Web SDK
Integration Manual

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MItek Manual

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Content

NOTE:
In October 2017, ICAR was acquired by Mitek Systems which means the ICAR portfolio is proprietary of Mitek Systems. Any reference to ICAR since now refers to Mitek.

Introduction

Camera control on web context is not an easy task. We know it because we have dealt with it. There are different usage scenarios (mobility, desktop), device quality (mobile camera with 15MPx vs 640x480 webcam with no autofocus) and several OS. Moreover, assisting your users to obtain a good image of their document using these tools needs more than a simple acquisition guide. Finally, acquiring a portrait of the person being sure that it is not a printed photo is a must to avoid that you have a real person in front of the camera.

That’s why we created Icar Web SDK.

Icar Web SDK includes a video SDK so you do not need to worry about how to implement video control. Using our module, you will have a video capturing the frames in a glimpse.

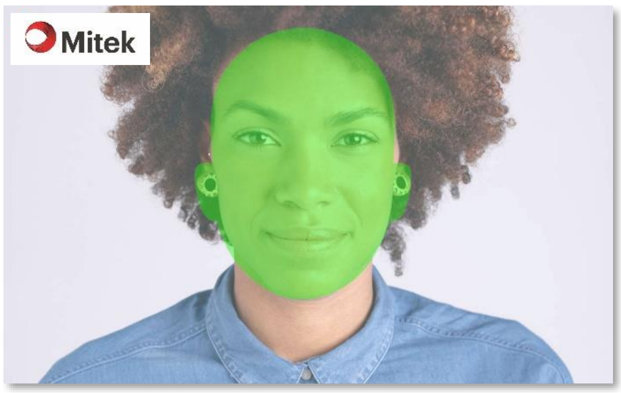
In addition, Icar Web SDK enables you to include into your website a face liveness validation functionality simply by writting some lines of code, and offers an autocapture functionality to allow the users to get an image of the document automatically.

IcarSDK.video

Add a video in your website by just adding some lines of code.

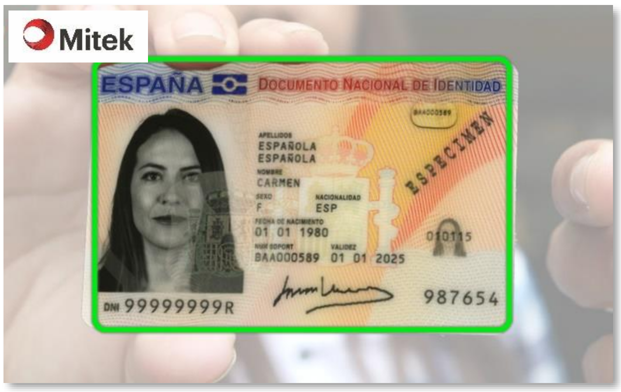
IcarSDK.faceCapture

Capture an image of a person only when the liveness test is checked. Make sure that the face is correctly positioned and at a good resolution.



IcarSDK.documentCapture

Capture an image of a document. When the user fits the document to the template, the system detects the document and acquires the image once it is on focus.



IcarSDK.video

Accessing the camera is not easy from Javascript, because of differences among browsers. Moreover, getting the image frames at the best resolution is not trivial. To help you in this task, we provide a video module optimized for the faceCapture API.

Moreover, IcarSDK.faceCapture assumes that all the functionality of the video (initialization, play, request frames, etc.) is given externally by a user defined module. You can use this module to do that.

There are 3 steps to add video capture to your web site:

1. Load the IcarSDK source code
2. Add a video component.
3. Initialize the video component.

Step 1: Loading the IcarSDK.video

The first step is to load the IcarSDK API into your web page.

```
<script async defer src="js/icarSDK.js"></script>
```

Step 2: Adding a video component

Next, you need to create a video component. For example:

```
<video id="videoInput" width="640" height="480" autoplay="true"></video>
```

Step 3: Initialize video capture

Finally, you must to initialize icarSDK.video, and the video will automatically start to capture frames from the webcam.

```
IcarSDK.video.initialize(videoInput)
```

NOTE: Acquisition can be configured for each context, depending on whether you are capturing a face or a document. See IcarSDK**.video.initialize(videoInput [, options])** for further details.

Methods of IcarSDK.video

IcarSDK.video includes several methods to manage its functionality.

IcarSDK.video.initialize(videoInput [, options])

This method initializes the video. It has a mandatory parameter (`videoInput`), corresponding to the id associated to the video component where we want to acquire the video. Additionally, there are some optional parameters that we can define to configure *icarSDK.video*. The first one defines the type of capture (modeCapture) that we are going to do:

- `IcarSDK.MODE_CAPTURE.GENERAL` (default)
- `IcarSDK.MODE_CAPTURE.FACE`
- `IcarSDK.MODE_CAPTURE.DOCUMENT`
- `IcarSDK.MODE_CAPTURE.DOCUMENT_IDCARD`
- `IcarSDK.MODE_CAPTURE.DOCUMENT_PASSPORT`

```
var OPTIONS_VIDEO = {
  modeCapture: IcarSDK.MODE_CAPTURE.FACE
}
IcarSDK.video.initialize(videoInput, OPTIONS_VIDEO);
```

In the case that you are going to use this module to do faceCapture, we recommend using the mode `IcarSDK.MODE_CAPTURE.FACE`. This mode is optimized to do the capture a face and the resolution of the video is configured to *640x480* (or the closest resolution that supports the camera). If the video is used to capture documents, the mode `IcarSDK.MODE_CAPTURE.DOCUMENT` will configure your camera with the best resolution allowed, but it is possible to specify the kind of document: `IcarSDK.MODE_CAPTURE.DOCUMENT_IDCARD` and `IcarSDK.MODE_CAPTURE.DOCUMENT_PASSPORT`. The default value is `IcarSDK.MODE_CAPTURE.GENERAL`.

By default, *icarSDK.video* uses the best camera for each process. When we configure the video module to capture documents (`IcarSDK.MODE_CAPTURE.DOCUMENT`), *icarSDK.video* uses the rear camera in mobile devices and the first camera found in other cases. When the module is configured to capture the face (`IcarSDK.MODE_CAPTURE.FACE`), the camera used is the front camera in mobiles devices and the first one found in the rest of devices. The video is flipped to make easy to the user to the positioning (except in the case that *icarSDK.video* is using the rear camera of a mobile device).

In the case that you would like to select a specific camera, you can do it as follows:

```
var OPTIONS_VIDEO = {
  cameraIndex: 1
}
IcarSDK.video.initialize(videoInput, OPTIONS_VIDEO);
```

If you need to know how many available cameras are on the system, you can use method `getNumberOfCameras` (see below).

