

Three Canvases to Plan Your Next ML Project

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POC CRISIS

useless POC
implementation
of AI projects

AI PROJECT IDEAS
IMPLEMENTED AS
POCs,

SUCCESSFUL POCs

THE INNOVATION WITH AI NEEDS PROCESSES FOR
EVALUATING & CHOOSING OPPORTUNITIES
BEFORE THEY HIT POC-INVESTMENT

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PRE - POC SCREENING



~~BACK-OF-THE-ENVELOPE
CALCULATIONS
FOR MACHINE LEARNING PROJECTS~~

① VALIDATE THE WORKFLOW INTEGRATION

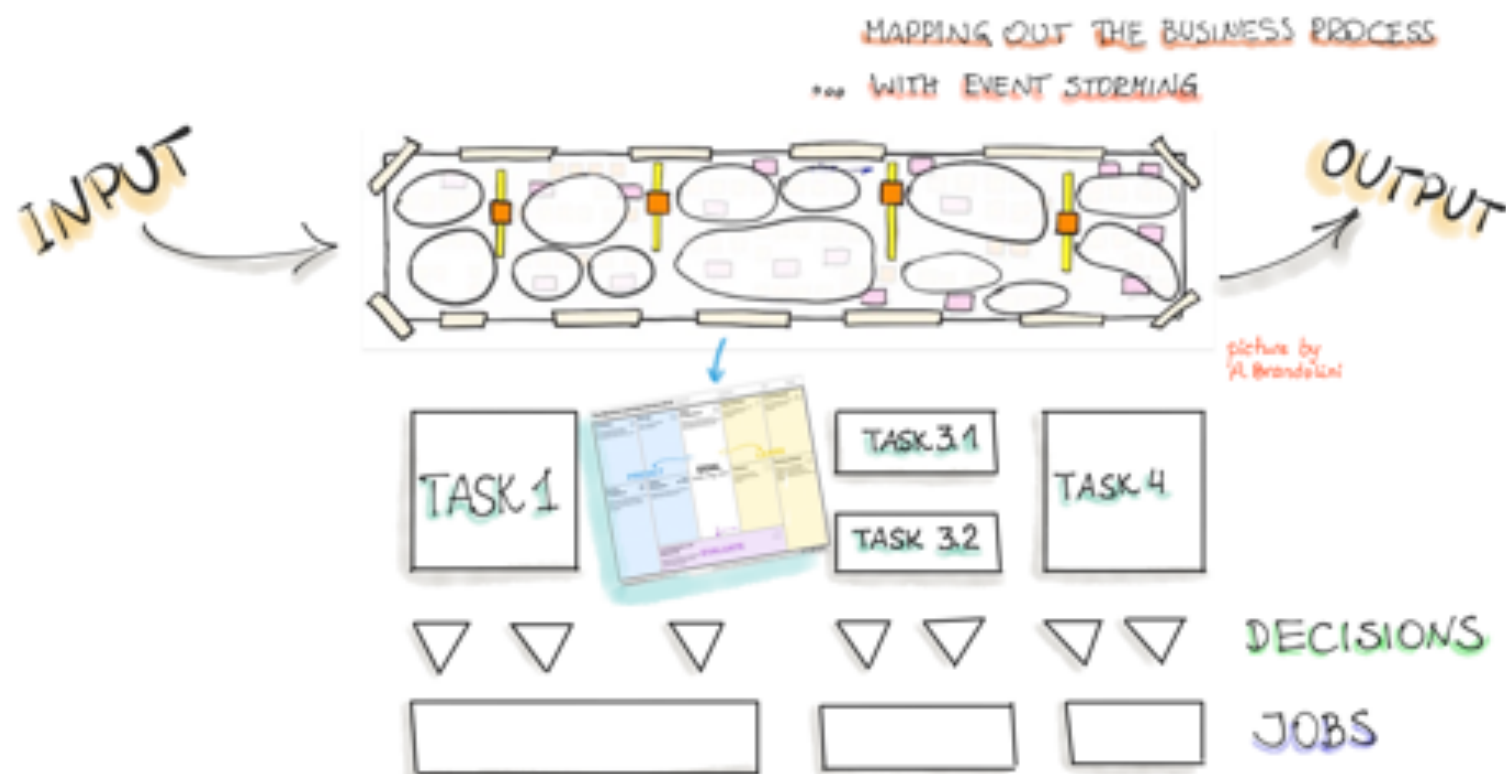


HOW DOES THE AI SYSTEM
FIT WITH PROCESSES THAT
PRECEDE AND FOLLOW IT ?

