


Enact: A New Way to Work With Quality

A photograph of two men in business attire sitting at a desk. The man on the left is wearing a light blue shirt and a dark tie, looking down at a laptop. The man on the right is wearing a dark suit, a white shirt, and a striped tie, looking towards the laptop. The image is overlaid with a semi-transparent dark grey rectangle containing the text.

Delivering the insight
you need, when and
where you need it.

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Manufacturers collect process quality data in the hope of gaining strategic insights that can help improve operational efficiency, product quality, and yield as well as reduce costs and waste. Yet in today's data-rich environment, a wide gulf exists between data collection and true data understanding. Advances in automation and connected devices mean manufacturers have more data than ever, but accessing and analyzing that data can burden IT and overwhelm operators and quality professionals. To overcome these challenges, InfinityQS® designed the Enact™ Quality Intelligence platform. Enact takes the work out of quality intelligence – by working like manufacturers do and presenting strategic insight in a focused, visual way, when and where you need it.

Purpose-Built for Modern Manufacturing

Technology is no longer the sole domain of the IT department. Unlike the manufacturing landscape of a decade ago, when IT typically dealt with all of a company's tech and data reporting needs, today's approach often incorporates technology throughout shop floor processes and beyond. As a result, workers at every level have access to useful data that can help improve efficiency and product quality.

Yet as the amount and sources of data increase, sifting through data stored in multiple locations to find the exact information you need at any given moment becomes more and more difficult. Manufacturers find themselves needing technical help to address more complex data needs. Data analytics can be an expensive undertaking when entire IT teams are required to bring data together.

The InfinityQS Enact Quality Intelligence platform bridges these needs. Designed around a native cloud model, Enact collects, aggregates, and analyzes data to deliver tailored intelligence with the manufacturing process in mind. As a result, Enact streamlines and optimizes quality intelligence data to improve your processes and your product quality.



The Way You Work with Enact

Different members of your manufacturing team interact with quality data in different ways and toward different ends. Operators need to see which types of data need to be collected and when. Operations managers need to have a broad view of what's happening across their designated area of responsibility — in real time. Quality professionals need immediate notification of quality issues. And the ability to get a “big picture” view of which processes are working best—or are in dire need of attention—can help managers and executives solidify and implement best practices that offer business-wide benefits

Enact addresses these needs in two ways. First, Enact uses process models to describe how you manufacture your products. These dynamic process diagrams show you exactly where and when various materials—which are represented by *inputs*— flow into operations to create *outputs*. You can combine and modify process model elements to create a visual process map, from raw materials to finished goods. Notifications, collection points, inputs, outputs, operations, and other important information appear in the context of your actual manufacturing process.

To provide visibility into the quality data that these process models help you collect, Enact provides role-based functionality that helps users focus in on the most vital information for them. You can create and distribute standard dashboards to help keep employees on the same page, across teams or geographic locations. At the same time, dashboards provide the flexibility to customize their appearance, analysis, and data selection that a particular user needs at any given time.

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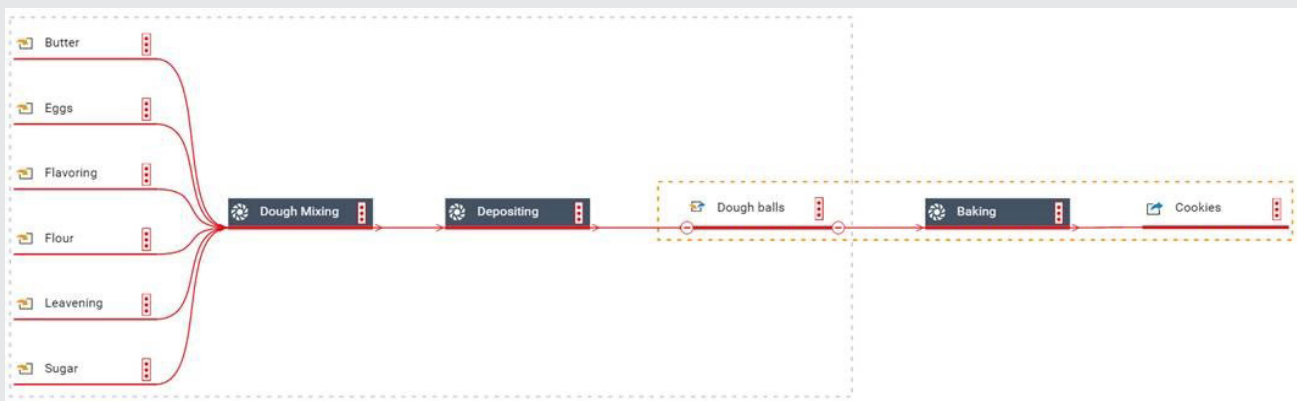
Process Models Illustrate Operations

Enact process models and parts recipes work together to illustrate manufacturing operations within a holistic framework. You see how materials are transformed through operations to create an end product and where data collections are performed to verify quality. Process models can be created, combined, and reused to represent how you make your products across different manufacturing lines, departments, and sites.

