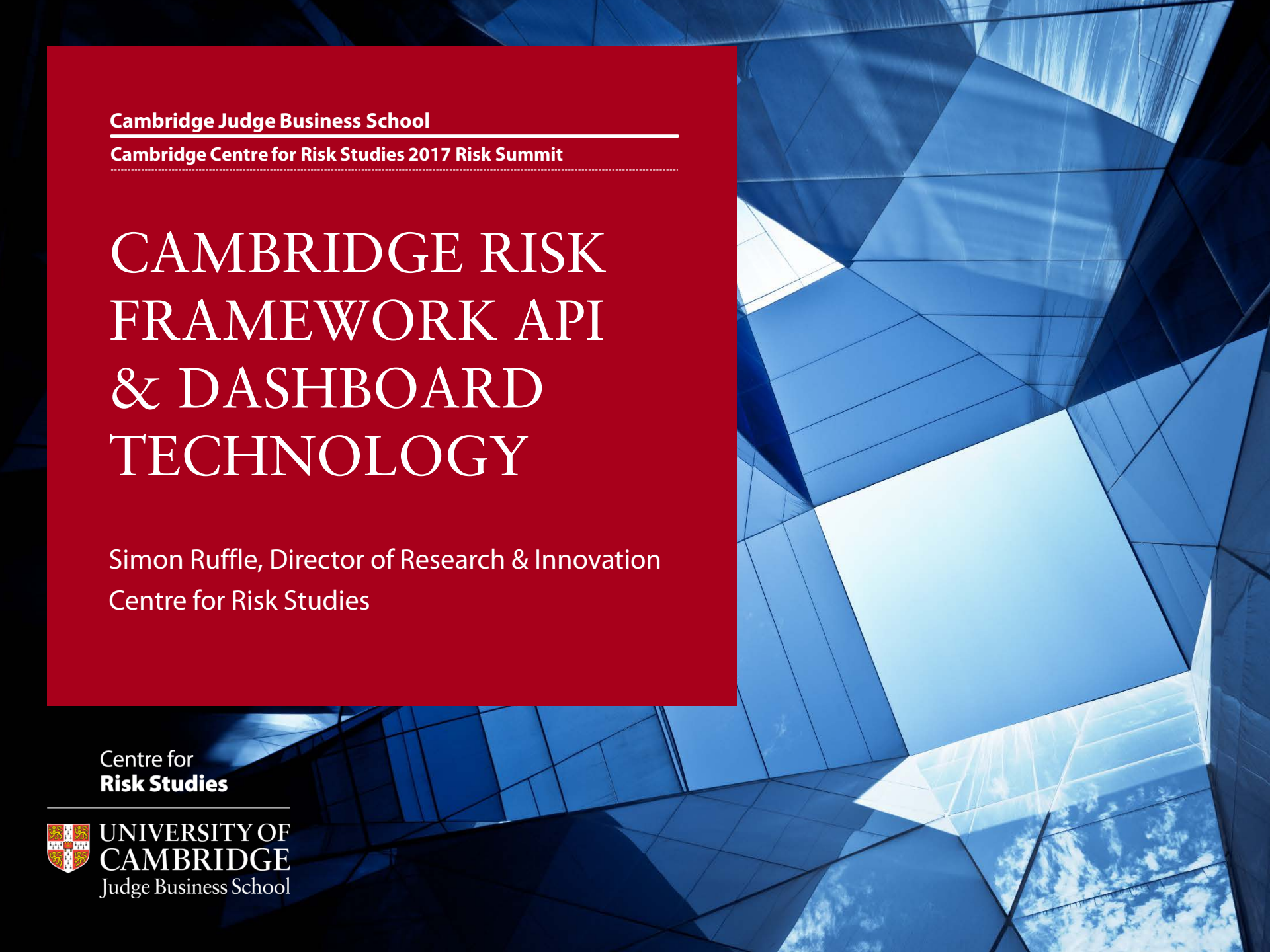
Cambridge Judge Business School

Cambridge Centre for Risk Studies 2017 Risk Summit

CAMBRIDGE RISK FRAMEWORK API & DASHBOARD TECHNOLOGY

Simon Ruffle, Director of Research & Innovation
Centre for Risk Studies



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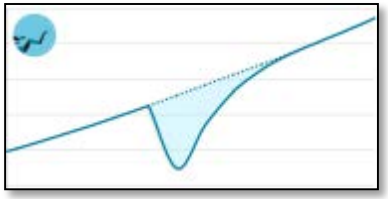
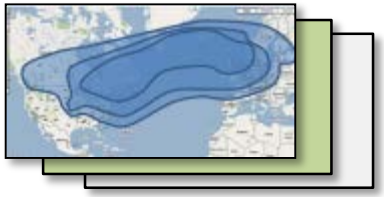
Project Pandora for Integrated Risk Assessment

Threat Maps

