Contribution to Augmented Reality Applications and Interfaces for Mobile Devices

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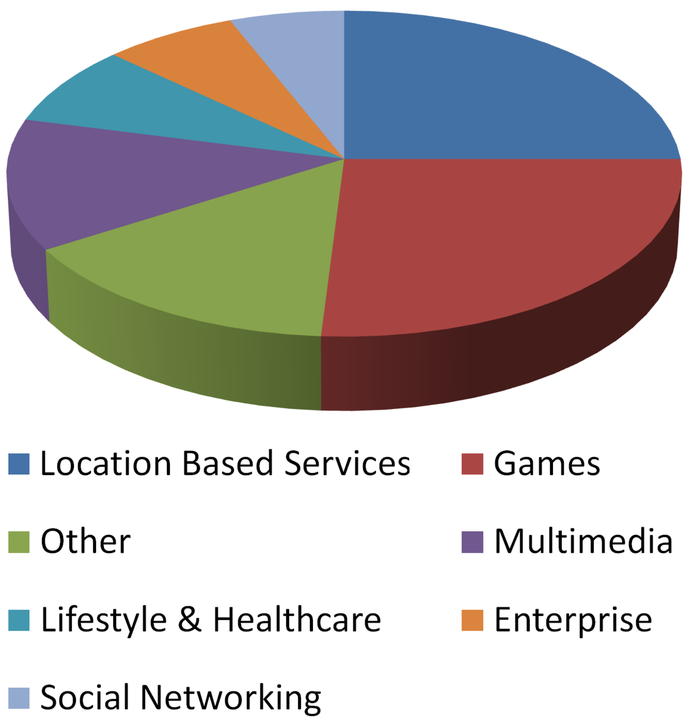
Motivation of the work

- **Augmented Reality** (AR) combines both real and virtual worlds, providing a **unique user experience**.
- **Ideal tool for many fields**, such as education, training, tourism, etc.
- **Produce innovative research results** to spread AR to other fields apart from **gaming, advertising and world browsers** [1].

AR Market by category 2010-2015



- Several unresolved challenges such as the **organization** of the augmented **information** [2].

Thesis Objectives

1. **Contribute** to AR **authoring** applications.
2. **Ease the creation** of new **AR** applications to **non-technical personnel**.
3. **New fields of application** for augmented reality.
4. **Increase** AR presence for people with **special needs**.

References

[1] Juniper Research, "Augmented Reality A Market, Primed", White paper http://www.juniperresearch.com/document-library/white-papers/augmented-reality-a-market-primed, last accessed: 2015.

