

we think food

MONITORING
THE RECIPE
MAKE

MATURATION
AND GRADING

RETAIL PACK

GIVEAWAY
AND
DISTRIBUTION

STOCK
MANAGEMENT

PLANNING AND
FORECASTING

QA AND
END-TO-END
TRACEABILITY

AUTOMATED
BATCH
REGRADING

Cheese make & processing



integrator
food processing software

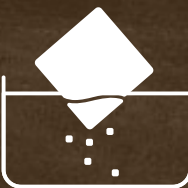
The difference between standard ERP software and Integreater?

Chalk and cheese

The cheese process



Managing the raw ingredients
Milk delivery → Pasteurised or non-pasteurised → Tested for quality. Safeguarded against pathogens.



Mixing the ingredients
Add cultures, i.e. rennet, lactic acid and any ingredients to counteract bacteria or determine colour.



Curds and whey
Transfer products to vats → Cut curds and whey → Fineness of cut determines moisture and texture.



Cooking
Heat treatment regulates size, limits acid producing bacteria and promotes curd contraction.



Final stirring
Lactic acid develops and more whey is exuded. Separate curds by cheese production method.



Moulding and pressing
Mill curds and add salt. Press curds in moulds or send for cheddaring. If required, salt, wax, apply shrink or cloth wraps, or spray with mould.

The **si** effect



Automate your cheese make sheet
Our cheese make sheet module records and analyses all conditions - from milk supplier, vat, moisture and temperatures, even PH levels - to hone in on best conditions to maximise cheese quality.



Data capture - every step of the way
Real-time data capture automatically tracks entire cheese making process, including temperature, moisture levels and QA information.



Ripening

Move product to cheese store. Flavour and texture, together with ripening, weight and rind determined by microbiological, physical, climate and biochemical changes.



Real-time view of stock and maturation
Automatically record storage details, how and when cheese is moved. With live visibility never forget older stock.

Track each test block in stored pallet.
Understand how each cheese is "moving" through maturation.

Analyse make, maturation and storage conditions for quality cheeses to help replication for future batches.



Product suitability

Even if safety & legal requisites are met, texture, flavour or look may deem cheese unsuitable.



Grading

Expert grader regularly assesses ripening of test blocks from each of the vats for quality, consistency and assigns a grade.

Automated batch re-grading and cheese profiling

Integrator updates entire batch whenever a block is graded and changes all product codes. Automatic alerts sent whenever re-grading is due.

Individual cheese profiles identify which products are suitable for each customer.

700

UK produced named cheeses
(source: British Cheese Board)

Yield and giveaway



Improve yield, decrease waste and increase profitability
Real-time production run analysis improves yield, minimises giveaway on fixed weight and mass balance.

Recognise why a block or batch is producing more off-cuts than usual.

7-8%

Grated and sliced cheese market growth p.a.

Prime finished products

Secondary offcuts

Waste

Know what should be processed, by customer spec, plan and forecast
Scan prime finished products, measure in real-time, and catch giveaway of fixed weight product. Box, weigh and label.

Weigh and label. Sell or reissue into production for further processing.

Automatically capture waste for mass balance.



QA & traceability

QA determines cheese conforms to legal, customer requirements and the grade to achieve payment.

Complete forward and backward traceability assured

Data capture ensures complete traceability and records errors.

Stock valuation

Identify variances, stock anomalies and rejections against standard cost to assess stock valuation.

Maximise your cheese quality

You know what it takes to make a great cheese, we know that keeping a detailed record of the process is imperative. That's why you can now throw away the paper and go digital thanks to our unique automated cheese make sheet.

Automate your cheese make sheet

Our Integreater cheese make sheet software manages all the ingredients that go into the vat and the conditions of the make. It automatically pick-ups and records process points in real-time, and analyses all conditions, including:

- supplier details
- volume of milk within each vat
- milk density and the amount of fat within it
- whenever temperature has been taken and for how long
- PH levels, moisture readings and salt content.

Ultimately, it provides you with all the information you need to compare each cheese make with the grade and quality of the resulting product.

