Proagrica

Delivering a Precision Agriculture Solution

HPCC SYSTEMS®

Using Big Data to Help Feed the World

JEFF BRADSHAW, GROUP CTO AT F4F, DBT AND ADAPTRIS, RBI

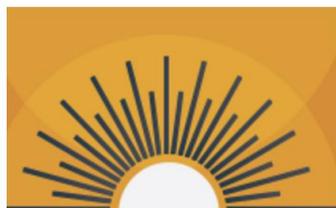GRAEME MCCRACKEN, CHIEF OPERATING OFFICER, PROAGRICA, RBI

F4F — ADAPTRIS agricultural e-commerce

Who are Proagrica
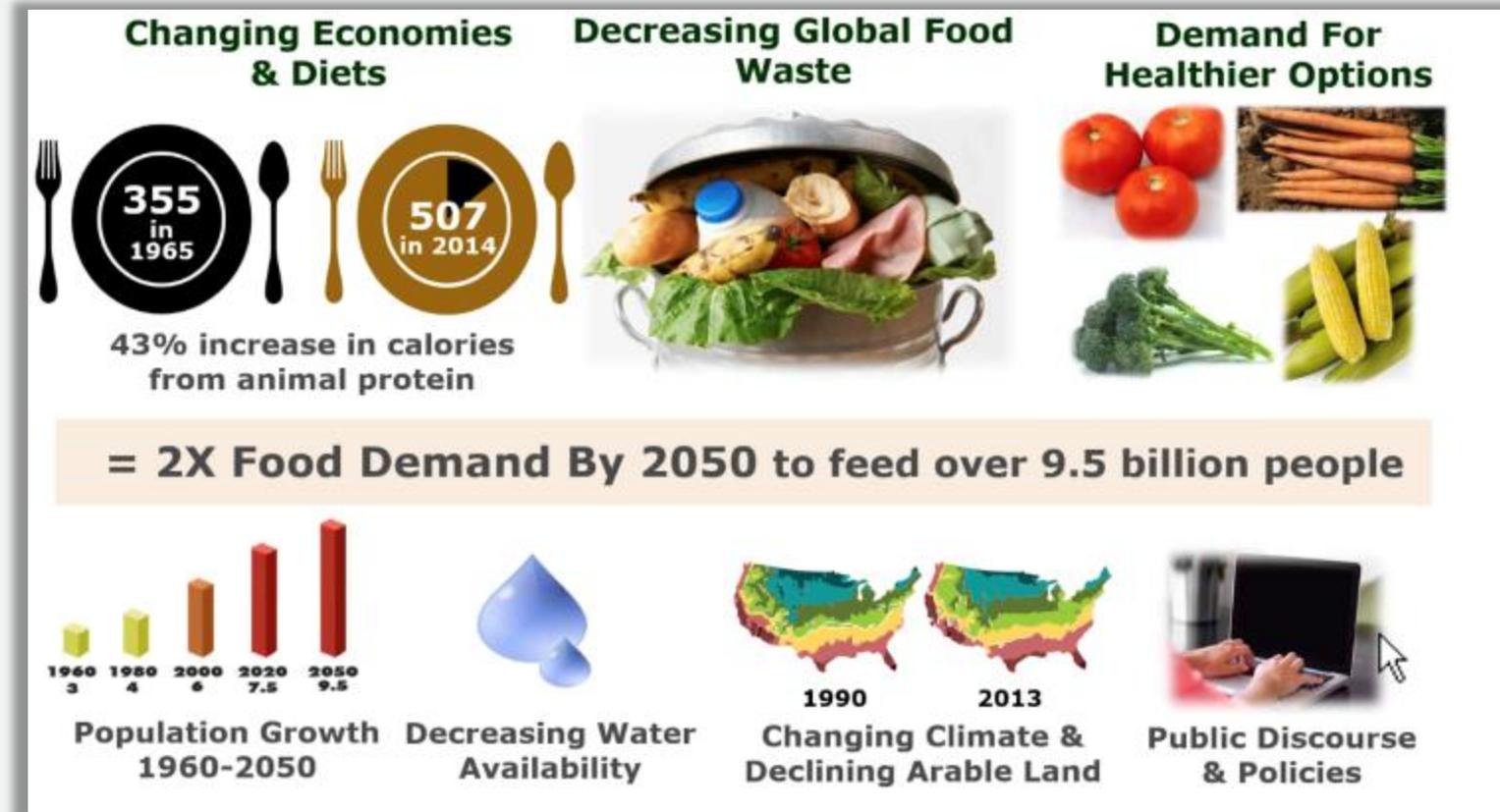

Proagrica, the global agricultural division of RELX, drives growth and improves efficiency by delivering high-value insight and data, critical tools and advanced technology solutions
