



# International Industry 4.0

Student contest 2024  
by Digital Industries World



## 3<sup>a</sup> Edition of the competition dedicated to Industry4.0

### Regulation

#### Foreword

Digital Industries World establishes, in collaboration with Fondazione Politecnico di Milano and Politecnico di Milano (Department of Management, Economics and Industrial Engineering), the third edition of the 'International Industry 4.0 student contest by Digital Industries World' reserved to students enrolled to the **last year of the study program in engineering studies**, with an interest in manufacturing processes, production digitalization, shop floor control and Industry 4.0.

#### 1. Purpose

The competition aims to stimulate students to develop **innovative solutions that take advantage of Industry 4.0** to improve the management of production systems. The competition encourages the hands-on use of **Industrial Operations X<sup>1</sup>, the platform on which the reference ecosystem for IoT and cloud in industry is based**. With this in mind, the competition is intended to be an experience in approaching professional challenges, valid not only from a personal training point of view, but also to bring students into contact with the digital transformation of companies facing innovation trends in Industry 4.0, factors that are accelerating the growth and diversification of applications.

#### 2. Characteristics of projects to be developed

**The realisation of an application for Industry 4.0** is proposed by students enrolled to the contest that should be able to develop a solution accommodating one or more **digital technologies**, such as cloud, edge computing, simulation.

Additionally, the students may take advantage of the Siemens Insights Hub platform (see appendix A on project characteristics) using the tools available with the "Start4Free"<sup>2</sup> *freemium* plan and the open-source solutions made available by the Digital Industries World user community<sup>3</sup> or other Industrial Operations X portfolio elements. In this regard, students will be trained on the Insights Hub platform for developing and deploying cloud applications.

The official language of the competition is English.

#### 3. Working Groups

Students enrolled to the **last year<sup>4</sup> of the study program in engineering** are eligible to take part to the competition.

- Each project must refer to a working group, formed by a minimum number of 2 and a maximum number of 5 students, one of whom must be appointed as Correspondent.
- Each team can work on only one project.
- Each person may only be part of one group.

<sup>1</sup> <https://www.siemens.com/global/en/products/automation/topic-areas/industrial-operations-x.html>

<sup>2</sup> <https://plm.sw.siemens.com/en-US/insights-hub/start/>

<sup>3</sup> <https://developer.siemens.com/industrial-iot-open-source/index.html>

<sup>4</sup> **Therefore, both Bachelor and Master students are eligible as far as they are enrolled to the last year of the study program.**



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## 4. Choice of participation theme

The choice of theme for the contest must adhere to the scope of Industry 4.0.

The projects will be developed on the basis of the theme freely chosen by the group of students, in the context of Industry 4.0, in accordance with the modalities set out in Appendix A 'Features of the projects proposed by the students'.

Ideas and suggestions on the topics will be provided to the students during the meetings scheduled in phase 1 of the competition and may come from projects in the Industry 4.0 Lab of the Politecnico di Milano, companies and institutions belonging to Digital Industries World as well as from Master's degree courses.

## 5. Entering the competition: how and when

To participate in the competition, entries must be received no later than **31 January 2024**.

**To register, simply fill in the contest form**, available on [digital-industries.academy](https://digital-industries.academy)

**Type of registration:** students may choose to **register individually** or in **groups** (each group member must register individually by entering his or her name, surname, e-mail and the name of the group agreed upon with the other group members).

For problems during registration, please contact [info-industry40lab@polimi.it](mailto:info-industry40lab@polimi.it).

The organisers reserve the right to extend the registration period or cancel the competition if the number of participating groups is less than 10.

## 6. Project and contest documentation

The **International Industry 4.0 student contest 2024 by Digital Industries World** will take place in **2 phases**.

The **first** phase (idea challenge) will end **no later than April 2024**.

In this phase the participating groups will have to elaborate and describe the concept of their project.

Projects deemed suitable by the evaluation committee will advance to the second phase.

The **second** phase (boost program) will end **no later than June 2024**.

In this phase the participating groups will have to implement the presented project in practice.

In order to be accepted, **the project documentation, at the end of each phase, must be transmitted in file-sharing format** to the technical secretariat of the "**International Industry 4.0 student contest 2024 by Digital Industries World**" competition, in accordance with modalities that will be communicated.

The documents to be submitted can be found in the Appendix to these Regulations.

