal useraccount
- Get a personal useraccount by contacting DEMO Consultants - *info@demobv.nl*
- For quick demo purposes, login with *JSmith / Welcome2RESuite*



**RE SUITE**

Welkom bij de RE Suite van DEMO Consultants. Login om door te gaan.

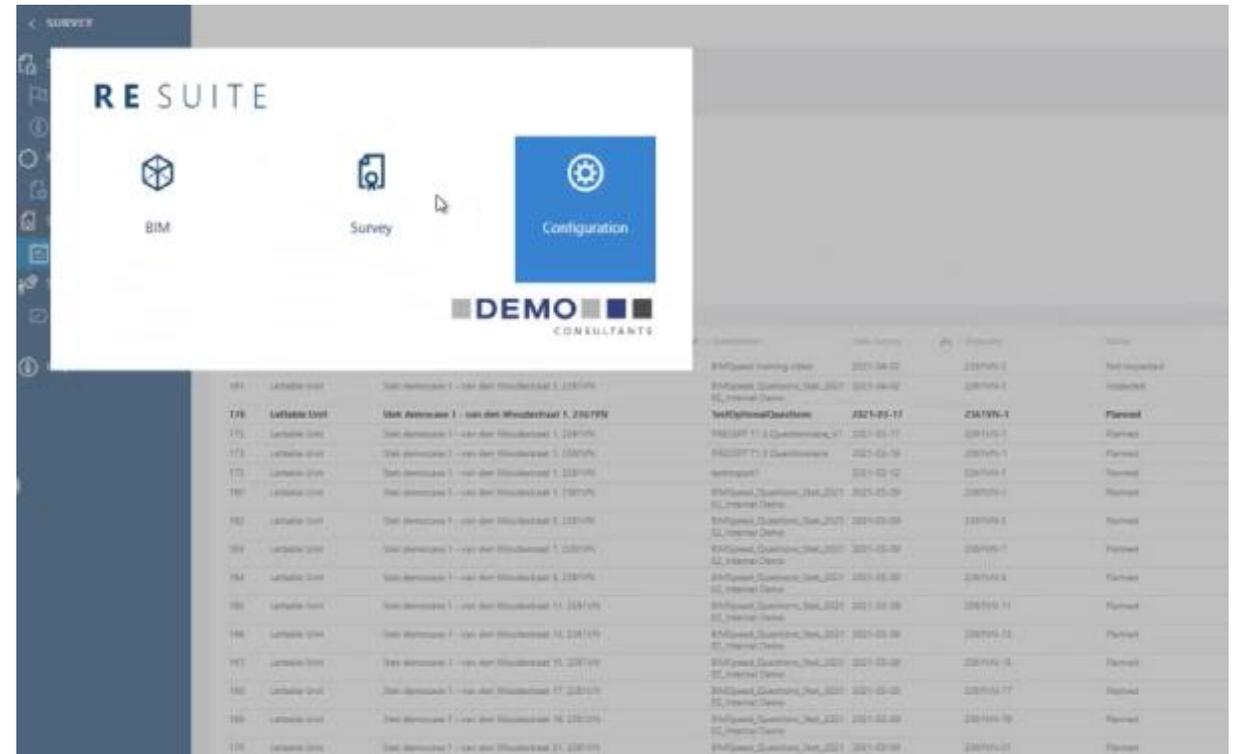
Gebruikersnaam

Wachtwoord  [Wachtwoord vergeten?](#)

**DEMO** ■■■  
CONSULTANTS

# Inside the RE Suite

- 3 subapps available:
  - Survey: questionnaire management
  - BIM: coupling and viewing BIM models
  - Configuration: language settings, useraccount management, and such



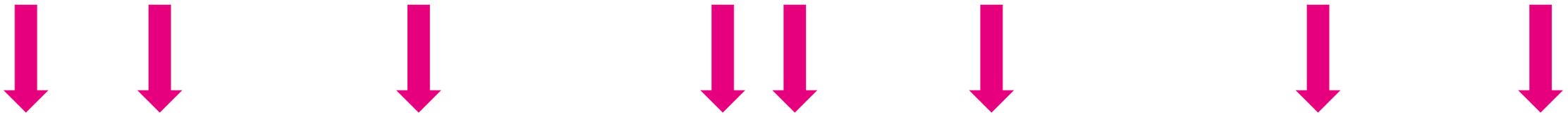


# QUESTIONNAIRE MANAGEMENT



- Creating questionlists

# Creating questionlists with template



	A	B	C	D	E	F	G	H	I	J	K	L
	Vragenlijst	thema's	Natural key vraaggroep	Visibility rule	vraaggroep	vraaggroep volgorde	Natural key	Question Type	Question	Answer Options	Standaardantwoord	Maatregelen
1	BIMSpeed training vide	Background questions					A.1	0	What is your age?	20 – 44;45 – 65;65 – 79;Older than 80		
3	BIMSpeed training vide	Sound					B.1	0	Do you experience noise in your home?	No;From other homes;From other rooms within your own home;From outside	No	
4	BIMSpeed training vide	Sound		B.1<>No			B.2	2	Where?			
5	BIMSpeed training vide	Light					C.1	0	What do you think about the lighting in your home/complex?	lighting;The lighting often does not work;Other, namely...		
6	BIMSpeed training vide	Light		C.1=Other, namely...			C.1.2	1	Other:			

- Template can be downloaded from software
- Each line is a question
- Each question has a *question type*, *question text*, *answer options*, *visibility rule*, *theme*
- For further details, watch the vid

# TYPES OF QUESTIONS

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- Closed question

Choose from prescribed answers

e.g. *“What is your age?” Younger than 50 ; Older than 50*
- Open question

Type a custom answer

e.g. *“Do you have any additional remarks?”*
- Spatial question

Select a space in a BIM model as an answer

e.g. *“In which rooms do you experience draughts?”*

By marking questions as spatial questions we trigger BIM behaviour in the mobile app.

This finishes questionlist creation.

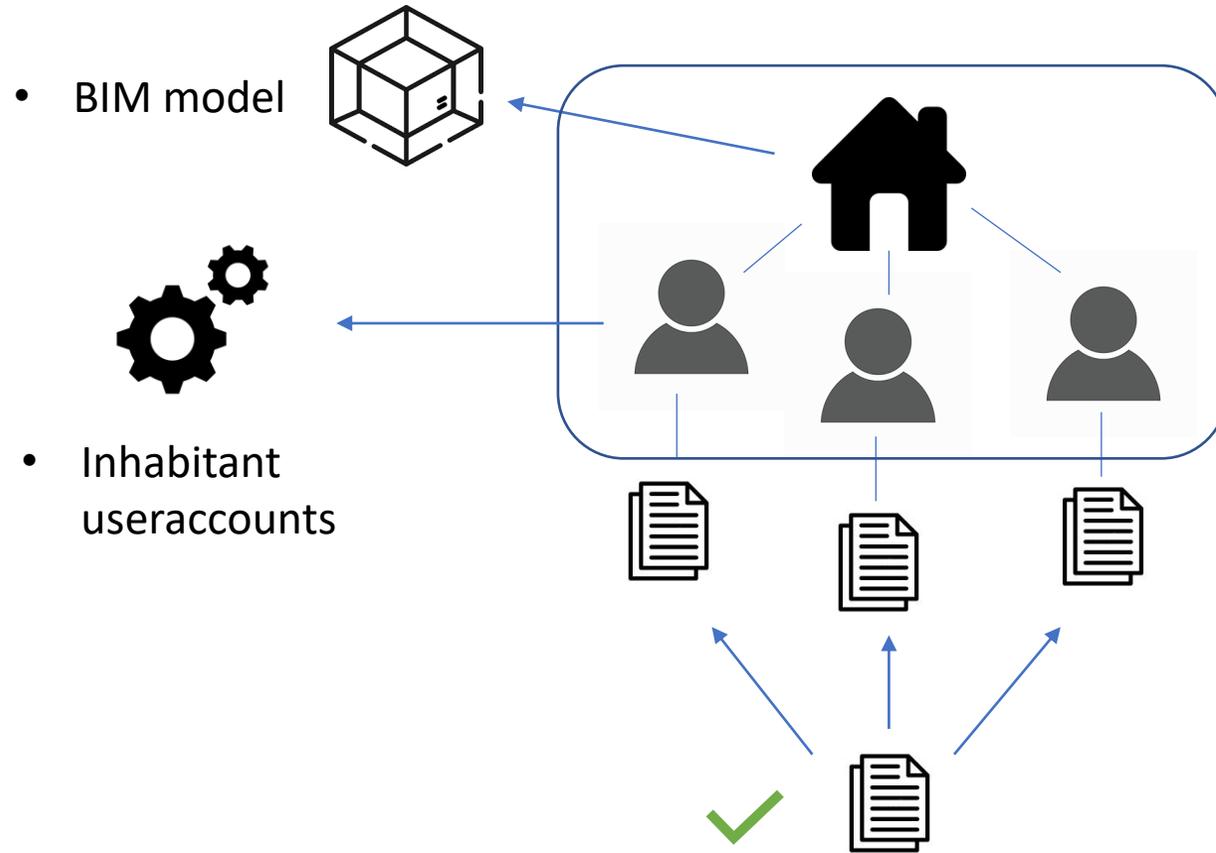


# QUESTIONNAIRE MANAGEMENT



- Creating units for distribution

# Understanding lettable units



- Real estate object
- Lettable units (i.e. inhabitant units)
- Questionlists instances (1 for each inhabitant)
- Base template

# CREATING UNITS FOR DISTRIBUTION

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- STEP 1  Create a real estate object
- STEP 2  Create lettable units
- STEP 3  Create useraccounts





STEP 1



Create a real estate object

# Create real estate object

The screenshot displays the RE Suite software interface. On the left is a dark blue navigation sidebar with the following menu items: SURVEY, Stock, Objects (highlighted), Lettable units, Management, Templates, Survey planning, Planning, Surveys, Questionnaires, Observations, and Help. A yellow callout bubble with the text "Go to objects" points to the "Objects" menu item. The main content area is titled "CMP 1 Complex 1 Delftechpark" and is divided into two sections. The top section, "General", contains a form with fields for Name (Complex 1 Delftechpark), Object number (CMP 1), Region, Municipality, Location, Subobject number, Construction year (1990), Number of subobjects (2), Zip code, Surface area (GFA) (m2), Address, Type of contract, Refurbishment year, Inspector, Owner, Inspection date, Building type, Re-inspection date, End exploitation (2100), Explanation, and Longitude/Latitude. A "VAT low allowed" checkbox is also present. The bottom section, "Lettable units", contains a table with columns for Subobject number, Street, House number, Addition, Zip code, Dwelling type 1, Exploitation end year, Points, and Refurbishment. A yellow callout bubble with the text "New object" points to a plus icon in the top right corner of the main content area. At the bottom left of the interface, it says "Number of objects: 9".

