The complete geological structural modelling and analysis toolkit
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WHO WE ARE

Petroleum Experts (Petex) are the global standard in petroleum engineering and structural geology tools, developing a wide range of software. We are a team of highly skilled professionals with extensive experience in petroleum engineering, structural geology, and engineering software. Following the acquisition of Midland Valley, we are now established as the world leader in the field of structural geology, providing expert consultancy, training and the MOVE suite of geological software, and have a single-minded commitment to the needs of our clients.
OUR HISTORY
Petroleum Experts started in business in 1990. All members of the team have been involved in the development of software engineering products, as well as having extensive experience in petroleum engineering and structural geology. The corporate strategy developed from this experience, and a long-term business outlook, were fundamental to the prompt success of Petroleum Experts. The company’s petroleum engineering software tools enable the oil and gas industry to dynamically model their oil reservoirs, production and injection wells and surface pipeline networks as an integrated production system.

For more than thirty five years, geoscientists at Midland Valley (named after an area of Scotland that lies between the Southern Uplands Fault and the Highland Boundary Fault) used restoration and balancing techniques to unravel geological evolution and extract unseen information from available data. The ground-breaking approach minimises technical uncertainty – enabling your organisation to reduce risk in a methodical and cost-effective way. The main focus of the company was to commercialise applied structural modelling and balancing in the extractive industries, eg. oil and gas exploration and production or mining, through the MOVE software suite.

In October 2017 Petroleum Experts and Midland Valley joined forces. Petroleum Experts pioneered integrated field modelling with the objectives of improving field management, production and recovery, with their petroleum engineering IPM suite – fully integrated reservoir, well, surface network modelling system, and the Digital Oil Field platform (DOF). The next evolutionary step of integration will incorporate geology and geophysics through MOVE, to deliver a seamless set of workflows from field geology to production and oil and gas field management – field discovery to late production life.
BUSINESS
The success of our business is down to a highly-focused and – more importantly – sustained drive towards incremental and measurable steps in innovation of new engineering and structural geology modelling techniques. Our drive has brought direct, bottom-line production gains to our clients directly or indirectly involved in extractive and subsurface storage industries, for example, oil & gas, mining & quarrying, CCS, radioactive waste storage, geothermal energy, geological survey and geotechnical engineering. Key to the company’s long-term business success has been our ability to guide our clients. We offer our clients constructive, holistic advice on how to best adopt our technology, enabling them to enhance their organisation; maximising not only exploration and production success but also technical efficiency. This can be evidenced by our extensive list of industry leaders who we are proud to call our clients.

FINANCIALS AND MARKET POSITION
Since the very beginning, our financial performance has been outstanding. Petroleum Experts has enjoyed a consistent increase in both turnover and profit. All of our product development is self-financed, which enables us to focus on technical innovation and quality technology; instead of reliance on external funding. Petroleum Experts was awarded Company of the Year 2010 at the SME awards for Scotland and, in 2009, we were awarded Business of the Year for Scotland. In previous years we have won several awards for business growth, including European Business Awards “Ruban d’Honneur” in 2009 as well as the fastest growing technology companies for six of the seven years that Deloitte Fast 50 Awards were run in Scotland.

Petroleum Experts has over 450 clients worldwide. In fact, more than 80% of the revenue comes from outside Europe. Our company is recognised across the international oil and gas industry as the technical market leader within its area of expertise and has been ranked number one in all technical evaluations across the industry for more than eight years.
OUR PEOPLE
One of the reasons that we are the world leader in structural geology is because our specialists and software developers are leaders in their respective fields and strive for excellence. We’re lucky enough to work with a great team of creative, innovative and passionate people – from all over the world – who are key to delivering cutting-edge software, services and training. We have a team of expert geoscientists and engineers, who have a wealth of experience and knowledge between them, ready to offer insight and expertise on any project. Our dedicated software engineers are also exceptionally skilled and ensure that Move continues to be the market leader in structural geology software. And we are all dedicated to your support. Professional and efficient, we make sure all your questions are answered, assist you when you need help and make sure you can get Move up and running with no fuss.

OUR ETHICS
We operate a policy of inclusion and equality. Each member of our team is recruited on merit and technical ability. We expect all individuals to contribute to the decision making process and to help drive the company forward, no matter their role. We encourage communication and cooperation between all teams enabling us to perform at the highest level – both for ourselves and for our clients.
CONSULTANCY

It’s all about reducing the uncertainty in the structural model. We use restoration and balancing techniques to unravel geological evolution and extract unseen information from available data. Our ground-breaking approach minimises technical uncertainty – enabling your organisation to reduce risk in a methodical and cost-effective way.

