UC4a Progress Report

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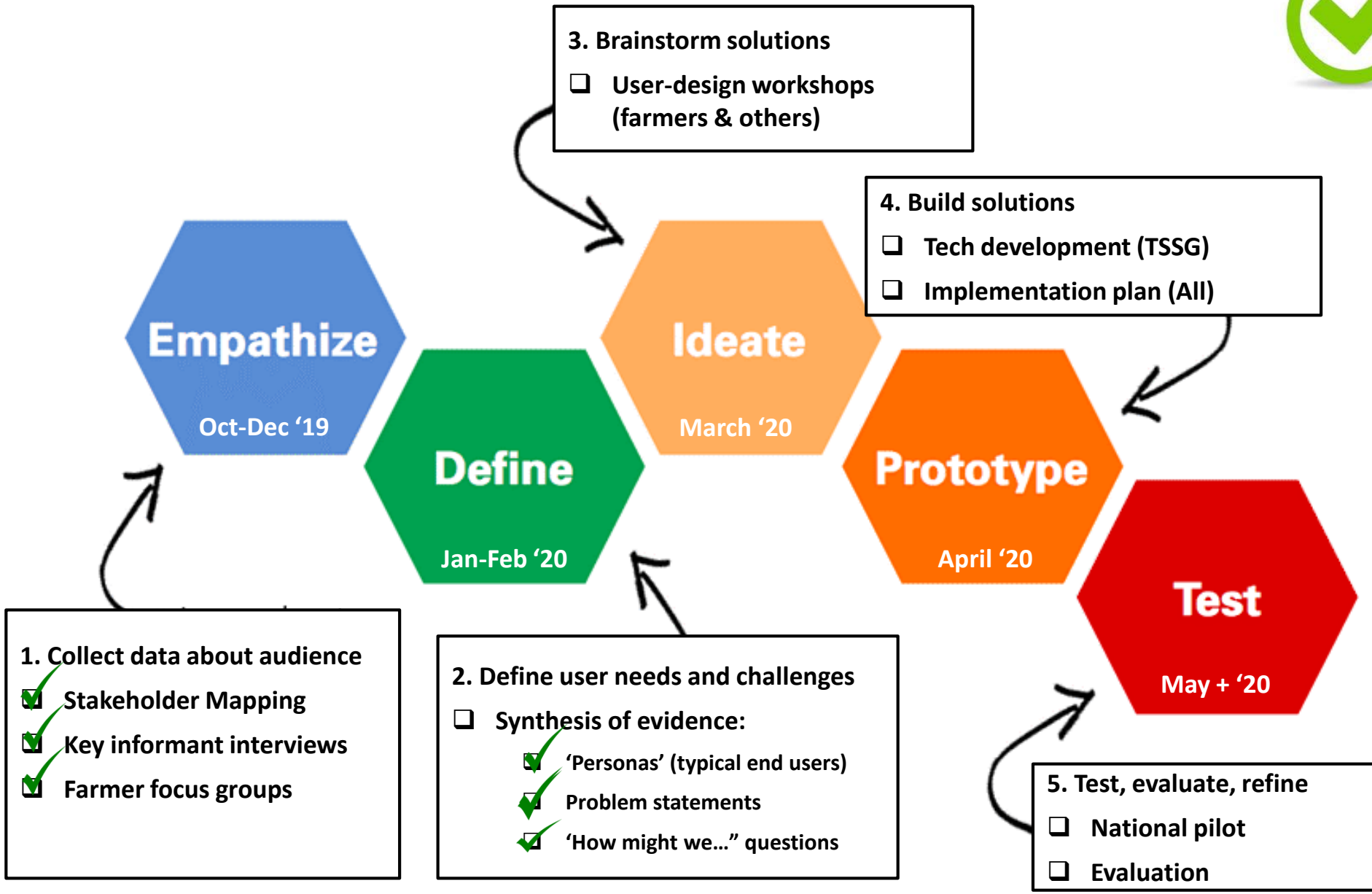
Design Thinking Process - Progress



Defining the problem: Farmers' Perspectives

From In-dept user analysis it was found that the main pain points for farmers across all sectors are very similar, these include:

- Current Process takes a long time
- Difficulties with Smart Phones
- Poor internet connections
- Accessibility issues
- Delivering the correct training

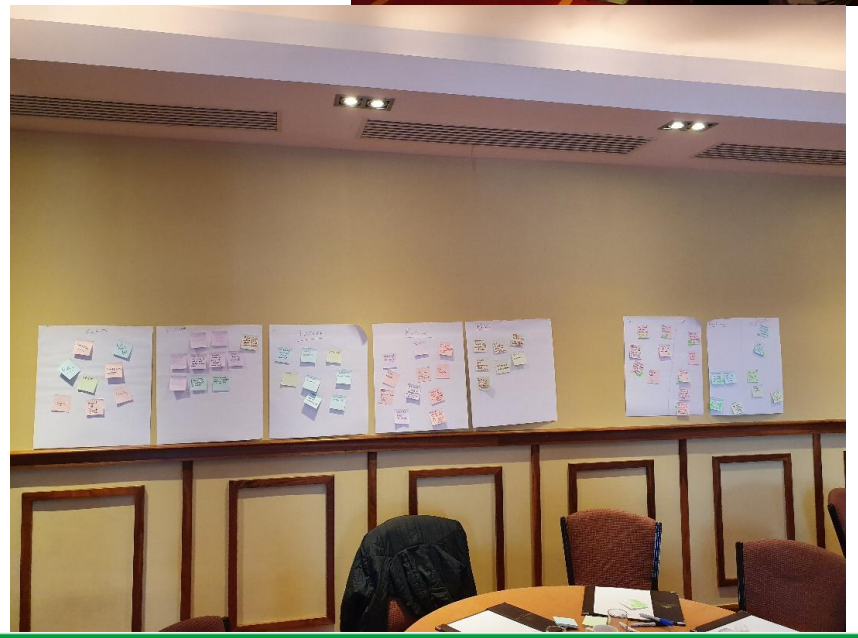
UC4a: Co-design workshops

Aim: Co-develop a geotagged smartphone photo app with farmers & farm advisors to:

