interactive scape

Touch & Object Assistant

Operating instructions

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Content

As of Touch and Object Assistant Version 4.6
and on the following devices

st32aio-006
st43-007
st55-007
st65-008
and newer

Capore® Plus is no longer supported!
This manual therefore does not
explain the commissioning and configuration of Capore® Plus!

interactive scape

Technical specifications are subject to change without notice.
Version 1.0 - Status: 03/2022
poc: DKr

1. User Interface (Web Interface)
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1. User Interface (Web Interface)

This manual describes the configuration of the touch and object recognition of the ***Scape*® Tangible** with ***the Touch & Object Assistant***.

The **Touch & Object Assistant** is the operating system in your ***Scape*® Tangible.** It powers the touch & object recognition. The
integrated technology takes over all the des **Touch & Object Assistant** and sends the detected information as TUIO messages to all configured client systems. The **Touch & Object Assistant** provides a **web interface** through which you can make the following settings on the system:

- Activate object recognition licence of the **Scape® Tangible**
- Manage TUIO settings
- Set **Capore®** object detection mode
- Test touch & object recognition
- Manage **Scape X®** objects (TUIO ID, rotation angle, X and Y offset)
- Manage network settings
- Back up / restore settings
- Restart services
- Restart system
- **Touch & Object Assistant** update
- Send debug data to Interactive Scape

1.1. Opening the User Interface

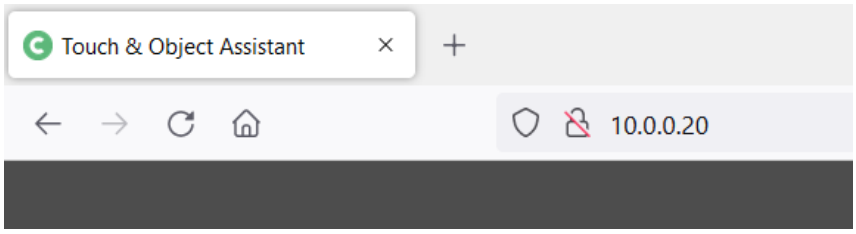

Abb. 1:

Open a web browser on a device that is connected to the **Scape® Tangible** via a network.
Depending on how your **Scape® Tangible** is connected to the network, you have the following possibilities to access the **web interface.**

a) The **Scape® Tangible** is connected directly to the application PC with a network cable:
By default, the network interface of the **Capore® API box is** set to the static IP address **10.0.0.20** with the subnet mask **255.255.255.0.** Set the network interface on the PC to the address 10.0.0.21/24, for example. Enter the IP address of the **Scape® Tangible** (10.0.0.20) in the address line of your browser.

b) The **Scape® Tangible** is integrated into a network with DHCP and DNS server:
In this case, the system obtains an IP address from the DHCP server automatically.
Enter it in the url field of your browser.
You can also reach the **web interface** via the **hostname** of the unit. The factory-set unique name of the **Scape® Tangible** can be found on the type plate on the back of the unit.