Our experienced team of structural geologists and petroleum engineers has worked on a wide range of projects both onshore and offshore, on all continents, and in all structural settings. Each project involves input from multiple members of the team and is designed around the specific requirements of the client. We use Move every day as an essential tool in our software development, support and project work.

Our aim is to work in close collaboration with our client throughout the project. Often the knowledge of local geology comes directly from the client and we provide wider insights, techniques and expertise in structural modelling to help answer specific questions about the geological evolution, and reduce the uncertainty in the geological model.

THE SCOPE OF OUR CONSULTING PROJECTS INCLUDES:

- Building geometrically consistent and balanced geological models in 2D and 3D space.
- Testing, validating and improving existing client interpretation using the modelling tools in Move (geometric and kinematic restoration and forward modelling).
- Determining the timing, geometry and kinematics of trap formation, fault movement and salt tectonics.
- Stress and Strain Analysis and Fault Response Modelling.
- Fracture analysis and fracture network prediction.
- Reservoir structure, volumetrics and compartmentalisation.
- Orebody structure and evolution for exploration and mining.
- Fault seal analysis.
- Reconstructing palaeobathymetry and depositional modelling.
- Structural characterisation for mining, including block caving.
- Digital field mapping.

Consulting projects range in duration from a few days to several months and we routinely build-in a component of training and technology transfer so that you are able to replicate the workflows used in the project, and if required, undertake a complete project independently in the future.

If you have a project that you would like to discuss then please don’t hesitate to call us or use the contact page on our website – get the experts on your side.
TRAINING

Learn from our experts and build your knowledge in the application of Move to structural geology.

We offer training courses to suit all levels, learning styles and budgets. These include Structural geology theory training using Move, Advanced Move software training; knowledge transfer workshops, all of which can be delivered in-house if required. The courses are relevant for all geoscientists working in a variety of sectors and can be tailored to both individual and company requirements.

STRUCTURAL GEOLOGY THEORY TRAINING USING MOVE
Normally held in either Edinburgh or Houston, our Structural geology theory training using Move follows a fixed course structure over five days. The course provides an introduction to basic structural geology theory and practice aimed at geologists and engineers. A background in structural geology is not required. The course uses practical exercises and the Move Software Suite as required. It is largely hands-on, introducing the theory and principles underlying the application of structural geology analysis in extractive industries such as oil & gas and mining. The Structural geology theory training using Move course outline and learning aims are shown on the following pages.

For more information on our training courses, visit petex.com/services/training-courses

ADVANCED MOVE SOFTWARE TRAINING
Normally held in either Edinburgh or Houston, our Advanced Move Software Training follows a fixed course structure over two to five days using Move structural modelling and analysis software. It is aimed at geologists with a background in structural geology or individuals who have completed our Structural geology theory training. The course provides in-depth training in all products in the Move Software Suite and is largely hands-on, using exercises and data from our software tutorials with supporting presentations and on-screen demonstrations. The Advanced Move Software Training course outline and learning aims are shown on the following pages.

For more information on our training courses, visit petex.com/services/training-courses
KNOWLEDGE TRANSFER WORKSHOP
We can design a Knowledge Transfer Workshop specific to your needs, showing the most effective application of Move to address your specific workflow requirements. We can provide parts of our basic and advanced courses and data to achieve this and incorporate your own data into the training. Courses can vary in length from one or two days up to five days and can be designed standalone or as part of a consulting project. Generally, a Knowledge Transfer Workshop is split into two parts: the first part focuses on theory and software training in Move, and the second part focuses on client-specific structural geology techniques and workflows, using Move tutorial or prepared client data. If client data is used, and not part of a consulting project, this must be provided in advance of the workshop.

If you would like to discuss a knowledge transfer, please email us at edinburgh@petex.com

IN-HOUSE TRAINING
We can provide any of our training options to you at your company premises. A company in-house training course can include elements of any of our Move software training options outlined above, customised to suit specific requirements.

If you would like to discuss in-house training, please email us at edinburgh@petex.com

TRAINING COURSE COSTS
Courses with a fixed structure delivered in Edinburgh or Houston have prices published on our website. Where courses are tailored to your needs; costs will depend on the length, preparation required and location of training. Please contact us directly to discuss the best option for you and your organisation and to get a quote.

