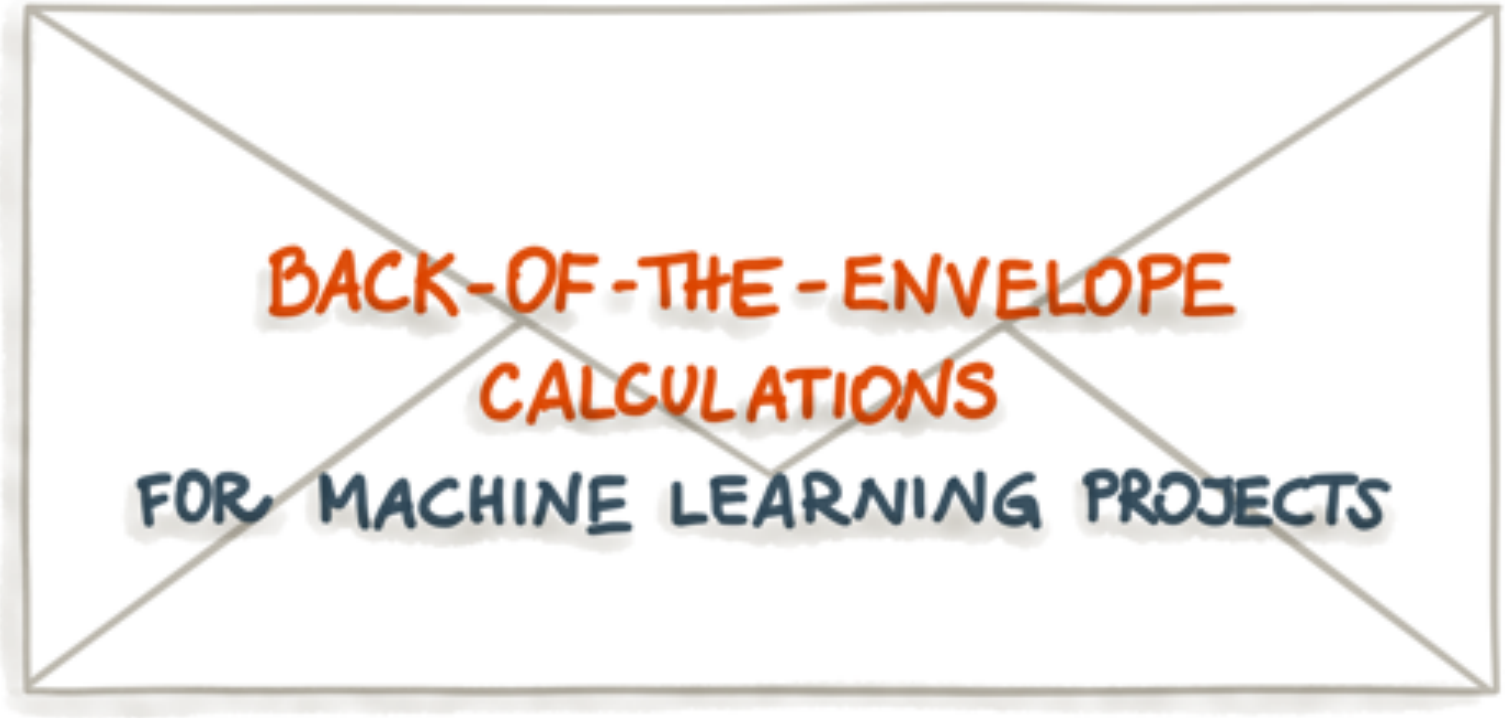
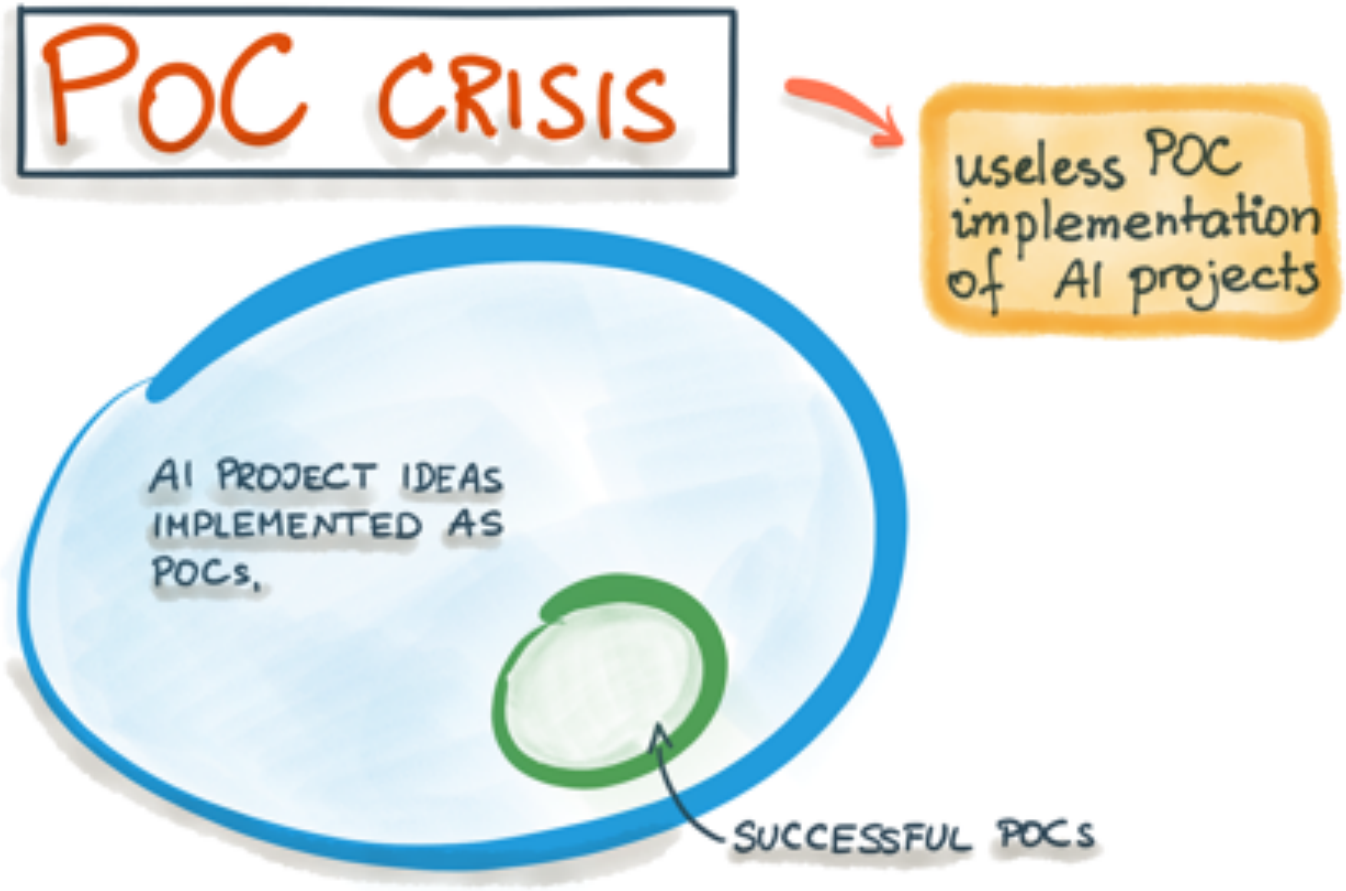


