



Ingredion.

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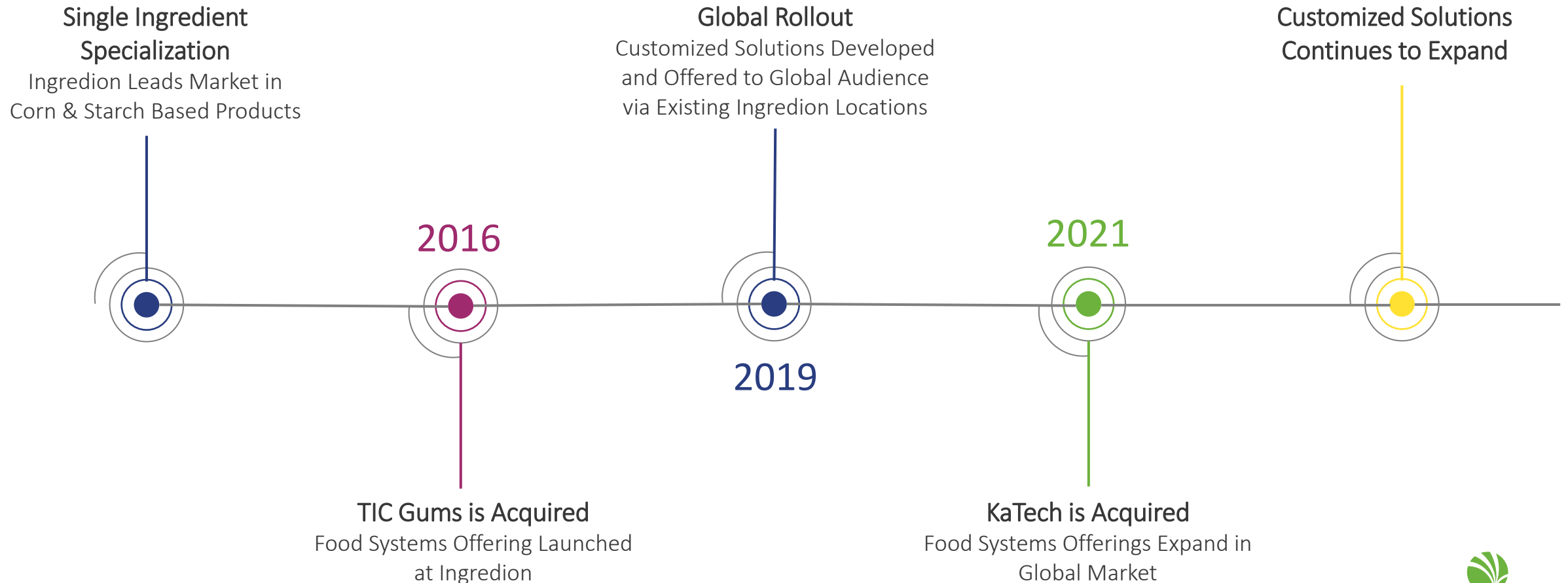
Using Devex PLM to Improve Efficiency in Food Systems Development & Commercialization

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September 20th, 2023



Ingredion Evolution as a Food Systems Solution Supplier



Food Systems: A foundational capability that enhances our anchor ingredients



Project Implementation Overview

Scope:

Implement a global PLM system to improve agility and efficiency for the Food System business

Implementation timeline:

7 months (+ 1 month extension)

End users:

- **Food Systems technical teams** located in 4 regions
- **Food technologists and culinologists** that work in food applications in which Food Systems are widely used i.e. sugar reduction, alternative meat or alternative dairy
- **Quality and Regulatory** team members that are involved in the commercialization process of Food Systems



The expectations of Selerant[®] Devex as a Systems Formulation & Management tool



Enhance building of formulation expertise and knowledge exchange - Multiple technologists in real time working on same project



Reduce time spent on off-line regulatory & quality evaluation and creation of technical datasheets - Provisional data sheets and nutrition data sheets available for experimental food recipes and systems



Enhance visibility of real time food system and final recipe costing - Develop system formulation in parallel with food recipe, while keeping the target cost in mind



