**CYBATHLON**

ETH Zürich
techonolgy@cybathlon.com
www.cybathlon.com

# Guidelines for Teams - Scoring infrastructure

**CYBATHLON 2020 Global Edition**

Table of contents



**Versioning**

| Version | History / Status |
|---|---|
| 23.10.2020 | - New software download links (BCI Game)<br>- Instructions on Discord<br>  ○ Access to server<br>  ○ Discord user name definition<br>- Clarifications |

| | |
|---|---|
| Contact in case of questions or comments, please contact: | technology@cybathlon.com or CYBATHLON Forum |

**Dear Teams**

We, the CYBATHLON community, share a common vision: A world without barriers!

Together, we have been incredibly successful in the last years! However, we are just at the beginning of our journey. In order to move people and technology together, we need to communicate together, plan together, and work together. The competition in November will attract media from all over the world. We can reach so many people! Health and safety of everyone involved has highest priority. An accident or incident will have an impact on our mission. We all need to be careful, considerate and fair! Please do not take any risk!

We are very much looking forward to the CYBATHLON 2020 Global Edition! Thank you so much for being part of this!

All the best
The CYBATHLON organising committee

# 1. Purpose of this document

The instructions in this document are **essential** for the success of the CYBATHLON 2020 Global Edition. It is the basis for a **valid participation** of your team in the races, the **presentation of** your team in the live programme, the social media channels, and on the CYBATHLON platform. Please read the guidelines carefully and use the **checklists** for your preparations.

# 2. Pending information

| Item | Description | Date of delivery |
|---|---|---|
| - | - | - |

## 3. General infrastructure information

The person that is scoring the pilot according to the referees' decisions is called time-keeper.

The infrastructure for the scoring system must be organised by the hub. It consists mainly of a Windows laptop or desktop PC that is connected to the internet (a wired connection is mandatory). It has the CYBATHLON results management software "TACS" installed. It is connected to a monitor in the start area and to a monitor in the finish area. For BCI and FES, start and finish monitor are the same monitor, i.e. only one monitor is necessary. On the monitors, TACS will display the countdown prior to the race, the current result during the race and the final result as well as the current overall ranking after the race.

An additional laptop or PC that is connected to the internet is required to present the livestream in the finish area (or close to the pilot in case of BCI and FES).

An official time-keeper will use TACS onsite at the hub to manage the start signal of the races, do the scoring during the race based on the referees decisions in real-time and with that, send the results to the results database in Zurich in real-time.

Several minutes before the races, a person of the CYBATHLON Mission Control Centre (MCC) in Zurich (MCC) will be in contact with the hub manager to make sure that everyone is ready for the race. Ideally, the hub manager is the manager of your team. The hub manager needs to have a laptop and a smart phone.

Our main communication software will be Discord.

## 4. Test sessions

In order to have an infrastructure that is already checked on competition day and to train all persons involved in the results processing, we will test your infrastructure and train the processes. In several test cases, we will test the connections to our results database and test back-up procedures with you.

You will receive an invitation to a test session.

## 5. Detailed infrastructure information

The items required for a hub with one competition track are listed below (see also Figures 1-3). If your hub organises multiple tracks, you might have to organise multiple scoring infrastructure sets. In that case, please contact the CYBATHLON team (technology@cybathlon.com) to agree on the number of sets to be organised.

## Legend:

- Monitor
- Monitor (no specs)
- Monitor signal
- Network
- Laptop/computer
- Hub/Team Member
- CYBATHLON Official
- Audience

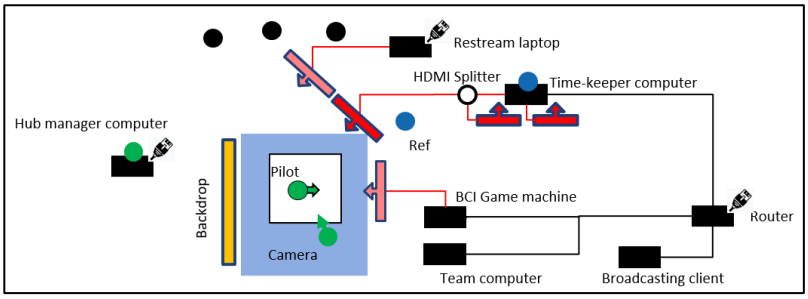



Figure 1 – General setup for BCI.

