Improving

LANDUSE SOLUTIONS

a collaborative pilot study with local indigenous organisations

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Kenex

IT ALL STARTED HERE...

INDIGENOUS MAPPING WANANGA '17

Hamilton 14-16 May

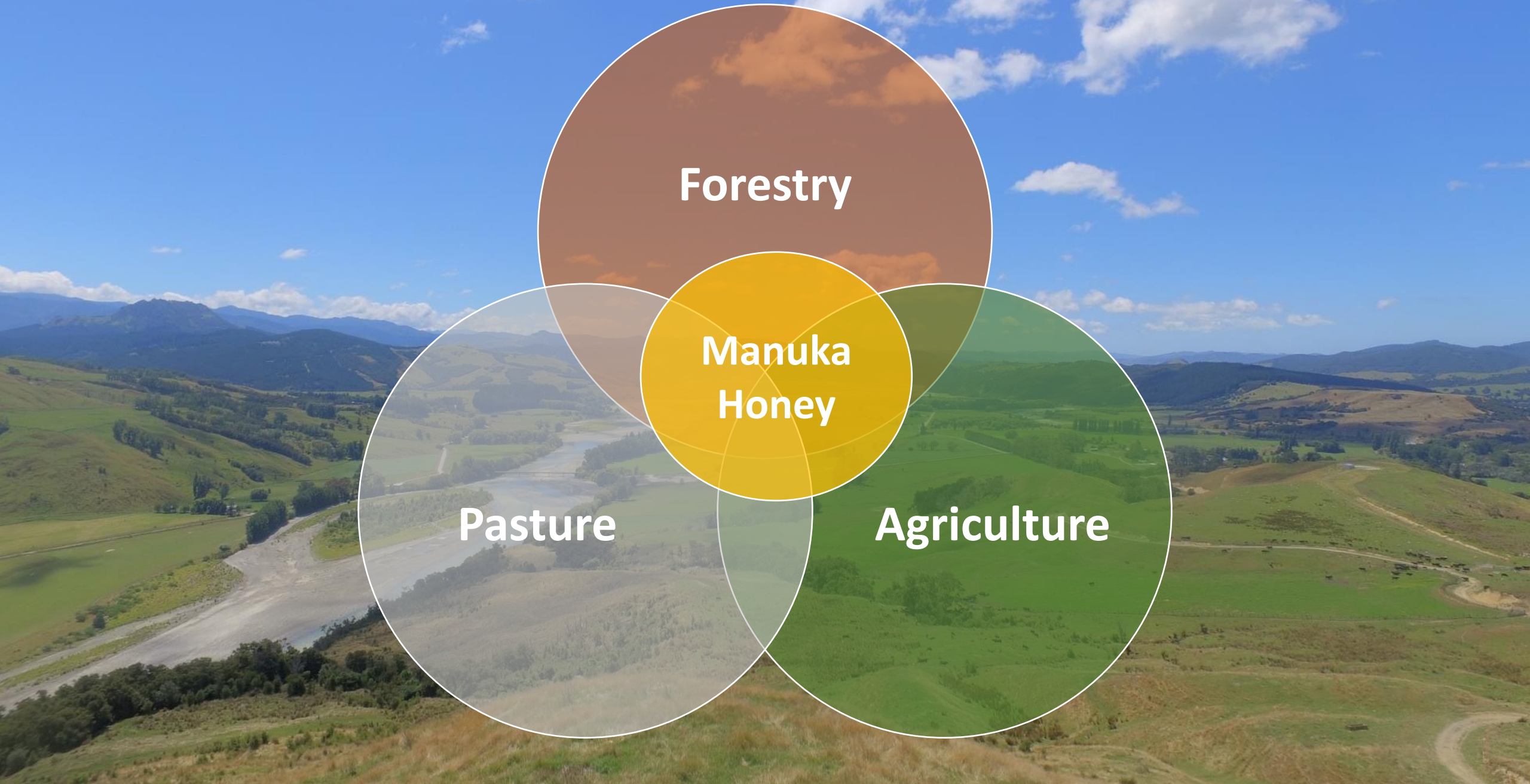
Why should I use GIS?

Can it help understand my land better?

How will it add value to my organisation?


I DRAW DATA ON PAPER MAPS
imgflip.com

What's the best possible land use for my block?



THE CHALLENGE:

Basic GIS skills

+

Basic GIS tools

How to keep it simple?

