

# MapMySmoke—A Context Aware Mobile Phone Application Targeted at Smoking Cessation

Rob Schick<sup>1</sup>, Gerry Humphris<sup>1</sup>, Tom Kelsey<sup>1</sup>, John Marston<sup>2</sup> and Kay Samson<sup>3</sup>

<sup>1</sup>University of St Andrews, <sup>2</sup>Dr Kyle and Partners Surgery–Pittenweem, <sup>3</sup>NHS Fife Tobacco Services

## Objectives

With the increasing availability of smartphones, we sought to investigate whether:

- An app could be deployed with smokers intending to quit
- An app would increase understanding of individual and population level smoking behaviour
- Knowledge of craving and smoking behaviour helps smokers quit
- App-based delivery of support messages could better support individual quit attempts

## Introduction

Approximately 11,000 people die in Scotland each year from smoking related causes. While quitting smoking is relatively easy, maintaining a quit attempt is very difficult. Pharmaceutical treatments improve abstinence rates, however they do not address the spatial aspects of smoking behaviour. Since smartphones can log spatial, as well as quantitative and qualitative data related to smoking behaviour, we can support smokers by first understanding their smoking behaviour and then sending dynamic support messages post-quit (Figure 1).

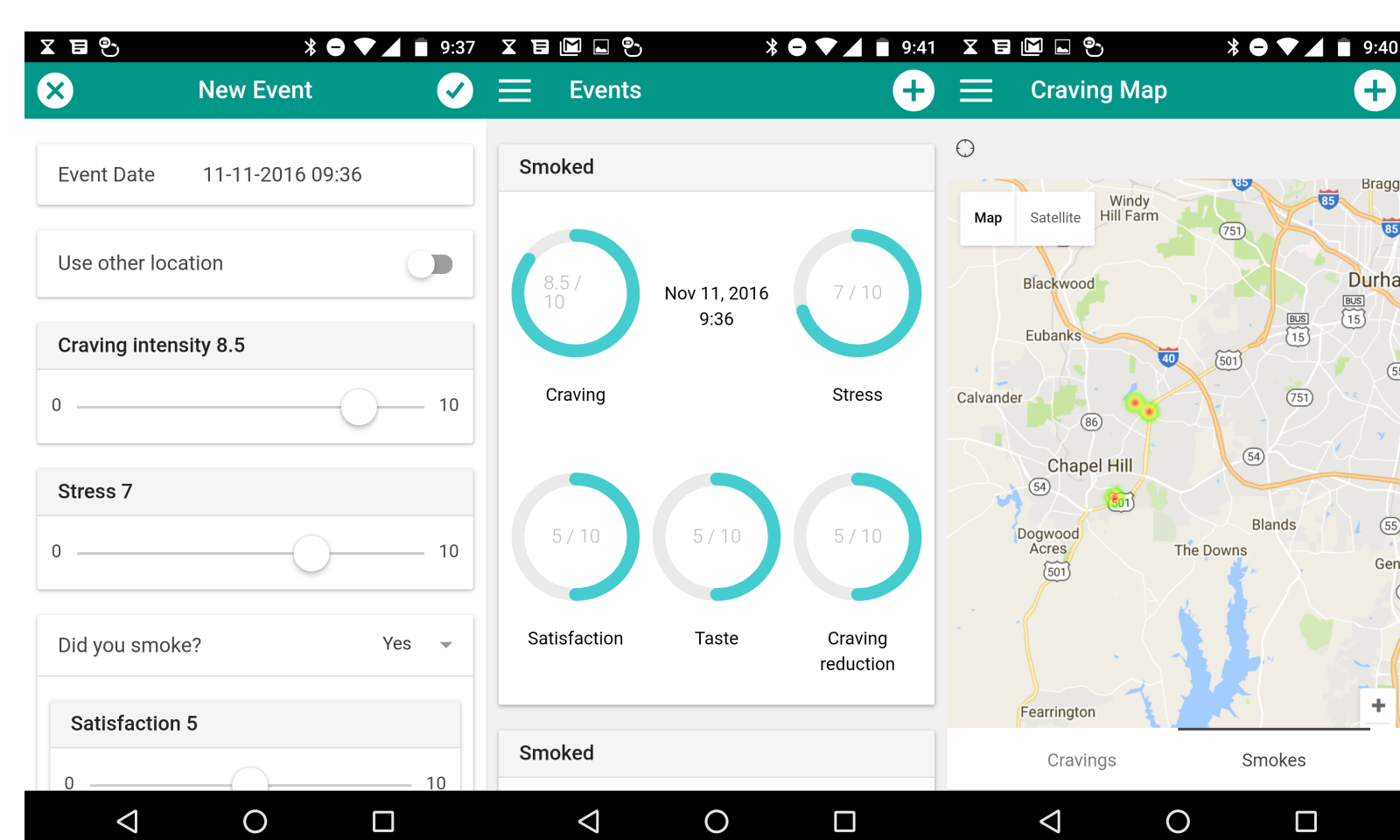


Figure 1: Screenshots from the MapMySmoke app indicating one data entry screen and two visual summaries.

## Methods

We have built a **smartphone app** that works on Android and iOS platforms. The deployment of this app within a clinical NHS setting has two distinct phases: 1) a two-week logging phase where pre-quit patients log all of their smoking and craving events; and 2) a post-quit phase where users receive dynamic support messages and can continue to log craving events, and should they occur, relapse events.

