Peer Review Assignment 3.1: Addressing a Problem Using Compute Power

**Assignment: Addressing a Problem Using Compute Power**

As you have learned in this module, new computing methods, such as quantum computing, are poised to increase the available compute power. In turn, this also means you can solve problems that were previously unsolvable.

Reflect on your organization or an organization of your choice. In 2–4 paragraphs, discuss the questions listed below:

* What is one problem that your organization cannot economically or feasibly solve yet, but could be addressed using increased computing capabilities?​ What is the size of the top- or bottom-line impact of solving the problem?
* Brainstorm two possible solutions to this problem, and pick the solution that is more feasible to implement. What is that solution?
* Which internal and external stakeholders would you need to align to pilot this solution?​
* How would you measure your success to prove that this is worth pursuing further?​

This assignment will take approximately 30 to 45 minutes to complete. After you submit your response, offer feedback to two submissions by your peers. Your peers’ responses will become available to review after the due date of this assignment.

**Instructions for Peer Review:**

The assignments for peer review will be assigned to you on**September 30, 2021.**

1. After submitting your response, select the Peer Reviews button that appears on the top-right of the page. Your peers’ responses will be displayed.
2. Select any response to begin your review.
3. After reviewing, add your comments in the Add a Comment box.
4. Once done, select the Save button.

It is recommended that you share at least one positive point they made, as well as one suggestion you have. When you give feedback to your peers, note whether they have fallen into the following common pitfalls, and share your suggestions on how they can better avoid these pitfalls.

1. Do they think that compute power is only for geeks and is less relevant to their organization?
2. Are they hesitant about including compute power in their business portfolio to open up new business models and products?

Please complete the two peer reviews assigned to you by **October 07, 2021**to earn full points for this assignment.

* What is one problem that your organization cannot economically or feasibly solve yet, but could be addressed using increased computing capabilities?​ What is the size of the top- or bottom-line impact of solving the problem?

One problem we addressed before was offering new products to our new clients who are in the same size as the existing ones, what we want to do is, if suppose that we have like 10 different products available for the new clients, which product should be offered first to the client, it is a pop-up screen appearing when the customer enters our environment if the client accepts than this will never pop up again,  if he chooses to decide later, then this will be added at the end of the queue and the second offer should be pop up for the next time. If he refuses that option, it will never pop up again. This seems not so complicated, however, if you have millions of customers that might take time.

Now I want to expand this idea by creating the digital twins of these customers on the cloud and create a marketplace for them, then I want to choose the best next customer (sector decision needs first here) and add this customer to the market then calculate best trade partners for this customer then calculate the trade value for all of them. Pop-up logic will be applied here, too.

The impact will be huge increases at the sales figures and low costs for all parties and boosting the customer satisfaction.

* Brainstorm two possible solutions to this problem and pick the solution that is more feasible to implement. What is that solution?

One possible solution here might be leaving the system by human-made decisions, so that small business owners (SMO) will discover the other potential shops in the market then they can go and purchase whatever is needed. No cost to us!

The other solution might be with AI-supported decision-making systems. This will advise SMO on what to buy where to buy and what quantity and when? AI also recommends what to sell who to sell and the exact amount. But, in order to design this system, we need big computing power and cloud storage. Most probably the challenge here is when and how much storage, compute power to buy, and this will take us to the cloud solutions. Equally important, while implementing this project is to train our AI systems with the data and try to find the best possible outcomes (fine-tuning the algorithm) to gradually expand (not immediately!) these customers’ businesses.

* Which internal and external stakeholders would you need to align to pilot this solution?​

The main goal of this idea will be increasing the sales figures of the stakeholders, increasing the level of quality, and creating a fair marketplace for free trade. Therefore, as an internal stakeholder, our sales/marketing as well as quality assurance teams will be collaborating with the external clients (SMO), since our teams are aware of what other clients’ needs(because we are helping them to create a brand, website …  and marketing strategy) and on which quality level.

* How would you measure your success to prove that this is worth pursuing further?​

We will track the sales figures monthly; first, we need to note the initial figures (current data), then we will follow up AI-based decision/ offering sales and purchase figures. Reducing costs is also so valuable, hence we can follow up on them as well.

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## **Peer Review Assignment 3.1: Addressing a Problem Using Compute Power**

ABHISHEK LALL submitted Sep 28 at 6:17pm

**This peer review is not finished yet.** For it to be considered finished, you need to leave at least one comment.

* What is one problem that your organization cannot economically or feasibly solve yet, but could be addressed using increased computing capabilities?​ What is the size of the top- or bottom-line impact of solving the problem?

