

# (Rück)versicherer als aktive Partner in ÖPP-Strukturen: Chancen durch parametrische Lösungen im Hochwasserschutz

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Public Sector Solutions

***«Haben sie schon mal überlegt  
parametrische  
Versicherungslösungen zu nutzen?»***

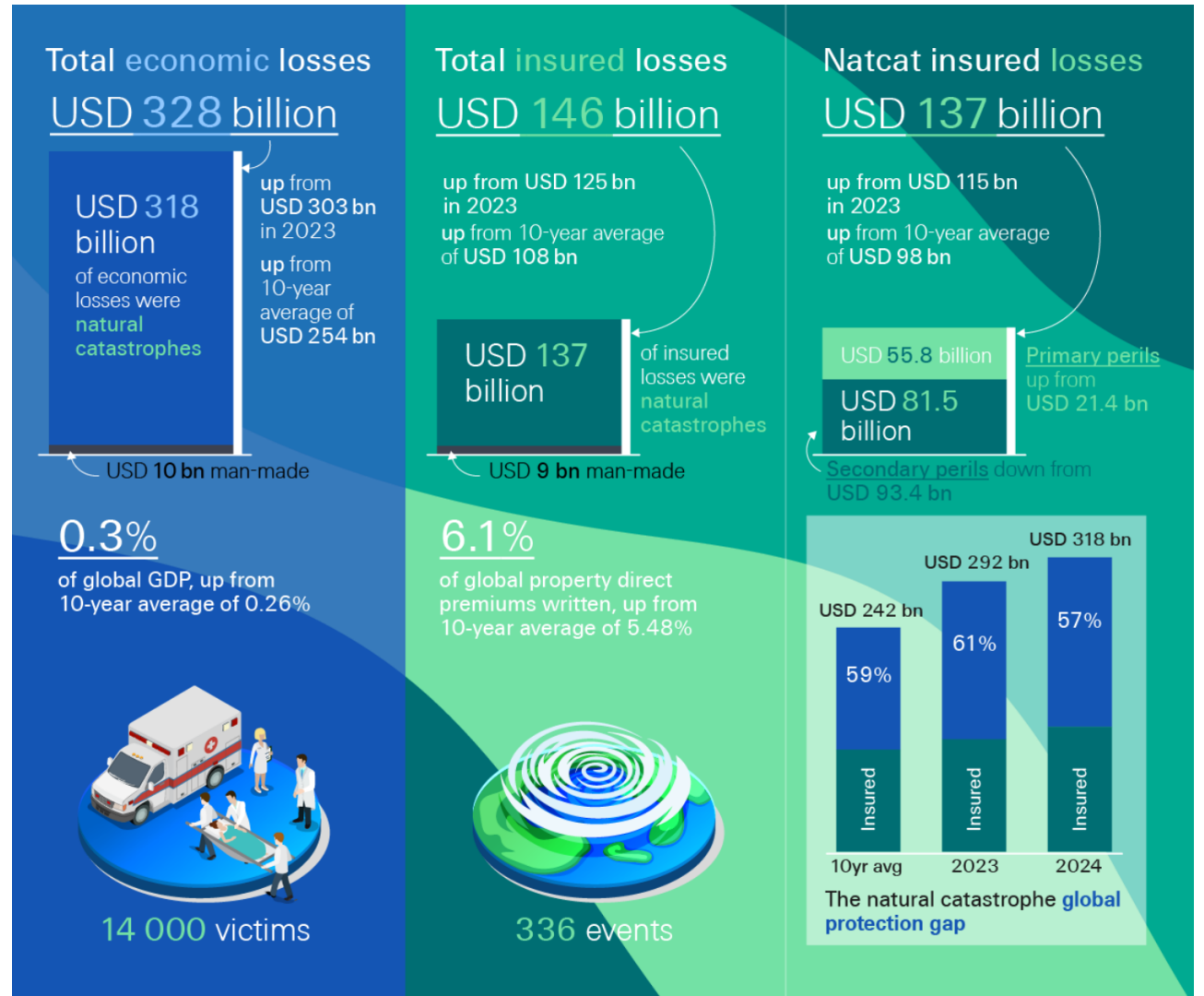


$$1 + 1 = 3$$

Zusammenarbeit zwischen  
öffentlichen, und privatem  
Sektor



# Versicherungslücke: Globale Unterversicherung ist massiv und minimiert Resilienz



# Versicherungslücke in Deutschland größer als der globale Durchschnitt



*„Ein Schließen der  
Versicherungslücke setzt  
Anreizstrukturen voraus.“*



# Öffentlich-Private Zusammenarbeit (ÖPP) – ein Erfolgsmodell

## RISIKOTRÄGER



Öffentlicher Sektor (Bund, Länder, Kommunen, öffentliche Infrastruktur)



Unternehmen und Haushalte

## VERSICHERUNGSLÖSUNG

### Macro

*Risikotransfer (parametrisch) für Regierungen, Länder, Gemeinden und Kommunen, um deren direkte und indirekte Kosten zu finanzieren*