Email us at edinburgh@petex.com

We also maintain close links with university research groups and we are continually looking at ways to invest in the future of new generations of geoscientists.
SUPPORT

Client support is a fundamental part of what we do. All members of our team are involved in client support, whether it’s on the frontline providing a rapid and technically detailed response to queries, or in making sure that our software documentation is of the very highest standard. In addition to one-on-one resolution of client support requests, we provide the Move Knowledgebase as a one-stop-shop for software help, explanation of underlying Move theory and self-instruction tutorials. Once a year, we host a User Group meeting in Edinburgh and invite all of our clients to attend. The meeting provides an opportunity for us to find out how our clients are using Move, and for our clients to learn about the latest developments in the software and to submit development requests; which for attending clients will be tabled and discussed. We also have an annual Technical Meeting in Houston, and smaller meetings globally across the year.

To learn more about our user meetings, please email us at edinburgh@petex.com

MOVE KNOWLEDGE BASE

This resource contains all Move Help Pages, Tutorials, a back catalogue of Move Monthly Features and the release documentation presented in a single, offline, searchable entity, independent of Move. The material is cross-referenced and brings together tutorial workflows with more detailed help topics including algorithm theory and recommendations for tool application and parameter values. The Knowledge Base can be easily updated and made available to our users regularly therefore it is considered more up-to-date than the application help pages. This allows us to improve our teaching material, which is then independent of the Move software release cycle.

TUTORIALS

Move tutorials are based on real datasets and provide users with detailed step-by-step instruction on the best practice workflows recommended by our structural geologists. They cover all functionality in the software. All 36 tutorials can be accessed from the Knowledge Base and from the software download link.

HELP PAGES

The Help Pages allows our users to find everything they need to know about Move. Help topics are linked with relevant tutorials to assist our users to understand best-practice workflows and how each tool is used. Help provides information on the core elements and tools of the Move software, how to navigate the user interface, explains advanced modules for more complex analysis and modelling, and provides guidelines on how to manage a project in Move and how to get the best from the software.

MOVE MONTHLY FEATURES

Move Monthly Features form part of the monthly newsletter issued by Midland Valley. Each month they focus on a topic or key workflow to provide our users with a deeper theoretical understanding of the software, its real-world applications and give tips and tricks to streamline workflows. Past monthly features can be accessed from the Knowledgebase.

To learn more about Move support resources, please email us at edinburgh@petex.com
MOVE SOFTWARE SUITE OVERVIEW

Structural modelling and analysis software for reducing risk and uncertainty in geological models.
The Move suite is the most complete structural modelling and analysis toolkit available. It provides a full digital environment for best practice structural modelling to reduce risk and uncertainty in geological models.

The Move suite provides a platform for integrating and interpreting data, cross-section construction, 3D model building, kinematic restoration and validation, geomechanical modelling, fracture modelling, fault response modelling, and fault and stress analysis. The software is designed by geoscientists working in close collaboration with software developers and enables you to create valid geological models.

Move reduces uncertainty by going beyond static models, which may be no more than an artist’s impression. By addressing time, development of structure, and checking geometric and evolutionary feasibility, you are three times more likely to produce the correct result.*

Move can be applied to any geological province or tectonic setting, including extensional, compressional, and strike-slip basins, as well as areas that have undergone inversion, thermal subsidence and salt tectonics. With the Knowledge Base, we offer our users access to fully integrated help and tutorials. Move is easy to use, bringing your ideas and concepts alive. The software provides you with the tools to check the geometric and evolutionary feasibility of your geological models.

MOVE CORE APPLICATION

Fully integrated 2D and 3D model building and analysis.

Move is the core application of the Move suite and all other modules require it to run. It provides a powerful stand-alone environment for data loading and integration, cross-section construction and 3D model building, and forms the base for our specialist structural modules including 2D and 3D Kinematic Modelling, Geomechanical Modelling, Fracture Modelling and Fault Response Modelling, as well as Fault Analysis and Stress Analysis.

The Move application provides a platform which integrates geo-referenced 2D and 3D views, allowing over 100 different data formats to be combined. The integrated views can be used to construct geologically valid cross-sections and 3D models using manual and automated tools.

