Project Swarm

Week 2 report

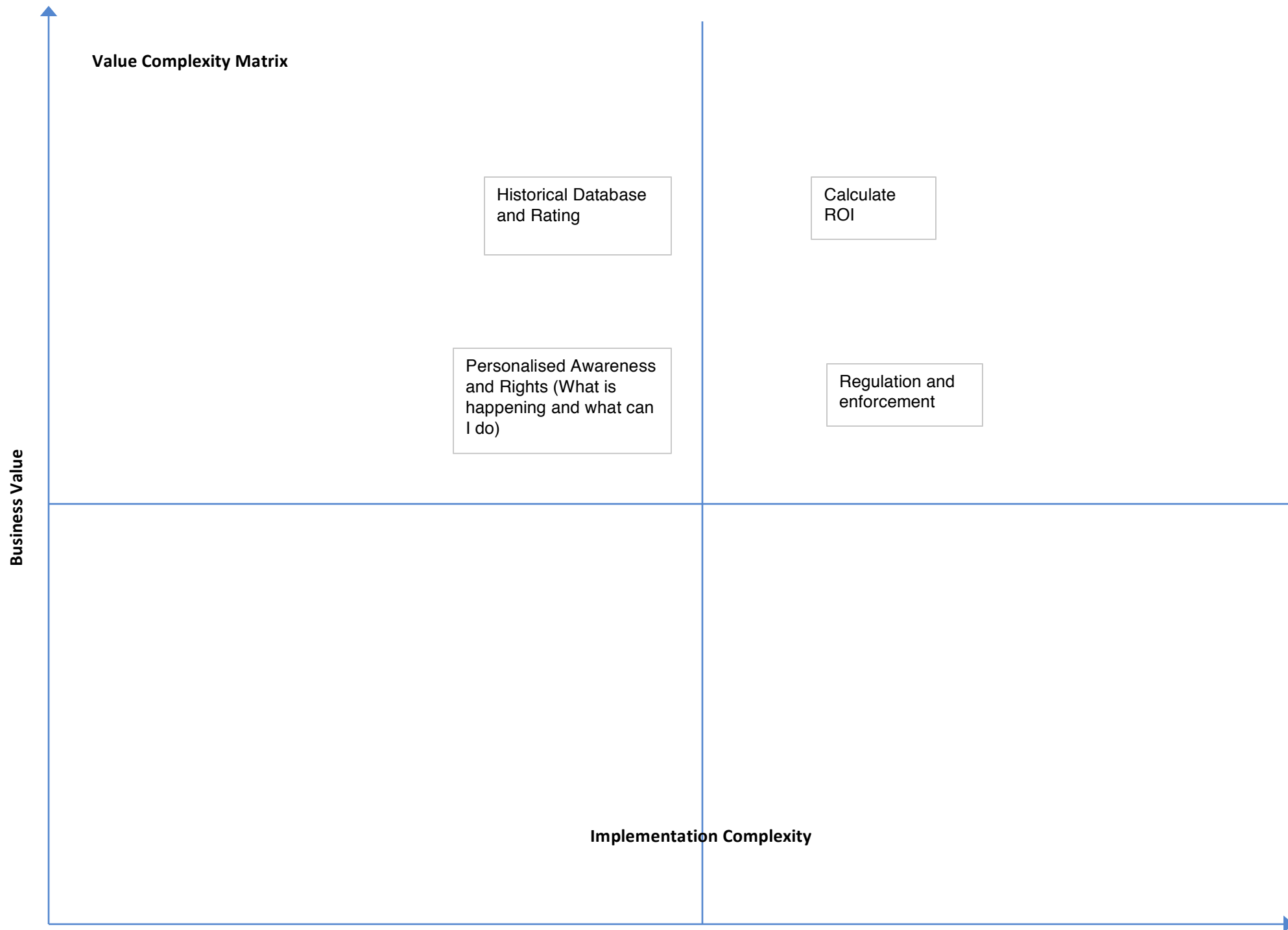**Version 0.3**

26/04/2019

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Data stores:

- Temperature YUL [public] (EnvCanada)
- Borough Population Data [public] (OpenMTL)
- heavy objects collection [private] (e.g. furniture, TV)
- Waste collection [private]
- Compost collection [private]
- Recycling collection [private]

