Veracity Spearhead: Organic Case Study

Exploring Trust, Truthfulness and Authenticity within New Zealand's Organics Supply Chain

Judith Perera

Research Assistant, Veracity Spearhead & Veracity Lab | PhD Candidate, University of Auckland

Veracity Lab Workshop --- 9th March 2023

Veracity Spearhead: Organic Supply Chain Case Study

- What is ‘Veracity’ in the context of the organic's domain?
  - Trust, Truthfulness and Authenticity through out the organics supply chain (Farm to Retail)
  - Involves objects/entities, actors, transactions, data

Certified Organic

Research Activity: Stakeholder Engagements

Stakeholder Engagement Meetings

- Veracity Lab Technical Group
- Organic Wine Growers NZ (OWNZ)
- Organics Aotearoa NZ (OANZ)
- Ministry of Business, Innovation and Employment (MBIE)
- BioGro (Certification Agency)
- Organic Farm NZ (OFNZ)
- Wellington City Council (WCC)
- Ministry of Primary Industries (MPI)
- Assure Quality (AQ)

Research Questions

- RQ1: What are the types of veracity issues that could be identified within the organics supply chain ?
- RQ2: What are the metrics involved in ensuring veracity in the organics supply chain ?
- RQ3: How do stakeholders perceive a veracity issue to be of high priority to be addressed ?
- RQ4: What support is needed to ensure veracity throughout the organics supply chain ?

Key Learnings from Stakeholder Engagements

Key SC Stages, Stakeholders, Standards, Regulations, Workflows

- 8 Stages of SC
  - Inputs, Farmers/ growers, Transport, Processing, Packaging, Warehousing, Shipping, Retail
- Stakeholders involved in SC stages
  - Producers primary and non-primary e. g. growers, manufacturers, distributors
  - Exporters
  - Retailors
  - Certification Agencies
  - Government (MPI)
  - Regulated markets e. g. EU, USA
- Standards, Regulations, Workflows
  - Standards: e. g. Organic Standards
  - Regulations: International, national and regional regulations
  - Workflows: e. g. Certification Workflows (primary, non-primary), Export workflows

Potential Veracity Issues: Identified Themes

- Domestic Level Vs International Level
  - Domestic - e. g. Use of inputs without prior approval from the certifier
  - International - e. g. A product with wrong labelling being shipped offshore
- Intentional (Fraud) Vs Unintentional (Mistakes, Laziness etc.)
- Priority/ Criticality
  - Major critical non-compliance
  - Critical non-compliance
  - Certifier non-compliance

Insights/ answers to Research Questions

- RQ1: types of veracity issues
  - Domestic Vs International
  - Intentional (fraud) vs unintentional (misunderstandings, laziness/ busy-ness)
- RQ2: metrics and indicators for veracity
  - Shipping records, Purchase, Sales records, Harvest inventory records
  - Scientific test results
- RQ3: priority of veracity issues
  - Based on criticality - Major critical non-compliance , Critical non-compliance, Certifier non-compliance
  - Time frame
- RQ4: support to ensure veracity
  - Harmonizing metrics, real-time data/metrics, food-mapping, record keeping e. g. monitoring chemical use, monitoring variation of yield year to year, root cause analysis, risk analysis, check-lists
  - OMP requirements, Public registry for organic businesses, National Organic Regulation, National Logo
  - Educating, on-farm support

Insights on Challenges in the Domain

- Current challenges observed in the field:
  - Regulatory barriers to trade
  - Lack of know-how of regulations of different markets
  - Conversion process to meet different market requirements e. g. for inputs
  - Cost of certification/ assessment i. e., cost of compliance
  - Cost of branding/ labelling produce
  - Multiple different certification agencies, multiple accreditations to achieve for different international markets
  - Prioritization of veracity could vary according to different stakeholder perspectives
  - Legacy systems, manual processes in auditing
  - Incomplete data sets
  - Lack of end-to-end traceability of the organics SC