Three Canvases to Plan Your Next ML Project

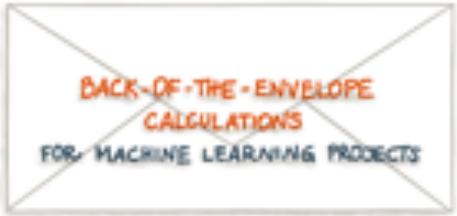
Larysa Visengeriyeva @visenger



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

@visengor

PRE-POC SCREENING



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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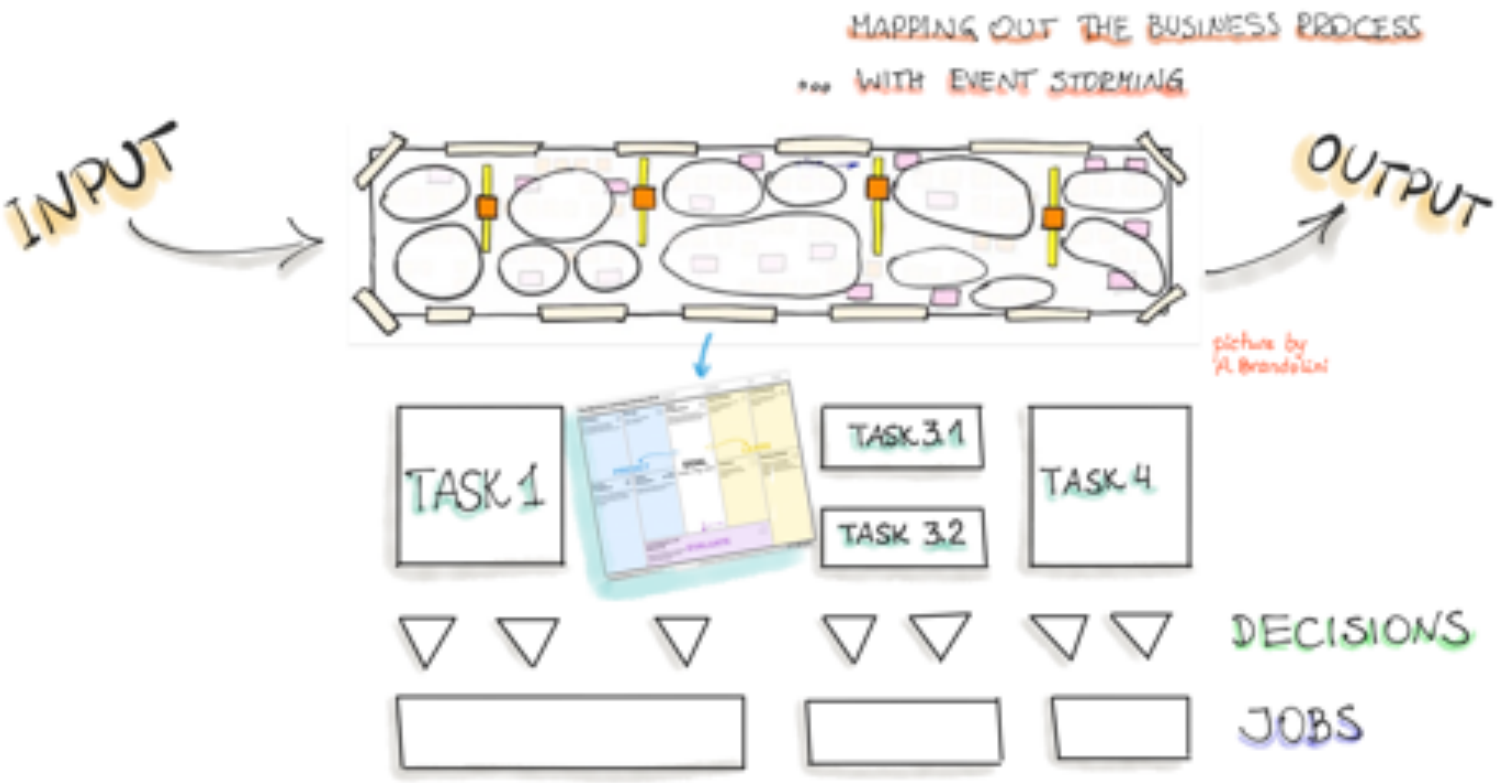
DECONSTRUCTING WORK FLOWS



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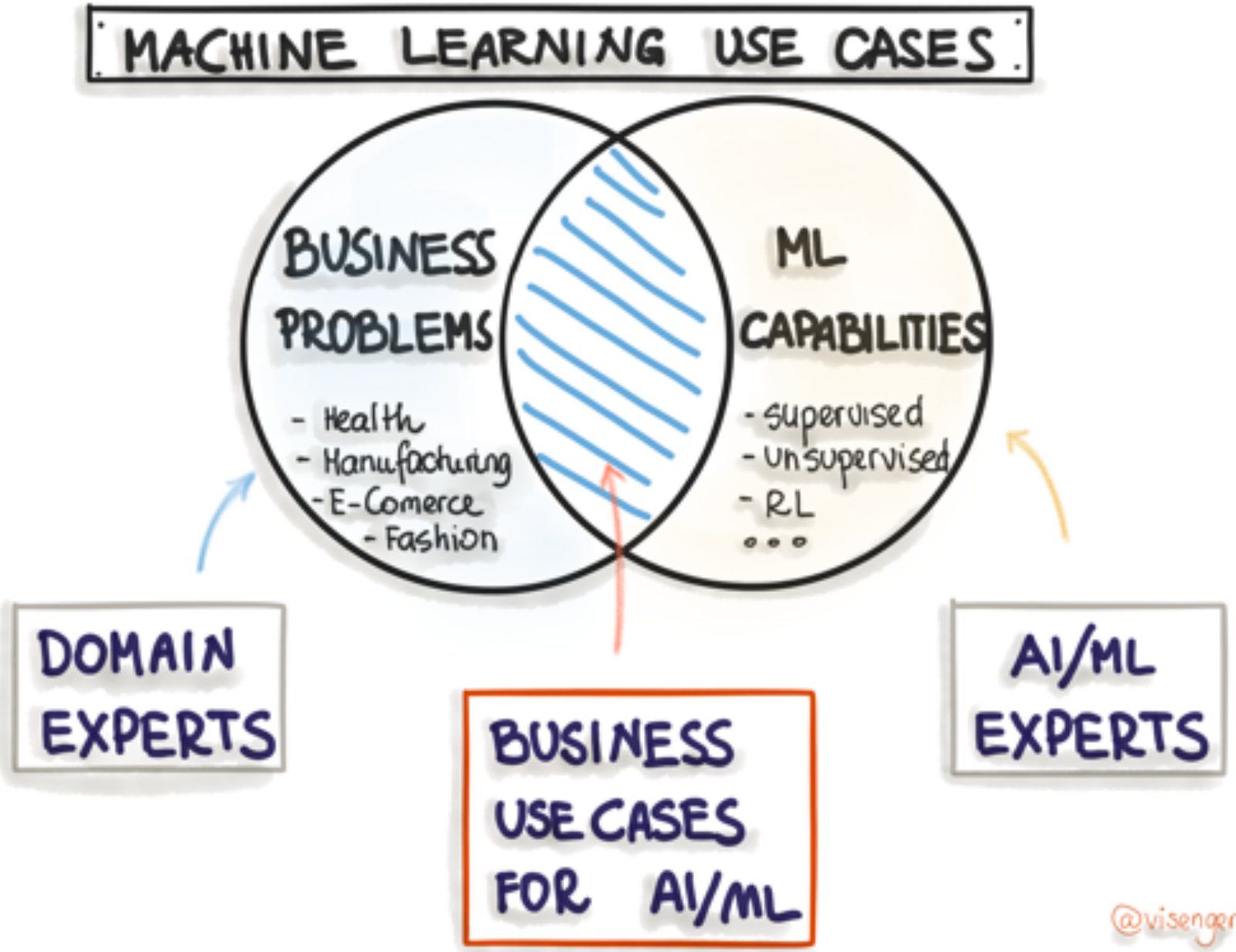
MACHINE LEARNING USE CASES
BUSINESS PROBLEMS
- Health
- Manufacturing
- E-Comerce
- Fashion
ML CAPABILITIES
- supervised
- unsupervised
- RL
...
DOMAIN EXPERTS
BUSINESS USE CASES FOR AI/ML
AI/ML EXPERTS
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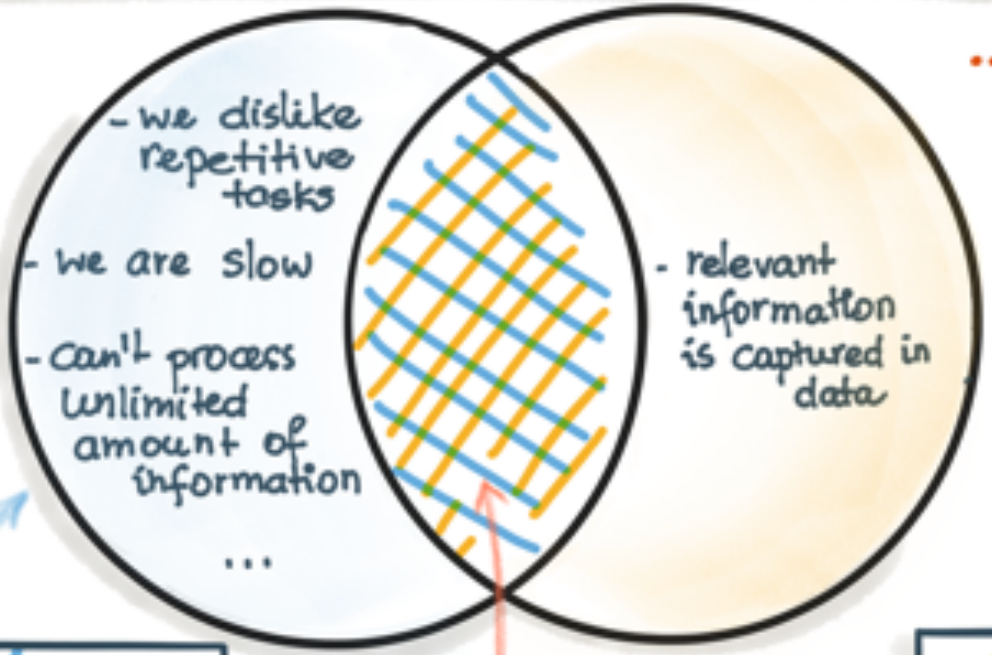
MACHINE LEARNING USE CASES