Cheese make pick-up points recorded in real-time

At a detail level, we've automated the process pick-ups within the software. For instance, the application takes the temperature straight from dairy system rather than relying on someone manually reading from a dial and keying in the data; it records the temperature milk is heated to and the time before rennet is added; and it captures the elapsed time for heating before it's moved on to the next stage of the process.

And for those elements that still need to be keyed back in, we've built the steps into the cheese make sheet process to ensure that information is recorded in real-time rather than retrospectively.



Our unique software defines exactly how the cheese make was delivered. So, when one good batch is compared to a less valuable one, we can, over time evaluate data that will help to pinpoint where the make process influenced the maturation process. **Rob Stephens, CEO, SI**



SI - Recipe Data Entry 8.15.4.3 User: VATS integrator food productivity software

Production Date: 17/09/2018 Vats: 01,02,03,04,05,06 Logout

PLC	Note	Status	Vat No	Product	Prod. Batch	Recipe	Stage	Milk Volume	Blocks
		Active	03	Matu Wht Ched - ** - ** - NG	8260-07	Maturing White Cheddar	Milling	22490	125
		Active	04	Matu Wht Ched - ** - ** - NG	8260-08	Maturing White Cheddar	Tables	22490	125
		Active	01	Matu Wht Ched - ** - ** - NG	8260-09	Maturing White Cheddar	Scalding	22480	125
		Active	02	Matu Wht Ched - ** - ** - NG	8260-10	Maturing White Cheddar	Cutting	22480	125
		Active	03	Matu Wht Ched - ** - ** - NG	8260-11	Maturing White Cheddar	Renneting	22480	125
		Active	04	Matu Wht Ched - ** - ** - NG	8260-12	Maturing White Cheddar	Starter Culture	22500	125
		Inactive	01	Matu Wht Ched - ** - ** - NG	8260-13	Maturing White Cheddar		22500	12
		Inactive	01	Matu Wht Ched - ** - ** - NG	8260-14	Maturing White Cheddar		22500	1
		Inactive	01	Matu Wht Ched - ** - ** - NG	8260-15	Maturing White Cheddar		22500	
		Inactive	01	Matu Wht Ched - ** - ** - NG	8260-16	Maturing White Cheddar		22500	

NAY-685253A (192.168.4.110) SQL-SCC-01/PSI RunNumber Click an item to open for data entry. Long click to edit note.

Reduce giveaway by $\frac{1}{3}$
Giveaway less and profit more with SI





Being able to reduce giveaway by 50% is not uncommon, as it's often the case that businesses don't think they have a giveaway issue, until they see our combined real-time reports, showing potential six figure savings. **SI Technical Reporting Expert.** 

It's too hard to stop giving product away!

That's a statement that we hear at SI all the time when we talk to customers about how to manage giveaway more effectively. Both cheesemakers and processors have the same problem; it comes down to the difficulty they have with uncovering the true cost of giveaway and its impact on the bottom line.

The answer lies in having the right information, at the right time. This is why we have technical reporting specialists, who work with customers to develop reports based on real-time information that combines data from our integrated planning, forecasting and production modules.

As one of our team explained, "Unless you have the right data in a usable format, you can never have the right information you need to hand, to ensure the cheese profile and product suitability meets your customer specification every time. Our reports and dashboards can show giveaway and costed giveaway, right down to the detail of the product codes.

"Equally, unless you have specialist applications, like our yield manager, you can't predict margins before the raw materials are processed and determine the blocks should be used to account for all variants and complexities.

"At SI, because we understand each of the steps in both the cheese make and cheese processing sectors, how and when to capture weight, when it comes to yield, we can combine data into useful information to optimise raw materials, reduce waste and maximise profit margins.

"Then, as yield specifications can be set for each product, and performance measured by comparing actual results against these criteria. Our software can then deliver real-time information, through dashboards and reports, to immediately alert operators to any discrepancies or for further analysis.

All of this adds up to improved margins, thanks to increased yield and reduced giveaway."

Track your cheese – from the minute it's made

After the cheese make process is completed, our Integreater software records all blocks as they are moved into storage.

