‘Ceres’ Plant Health Database

P1: Discovery Research - Internal Users

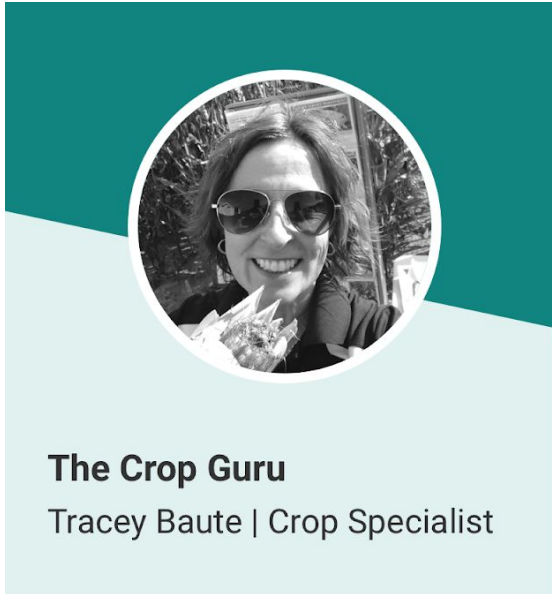
Code for Canada + OMAFRA

Background

Pest counts, locations, temperature, treatments—they're all examples of the crop protection data that OMAFRA Specialists use to generate insights and help growers make informative decisions. The data collected is unstandardised and scattered across lots of data sources and databases making it hard on specialists to deliver timely information to growers. Growers' work is very time sensitive; A week delay could cause irreparable crop damage or loss. In 2017, one pest caused roughly 80 million dollars' worth of crop loss.

Who are our users?

Our users are crop protection specialists who work with OMAFRA, like Tracey Baute. Tracey is an Entomologist who specialises in studying insects. She leads a pest trap network, where she works closely with growers to monitor pests like Western Bean Cutworm.



Approach

Crop protection specialists were asked questions via 1:1 interviews.

Research Objectives

- Understand stakeholders' current journey and jobs-to-be-done
- Define the data lifecycle
- Identify users' needs and pain points

Persona #1

The Crop Guru

Tracey Baute | Crop Specialist

Tracey is a walking Encyclopedia of knowledge on crop protection. She produces guides and resource material used by lots of growers and consultants. She is active on Twitter and uses it as a platform to update her followers.

Goal

To provide timely, and informative recommendations to growers, so they can better manage their pest issues and save their crops from any economic loss.

Jobs-to-Be-Done

- After setting up pest traps, I want to **collect standardised data** from the field in real-time to understand pest levels and spread
- After collecting pest related data, I want to **analyze the data** efficiently to identify immediate risks and long term trends
- After identifying pest risks, I want to **share threat alerts and treatments** instantly to help growers respond to threats and manage any risk