Insights on Conceptualizing Veracity

- ‘Veracity’ in the context of the organics supply chain
  - Trust, Truthfulness and Authenticity through out the organics supply chain (Farm to Retail)

- Veracity Characterizations:
  - Regulatory Veracity
    - Rules, regulations and standards (international, national and regional, **Rules as Code**)
  - Cultural Veracity
    - The “human element” (societal, bicultural, public, private, specifically the need to explore vision **mātauranga**)
  - Technical and Digital Veracity
    - Digital, data, infrastructure standards e. g. digital record keeping
  - Process Veracity
    - Internal control systems such as organisation policy and processes
  - Financial Veracity
    - Financial (fiscal, banking, tax and accounting)

Research Activity: Development of Visualizations, Classifications and Dashboards in Jira

Visualizations and Classifications in Jira

- Workflows
  - Supply Chain Workflow (Wine and Viticulture), Certification Workflows e. g. Certification Workflows for primary and non-primary producers, Export workflows
- Regulations and Standards
  - Regulations: Organic Regulation (Bill), International, National and Regional regulations
  - Standards: e. g. Viticulture and Winemaking Standard, Processing Standard, Distribution Standard
- Requirements to meet Standards e. g. Requirements for Organic Viticulture
- Potential Veracity Instances
- Conditions that apply to these instances

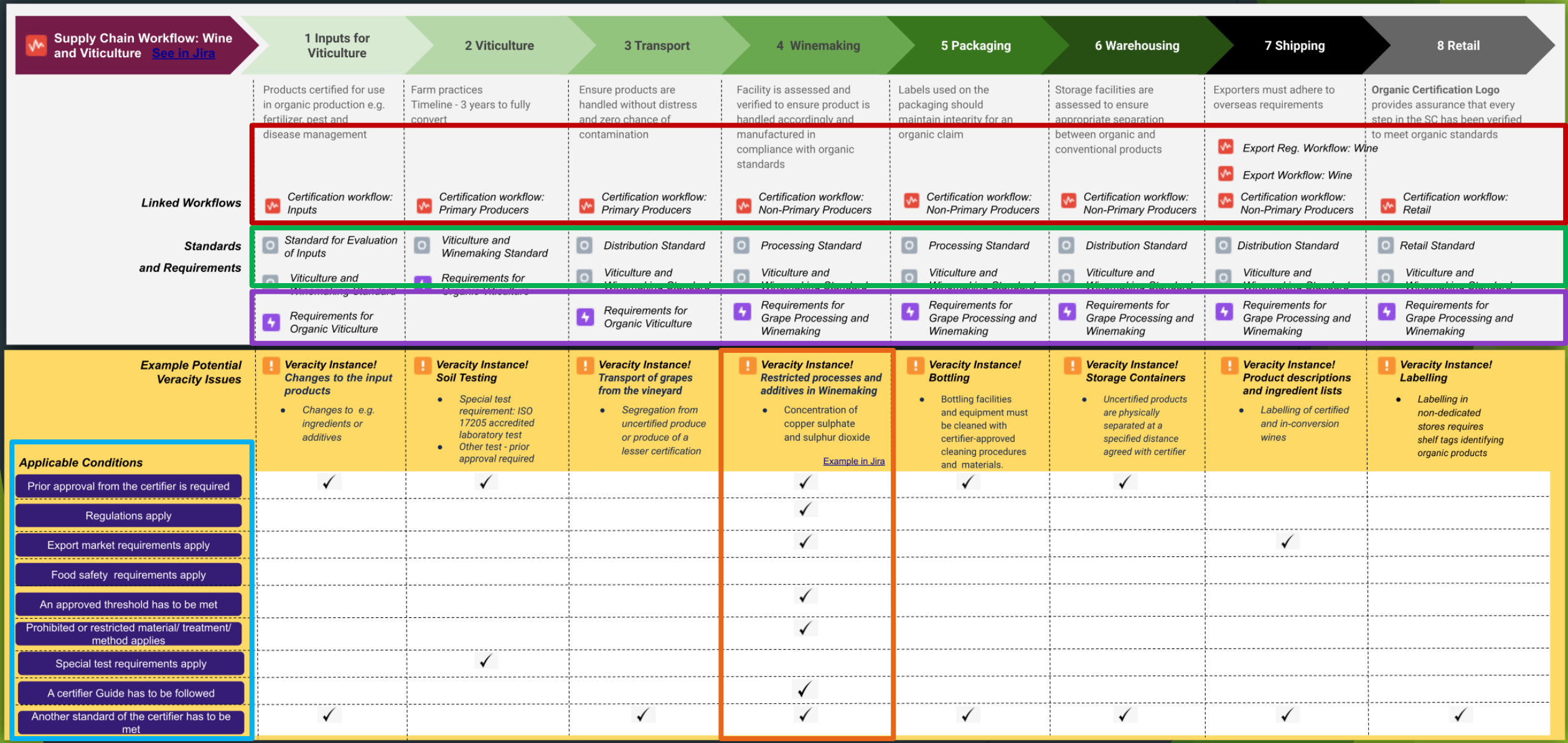
Visualizations and Classifications in Jira