The 2D/3D space provides a best practice environment to develop models, which can then be directly tested and validated using the kinematic modules. Orientation plots, cross plots, stereonets, rose diagrams and object property tables can then be used to thoroughly investigate and analyse the model and construction process. Move is used by geoscientists and engineers with the intention of getting maximum value from their data, in any tectonic regime and across a variety of resource industry sectors.

- Multiple data imports including Seismic, GIS, OBJ and ASCII
- Seamlessly integrated 2D and 3D model building
- Cross-section construction
- Attribute and Object Attribute analysis including SCAT
- Section, Map, 3D, and Google Map views of data
- Logical attribute query tool
- GIS Vector data live-stage connection
- 3D PDF export of 3D models and 2D animations
- Import and integrate a wide variety of data types including: digital field data, digital elevation models, seismic data, well and borehole data, geological maps, point clouds and point data, annotated field images, scanned cross-sections, grav/mag and remotely sensed data, ASCII, GIS shape and DXF files.
- Quickly create shaded 2D maps and sections and 3D models in fully geo-referenced space, using automated and manual digitization tools.
- Create 3D surfaces, shapes and volumes from a wide variety of data types.
- Photogrammetry support including the projection and draping of photographic outcrop images on an existing mesh.
- Create and slice 2D sections at any angle and orientation through your model.
- Project data onto sections and surfaces or manually transform objects.
- Condition and check your model and systematically improve its integrity.
- Full attribute analysis with multiple graphical plots including SCAT.
- Update your model in real-time using the Reshape tool to rapidly modify surfaces, whilst maintaining structural geometry.
- Display and analyse well and borehole data efficiently with the Well Track and Well Marker analysers.
- Visualize your data and model with advanced tools, including animation, lighting and the ability to save camera views.
- Create and export MBTiles from Move for use in our digital mapping software, FieldMove and FieldMove Clino.
- Export your data in a variety of formats for further analysis and modelling, including 3D PDF and 2D and 3D SEG-Y.

Use the Move Core application as your platform for the advanced structural modules: 2D Kinematic Modelling, 3D Kinematic Modelling, Geomechanical Modelling, Fracture Modelling, Fault Response Modelling, Fault Analysis and Stress Analysis, and for links to third-party products: Move Link for Petrel®, Move Link for OpenWorks and Move Link for GST.

* Mark of Schlumberger
2D KINEMATIC MODELLING

World-leading forward and reverse modelling tools for validating your interpretation and reducing uncertainty in your geological model.

Our 2D Kinematic Modelling module provides a comprehensive range of tools to build, balance, restore and analyse cross-sections at a local and regional scale. Take into account the importance of geological time and its impact on your decisions on the present-day structure. Kinematic algorithms are used to restore and remove deformation in geological cross-sections. It allows the undeformed state to be defined, while staying true to line length and area balancing principles.

Tools in the 2D Kinematic Modelling module can be used to interactively determine deformation rates, check the geometric and evolutionary feasibility of your model, highlight areas of geological uncertainty and constrain the evolution.

Work in 2D plus geological time. Evolve models backwards and forwards through time and assess the timing of critical geological events such as trap formation, juxtaposition and basin evolution.

- Comprehensive suite of 2D kinematic algorithms
- Interactive tools to help quickly generate balanced sections
- Restore, forward model and analyse sections
- Apply to any tectonic setting including salt
- *New* Area-Depth and layer-parallel strain calculations
- Fault and horizon construction
- Decompaction
- Depth conversion
- Thermal Subsidence
• Use kinematic algorithms for both restoration and forward modelling including:
  - Block Restoration
  - Flexural Slip Unfolding
  - Simple Shear Unfolding
  - Simple Shear Move-on-Fault
  - Trishear (planar and non-planar faults) Move-on-Fault
  - Fault Parallel Flow Move-on-Fault
  - Fault Bend Folding Move-on-Fault
• *New* Elliptical Fault Flow Move-on-Fault
• Include sedimentation, erosion and salt movements.
• Backstripping techniques including compaction, thermal subsidence and isostasy.

• Seismic data and images can be carried through the restoration.
• *New* Preview kinematic calculations for quick sensitivity testing of input parameters when carrying out forward modelling and restorations.
• Test and validate geological interpretations and produce balanced cross-sections.
• Develop realistic fault trajectories and depths to detachment.
3D KINEMATIC MODELLING

World-leading 3D forward and reverse modelling tools to help validate your model, and reduce uncertainty.