Parameters analysed

Terrain parameters

Current land cover

Land use capability

Degree of erosion

Parameters missing

Water availability

Water quality

Soil characteristics


FIRST STEP, FLYING A DRONE... THEN, CREATING THE GIS


1
2
3
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5
DEM
FIRST STEP, FLYING A DRONE... THEN, CREATING THE GIS

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1
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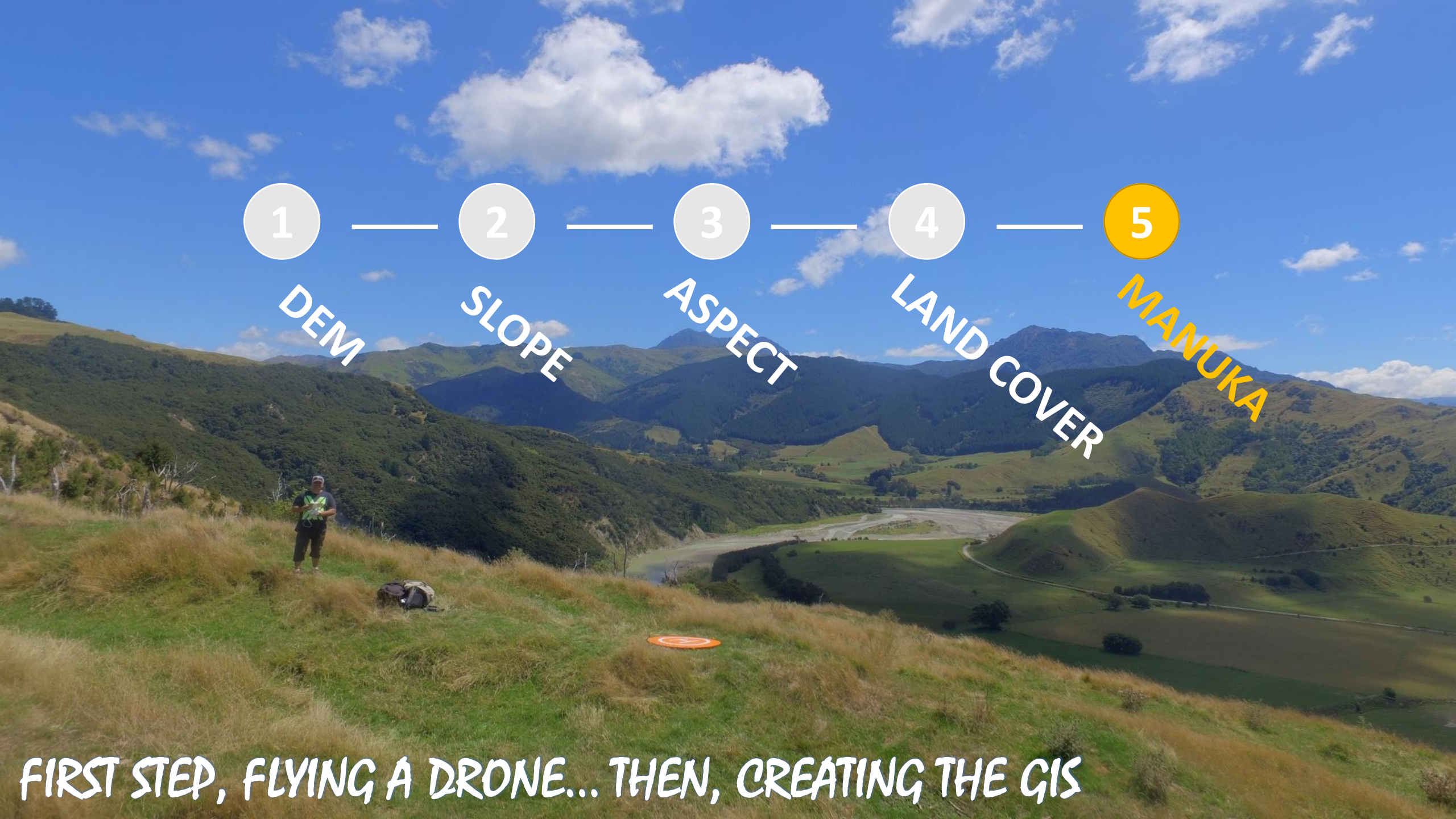
