



“facilitating innovation in marine farming by maximizing value and minimising waste”

SMART + CONNECTED AQUACULTURE

Workshop Report

Version 1 December 2019

Executive Summary

The Marlborough Aquaculture Smart + Connected (S + C) group holds an annual workshop to facilitate a conversation around innovation in marine farming to maximise value and minimise waste.

The outputs of the workshop inform the focus of the S + C Value and Innovation working group for the following year.

The workshop to inform 2020 workstreams took place on the 29th of November 2019. Liz Webb (from Practics) facilitated the workshop, which was structured around six topics provided by the S + C group.

Structure of Workshop

Introductions

The approximately 60 attendees were welcomed by Mayor John Leggett before Zane Charman (Chair of the Value and Innovation working group) provided feedback on the achievements of 2019.

Insights

The workshop focused on six key topics provided by the S + C group. The workshop opened with a speaker sharing insights on each topic. The six topics are:

1. Back to the future. How aquaculture can work backwards with existing markets to position nutrition and premium foods as the drivers of value (Speaker Andy Elliott, Wakatu)
2. Brave new world. What does industry want from real time reporting, emerging AI and technology (Speaker Brian Russell, Nelson Artificial Intelligence Centre)
3. Acid Reign. Maintaining & enhancing crop value in a warming & acidifying world (Speaker Niall Broekhuizen, Niwa)
4. Zero Waste. Using the tools of zero waste and product stewardship to minimise plastic waste from farm to home (Speaker Hannah Blumhardt, Product Stewardship Council)
5. Turning to the sun. How solar panels can reduce aquaculture emissions and power bills (Speaker Ryan Pigou, iGenerate)
6. People. What is the most important thing in the world? He tangata, it is people, he tangata. Building and training the aquaculture workforce (Speaker Lucy MacLean, Chair of Employers' working group for Smart + Connected)



A copy of each presentation can be found in the appendix.

Workshop

Attendees were invited to split into topic groups, to workshop ideas.

The workshop activities utilised Human Centred Design methodologies to ensure that each attendee had their opinions and ideas heard and included in the outputs of the day.

Groups captured why the topic was important to them, and how the Industry might address the topic before voting on which ideas they wanted to workshop as a group.

Once the groups had selected their ideas to move forward, they completed a full concept design, including:

- how the idea works
- who the key stakeholders are
- key risks to the idea, and any mitigants
- opportunities to prototype and test the idea
- How success could be measured and,
- A timeline for implementation.



A copy of all ideas are shared in the appendix of this document. While the groups consolidated their thinking into a central idea, there are significant insights into the thoughts of the groups contained within the notes.

Sharing

Each table presented their concept back to the wider group for discussion, who voted on their favourite ideas to proceed, before breaking for lunch.



Next Steps

The **Value and Innovation Working Group** from S + C group will meet to

1. start the process of organising project groups to review the concept posters and
2. move some of these initiatives forward.

All attendees were advised of the time and date of this meeting and invited to attend.

Workshop outputs

The groups presented the following concepts. The table shows the vote count each idea received. Note that each participant was given three “dots” to vote with, and had the option to vote all three on one idea, or spread their votes across the ideas.

Topic	Concept	# of votes
Brave New World	Max Spat	25 (15%)
Back to the Future	Functional Mussels	31 (19%)
Acid Reign	Ensure a resilient aquaculture industry in a changing environment	19 (12%)
Zero Waste	Identify & practise the key plastic sources in our industry. In order to guide action on waste minimisation	23 (14%)
Turning to the Sun	Generation Aquaculture	32 (20%)
People	Attracting and retaining great staff	29 (18%)

Detail of the concepts are below. Each group hand drew a concept poster; these have been translated into the table below for ease of reading. A copy of the original posters can be found in the appendix

Best effort has been made to capture the full notes from workshop participants – note, however, that some handwritings were... challenging. Where uncertainty exists, this has been noted with (sp?).

In several cases, the wider group mentioned work already underway that these concepts could link into i.e., Spat projects.