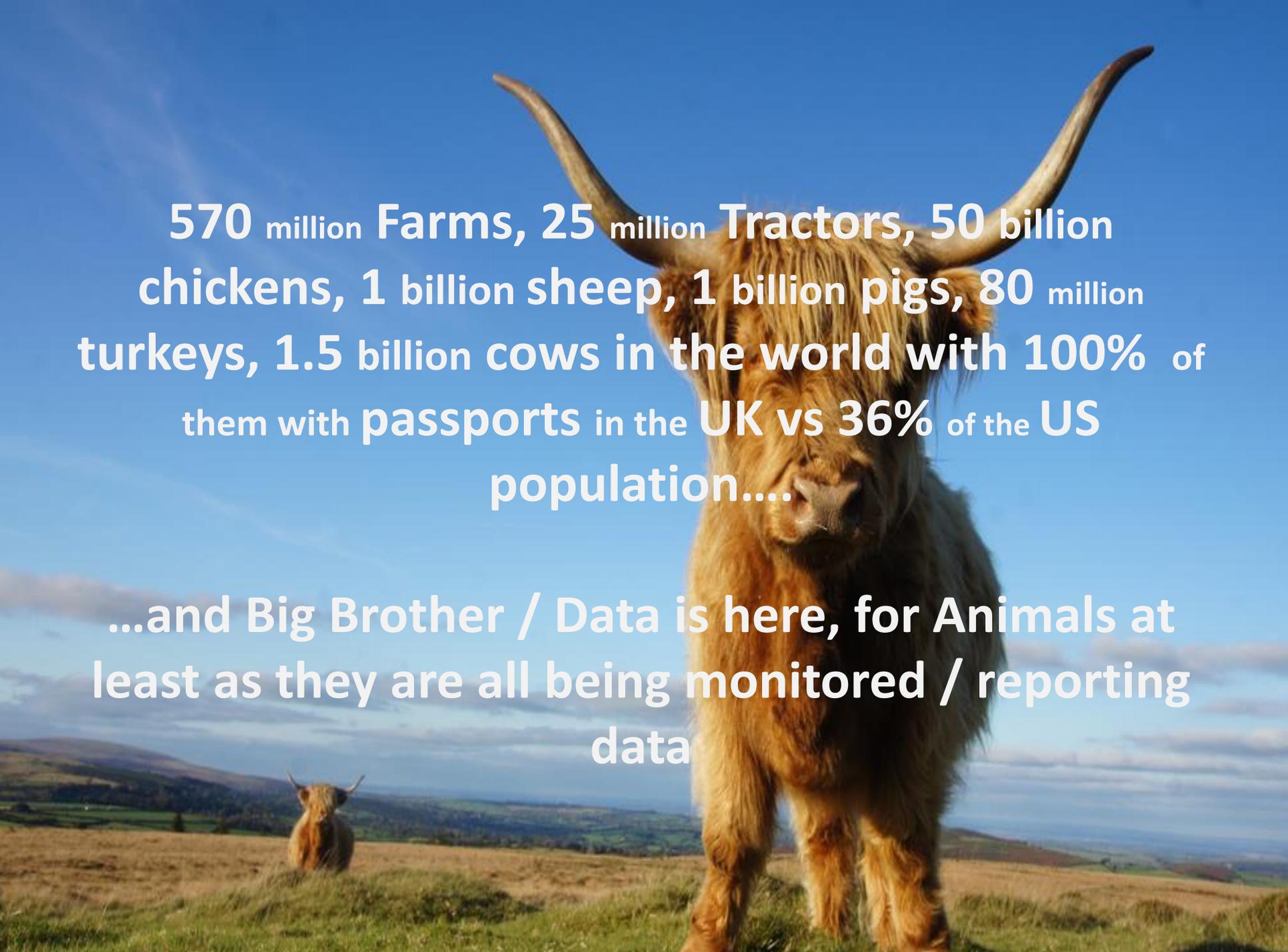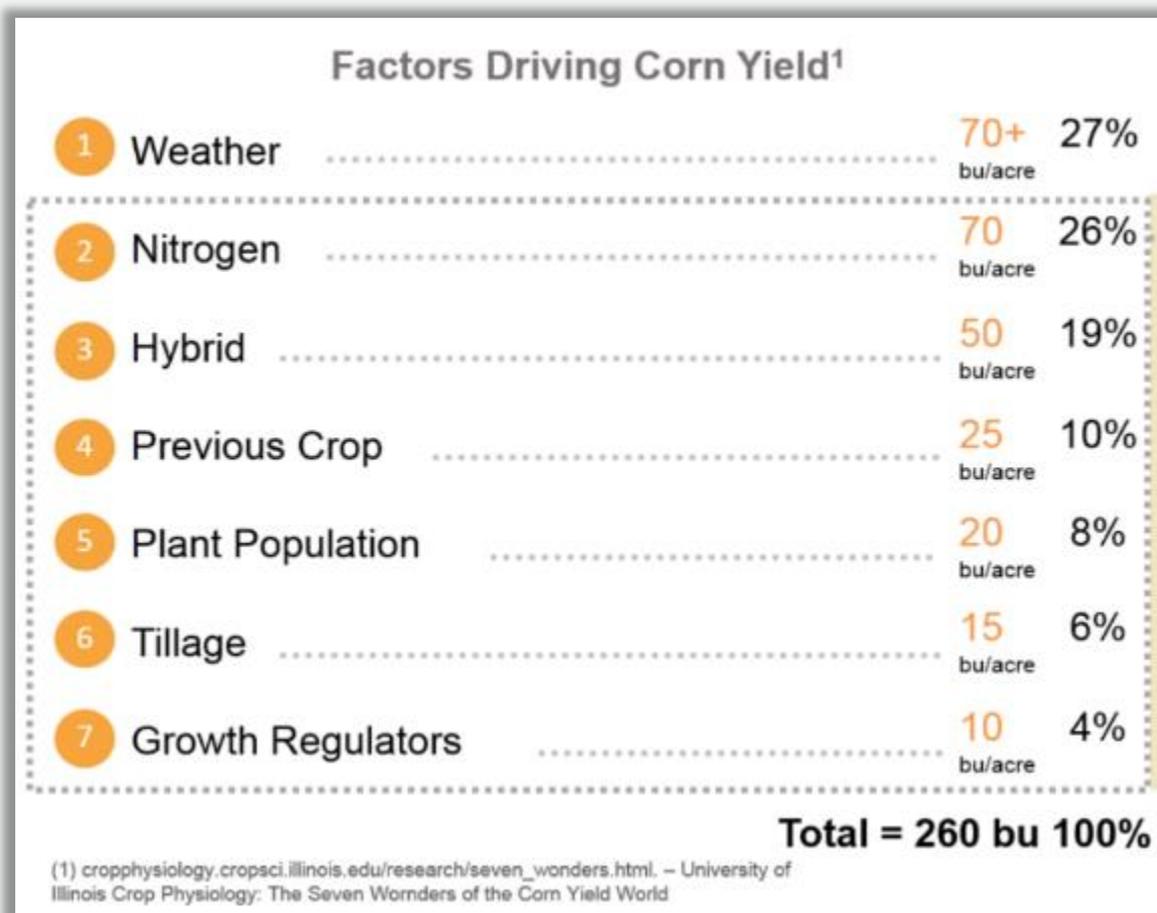
570 million Farms, 25 million Tractors, 50 billion chickens, 1 billion sheep, 1 billion pigs, 80 million turkeys, 1.5 billion cows in the world with 100% of them with passports in the UK vs 36% of the US population….

