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Everybody Rock Your Equity: Experiences of Organizing a Women in Computing Event with Role Models for Diversity and Inclusion

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Abstract. This paper describes the experiences of organizing an event to celebrate women in computing in Spain. We present how the idea of the event was conceived and what the aims with its organization are from its conception, including providing a network and role models for the participants based on role model theory. We then explain how these aims have been implemented for each of the four editions of the event, and we include data for them. Finally, we compile recommendations for readers interested in launching an event of these characteristics and we reflect on the work to be done in the future.

Keywords: gender · events · role models

1 Introduction and Background

One of the current concerns in computing education in the Western world is the underrepresentation of certain groups among students and faculty. In the case of women, enrolment tends to be low and progress to improve this situation is slow [10]. Recruiting processes have been studied in order to address this issue and one of the drawn conclusions is the need of role models [24]. Researchers in computing education have worked on the implementation and analysis of this strategy, e.g. [23,12,14,17], particularly to broaden participation [11,9,21].

Besides interventions aimed at the education system such as the ones mentioned above, other initiatives have been launched to address the lack of diversity

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in the area. In the US these initiatives were created in the 80's-90's [19]. These women wanted to support their younger counterparts and the focus was on how to keep one's identity as a woman while being in a male–dominated environment. From the numbers above we see that this uneven ratio in gender is still ongoing in the West, and indeed the initiatives continue in different countries. Some of the motivations for the volunteers' participation in this kind of project are providing a support network and positive role models in the same group to others [15].

The term role model is loosely defined and thus used in different ways [13]. While it is often used in computing education research, there is little work in how the phenomenon of role modelling works, what it involves, etc. Here we follow Grande's model [16], where a role model in engineering is defined as "a person who embodies a seemingly attainable achievement and/or an aspect (competency, character attribute, or behaviour) which, through its imitation or avoidance, may help another individual achieve a goal." A role model that represents an achievement is an example of reaching one of the goals that the person emulating them desires to achieve. The completion of this goal comes from outside of the role model themselves, it is given by others, e.g. winning an award. If what the role model represents is a goal achieved that is inherent to the role model, such as their being an honest person or having a particular skill, they represent an aspect. In events to celebrate women in computing, as concerns this paper, we should find both types of role models. And, following the definition, their achievement or aspect needs to seem attainable by those observing them.

It is important that there is diversity among the potential role models, as aspects as gender and ethnicity increase the positive effect of the role model [22,25], and we need different role models depending on the different stages we can be at in our careers [13]. Another kind of diversity refers to the professional identities that potential role models represent. Peters has studied how students in computing may narrow along their studies their view of how it is possible to be a part of the computing community, by favouring those identities that seem more accepted by others [20]. It is crucial then that role models represent different areas in computing and that those with influence support the role models that represent identities less dominant in computing [18].

This paper describes the experiences of organizing an event that has the aim of creating a local community that celebrates women in computing in Spain. In the next section we present how the idea of the event was conceived and what the aims with its organization are from its conception, including providing participants with different kinds of role models. We then explain in section 3 how these aims have been implemented for each of the four editions of the event, and we include data for them. Finally, we compile recommendations for readers interested in launching an event of these characteristics and we reflect on the work to be done in the future.

The view of gender used in this paper is as non-binary. According to this view, it is not possible to describe the gender of the participants by using just "male" or "female". Moreover, only each individual can say with which gender they identify.

We did not deem necessary to request gender as part of the participation form for either audience nor speakers. Thus, when we refer to a particular gender in this paper we are assuming this gender based on the gender that is traditionally assigned to names in Spanish culture, which in turn the participants provided in the registration form. Note that when we say e.g. women we use it as short for "those who identify as women". We would also like to emphasize that we show data related to gender, and focused on the female participants, to analyse the actual inclusion of members of all genders. This analysis is limited due to the reasons just stated.