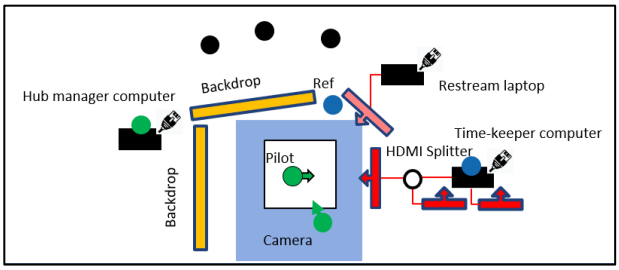



Figure 2 – General setup for FES

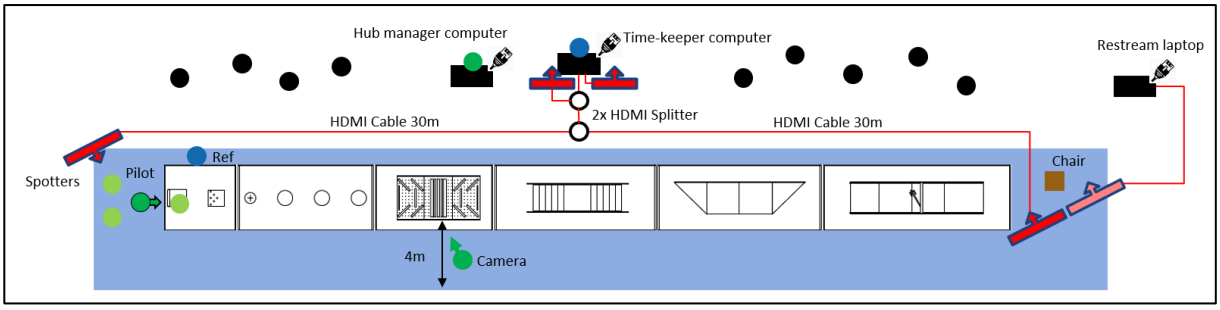



Figure 3 – General setup for ARM/LEG/EXO/WHL

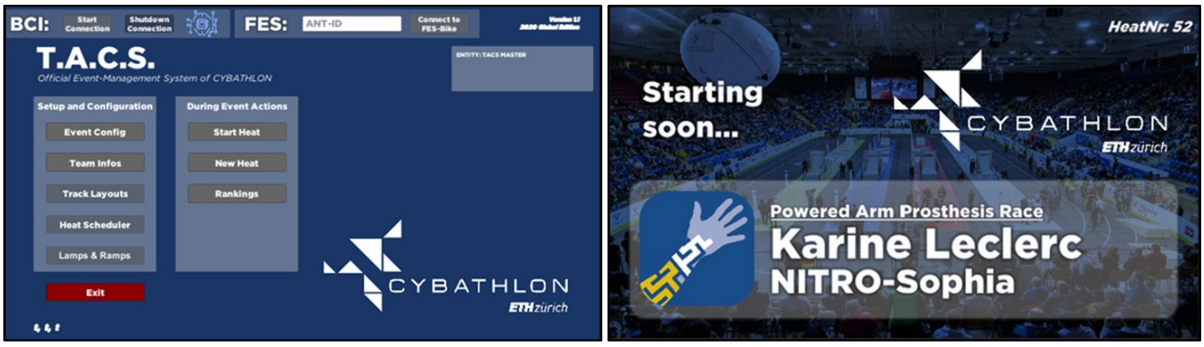



Figure 4 - Examples of TACS back-end (left) and TACS front-end screens (right).

