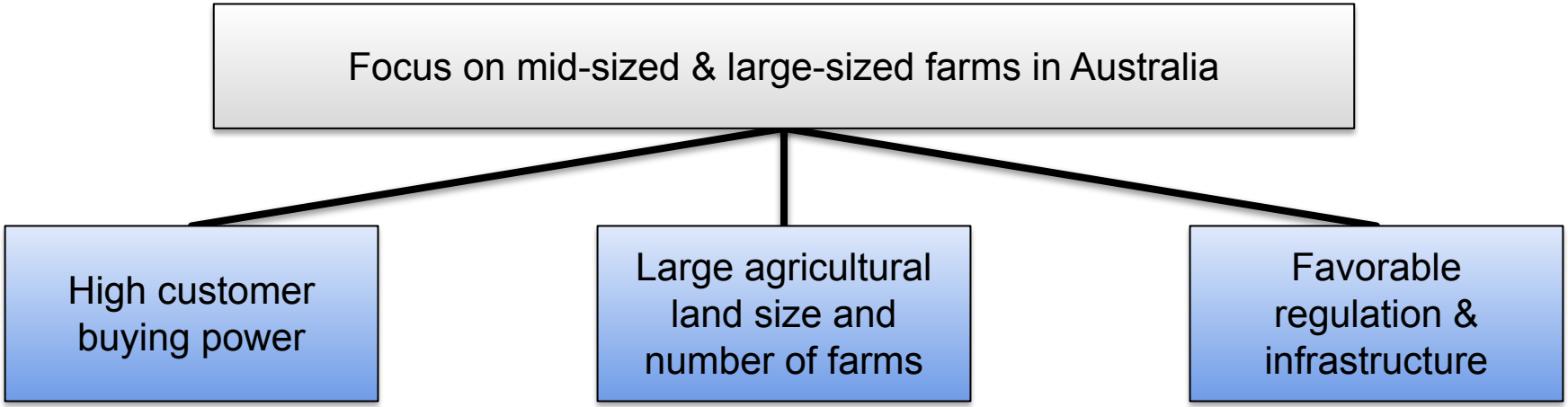
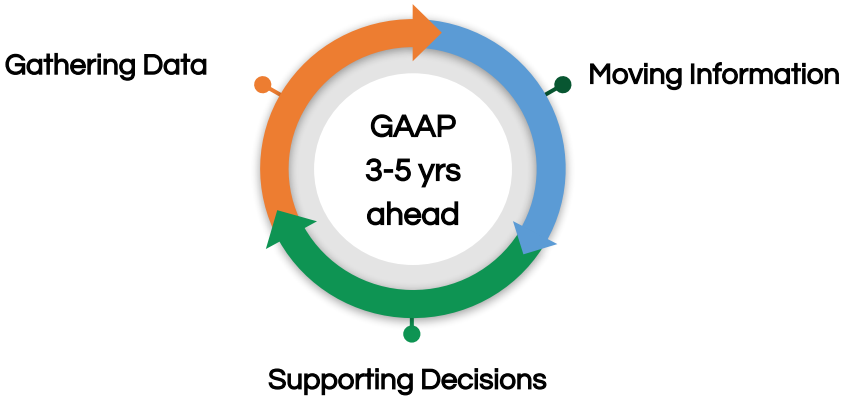
Precision Agriculture Marketing Analysis

Team 6: Yulun Ding, Anuj Patel, Min Yang, Ran He, Mengqi Li, Jamie Pan

Analysis concludes that Australia should be the target market



GAAP: Product Overview



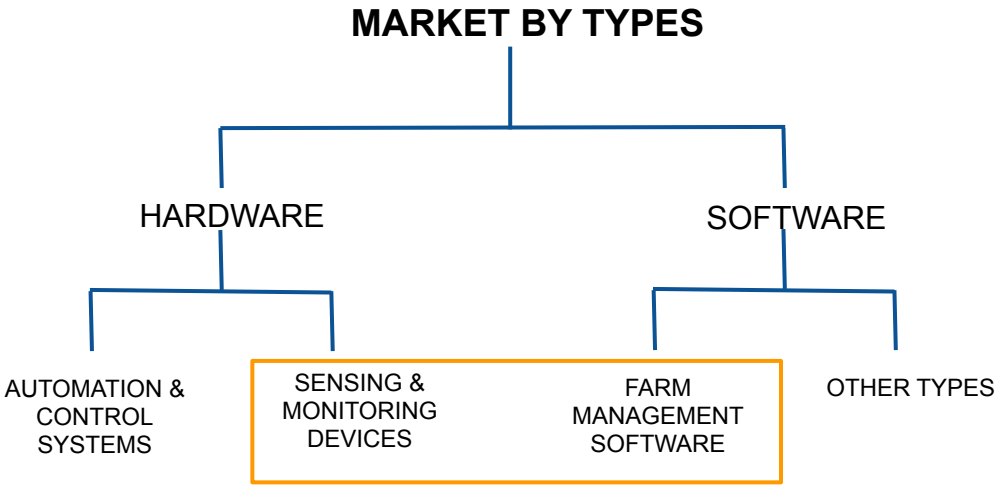
Features and capabilities:

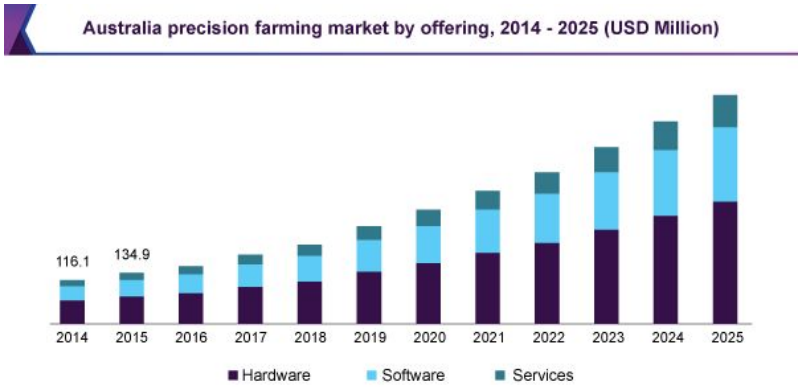
- Detect condition of plants and soil
- Immediately highlight problem or change
- Detect irrigation leaks
- Detect intrusion by animals or humans
- Plan maintenance/ repair task
- Fit almost all new flight platforms including inexpensive and light quad-copters

- Increase crop yields
- Reduce operating cost
- Better decision making

Resource: Gyrfalcon Agricultural Analytics Platform (a)

Australia has a mature precision farming market





13.38% CAGR to 2023

Major Competitors

THE YIELD TECHNOLOGY SOLUTIONS

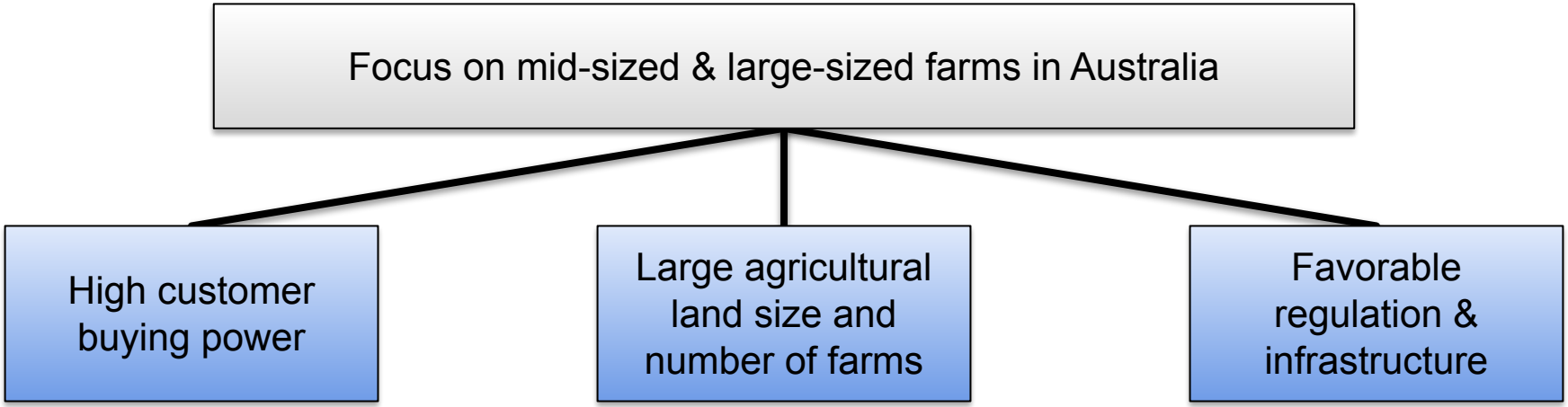
ovass CONNECT · MANAGE · ANALYSE

FarmLogs

Existing products with similar function

Source: Precision Farming/Agriculture Market Size, SHare & Trends Analysis Report By Offering (Hardware, Software, Services), By Application (Yield Monitoring, Field Mapping, Crop Scourint), And Segment Forecasts, 2018-2015)
KPMG strategic research: https://home.kpmg/au/en/home/insights/2016/09/powering-growth-realising-potential-agtech-australia.html

Analysis concludes that Australia should be the target market



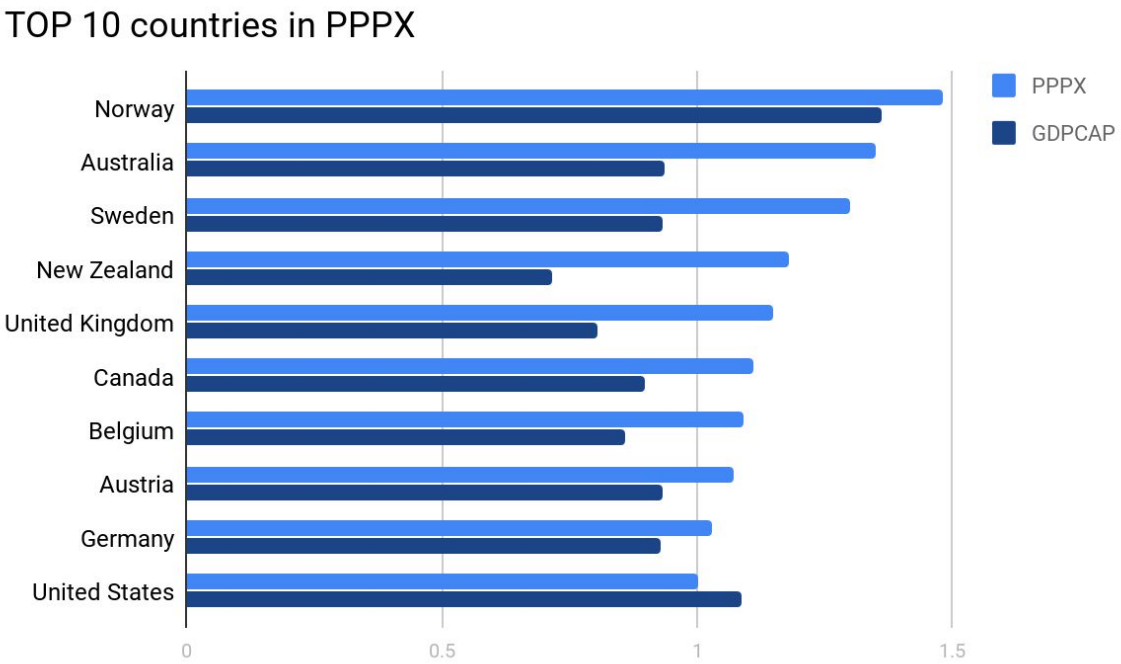
Potential customers have high buying power