If you would like to modify the path where the IcarSDK.video images are stored, you can modify the parameter `pathImages`. By default the path of the images that IcarSDK.video uses is './img/'.

```
var OPTIONS_VIDEO = {
  pathImages: './images/'
}
IcarSDK.video.initialize(videoInput, OPTIONS_VIDEO);
```

By default, the video is flipped or not automatically depending of the camera and device, but it is possible to force the flip of the video or disable it using the next parameter:

```
var OPTIONS_VIDEO = {
  flip_video: false
}
IcarSDK.video.initialize(videoInput, OPTIONS_VIDEO);
```

By default, it only request the user's video. In the case that you would like to have the audio, you can use the next parameter:

```
var OPTIONS_VIDEO = {
  getUserMediaAudio: true
}
IcarSDK.video.initialize(videoInput, OPTIONS_VIDEO);
```

icarSDK.video allows to know the state of the execution declaring a feedback function at the options.

```
var OPTIONS_VIDEO = {
  callBackFeedBackFunction: onFeedBackCallBack
}
IcarSDK.video.initialize(videoInput, OPTIONS_VIDEO);
```

The function (`onFeedBackCallBack`) must have the following prototype:

```
  onFeedBackCallBack(resultFeedBack)
```

The parameter resultFeedBack can be:

- `IcarSDK.RESULT_VIDEO.OK`
- `IcarSDK.RESULT_VIDEO.NO_CAMERA_DEVICES`
- `IcarSDK.RESULT_VIDEO.NO_CAMERA_PERMISSION`
- `IcarSDK.RESULT_VIDEO.UNAVAILABLE_CAMERA`
- `IcarSDK.RESULT_VIDEO.UNSUPPORTED_BROWSER`
- `IcarSDK.RESULT_VIDEO.UNKNOWN_ERROR`

IcarSDK.video.start()

This method starts the video capture process, if it has been stopped previously. By default, IcarSDK.video module authomatically starts the video capture process when we initialize the camera.

IcarSDK.video.pause()

This method pauses the video capture process, freezing the current frame.

IcarSDK.video.cleanUp()

This method stops the video process and cleans up all allocated data. Consequently, the video will stop delivering new frames.

IcarSDK.video.isInitialized()

This method indicates if the video is initialized or not.

IcarSDK.video.requestFrame()

This method is used to get a capture frame from the video. The parameter needed is a callback function that IcarSDK.video will call to return the captured image (`onFrameReceivedCallback`).

```
onFrameReceivedCallback(imageResult, hashCode)
```

The function (`onFrameReceivedCallback`) must have the following prototype:

Hence, imageResult will contain the captured image when the image is acquired by IcarSDK.video module. The format of the image is an imageData type[1].

In future versions, `HashCode` will contain the hash code computed from the imageData and the private key given to the client.

IcarSDK.video.changeCamera()

This method changes the camera that the module is using (in the case that there are more than one camera). When the SDK is using the last camera and you call `changeCamera`, the new selected camera is the first one on the list.

IcarSDK.video. getNumberOfCameras()

This method gets the number of available cameras (for instance, in a mobile device usually there is a frontal and a posterior camera). Since this task is asynchronous, this method needs as parameter the callback function (`onNumCamsReceivedCallback`) that will receive the anwer. When the checking process finishes, it will use the callback function to return the number of cameras found.
The function (`onFrameReceivedCallback`) must have the following prototype:

Hence, `numberCams` will contain the number of cameras connected.

```
onNumCamsReceivedCallback(numberCams)
```

[1] see https://www.w3schools.com/tags/canvas_imagedata_data.asp

Complete Integration example

Here you can see an example with some of the methods explained before.

```html
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="utf-8">
  <title>Icar vision</title>
  <script async defer src="js/icarSDK.js"></script>
</head>
  <body>
    <table width="640">
      <tr><td>
          <div style="position: relative;">
              <video id="videoInput" width="640" height="480" autoplay="true"></video>
          </div>
      <td></tr>
      <tr> <td>
          <input id="Capture" type="button" value="Capture" onclick="getImageFunction();"/>
          <input id="Start" type="button" value="Start" onclick="startFunction();" />
          <input id="Pause" type="button" value="Pause" onclick="pauseFunction();" />
          <input id="Stop" type="button" value="Stop" onclick="stopFunction();"  />
          <input id="ChangeCamera" type="button" value="Change Camera"
           style="visibility: hidden" onclick="changeCameraFunction();"  />
        </td></tr>
      <tr>
        <td> <canvas id="resultImage" width="640" height="480"></canvas> </td>
      </tr>
    </table>
   <script>
      window.onload = function () {
        var OPTIONS_VIDEO = {
           modeCapture: IcarSDK.MODE_CAPTURE.FACE,
           callBackFeedBackFunction: onFeedBackCallBack
        }
        IcarSDK.video.initialize(videoInput, OPTIONS_VIDEO);
      }
      function onNumCamsReceivedCallback(numberCams){
          if (numberCams>1){ // show the button because there are more than 1 camera
            document.getElementById('ChangeCamera').style.visibility = 'visible';
          }
      }
      function getImageFunction(){
        IcarSDK.video.requestFrame(onFrameReceivedCallback);
      }
      function startFunction(){
        if (IcarSDK.video.isInitialized())  {  // Paused video
           IcarSDK.video.start();
        } else { // Stopped video
           IcarSDK.video.initialize(videoInput);
        }
      }
      function pauseFunction(){
        IcarSDK.video.pause();
      }
      function stopFunction(){
        IcarSDK.video.cleanUp();
      }
      // FUNCTION: onFrameReceivedCallback
      // Callback function to be called once the frame is received
      // after a call to IcarSDK.video.requestFrame(onFrameReceivedCallback)
      // params:
      //  - imageResult: property where is stored the image captured
      function onFrameReceivedCallback(imageResult){
        var canvasResult = document.getElementById("resultImage")
        canvasResult.className = videoInput.className;
        canvasResult.width = imageResult.width;
        canvasResult.height = imageResult.height;
        var context = canvasResult.getContext('2d');
        context.clearRect(0, 0, canvasResult.width, canvasResult.height);
        context.putImageData(imageResult, 0, 0);
      }

      // FUNCTION: onFeedBackCallBack
      // Callback function to be called if there is any problem
      // executing the webSDK
      // params:
      //  - resultFeedBack: property where is indicated the result of
      //           the execution. The possible values are:
      //              IcarSDK.RESULT_VIDEO.OK
      //              IcarSDK.RESULT_VIDEO.NO_CAMERA_DEVICES
      //              IcarSDK.RESULT_VIDEO.NO_CAMERA_PERMISSION
      //              IcarSDK.RESULT_VIDEO.UNAVAILABLE_CAMERA
      //              IcarSDK.RESULT_VIDEO.UNSUPPORTED_BROWSER
      //              IcarSDK.RESULT_VIDEO.UNKNOWN_ERROR
      function onFeedBackCallBack(resultFeedBack){
       switch(resultFeedBack){
              case IcarSDK.RESULT_VIDEO.OK:
                     // Video correctly initialized
                     break;
              case IcarSDK.RESULT_VIDEO.NO_CAMERA_DEVICES:
                     alert("Camera not detected!");
                     break;
              case IcarSDK.RESULT_VIDEO.NO_CAMERA_PERMISSION:
                     alert("Not permissions to use the camera!");
                     break;
              case IcarSDK.RESULT_VIDEO.UNAVAILABLE_CAMERA:
                     alert("Camera is using in other process!");
                     break;
              case IcarSDK.RESULT_VIDEO.UNSUPPORTED_BROWSER:
                     alert("The browser is not compatible!");
                     break;
              case IcarSDK.RESULT_VIDEO.UNKNOWN_ERROR:
                     alert("Camera is using in other process!");
                     break;
       }
      }

    </script>
```

IcarSDK.faceCapture

This tutorial shows you how to add facial capture functionality with optional liveness check to a web page. There are 4 steps to enable faceCapture functionality into your web page:

1. Create an HTML page with the needed elements
2. Configure faceCapture
3. Define callback function to gather results
4. Start faceCapture process

Step 1: Create an HTML page with the needed elements

The first step is to load the IcarSDK into your web page and define a video element, where the API will get the frames to analize if the face is correctly placed, and, if enabled, if the subject in front of the camera is a real person or not.