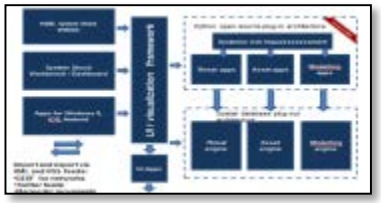
Risk Models & Output Data



Scenarios

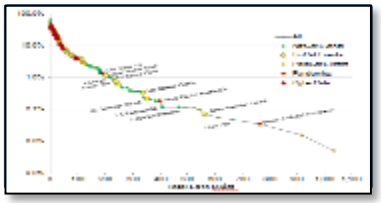


Software Platform (Cambridge Risk Framework)



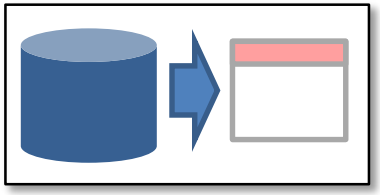
Exposure Data

Use Cases – Business Applications



Network Models

Private Portals, APIs and modeling interfaces



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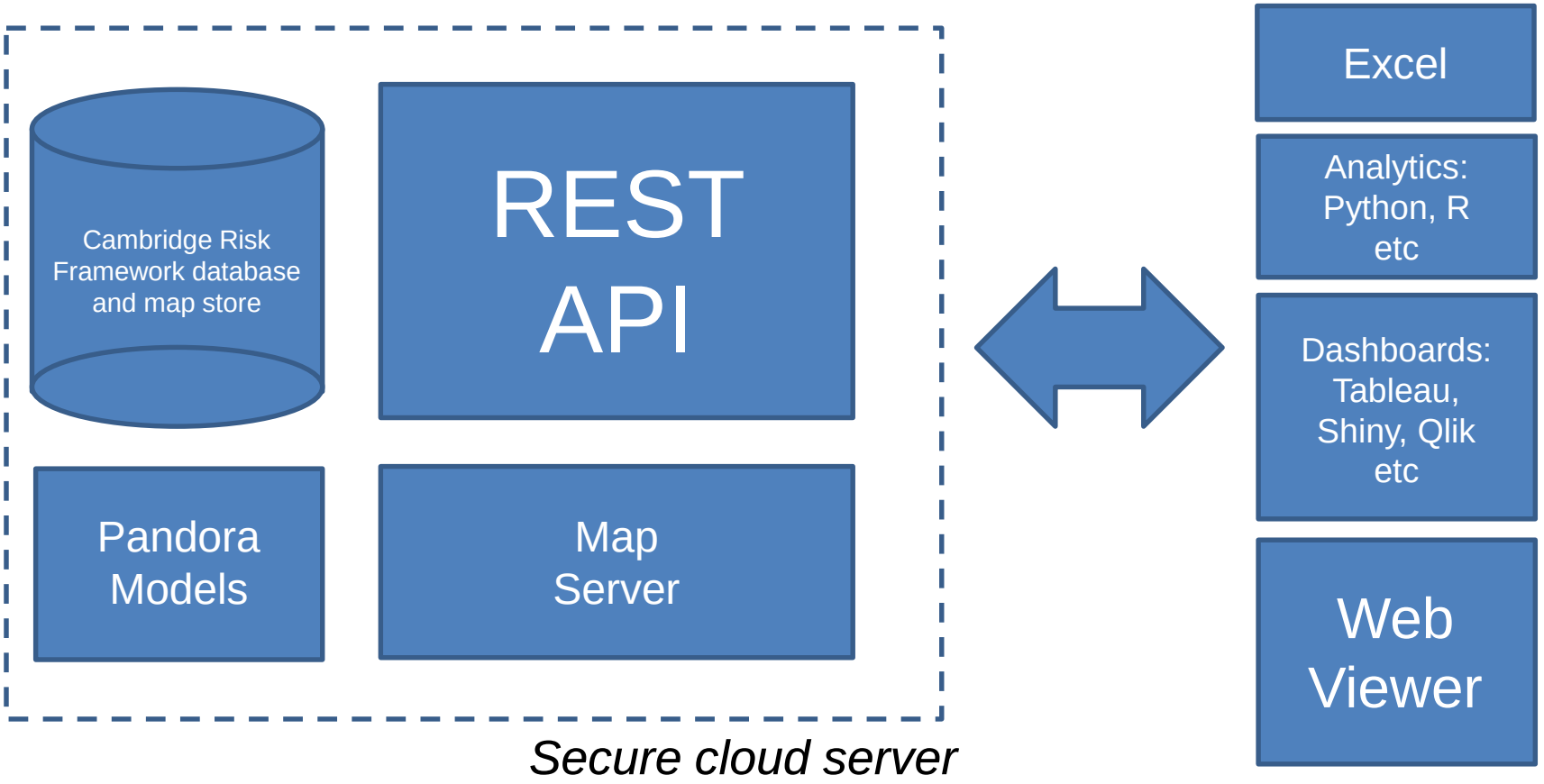
Cambridge Risk Framework