- Workflows
  - Supply Chain Workflow (Wine and Viticulture), Certification Workflows e. g. Certification Workflows for primary and non-primary producers, Export workflows
- Regulations and Standards
  - Regulations: Organic Regulation (Bill), International, National and Regional regulations
  - Standards: e. g. Viticulture and Winemaking Standard, Processing Standard, Distribution Standard
- Requirements to meet Standards e. g. Requirements for Organic Viticulture
- Potential Veracity Instances
- Conditions that apply to these instances

Infographic --- Wine & Viticulture

Supply Chain Workflow: Wine and Viticulture See in Jira	1 Inputs for Viticulture	2 Viticulture	3 Transport	4 Winemaking	5 Packaging	6 Warehousing	7 Shipping	8 Retail
	Products certified for use in organic production e.g. fertilizer, pest and disease management	Farm practices Timeline - 3 years to fully convert	Ensure products are handled without distress and zero chance of contamination	Facility is assessed and verified to ensure product is handled accordingly and manufactured in compliance with organic standards	Labels used on the packaging should maintain integrity for an organic claim	Storage facilities are assessed to ensure appropriate separation between organic and conventional products	Exporters must adhere to overseas requirements	**Organic Certification Logo** provides assurance that every step in the SC has been verified to meet organic standards
Linked Workflows	*Certification workflow: Inputs*	*Certification workflow: Primary Producers*	*Certification workflow: Primary Producers*	*Certification workflow: Non-Primary Producers*	*Certification workflow: Non-Primary Producers*	*Certification workflow: Non-Primary Producers*	*Export Reg. Workflow: Wine* *Export Workflow: Wine* *Certification workflow: Non-Primary Producers*	*Certification workflow: Retail*
Standards and Requirements	*Standard for Evaluation of Inputs* *Viticulture and Winemaking Standard* *Requirements for Organic Viticulture*	*Viticulture and Winemaking Standard* *Requirements for Organic Viticulture*	*Distribution Standard* *Viticulture and Winemaking Standard* *Requirements for Organic Viticulture*	*Processing Standard* *Viticulture and Winemaking Standard* *Requirements for Grape Processing and Winemaking*	*Processing Standard* *Viticulture and Winemaking Standard* *Requirements for Grape Processing and Winemaking*	*Distribution Standard* *Viticulture and Winemaking Standard* *Requirements for Grape Processing and Winemaking*	*Distribution Standard* *Viticulture and Winemaking Standard* *Requirements for Grape Processing and Winemaking*	*Retail Standard* *Viticulture and Winemaking Standard* *Requirements for Grape Processing and Winemaking*
Example Potential Veracity Issues	***Veracity Instance! Changes to the input products*** • *Changes to e.g. ingredients or additives*	***Veracity Instance! Soil Testing*** • *Special test requirement: ISO 17205 accredited laboratory test* • *Other test - prior approval required*	***Veracity Instance! Transport of grapes from the vineyard*** • *Segregation from uncertified produce or produce of a lesser certification*	***Veracity Instance! Restricted processes and additives in Winemaking*** • Concentration of copper sulphate and sulphur dioxide Example in Jira	***Veracity Instance! Bottling*** • Bottling facilities and equipment must be cleaned with certifier-approved cleaning procedures and materials.	***Veracity Instance! Storage Containers*** • *Uncertified products are physically separated at a specified distance agreed with certifier*	***Veracity Instance! Product descriptions and ingredient lists*** • *Labelling of certified and in-conversion wines*	***Veracity Instance! Labelling*** • *Labelling in non-dedicated stores requires shelf tags identifying organic products*
Applicable Conditions								
Prior approval from the certifier is required	✓	✓		✓	✓	✓		
Regulations apply				✓				
Export market requirements apply				✓			✓	
Food safety requirements apply								
An approved threshold has to be met				✓				
Prohibited or restricted material/ treatment/ method applies				✓				
Special test requirements apply		✓						
A certifier Guide has to be followed				✓				
Another standard of the certifier has to be met	✓		✓	✓	✓	✓	✓	✓