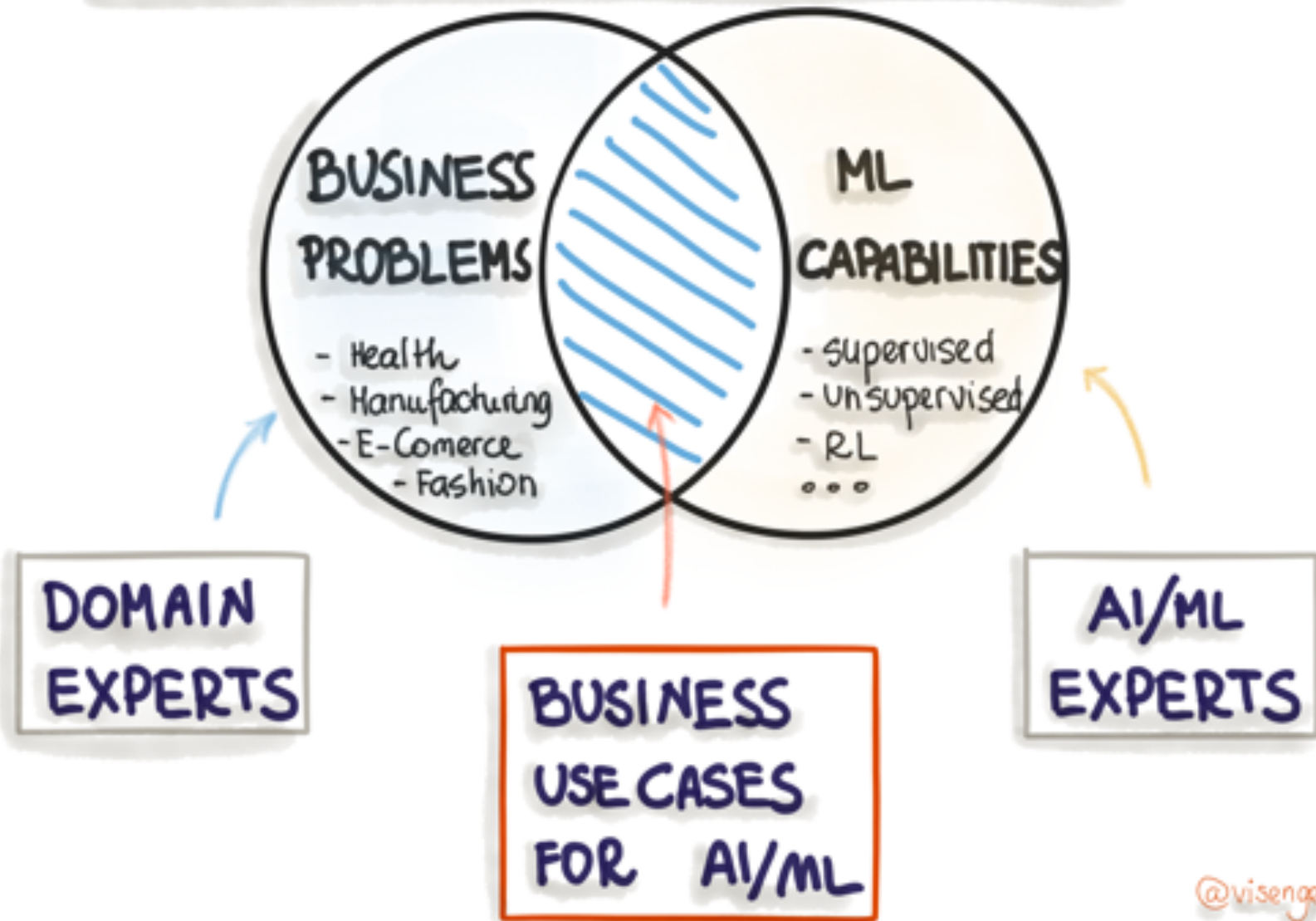
② ESTIMATE COSTS, NOT BENEFITS

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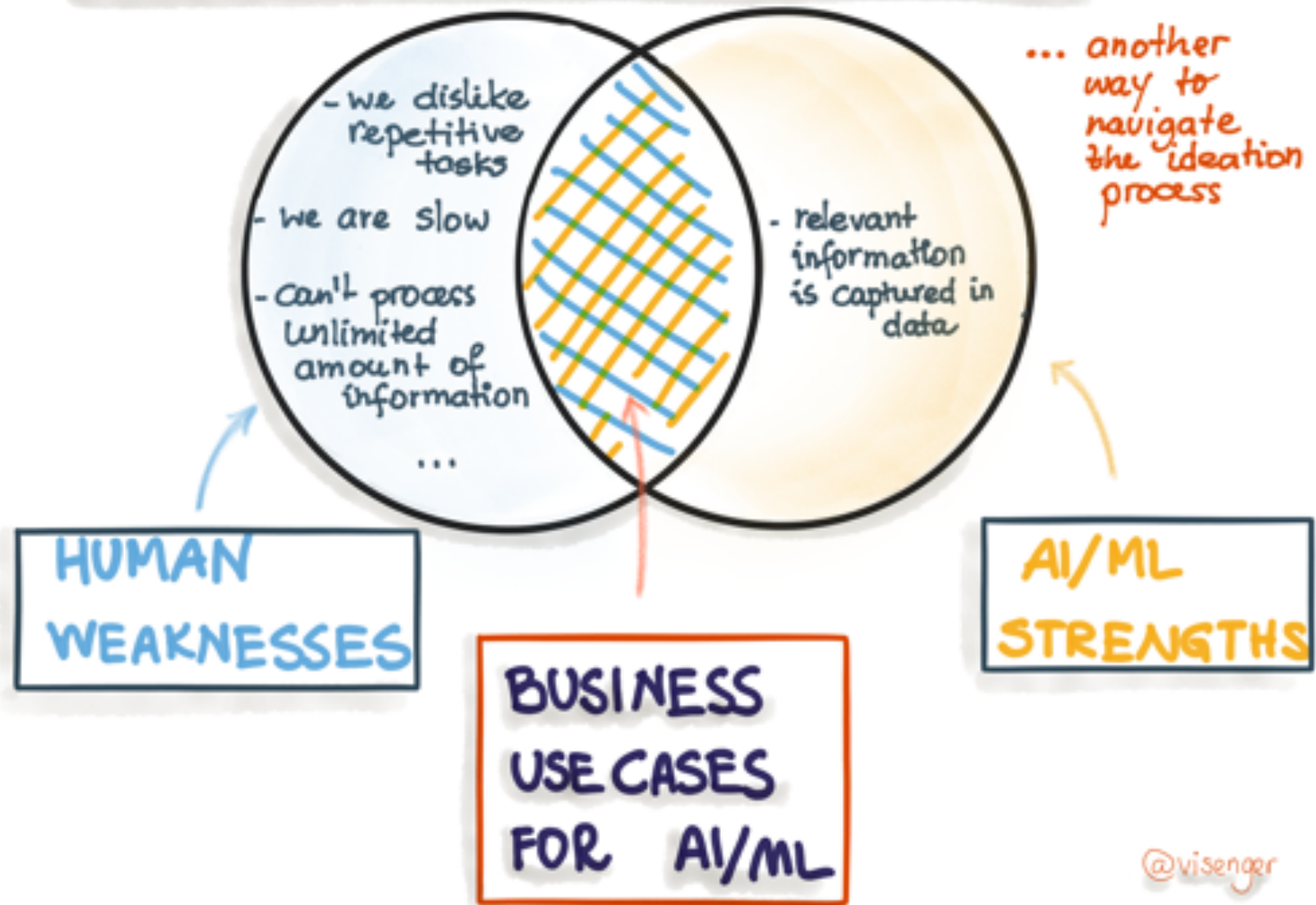
DECONSTRUCTING WORK FLOWS



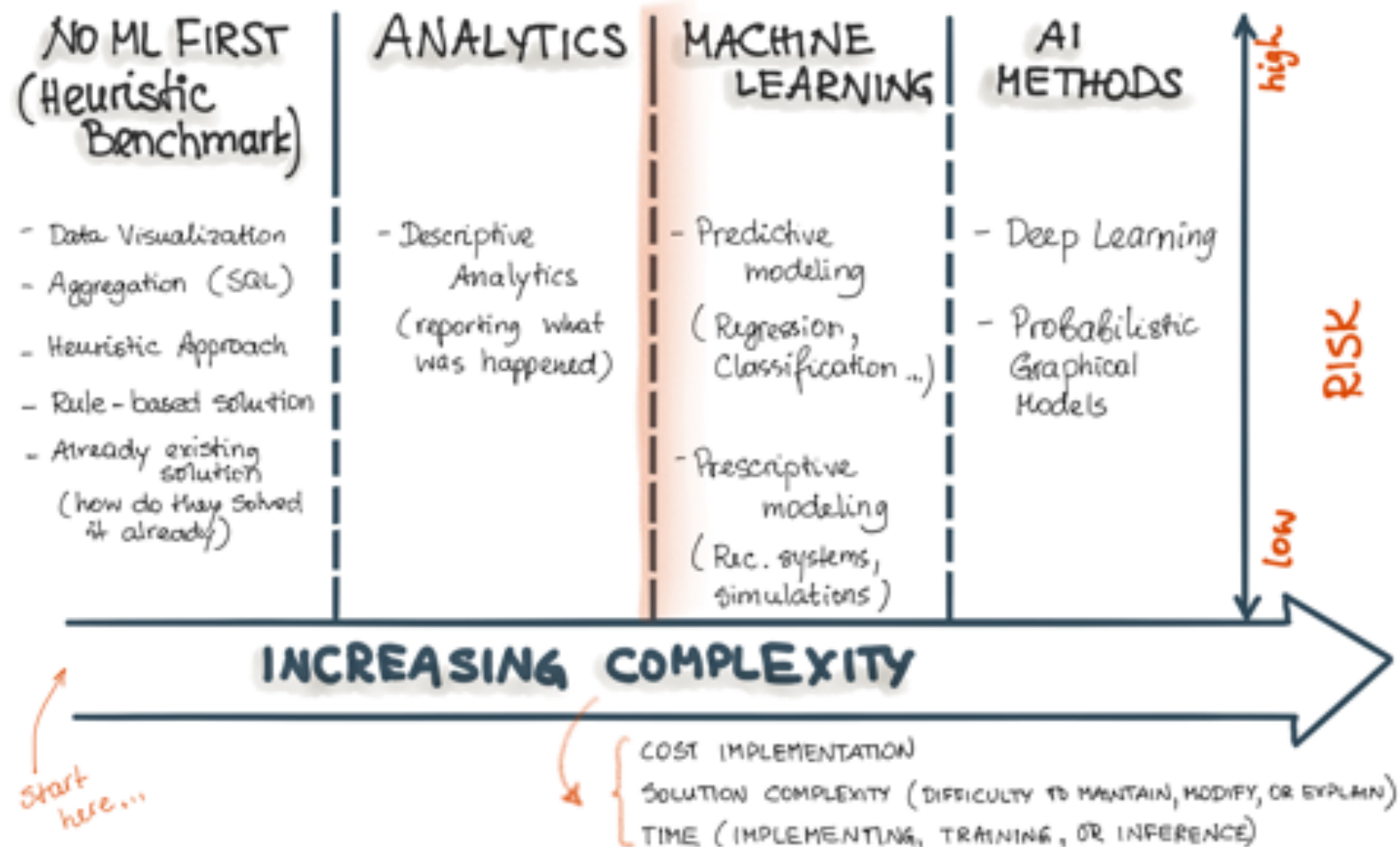
MACHINE LEARNING USE CASES



MACHINE LEARNING USE CASES



TAMING THE COMPLEXITY OF DS SOLUTION



WORKFLOW INTEGRATION

... HOW THE ML MODEL
IS EMBEDDED INTO
A BUSINESS WORKFLOW



⚡ UNCLEARNESS HERE IS AN
INDICATOR THAT WE HAVE
TO GO BACK AND REDESIGN

ESTIMATE COSTS, NOT BENEFITS

~~BACK-OF-THE-ENVELOPE
CALCULATIONS
FOR MACHINE LEARNING PROJECTS~~

COSTS

vs.