REST API Endpoints

Use of standards-based way of separating front and back-end functionality

General Purpose Endpoints		
API Root	/	The top level of the API which does not return any data.
Extended User	/extendeduser	Gets information about the current logged in user.
Data Version	/dataversion	Describes the different data versions available. Returns an identifier for the default Global GDP@Risk model run that is included in all Pandora systems.
Photo	/photos	Provides a database of images.
Meta Data	/metadata	Accesses the metadata information system.
Meta Data Query	/metadataquery	Accesses the metadata information system through a hierarchical query, designed for context help.
Log Out	/logout	Utility for logging out of a Basic Authentication session on a browser.

Endpoints for Portfolio Data Management		
File Upload	/file_upload	Manages CSV file upload to the Pandora system. Files can be uploaded, downloaded and deleted.
Portfolio	/portfolio	Used in conjunction with Portfolio Nodes and Edges, this offers an alternative to File Upload using REST POSTs, not physical files.
Portfolio Nodes	/portfolio_nodes	Allows creation, inspection, alteration and deletion of individual Portfolio Node records.
Portfolio Edges	/portfolio_edges	Allows creation, inspection, alteration and deletion of individual Portfolio Edge records.

Endpoints for the Global Risk Index		
Pandora Threats	/pandora_threats	Describes the 22 Pandora threat types
Run Model	/run_model	Runs the Pandora model across a given portfolio.
Portfolio Nodes Results	/portfolio_nodes_results	Portfolio node results generated by a model run.

Endpoints for Trillion Dollar Scenarios		
Events	/events	Lists and manages the Trillion Dollar Scenario event set. Used to upload scenarios.
Local Impact Severity Event Group Nodes	/local_impact_severity_events_group_nodes	Defines the “footprint” of scenarios in terms of city LISs. Used to upload scenarios.
Local Impact Severity Event Levels	/local_impact_severity_event_levels	Describes the Local Impact Severity (LIS) levels (CY1, CY2, etc.), along with a text description.
Local Impact Severities	/local_impact_severities	Losses for each city for each LIS for a given model run, i.e. for a given portfolio.
Event master view nodes	/event_master_view_nodes	Trillion Dollar scenario losses by city by LIS for a given model run, i.e. for a given portfolio.
Exceedance probability	/exceedance_probability	Provides data representing points on an exceedance probability curve for a given model run, i.e. for a given portfolio.