…and Big Brother / Data is here, for Animals at least as they are all being monitored / reporting data

Agriculture is at the Centre of Global Change

How could data help?

Factors Driving Corn Yield[1]

#	Factor	bu/acre	%
1	Weather	70+ bu/acre	27%
2	Nitrogen	70 bu/acre	26%
3	Hybrid	50 bu/acre	19%
4	Previous Crop	25 bu/acre	10%
5	Plant Population	20 bu/acre	8%
6	Tillage	15 bu/acre	6%
7	Growth Regulators	10 bu/acre	4%
	Total	**= 260 bu**	**100%**

(1) cropphysiology.cropsci.illinois.edu/research/seven_wonders.html. – University of Illinois Crop Physiology: The Seven Wornders of the Corn Yield World

Precision Agri: Our Data Landscape / Assets

Vast amounts of data spread across the Agricultural landscape. Proagrica is consolidating, organising and enhancing this data to help drive value across the entire industry, from the farm gate all the way to the super market shelf

Farm Management Information Systems (FMIS)
A wide spectrum of tools used by Farmers all generating data

Satellites / Drones
Ability to identify yield and crop issues from space / drones

Sensors
Ground and animal sensors measuring everything from animal fertility to soil moisture

Soil
Global soil type horizons

Farm Machinery
Every piece of equipment on the farm is now generating data and wants to be precise

Weather Data
Global current and historical weather and soil moisture data at sub-field level

Manufacturers & Distributors
Adaptris manages supply chain connectivity between MFRS and their Distributors

Agronomist
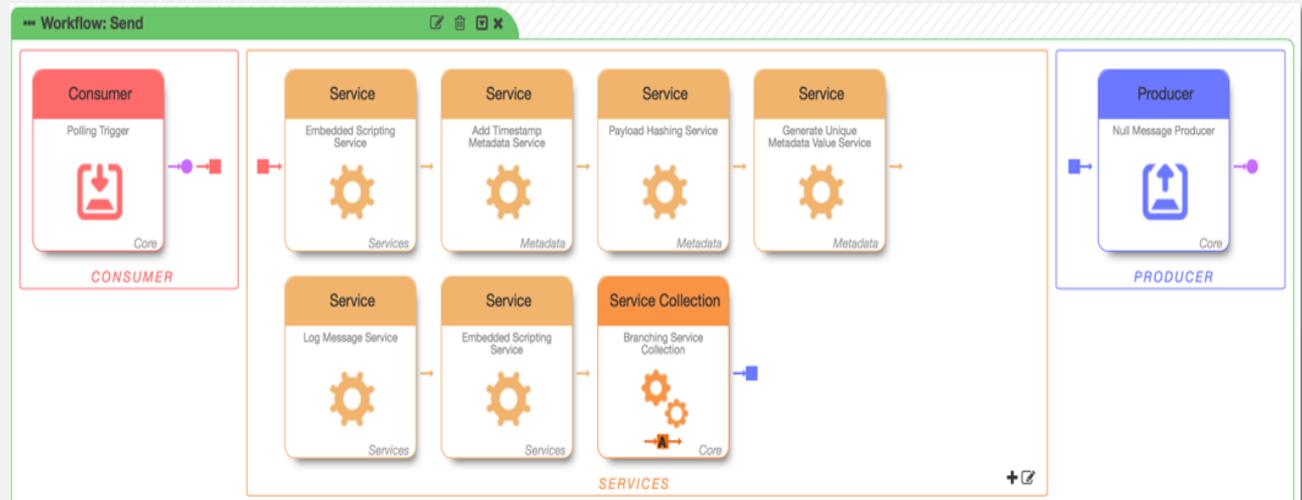Providing farm advice, shape files and data to farmers

F4F

Proagrica

Why HPCC?

- During our evaluation we asked 3 key questions:

  - Can it scale to the volumes in Agriculture?

  - How does it fit with an ESB?