1.35 times higher than U.S. in PPPX (Gyrfalcon Data Bank)

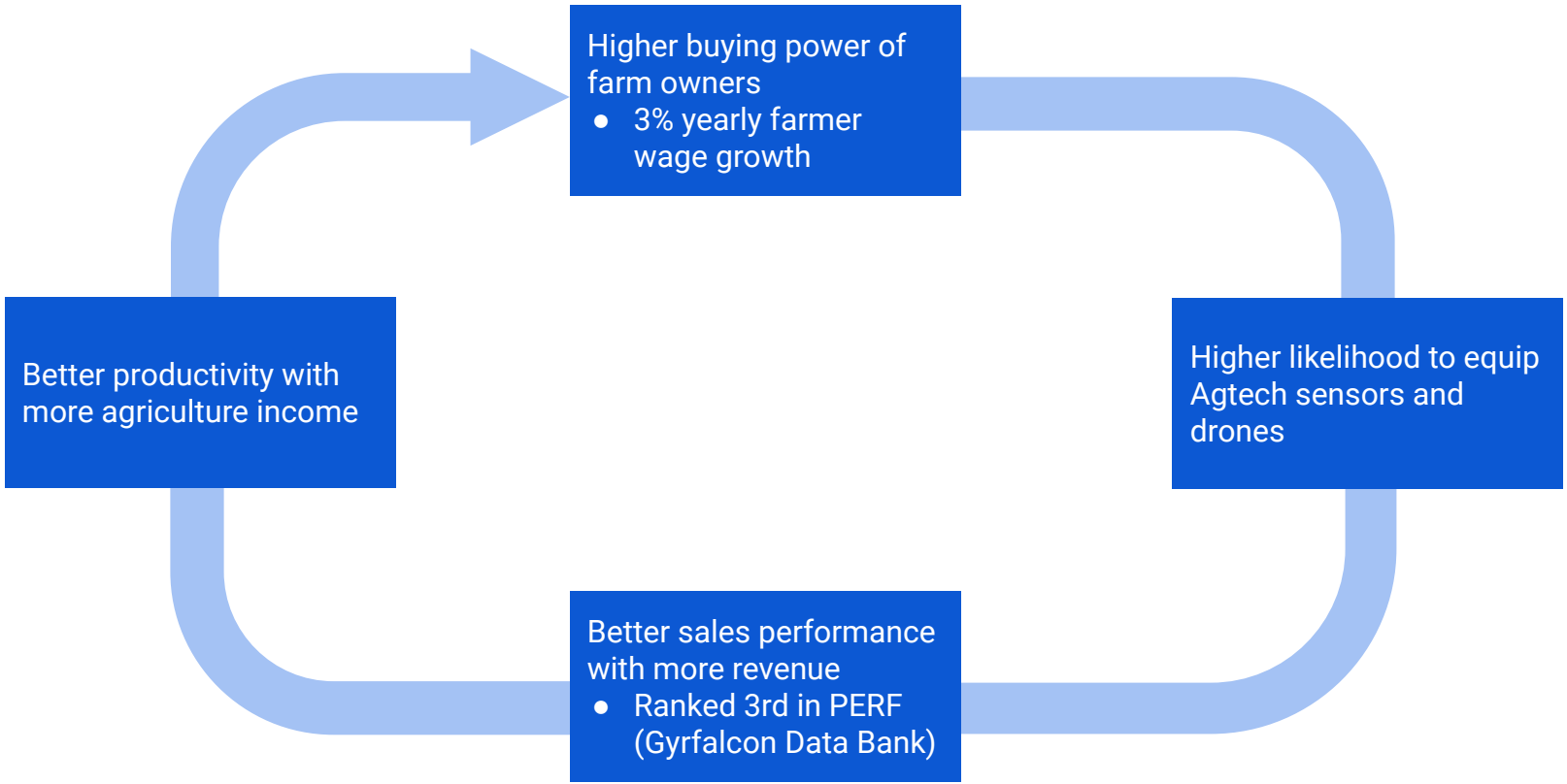
5th GDPCAP rank in global wide, $46,746 (Gyrfalcon Data Bank)

398k average cash income per cropping farm (agriculture.gov.au, 2017)

42% increase in technology-related spending by 2030 (Australian Bureau of Statistics)



