



Planting the seeds locally for a more sustainable future

How it all started...



- The initial team – 14 people, including: app developers, scientists, gardeners, an outdoor education centre worker, and a forestry school teacher.
- International collaboration with teams from San Francisco, NYC, Chile, Nairobi and the Dominican Republic.
- Grower's Nation won the Galactic Impact award.

## **Key aim**

To get more people involved in and enthusiastic about growing produce sustainably using the available space in their gardens, school/ university grounds or work places that is not currently being used to its full potential.

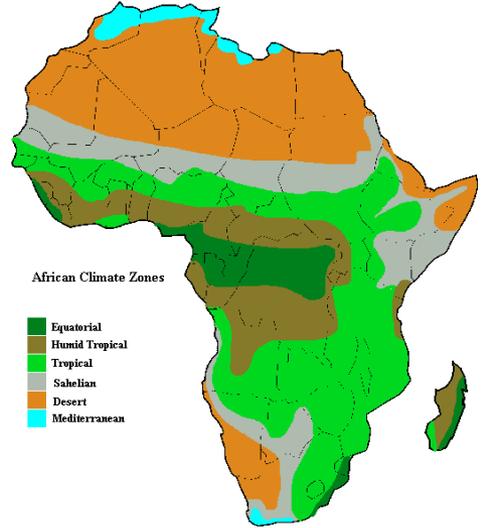
## **Key outputs**

- (i) A global scientifically based app that will enable people to see quickly and with ease when the optimal time in their area is for planting and harvesting different produce.
- (ii) Related outreach activities, including the development of educational materials and community based resources.

# Geo-located data



Weather data  
- First/last  
frost



Climate data  
- temp, precip



Growing  
conditions  
data



Satellite data  
-ITCZ,  
evapotranspiration



Soil data - PH, type

# Potential reach

- Potential to reach a wide range of users, from someone new to growing produce in their back garden, to schools who are starting or maintaining allotments, to crop farmers in developing countries.
- We are developing an app that works on the web as well as mobile devices.
- For areas of the world where internet access may not be possible, we are considering other options, including an SMS messaging service and providing weekly digests of the key information that can be printed out locally and provided to farmers.

Why will this app be useful?

# The Market

- There is not currently a global scale application that provides produce growing information incorporating climatology, recent weather observations, soil and growing condition data.
- Related apps available at a cost to download. This limits their reach and accessibility.
- A gap in the market for a one stop website offering all of the required information to get started with growing produce, including a free, easy to use and scientifically based application.
- With the ongoing push towards more data and scientific research being made available open source, now seems to be an appropriate time to be developing such an application.

# Social need

- More people are becoming interested in growing their own fruit and vegetables.
- The cost of produce can be expensive and prohibitive for many families. Making optimal use of the available space in people's gardens or local areas for growing produce could help to provide affordable access to a healthier diet.
- Some people are likely to be put off growing their own produce, as they see it as being complicated. There are many different sources of information, which can be time consuming to research, contradictory and potentially confusing.

# Social need (continued)

- Important that people new to growing produce have free access to user friendly information that at least enables them to answer:
  1. **What** produce can I grow where I live?
  2. **When** should I sow/ plant/ harvest it?
- Teachers are very busy, and do not have time to search out all the required information for starting a produce growing plot with their students. Such an accessible application could help the practice of growing fruit and vegetables to be better integrated into the school curriculum.
- In developing countries, the optimum crop yields are not being attained due to the current lack of comprehensive, knowledge based advice that makes best use of the available scientific data sets.

# Sustainability

- If more people become enthusiastic about growing their own produce, then there will be an increased understanding and respect within society about where produce comes from. This could lead to more sustainable living and have a positive knock on effect for related issues such as energy usage and recycling.
- Increased local availability of produce could potentially bring food prices down, and help people who are suffering from the effects of the recession.
- An increase in local food production could help reduce the number of air miles involved in transporting food around the world.

# First release of the app

- Initial algorithm development for temperate climates.
- We aim to release a UK prototype version by next Spring.
- Depending on data availability, we may be able to release it in other parts of the world also.
- In parallel we would like to produce teaching resources that fit in with the school curriculum for different age groups, and that can make use of the app for growing plot projects.

# USAID Food security open data hackathon 14 to 16 September 2012



**HACKING  
for  
HUNGER**



# USAID Challenge

Grower's Nation - Agronomy data  
map

## Key aim

To develop a global agricultural based  
open source data mapping application

# Agronomy data map benefits

- Feeds in well to the Grower's nation project by enabling us to more easily find the right open source data sets for expanding the app's functionality to other regions of the world.
- A useful resource for other agricultural related projects, including our sister project, the Pineapple Project (one of the other hackathon challenges)
- Will provide easy to access information about all the data required for future food security related hackathon challenges, allowing more time for
- Crowd sourcing of data capability, will enable the information provided to be kept up to date and relevant as more open source data sets are made available worldwide.

