FinTech – Insurance

TIMO PENTTILÄ

Insurance Technology

More data and computing power

WHY

New products and services

Cost Savings

User Experiment

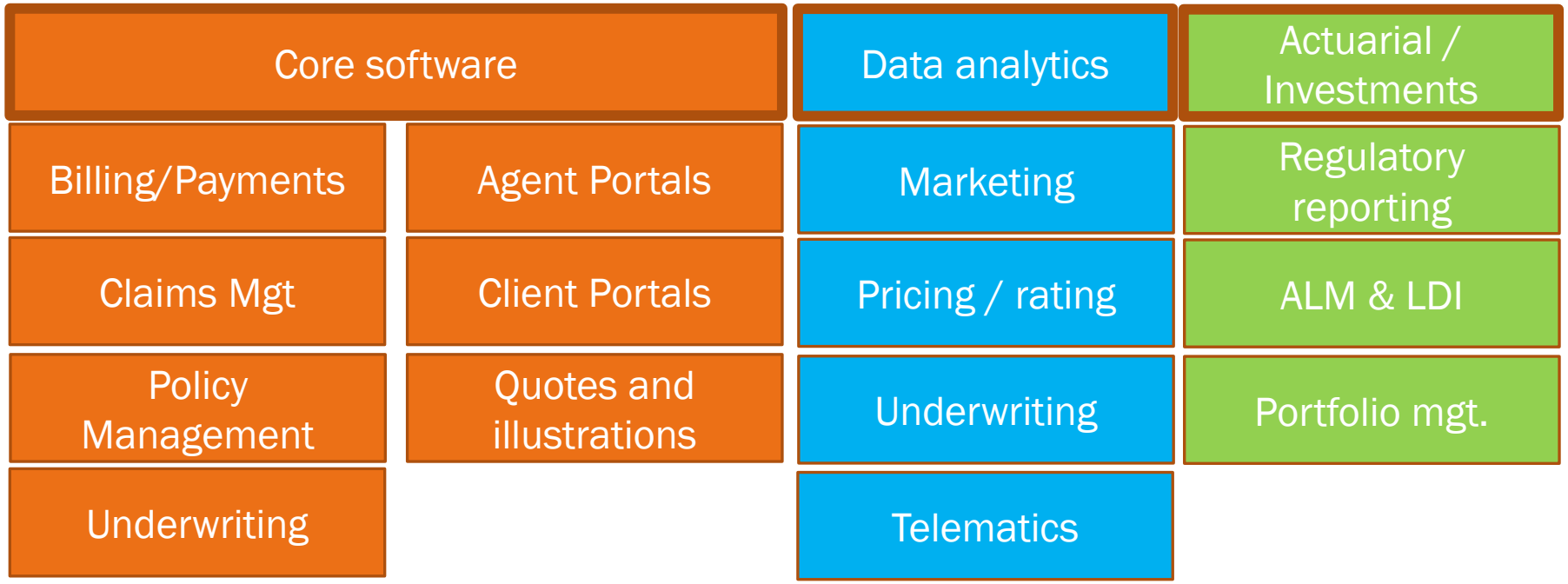
Regulations

IoT

New Technologies, Tesla etc.

Personalized Insurance

Insurance Key Technologies



SUPERVISORY TECHNOLOGY (SUPTECH)