1.2. Overview

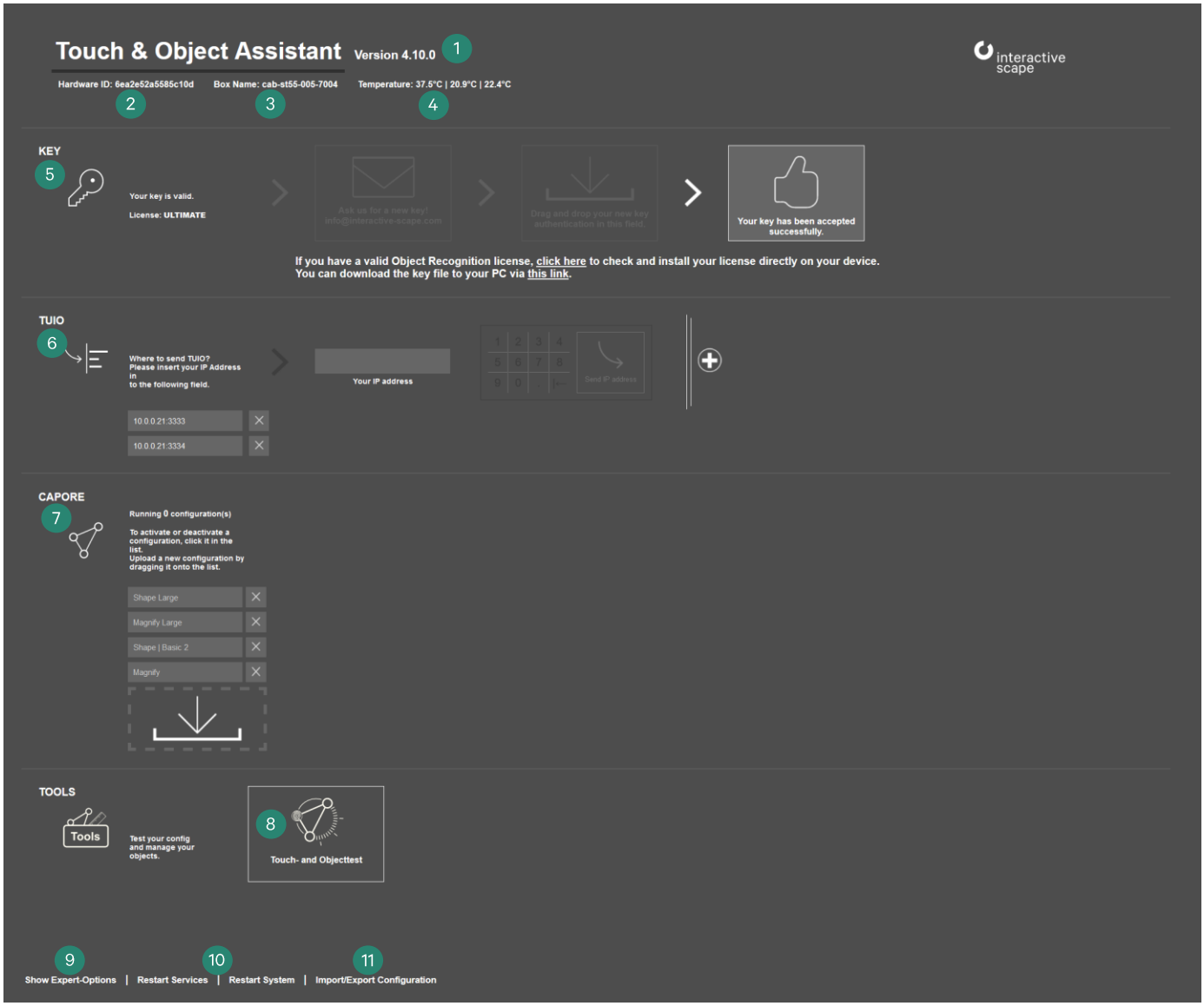

Abb. 2:

1	Version number of the **Touch & Object Assistant**
2	Hardware ID of the device
3	Host name of the **Scape® Tangible**
4	Temperature inside the unit
5	**Capore® / Scape X®** activation and licence check
6	TUIO settings
7	Setting the object recognition mode for **Capore®**
8	Tools for testing and configuring touch and object recognition
9	Show / Hide Expert Settings
10	Restarting services or the entire system of the **Scape® Tangible**
11	Back up/restore configuration

1.3. Configuration

1.3.1. Hardware ID & System information

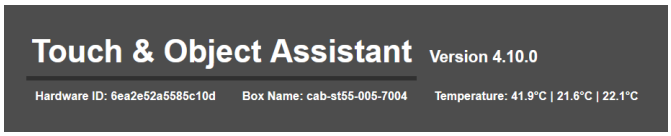

Abb. 3:

Make sure that you always have the latest version of the **Touch & Object Assistant** installed so that your system is optimally protected and functions stably. Click on the version number to check whether an update is available (more information on the update process in **Chapter 1.3.7 - Expert settings).**

The hardware ID is a unique character string that uniquely identifies your system. You need this string to obtain a valid licence file.

1.3.2. Activation & licence key

If your system requires activation (see figure 4), send your hardware ID (see **chapter 1.3.1 - Hardware ID & System Information)** to info@interactive-scape.com.

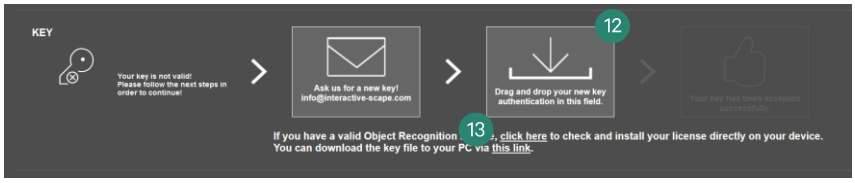

Abb. 4: Inactive **Capore® object recognition**

You will receive a licence key file. Drag and drop it onto the corresponding **symbol (12)**.

If you have purchased an object recognition licence, your licence is also stored on the Interactive Scape licence server. If your system is connected to the Internet, you can have the licence installed automatically.
To do this, click the corresponding **link (13)**.

At https://activate.capore.de you can also download your licence key at any time after entering your hardware ID.

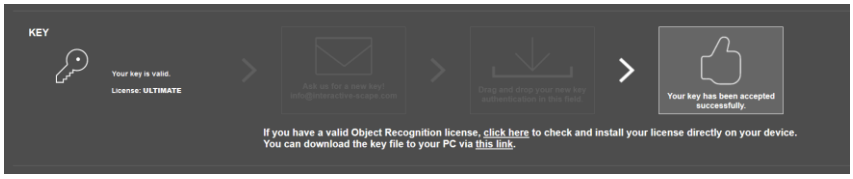

Abb. 5: A valid licence key file was found.

Now your **object recognition** is activated and ready to use (see figure 5).

1.3.3. TUIO

TUIO is a UDP-based protocol for transmitting touch and object information over a network.
In the **TOA web interface** you can define and delete any TUIO clients in the network. All touch and object information is sent to all TUIO receivers in the list.

