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THE IDEA OF IMPLEMENTING A MATHEMATICS PLATFORM FOR ANDROID DEVICES WITH HELP OF APP INVENTOR

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Abstract: *App Inventor for the Android platform is a powerful visual and drag-and-drop tool that lets anyone build and design games and other mobile apps with 2D graphics and animation, create multimedia quizzes and guides, design complex apps that control robots, apps that inform and educate or learn computer sciences - with no programming experience required. App Inventor is freely available for anyone to use, runs online and is accessible from any browser, so the users can design the app interface using a web-based graphical user interface builder only by piecing together blocks like in a puzzle. In this paperwork we try to give some basic ideas of how everyone using App Inventor could build a specific mathematic application similar to Microsoft Mathematics v. 4.0 - a very powerful software that provides a set of mathematical tools that help students get school work done quickly and easily.*

Keywords: *Environmental Informatics, IT applications, innovative*

1. INTRODUCTION

People have been doing personal computing since the 1980s, but today's mobile applications are making computing personal as never before [3]. Today, we carry computers with us constantly, as smart-phones and pads and the new devices that are regularly emerging.

More significantly, today's personal computing is increasingly about us: where we live, where we work, who our friends are, what we buy, what we like, whom we talk with, and what we talk about. This personal computing is linked to global data services and information sources in a way that fundamentally transforms our experience and our perception of our world.

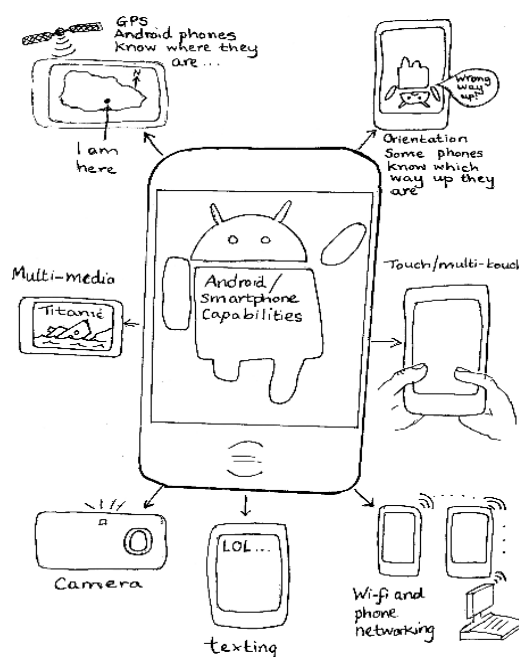


Fig. 1. *Android devices - using perspectives*

Our consumer culture gives us all sorts of opportunities for entertainment, pleasure and sometimes even learning. The high-tech objects (cell phones, tablet computers, TVs, etc) that we use today to consume entertainment and information are black boxes to most of us [3]. In other words, most people can't create the apps that run on these gadgets. What if we could change that? What if we could take creative control of our everyday gadgets, like cell phones?

2. APP INVENTOR FOR ANDROID - BACKGROUND AND MAIN ISSUES

When App Inventor software was created at Google, the team who did this work was motivated by the vision that mobile computing could be personal computing technology that anyone can actually personalize, by creating applications for personal use, with no programming experience required [1].

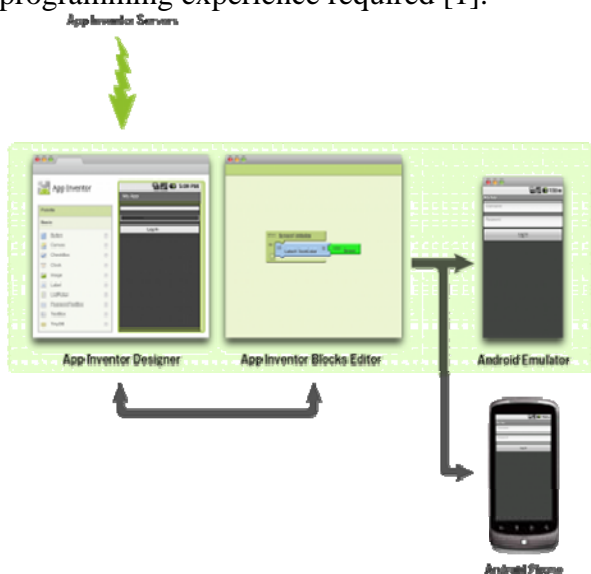


Fig. 2. App Inventor for the Android platform

Even if App Inventor is still a beta system under development - Google team is working to make it more powerful and easier to use - there is already a growing community of App Inventor users of all ages who are exploring and experiencing what it's like to make applications for themselves [10,12].

Design processes help take your awesome ideas and make them reality. There is nothing mysterious about a design process, although frequently developers give them fearsome and

magical-sounding names such as waterfall model, spiral model, and agile development. These all refer to the same thing: logical steps that developers and programmers use to move an idea from a dream to a fully functional program [2,6].

