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# The Official IOI Website: The Good, the Bad and the Ugly

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**Abstract.** This paper is an extended report from one of the discussion groups at the 35<sup>th</sup> International Olympiad in Informatics (IOI) in Hungary. It looks back at the evolution of the official IOI website, provides an overview of the current web resources and reflection on their strengths and weaknesses. The report also proposes short-term and long-term suggestions for further development of the IOI web services.

**Keywords:** IOI, website, web services, customer journey, sitemap, social media.

## Introduction

It is a longstanding tradition now that every International Olympiad in Informatics (IOI) program includes group discussions. The IOI community members are called to propose the topics and sometimes the resulting discussion reports lead to proposals for changes and new procedures, for example, the recent introduction of the Honorable Mention award (Jovanov and Stankov, 2020).

One of the seven group discussions at the IOI 2023 in Hungary was “Face of the IOI” with the question posed as “What can be improved on the IOI official website and other online infrastructure (country websites, social media, etc.)?” The motivation for the discussion was the anecdotal evidence of difficulties in finding the required information as some of the materials are not immediately available through the current official IOI website. For example, in 2022 there were no submissions for the IOI call for projects, but apparently the relevant announcement was not prominently visible and easily accessible at the website.

The goal of this report is to expand on the discussions of this workshop with a hope that the short-term and long-term recommendations will be taken on board for further improvement of the IOI web services.

## 1. The Look Back

The Wayback Machine<sup>1</sup> holds the snapshot records for the official IOI website hosted at <https://ioinformatics.org/> as old as back from 5 October 2002. The second version of the website was launched around 26 June 2005 and credits Don Piele<sup>2</sup>, an IOI pioneer from the USA, who sadly passed away in 2014 (Donald Piele Obituary, 2014), as the webmaster. The longest serving third version was created in January 2008, as it is apparent from the page source of the homepage, by Scott Greenlay of the University of Waterloo, who at the time worked with Troy Vasiga<sup>3</sup> of Team Canada. Since 2012, the website has been updated by Martins Opmanis<sup>4</sup>, an IOI veteran from Latvia. He continues maintaining this version, which is hosted at <https://ioi.lv/>, in parallel with the official IOI website after the introduction of the newest version in August 2018. This website, also accessible through <https://history.ioinformatics.org>, is still popular with 600+ peak monthly visits increasing every year (650 in August 2019, 702 in September and 724 in December 2020, 806 in June 2021 and 936 in August 2022).