Infographic --- Wine & Viticulture



Supply Chain Workflow: Wine and Viticulture See in Jira

4 Winemaking

Facility is assessed and verified to ensure product is handled accordingly and manufactured in compliance with organic standards

Linked Workflows

Certification workflow: Non-Primary Producers

Standards and Requirements

Processing Standard

Viticulture and Winemaking Standard

Requirements for Grape Processing and Winemaking

Example Potential Veracity Issues

Veracity Instance! Restricted processes and additives in Winemaking

- Concentration of copper sulphate and sulphur dioxide

Example in Jira

Applicable Conditions

Prior approval from the certifier is required	✓
Regulations apply	✓
Export market requirements apply	✓
Food safety requirements apply	
An approved threshold has to be met	✓
Prohibited or restricted material/ treatment/ method applies	✓
Special test requirements apply	
A certifier Guide has to be followed	✓
Another standard of the certifier has to be met	✓

Projects / Veracity Spearhead / VS-85 / VS-108

Restricted processes and additives in Winemaking

Attach | Link issue

Description

The use of the following processes and additives is restricted and **requires annual written approval from the certifier**:

- the **addition of ascorbic acid**
- sulphur dioxide (E220), either as gas or metabisulphite, may only be used if the final **concentration of sulphur dioxide**, i.e. at the time of release of the wine on the market, is less than those indicated below:
  - Final sugar (g/litre): Less than 5 (dry), Total sulphur dioxide (mg/litre): 150
  - Final sugar (g/litre): More than 5 but less than 30 (medium), Total sulphur dioxide (mg/litre): 200
  - Final sugar (g/litre): More than 30 (sweet), Total sulphur dioxide (mg/litre): 250

Note: **some markets have specific limitations on use of sulphur dioxide** in organic winemaking and wine made from organic grapes. These limitations affect the way such wines are labelled.

- copper sulphate: **certified wines must not have residual copper exceeding 10 percent of the levels stipulated by the Australia New Zealand Food Standards Code**

Note: **some market have specific limitations on use of copper sulphate** in organic winemaking and wine made from organic grapes. These limitations affect the way such wines are labelled.

- Diammonium phosphate (DAP) for winemaking only.

If the wine is destined for markets which regulate the use of the label "organic" (currently Europe and USA for wine) and don't allow the use of DAP, then DAP can not be used in the making of that wine.