Our 3D Kinematic Modelling module uses leading edge kinematic algorithms to validate and restore 3D geological models. Complex geological structures can be restored to identify alternative scenarios in areas of high structural uncertainty. Discover the geological history of your modelled scenario to reveal unseen structures and changing geometries.

This module can be applied to any geological setting including: extensional, compressional and strike-slip basins as well as areas that have undergone inversion, thermal subsidence and salt tectonics.

Forward and reverse model through time in 3D, whilst adhering to line length, area and volume balancing principles. The module will help you construct realistic geological models, which can then be used as the basis for further analysis.

- Comprehensive suite of 3D kinematic algorithms
- Enhanced structural understanding
- Model real-world scenarios
- Predict unseen structures and reduce uncertainty
- Depth conversion
- Decompaction
- Thermal Subsidence
• Work in 3D plus geological time. Evolve models backwards and forwards through time and assess the timing of critical geological events.
• Use 3D kinematic algorithms including:
  - Jigsaw Restoration
  - Flexural Slip Unfolding
  - Simple Shear Unfolding
  - Simple Shear Move-on-Fault
  - Fault Parallel Flow Move-on-Fault
  - Trishear Move-on-Fault
• Model deformation associated with a propagating fault tip using the 3D Trishear Move-on-Fault algorithm. Parameters can be varied along-strike.
• Take into account physical compaction, isostatic and thermal subsidence effects to investigate basin architecture through time.
• Calculate strain for areas and volumes, and save strain attributes for further analysis. This essential output can then be used with our Fracture Modelling module.
• Measure horizon areas and volumes in 3D models using the 3D Model Analysis tool, which allows for quick validation of 3D models. Use this to estimate reservoir volumes, sweet spots and optimise oil and mineral extraction.
• Highlight the timing and significance of critical geological events in 3D.
• Decompaction with isostasy and thermal subsidence.
• Support Lagrangian and Eulerian strain calculations, with Finite or Infinitesimal strain output.
GEOMECHANICAL MODELLING

Physics-based restoration of surfaces and volumes using elastic rock properties.

Our Geomechanical Modelling module uses elastic mechanical properties and physical laws of motion (Mass-Spring methodology) to mimic 3D rock deformation. Rapid modelling based on different geological assumptions can be done by running and saving multiple restoration scenarios with different mechanical properties, pin and fault displacement parameters.

The Mass-Spring algorithm calculates forces on the point masses, which are assigned to the surface or volume vertices (and are connected by simulated springs). These forces govern the point mass trajectories and simulate physical behaviour of the surfaces during restoration, associated with heterogeneous strain. This differs from the approach used in kinematic modelling, where geometric rules govern point trajectories.

- Physics-based 3D rock deformation modelling
- Save scenarios
- Rapid run times
- Strain capture
- Multiple outputs for Fracture Modelling
• Use a flexible workflow to conduct the restoration.
• Model rock deformation using Young’s Modulus and Poisson’s Ratio.
• Define fault displacement cut-offs to close fault gaps on the selected surface.
• Apply boundary conditions: projection to target, restore fault displacements, change area/volume.
• Control how quickly the restoration converges on a solution, and is deemed to be complete.
• Use the strain magnitude captured during modelling as an input for Fracture Modelling.
FRACTURE MODELLING

A tool for creating Discrete Fracture Network (DFN) models from an input geocellular volume and for calculating flow-related properties for the DFN in each cell of the volume.

The Fracture Modelling module generates Discrete Fracture Network (DFN) models from an input geocellular volume. The tool is easy to use and uses a workflow wizard to guide the user through the fracture modelling process.

The tool uses a volume-based approach to create fractures on a cell-by-cell basis with input parameters defined for each cell of the volume. Input parameters are the size (length and aspect ratio), size distribution, orientation (dip and dip azimuth), density, and aperture of fractures. Fractures are discrete rectangular elements and multiple fracture sets can be created simultaneously. After creation of a DFN, the connectivity of fractures in the network can be calculated as well as fracture-related flow properties for each cell, including secondary porosity, secondary permeability, sigma, and fracture intensity.

Combining the Fracture Modelling module with other advanced modules, such as the 3D kinematic modelling, Strain Capture, and Stress Analysis modules allows integrated fracture modelling workflows to be performed. As an example, strain calculated using the 3D Kinematic Modelling module can be used to define input properties for fracture modelling. The mechanical stability of the DFN model can then be calculated using the Stress Analysis module.
• Generate DFN models from a range of input parameters, including:
  - Purely statistical DFN models created from no input properties.
  - DFN models created from properties in each cell of the input volume (e.g. strain).
  - Hybrid DFN models combining statistical and property-based methods.