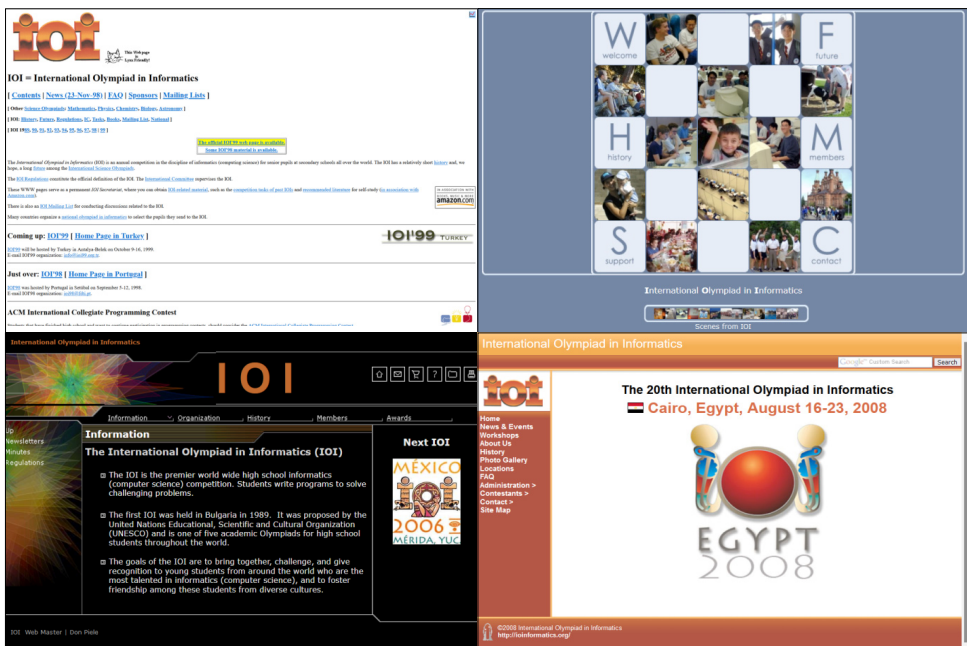


Fig. 1. Snapshots of the IOI website homepage (from left to right) in 1998 and 2002 (top row), in 2005 and 2008 (bottom row).

<sup>1</sup> The Wayback Machine is an initiative of the Internet Archive non-profit, building a digital library of Internet sites and other cultural artifacts in digital form. <https://web.archive.org/>

<sup>2</sup> IOI Stats – United States of America – People – Donald Theodore Piele. <https://stats.ioinformatics.org/people/4185>

<sup>3</sup> IOI Stats – Canada – People – Troy Vasiga. <https://stats.ioinformatics.org/people/3254>

<sup>4</sup> IOI Stats – Latvia – People – Mārtiņš Opmanis. <https://stats.ioinformatics.org/people/2645>

There is another website hosted at <https://olympiads.win.tue.nl/ioi/> and maintained at the time by Tom Verhoeff<sup>5</sup> of Eindhoven University of Technology (TU/e), which predates the current IOI website with an earliest snapshot from 5 December 1998. This site is still up and is an invaluable resource if you want to deep-dive into the history of IOI, the times when the diskettes were used to pass the solutions.

One more website is the IOI Statistics website with the earliest Wayback Machine snapshot from April 2014, hosted at <https://stats.ioinformatics.org/>. Arguably the most popular IOI website that provides convenient access to comprehensive contestant data, it is moderated by colleagues from Latvia, Eduard Kaliničenko<sup>6</sup>, Martins Opmanis and Oleg Oshmyan<sup>7</sup>.

### 1.1. Mailing Lists

As per the Final Report (Heyderhoff *et al.*, 1992) for the IOI 1992 in Bonn, Germany, one of the decisions was “to install an electronic discussion list, in the form of a list server, as a means of communication among the participating countries in the period between two Olympiads.” The proposal came from the Hungary and the USA delegations, and as it is apparent from the domain name ([inf.bme.hu](http://inf.bme.hu)) the mailing list was hosted by the Budapest University of Technology and Economics. In October 1997, it was replaced by the new IOI-list at TU/e with more specific mailing lists added over the years.

Currently the International Technical Committee (ITC) maintains the mailing lists for the IOI General Assembly, announcements, discussions, for all three international committees, and for national/regional training camps<sup>8</sup>.

### 1.2. Social Media Channels

Back in August 2019, the IOI pages were launched at major social media channels i.e. Facebook, X (formerly Twitter), Instagram and YouTube. Apparently all relevant social media profiles are associated with the IOI Secretariat email. They are maintained by Eslam Wageed<sup>9</sup> of Team Egypt.

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<sup>5</sup> IOI Stats – Netherlands – People – Tom Verhoeff. <https://stats.ioinformatics.org/people/3553>

<sup>6</sup> IOI Stats – Latvia – People – Eduards Kaļiņičenko. <https://stats.ioinformatics.org/people/681>

<sup>7</sup> IOI Stats – Latvia – People – Oļegs Ošmjans. <https://stats.ioinformatics.org/people/1731>

<sup>8</sup> IOI Mailing Lists. <https://lists.ioinformatics.org/>

<sup>9</sup> IOI Stats – Egypt – People – Eslam Wageed. <https://stats.ioinformatics.org/people/3269>

## 2. The Current State

The interest in “a redesign of the look and feel” of the official IOI website had been expressed as early as in 2011 (International Committee, 2011). In August 2018, a project led by Bojan Kostadinov<sup>10</sup> of Team North Macedonia concluded with the launch of the new version of the website. There was an unfortunate miscommunication during the unintentionally abrupt transition to the new version of the website, as it is apparent from discussions at the IOI 2018 General Assembly (IOI, 2018) and in the International Committee (International Committee, 2019) during the IOI 2019. The intention of the redesign was primarily to change the look and feel while retaining all the information.

