Custom Cloud

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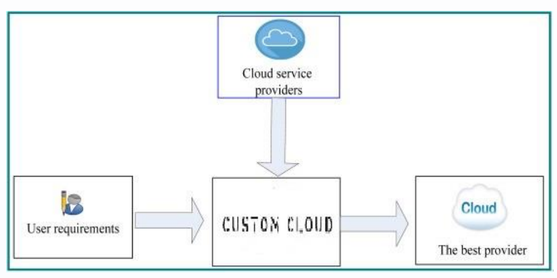
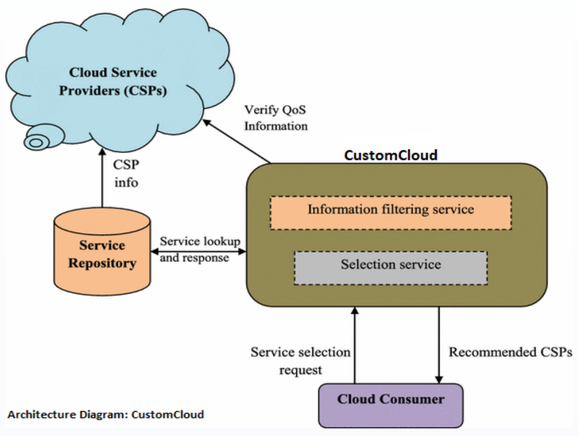
INTRODUCTION

- Custom Cloud is a typical cloud service selection to choose the optimal cloud services dependent on numerous clashing Quality of Service measures.
- We offer a custom-made cloud, where the user gets the best of services after the comparison amongst the available Cloud Service Providers according to his usage and needs on the basis of various functional and non-functional services attributes using Multi-Criteria Decision-Making problem to evaluate the service providers concentrate on choosing the cloud resources for a single task with the highest Quality of Service performance.
- It is user-centric and compares various parameters like Response time, Availability, Throughput, Successabilty, Reliability, Compliance, Best Practices according to WS-I Basic Profile, Latency, Documentation and Web Service Relevancy Function.





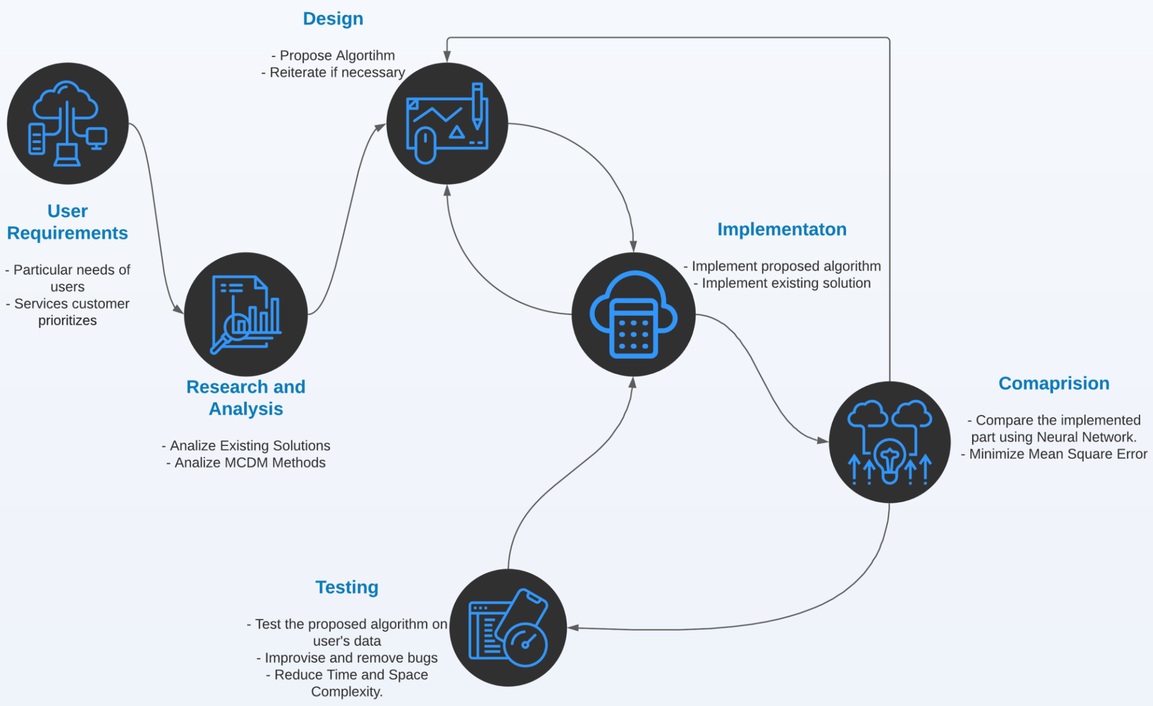
GOALS AND OBJECTIVES

Following are the major Goals and Objectives of the project:

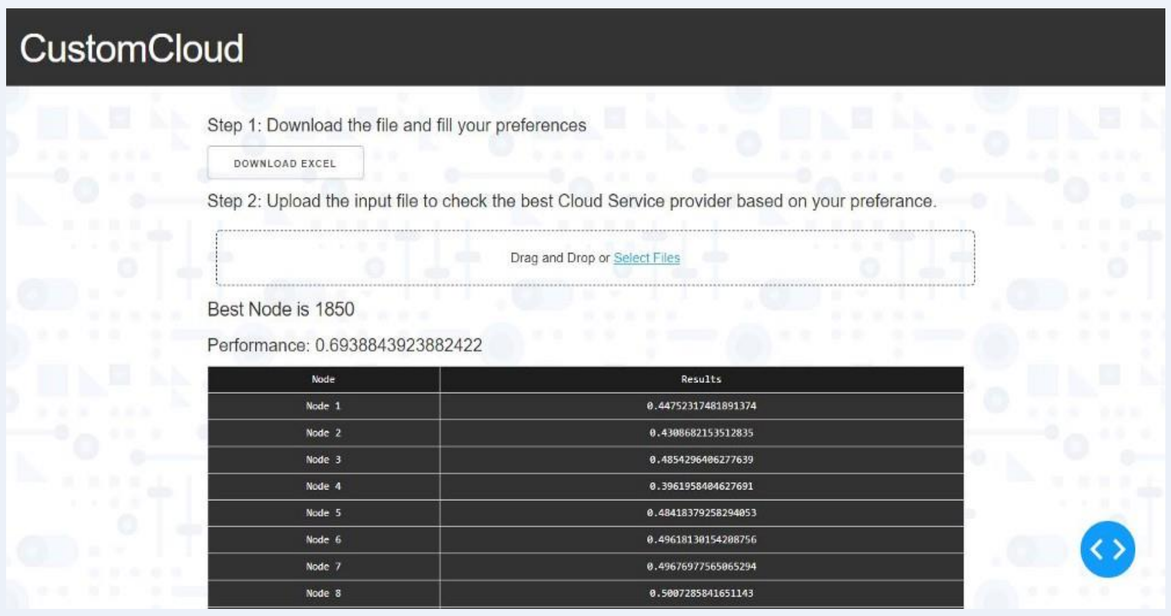
- Compare and rank the Cloud service providers based on various attributes.
- Study different MCDM techniques to compare the CSPs.
- Propose a new and more efficient way to rank CSPs based on user needs.
- Design an interface/portal for small businesses to aid them when they move to Cloud Computing.

PROPOSED SOLUTION

Final performance = (((0.2)*((Performance of WSM)^2)+ (0.3)*((Performance of TOPSIS)^2)+ (0.5)*((1 - Performance of VIKOR)^2))^(1/2))



USER INTERFACE



RESULTS

CSP	Response Time (ms)	Availability(%)	Throughput (invokes/second)	Successability(%)	Reliability (%)	Compliance (%)	Best Practices (%)	Latency (ms)	Documentation (%)
A1	302.75	89	7.1	90	73	78	80	187.75	32
A2	482	85	16	95	73	100	84	1	2
A3	3321.4	89	1.4	96	73	78	80	2.6	96
A4	126.17	98	12	100	67	78	82	22.77	89
A5	107	87	1.9	95	73	89	62	58.33	93
A6	107.57	80	1.7	81	67	78	82	18.21	61
A7	255	98	1.3	99	67	100	82	40.8	4
A8	136.71	76	2.8	76	60	89	69	11.57	8
A9	102.62	91	15.3	97	67	78	82	0.93	91
A10	93.37	96	13.5	99	67	89	58	41.66	93
Impact	Negative	Positive	Positive	Positive	Positive	Positive	Positive	Negative	Positive

Following results can be drawn from the tables:

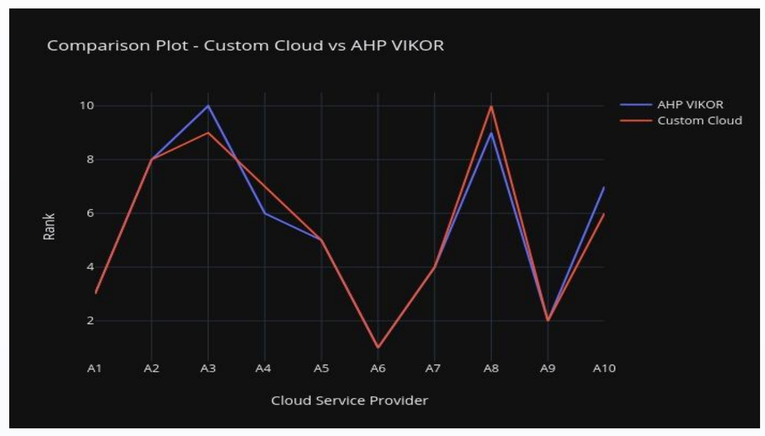
- Tables show the comparison between AHP-VIKOR and Custom Cloud's algorithm.
- The consistency of ranks by Custom Cloud's algorithm as compared to existing Hybrid MCDM algorithm shows that the proposed algorithm is reliable and provides more accurate results while reducing the time complexity providing faster outputs.

CSP	Performance	Rank
A1	0.3667	3
A2	0.6479	8
A3	1	10
A4	0.6198	6
A5	0.6161	5
A6	0	1
A7	0.5388	4
A8	0.8488	9
A9	0.2776	2
A10	0.624	7

Table : AHP VIKOR - Output

CSP	Performance	Rank
A1	0.593784	3
A2	0.347333	8
A3	0.187158	9
A4	0.385974	7
A5	0.409211	5
A6	0.881207	1
A7	0.41179	4
A8	0.182315	10
A9	0.645564	2
A10	0.403395	6

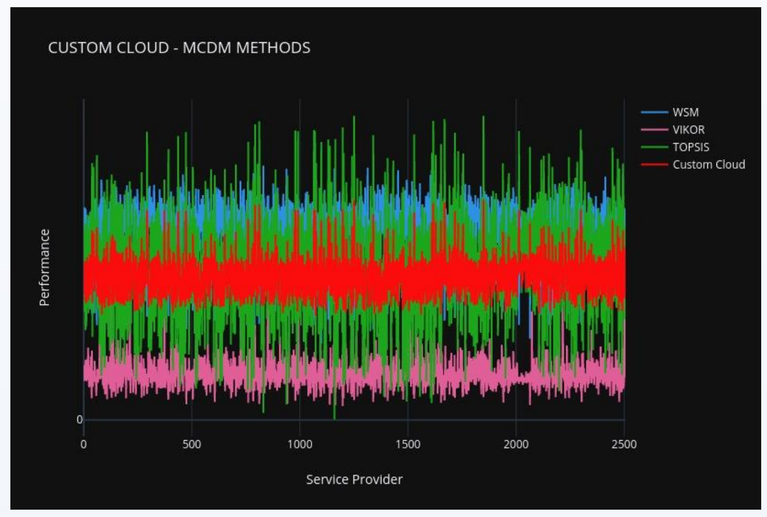
Table : Custom Cloud - Output



- When a user enters his preferences, he gets the best CSP for his particular needs in lesser time and the output is backed by more than 3 MCDM algorithms.

CONCLUSIONS

- Custom Cloud offers a more reliable and fast way of selecting the best performing CSP in the least time complexity.
- The plot shows the performance of different MCDM Methods like WSM, TOPSIS, VIKOR and Custom Cloud's algorithm for over 2500+ Cloud Service Providers.



- The plot for Custom Cloud's algorithm is more consistent and in trend with existing solutions and due to Neural Network's application, the proposed algorithm performs better than the existing solutions like Hybrid MCDM technique.

FUTURE WORK

- A prototype of a web-based UI using Flask was created to test and showcase the project for evaluation.
- After the submission of project, we plan to build a web app that supports all platforms and is easy to use.
- We also plan to enhance the Neural Network by training it over different inputs from various users and would like to cater small businesses and people who wants to switch to Cloud from the traditional computing environments and help them choose from 2500+ CSPs available.

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