

Women in Security: Building a Female InfoSec Community in Korea, Japan, and Taiwan

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[Abstract]

The information security industry has historically been a male-dominated field, and today, unfortunately, this situation has not changed much. Indeed, the survey conducted by Frost & Sullivan in 2017 concluded that women represented only 11% of the current information security workforce.

While more women are expected to join the information security industry to reach new levels of innovation, still, it is difficult to increase their number because women face many obstacles, such as stereotype bias. One way to bridge this gap is a female community, which can support and motivate women, and produce more role models.

In this talk, we will introduce three representative Asian female communities, Power of XX, CTF for GIRLS, and HITCON GIRLS, which are established in Korea, Japan, and Taiwan, respectively. We will first explain how we build and maintain each female community, and then go into the details of how we tackled various challenges, such as building a sustainable community and attracting and retaining new members.

Moreover, a comparison of these three communities reveals some of the crucial factors in starting and continuing a female community. One of the examples is that each community started by a few tech-savvy women with the support of an existing local community, such as POC, SECCON, and HITCON. Another example is that all the community members are connected by their interests in technology, such as binary analysis, web exploitation, and playing CTF, and they teach the related topics to each other interactively.

We believe that our insights could help start a new female community and encourage other existing female communities.

● [South Korea: Power of XX]

1. What is Power of XX(PoXX)?

- 'Power of XX' is the Women-only CTF based in Korea. It was the first batter of women only CTF in the world. Now it is not a simple CTF, it became one of the communities in Korea.

2. Introduction of Power of XX

- It was established in 2011. Cyber security club (which name is 'SISS') in university was advised by POC Security (<https://pocsec.com>) to run this. In early 2010, there were few cyber security clubs for women in Korea, therefore SISS has taken the opportunity and broaden the prospects.

2-1. Operation

- * Jeopardy style CTF
- * Qualification & Final
- * Every year 80 teams in average
- * No limitation in number of members or nationality to attend
- * Only 6 ~ 8 teams go to final, consist of 5 members per team

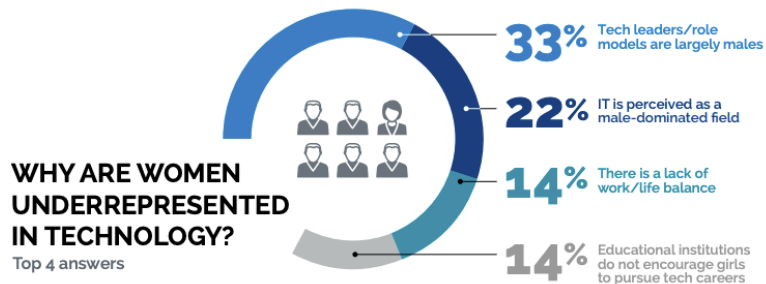
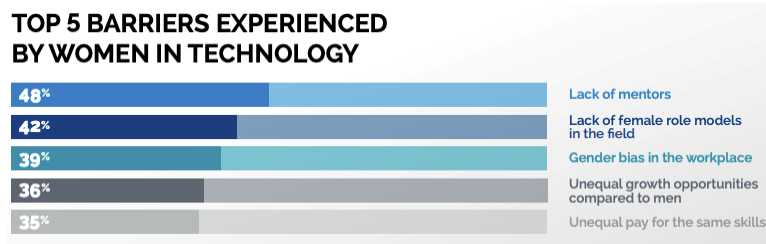
We have various teams from High school, University clubs, researcher oriented(around 30%). So participants are aged from 10s to 30s. Award is given to 1st to 3rd places. Until 2016, SISS and Hacker School (which is one of the hacker communities in Korea) were running Power of XX. And from 2017 till now, SISS and Demon team (which is one of the hacker teams in Korea) are running the CTF together.