BENEFITS

- REAL
- TANGIBLE
- CAN BE ESTIMATED



OUR FOCUS: WE WANT
TO ESTIMATE THE
"WORTHINESS" OF THE
ML PROJECT

- HYPOTHETICAL
- UNCERTAIN

at least
... at this point of
time

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THE TAXONOMY OF COSTS

COSTS

ONE-TIME

STAFF

- TEAM 2-4 PEOPLE
1 DOMAIN EXPERT

INFRASTRUCTURE

- FULL-SCALE
DEVELOPMENT

CHANGE MANAGEMENT

- SYSTEM INTEGRATION
TRAININGS

RUNNING

SYSTEM MAINTENANCE

- 10% - 30% OF
INITIAL DEVELOPMENT

OPERATIONAL MAINTENANCE

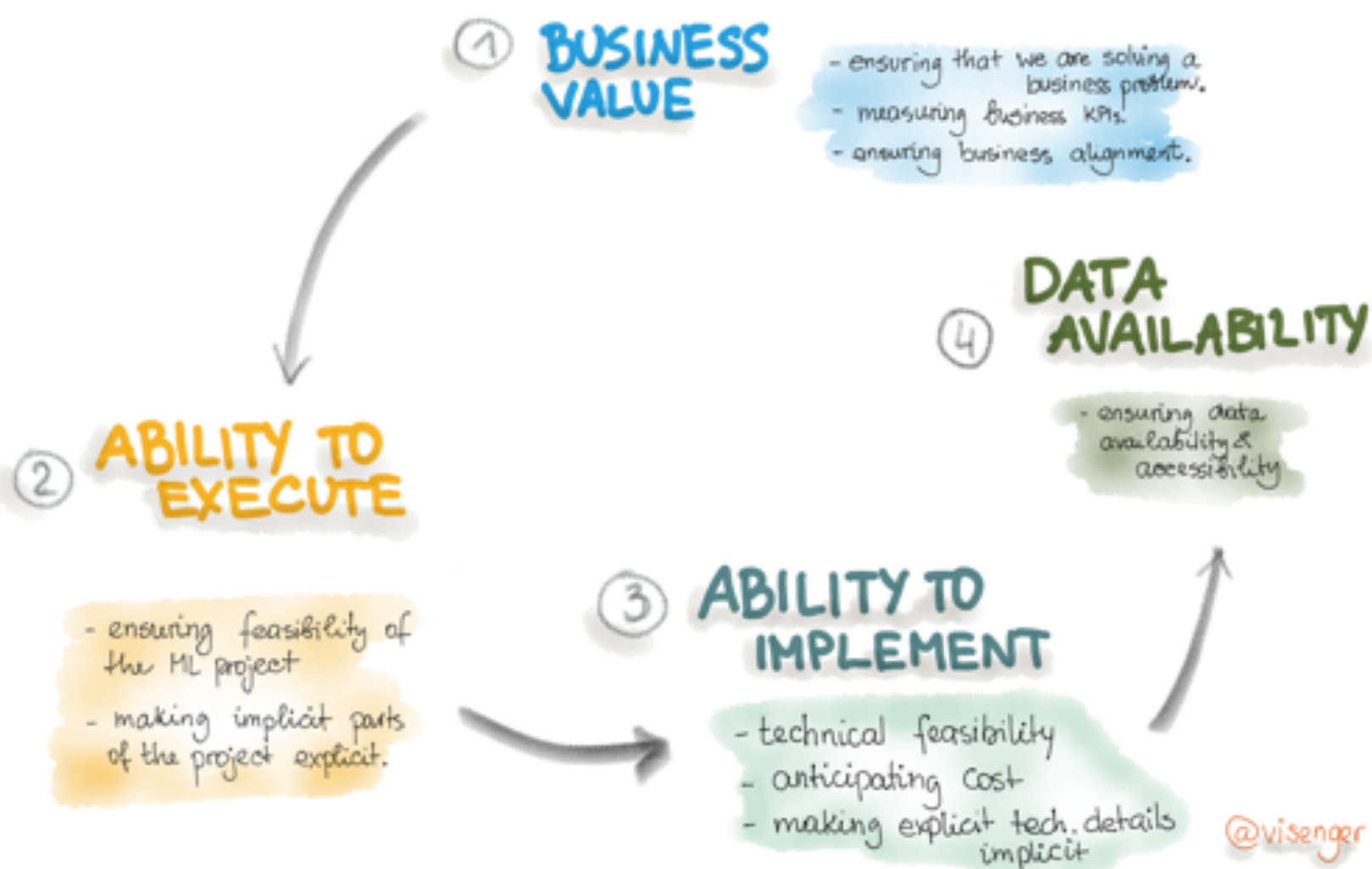
- MONITORING

DATA

- EXTERNAL DATA COSTS

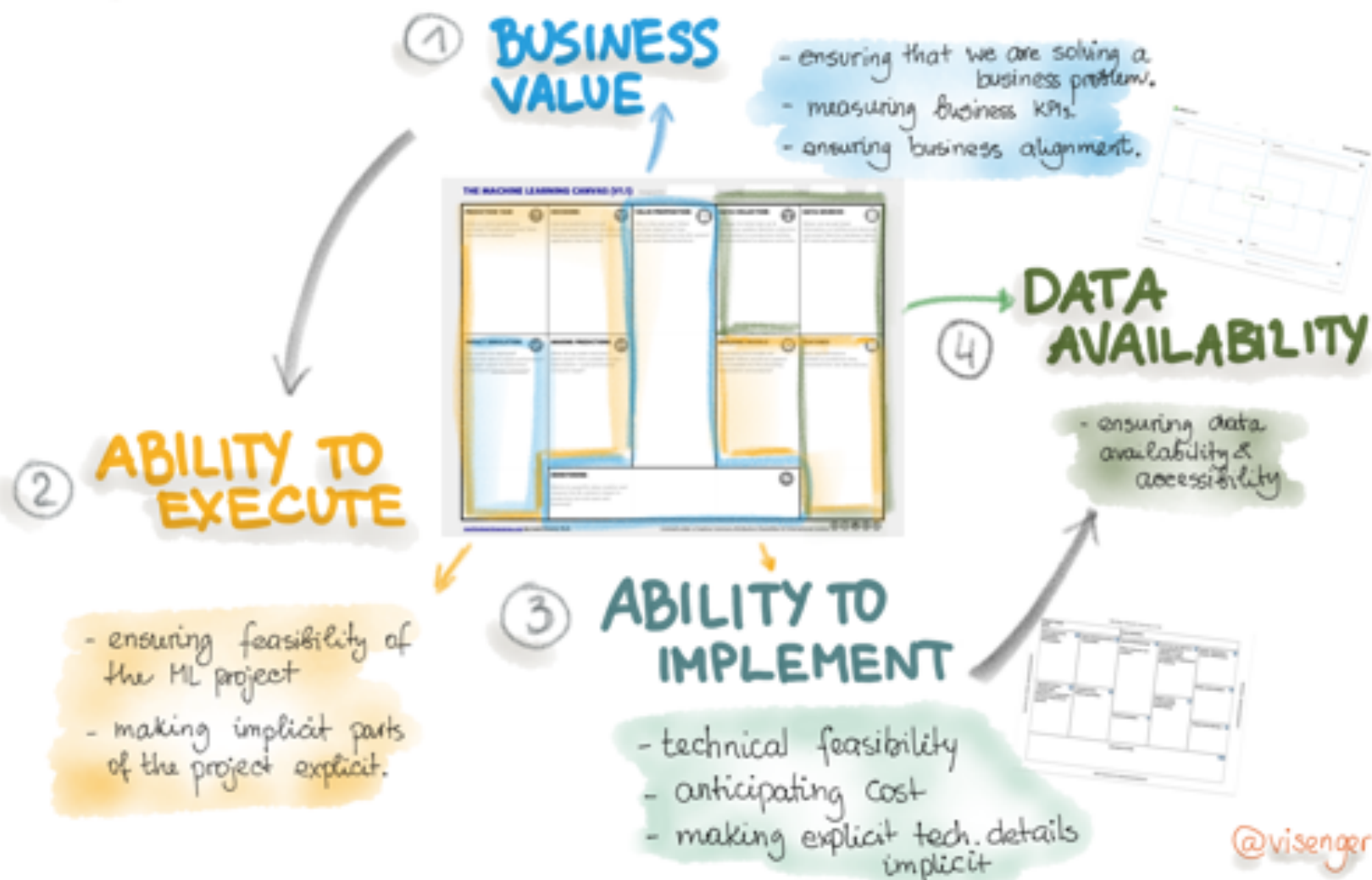
WORKING BACKWARDS

... start with the end in mind.



WORKING BACKWARDS

... Start with the end in mind.



