WELCOME TO
1st National Workshop Smart Farming and Data Analytics 2019

12th June 2019

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Today, a farmer is the ultimate multi-tasker

- Farm labourer
- Farm manager
- Accountant
- Economist
- Mechanic
- Internet and IT Savvy
- A son, daughter, wife, husband, brother, sister, mother, father..

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“Farming” or agriculture is now a very broad term







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The average Irish farm

What is Smart Farming? (1)

- **Traditionally, the decision-making processes in farming have been experiential and intuitive in nature** (Eastwood, et al, 2109)
- Smart Farming sees **the use of digital technologies in farming including sensors for animals, plants, soils and resources**.
- Smart Farming also sees the use of software applications to monitor and track animals, plants, soils and resources on the farm.

What is Smart Farming? (2)

- **Farms that use a combination of digital technologies combined with data about the farm and surrounding environment are called "Smart Farms"** (van der Burg et al, 2019)
- Smart Farming tries to deliver new, better or additional information to farmers and farm managers in order to **support better decision making and plan sustainably and economically**.
- Smart Farming is based on location, context, situation awareness, triggered by real-time events.

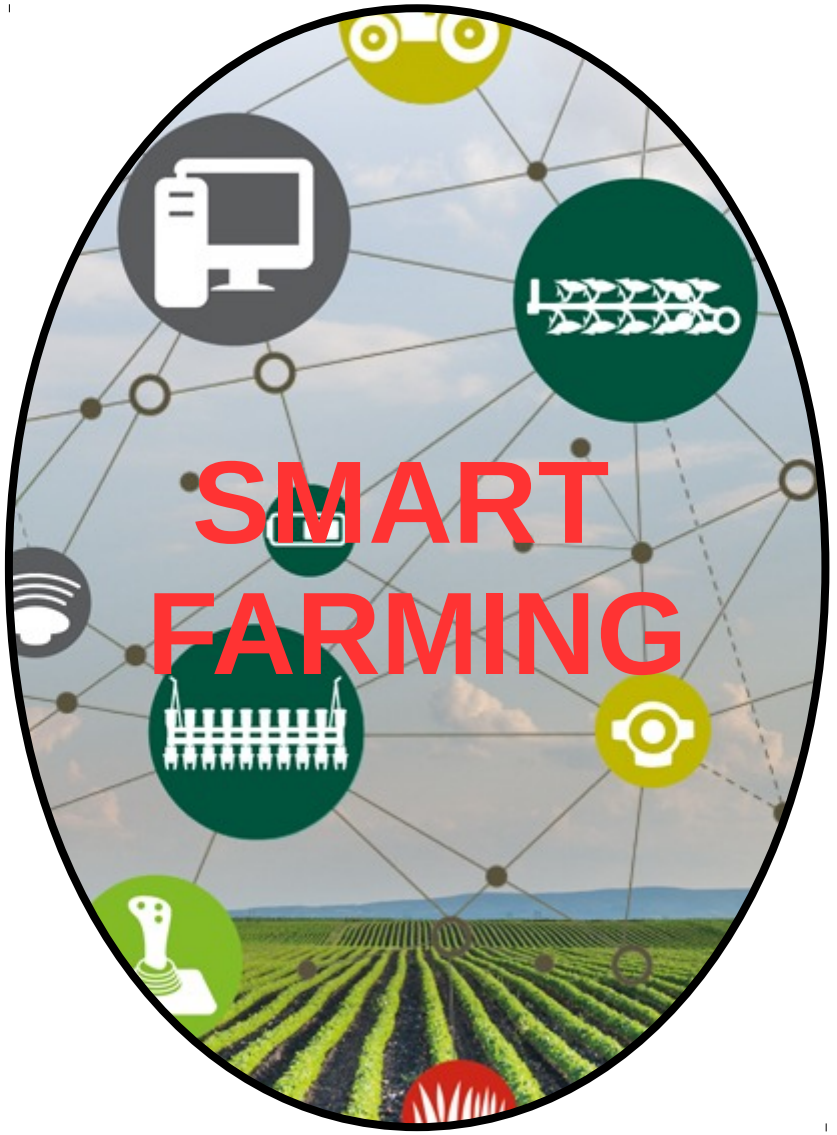
What is Data Analytics? (1)

- **Data Analytics is the behind science of examining raw data with the purpose of drawing conclusions about that information.**
- Data Analytics involves applying an algorithmic or mechanical processes to **derive insights from vast quantities of data, often referred to as Big Data**.
- Big Data presents three primary problems:
  - there's too much data to handle easily;
  - the speed of data flowing in and out makes it difficult to analyse;
  - and the range and type of data sources are too great to assimilate.

What is Data Analytics? (2)

- With the right data analytics and techniques, **these big data can deliver hidden and unhidden insights, patterns and relationships from data multiple sources**.
- The field of **data analytics is directed towards solving problems for questions we know we don't know the answers to**.
- More importantly, **data analytics is based on producing actionable results** that can lead to immediate improvements.

