Security

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Security Issues in Ubiquitous Computing

- Background information of ubiquitous computing and security.
- Examples.
- Security and reality:
    - Sometimes, people do not expect security at all…(usability & profit)

Frank Stajano

- Professor of Security and Privacy at University of Cambridge
- Research interests: systems security, privacy in the electronic society, and ubiquitous computing
- Famous work: "Security for Ubiquitous Computing".
- Fun fact: He runs a Youtube Channel, called [Frank Stajano Explains (.com)](), for students of computer science and for younger people whom he hopes to inspire to become students of computer science in the future.

AppMoD: Helping Older Adults Manage Mobile Security with Online Social Help

- Background & related work.
- Their approach.
- Method of user study.
- Conclusions of user study.

Zhiyuan Wan

- Associate professor in the College of Computer Science and Technology at Zhejiang University, China.
- Research interests: software engineering, software security, and programming languages.
- Famous work: "What security questions do developers ask? a large-scale study of stack overflow posts".

Lingfeng Bao

- Lecturer at Zhejiang University, China.
- Research interests: software engineering, such as developers' behavior analysis, mining software repositories, etc.
- Famous work: "What do developers search for on the web?".

Fun facts about Zhiyuan Wan & Lingfeng Bao

- Both received PhD at Zhejiang University.
- Were both postdoctoral research fellow at Zhejiang University under the supervision of Prof. Shanping Li.
- Were both research scientist in the School of Information Systems, Singapore Management University, Singapore under the supervision of Prof. David Lo.
- Both did many works related to developers behavior analysis.

One more thing: Threat Modeling

- What do you want to protect?
- What/who do you trust?
- What/Who is your adversary?
- What can your adversary do?
- ...

Discussion Question 1

- "...security is essentially risk management." (Frank Stajano, 2009)
- Who should be in charge of making this risk management? Is it the investors, company managers, developers, users, security experts, potential regulators, or someone else?

Discussion Question 2

- "I strongly agree that it is critical for UbiComp technology to develop an efficient and easy mechanism for authentication not to lead users to abandon the system because of the poor usability resulting from the complex security mechanisms." (Eunkyung Jo)
- "I think usability is possibly one of the biggest concerns when it comes to designing for security, because the system is only as secure as the people using the system." (Colby Reyes)
- "Rather, it should be considered as a global property of an entire system, and be considered with usability." (Lika Liu)
- …
- Is security always a trade-off with usability? Or do you think that with carefully designed security measures, usability can also be guaranteed?

Discussion Question 3

- Sometimes security does not only against users and investors' willings, but also developers'.
- For instance, if you own an Android phone, you are probably still stuck at a Linux kernel that is at least 1~2 years delay in comparison with mainstream Linux kernel. As so many out-of-tree codes are needed, it is almost impossible to use mainstream kernel.
- In future, should security gain more importance or should it be treated the same as before?

Discussion Question 4

- "I really expected them to be able to make correct decisions at least 80% of the time, but the results show that users are still big risks to themselves because making the wrong decision ~30% of the time gives attackers a lot of chances to do some damage." (Jason Fan)
- "These younger connections might not always be able to make the best decisions for the older adults and it might be better to instead educate these older adults on the information they need to make the decisions on their own." (Neeraj Dharmadhikari)
- "Shouldn't a private and secure system be trustless?" (Maruf Zaber)
- Is education of security to common people more important or should developers put more effort on building secure system that requires least user side decision making work?

Discussion Question 5

- Should security be more human-centric or technocentric? For example, when encountering a security problem, do you think user behaviors should be analyzed and considered more (i.e. AppMoD) or do you think we should always first try to seek some underline technical solutions?