

# PillarOne – Gestion des Risques en mode «open-source»



Munich Re, Thomas Schaffrath-Chanson

Parlons Risque Solvabilité II

Paris, 23 Octobre 2008



# Que se passe t-il derrière PillarOne?

## Une plate-forme pour la gestion des risques



PillarOne est

- une plate-forme d'analyse des risques et d'aide à la décision pour la gestion de risques,
- compatible avec les exigences en terme de processus et audit d'une compagnie d'assurances

et soutient

Processus	Tâches	Documentation
Segmentation/modélisation	Modèle sur mesure	
Calibrage	Assemblage des données	
Analyse	Définition mesure de risques	
Présentation	Résultats processus	

- La **transparence** est un atout majeur: actuaires, consultants, risk managers et régulateurs doivent savoir comment la gestion des risques est faite.
- L'esprit de collaboration en mode «open-source» est le meilleur moyen pour **favoriser la création** des produits chez les utilisateurs.
- La méthodologie «open-source» est la forme la plus dynamique de **collaboration** - aucune barrière aux nouvelles idées.
- Elle constitue une nouvelle approche de la **propriété intellectuelle**: accès gratuit, mais services connexes payants.
- PillarOne signifie: **indépendance** vis à vis d'un seul fournisseur.

# Munich Re sponsorise PillarOne. Pourquoi?



«Munich Re, initiateur et sponsor, soutient les petites et moyennes compagnies d'assurances dans leur gestion des risques, car la création de modèles internes représente un coût relativement élevé pour de telles compagnies.»

«Munich Re estime que le modèle standard sous Solvency II ne prend pas assez en considération la réassurance. L'«open-source» apporte alors une réponse concrète: PillarOne offre un conseil personnalisé pour gérer d'une façon plus précise la stratégie de réassurance de ces cédantes.»