Labels: PriorApprovalfromCertifier... | RegulationApplies | ExportMarketRequirements... | ApprovedThreshold | ProhibitedOrRestrictedMat... | RefersToAnotherOrganicSta... | FollowCertifierGuide

Linked issues

blocks

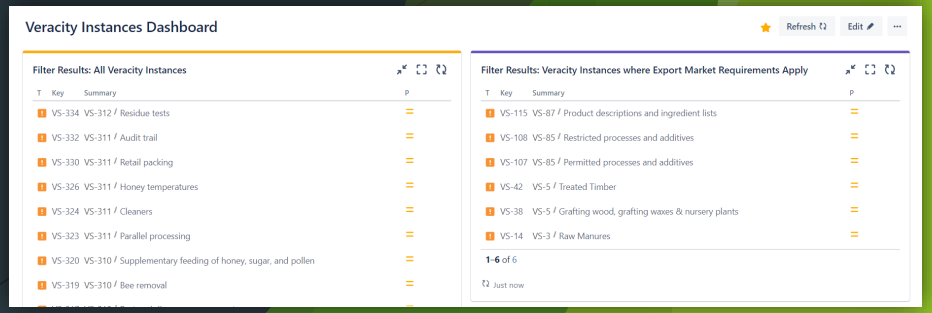
VS-163 Certification Workflow: Non-Primary Producers — BACKLOG

is blocked by

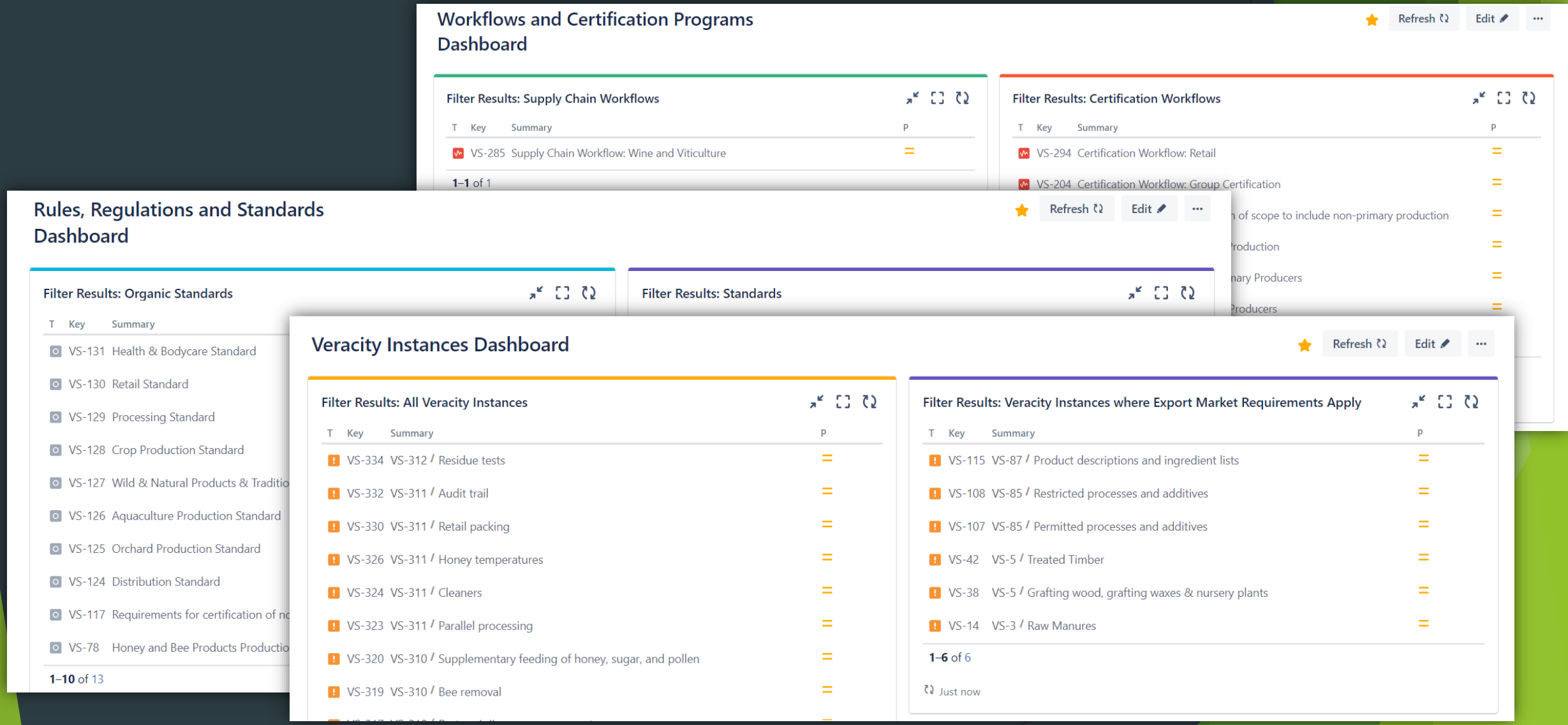
VS-123 Australia New Zealand Food Standards Code — BACKLOG

