UstarPRE Feature

Automated Ustar computation

Computation of Scaled Ustar

Convert LS-DYNA results to NASTRAN format

Platform
OS）Windows 7, 8
     64/32Bit

MEM）4GB+
CPU）PentiumD+

Prerequisites）

+ U* program
 Keio Univ. Ustar
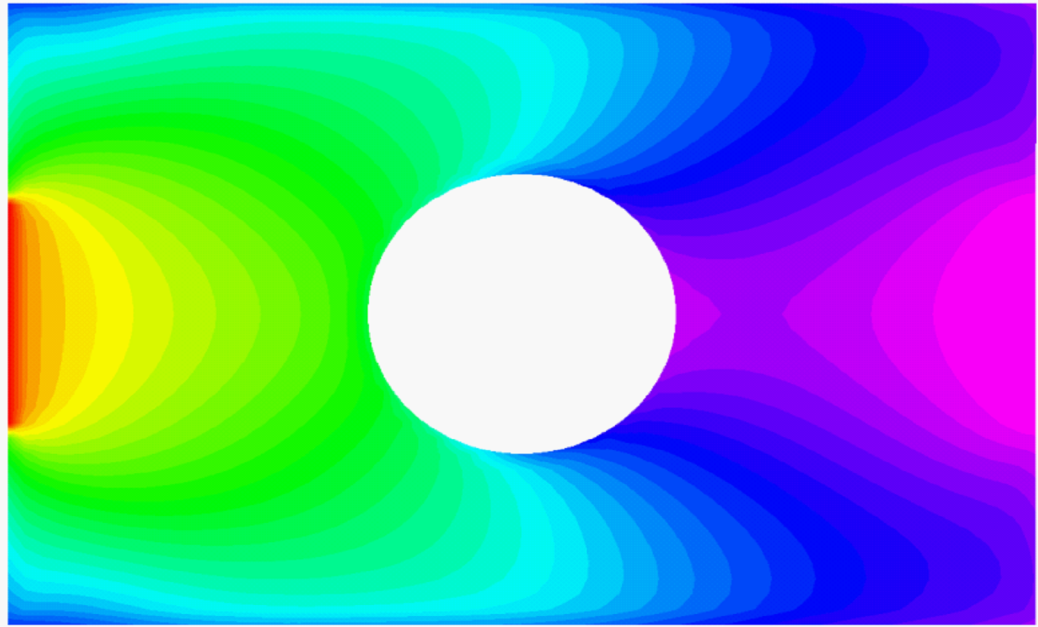 MSC U*ToolKit
  Keio Univ. Ustar FRONE Ed.

+ Explicit Solver
   LS-DYNA or
   Radioss

+ Implicit Solver
   MSC.Nastran or
   NX Nastran or
   Radioss

+ Supplement
   LS-PREPOST

Automated Dynamic Ustar Computation Program
UstarPRE

Load Flow Variation in Transient

Ustar is.）

 U Star(also known as U*) is the revolutionary new approach for understanding load path inside of any body.

 The conventional method to evaluate the integrity of structure is just focused on strength and stability, while not for evaluation of load path which is the essential function of structure.

 For example, the stress concentration is important for strength evaluation, but that beautiful stress contour gives no information about the load ˝flow˝ inside the structure. In other words, the stress concentration is formed by the shape or its material, and that is just a local phenomena. However, it is unknown about the overall function of structure, transfer and support the loads.

 Ustar approach is focused onto the difference of distribution of strain energy inside structure, and compute the overall distribution of load & its flow and visualize. With Ustar, one can see the load flow inside structure directly, and understand which feature of structure supports and where is the primal load path.

Automated Ustar Computation Program）

 The Automated Ustar Computation Program is a set of software to let simplify Ustar input preparations which are very complicated. You can use any of Ustar computation programs one of Keio univ. Ustar, MSC U* Tool Kit, or Keio univ. Ustar FRONE edition.

