(from left to right)

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ResQ - إنقاذ

https://github.com/NYUAD-Team12/

ResQ
together and quicker

Problem:

Abundance of volunteers and volunteering tasks but lack of efficiency and effectiveness.

Target Customers:

Government entities, NGOs, volunteering groups

Need for Humanitarian Aid

Total of 45.2 million people in need of humanitarian aid in Syria, Yemen, Libya and Iraq.

(source: UN.org, 2020)

Availability of Volunteers

200,000 volunteers in Saudi Arabia, 1 million expected by 2030
(Saudi 2030 vision)

Thousands of volunteers, NGOs, and humanitarian campaigns after the disasters in Arab region

So, what is the solution?

Solution

Our Volunteering Management system aims to:

1. Distribute volunteers to tasks specific to their strengths and capabilities

2. Match the specific volunteering task to volunteers that are capable of completing the job in a more efficient matter

3. Provide easily accessible user interface with high quality and accuracy.

Solution

1. Formulate the mathematical model: Quadratic Unconstrained Binary Optimization (QUBO)

$$\sum_i Profit \sum_j (Pr_i^j - \overline{Pe})\overline{X}$$

$$\overline{Pe} = \text{People skill vector}$$

$$\overline{X} = \text{Binary Vector}$$

- **Minimum** number of unmatched people
- **Matching** the problems with the best possible resource
- **Maximize** the number of people it will benefit

Solution

2. Solving this QUBO Problem in classical computing takes a long time.

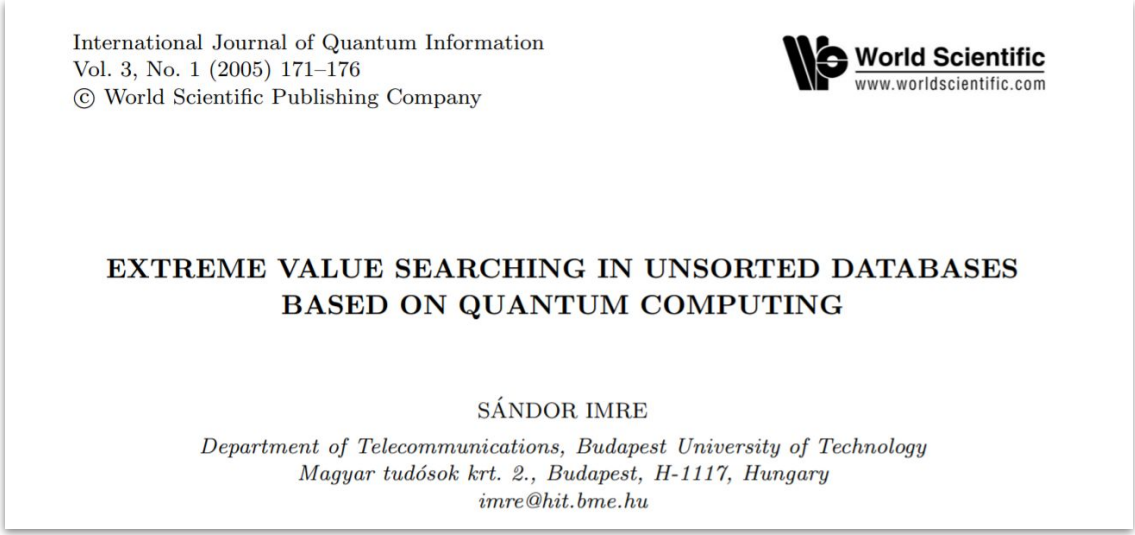
Example: 30 people, 15 tasks

Hence we moved to a quantum solution as quantum computing allows us to evaluate a superposition of various inputs simultaneously.

3. Quantum Solution: Quantum Approximate Optimization Algorithm (QAOA)

The Quantum Novelty

- Paper with similar approach to similar problems
- Only works in error corrected universal quantum computers (not today)



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EXTREME VALUE SEARCHING IN UNSORTED DATABASES BASED ON QUANTUM COMPUTING