RE Suite CMP 1 Complex 1 Delftechpark

SURVEY

- Stock
- Objects
- Lettable units
- Management
- Templates
- Survey planning
- Planning
- Surveys
- Questionnaires
- Observations
- Help

Objects

CMP 1 Complex 1 Delftechpark

DM3561 Beltenweg

DM3563 Hortensiastraat

DM3565 Delftechpark e.o.

Hogekamp, Enschede Hogekamp, Enschede

IFD IFD Gebouw

INCPTN01 St. Nikolaaschapel

School complex Pisa Piazza Vittorio Emanuele II

T1 Test

Number of objects: 9

CMP 1 Complex 1 Delftechpark

General BIM

Name: Complex 1 Delftechpark

Object number: CMP 1

Region: \_\_\_\_\_

Municipality: \_\_\_\_\_

Location: \_\_\_\_\_

Subobject number: \_\_\_\_\_

Construction year: 1990

Number of subobjects: 2

Zip code: \_\_\_\_\_

Surface area (GFA): m2

Address: \_\_\_\_\_

Type of contract: \_\_\_\_\_

Refurbishment year: \_\_\_\_\_

Inspector: \_\_\_\_\_

Owner: \_\_\_\_\_

Inspection date: \_\_\_\_\_

Building type: \_\_\_\_\_

Re-inspection date: \_\_\_\_\_

End exploitation: 2100

Explanation: \_\_\_\_\_

Longitude: \_\_\_\_\_

Latitude: \_\_\_\_\_

VAT low allowed:

Lettable units

Subobject number	Street	House number	Addition	Zip code	Dwelling type 1	Exploitation end year	Points	Refurbishment
	Delftechpark	1		1234AB				
	Delftechpark	2		1234AB				

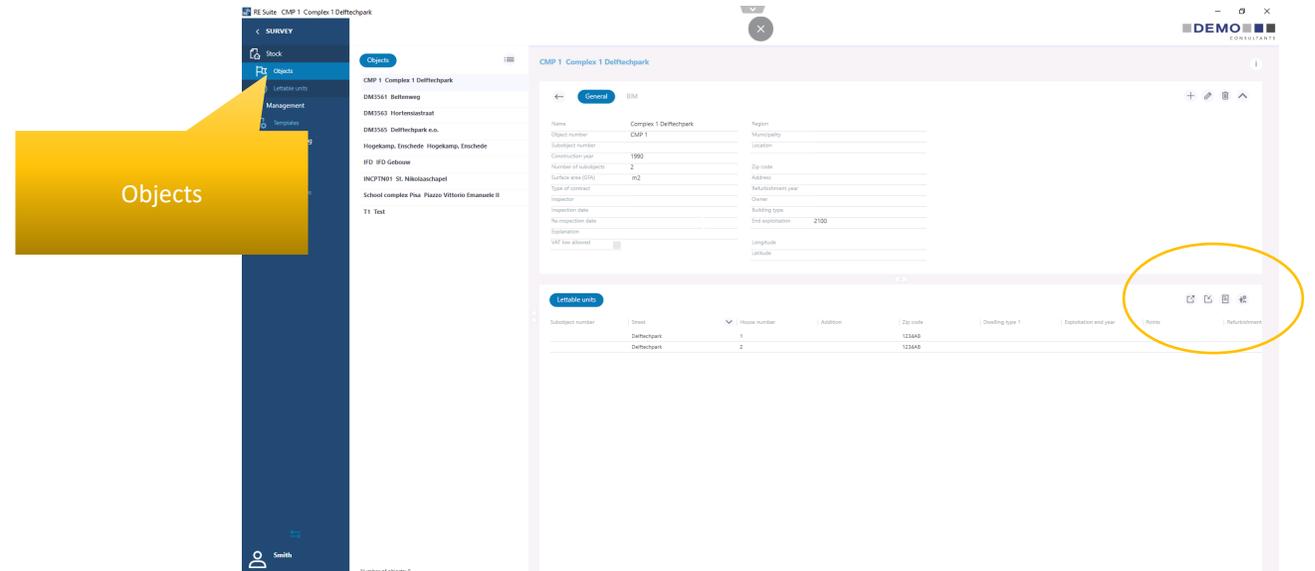
New object

Smith

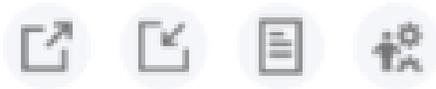


- STEP 1      ●      Create a real estate object
- 
- 
- 
- 
- 
- 
- STEP 2      ●      Create lettable units

# Create lettable units



2. 1.



1. Download and fill in template
2. Import
3. Lettable units created

	A	B	C	D	
1	Streetname	Housenumber	Postalcode	City	
2	Delftechpark	5	1234AB	Delft	
3	Delftechpark	7	1234AB	Delft	
4					
5					
6					

- STEP 1  Create a real estate object
  - STEP 2  Create lettable units
  - STEP 3  Create useraccounts
- A vertical line of small pink dots connects the three large dark blue circles, indicating a sequential process.

# Create inhabitant user accounts

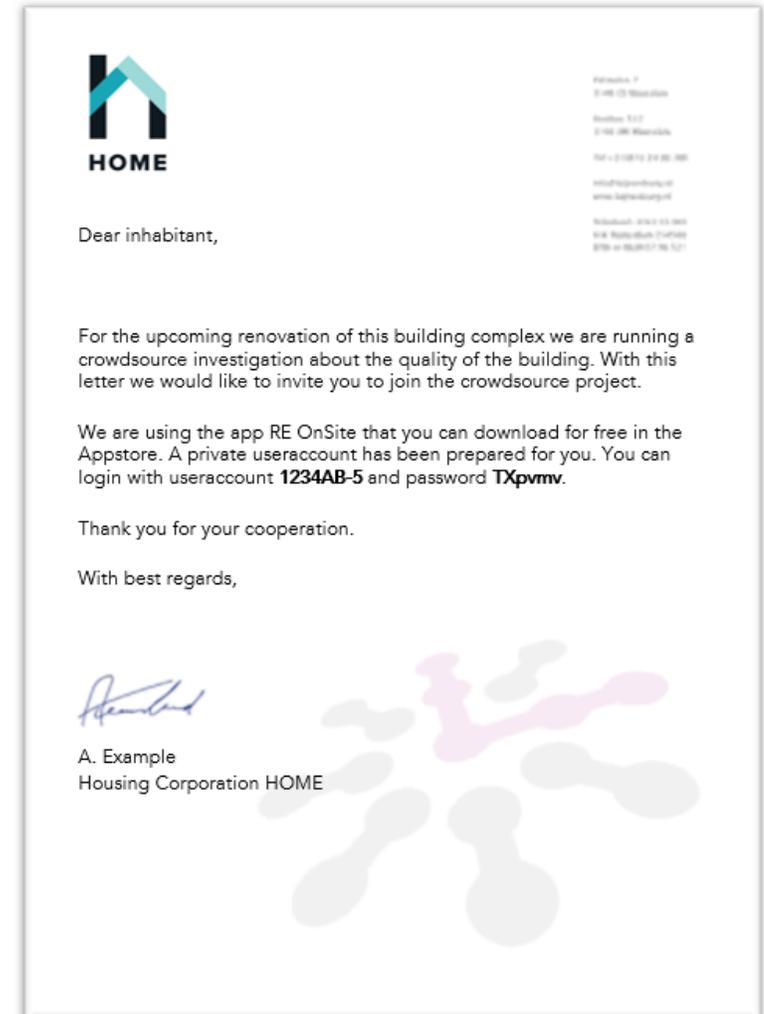
2.



1.