The product will be beneficial to customers



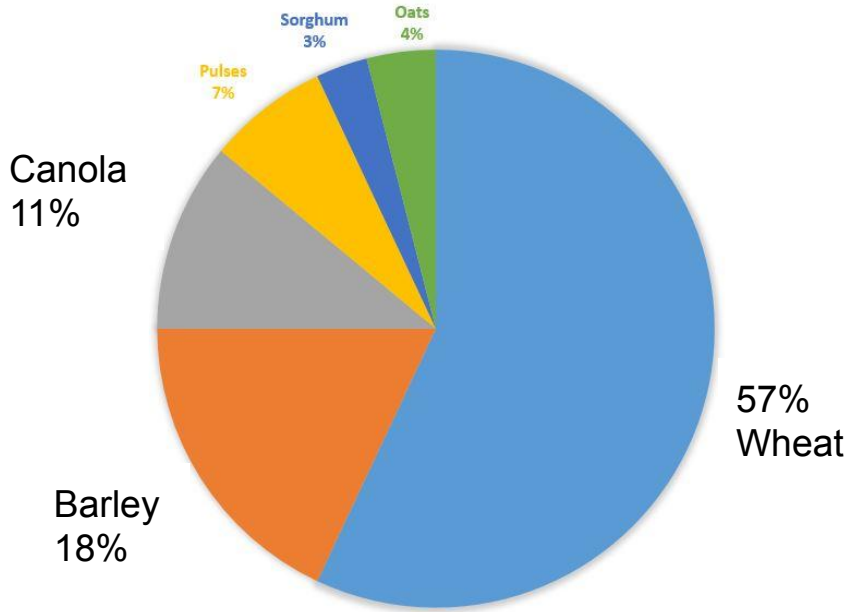
High number of farms are involved in growing crops

34% 2016: 29,131 farms are involved in growing crops
(Australian Bureau of Statistics, Agricultural Commodities 2015/2016)

15% of annual global wheat trade
(Aegic Australia Grain Production - a Snapshot 2016)

30% of annual global barley trade
(Aegic Australia Grain Production - a Snapshot 2016)

Crop Production Share:

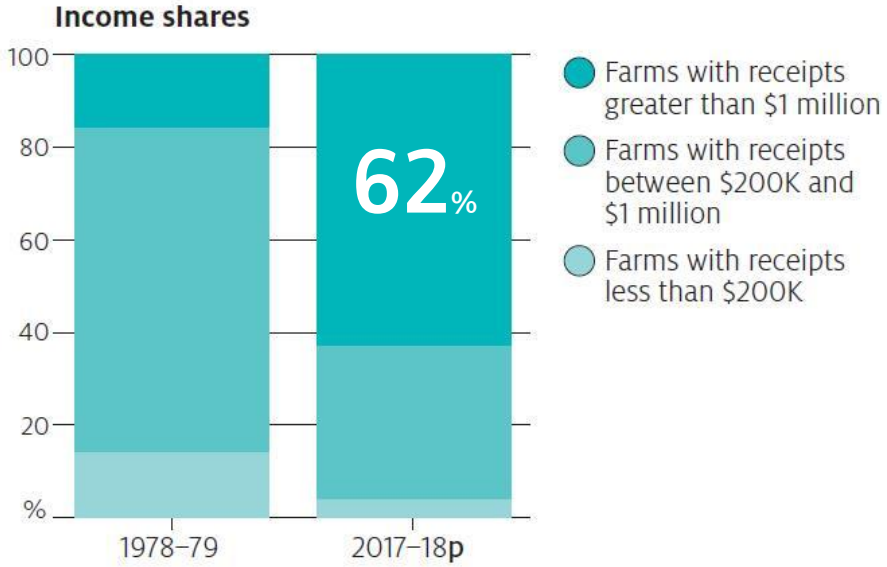


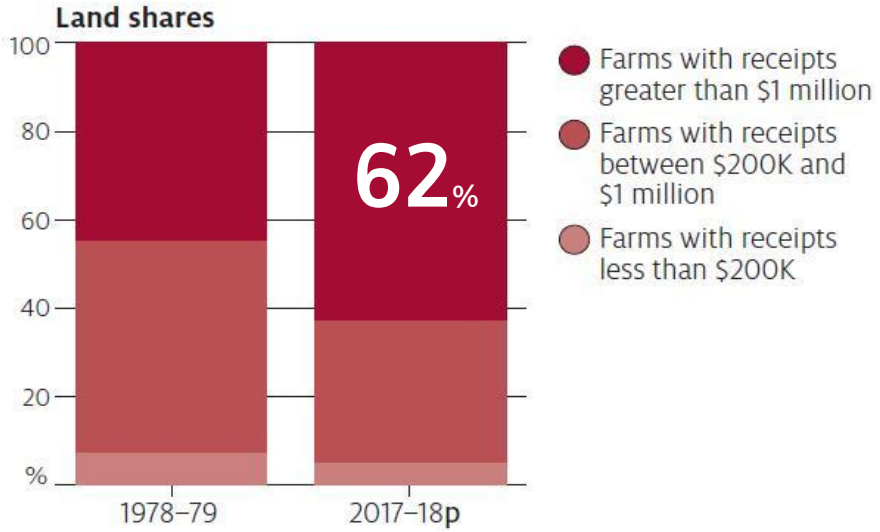
Source: ABARES Crop Report (2016/17 estimates)

High revenue farms have higher land share

Farms with revenue > $1m:

less than ¼ broadacre population own 62% of farmland & make 62% of broadacre income in 2017-18p.