3. Objects

In early 2010, we found some barriers. Women are underrepresented in this area. So, there were lacks of community for women. And also, these are linked to lack of female role models in this field. Difficulties in learning could be one of the other reasons. The most highlighted thing is that cyber security area is supposed to be male-dominated field. So women are just like hanging around them, not the main part.

We can also observe those from the ISACA research¹ of 2017.

¹ Breaking Gender Barriers, http://www.isaca.org/SiteCollectionDocuments/Breaking-Gender-Barriers_res_eng_0317.PDF



All those things make women get lose their confidence, and eventually lots of women give up in the middle. So, to get out of male-dominated area and increase women's accessibility, we started with CTF. And to cultivate women cyber security researchers and retain women who already in the field, we've established an active and sociable networking community.

4. Overcome

As you can see from previous part, we found some barriers. In order to overcome those, we tried following things.

- 1) Through out interesting concept challenges using morse code, maze system, treasure hunt, card game and so on, we were able to recruit more women researchers.
- 2) We tried for several years to make larger pool of women researchers and to give them more opportunity to build networks, like inviting abroad women hacker teams (CTF 4 Girls in Japan, HITCON Girls² in Taiwan) to Korea.
- 3) Recruit them to hacker team. We found some talented girls during the CTF, apparently Demon team (supported by POC Security) has recruited them. And we provide opportunities to attend our technical conferences (POC³, Zer0Con⁴, MOSEC⁵), training courses, so they have managed to learn and research in various subjects. Or we connect them to other hacker teams, so that they can research and study with new members.

² 南韓 Women Only CTF 與社團, <https://hitcon-girls.blogspot.com/2017/12/women-only-ctf-power-of-xx.html>

³ POC conference, <http://powerofcommunity.net>

⁴ Zer0Con conference, <http://zer0con.org>

⁵ MOSEC conference, <http://mosec.org>

5. Impacts

Through all our efforts, more women hackers and researchers could be active. At the first time, we started this ctf with only 30~40 people, but now we have more than 80 teams. In recent years, not only domestic teams but also abroad teams are increasing like from USA, Japan, Taiwan and so on.

And Winner of 2018 won the first place at other CTF(not women only ctf). She attended that CTF as one member team, and is now member of Demon team. This was really impressive thing for us. Invitation to Russia PHDays CTF or inviting Japan & Taiwan teams were good opportunity for us to make our own stable community, and make meaningful meet ups with neighboring country people.

6. Future Plans

To make our concrete community, we are planning to hold following events in near future. 1) Training program for whole age women in Korea. 2) Organizing Power of XX with various teams all around the world. 3) International competition with invitation of women hacker teams from all around the world. 4) CTF competition co-operating with 'Belluminar'(which is an international ctf held in POC conference).

Korea is the first which have made women-only CTF and followed by Japan and Taiwan respectively. We feel thankful to them the way they have made sociable Asia Women cyber security community. Nowadays there are some movements that other Asian countries are trying to cultivate women hackers and researchers. Hope our 3 countries' experience and know-how could be a starting point of those movements.

- [\[Japan: CTF for GIRLS\]](#)



CTF for GIRLS is the first female infosec community (organization) in Japan which was started in 2014 with about 10 female security engineers and students. Here, we will introduce the two main activities of CTF for GIRLS: (1) Women-only CTF Workshop and (2) Women-only CTF.

(1) Women-only CTF Workshop

Our women-only CTF workshop started from 2014. Since then, every year we hold the workshop from two to three times. In total, we held the women-only CTF workshop 13 times, and more than 700 women have participated our workshop. At the workshop, we first give a brief lecture which are related to computer security, such as binary analysis, forensics, network security, web security, and crypto. In each lecture, we teach from the basics of computer science. For example, when we give a lecture about the binary analysis, we start from “What is hexadecimal is?” and “What is Windows API is?”, and teach how to read assembly and how to use debugger. After the brief lecture, we provide CTF challenges which are related to the lecture.

Following table shows the women-only CTF workshop which we have held.

