DECEMBER 5, 2023

Data Quality Considerations for Environmental Data

PRESENTED TO: NEBC

PRESENTED BY: SHAUNA MCKELLAR

Sustainability is our business

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Founded in 1971, we are the largest advisory firm in the world focusing solely on sustainability, offering unparalleled depth and breadth of expertise.

We shape a sustainable future with the world's leading organizations

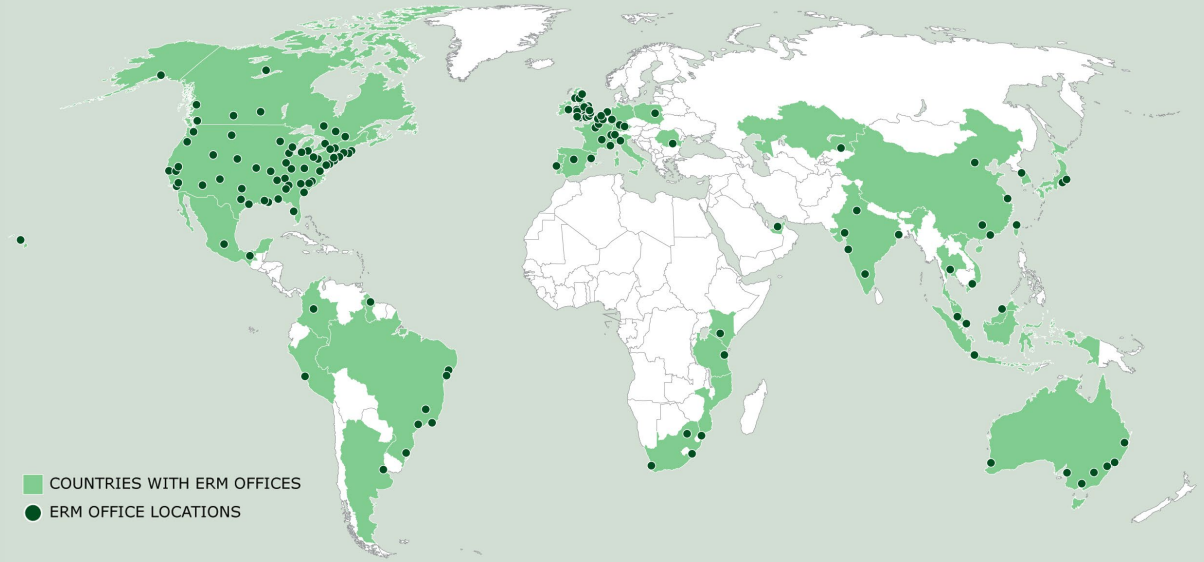
Our purpose guides everything we do. We create a better future by helping the world's biggest brands address today's sustainability imperatives.

We are the recognized market leader in sustainability services

Numerous industry benchmarks attest to our market leadership and the majority of our work is sole-sourced, reflecting trusted partnerships we build with our clients.

ERM OVERVIEW

8000+ Professionals	40 Countries & territories	**Climate change consulting Leader** Verdantix Green Quadrant 2023
150+ Offices	50+ Years of experience	#1 Sustainability service provider – HFS 2022



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70%
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Agenda

1. Data Safety/Sustainability Moment
2. Understanding your Data Workflow
3. Visualizing Data Workflows
4. Data Quality Checkpoints
5. Environmental Data Management (EDM) Resources

SUSTAINABLE DATA MOMENT

DIGITAL CARBON FOOTPRINT / “DARK DATA”