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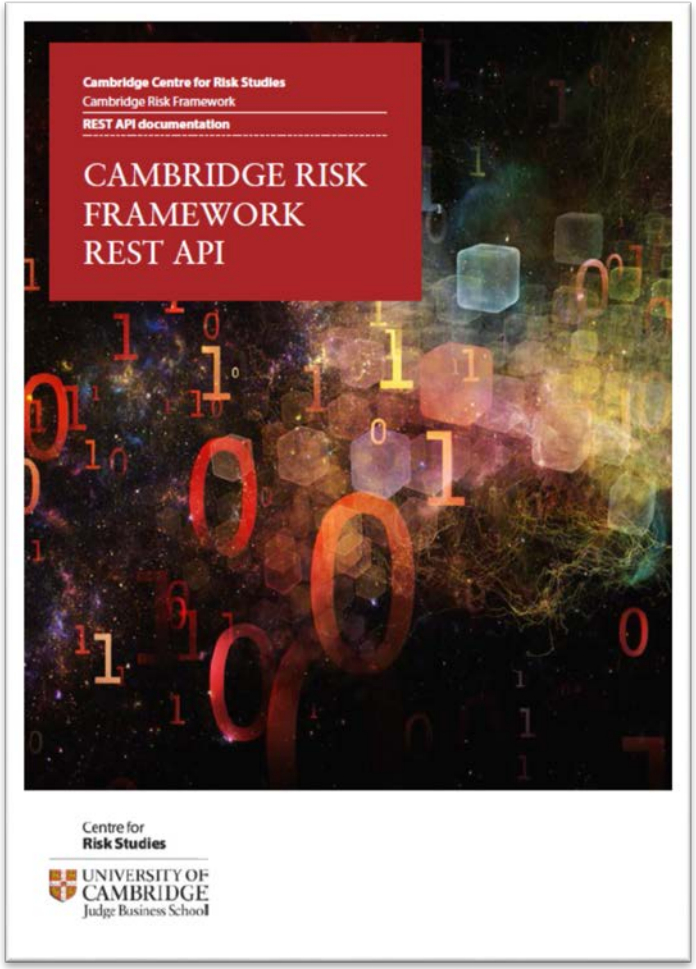
https://pan-api.cambridgeriskframework.com