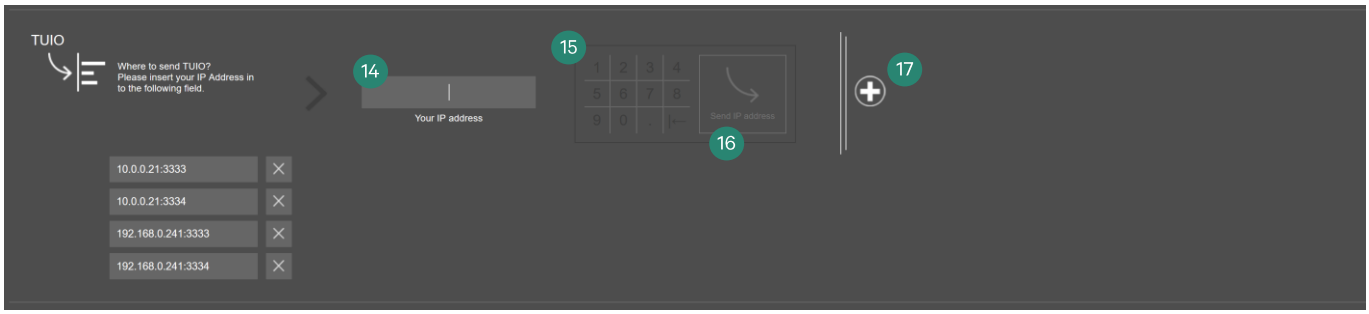

Abb. 6:

Enter a valid IP address in the **IP address field (14)** via the **number field (15)** or with a keyboard. Complete the entry by pressing the **Send IP address** button **(16).**

The TUIO default port is 3333. If you want to use a different port, click on the **plus (17)** to display the port entry and select a port.

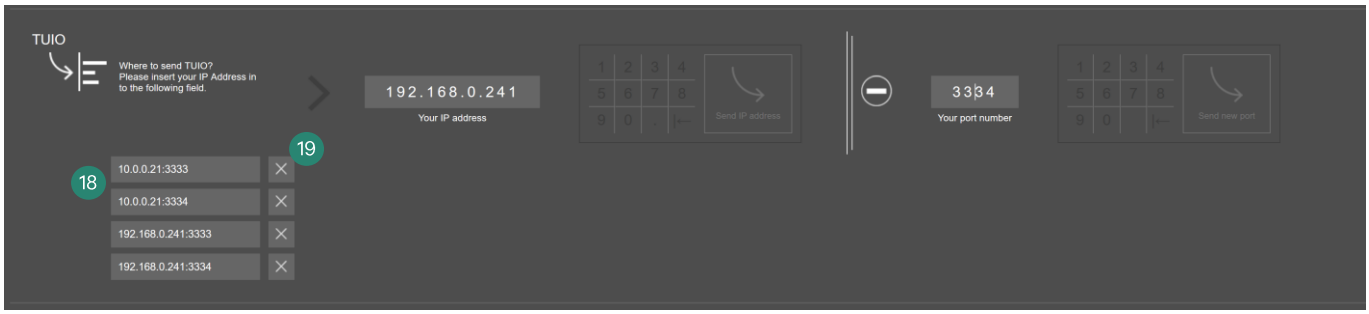

Abb. 7:

The entered address is added to the **list of TUIO recipients (18).**

Delete TUIO recipients from the list by clicking on the **X (19)** behind the corresponding entry.

With Expert Options displayed, you can set the TUIO version used per client.

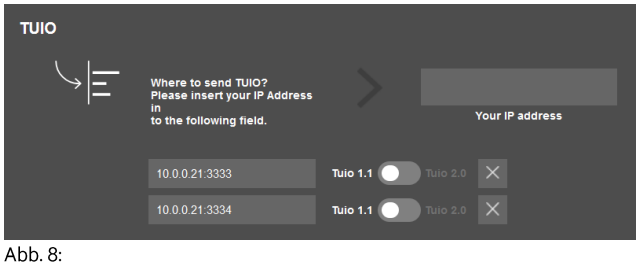

Abb. 8:

1.3.4. TUIO Websockets

In addition to the standard UDP protocol for TUIO, you also have the option of receiving TUIO data from the **Scape® Tangible** via a websocket.

The system provides you with 2 websocket servers for this purpose.

TUIO 1.1→ ws://10.0.0.20:3333
TUIO 2.0→ ws://10.0.0.20:3343

At http://10.0.0.20/js/tuio_client/tuio20/Tuio20Client.js you will find a JavaScript TUIO 2.0 client that you may integrate directly from the device into your project.

```
<script src="http://10.0.0.20/js/tuio_client/tuio20/Tuio20Client.js"></script>
<script>
    let DemoImplementation = function(){
        this.tuioReceiver = new WebsocketTuioReceiver("ws://"+location.hostname+":3343/");
        this.tuio20Client = new Tuio20Client(this.tuioReceiver);
        this.tuio20Client.addTuioListener(this);
        this.tuioAdd = function(tuioObject){ console.log(tuioObject); };
        this.tuioUpdate = function(tuioObject){ console.log(tuioObject); };
        this.tuioRemove = function(tuioObject){ console.log(tuioObject); };
        this.tuioRefresh = function(tuioTime){
            console.log(this.tuio20Client.getTuioPointerList());
            console.log(this.tuio20Client.getTuioTokenList());
            console.log(this.tuio20Client.getTuioBoundsList());
        };
    };

    var dI = new DemoImplementation();
</script>
```

1.3.5. Object tracking

There are different types of **Capore® objects** (**Capore® Basic 2**, **Capore® Magnify**, **Capore® Shape 2**). Each of these object types is identified by unique patterns that are stored in a pattern file. By selecting a specific pattern file, you determine which object types the system recognises.
Multiple activations are also possible.