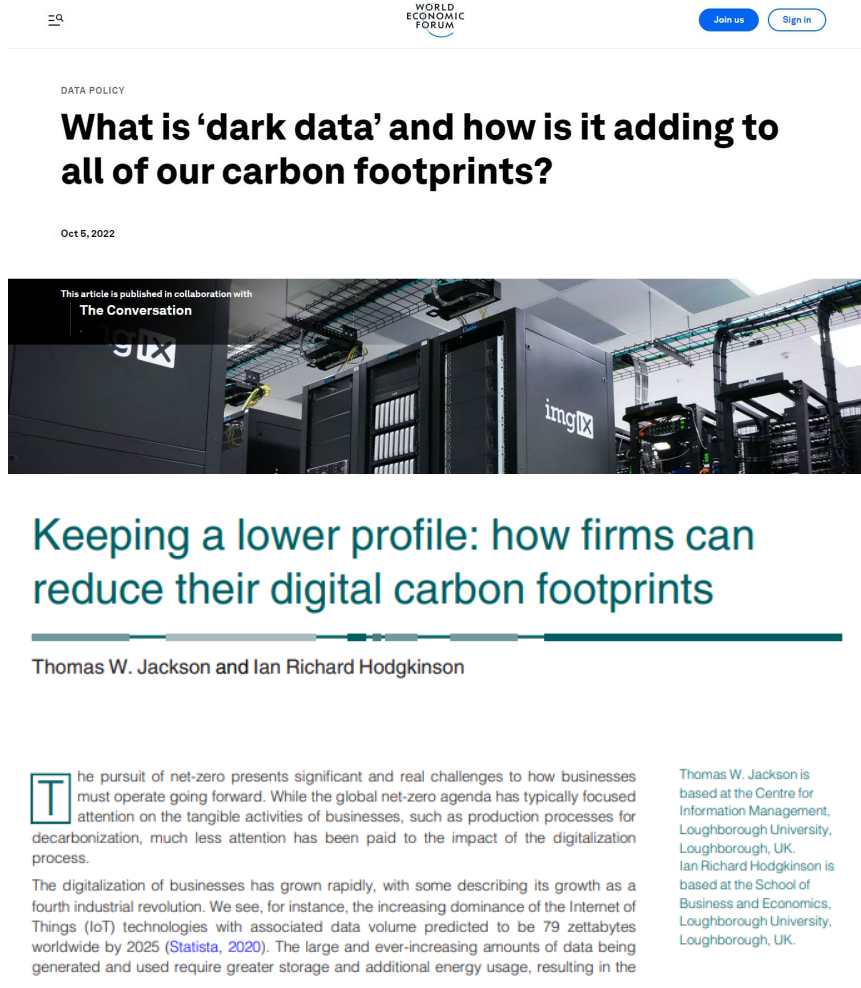
- ‘Dark Data’ is single-use digital data – things put in the cloud and never access again (from mobile devices to “Internet of Things” and big data)
- Storage of this data takes up space on servers and results in increased electricity consumption.
- Digitalization generated 4% of global greenhouse gas emissions in 2020 (aviation industry generated 2.1%).
- Currently, companies produce 1,300,000,000 gigabytes of dark data a day –a carbon footprint equivalent to 3,023,255 flights from London to New York.
- Organizations need to think about how to manage their data to minimize their digital carbon footprint.

Sources:

What is ‘dark data’ and how is it raising carbon footprints? | World Economic Forum (weforum.org)

The environmental cost of big data | World Economic Forum (weforum.org)

Keeping a lower profile: how firms can reduce their digital carbon footprints – Journal of Business Strategy



WORLD ECONOMIC FORUM

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DATA POLICY

What is ‘dark data’ and how is it adding to all of our carbon footprints?

Oct 5, 2022

This article is published in collaboration with The Conversation

Keeping a lower profile: how firms can reduce their digital carbon footprints

Thomas W. Jackson and Ian Richard Hodgkinson

The pursuit of net-zero presents significant and real challenges to how businesses must operate going forward. While the global net-zero agenda has typically focused attention on the tangible activities of businesses, such as production processes for decarbonization, much less attention has been paid to the impact of the digitalization process.