THE MACHINE LEARNING CANVAS

← PREDICTION →

← TRAINING →

DOMAIN
KNOWLEDGE

PREDICTIVE
ENGINE

THE MACHINE LEARNING CANVAS (V1.1)

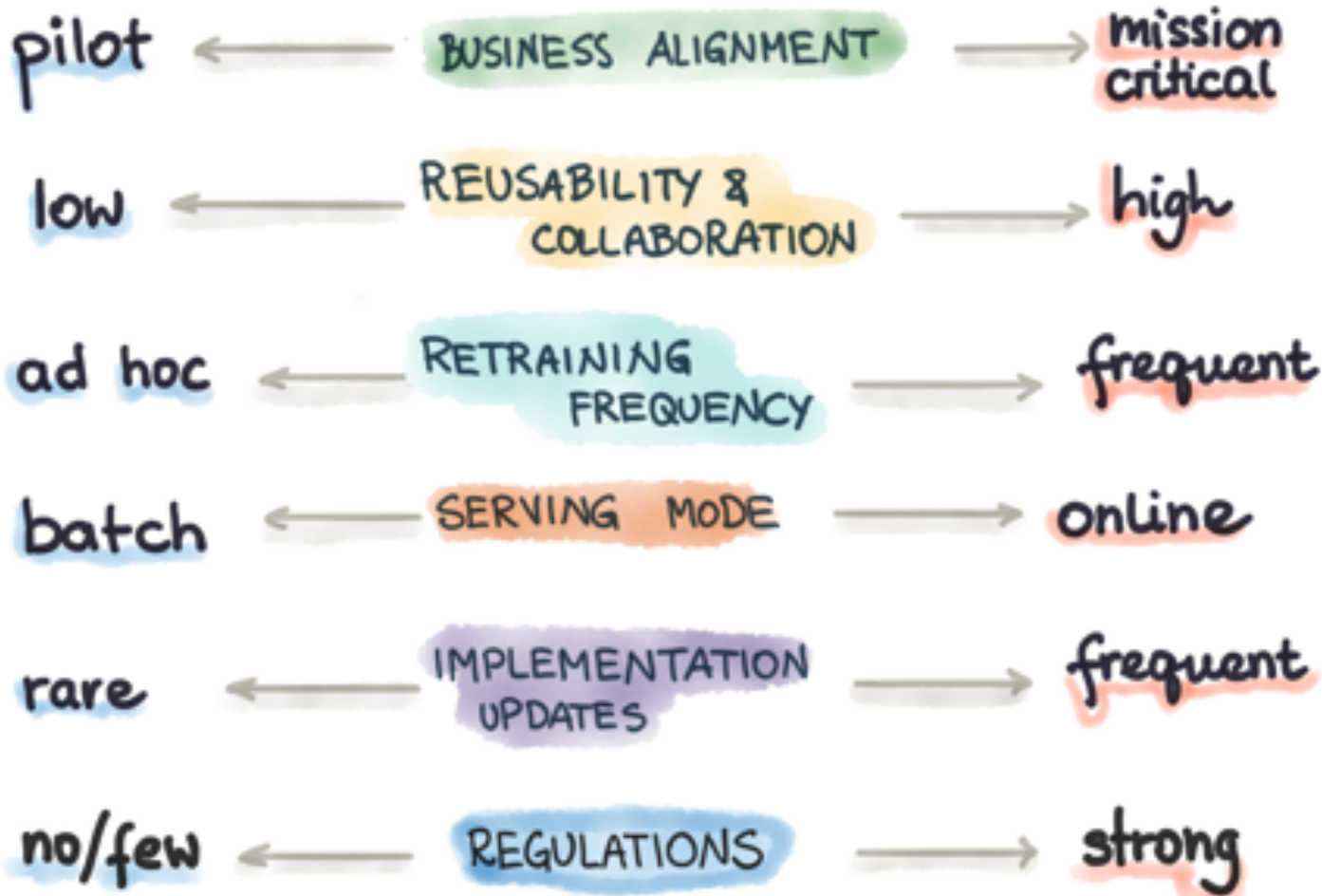
PREDICTION TASK  Why do we need predictions? What are the business outcomes? What time before observation?	DECISIONS  How are predictions turned into decisions? What are the business parameters of the process? Application that does that.	VALUE PROPOSITION  Who is the end-user? What are their objectives? How will they benefit from the ML system? Identify success metrics.	DATA COLLECTION  Strategy for initial train set & continuous update. Monitor collection rate, feedback on production entities, constraints to observe outcomes.	DATA SOURCES  Where can we get (and) information on entities and observed outcomes? Storage: database tables, API methods, webhooks for scrapes, etc.
IMPACT SIMULATION  Can models be deployed? Which test data to assess performance? Cost/benefit values for (predicted prediction) (Success criteria)	MAKING PREDICTIONS  When do we make next time? Batch/real time? Time available for this + feature engineering + post processing? Compute target?		BUILDING MODELS  How many good models are needed? When would we update? Time available for this (including feature engineering and analysis)?	FEATURES  Input representations available at prediction time, extracted from raw data sources.
MONITORING  Metrics to quantify value creation and measure the ML system's impact on production (on end-users and business)?				

<https://mlcanvas.com> by Louis Bonard, Ph.D.

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BUSINESS ALIGNMENT

ML USE CASE CHARACTERISTICS



IDENTIFY CHARACTERISTICS OF ML USE CASE

THE MACHINE LEARNING CANVAS (V1.1) Designed for: _____ Designed by: _____ Date: _____ Iteration: _____

PREDICTION TASK ? Entity on which predictions are made? Possible outcomes? What time before observation? <i>Implementation updates</i>	DECISIONS T How are predictions turned into proposed value for the end-user? Mention parameters of the process / application that does that. PREVIOUS STEPS → USE OF THE MODEL → DESIRED OUTCOME <i>Workflow integration</i>	VALUE PROPOSITION T Who is the end-user? What are their objectives? How will they benefit from the ML system? Mention workflow/interfaces. <i>Business alignment</i>	DATA COLLECTION T Strategy for initial train set & continuous update. Mention collection rate, holdout on production entities, costs/constraints to observe outcomes. <i>Regulations</i>	DATA SOURCES T Where can we get (raw) information on entities and observed outcomes? From database tables, APIs, web scraping, etc. DATA LANDSCAPE CANVAS 
IMPACT SIMULATION ✓ Can models be deployed? Which test data to assess performance? Cost/gain values for (incorrect) predictions? https://arxiv.org/abs/2006.02512 <i>Regulations</i>	MAKING PREDICTIONS T When do we make real time / batch pred? Time available for this + featureization + post-processing? Compute target? <i>Serving mode</i>	BUILDING MODELS T How many prod models are needed? When would we update? Time available for this (including featureization and analyzing)? <i>Retraining frequency</i>	FEATURES T Input representations available at prediction time, extracted from raw data sources. <i>Regulations</i>	
	MONITORING T Metrics to quantify value creation and measure the ML system's impact in production (on end-users and business)? <i>Business alignment</i>			