VS-79 Permitted and Restricted Materials and Practices — BACKLOG

VS-129 Processing Standard — BACKLOG



Dashboards


Workflows and Certification Programs Dashboard
Refresh
Edit
Filter Results: Supply Chain Workflows
T Key Summary P
VS-285 Supply Chain Workflow: Wine and Viticulture
1–1 of 1
Filter Results: Certification Workflows
T Key Summary P
VS-294 Certification Workflow: Retail
VS-204 Certification Workflow: Group Certification
Rules, Regulations and Standards Dashboard
Refresh
Edit
Filter Results: Organic Standards
T Key Summary
VS-131 Health & Bodycare Standard
VS-130 Retail Standard
VS-129 Processing Standard
VS-128 Crop Production Standard
VS-127 Wild & Natural Products & Traditio
VS-126 Aquaculture Production Standard
VS-125 Orchard Production Standard
VS-124 Distribution Standard
VS-117 Requirements for certification of nc
VS-78 Honey and Bee Products Productio
1–10 of 13
Filter Results: Standards
Veracity Instances Dashboard
Refresh
Edit
Filter Results: All Veracity Instances
T Key Summary P
VS-334 VS-312 / Residue tests
VS-332 VS-311 / Audit trail
VS-330 VS-311 / Retail packing
VS-326 VS-311 / Honey temperatures
VS-324 VS-311 / Cleaners
VS-323 VS-311 / Parallel processing
VS-320 VS-310 / Supplementary feeding of honey, sugar, and pollen
VS-319 VS-310 / Bee removal
Filter Results: Veracity Instances where Export Market Requirements Apply
T Key Summary P
VS-115 VS-87 / Product descriptions and ingredient lists
VS-108 VS-85 / Restricted processes and additives
VS-107 VS-85 / Permitted processes and additives
VS-42 VS-5 / Treated Timber
VS-38 VS-5 / Grafting wood, grafting waxes & nursery plants
VS-14 VS-3 / Raw Manures
1–6 of 6
Just now

Research Activity:
Development of Use Case Briefs

Identification of Certification Workflows

- Identified multiple Workflows within the Organic SC --- e.g., workflows pertaining to the Organic Certification
  - *[1] Certification Workflow for Inputs*
  - *[2] Certification Workflow for Primary Producers*
  - *[3] Certification Workflow for Non-Primary Producers*
  - *[4] Certification Workflow for Retailers*
- *[Definition]* Certification Workflow:
  - Business processes of the different types of certifications