Metrics - To optimize opportunities and resources



Reduce development time, prevent duplication and reduce number of missed opportunities - Improved access to existing experimental and finished formulations as start for new projects

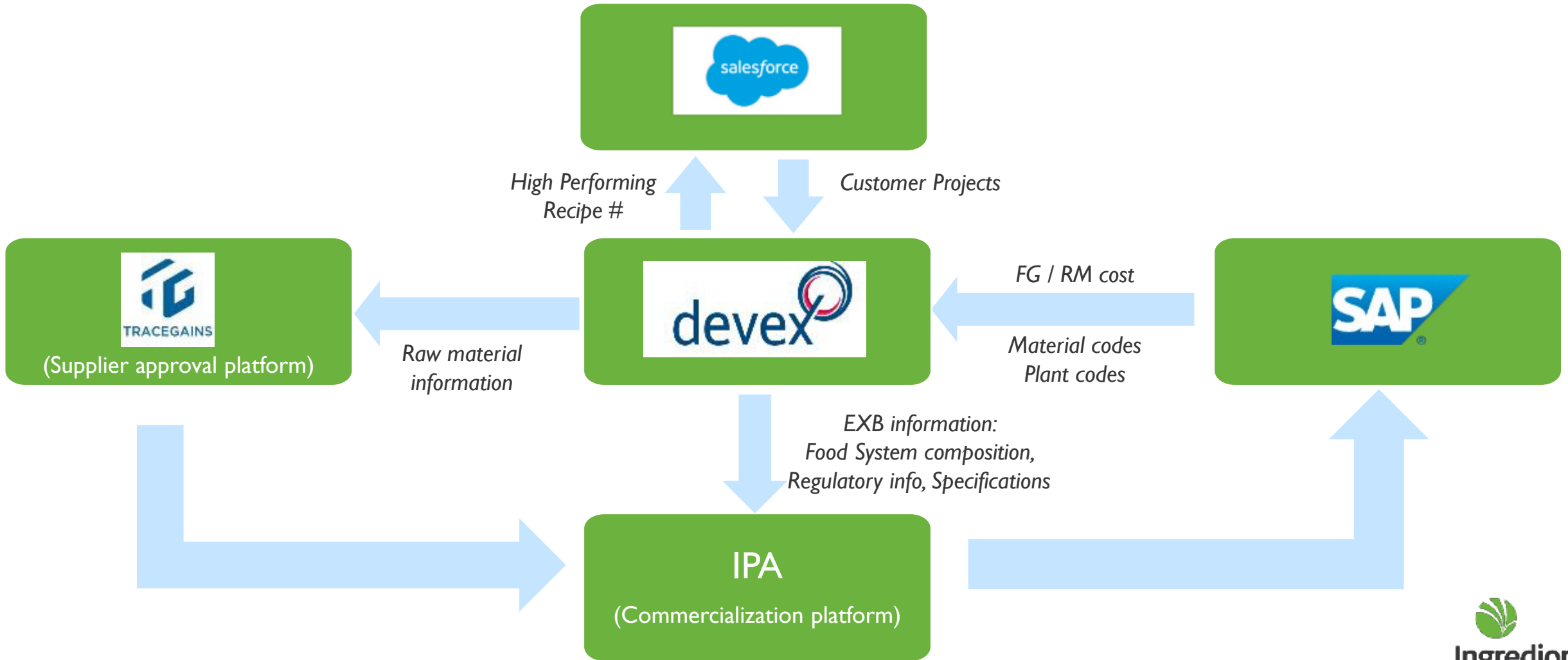


Higher commercial responsiveness/win rate - Enhanced speed & accuracy of food system and food recipe development