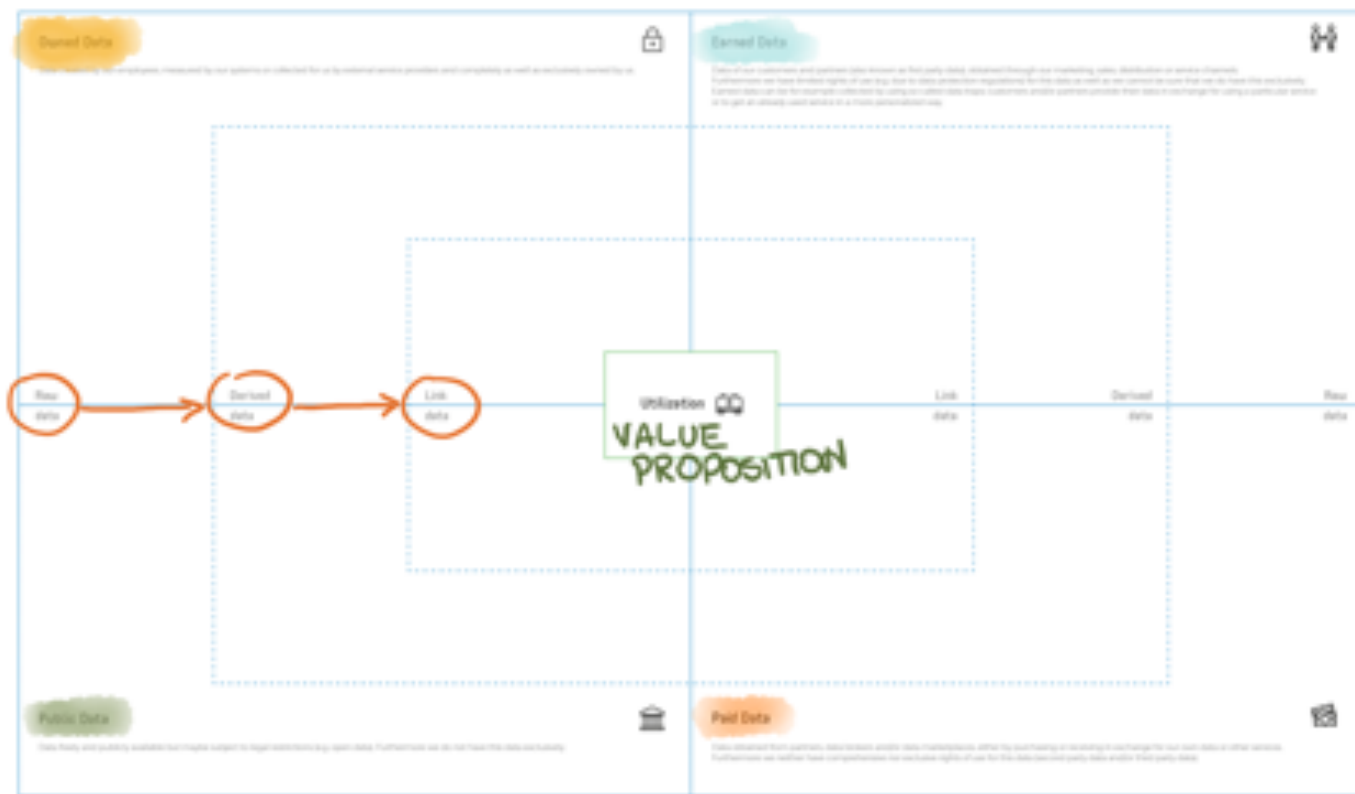
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DATA LANDSCAPE CANVAS



Data Landscape



MLOps Stack

...recently in the community

MLOps.community

bad-startup-ideas

be-shameless

berlin

career-advice

data-engineering

dataops

datascience


engineeringlabs

evangelism

mlops-questions-answered

11 Pinned + Add a bookmark


Monday, January 4th



Samuel Hinton

10:16 AM

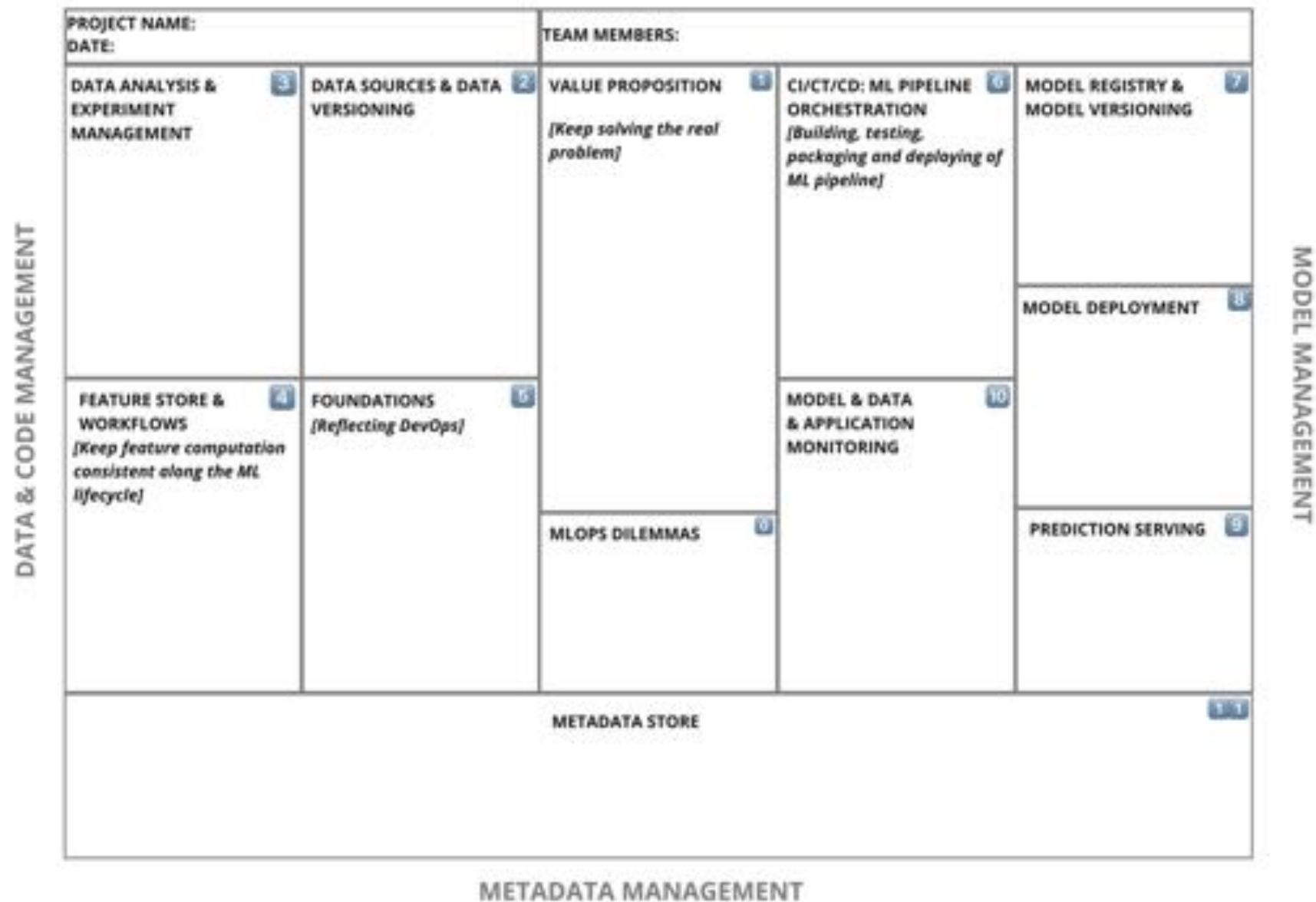
Hi all! Im currently getting into MLOps and its super overwhelming. We have a small team with a small amount of data, but it seems like the solutions out there are all going to require a large investment in infrastructure. From Kubeflow, MLFlow, ZenML, ClearML, BentoML, Clipper, I dont know where to start. We need to track experiments, have reproducible runs, serve and productionise models, all the normal fare. Where would the veterans suggest I start my adventure into this land of MLOps? Any good overviews of the solutions that exist, from simple and solving one issue, to complicated kitchen sink solutions? (edited)