# Séminaire de la communauté: travail soutenu sur des thèmes spécifiques et planification

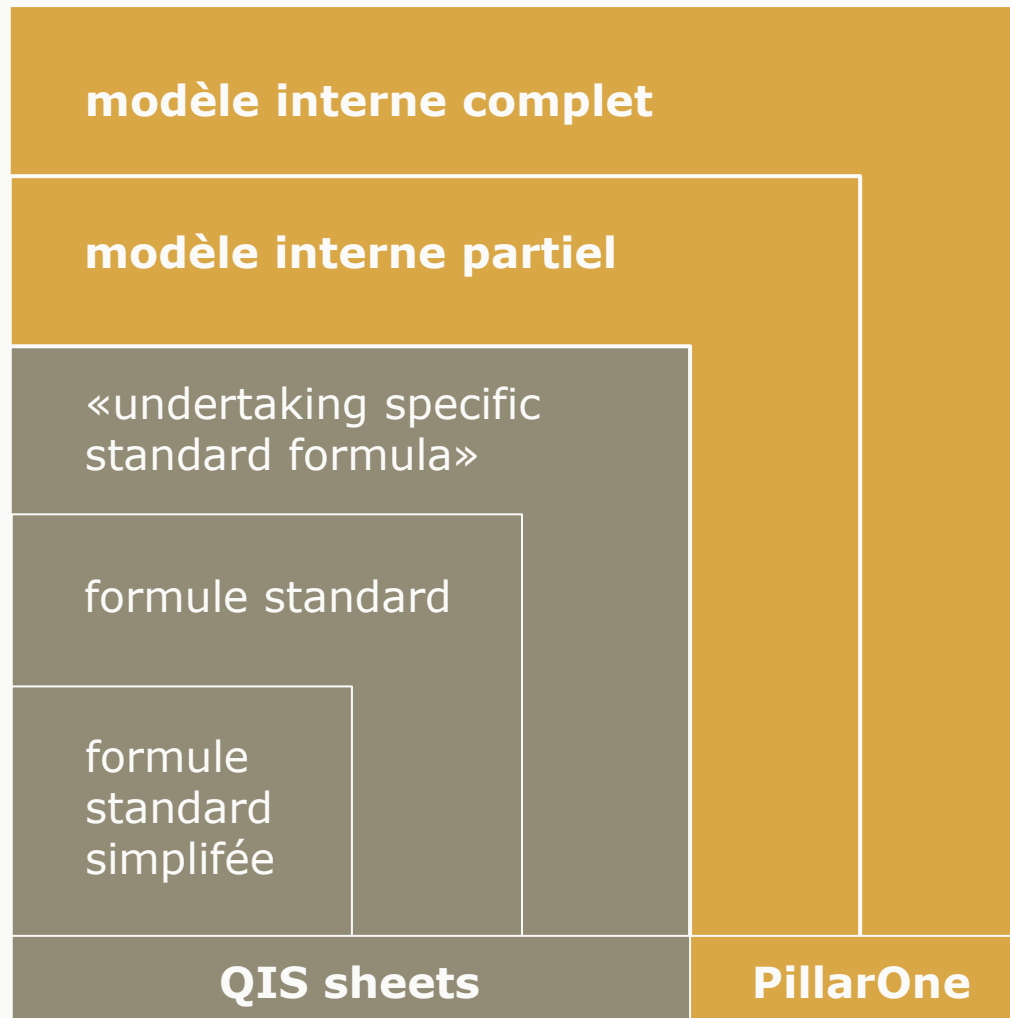


## Communauté PillarOne

- Résultats d'un séminaire, organisé et modéré par Munich Re et Intuitive Collaboration.
- Le groupe de travail discute, structure et établit la priorité et l'importance aussi bien d'outils que des méthodes de modélisation.
- Resultats:
  - PillarOne.Reserving Avril 2008
  - PillarOne.RiskAnalytics Automne 2008



# Différentes options pour estimer le SCR – PillarOne apporte des solutions pour Solvency II



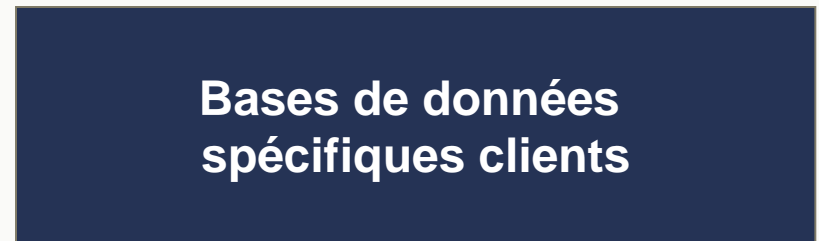
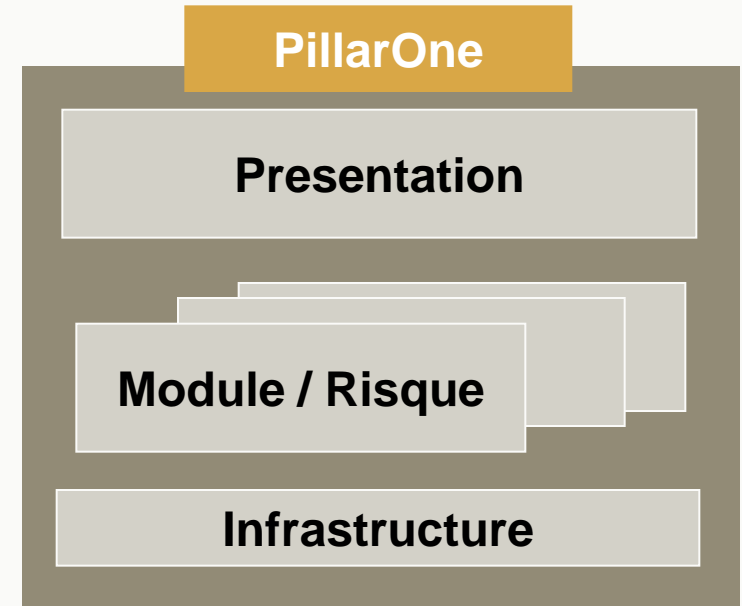
# Intégration de la gestion des risques dans le pilotage de l'entreprise

Les méthodes de pilotage des risques est au cœur du métier des assureurs

- les processus personnalisés peuvent fournir des avantages compétitifs.
- les processus s'appuient sur des méthodes actuarielles globales et personnalisées.