To do that, you need to make sure that you load the API source and that you define a video element in your web page.

Here is how the API source from IcarSDK API is loaded:

```
<script async defer src="js/icarSDK.js"></script>
```

And this is the definition of the video element:

```
<div style="position: relative;">
   <video id="videoInput" width="640" height="480" autoplay="true"></video>
</div>
```

The **video element MUST BE WITHIN A DIV** container with the **position** defined as ***absolute***, ***fixed***, ***relative*** or ***sticky***, if we want that all the information that shows the faceLiveness shows correctly. Besides, the video **must start to play before** the use of the faceLiveness.

Step 2: Configure faceCapture

Next step is initializing the face capture module. Here you have three options:

1. Use a video tag on your HTML code as video input (not recommended)
2. Integrate integrate `IcarSDK.video` module for further control of video input (recommended)
3. Use your own video capture code

The first option is the simplest, just call the `create` method and frames will be captured directly from the video element received as a parameter:

```
IcarSDK.faceCapture.create(videoInput, null, onFaceCaptureResultCallback);
```

However, we highly recommend to use `IcarSDK.video`, just follow the instructions from page 5.

In case you still need to use your own video capture code, see section **Video Frame Capture Customization** from page 17.

Step 3: Define callback function to gather results

Note that the IcarSDK.create method receives as a parameter `onFaceCaptureResultCallback`. This parameter must be an integrator-defined callback function that will receive the result of the face liveness process once it is ended.

Hence, you need to define your own callback function. Here is an example of such a callback that displays the image received in a canvas if the process is successful:

```
    function onFaceCaptureResultCallback(answerResult, modeCapture, imageResult,
hashCode){
        if (answerResult == IcarSDK.ResultProcess.OK){
          var canvasIn = document.getElementById("resultImage")
          canvasIn.className = videoInput.className;
          var context = canvasIn.getContext('2d');
          context.clearRect(0, 0, canvasIn.width, canvasIn.height);
          context.putImageData(imageResult, 0, 0);
        }
    }
```

For further information on the parameters that this callback will receive, see **Face capture results callback function** on page 12.

Step 4: Start face capture process

Once the face capture module is initialized, you can start the process.

```
  IcarSDK.faceCapture.start();
```

Face capture results callback function

As stated before, integrators must define their own callback function which will be called by IcarSDK.faceCapture once the face liveness process is completed.

This callback function must have the following prototype:

```
  function onFaceCaptureResultCallback (answerResult, modeCapture, imageResult, hashCode)
```

The callback will receive the following data in the parameters:

- `answerResult`: indicates the result of the face capture process. It can be successful (`IcarSDK.ResultProcess.OK`), unsuccessful (`IcarSDK.ResultProcess.FAIL`) or the number of attempts have been exceeded (`IcarSDK.ResultProcess. ATTEMPTS_EXCEEDED`).

- `modeCapture`: for face capture, it will always be `IcarSDK.CaptureMode.AUTO_TRIGGER`. The special value `IcarSDK.CaptureMode.MANUAL_TRIGGER` is reserved for further versions of the SDK, in case an special manual trigger function is added.
- `imageResult`: contains the image captured, which is selected during the liveness process.
- `hashCode`: this property will contain in future versions of the SDK the hashcode generated from the image result and the private key provided by the customer.

Next code sniplet presents a sample definition of this callback function: in this example, we check the result of the execution, and if it is successful, we show the captured image in a canvas previously defined:

```
function onFaceCaptureResultCallback(answerResult, modeCapture, imageResult, hashCode){
       if (answerResult == IcarSDK.ResultProcess.OK){
                var canvasIn = document.getElementById("resultImage")
                canvasIn.className = videoInput.className;
                var context = canvasIn.getContext('2d');
                context.clearRect(0, 0, canvasIn.width, canvasIn.height);
                context.putImageData(imageResult, 0, 0);
        }
}
```

Methods of IcarSDK.faceCapture

IcarSDK.faceCapture.create(videoInput, requestFrameCB, onFaceCaptureCB [, options])

This function initializes the faceCaptureprocess, and allows to configure its behaviour.

These are the parameters:

- `videoInput`: The video element id.
- `requestFrameCB`: In the special case that you are using your own video capture functions, use this parameter to define the callback that `IcarSDK.faceCapture` will call whenever it needs a new frame (see **Video Frame Capture Customization for Face Capture** for details). Otherwise use `null`.
- `onFaceCaptureCB`: The callback function that `IcarSDK.faceCapture` will use to return the result.
- `options`: This parameter contains a structure that allows you to configure the behavior of the module, and to personalize the guiding messages. See **Customization of faceCapture using options** for the available options.

IcarSDK.faceCapture.start()

Once the video has started playing, the face liveness process can be started using the function `start()`. The module will show a face template overlayed to the video input and guiding messages for the user.

At the example from page 18, we have implemented a button in the web site which starts the process when the user clicks it.

```
<input id="startBtn" type="button" value="Start "
      onclick="IcarSDK.faceCapture.start();"/>
```

IcarSDK.faceCapture.stop()

You can stop the faceCapture process calling to the method `stop`(). This method will stop the process and it will call to the callback function (`onFaceCaptureResultCallback`) given a `IcarSDK.ResultProcess.FAIL` result, and empty image as a second parameter. You can find it in the example from page 18.

IcarSDK.faceCapture.isRunning()

You can know the state of the process calling to the method `isRunning`(). This method returns `true` is the faceCapture process is `running`, or false if is stopped (and ready to be run again).

Customization of faceCapture using options

Currently the following customizations are available through `options` parameter of `create` method:

Guiding Messages Customization

`IcarSDK.faceCapture` shows some information messages to guide the user during the liveness process. These messages can be customized.

To customize the guiding messages, you should proceed as the following example:

```
var OPTIONS_FACE_CAPTURE = {
  MSG_PLACE_FACE_INSIDE: "PLACE THE FACE INSIDE",
  MSG_STAY_STILL_AND_OPEN_EYES: "PLEASE, STAY STILL\nAND OPEN THE EYES",
}
IcarSDK.faceCapture.create(videoInput, requestFrameCallback, onFaceCaptureResultCallback,
                            OPTIONS_FACE_CAPTURE);
```

Note that if you want to introduce a line break in a string, you should use the character “`\n`” to indicate where will be the line break.