The software is clever enough to even track where your test block is in relation to your stored pallet. And, as all this information will be to hand, you will be able to easily identify through individual cheese profiles which products suitable for your customers.

Regrade and automatically update product codes

Electronic data capture also ensures complete visibility, traceability, and reduces recording errors typical in manual paper systems.

Whenever changes need to be applied to all cheeses in a batch, including regrading information, Integreater will automatically change all the product codes, whilst maintaining the original data.

And, permissions can also be set to provide rules flexibility, if your authorised staff need to add and record any ad-hoc information.

Stock control and valuation

When you have control of your stock, you have control of your business. But when the stock is constantly changing, it adds layers of complexity. Our software provides live visibility of stock, the exact location for where it's being kept, no matter where it moves within the storage area and throughout the maturation cycle.

Our Integreater software not only provides details of current stock levels, but also enables quickly and easy access to the value of stock as it is graded. This is achieved by identifying any variances, stock anomalies and rejections against the standard cost.



How much energy are you wasting keeping cheese in stock that just won't make the grade?

Through our collaboration between the food sciences department at the University of Nottingham and South Caernarfon Creameries, a unique project has been researching how to create a model that will help you answer this question.

So instead of guessing what to stock and what to sell, see how you could work with SI and benefit from a world first technology and research collaboration, funded by Innovate UK*, for the benefit of the whole cheese industry.

Read on to find out more about the research and how it could help your business.

*Innovate UK is the UK's innovation agency, sponsored by the Department for Business, Energy & Industrial Strategy.

A female scientist with dark hair tied back, wearing a white lab coat and clear safety goggles, is focused on a computer monitor in a laboratory setting. The background shows various pieces of scientific equipment, including a large green flexible duct. The scene is brightly lit, typical of a modern research facility.

Cheese Collaboration

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Our objective for the research has been to find a way to predict how a batch of cheese will develop and, as a result, help its customers to decide which cheeses to keep and which to sell, minimising wastage. **Bill MacNaughtan, Food Sciences Laboratory Manager, University of Nottingham.**”

Research summary

Even as the food industry has embraced technology to control and standardise their production processes, cheese making retains more than a few reminders of its unpredictable origins as a craft. Every cheese recipe that a site produces will be slightly different, and while this can be great for enthusiasts, it can sometimes prove problematic for the manufacturers.

However, a partnership initiated in 2016 between SI, South Caernarfon Creameries and researchers at the University of Nottingham, may be able to provide a solution that limits wasted energy and time, without changing the product itself.

Unpredictability is a natural consequence of the cheese production process, but maturation can require the product to be held in storage for up to 18 months as its chemistry changes. Keeping stock in this way comes at a considerable cost in terms of both inventory value and storage, especially as the cheese needs to be kept chilled throughout. Currently, cheddar producers will typically overstock in the knowledge that only a proportion of their total inventory will actually meet the required maturation. Out of those that do mature, only some will have the optimum texture and consistency to provide the best yield when cut for retail pack.

Cheese making is unlikely to ever become precise enough to ensure that every cheese produced matures in the exact same way, so instead SI decided to see if there was a way to predict and model how the products will react before placing it in storage.

In this unique research collaboration project, the company teamed up with South Caernarfon Creameries, who have provided both samples and several decades of cheese making experience, together with the experts at the University of Nottingham's Food Sciences department.

With the aid of an Innovate UK grant*, the project has studied mature cheeses in minute detail, to find out exactly what parameters indicating maturation and cutability could be measured and how they might be influenced by the cheese make process.

“Using a texture analysis machine, you can measure how crumbly the cheese is, how elastic it is, and other physical properties,” explained Bill MacNaughtan, Food Sciences Laboratory Manager at Nottingham. “As well as that, we’ve been taking spectroscopic measurements that can give an idea of the chemical makeup of the cheese, and thermal measurements that let us determine its melting point.”