REST API Functionality

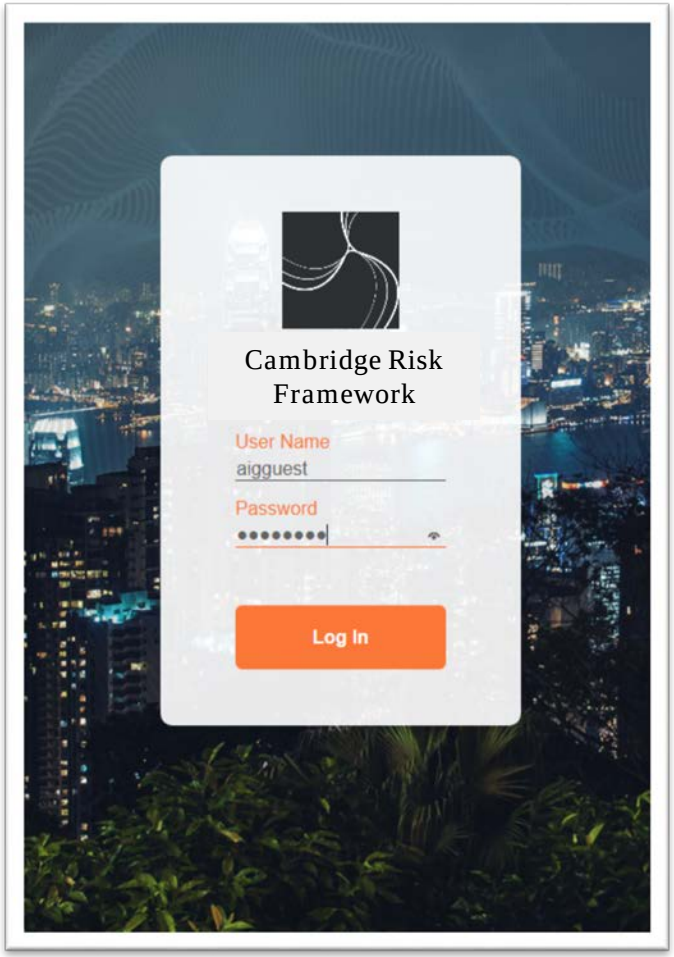
- Upload portfolio of locations
- Run models
- Read results datasets
  - City Risk GDP@Risk
  - Local Impact Severities (LIS)
  - Trillion Dollar Event Set
  - Exceedance Probability (EP) Curves
- Access to underlying model parameter tables
- Manage data – create, edit, view and delete
- Download to Excel
- Advanced technology
  - Secure user group based access over encrypted link (https)
  - Industry standard REST protocol
  - Browse-able API for development
  - Cloud based



Full documentation and coding examples for Python and R available online

Web Viewer Online Interface Functionality

- Upload a schedule of locations with revenues
- Run a model chosen from
  - Supplied models such as
    - 2017 – 2026 10 Year Pandora Model
    - 2017 – 2019 3 Year Pandora Model
  - Custom Model
- View results in a web based work environment (dashboard)
- Download results to Excel
- Share dashboard with colleagues



Pandora

Secure | https://pan-api.cambridgeriskframework.com/portal/index.html

Data

Upload revenue data for world cities, so Pandora can model, analyse and run reports.

Upload GDP Data

Models

With uploaded data select the Pandora model you would like to run on your data.

Run Pandora Model

Reports

View maps and EP curves of your Pandora data to gain valuable insight.

View Pandora Report

Pandora

GDP@risk for 301 major world cities from 22 emerging and natural threats.