2 Origin and Aims of the Event "Informática para tod@s"

The Association for Computing Machinery (ACM) is a well-known computing society, the goal of which is "to bring together computing educators, researchers, and professionals to inspire dialogue, share resources, and address the field's challenges" [5]. Within ACM, the ACM Women's Council (ACM-W) "supports, celebrates, and advocates internationally for full engagement of women in all aspects of computing"[1]. One key activity of ACM-W are the ACM-W Celebrations of Women in Computing, local conferences targeted at students and professionals. Each celebration is unique and adapts to the local culture and environment, but common activities include poster sessions, presentations about work in computing, career fairs, and industry and graduate school panels. ACM Women Europe (ACM-WE) is "a standing committee of ACM Europe and works to fulfill the ACM-W mission in Europe"[3]. ACM-W supports the creation of new celebrations and provides financial and conference services support to these conferences. The main ACM-WE Celebration of Women in Computing is called womEncourage. It is an annual event targeted at individuals in Europe. The location for each year is chosen so that different areas of Europe are reached. The first womEncourage celebration took place in Manchester (UK) in 2014, followed by Uppsala (Sweden), Linz (Austria), Barcelona (Spain) and Belgrade (Serbia). The 2019 womENcourage celebration will take place in Rome (Italy). In addition to the womENcourage celebrations, ACM-W supports local (country or regional level) similar celebrations. Celebrations are tracked on an annual basis from July to the same month the following year. For the 2018–2019 period, 23 local celebrations have taken place or are scheduled around the world, in countries such as Azerbaijan (with the official language of the event being Azerbaijani), Serbia (in Serbian), Chile (in Spanish), Canada (in English), Turkey (in Turkish) and Ukraine (in Ukranian and English) [2].

   One of the authors, Virginia Grande, has been involved in the ACM for over a decade. She started as a volunteer in her local ACM Student Chapter [4] at the Universidad Politécnica of Madrid (UPM). From here she was part of a committee to support chapter members across Europe, which included a collaboration with ACM-WE. In 2015, she was one of the two Chairs of the womENcourage celebration in Uppsala. She contacted another of the authors, Dr. Clara Benac,

a lecturer at UPM, to be part of that womENcourage celebration, which she did as Posters's Co-chair. After the success of womENcourage 2015, Grande approached Benac with the idea of starting a local Spanish ACM Celebration of Women in Computing. Benac then contacted another of the authors, Dr. Laura Castro from the Universidade da Coruña (UDC) who had collaborated with Benac in some European research projects. To maximize exposure to students of the event-to-be, Grande proposed to contact the ACM-W Student Chapter from the Universidad Politécnica de Valencia (UPV). The students Patricia Pons, Raúl Corobán and Carolina Marín readily joined the team, and proposed Valencia as the first location for the celebration. Thus, the first "Informática para tod@s (IPT)" took place the first of July 2016 at UPV. Lecturer Dr. Silvia Terrasa was the local organizer, closing the first IPT team. In the following section we explain the growth of the team and the evolution of the conference organization in general terms. Here we want to emphasize that from its origins the IPT organizing committee has been formed by professionals and students from different regions in Spain. This is important because, as a celebration at a national level, different regions should be represented. Notice that we put special care in saying that this is a celebration in Spain but not of Spanish people: our target audience includes any individual who is located in Spain and/or speaks Spanish (so that they can follow the event), regardless of their country of origin, citizenship, cultural background or gender. As for the different stages of career development, besides contributing to better quality for the organization due to more varied representation, this aligns with the role model theory that diversity in this aspect is important too [13].

As organizers, we wanted to send a clear message that diversity is important for us. Thus, as mentioned above the name chosen for the celebration was "Informática para tod@s" (IPT). In Spanish, most words have a gender, i. e., are either "feminine" or "masculine". The plural masculine is used to refer to a set which may contain masculine and feminine words. "Todos" means everyone, while "todas" is used for a group of only female individuals. In Spain, it has become common to use the "@" symbol to include feminine and masculine words (among other inclusive language practices, none of them yet to be recognized by the Spanish Language Academy or RAE by its acronym in Spanish [7]). Thus, by using "tod@s" we stress the inclusion of all genders. But gender is not the only aspect considered in terms of diversity. Besides the cultural aspects mentioned above, we target attendees and organizers from different educational and professional backgrounds, from all areas of computing, from young people to retirees, and always asking for all kinds of food restrictions to accommodate for those with varied belief systems and needs. We also aim to take care of accessibility for both the venue and the website of the celebration, including support for parents, e.g. lactation rooms. In terms of topics covered, the decision is to organize a mix of presentations about work in computing and activities that address awareness of gender-related issues. The topics in computing should be carefully selected to foster the view that many professional identities are welcome in this community and are represented by different role models.