(1) understand the user needs & requirements of farmers & farm advisors
(2) develop first prototype of app using a user-design led approach

Delivered over **three** tasks

(1) Vision Board
(2) User needs
(3) Crazy 8's



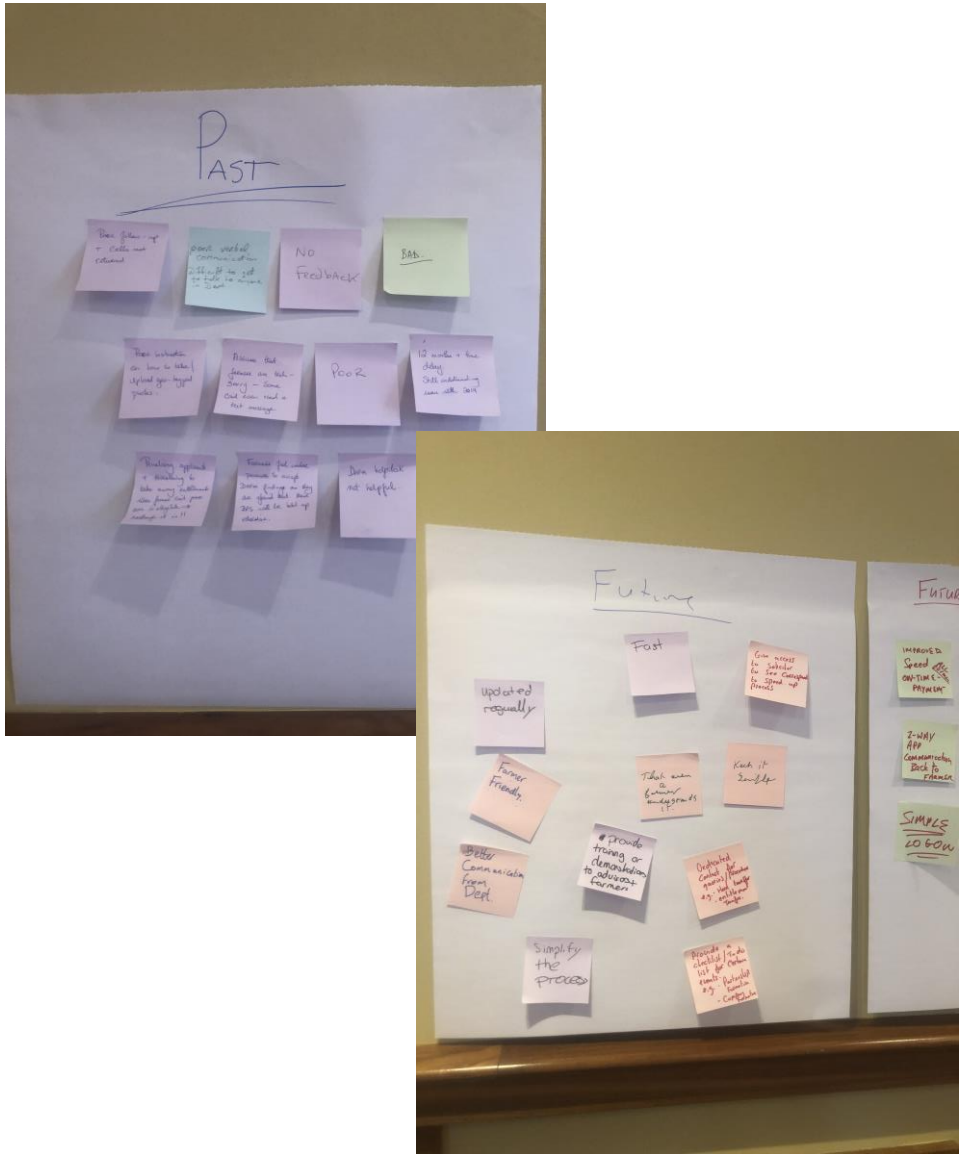
Concluded with a final 'wrap up' discussion

Task 1: Vision board findings (Ice breaker)

THE PAST

Most common words and phrases used are as follows:

- Slow
- Poor
- Time Consuming
- Unclear
- Complex / Difficult
- Overwhelming
- Unfriendly
- Outdated
- Bad Communication