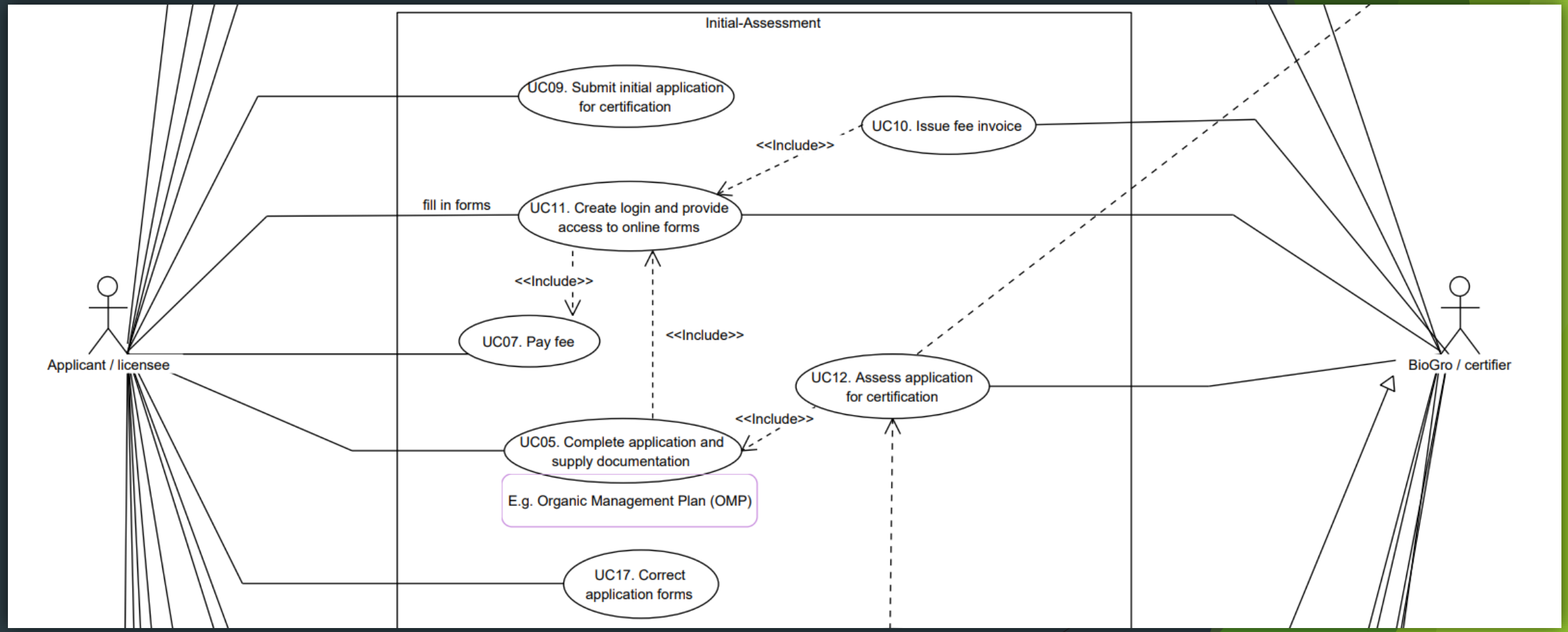
Identification of UML Use Cases

- Within the workflows we identified ‘Use Cases’ --- Use Cases can also be reused within multiple workflows

- Some examples:
  - Describe ingredients of product(s)
  - Perform on-site audit
  - Issue certification and supply logo

- *[Definition]* Use Case:
  - Interactions between different actors and systems to accomplish the Certification Workflows

Example Snippet of a Use Case Diagram



Development of Use Case Briefs

- We describe a hypothetical scenario that describes the use case concerning;
  - a blue-sky scenario — an ideal or perfect scenario
  - and two exception scenarios — illustrate possibilities where 'Veracity' could be compromised — potential veracity instances
- The 'Criticality' of a Use Case is determined by:
  - their repeatability within workflows
  - and the possibility of having veracity issues
- *[Definition]* Use Case Brief:
  - Describes example scenarios (i.e., scripts) for each Use Case centered around the tasks performed by actors

Thank You