Central store: Infestation Reports [Public] (OpenMTL)

Actors and their relationships:

- City of Montreal (inspector, auditor, legislator, etc.) — Issues prevention and ... ; Isolates or quarantines area, regulates import and exports
- Reviews the history of dwellings, risk profile for high contagion areas (reward vs. threat of financial loss) — Investor (partnering with landlord or operating thru 3rd party) [consortium, parternship] - working remotely
- Vets potential tenants. Hires third party for waste collection
- Requests landlord and city to improve dwelling attributes — Landlord (owner operator)
- Fed. Government (grants, contagion containment, etc.) — Mediates leasing conflicts, and enforces leasing regulations
- Prov. Government (Regie du Logement, grants, contagion containment, etc.) — Grants loans based on property attributes
- Banks
- Remediates of infested dwellings and files report upon completion — Exterminator
- Upholds decisions made by City of Montreal and provincial /fed. reg. — Municipal law enforcement, bailiff, judges, etc.
- Looks at freq. of property attributes for potential living area — Prospective Tenant or Resident (planning to move)
- Offers insurance at premium in high risk living areas — Insurance companies
- Facilitates sale or purchase of dwelling based on property attributes, and Hires a third party to renovate and assess indept. the infestation — Real estate agents
- Tenant or Resident (not planning to move)

Rank (Smallest importance 1 to highest importance 12)	Personas	List of Use Cases
10	1) City of Montreal	Awareness programs? Hotline to report issues, complaints, and suggestions in the area (e.g. 311 line)? Dispatch inspectors Impose fines within boroughs
7	2) Federal Government	Border inspections responsibility National level database?
8	3) Provincial Government ("Régie du Logement")	Can I pinpoint areas or general awareness program to reduce infestations? Oversee municipal level enforcement and cleanups (Provincial rating for boroughs). Provincial database.
2	4) Banks	Is this a good investment area? Do we have access to data to investigate?
9	5) Exterminator	Perform extermination Notify city of completed procedure Communicate awareness steps with clients Promote inspections and cleaning to possible clientele in the area
3	6) Municipal Law Enforcement	Maintain orderly evictions of premises
5	7) Prospective Tenant	Do I have access to historical for this dwelling?
4	8) Insurance companies	Does client (owner/resident/lessee) have any past claims? Any infractions?
1	9) Real estate Agent	How do I check if the dwelling has a history of infestation? Can I validate the cleanliness of the premises? (Inspection, Databank check)
12	10) Tenant/Resident	What are my rights regarding this issue in my home? (issue due to neglect by owner or neighbor) How do I bring this to someone's attention?
11	11) Landlord (Owner/Operator)	Can I perform a background check on potential resident's present dwelling?
6	12) Investor	Can I incur losses investing in the building/area? Have there been issues at this address before? If know trouble area, are there any long range plans by the city to clean up the area?

Rank (Smallest importance 1 to highest importance 4)	List of Use Cases	List of Use Cases (detail)
2	Personalised Awareness and Rights (What is happening and what can I do)	Awareness programs? Hotline to report issues, complaints, and suggestions in the area (e.g. 311 line)? Can I pinpoint areas or general awareness program to reduce infestations? Communicate awareness steps with clients Promote inspections and cleaning to possible clientele in the area How do I bring this to someone's attention? What are my rights regarding this issue in my home? (issue due to neglect by owner or neighbour) Can I validate the cleanliness of the premises? (Inspection, Databank check)
1	Regulation and enforcement	Border inspections responsibility Notify city of completed procedure Dispatch inspectors Perform extermination Maintain orderly evictions of premises Impose fines within boroughs If know trouble area, are there any long range plans by the city to clean up the area? Oversee municipal level enforcement and clean-ups (Provincial rating for boroughs).
3	Calculate ROI	Is this a good investment area? Can I incur losses investing in the building/area?
4	Historical Database and Rating	National level database? Do I have access to historical for this dwelling? Provincial database. Does client (owner/resident/lessee) have any past claims? Any infractions? Can I perform a background check on potential resident's present dwelling? How do I check if the dwelling has a history of infestation? Have there been issues at this address before? Do we have access to data to investigate?