Brave New World

What is the concept called?	Max Spat #MaxSpatAI
Who is it for?	<ul style="list-style-type: none"> • Industry • Environment • Society
What problems does it solve?	Spat Retention
What is the big idea?	Use AI to monitor spat in wild and predict when best to harvest
Illustrate how it works?	<p>1. Monitoring</p> <ul style="list-style-type: none"> • Spat behavior • Environmental cond? • Climate • Food <p>2. Understanding</p> <ul style="list-style-type: none"> • Spat life cycle • Spat sensitivity/preferences • Spat line behavior <p>3. Informing</p> <ul style="list-style-type: none"> • When to harvest spat • Spat husbandry/management
Why might it fail?	<ul style="list-style-type: none"> • Funding • Lack of uptake • Lack of education or communication
What should we prototype/test?	<ul style="list-style-type: none"> • Create experimental design working with the MFA selecting locations • Implement design
How might we measure success?	<ul style="list-style-type: none"> • Increased retention of spat • Increased demand and uptake • Changed practice • improve retention • National roll out
How will we make this happen?	<p>Over 12 months</p> <ul style="list-style-type: none"> • Organize • Team • Decisions – Sites etc. • Field work • Data analysis • Tell a story <p>And then repeat – Nov 2020 Spat Season</p> <p>Year 2 – 40% increase in Yield</p>

Back to the Future

What is the concept called?	Functional Mussels
Who is it for?	<ul style="list-style-type: none"> • Consumers • Industry • Producers • Exporters • Communities
What problems does it solve?	<ul style="list-style-type: none"> • Low value exports (industry/exporters) • Health problems + nutrition of consumers
What is the big idea?	Achieving a functional claim for GSM
Illustrate how it works?	<ol style="list-style-type: none"> 1. Market insights – Trends 2. Vision 10 years out 3. Industry sign off – Stakeholder engagements 4. Timeline + implementation <p>+</p> <ol style="list-style-type: none"> 1. Customer demands for health solutions 2. Working group – AQNZ director, Industry rep, PM, Outside industry exporters, "scaeyee (sp?), six people 3. Supply chain, community, local growth 4. \$ increase <p>= Public announcement @AQNZ Conference 2020</p>
Why might it fail?	Inadequate resources for research
What should we prototype/test?	The functional claim
How might we measure success?	<ul style="list-style-type: none"> • Broad acceptance of functional claim • Independent peer-reviewed validation of functional claim • Price resilience • Consumer perception
How will we make this happen?	

Acid Reign

What is the concept called?	"Ensure a resilient aquaculture industry in a changing environment"
Who is it for?	<p>Aquaculture industry</p> <ul style="list-style-type: none"> • Farmers • Regulations • Local community • NZ Inc • Science providers
What problems does it solve?	Enable the persistence of the industry in a changing environment
What is the big idea?	Resilient strategy + action plan implemented across New Zealand
Illustrate how it works?	<ul style="list-style-type: none"> • Identify research needs and gaps – practical farming perspectives and theoretical/science perspectives • Plan research and acquire funding • Create a steering group to quantify risks • Establish what's already happening and share information – industry, researchers and funders • Further collaborative planning including milestones • Appoint someone to take responsibility – maintaining momentum and continuous improvement
Why might it fail?	<ul style="list-style-type: none"> • No funding • Lack of focus • Collaborative failure • Fizzes out • Focusing on the wrong stuff • Lack of buy in
What should we prototype/test?	<ul style="list-style-type: none"> • Dit(sp?) workshop/steering group models • AI and measurement tools
How might we measure success?	<ul style="list-style-type: none"> • Investment signals • Agreed strategy • Working group established
How will we make this happen?	<ul style="list-style-type: none"> • Early 2020 – Create steering group • Feb/early 2020 – Funding applications • Ongoing