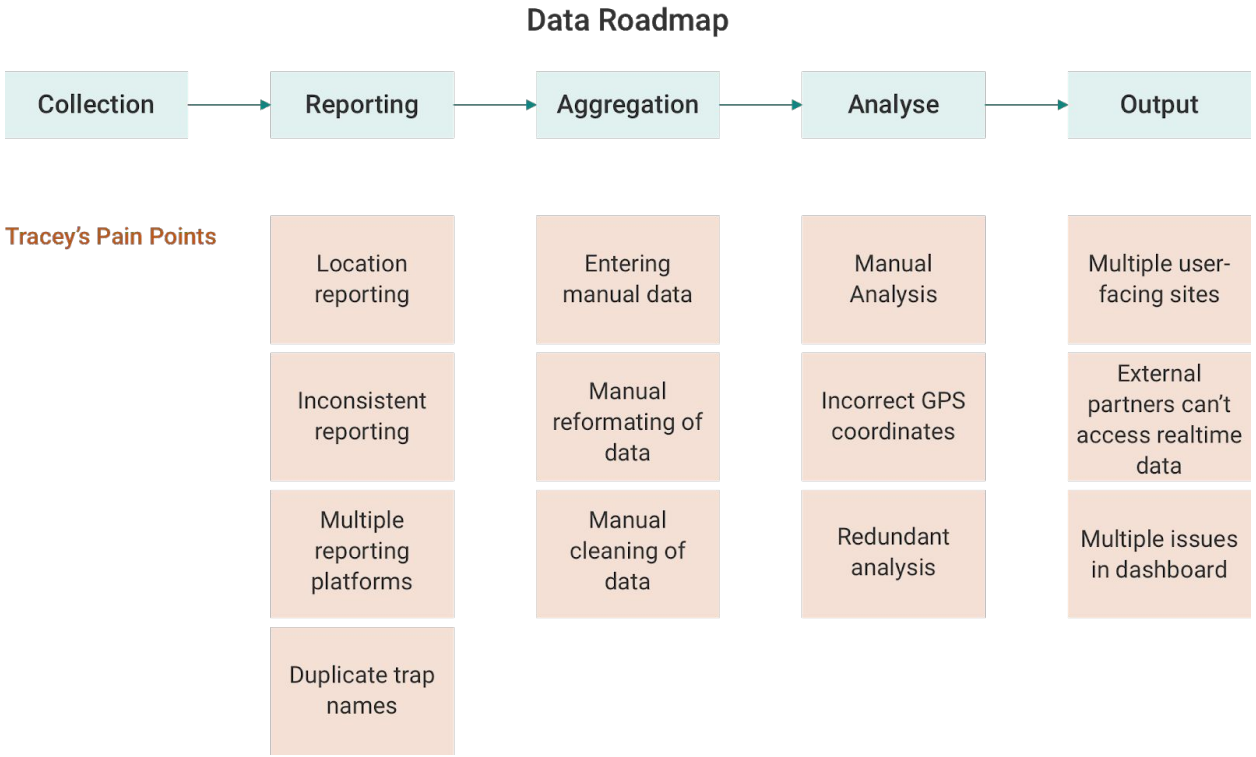
Pain Points

- Annoyed by the unstandardized scouting report formats
- Unhappy about digitizing reports, and cleaning data
- Unhappy about manual processes when collecting, reporting, and analyzing data
- Upset by not being able to access internal historical data making it difficult to analyze larger trends
- Dissatisfied that accessing external weather data is not automated

Tracey's current journey

The data roadmap defined from Tracey's interview has five phases. It starts with collecting the data and moves into each step, ending with a visual or a written output.

In one of our blog posts, we uncovered Tracey's journey in details. If you want to learn more, [go here.]



> The goal is to allow us to monitor pest populations and deliver timely information to growers to make the decision whether to spray or not. The more accurate and timely that is, the less risk of them making applications that aren't necessary or too late and cause economic loss.

- Tracey Baute

Persona #2

The Research Analyst

Kevin | Weed Management Specialist

Kevin conducts field trials with academic partners or growers to measure the efficacy and safety of various treatments/herbicides and techniques. He shares key insights in articles, a custom app, and at conferences. He has 20 years of herbicide testing experience.

Jobs-to-Be-Done

- When setting up weed management trials, I want to **collect data** in the field, standardize it, and save it in the Cloud to easily utilise the data.
- After collecting data from weed management trials, I want to **analyze data** efficiently to assess occurences of herbicide resistance in the community and generate treatment efficacy scores.
- After identifying herbicide efficacy data and recommendations, I want to **share** this information with stakeholders and growers to minimise the economic impact of weeds.

Behaviors

- Takes notes using pen and paper
- Reports field observations on his phone and emails them to himself
- Uses his camera phone for taking photos
- Shares treatment efficacy scores in a custom app available to growers

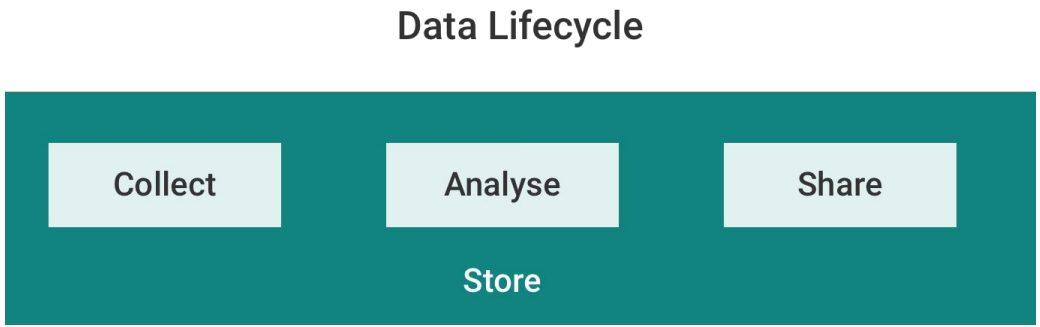
Pain Points

- Upset by not being able to access historical trail data and historical weather data
- Annoyed by the lack of sufficient tools that cause data to be scattered and difficult to utilize
- Annoyed by the inefficient manual work, such as digitizing analog notes, entering data, and aggregating reports and datasets
- Frustrated by the very time-consuming necessary process of cleaning and manipulating the data
- Confused sometimes by the difference between owner's address and farm address
- Unhappy about the impermanent data storage
- Annoyed by the how long it takes to open intensive programs such as GIS shape files

Data Lifecycle

After interviewing 11 Specialists, we learned that the data doesn't always move in one specific order as it was illustrated in the data roadmap for Tracey's journey. The arrows made the roadmap format limiting, so we created the data lifecycle diagram to better capture the specialists' process.