Value Complexity Matrix

Business Value

Implementation Complexity

Historical Database and Rating	Calculate ROI
Personalised Awareness and Rights (What is happening and what can I do)	Regulation and enforcement

(Henry 2018)

Area/Domain: Bed bug infestation

■ Descriptive Analytics

What happened? We know that there were exterminations at this location (intersection) in the past, sometimes frequently.

■ Diagnostic Analytics

Why it happened? History of exterminations nearby, where the bed bugs spread through clothing, humans, animals or other items unto uncontaminated items. With an incubation period, the spread may have been undetected for one to two weeks.

Used clothing, used furniture, rental housing, and travel accommodation facilities are available nearby from locations where exterminations occurred.

(Environment Canada 2018)

■ Predictive Analytics

What will happen? Infestation of a nearby residents and decrease in the quality of life by interrupting daily routine activities. High expenses incurred by landlord for extermination of bed bugs. In extreme cases, there a possibility of Lyme disease spread.

■ Prescriptive Analytics

What should I do? Avoid clutter, clean frequently, avoid taking in used items, avoid in-door animals unless cleaned at the time of home entry, and taking precautions in highly residential contaminated area. Use of decontamination methods including pesticides and other tools. Stay clear of short-term rental housing.

Mockup of a dashboard (or app)

Data application: Should I stay away from this neighbourhood ?

Objective: The analytics tool helps potential home occupants to decide whether to live in an area with historical reports of bed bugs and with a probability of infestation.

Audience: First time buyers and first time real estate investors

Dashboard and Metrics and Analytics

Descriptive Analytics

Show the number of exterminations in an area defined by a filter selection (borough, neighbourhood, or intersection of longitude and latitude)

Diagnostic Analytics

Presents to the user the frequency, such as every 2-3 months, of nearby extermination. Also, shows the location of each reported extermination on a map relative to each other.

Predictive Analytics

Based on the high frequency of exterminations at one and nearby location and an incubation lead-time, predicts the potential location of upcoming infestation. If the potential of an infestation is present, then home occupancy is not favoured. Otherwise, home occupancy is favoured.

Prescriptive Analytics

For locations with a present potential of an infestation, recommends a waiting period for an extermination event to not occur at one or nearby locations. After this waiting period, home occupancy is favoured.

Inspiration References

Works Cited

Bedbugs.net. *Montreal Bed Bug Guide.* April 26, 2019. http://registry.bedbugs.net/city/montreal (accessed April 26, 2019).

Environment Canada. *Bed Bug Control.* April 1, 2018. http://www.environnement.gouv.qc.ca/pesticides/permis-en/code-gestion-en/BedBugControl.pdf (accessed April 26, 2019).

Henry, Louisa. *Use a product value matrix to prioritize your roadmap.* July 4, 2018. https://www.reforge.com/brief/use-a-product-value-matrix-to-prioritize-your-roadmap#KBvOS1-Q8ExHBnb445VZJw (accessed April 26, 2019).

The Bed Bug Registry. *The Bed Bug Registry.* April 26, 2019. https://www.bedbugregistry.com/location/QC/?filter=address (accessed April 26, 2019).

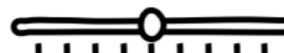## Should I wait or Move into a previously infested area ?

Boroughs
Ahuntsic-Cartierville ▾

Neighborhoods
La Visitation ▾

Reference period
Past 6 months

Pick a previously reported infestation location:

Intersection Coordinates
Longitude Latitude

Longitude	Latitude	
292777	504861	⊙
292777	504861	○
292777	504861	○

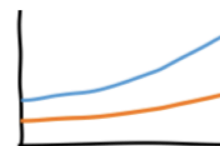**Pick a comparison criteria for location:**

Decision Radius (km)
5 ▾

# of reported infestations
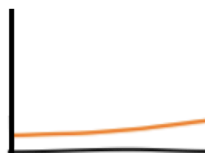
# of reported infestations within radius

# of reported infestations with approx. incubation periods

Recommended waiting period before considering move into area

2 months

| Find |

| Reset |