Here is the complete list of guiding messages and their default value:

1. `MSG_PLACE_FACE_INSIDE`: `"PLACE THE FACE INSIDE"`
2. `MSG_STAY_STILL_AND_OPEN_EYES`: `"PLEASE, STAY STILL\nAND OPEN THE EYES"`
3. `MSG_NO_EYES_DETECTED`: `"EYES NOT DETECTED"`
4. `MSG_COME_CLOSER`: `"PLEASE, COME CLOSER"`
5. `MSG_GO_BACK`: `"PLEASE, GO BACK"`
6. `MSG_BLURRED_IMAGE`: `"BLURRED IMAGE"`
7. `MSG_STAY_STILL`: `"PLEASE, STAY STILL"`
14. `MSG_PLACE_HEAD_CENTERED`: `"PLEASE, PLACE HEAD CENTERED\nINSIDE AND LOOK FRONTALLY"`
15. `MSG_TAKE_OFF_GLASSES`: `"IN CASE YOU WEAR GLASSES TAKE THEM OUT"`
16. `MSG_ACCEPTED`: `"ACCEPTED"`
17. `MSG_BLINK_EYES`: `"PLEASE, BLINK\nEYES SLOWLY"`
18. `MSG_ABORTED`: `"ABORTED PROCESS"`
19. `MSG_STARTING_PROCESS: "INITIALIZING THE PROCESS\n\nIN %n SECONDS\n\nOPEN YOUR EYES AND\nFOLLOW THE INSTRUCTIONS",`
20. `MSG_RESTARTING_PROCESS: "RE-STARTING THE PROCESS\n\nIN %n SECONDS\n\nOPEN YOUR EYES AND\nFOLLOW THE INSTRUCTIONS"`
21. `MSG_WRONG_POS_DEVICE: " HOLD PHONE UPRIGHT"`

MSG_STARTING_PROCESS and MSG_RESTARTING_PROCESS are used during the starting and re-starting process and they show the number of seconds to start the process of capture. If we customize these messages, we can show the number of seconds introducing "%n" in the string.

Changing Waiting Number Seconds of Blinking

The module *faceCapture* includes a blinking test to check if the person is a real one or not. This process shows a previous message to inform about the things that user must to do. By default, this message is showed 3 seconds, but can be customized defining the option parameter NUMBER_SEC_WAITING_STRING_PROCESS.

```
var OPTIONS_FACE_CAPTURE = {
  NUMBER_SEC_WAITING_STRING_PROCESS: 3 }
IcarSDK.faceCapture.create(videoInput, requestFrameCallback, onLivenessResultCallback,
                            OPTIONS_FACE_CAPTURE);
```

It is possible disable this message setting NUMBER_SEC_WAITING_STRING_PROCESS to -1.

Disabling Liveness

The module faceCapture is destinated to check if the person that is in front of the camera is a real person or not, but, in the case that you only need to take a picture when a face is in front of the camera, you can use faceCapture for this purpose. To do that, you need to define the option parameter DISABLE_FACE_LIVENESS_CHECK to true.

```
var OPTIONS_FACE_CAPTURE = {
  DISABLE_FACE_LIVENESS_CHECK: true }
IcarSDK.faceCapture.create(videoInput, requestFrameCallback, onLivenessResultCallback,
                            OPTIONS_FACE_CAPTURE);
```

In this case, faceCapture will ensure that face is in front of the camera and it will capture a clear, well focused image.

Max Number of Attemps

The module faceCapture has a parameter to indicate the number of attemps for each liveness method. By default, it is 3, but you can modify it by defining option parameter MAX_ATTEMPTS.

```
var OPTIONS_FACE_CAPTURE = {
  MAX_ATTEMPTS: 3 }
IcarSDK.faceCapture.create(videoInput, requestFrameCallback, onLivenessResultCallback,
                            OPTIONS_FACE_CAPTURE);
```

You can disable this property by setting MAX_ATTEMPTS to -1.

Interocular Distance

The module *faceCapture* uses the detection of the face, by default, to determine the distance between tha user and the camera, but it is possible to determine the distance (instead of the face detection) using the interocular distance.

It is possible to activate this property activating the option parameter USE_INTEROCULAR_DISTANCE. By default, the distance between the eyes should be between the 9% and the 13% of the longest side of the image.

```
var OPTIONS_FACE_CAPTURE = {
  USE_INTEROCULAR_DISTANCE: true }
IcarSDK.faceCapture.create(videoInput, requestFrameCallback, onLivenessResultCallback,
                           OPTIONS_FACE_CAPTURE);
```

The minimum and maximum distance can be modified by setting MIN_INTEROCULAR_DISTANCE and MAX_INTEROCULAR_DISTANCE properties.

```
var OPTIONS_FACE_CAPTURE = {
  MIN_INTEROCULAR_DISTANCE: 0.4,
  MAX_INTEROCULAR_DISTANCE: 0.6 }
IcarSDK.faceCapture.create(videoInput, requestFrameCallback, onLivenessResultCallback,
                           OPTIONS_FACE_CAPTURE);
```

Font Customization

The module *faceCapture* shows the information throws texts over the video. The font and color can be customized as follows:

```
var OPTIONS_FACE_CAPTURE = {
  fontText: "bold 16px Arial",
  colorText: "white" }
IcarSDK.faceCapture.create(videoInput, requestFrameCallback, onLivenessResultCallback,
                           OPTIONS_FACE_CAPTURE);
```

fontText must be defined following the syntax of the CSS font Property (https://www.w3schools.com/tags/canvas_font.asp) and *colorText* must be defined following the w3schools color names (https://www.w3schools.com/tags/ref_colornames.asp).

Position Text Customization

The position (in vertical) of text showed can be customized as follows:

```
var OPTIONS_ LIVENESS = {
  positionCanvasTextInformation: 0.33
  }
IcarSDK.faceCapture.create(videoInput, requestFrameCallback, onLivenessResultCallback,
                                                         OPTIONS_FACE_CAPTURE);
```

The value must be between 0 and 1.0. The value indicates the position between the top and the bottom of the video. By default is 0.33.

Background Layer Customization

The color of the background layer can be customized as follows:

```
var OPTIONS_FACE_CAPTURE = {
  colorBackground: "#FFFFFF",
  alphaBackground: 0.3 }
IcarSDK.faceCapture.create(videoInput, requestFrameCallback, onLivenessResultCallback,
                           OPTIONS_FACE_CAPTURE);
```

colorBackground must be defined following the w3schools color names (https://www.w3schools.com/tags/ref_colornames.asp) and *alphaBackground* must be between 0 and 1.0.

