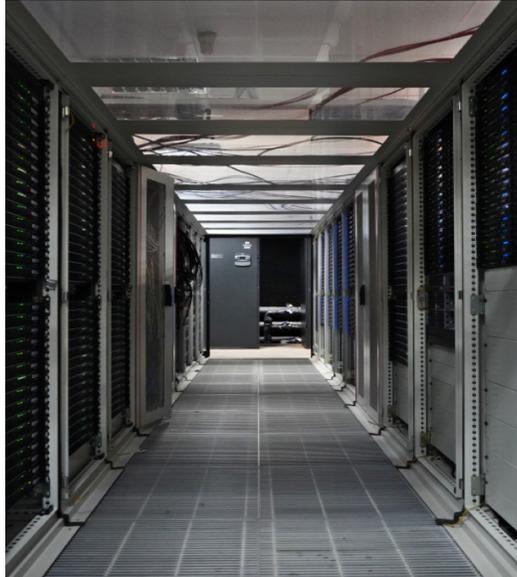




TURKISH ACADEMIC NETWORK AND INFORMATION CENTER



**NCC TURKEY COMPETENCES**

**1 August 2022**

## 1. Training & Awareness

NCC Turkey has organised many training and awareness activities in HPC, AI and HPDA-related domains based on the needs of SMEs and the industry side. These activities aim to make SMEs more familiar with HPC-related technologies, and to promote the benefit of HPC usage. The activities have been delivered as live online events for remote participation. Video recordings are shared on the [YouTube page](#) for those who are unable to participate in training programs, and the documents corresponding activities are [available on this page](#). The participation rates in the activities organized so far are depicted in Figure-1 as a percentage. As seen in graph, the participants show more interest in training events. The details of the activities are given in below:

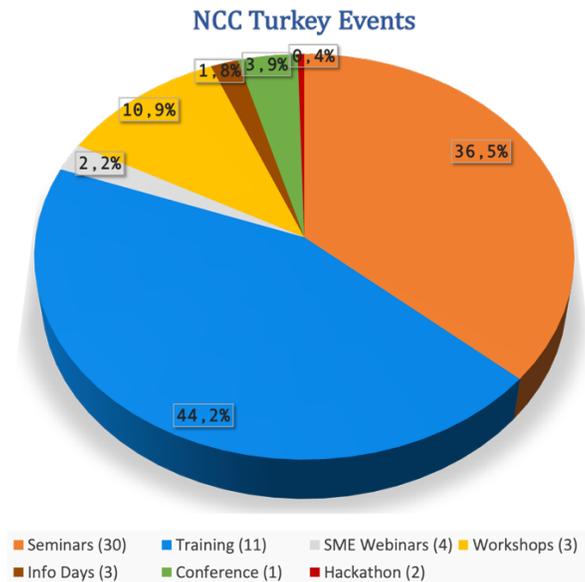


Figure-1: The participation in the activities organized so far is shown as a percentage. It is the number of the activities given in the description box.

- Training programs involve engaging generally new and intermediate HPC users. In some training activities, a limited number of accounts are open and these participants are given the opportunity to experience working on TRUBA infrastructure by executing open-source programs. Indico event page is used both for registrations to training and content distribution. GDPR consent forms are collected prior to the event from all the contributors to the legal issue. Until August 2022, 13 training activities have been held.
- As a part of training activities, The NCC has developed an effective and collaborative platform for beginner-intermediate Turkish [training documentation and tutorials](#). The documents include the user guides of HPC software and TRUBA, which will be extended with tutorials, and how-to guides by taking into account the need of HPC users. NCC edits and updates the document on a regular basis.
- Seminars are organized in two ways. One is the scholars from universities giving a talk on topics with HPC, HPDA, and AI convergence. The other type of seminar is in which the challenges related to adopting SMEs'

jobs to the HPC environment and, the case studies carried out by SMEs with NCC TURKEY team. In particular, the SME seminar series inspire other SMEs to use HPC in their projects. Up to May 2022, 34 seminars have been held.

- In order to increase the visibility of the project and awareness of the HPC benefits, the workshops are organised, as well. Up to now, 3 workshop have been held.
- The Hackathon-like event “EuroCC Compuhion Series” has been organised as online. In these events, the problem has been introduced first and the teams submit their solutions. Free CPU hours have been given to the winning groups as a gift.
- Info days have been organised to inform about the EuroHPC calls, as well as to provide a ground for discussion and networking.

## 2. Consultancy & Case Studies

- NCC Turkey provides consultancy services to SMEs and big industries according to the needs of them. Up to the EuroCC project, this help was only on the technical side. With initializing case studies carried out in the context of the EuroCC project, these supports have begun to become more versatile both academically and technically. We have an academic expert pool from which we match academic experts to case studies to give strategic consultancy during the case study. The expert pool is potent in materials science, CFD, big data, artificial intelligence, deep learning, and graph analytics.
- NCC Turkey has built collaborations with large, medium, and small-sized companies (public or private sector) with problems in the field of High-Performance Computing (HPC)/Big Data/Artificial Intelligence through case studies to strengthen industry-academia collaboration. Utilizing a clear strategy and a well-defined process to initiate case studies with SMEs, 27 case studies have been launched. The process of the strategy is explained in an info graph given in Figure-2. The distribution of the fields and sectors of the case studies is depicted in Figure-3. As given in the figure, most of the case studies are from the manufacturing sector. The detailed information regarding the case studies and the success stories realized after these studies are on [EuroCC website](#).