**The hub manager table** – infrastructure for communication with the CYBATHLON Mission Control Centre (MCC) at ETH Zurich:

| **Amount** | ***Person*/Object** | **Details** |
|---|---|---|
| 1 | hub manager | A member of the hub/team. Ideally, the team manager. |
| 1 | laptop | |
| 1 | smart phone | The instant messaging/VoIP application “Discord” must be installed (see below for more information). |
| 1 | headset | |

**Time-keeper table** – infrastructure to score the pilots performances and to communicate with the CYBATHLON Mission Control Centre (MCC) in Zurich. It is important that the time-keeper sees the referee during the race at all times. Please position the time-keeper table accordingly.

| **Amount** | ***Person*/Object** | **Details** |
|---|---|---|
| 1 | official CYBATHLON time-keeper | The time-keeper is recruited by the CYBATHLON organising committee. We may contact you for supporting the recruitment. |
| 1 | “time-keeper computer” | • Windows laptop or desktop PC (minimum requirements: Intel i5 6h Gen (recommended: i5 8h Gen or newer) processor, 16 GB RAM<br>• Admin rights (e.g., system clock of the computer must be changed)<br>• Wired internet connection<br>• Output socket to the monitor (recommended is HDMI)<br>• CYBATHLON results management software “TACS” and the instant messaging/VoIP application “Discord” installed<br><br>**FES only:** The time-keeper computer requires a USB port with the ANT dongle (sent together with the smart trainer) plugged in. |
| 2 | monitors | • One monitor for the TACS back-end (GUI for time-keeper, see figure 4) |

| | | |
|---|---|---|
| | | • One monitor for the TACS front-end (information to the pilot and the audience, see figure 4)<br>(in case of a laptop, one monitor can also be the one of the laptop) |
| 1 | mouse | Touchpad of a laptop is insufficient. |
| 1 | keyboard | |

| | | |
|---|---|---|
| 1 | laptop, desktop PC or mobile phone | "Discord" app installed and a wired internet connection |
| 1 | headset | |

| | | |
|---|---|---|
| 1 | table | |
| 1 | chair | |

**BCI only – BrainDrivers infrastructure**

| Amount | Object | Details |
|---|---|---|
| 1 | "BrainDrivers game computer" | • Desktop PC (minimum requirements: 16 GB RAM, admin rights, two integrated network cards, recommended OS: Windows)<br>• BrainDrivers installed<br>• Connected to the time-keeper computer and to the broadcasting client<br>• The second network card is dedicated for a connection to the teams BCI computer. |
| 1 | "broadcasting client computer" | • Windows laptop or PC (minimum requirements: 16 GB RAM, admin rights)<br>• BrainDrivers installed<br>• Discord installed<br>• Connected to the time-keeper computer, the BCI game computer and the internet |
| 1 | router | The router shall connect BCI game computer, broadcasting client and time-keeper computer and shall provide wired internet connection for the broadcasting client and the time-keeper computer. |

**ARM/LEG/EXO/WHL only: Start zone** – infrastructure to present the countdown to the pilot and show the results from the other hubs):

| Amount | Object | Details |
|---|---|---|
| 1 | HDMI splitter and HDMI cable | Splits the front-end monitor signal from the time-keeper computer and sends the signal to the monitor in the start zone. If an alternative to a HDMI signal is used, please find a solution accordingly. |
| 1 | monitor | recommended size: 27'' or bigger, 1080p |

| | | |
|---|---|---|
| | additional infrastructure (tables, constructions) | Infrastructure that is needed to position the monitor at the pilot's eye height (while standing for ARM/LEG/EXO and while sitting for WHL/BCI/FES |

**All disciplines: Finish zone** – infrastructure to present the performance results, the ranking of the pilot related to that performance and the livestream).