Internal Parameters Customization

There are some other options that can be defined:

- `pathImages`: path where the faceCapture images are stored, by default the path of the images that faceCapture uses is './img/'.
- `initial_zIndex`: start zIndex of the canvas that faceCapture will be create to show information. The default value is 50.

```
var OPTIONS_FACE_CAPTURE = {
  pathImages: './images/',
  initial_zIndex: 10,
}
IcarSDK.faceCapture.create(videoInput, requestFrameCallback, onFaceCaptureResultCallback,
                              OPTIONS_FACE_CAPTURE);
```

Video Frame Capture Customization for Face Capture

By default, face liveness extracts the frames directly from de video element received as a parameter during the creation. This is done by passing a **`null`** as the second parameter when you call `create`:

```
  IcarSDK.faceCapture.create(videoInput,null,onFaceCaptureResultCallback);
```

However, if you want to re-define the way frames are obtained, you can pass your custom defined callback as:

```
IcarSDK.faceCapture.create(videoInput,onFrameReceivedCallback,onFaceCaptureResultCallback);
```

Here is the basic structure of the function that you need to define to customize frame capture:

```
        function onFrameRequestedCallback(onFrameReceivedCallback){
            //
            // DO SOMETHING TO OBTAIN THE FRAME ONTO A VARIABLE CALLED frameData
            // OF TYPE "ImageData"
            //(see https://www.w3schools.com/tags/canvas_imagedata_data.asp)

           // THEN CALL THE CALLBACK onFrameReceivedCallback TO FEED
           // THE FRAME TO FACE CAPTURE MODULE
            onFrameReceivedCallback(frameData, hash);
        }
```

Complete integration example of faceCapture

Here you can see an example of complete integration of IcarSDK.video and faceCapture.

```
<!DOCTYPE html>
<html lang="en">
    <head>
        <meta charset="utf-8">
        <title>Icar vision</title>
        <script async defer src="js/icarSDK.js"/>
    </head>
    <body>
        <div style="position: relative;">
            <video id="videoInput" width="640" height="480" autoplay="true"/>
        </div>
        <div>
            <input id="startBtn" type="button" value="Start"
                   onclick="IcarSDK.faceCapture.start();" />
            <input id="stopBtn" type="button" value="Stop"
                   onclick="IcarSDK.faceCapture.stop();" />
            <br>
            <canvas id="resultImage" width="640" height="480"/>
        </div>
        <script>
        window.onload = function () {
            var OPTIONS_VIDEO = {
                modeCapture: IcarSDK.MODE_CAPTURE.FACE
                callBackFeedBackFunction: onFeedBackCallBack
            }
            IcarSDK.video.initialize(videoInput, OPTIONS_VIDEO);

            var OPTIONS_FACE_CAPTURE = {
                MSG_PLACE_FACE_INSIDE: "PLACE THE FACE INSIDE",
                MSG_STAY_STILL_AND_OPEN_EYES: "PLEASE, STAY STILL\nAND OPEN THE EYES",
                MSG_NO_EYES_DETECTED: "EYES NOT DETECTED"
            }
            IcarSDK.faceCapture.create(videoInput, requestFrameCallback,
                                       onFaceCaptureResultCallback, OPTIONS_FACE_CAPTURE);
        }

        // function to do the request of the frame to the video (not needed here, but
        // as an example)
        function requestFrameCallback(onFrameReceivedCallback) {
            IcarSDK.video.requestFrame(onFrameReceivedCallback);
        }
       // Return function that the process will use when it will finish
        function onFaceCaptureResultCallback(answerResult, modeCapture, imageResult,
                                                                   hashCode) {

            if (answerResult == IcarSDK.ResultProcess.OK) {
                var canvasResult = document.getElementById("resultImage");
                canvasResult.className = videoInput.className;
                canvasResult.width = imageResult.width;
                canvasResult.height = imageResult.height;
                var context = canvasResult.getContext('2d');
                context.clearRect(0, 0, canvasResult.width, canvasResult.height);
                context.putImageData(imageResult, 0, 0);
            }
        }
       // FUNCTION: onFeedBackCallBack
       // Callback function to be called if there is any problem
       // executing the webSDK
       // params:
       //  - resultFeedBack: property where is indicated the result of
       //           the execution. The possible values are:
       function onFeedBackCallBack(resultFeedBack){
        switch(resultFeedBack){
               case IcarSDK.RESULT_VIDEO.OK:
                      // Video correctly initialized
                      break;
               case IcarSDK.RESULT_VIDEO.NO_CAMERA_DEVICES:
                      alert("Camera not detected!");
                      break;
               case IcarSDK.RESULT_VIDEO.NO_CAMERA_PERMISSION:
                      alert("Not permissions to use the camera!");
                      break;
               case IcarSDK.RESULT_VIDEO.UNAVAILABLE_CAMERA:
                      alert("Camera is using in other process!");
                      break;
               case IcarSDK.RESULT_VIDEO.UNSUPPORTED_BROWSER:
                      alert("The browser is not compatible!");
                      break;
               case IcarSDK.RESULT_VIDEO.UNKNOWN_ERROR:
                      alert("Camera is using in other process!");
                      break;
        }
       }
       </script>
    </body>
</html>
```

IcarSDK.documentCapture

This tutorial shows you how to add a functionality for the automatic capture of a document from a web page using the device camera, both in desktop and mobile mode. There are 4 steps to enable documentCapture functionality into your web page:

5. Create an HTML page with the needed elements
6. Configure documentCapture
7. Define callback function to gather results
8. Start documentCapture process

Step 1: Create an HTML page with the needed elements

The first step is to load the IcarSDK script into your web page and define a video element, where the API will get the frames to analize if the document is correctly placed and will authomatically trigger the capture.

To do that, you need to make sure that you load the API source and that you define a video element in your web page.

Here is how the API source from IcarSDK API is loaded:

```
<script async defer src="js/icarSDK.js"></script>
```

And this is the definition of the video element:

```
<div style="position: relative;">
   <video id="videoInput" width="640" height="480" autoplay="true"></video>
</div>
```

The **video element MUST BE WITHIN A DIV** container with the **position** defined as ***absolute***, ***fixed***, ***relative*** or ***sticky***, if we want that all the information that shows the faceLiveness shows correctly. Besides, the video **must start to play before** the use of the faceLiveness.

Step 2: Configure documentCapture

Next step is initializing the document capture module. Here you have three options:

4. Use a video tag on your HTML code as video input (not recommended)
5. Integrate integrate `IcarSDK.video` module for further control of video input (recommended)
6. Use your own video capture code

The first option is the simplest, just call the `create` method and frames will be captured directly from the video element received as a parameter:

```
        IcarSDK.documentCapture.create(videoInput, null, onDocumentCaptureResultCallback);
```

However, we highly recommend to use `IcarSDK.video`, because this way you will be able to obtain the best image resolution; just follow the instructions from page 5.

In case you still need to use your own video capture code, see section **Video Frame Capture Customization** from page 27.

Step 3: Define callback function to gather results

Note that the IcarSDK.create method receives as a parameter `onDocumentCaptureResultCallback`. This parameter must be an integrator-defined callback function that will receive the result of the document capture process once it is ended.