41 replies

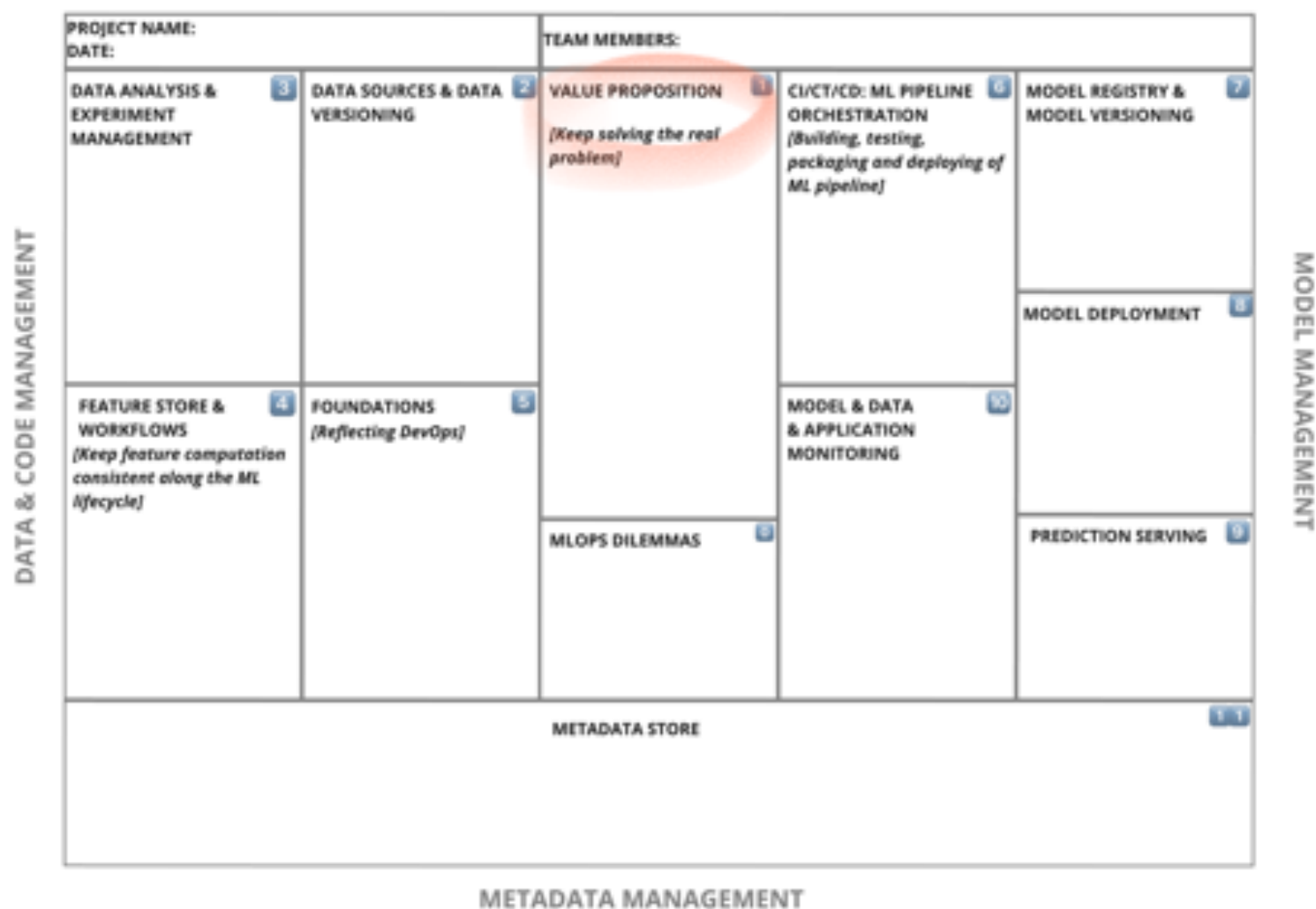
Last reply 9 months ago

MLOps Stack Canvas v1.0



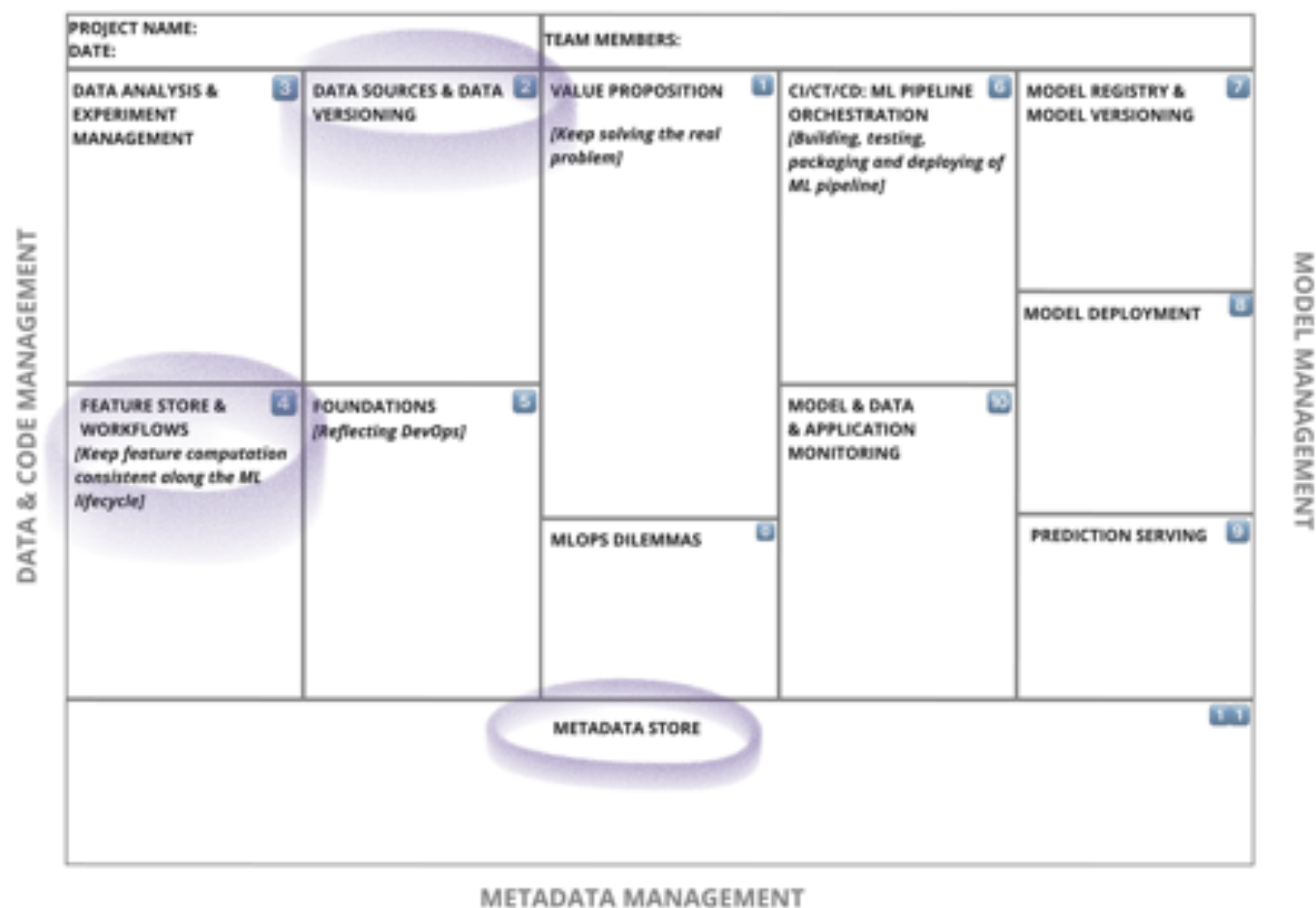
BUSINESS ALIGNMENT

MLOps Stack Canvas v1.0



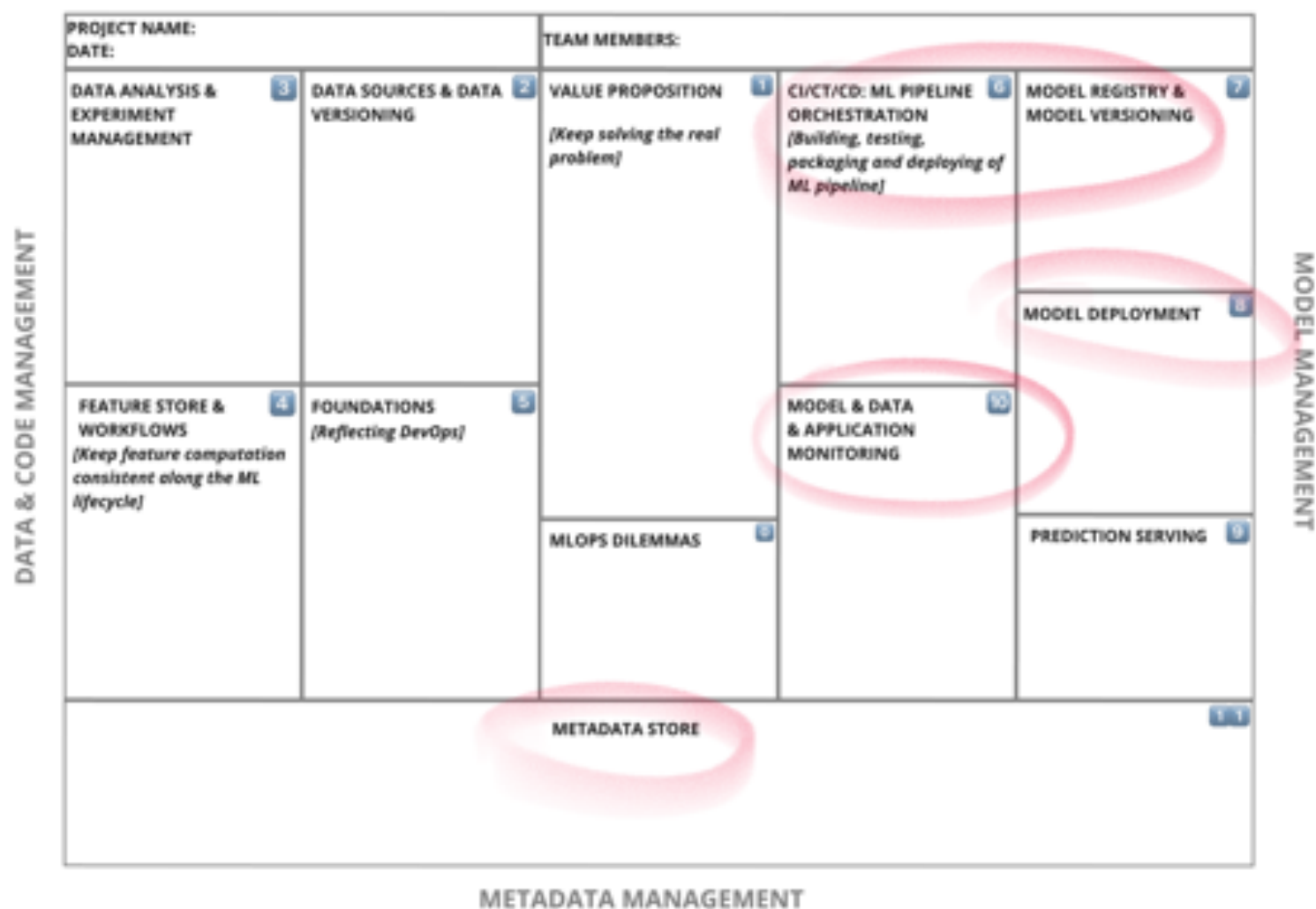
REUSABILITY & COLLABORATION

MLOps Stack Canvas v1.0



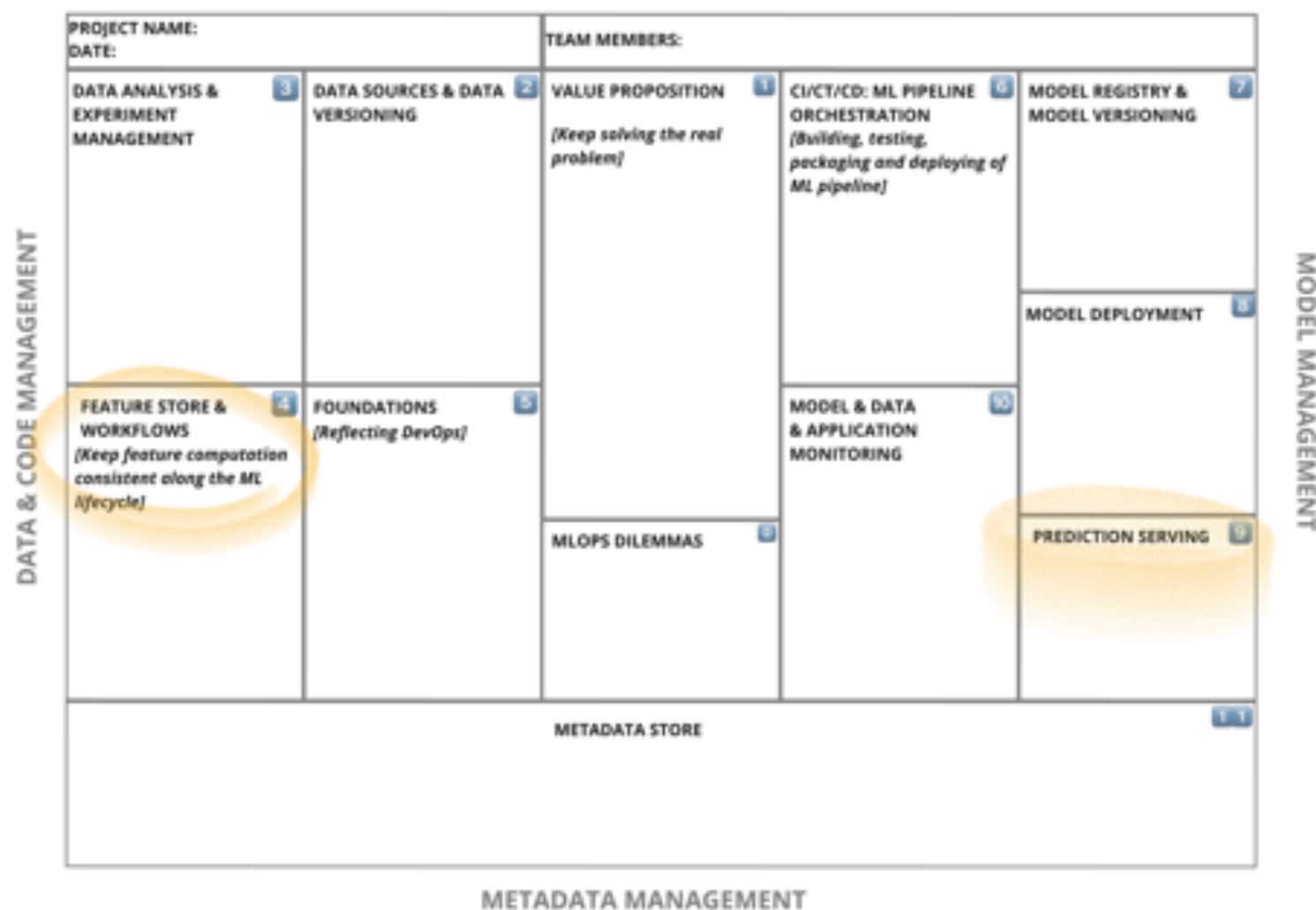
RETRAINING FREQUENCY

MLOps Stack Canvas v1.0



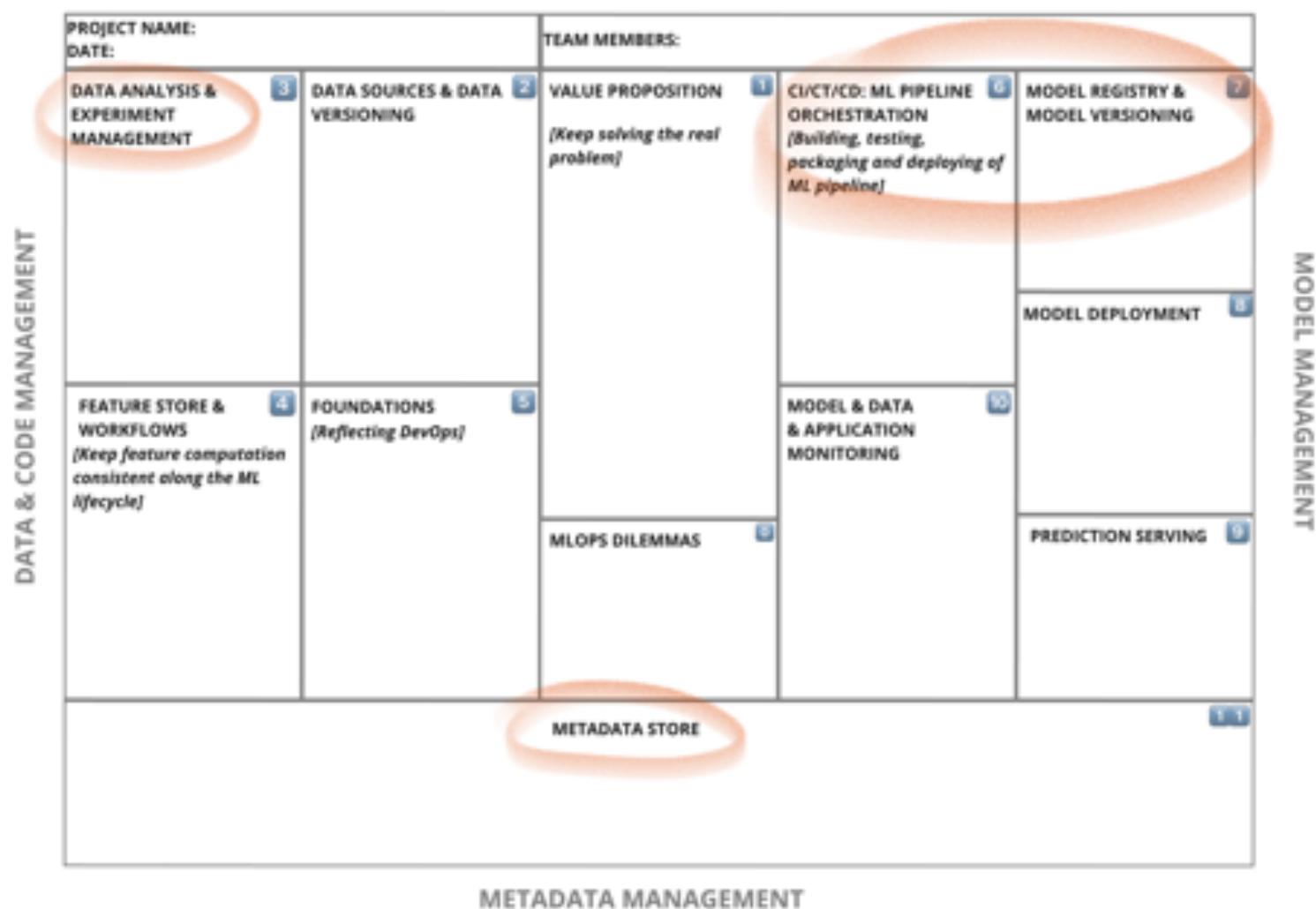
SERVING MODE

MLOps Stack Canvas v1.0



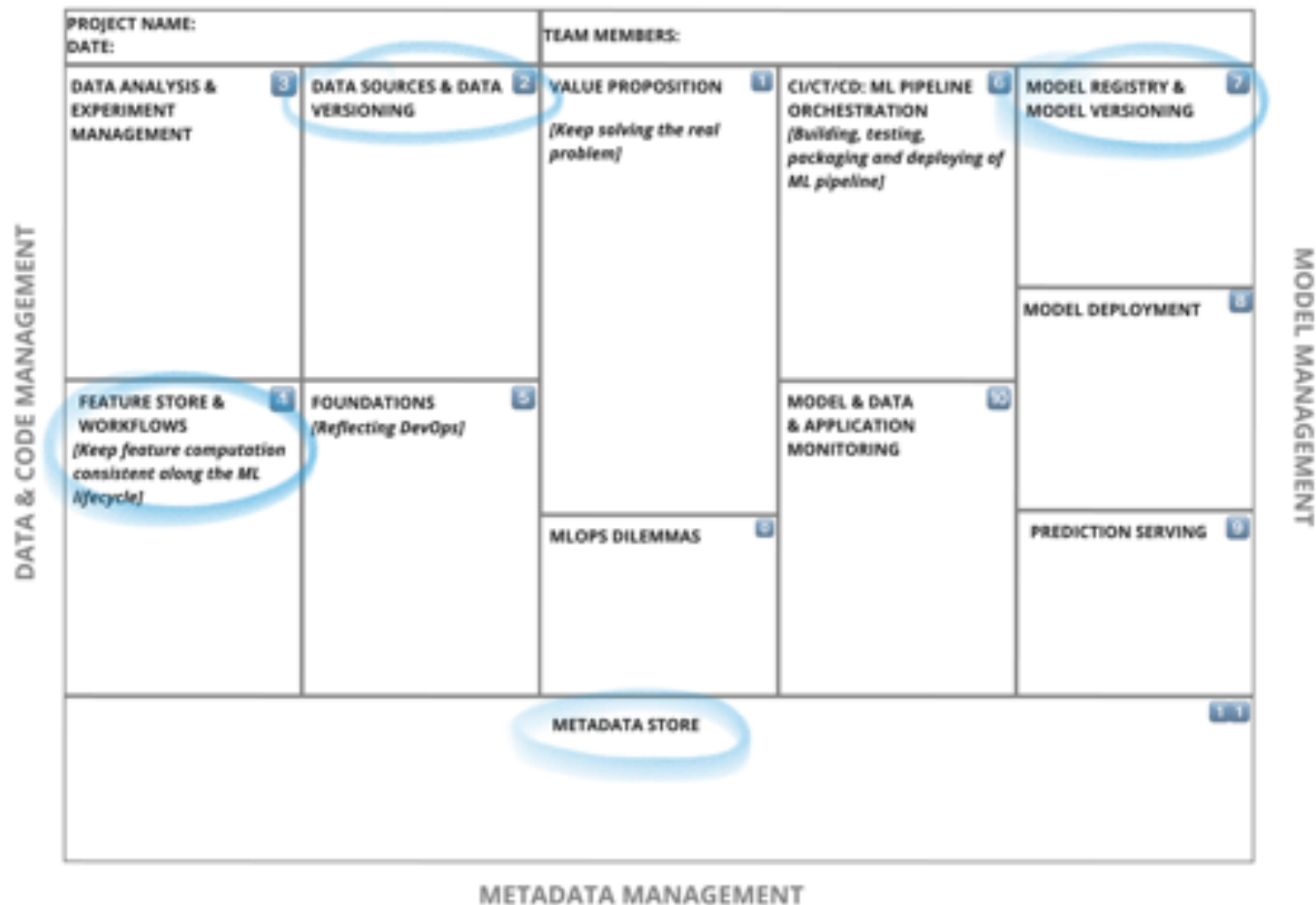
IMPLEMENTATION UPDATES

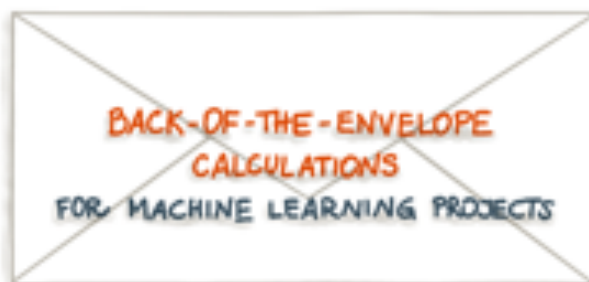
MLOps Stack Canvas v1.0



REGULATIONS

MLOps Stack Canvas v1.0





ENHANCES OUR
UNDERSTANDING OF...

- USER/BUSINESS PROBLEM
- HOW TO MEASURE SUCCESS
- COMPLEXITY OF THE ML SOLUTION
- DATA & ITS AVAILABILITY
- WORKFLOW INTEGRATION
- REQUIREMENTS OF THE ML SYSTEM