| Amount | Object | Details |
|---|---|---|
| 1 | HDMI splitter and HDMI cable | Splits the front-end monitor signal from the time-keeper computer and sends the signal to the monitor in the finish zone. If an alternative to a HDMI signal is used, please find a solution accordingly. |
| 1 | monitor | recommended size: 27'' or bigger, 1080p |

| | | |
|---|---|---|
| 1 | "restream computer" | BBM productions directly restreams the camera signal you provide us back to the hub via Discord in order that you can see what you are filming and that the people in the hub can see what is filmed.<br><br>• Laptop or desktop PC (min: 8GB RAM)<br>• Connected to the internet<br>• The instant messaging/VoIP application "Discord" must be installed (see below for more information). |
| 1 | monitor | |
| | additional infrastructure (tables, constructions) | Infrastructure that is needed to position the monitor at the pilot's eye height (while standing for ARM/LEG/EXO and while sitting for WHL/BCI/FES |

| | | |
|---|---|---|
| 1 | chair | for the pilot (suggestion) |

Instructions regarding the placement of the branding on the ARM, LEG, EXO and WHL race infrastructure and the placement of the backdrops for the BCI and FES setup will be provided in separate guidelines. The branding will be sent to you together with other material and race objects.

# 6. Software installation instructions

## 6.1. Discord (instant messaging/VoIP application, freeware)

Please download the discord software on the devices mentioned in this document from here https://discord.com/. Please register when launching Discord the first time and test as far as possible. You will receive further instructions with the invitations to your test sessions.

If you register for Discord taking a role during the event, please use the following **username** in order that we can identify you easily.
(If you missed this you can always change your username afterwards: https://support.discord.com/hc/en-us/articles/213480948-How-do-I-change-my-Username-)

City: City of your hub.
Role:

- Mgr: Manager
- Film: Filming camera person
- Com: Communication person (who will do an interview with the pilot/team member after a race.
- TK: Time-keeper

| |
|---|
| IOC-country code_City_[Mgr/Film/Com/TK]_FirstName |

Example:

- RUS_Moscow_Mgr_Anna
- ITA_Padova_Com_Alberto
- JPN_Wakayama_Film_Alice

The username can only have between 2 and 32 characters. In the case you need to many characters please use meaningful abbreviations of your city's name.

CYBATHLON will instruct the time-keepers to create a username.

Use the following Link to join the CYBATHLON 2020 server on which all communication will happen; for both testing and the event.

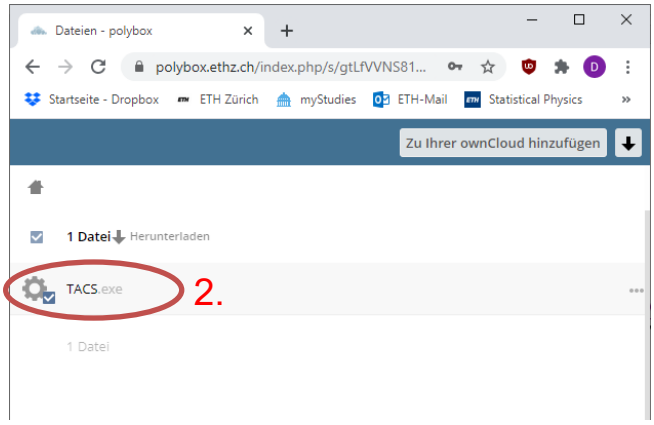
Discord Server: https://discord.gg/zw99744

## 6.2. TACS (CYBATHLON results system software)

Download the current TACS release:

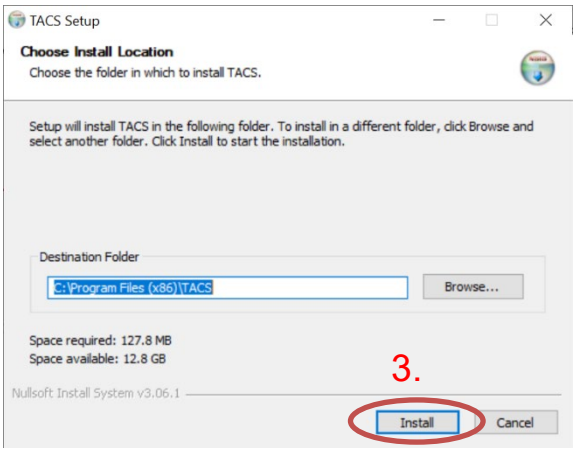
(1) Open the following link: https://polybox.ethz.ch/index.php/s/SZgifFXzFb9Rp8v and use the following password: **cybathlon**

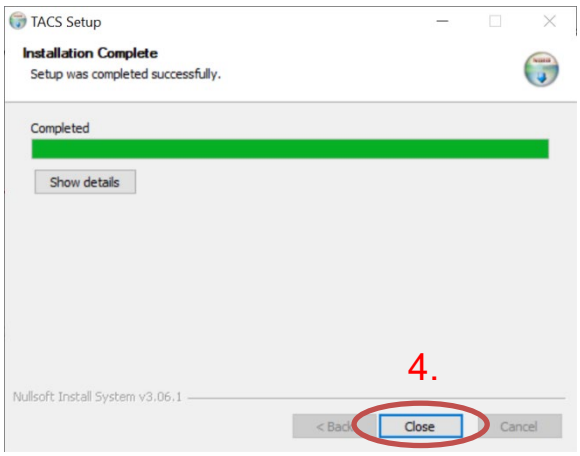
(2) Then download the file “TACS_Installer.exe” by clicking on it and saving it to a location of your choosing:


(3) After the download is complete, open TACS.exe. The TACS Setup should open and a destination folder can be chosen. Leave this path as the default one and hit install.

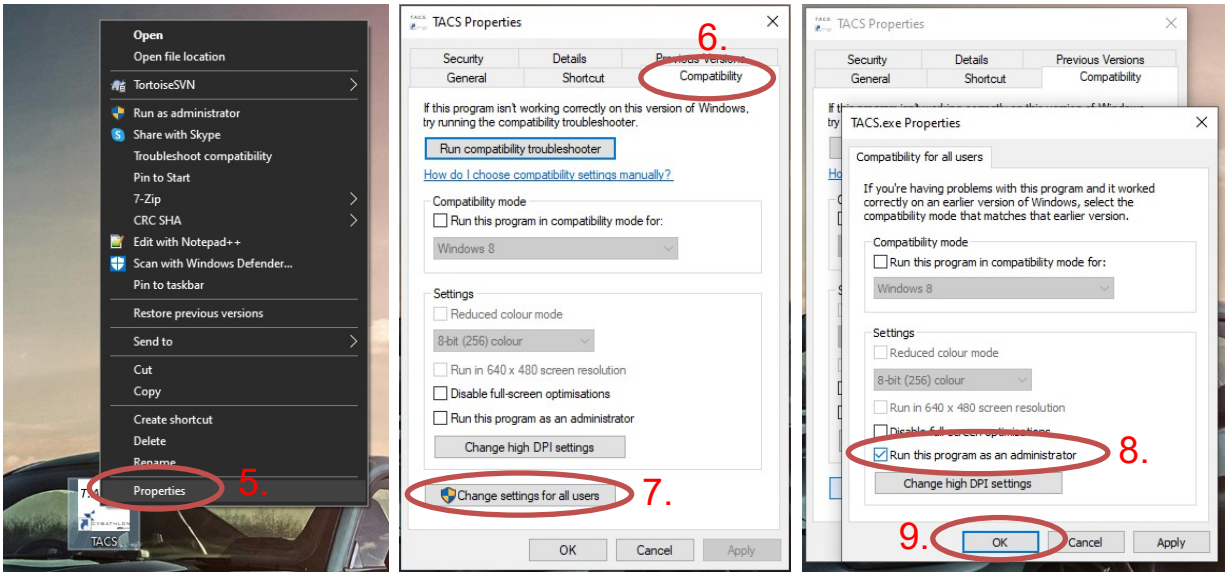
(4) After the installation terminates, close the TACS Setup.