... another way to navigate the ideation process

HUMAN WEAKNESSES

BUSINESS USE CASES FOR AI/ML

AI/ML STRENGTHS

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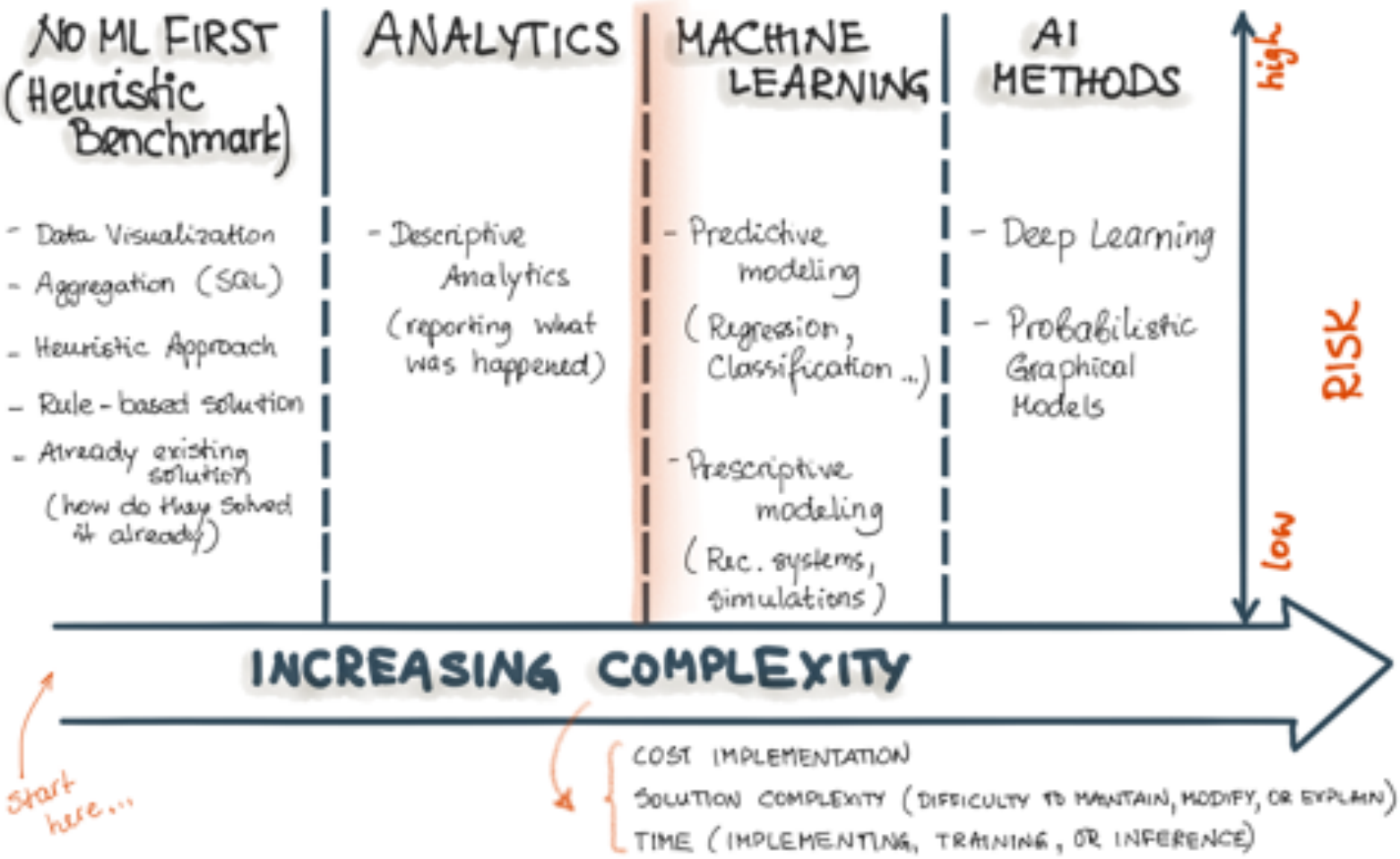
TAMING THE COMPLEXITY OF DS SOLUTION

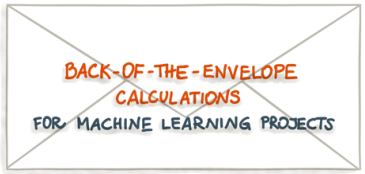


WORKFLOW INTEGRATION

... 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



COSTS

- REAL
- TANGIBLE
- CAN BE ESTIMATED

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

vs.

BENEFITS

- 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

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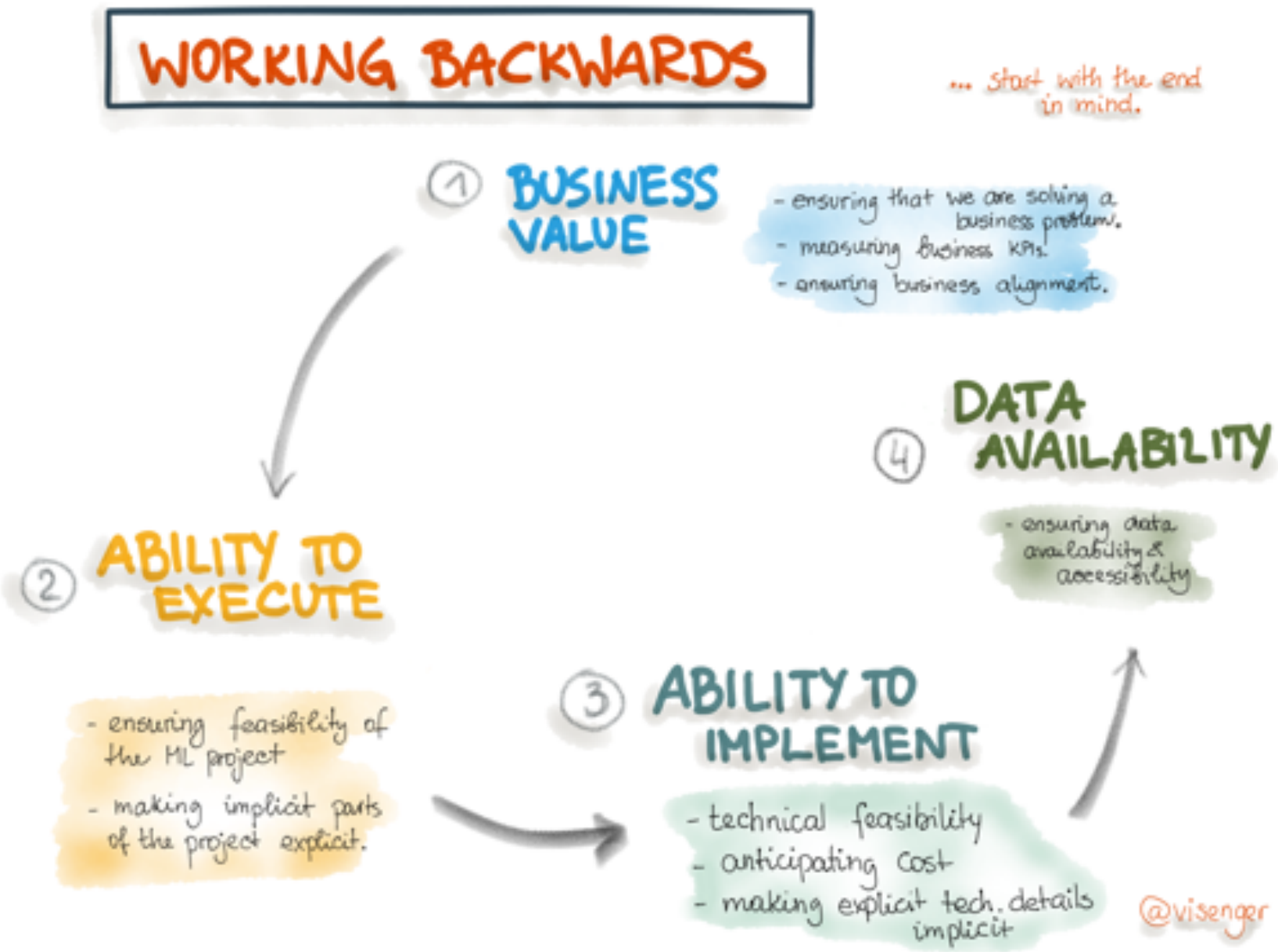
WORKING BACKWARDS
... start with the end in mind.
1 BUSINESS VALUE
- ensuring that we are solving a business problem.
- measuring business KPIs.
- ensuring business alignment.
2 ABILITY TO EXECUTE
- ensuring feasibility of the ML project
- making implicit parts of the project explicit.
3 ABILITY TO IMPLEMENT
- technical feasibility
- anticipating cost
- making explicit tech. details implicit
4 DATA AVAILABILITY
- ensuring data availability & accessibility
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WORKING BACKWARDS

... start with the end in mind.