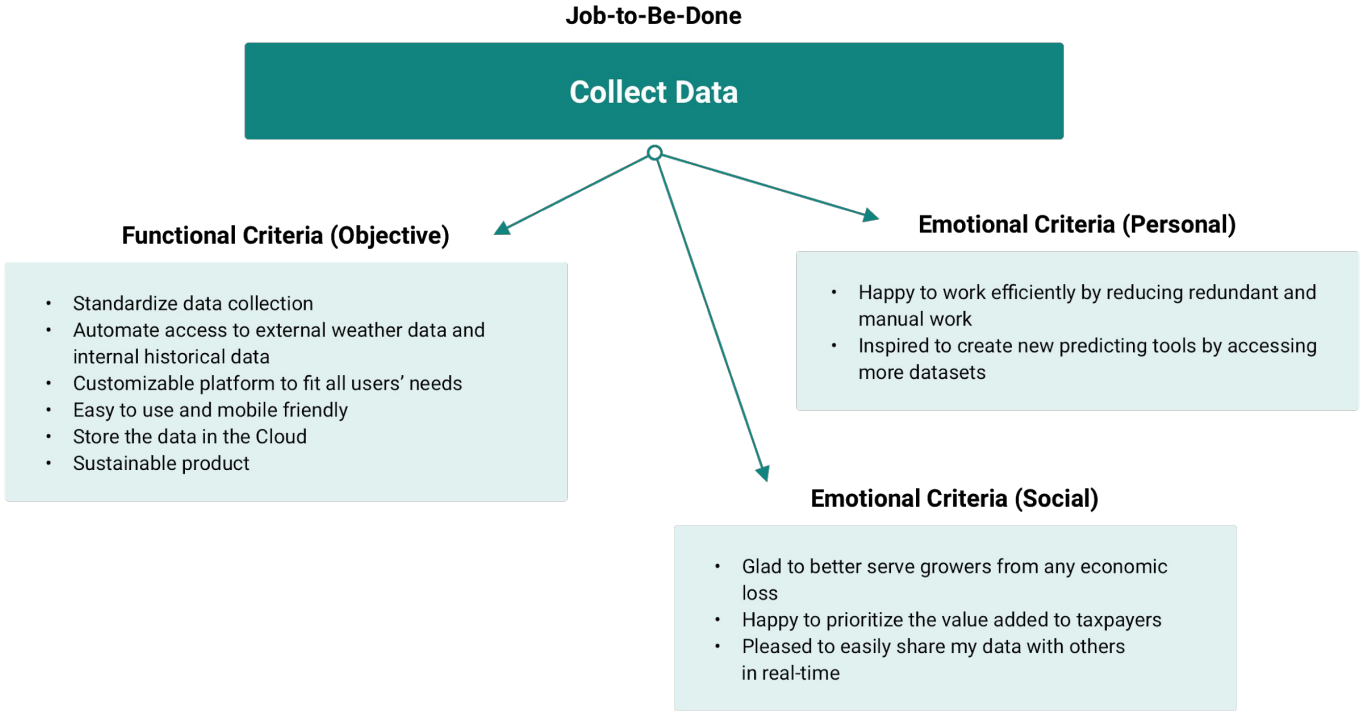
You can read more about how and why we revised our diagram in this document: Defining data: Roadmap vs Lifecycle.



Jobs-to-be-done (JTBD)

The data lifecycle identified also reveals the main 3 jobs-to-be-done that all specialists need to do, which is to collect data, analyse it, and share insights. Jobs-to-be-done is a framework that conveys the concept of users “hiring” products to help them do a certain job. Not well built personas might capture only who people are and what they do, but not why they do something. JTBD focuses on users’ needs and desired outcomes to eliminate any biases for the existing solutions. It explains the functional success criteria, which includes objectives and requirements for the task at hand. It also clarifies the emotional success criteria, which includes users’ feelings and perception from two dimensions: personal and social.