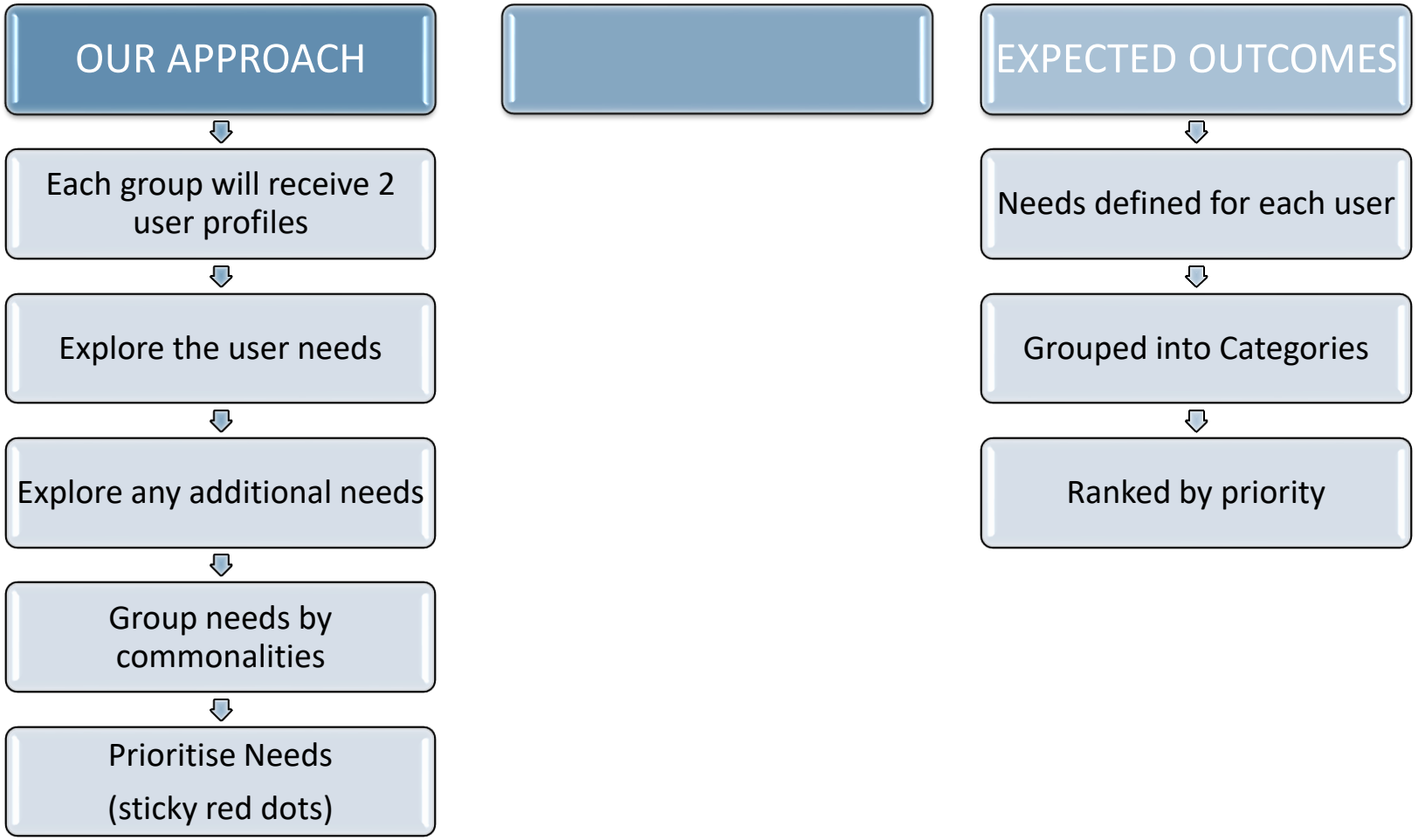


THE FUTURE

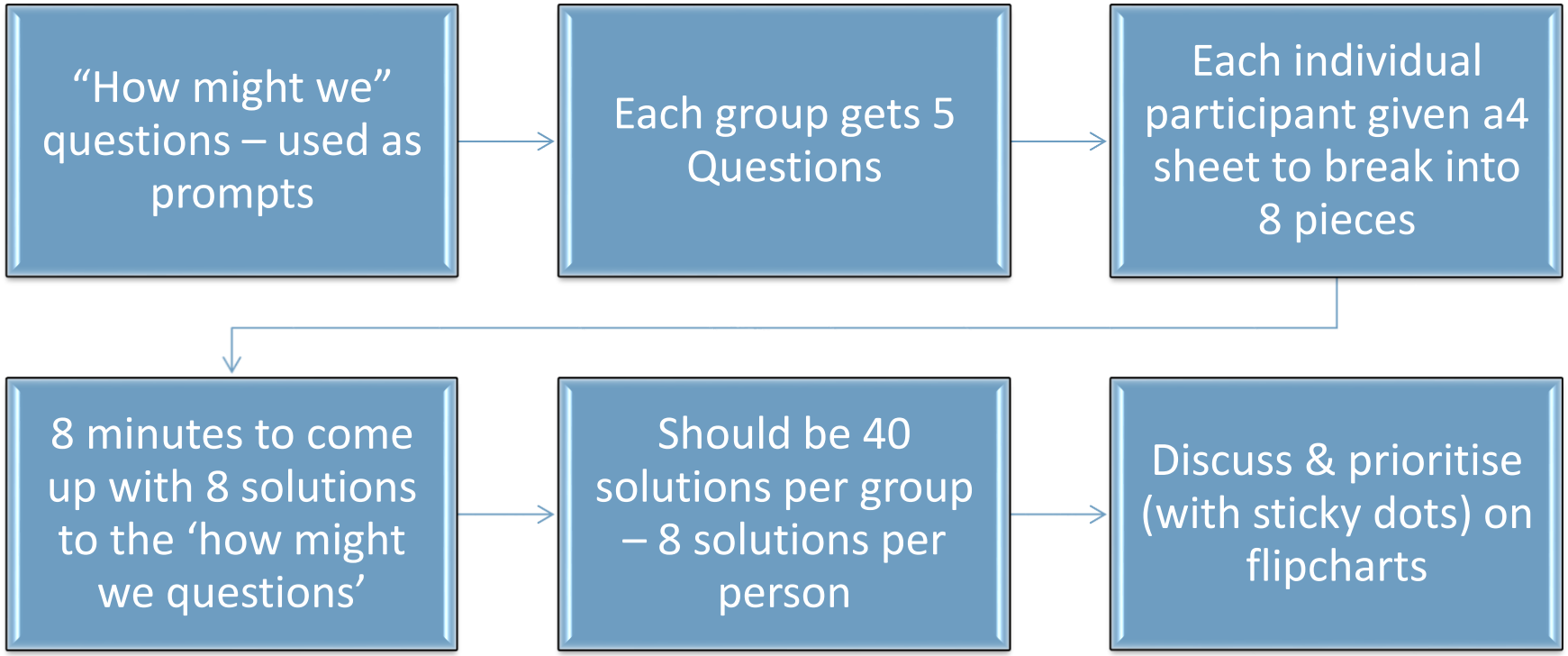
Below are the words and phrases used to describe the future vision:

- Simplistic (Simplified)
- Clear Communication (2-way communication)
- Error-free
- Easier / Speedier Resolution
- Feedback
- Trust
- Farmer-Friendly / User-Friendly
- Simplified Login / Identification

Task 2: User Needs



Task 3: Ideation - Crazy 8's



Example of Problem Statements and ‘How Might We…’ Questions

Problem Statements	‘How Might We…’ Questions
Farmers lack self-confidence in their ability to use a smartphone for work.	***How might we*** increase farmers’ confidence to use smartphones for farm-related work?
Farmers’ currently feel that they lack control over the communication process with the Department.	***How might we*** empower farmers and increase their sense of control in communicating with the Department?
Farmers value smartphone apps which make their life easier.	***How might we*** ensure that farmers believe that the geo-tagged app will make their life easier?

How might we… design an app that farmers agree is easy to use?

- ❑ Responsive
- ❑ Visual/colourful
- ❑ Accessible/usable
- ❑ Stepped approach to submission with save feature
- ❑ Contact/help discussion
- ❑ Simple login (face/finger)

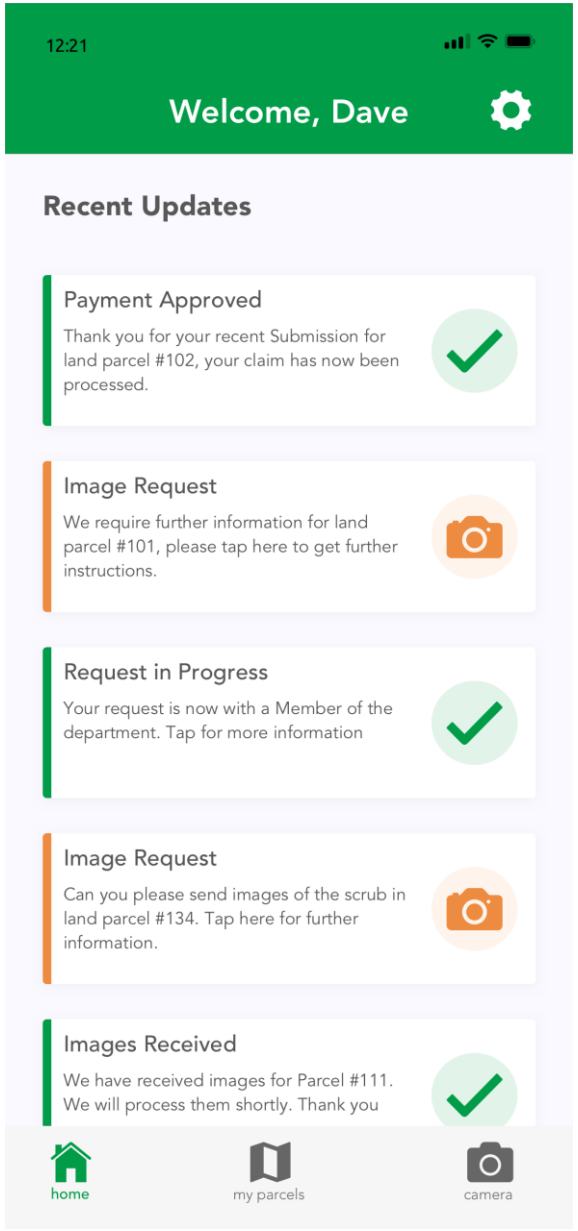
How might we… ensure the app improves communications between the farmer and the Department?

