

SPOTLIGHT

Welcome to the winter issue of Oasis Spotlight. These newsletters are designed to keep you up-to-date with news about the Oasis community.

This quarterly issue features an article on our partnership with Equinix, an article on the central feature of Oasis, its Financial Module, plus an update on new members.



SPOTLIGHT ON EQUINIX

Oasis is proud to work in alliance with Equinix, the world's largest provider of colocation and interconnection services.

Working with Oasis during 2015, Equinix and its partners will support implementations of the ARA hurricane model, the Lloyd's Middle East earthquake model, and other models under the banner of the Oasis Solutions Project (OSP). [Read more >](#)

Insurance Day London Market award

Amidst the glamour and glitz when the great and good gathered for the Insurance Data Awards on 4th December at the Lancaster Hotel, Oasis Loss Modelling Framework was awarded "Technological Initiative of the Year". This follows our earlier award of "The Innovation of The Year Award 2014" from The Reactions magazine so is double recognition by the industry of the innovative impact of Oasis. Many thanks to all who have helped us on our journey.



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A year of transformation

Cat modelling has seen some big changes already in the past couple of years, with Touchstone, RMS (One), WorldCat Enterprise, Elements and Risk Insight all with new versions, and of course Oasis bursting on the scene. Where is this "next gen" going and what will 2015 bring?

We believe it will look very different this time next year. The new Oasis in-memory engine will deliver blistering speed and a new "business front-end" will be adaptable to many business workflows and provide access to any models running in many Oasis instances. There will be many operational models working, and a keen debate over what "high precision" models mean for underwriting and capital-setting.

If you are members, hold tight for the ride but, if not, join Oasis (free to non-insurance entities) and surf the wave of change.



The development of the Oasis Financial Module has been driven by the 'Financial Module Working Party' of representatives of the Oasis community, and designed around actual examples provided by this expert group, ranging from simple single-site residential policies to complex reinsurance treaties.

This information has now been published on the open web (<http://www.oasislmf.org/the-toolkit/documentation/>) to invite more examples, contributions and comment.

The key design features of the Oasis Financial Module are:

- **Non-parametric probability distributions.** Event intensities and damage responses can show significant uncertainty, sometimes multi-modal (that is with multiple peaks rather than just a single central peak of probability). The associated values can therefore vary, and be represented as probability distributions rather than simple point values. Oasis makes no assumptions about these probability distributions and instead treats them as probability masses in discrete bins, such as the bins [0,0] for no damage and [1,1] for total damage.
- **Monte-Carlo sampling.** Insurance practitioners are used to dealing with losses arising from events. These losses are numbers, not distributions, and policy terms are applied to the losses individually. Oasis adopts the same perspective, which is to generate individual losses from the probability distributions by "Monte-Carlo" sampling using random numbers (as if from a roulette wheel). This not only reflects our insurance experience but means we can apply with confidence the often highly non-linear and complex policy conditions to the sampled losses as if they were actual claims.
- **Correlation of intensity and damage across coverages and locations.** Correlations are typically modelled between locations and between coverages:
 - For **locations**, the most obvious correlation is that variations in intensity are likely to be lower for adjacent properties and independent if they are far apart. Vulnerability might also be correlated locally if systemic variations in building practice due to the same builder.
 - For **coverages** at a single location, damage may be correlated between, say, buildings and contents. Models often just fully correlate by using the same random number to sample the distributions for coverages at a property. A more sophisticated way is to use pairwise correlation coefficients derivable from claims data. Another way is to take a primary distribution such as buildings, sample that and then apply a value for the damage to another coverage. Another route is to extend the conditional calculation by allowing a probability distribution depend on the primary distribution - for example, business interruption can be modelled as a probability distribution conditional on buildings and contents damage.
- **Data-driven application of Insurance Terms and Conditions.** As with calculations of ground-up losses, Oasis uses an agnostic (i.e. independent of business or model) data-driven (i.e. data determine the logic paths) approach. Whether insurance or reinsurance the variations and complexities are endless and the "data driven" design supports a very wide range of such variations. For insurance there are in general three types of process – (a) aggregate to a "level"; (b) apply rules to determine the element of loss that is insured; and (c) back-allocate to lower levels ready for the next "level" aggregation. Reinsurances are more complicated as they can have benefitting inuring policies. The modelling of unli reinsurance programmes is not covered in Release 1 of Oasis but, having said that, many layered facultative reinsurances and treaties without inurings can be treated in the same way as insurance policies.