• Save Fracture Modelling sessions so that previous sessions can be quickly revisited.
• Preview results before running a full simulation allowing for computationally expensive simulations to be identified.
• Filtering of fracture sets for easy visual interrogation of results.
• Save results as discrete fracture objects, either as sets or as individual fractures.
FAULT RESPONSE MODELLING

Boundary element modelling to simulate displacement on faults, and geomechanical analysis of surrounding fracture systems.

The Fault Response Modelling module is a highly versatile tool that can be used to validate your interpretation, identify highly fractured zones and realistically model stress perturbations around faults and other discontinuities.

The module considers mechanical properties to reproduce fault-related deformation and provides a quantitative assessment of the surrounding fracture system. Faulting is simulated using a boundary element method with triangular elastic dislocations. This approach allows complex faulting scenarios to be quickly tested and evaluated.

Strain and stress fields calculated using this approach, or derived from the Strain Capture tool in Move, can be used to predict fracture orientations and relative intensities. Resolving the shear and normal stress components allows failure potential of individual fractures and nearby faults to be assessed.

- Calculate the displacement on faults from a regional stress field
- Compute and visualize displacement, strain and stress induced by faulting
- Predict spatial distributions of sub-seismic fault and fracture systems
- Assess the reactivation potential of faults and fractures
• Ability to model a wide range of scenarios; displacement on faults can be individually defined or calculated from a user-defined regional stress field, with the ability to model strike-slip, dip-slip or opening/closing components of displacement.
• Complex geometries of faults and other discontinuities can be modelled, including enclosed bodies like salt diapirs and igneous intrusions.
• Displacement, strain and stress are calculated at observation points in surrounding rock volume with defined elastic and mechanical properties.
• Shear and normal stress components can be calculated for fault and fracture systems.
• Relationships between shear and normal stress can provide information about fracture intensity, mode of failure and reactivation potential.
• Optimal fracture orientations can be derived by using the shear and normal stress components to identify the fractures with highest Coulomb Stress.
• Fracture sets can be filtered based on fracture stability and Coulomb Stress failure, allowing the fractures exceeding the failure criteria to be easily visualized.
• Different fracture sets can be generated and compared to the orientations of real fractures.
• Pressure perturbations around reservoirs can be simulated by calculating the displacement induced by pressure acting on a triangulated surface.
• The Boundary Element Modelling approach provides rapid results, and the ability to model multiple scenarios quickly.
FAULT ANALYSIS

Quantitative analysis of fault throw, juxtaposition and seal through geological time.

A tool for rapid evaluation of throw distribution, across-fault juxtaposition and fault sealing capacity in 3D. Combined with statistical analysis of fault displacement and scaling relationships, the tool provides powerful validation of geological interpretations.

Uniquely, the module can be integrated with restoration workflows using MOVE’s 3D Kinematic Modelling and Stress Analysis modules to provide a complete temporal fault displacement and seal investigation. This workflow delivers key information on potential baffles or conduits to flow at the time of hydrocarbon generation and migration. The sealing potential of faults and joints encountered in a wide range of mineral and ore systems can also be investigated using this approach.

- Complete temporal fault displacement and seal analysis.
- Visualize throw, juxtaposition and shale gouge ratio on fault surfaces.
- Statistical analysis of fault scaling properties.
- Quantify the potential impact of uncertainties in your input data.
• Create hanging wall and footwall fault cut-offs highlighting interpretation inconsistencies and allowing subsequent analysis.
• Plot 3D throw colour maps and create 2D strike projections (throw profiles) for multiple faults.
• Define lithologies and Vshale in the Stratigraphy and Rock Properties database to create juxtaposition diagrams and plot shale gouge ratio in 3D.
• Statistically analyse fault scaling properties, including throw/length and cumulative frequency.
• Calculate heave polygons for all faults and horizons in a model.

• Create instantaneous fault-growth curves to review movement history of faults.
• Restore model to analyse palaeo-juxtaposition and fault sealing.
• Create triangle diagrams that account for across-fault thickness variations, or using two wells.
• Rapidly run multiple model iterations to quantify risk based on input uncertainty.
• Interrogate distributions of possible outcomes, and visualize aggregate statistics, distribution percentiles and probabilities of specific outcomes across a fault surface.
STRESS ANALYSIS

A tool for quickly evaluating the geomechanical response of geological features to stress field scenarios, such as present day or paleo-stress. Additionally, a tool for inverting stress fields from lineation data and loading micro-seismicity data for integration with other data in Move.