### Nationale Programme

*Regierungsseitige Versicherungspools um die Versicherungsdichte zu steigern*

## ERFOLGREICHE BEISPIELE



### Schweizerischer Elementarschaden-Pool (SEP)

Loss-sharing pool of private insurers



### Flood Re

Insurance industry-owned reinsurer



### Caisse Centrale de Réassurance (CCR)

State reinsurer



### Turkish Catastrophe Insurance Pool (TCIP)

Government owned, managed by Turk Re



### Norwegian Natural Perils Pool

Loss-sharing pool of private insurers



### Earthquake Commission (EQC)











































Distribution by private insurers













### National Flood Insurance Program (NFIP)\*

Federally managed


# Elementarschaden-Versicherungs-Pool Lösungen haben sich weltweit bewährt

	Perils covered	Assets covered	Rate type	Gov. involvement	Reinsurance
 <b>Schweizerischer Elementarschaden-Pool (SEP)</b> Loss-sharing pool of private insurers	  			-	
 <b>Flood Re</b> Insurance industry-owned reinsurer				Guarantees for top layer	
 <b>Caisse Centrale de Réassurance (CCR)</b> State reinsurer	  			Unlim. financial guarantee	-
 <b>Turkish Catastrophe Insurance Pool (TCIP)</b> Government owned, managed by Turk Re				Guarantees for cat layers	
 <b>Norwegian Natural Perils Pool</b> Loss-sharing pool of private insurers	  			-	
 <b>Earthquake Commission (EQC)</b> Distribution by private insurers				Government funded	 
 <b>National Flood Insurance Program (NFIP)*</b> Federally managed				Can borrow funds from U.S. Treasury	 

Perils	Assets covered	Rate	Reinsurance used	*Compulsory
 Earthquake	 Property	 Risk-based	 Traditional	
 Flood	 Social protection	 Flat	 Cat bonds/ cap. market instruments	
 Drought				
 Tropical cyclone				

Ahrtal Juli 2021



An aerial photograph showing a residential area with a large portion of the ground covered in blue, indicating flooding. The water is deepest in the center and shallower towards the edges. The surrounding area includes houses, roads, and some greenery.

Versichert: ~8.3 Mrd. €  
Gesamt: ~33 Mrd. €  
Indirekt: ~7 Mrd. €

Nothilfe- und Soforthilfe-  
Finanzierung: ~400 Mio. €

*„1 € Soforthilfe entspricht ~3-7 €  
nachrangiger Unterstützung“*



# Parametrische Lösungen



# Parametrische Lösungen: Robust und bewährt seit 40 Jahren

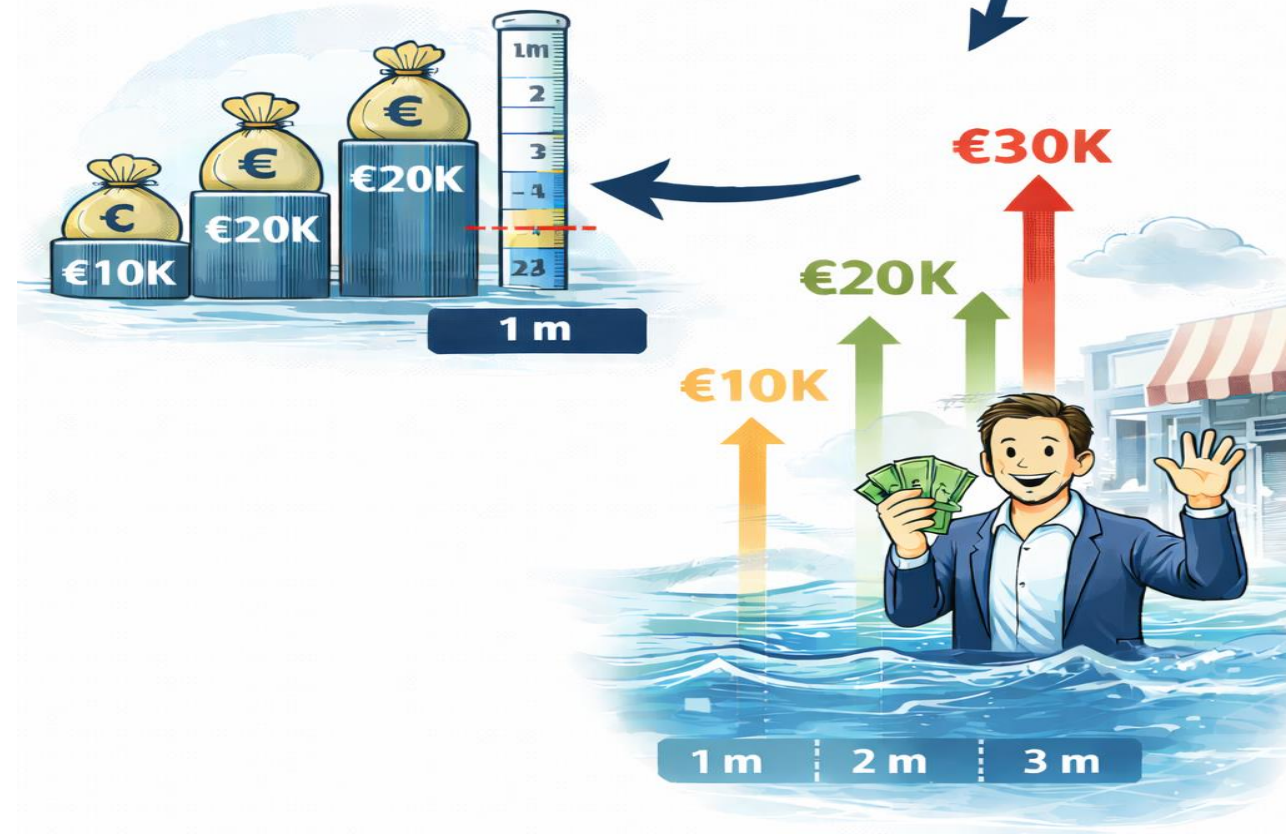
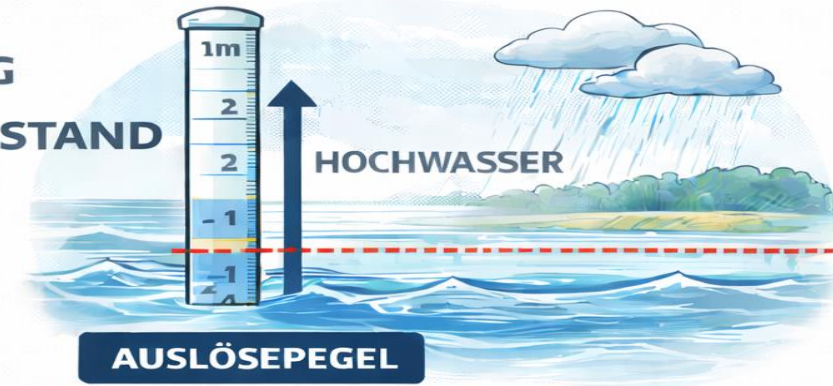