1 BUSINESS VALUE

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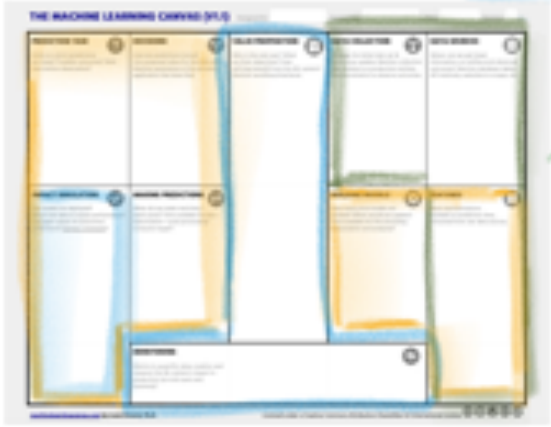

2 ABILITY TO EXECUTE

- ensuring feasibility of the ML project
- making implicit parts of the project explicit.

3 ABILITY TO IMPLEMENT

- technical feasibility
- anticipating cost
- making explicit tech. details implicit

4 DATA AVAILABILITY

- ensuring data availability & accessibility

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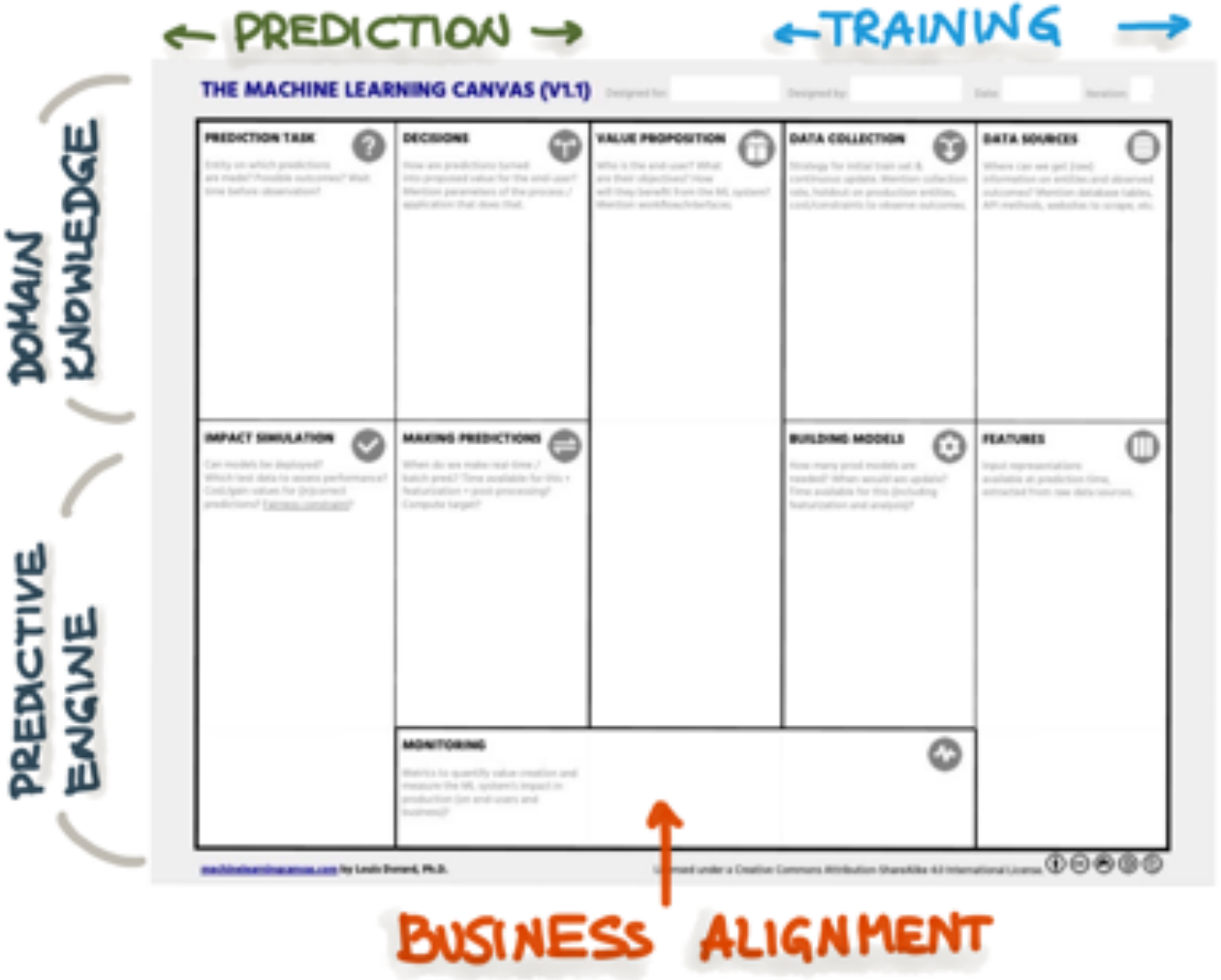
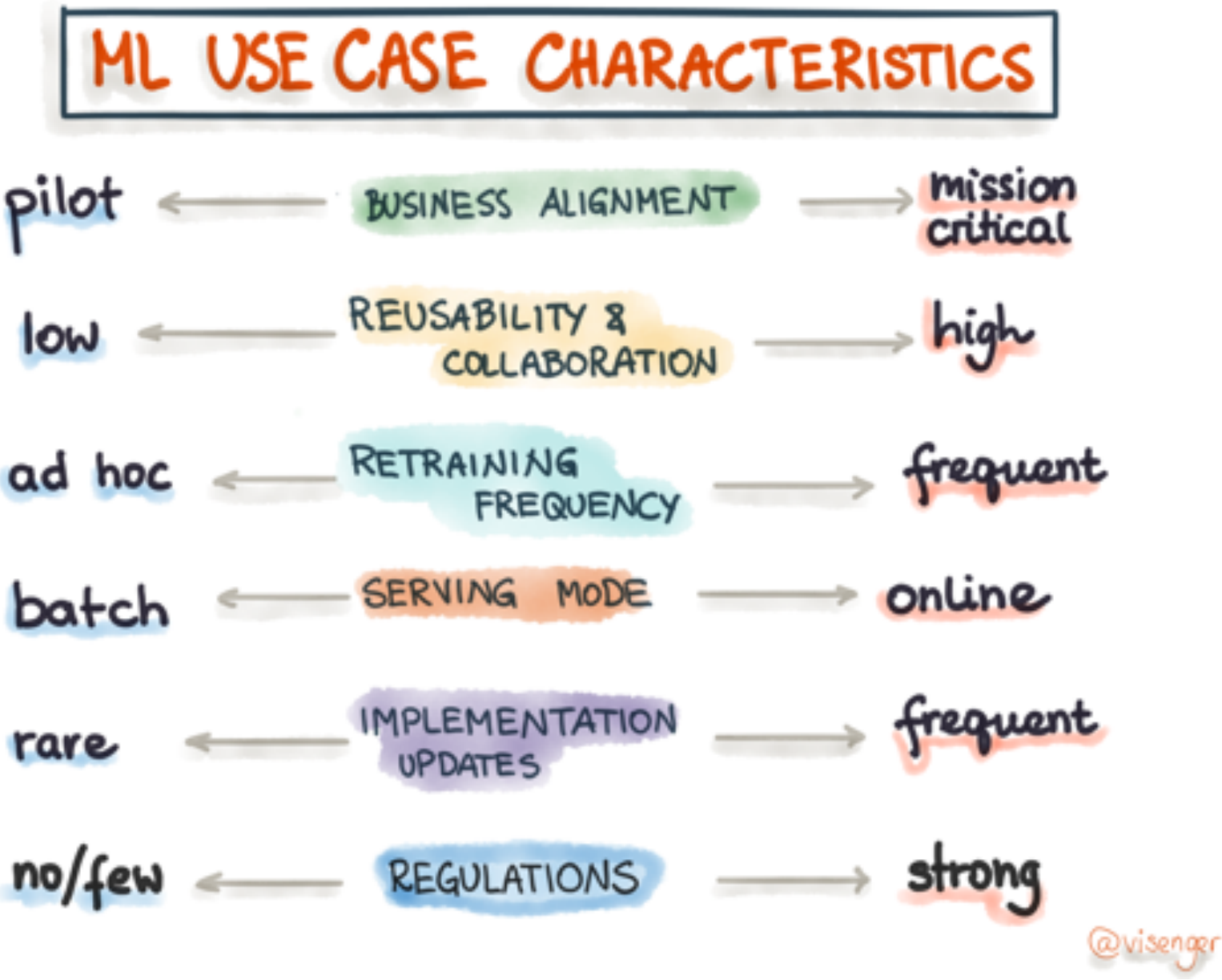
THE MACHINE LEARNING CANVAS




ML USE CASE CHARACTERISTICS
pilot
BUSINESS ALIGNMENT
mission critical
low
REUSABILITY & COLLABORATION
high
ad hoc
RETRAINING FREQUENCY
frequent
batch
SERVING MODE
online
rare
IMPLEMENTATION UPDATES
frequent
no/few
REGULATIONS
strong
@visenger

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? Wait time before observation?

Implementation updates

DECISIONS

How are predictions turned into proposed value for the end-user? Mention parameters of the process / application that does that.