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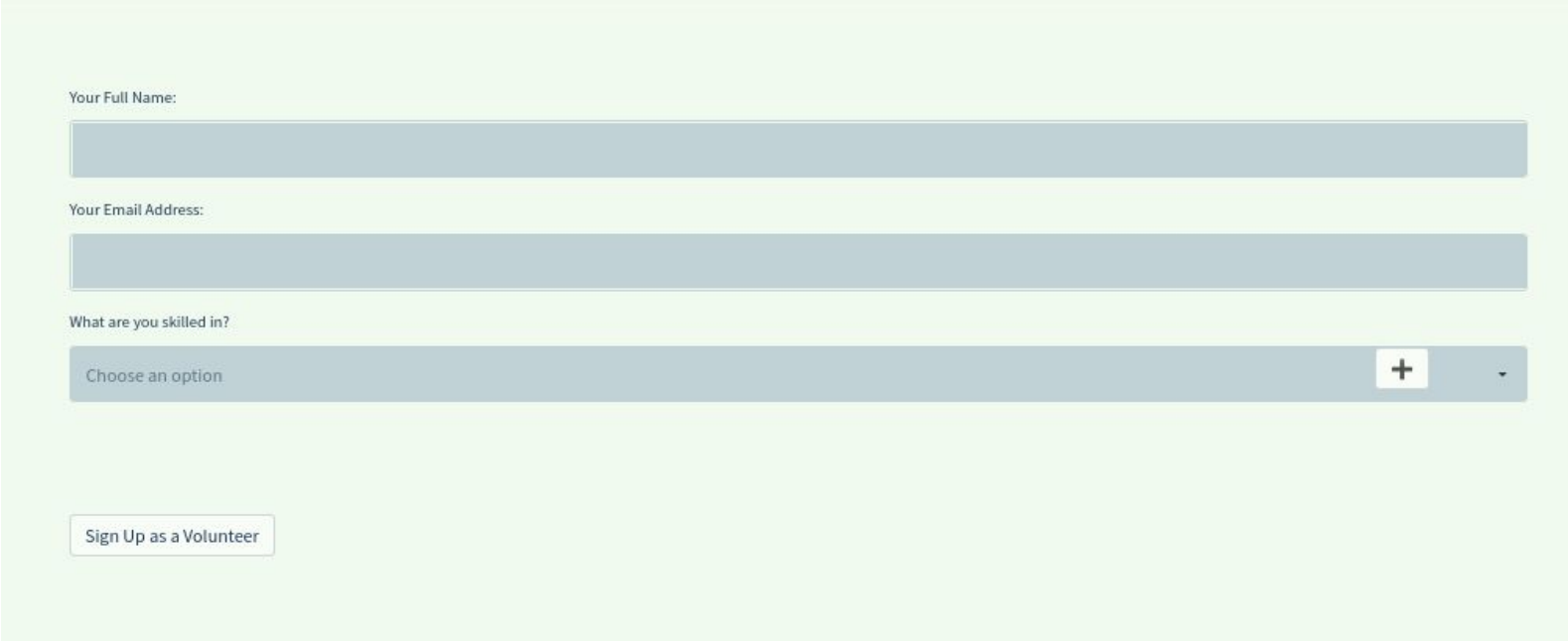
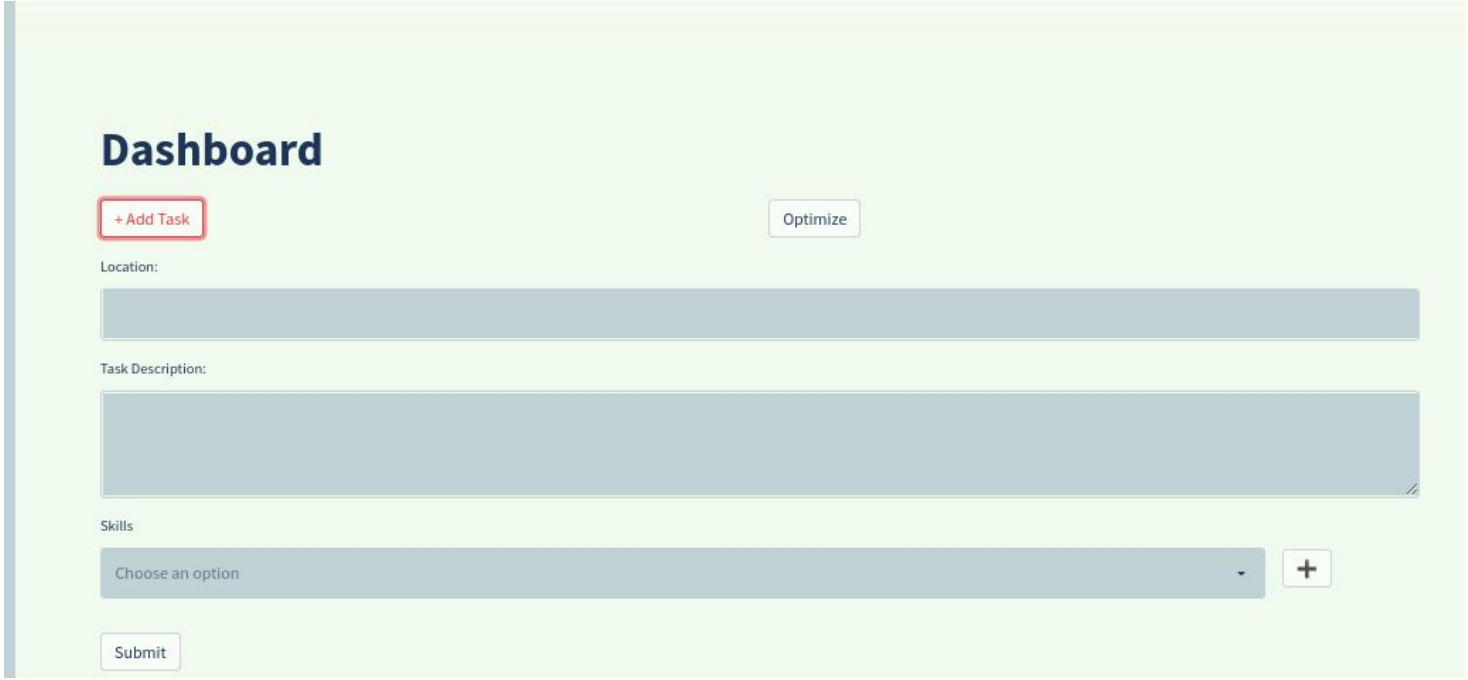
Live Website