Parametrische Versicherungen basieren auf der Messungen eines **natürlichen, idealerweise messbaren physikalischen Phänomens (Parameter)**



Die Auszahlung eines vorher festgelegten Betrages erfolgt sobald ein **bestimmter Schwellenwert überschritten** ist (z.B. Regenmenge, Wassertiefe)

MESSUNG  
HOCHWASSERSTAND



# Von lokalen Sensoren bis zu globalen Satelliten: Risikogerechte Gefahrenabbildung, konstantes Monitoring und Einbindung in digitale Wertschöpfungsketten



Flut



Blitzeinschlag



Hagel



Tsunami



Erdbeben



Sturmflut



Wind



Vulkan



Tornado



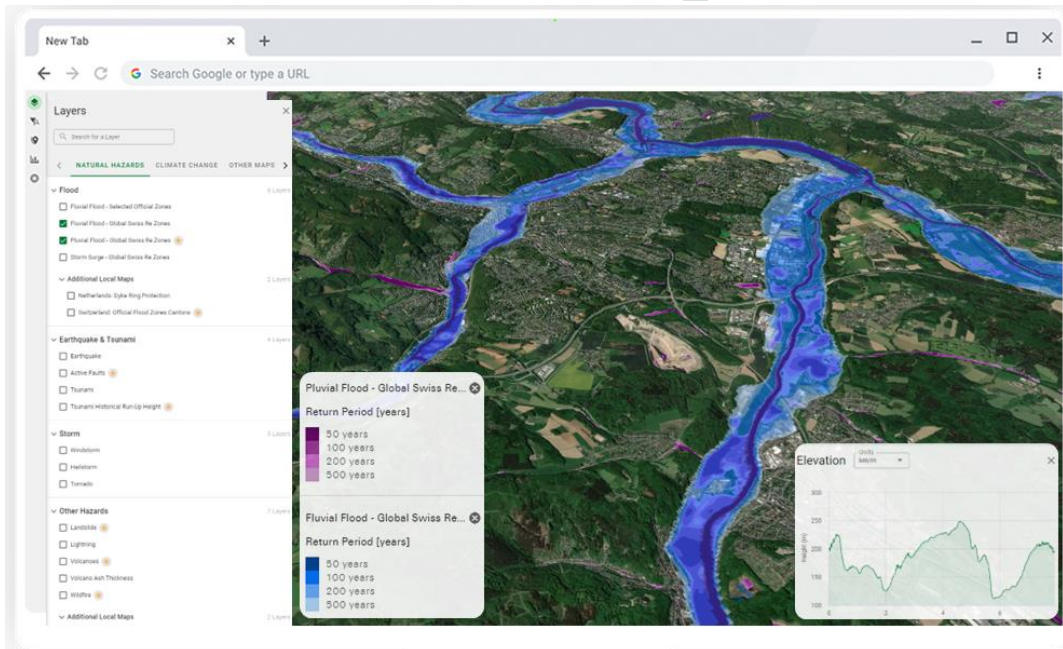
Waldbrand



Starkregen



Hangrutsch

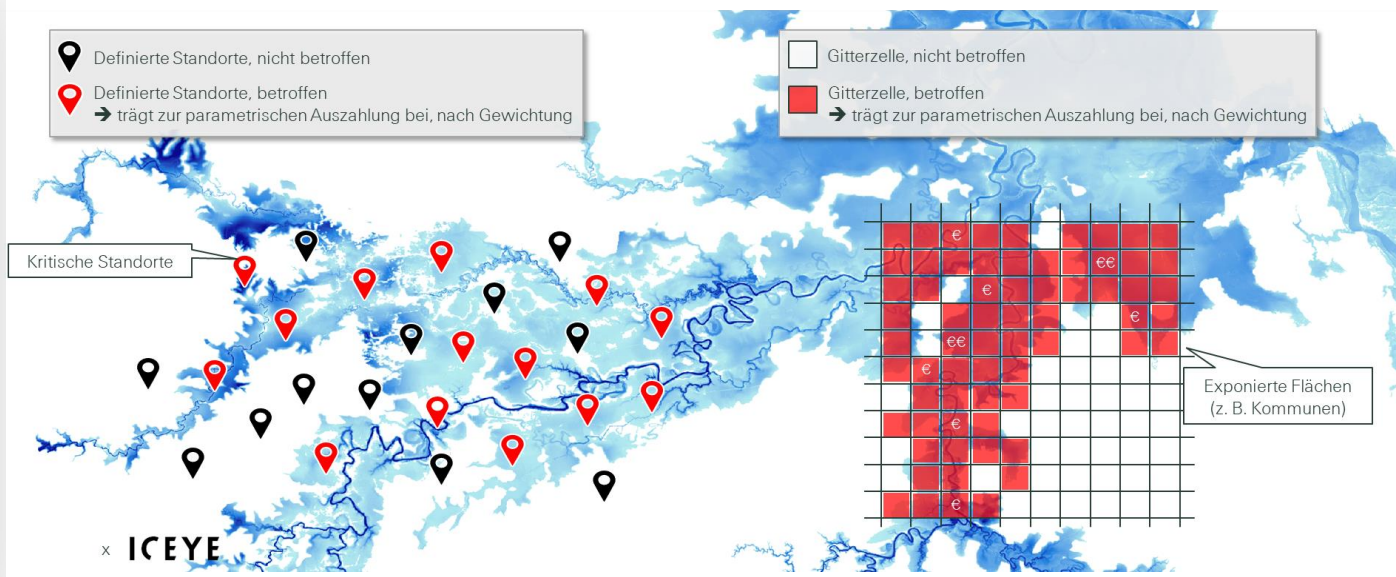


**Option 1:** Infrastruktur, Bevölkerungszentren, wichtige Risiken:

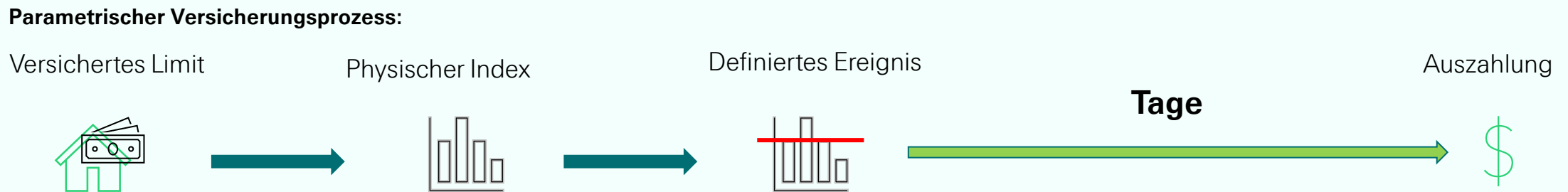
**Option 2:** Flächen (z.B. Kommunen):

- Definierte Standorte, nicht betroffen
- Definierte Standorte, betroffen  
→ trägt zur parametrischen Auszahlung bei, nach Gewichtung

- Gitterzelle, nicht betroffen
- Gitterzelle, betroffen  
→ trägt zur parametrischen Auszahlung bei, nach Gewichtung