While ACM provides funding for the celebrations (half from ACM itself and half from Microsoft Research), our aim is to find other sources of funding whenever possible and recognize the support given by these sources. As an example, one of the higher expenses tends to be the venue, which may be covered by a public institution, e.g. for the first edition, the hosting university kindly supported the event by letting us use their facilities, and financing some of the expenses. We featured them as a supporter of the event in the merchandising materials.

This effort in looking for more funding comes from the goal of having free registration for all attendees. Our believe is that this is particularly important for students (and it is encouraged by ACM-W). We have also included professionals and others who may not have a financial situation that allows them to afford a regular conference fee. For the same reason, there is a goal to establish and maintain a travel grant system aimed at students, particularly those presenting posters, so that those who want to present their work (or listen to others) may have the financial means to participate in IPT.

3   Evolution of IPT

In this section we present how we have worked to reach the aims stated above during each of the four editions of IPT and data to support these claims. The aims listed were:

1. regional diversity in terms of event location and location of members of the organizing team
2. role models in different career stages
3. variety in areas of computing represented
4. send a message of inclusion, that the event is open to everyone regardless of gender, country of origin, needs, beliefs, etc.
5. accessibility of venue and website
6. financial support for participants: free registration and some travel grants
7. to support the previous aim, find sources of funding other than ACM whenever possible

Thanks to the enthusiasm of the IPT community, it has been possible to address aim 1 in terms of venue location with participants from an edition that volunteer for local arrangements of the next one. This is crucial to facilitate attendance to the event from different regions in Spain. Spain is politically and administratively organized in 17 regions referred to as "Comunidades Autónomas". Since 2016 each IPT edition has taken place in a different "Comunidad Autónoma". IPT2016 was in Valencia, followed by IPT2017 in Palma de Mallorca (Universidad de les Illes Balears, UIB), IPT2018 was held in Madrid, and IPT2019 in A Coruña (Universidade da Coruña, UDC). Fig. 1 depicts the four locations IPT has had in its four editions so far.

As for the volunteers in the organizing committee, an example of the variety of institutions can be found in the list of affiliations in this paper, which are a subset of the actual volunteer team. Notice that location in Spain is not a

Fig. 1. Map with IPT locations as of 2019.

requirement. Grande is a PhD student in Sweden, while other organizers have been doing their exchange studies, internships or work in different countries, such as student Corobán (in charge of graphic design for all editions) in the Netherlands or Google engineer Alma Castillo (2019 Co-chair) in the UK. This can be seen as another take on how the event is targeted at those with some connection to Spain and/or the Spanish language, and not necessarily Spanish citizens located in Spain. It also shows an aspect of aim 2 for role models in different areas and career stages.

The organizing committee of each new IPT edition combines experienced members (participants from previous editions) with new organizers. From the beginning there have always been two General Chairs. After the first edition, it was decided to choose two Chairs whose background and experience came from academia and industry respectively, to encourage the participation of educators, students, researchers, and professionals and offer different perspectives of computing and better address aims 2 and 3 regarding different role models and professional identities represented through them. Table 1 shows the names and affiliations of the Chairs for each edition, classified as academia (university) or industry (company).

In the first three editions, all of the general Chairs had experience in organizing conferences and/or related competencies gained during their professional careers. This changed in the 2019 edition when one of the Chairs, (now Dr.) Patricia Pons, was a PhD student. She has been a member of the IPT organizing committee from the beginning. Pons started as a student by coordinating the student volunteers in 2016, later took charge of the poster track and in general showed skills and attitudes that led the organizing team to invite her to co-chair the 2019 edition while she approached her PhD graduation. As the rest of the Chairs before her, Pons's work was excellent and an example of what can be achieved when non-senior volunteers are trusted with responsibility.