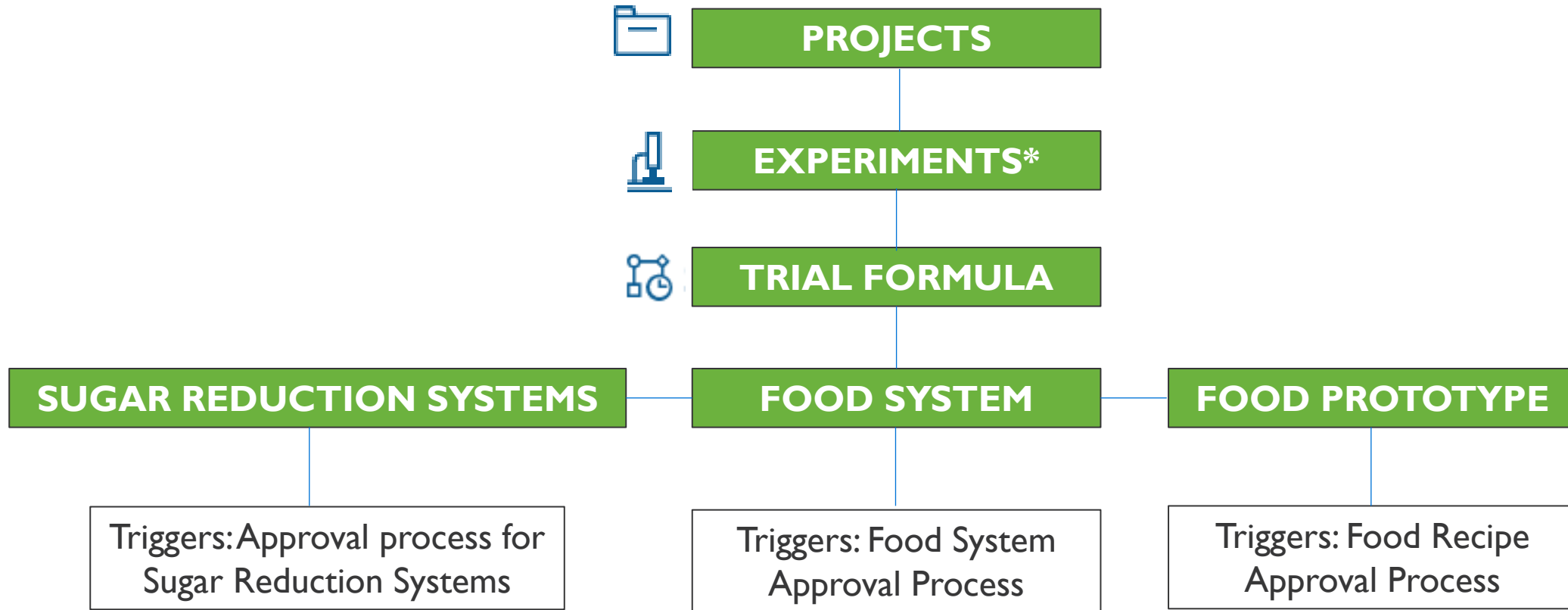


Increase customer loyalty - Agile solutions and formulation service that answers customer's needs