JTBD - Tracey

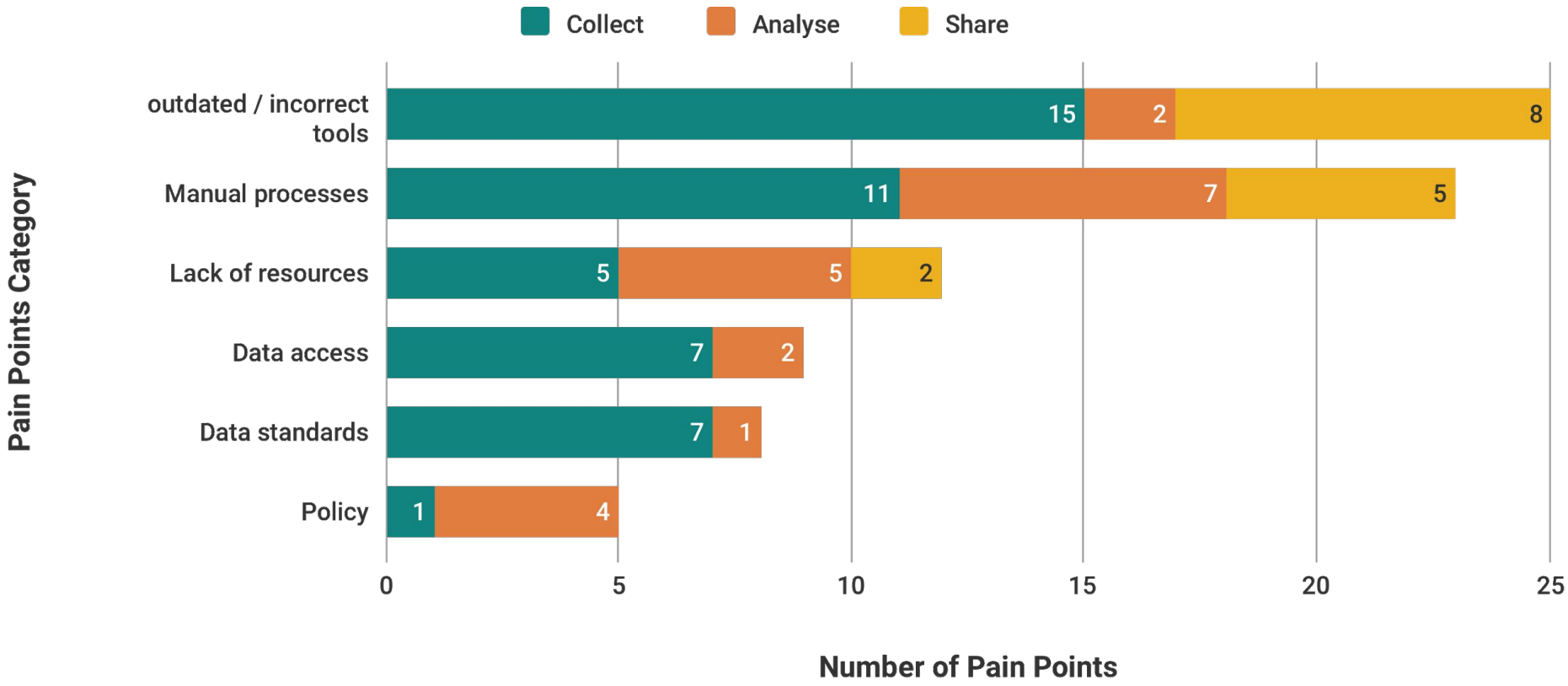

Job-to-Be-Done
Collect Data
Functional Criteria (Objective)
Standardize data collection
Automate access to external weather data and internal historical data
Customizable platform to fit all users' needs
Easy to use and mobile friendly
Store the data in the Cloud
Sustainable product
Emotional Criteria (Personal)
Happy to work efficiently by reducing redundant and manual work
Inspired to create new predicting tools by accessing more datasets
Emotional Criteria (Social)
Glad to better serve growers from any economic loss
Happy to prioritize the value added to taxpayers
Pleased to easily share my data with others in real-time

Pain Points

Later, we collected the pain points from our interviews and categorized them under 6 themes: data access, data standards, lack of resources, manual processes, and incorrect tools.

Based on our research, we believed the most significant issues occurred during the data collection phase. Reliance on manual processes and pen and paper tools means it can take specialists a long time to collect and report the data they need. Inconsistent data standards also hinder the process, and can reduce data quality, which makes it harder to use.

If you want to learn more about the specialists' pain points, check the Specialist interviews summary.


Collect
Analyse
Share
outdated / incorrect tools
Manual processes
Lack of resources
Data access
Data standards
Policy
15
2
8
11
7
5
5
5
2
7
2
7
1
1
4
0
5
10
15
20
25
Pain Points Category
Number of Pain Points

Problem

Crop protection specialists at OMAFRA may have slightly different user journeys, but they all share the same goal. They aim to share timely insights to help growers respond to crop threats and manage risk. On average, specialists spend 25% of their time collecting, processing and analysing data. It takes them **too long to generate insights and growers might not be able to act fast enough to save their crops.**