## Methods

Following the initial logging phase, patients will consult with their GP to review their smoking patterns and to outline an individualised quit-attempt plan. We will deploy the app through two feasibility studies within NHS Fife with 10 and 100 patients, respectively. Phase I recruitment was done through Dr Kyle & Partners Surgery in Pittenweem. Phase II recruitment will be supervised by NHS Fife Tobacco Services.

## Conclusion

This is a complex, pragmatic intervention with technological and clinical components working in unison.

## Additional Information

**MapMySmoke** is supported by:

- A LEADERS award to Schick from SULSA
- NHS Fife R & D Bursary Award
- University of St Andrews' EPSRC Impact Acceleration Account

**MapMySmoke** has received approval from:

- **NHS Ethics** (REC Reference: 16/WM/0068; IRAS Project ID: 191816) (26 February 2016)
- **NHS Scotland**–The Public Benefit and Privacy Review for Research and Academic Studies (18 May 2016)

ClinicalTrials.gov–Identifier: NCT02932917

## Acknowledgements

Callum Hyland, Anastasiia Izmailova, Eliza Jonauskite, Nick Tikhonov, Alex Ungurianu from the UStA School of Computer Science for development support. We thank Fiona Lockett of NHS Fife, as well as Mara van Beusekom and Kwong Ling of the UStA School of Medicine.

## Important Result

We have successfully deployed the **MapMySmoke** app in a clinical setting within NHS Fife. **MapMySmoke** collects real-time data on smoking and craving behaviour. Initial feedback indicates that use of the app helps make patients **more** aware and helps them **resist** cravings.

## Results

The 9 consented patients have logged 124 craving events and 261 smoking events (Figure 2).

Patients using the **MapMySmoke** app have reported positive feedback to Dr. Marston:

*“The app is very useful in highlighting smoking behaviour—in particular I found the heatmap the most helpful.”*

*“I like the app, and found that seeing a representation of my smoking behaviour is both surprising and helpful.”*