- ❑ Interactive screen share
- ❑ Chat bot
- ❑ Quick response (timed metric)
- ❑ Reminders
- ❑ Status Updates / Notifications

The App: Progress

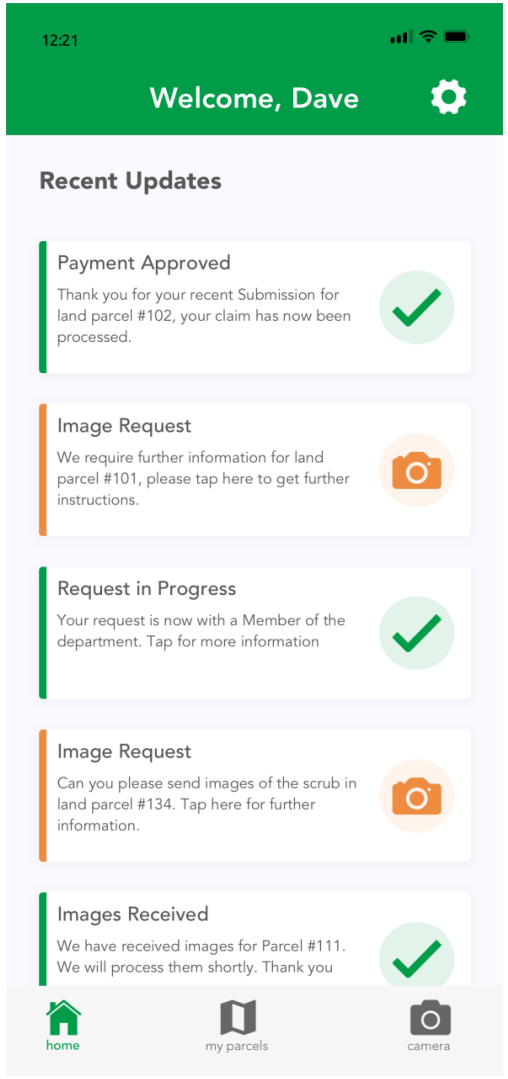
Design

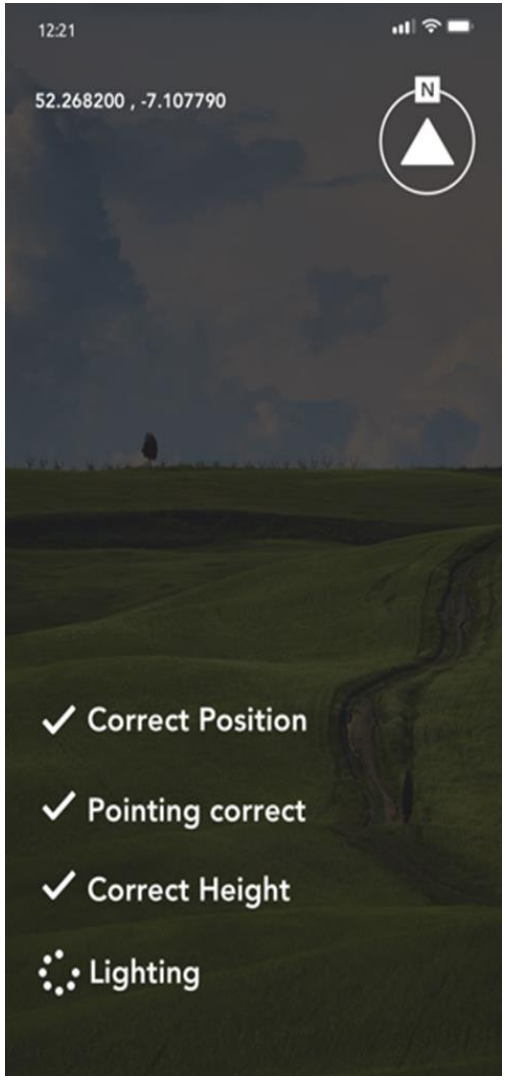
- Design Complete
  - All necessary pages and components designed based on workshop feedback (to date)
- Click Through Prototype complete: https://www.sketch.com/s/1e27d1b8-0a2d-4655-b494-19290ec10469/a/8ZkAQR/play
- Online MAA animation
  - Mural and Zoom



Development

- Ionic
  - Based on comparative research, Ionic was the front runner
  - eGNSS4CAP also ionic
  - Security Plugins available
  - Hybrid & Offline
- Components:
  - Main components for layout completed
  - Camera integration
  - Native maps (Apple and Google tested)
  - GPS location
  - Gyroscopic information





GNSS Accuracy Updates

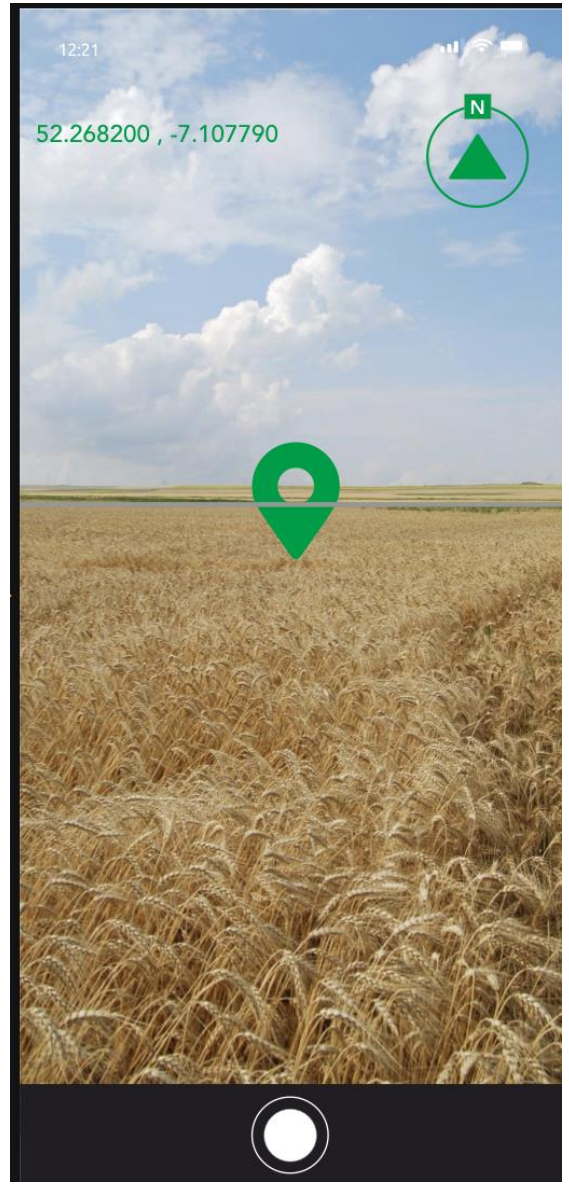
- EGNSS4CAP
  - Codebase Updated to JavaScript from Java
  - Still only works for android (but can be integrated for IOS with our app)
  - Compatible with our application
    - Ionic with Capacitor
  - Plugins available
    - Phone info
    - GNSS status plugin
    - Cordova plugin to retrieve NMEA stream from phone gps receiver