Selerant[®] Devex connectivity with other Ingredion platforms



Today, Selerant[®] Devex is used to centralize development work

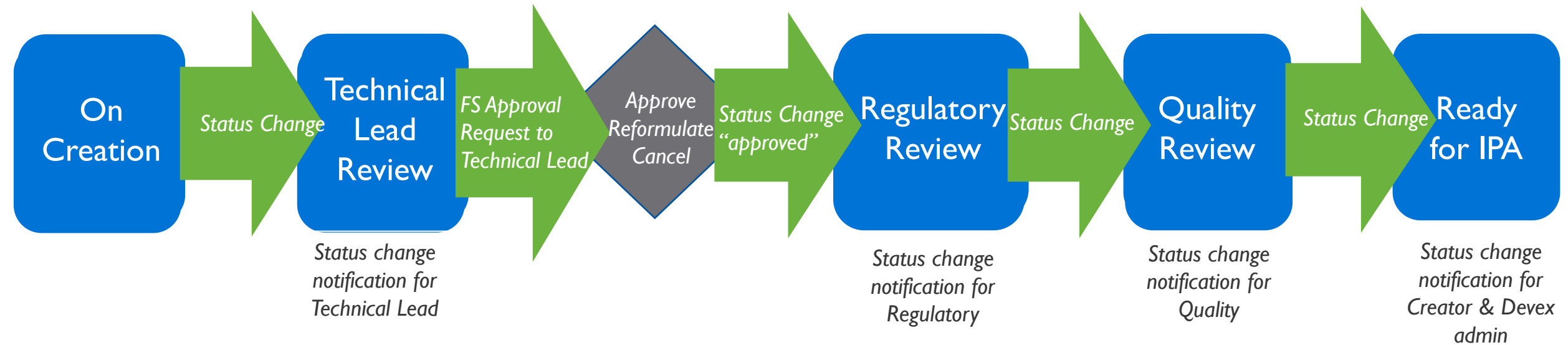


Workflow : Ingredion Food System Approval Process

Devex Status

Approval

Streamlined process for all regions to commercialize newly developed Food Systems



Additional approval workflows implemented for Food Recipes and External Raw Materials



Best practices during implementation

- Define processes with a cross-functional and cross-regional team
- Streamlining of approval workflows for all regions
- Always seek regional buy-in
- Ensure solution can be leveraged across other functional areas
- Know your team members strengths and weaknesses
- Corporate IT is fully involved with design and implementation
- Communication, communication, communication



Challenges faced during implementation

- Data loading
- Meeting all regional needs
- Design discrepancies
- Time zone differences & calendars availability
- ... and a baby on the way

Today, Selerant[®] Devex is a key enabler for our Food Systems business

- Contains required calculations for every food segment to facilitate the creation of Food Systems and recipes containing Food Systems
- Creates prototypes reports for food recipes containing Food Systems and Sugar Reduction Systems including nutritional labels according to the regulatory guidelines of US, Canada, Mexico, EU, Colombia, and Brazil
- Enables the recording of experimental data for Food Systems development
- Contains the technical, regulatory, and quality approval workflows to streamline and speed up the commercialization of Food Systems
- Creates Technical Data Sheets, detailed Nutritional Reports, and lab printout reports for experimental trials of Food Systems

Soft and chewy Baked donut

IDEA SOLUTION

NATIONAL 123 Search is a modified food search based from recipe. It will check and search across all food products on file and return the address of 123 or more of NATIONAL 123 Search on the formulation.

INGREDIENTS	Units
Part A	
1. Flour, granulated	12.47
2. Sugar, granulated	14.23
NATIONAL 123 Search	18.58
Baking powder	0.38
Prepared	0.00
Part B	
1. Egg, whole	12.47
2. Milk, whole, grade A	12.47
Total	50.00

Preparation:

1. Mix Part A.
2. Dry Blend Part A thoroughly and store.
3. Mix Part B in a large bowl with the paddle attachment for 2 minutes.
4. Add milk and whole egg from Part B and mix on low speed for 30 seconds.
5. Increase mixer speed and mix for 12 minutes.
6. Add mixed blend and mix on low speed for 30 seconds.
7. Increase to medium speed and mix for 30 seconds.
8. Place dough in greased 4 1/2 cup and 1/2 inch diameter donut pan (12 donuts).
9. Bake in 350°F Dry Air Convection Oven for 10 minutes.
10. Cool, pack & store.

Nutrition Facts

Serving Size 30g

Amount per serving

Calories 130

Total Fat 1g 2%

Sodium 1mg 0%

Total Cracked Protein 15g 30%

Total Sugar 1g 2%

Total Fiber 1g 4%

Total Fat 1g 2%

Total Sugar 1g 2%

Total Fiber 1g 4%

Food System Test MS000010009

Chemical and Physical Properties

Property	Value	Min.	Max.	Unit
CPK	1			

Microbiological Limits

Property	Value	Min.	Max.	Unit
Aerobic Plate Count	100			cfu/g

Nutritional Data (per 100g)

Property	Value	Min.	Max.	Unit
Energy	260			kJ
Protein	10.0			g
Total Fat	10.0			g

nutritional information

Typical Nutritional Data per 100g

Component	Value	Unit
Protein	10.0	g
Total Fat	10.0	g
Total Cracked Protein	15.0	g
Total Sugar	1.0	g
Total Fiber	1.0	g



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Thank you!