*One example is that of building image search capability. Essentially the idea is to build a search engine of images of damaged vehicles and properties where the end users can look for duplicate images when they submit a new image. The volume of images is in the order of millions making the computation cost-prohibitive.*

*This product has the capability of generating multiple millions of dollars of revenue in terms of top-line impact.*

* Brainstorm two possible solutions to this problem and pick the solution that is more feasible to implement. What is that solution?

*A couple of possible solutions is 1) to leverage a cloud solution like AWS & 2) to build an on-prem solution from scratch that could involve procuring all of the hardware & software.*

*An AWS-based solution is a more preferred approach because it allows us to experiment and scale the solution with ease when we are ready. AWS also provides a more convenient solution as it is currently leveraged for storage and potential integration with our other existing products.*

* Which internal and external stakeholders would you need to align to pilot this solution?​

*In terms of internal stakeholders, an alignment is needed with the in-house data science teams for rapid prototyping on image-matching and then eventually with the technology teams to productize the solution.*

*In terms of external stakeholders, we will need a partnership with AWS consulting teams to leverage their specific expertise with respect to the cloud environment. This is crucial as our in-house technology team has limited experience with the implementation of this type of project.*

* How would you measure your success to prove that this is worth pursuing further?​

*We plan on establishing success criteria with business stakeholders in terms of overall accuracy/false positives & latency. There are multiple analytical approaches to solve the problem of “image-matching”, the prototype that meets the business requirements will be deemed as worth further pursual.*

=========My Comments =========

I would suggest that paying attention to the finance side of the project is also as important as whether the project is doable in terms of the feasible technology and human resource solution. The other area which is also when/where and how to introduce this new project to the decision-makers to get the required fund, simply be careful on the office politics!

I strongly agree with AWS's solution in terms of security, availability, and performance around the globe without hesitating qualified/experienced staff.

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## **Peer Review Assignment 3.1: Addressing a Problem Using Compute Power**

Adam Salmen submitted Sep 27 at 6:21pm

**This peer review is not finished yet.** For it to be considered finished, you need to leave at least one comment.

* What is one problem that your organization cannot economically or feasibly solve yet, but could be addressed using increased computing capabilities?​ What is the size of the top- or bottom-line impact of solving the problem?

As a science based organization, we are charged with innovating new uses and products to solve challenges around the world.  We currently have a large percentage of our revenue going into R&D activities, but are simply using this for smaller customer developments.

I believe we could use quantum computing to determine all the possible product developments, and phenotypes of our materials so we can have a better starting point for material developments in the future.  The topline impact would be access to new markets through the synthesis of new materials which meet industry needs.  The bottom line impact would be that we not only narrow down potential product developments from the onset, but also don’t loose technical knowhow when one of our scientists retires, or quits.

* Brainstorm two possible solutions to this problem, and pick the solution that is more feasible to implement. What is that solution?

We could use AI to program in all the previous experiments and their results, which should then be able to help us understand which experiments we could use in the future?

Or we could use Quantum-computing to understand all the basic polymer building blocks and whether they would be able to interact.

I would guess that the first solution would be easier, as AI and ML are currently more reachable

* Which internal and external stakeholders would you need to align to pilot this solution?​

We need to get our innovation heads (head of technology & head of Marketing) together with the head of IT to discusss whether this solution is even possible. furthermore, I reached out to Orlagh Neary at Microsoft to see if they had any off the shelf solutions we could use which work in the Microsoft sphere to reduce any further burdeon on our IT staff

* How would you measure your success to prove that this is worth pursuing further?​

I would want to understand whether we can actually implement this with our head of IT and Microsoft as a first step.  if everyone is in agreement, I would put some of our top chemists on a team with MS, and IT to pilot this program and see if we could get a proof of concept going.

============ My Comments ===========

It seems an overall idea worth to try and I will strongly encourage you to try that, but before that maybe you might want to pay attention to the below points.

Firstly, quantum computing is still in the prototype phase, therefore you need to find better solutions… as you suggested Microsoft Azure cloud solutions will definitely help to do these calculations.

Secondly, finding the best algorithm which will produce the best-desired results will take time and requires advanced level experienced staff, you might have those staff, but you need to decide, is this the best place to use these experienced staff? And what would be the cost of this?

The third one might be related to organizing “the heads” meeting, it would be a wise action to implicitly going over the project details with these managers before coming together and you need to be sure that how they will be benefited from this project both personally and as per department.

And lastly, taking Microsoft as a partner is a great idea but do not forget it will also bring its huge costs, therefore your budget should be allocated accordingly.