Source: Snapshot of Australian Agriculture,, 2018, ABARES

Australian regulation & infrastructure are favorable

No **drone license required**
(Australia Civil Aviation Safety Authority 2018)

No **tariff by AUSFTA**
(AUSFTA, since 2005)

36/45 **score for IP environment**
(Global Innovation Policy Center, 2019)

17th **ranking in rule of law**
(WorldBank 2017)

18th **ranking in ease of doing business**
(WorldBank 2019)

100% **of population has electricity access**
(WorldBank 2018)

112.7 **mobile subscriptions per 100 people**
(WorldBank 2017)

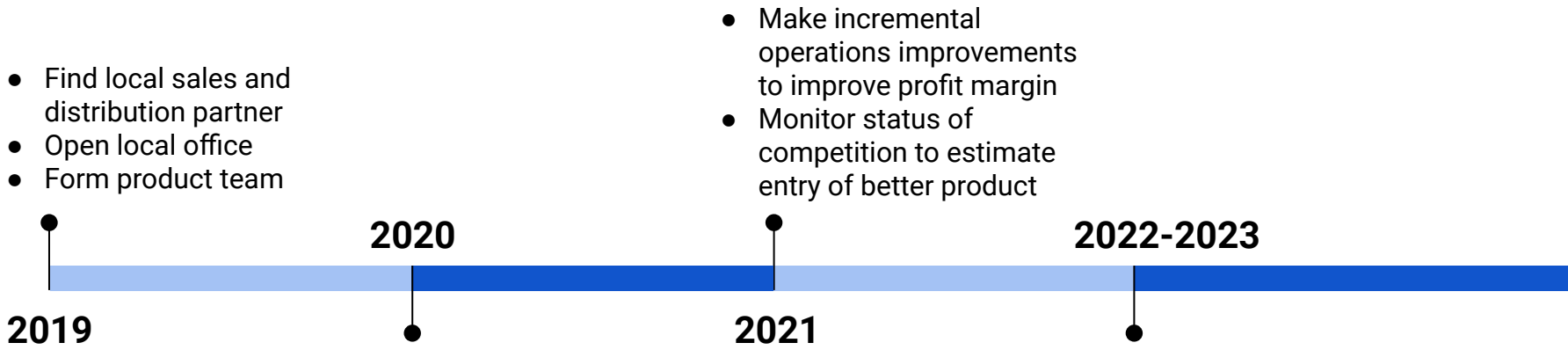
86.5% **of population has Internet access**
(WorldBank 2017)

1st year break-even analysis supports the profitability

Financial Category		Value
Revenue	Market Size	29131
	Market Capture	22%
	Price Point	$300
	TOTAL REVENUE	$1,922,646
Expense	Variable Costs	$640,882
	Overhead	$192,265
	Salaries	$288,397
	Shipping Costs	$72,099
	Marketing & Other	$96,132
	Partner Sales & Distribution	$192,265
	Fixed Costs	$222,000
	TOTAL EXPENSE	$1,704,040
Corporate Information	WACC	8%
	Tax Rate	35%

Summary	
Profit before Taxes	$218,606
Profit after Taxes	$142,094
Return	8.34%
Return minus WACC	0.34%

Profitability is achieved through a reasonable timeline



22% **Market Share**

$142k **Profit**

Thank you!
Questions?

Appendix

A

Table 1 Winter crop area, Australia, 2008–09 to 2018–19

Year	Unit	New South Wales	Victoria	Queensland	South Australia	Western Australia	Australia
2008–09	'000 ha	6,295	3,492	1,208	3,979	7,899	22,901
2009–10	'000 ha	6,106	3,488	1,173	3,783	8,271	22,844
2010–11	'000 ha	6,158	3,457	1,217	3,821	7,715	22,392
2011–12	'000 ha	5,969	3,411	1,205	3,838	8,252	22,693
2012–13	'000 ha	5,852	3,457	1,222	3,776	8,097	22,421
2013–14	'000 ha	5,314	3,283	1,105	3,448	8,249	21,420
2014–15	'000 ha	5,491	3,304	995	3,639	8,313	21,760
2015–16	'000 ha	5,375	2,915	1,049	3,152	7,771	20,283
2016–17	'000 ha	6,062	3,231	1,375	3,904	8,531	23,123
2017–18 **s**	'000 ha	5,496	3,333	1,309	3,505	8,441	22,101
2018–19 **f**	'000 ha	4,798	3,378	1,099	3,588	8,262	21,148
% change 2017–18 to 2018–19		–13	1	–16	2	–2	–4

f ABARES forecast. **s** ABARES estimate.

Notes: Includes barley, canola, chickpeas, faba beans, field peas, lentils, linseed, lupins, oats, safflower, triticale and wheat. Due to a change in scope by the ABS of its agricultural data collections, crop production is shown for establishments with an estimated value of agricultural operations (EVAO) of $5,000 or more until 2014–15, and an EVAO of $40,000 or more from 2015–16.

Table 2 Winter crop production, Australia, 2008–09 to 2018–19

Year	Unit	New South Wales	Victoria	Queensland	South Australia	Western Australia	Australia
2008–09	kt	9,438	3,887	2,326	4,863	13,785	34,378
2009–10	kt	7,787	5,889	1,617	7,035	12,943	35,344
2010–11	kt	14,784	7,625	1,821	9,316	8,044	41,672
2011–12	kt	11,952	7,352	2,329	7,371	16,600	45,670
2012–13	kt	11,123	6,886	2,156	6,470	11,243	37,934
2013–14	kt	9,773	6,773	1,516	7,221	16,510	41,878
2014–15	kt	10,445	5,117	1,464	7,439	14,662	39,197
2015–16	kt	11,624	3,568	2,104	6,105	14,206	37,687
2016–17	kt	15,510	9,513	3,159	10,661	17,737	56,674
2017–18 **s**	kt	7,181	7,634	1,390	6,945	14,619	37,824
2018–19 **f**	kt	8,277	6,146	1,609	7,226	14,326	37,676
% change 2017–18 to 2018–19		15	–19	16	4	–2	–0

f ABARES forecast. **s** ABARES estimate.

Notes: Includes barley, canola, chickpeas, faba beans, field peas, lentils, linseed, lupins, oats, safflower, triticale and wheat. Due to a change in scope by the ABS of its agricultural data collections, crop production is shown for establishments with an estimated value of agricultural operations (EVAO) of $5,000 or more until 2014–15, and an EVAO of $40,000 or more from 2015–16.