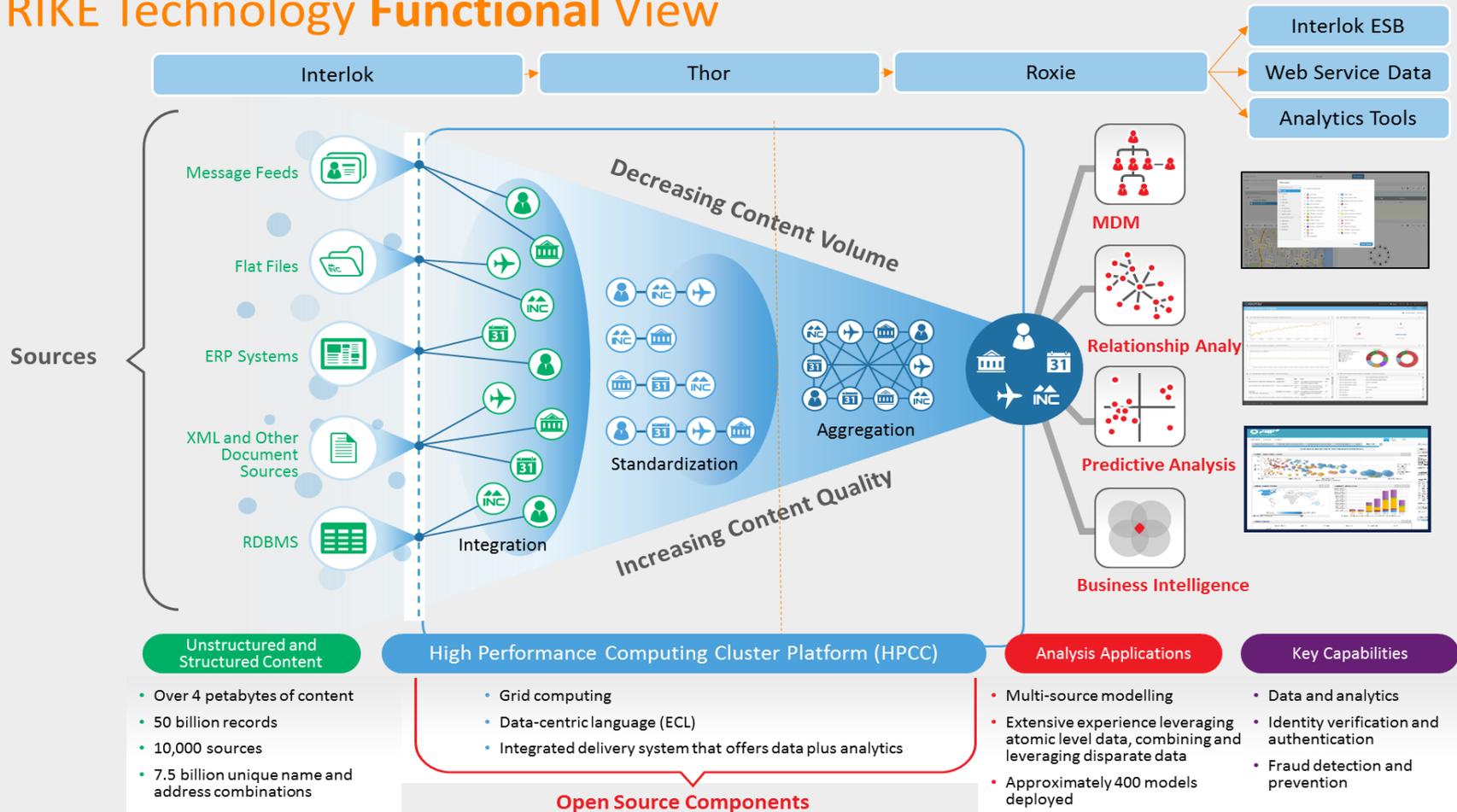 - Can it provide real-time analytics / real time data?

Interlok™ Adapter

In order to provide a solution that adheres to industry best practice and embed years of integration experience, Adaptris created the Interlok™ Framework

- Seamless connection to hundreds of applications, data standards and communications protocols.
- Event based architecture.
- Highly scalable both horizontally and vertically.
- Ability to cache data to reduce latency of repeated calls to slow or remote back end systems.
- Fault Tolerant 99.999 availability.
- Ability to deploy runtime components into industry standard containers

- Hundreds of pre built connections and services
- Ability to wrap workflow and expose as an API
- Built in ability to dashboard and surface live data
- Central configuration/federated execution
- Low latency

ProAgrica HPCC Platform

STRIKE Technology **Functional** View

Interlok → Thor → Roxie → Interlok ESB / Web Service Data / Analytics Tools

Sources: Message Feeds, Flat Files, ERP Systems, XML and Other Document Sources, RDBMS

Integration · Standardization · Aggregation

Decreasing Content Volume · Increasing Content Quality

MDM · Relationship Analy · Predictive Analysis · Business Intelligence

Unstructured and Structured Content
- Over 4 petabytes of content
- 50 billion records
- 10,000 sources
- 7.5 billion unique name and address combinations

High Performance Computing Cluster Platform (HPCC)
- Grid computing
- Data-centric language (ECL)
- Integrated delivery system that offers data plus analytics

Open Source Components

Analysis Applications
- Multi-source modelling
- Extensive experience leveraging atomic level data, combining and leveraging disparate data
- Approximately 400 models deployed