Hence, you need to define your own callback function. Here is an example of such a callback that displays the image received in a canvas if the process is successful:

```
    function onDocumentCaptureResultCallback(answerResult, modeCapture, imageResult,
roiData, hashCode){
        if (answerResult == IcarSDK.ResultProcess.OK){
          var canvasIn = document.getElementById("resultImage")
          canvasIn.className = videoInput.className;
          var context = canvasIn.getContext('2d');
          context.clearRect(0, 0, canvasIn.width, canvasIn.height);
          context.putImageData(imageResult, 0, 0);
        }
    }
```

For further information on the parameters that this callback will receive, see **Document capture results callback function** on page 21.

Step 4: Start document capture process

Once the face capture module is initialized, you can start the process.

```
    IcarSDK.documentCapture.start();
```

Document capture results callback function

As stated before, integrators must define their own callback function which will be called by `IcarSDK.documentCapture` once the capture process is completed.

This callback function must have the following prototype:

```
function onDocumentCaptureResultCallback (answerResult, modeCapture, imageResult, roiPoints,
hashCode)
```

The callback will receive the following data in the parameters:

- `answerResult`: indicates the result of the document capture process. It can be successful (`IcarSDK.ResultProcess.OK`), unsuccessful (`IcarSDK.ResultProcess.FAIL`) or the number of attempts have been exceeded (`IcarSDK.ResultProcess. ATTEMPTS_EXCEEDED`).
- `modeCapture`: indicates de mode of the capture used: `IcarSDK.CaptureMode.MANUAL_TRIGGER` when the image capture was manually triggered, or `IcarSDK.CaptureMode.AUTO_TRIGGER` when the image is taken automatically by detecting the document.
- `imageResult`: contains the image of the document captured if the capture process was successful.
- `roiPoints`: this parameter contains the quadrangle coordinates of the region whe the document is. Hence, it is a vector of 8 positions:

```
        [top_left_x, top_left_y,
         top_right_x, top_right_y,
         bottom_right_x, bottom_right_y,
         bottom_left_x, bottom_left_y]
```

  This information should be sent to ID_Cloud to obtain better document processing results (see **ID_Cloud integration manual** for details on how to do that).
- `hashCode`: this parameter will contain in future versions of the SDK the hashcode generated from the image result and the private key provided by the customer.

Next code sniplet presents a sample definition of this callback function: in this example, we check the result of the execution, and if it is successful, we show the captured image in a canvas previously defined:

```
        function onDocumentResultCallback(answerResult, modeCapture, imageResult,
roiPoints, hashCode){
            if (answerResult == IcarSDK.ResultProcess.OK){
                var canvasIn = document.getElementById("resultImage")
                canvasIn.className = videoInput.className;
                var context = canvasIn.getContext('2d');
                context.clearRect(0, 0, canvasIn.width, canvasIn.height);
                context.putImageData(imageResult, 0, 0);
            }
        }
```

Methods of IcarSDK.documentCapture

These are the methods of this module:

IcarSDK.documentCapture.create(videoInput,requestFrameCB,onDocCaptureCB [, options])

These are the parameters:

- `videoInput`: The video element id.
- `requestFrameCB`: In the special case that you are using your own video capture functions, use this parameter to define the callback that `IcarSDK.documentCapture` will call whenever it needs a new frame (see **Video Frame Capture Customization for Document Capture** for details). Otherwise use `null`.
- `onDocCaptureCB`: The callback function that `IcarSDK.documentCapture` will use to return the result.
- `options`: This parameter contains a structure that allows you to configure the behavior of the module, and to personalize the guiding messages. See **Customization of documentCapture using options** for further details on the available options.

IcarSDK.documentCapture.start()

Once the video has started playing, the document capture process can be started using the function `start`(). The module will then show a document template overlayed to the video input and guiding messages for the user.

At the example, we have implemented a button in the web site which starts the process when the user clicks it.

```
<input id="startBtn" type="button" value="Start" onclick="IcarSDK.documentCapture.start();"
/>
```

IcarSDK.documentCapture.stop()

You can stop the documentCapture process calling to the method `stop`(). This method will stop the process and it will call to the callback function (`onDocumentResultCallback`) given a `IcarSDK.ResultProcess.FAIL` result, and empty image as a third parameter. You can find it in the example too.

You can force the module to return the last frame processed when the method `stop`() is called. You can use a Boolean parameter to indicate if we want to get tha last image or not `stop(true) or stop(false)`. By default is `false`. In case to activate this functionality the callback function will be called given a `IcarSDK.ResultProcess.FAIL` as result and a `IcarSDK.CaptureMode.AUTO_TRIGGER` as modeCapture. The `imageResult` parameter will contain the last frame processed and the `roiPoints` parameter will be empty.

IcarSDK.documentCapture.manualTrigger()

You can force the module to capture a frame manually. This method will capture the current frame of the video and it will call to the results callback function with a `IcarSDK.ResultProcess.OK` result, and a `IcarSDK.CaptureMode.MANUAL_TRIGGER`.

IcarSDK. documentCapture.isRunning()

You can know the state of the process calling to the method `isRunning`(). This method returns `true` is the documentCapture process is `running`, or false if is stopped (and ready to be run again).

Customization of documentCapture using options

There are some optional parameters that we can define to customize the document capture UX for seamless integration onto our webpage.

Internal Parameters Customization

IcarSDK.Document shows a frame on the video to help the user to put the document in front the camera. The parameters of this frame can be costumized using the following options:

- *`width_document`*: width of the document (in mm) that you want to capture. By default, it is 85.6.
- *`height_document`*: height of the document (in mm) that you want to capture. By default, 53.98.
- *`marginPercent_frame`*: percentage of margin around the frame in the image. By default, it is 0.1, which is a 10% of the image width or height.
- *`initial_zIndex`*: start zIndex of the canvas that documentCapture will be created to show information. By default, it is 50.
- *`type_doc_selected`*: you can choose one of the pre-establish templates:
  - *`IcarSDK.TYPE_DOC.IDCARD`* (width = 85.6, height = 53.98)
  - *`IcarSDK.TYPE_DOC.PASSPORT`* (width = 125, height = 88)

If *width_document* or *height_document* is defined, this option will be ignored.

Here is a code snipplet on how to define these options:

```
var OPTIONS_DOC_CAPTURE = {
  width_document: 85.6,
  height_document: 53.98,
  marginPercent_frame: 0.1,
  initial_zIndex: 10,
  type_document: IcarSDK.TYPE_DOC.IDCARD
}
IcarSDK.documentCapture.create(videoInput, requestFrameCallback, onDocumentResultCallback,
                               OPTIONS_DOC_CAPTURE);
```

Guiding Messages Customization

`IcarSDK.documentCapture` shows some information messages to guide the user during the document capture process. These messages can be customized.

To customize the guiding messages, you should proceed as the following example:

```
var OPTIONS_DOC_CAPTURE = {
  MSG_PLACE_DOC_INSIDE: "PLACE THE\nDOCUMENT INSIDE",
  MSG_DOC_OK: "STAY STILL ",
}
IcarSDK.documentCapture.create(videoInput, requestFrameCallback,
                               onDocumentCaptureResultCallback, OPTIONS_DOC_CAPTURE);
```

Note that if you want to introduce a line break in a string, you should use the character “\n” to indicate where will be the line break.