Workflow integration

VALUE PROPOSITION

Who is the end-user? What are their objectives? How will they benefit from the ML system? Mention workflow/interfaces.

Business alignment

DATA COLLECTION

Strategy for initial train set & continuous update. Mention collection rate, holdout on production entities, costs/constraints to observe outcomes.

Regulations

DATA SOURCES

Where can we get (raw) information on entities and observed outcomes? Tables in database tables, websites to scrape, etc.

DATA LANDSCAPE CANVAS

IMPACT SIMULATION

Can models be deployed? Which test data to assess performance? Cost/gain values for (in)correct predictions? Fairness constraints?

Regulations

MAKING PREDICTIONS

When do we make real-time / batch pred? Time available for this + featurization + post-processing? Compute target?

Serving mode

BUILDING MODELS

How many prod models are needed? When would we update? Time available for this (including featurization and analysis)?

Retraining frequency

FEATURES

Input representations available at prediction time, extracted from raw data sources.

Regulations

MONITORING

Metrics to quantify value creation and measure the ML system's impact in production (on end-users and business)?

Business alignment

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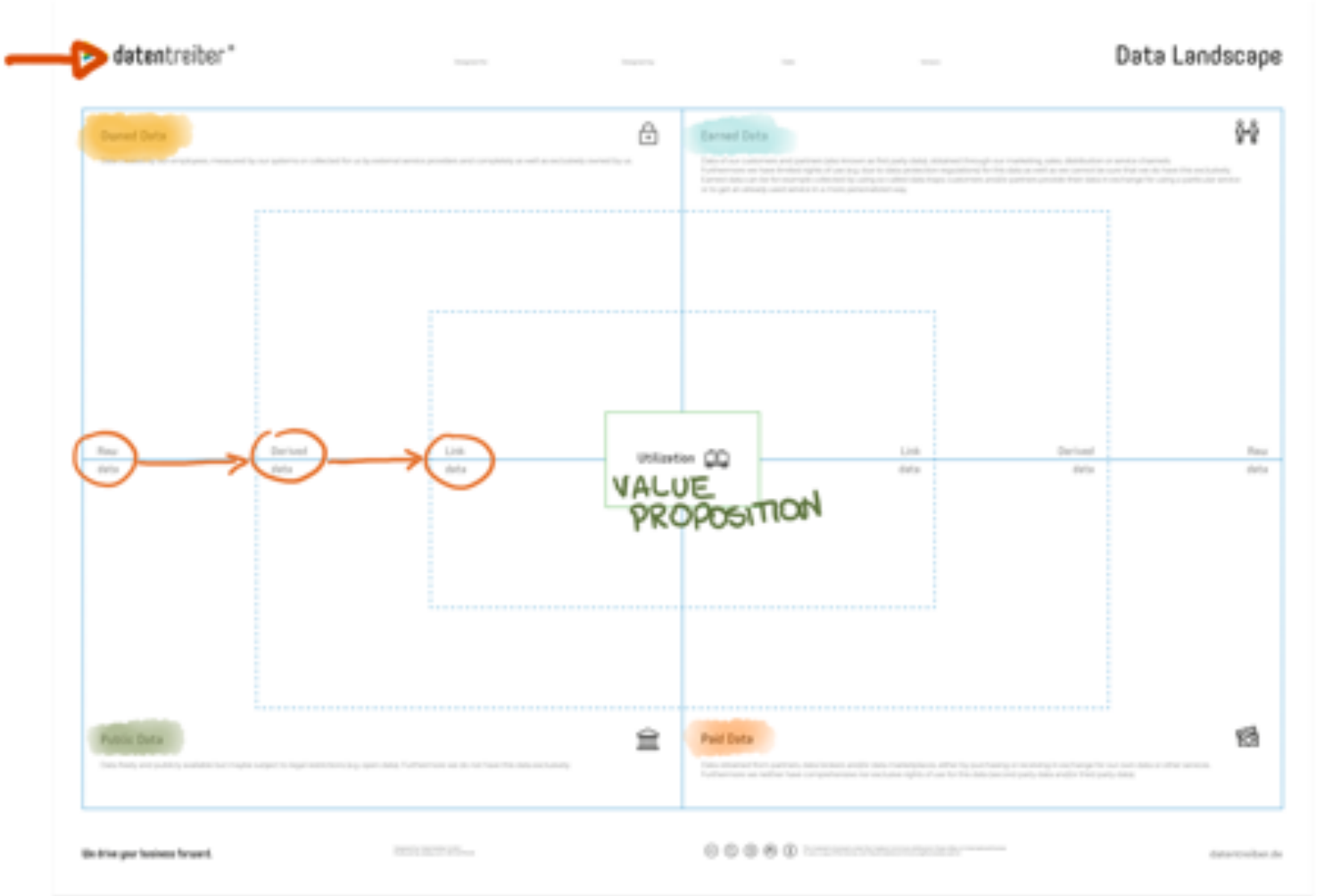
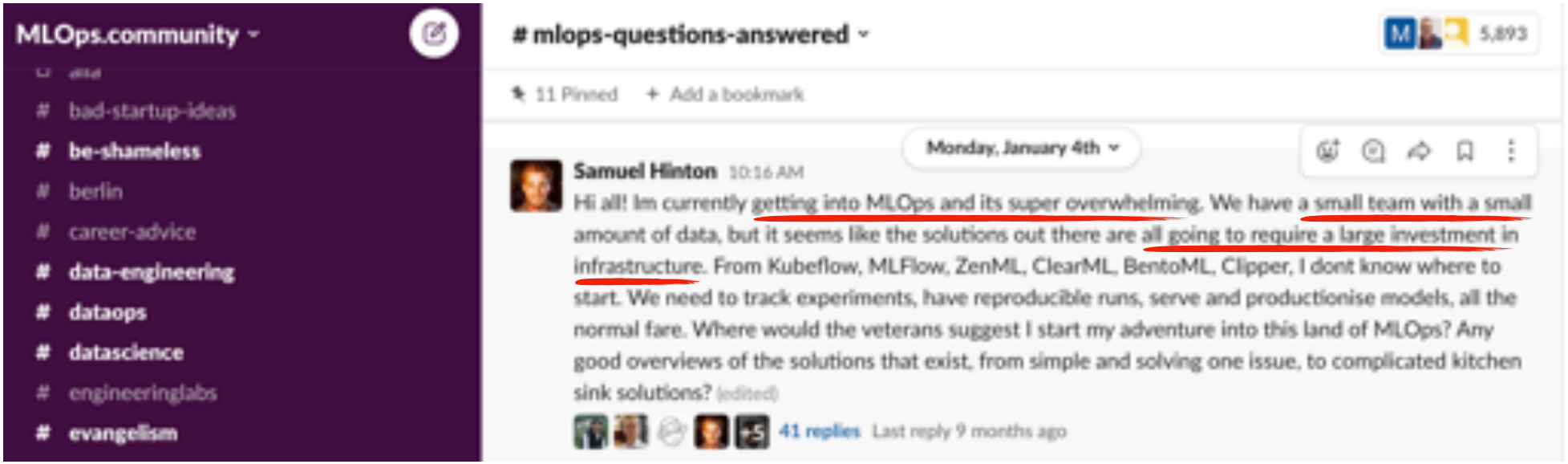
DATA LANDSCAPE CANVAS