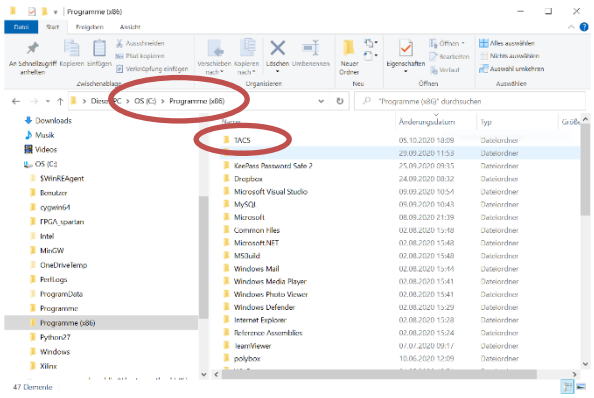

(5) The TACS Software can now be opened by clicking the shortcut on your desktop:

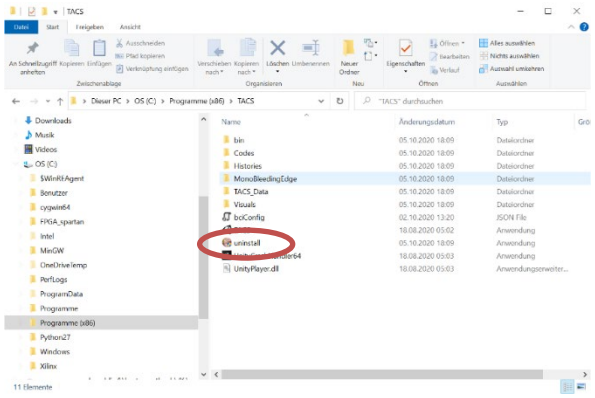
(6) Adapt the following changes such that TACS is run as Administrator as default:
Right click on the TACS shortcut on your desktop and select “Properties”. Open the “Compatibility” tab and select “Change settings for all users”. Then tick the box “Run this program as administrator”. Hit “OK”.



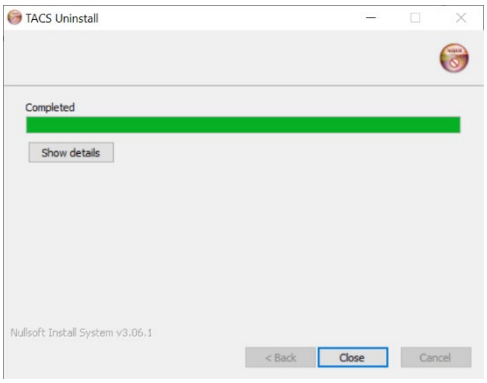
### Uninstall TACS

Locate and open the TACS folder in your programs folder. Then execute unistall.exe, located within the TACS folder





The uninstall wizard should execute automatically and remove TACS as well as the shortcuts on your Desktop. After successful execution you should see this:




## 6.3. 6.3 Install BCI Game Server Test-Day Version

In case your Hub has a BCI Team, please install the latest test version of the BCI game Brain Drivers:

(1) Open the following link: https://polybox.ethz.ch/index.php/s/HxG6kq94VZSP6Zc and use the following password: **cybathlon**

(2) Download either Windows version, if your computer is running Windows or correspondingly Linux.

(3) The game comes in a zip folder. Please unzip it and place it on the desktop of your game server.

# 7. References

Please check the CYBATHLON Forum (https://www.cybathlonforum.ethz.ch) for further discussions about the broadcasting of the event.

At the current status of this document no further documents are referenced.

| Document | Link |
|---|---|
| - | - |