*Innovate UK is a UK Government funded initiative

“Throughout this project, we’ve been making a note of all these measurements at different points along the maturation process and, in the longer term, hope that when we combine it, we will be able to produce a very reliable model of cheese maturation and cutability. This could then allow SI to predict how a batch of cheese will develop, helping its customers to prevent wastage and decide which cheeses to keep and sell. For example, if producers could predict how certain parameters will change, they could minimise energy and storage costs for a cheese that won’t ever develop into a mature vintage product, and this could result in significant cost savings.”

Making use of data

SI’s unique cheese processing technology already tracks a huge amount of data about each batch of cheese, from the raw ingredients right through to the finished product. Now, the plan is to integrate any information uncovered by the researchers at Nottingham, in the hopes of creating a package that allows manufacturers to better predict maturation and cutability.

“Through tighter data capture and detailed information, the research team has already unearthed ways to provide benefit and add value to the product. “For more than two years the scientists compiled the data.

The findings could reveal that many manufacturers aren’t being as consistent in their processes as they believe themselves to be; small changes over time can quickly add up,” explained Rob Stephens, SI’s CEO.

“If, because of this collaborative project, we unearth a way to predict which cheeses will mature, it will be a major breakthrough for the industry. This predictive model would also complement our unique software that can already deliver significant benefits to cheese makers and processors.

Our unique digital version of the traditional cheese make sheet captures live data from the processing equipment used to create each batch. Using this software, we can define exactly how the cheese make was delivered, pinpointing things like changes in temperature. So, when one good batch is compared to a less valuable one, we can, over time gather information that will help to pinpoint where the make process influenced the maturation process.”

With this information at their fingertips, cheese makers can look to prevent those small changes in the cheese make that will make a big difference to the end result. And through our ongoing research and development, SI can help to make the cheese industry more sustainable, through a reduction in both energy and unnecessary



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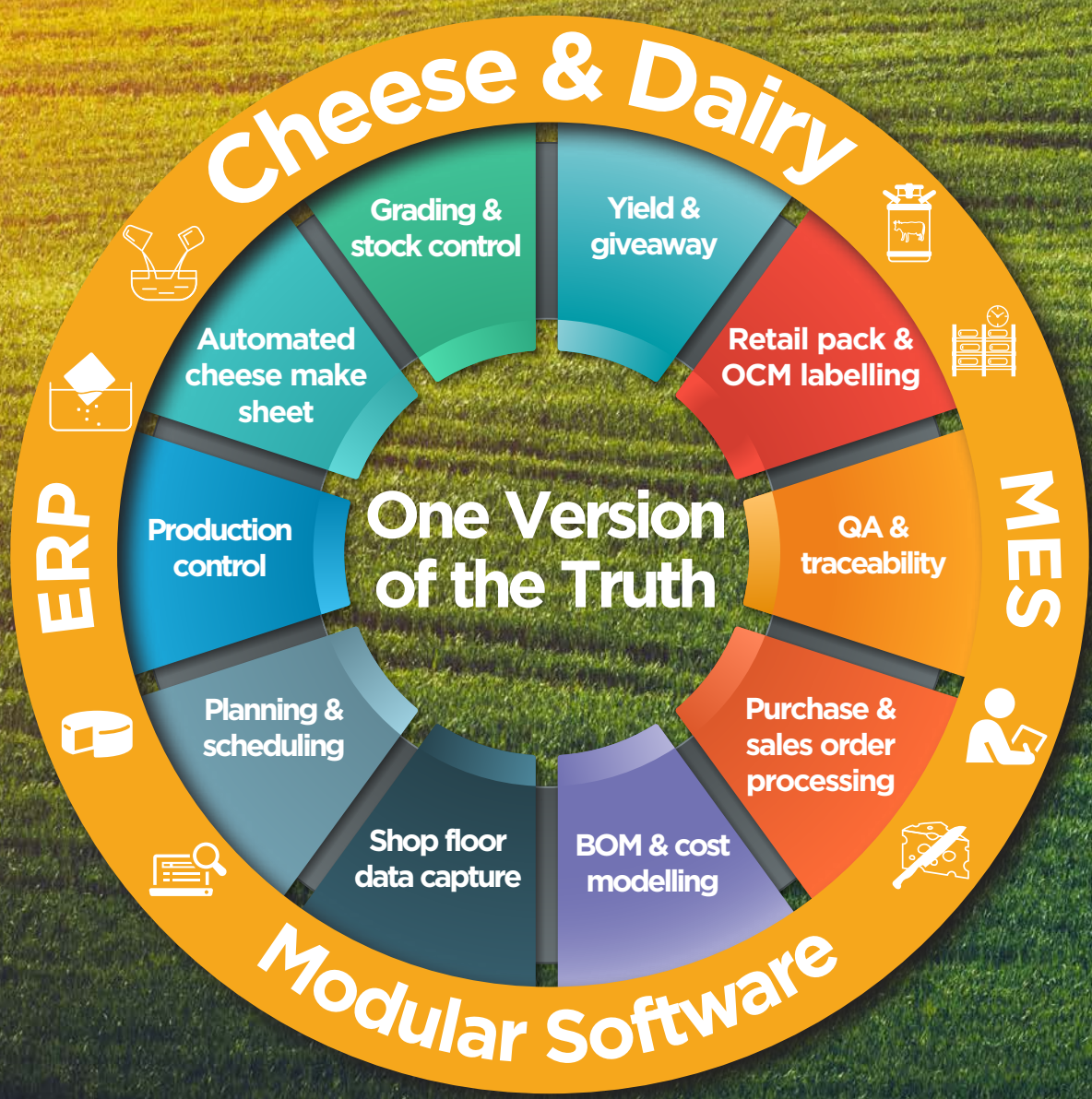
When data is compiled, it could reveal that many cheese makers aren't being as consistent in their processes as they believe; small changes over time can quickly add up.

