# Prototype of a cashless system on existing vending machines

## Petar Hlad Colic

# Project Critical Review

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REVISION HISTORY AND APPROVAL RECORD

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# 1. GENERAL COMMENTS ABOUT THE WORK PROGRESS

## 1.1. *Incidences*

The major incidence has been the problem to find a suitable NFC reader and also to find a convenient python library for the reader to integrate it in the client application.

I had a working NFC reader that I borrowed from a colleague. Then ordered some readers for the project and when they arrived after a couple of weeks, they didn't work properly (didn't read all expected card types though it was the same reader model). Then I spent a couple of weeks more trying to get a working NFC reader but all tries had de same issue: didn't read all expected NFC card types. At the end I kept the borrowed reader.

As it took a long time to find a working NFC reader, the part of finding the proper software for it delayed because of not knowing which reader will use the system. It also wasn't easy as I thought it would. These libraries are written in C or similar and we have to find some C wrapped Python libraries that someone coded and hope that it works. The issue with this is that the library had to be easy integrable in our code.

Finally, we are using the PN532 NFC reader and nfcpy library.

Also, due to the students' association spring activity where the vending machine, during march the vending machine is unreachable. So some things had to be postponed.

The Work plan delayed 3 weeks.

## 1.2. *Work Plan modifications*

As the plan delayed 3 weeks, all the remaining work is shifted 3 weeks.

WP3 ends on 28/05 instead of 07/05.
WP4 starts on 29/05 instead of 08/05 and ends on 02/06 instead of 14/05.
WP5 starts on 03/06 instead of 15/05 and ends on 09/06 instead of 28/05.
WP6 starts on 10/06 instead of 29/05.

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## 2. UPDATED WORK PLAN

### 2.1. *Updated Work Packages, Tasks and Milestones*

| Project: Prototype of a cashless system | WP ref: WP1 | |
|---|---|---|
| Major constituent: Programming Learning | Sheet 1 of 6 | |
| Short description:<br>Learn python language and other software concepts that will be needed in the software development in order to design the software system. | Planned start date: 01/02/2016<br>Planned end date: 12/03/2016 | |
| | Start event: T1<br>End event: T2 | |
| Internal task T1: Learn python.<br>Internal task T2: Learn to use other needed tools. | Deliverables:<br>None | Dates:<br>None |

| Project: Prototype of a cashless system | WP ref: WP2 | |
|---|---|---|
| Major constituent: System design | Sheet 2 of 6 | |
| Short description:<br>Design of the whole system (software and hardware) fulfilling the project requirements and specifications<br><br>Also will have to do all proofs of concept to ensure that the design is feasible. | Planned start date: 28/02/2016<br>Planned end date: 26/02/2016 | |
| | Start event: T1<br>End event: T4 | |
| Internal task T1: Design server application<br>Internal task T2: Design client application<br>Internal task T3: Design hardware system<br>Internal task T4: Proofs of concept | Deliverables:<br>None | Dates:<br>None |

| Project: Prototype of a cashless system | WP ref: WP3 | |
|---|---|---|
| Major constituent: System development | Sheet 3 of 6 | |
| Short description:<br>Develop the system following the system design. | Planned start date: 27/03/2016<br>Planned end date: 28/05/2016 | |
| | Start event: T1<br>End event: T3 | |
| Internal task T1: Develop the server application<br>Internal task T2: Develop the client application<br>Internal task T3: Develop the hardware system | Deliverables:<br>None | Dates:<br>None |

| Project: Prototype of a cashless system | WP ref: WP4 | |
|---|---|---|
| Major constituent: Design the test unit | Sheet 4 of 6 | |
| Short description:<br>Design the test and demonstration unit that will be portable to show the results of the project | Planned start date: 29/05/2016<br>Planned end date: 02/06/2016 | |
| | Start event: T1<br>End event: T1 | |
| Internal task T1: Design the test unit | Deliverables:<br>None | Dates:<br>None |

| Project: Prototype of a cashless system | WP ref: WP5 | |
|---|---|---|
| Major constituent: Develop the test unit | Sheet 5 of 6 | |
| Short description:<br>Develop the test unit that will be used in the presentation following the design. | Planned start date: 03/06/2016<br>Planned end date: 09/06/2016 | |
| | Start event: T1<br>End event: T2 | |
| Internal task T1: Develop the test unit<br>Internal task T2: Test the system on the test unit | Deliverables:<br>None | Dates:<br>None |

| Project: Prototype of a cashless system | WP ref: WP6 | |
|---|---|---|
| Major constituent: Writing | Sheet 6 of 6 | |
| Short description:<br>Write down the final degree project | Planned start date: 10/06/2016<br>Planned end date: 27/06/2016 | |
| | Start event: T1<br>End event: T1 | |
| Internal task T1: Write the final document | Deliverables:<br>Final degree project | Dates:<br>27/06/2016 |

**Milestones**

| WP# | Task# | Short title | Milestone / deliverable | Date (week) |
|---|---|---|---|---|
| 2 | 4 | Proofs of concept | Validated Design | 26/02/2016 |
| 3 | 3 | System development | System developed | 07/05/2016 |
| 5 | 2 | Test Unit Development | System tested on test unit | 09/06/2016 |
| 6 | 1 | Final Degree Project | Document | 27/06/2016 |

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## 2.2.   *Updated Time Plan (Gantt diagram)*

| Project timeline in months/weeks | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FEBR | | | | MARCH | | | | | APRIL | | | | MAY | | | | JUNE | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |

Training

System Design

System Development

Test Unit Design

Test Unit Development

Writing