In every year of IPT there have been different kinds of role models, of which we name a few here. While Pons is another example of a role model showing

her development through different stages (in this case, of her PhD), she also represents the two kinds of role models that Grande's model [16] includes. Pons is an achievement role model, as IPT participants can see her achievements in IPT as her roles in the organization that have been posted for every edition on the event website [8]. She is also an aspect role model, as she is a concrete example of competencies, behaviours and attitudes that can be emulated by both professionals and students, e.g. her presentation skills showed in her different roles as a speaker in IPT, her proactiveness inspiring other members of the organizing team. Corobán's outstanding contribution to IPT, described below, is an example of how men can be part of a team that aims to celebrate women, regardless of the gender of the volunteer themselves. Lobo, who we also mention again below, exemplifies that people in computing do not necessarily have a background solely in the area: she is a student in Computer Science and Business, currently in Dublin. As for examples of skills related to being in computing but not exclusively of the area, PhD student Nerea Luis has been mentioned in Spanish media often for her impact in local policies and in general abilities to discuss computing with those who are not trained in the field. There were also five pregnancies along the editions during which parents and the rest of the committee adapted the work when needed so that everyone continued to participate (not only in the organization but attending the event itself).

As described in section 1, the success of a role model needs to seem attainable. Observers need to be able to understand how they could get there themselves. Thus, for all editions of IPT we made sure that there were plenty of networking opportunities that involved contact with potential role models, in this case the examples described here but also speakers and others. In 2019 we made more emphasis in presence in media, which included interviews to the organizing committee expressing their views on gender and computing, why there were part of IPT, etc. Other interviews were conducted with speakers and other participants. Since 2018 we have recorded talks with the permission of the speakers, so that they can be watched after the event by the participants and those interested who could not make it to that year's edition.

Table 1. IPT chairs

	Chairs	University	Company
IPT2016	Clara Benac	UPM	
	Laura Castro	UDC	
IPT2017	Paloma Moreda	UA	
	Susana Morcuende		People are not resources
IPT2018	Cristina Manresa	UIB	
	Inés Huertas		Datatons
IPT2019	Patricicia Pons	UPV	
	Alma Castillo		Google

The participation in the event and the format chosen for the program of each edition illustrate efforts towards aims 3, 4, and 6, i.e. all areas of computing are deemed as relevant, and everyone should feel welcome and supported financially if needed and possible. The oral presentations every year have included topics such as artificial intelligence, human-computer interaction, working in computing with a social sciences background, and reflections on issues related to gender in the field, such as a presentation on the challenges of working as an engineer and motherhood. From the first edition of IPT, students have been invited to submit posters about their work in any area of computing and not necessarily finished projects, so that they can receive feedback and recognition. Initially it was a poster session with posters hanged in the corridor panels and discussed during the breaks, but in later editions we chose to have lightning talk presentations for each poster as part of the only track of the event, to increase the visibility of the work and their authors. For this reason, and the addition of a career fair from the 2018 edition, the event has been extended from one to two days in length.

Table 2 shows the evolution of IPT regarding the number posters, oral presentations and the inclusion of a round table or a career fair. The round tables themes have been: "What would I be doing tomorrow? Job opportunities for all" (Valencia), "Reinventing yourself in computing" (Palma), "Factors and options for professional and personal development" (Madrid) and "Initiatives for women in STEM" (A Coruña). The career fair was added as the organizing team grew, and has featured both local and international organizations, for profit and NGOs.

IPT has grown year-on-year, with each edition delivering higher numbers of oral presentations (including keynotes), attendees and sponsors. While IPT is open to everyone interested in celebrating the role of women in computing, female participation has been predominant in all editions, as shown in Table 3.