1
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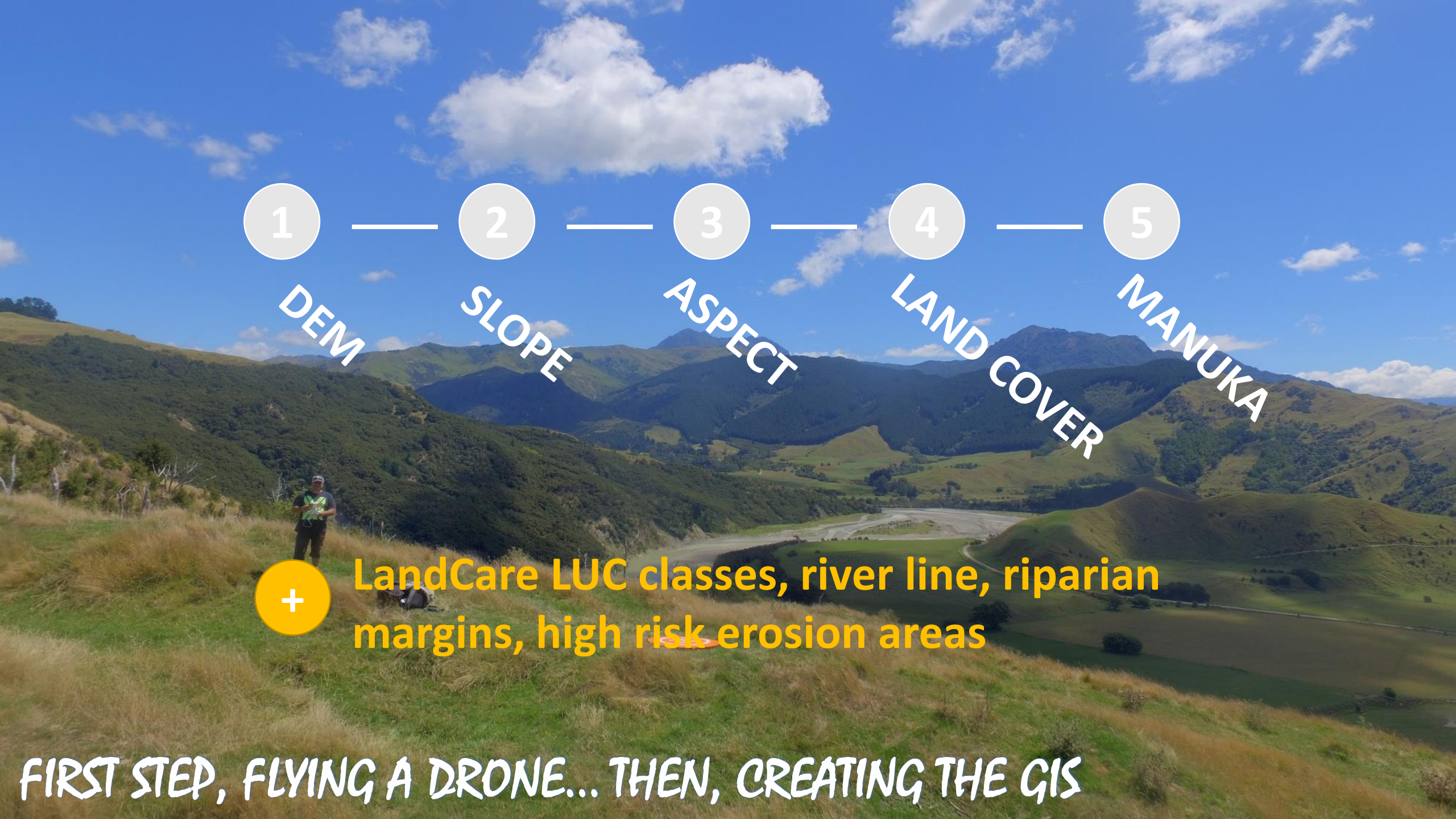
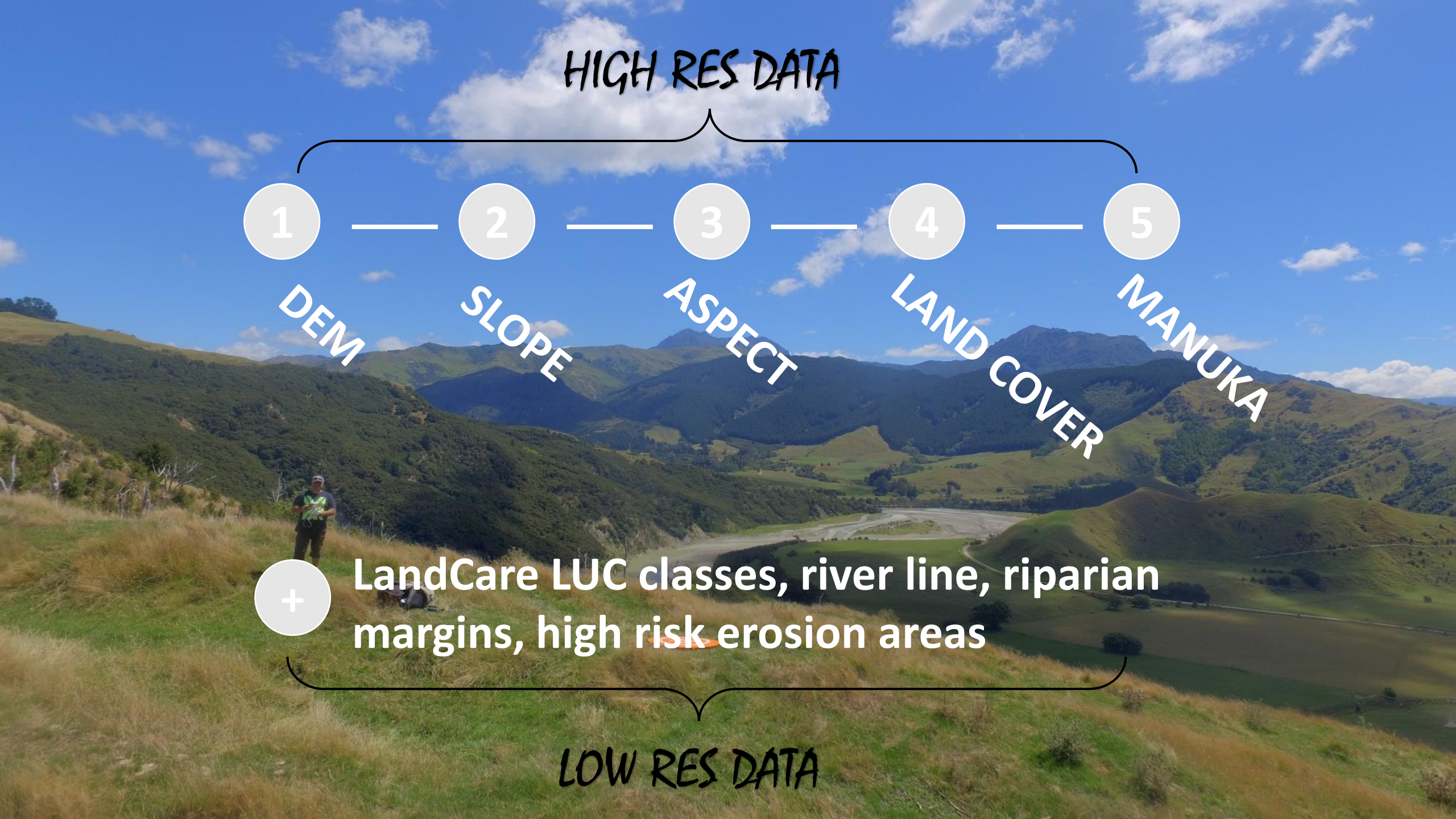
MANUKA
FIRST STEP, FLYING A DRONE... THEN, CREATING THE GIS