## PillarOne

- englobera aussi bien des méthodes standardisées que des méthodes personnalisées
- et soutiendra les processus de documentation exigés.



Segmentation  
Comments

### Business Explorer



Name

- ✘ Insurance Group Inc.
  - ✘ Insurance Group Gross
    - ✘ Assistance
    - ✓ Fire
    - ✓ Liability
    - ✘ Motor Liability
    - ✓ Motor Hull
    - ✘ Credit
    - ✘ Legal Protection
    - ✘ Marine
  - ✘ Insurance Group Net
    - ✘ Assistance
    - ✘ Fire
    - ✓ Liability
    - ✘ Motor Liability
    - ✓ Motor Hull
    - ✘ Credit
    - ✘ Legal Protection
    - ✘ Marine

### Business Segment

Data format

Properties

Name

Number of reporting periods

First reporting period

Currency

← To start with, we have the overview of the classes of business as specified in QIS4.

After selecting the class of business, we describe the data statistics. It is sufficient to select the first reporting year and the number of reporting years.

Apply

Segmentation  
Comments

### Business Explorer



- Name
- ✗ Insurance Group I
  - ✗ Insurance Gro
    - ✗ Assistance
    - ✓ Fire
    - ✓ Liability
    - ✗ Motor Liability
    - ✓ Motor Hull
    - ✗ Credit
    - ✗ Legal Protection
    - ✗ Marine
  - ✗ Insurance Group Net
    - ✗ Assistance
    - ✗ Fire
    - ✓ Liability
    - ✗ Motor Liability
    - ✓ Motor Hull
    - ✗ Credit
    - ✗ Legal Protection
    - ✗ Marine

The selection shows the business segment in the right pane.

### Business Segment - Motor Liability

Data format: Incremental

Properties: Loss & Premium | Chain Ladder | Additive | Summary

Name: Motor Liability

Number of reporting periods: 10

First reporting period: 1998

Currency: EUR

Apply

Segmentation

Comments

Business Explorer



- Name
- ✘ Insurance Group Inc.
  - ✘ Insurance Group Gross
    - ✘ Assistance
    - ✓ Fire
    - ✓ Liability
    - ✘ Motor Liability
    - ✓ Motor Hull
    - ✘ Credit
    - ✘ Legal Protection
    - ✘ Marine
  - ✘ Insurance Group Net

Premium statistics and loss statistics (occurred and paid) are taken from an Excel sheet. Entering the data manually is cumbersome and error prone. Therefore we convert the data with the drag and drop function.

Business Segment - Motor Liability

Data format

Properties

Claims paid

	Premium	1999	2000	2001	2002
1998	147,374.00	73,275.00	23,186.00	4,934.00	3,095
1999	142,546.00	75,121.00	22,987.00	5,197.00	2,717
2000	142,564.00	74,202.00	22,342.00	3,545.00	2,436
2001	141,580.00	79,175.00	24,801.00	7,216.00	3,595
2002	148,753.00	78,035.00	23,852.00	6,102.00	3,313

Multiplicative tail factor

	2008	2009	2010	2011
Discount	1.00	1.00	1.00	1.00

Claims incurred

	Premium	12	24	36	48
1998	147,374.00	128,911.00	4,091.00	-994.00	-2,285
1999	142,546.00	136,797.00	1,615.00	-2,369.00	-3,253
2000	142,564.00	127,596.00	2,566.00	-3,974.00	-1,482
2001	141,580.00	127,476.00	-5,494.00	-3,517.00	-300
2002	148,753.00				