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Pandora

https://pan-api.cambridgeriskframework.com/portal/index.html

Data **Models** **Reports**

Input Export Mode

Global Risk Index 2017

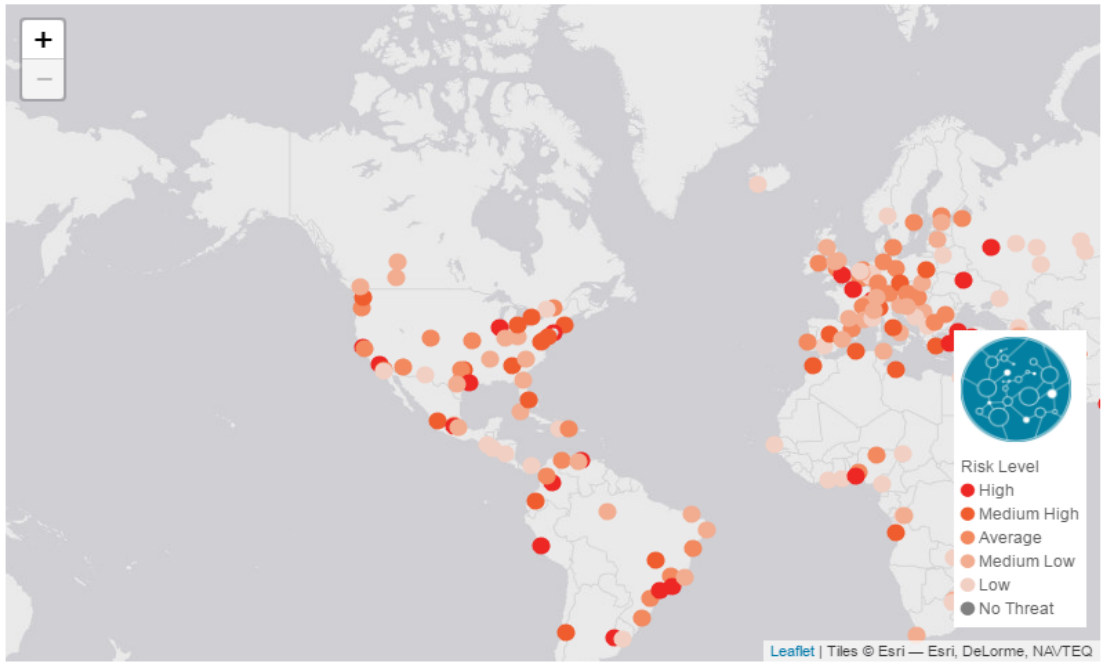
New York

All Threats

New York GDP@Risk All Threats:
$93.240 B

New York Rank All Threats:
7th of 301

Global GDP@Risk All Threats:
$5.545 T



Total GDP at risk of all threats

Taipei

New York GDP at Risk

Market Crash

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Pandora

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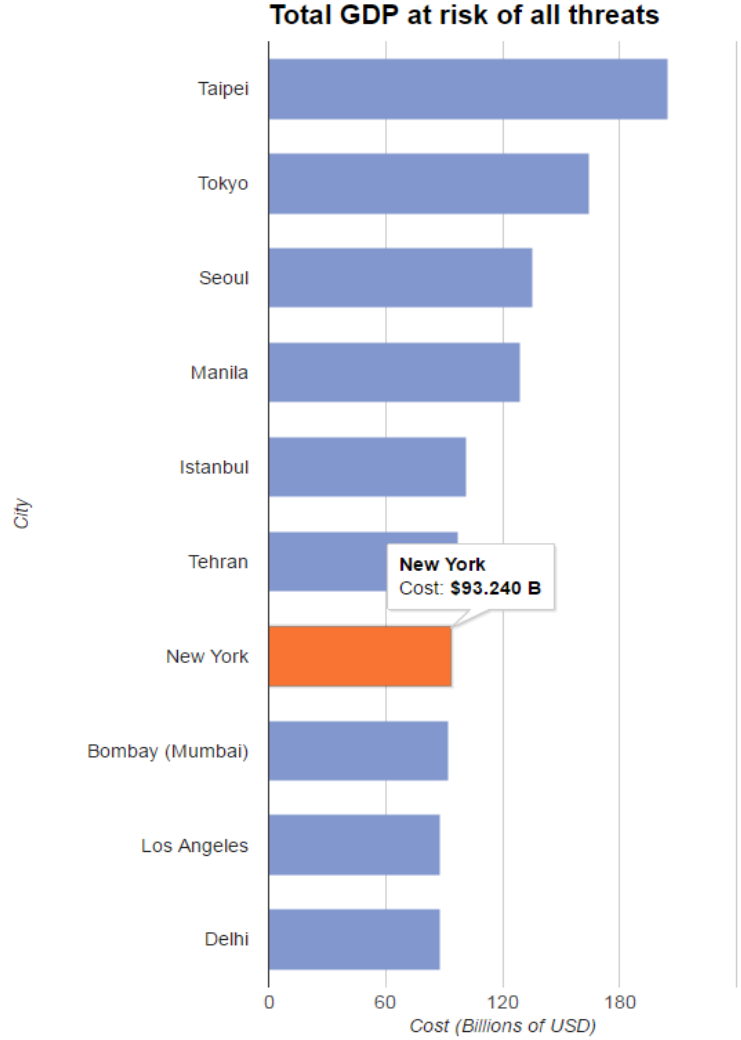