A Process Model at Work

A simple example can help to illustrate the benefits of process model functionality. Suppose you manufacture cookies. With the visual representation the process model provides, you can see all the points in the flow of the cookie-making process:

Figure 1: Process models form a holistic view of operations.



Raw materials (butter, eggs, flour, and so forth) undergo operations (dough mixing, depositing), resulting in a dough ball. This dough ball goes through the next operation (baking), resulting in a cookie. The final operation is inspection at the inspections station. Inspection involves addressing two primary questions:

- › **Are the cookies the correct size and weight?** If the cookies are too light, packages will end up underweight and consumers won't be happy. If the cookies are too heavy, you are basically giving product away and will end up short on ingredients—and profit.
- › **Do the cookies have the proper taste, odor, and color?** The correct color, moisture, and overall appearance are vital to consumer satisfaction. Cookies that are burnt, too dry and crumbly, or too soft just won't sell (and won't taste good, either).

If issues with weight or appearance are discovered during inspection, where in the process do you need to make adjustments? It's difficult to locate exactly what went wrong and where. But by having a process model, you can see that:

- › Issues with cookie weight relate to the depositor.
- › Issues with over- or under-cooking relate to the oven that is used in the baking operation.

These simple examples illustrate how the process model can benefit more complex manufacturing processes. In this example, you can also extrapolate the following:

- › If a cookie is too sweet or salty, you should examine the mixer that was involved in making the dough.
- › If the packaged cookies are cracked or broken, inspect the packaging equipment.
- › For cookies with more ingredients, such as chocolate chips, too many or too few chocolate chips might relate to the mixer or depositor.
- › For cookies with decorative items such as frosting or sprinkles, issues with these decorations likely relate to a depositor.

The use of a process model can lead to true root cause analysis of your manufacturing processes. Even inspections performed at the end of the line can provide these benefits because Enact knows what processes and operation steps are responsible for the feature being evaluated at the end of the line. Once deployed, the process model understands which operations and materials result in certain outcomes or issues. As a result, operators are freed from tedious tasks and can spend more time doing other work..

Support for Growth and Innovation

Enact's software as a service (SaaS) model makes it incredibly easy to set up process models to enable quality checks for additional products or to scale up or down across sites. From a single location, an administrator can easily increase or decrease the number of users, process models, and data collections in use across the entire enterprise.



Enact is designed to reduce the burdens on IT resources that are often already stretched thin. Process models can be modified to add new processes, products, or plants to your workflow. For processes that produce more than one variety of product, process models are flexible to accommodate variations in part recipes. You can expand models to show the entire manufacturing process, from incoming raw materials to finished product, or collapse to only a single operation.

Deployments from one site can also be piggybacked by other sites that make similar products. Process models, recipes, part lists, specifications, and many other configurations that are required for a deployment are intended to be reused by anyone in the organization. As a result, you can dramatically reduce deployment times and promote enterprise standardization, without reinventing the wheel.

These capabilities help to keep everyone, from operators to CEOs, informed and in sync. Instead of separate teams in separate shifts or plants performing checks and evaluations in different ways, your company—and quality procedures—become unified. Spotting conditions that could indicate a problem becomes easier. Likewise, users can more quickly identify best practices that produce outstanding results.

Role-Based Dashboards and Notifications

All manner of data streams are generated and managed on the factory floor, but each person is responsible only for a small fraction of those streams. For each user, Enact uses role-based functionality to determine privileges, assigned tasks, and data visibility. Based on each user's defined role, Enact evaluates:

- › **What you're allowed to do.** Can you create dashboards? Can you enter data? Can you edit data?
- › **What you're allowed to see.** Are you allowed to see everything in the company? Only a certain region? Only a specific site? Only your department or area?

This tailoring of information helps ensure data security and helps users be more productive in their roles. Without role-based isolation of data, important signals and notifications can be missed in the tide.