Zero Waste

What is the concept called?	Identify and prioritise the key plastic sources in our industry in order to guide action on waste minimisation
Who is it for?	<ul style="list-style-type: none"> • Ourselves – companies and industry • Consumer transparency • Environment
What problems does it solve?	<ul style="list-style-type: none"> • lack of knowledge • Being able to prioritise • Low hanging fruit
What is the big idea?	Get the data to define AND agree on problem(s) + action
Illustrate how it works?	<ol style="list-style-type: none"> 1. Define Scope 2. Collecting data – (Centralised/consolidated) - Inputs, production, processing, retail 3. What plastics used and amounts 4. Analyse data 5. Identify innovation opportunities 6. Make change 7. Communicate change to consumers and community
Why might it fail?	<ul style="list-style-type: none"> • Lack of resource or funding • IP concerns/competitive • Price points
What should we prototype/test?	<ul style="list-style-type: none"> • Data collection platform that drives and prioritises innovations projects
How might we measure success?	<ul style="list-style-type: none"> • Long term data – Contribute to S + C sustainability dashboard? Tangible change • The number of innovation projects that reduce and minimise waste
How will we make this happen?	<ol style="list-style-type: none"> 1. Agree project team + leader 2. Define scope + objectives further 3. Invite participation (safe space to contribute) 4. Define data recorded + template 5. Collection period (TBC) 6. Analysis of top priorities 7. Discussion workshop 8. Produce report/agreed actions 9. Spin off projects allocated ETC. 10. Agree time frame for assessing data 11. Public opportunity – share existing positive activity 12. Report change <p>12 months period</p>

People

What is the concept called?	Attracting and retaining great staff
Who is it for?	<p>Industry</p> <ul style="list-style-type: none"> • Individual • Team • Society and community
What problems does it solve?	<ul style="list-style-type: none"> • Labour shortages • Staff turnover (costs etc., safety etc.) • Company efficiency
What is the big idea?	<ul style="list-style-type: none"> • Marketing • Company culture
Illustrate how it works?	<p>Circle of love</p> <ol style="list-style-type: none"> 1. Marketing – GET THEM (Market culture, aquaculture understanding in schools) 2. Training – TRAIN THEM (on the job, training organisations) 3. Culture – KEEP THEM (Rewards, pride, pathways, leadership, value)
Why might it fail?	<ul style="list-style-type: none"> • Lack of resources – time etc. • Barriers to change • Stigmatism
What should we prototype/test?	<ul style="list-style-type: none"> • School programs • Nationwide marketing – AQNZ • On job training • Feedback processes
How might we measure success?	<ul style="list-style-type: none"> • Exit interviews • Feedback trends • More engagement/ employment • Staff retention
How will we make this happen?	<ol style="list-style-type: none"> 1. Approach AQNZ to develop a collaborative marketing campaign – school programmes etc 2. Develop on the job training plans – industry intervene in educational changes 3. 2-way feedback mechanisms in all companies – sustainable rewards + benefits

Turning to the Sun

What is the concept called?	Generation Aquaculture
Who is it for?	<p>Industry</p> <ul style="list-style-type: none"> • Business • Staff • Environment • R+L?
What problems does it solve?	<ul style="list-style-type: none"> • Less fossil fuel use • Using what we've got endless supply of
What is the big idea?	<ul style="list-style-type: none"> • Change in culture for a new generation – people + electric • Reverse the process from FUEL – ATMOSPHERE to ATMOSPHERE – FUEL - GENERATE
Illustrate how it works?	<ol style="list-style-type: none"> 1. Put solar panels on factory roofs 2. Use those solar panels to charge forklifts + free fuels to charge staff electric cars = happy employees 3. solar panels on staff members homes (Subsidies for staff members own solar panels) <p>And</p> <ol style="list-style-type: none"> 1. Boats can be charged from the wharfs/docks with solar panels attached 2. mussel floats in the water with solar panels then mean boats can be charged while at sea
Why might it fail?	<ul style="list-style-type: none"> • Funding and costs • Weather • Nightshift workers – are the solar panels still affective for charge over night
What should we prototype/test?	<ul style="list-style-type: none"> • Putting EV panels on a boat, seeing how effective that works - "SIL OR SIMLIAK"(SP?)
How might we measure success?	<ul style="list-style-type: none"> • Fuel usage • fuel emissions • Uptake + scale
How will we make this happen?	<ol style="list-style-type: none"> 1. System ideation + exploration 2. Concept maturation 3. Find collaboratives/partners 4. Prototype + trial components 5. Funding 6. Invest 7. Tell the world 8. Commercialize or sell IP