Key Capabilities
- Data and analytics
- Identity verification and authentication
- Fraud detection and prevention

The sum of the parts

- ▸ Flexibility
- ▸ Near real-time
- ▸ Full integration to customers
- ▸ Improved management / troubleshooting
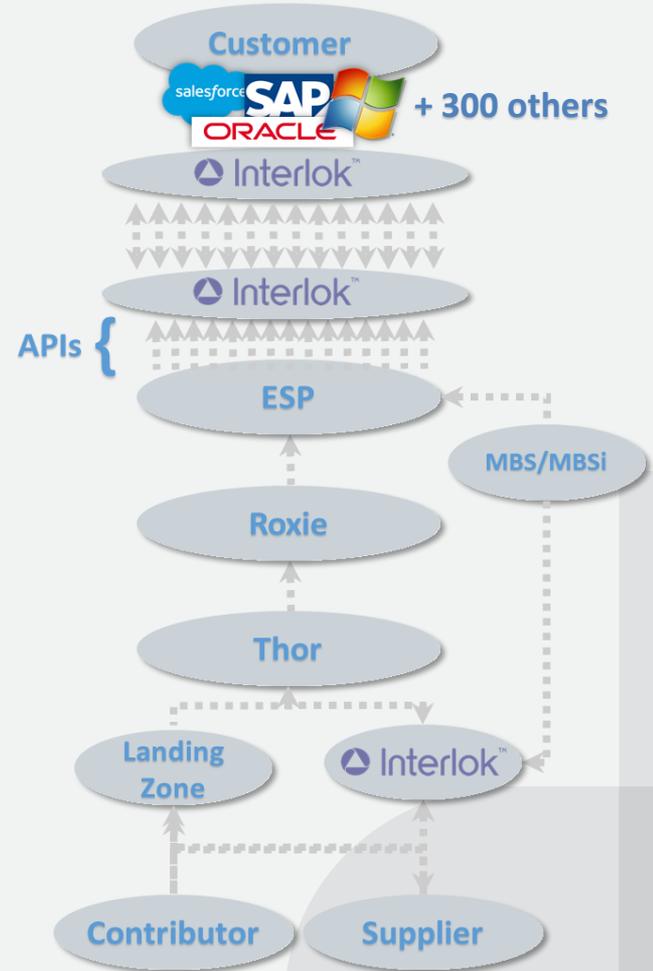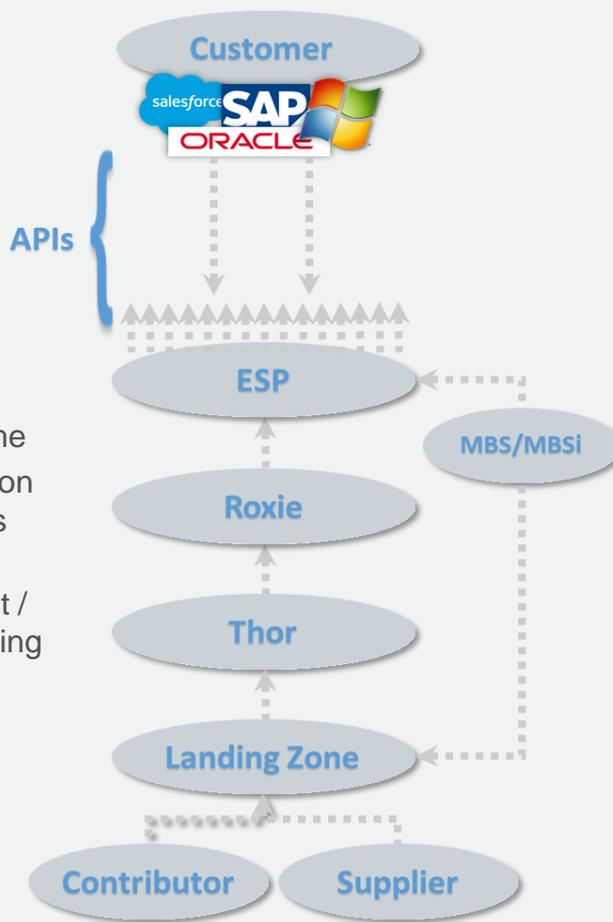
The Proagrica Ag Platform