Multiplicative tail factor

Segmentation  
Comments

**Business Explorer**

Name

- ✘ Insurance Group Inc.
- ✘ Insurance Group Gro
  - ✘ Assistance
  - ✓ Fire
  - ✓ Liability
  - ✓ Motor Liability
  - ✓ Motor Hull
  - ✘ Credit
  - ✘ Legal Protection
  - ✘ Marine
- ✘ Insurance Group Net
  - ✘ Assistance
  - ✘ Fire
  - ✓ Liability
  - ✘ Motor Liability
  - ✓ Motor Hull
  - ✘ Credit
  - ✘ Legal Protection
  - ✘ Marine

A paid triangle constitutes the minimum information. With this minimal information we only offer to run the Chain ladder projection.

**Business Segment - Motor Liability**

Data format: Incremental

Chain Ladder Additive Summary

	Premium	1999	2000	2001	2002
	147,374.00	73,275.00	75,121.00	74,202.00	79,175.00
2000	142,546.00	23,186.00	22,987.00	22,342.00	24,801.00
2001	142,564.00	4,934.00	5,197.00	3,545.00	7,216.00
2002	141,580.00	3,095	2,717	2,436	3,595
2002	148,753.00	6,102.00	3,313		

Multiplicative tail factor: 1.00

	2008	2009	2010	2011
Discount	1.00	1.00	1.00	1.00

Claims incurred

	Premium	12	24	36	48
1998	147,374.00	128,911.00	4,091.00	-994.00	-2,285
1999	142,546.00	136,797.00	1,615.00	-2,369.00	-3,253
2000	142,564.00	127,596.00	2,566.00	-3,974.00	-1,482
2001	141,580.00	127,476.00	-5,494.00	-3,517.00	-300
2002	148,753.00				

Multiplicative tail factor: 1.00

Run Diagnostic Apply

Segmentation  
Comments

### Business Explorer

Refresh Save Print Copy Paste

Name

- ✖ Insurance Group Inc.
  - ✖ Insurance Group Gross
    - ✖ Assistance
    - ✓ Fire
    - ✓ Liability
    - ✓ Motor Liability
    - ✓ Motor Hull
    - ✖ Credit
    - ✖ Legal Protection
    - ✖ Marine
  - ✖ Insurance Group Net
    - ✖ Assistance
    - ✖ Fire
    - ✓ Liability
    - ✖ Motor Liability
    - ✓ Motor Hull
    - ✖ Credit
    - ✖ Legal Protection
    - ✖ Marine

### Business Segment - Motor Liability

Data format: Incremental

Properties Loss & Premium Chain Ladder Additive Sum

Claims paid

	12	24	36	48	60	72	84
1998	71,378.00	23,848.00	5,734.00	3,108.00	1,742.00		
1999	73,275.00	23,186.00	4,934.00	3,095.00	1,745.00		
2000	75,121.00	22,987.00	5,197.00	2,717.00	1,518.00	1,711.00	814
2001	74,202.00	22,342.00	3,545.00	2,436.00	1,149.00	1,200.00	531
2002	79,175.00	24,801.00	7,216.00	3,595.00	2,006.00	1,758.00	890

0.65 0.86 0.91 0.93 0.95 0.96 0

Claims incurred

	12	24	36	48	60	72	84
1998	128,911.00	4,091.00	-994.00	-2,285.00	-1,975.00	-1,973.00	-511
1999	136,797.00	1,615.00	-2,369.00	-3,253.00	-2,210.00	-945.00	-3,024
2000	127,596.00	2,566.00	-3,974.00	-1,482.00	-1,735.00	-218.00	-748
2001	127,476.00	-5,494.00	-3,517.00	-300.00	-2,734.00	-956.00	856
2002	131,440.00	302.00	232.00	6,933.00	91.00	1,031.00	-888

1.03 1.04 1.03 1.03 1.02 1.01 1

In the next tab, we have the run-off according to the additive model.