The Stress Analysis module is a tool for assessing the geomechanical response of geological features (e.g. faults and fractures) to an applied stress field. The orientation and magnitudes of the principle stress axes are easily defined in the tool, either manually in the toolbox or interactively in the stereonet. Stress magnitudes can be set as linearly increasing with depth or variable. Stress Field scenarios can be saved to objects, allowing for quick scenario testing. Once a stress field is defined, the effect of the stress field can be rapidly visualised and evaluated, both graphically and in 3D. Filtering of the results can be used to identify areas of greatest mechanical instability, which might indicate sweet-spots or reveal potential migration pathways or spill points. The tool has many applications in the hydrocarbon, mining, CO2 storage, and engineering sectors.

- Visualisation of geological features (planes and lineation’s) on a stereonet and Mohr diagram.
- Definition of a tri-axial stress system ($\sigma_1 > \sigma_2 > \sigma_3$), with depth-dependent stress magnitude and pore pressure.
- Calculation of mechanical stability parameters (e.g. slip tendency and fracture stability) of features under any applied stress.
- Colour and visualise the mechanical stability of features in 3D.
• Freedom to define any stress regime scenario and a Mohr-coulomb failure envelope suitable for the material being investigated.
• Visual display of shear and normal stress values when moving the cursor over the stereonet plot.
• Colour mapping of the stereonet plot and Mohr diagram for each stress attribute allowing easy assessment of likely unstable orientations.

• Compute stress attributes for slip tendency, dilation tendency, fracture stability, slip stability, retention capacity and leakage factor of planes and lines.
• Inversion of fault kinematic indicators to derive a regional stress state.
Move Link for Petrel provides a means for Petrel users to share data with Midland Valley’s structural modelling and analysis software suite.

- Once data is in Move, it is possible to perform the full range of restoration, validation, balancing and advanced structural modelling workflows.
- Achieve fast, direct transfer of data from Petrel to Move and back again.
- The Petrel input data tree and model data tree navigation are fully integrated inside Move.
- Interactively add and remove data objects from the session, even if the connection between Move and Petrel is closed.
- Provides support for grids, surfaces, point set, triangle mesh, fault sticks, fault and horizon interpretation, fracture sets, 2D/3D seismic data and wells including markers.
- Automatically detects changes to geometry and attributes and allows these to be saved back to Petrel.

Move Link for OpenWorks lets Move users import their data directly from a Landmark OpenWorks R5000 data store.

- Validate your models without the need to export ASCII using the Move Link for OpenWorks.
- Achieve fast, direct transfer of data from R5000 to Move.
- Interactively add and remove data objects from the session.
- Pull a subset of objects from R5000 via a Move standard tree view.
- Supports geometry and attributes.
- Provides support for data types including faults, grid surfaces, horizon 2D data, horizon 3D data, 2D/3D seismic data and well tracks.
- Provides a detailed OpenWorks model description and attributes output.

Share project data across your organisation using the Move Link for GST (Geosciences in Space and Time).

- Fast retrieval of features based on spatial locations, geometry type and schema.
- Supports point, line, polygon, mesh and volume data.
- Features retrieved from GST are fully integrated with standard Move tools.
- Edits can be saved back to GST storage or kept within Move.
- Using full or partial locking, multiple users can make and save changes at the same time.
- Changes to GST features made by other user’s can be applied to update existing Move documents with a single click.
- Data is held securely within corporate database systems and can be shared with other Move users or via GST Desktop and Web Interface.
DIGITAL FIELD MAPPING

Collect data in the field ten times faster than with traditional methods with our two applications for field geologists.

FIELDMOVE CLINO
for smartphones (Apple and Android)

More than a digital compass-clinometer, you can also capture and store geo-referenced text notes and photographs. It’s free and in the iOS version you can create lines and polygons while you are in the field.

FIELDMOVE
for tablets (iOS, Android and Windows)

NOW FREE! All of the functionality of Clino, but for larger screens. You can also create sketches, annotate photographs and edit linework.

AVAILABLE TO DOWNLOAD FROM THE FOLLOWING APP STORES