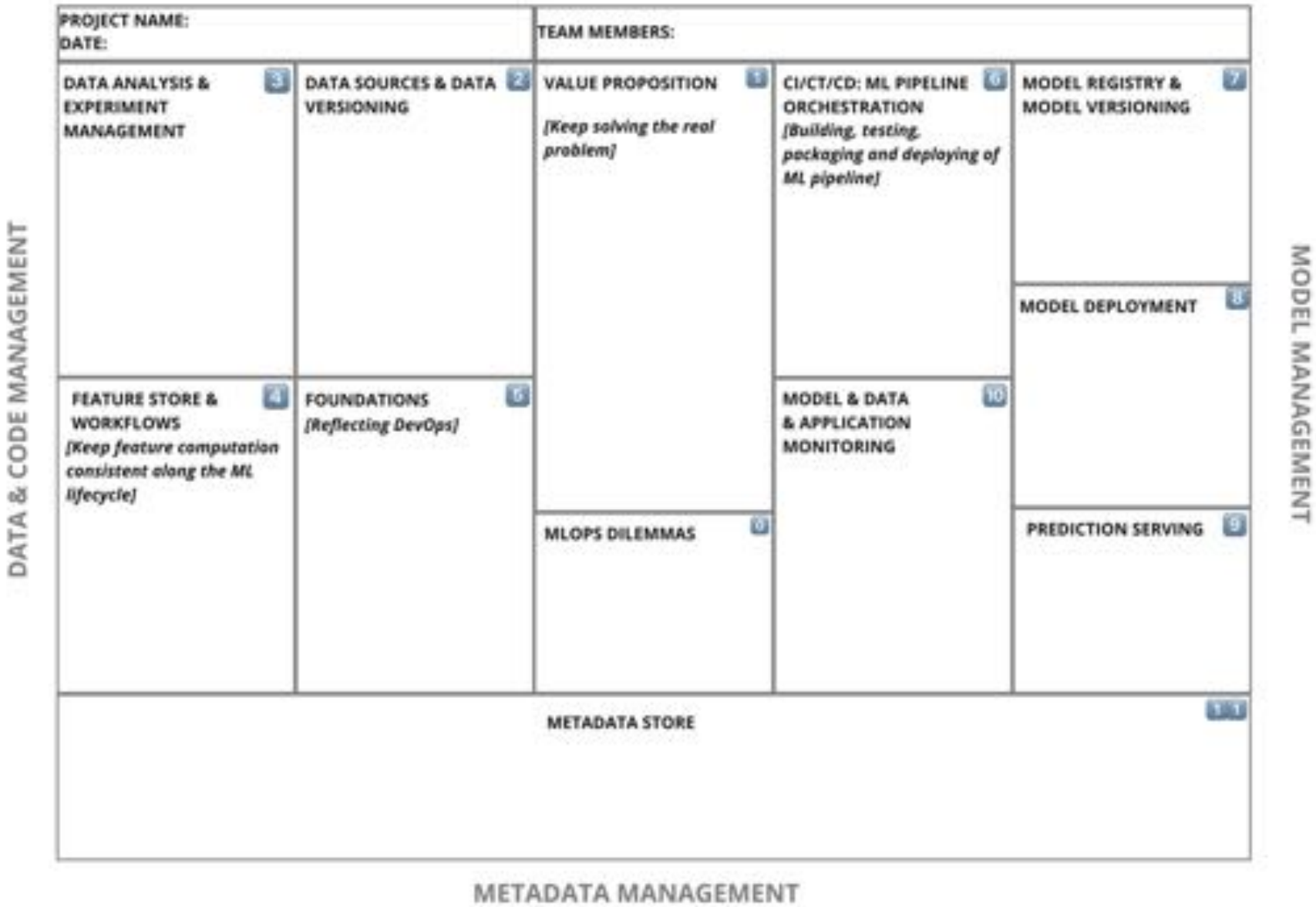


MLOps Stack

...recently in the community



MLOps Stack Canvas v1.0



BUSINESS ALIGNMENT

MLOps Stack Canvas v1.0

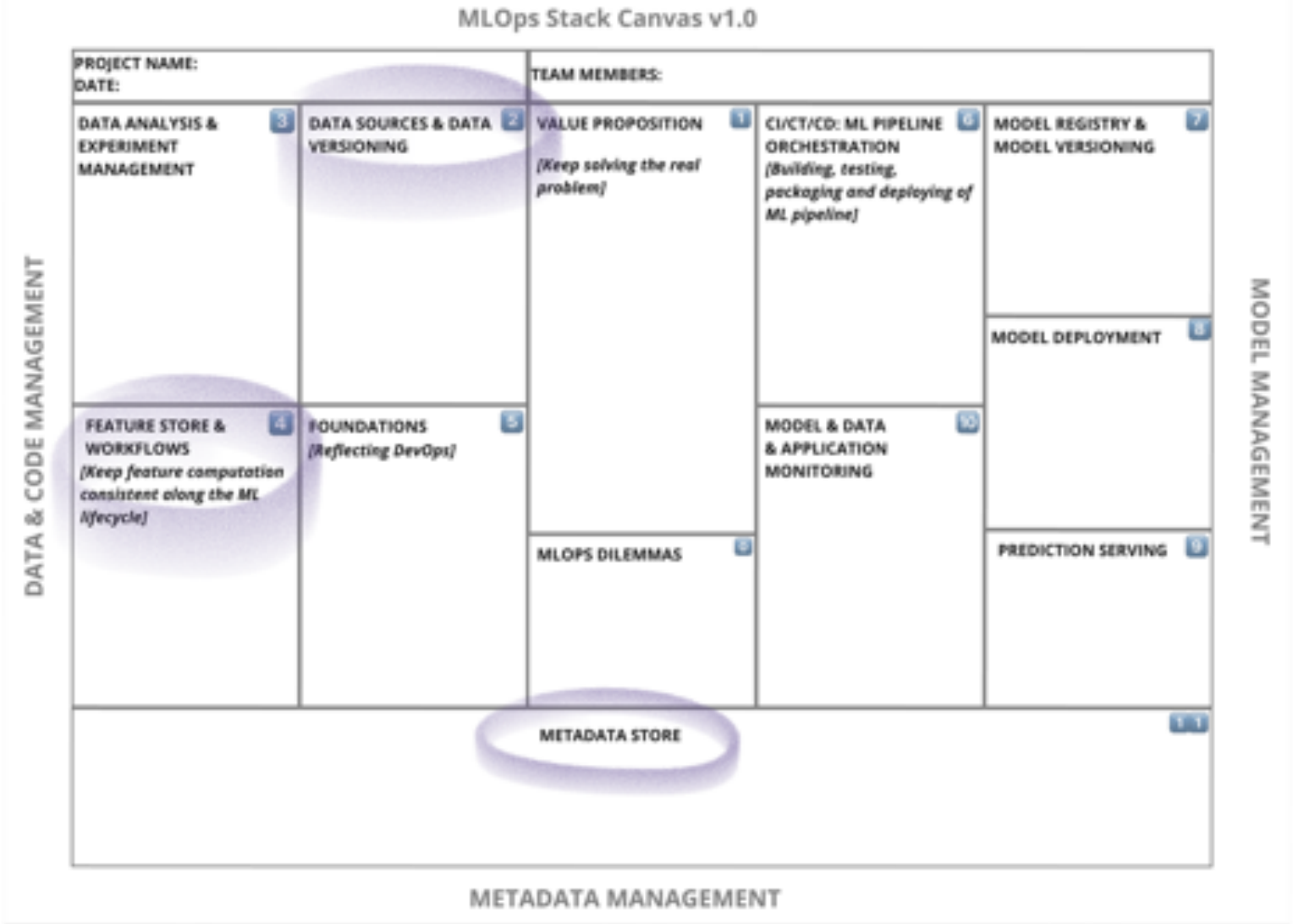
PROJECT NAME: DATE:		TEAM MEMBERS:		
DATA ANALYSIS & EXPERIMENT MANAGEMENT 3	DATA SOURCES & DATA VERSIONING 2	VALUE PROPOSITION 1 *(Keep solving the real problem)*	CI/CT/CD: ML PIPELINE ORCHESTRATION 6 *(Building, testing, packaging and deploying of ML pipeline)*	MODEL REGISTRY & MODEL VERSIONING 7
				MODEL DEPLOYMENT 8
FEATURE STORE & WORKFLOWS 4 *(Keep feature computation consistent along the ML lifecycle)*	FOUNDATIONS 5 *(Reflecting DevOps)*	MLOPS DILEMMAS 8	MODEL & DATA & APPLICATION MONITORING 10	PREDICTION SERVING 9
METADATA STORE 11				