**Business Explorer**

Segmentation

Comments

Name

Insurance Group Net  
 Legal Protection  
 Marine  
 Assistance  
 Fire  
 Liability  
 Motor Liability  
 Motor Hull  
 Credit  
 Legal Protection  
 Marine

A summary is the last of the application's process views. Here we have run-off patterns for the chain ladder method, closing loss balance projections, reserve estimates and the cash flows until that point.

**Business Segment - Motor Liability**

Data format: Incremental

Properties | Loss & Premium | Chain Ladder | Additive | Summary

Chain Ladder Lag Patterns

	12	24	36	48	60	72	84
Paid	0.66	0.86	0.91	0.94	0.95	0.97	0.98
Incurred	1.03	1.04	1.03	1.03	1.02	1.01	1.00

Ultimates of Projections

	Premium	Chain Ladder Uncertainty (Paid)	Chain Ladder (Incurred)	Ac
1998	147,374.00		110,522.00	123,221.00
1999	142,546.00		112,410.44	126,396.13
2000	142,564.00		112,508.95	121,718.17

Estimated Reserves

	Chain Ladder Uncertainty (Paid)	Chain Ladder (Incurred)	Additive (Paid)
1998	0.00	12,699.00	0.00
1999	978.44	14,964.13	930.44
2000	1,858.95	11,068.17	1,787.17

Cashflows

	12	24	36	48	€
Chain Ladder Uncertainty (Paid)	0.45	0.63	0.74	0.83	
Additive (Paid)	0.45	0.62	0.74	0.82	

# Voulez-vous essayer PillarOne.Reserving? Téléchargement / «sandbox»

Le logiciel est téléchargeable sur le site:

[www.pillarone.org](http://www.pillarone.org)

Vous pouvez aussi tester le logiciel en pratique dans la «sandbox»:

[demo.canoo.com/pillarone](http://demo.canoo.com/pillarone)

The screenshot shows the PillarOne Reserving website. The header includes the PillarOne logo and navigation links: PILLARONE, EVENTS, NEWS, DOWNLOADS (highlighted), BLOG, and COLLABORATION. The main content area is titled "Reserving" and describes it as a stand-alone and multi-user enterprise mode application. It lists the current release (0.3.1) and experimental releases, including Reserving 0.3rc2 (Release candidate) and Reserving 0.3.2 (Unreleased). Download links are provided for Windows (63 MB - Windows Installer) and All platforms (63 MB - Expandable jar file). A sidebar on the right contains a "DOWNLOADS" section with a navigation menu (Downloads, Reserving, Roadmap, Releases), a "REGISTER" section with a "Join PillarOne" button, and a "TOOLS" section with a search box and "Send this" / "Print this" options.

# Impact de la réassurance sur le capital-risque?

## Un exemple pratique

PeakRisk (Peak risk cover)		NP (Pure non-proportional cover)	
Motor liability	ML WXL 95 xs 5	ML WXL 99 xs 1	
Motor own damage	MOD CXL 10 xs 10	MOD CXL 19,5 xs 0,5	
Personal accident	PA WXL 1 xs 2 → PA CXL 10 xs 2	PA WXL 2.8 xs 0.2 → PA CXL 1.4 xs 0.2	
Property	Prop. CXL 170 xs 10	Prop. CXL 14 xs 1 → Prop. SL 300% xs 100%	
ML50+NP (ML quota share and NP cover)		ALL 50+NP (Quota share and NP cover)	
Motor liability	ML 50% quota share cession → ML WXL 99 xs 1	ML 50% quota share → ML – WXL 99 xs 1	
Motor own damage	MOD CXL 19.5 xs 0.5	MOD 50% quota share → MOD CXL 19.5 xs 0.5	
Personal accident	PA WXL 2.8 xs 0.2 → PA CXL 1.4 xs 0.2	PA 50% quota share → PA WXL 2.8 xs 0.2 → PA CXL 1.4 xs 0.2	
Property	Prop. CXL 14 xs 1 → Prop. SL 300% xs 100%	Prop. CXL 14 xs 1 → Prop. 50% quota share → Prop. SL 300% xs 100%	