# Klassische Versicherung vs Parametrische Versicherung



# “Basis Risiko” von parametrischen Versicherungen – (k)ein Problem ?!

Weicht der Zahlungsbetrag einer parametrischen Lösung vom eingetretenen Schaden ab, spricht man von **Basis Risiko**



Effektiver Schaden



- **Richtig:** Das Basis Risiko von parametrischen Produkten lässt sich massiv minimieren, jedoch nicht völlig eliminieren
- **Richtig:** Gerade bei Grossereignissen kann auch ein Schadenbeurteiler oder Elemente wie Unterversicherung oder Ausschlüsse zu einem Zahlungsbetrag  $<$  erlittener Schaden führen

# Der Mehrwert einer parametrischen Lösung



# Parametrische Lösungen erweitern die Handlungsoptionen für Risikotransfer

- Erlaubt es nicht genau bewertbare- und lokalisierbare Risiken zu versichern (**Exposure**)
- Maximale **Transparenz** hinsichtlich der Struktur und der Auszahlungsbedingungen (keine Ausschlüsse)
- **Freie Verfügbarkeit** des ausbezahlten Versicherungsbetrages (solange ein Schaden nachweisbar ist)
- **Auszahlungsgeschwindigkeit**
- Keine **Schadenbegutachtung** nötig (Schadenregulation)
- Zugang zu (alternativen) Kapitalgebern (ILS, **Cat Bond**)



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Zusätzliche gesundheitliche Ausgaben