The F4F platform + HPCC is key to unlocking value across Agriculture

MEDIA SOFTWARE INTEGRATION & CONNECTIVITY DATA & ANALYTICS

▸ A combination of Proagrica industry knowledge and market independence with our industry connectivity and the HPCC Big Data solution

▸ A consolidated platform to consume real-time and customer integration platform to source, enrich and expose global agricultural data

▸ Enriching all aspects of the Agricultural supply chain with Precision data, services and advanced Analytics tools

Crops and beyond

CROPS
To serve, among others, suppliers of crop farm inputs and advice. Value back to farmers

DAIRY
UK-based dairy production data collection. Serving feed/AH manufacturers

BEEF
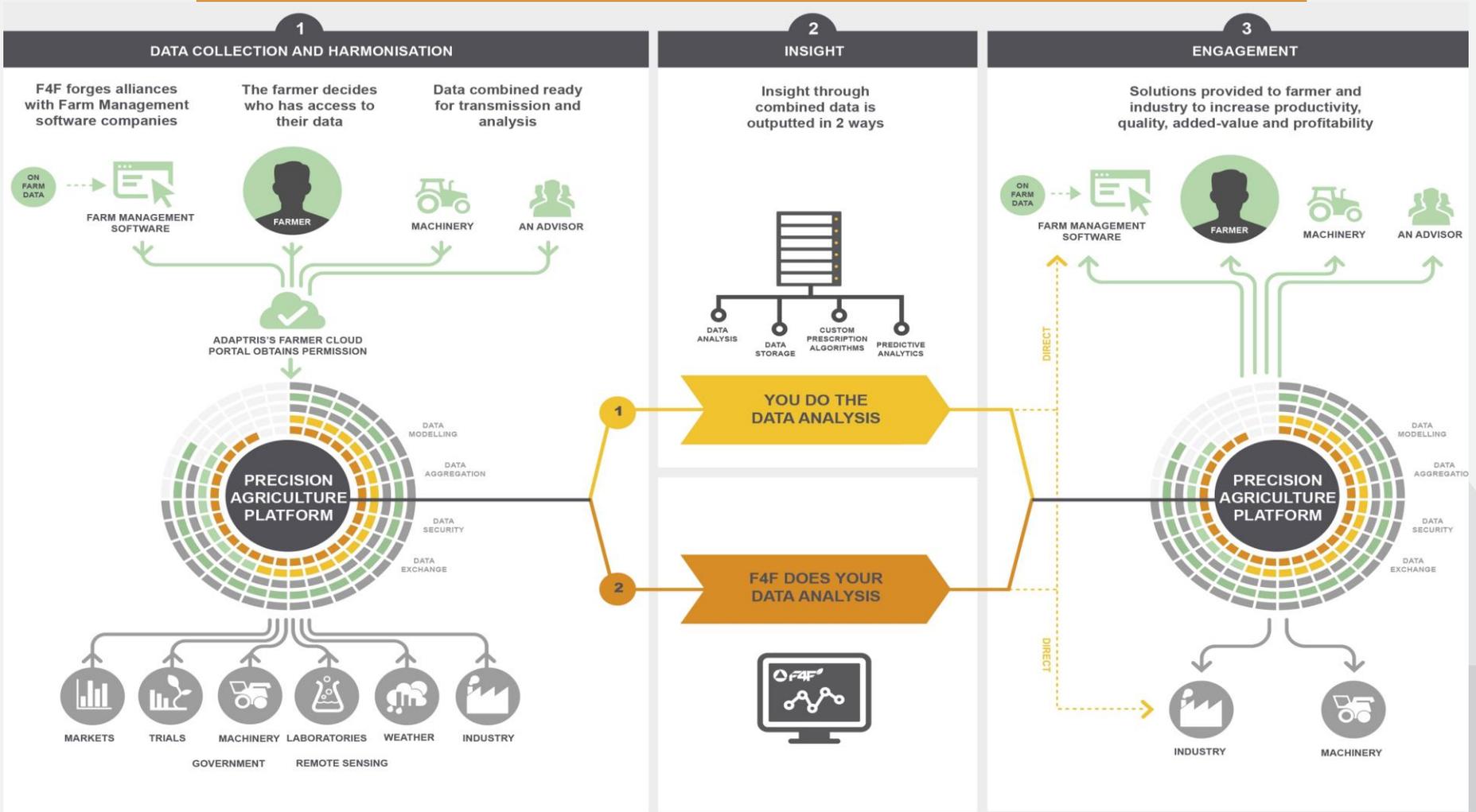International food retailers / mfrs seeking visibility of beef production best practice
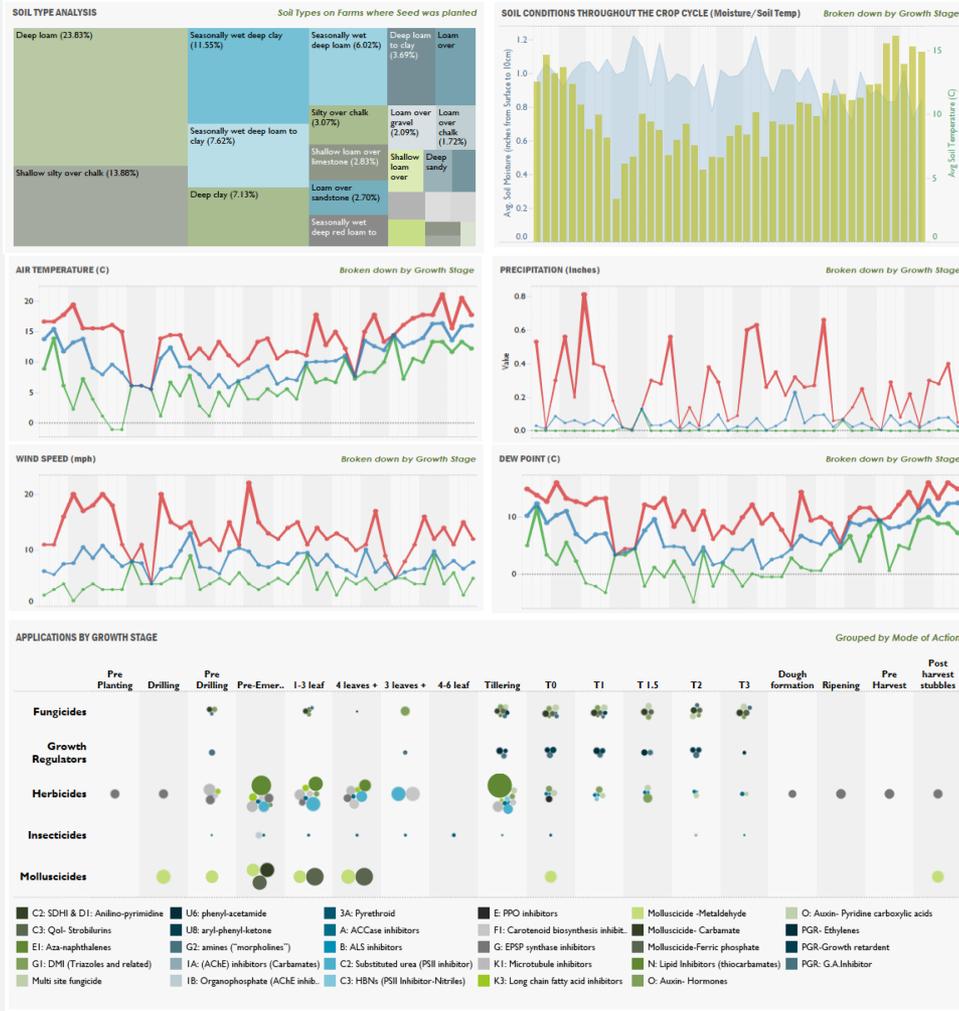
POULTRY
Veterinary systems to poultry management systems and abattoir systems

An overview of the approach

What does it deliver?

- Global insight through fully integrated ESB data, Data As A Service and a range of Analytics tools

- An agile, scalable, resilient and secure platform that can consume data from any source, consolidate, enrich and expose global agricultural data from everything soil to animals and all the way to satellites

- Precision Ag covering the full Ag value chain from Mfr, through Agronomist, CO-OP, Farmer and Distributor

- A range of Analytics solutions focused on Pesticides, Herbicides, Fertilizers, Seeds, Cattle, Milk, etc. that provide insight at market, region, farm, field and sub-field levels

- Enabling the industry to increase yield and profitability whilst reducing inputs and improving environmental impact

Over 2,300 integrated agricultural customers

Questions?

"It always seems impossible until it is done……"