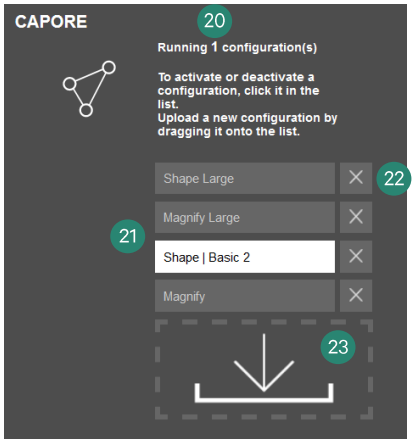

Abb. 9:
The number of active pattern files can be found in the **text (20)** above the **list of installed pattern files (21)**.
Click on a grey entry in the **list of installed pattern files (21)** to activate this pattern file for the **Capore® object recognition** or on a white entry to deactivate it.
Active pattern files are highlighted in white in the list of **installed pattern files (21).**

Click on the **X (22)** of a list entry to delete this pattern file from your device.

Add more pattern files to your List by dragging and dropping them individually onto the **upload icon (23).**
The files are automatically added to the **list of pattern files (21)** and can then be selected.
The change of the pattern configuration is active immediately.

You do not need a pattern configuration to use the Scape X® object recognition.
If you have a Scape X® object recognition licence, all Scape X® object types are recognised automatically.

1.3.6. Tools

Touch & Object Test

With the **touch and object test** you can:

- check the touch detection of your system,
- check the object recognition of your system,
- Assign a new ID to **Scape X® objects**,
- Calibrate the rotation angle and X or Y offset of **Scape X® objects.**

When starting the touch and object test, your browser automatically switches to full screen mode. This is the only way to display the positions of the touch and object visualisations correctly.

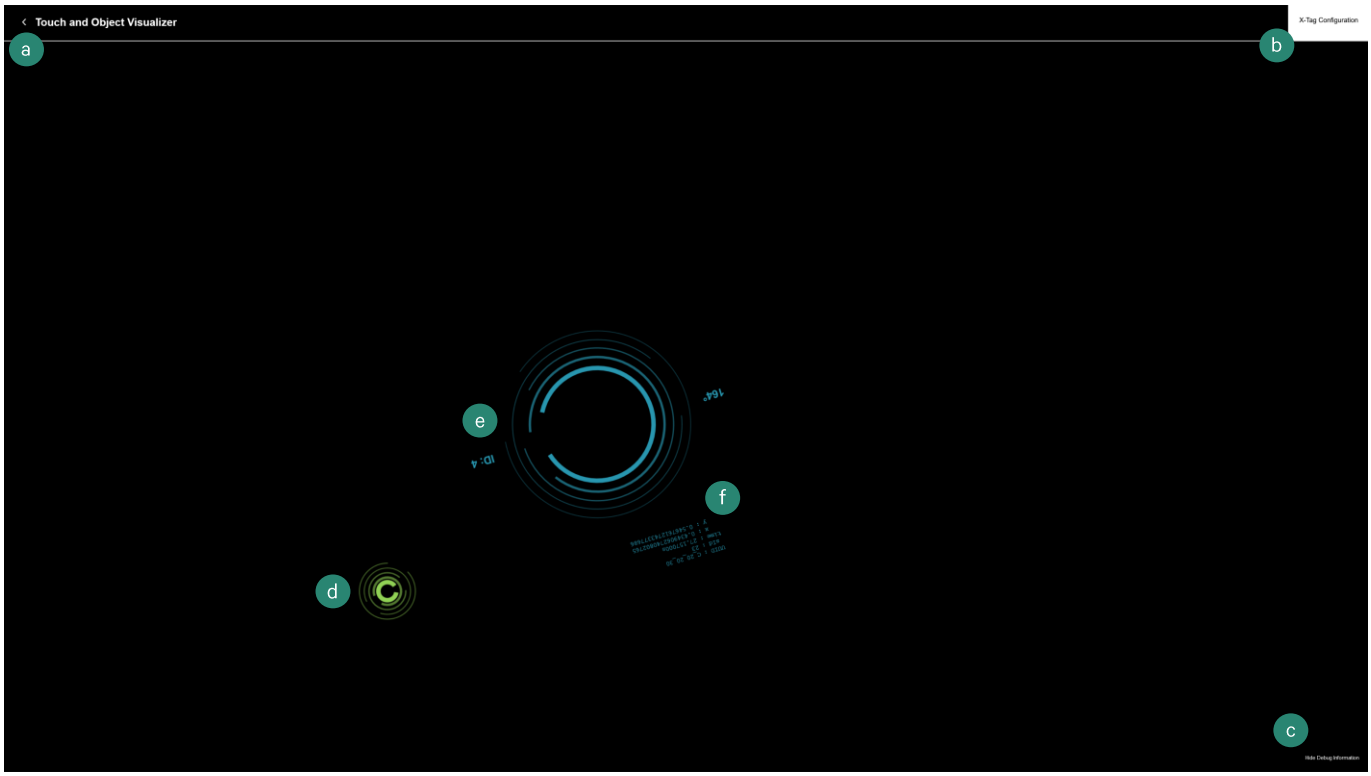

Abb. 10: Touch and object test - overview

a	End touch and object test (keyboard key x)
b	Show / Hide **Scape X®** Object Settings
c	Show / hide meta-information on objects
d	Touch visualisation
e	Object visualisation with current rotation angle and TUIO-ID
f	Object meta-information

Scape X® Object Settings

Click on the **button (b) to** display the **Scape X®** object settings.
The settings for **Scape X® objects** are only available if there is **exactly one Scape X® object** on the screen.