Temporäre Unterbringung



Versorgungsausfälle



Wiederaufbau und Instandsetzung



Evakuierungskosten



Soziale Hilfestellung



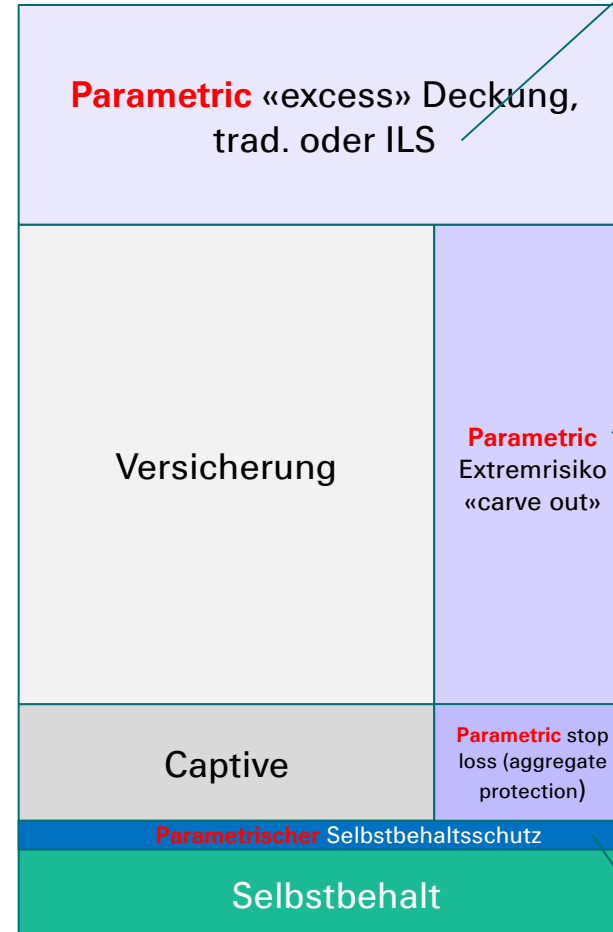
Entgangene Steuereinnahmen



Geschäftsunterbrechung

# Parametrische Lösungen komplementieren traditionelle, strukturierte Versicherungslösungen

- **Verschlinkung** bestehender (Portfolio) Versicherungsstrukturen
- Separierung von **problematischen Risiken**
- Steigerung der **Kapital Effizienz** (Reduktion der Kosten)
- Zugang zu **Versicherungskapazität** (Kapital)



## Japan's Zenkyoren & Germany's SV secure \$100m in quake reinsurance from cat bond

21st May 2025 - Author: Beth Mosselwhite - Share

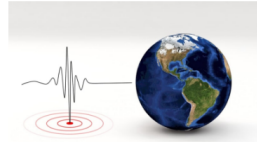
German insurer SV Sparkassenversicherung (SV) has entered the catastrophe bond market with the successful completion of its debut cat bond, Liongate Re, securing \$100 million in fully collateralized reinsurance, in collaboration with Japanese mutual insurer Zenkyoren.

Named after the company's headquarters at the "Löwentor" in Stuttgart, Liongate Re was issued via a dedicated Irish SPV.

The issuance marks a key milestone in SV's broader risk transfer strategy, complementing traditional reinsurance with access to the wider capital markets. It also underscores SV's commitment to innovation in risk management.

Moreover, the transaction reflects a collaborative partnership with Japanese mutual insurer Zenkyoren. Both organisations are long-term oriented and share values such as financial stability and reliability. Liongate Re stands as an example of international cooperation and the benefits of collaboration between like-minded insurers.

Structured with reinsurer broker Guy Carpenter Securities, the bond provides three years of retrocessional earthquake reinsurance—covering losses across Germany on a parametric basis and from Japan on an indemnity basis.