- TECHNICAL COMPONENTS FOR MLOPS



ownml.co

OWNML

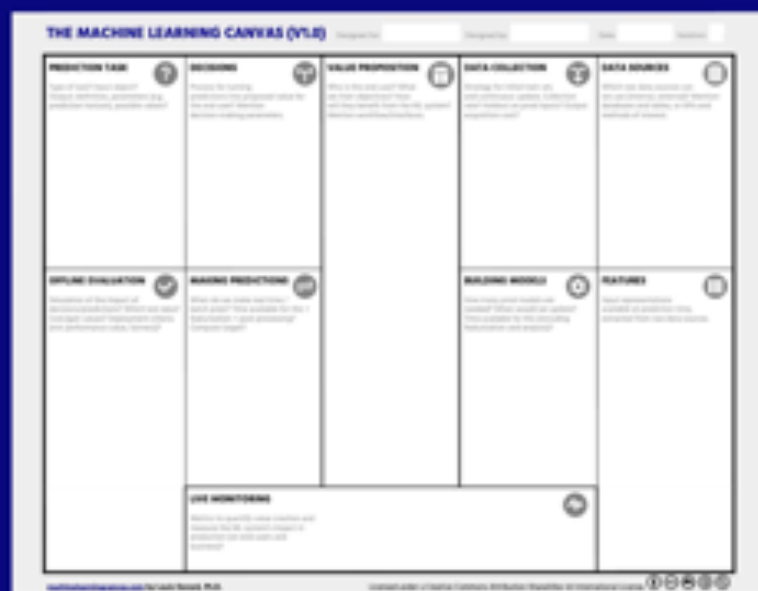
ABOUT

CANVAS

COURSES

OWNML

The Machine Learning Canvas



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We will never send spam nor share your data. You can
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DATA LANDSCAPE CANVAS


The screenshot shows the 'Data Landscape Canvas' interface on the website canvasgeneration.com. The browser's address bar shows the URL. The interface has a dark sidebar on the left with the 'Data Landscape' title and a 'Datentreiber' section containing filters for 'Website' and 'Library', a file upload section with 'PDF' and 'Image' options, and a list of tags including 'Personal use', 'Commercial use', 'Creative Commons', and 'Contact'. The main canvas area is titled 'Data Lands' and features a central diagram with concentric dashed boxes and a central 'Utilization' box. The diagram is divided into four quadrants: 'Shared Data' (top-left), 'Shared Data' (top-right), 'Public Data' (bottom-left), and 'Public Data' (bottom-right). The 'Utilization' box is in the center, with 'Data' labels on the horizontal axis. The 'Data Lands' title is in the top right corner of the canvas area. The bottom of the canvas has a status bar with 'No data per feature/element', a zoom level of '50%', and a full-screen button.

on Miroverse ...

Miroverse → Strategy & Planning

MLOps Stack Canvas

♡ 8 Share Use template



MLOpsStack by Larysa Visengeriyeva
Miro.com

1K 110

We envision the MLOps Stack Canvas as help to architect the ML system.
MLOps Stack Canvas condenses the main elements of a whole technology.