PLATFORM TIME-SHARE COMPUTATIONAL ENGINEERING

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We are pleased that you downloaded the document discussion of the Platform Time-Share computational Engineering. We address several concerns of users of the Computation Platform Time-Share.

We have taken the exhaustive approach of discussing our service because we deem it important that you be adequately informed about the service provided, the benefits but theoretic constructs and the financial benefits.

Our goal is to ensure that after reading the approach you get the take away that your use of this computation time-share facility shall be quite beneficial to your operations both in terms of enabling higher productivity and application of targeted science more specific to the situation that most would adopt. In this regard then the output of your performance of your duties is more satisfying from the deeper insight gained.

Although our ultimate goal of service is Reactor Analysis, we also provide services in Thermodynamics Analysis and Mixing or Blending Analysis. Both these concepts and practices are critical components in our computational engineering services so we are able to separately offer these services as well.

What we do in these regards then is the development and hosting of different computational algorithms, for Thermodynamics, Mixing Analysis, and reactors Analysis. These algorithms, being hosted, of course, are available for the intended users.

Some of the intended users are companies that have specifically engaged us to develop and host for their uses and benefits only computational algorithms specific to their development and production operations

Other intended user are the general public for which the algorithms are generic and developed according to the conceptualization of the staff of the company.

Computational Engineering

Thermodynamics Guidance

The Thermodynamics foundation of our Mixing Computation algorithm is rather more of Molecular Thermodynamics and less of macroscopic Thermodynamics. Starting with the First Abstraction of Thermodynamics, the Virial Stress Tensor is that incorporated to grant access to the Internal Dynamics of the Thermodynamics system. By this mechanism we side step all Gibbs Energy considerations in the algorithms

As such we are able to effectively perform detailed analysis of the forms of mixing enabled under different fluid properties, and consequentially effectively capture these features into the algorithms.

By focusing on the molecular level interactive dynamics of the and mixture of fluids, we are able to express the state of mixedness and hence blending of the fluids.

The direct molecular level interaction analysis also enables the precise evaluation of any potential reaction dynamics and therefore inform on possibilities of potential explosions and flammability of any mixtures of fluids, which goes to enhance the safety considerations of Material Blending Operations.

Of course, needles to state that the same recognition of the Properties of state of a mixture is just as insightful and instructive in the analyses of reactors, irrespective of the type of reactor: Chemical, Biochemical, Bioreactors: Microorganism Bioreactor or Biologics Bioreactor

Mixing and Blending Guidance

Our construction of the mixing cells of non-Newtonian fluids is akin to the construction to the Newtonian fluid except for the preferred identification of the preferred cross-sectional face and of the type of smoothing or rounding implemented in the construction to enable full topological mapping of the space

Reactors Analyses

Reactors as one of the areas of challenge in engineering is chosen to be addressed in the Platform Time-share to enable companies.

Computational Capability

Computational Platform Time-Share

Our Computational Engineering service is provisioned on our Computational Platform Time-Share hosted on several of our computer machines. The scope of functionality of the Time-share is continually being expanded and the machines deployed ever so increasing in count.

In the general form, the Platform Time-Share is accessible through the Internet and the company website. A user granted Platform access simply submits the specifications of the project to be analyzed, and the Platform selects the appropriate algorithm, performs the required analysis and send the data back to the user even as the user waits on line.

In the more customized case in which a company has its algorithm developed and hosted by us, such company is granted a special access Desktop User-Interface designed of the popular Electron Tool. The object is to ensure private and secured use of the system under on-Demand conditions.

The Platform itself by design is readily retrofitted with High performance Super-computing machine collective to provide the context of a supercomputer to enable fast computation.

Expansive Database Collection

The Platform machines includes several database servers geared to support the chemical, biological and materials properties of various matter and states of matter. We have in effect implemented the system so that data required for the computation of a customer analysis are dynamically acquired from the databases and used by the algorithm on a just-in-time I/O functionality.

More specifically we have database servers of chemical databases, Microbial and Microorganism databases, Biologics databases, Materials databases, and Environmental Databases – which draws from several databases for the object of data search time and acquisition minimization

High Performance Computing Tracks

As a multi-algorithmic computation system, the Platform is being arranged into server rows of High Performance Computing rows of servers and with groups of the machines configured into the Super-computing Integrated server Collective.

So we have HPC Server rows -- sort of sub-Platforms constituting the Platform:
Thermodynamics Analysis sub-Platform,
Mixing & Blending Guidance sub-Platform
Chemical Reactors Computation sub-Platform
Biochemical Reactors Computation System
Microorganism Bioreactor sub-Platform
Biologics Bioreactor sub-Platform

Of course, each sub-Platform is directly integrated with all the databases.

OnBoarding Platform

Algorithm Development

OnBoarding the Platform for use of the algorithm differs between users of custom hosted algorithm and user of general hosted algorithm. Each group requires a different mechanism for onboarding

Custom hosted algorithm available as a consequence of a company engaging us to develop and host the algorithm. Ordinarily, a company engages us, provides us chemical and rheological properties information of the fluids, and the format of the mixing or shearing of the fluids as planned. We then develop an algorithm that accounts for the mixing process and hence the blending of the fluids which are reactants in the case of reactor analysis.

When the computational analysis is for reactors, the data transfer also must include extensive information about the reactions and the kinetics of the reactions, as well as cooling and heating needs, and the integration of the heat exchange mechanism with the equipment

Non-custom hosted algorithms have general submission process through the website using forms that are provided. All relevant data about the medium in terms of chemical, rheological and reactions and related kinetics must be entered into the form for the system to collect and as to accurately determine the operating context, and select the same from the depository of algorithms and their sequence of execution

Hosting Algorithm

The algorithm once developed is deployed on the Server row to which its use is specific, and immediately thereafter the algorithm is live.