Security

- Checking for Rooted Devices (iOS and Android)
- Get network information (position)
- eGNSS4CAP plugin
- Check for ‘spoofing’ apps
- 2 factor authentication
- Watermarked images based on data

Augmented Reality

- Adding information to the camera
  - Placeholder
  - Compass
  - GPS coordinates
- Research ongoing with AR/VR team in TSSG

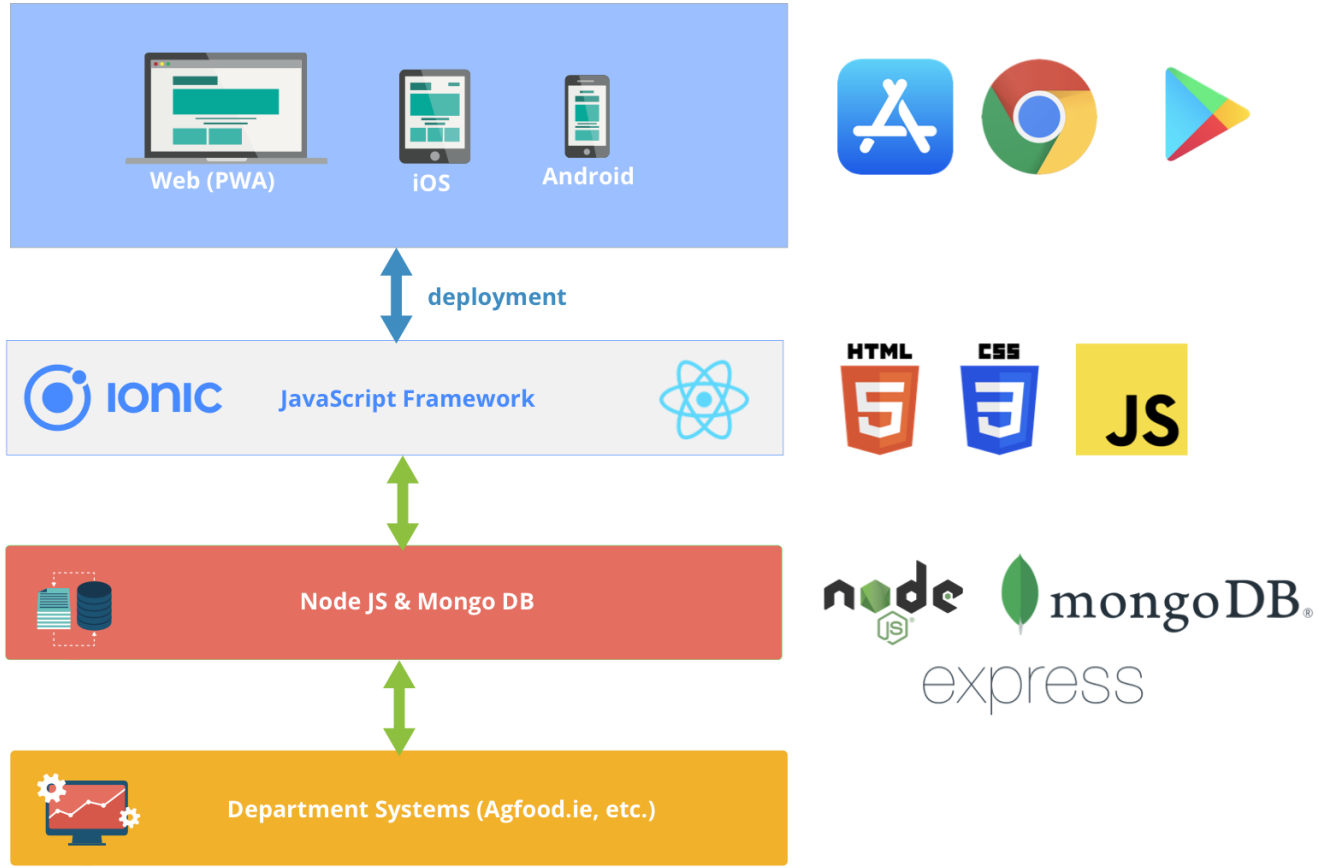


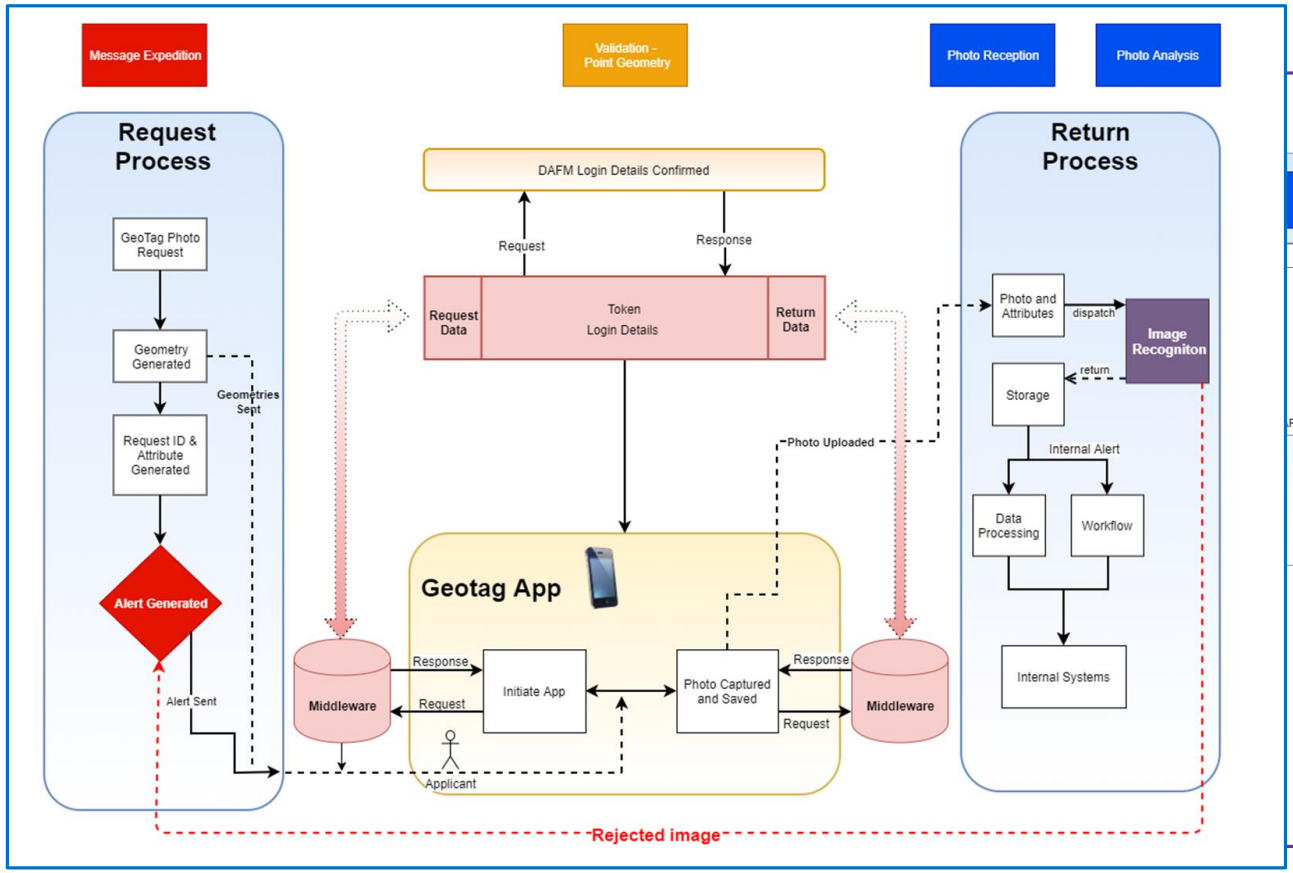
Object Recognition (research in progress)

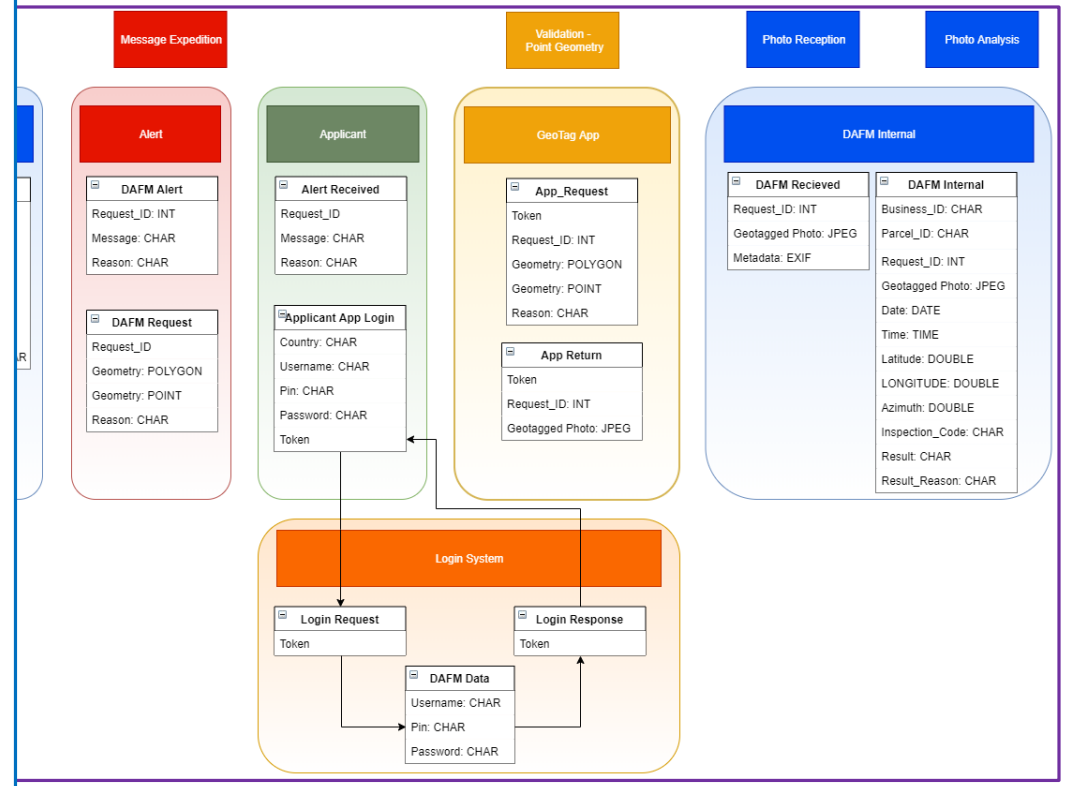
- Identify what is in an image
  - Using Google Vision API
  - Identify people / person , number plates etc.
  - Deny upload based on information
- Can be used in future for training AI models