Table 3 Summer crop area and production, Australia, 2007–08 to 2017–18

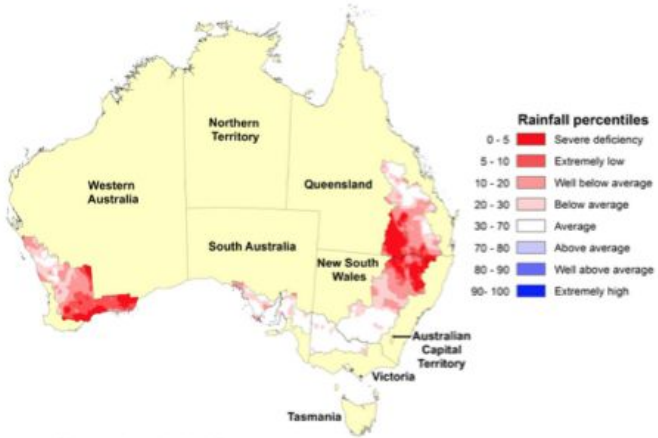
Year	New South Wales		Queensland		Australia	
	'000 ha	kt	'000 ha	kt	'000 ha	kt
2007–08	398	1,668	791	2,877	1,199	4,567
2008–09	402	1,430	746	2,350	1,156	3,794
2009–10	381	1,405	514	1,342	903	2,764
2010–11	713	2,514	790	1,901	1,514	4,446
2011–12	757	3,064	783	2,379	1,558	5,494
2012–13	711	3,205	686	2,250	1,412	5,506
2013–14	568	2,317	559	1,469	1,139	3,847
2014–15	435	2,044	696	2,134	1,149	4,262
2015–16	412	1,656	624	1,821	1,054	3,563
2016–17	662	2,286	566	1,280	1,247	3,667
2017–18 **s**	614	2,324	711	1,814	1,334	4,158
% change 2016–17 to 2017–18	–7	2	26	42	7	13

s ABARES estimate.

Note: State production includes cottonseed, grain sorghum, corn (maize), mung beans, rice, peanuts, soybeans and sunflowers. Total for Australia also includes navy beans, and small areas and volumes of summer crops in other states. Due to a change in scope by the ABS of its agricultural data collections, crop production is shown for establishments with an estimated value of agricultural operations (EVAO) of $5,000 or more until 2014–15, and an EVAO of $40,000 or more from 2015–16.

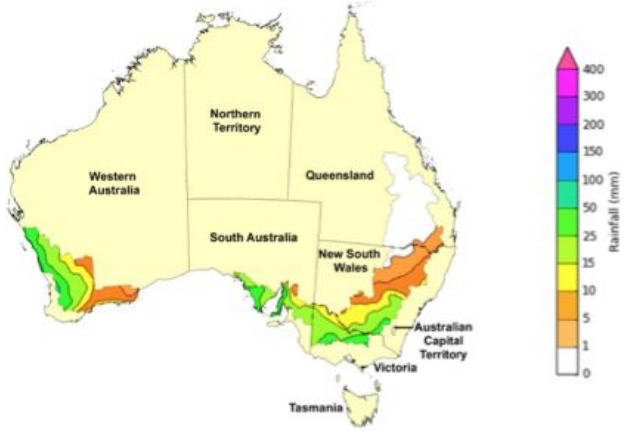
B

Map 2 Australian rainfall percentiles, 1 to 31 May 2018



Note: Rainfall percentiles are displayed for cropping regions only.
Source: Bureau of Meteorology

Map 3 Australian forecast rainfall totals, 5 to 12 June 2018



Note: Forecast rainfall totals are displayed for cropping regions only.
Source: Bureau of Meteorology

C

- no extensive training required
- point-and-click flight planning
- anytime- anywhere operation
- controllable via any PC or tablet or even an iPhone
- Inexpensive replacement parts
- good tech support

- patented algorithms
- instant recommendation
- large data capacity
- high-speed communication

picture:https://www.amazon.com/DJI-Phantom-V2-0-Version-Quadcopter/dp/B07DLHCLJS/ref=asc_df_B07DLHCLJS/?tag=hyprod-20&linkCode=df0&hvadid=309813568978&hvpos=1o3&hvnetw=g&hvrand=11960106122425587932&hvpone=&hvptwo=&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=9073469&hvtargid=aud-643330155750:pla-633826592797&psc=1

D

ovass

FOUNDER

David Newman and Ravi Nichani

DESCRIPTION

Software enabled by sensors that managers data assets to provide actionable insights for farmers.

STAGE

Ovass are looking for funding partners. Currently in early stages, with the business model still being refined. Pilot sites are being identified.

CHALLENGE

Identifying the core problem to be solved and understanding that Ovass cannot be all things to all people.

ADVICE TO OTHERS

"Make it real for the farmer, build trust, demonstrate value".

THE YIELD TECHNOLOGY SOLUTIONS

FOUNDER

Ros Harvey

DESCRIPTION

Internet of Things (IoT) technology combined with wireless sensor network and localised data to improve yields and profitability.

STAGE

Bosch is a key strategic investor. The Yield also received a substantial Accelerating Commercialisation grant from the Federal Government.

CHALLENGE

Managing the data in a way that allows the right data to be connected to the right problems.