Rob Stephens, CEO, SI

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Cheese & Dairy



At SI, we know cheese

From monitoring the recipe make, maturation and grading, through to the block of cheese being cut, its yield, giveaway and distribution. We've invested our know-how to design a set of software to manage and add value to every one of your processes.

Unique Cheese make sheet software.

Our modular cheesemake software manages all ingredients that go into the vat, providing real-time data capture for all your make processes, allowing you to hone in on best conditions to maximise cheese quality.

Track your cheese - from the minute it's made.

Our cheese grading and stock management applications provide real-time visibility, even when stock is constantly changing throughout maturation and grading. It will even change all batch product codes and automatically alert you when re-grading is due.

Improve yield, reduce giveaway and increase profitability.

Whether you're a cheese maker or a processor, our software uncovers the business cost of your giveaway. By simplifying your planning and forecasting, you always know the customer specification, cheese profile and product suitability of every order.

And with SI's modular cheese software at the heart of your operations, real-time data capture delivers end-to-end traceability and audits in minutes

SI works with many of the UK's leading cheese companies, including:

Joseph Heler • Wensleydale Creamery • South Caernarfon Creameries • Long Clawson Dairy • Butlers Farmhouse Cheeses • Cropwell Bishop Creameries • Caledonian Cheese Company • Exton Foods

At SI, everything we do is geared around helping our customers to run their perishable food businesses as efficiently as possible, whilst enabling them to fulfil their customer expectations. They rely on us to provide superior levels of control throughout their businesses to provide a real-time understanding of what's going on. By working with us, and using our specialist software, they can make informed, effective decisions and fine-tune their operations in real-time.

At SI, we know that a business relationship is based on mutual trust and understanding. We work alongside our customers to get under the skin of their operations and define the very best solutions to fit with the way their businesses work. The SI difference is our combination of a proven solution,

created directly for the food production industry, and the unrivalled knowledge provided by our specialist team.

Our values underpin everything we do – straightforward, innovative, tenacious, committed and trusted - and are the direct result of our own customer feedback when we asked them what we were like to work with and how we were different to other suppliers.

Whatever the challenge, we are driven by a common purpose to ensure our customers are always satisfied. We never give up; we always take ownership; we make it work for you. Our drive, tenacity and commitment are the foundations of our longstanding relationships.

“What makes you different from the competition?
Specialist solutions. People. Real service. **Faccenda Foods**”

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