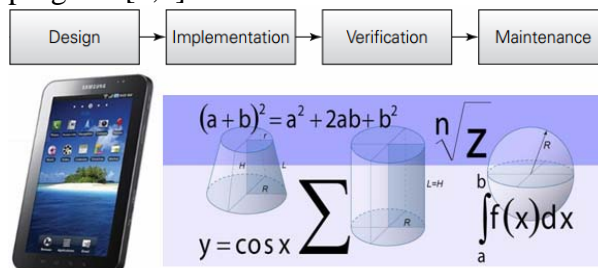


Fig. 3. The development process of every apps - clarifying the Design Idea

When it comes to the developer tool App Inventor and even the mobile operating system Android, it is difficult to talk about history, given that this history is still rather young.

Since Android was first released in October 2008, the Linux-based operating system for different mobile devices that was initiated by the Open Handset Alliance (OHA) and marketed by Google has developed from a niche product to a market leader [4,5].

App Inventor for the Android platform is a blocks language for mobile phones and a powerful visual and drag-and-drop tool that lets anyone build and design games and other mobile apps with 2D graphics and animation, create custom multimedia quizzes, design complex apps that control robots or communicate with the web, build apps that inform and educate or learn computer sciences - with no programming experience required [9,10].

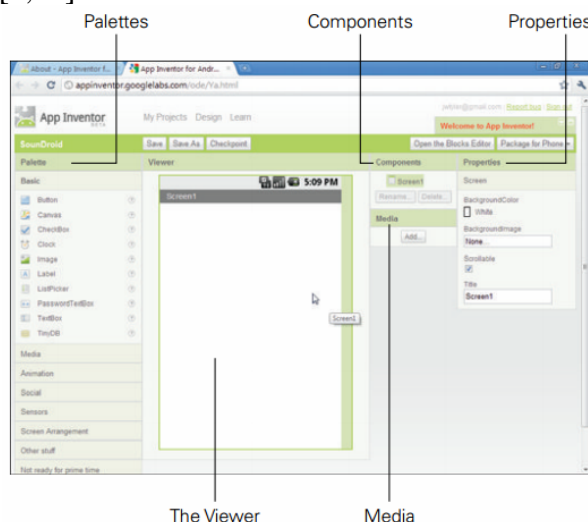


Fig. 4. The Design view for App Inventor



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The Design window should appear in your browser once you enter the name of your app and click OK. The Design window is where you begin creating how app will look, the user interface (UI)[12].

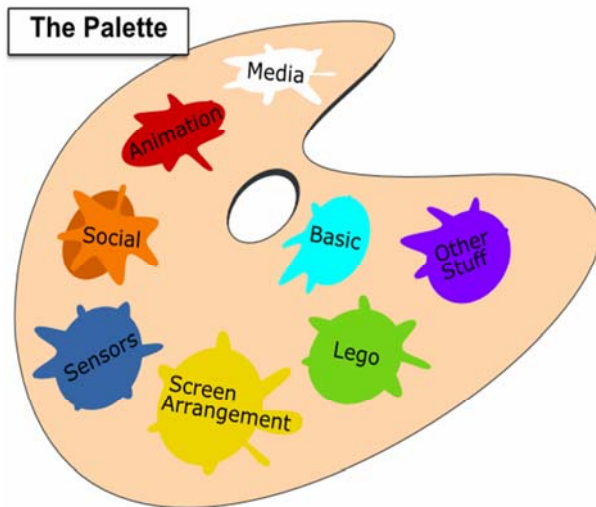


Fig. 5. App Inventor - the Palette of components

Accessing the Blocks Editor is realized with Open the Blocks Editor button near the top right corner of the Design window [11,13].

Accessing the Emulator is realized with the New emulator button at the top of the Blocks Editor window. This will open an emulation of an Android device. Back in the Blocks Editor, with the Connect to Device... button we can establish the connection with the app and also be able to see the project in the emulator.

3. RESULTS AND DISCUSSIONS

With an application like Microsoft Mathematics for android students can learn to solve equations step-by-step while gaining a better understanding of fundamental concepts in algebra, calculus, geometry, text recognition, trigonometry, physics, and much more [8].