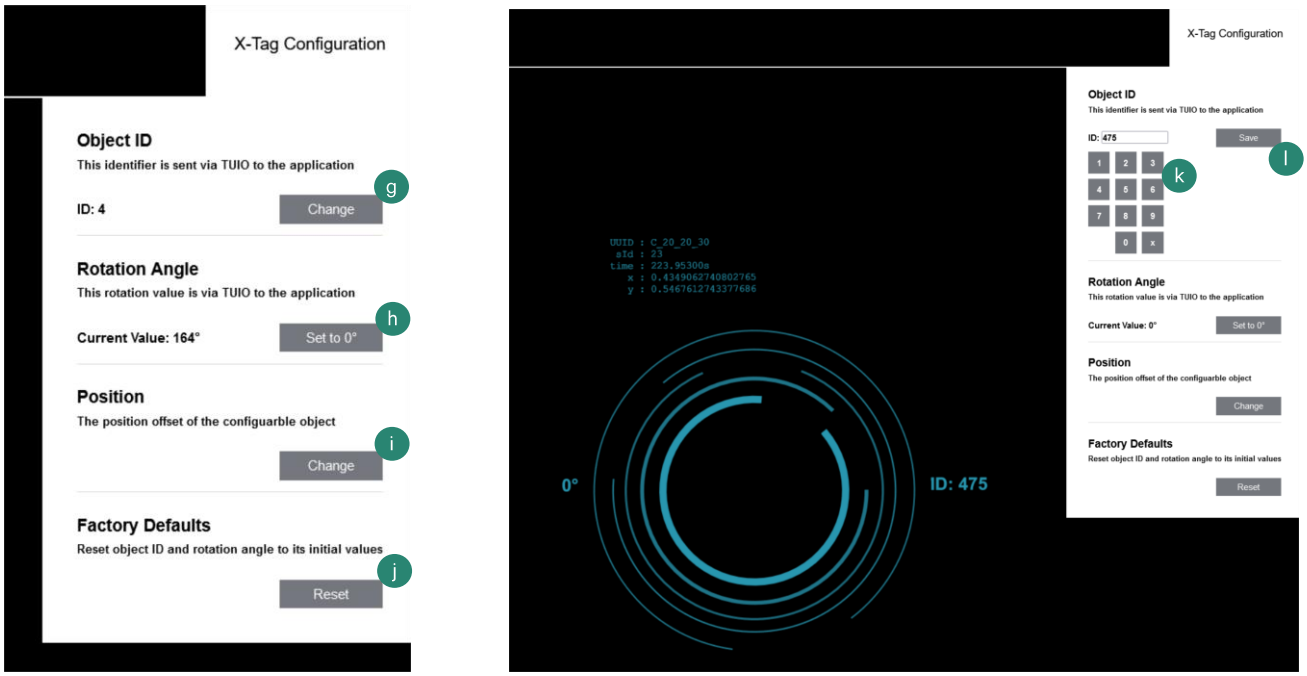

Abb. 11:

Click on the **"Change"** button **(i) to** assign a newTUIO-ID to a **Scape X® object** or to change the assigned TUIO-ID. The TUIO ID is a number that identifies an object in the TUIO protocol.
A TUIO ID is not unique and can be assigned to several objects.

Use the **number keys (k) to**
enter the new TUIO ID and finish the process with "**Save" (l).**

This change is active immediately.

Click on the **"Set to 0°"** button **(h) to** calibrate the rotation angle of an object. The current physical rotation of the object is assumed to
be 0° and saved.

This change is active immediately.

Click on the **"Change"** button **(i)** under **Position to** define an offset for the X and Y position of an object.

Position your object on the rings of the image so that your desired object centre corresponds to the centre of the image. Complete the process with **"Save" (m).** You can also cancel the process at any time with **"Cancel" (n)** and return to the initial screen.