# Eine Auswahl innovativer parametrischer Lösungen weltweit

Agriculture

Drought

Earthquake

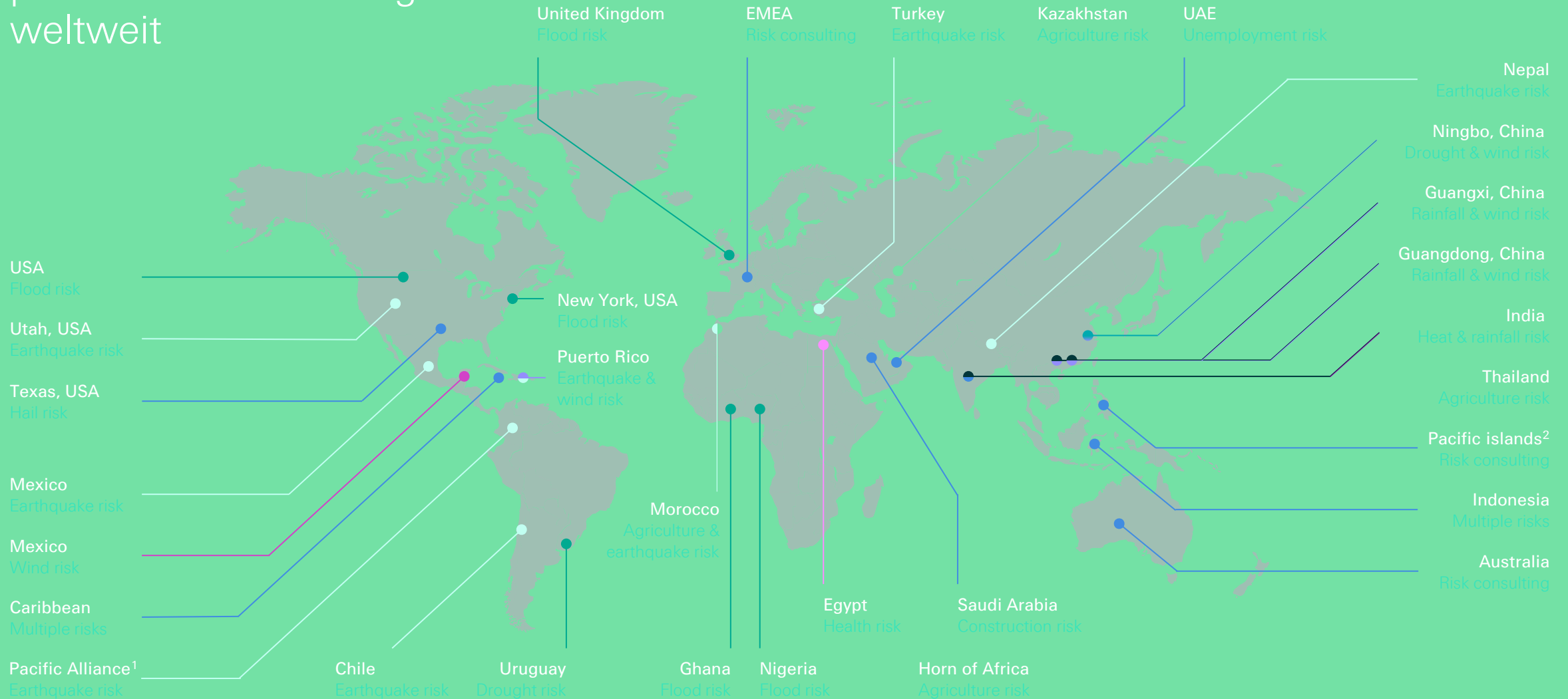
Flood

Rainfall

Health

Windstorm






































Other













<sup>1</sup> Chile, Colombia, Mexico and Peru

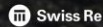
<sup>2</sup> Indonesia, Philippines, Fiji and Solomon Islands

# Staatliche parametrische Lösungen (Sovereign Risk Pools)

	Perils covered	Assets covered	Rate type	Gov. involvement	Reinsurance
 <b>FSEC Dual-Pillar Catastrophe Scheme</b> Pool for insured and solidarity fund for the uninsured				Mandatory tax on insurance contracts	
<b>CCRIF Caribbean Catastrophe Risk Insurance Facility*</b> Regional parametric insurance facility	  			Premiums paid by member governments	
<b>SEADRIF Southeast Asia Disaster Risk Insurance Facility*</b> Risk-pooling platform	  			Premiums paid by member governments	
<b>PCRAFI Pacific Catastrophe Risk Assessment and Financing Initiative*</b> Catastrophe risk pool	  	 		Premiums paid by member governments	
 <b>FONDEN Mexico Natural Disaster Fund*</b> Government-backed financial mechanism	  			Government funded	 
<b>ARC Africa Risk Capacity*</b> Regional sovereign insurance pool	 			Premiums paid by member governments	

Perils	Assets covered	Rate	Reinsurance used	*Compulsory	
 Earthquake  Drought	 Flood  Tropical cyclone	 Property  Social protection	 Risk-based  Flat	 Traditional  Cat bonds/ cap. market instruments	

# Swiss Re hat viel Erfahrung, die es gerne in einen Dialog einbringt

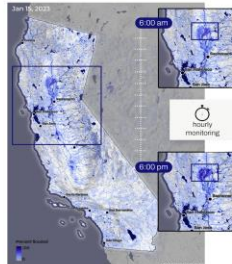


## Ensuring fast and flexible payouts for disaster response

### CLIENT

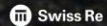
A mid-size city in California with significant flood exposure.

Flooding in the city damages property, disrupts critical infrastructure and emergency services, and reduces economic activity.



If the policy had been in place, it would have led to a USD 1.78m payout for a major flood event in 2017, and a USD 870k payout for a flood event in 1998.

Residents and businesses can benefit from a faster, more efficient recovery because the city can deploy parametric proceeds more quickly and flexibly for uncovered losses.

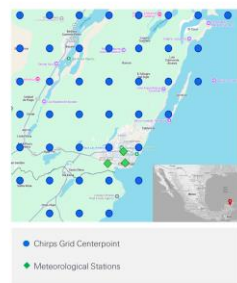
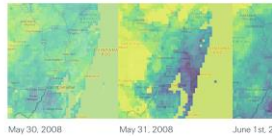


## Covering municipalities against extreme rainfall events in Latin America

### CLIENT

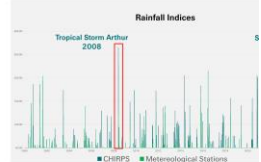
A municipality in Mexico is developing assets and public services in flood-prone areas.

The area has a history of severe rainfall-driven flooding. For example, Tropical Storm Arthur in 2008 caused significant damage and disruption.



**SOLUTION**  
A parametric cover triggered by rainfall maps using CHIRPS satellite imagery and on-site meteorological stations.

The coverage area and trigger thresholds were tailored to the local climatology to reflect extreme rainfall risk.



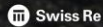
### IMPACT

Back-testing shows the cover would have paid MXN 8,250,000 for the June 2024 event. The cover would have paid the full limit of MXN 20,000,000 for Tropical Storm Arthur.

This provides rapid liquidity to support emergency response, clean up, and other priority needs after extreme rainfall.

### Summary of thresholds based on CHIRPS rainfall index and meteorological station measurements

Rainfall Index CHIRPS (mm)	Payout Factor (%)	Rainfall Index M. Stations (mm)	Payout Factor (%)
193	5%	184	25%
203	10%	214	50%
213	20%	244	75%
223	40%	274	100%
233	70%		
243	100%		



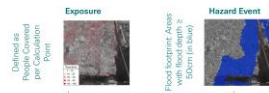
## Enhancing urban flood resilience in Lagos State

### CLIENT

Lagos State Ministry of Finance is the policyholder and provides overall financial oversight, while LASEMA leads disaster coordination and helps validate the technical terms of the parametric product and the associated contingency plan.

