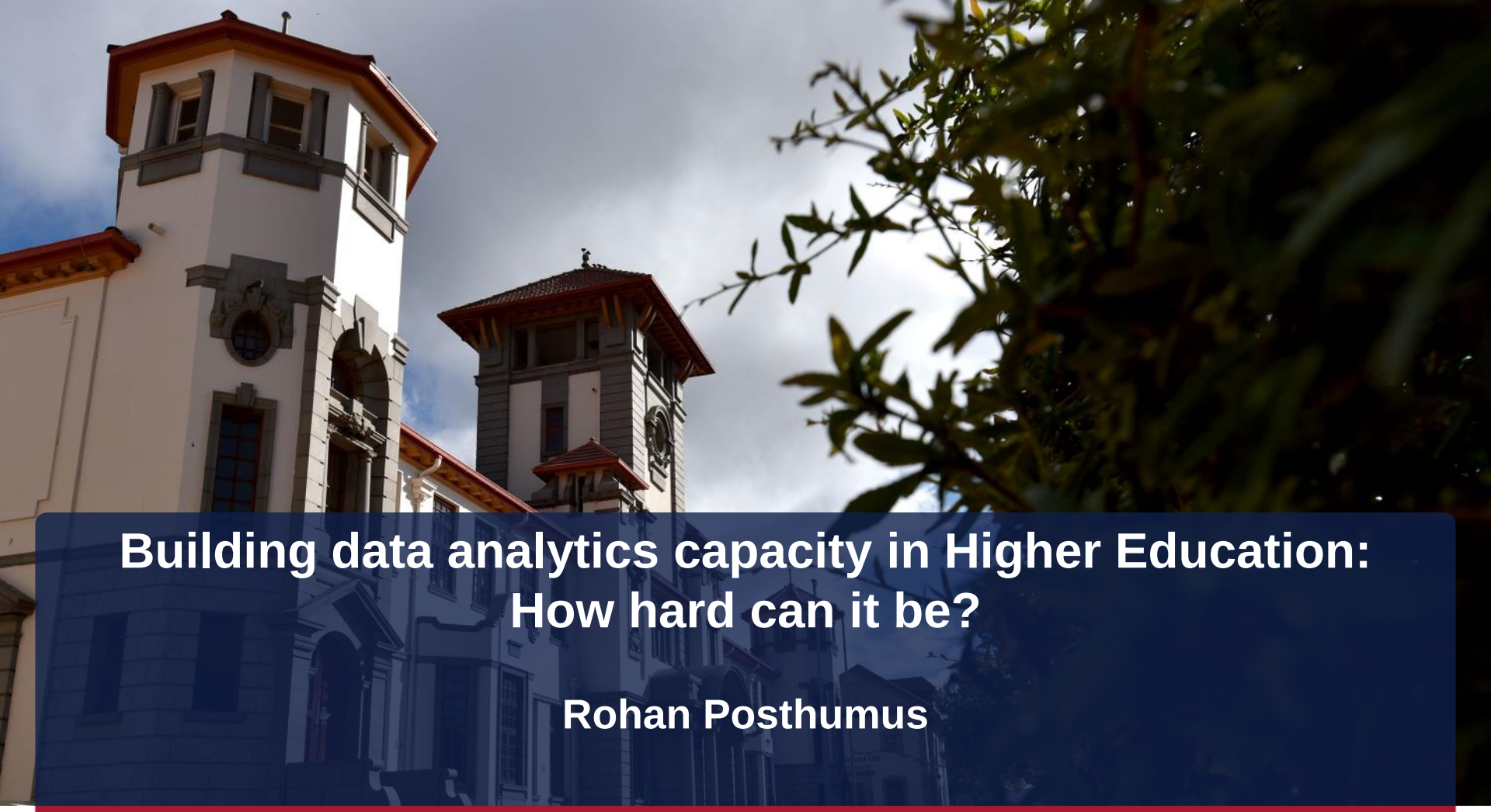

Building data analytics capacity in Higher Education: How hard can it be?

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Overview

- Introduction
- Data science lifecycle
- Action research framework
- Workshop series
- Conclusion

Introduction

IBM

More data has been created in the past 2 years than in the entire history of the human race!

