Business case for a new Seed Industry Seed Certification IT system.

Prepared by Evan Johnston and George Gerard, NZGSTA representatives on the SQMA Executive

September 2019

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What is the Seed Certification Information system?

The SCIS software platform is the repository of data collated, analysed and used to verify the status of all certified crops in New Zealand. The data is collated from activities throughout the certification process from the registration of new varieties to the finalisation of quality tests.

This data represents on average of 3300 crop entries per year, representing about 35 – 40,000ha or 40,000 tonnes of seed, with a grower contract value of about $100 million dollars.

Background

The current Seed certification database (SD) is maintained and administered by AsureQuality, a State-owned enterprise. AsureQuality is contracted by the Seed Quality Management Authority (SQMA) to administer Seed Varietal certification in New Zealand. To allow this, AsureQuality must be an approved independent verification authority under the Ministry for Primary Industries (MPI) Export standards. The current SD was essentially inherited by AsureQuality as it transitioned from being a department in the Ministry of Agriculture and Fisheries (MAF Quality Management) to its current status. MAF Quality Management was once the organisation that both regulated and operated the seed certification scheme.

Although AsureQuality operates and administers the SD, it does not own, govern or set policy on its fitness for purpose. This is the accountability of the SQMA. Hence, any development required to fit evolving industry need must be directed and managed by this organisation.

The SQMA is a non profit organisation tasked with the setting of policy on how the OECD, AOSCA and NZ Domestic seed certification schemes are operated in New Zealand. To get policy consensus across these schemes, it has representation from all industry sectors. This representation includes plant breeders (Ag Research, Plant and Food, NZPBRA), seed merchants (NZGSTA), Seed Processors (NZ Seed Processors Association) and growers (Herbage Seeds subsection Federated Farmers). Also in attendance are MPI as the national designated authority for OECD varietal certification, AsureQuality and representation for ISTA (International Seed Testing Association).

At inception close to 20 years ago, the SQMA developed policy determining that a single independent verification authority should administer and operate New Zealand's seed certification schemes. AsureQuality was contracted to provide this service and continues in this role to the present.

Current situation

The SD is a 35-year-old system with a PowerBuilder front end and Microsoft Access back end.

The system has a long list of developments identified by users and stakeholders as needed but yet to be implemented. The technology platform used to develop SD is a relatively complex one (Enterprise Java) and the system requires specialist skills and experience to develop and maintain. This capability only comes from the larger and more expensive software development companies.

There have also been a number of outstanding design issues and challenges experienced by users of the SD since it was first implemented and some of these relate to the structure of the underlying database tables that are used. In 2007 a project to develop an online system to allow grower and label applications to be entered into the SD (eSeedcert). This system was recently withdrawn due to unresolvable technical issues with SD.

It is however only in the last couple of years where increasing demand has been placed on the SCIS to deliver evolving industry and regulatory requirements that awareness has developed of its constraints and fragility.

Therefore, SQMA employed Ronin, an IT consultancy firm to review the status of the software and its fitness for purpose for current and future industry need.

The essential outcome of the review was that the current system is considered to be no longer worth investing in. It would be more cost effective for the industry to have a clean starting point with a new software platform and architecture that allows for greater technical and business flexibility.

SQMA action

The lack of continued development and maintenance over a number of years has meant that the SD is constraining users and stakeholders from efficiently operating seed certification functions. For example, growers are required to manually process their seed crop entries each year rather than doing this via a web portal. This functionality was actually built in 2007 and used for several years but was unable to function effectively due to continuing technical challenges.

The SQMA is concerned that the current situation has reached an unsustainable point for the industry and will constrain its ability to meet current and future customer demand for certified seed in domestic and export markets.

Due to the expected timeframe needed to develop and deliver a new SCIS platform, the SQMA felt it necessary to immediately initiate a project for a new SCIS system.

Projected costs

Ronin have been employed as project managers and have been tasked with assessing the cost of delivering a new SCIS software platform to the SQMA.

Table 1. The initial estimated direct project costs are as follows:

Activity	
Consultancy, systems reviews, functional requirements assessment and Requirements for Proposal (RfP) preparation by Ronin	$110,000
Design, Build and Testing	$1,200,000
Enhancement / updates / transfer cost of the old data	$430,00
Project management	$60,000
Industry training	$60,000
Total direct project costs	**$1,860,000**

In addition, there is expected to be at least $130,000 of in-kind costs committed by industry participation in the steering groups and project teams.

The direct costs of this project are forecast to be about $1.85 million. With feedback from Ronin the costs might be able to be revised down. This is due to their assessment of the software development vendors that have been selected to receive the Request for Proposal (RFP). These vendors have far greater experience, skill, capacity and capability than expected and all had completed projects similar in type and size to the SCIS Project

The agreed principle of the project is that it will initially deliver a system with the functionality and requirements to allow the industry to operate the OECD, EU, New Zealand and AOSCA certification schemes. Additional enhancements will be added determined by industry need, priorities and available resources. Another significant objective of the project is to integrate SCIS and SCID (Seed

Crop isolation Distance) onto the same platform. This would significantly enhance functional benefits to SCID users.