The digitalization of businesses has grown rapidly, with some describing its growth as a fourth industrial revolution. We see, for instance, the increasing dominance of the Internet of Things (IoT) technologies with associated data volume predicted to be 79 zettabytes worldwide by 2025 (Statista, 2020). The large and ever-increasing amounts of data being generated and used require greater storage and additional energy usage, resulting in the

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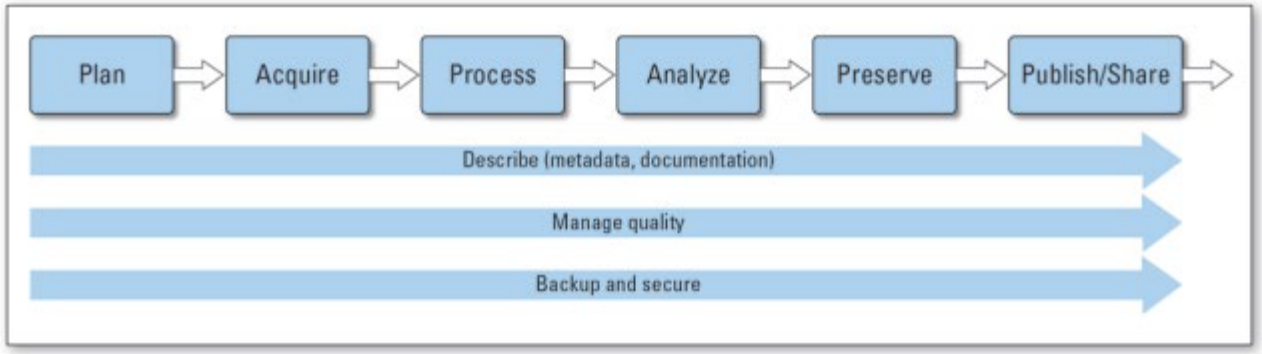
Understanding your Data Workflow

Understanding your Data Lifecycle and Workflows

Various Environmental Data Lifecycle Diagrams

Source: ITRC

Source: U.S. Fish & Wildlife Service



Source: USGS

Planning your Data Workflow

"Know the flow"

Have a plan

- Understand your end goal and work backwards from there.
- Include details on HOW you will do it not just WHAT you will do.
- Set standards.
- What are your data quality checkpoints?

Identify your Team

- Cross functional collaboration is a must.
- Individuals with strong programming skills might not have science backgrounds.
- Subject Matter Experts might not be familiar with the logistics of storing/querying/reporting data.

Assign Task Ownership

- Each assigned owner needs to know:
  - When to perform the task.
  - How to perform the task.
  - How to document the task has been completed.