10 million new photos uploaded every hour!

Processes more than 24 petabytes a day!
(1 petabyte = 1million gigabytes)

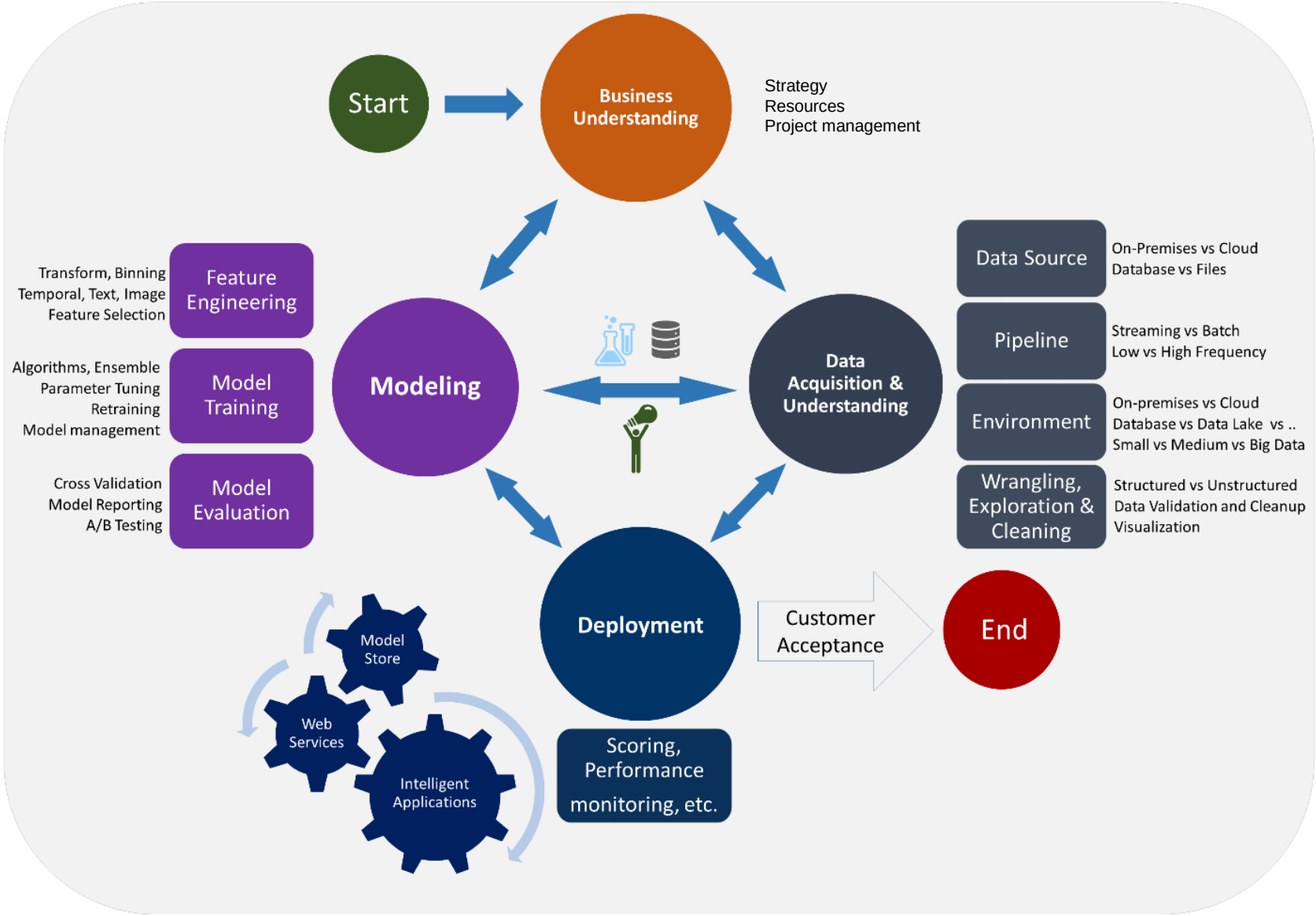
Exceeds 400 million tweets a day!