If you are a **Volunteer**



Live Website

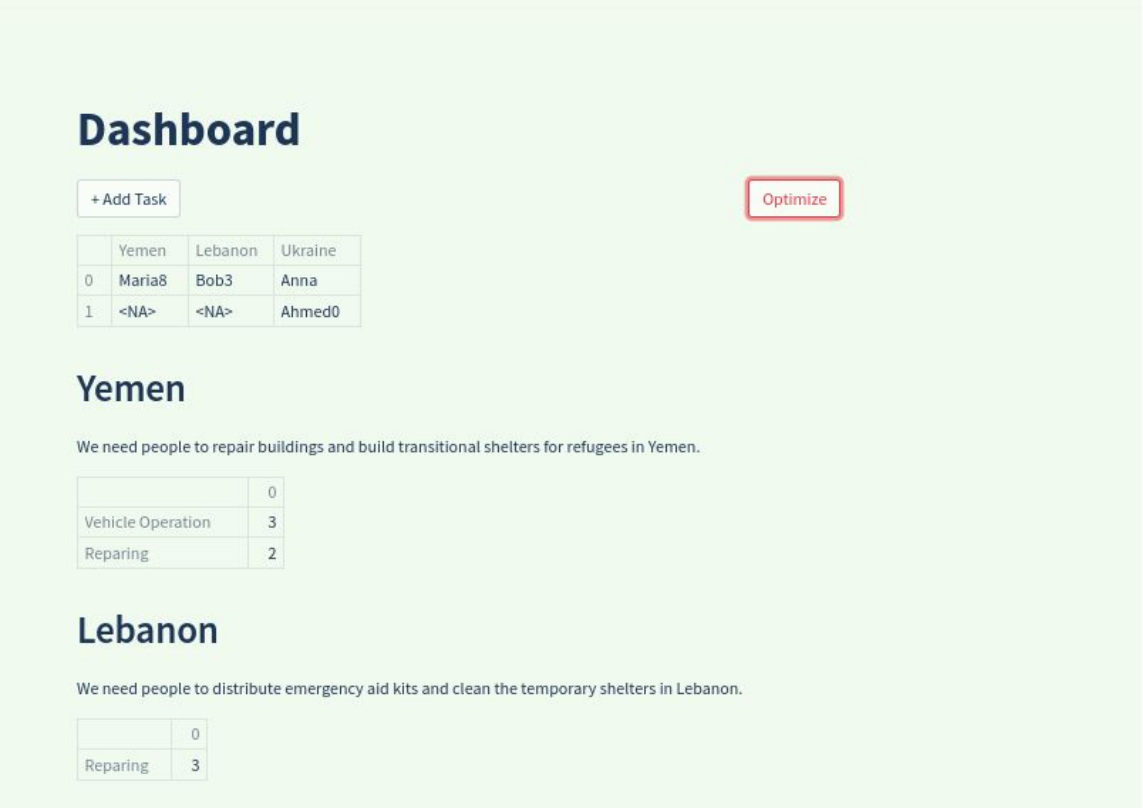
If you are an **NGO Manager**



Live Website

Amazon Braket

Optimize your human resources



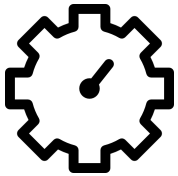
It’s demO’clock!