FIRST STEP, FLYING A DRONE... THEN, CREATING THE GIS


HIGH RES DATA
1
DEM
2
SLOPE
3
ASPECT
4
LAND COVER
5
MANUKA
+
LandCare LUC classes, river line, riparian margins, high risk erosion areas
LOW RES DATA

PUTTING ALL TOGETHER: Flat land Agriculture Model

Parameters

Slope < 10 degrees

Not South facing

Healthy and Dry Grassland

Low risk of erosion

Land capability class 6

Outside riparian margins

Water availability

Fuzzy Overlay

AND

Results

0.3 ha suitable for blueberry farming, forecasted profit: $34,000 NZD/year

4.7 ha suitable for flat land agriculture, forecasted profit: $9,000 NZD/year

Rolling Hills Agriculture Model

Parameters

Slope 10-20 degrees

Healthy and Dry Grassland

Low risk of erosion

Land capability class 6 & 7

Outside riparian margins

Fuzzy Overlay

AND

Results

9.1 ha suitable for rolling hills agriculture, forecasted profit: $5,000 NZD/year

Forestry Model

Parameters

Healthy and Dry Grassland

Outside riparian margins

Fuzzy Overlay **AND**

Results

29.5 ha suitable for forestry, forecasted profit: $20,000 NZD/year

Honey Model

Parameters

Slope < 10 degrees

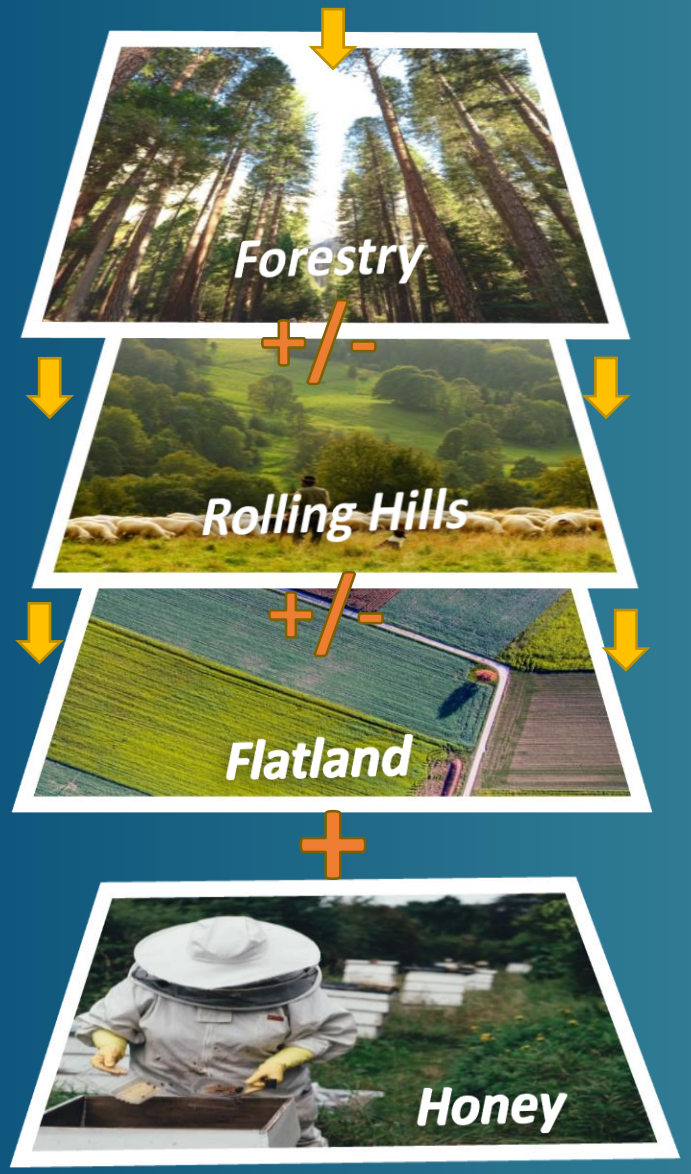
East facing (or flat)

Fuzzy Overlay **AND**

Results

1.6 ha suitable for installing beehives, 30 max, forecasted profit: $10,000 NZD/year

Final Land Capability Map



15.5 ha — $12K

9.1 ha — $8K — $6K

4.7 ha — $4K — $10K

0.3 ha — $250 — $600 — $45K

1.6 ha — 30 hives, 400 kg, $10k

WHAT WE LEARNED:

PROS

The modelling process is simple and flexible, easy to teach.

With it we can model for different land uses.

We used only ArcGIS tools (and DroneDeploy)

Landowners were happy of the increased knowledge of their land.

CONS

Data at block resolution is hard to find, limiting the model accuracy.

We love drones, but they are expensive and time consuming.

We still need extensions and apps to complete the model ($$)

Image interpretation can be complicated with basic GIS skills

1. BUILD YOUR GIS PLATFORM
2. CREATE DB & FIND MISSING DATA
3. GET FEEDBACK, DO IT BETTER & TAILOR TO YOUR NEEDS
4. LEARN THE TOOLS AND PRACTICE
5. CREATE NEW PROJECTS & DIY!

Thank you!

IMW 2018
Auckland
27-30 August

Questions & Feedback

Kenex