Google

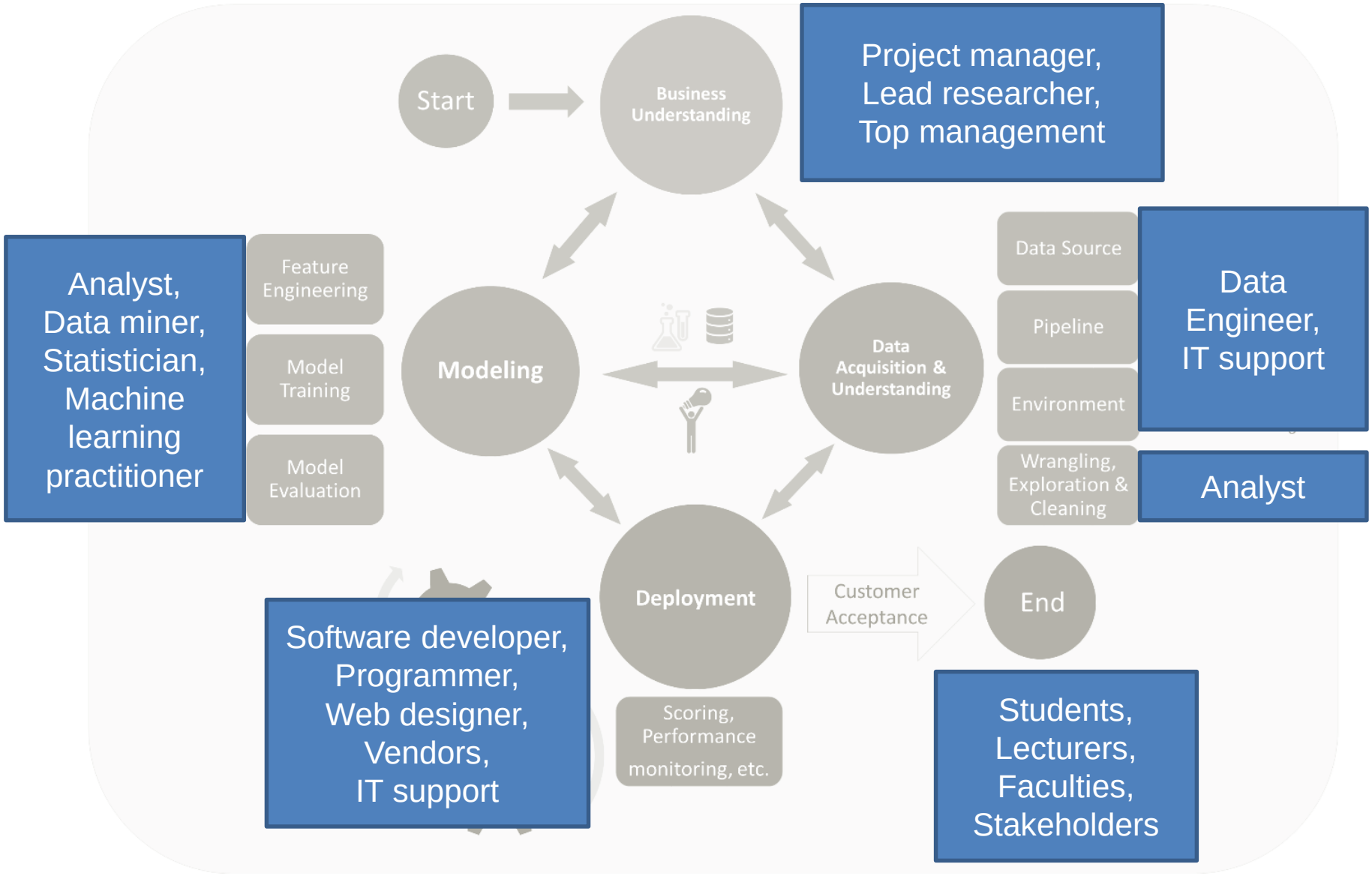
Stored information grows 4x faster than the world economy!

Where do you develop analytics capacity?