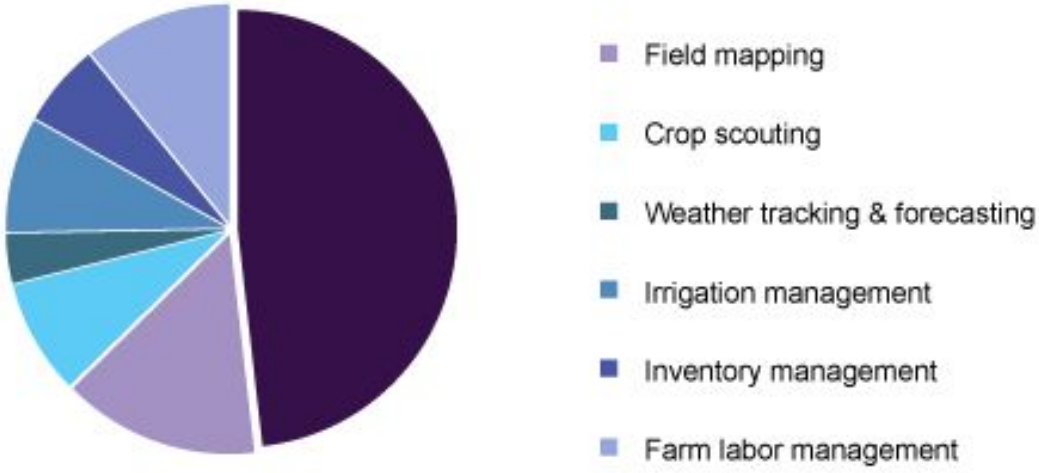
ADVICE TO OTHERS

"It is critical to first consider the needs and wants of the farmer."

KPMG strategic research: https://home.kpmg/au/en/home/insights/2016/09/powering-growth-realising-potential-agtech-australia.html

E

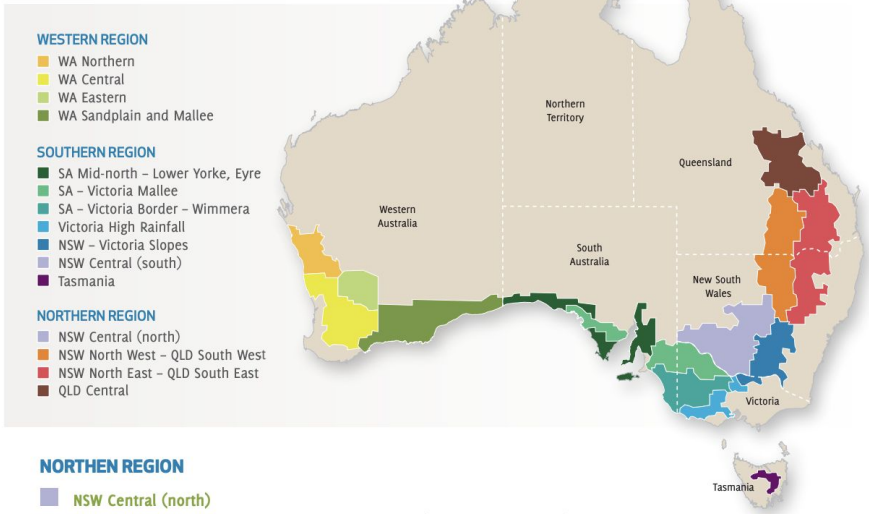
Precision farming market share, by application, 2016 (%)



Our product functionality covers more than 75% of the current market share

F

Australian agroecological zones



WESTERN REGION

WA Northern
Winter — Wheat, barley, oats, triticale, lupins, field peas, canola, faba beans, chickpeas

WA Central
Winter — Wheat, barley, oats, triticale, cereal rye, lupins, field peas, canola, faba beans, chickpeas

WA Eastern
Winter — Wheat, barley, oats, triticale, lupins, field peas, canola, faba beans, chickpeas

WA Sandplain and Mallee
Winter — Wheat, barley, oats, triticale, lupins, field peas, canola, faba beans, chickpeas

SOUTHERN REGION

SA Mid-north – Lower Yorke, Eyre
Winter — Wheat, barley, oats, triticale, lupins, field peas, canola, chickpeas, faba beans, vetch, safflower

SA – Victoria Mallee
Winter — Wheat, barley, oats, triticale, cereal rye, lupins, vetch, canola, field peas, chickpeas, faba beans, safflower

SA – Victoria Border – Wimmera
Winter — Wheat, barley, oats, triticale, lupins, field peas, canola, chickpeas, faba beans, vetch, lentils, safflower

Victoria High Rainfall
Winter — Wheat, barley, oats, triticale, lupins, field peas, canola

NSW – Victoria Slopes
Winter — Wheat, barley, oats, triticale, lupins, field peas, canola

NSW Central (south)
Winter — Wheat, barley, oats, chickpeas, triticale, faba beans, lupins, field peas, canola, safflower