Smart Farming and Data Analytics



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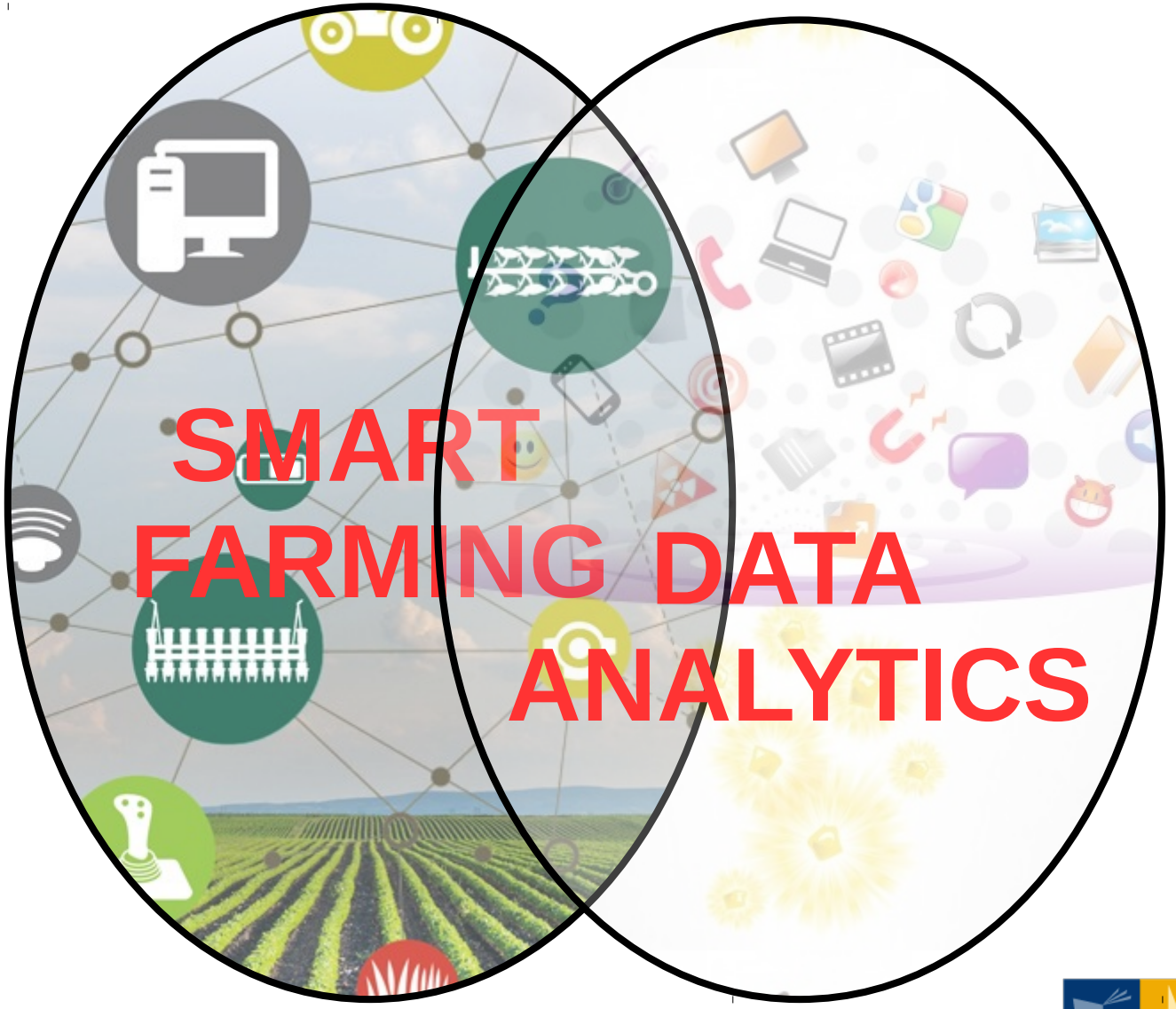
SFDAI 2019 is about exploring the intersection of these two domains



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FUTURE FARMS
small and smart

SURVEY DRONES

Aerial drones survey the fields, mapping weeds, yield and soil variation. This enables precise application of inputs, mapping spread of pernicious weed blackgrass could increasing Wheat yields by 2-5%.

FLEET OF AGRIBOTS

A herd of specialised agribots tend to crops, weeding, fertilising and harvesting. Robots capable of microdot application of fertiliser reduce fertiliser cost by 99.9%.

FARMING DATA

The farm generates vast quantities of rich and varied data. This is stored in the cloud. Data can be used as digital evidence reducing time spent completing grant applications or carrying out farm inspections saving on average £5,500 per farm per year.

TEXTING COWS

Sensors attached to livestock allowing monitoring of animal health and wellbeing. They can send texts to alert farmers when a cow goes into labour or develops infection increasing herd survival and increasing milk yields by 10%.

SMART TRACTORS

GPS controlled steering and optimised route planning reduces soil erosion, saving fuel costs by 10%.