Name	P0
ExampleCompany	
- MTPL	
- mtpl	
- ClaimsGenerator	
- AttritionalClaimsGenerator	
- Base	ABSOLUTE
- Generator	
- type	Normal
- mean	100
- stDev	20
- SingleClaimsGenerator	
- ClaimsGenerator	
- Base	ABSOLUTE
- Generator	
- type	LogNormal
- mean	50
- stDev	5
- FrequencyGenerator	
- Generator	
- type	Poisson
- lambda	10
- Base	ABSOLUTE
- RIProgram	
- Contract1	
- ContractStrategy	
- type	QuotaShare
- quotaShare	0.3
- commission	0.05
- CoveredLines	[]
- InuringPriority	0
- Contract2	
- ContractStrategy	
- type	WXL
- premiumBase	ABSOLUTE
- premium	70.0
- reinstatementPremiums	[0.5]
- attachmentPoint	80.0
- limit	50.0
- aggregateLimit	210.0

File

- ExampleCompanyDBResultDescriptor
- ExampleCompanyResultDescriptor

Name	NET	GROSS	ULTIMATES	CEDED	ULTIMATES_NET
ExampleCompany					
[-] MTPL					
[-] MotorHull					
[-] PersonalAccident					
[-] Property					
[-] UnderwritingPortfolio					
[-] claimsAggregator					
[-] ClaimsGross	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
[-] ClaimsCeded	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
[-] ClaimsNet	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Parameter

ExampleCompanyParameters

Iterations

Simulation Info

Start time:

Estimated End Time:

Remaining Time:

Run

Results

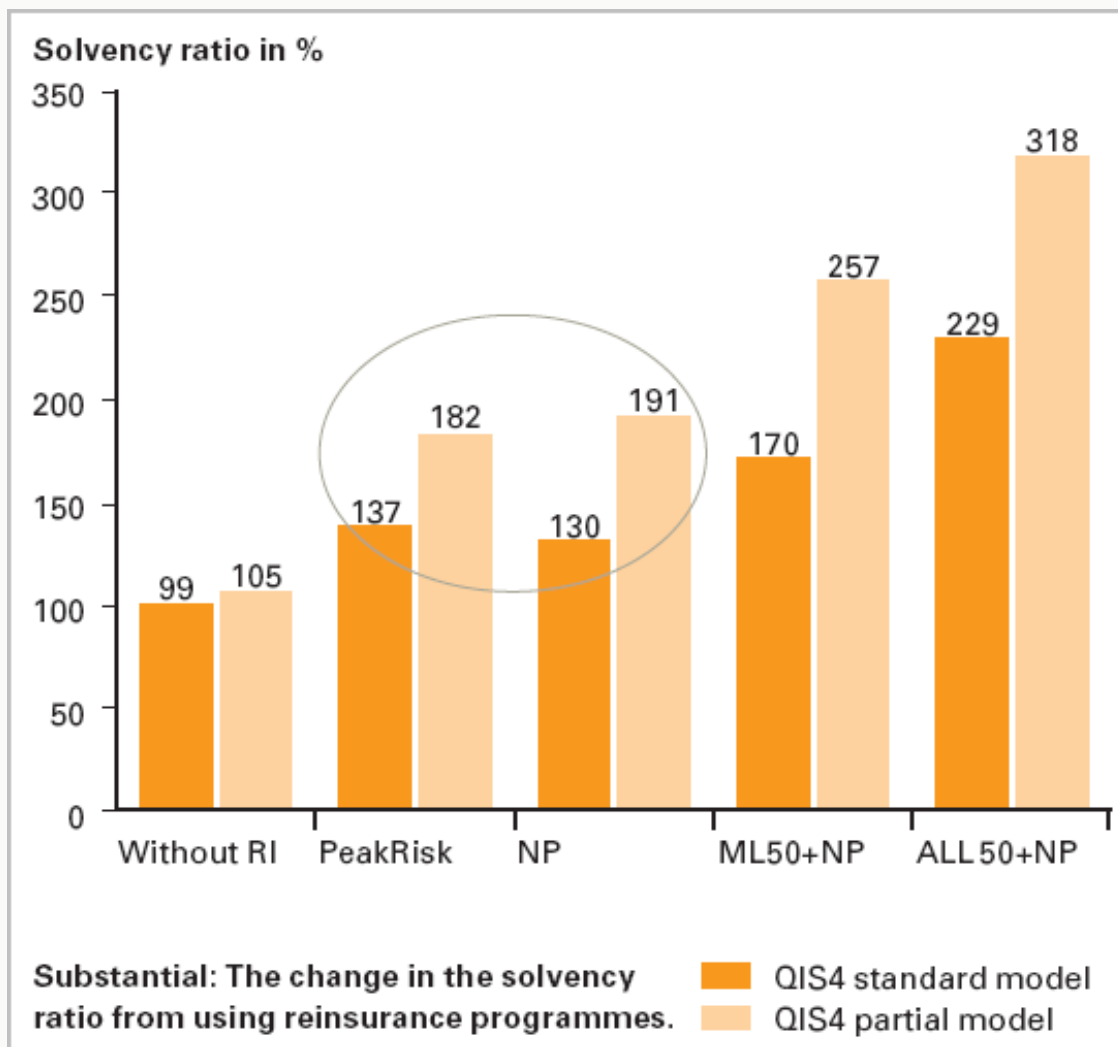
Mean  Min  Max  StdDev

Name	Mean	Min	Max	StdDev
ExampleCompany				
└--MTPL				
└--mtpI				
└--CommissionAggregator				
└--Ultimates				
└--ultimate	1500.0	1500.0	1500.0	0.0
└--Net premium				
└--Ultimates				
└--ultimate	30982.0	30982.0	30982.0	0.0
└--Gross premium				
└--Ultimates				
└--ultimate	100000.0	100000.0	100000.0	0.0
└--Property				
└--property				
└--RiProgram				
└--ClaimsGross				
└--ultimate	8.60787509...	32.0824931...	9.23247773...	2.75761003...
└--Contract1				
└--CoveredClaims				
└--ultimate	2.58236252...	9.62474795...	2.76974331...	8.27283010...
└--UnderwritingPortfolio				
└--claimsAggregator				
└--ClaimsCeded				
└--ultimate	9.19921873...	11.8585521...	1.77491442...	3.20252156...
└--ClaimsGross				
└--ultimate	3.06640624...	39.5285071...	5.91638142...	1.06750718...
└--ClaimsNet				
└--ultimate	3.11150249...	22.4577452...	6.46273441...	1.16049315...

# Impact de la réassurance sur le capital-risque! Un exemple pratique produit sous PillarOne.

## Capital-requis sous QIS4:

- QIS4 modèle standard
  - via QIS4-sheet
- QIS4 modèle partiel
  - via QIS4-sheet
  - et PillarOne



**Novembre 2007:** lancement du projet

**Avril 2008:** PillarOne.Reserving en production

- application «reserving» comme support pour QIS4
- procédures classiques: Chain Ladder et méthodes additives