DATA & CODE MANAGEMENT

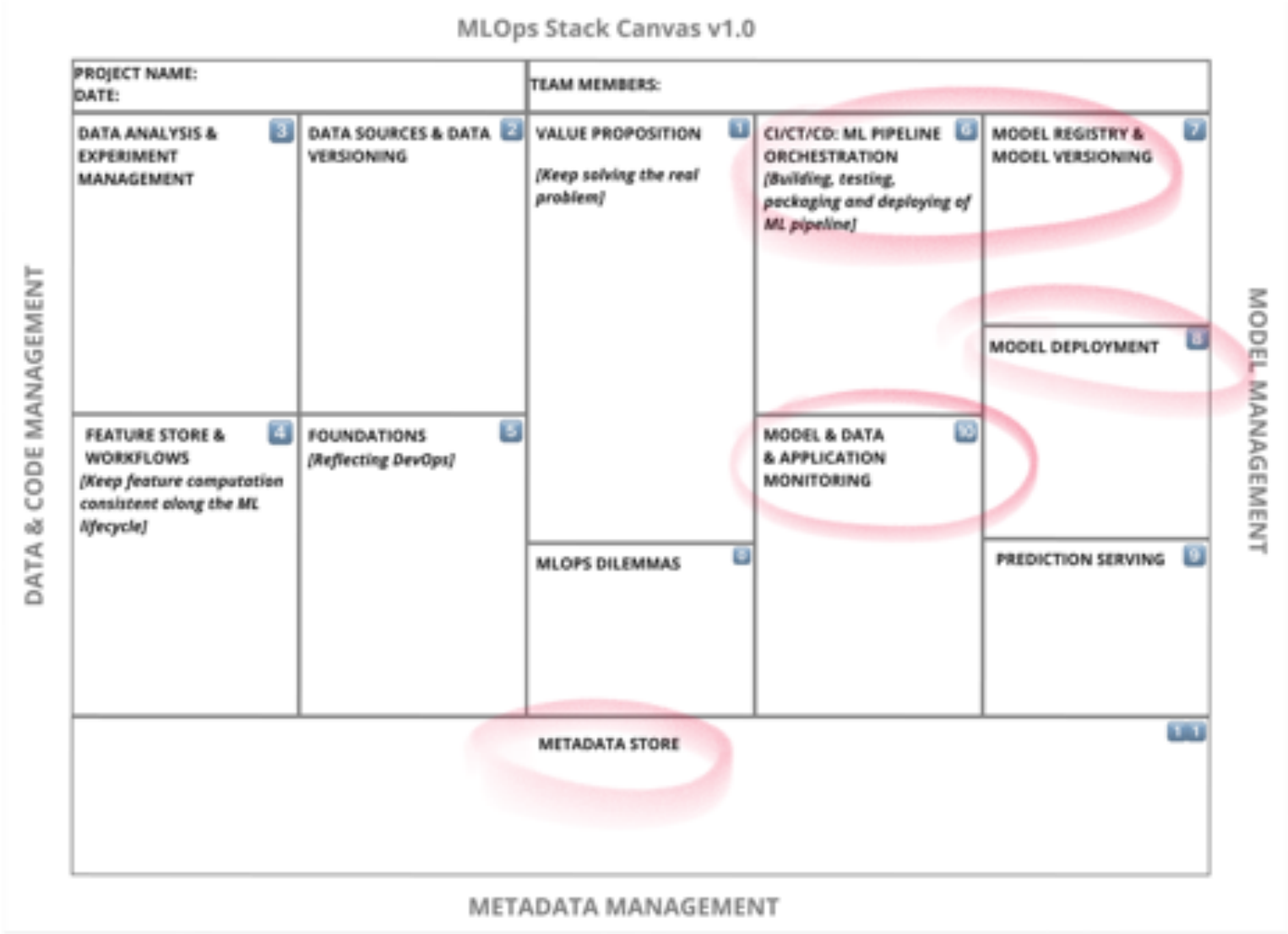
MODEL MANAGEMENT

METADATA MANAGEMENT

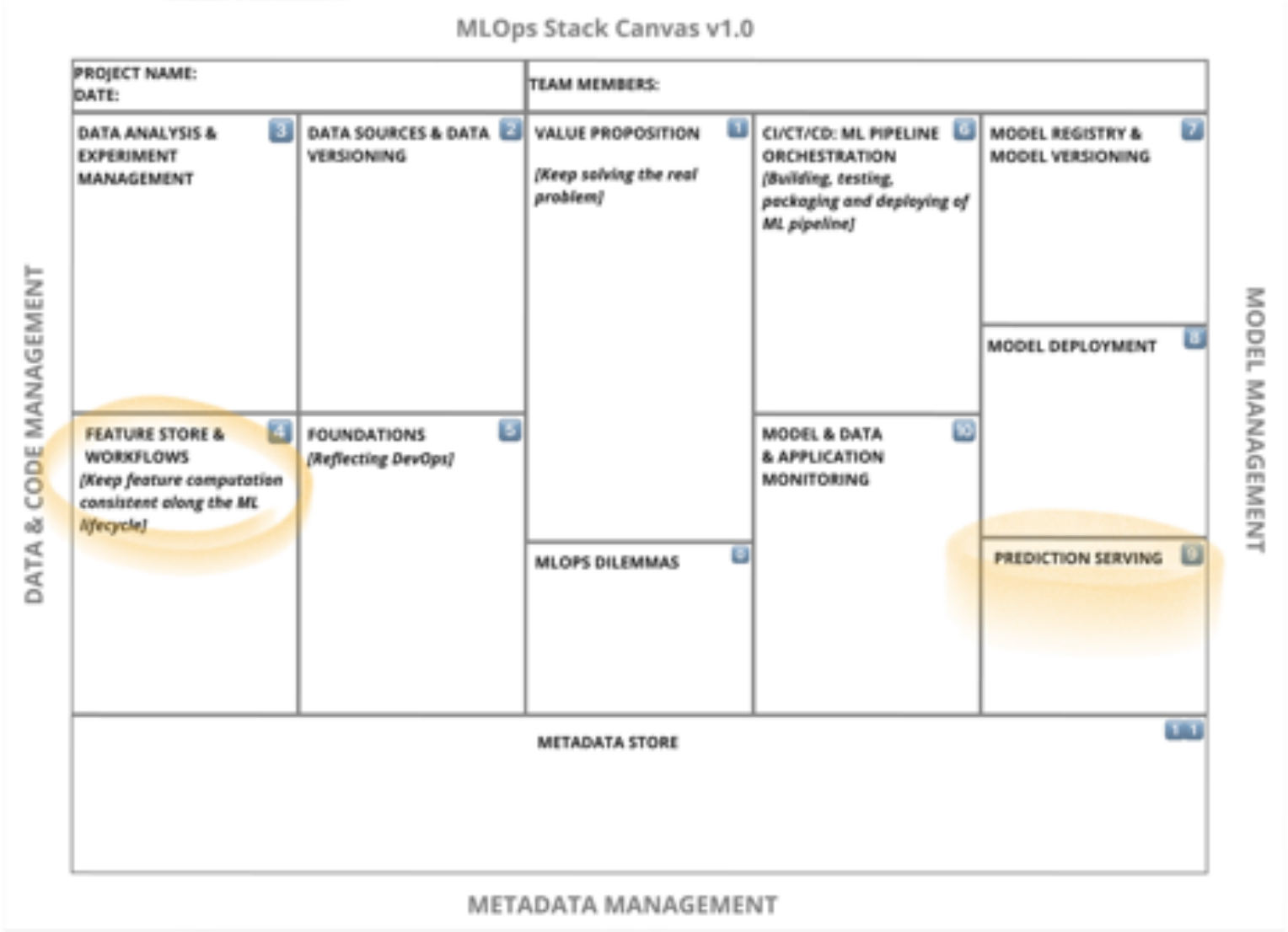
REUSABILITY & COLLABORATION



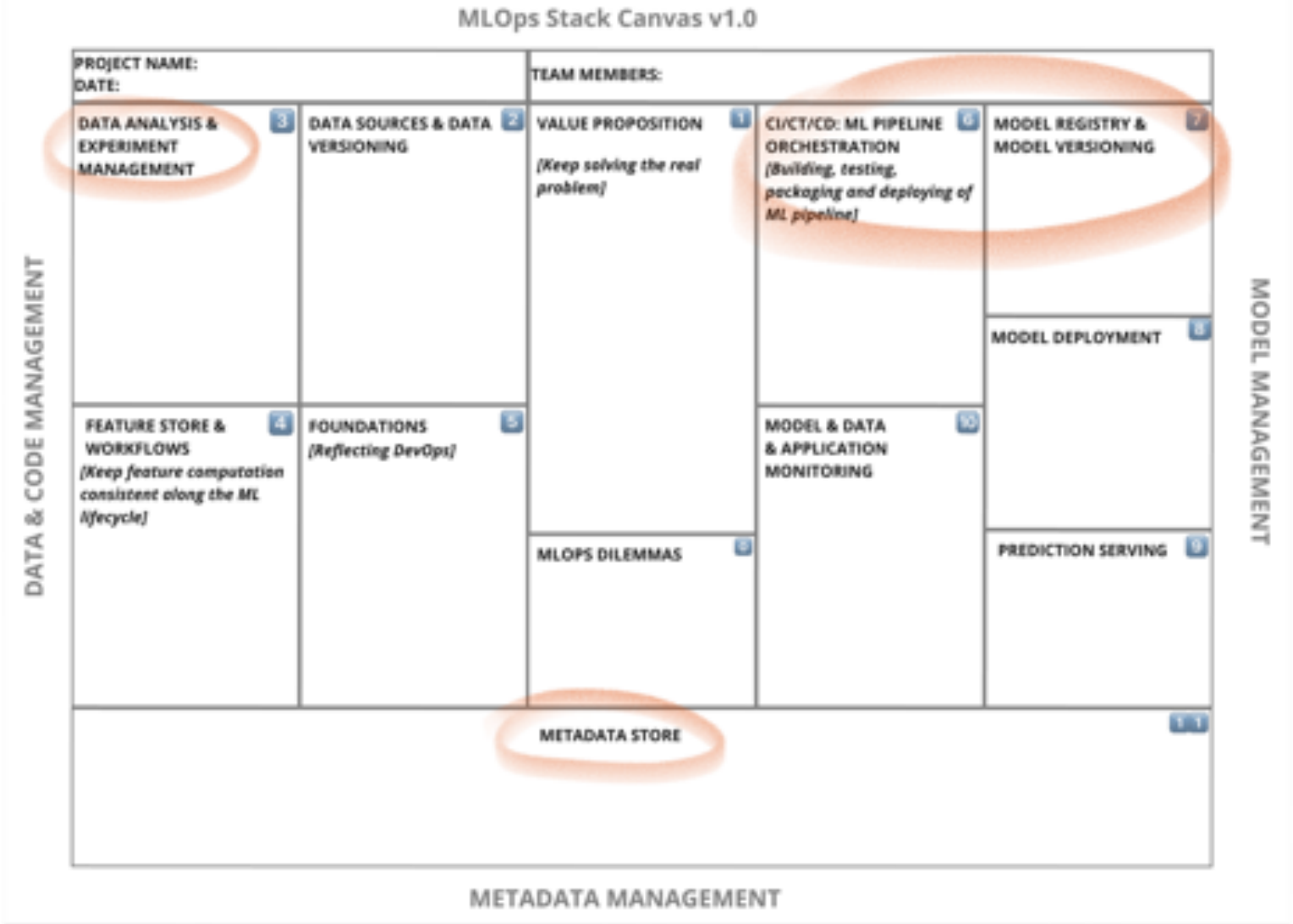
RETRAINING FREQUENCY



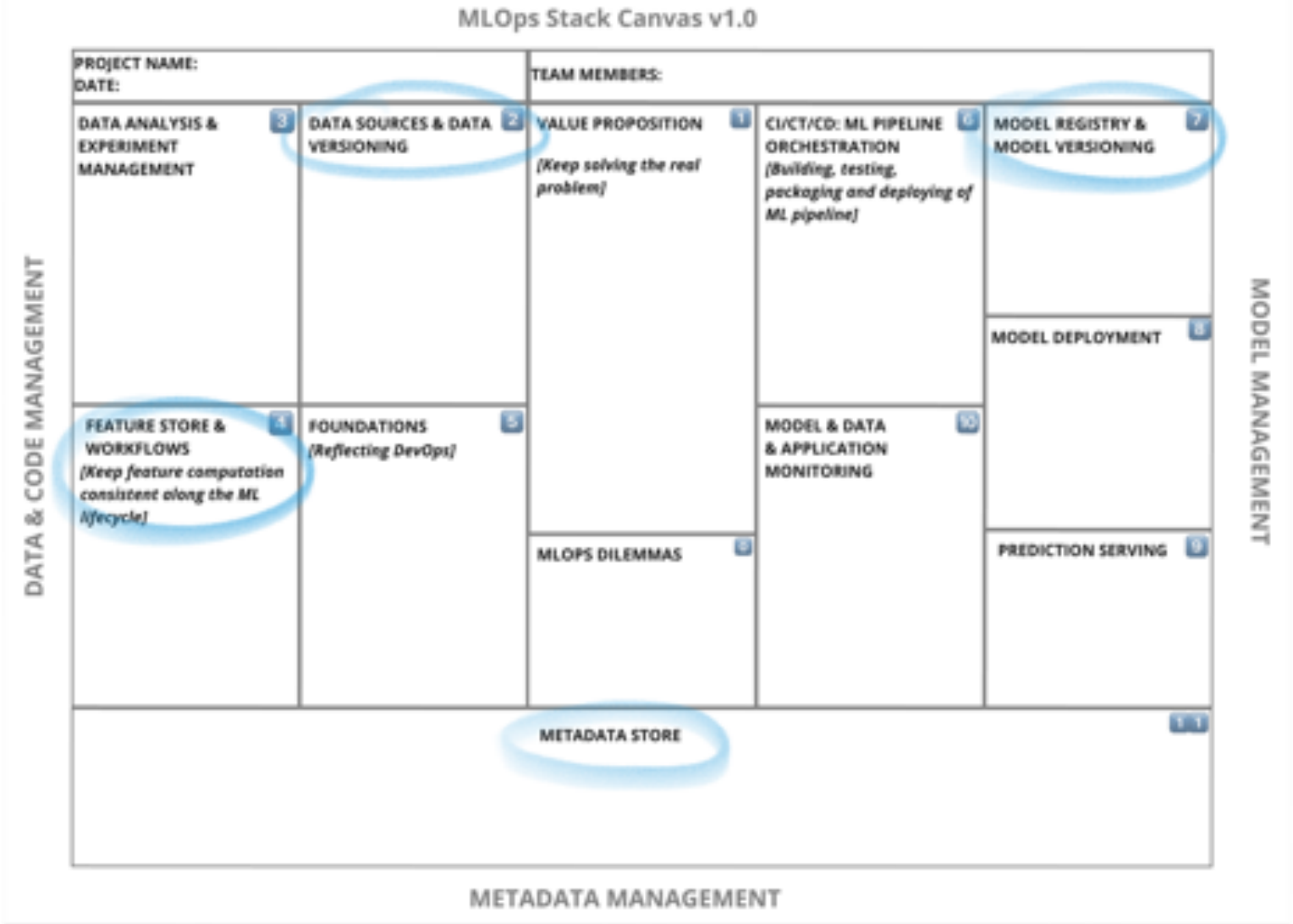
SERVING MODE

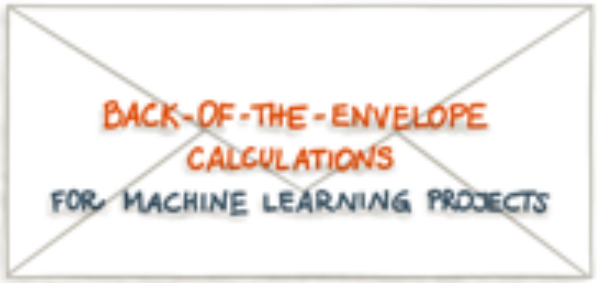


IMPLEMENTATION UPDATES



REGULATIONS





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