 In dynamic motion, the structural load path is changing at each moment. To evaluate this, the inertial forces must be considered as well as other conventional loads.

 UstarPRE let solvers to compute inertial forces from state vector of each analysis time.

Automation-Efficient Process of Huge Data）

 A massive number of files with large size are generated during calculation of Dynamic Ustar and it is essentially important to manage & process those files easier.
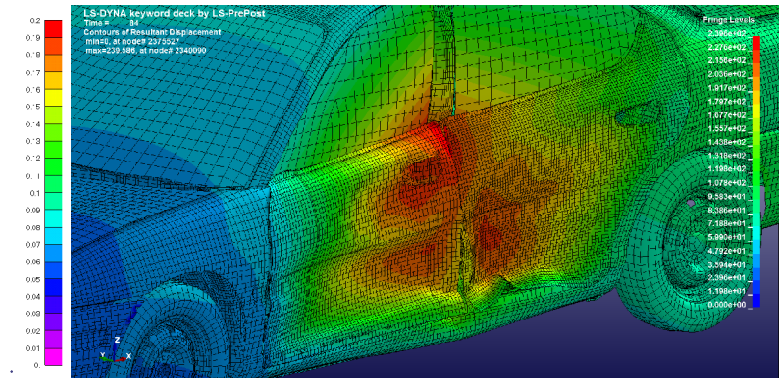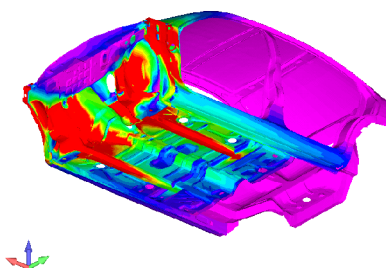
 UstarPRE, the automated Dynamic Ustar computation program effectively controls multiple programs for processing FEA results to get Ustar indexes. UstarPRE is designed as flexible so that fits to customer's analysis system and open up a door to this new approach for insight of the structure.

 UstarPRE makes it simple and straightforward through intuitive GUI.

Simple and Intuitive Operation
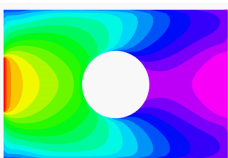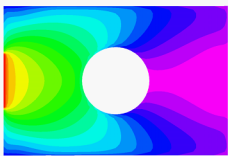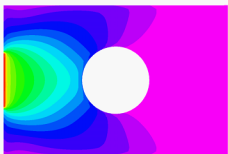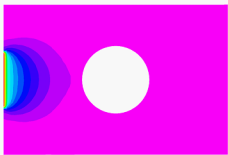
Automated Dynamic U*Computation Program

UstarPRE

General ）

UstarPRE outlines related files and prepares Ustar input files through simple 4 steps:
①Conventional FEM analysis
②Generates Input for Inspection Load Method
③Generates input for Inertia Force
④Generates input for Dynamic Ustar

UstarPRE can be fit to your own CAE PRE/POST processor.

Input for Inspection Load Method）

Inspection Load Method[*3] is an approach to efficient solution of Ustar indexes developed by Keio university. UstarPRE generates input files from FEM model and nodes list to specify Ustar indexes.

Input for Inertial Forces）

In dynamic motion, the state of inertial force varies from time to time. UstarPRE outputs files to compute inertial forces for each time slice. Those files are in NASTRAN format.

Input for Ustar）

The Ustar indexes can be computed by Keio Univ. Ustar Program

(Inspection Load Method), MSC.Nastran U*toolkit from MSC Software Corporation, and Keio Univ. Ustar Program FRONE Edition.