Workshop	Year/Month	Category
1 st	2014/May	Network/Web/Binary/Forensics/Crypto/Trivia
2 nd	2014/October	Network
3 rd	2015/April	Binary
4 th	2015/December	Web
5 th	2016/May	Forensics
6 th	2016/December	Crypto
7 th	2017/May	Network
8 th	2017/December	Forensics
9 th	2018/May	Web
10 th	2019/February	Crypto
11 th	2019/May	Forensics

Student Only WS	Year/Month	Category
1 st	2017/August	Web/Crypto
2 nd	2018/August	Network

To support the beginners, we provide a Virtual Machine which all the related tools are already installed. Moreover, we provide a manual to install the Virtual Machine. We also focus on providing CTF Challenges from basic to advanced level so that everyone could enjoy. Lastly, we sometimes regulate the media and photos, because some of participants really cares about their privacy.



(2) Women-only CTF (GHOST IN THE SHELL CTF)

“GHOST IN THE SHELL” is a famous Japanese science fiction comic which is originally written by Shirow Masamune, and was made into movie by Hollywood in 2017. CTF for GIRLS collaborated with GHOST IN THE SHELL from 2015 to 2017 to hold women-only CTF. The goal of the GHOST IN THE SHELL CTF is to produce highly skilled female security engineer, such as Motoko Kusanagi, the heroine of "GHOST IN THE SHELL" which is called as "ultra-wizard hacker" from our CTF.

Following table shows the women-only CTF which we have held.

CTF	Year	Domestic or International [Place]
1 st	2015	Domestic Contest [Kobe City]
2 nd	2016	Domestic Contest [Tokyo]
3 rd	2017	International Contest [Tokyo] (in CODEBLUE)

One of the characteristics of the GHOST IN THE SHELL CTF is CTF visualization system Called AMATERAS ZERO which is developed by National Institute of Information and Communications Technology (NICT). Following image shows the CTF visualization system which is showing the players and the CTF challenges.



● **Challenges**

Here, we will provide how CTF for GIRLS has approached to the following two challenges: (1) Build Sustainable Community (2) Connect Attendees

(1) How Did We Build a Sustainable Community?

1. Create an Organization that Does Not Rely on a Single Person

- Created a manual. (e.g., How to create CTF challenges, How to hold Workshop, etc.)
- Hand over power to young members.

2. Recruit New Members

- [Early Stage] Asked existing local community members whether they know a woman who is interested in CTF for GIRLS activities.
- [Now] Recruit a new member from the workshop participants.

(2) How Did We Connect Female Security Engineers/Students?

1. Visualize the CTF for GIRLS Community to Gain Recognition

- Created an official website, social media accounts and reported the activities regularly.
- Created a logo, sticker, and T-shirts
- Invited a media. Took the interview. (e.g., Newspaper, Magazine, Web Media, etc.)
- Collaborated with famous events/contents. (e.g., CODEBLUE, Ghost in the Shell)

2. Actively Facilitate Networking

- Provided cute snacks during the break.
- Held an after-party.

● For more information

- ✓ Official Website: <http://girls.secon.jp>
- ✓ Twitter: @ctf4g
- ✓ Facebook: <https://www.facebook.com/CTF-for-GIRLS-983496775036075/>
- ✓ E-mail: ctf4girls@secon.jp

[Acknowledgement]