Member update

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Welcome to new Members and Associate Members since our last newsletter

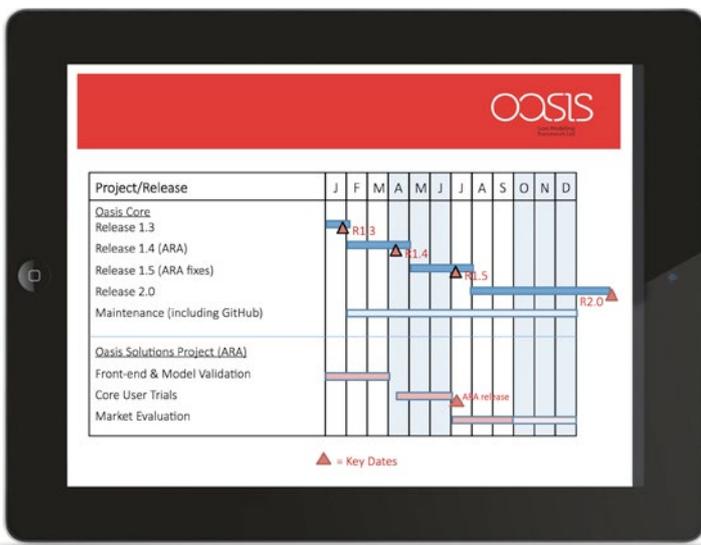
MEMBERS

- Argo Managing Agency Limited
- Ark Syndicate Management Limited
- Ascot Underwriting Limited
- Axa
- Barbican Managing Agency Limited
- Beazley
- Brit Syndicates Limited
- Canopus Managing Agents Limited
- Chaucer Syndicates Limited
- Gen Re / Faraday
- Hardy (Underwriting Agencies) Limited

- Mitsui Sumitomo Insurance Underwriting at Lloyd's
- QBE Underwriting Limited
- R&Q Managing Agency Limited
- Starr Managing Agents Limited
- W.R.Berkley Syndicate Management Limited
- XL London Market Limited

ASSOCIATE MEMBERS

- CATEX
- COMBus
- Finity
- L and T Infotech
- NCAR
- Pitney Bowes Software
- RedPavia
- Taylor Fry Consulting Actuaries
- University of Adelaide



Oasis Plans 2015

Oasis has two streams of activity in 2015 - Oasis Core for system releases, and the Oasis Solutions Project (OSP) to deliver the ARA hurricane model, HurLoss. Only Oasis Core is strictly within the remit of the Oasis Board, while a separate solutions company, Oasis Palm Tree, delivers OSP.

OASIS CORE RELEASES

- **R1.2** will be enhanced throughout the period to R1.5.
- **R1.3** (February): in-memory version (C++/C) with model data security using APIs. This is really a "beta" release for OSP and most users should stay with R1.2 (released in October 2014).
- **R1.4** (April): OSP-related fixes coming from system testing and performance benchmarking (in Q1).
- **R1.5** (July): the main release of the year where R1.2 (SQL-based) and R1.3/4 (in-memory version) are combined to deliver the main 2015 solution for Market evaluation.
- **R2.0** (2016): Release 2.0 is a different system which supports period rather than event calculations (e.g. for seasonal or aggregate policies) and unli reinsurance structures.

OASIS SOLUTIONS PROJECT (OSP)

- **System Development (Q1)**: continuing the development started in Q4 2014 of the in-memory version of Oasis, APIs to work with the ARA model, and the new Business Front-end which will be designed through a Lloyd's user group. This stage also includes development of "good practice" Model Validation within the Lloyd's Market and benchmark test datasets.
- **Core User Testing (Q2)**: working with a select few Lloyd's Managing Agents to test the system thoroughly before Market Evaluation.
- **Market Evaluation (Q3)**: full-scale testing throughout the market (and also non-Lloyd's entities as decided by Lloyd's) to evaluate the value of the ARA model used through Oasis and a new Business Front-end system. We also expect several commercial providers to have developed alternative, but not free, front-ends.



Software update

In order to deliver models in 2015, Oasis is undergoing some radical changes "under the bonnet". R1.2, just released, includes support for clustered SQLServer and a more efficient way of computing the Monte Carlo samples using "wide tables" but is still a SQL-based calculation. R1.2 is being refactored (i.e. cleaned up) and will remain the principal release through to R1.5 in July. In the meantime, R1.3 and R1.4 are dedicated to the high-performance in-memory Kernel which simplifies the existing SQL-based Kernel.

With OSP offering user evaluation of some industrial-strength models in Q3/4 2015, it is perhaps worth summarising the options available to deploy Oasis:

1. For small models, Oasis is designed to run on a Windows laptop or Mac with all tiers accessible within the same machine using MySQL or SQLServer.
2. For large models, there are at least options which are not exclusive:
 - Large Massively Parallel Processing (MPP) appliances like Netezza. These act (optionally) as compute engines but mostly as data stores supporting the main compute.
 - SQLServer estates, used directly as a cluster or as a back-end data store.
 - Industrial scale mid-tier processors (e.g. Xeons with 64 hyper-threaded cores and up to 1Tb of memory).
3. A possible option to be explored is combining the industrial mid-tier processors handling the in-memory calculations with back-end Hadoop data stores for extensible processing capacity. This may turn out to be the most attractive architecture in price/performance for many insurance businesses in 2016/2017.