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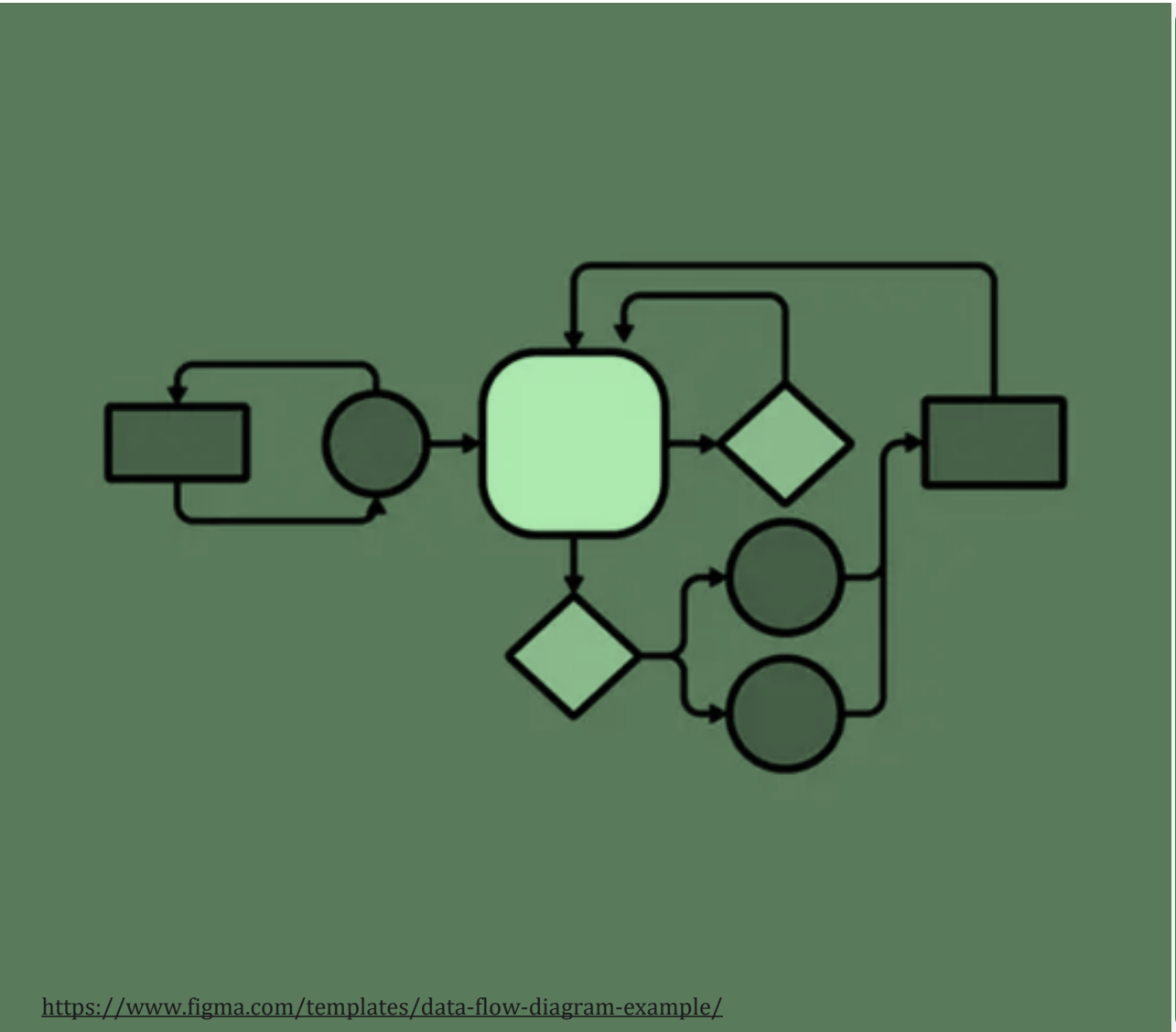
Visualizing Data Workflows