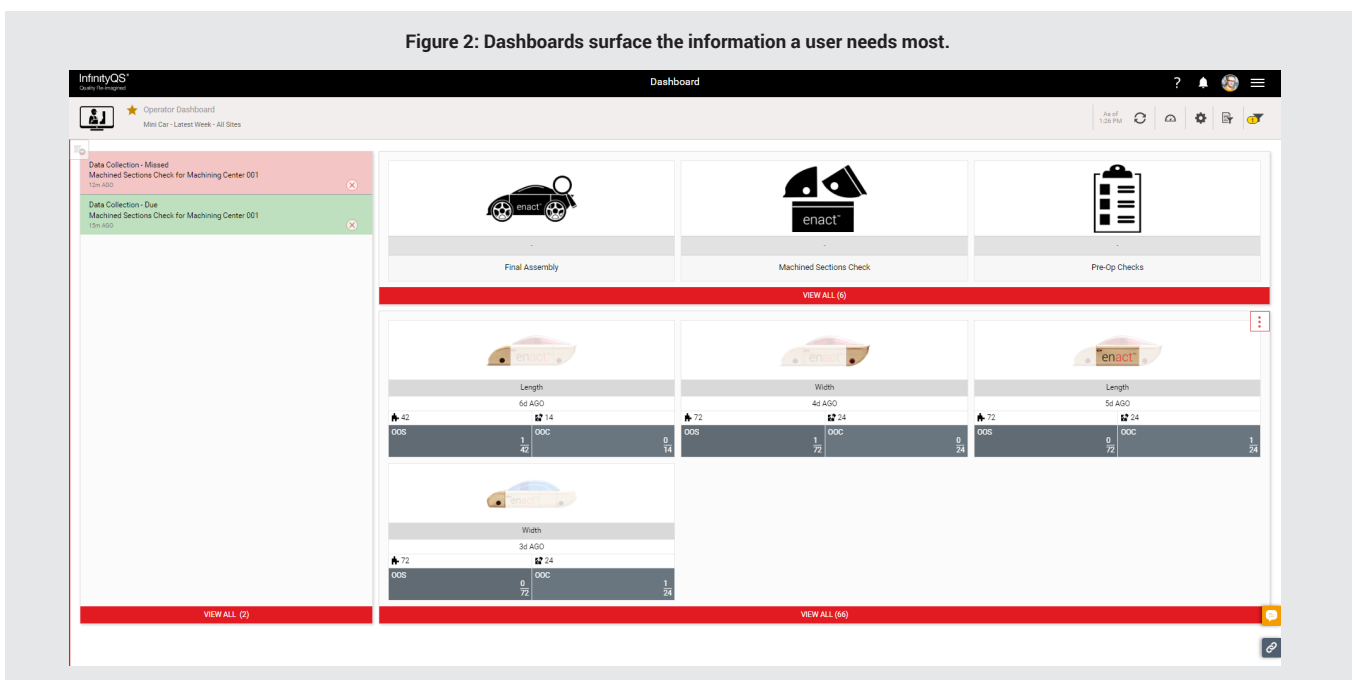
One Framework, Many Views

Enact provides visibility into your quality data via visual dashboards, available on any device, from any location. Dashboards are designed to use one framework to present essential data to different users, according to their roles, access permissions, and levels of responsibility.

For example, the dashboard in Figure 3 might be accessed by a quality technician, filler operator, and quality manager. Each will see different data:

- › **Filler operator.** The filler operator has access to data for the fillers on which he works. Today, he is working only on Filler 01. The operator will see only notifications that are targeted to the operator or to Filler 01. He'll also see data collections for Filler 01 and analysis for the operations that he has visibility to, with any issues prioritized in the tile. Nothing else will show, although the operator can see an analysis of all his data streams by clicking View All.
- › **Quality technician.** The quality tech has access to data from across the entire site. Today the technician, like the filler operator, is assigned to Filler 01. The tech will see notifications for the whole site because she might need to respond to any issue at any time. However, she'll see data collections only for Filler 01. (Like the operator, the tech can click View All to see any other data collections for which she has permissions.) The technician will see analysis for all site processes that are having issues.
- › **Quality manager.** The quality manager has access to data for multiple sites. The manager's view will be similar to the quality technician's but will span multiple sites.

Figure 2: Dashboards surface the information a user needs most.