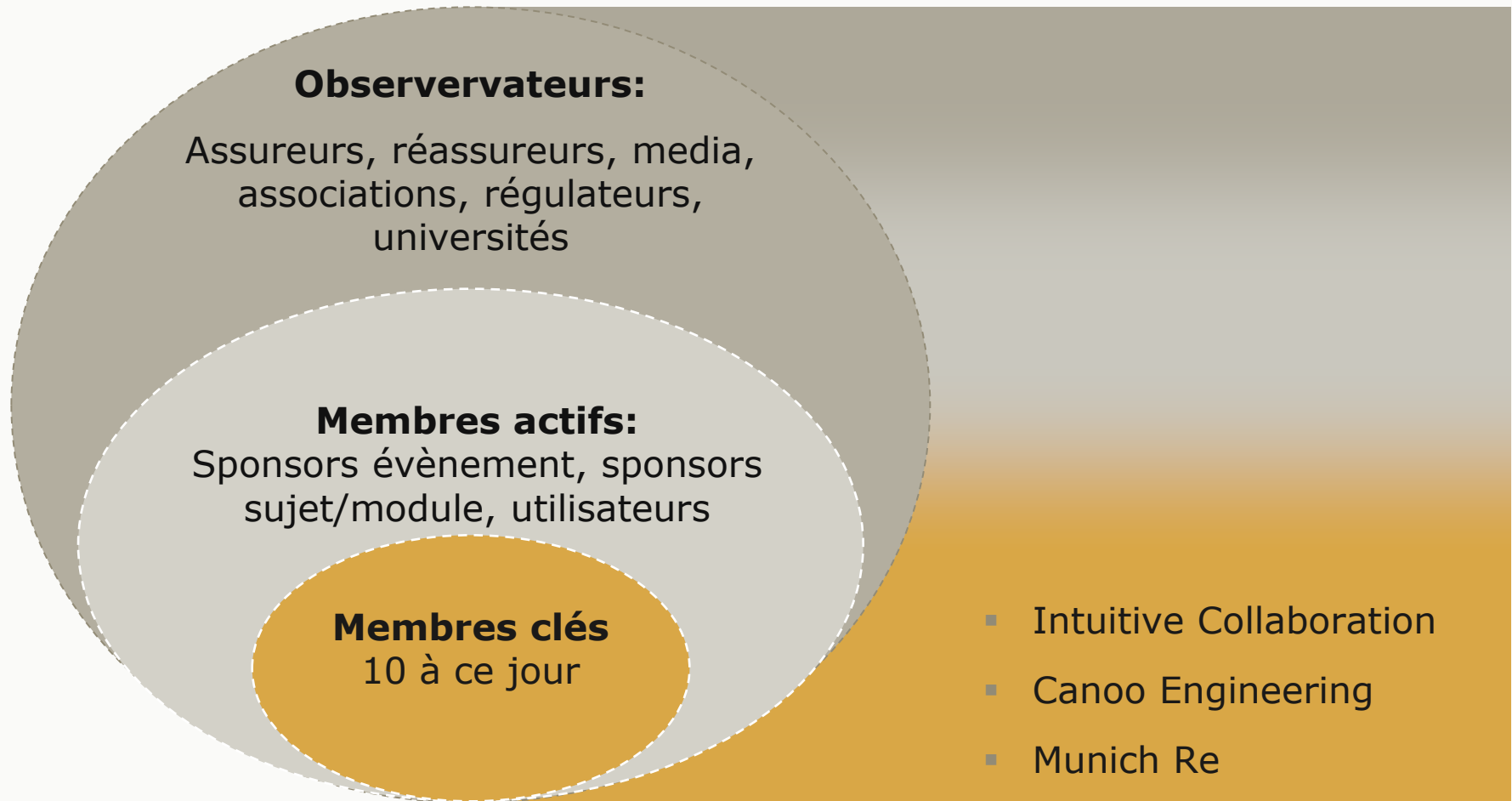
**Octobre 2008:** PillarOne.RiskAnalytics en lancement

- modèles internes partiels non-vie d'après Solvency II
- outil de simulation basée sur la méthode «Monte Carlo»
- résultats des programmes de réassurance visibles

**Avril 2009:** futurs développements de PillarOne.RiskAnalytics

- fonctions OLAP
- développement de la fonction «plug-in»
- votre avis compte – alors rejoignez nous !

# La communauté PillarOne: réalisez vos idées!



# Résumé: avantages pour la gestion des risques plate-forme PillarOne



- votre outil de modélisation interne
- développement de la culture de gestion des risques pour notre industrie
- accès libres aux concepts, code, tests et exemples
- communauté ouverte aux utilisateurs, régulateurs et au-delà
- logiciel pour utilisateurs individuels et travail en réseau



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