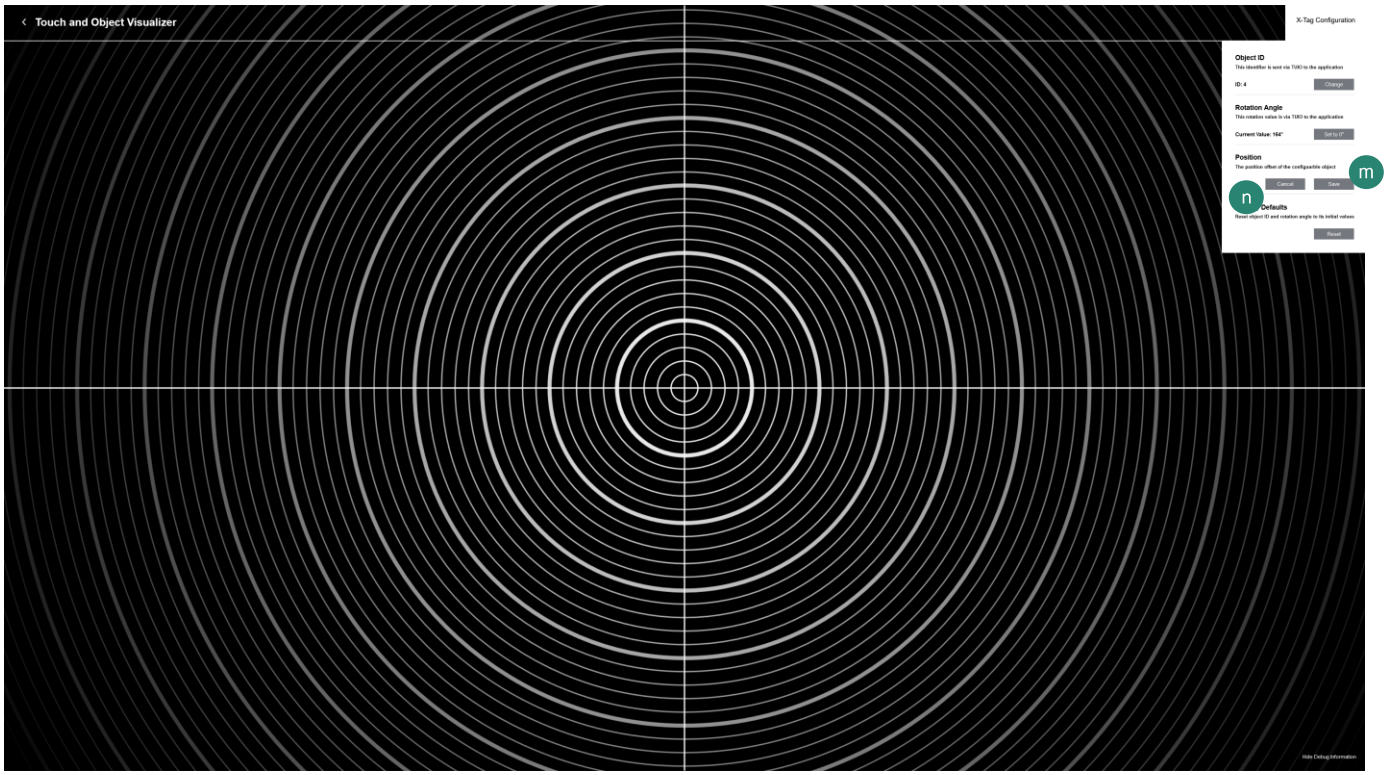

Abb. 12:

Click on the **"Reset" button (j)** to delete the calibration of the angle of rotation and the position as well as the assignment of the TUIO ID of a **Scape X® object.**

This change is effective immediately.

Changing the TUIO ID, the rotation angle and the position affects all Scape X® objects with the same UUID. If you reset the data for Scape X® Tag Visible ID 4, for example, those of all Scape X® Tags Invisible and Scape X® Shape Visible ID 4 will also change.

1.3.7. Advanced setting options

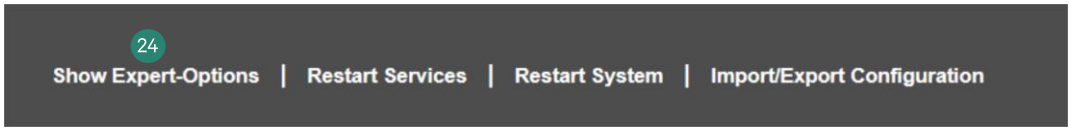

Abb. 13:

Click on **"Show Expert-Options" (24)** to access the following settings.

Advanced TUIO settings

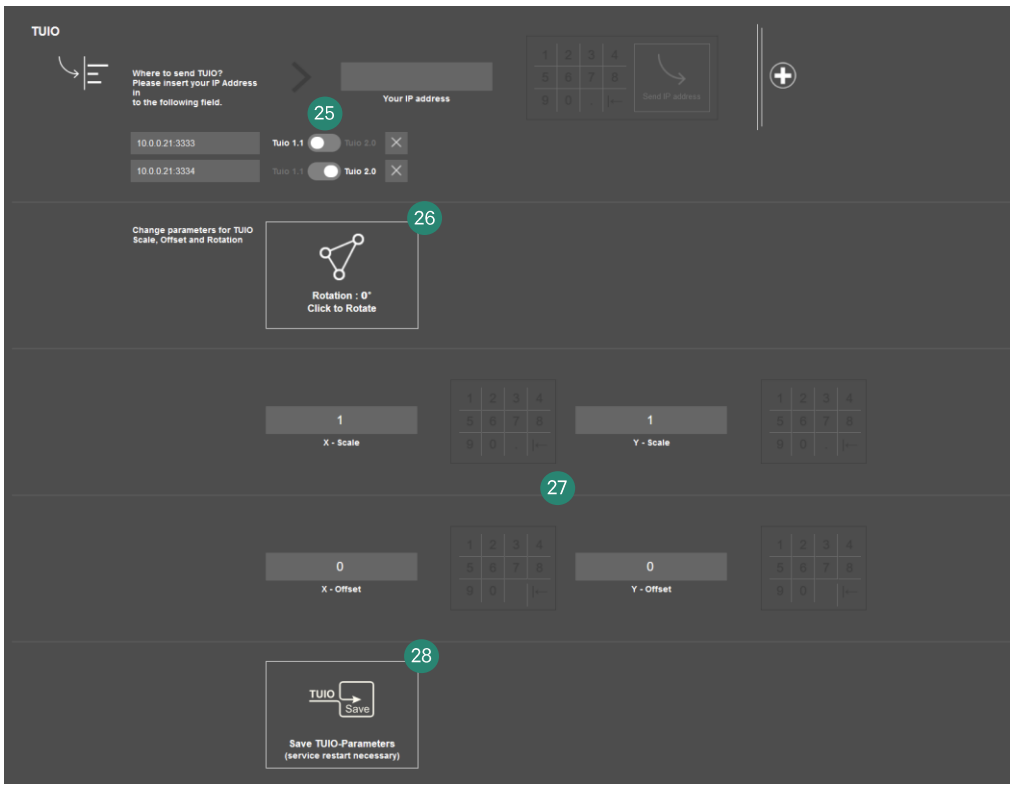

Abb. 14:

Use the **TUIO version switch (25)** behind each TUIO client to
select which TUIO version (**TUIO 1.1** or **TUIO 2.0**) is to be sent to the respective TUIO client.
The default setting for new TUIO clients is TUIO 1.1.