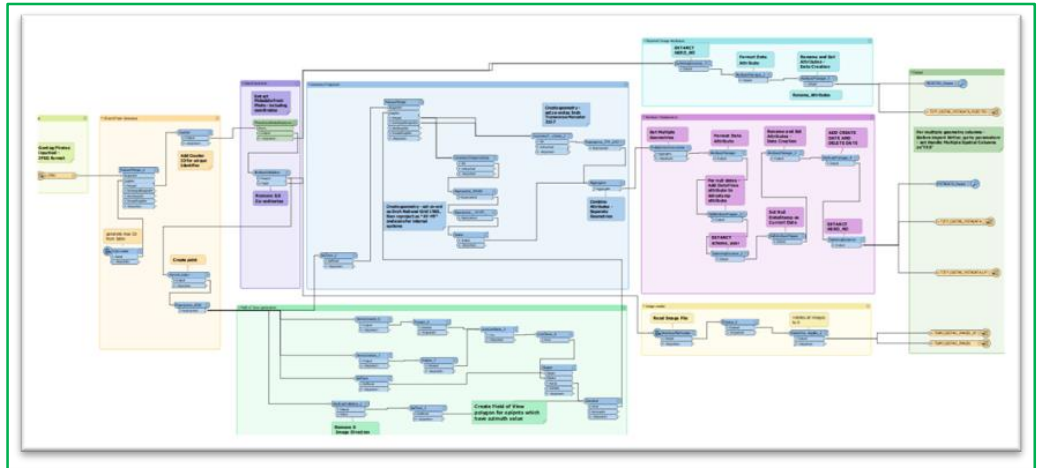
Available for testing

MEAN / MERN Technology Stack




Message Expedition
Validation - Point Geometry
Photo Reception
Photo Analysis
Request Process
GeoTag Photo Request
Geometry Generated
Geometries Sent
Request ID & Attribute Generated
Alert Generated
Alert Sent
DAFM Login Details Confirmed
Request
Response
Request Data
Token
Login Details
Return Data
Photo Uploaded
Geotag App
Middleware
Response
Request
Initiate App
Photo Captured and Saved
Response
Request
Middleware
Applicant
Return Process
Photo and Attributes
dispatch
Image Recogniton
return
Storage
Internal Alert
Data Processing
Workflow
Internal Systems
Rejected image


Message Expedition
Validation - Point Geometry
Photo Reception
Photo Analysis
Alert
DAFM Alert
Request_ID: INT
Message: CHAR
Reason: CHAR
DAFM Request
Request_ID
Geometry: POLYGON
Geometry: POINT
Reason: CHAR
Applicant
Alert Received
Request_ID
Message: CHAR
Reason: CHAR
Applicant App Login
Country: CHAR
Username: CHAR
Pin: CHAR
Password: CHAR
Token
GeoTag App
App_Request
Token
Request_ID: INT
Geometry: POLYGON
Geometry: POINT
Reason: CHAR
App Return
Token
Request_ID: INT
Geotagged Photo: JPEG
DAFM Internal
DAFM Recieved
Request_ID: INT
Geotagged Photo: JPEG
Metadata: EXIF
DAFM Internal
Business_ID: CHAR
Parcel_ID: CHAR
Request_ID: INT
Geotagged Photo: JPEG
Date: DATE
Time: TIME
Latitude: DOUBLE
LONGITUDE: DOUBLE
Azimuth: DOUBLE
Inspection_Code: CHAR
Result: CHAR
Result_Reason: CHAR
Login System
Login Request
Token
Login Response
Token
DAFM Data
Username: CHAR
Pin: CHAR
Password: CHAR



Next Steps…

- UC4a virtual workshops
  - NIVA partners (Mid May)
  - Macra na Feirme (Mid May)
  - Advisors and Farmers virtual workshop (Late May)
- UC4a focus group
  - Testing partners (Late May)
- Protype testing (August)

NIVA
NEW IACS VISION IN ACTION

THANK YOU!

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This project has received funding from the european union's horizon 2020 research and innovation programme under grant agreement no. 842009