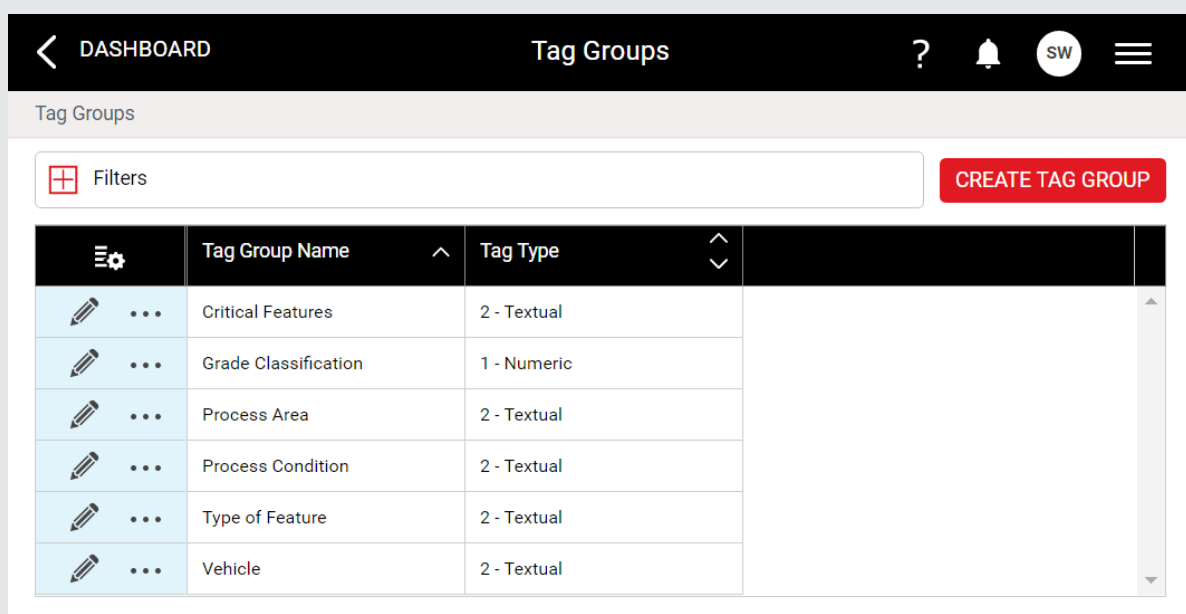
In each case, the dashboard's prioritized layout delivers the most important data first. Enhanced notifications are easy to see; badges alert users to new notifications. Users can customize the look and feel of standardized dashboards, or create their own comprising a variety of tiles. Drilling down into details is easy, plus users get "at a glance" information that helps them focus on the task at hand.







Flexible Filtering

Enact provides other methods for focusing data. *Tags*, *parameter sets*, and *filtering* enable users to see exactly what they need to know.

Tags. You can apply tags to enable the selection, filtering, and sorting of data.

Figure 3. Used for filtering, sets of tags within Tag Groups specify characteristics to identify associated elements.



	Tag Group Name	Tag Type
 ...	Critical Features	2 - Textual
 ...	Grade Classification	1 - Numeric
 ...	Process Area	2 - Textual
 ...	Process Condition	2 - Textual
 ...	Type of Feature	2 - Textual
 ...	Vehicle	2 - Textual

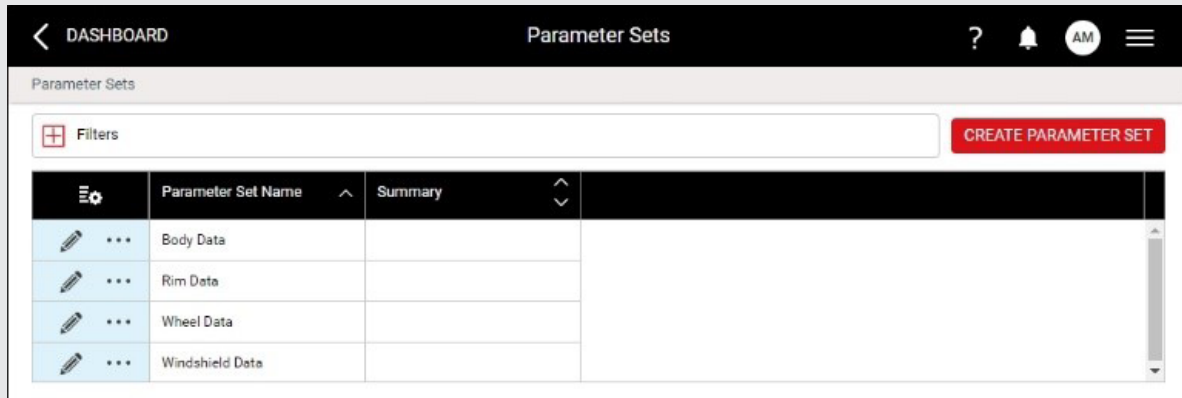
Use tags to categorize items by

- › product classification (steel parts, aluminum parts, carbonated drinks, unsweetened drinks);
- › feature type (critical to quality, process checks, functional check);
- › lot (purchase order, customer); or
- › process (equipment brand, model).