1. Create user accounts (uses imported lettable units)
2. Export login credentials to csv
3. Distribute login credentials to inhabitants (e.g. by letter)

	A	B	C	D	E	F	G	H
1	Streetname	Housenumber	PostalCode	City	Username	Password		
2	Delftechpark	5	1234AB	Delft	1234AB-5	TXpvmv		
3	Delftechpark	7	1234AB	Delft	1234AB-7	iTyvSm		
4								
5								
6								





# QUESTIONNAIRE MANAGEMENT



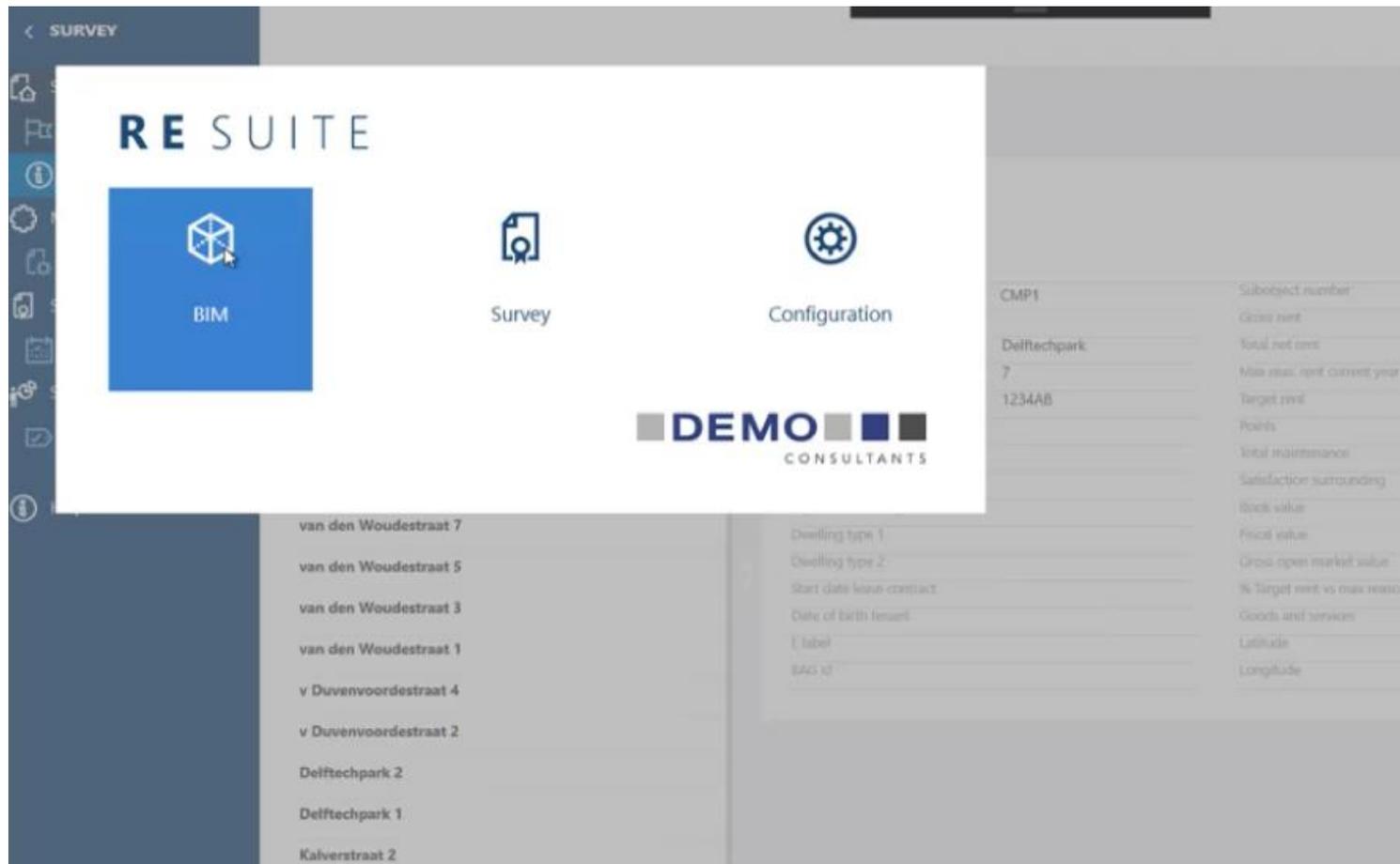
- Coupling a BIM model

# Couple a BIM model

- Short summary, watch video for details

# BIM model coupling summary

- Go to RE BIM



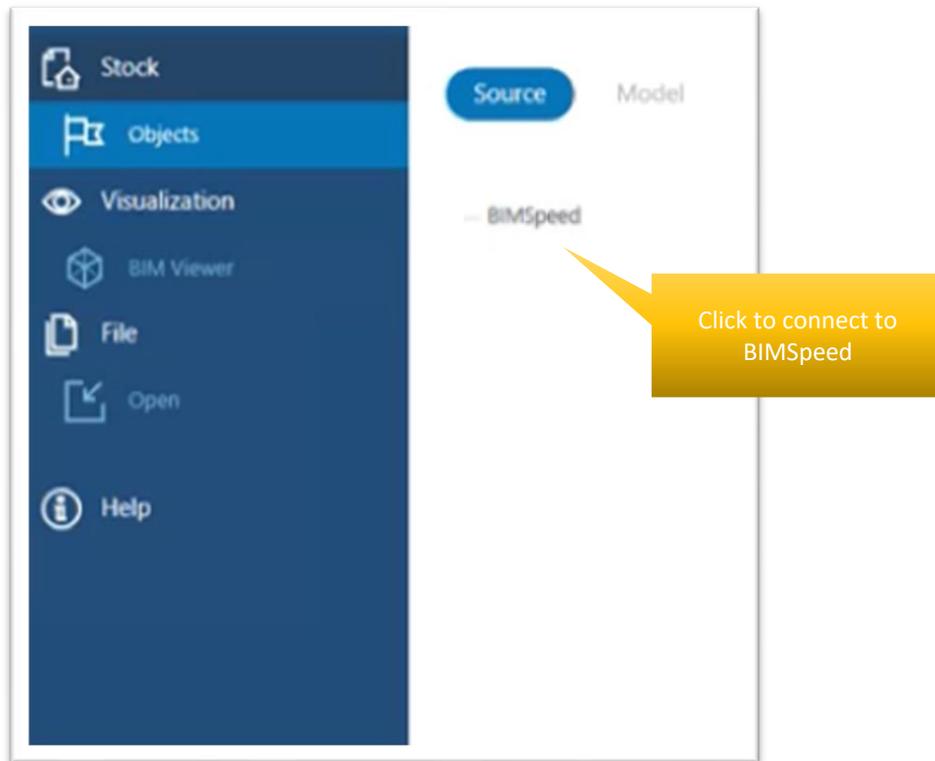
# BIM model coupling summary

- Select the real estate object
- Select the BIM tab

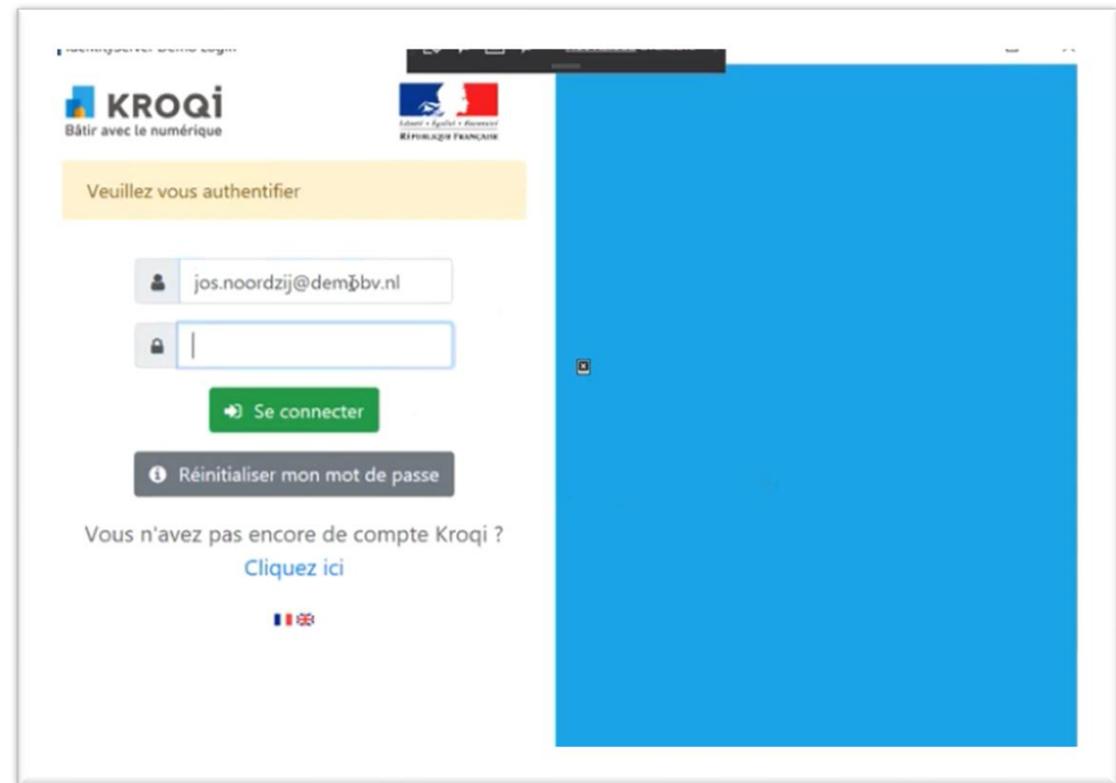
The screenshot displays a software interface with a dark blue sidebar on the left containing menu items: Stock, Objects, Visualization, BIM Viewer, File, Open, and Help. The main area is divided into two panes. The left pane, titled 'Objects', lists various real estate objects, with 'CMP1 Complex 1 Delftechpark' selected. A yellow arrow points from the 'Objects' menu item in the sidebar to this selected object. The right pane, titled 'CMP1 Complex 1 Delftechpark', shows a 'General' tab and a 'BIM' tab. A yellow arrow points from the 'BIM' tab to the 'General' tab. Below the 'General' tab, a form displays object information: Object number (CMP1), Subobject number, Construction year (0), Name (Complex 1 Delftechpark), Surface area (GFA), Location, Zip code, Address, Longitude, and Latitude. A yellow callout box labeled 'General object info' points to the 'Name' field.

