

**Supplementary Material – SM2 – List of 17 AI-powered solutions discovered then evaluated during the AI for VFMA design process**

	AI tool		
	Type	Description	Data created
1	AI microscope	Ability to detect pest	Images and classification of pest types earlier than if done with the human eye only
2	AI microscope	Ability to detect nutrient deficiency	Images and classification of nutrient deficiency earlier than if done with the human eye only
3	Refractometer application	Ability to obtain a BRIX rating for vegetables and fruits	BRIX number with a value of 1 to x. Depending on the crop type, the number will classify the vegetables and fruits to a Low, Medium or High level of nutrient density.
4	Spectrometer + AI image recognition (Possible with DigitAG company, AI microscope, Machine Learning expert)	Could test the ability to link spectrometer reading to visual features to make the use of a simple mobile phone as a possible assessment tool both for producers and consumers.	Images and classification of vegetables and fruits along a rating scale based on BRIX equivalent
5	Digital Agriculture Services Platform	Climate change risks assessment	Property-customised report on climate risks including flood, fire, drought, etc.
6	Digital Agriculture Services Platform	Elevation, rainfall, frost data average	Property-customised report on the property base information updated every 17 days
7	DigitAG company	Predictive analytics and insights for vineyards	Pruning analysis and measurements, growth and predictive growth analysis, soil analysis
8	DigitAG company	Predictive analytics and insights for other crops - TBD	Possibility to identify berry ripeness with image classification. Also count of apples for thinning.

9	AI microscope	Skin pattern detection for ripeness and other quality features - TBD	Possibility to develop a ripeness index for fruit and vegetables based on image classification
10	Spectrometer for cheese	Fat protein and fat content detection for consistency of cheese production using a device	Ability to measure as part of the processing to act early and ensure consistency of cheese quality
11	Machine learning expert	Social Network Analysis and Machine Learning as a definition of data types and relationships between different network nodes	Flow of data identified for data gathering and flow of quality across multiple operators
12	Machine learning expert	Sustainability star rating of produce online based on sustainability credentials and certifications. Framework developed around food	Definition of data points required for scoring of sustainable practices or sustainable produce
13	Machine learning expert	Sustainable farming supply chain. Example with coffee trade other projects where the aim is to improve the life of the farmers. Ensure the price the consumer pays go to the primary producer. Answer the question, as a consumer how can I verify the produce is 100% produced by sustainable practices.	Tracking and tracing of supply chain practices and revenue distribution.
14	Victorian inventor	Two spectrometer-based readers for assessment of nutrient density and comparison to good value price for money	Score for vegetables and fruit. (a similar technology exists which gives the following details of what data is created: "This captures a large set of measurements about the fruit and its environment, revealing data like the fruit's sugar content, acidity, firmness, weight and color, as well as its GPS location and weather conditions at the time of sampling.")
15	AI and Image recognition for beef	Possibility to look at using machine vision to detect fat content, marbling and colour and indications of quality	Image classification to rate the quality of beef either at the producer or at the consumer level

16	AI and image recognition for shelf life	Possibility to look at measuring shelf life of produce	Data comparison using vegetable and fruit types and appearance over a period of time, within uncontrolled storage types
17	Digital Agriculture Services + (software developer/beef producer)	Add the ability to input on farm info on fertiliser / seeding / weed reduction programs.	Ability to compare soil health and farm data with the type of inputs.