The DRIP Problem: Data Rich Information Poor

- **Around 90% of the data collected** by farm machinery such as Combine Harvesters, tillage machinery, etc **are "never actioned"** (OECD, 2016).
- **A number of significant barriers to the more widespread uptake of Smart Farming** in Ireland (Digital Divide, Cost, complex technology, ethical use of data, commercialisation, etc)

The tractor of today!

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SFDAI 2019 has a number of goals for today

- **Highlight** to the agricultural community the **innovations** possible in Ireland through an exploration of data analytics for Smart Farming,
- **Learn from the agricultural community** so that researchers and scientists can **develop a research agenda for Smart Farming data analytics** in order to bring about **the practical reality of Smart Farming and Data Analytics**.

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Session 1: Keynote Speakers (09:45 – 10:50)

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Tea/Coffee Break (10:50 – 11:30)

- Callan Building Foyer
- Right outside this room (CB2)
- Please check your badge for your workshop grouping in Session #2
- Go directly to your workshop room after coffee break for 11:30 start.

Session 2: Breakout group discusions (11:30 – 13:00)

- One of the central parts of SFDAI 2019 is the breakout group discussions.
- We've divided you up into four workshop groups.
- We need to explain a little about how these four workshop groups will work.

Session 2: Breakout group discusions (11:30 – 13:00)

- We are joined today by representatives of two large EU Research Projects.

FAIRshare
DIGITAL TOOLS FOR FARM ADVISORS

Dr. Aine Regan,
Teagasc, Athenry, Ireland

Dr. Simone van der Burg
Wageningen, The Netherlands

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Session 2: Breakout group discusions (11:30 – 13:00)

- There are three small structured format work groups W1, W2 and W3 which will run from 11:30 – 13:00 for these projects
- **We have asked some delegates in advance to be part of these workshops.**
- **All remaining delegates will join in W4 which is a more open structure work group with several sub-groups.**

Session 2: Breakout group discusions (11:30 – 13:00)

- CHECK YOUR BADGE for your Work Group
- **Please go directly to your Work Group room after the coffee break.**

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SFDAI 2019 Lunch

- In the Phoenix Restaurant (building adjacent to the Callan Building)
- **Please bring your lunch voucher with you**
- There is a reserved area for SFDAI 2019

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Session 3: Expert Lecture
Sessions 14:10 – 16:15

Lecture 1:
What can drones do?
Mr. Aidan Magee
National Center for Geocomputation, MU

Lecture 2:
How to make sense of your data?
Dr. Christina O'Connor
School of Business, MU

Lecture 3:
Exploring Copernicus
Dr. Conor Cahalane
Dept of Geography, MU

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Session 3: Expert Lecture Sessions 14:10 – 16:15 (rooms)

Lecture 1:
What can drones do?
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Session 3: We've created 3 groups

- **GROUPS are written on your badge.**
- Please check your group schedule in the Reg Pack.
- Each group will visit each Expert Lecture Session in order
- The order will be printed on the doors (and on the timetable).
- **Then go directly to your first lecture session.**

- There will be some time between each 30 min session for a break and to move to next room

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Session 3 – group timetable

Group	Lecture 1: What can drones do? Room: CB4	Lecture 2: How to make sense of your data Room: CB2	Lecture 3: Exploring Copernicus Room: CB3
Group 1	14:20	15:00	15:40
Group 2	15:40	14:20	15:00
Group 3	15:00	15:40	14:20

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Session 4: Closing Session 16:15 – 16:30 (Room CB2)

- Formal closing of SFDAI 2019
- Wrap up and summary of the whole day.
- **There will be an opportunity for some final comments, questions and remarks from delegates**.

SFDAI 2019 – Practical Information

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Practical Information

- **Toilet Facilities:** Available in the callan building. Follow the Corridor ahead and take first right turn (entrance between lockers)
- **Fire Assembly Point**: Outside the Callan Building on the grass area
- **Smoking Areas:** Outside the buildings, in designated areas.

Free WiFi available in all rooms

- Visitors from other academic institutions are asked to used the ‘eduroam’ network.
- **All Visitors can use the Maynooth University WiFi network (no signup required)**

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Smart Phone/Device Etiquette

- We are delighted to support engagement, connection and networking on smart devices amongst delegates.
- **Please use smart devices with consideration to those around you** and especially our speakers and workshop faciliators.
- Please ensure devices are in Silent Mode.

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Think sustainably..

- **Please consider returning your delegate badge for reuse at another event** (Drop at reg desk or in CB2 at workshop end).
- **Please recycle or store your SFDAI 2019 registration pack**

Thank you to all those who helped, behind the scenes, to make SFDAI 2019 happen

- **Heather Meldrum and Phil Dully** (CS Dept Admin)
- **Aine Regan** (Teagasc)
- **Joe Timoney** (CS Head of Dept) *[The workshop is funded by the MU Research Incentivisation Fund]*

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Session 1: Keynote Speakers

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