Funding shortfall and contingency

The budget for this project on the current estimated cost has a small projected funding shortfall of about $60,000, however there must be a contingency allowed for a blow out in costs.

It is planned that any funding shortfall will be addressed by increasing the industry contributions on certified seed labels and official purity and germination (P & G) certificates. Given that in many situations growers pay for the costs of labels and P & G certificates, it is the intention of the SQMA to share any additional industry contributions equally between growers and seed companies. Initial budget projections are to plan for a contingency collection target of between $100- 120,000 per annum. If not required, this contingency capital would be come an accrual to cover eventual software replacement costs.

Table 2. Projected cost of increased industry contribution

Source	Contributor	Annual accrual of $120,000
Label contribution costs	grower	3 cents/label
P G certificate contribution costs	Seed company	$11.10/certificate

This will be an important implication for all industry stakeholders to comprehend. It is very possible that in the short to medium term, industry contributions overall will have to go up rather than down and that seed companies will need to contribute their share of this increased cost.

SQMA has established a sub committee to assess a contribution collection process with AsureQuality, the current collection agency.

Benefits of the projected replacement SCIS

Fig 1. The diagram below shows the activities and the functions the SCIS will be engineered to support**.**
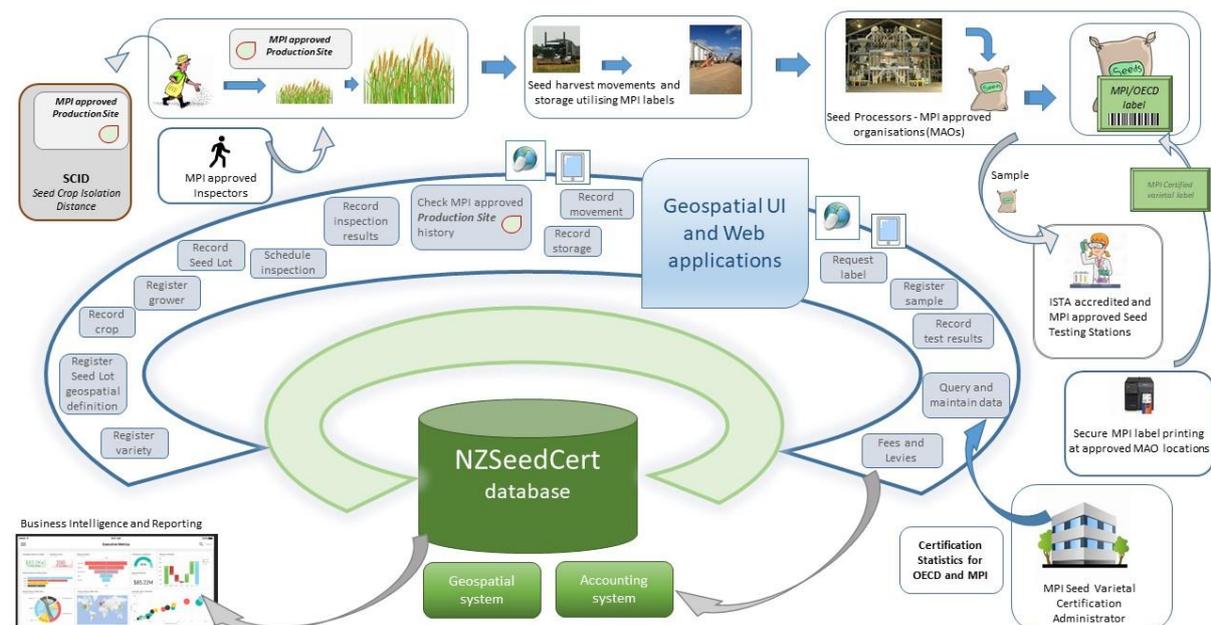
Direct cost benefits

The direct cost benefits of the new SCIS are somewhat subjective as the system being replaced will not be "like for like" with its replacement. The functionality of the new software platform will allow for a much higher level of automated data collection, data analysis and statistical reporting than its replacement.

Currently most of the information required to be captured by the existing SeedCert system is entered by a centralised bureau. In future it is intended that where possible the originators of information required for certification processes will be able to utilise the SCIS to enter this information themselves i.e. the system will provide functionality and/or direct interaction through application programme interface (APIs) from individual users' database systems for;

- Breeders,
- Owners of varieties,
- Merchants/Agents,
- Growers,
- Inspectors and inspections,
- laboratory and other tests,
- seed movement and logistics,
- Seed Processors,
- label requests and printing,
- certificate requests and printing,
- system management and administration,
- security and access control,
- fees and levies,
- the Regulator's (MPI) administration functions

For the administrator of the new SCIS, there will be a significant reduction in time taken to complete manual administrative processes as a number of these will be removed or distributed to others. This will be particularly in the processing of field inspection data and seed crop certification entries.

Cost savings are estimated to be in the vicinity of administration overheads of $100,000 per annum. Field inspection overhead costs are expected to be reduced as no manual data entry will be required. This is expected to save 10% of inspection workload.

Other administrative cost savings will come through from having a platform with all the historical development needs addressed. Some of these are as simple as being able to correctly invoice label charges and clients without the need for manual rework.