The current IOI website uses Bootstrap, a popular free, open-source front-end development framework for building websites with responsive design, easily viewable primarily on mobile devices. The new design has also greater potential for more visual, media-rich content. However, this potential still is to be used fully, as initially the primary intent was only to transfer the existing content.

While having a powerful mission and an inspiring imagery IOI still to more proactively engage new members to join the IOI countries, new long-term sponsors to sustainably support the organization and new nations to host future IOI contests. The IOI website has an unused potential to help with these.

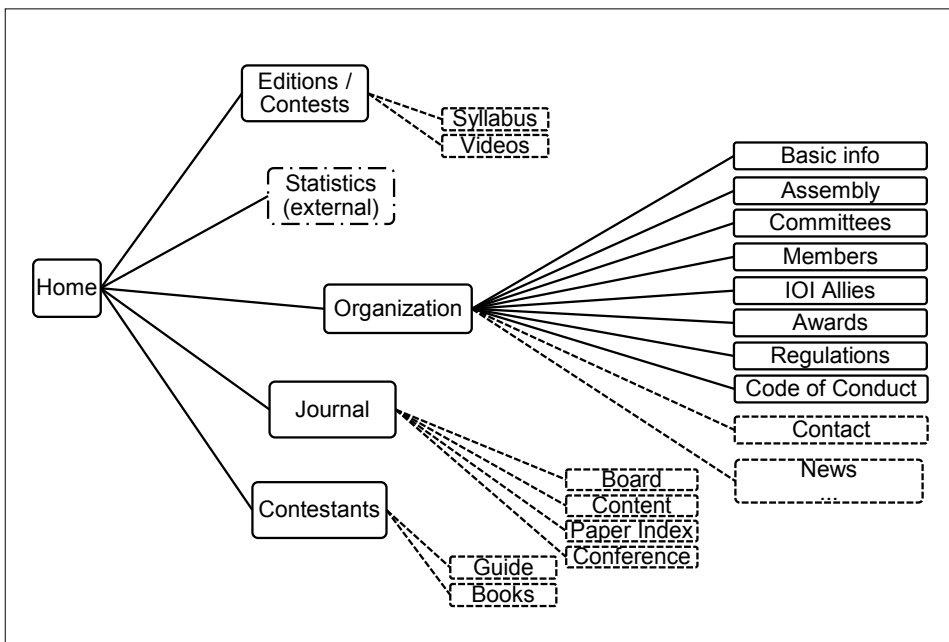


Fig. 2. The current sitemap of the official IOI website.

<sup>10</sup>IOI Stats–Macedonia–People–Bojan Kostadinov. <https://stats.ioinformatics.org/people/4451>

In addition to the look and feel changes, over the years there were suggestions for the IOI website to go through structural redesign. For example, a call to address the concerns about “some information on the website [being] hard to find,” was voiced as early as back in 2009 (International Committee, 2009).

It is apparent from the sitemap (Fig. 2) that there are useful resources that are not easily accessible or not permanently available (denoted by dashed borders), such as getting-started guideline or recommended readings for the new contestants or even contacting details, which are buried as links at the bottom of the homepage with no alternative paths to them.

This need for structural redesign was also the main motivation behind the “Face of the IOI” workshop at the IOI 2023. The following section summarizes the discussion points and outlines potential recommendations.

### **3. The Way Forward**

In the early 2000’s many organizations went through strategic rethinking of their web services and moving out from an informational, archival view towards using them as a means for engagement and communication.