# Agronomy map functionality

## 1. A simple user interface and search functionality:

- Users can search for available datasets by clicking on a country or possibly by selecting a region of any size.
- Alternatively use drop down menus with country selections.
- Possible search options – location, data type, resolution, most recent data sets etc. e.g. search for ‘soil ph data’ and ‘minimum resolution = 50km’ and region= ‘Africa’ to produce a map highlighted with the countries that this data is available in. User could then click on each country for more details about the available data sets.
- Possible user account functionality – users could sign in with their facebook/ twitter/ other account. This would be useful for storing a history of each user’s searches.

# Agronomy map functionality (continued)

## 2. Map overlays

World overview maps of e.g.: climate zones, agricultural land use, topography, satellite imagery.

## 3. Database requirement

- The actual data will not be included in the application, only links to where it can be accessed, and as much info as possible about the data.
- A database to store details of each different data set, including:
  - (i) An html link to where the data can be accessed
  - (ii) links to any documentation
  - (iii) a wiki type functionality for users to add comments/ advice about particular data sets.

## 4. Crowd sourcing data

A crowd sourcing capability to enable organisations to add their own open source data sets to the map

# Skills needed

- App developers with mapping and layering skills
- Database experts
- Science experts – what data would it be beneficial to include in this app for wider use by future agriculture development projects?
- On site coordinator – someone to lead the project at the hackathon location, and present the results.

# Data requirements

# Useful data sets

Information about these scientific data sets would be useful for the Grower's nation app:

- Soil data – type/ texture, ph, moisture, depth.
- Growing conditions data for different produce types
- Climatology data – precipitation, temperature
- Weather data – precipitation, temperature
- Topography data, including aspect, elevation.
- Satellite data, e.g. evapotranspiration, land cover
- Land use data

# Useful data sets (continued)

This could also be a very useful app for other agronomy/ agriculture/ sociology related projects, and it would be good to include:

- Economic data related to agricultural land use, e.g. local costs of agriculture production, local commodity pricing.
- Sociology data about living standards in relation to agriculture, e.g. access to clean water.
- Any other agriculture related datasets that could be useful for people working with open source data

# Grower' s nation project - Outreach

# Education and community projects

- Develop our outreach activities to encourage more schools and youth groups to participate in maintaining growing plots.
- Produce teachers packs for different age groups to enable learning about growing produce to be easily integrated into the school curriculum.
- Possibly create a forum to enable links between school growing projects internationally.
- Encourage companies/ colleges/ universities to sponsor plots of land for their employees or students to grow produce on.

What's next?

# Project continuation and funding

- The Met Office have agreed to fund us with 1 fte for a 6 month period.
- During this period we will look for other funding sources.
- Being a small sized non-profit organisation opens the project up to more funding opportunities from external sources.
- We will acknowledge the support of contributors/ collaborators/ data providers/ funders on our website, and within the app release information.

# Summary

- All of the necessary scientific data input for the development of this app now exists. It is important that such a tool can be developed open source and provided for free so that it can have as wide a reach as possible, and a positive impact on the sustainability of food supply by encouraging more local production.
- An initial UK version release will hopefully encourage free access to more of the data sets we require for different regions of the world.
- Outreach activity developments will help us to encourage sustainability and maximise usage of the app.

Please feel free to get in touch with  
any questions or comments:

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Or to find out more information:

[www.growers-nation.org](http://www.growers-nation.org)

# Grower's Nation

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## Background

On April 21st 2012, as part of the International Space Apps Challenge, NASA challenged us to create an app in a weekend that would have societal impact in the world!

### [Space Apps Challenge – Grower's Nation](#)

The Grower's Nation app is currently under development and is the result of a dedicated team who are passionate about exploring the potential of unused land for the growing of fruit, vegetables and other crops. The app has been designed to reduce the barriers to growing by taking location, climate and growing data into consideration and to give more people the information they need when selecting what to grow.

The Grower's Nation team are based in Exeter, UK. During the Space Apps weekend, held at the Met Office, we collaborated with teams from around the world including San Francisco, New York City, Chile, Nairobi and the Dominican Republic.

### **What can I do with the app?**

With this app, you can search for your location by post code or town and be presented with a list of produce which is suitable to grow in your climate and soil type. The app will show you when to sow, plant out and harvest your crops.

### **What data will this app use?**

Climate data – monthly temperature and precipitation;

Soil data – pH, soil type and soil moisture;

Forecast weather data – first, last frost;

We have started compiling an open source [data set of produce growing conditions](#) especially for this project as the data wasn't freely available prior to the weekend.

### **Who will the users be?**

This app has the potential to reach a wide range of users, from someone new to growing produce in their back garden, to schools who are starting or maintaining allotments, to crop farmers in developing countries.

Search...

## WELCOME

Grower's Nation - a global map based app to determine what produce to grow and when given the soil type and current seasonal conditions. Can be used on both web and mobile based devices. Twitter @GrowersNation



## Twitter feed

- ✦ @meganthefoodie @realfoodexeter we'll soon be looking to expand our outreach and happy to register interest from related organisations! 2 months ago
- ✦ The 6 Space App Challenge winners that want to change the world [dvice.com/archives/2012/...](#) via @dvice #spaceapps 2 months ago
- ✦ @dougiekinnear Thanks! Good luck with the