Business Scalability

- Expand to other regions outside the Arab region, especially Southern Asia where they suffer from similar disasters and lack of volunteering management.
- Expand to corporate companies to provide task and talent allocation management tool
- Expand to manage other resources of NGOs, such as, distribution of existing donations and humanitarian aid

Conclusion

Problem Impact & Importance



Efficient and easier resource allocation for NGOs and humanitarian aid providers

Resolution of volunteer task management and meeting the humanitarian aid needs

ResQ
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who will you ResQ ?
together and quicker

Appendix

ResQ
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Next steps

- Validation system for improving accuracy of data (volunteers' skill levels and human resource data)
- Extend to donation allocation management from donating groups to NGOs and social groups in need

Humanitarian Aid in Libya, Syria, Yemen and Iraq

13.5 million people need in Syria

21.1 million in Yemen

2.4 million in Libya

8.2 million and in Iraq

(source: UN.org, 2020)

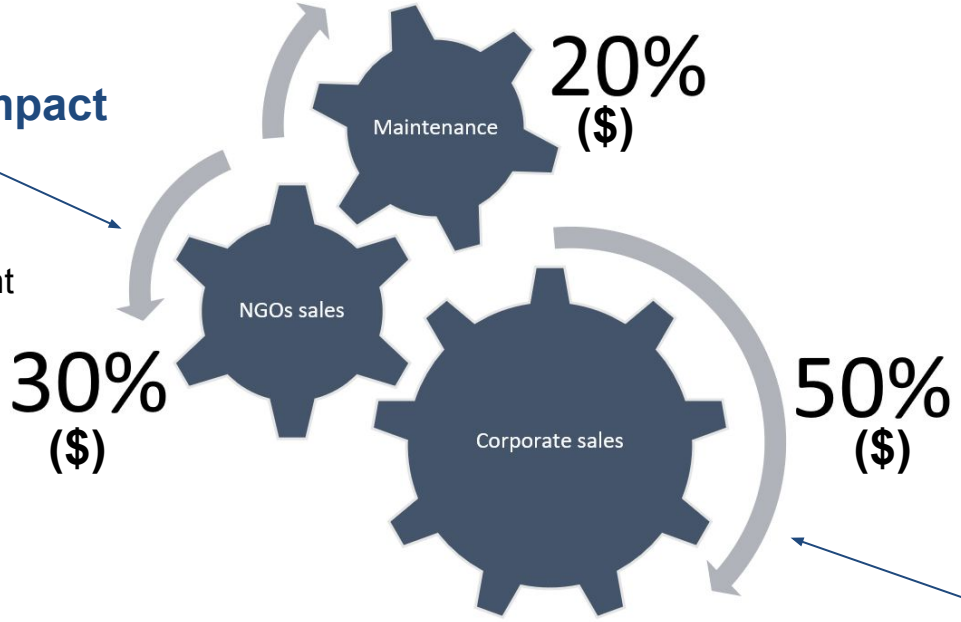
Business and Social Sustainability

Strong social impact

-Number of allocated volunteers

-Rate of skills development

-Evolution of committed volunteers



-Sales revenue

-Net profit

Strong economic impact

The Business Model Canvas

Key partners
What are your key partners to get competitive advantage?

expertise from mentors in quantum computing

collaboration with NGOs that have helped in Beirut explosion to get experience and expertise

Key activities
What are the key steps to move ahead to your customers?

Quantum computing for the management system

Key resources
What resources do you need to make your idea work?

Data of volunteers and their skills

Human resources(software and data engineers, cybersecurity, IT support)

Key propositions
How will you make your customers' life happier?

We use the algorithm in quantum computing which makes the performance of our application much more faster and feasible for large input datasets

By providing an application and quantum algorithm to make resource allocation management and matching more efficient and easier

Customer relationships
How often will you interact with your customers?

trainings, workshops for organization and management skills to public entities or organizations

Channels
How are you going to reach your customers?