CTF for GIRLS members		
Name	Name(Japanese)	Affiliation
Haruka Nakashima	中島 春香	-
Haruka Suzuki	鈴木 悠	LAC
Momoko Aoyama	青山 桃子	Hitachi Solutions
Akiko Sueyoshi	末吉 亜希子	NTT Data
Sayo Ichinose	一瀬 小夜	-
Chiho Mihara	三原 千穂	Toshiba
Mari Aoba	青羽 真利	LAC
Ayako Kozakai	小境 彩子	NTT Data Intellilink
Yu Yanagi	柳 優	IBM Japan
Hitomi Kimura	木村 仁美	TrendMicro
Tomomi Oogushi	大串 智美	NTT Data
Nao Takaoka	高岡 奈央	-
Erika Kikuchi	菊池 絵里加	Information Science College
Y.Ozawa	-	-
M.Takahashi	-	-
+ more than 15 members		
SECCON members/etc		
Tomohiro Hanada	花田 智洋	-
Yoshinori Takesako	竹迫 良範	-
Y.Hayashi	-	-
JNSA (Japan Network Security Association)		
+ more than 35 members		

- **[Taiwan: HITCON GIRLS]**

HITCON GIRLS is a female InfoSec community at Taiwan. We are a community of women explorers who are taking adventure in the world of information security!



Our purposes

We have two purposes:

1. We believe everyone can learn InfoSec.
2. Team up girls who are interested in InfoSec, learning and growing together.

We will follow our purposes to hold our events. And have a review meeting after each event, make sure we are still in the right path.

The beginning of HITCON GIRLS

At first, we got together for holding a workshop event which just for girls. Most of our attendees know nothing about information security. After they join our event, we got a lot of positive response from them.

Their responses is the biggest source of our drive and make our next events great then previous one. On the other hand, we found out that it's to enhance the internal cohesion in HITCON GIRLS. Most important of all. We can help more girls to learn security in the future.

The structure of HITCON GIRLS

Based on our beginning workshop, we found out that we don't have enough ability to teach beginner. So, our first step is to improve our security domain knowledge.

In addition, we need some members to manage our community. Otherwise, we can not have a well organized group to help us focus on those domain knowledge.

According to those reasons, we split into two teams: administrative group and study group. The administrative group like an infrastructure team which help us to construct and process any activity. So the study group can threw themselves into research. The study group also can give technical support for the organization when we need it.

The Study Group of HITCON GIRLS

We divide HITCON GIRL study group into several teams. Each team has their main research topic. We also have a meet up once a month and each team take turns sharing their researches.

We have established these groups:

- Web PT team
- Malware analysis team
- Network Security team
- CTF team
- Android PT team
- Digital forensics and incident response team
- Free Research team

The Administrative Group of HITCON GIRLS

Administrative group is to help our community host study group and hold events. Last but not least, our Administrative group will hold several large events once a year.

Our Administrative group will arrange a meeting every three months. The meeting usually include checking the current situation of the study group and plan the coming event. Nevertheless, administrative group will always take the minutes in every meeting.

Events HITCON GIRLS held

Our events and activities are divided into three types:

- The Events
- Knowledge Sharing
- Sharing Invitation

Our accomplishment

Base on our purposes, we are working hard on those:

- Sharing Knowledge: Publish Our knowledge to community

- ✓ Youtube <https://www.youtube.com/channel/UCkkgOjhcZry-RRJGla2ZsWQ>
- ✓ Blog <https://hitcon-girls.blogspot.com>
- ✓ Slideshare <https://www.slideshare.net/HITCONGIRLS>
- Broadcast a message: Doing security is an option for girls
 - ✓ Website <http://girls.hitcon.org/main/>
 - ✓ FB Fan Page <https://www.facebook.com/HITCONGIRLS/>
 - ✓ Twitter <https://twitter.com/hitcongirls>

Takeaway

- In this paper we share our experience and show this successful model about how to maintain a girl's community
 - ✓ In order to make our community stay longer, we need to have our own research team and people who are willing to share their research.
 - ✓ Community usually will decline in a period of time So that the right purpose and clear direction is what we are
- Community belongs to everyone.
 - ✓ We share knowledge to each other. Everyone join HITCON GIRLS can learn something.
 - ✓ I don't think community belong to one person. Everyone can be a next leader based on integral management system. So we keep the meeting discussion complete, the plan of hosting events and event records.
- We believe everyone can learn information security. Doing security is an option for girls.