Dynamic Ustar）

Dynamic Ustar, which account the effects of inertial forces can be performed using input files generated by UstarPRE. Inertial Forces can be computed by Nastran
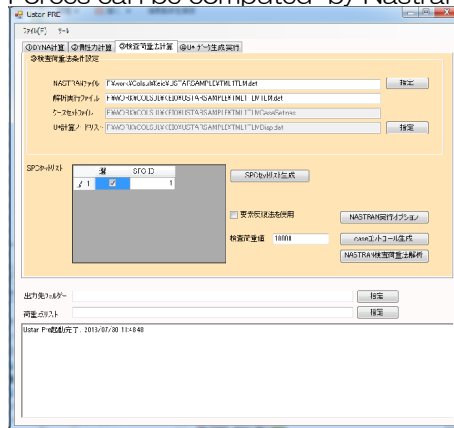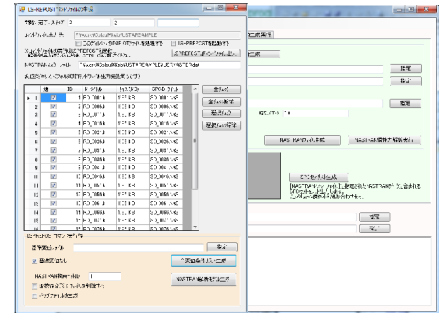

(MSC or NX) or RADIOSS.

Functions）

UstarPRE simply automates preparation of input files required for Dynamic and Static Ustar computation.

Inertial Forces）

Inertial forces can be computed using state data of LS-DYNA time


transient results. All you need is just specify time slices through GUI.

Managing Data）

Each data using for specific Ustar computation are managed in folder structure. User can reuse existing files.

Applications）

* Safety and Integrity
  Structural safety and durability assessment of vehicles such as automobiles, trains, or aircraft..
* Durability of damaged structure
* Propagation of vibration induced by such as motors, wing flutters..
* Reliability
  Reliability of high-rize buildings or construction machineries
* Load path evaluation of large scale structures such as ships
* Stabilities
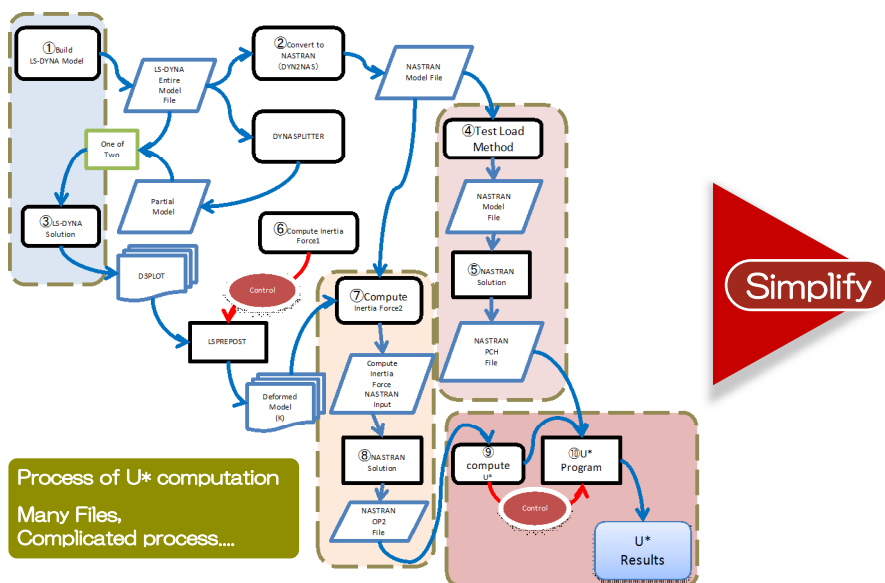
Process of U* computation

Many Files, Complicated process....

Simplify

① Time Transient FEA

② Inspection Load Method

③ Inertial Force

④ Dynamic Ustar

*1) A part of the software, DYna-NAStran translator may not convert all of DYNA input files.
2) This software utilize patents of Keio university for Dynamic U and acquired the license of those patents.
3) This software includes neither license of Keio Univ. U, MSC Nastran U* Toolkit, Keio Univ. U* FRONE Edition, nor all related licenses of Inspection Load Method.

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