Tasmania
Winter — Wheat, barley, oats, triticale, lupins, field peas, canola

NORTHEN REGION

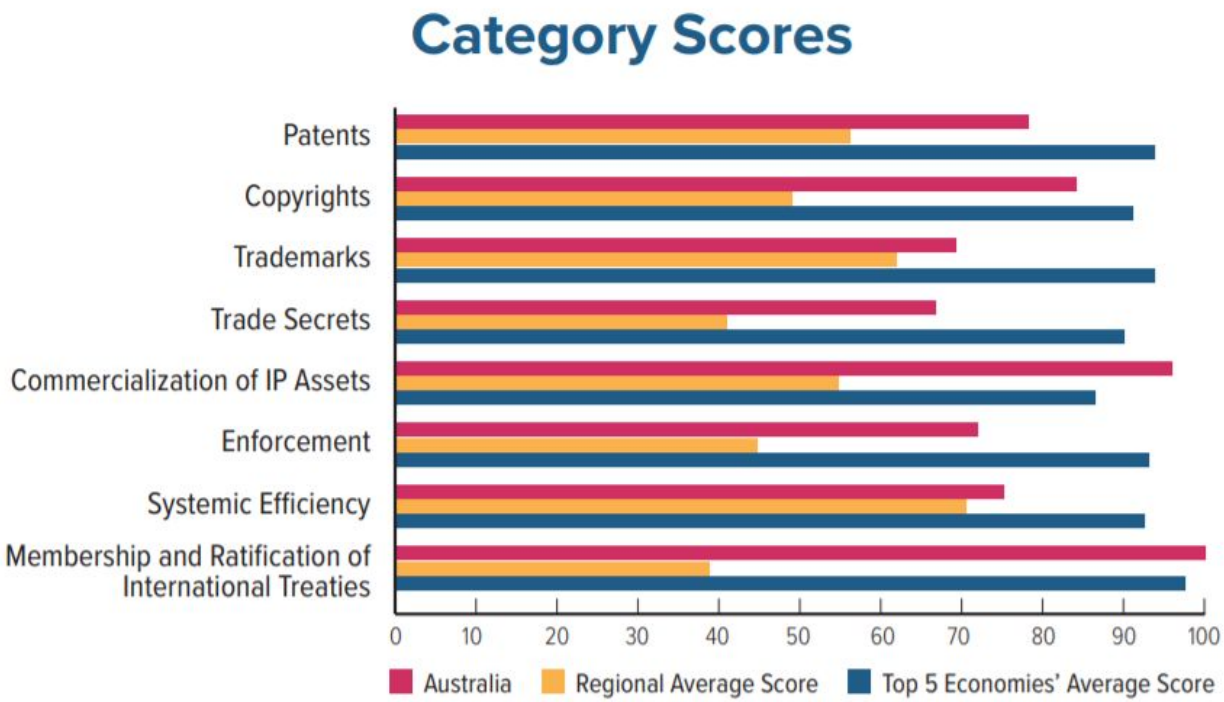
NSW Central (north)
Winter — Wheat, barley, oats, chickpeas, triticale, faba beans, lupins, field peas, canola, safflower
Summer — Sorghum, sunflowers, maize, mungbeans, soybeans, cotton

NSW North West – Qld South West
Winter — Wheat, barley, oats, chickpeas, triticale, faba beans
Summer — Sorghum, sunflowers, maize, mungbeans, soybeans, cotton

NSW North East – Qld South East
Winter — Wheat, barley, oats, chickpeas, triticale, faba beans, millet/panicum, safflower, linseed
Summer — Sorghum, sunflowers, maize, mungbeans, soybeans, peanuts, cotton

Qld Central
Winter — Wheat, barley, oats, chickpeas
Summer — Sorghum, sunflowers, maize, mungbeans, soybeans, cotton

G



Source: US Chamber International IP Index https://www.theglobalipcenter.com/ipindex2019/

H

Ease of Doing Business Score on Doing Business topics - Australia

Source: WorldBank Doing Business Report 2019

The Four Universal Principles

The rule of law is a framework of laws and institutions that embodies four universal principles:

1. Accountability
The government as well as private actors are accountable under the law.

2. Just Laws
The laws are clear, publicized, stable, and just; are applied evenly; and protect fundamental rights, including the security of persons, contract and property rights, and certain core human rights.

3. Open Government
The processes by which the laws are enacted, administered, and enforced are accessible, fair, and efficient.

4. Accessible & Impartial Dispute Resolution
Justice is delivered timely by competent, ethical, and independent representatives and neutrals who are accessible, have adequate resources, and reflect the makeup of the communities they serve.

Source: World Justice Project. https://worldjusticeproject.org/about-us/overview/what-rule-law

Financial Category		Value	Additional Information
Revenue	Market Size	29131	[3]
	Market Capture	22%	(assumption)
	Price Point	$300	(assumption)
	TOTAL REVENUE	$1,922,646	
Expense	Variable Costs	$640,882	$100 per unit (given)
	Overhead	$192,265	10% of total revenue (given)
	Salaries	$288,397	15% of total revenue (given)
	Shipping Costs	$72,099	$11.25 per unit assuming FCL 40'HC container, 8 cubic ft per unit, shipping from Washington, DC (USWAS) to Melbourne (AUMEL) [2]
	Marketing & Other	$96,132	5% of total revenue (assumption)
	Partner Sales & Distribution	$192,265	10% of total revenue (given)
	Fixed Costs	$222,000	$46.25 p/ sqm (average office rental in Melbourne) [1] and assuming 400 sqm office space rented for 1 year (12 months)
	TOTAL EXPENSE	$1,704,040	
Corporate Information	WACC	8%	(given)
	Tax Rate	35%	(given)

Summary	
Profit before Taxes	$218,606
Profit after Taxes	$142,094
Return	8.34%
Return minus WACC	0.34%

Sources:

[1] Office Space Price: Australia real estate report - 2019. (2019). (). London: Fitch Solutions Group Limited. Retrieved from ABI/INFORM Collection Retrieved from http://proxygw.wrlc.org/login?url=https://search-proquest-com.proxygw.wrlc.org/docview/2138289527?accountid=11243

[2] Freight Cost Estimator (FCL): https://www.freightos.com/freight-resources/estimate-shipping-cost-international-shipping-cost/

[3] Australian Bureau of Statistics, Agricultural Commodities 2015/2016: http://www.abs.gov.au/ausstats/abs@.nsf/mf/7121.0