# BIM model coupling summary

- Click BIMSpeed node in source navigator

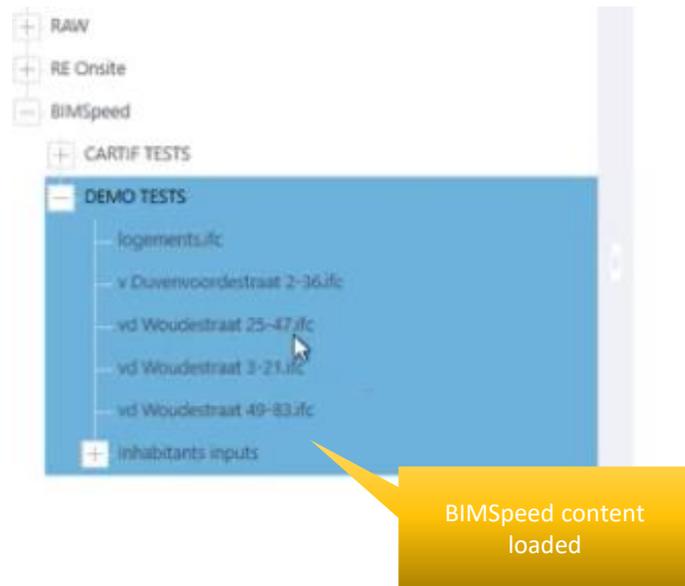


- Do SSO login

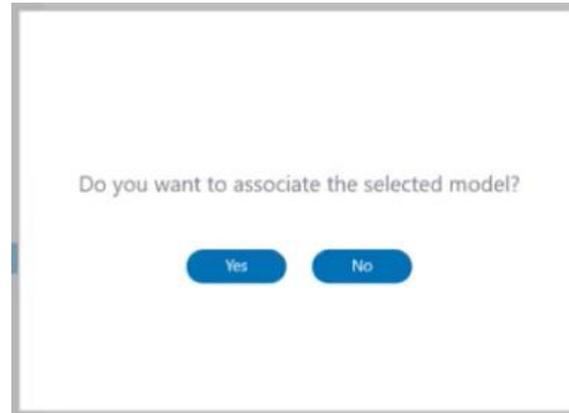


# BIM model coupling summary

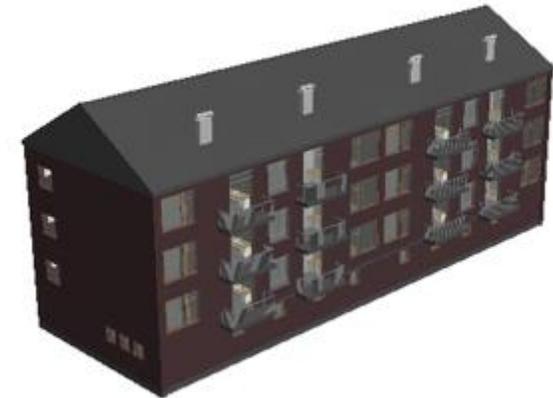
- Right mouse click → Download ifc from bimspeed



- Leftclick → associate model to real estate object



- BIM model coupled



# BIM model requirements

- All IFC Spaces should have the following data / parameters:
  - BIM-speed Streetname (e.g. “Delftechpark”)
  - BIM-speed Apartment (e.g. “1”)
  - Space boundary data

## Required parameters

Property	Value
BIM-Speed_Apartment	7
BIM-Speed_ApartmentSubType	STD
BIM-Speed_ApartmentType	B
BIM-Speed_Complex	414B
BIM-Speed_GUID	93fb23e8-d2f4-4d5d-9d07-6c393180b3fc-0006fcd4
BIM-Speed_LIC	WARM WDS1 7 001 001
BIM-Speed_LevelAssignment	001
BIM-Speed_PIC	
BIM-Speed_RevitID	457940
BIM-Speed_SpaceName	Bedroom
BIM-Speed_SpaceNumber	001
BIM-Speed_Streetname	van den Woudestraat

## Space boundary data

Component	Type	Area
Door	0762 x 2134mm	21.74 sq ft
Slab	Wood Joist 220mm - Wood Finish	235.03 sq ft
Wall	Trennwand 11cm	285.42 sq ft
Wall	Innenwand 22cm	119.65 sq ft
Window	Balkontür 2.65x2.58 2	73.59 sq ft

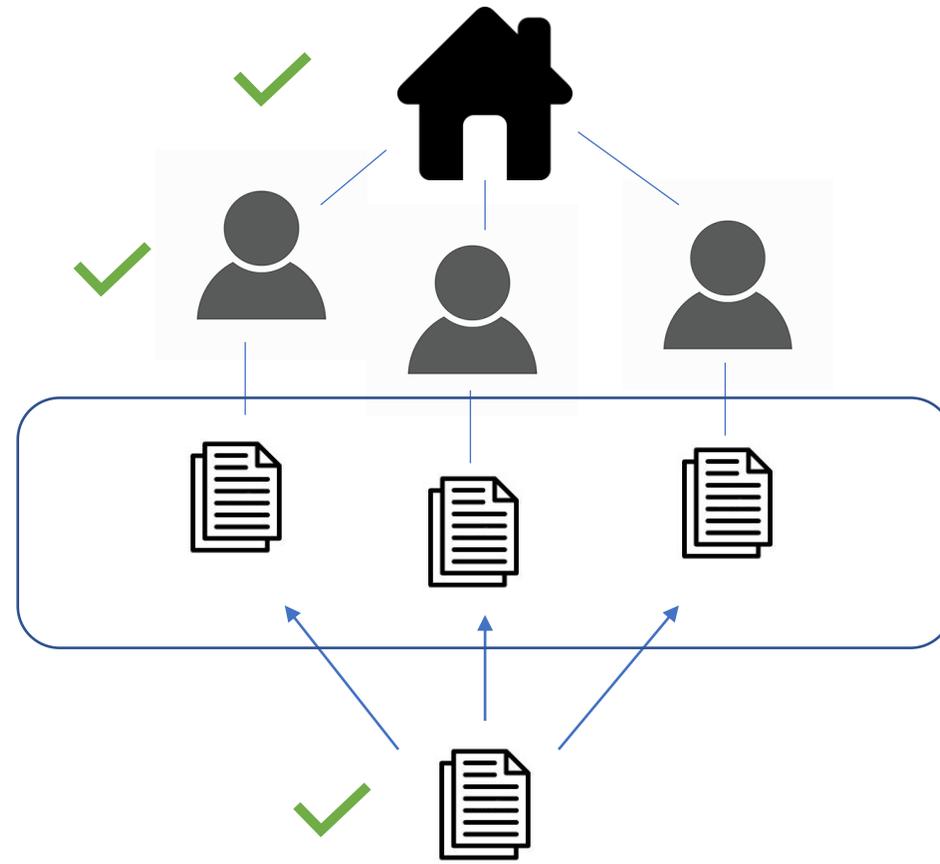


# QUESTIONNAIRE MANAGEMENT



- Releasing questionlists

# Releasing questionlists



< SURVEY

- Stock
- Objects
- Lettable units
- Management
- Templates
- Survey planning
- Planning**
- Surveys
- Questionnaires
- Observations
- Help

Smith

## CMP 1 Complex 1 Delftechpark

← Planning

3. Do settings

2. Click new

Objecttype  
Planned object  
Questionlist  
Date Survey  
Inspector

id	Objecttype	Survey	Questionlist	Date Survey	Inspector	Status
	Lettable Unit	DM3561 - 1781 - Boterbloemweg 2, 8042 CP, Bernisse	Rijswijk opname	2019-08-14	E.M. Neumann	Planned

1. Go to planning

- Select object type = lettable unit,
- Select the lettable units,
- Select the question template,
- Select a date,
- Click save.