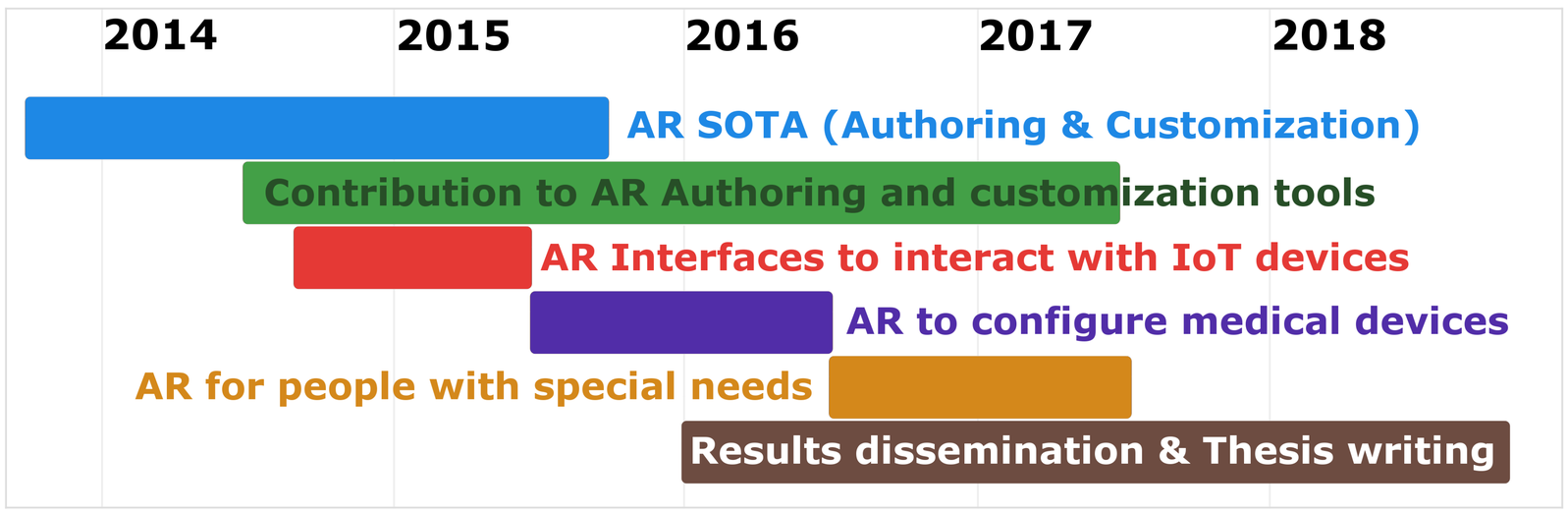
[2] M. Singh et al., "Augmented Reality Interfaces," Internet Computing, IEEE , vol.17, no.6, pp.66,70, Nov.-Dec. 2013.

[3] Zhu, J., Ong, S.K. and Nee, A.Y.C., "A context-aware augmented reality system to assist the maintenance operators", International Journal on Interactive Design and Manufacturing (IJIDeM), vol. 8, pp.293,304, 2014.

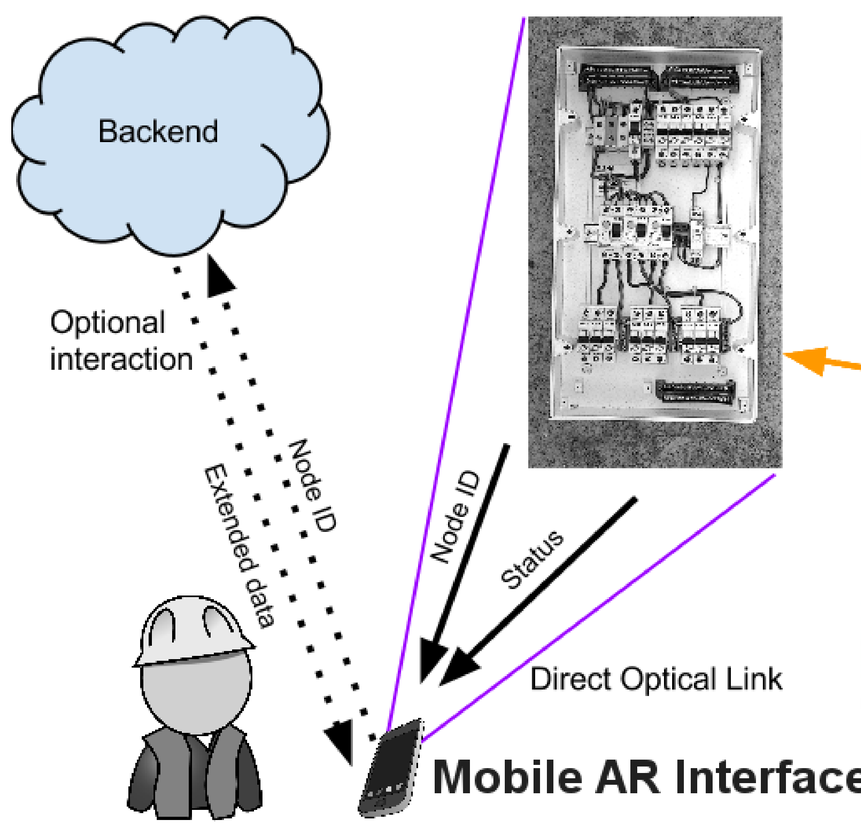
[4] Pasquale Daponte, Luca De Vito, Francesco Picariello and Maria Riccio, "State of the art and future developments of the Augmented Reality for measurement applications," Elsevier Measurement, vol.57, pp.53.70, Nov. 2014.