Organize meeting with ministries, public initiatives, NGOS that manage volunteer works and pitch our business.

Participate in incubators or accelerators that seek social entrepreneurship for social good

Customer segments
Who are your customers? Describe your target audience in a couple of words.

We target two customer base: corporate companies as our business scalability side and the NGOs for social good

Corporate companies with large datasets and need of high-cost matching and resource allocation computing

NGOs with mission of humanitarian aid resource allocation

Cost Structure
How much are you planning to spend on the product development and marketing for a certain period?

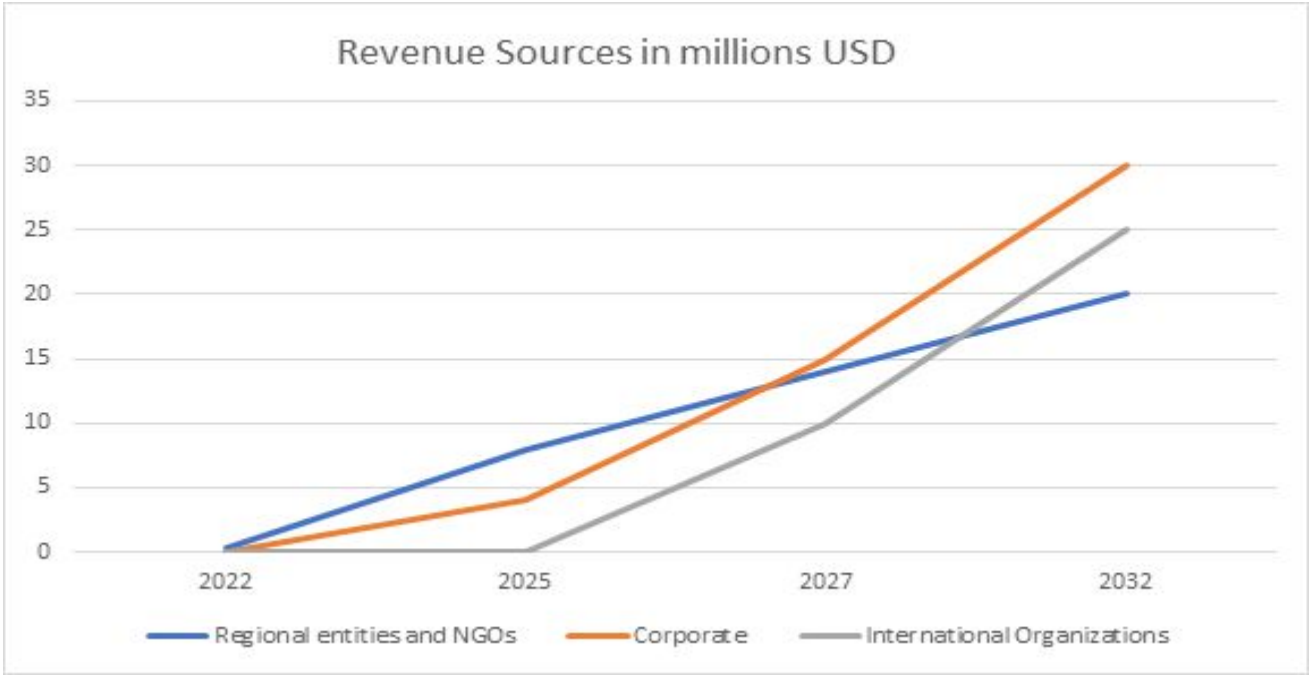
Software costs
Salaries
Advertisement

Revenue Streams
How much are you planning to earn in a certain period? Compare your costs and revenues.

initial revenue from purchase

subscription fee

Revenue Goals



Guarantee of the skills level

A quiz for most demanded skills
A rating system by specialized experts

ResQ uses data after it being validated by corporates similarly to a classical recruitment process

Skills levels

1: has basic knowledge and motivation but no experience
2: needs basic supervision to execute task
3: can execute skill alone at a basic level
4: can execute skill alone at an advanced level
5: can execute skill at an advanced level and supervise

QAOA

- QAOA uses the variational method
- Simplify the cost function:

$$Q = LX_1 + xQX^T$$

- Map the binary variables to (I-Z)/2 to create the Hamiltonian
- Ground state of the Hamiltonian = Optimal Solution

Revenue Streams

- Selling the solution to Governmental commissions, NGOs and corporates
- Subscription revenue