Data Science Lifecycle

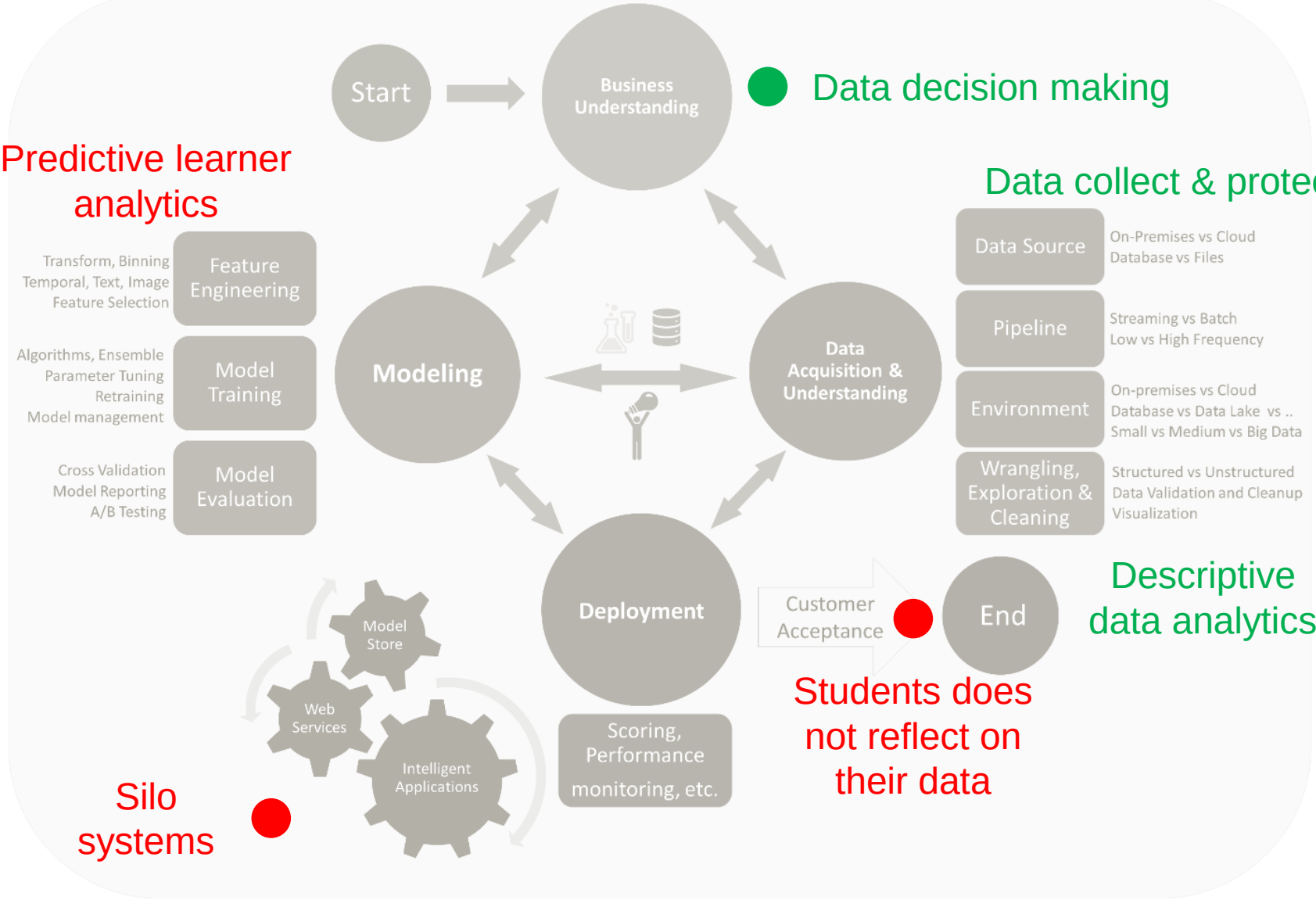


Data Science Lifecycle

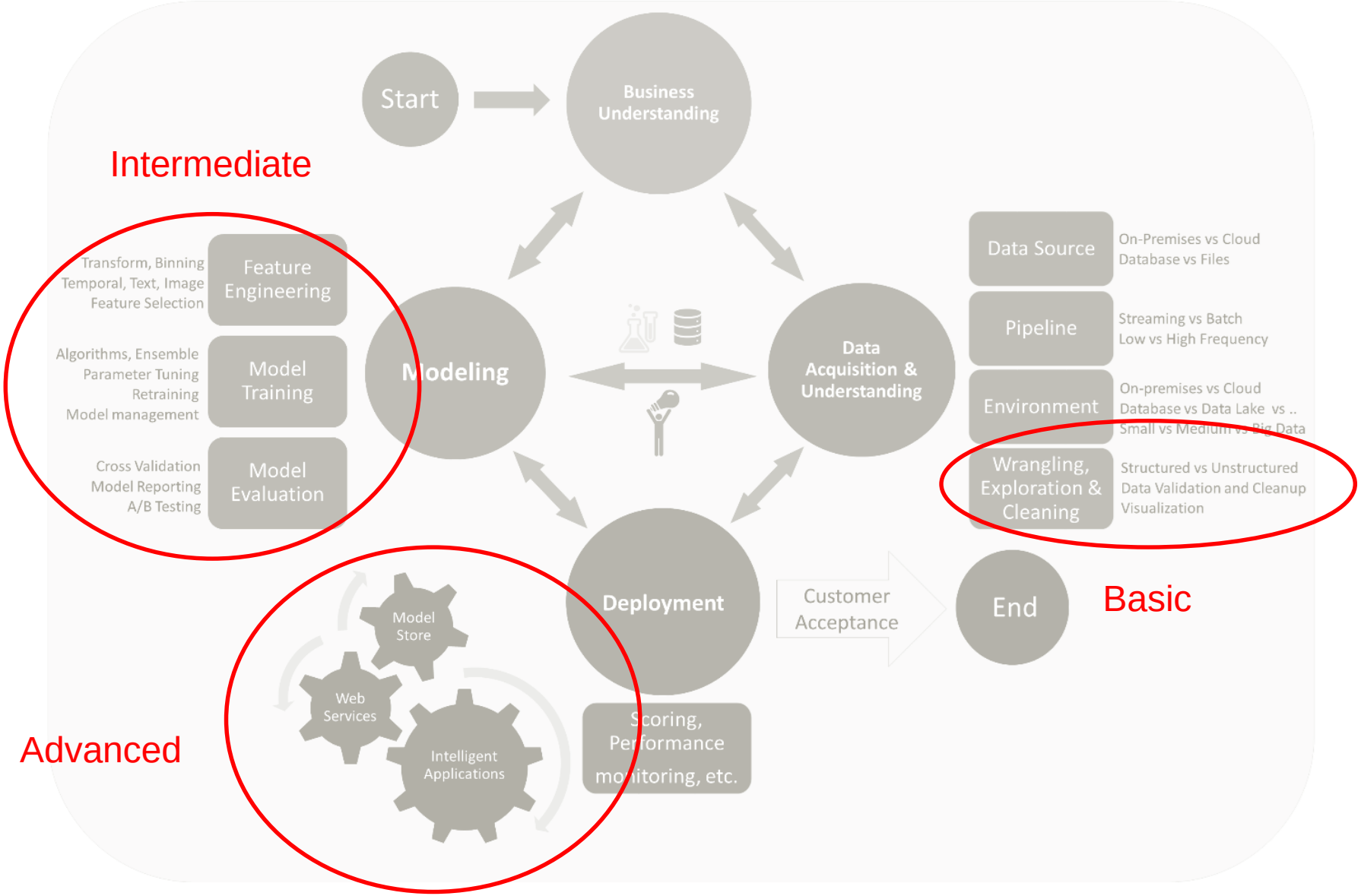


Capacity needed

Data Science Lifecycle