The ongoing maintenance and system hosting of the new SCIS will be cheaper than the current IT system due to the Cloud based technology employed and the type of service provider required to monitor the software.

Indirect cost benefits

The indirect benefits for industry will be significant due to the flexibility being built into the architecture of the system for multiple stakeholder interface and the incorporation of GIS software for field and crop identification.

GIS will improve seed quality and seed traceability

- GIS software will capture the exact location and area of a crop and over time will provide exact historical crop placement to validate cropping history. This will remove the current

reliance on grower records to describe the exact locations of previous crops, mitigating contamination risk from other-crop seed.

- The project has a design option allowing for the integrating the **Seed Crop Isolation Distance (SCID)** scheme to a shared platform to capitalise on its GIS functionality. One new benefit for SCID users will be that field history data will be presented as well as isolation distance from other crops.
- Using GIS data to map field locations creates an accurate method of verifying the placement of imported seed that may be subject to biosecurity control. This is an attractive proposition for MPI as the government agency responsible for biosecurity management in New Zealand.
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Multiple stakeholder interface will improve process efficiency and reduce external costs
- An important attribute of the new SCIS will be its flexibility to allow multiple data interfaces either by web portal or APIs from stakeholders all along the seed certification supply chain as illustrated in figure 1. These interfaces will include:
  - Web based seed crop certification entries
  - Official field inspection using crop monitoring applications on mobile devices
  - Official seed testing data loaded daily by API from seed laboratories

The essential benefits of the SCIS project is the development of an IT platform using modern programming and hosting technology that dramatically reduces costs of a project like this in today's IT environment. It will also give the opportunity for the Seed Industry to restructure its governance and change policy on how New Zealand's official seed certification schemes are managed.

For individual seed companies and growers, these possible policy changes could significantly improve business efficiency and decrease seed certification costs.
An example of this could be to allow seed companies to employ their own accredited field staff to carry out varietal crop inspections. This could quite considerably cut costs for their growers, especially those in more remote areas and may allow more timely inspections and responses to issues.

The new SCIS with the functionality proposed (including SCID) will directly or indirectly affect most member organisations of the NZGSTA.

Management and ownership of the new SCIS
One of the most significant aspects of the SCIS project will be the placing of ownership, licensing and maintenance of the SCIS software with the SQMA. However, the security and use of the data that verifies and describes the status of varieties held in the SCIS for OECD and EU seed varietal certification will continue to be available to MPI.

System ownership applies responsibility on the Seed Industry to ensure the software is fit for purpose going forward. Policy will have to be established as to how Industry will participate in identifying development needs and funding it. The default method for funding most development programmes for software is to establish a user pays system to accumulate capital and it is anticipated that the Seed Industry would do this through an industry contribution (fee structure) yet to be formulated but possibly on the issuance of seed certification labels, per kilogram fee on MD seed tested, variety listings and official test certificates.

Given that the first three years of development has already been budgeted into the project costs it will be a policy determination as to what the contribution rate should be set at beyond project completion.

Project risks

Financial
The key direct financial risk to the project will an over run of costs. The main driver of this will be scope creep where new requirements are added during development. The way to mitigate this is to thoroughly complete due diligence on the design as being fit for purpose before starting the software build. The tendering process will also be structured to result in an **agreed fixed price** for the program development.

The other area where there is the potential for cost over-run is in the cleansing and translation of data from the old database into the new software platform. It has been identified that 5 years of data may be required to populate the new platform so that it can use field history to determine certification status. No forensic analysis has been undertaken yet on the quality of data held in the current SCIS. This cost could extend to an additional $60,000 for a data analyst.
Mitigation for this will be an assessment of the accuracy of this historical information (especially crop sites), the value and volume.

If there is a blow out of costs and all capital reserves are used up on the project, the default funding option is to increase the industry contributions on seed bag labels and certificates, not to come back to NZGSTA for additional funding.

Lastly, there may be significant financial risks to industry stakeholders if this project does not get completed. There is no questioning that the current operational state of New Zealand's SCIS is in a fragile state, and needs replacing to address efficiency, traceability and transparency issues. The current SCIS is a straitjacket that constrains this restructure opportunity.

Non-financial risks
This IT project is quite unique in that the Project Owner (the seed industry) is not contributing any internal IT expertise. This expertise will come from contracted suppliers and from the Vendor itself. Therefore, the Project Owner must trust the Vendors advise that all technical aspects of the project are fit for purpose and of appropriate value. There is a risk that the developed software platform does not function as expected, is costly to maintain or enhance and is not reliable, requiring fixes. The SQMA mitigation for this is to continue to contract the RONIN group to oversee the new SCIS development and ensure adherence to the contract.

Continuity of supply
There is a risk that the Vendor supplying the IT Solution goes out of business, does not have the ability to complete the project or is unable to provide continued support services beyond the completion of the project. To mitigate this, only mid-size Vendors with an extended and proven track record of project completion and ongoing support are being selected to receive the RFP. The selected vendors already have worked with Seed Industry members before and therefore understand our industry. All selected vendors have all been successfully operating for over 20 years.