*“Being asked to log my cravings has helped me resist smoking.”*

## Example Smoking Behaviour

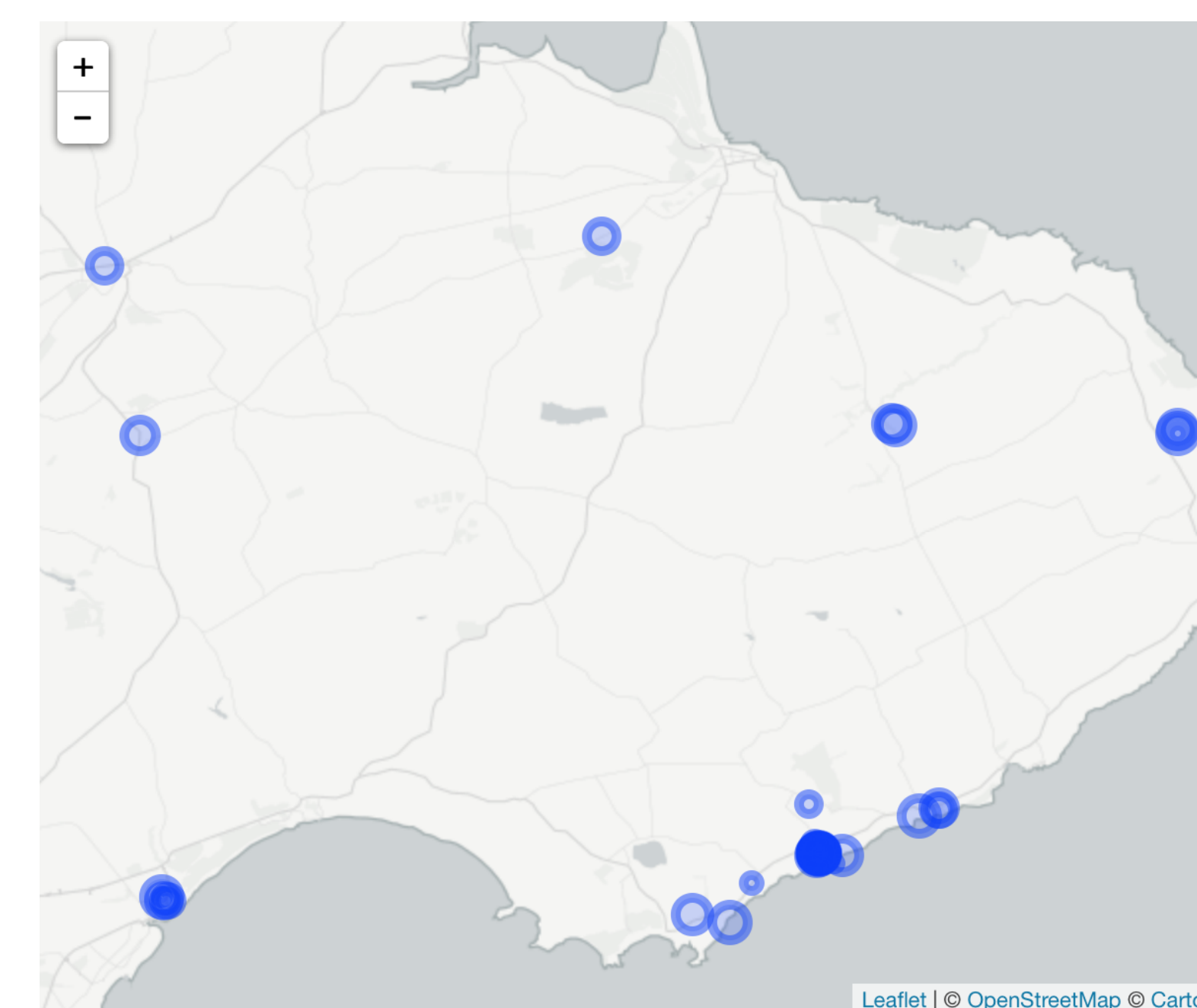


Figure 2: Smoking events for one patient. Size of circle corresponds to level of satisfaction of each smoking event—larger circle means more satisfaction.

## Contact Information

- Web: <http://mapmysmoke.cs.st-andrews.ac.uk/>
- Email: [robschick@gmail.com](mailto:robschick@gmail.com)
- Phone: +1 (919) 537-1932