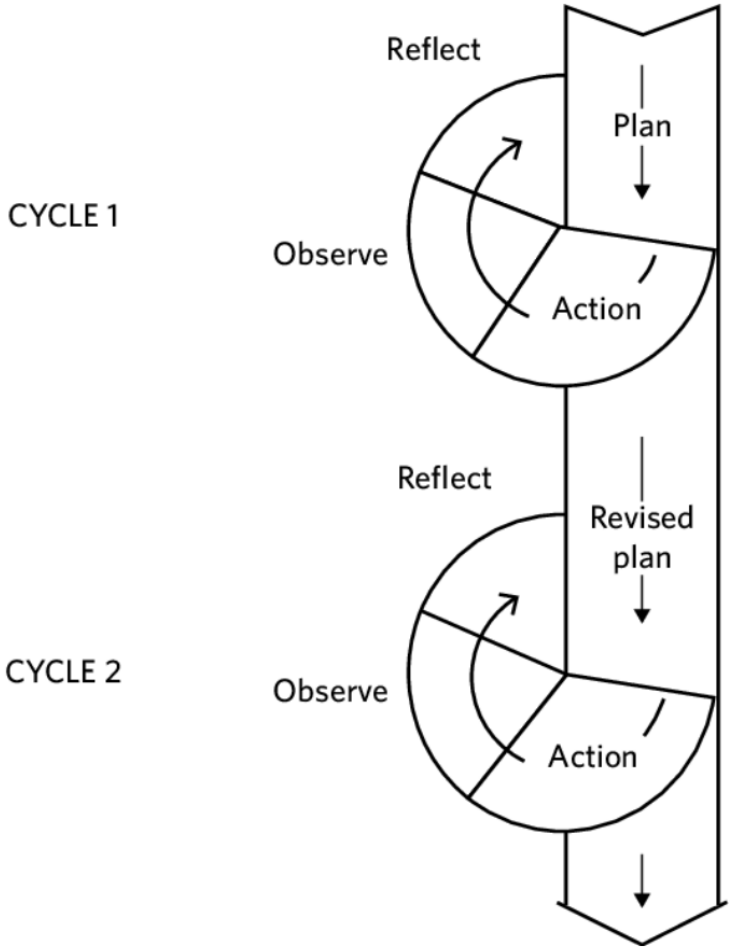


Data Science Lifecycle



How do you develop analytics capacity?

Action research framework



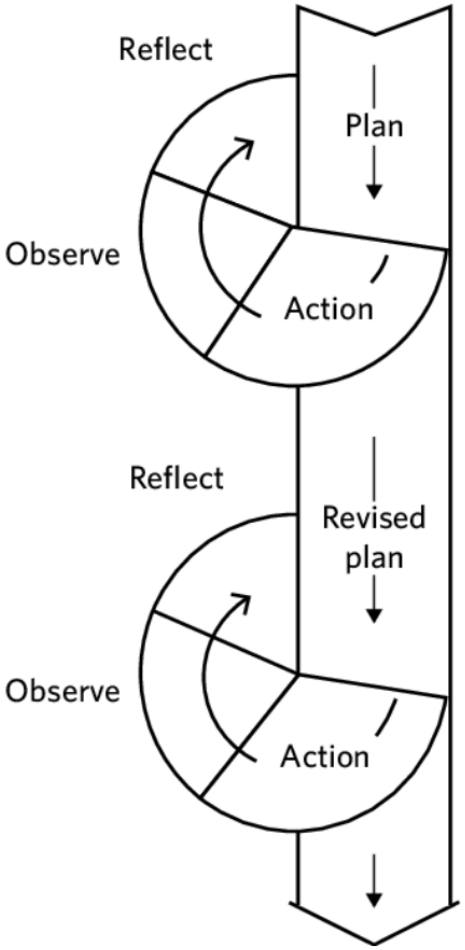
Kemmis and McTaggart model

Action research framework

Cycle 1 = Basic

Cycle 2 = Intermediate

Cycle 3 = Advanced



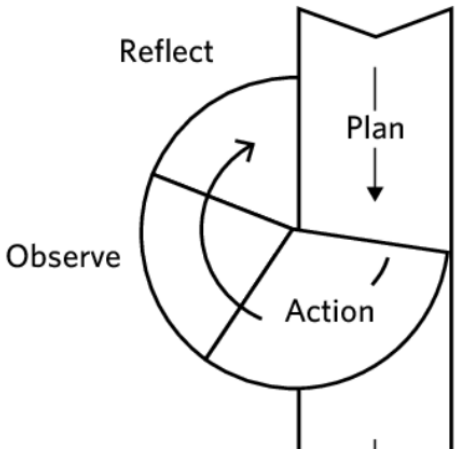
Blended learning approach:

- LinkedIn Learning videos
- Workshop exercises

First workshop

Cycle 1: Basic

1. Plan:
- Basic statistics
- Interpretation
- Working with data



2. Action:
- First videos
- Then exercises
- Spread over couple of months
- E.g.

3. Observe:
- Evaluation forms

4. Reflect:
- Themes from evaluation

Reflection: Basic

Expectation	Relevant	Teach	Improve	Exercises	Blackboard	Recommendations
Remind me. Confidence.	Kind of. Need Excel formulas.	If I focus, I can interpret.	20 min watch time. Too many vidoes.	Had to leave. All usefull. Data verification, cleaning, dictionary.	Not sure what wanted to engage with. Will engage more. Didn't need appointment - unders	All relevant. Tailored engagement. Too little time for activities.
Basic stats. Enjoyed predictive stats.	Highly relevant.	Summarized undergrad work.	More programming. Advanced methods.	Predictive analytics.	.	It is excellent.
Refresher.	Too theoretical. Little relevant.	Data cleaning.	How videos are presented.	Taught aditional features of Excel. Used the Tasks function.	Portal for tasks.	None, the workshop is ideal for my experience.
Refresher. Time constraints.	Data cleaning and management.	More effective/efficient ways.	None, Finding time was issue.	Pivot tables and application.	Not interacted. Knew what was expected of me.	Liked group work.
Skimmed videos. Basics and usefull exersises.	Data sorting, capturing.	Have to watch videos.	Time consuming. Align concepts to help retain knowl	Liked data dictionary. Pivot tables. Report writing.	Not interacted. Only downloaded.	Engagement is great. Short 2-3 hour sessions + online activities
Identify "hidden" functions.	Not. I only upload data, not work with it. Maybe in future.	Different functions.	None.	Data dictionary (easy).	Not interacted. Only watched vidoes.	None.
Introduced to important concepts. Recording st	Faster ways to do things. Refresher of consepts. Help with interpretation of r	Basc skills for documentaion.	Can be organised better. Microsoft Access to difficu	Pivot tables.	Not interacted. Work closely with presenter. Google.	Keep everything practical.
Refresher.	Everything. Refresher.	Tips and tricks.	Videos does not follow logical workflow.	.	Asked questions, but other participants does not answer.	None.
The videos brought new light on view of data.	Only 10% but mag in future.	Formula application. Data analysis. Perspectives on san	Duration. Time consuming but it is nessesary.	Pivot tables, analysing graphs and stats.	None. But enjoyed the group I worked in.	More Excel formulas.
Very informative.	Financial analysis, helps with reporting.	Basics was intersing. Exited about stats.	None. Too many new concepts.	All exercises. Workshops gave time to focus on workflow.	Not interacted. Only download. Go to presenter directly.	None.
Bit overwhelming. Too much to take in.	Excel function are relevant.	New functions and shortcuts.	Shorter videos that focus on one thing at time.	Cleaning, transforming data. Relevant and useful. Better way of do	Not interacted. Download and to do list.	Important information. Bit overhelming.
Not watch all videos. Time constraint.	Excel function are relevant.	.	Designated time in daily schedule.	Inspecting source data.	Not interacted. No time.	Extremely useful. Gave name to what I have been doing.
Not watch all videos. Time constraint.	Work and studies.	Life is stats and generating data.	Lack of time. Perhaps slides.	Data dictionary and readme.	Once on Blackboard. Personally with presenter.	More material and more interaction is better than vidoes.
Refresher. Clarity on topics.	Not relevant to current job discription. But studies yes.	Tools.	None, vidoes is well paced.	All. Apllied theory to own data.	Not interacted. Time constraint. Evrybody learn different rate.	Current job discription made working on own data irrelevant.
Learn use of data.	Very relevant.	Refresher.	.	.	.	.
Refresher.	Help make informed judgements.	Refresher.	Videos is fine. Gives sence of workshops.	.	.	.
Not watched.	Help me with online user behaviour.	.	.	Pivot tables. Data analytics.	Have with group, not with Blackboard	Explain basic concepts during sessions.