In 2003, the author led a country phase for the multi-million pound British Council project to revamp its web strategy (Telecompaper, 2003). The news articles back then were mostly focused on how this organization that operates in 110 countries will achieve almost an immediate return on investment and 1.3 million GBP savings right the next year after the completion of the project by centralizing and harmonizing its infrastructure. However, the success of the project was also defined by the professional central team, which put together a clear vision for the goal of every web service, clear standards for customer-centered website structure, web page templates to be used for predefined page types, comprehensive artistic and technical guidelines for developing textual and media content.

The central vision was that any content should eventually serve the goal of bringing the visitor in contact with the organization for procuring its services or products. Understanding potential visitors and building a customer journey map is crucial for its implementation. A customer journey is broadly described (Lemon and Verhoeff, 2016) as the flow of iterative and dynamic customer experience process from pre-purchase to purchase and post-purchase, the interactions that occur before, during, or after the customer experiences a product or service.

Ultimately the sitemap will reflect the customer journeys with an aim to minimize the effort for reaching the required destination, for example the web page with the sought information. This also informs the requirements towards the visual content that is meant to be engaging, showing people in action, focusing on personal experiences, as well as towards the textual content that should be clear and direct with calls to action, formal and friendly with a readable structure.

Table 1  
The list of identified visitor groups and their primary intentions  
(available and  – easy to find,  – not easy to find,  – not available)

Who are they?	What do they want?	Call to action
1. School students, interested	What is IOI? What are the costs? What my friend is doing there? What are the benefits?	Learn about us <input type="checkbox"/>
	What is the organization, committees?	Learn about us <input checked="" type="checkbox"/>
	How to join IOI? Is my country there?	Join us <input type="checkbox"/>
	What are the procedures?	Learn about us <input checked="" type="checkbox"/>
	How to prepare for the competition? What are the resources?	Join us <input type="checkbox"/>
2. School students, returning	Learn about statistics.	Learn about us <input checked="" type="checkbox"/>
	Learn about future IOI.	Join us <input checked="" type="checkbox"/>
	Is IOI safe? What is the safety advice for this year?	Join us <input checked="" type="checkbox"/>
3. Parents / teachers of the above 1 or 2	– same as above 1 or 2.	
4. Companies	Hire the top talent.	Grow with us <input checked="" type="checkbox"/>
	Sponsor the next IOI.	Support us <input checked="" type="checkbox"/>
5. Universities	Recruit the top talent.	Grow with us <input checked="" type="checkbox"/>
	Research competitive programming.	Grow with us <input checked="" type="checkbox"/>
	Participate at the IOI conference.	Grow with us <input type="checkbox"/>
6. Potential hosts, e.g. country government	How to become a host? e.g. processes, steps, contacts	Support us <input checked="" type="checkbox"/>
7. Other Olympiads	Compare processes and procedures	Learn about us <input checked="" type="checkbox"/>
8. Activists, e.g. disability, gender	Does IOI support their cause?	Learn about us <input type="checkbox"/>
9. Larger IOI community	How to submit a project?	Grow with us <input type="checkbox"/>
	How to submit a task?	Grow with us <input type="checkbox"/>
	How to submit an article (to the IOI conference)?	Grow with us <input checked="" type="checkbox"/>

### Short Term Reflections

The group went through an exercise of taking a step back for a fresh look at the IOI website from the perspective of what are the main groups of visitors and what is their primary intention. Having access to website statistics (e.g. visitor data, search phrases) and surveying a larger number of people could help with potentially more visitor groups identified.

Quick examination shows that answers to a number of the inquiries listed in Table 1 are not easily accessible. Ironically, to have a laconic answer to the simple question about what the IOI is, one now needs to navigate to the IOI regulations, while many country websites include immediately visible few standard paragraphs about the IOI.

The IOI Regulations (IOI, n.d.) list “To encourage countries to organise a future IOI in their country” among the five “main objectives to be accomplished by the IOI”, however there is not much to accommodate related inquiries at the website.