Here is the complete list of guiding messages and their default value:

1. `MSG_PLACE_DOC_INSIDE: "PLACE THE DOCUMENT INSIDE",`
2. `MSG_DOC_OK: "STAY STILL",`
3. `MSG_DARK_IMAGE: "DARK IMAGE",`
4. `MSG_BLURRED_IMAGE: "BLURRED IMAGE",`
5. `MSG_TRY_AGAIN: "TRY REFOCUSING BY APPROACHING\nTHE DOCUMENT AND TRYING AGAIN"`

Max Number of Attemps

The module documentCapture has a parameter to indicate the number of attemps. By default, it is 3, but you can modify it by defining option parameter MAX_ATTEMPTS.

```
var OPTIONS_DOC_CAPTURE = {
  MAX_ATTEMPTS: 3 }
IcarSDK.documentCapture.create(videoInput, requestFrameCallback,
                               onDocumentCaptureResultCallback, OPTIONS_DOC_CAPTURE);
```

You can disable this property by setting MAX_ATTEMPTS to -1.

Font Customization

The module *documentCapture* shows the information throws texts over the video. The font and color can be customized as follows:

```
var OPTIONS_DOC_CAPTURE = {
  fontText: "bold 16px Arial",
  colorText: "white" }
IcarSDK.documentCapture.create(videoInput, requestFrameCallback,
                               onDocumentCaptureResultCallback, OPTIONS_DOC_CAPTURE);
```

fontText must be defined following the syntax of the CSS font Property (https://www.w3schools.com/tags/canvas_font.asp) and *colorText* must be defined following the w3schools color names (https://www.w3schools.com/tags/ref_colornames.asp).

Anyway, **text size is responsive** and it is adapted to the size of the canvas. If the size of the font defined is too big, the text is adjusted to the canvas.

Position Text Customization

The position (in vertica) of text showed can be customized as follows:

```
var OPTIONS_DOC_CAPTURE = {
  positionCanvasTextInformation: 0.33
  }
IcarSDK.documentCapture.create(videoInput, requestFrameCallback,
                               onDocumentCaptureResultCallback, OPTIONS_DOC_CAPTURE);
```

The value must be between 0 and 1.0. The value indicates the position between the top and the bottom of the video. By default is 0.33.

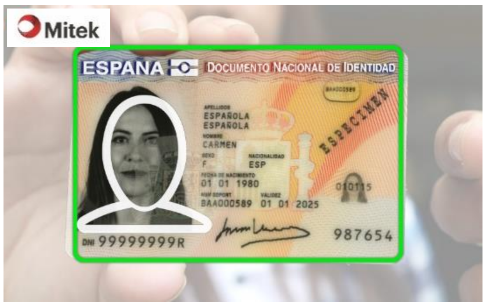
Background Layer Customization

The color of the background layer can be customized as follows:

```
var OPTIONS_DOC_CAPTURE = {
  colorBackground: "#FFFFFF",
  alphaBackground: 0.3,
  color_lineDetected: "#00FF00",
  color_lineNotDetected: "white" }
IcarSDK.documentCapture.create(videoInput, requestFrameCallback,
                              onDocumentCaptureResultCallback, OPTIONS_DOC_CAPTURE);
```

colorBackground, color_lineDetected and *color_lineNotDetected* must be defined following the w3schools color names (https://www.w3schools.com/tags/ref_colornames.asp) and *alphaBackground* must be between 0 and 1.0.

Image Template Customization



The documentCapture module allows show an image inside the background layer. This image can be used as guide to put the document on the rectangle. The image template can be customized as follows:

```
var OPTIONS_DOC_CAPTURE = {
  path_template_img: " ./img/imgTemplate.png”
}
IcarSDK.documentCapture.create(videoInput, requestFrameCallback,
                              onDocumentCaptureResultCallback, OPTIONS_DOC_CAPTURE);
```

Automatically the template image is fixed to the size of the rectangle. During the document capture process is possible to hide, or to show, the image template using the next functions:

- `IcarSDK.documentCapture.showTemplateImage()`
- `IcarSDK.documentCapture.hideTemplateImage()`

By default, the template image is showed as the video style is defined. If the video is flipped, the template image is flipped too. But it can be disabled using the next parameter:

```
var OPTIONS_DOC_CAPTURE = {
  flip_template_img: false
}
IcarSDK.documentCapture.create(videoInput, requestFrameCallback,
                               onDocumentCaptureResultCallback, OPTIONS_DOC_CAPTURE);
```

Blurring Test Customization

WebSDK makes a blurring test to verify if the image is blurred or not. The blurring measure is computed automatically taking in account some properties of the image. This measure can be modified using the *multiplicationFactorBlurring*.

By default is 1.0, but can be increased if we want to accept images with less quality. Or decrease if we are sure that the camera of the devices has a good performance and the image will be with a great quality.

```
var OPTIONS_DOC_CAPTURE = {
  multiplicationFactorBlurring: 1.5
}
IcarSDK.documentCapture.create(videoInput, requestFrameCallback,
                               onDocumentCaptureResultCallback, OPTIONS_DOC_CAPTURE);
```

Next, we show two images captured. One with the default value (1.0), and the second one with value 1.5.

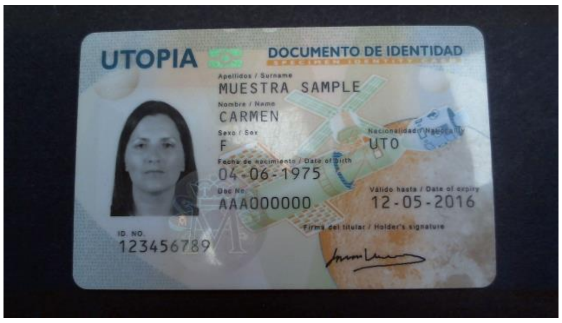


Figure 1 multiplicationFactorBlurring: 1.0 (default)

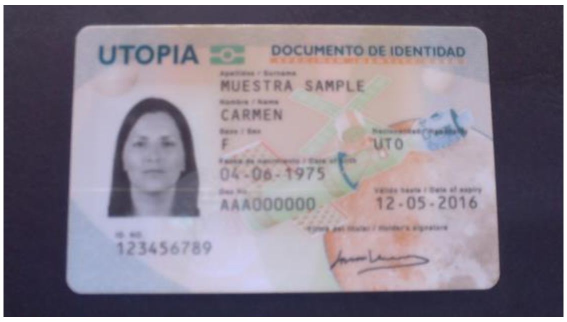


Figure 2 multiplicationFactorBlurring: 1.5

Feedback

To receive some feedback during the document capture you have to create a function on the options of document capture. During the process `messageFeedbackFunction` **can be called several times** to send feedback messages.

```
var OPTIONS_DOC_CAPTURE = {
       messageFeedbackFunction:  messageDocCaptureFeedback
}

IcarSDK.documentCapture.create(videoInput, requestFrameCallback,
                              onDocumentCaptureResultCallback, OPTIONS_DOC_CAPTURE);

function messageDocCaptureFeedback(messageDC){
       console.log(messageDC. CODE);
       console.log(messageDC.TEXT);
}
```

Where messageDC is an object with two properties:
`messageDC. CODE` (number from 1 to 5)
`messageDC.TEXT` (little description of the problem)

Here you have a list of possible feedback messages:

```
    1.  POOR SYSTEM
    2.  NO MOVEMENT DETECTED
    3.  DARK IMAGE
    4.  BLURRED IMAGE
    5.  TOO MUCH ACTIVITY
```

During all document capture process `messageDocCaptureFeedback()` can be called and return several feedback messages, only one per time.