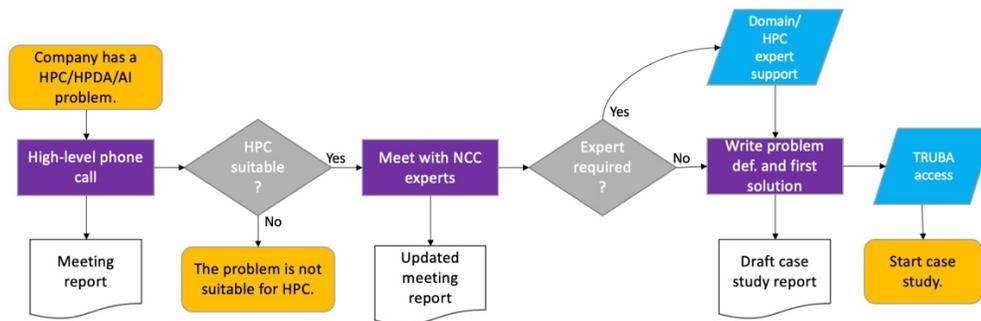


Figure-2: Case study initiation process

- [A case study initiation form](#) was prepared to make easier to reach SMEs with overlapping HPC AI and HPDA problems. [Another form](#) has been prepared to encourage SMEs to use HPC-related technologies in their work, to provide information about the opportunities of the EuroCC project and the EuroHPC ecosystem.

Based on the answer to this form, a feedback report with recommendations will be sent to those who fill out the form.

- During the case studies, regular online meetings are organized in order to understand their needs and problems. Taking into account their requirements such as installation of applications, infrastructure usage, academic help, etc., consultancy is provided by NCC experts to these stakeholders. In addition, these requirements will help us to update our documentation page.
- In consultancy respect, NCC experts continue to give project writing support for EuroHPC calls to SMEs especially those having HPC needs and those with a lack of computational experience for adopting them in this community. The details of the technique supports and services will be given in the Services & Support part.

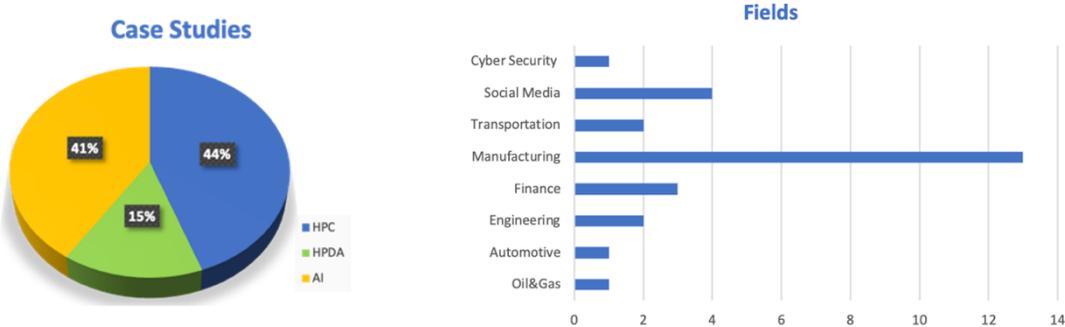


Figure-3: Distribution of case studies according to their fields and sectors

### 3. Collaboration

- NCC Turkey has introduced the Center of Excellences (CoEs) to research communities, provides information about relevant calls, and fosters collaboration. Additional and more specific meetings have been held with those centers/communities that are closely interested in CoEs. NCC Turkey has contacted many CoEs for this purpose. NCC TURKEY organized round table type meetings that brought the CoE and research centers together. The attempts are expected to achieve a positive outcome.
- Based on the competencies and requirements, NCC Turkey has initiated collaboration with other NCCs in the context of twinning-training activities to build cross-national collaboration and strengthen NCC collaboration. In this framework, NCC Turkey has started to communicate with the NCC Czech Republic, NCC Greece, NCC Hungary, NCC Spain.
- Cooperation with projects funded by the European Union has also been established. With this respect, NCC Turkey contacted SparCity, Mind4Machines. Letter of Collaboration agreements are signed with SparCity and Mind4Machines.

All these collaborations broaden the network and allow for the exchange of knowledge.

#### 4. Services and Support

- NCC Turkey has been not only providing HPC services to the national researchers but also hosting scientific data repositories. Currently, more than 3000 researchers from 114 different universities, who utilize TRUBA infrastructure's resources, are able to enhance their innovative studies, strengthen their scientific achievements, and compete with their colleagues at the international level thanks to this infrastructure.
- Industrial users are more accustomed to cloud Infrastructure-as-a-Service and Platform-as-a-Service solutions. To support the industry in adopting HPC infrastructures, our infrastructure experts work with the industrial users to devise solutions. For example, we provide the Open OnDemand service as a convenient access point to launch interactive apps such as Jupyter Notebook, RStudio, and MATLAB.
- We install numerous software modules on the clusters, and the users can create and use dedicated virtual environments with CUDA support, which is favorable for HPDA and AI tasks. We provide the necessary mechanism to launch and use JupyterLab on the clusters using virtual environments or containers.
- We also offer dedicated support for open-source CFD software OpenFOAM and distributed data analytics and deep learning software, including Apache Spark, Dask, and Horovod.