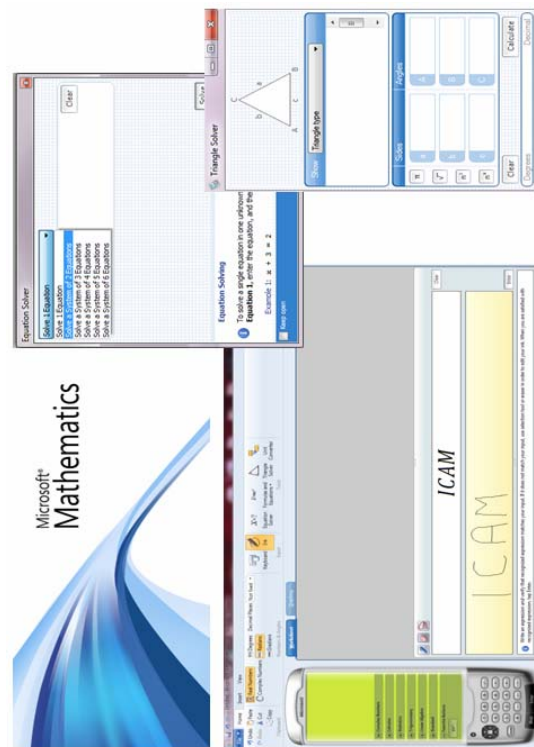


Fig. 6. Microsoft Mathematics - specific apps

Our results working with App Inventor were determined in accordance with our skills, our determination and our interest in graphics, animation and educational software.

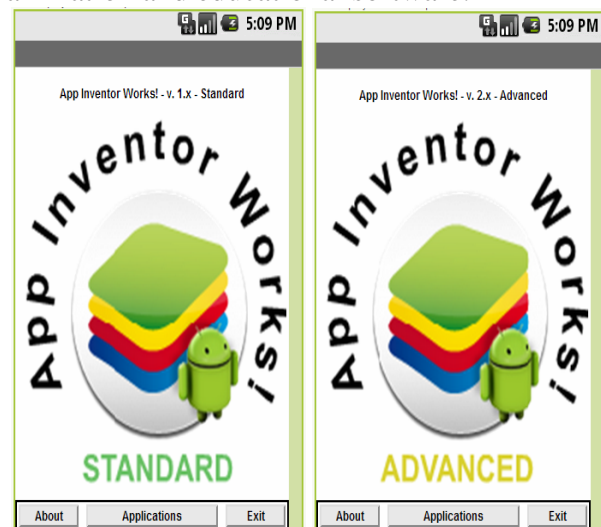


Fig. 7. Results - different types of apps integrated into educational mathematics platform

We present a few results that could be developed by any students even if they have no programming experience like most of us everyday entertainment and information consumers. As you can see it is possible to represent, in an interesting way (design, animation), different types of mathematics fundamental concepts (like in the first emulator image), formulas, equation and triangle solver apps, and much more:

- App Inventor Works - Standard version - 5 different apps: *Calculator*, *Formulas*, *Equation Solver*, *Geometry Solver* and *Unit Converter*.
- App Inventor Works - Advanced - 5 different apps: *Glossary*, *Financial Calculus*, *Statistics*, *Grapher (2D)* and *Surfer (3D geometry creator)*.

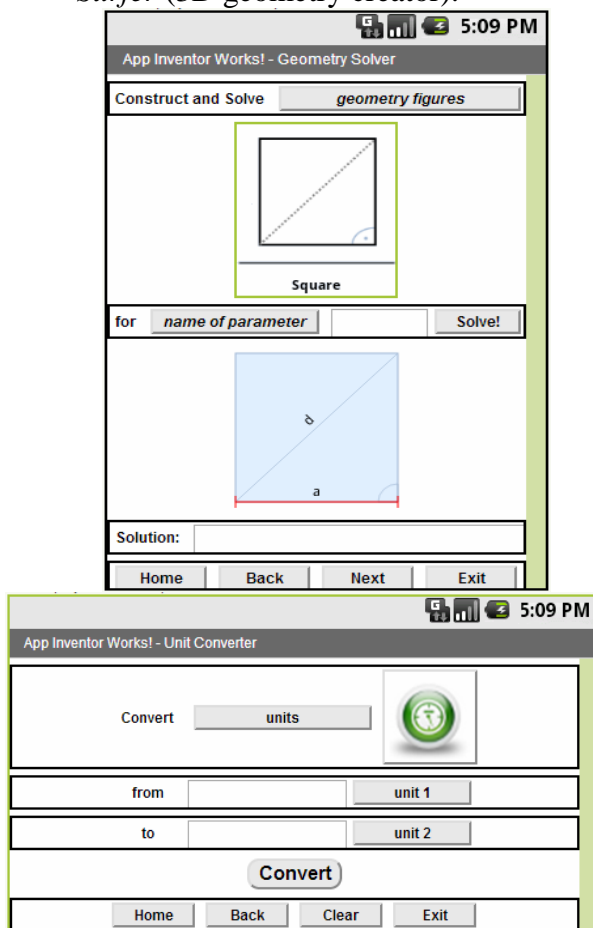


Fig. 8. *Geometry Solver and Unit Converter*

All the apps are based on various palette of components (basic, media, animation, social, sensor, screen arrangement etc) and blocks (definition, text, list, math, logic, control, color) which facilitate the project design and functionality.

4. CONCLUSIONS

Information and communications tools and methodologies have produced unprecedented changes in our society in all its aspects, but especially in mobile devices environment.

According to this trend, in the present workpaper, we try to help everyone who use App Inventor for Android and are interested in mathematics to develop specific educational applications.

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