Adjustment of the TUIO coordinates

If you use your screen in portrait mode or if you want to combine several **Scape® Tangible** into one touch screen, it may be necessary to adjust the coordinates of the TUIO output.

To rotate the TUIO output by 90°, click on the button to adjust **the TUIO rotation (26).**

Below you will find some example configurations.

TUIO - Configuration for one unit Landscape Flipped

Display 1 - Landscape Flipped
Rotation : 0°
X-Scale : -1
Y-Scale : -1
X-Offset : 0
Y-Offset : 0

TUIO - Configuration for a device Portrait

Display 1 - Portrait
Rotation : 90°
X-Scale : 0
Y-Scale : 0
X-Offset : 0
Y-Offset : 0

TUIO - Configuration for a device Portrait Flipped

Display 1 - Portrait Flipped
Rotation : 90°
X-Scale : -1
Y-Scale : -1
X-Offset : 0
Y-Offset : 0

TUIO - Configuration for four units on one system as one extended display

Display 1 - top left – Landscape	**Display 2 - top right - Landscape**
Rotation : 0°	Rotation : 0°
X-Scale : 0,5	X-Scale : 0.5
Y-Scale : 0,5	Y-Scale : 0.5
X-Offset : 0	X-Offset : 1.0
Y-Offset : 0	Y-Offset : 0
Display 3 - bottom left - Landscape	**Display 4 - bottom right - Landscape**
Rotation : 0°	Rotation : 0°
X-Scale : 0.5	X-Scale : 0.5
Y-Scale : 0.5	Y-Scale : 0.5
X-Offset : 0	X-Offset : 1.0
Y-Offset : 1.0	Y-Offset : 1.0

TUIO configuration for 3 displays upright, side by side

Display 1 - left – Portrait	**Display 1 - centre - Portrait**	**Display 1 - right – Portrait**
Rotation : 90°	Rotation : 90°	Rotation : 90°
X-Scale : 0.3333	X-Scale : 0,3333	X-Scale : 0.3333
Y-Scale : 1	Y-Scale : 1	Y-Scale : 1
X-Offset : 0	X-Offset : 0,3333	X-Offset : 0.6666
Y-Offset : 0	Y-Offset : 0	Y-Offset : 0

Network settings

In the network settings, you can configure the network adapter of the **Scape® Tangible.**
Enter the data using the respective numeric fields next to the input boxes or using a keyboard (for keyboard entries, click in the corresponding input box beforehand).

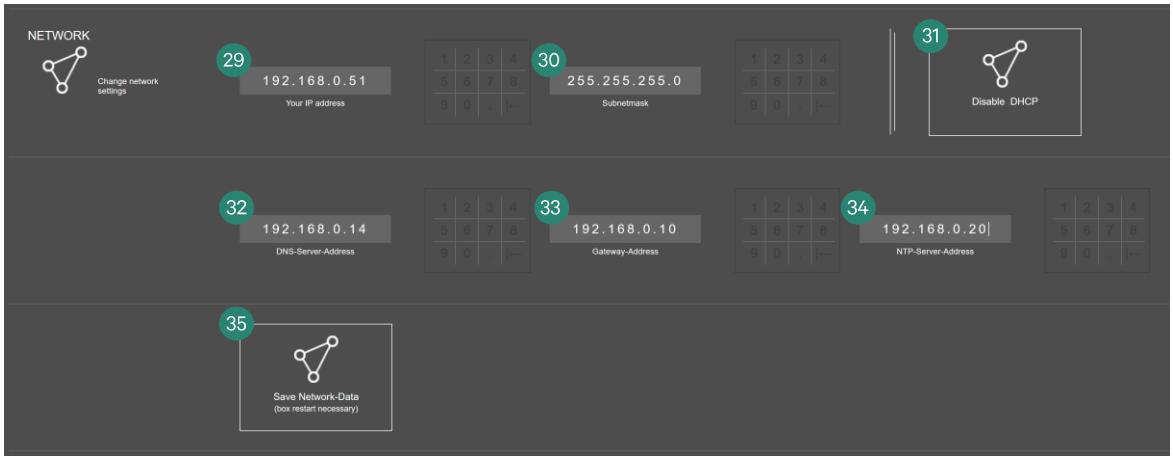

Abb. 15: Network settings - overview

29	Static IP address of the **Scape® Tangible**
30	Subnet mask for the static IP address of the **Scape® Tangible**
31	Switching the IP address acquisition via a DHCP server on / off
32	IP address of the DNS server
33	IP address of the standard gateway (Internet access)
34	IP address of an NTP server for time synchronisation
35	Save Network Data

The operation of DHCP and a static IP address is possible at the same time. The **Scape® Tangible** can then be reached via both addresses, the dynamic and the static one.

Your **Scape® Tangible** is always accessible via the IP 10.0.0.20/24.

Confirm your entries with the button **"Save Network Data" (35)**.
Changes to the network settings of the unit will only take effect after a restart of your **Scape® Tangible** (see **later in this chapter**).

