Description of New Features and Bug Fixes at Version 6.01c

			Description
1	Bug Fix	Deleting Graphs	Previously when deleting an open graph the axis settings could be lost. They are now correctly 'shuffled' when a graph is removed.
2	Change	Angle Graphics	The 'measure / angle' graphics elements have been improved to have a robust method for sign convention based on the sign of the cross product components.
3	Bug Fix	Angle Graphics	Previously an angle graphic could show a full circle when the angle is displaying a very small angle. This is now handled with a small angle trap.
4	Bug Fix	Ackermann Calculation	To improve stability stopped calculating Ackermann on non-steerable rear suspensions. Trap and return zero's.
5	Bug fix	List Lines	Graph line listing was sequenced the wrong way round, now aligned on bump/rebound.
6	Bug Fix	Maximize Window	Potential confusion when setting the main graphical window as maximized was identified and resolved.
7	Bug Fix	Large Integers	It was possible for a user to try and display a large real number with zero decimal points that if handled as an integer could overflow the allowable limits for an integer. This is now handled differently.
8	New	Clipboard	Added to all spreadsheet widgets a menu option to copy highlighted data to the clipboard. Provides a more consistant and robust method for copying to the clipboard.
9	Bug Fix	2D	If started in 2D some toolbar icon were not enabled. Now resolved.
10	Change	Close and Esc	The action of close and esc on the file new dialogue box have been aligned to avoid confusion. Now correctly have the same functionality.
11	Bug fix	File New	Possible combination settings of front and rear template types could cause a program hange. Now resolved.
12	Change	Template checks	Extra data checks have been added to the template validation tests to improve capability.
13	New	Model Checking	The improved model checker can now be run from outside of the template editor via the Data / Tools menus
14	Change	File New	An additional warning is given if the user selects the same template for both front and rear axles in a full vehicle model file.
15	Change	ETRTO	The tyre sizing module has been enhanced so that the tyre data can be applied to either front or rear as required.
16	Bug Fix	Template 12	A problem with the default template 12 was identified and has now been resolved.

17	Change	Turning Circle	Two turning circle calculations have been available for a while, at this release the default one included in the standard SDF listing has been changed to 'Overall turning circle diameter' from the previous default 'turning circle radius'.
18	Bug Fix	C of G	Previously when adding a part C of G additional spurious points could be included. This issue has now been resolved.
19	New	Visibility switches	A number of data entry dialogue boxes have been enhanced to give local access to relevant visibility switches. This includes Part C of G and Bush Stiffness.
20	Change	Animation	The default animation speed has been changed to be fastest refresh available. Users can slow as required via the display menus. Also now limited between more realistic time band.
21	Change	Groups	Can now turn on short label visibility at group point picking.
22	Bug Fix	Free Body Diagram	For a rear only model the free body display will now correctly open showing the rear suspension. Previously it defaulted to the non-existent front model.
23	New	Template 47	A new default template has been added at slot 47 for a rear suspension with additional toe link.
24	Bug Fix	Custom control Window	The drawing of custom control windows during model animation is now checked and only re-drawn if window contains graphics that need refreshing. The deleting of custom control windows has also been revisited to ensure the correct window is always removed.
25	New	Commands	Added Pseudo commands for Modes 1 to 6 such that a user control window can use them to switch between modes.
26	Bug Fix	Command line	Reworked the handling of passed commands on start-up so that an 'explorer' type double-click on a data file is correctly opened.
27	Bug Fix	Getting Started	The internal link to running the 'getting started' document has been revised to ensure correct opening of the pdf file.
28	Change	Dialogue boxes	A number of menu bars and dialogue boxes now have optional 'sticky' properties so that they can be located at sides, top or bottom as required.
29	New	User Window	New option added to the User Window create option that will pre-fill it with the currently displayed graphs.
30	Change	User Windows	The mouse hover over a graph in a user window will now perform the same as the main display graphs in terms of adding nearest point values on to the main window status bar.
31	Bug Fix	Ground Plane Pitch	Corrections to co-ordinates based on ground plane pitch would affect local co-ordinate systems. This is now correct.
32	New	Compliant TCP	Added the concept of a TCP point that will always be on the ground plane. The current TCP point only stays on the ground plane in kinematics. This compliant TCP has a new tag No. and can be added to the model template.

Software Release Notes

33	Change	Virtual SKCMS	The Virtual SKCMS solution has been modified such that a partial file write can be achieved.
34	New	Graph Picking	A new switch has been added to turn On/Off the function of graph element picking and dragging. The default setting is Off.
35	New	Mass Matrix	A new result has been added being the 6 x 6 mass matrix of the sum of all the masses.
36	New	Cof G Point	A new C of G point type has been added to template point types that can be used for transposition of inertia properties from one co-ordinate system to another.
37	Bug Fiz	Drawing 3D circles	A trap has been added to drawing this primitive to prevent an issue with all passed points being zero. Was primarily an issue with Engine Mount models.
38	Bug Fix	Pitch Points	A problem was spotted with the structure of Pitch function that could leave inboard steering points in the wrong position. This has now been resolved.
39	New	Carline View	A new viewing concept has been added, referred to as the 'Carline' view it caters for a model that has it s point positions defined via a CAD co-ordinates system that does not have tyres on a common ground plane and the body not orientated at ride. User reads and write hard points in this carline axis system but can switch to a particular 'case' where the car is rotated to have the wheels on common ground contact. Each of these cases can have different associated front and rear bump travel.
40	Change	Two Part Rack	The two paert rack is now added to the model using Equations for the point positions. Makes it far simpler to re-position it after adding.
41	New	INI File	The widespread adoption of Windows 10 with its own unique folder restrictions means that at this release the location of the users INI file has been moved from the 'Windows' folder and is now stored in the 'application data\lesoft' folder.
42	Change	Ackerman	An extra solution position has been included to support Ackermann calculations. It was needed to support the calculation of toe nagles under all model template types.
43	Change	Ackerman	The Ackerman calculation has been changed to only use kinematic toe angles. A solution based on compliant toe is unstable. At this point any static toe is removed prior to calculating the Ackermann for a similar reason.
44	Change	Tyre Graphic	The pre-fill graphical option for tyre now makes use of the wheel diameter whn called from the ETRTO dialogue box.
45	Bug Fix	Parts Clash	The Part clash utility previously gave a spurious result if it was run with a pre-filled wheel due to the zero centre facet. This has now been resolved by changing the pre-fill function..

46	New	Non-linear Rack travel	A new functionality has been added to the steering rack to have non –linear relationship between the rack travel and handwheel angle.
47	Change	Start-up	The dfault start up view has been changed to have the menu tree display on the lhs of the screen and solver settings on the RHS. Graphical and main window display opened maximized.
48	Change	Duplicate menus	A number of menu trees were duplicated. These have been consolidated and menus generally arranged inti more logical grouping.
49	Bug Fix	Undo	An undo of a full vehicle model that was just showing the rear suspension, would jump back to showing the front suspension after the undo event. This has now been resolved.
50	Bug Fix	2D Graphs	The colour mapping for 2D module graphs was not corrclty applied. Now resolved.
51	Change	Control Element	The use of a positional control element requires two input transducer points to be identified. This is not made clear in the interface and users could leave the 2nd point blank. The rules have been tightened to ensue only valied cases are applied.