HOW DEDICATED HARDWARE IN SYSTEM ON CHIPS WILL IMPACT SECURE
AUTHENTICATION IN MOBILE DEVICES
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Components of a SoC

- Microprocessors: An integrated circuit that contains all the functions of a central processing unit of a computer.
- Graphic Processing Units (GPU): A programmable logic chip (processor) specialized for display functions. The GPU renders images, animations, and video for the computer’s screen.
- Random Access Memory (RAM): A type of computer memory that can be accessed randomly; that is, any byte of memory can be accessed without touching the preceding bytes.
- Storage: The retention of retrievable data on a computer or other electronic system.

WHAT IS A SOC

- SoCs can be used to replace the main components of the mobile device to decrease the size of a system, such as in the Apple Watch, or they can be used to augment tasks normally performed on the central processing unit.
- A SoC is very similar to a computer. It has a lot of the same parts that a computer does; it processes information in a very similar way. SoCs augment the work of the main computer by instead of having the main components in a device perform a task the SoC will perform the task itself.

SOCS IN MOBILE DEVICES

- One of the main uses of a SoC is for securing a device through secure authentication. They are being used to make them much more secure by adding advanced hardware features.
- In this day and age where hacking is getting more sophisticated, it is imperative that our security becomes more challenging to hack. SoCs will be important because as society uses mobile devices more their information is put at more risk, risk that SoCs will help reduce.
- SoCs are also used to secure the boot process and other sensitive processes such as handling encryption. If malicious code is able to run during the boot process, then it will essentially have access to almost any service on the device.
- Another thing SoCs are responsible for would be handling encryption on a device. This is important because encryption is the first line of defense against having hackers steal your information. Even if a breach occurs, if the information in encrypted and therefore useless to the hackers.

SOCS AND SECURITY

- System on Chips are becoming a fundamental part of security inside modern mobile devices. SoCs, are integrated circuits that incorporate microprocessors, graphic processing units, random access memory, and storage.
- SoCs are beginning to be used to augment security. Using more dedicated hardware for security in our devices has resulted in mobile devices becoming more secure.
- SoCs increase the amount of security of a device by implementing more secure encryption, a separate place to verify users, and augmenting the CPU for security authentication needs.

SOCS AND SUSTAINABILITY

- The increased security that SoCs offer has led to less phones being stolen. Over a long period of time this will help to reduce the electronic waste which is starting to litter the world.
- SoCs will impact the amount of electronic waste (e-waste) introduced into the environment. E-waste is comprised of discarded electrical or electronic devices.
- There are now more devices being made than ever before. E-waste accounts for two percent of trash in landfills, but it accounts for nearly seventy percent of the toxic heavy metals in those landfills.
- Contamination from e-waste byproduct can cause changes in thyroid function, changes in cellular expression and function, adverse neonatal outcomes, changes in temperament and behavior, and decreased lung function in humans.