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Spotlight on Equinix



Equinix provides colocation and interconnection services across more than 100 data centres globally. We now support more than 4,500 customers that choose to deploy critical IT business systems with us, and connect them to their customers and supply chain partners world wide.

Through our global platform of International Business Exchange™ (IBX®) data centres, spread across 32 markets in 15 countries, covering the Americas, EMEA, and Asia-Pacific, we aim to offer businesses a high quality colocation service delivered on a consistent basis regardless of location, where they can safely and reliably house IT operations and securely exchange critical information between respective counterparties.

We do this by concentrating on what we do best – operating data centres and ensuring they are connected to the maximum number of carrier networks possible, rather than offering numerous additional products such as fully provisioned managed services. Such offerings can be purchased from our huge network of world-class service providers to achieve the exact mix of managed service and contracting arrangements a customer requires.

From an Oasis perspective, Equinix can help both the project and its members in a number of ways:

1. Equinix has established a specialist insurance colocation and interconnection team, based in London, that leads the company's involvement with the industry, yet operates globally through designated staff and partners.
2. Our global footprint means that we are almost always already on the ground wherever there is a major centre of insurance activity, or emerging insurance market; including London, Frankfurt, New York, Dubai, Brazil and Singapore etc.
3. Our vertical approach enables us to gather communities of interest together to produce solutions that are directly related to actual challenges that insurers are experiencing.

As an example of this, we recently completed a project to move the operation of AIR Worldwide modelling systems to cloud operation. Assembling a partnership of service providers and insurers to build an functioning colocation environment from which the new cloud technology could be tested as a proof of concept (PoC)

This involved:

- A managed service supplier to build and operate the infrastructure
- AIR Worldwide themselves for the modeling software
- A hardware supplier to provide the appropriate hardware
- An underwriting test partner, drawn from the London Market

The PoC was conducted entirely free of charge to the testing partner, and has resulted in a tried, tested and operating solution, now being sold as a commercial product.

As a result of our recent efforts, Equinix data centres are now home to various London Market organisations and global insurers, including a central body, two Lloyd's Syndicates, two international reinsurers, a top-five broker and various companies providing IT services to the Insurance Market.

This growing insurance footprint is enabling Equinix to become involved in the areas where we can deliver greatest value to insurers - through service interconnection and access to new IT services such as cloud technology.

Equinix is working hard to give our customers safer and smarter interconnection options, as well as enabling direct access to multiple cloud service providers, bypassing the public internet by leveraging our 'cloud connect' cross-connect product, the 'Equinix Cloud Exchange', and our new access route, 'Performance Hub'. These Ethernet-based technologies improve performance and security, while reducing costs, and are ready to play a major role in the effective delivery of the modeling service Oasis is facilitating.

In Oasis terms, this will allow us to assist our customers in their design of modelling architectures, taking the risk and performance issues of Internet connectivity out of the equation. Insurers can then experience all the benefits offered by cloud technology within a secure and safe data centre environment, near to where their business offices and end users are.

Equinix firmly believes that cloud computing's software, platform and infrastructure-as-a-service (SaaS, PaaS and IaaS) solutions can be used in a secure fashion if they are implemented correctly, as part of a balanced IT infrastructure model, with securely controlled connectivity and access. Such implementation allows access to private or hybrid cloud, as well as direct connection to public cloud service providers, including leading players such as Amazon and Microsoft. This approach will allow Oasis customers to leverage the power of the cloud to get maximum efficiency from their modelling investment.

Finally, and in order that insurers can maintain complete choice in the way that they host and operate their models, Equinix can also facilitate connectivity to dedicated hardware if so desired

In conclusion, Equinix strongly believes that the insurance market, a market that is already a natural ecosystem, will derive huge benefit from development of a true digital ecosystem making it easier and more effective to transfer data between market stakeholders.

Equinix will use its experience from the world of capital markets to help drive this digital economy into the world of insurance, but at the same time, through its experienced market professionals, Equinix will always remain mindful of the painful lessons of the past to develop and encourage effective yet workable proposals for the market.

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Welcome to our new Community Manager

I would like to introduce myself, my name is Julia Arevalo and I recently joined the team as a Community Manager.

As a Community Manager I am responsible for keeping our website up to date and making sure all our members are informed about opportunities and developments in the Oasis community and keep you aware of the latest news, meetings and events.

What would you like to see from our newsletters in future? Please email me with your thoughts and ideas (julia.arevalo@oasislmf.org).

In the meantime I hope you enjoyed this edition.



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We would like to take a moment to express our appreciation for your business and let you know that we look forward to continuing to serve you in the coming year. As you celebrate this season of joy and peace, know that we send the warmest of wishes your way.

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*Season's
greetings*