Table 2. IPT program evolution in numbers

	Place	Posters	Oral presentations	Round table	Career fair
IPT2016	Valencia (Valencian Community)	5	3	Yes	No
IPT2017	Palma (Balearic Islands)	12	4	Yes	No
IPT2018	Madrid (Community of Madrid)	8	6 *	Yes	Yes
IPT2019	A Coruña (Galicia)	12	12 †	Yes	Yes

* One invited keynote
† Two invited keynotes

We have always managed to achieve our goal 6 of financial support for the registration: it has always been free for all participants. The funding received (through ACM or by Spanish companies) was mainly used to cover (i) travel expenses (number of grants given in each edition, see Table 3) of speakers, poster presenters, organizers and students, (ii) other costs like catering or printed ma-

Table 3. IPTs' participation

	Attendees	Women	Travel grants to students
IPT2016	40	30	4 (3 women)
IPT2017	50	39	7 (5 women)
IPT2018	70	50	7 (6 women)
IPT2019	101	70	7 (6 women)

terial, e.g. accepted posters were printed at the venue as additional support to the students who may not have the chance to print them themselves. The travel grants have been mainly given to individuals in Spain but we have also granted one for a person in Tunisia and another in Peru.

As sources of funding other than ACM, the universities involved in each edition (UPV, UIB, UPM, UDC) were very supportive. They let us use their facilities and/or cover some of the expenses. Note that the Madrid edition was the only one which did not take place at a University. A more central facility provided by the Madrid city council was used instead. From 2019, a committee member had the specific role of sponsors outreach. Student Marta Lobo was very successful in attracting external funding that allowed us to improve the financial support for participants aforementioned. Sponsors were featured in the material promoting the event, including the website.

All the graphical material has been created by Corobán with a focus on inclusion. For instance, Fig. 2 shows the poster used to announce IPT2019. Here and in material such as different Calls for Participation (CFP), Corobán included depictions of participants of different gender expressions, skin colour, body type and age, among others. He also took the chance to include parents of small children mingling with other participants as another example of sending a message of inclusion represented in aim 4. Not forgetting those with different impairments, besides the depictions in the graphical material (a complete compilation of which can be found in [6]), the website [8] followed accessibility guidelines and the venues were chosen considering appropriate access for different levels of mobility and well-connected for easier travel.

4   Conclusions and Future Work

In this paper we have presented our experience during the last four years organizing an event for women in computing with an interdisciplinary approach that uses role models of different kinds to inspire the computing community in Spain. This section compiles several recommendations for those interested in organizing a similar event, based on the lessons learned during the four editions of IPT.

The different role models that participate in the event may have a positive impact not only on the participants but also on the organizers, as shown previously with the example of Patricia Pons. While among the participants we have had people from different countries, unfortunately so far, the citizenship repre-

Fig. 2. IPT 2019 Poster.

sented in the organizing committee is only Spanish. Bringing other perspectives
to the table, such as the one provided by someone from a different country or
culture, is something for which to aim. Another initiative to refine our selection
of role models and their characteristics will be to compile more precise data on
demographics: at the moment we are aware of the participation in IPT of atten-
dees and speakers from different career stages and paths, regions, ages, genders,
etc. because these individuals themselves mention it in our registration form or
in exchanges with the organization. We are planning on a formal compilation of
data for IPT 2020 so that we can better study how the community we target the
event to looks and with what kind of role models we can aim to provide them.
A similar approach will be included in a feedback form after the event to better
evaluate the impact of IPT again in terms of the specific case of our demograph-

ics and role modeling (at the moment there is a common generic feedback form for all ACM Celebrations).

The hosting institution and organizations that collaborate with the event may gain visibility, which can translate into new members. This has happened, for example, for local groups in the 2019 edition. The event can also foster collaborations between groups that are not in the same geographical area but meet there.

The program aims to provide a learning experience for the participants mainly in two ways. The activities about gender and computing encourage the attendees to reflect on the role of women in computing, particularly in Spain, and learn about opportunities for female students and professionals, such as grants and other networks and events. The presentations about work in computing aim to be informative for all kinds of participants: speakers are informed of the audience being partly students, partly professionals from industry and academia, and the content is adapted accordingly.

There are several points we consider for future editions. One of our aims is to keep a controlled size: we deem important to keep the balance between providing our attendees with an interesting network while maintain the total amount of participants within a range that fosters interaction during breaks and networking activities.

Overall, our experience has been that an event like IPT has a positive effect on not only participants (due to the learning opportunities that the program offers plus the chances to meet roles and other contacts) but also organizers. We recommend to both professionals and students that they investigate how they can get involved in a similar initiative in their region.

Acknowledgements

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