

Mr. SymBioMath
EU FP7 IAPP Project Nr. 324554

Bioinformatics software, shifting to mobility,

Juan Falgueras

Leibniz Supercomputer Centre Garching, Munich, 15/9/2014

Speech for the Munich Summer School

Mobile devices are pervading all the work environments with such swiftness that makes past decades of computerization appear lethargic. Even so, porting previous desktop applications is not always possible or of practical use, needing a whole reexamination of their user interface model. Software for Bioinformatics adds further issues: lack of standards in formats, mixed alternatives on the treatment of data, huge data-sizes, difficulty of output representation, which makes simpler interactive environment as are touch interfaces, struggle to reach a bare basic level of practical utility. Prove of that is near all the currently available Bioinformatics apps for mobile platforms, over 50, are either educative, or target only one simple action, typically a blast on a short local sequence.

In spite of all of that, a careful design, based on continuous user testing, and sensible goals, is paying us more than acceptable results.

To start with, we had real useful desktop applications, based on open workflows that could fundamentally be modeled easily as the user needed different treatment for their data. We took the essentials of this open perspective, as none of the currently available mobile software is worth its use except in rather particular conditions, and only the simplest processes are available. Our approach is more ambitious as it leaves open the process you can do to your data. You have hundreds of them at a single touch. The interface is continuously being fine tuned as more user testing adds real usability information.

The most challenging aspect here is the change in the development paradigm that is traditionally followed and now must prioritize usability. That is something that slows down the development and necessarily postpones the delivery of results. Good user evaluation techniques are critical here and their results can change even the possible goals initially projected.

What we are currently working with is showing that well thoroughly tested tasks, although simple, can yield real practical and usable apps, that are really used not once but made personal assistants in the Bioinformatician everyday work.

We have made a thoroughly search over the current offer of apps available for the mobile platforms. Only a few apps can be considered useful tools, many others could only have educative purposes. Those with practical use are not ambitious and leave a lot to be desired. From them is easy to learn on mistakes and successes designs and possible goals. But what is more important is what real users tell you as they use mobile devices and would like to have there.

Our first proposal it is being a well organized hierarchical list of processes and actions available to the Bioinformatitian. Each task quite meticulously labeled, progressively documented, not loading the interface with loads of information, but linking out when needed. Programmatically designed parameter entering when not available, but for the most important and well known processes, custom dialogs where, based on the frequent previous experience, the user is easily able to find in the most sensible way, defaults and easy to touch-entering values.

Heavy data handling is solved not by transferring them via wifi connections into local storage, except when asked, but accessed through external references, and results use the devices as local caches only when capacity allows, but usually saved in the servers and sending the devices only graphical or handy results.