# MOBILE INHABITANTS APP



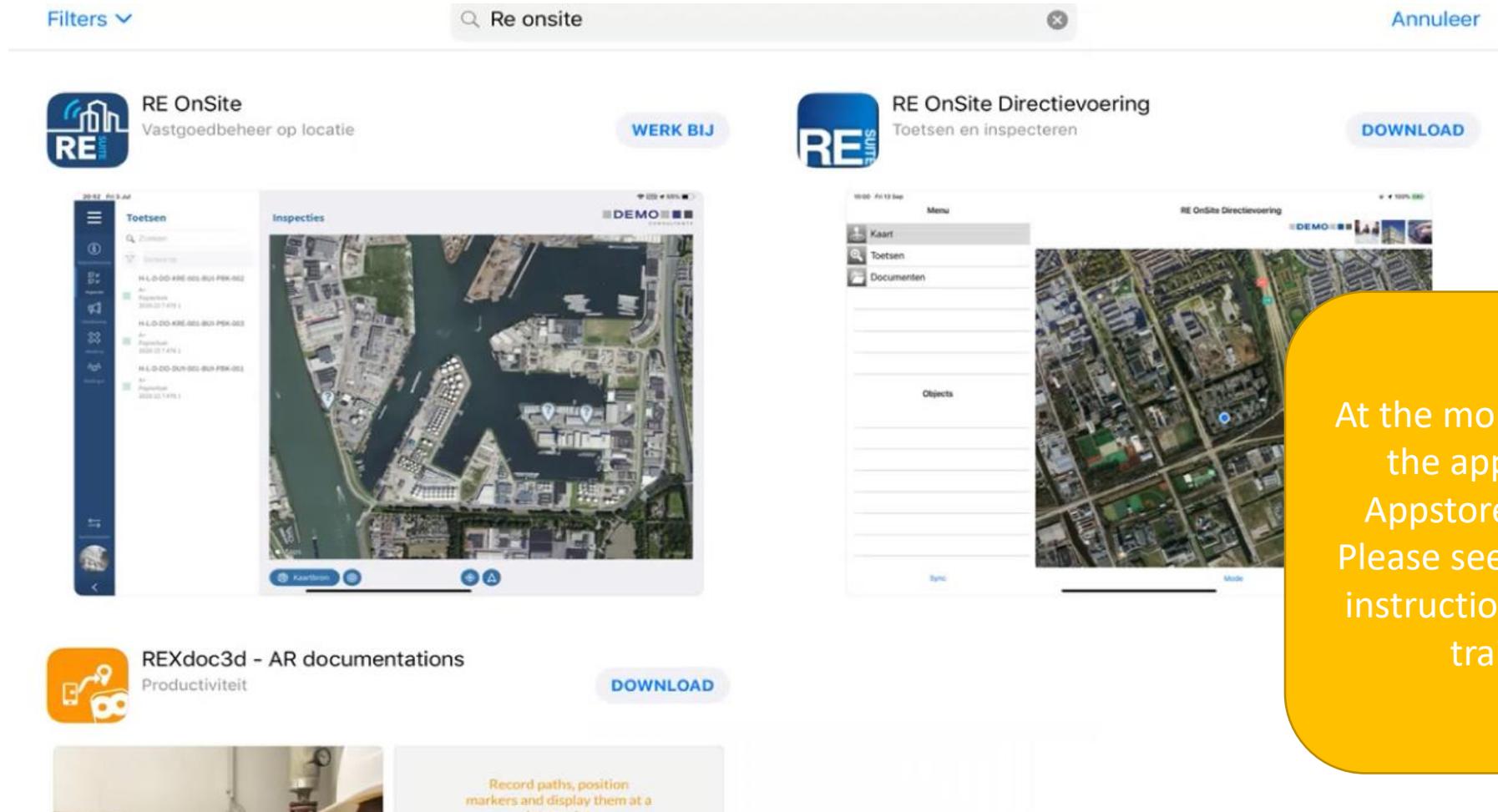
- Download, configure, login

# How it starts for the inhabitant



- Inhabitant receives letter with:
  - Invitation for crowdsourcing project
  - Name of app to download
  - Credentials for login
  - Configuration instructions

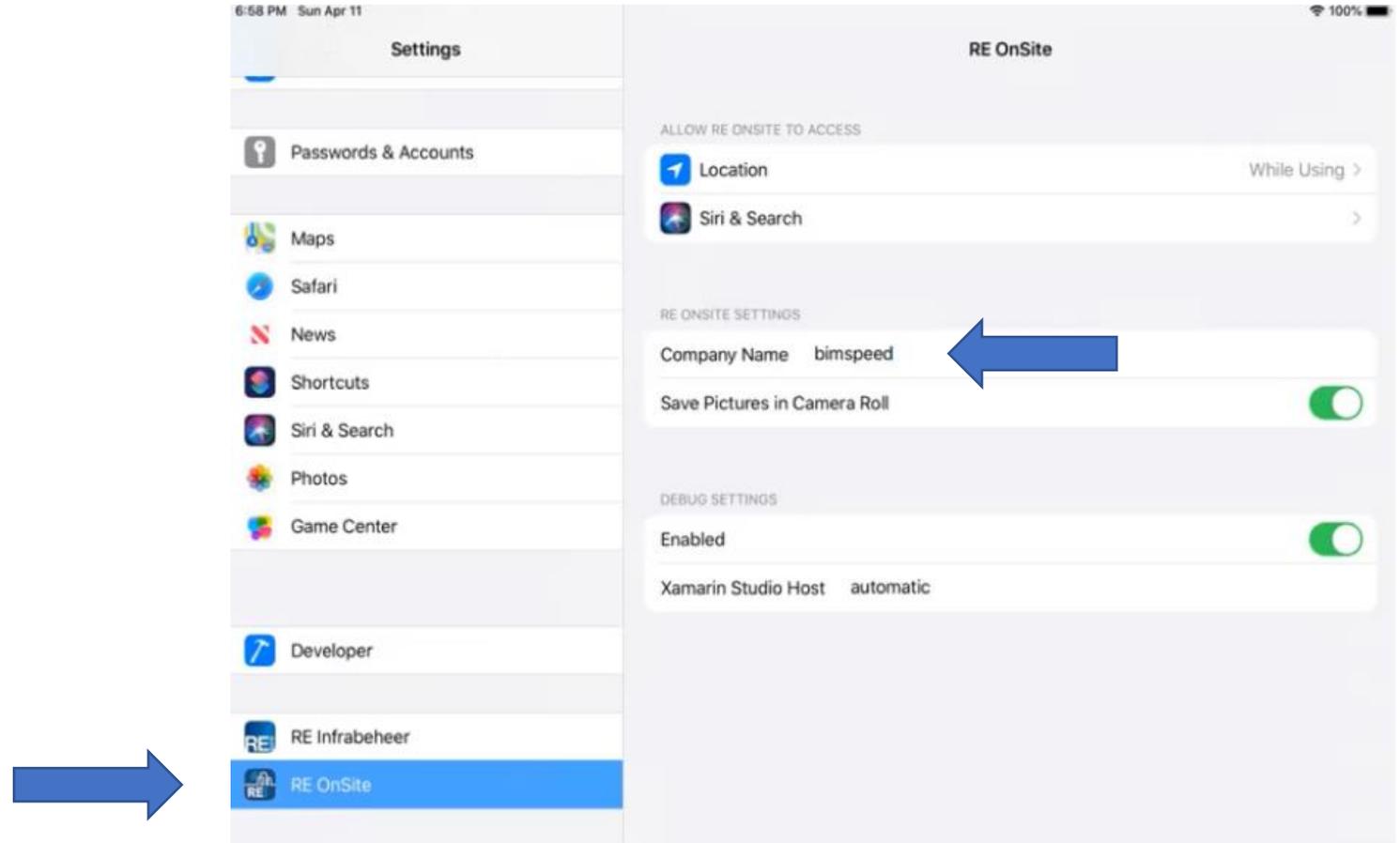
# Inhabitant downloads app from appstore



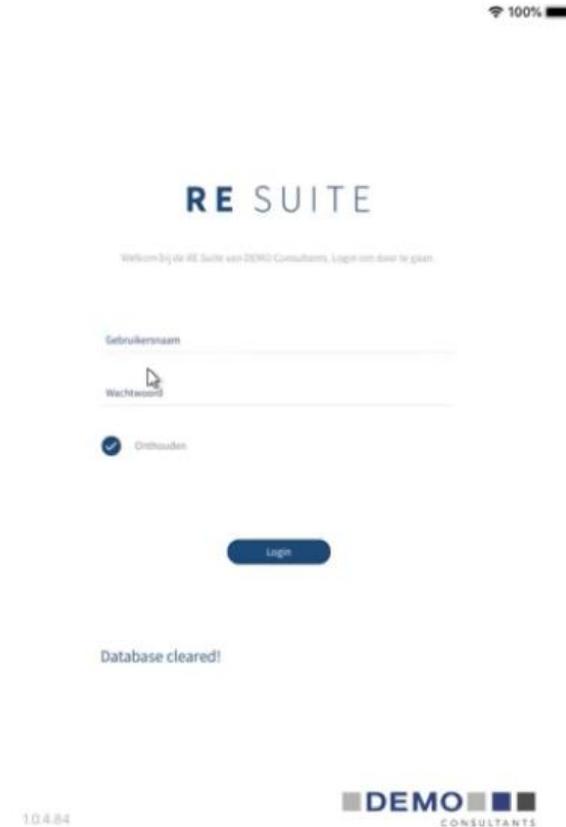
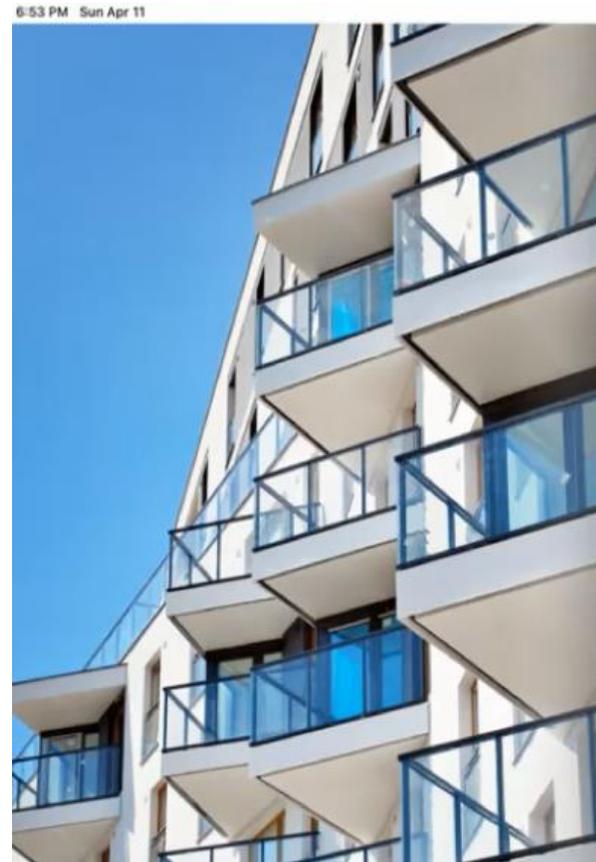
At the moment of this training, the app is not yet on the Appstore, only in Testflight. Please see Testflight download instructions on the BIMSpeed training website.