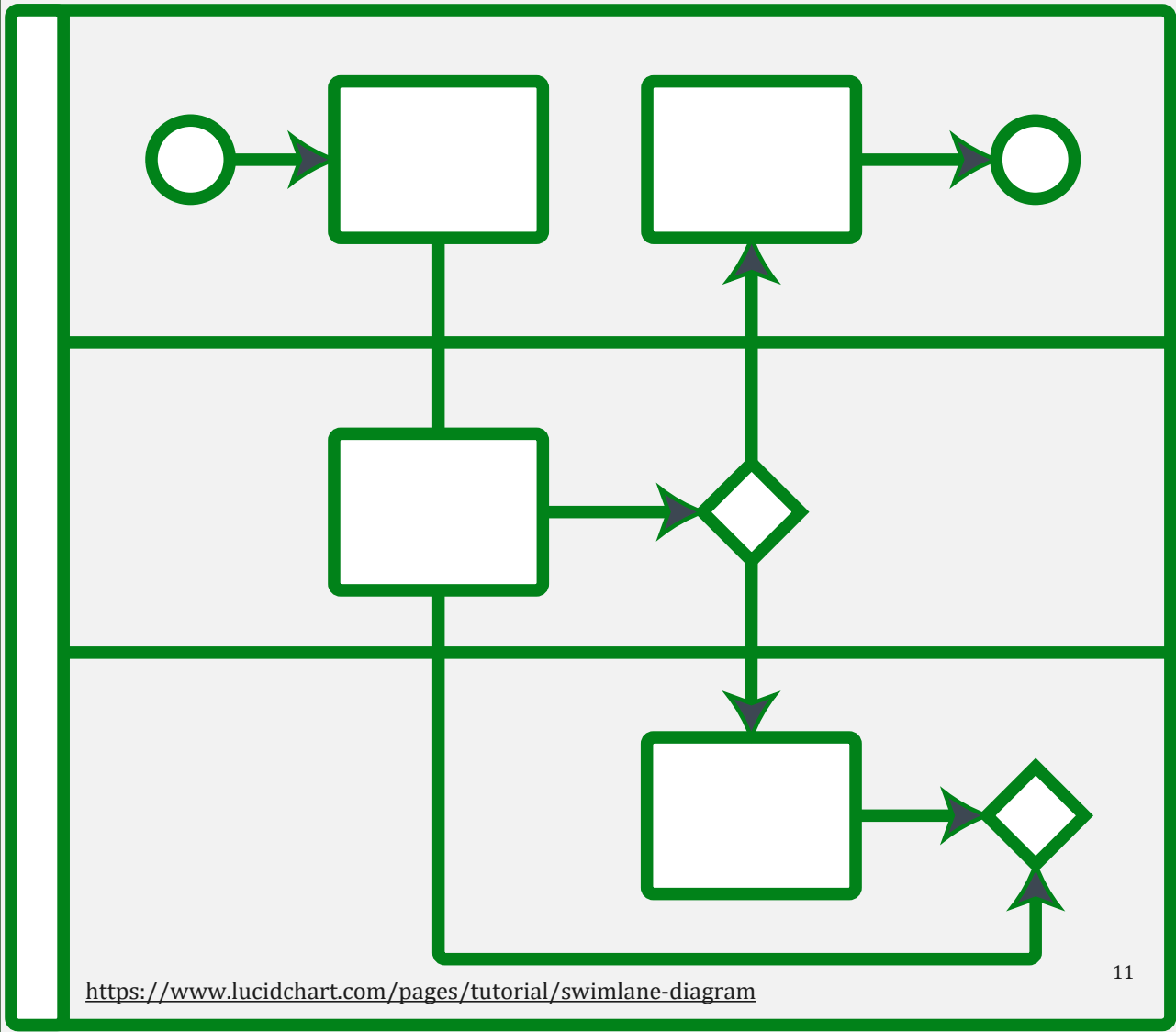
Diagraming Data Flows

Data Flow Diagrams



https://www.figma.com/templates/data-flow-diagram-example/

Swim Lane Diagram



https://www.lucidchart.com/pages/tutorial/swimlane-diagram

Common Data Quality Checkpoints

Common Data Quality Checkpoints

Image Source: ITRC

Plan

- Does the plan meet the requirements of the proposal/regulations?
- Have you mapped out your data flow?
- Have you documented tasks and assigned task owners?
- Have you set data quality objectives?

Acquire

- What are the sources of existing data? How has this been documented?
- Is new data being collected in accordance with approved plans?
- Are the appropriate data being requested and reported?

Common Data Quality Checkpoints

Image Source: ITRC

Process/Maintain

- Has the data been synthesized into consistent formats accurately and completely?
- Do you have appropriate metadata to supplement data stored electronically?
- Is your supplemental documentation (photos/paper copies) accurate and labeled appropriately?
- Has acquired data (both existing and new) been verified/validated against set project/program standards? How have these findings been documented?
- Are you only analyzing data that meets your quality standards?
- Are the data in your visuals/tables/reports consistent?

Common Data Quality Checkpoints

Image Source: ITRC

Publish/Share

- For online/remote access, impersonate different users to verify proper access
- Ensure those accessing the data know the status/quality of the data being accessed.
- As with previous step, have you verified that the data in your visuals/tables/reports is consistent?

Retain

- Is your metadata and supplemental documentation in a known and easy to access place?
- Are your files labeled in a way where they will be usable in the future?
- Do you have documentation on how your data was collected and managed?

Additional Environmental Data Management Resources:

Interstate Technology and Regulatory Council (ITRC) Environmental Data Management (EDM) Best Practices

Https://itrcweb.org/itrcwebsite/teams/training/edm

The Exchange Network Data Standards

https://exchangenetwork.net/data-standards/

International Conference of Environmental Data Management (ICEDM)

http://www.icedm.net/

Thank you

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