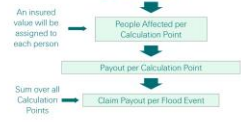


Flooding in Lagos in 2012. Source: Premium Global Nigeria.



**SOLUTION**  
A sub-sovereign parametric cover based on the observed uses a satellite-derived flood inundation depths  $\geq 50$  cm transparent payouts.

The scheme covers poor seven local government areas. Payouts are calculated (centroid of grid cells) using 30 meter resolution and



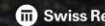
Example of the flood footprint in Accra, Ghana. Source: ICEYE.

### IMPACT

When thresholds are met, the scheme provides timely funds to support emergency relief and early recovery, strengthening Lagos State's (incl. LASEMA's) ability to respond and helping vulnerable populations. Relief efforts will be guided by as per pre-agreed contingency plan.

**Benefits of the product**  
Lower basis risk, all types of customizable flood risk.

The project team, consisting of Marshfield, data provider 1, QuickLinks and others are scheme in 2026. Premium



## Financial Protection for Vulnerable New Yorkers

### CLIENT

In New York City, low- to moderate-income residents have limited access to financial resources after a flood disaster.

The Center for NYC Neighborhoods (CNYCN), in partnership with the Mayor's Office of Climate & Environmental Justice sought a solution to help better protect residents from flood risk.



Simulated "Worst-Case" flooding event (blue) in NYC overlaid with Neighborhood Tabulation Area borders (purple), illustrating widespread flood risk. Source: NYC OpenData.

### IMPACT

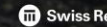
If the policy is triggered, residents of qualifying flood-affected households are eligible to receive a grant from CNYCN of up to USD 15,000.

The pilot program inception on February 1, 2023, and subsequently renewed to include additional neighborhoods in 2024.

Several localized flooding events were monitored during the policy period, but these did not exceed the attachment threshold.



Example of a flooding event September 29-30, 2023 that inundated localized areas throughout NYC and the Tri-State Area. The event did not exceed the attachment thresholds for the parametric structure. Source: ICEYE, Swiss Re.

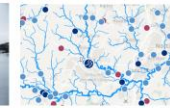


## Covering disaster costs from River Flooding

Swiss Re offers parametric coverage based on river height or discharge in the UK for public assets proximate to rivers.



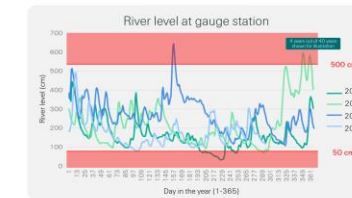
Flooding in York 2020. Source: Swiss Re.



A network of river gauging stations surrounds the asset of interest. Source: Environment Agency.

### EXAMPLE CLIENTS

1. A harbour seeking to protect its revenue from operational disruptions due to high water from flood events.
2. A UK municipality building or institution situated near a major waterway looking to cover expenses resulting from floods.



### SOLUTION

A parametric cover uses measurements of river height provided by the Environment Agency of the UK.

The client uses parametric payments to support emergency actions like building drainage and repair. Triggers are aligned to contingency plans using forecasted river height.

### ADVANTAGES

**Covers Direct Costs:** Clean up, repair of facilities, replacement of non-insured contents.

**Covers Indirect Costs:** Business interruption due to ground-level flooding, like lost earnings from supply chain interruption.