Another objective is “to foster friendly international relationships among computer scientists and informatics educators.” IOI Conference and Journal are very much speaking to this objective. Researching competitive programming can be further promoted, as there are very few efforts to analyze the competition data (Hasanov *et al.*, 2021). Promoting the IOI Conference more outside the IOI community, perhaps through partnerships with relevant global professional societies, may also increase the number of guest participants from potential new countries.

The group proposed a second exercise about checking if those visitor groups easily land at the IOI website by searching for related keywords e.g. IOI, programming/coding/computing/algorithmic competition/contest/award for high-school kids/children/students. A quick examination showed that for a direct search for “IOI” Google recommends the IOI official website and Wikipedia article on top of the search results, accompanying it with references to the I.O.I Korean pop music girls’ band. The search for variations of the “programming competition for high-school kids” returns the reference to IOI among top nine results, except when “award” is used.

### *Long Term Reflections*

The need for “a centralized content management system for building official IOI websites” every year was already noted in conclusions of the IOI 2019 team’s report (Yusubov *et al.*, 2022) as a way to “save host team’s efforts for setting up this important communication channel, resolve the issue of archiving the historical content, and ensure a consistent look and feel.”

The idea is to arrange a centralized hosting for the official IOI main website, as well as IOI editions. Many global organizations or conferences use this approach. A good example is the ACM Celebration of Women in Computing womENcourage™ websites (womENcourage, 2020). The system uses the centrally hosted WordPress platform with a generic ACM template, which provides some degree of flexibility for customization. Each year, the global administrator creates a new site with default structure and content for the upcoming edition. The local host gets administrator access with the possibility of adding local editors.

There are many immediate benefits of this approach:

- Helping hosts: hosts will not have to think about arranging the web hosting, choosing the content management system, etc. they will immediately focus on adding the content and managing the communications.
- Consistency: using a centralized general template, some preset color schemes and graphical design themes will help to build a strong identity.
- Harmonization: some content can be reused between the websites, e.g. news about this year’s IOI can automatically appear at the main IOI website.
- Auto-archiving: past IOI edition websites will not face the danger of being lost, as well as not rely on individual initiatives for ensuring proper archiving.

The group also discussed potential risks that need to be considered and mitigated:

- A considerable effort will need to be put to complete the project with the technical infrastructure and processes successfully developed.

- The assigned IOI organizational structure will have to handle the additional responsibility of maintaining the centralized hosting.
- There may be a need for a special functionality that will exceed the limitations of the common template or the platform.
- A host may have wishes dictated by local arrangements or specific requirements that will conflict with the central arrangements.

### *Further Thoughts*

Domain name reservation is another matter to keep an eye on. Many organizations make sure to secure their names (e.g. ioiXXXX, ioinformatics) on all major general and country top-level domain names. Perhaps, this can also be centralized.

Once the centralized approach is piloted for the websites, it can be used also for media hosting/social media channels. For example, ACM gives limited access for conference organizers to the official ACM YouTube channel (YouTube, n.d.) for uploading their video material. Many videos are popular years after an IOI edition is over. For example, in 2023, the Team USA interview at IOI 2019 got up to 1,177 views monthly. Perhaps, if relevant agreements and licensing is arranged, monetization of these videos (and other media) may open a new income stream in the IOI budget.

## **Conclusion**

There is a big potential of the official IOI website for turning into a powerful engagement tool that will help with achieving the organizational goals. The previous section mentions a number of recommendations for further improvement of the IOI web services.

A prerequisite for a successful implementation of those is having accessible web statistics from simple visit and page view numbers to website visitor journey maps, as the famous quote says “you can’t manage what you don’t measure.” Above all, as people and procedures are considered among major components of any information system (Bourgeois, 2014), it is important to establish clear procedures for what the main operations (e.g. uploading the contest tasks in a week after the IOI is closed) are and who the responsible person is for each operation.

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<sup>11</sup> IOI Stats – Estonia – People – Sandra Schumann. <https://stats.ioinformatics.org/people/6520>

<sup>12</sup> IOI Stats – Singapore – People – Steven Halim. <https://stats.ioinformatics.org/people/3313>

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