# Small app configuration step before logging in

- Important before logging in
- This couples the app to the right database, ensuring that login credentials will work.
- **THIS SHOULD BE IN THE LETTER**



# Inhabitant logs in with credentials from letter.



# User consent page

6:55 PM Sun Apr 11 100%

**BIMSPEED Informed Consent Information for crowdsourcing** 

**User consent**

Thank you for agreeing to participate and contribute information to our renovation work. The BIM SPEED project will use the data that you provide to develop a more efficient and thorough understanding of structures undergoing renovation.

Before continuing, we need to ensure that you are 18 years old or older and that you are contributing voluntarily to this project. There are no obvious physical, legal or economic risks associated with participating in this study. You do not have to answer any questions you do not wish to answer. Your participation is voluntary and you are free to discontinue your participation at any time.

The information you provide will be stored securely by DEMO Consultants and this information will be anonymised before being fully integrated into BIM SPEED project developments. No personally identifiable information will be reported in any research product or renovation reports. More information on the project and its direct results are available on our project website.

The BIM SPEED Project believes privacy and data security and confidentiality to be very important. If you have any privacy and data security related concerns, please first contact our project data security manager, Jason Pridmore (pridmore@eshcc.eur.nl) at Erasmus University. Further support is available from the Erasmus University and project Data Protection Officer, Marlon Domingus (marlon.domingus@eur.nl).

By clicking "I agree" you are indicating that you are 18 years of age or older, that you are participating voluntarily and that you agree to allow BIM SPEED to use your data for analysis within this project.



I Agree

# MOBILE INHABITANTS APP



- Working with questionnaires

# Questionnaire page

The screenshot shows a mobile application interface for a questionnaire. At the top, the status bar displays '4:07 PM Sun Feb 14' and '100%' battery. The app header includes a hamburger menu icon, the title 'Stek democase 4 - v Duvenvoordestraat 2, 2361JT, Warmond', and the BIM-SPEED logo. A vertical pink sidebar on the left contains a 'Inspectie' icon and a 'Synchroniseren' button with a refresh icon. The main content area features a blue header 'BIMSpeed\_Questions\_Stek\_202102\_Internal Demo\_3' and a list of question themes: 'Light', 'Background questions', 'Sound', 'Indoor climate / heating', 'Warm water', 'Ventilation and air quality', and 'Maintenance'. The 'Warm water' and 'Maintenance' items are marked with green checkmarks. A 'Inleveren' button is located at the bottom right. Three yellow callout boxes on the left provide instructions: 'Question themes' points to the list, 'Green = all theme questions answered' points to the green checkmarks, and 'Click on theme: drop down' points to the dropdown arrows.

4:07 PM Sun Feb 14

100%

Stek democase 4 - v Duvenvoordestraat 2, 2361JT, Warmond

BIM SPEED

Inspectie

BIMSpeed\_Questions\_Stek\_202102\_Internal Demo\_3

Light

Background questions

Sound

Indoor climate / heating

Warm water

Ventilation and air quality

Maintenance

Synchroniseren

Inleveren

Question themes

Green = all theme questions answered

Click on theme: drop down

# Dropping down a theme, shows question previews

4:11 PM Sun Feb 14

Stek democase 4 - v Duvenvoordestraat 2, 2361JT, Warmond

BIM SPEED

BIMSpeed\_Questions\_Stek\_202102\_Internal Demo\_2

Light

Background questions

✓ What is your age? Older than 80

✓ Are there personal circumstances and / or health aspects that we need to take into account when renovating your home? No not at all

Have MIVA adjustments already taken place in your home? (A MIVA adjustment is a part in a house that is adapted to the requirements of a resident with a physical disability. Eg. a disabled toilet, or a door that has been made wheelchair accessible.) yes

✓ Which part in your house? Unanswered

✓ What is your household situation like? Other, namely...