**Affordable:** Open-source gauge data is freely accessible, keeping costs to insured lower.

**Flexible:** Contracts are tailored to a client's specific revenue and financial loss exposure to river levels.

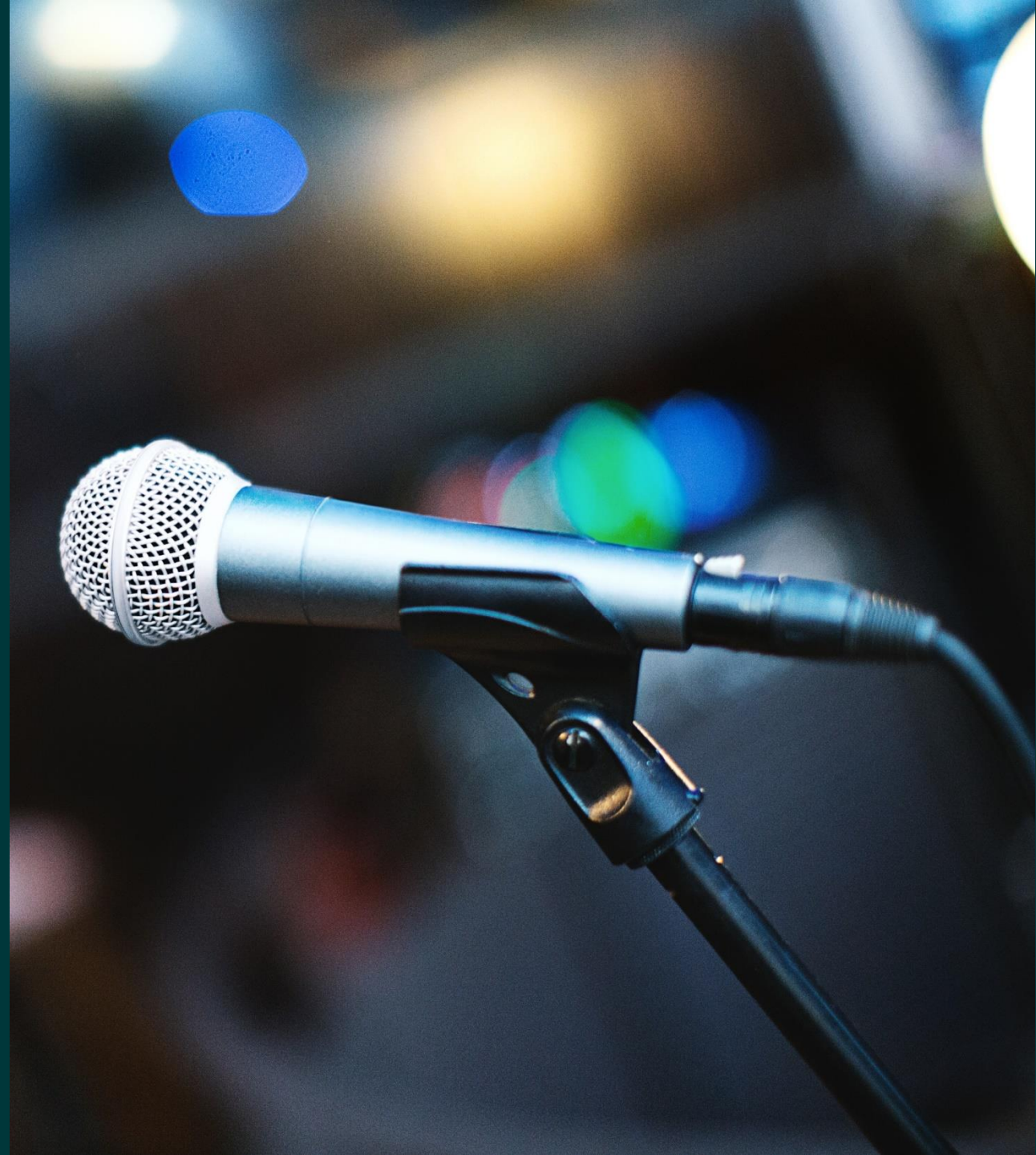
### CONSIDERATIONS

**Proximity:** Requires assets that are proximate to rivers to minimize basis risk.

**Measurement at location:** Best suited for assets where a relationship between river level and direct impact are clearly demonstrated.

**Area cover:** Can only serve as a proxy for large areas covers for cities or states.

# Fazit



***Flut** ist eines der versicherungstechnisch, komplexesten und gleichzeitig größten Naturgefahrenpotentiale.*

*Ohne sinnvolle **Anreize** im Rahmen öffentlich-privater Zusammenarbeit wird es kaum eine nachhaltig finanzierbare Lösung geben.*

***Parametrische, Index-basierte Produkte** sind ein wesentliches Instrument, um adäquate Risiko und kundengerechte Lösungen bereitzustellen*

*Stimmen sie zu?*

# Vielen Dank!

## Kontaktieren Sie uns



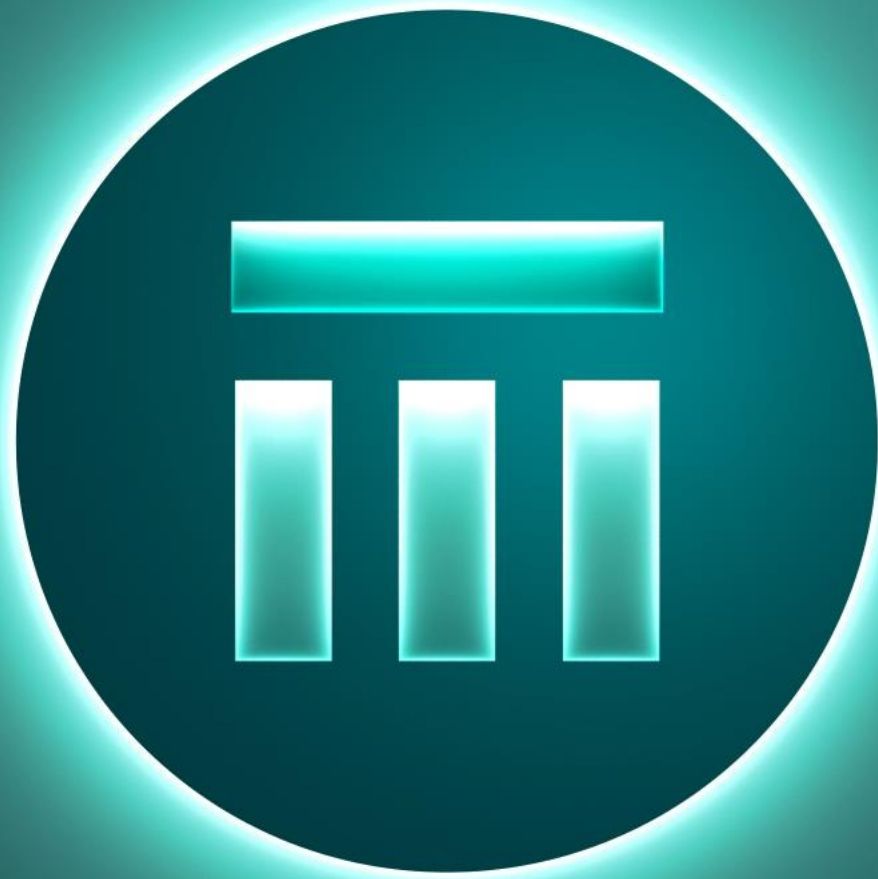
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