IBM's Linux Watch: The Challenge of Miniaturization

‘ *W. Hamburgen, D. Wallach, M. Viredaz, L. Brakmo, C. Waldspurger, J. Bartlett, T. Mann, K. Farkas*

This is an interesting article describing the design and development process of the IBM Linux Watch. The authors focused on emphasizing aesthetics and improving user experience. Each and every component added to the watch was a design decision due to different trade-offs associated with it(for eg touchscreen and roller ball, elegant interface vs the reduced readability due to smudges; selecting Linux over other OS due to lower cost and an open dev. environment.)

I also liked the prototyping they did using the laptop and mouse to gather user feedback.The use of printed transparencies on OLED screen to determine right font color is also pretty innovative.

Their decision to use Linux benefited them later when they wanted the Bluetooth stack on the watch. Their work is an example of how the development process's for a wearable might take place. The need for knowledge of the full stack and the problems encountered in implementing it is important. Though they initially say that the focus is on user experience, this paper is mainly about the development process followed in the watch's development.

Itsy: stretching the bounds of mobile computing

‘ *W. Hamburgen, D. Wallach, M. Viredaz, L. Brakmo, C. Waldspurger, J. Bartlett, T. Mann, K. Farkas*

This paper discusses a hand held device Itsy which is a prototype computer with enough processing and memory to run cycle hungry applications. It also analyses its energy and power performance for various applications, clock frequencies and also, for different voltages.

The ARM SA-1100 processor is used due to its software controllable clock speed and different power modes. These power modes are later exploited by the software to increase battery life. There is a power management module which makes sure that the system state is saved and restored for every change in frequency or power mode (sleep, idle).

Itsy also explores two different input mechanisms - speech and gesture. The user study performed by authors shows that gesture is more user friendly and intuitive for some types of applications(photo lib, doom game). I am not sure how effective this system would be for some other types of applications(calendar or documents) and also how users would react to long time use of the gesture(I feel it might be tiring or distracting since you have to focus your vision back on the device after moving it.)

Itsy fares as good as a desktop computer from that era on different performance measuring benchmarks. The authors also describe energy consumed by different applications and it is comparable to what smart-phones use these days. Itsy uses the dynamic frequency and voltage regulation and it also changes its power modes (idle,sleep) which gives it a good battery life without compromising on he high performance. .

Time and time again: parallels in the development of the watch and the wearable computer

‘ *T. Martin*

Probably the most interesting paper I have read. It talks about the parallels drawn between how the design of a wristwatch has changed over time and compares it to development of wearable computing. The author considers placement on body, user interface and potential impact on society as the points to draw parallels on.

Wearibility is not just a function of human anatomy, instead it also depends on the current trends in fashion. This is shown by examples of how watches which were initially worn around necks, then in waist coats, but were later shifted to the wrists to accommodate for flexibility of use during war. Similar trends apply to wearables, wherein they are not associated with shoulder bags, purses to make it more gender neutral and fashion central.

The author then talks about different UI associated with watches, which includes haptic, auditory and sensory(striking watch). He then makes a point about user interface, saying that the interface gradually becomes a less of a problem once the community starts accepting the given product (example - use of only hour marking in the watch).

Lastly, the author mentions on how the device impacts the society(by quoting the example of workers using their watches to differentiate 'company' and 'my' time.) This can be extended to wearables where the concept of information will be broadened(Example - digital photographs).

The author wants us to realize the importance of learning from the history of wristwatches and learn that wearibility is not just a function of functionality, but also of the societal changes, fashion and also the user interface.

Reconcililing ICT and Wearable Design : Ten Lessons from Working from Swatch

‘ *Mark T. Smith*

The author works at a information and communication technology group at HP and had expected the smart watch project to be a technical design project, but after meeting with their counterparts at Swatch they realized that it was going to be a joint collaboration of technology with fashion. The Swatch's design point of view was integrating the watch with one's personal and social identities.

One of the important lesson learnt was the market expectation and design, HP was focused on releasing a new technology to the users, but Swatch's team made sure they realized that the users were not interested in the computing per se, but were rather interested in the social interaction which was made easier by the watch. This led to HP focus on the web watch model to follow the market's 'pull model'.

The collaboration between HP and Swatch was symbiotic as Swatch could provide data regarding the demographics of the intended users which would help HP make design decisions and HP's team could help Swatch's team understand the application design and the architecture behind which led them to create more intuitive and creating better use case scenarios.

They also developed a prototype which was an important medium to stimulate discussions, increase participation from executives and increased both the teams productivity and communication.

This paper was an interesting take on how design and ICT can work concurrently on a problem despite the work done by them being orthogonal. It also displayed how both the domains influenced each other to produce better results.