[5] Perey, Christine et al., "Open and interoperable augmented reality," Mixed and Augmented Reality (ISMAR), 2014 IEEE International Symposium on pp.1,3, 10-12 Sept. 2014.

Research Plan

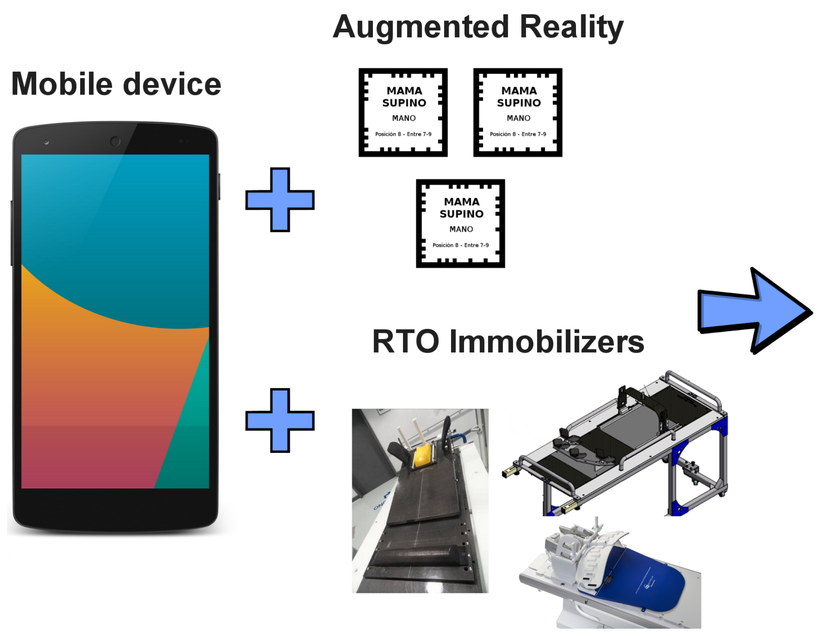


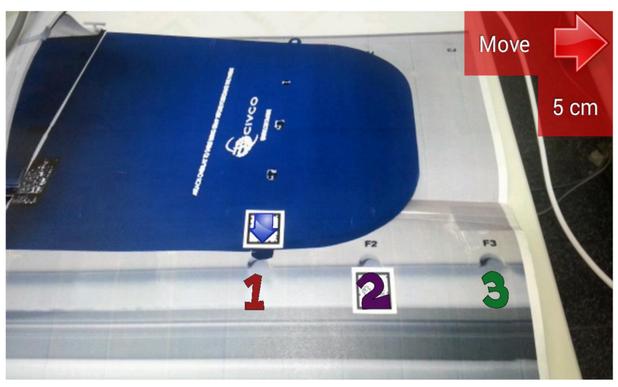
Results & Discussions



- Contribution combining a IoT devices with an AR interface [3].
  - System to help maintenance staff from a Smart Cities thanks to intuitive AR interfaces, an IoT infrastructure and LED beacon as a dynamic marker.
  - Currently submitted to the journal *Sensors* special issue about Smart Cities.
- AR Authoring tool
  - State of the art lacks of tools for mobile devices.

Next Year Planning





- Exploring different fields for AR.
  - **AR** application to **detect and correct** configuration errors of **radiotherapy immobilizers** [4].
  - Real-time **feedback**.
- Contribution to authoring tools
  - Implement an **authoring tool** to create **AR scenarios** [5].
  - Focused on non-technical staff with support for mobile devices.