Send debug data to Interactive Scape

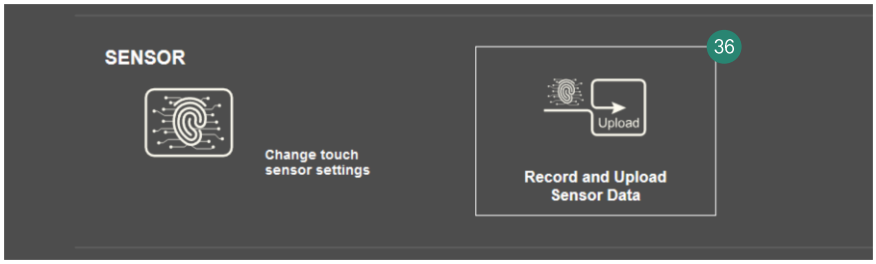

Abb. 16:

When this button is clicked, approximately two seconds of sensor data from your unit is recorded and uploaded to an Interactive Scape remote server.
These are stored together with your hardware ID and the current timestamp.
We only use this data internally to improve our algorithms.

As a rule, Interactive Scape Support will ask you to use this function.
Independent activation is not necessary

Update of the Capore® API box

Abb. 17:

If your PC is connected to the Internet, you can click on the version label of the **Touch & Object Assistant** to check whether a newer version of the operating system is available.

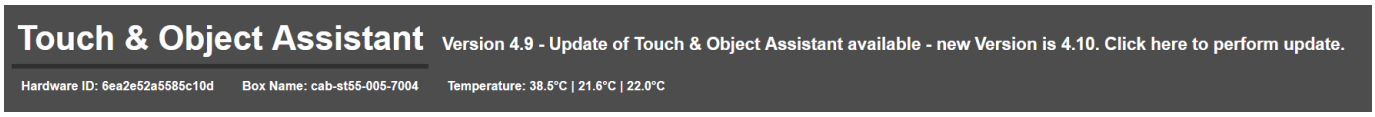

Abb. 18:

If a newer version of the **Touch & Object Assistant** is available, you will be informed.
Click on the message to start the update process.

During the update, the network connection of the Scape® Tangible must not be interrupted!

During the update, the power supply of the Scape® Tangible must not be interrupted!

If you have a valid **Touch & Object Assistant** - image file, you can upload and install the included system onto the unit instead of a configuration file as described under **Import/Export Configuration.**

Restart Capore® API box

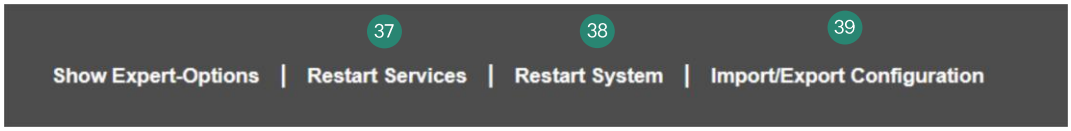

Abb. 19:

"Restart Service" (37) restarts individual **services** for touch and object recognition.
The operating system of the **Scape® Tangible** is not restarted.

"Restart System" (48) restarts the entire **Touch & Object Assistant** and all services. This action is comparable to disconnecting and reconnecting the power supply and is necessary, for example, to activate new network settings.

Import/Export Configuration

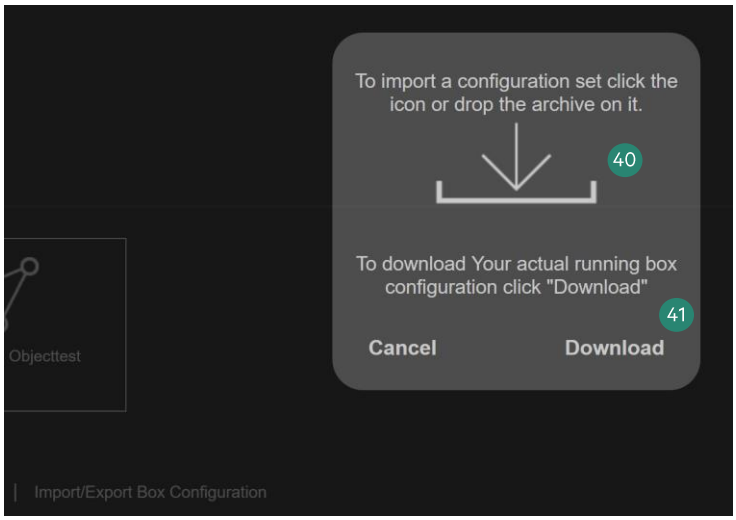

Abb. 20:

You can save the settings (incl. the uploaded pattern files) that you have made on your **Scape® Tangible in** a backup file. Click on **"Import/Export Configuration" (39)** and then on the button **"Download" (41)**.
With the help of this backup file you can restore the settings of your **Scape® Tangible** or set up another device.

It is not possible to back up or restore the activation key of the Scape® Tangible via the backup file.

You can also load a **Touch & Object Assistant** image file onto the unit at this point to update the system offline. The system itself recognises whether an image file has been selected instead of a configuration file and asks whether the system should be updated.

2. Troubleshooting Tips

If your **Touch & Object Assistant** does not work as intended, contact **Interactive Scape Hardware Support**. You can reach them on weekdays at **+49 30 698 094 150**.

2.1. Manufacturer - Support

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