You can apply multiple tags for flexible, precise descriptions. For example, you might tag an item as carbonated product, sweetened product, and co-packaged product.

Parameter sets. Apply parameter sets to support the creation of standard dashboards (e.g., Box-and-Whisker Plot on the left, Pareto on the right, data table at the bottom).

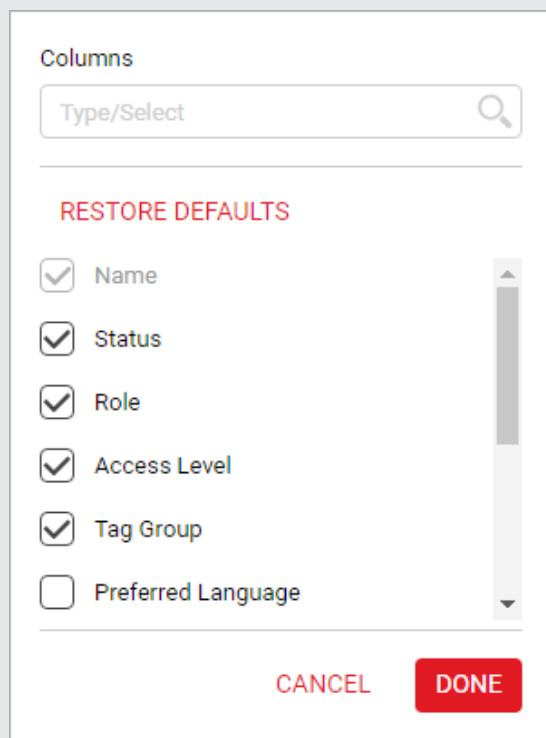
Figure 4. Parameter sets let you limit the specific data that surfaces in your dashboard.



You can then repurpose those dashboards for different data collections. For example:

- › Show only critical quality checks for the most recent month.
- › Show all checks for today.
- › Show all checks from yesterday.

Figure 5. Configuring filters is easily accomplished through a simple dialog box.



Filtering. Filtering functionality enables the use of parameter sets and dashboards as a starting point for analysis, then gives users the ability to focus on specific items of interest. Filtering can also be used to find relevant items with large lists of things (e.g., specification limits).

Users can customize the look and feel of standardized dashboards, or create their own to get “at a glance” information that helps them focus on the task at hand.

Enact a New Level of Quality

Enact's unique features enable powerful, flexible visibility, knowledge, and understanding of your quality data. With the focused insight that Enact supports, users across your operations, quality, and management teams can find new ways to minimize or prevent quality problems and increase the use of best practices and standards. Now manufacturers can have their quality — and understand it, too.

Want to learn more? Visit www.infinityqs.com/enact to see Enact in action.



About InfinityQS International, Inc.

InfinityQS International, Inc.® is the global authority on enterprise quality. The company's Quality Intelligence solutions deliver unparalleled visibility and strategic insight across the enterprise, from the shop floor to the boardroom, enabling manufacturers to re-imagine quality and transform it from a problem into a competitive advantage. Powered by centralized analytics, InfinityQS solutions provide operational insight to enable global manufacturers to improve product quality, decrease costs and risk, maintain or improve compliance, and make strategic, data-driven business decisions. Headquartered near Washington, D.C., with offices in Seattle, London, and Beijing, InfinityQS was founded in 1989 and now services more than 2,500 clients — from the smallest to the world's leading manufacturers, including Ball Corporation, Boston Scientific, Graham Packaging, and Medtronic. For more information, visit infinityqs.com.

Corporate Headquarters
InfinityQS International, Inc.
12601 Fair Lakes Circle
Suite 250
Fairfax, VA 22033
USA

T/ +1-703-961-0200
E/ GetInTouch@infinityqs.com

EMEA Headquarters
InfinityQS Europe Ltd
730 Capability Green
Luton, Bedfordshire
LU1 3LU
United Kingdom

T/ +44 (0)1582 380560
E/ GetInTouch@infinityqs.com

China Headquarters
InfinityQS International, Inc.
2107B, Building No. 1,
G.T. International Center
Yongdangli,
Jianguomenwai Avenue
Chaoyang District,
Beijing, China 100022

T/ (86)10 6569 9909
E/ GetInTouch@infinityqs.com

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