✓ Other: 25 dogs and 67 goats

✓ May we contact you based on your answers? yes

✓ Sound

Indoor climate / heating

Warm water

Ventilation and air quality

Inleveren

Inspectie

Synchroniseren

Checkmark gray / green

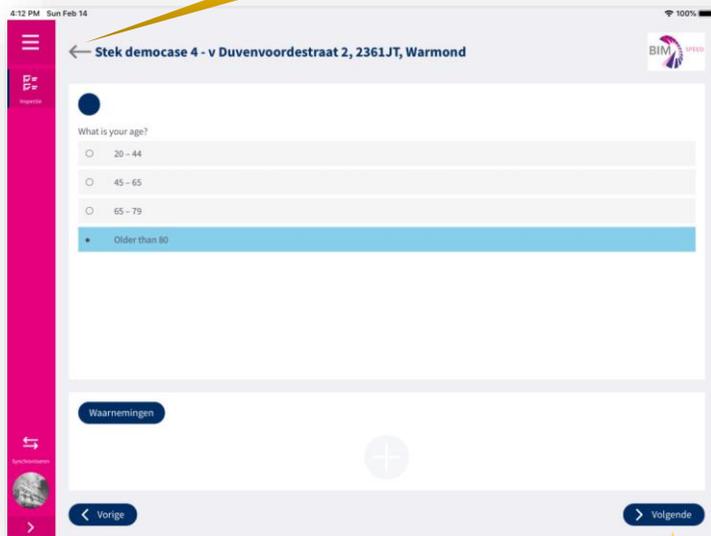
Click on question: open question page

Given answer

# 3 questiontype UI's

Closed question

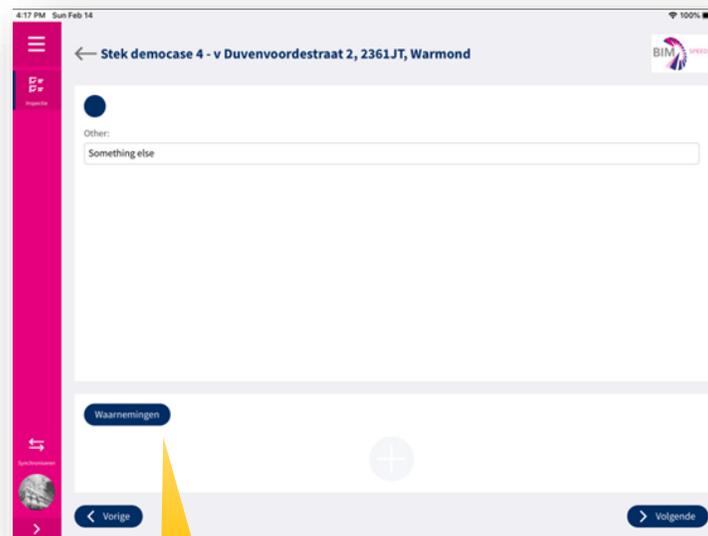
Back to overview



Previous question

Next question

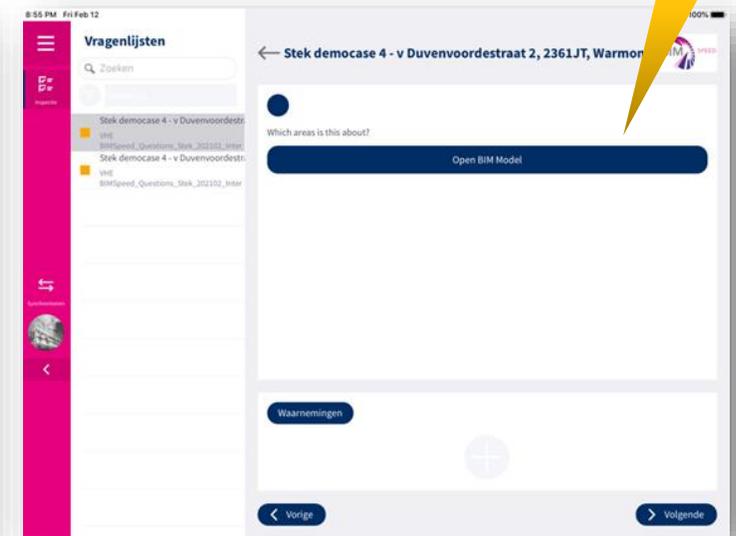
Open question



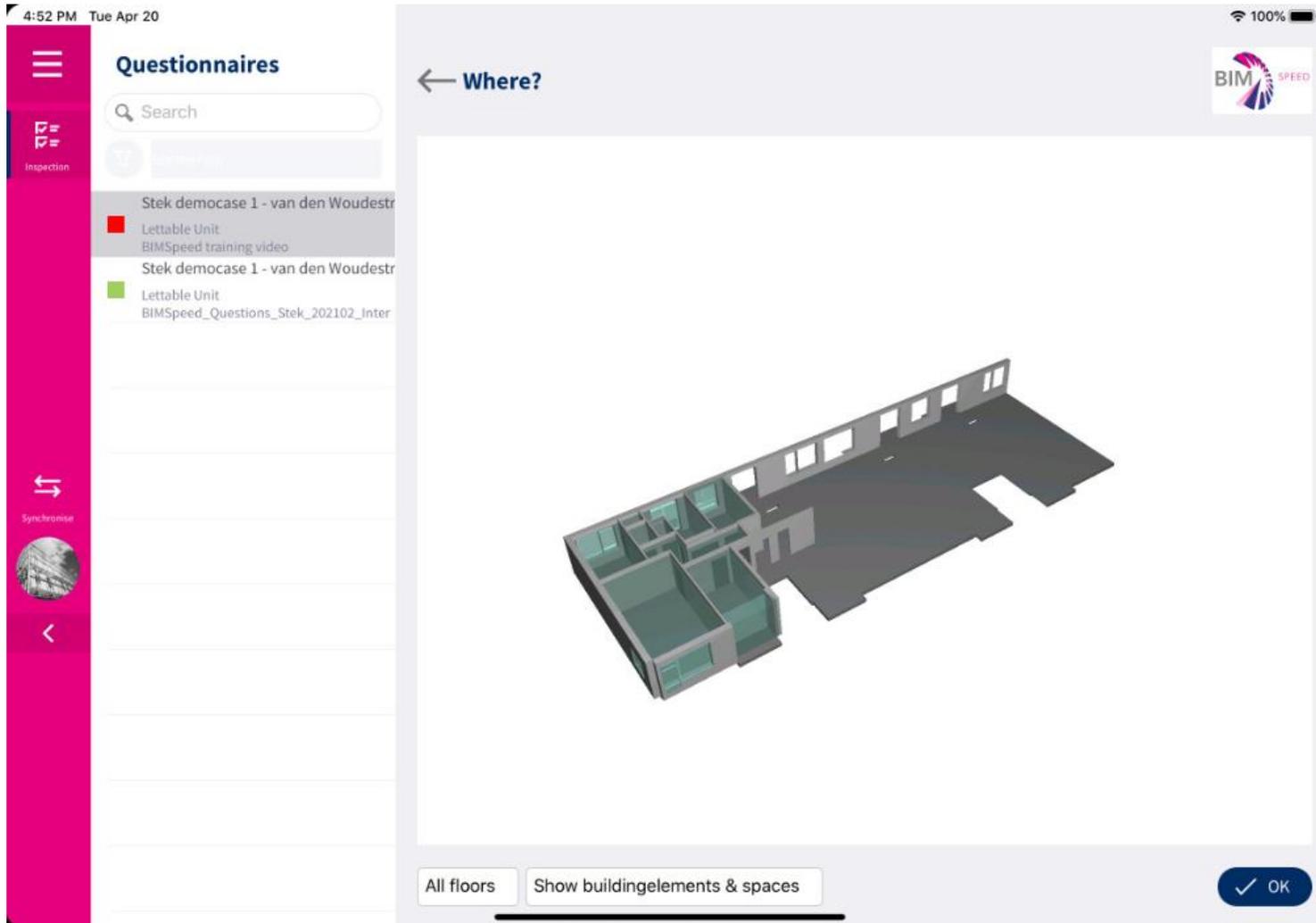
Add personal observations

Spatial question

Open BIM Viewer

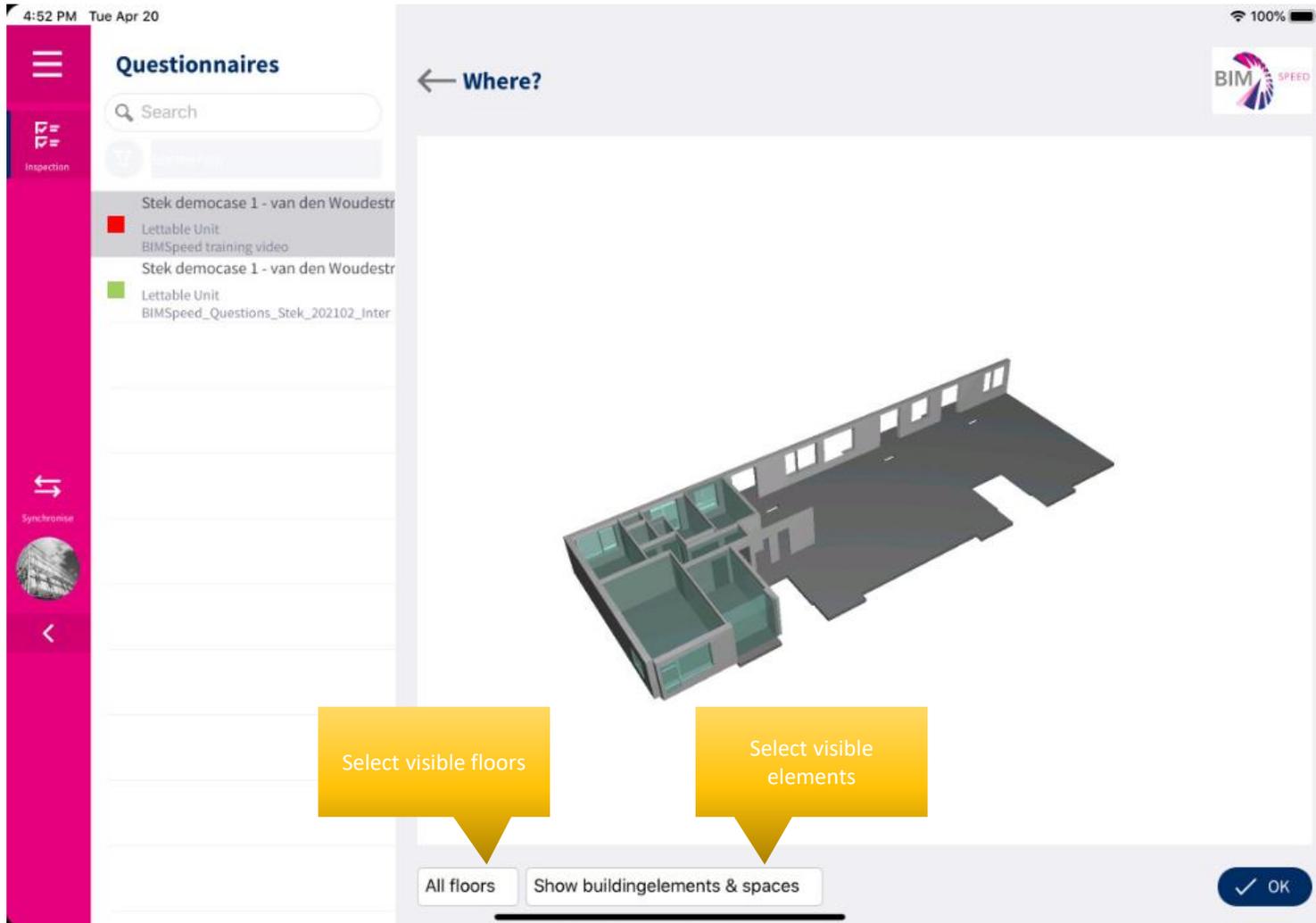


# Navigating



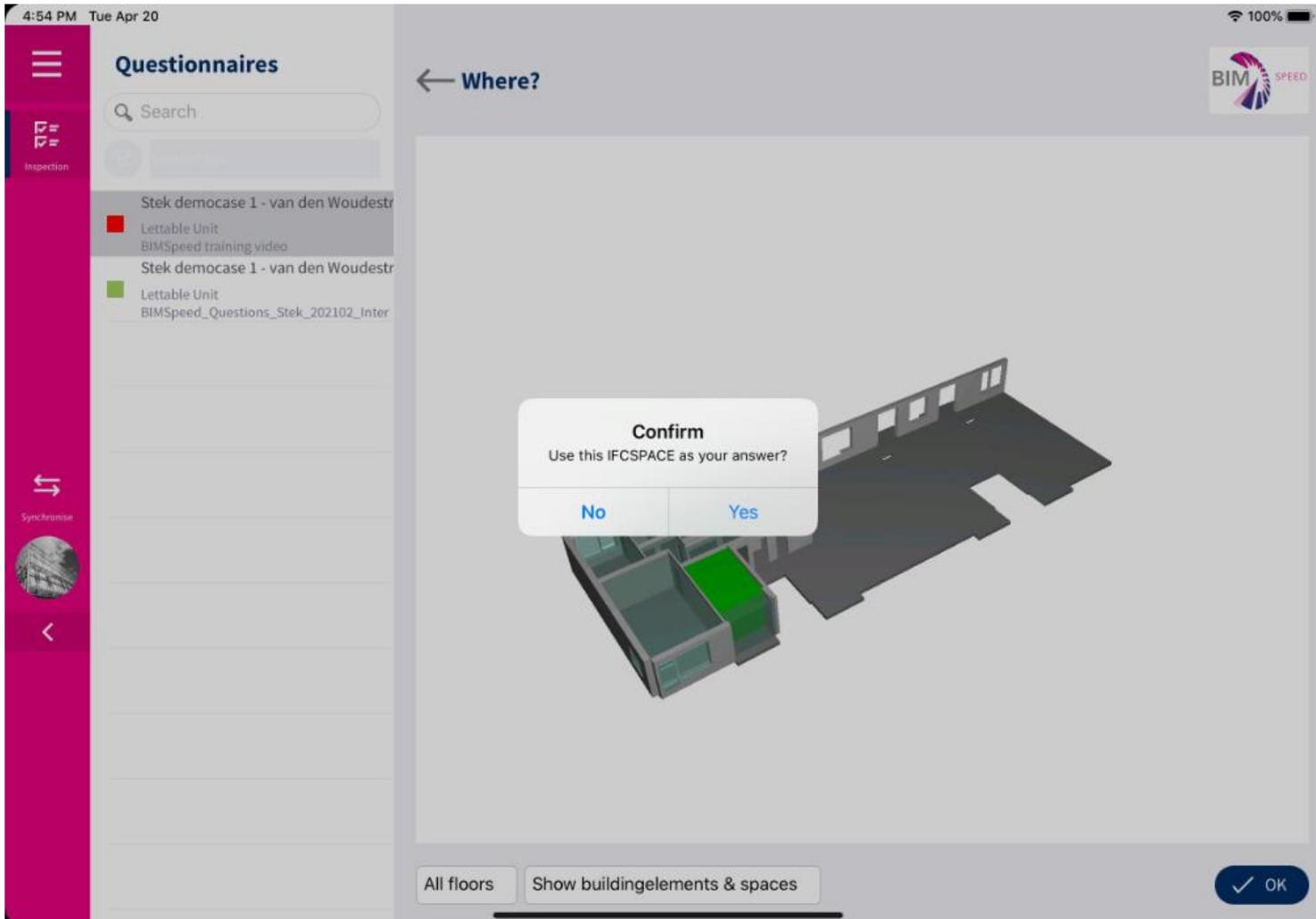
- Model automatically filtered to dwelling of the inhabitant
- Pan
- Rotate
- Zoom