Video Frame Capture Customization for Document Capture

By default, document capture extracts the frames directly from de video element received as a parameter during the creation. This is done by passing a **`null`** as the second parameter when you call `create`:

```
  IcarSDK.documentCapture.create(videoInput, null, onDocumentResultCallback);
```

However, if you want to re-define the way frames are obtained, you can pass your custom defined callback as:

```
 IcarSDK.documentCapture.create(videoInput,onFrameReceivedCallback,
                               onDocumentResultCallback);
```

Here is the basic structure of the function that you need to define to customize frame capture:

```
         function onFrameRequestedCallback(onFrameReceivedCallback){
             //
             // DO SOMETHING TO OBTAIN THE FRAME ONTO A VARIABLE CALLED frameData
             // OF TYPE "ImageData"
             //(see https://www.w3schools.com/tags/canvas_imagedata_data.asp)

            // THEN CALL THE CALLBACK onFrameReceivedCallback TO FEED
            // THE FRAME TO DOCUMENT CAPTURE MODULE
           onFrameReceivedCallback(frameData, hashCode);
         }
```

Complete integration example of documentCapture

Here you can see an example of complete integration of `IcarSDK.video` and `IcarSDK.documentCapture`.

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="utf-8">
  <title>Icar vision</title>
  <script async defer src="js/icarSDK.js"></script>
</head>
  <body>
    <div style="position: relative;">
        <video id="videoInput" width="640" height="480" autoplay="true"></video>
    </div>
    <div>
      <input id="startBtn" type="button" value="Start"
             onclick="IcarSDK.documentCapture.start();" />
      <input id="captureBtn" type="button" value="Capture"
             onclick="IcarSDK.documentCapture.manualTrigger();" />
      <input id="stopBtn" type="button" value="Stop"
          onclick="IcarSDK.documentCapture.stop();" /><br>
      <canvas id="resultImage" width="640" height="480"></canvas>
    </div>
```

```
     <script>
    window.onload = function () {
      var OPTIONS_VIDEO = {
          modeCapture: IcarSDK.MODE_CAPTURE.DOCUMENT,
          callBackFeedBackFunction: onFeedBackCallBack
      }
      IcarSDK.video.initialize(videoInput, OPTIONS_VIDEO);
      var OPTIONS_DOCUMENT = {
         width_document: 85.6,
         height_document: 53.98,
         marginPercent_frame: 0.1,
         MSG_PLACE_DOC_INSIDE: "PLACE THE\nDOCUMENT INSIDE"
      }
      IcarSDK. documentCapture.create(videoInput, null, onDocumentResultCallback,
                                      OPTIONS_DOCUMENT);
    }
    // Return function that the process will call when the process finishes
    function onDocumentResultCallback(answerResult, modeCapture, imageResult, roiPoints,
                                      hashCode){
      if (answerResult == IcarSDK.ResultProcess.OK){
        var canvasResult = document.getElementById("resultImage");
        canvasResult.className = videoInput.className;
        canvasResult.width = imageResult.width;
        canvasResult.height = imageResult.height;
        var context = canvasIn.getContext('2d');
        context.clearRect(0, 0, canvasResult.width, canvasResult.height);
        context.putImageData(imageResult, 0, 0);
      }
    }

     // FUNCTION: onFeedBackCallBack
     // Callback function to be called if there is any problem
     // executing the webSDK
     // params: - resultFeedBack: property where is indicated the result of
     //            the execution. The possible values are:
     function onFeedBackCallBack(resultFeedBack){
        switch(resultFeedBack){
               case IcarSDK.RESULT_VIDEO.OK:
                      // Video correctly initialized
                      break;
               case IcarSDK.RESULT_VIDEO.NO_CAMERA_DEVICES:
                      alert("Camera not detected!");
                      break;
               case IcarSDK.RESULT_VIDEO.NO_CAMERA_PERMISSION:
                      alert("Not permissions to use the camera!");
                      break;
               case IcarSDK.RESULT_VIDEO.UNAVAILABLE_CAMERA:
                      alert("Camera is using in other process!");
                      break;
               case IcarSDK.RESULT_VIDEO.UNSUPPORTED_BROWSER:
                      alert("The browser is not compatible!");
                      break;
               case IcarSDK.RESULT_VIDEO.UNKNOWN_ERROR:
                      alert("Camera is using in other process!");
                      break;
        }
      }
    </script>
  </body>
</html>
```

SDK compatibility

Desktop computers

	Google Chrome			Firefox			Internet Explorer	Microsoft Edge	Opera			Safari	
Platform / Feature	Windows	MacOS	Linux	Windows	MacOS	Linux	Windows	Windows	Windows	MacOS	Linux	MacOS	Windows
Webcam capture	Chrome 23 or later	Chrome 23 or later	Chrome 23 or later	Firefox 22 or later	Firefox 22 or later	Firefox 22 or later	Does not accept webcam	All versions	Opera 12.10 or later	Opera 12.10 or later	Opera 12.10 or later	macOS high Sierra or later	Does not work

Mobile devices

	Safari iOS	Android Browser	Samsung Internet	Google Chrome		Amazon Silk	BlackBerry Browser			Nokia Browser		Internet Explorer		Opera Mobile	Opera mini	Firefox	
Platform / Feature	iPhone iPad	Phones & Tablet	Android devices	Android 4.0+	iOS*	Kindle Fire	Phones	BB10	Tablet	Nokia X	Symbian	Windows Phone	Windows 8.x	Android & Symbian	Java, iOS Android	Android, MeeGo	iOS*
Direct video capture (*)	iOS 11 or later (***)	Android 5.0 or later	Samsung 2.0 or later	All versions	Does not work	Does not work	Does not work	All versions	Does not work			Does not accept direct video	Does not accept direct video	All Versions (**)	Does not work	All versions	Does not work

(*) Please notice that for face liveness detection, direct video capture is mandatory. This means that therefore in IOS face liveness is not available, since currently no browser accepts in-browser live video processing, and a native app integrating ID_Mobile SDK is needed instead.
(**) Please notice that webSDK uses the information provided from the camera to flip de image showed. Opera Mobile doesn't provide any information and the camera is selected by the user, so the video cannot flipped correctly.
(***) Except 11.0.1 version

Important note: it all needs https protocol, you have to use a secure connection.
Important note2: it can only work through port 80/443.