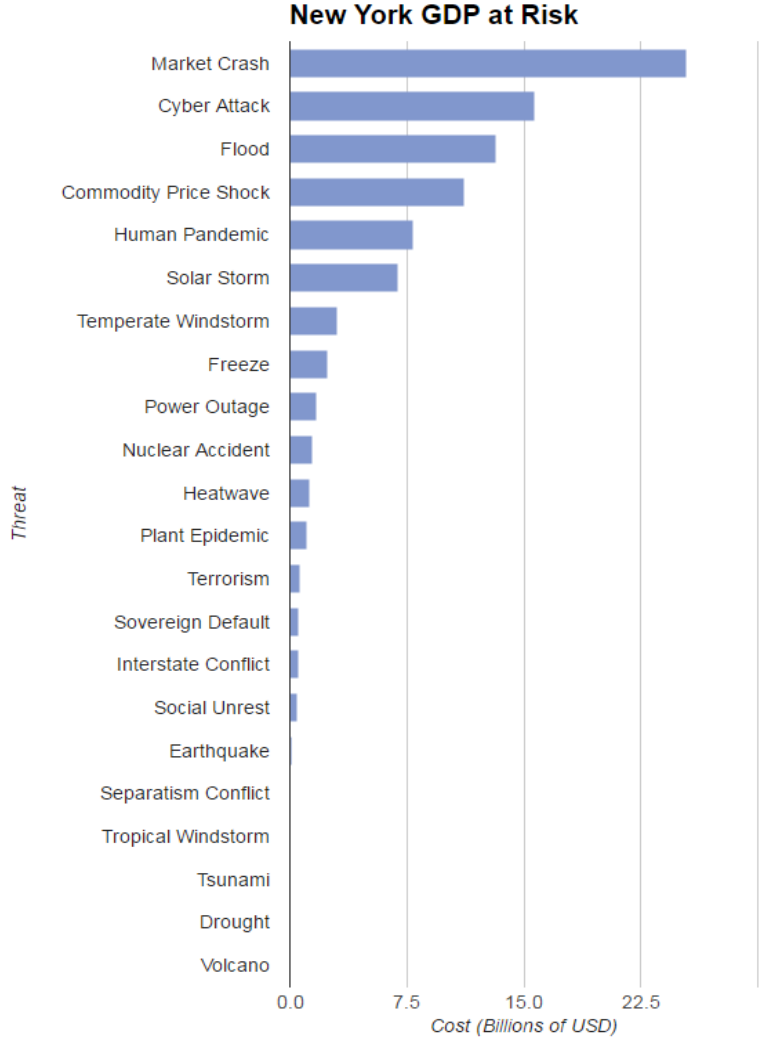

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Pandora

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Data **Models** **Reports**

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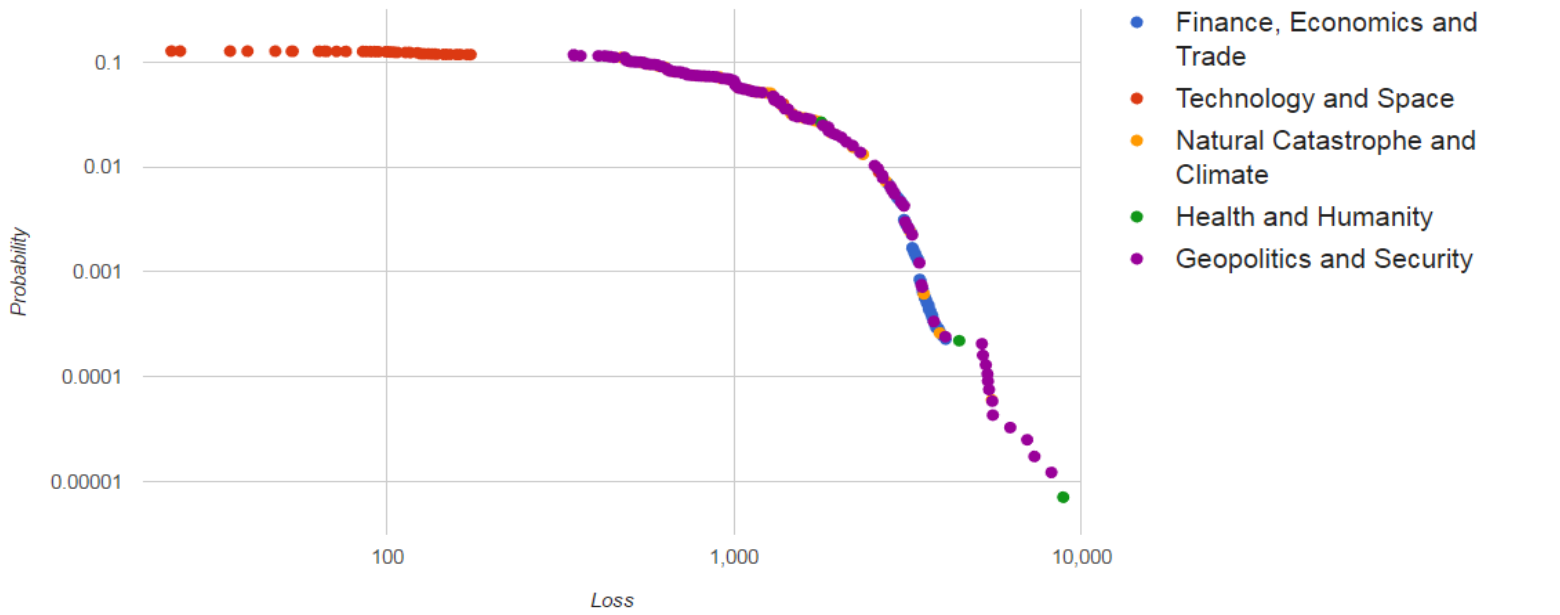

Loss range: $0 - $8894

(Billions of US Dollars)

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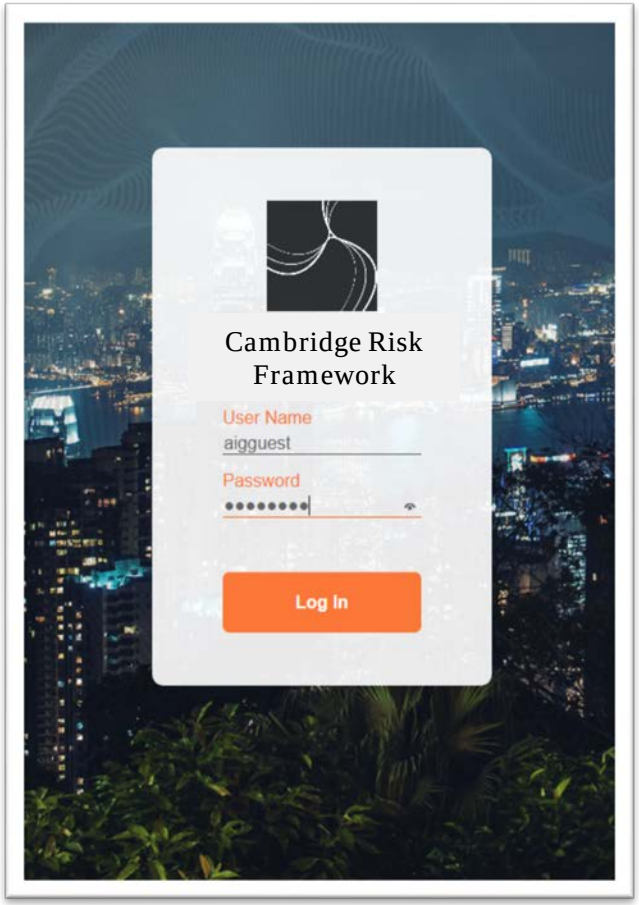
Release of the Cambridge Risk Framework

- 2018 Cambridge Global Risk Index to be hosted on the Cambridge Risk Framework
- Cambridge Risk Framework to feed Lloyd's World City Risk Index 2018
- Use cases for individual collaborators
- Future activities
  - Integration into collaborators' internal systems
  - Managing workflow
  - Designing user experience



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