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CANVAS
COURSES
The Machine Learning Canvas
THE MACHINE LEARNING CANVAS (V1.0)
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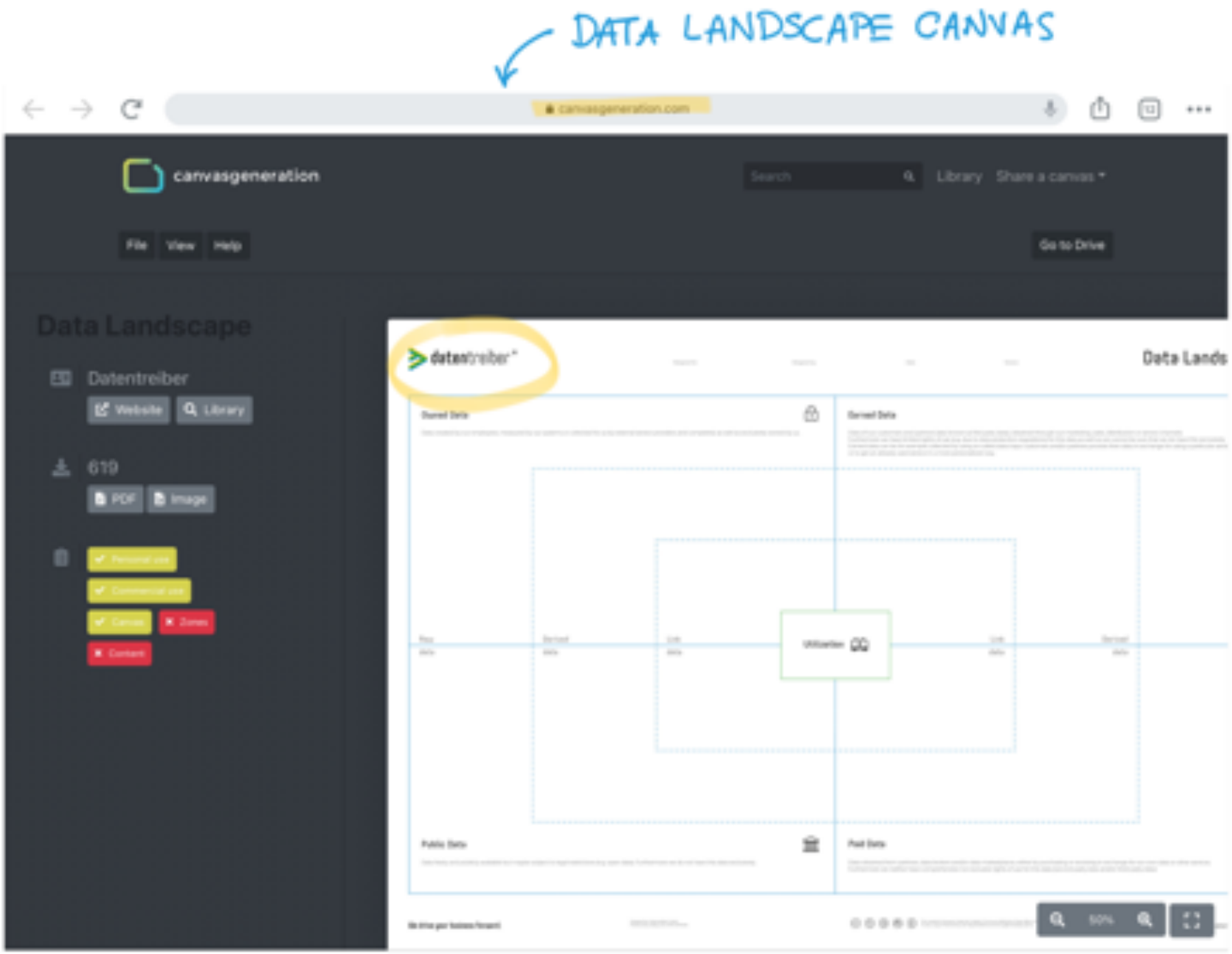
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Paid Data
60%

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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.