### Phase 1 of the contest – idea challenge:

Each group formed after registration must, under penalty of exclusion from the contest, attend the following meetings:

- **Beginning of March 2024: introductory event** for the contest, to be held in hybrid mode via Teams (or other platform to be communicated) or in the classroom, and **presentation of Digital Industries World** and the **Industry 4.0 Laboratory** of the Department of Management Engineering of the Politecnico di Milano. The final composition of the groups will be announced during the event.
- **March 2024: introductory and basic training** in the use of digital industries-related software applications such as Insights Hub.



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- **March 2024:** hybrid visit to the Industry 4.0 Lab at the Department of Management, Economics and Industrial Engineering (<https://www.industry40lab.org>) to present the opportunities in the laboratory to students interested in the Contest.
- **March 2024 - April 2024:** Preparation of project proposal concepts by students and submission to the secretariat.
- **April 2024:** Speech by the groups to present the idea and award ceremony (with announcement of the top 10 groups, of which 5 finalist will have the possibility to enter the boost program). Hybrid event.

## Phase 2 of the contest – boost program:

All groups participating in the boost program must, under penalty of exclusion from the contest:

- **elaborate the project proposed in phase 1:**
  - through the material provided by the Industry 4.0 Lab, Digital Industries World companies or projects related to master's degree courses; with regard to the data collected by the lab, the research team makes itself available to support the understanding of such data.
  - With the support of Digital Industries World, and any related companies, for the realisation of the prototype to ensure its operation in a real industrial environment.
  - in case of difficulties with the Insights Hub platform, the groups can refer:
    - to the Insights Hub website and community: <https://documentation.mindsphere.io/MindSphere/index.html>;
    - to the Digital Industries World association (e-mail: [segreteria@digital-industries.it](mailto:segreteria@digital-industries.it)) via its experts.
- Deliver the project by
- Present their work in the **final award ceremony** (related to the boost program)

## 7. Project evaluation

The awards of the "International Industry 4.0 student contest 2024 by Digital Industries World" will be assigned by an **Evaluation Committee**, composed of experts from Digital Industries World and representatives from Fondazione Politecnico di Milano and Politecnico di Milano.

During the project evaluation phase, the experts of the Evaluation Committee may make use of the possibility of contacting the group and its members in order to ascertain and understand the proposed solution in detail.

The judgement of the Evaluation Committee is final.

## 8. Awards

The best 10 projects of the first phase (idea challenge) will be awarded a prize<sup>5</sup> of € 250 each in Amazon vouchers.

**The team members of the best 5 projects of the second phase (boost phase) will be hosted for a business trip to visit one innovative production facility in Europe among Digital Industries World members or their partners.**

The total value of the vouchers will be divided equally between the members of each ranked group.

<sup>5</sup> Not subject to VAT ex art. 2 of D.P.R. n. 633/72, lettera m



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In addition to the above-mentioned prizes, **Digital Industries World will issue the following awards:**

Students admitted to the finals and who have submitted a complete project in all its parts, regardless of whether it was deemed worthy of a prize, will be awarded a certificate of Finalists of the 'International Industry 4.0 student contest 2024 by Digital Industries World'.

## 9. Non-awarding of prizes

The Evaluation Committee reserves the right, at its sole discretion, not to award all or part of the prizes if it considers that the projects submitted have not reached a minimum quality level.

## 10. Notification of winners (idea challenge)

The competition secretariat will inform the winning groups **by April 2024** (possible extension will be communicated).

## 11. Award Ceremony (boost programme)

The International Industry 4.0 student contest 2024 by Digital Industries World will be awarded by **June 2024** (date to be confirmed) at the Politecnico di Milano (hybrid event).

The Award Ceremony will be presided over by the top management of Digital Industries World, Fondazione Politecnico di Milano and Politecnico di Milano, the press and personalities from companies or organisations and associations.

## 12. Information on registration and contest meetings

In matters relating to registration and meetings for the 'International Industry 4.0 student contest 2024 by Digital Industries World', you can request information and assistance from the following e-mail: [info-industry40lab@polimi.it](mailto:info-industry40lab@polimi.it).