# Filtering



- Show all floors / 1 floor
- Show spaces / building elements only or both

# Selecting spaces



- Tap space > confirm selection

# Add personal observations

4:13 PM Sun Feb 14

Stek democase 4 - v Duvenvoordestraat 2, 2361JT, Warmond

BIM SPEED

Inspectie

Waarneming

Titel

Waarneming

Foto's

Locatie

Tekening

Synchroniseren

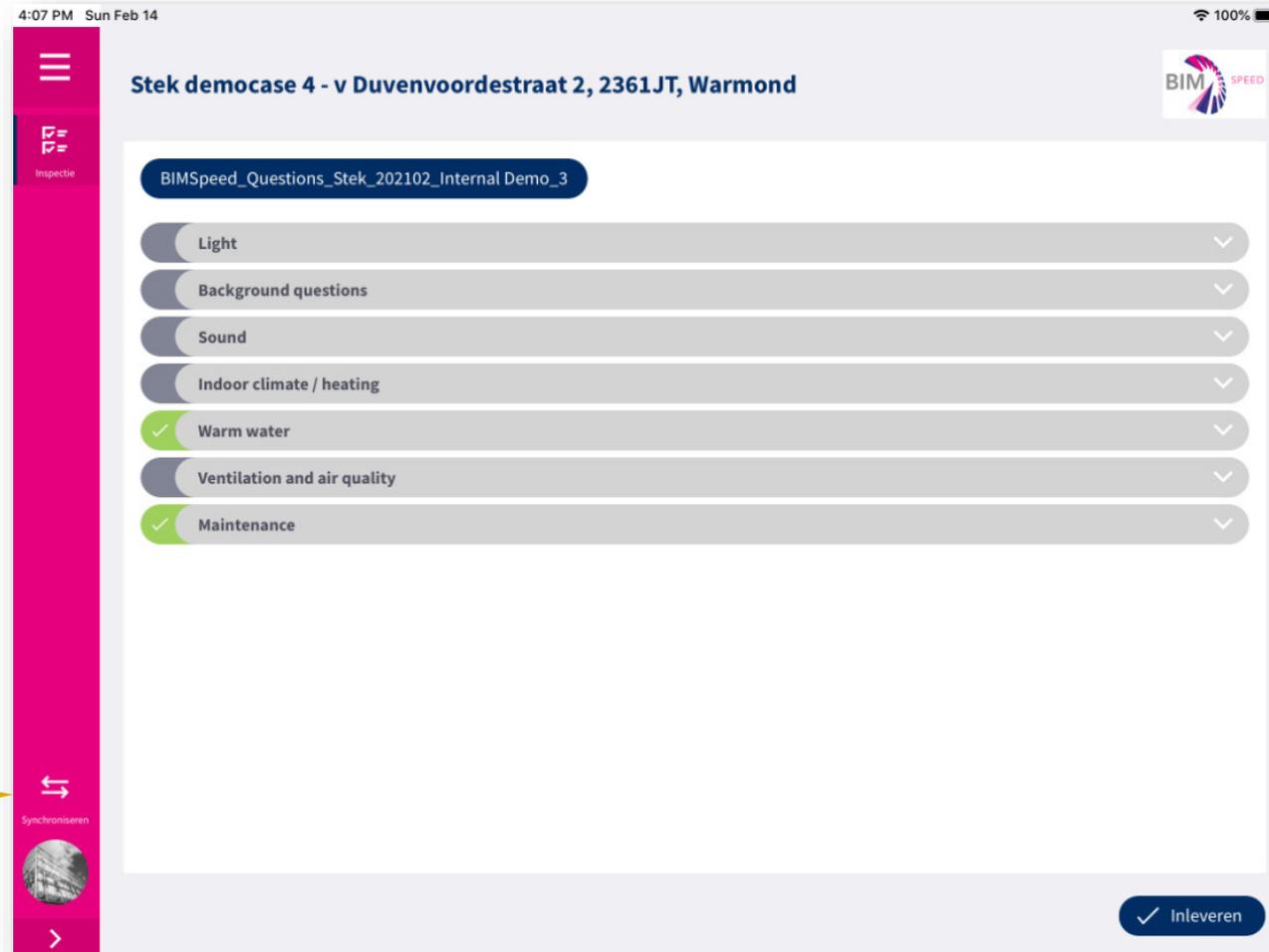
Annuleren

Bewaren

Add extra textual info

Add photos

# Hand in the results



2. Synchronise

1. Hand in



# QUESTIONNAIRE MANAGEMENT



- Working with the results

# Processing filled in questionlists

The screenshot displays the RE Suite software interface. On the left is a dark blue navigation sidebar with the following menu items: SURVEY, Stock, Objects, Lettable units, Management, Templates, Survey planning, Planning, Surveys, Questionnaires (highlighted in blue), Observations, and Help. The main area is divided into two panes. The left pane, titled 'Objects', shows a list of 37 objects, including 'Complex 01 - Haaswijk - AA, 1111, Delft' and several 'Lettable Unit' entries. A yellow callout box with the text 'Go to Questionnaires' points to the 'Questionnaires' menu item. The right pane shows a detailed view of a questionnaire for the 'Light' category. It includes a navigation bar with 'Light' selected, and a table of questions:

Question ID	Question Text	Score 1	Score 2	Other, namely...
9	What do you think about the lighting in your home/complex?	1	0	Other, namely...
11	What do you think about the amount of daylight in your home?	0	0	

# Processing filled in questionnaires

Tab through themes

Woning Vliering Wanden Dak lekken Asbest Dakkapel Dakramen Conclusie

Buttonbar

Woning				
1	EGW of MGW?	1	0	MGW
2	Heeft de woning een plat dak of een schuin dak?	0	0	schuin

1. 2. 3. 4.



1. Edit content
2. Get completion summary
3. Batch edit
4. Export to BIMspeed

# Answers exported to BIMSpeed

Standard folder for crowdsourcing results

Separate files per theme

1 file containing everything

Name	Size	Date
Warm water	882 o	12/04/2021 6:55 AM
Ventilation and air quality	1.03 ko	12/04/2021 6:55 AM
Sound	489 o	12/04/2021 6:55 AM
Maintenance	631 o	12/04/2021 6:55 AM
Light	2.53 ko	12/04/2021 6:55 AM
Background questions	2.25 ko	12/04/2021 6:54 AM
All	31.91 ko	12/04/2021 6:54 AM

# JSON structure

- Question Theme
  - Question 1
    - Respondent Answer
    - Respondent Answer
  - Question 2

```
Code
1- [{"QuestionListTheme": "Light",
2- "Questions": [
3-   {
4-     "QuestionText": "This is a spatial question. What is your answer?",
5-     "RespondentAnswers": [
6-       {
7-         "Respondent": "respondent: JNOTest - JNOTest",
8-         "Answer": "",
9-         "QuestionListTheme": "Light",
10-        "Project": "DEMO TESTS"
11-      },
12-      {
13-        "Respondent": "respondent: TestMN1 - Testobject MN 1",
14-        "Answer": "",
15-        "QuestionListTheme": "Light",
16-        "Project": "DEMO TESTS"
17-      },
18-      {
19-        "Respondent": "respondent: 08 jw - jw",
20-        "Answer": "",
21-        "QuestionListTheme": "Light",
22-        "Project": "DEMO TESTS"
23-      }
24-    ]
25-   },
26-   {
27-     "QuestionText": "What do you think of the indoor climate of your home?",
28-     "RespondentAnswers": [
29-       {
30-         "Respondent": "respondent: JNOTest - JNOTest",
31-         "Answer": "Not pleasant",
32-         "QuestionListTheme": "Light",
33-         "Project": "DEMO TESTS"
34-       },
35-       {
36-         "Respondent": "respondent: TestMN1 - Testobject MN 1",
37-         "Answer": "Not pleasant",
38-         "QuestionListTheme": "Light",
39-         "Project": "DEMO TESTS"
40-       }
41-     ]
42-   }
43- ]
44- }
Ln: 1 Col: 1
```

# Contact

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*DEMO by  
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Inhabitants Crowdsourcing App  
BIM-SPEED Project*



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