Positive feedback:

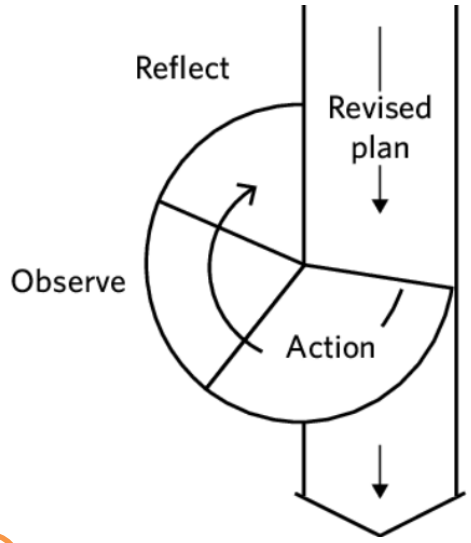
- Statistics refresher
- Informative videos
- **Relevant exercises**
- Functions and pivot tables exercises

Negative feedback:

- Didn’t have time to watch videos
- Videos too long and not organized according to **workflow**
- Didn’t collaborate on Blackboard
- Some struggle, limited statistics background

Cycle 2: Intermediate

1. Plan:
- Modelling
- Programming



2. Action:
- Drop video
- Workflow exercises
- 2 days back to back workshops
- Then resources
- E.g.

3. Observe:
- Evaluation forms

4. Reflect:
- Themes from evaluation

Reflection: Intermediate

Expectation	Relevant	Teach	Improve	Exercises	Blackboard	Recommendations
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Refresher. Time constraints.	Data cleaning and management.	More effective/efficient ways.	None, Finding time was issue.	Pivot tables and application.	Not interacted. Knew what was expected of me.	Liked group work.
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Refresher.	Help make informed judgements.	Refresher.	Videos is fine. Gives sence of workshops.	.	.	.
Not watched.	Help me with online user behaviour.	.	.	Pivot tables. Data analytics.	Have with group, not with Blackboard	Explain basic concepts during sessions.

Positive feedback:

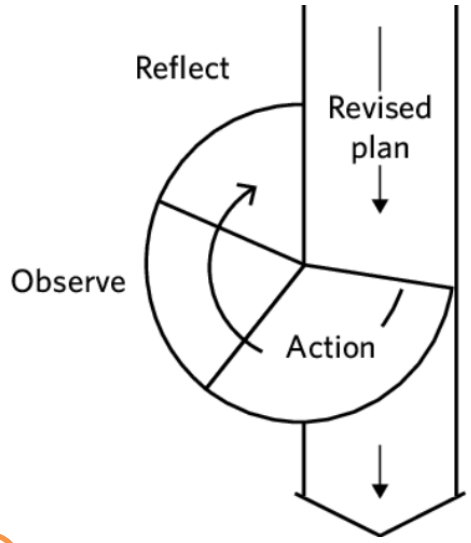
- Concise, easy to follow instructions
- Fun and enjoyable
- Hands on and interactive
- Applicable to day to day work
- Like **workflow** approach

Negative feedback:

- Some **concepts** are new and not all content were easy to follow
- No prior experience makes workshops difficult
- Give participants **problems to solve**

Cycle 3: Advanced

1. Plan:
- Advanced topics



2. Action:
- Project
- Scaffolding difficult concepts

3. Observe:
- Assessment

4. Reflect:
- Themes from evaluation

Conclusion

Conclusion

- As institutions are collecting more data, people are forced to work with data (even ULD) i.e. global evidence based culture

- Basics:

  Everyone will have to develop basic data **interpretation** skills

- Intermediate:

  Analysts gets buried by data, needs to build proficiency / **productivity**

- Advanced:

  Teach to drive **innovation** and push student success forward

Thank you