## 13. Dates to remember

**28 February 2024** - Closing date for entries

**April 2024** – Submission deadline of project concept proposals phase 1 – idea challenge

**June 2024** - Submission date for projects phase 2 – boost program

**June 2024** - Award Date (boost program)

## 14. Obligations of Participating Students

By registering for the "**International Industry 4.0 student contest 2024 by Digital Industries World**" the students make the following commitments: the finalists will personally attend the Award Ceremony, in the manner and at the times indicated in these Regulations or communicated later. Any travel and/or accommodation expenses will not be recognised. Registration and submission of the project implies acceptance of all the rules and procedures set out in these Rules and Regulations, under penalty of forfeiture from the Competition itself.

This competition may in no way be construed as an offer of employment or the establishment of an employment relationship with the promoting organisations and participating companies.

Participants who are not winners may not make any financial claims whatsoever against the promoters and participating companies.

By registering for the International Industry 4.0 student contest 2024 by Digital Industries World, students assign the exclusive, proprietary and non-proprietary rights of use of the submitted work.

## 15. Project Dissemination



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The organisers are authorised by the students, upon registration, to disclose to the press, or publish freely, all the Projects received, the names of the authors without any charge. The editorial copyright for the dissemination of the projects' contents is owned by Digital Industries World, valid worldwide and cannot be transferred to third parties by the students. Submitted materials will not be returned.

## 16. Promotion of the competition

The secretariat of the **"International Industry 4.0 student contest 2024 by Digital Industries World"** also fulfils the task of disseminating the Rules and Regulations among the study courses in Universities referred to in the preamble of these regulations and of promoting the diffusion of the news related to the contest participation, the notification of the winners and the organisation of the awarding phase. The planned actions are aimed at fostering the achievement of the main objective, which is to bring students closer to the use of the IoT and cloud ecosystem in the Insights Hub industry.

## 17. Processing of personal data

Digital Industries World, Fondazione Politecnico di Milano and Politecnico di Milano are autonomous data controllers for the contest.

As far as Fondazione Politecnico di Milano is concerned, each student registering for the competition agrees to the privacy regulations available on the contest page.

As far as Politecnico di Milano – Dipartimento di Ingegneria Gestionale (Department of Management, Economics and Industrial Engineering) is concerned, each student registering for the competition agrees to the privacy regulations available on the contest page.



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## Appendix A - Characteristics of the projects proposed by the students

The topic under Industry 4.0 themes chosen by the students must propose the realisation of an actual Industry 4.0 application development project. The Industry 4.0 solutions could be developed according to the tools that better fit the purposes, either available for free on the market and/or offered by the affiliated University<sup>6</sup>. It is not compulsory that those solutions will run adopting, completely or entirely, the Insights Hub platform and related libraries.

Please note that project opportunities may also arise from Digital Industries World companies and institutions, projects in Master's degree courses or dissertations.

**Project proposals (idea challenge)** will have to be detailed and meet specific requirements for delivery:

### Detailed features of project proposal concepts and specific requirements for the delivery for the idea challenge

*In order to be considered valid, each submitted project concept proposal must consist of 10 slides illustrating the proposal of a real application project for Industry 4.0. Please highlight the functional and logical blocks of the solution, eventually including Insights Hub functions, and also carrying out a "pre-feasibility" assessment, from a technical and economic perspective. Optionally, a video explaining the concept may be included in the presentation.*

*The presentation could be developed on a preferred software or platform, but there must be the possibility to share, together with a .pdf document, also the editable file.*

**The final projects** must have detailed features and meet specific requirements for delivery as detailed below:

### Detailed project characteristics and specific requirements for final delivery of the boost program

*In order to be considered valid, each submitted project must comply with the following characteristics:*

- *The project must be a **real application project for Industry 4.0** and must be created in its entirety by the team in an original way.*
- *The project could be realised relying on **various tools, languages and software**, eventually leveraging upon Insights Hub via the 'Start for Free' plan.*
- *Evaluation criteria will include creativity, innovation, originality, applicability, comprehensibility and completeness as well as the quality of the documentation.*

### The project must be accompanied by:

- a) *Comprehensive description of the project and its operation (including any explanatory drawings), indicating team members, courses of study, a concise and representative title and objective of what has been developed.*
- b) *The software programme for the project - which must be capable of performing the tasks set out in the project description and be able to function perfectly - must be provided with comments and must also list any additional functions and packages required for its operation.*
- (c) *Explanatory table of the variables and signals used.*
- d) *Any documents and videos considered useful to complete the project. Such additions to the final delivery are to be considered optional but recommended in order to improve the understanding of the project in its entirety and/or for specific passages.*

<sup>6</sup> Check the internal regulations by each University/Department for the correct use.