Data sharing and data analytics

Development of a common risk assessment framework

Supporting market monitoring from a conduct of business perspective

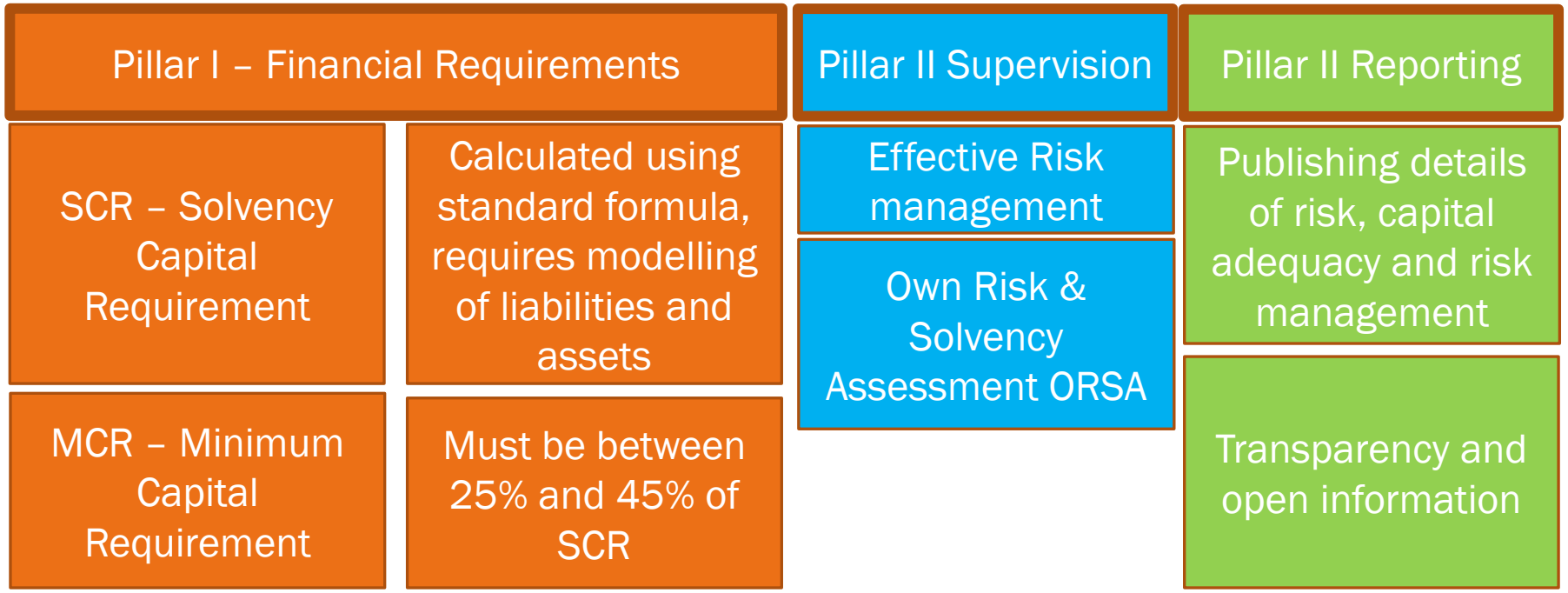
Developing a tool to automate the assessment of the information available in the Key Information Document (KID) *established by the Packaged Retail Investment and Insurance Products (PRIIPs)

Solvency II Regulation

The key objectives of Solvency II are as follows:

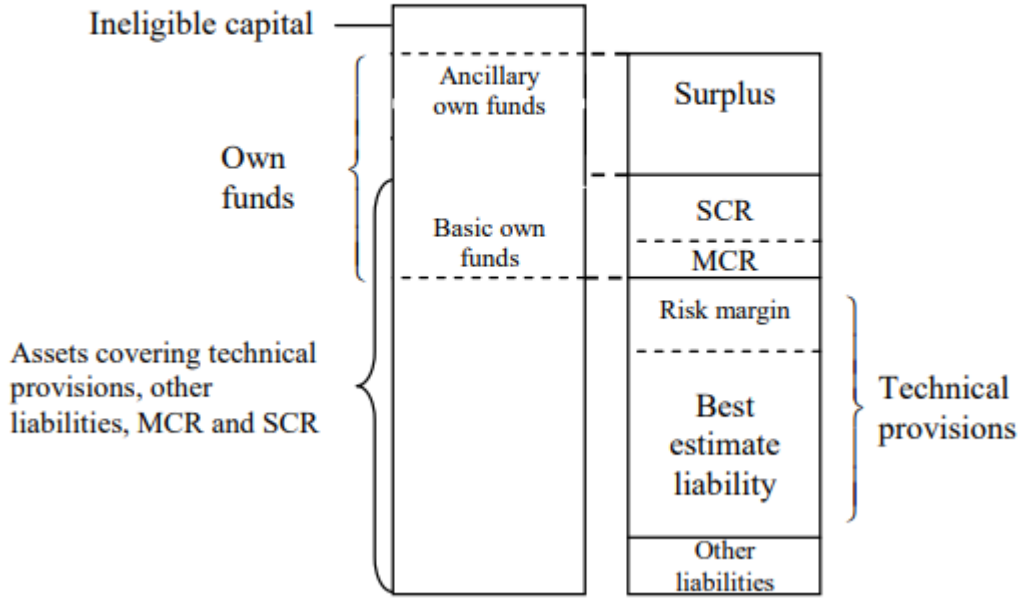
- **Improved consumer protection:** It will ensure a uniform and enhanced level of policyholder protection across the EU. A more robust system will give policyholders greater confidence in the products of insurers.
- **Modernised supervision:** The “Supervisory Review Process” will shift supervisors’ focus from compliance monitoring and capital to evaluating insurers’ risk profiles and the quality of their risk management and governance systems.
- **Deepened EU market integration:** Through the harmonisation of supervisory regimes.
- **Increased international competitiveness of EU insurers.**

Solvency II regulation for Insurance Companies



Solvency II Solvency Capital

Pillar I – Financial Requirements



Solvency - Valuation of Assets

Assets are required to be valued at market value

If such prices are not available then mark-to-model techniques can be used — provided these are consistent with the overall market consistency

Best estimate liability

The best estimate liability (BEL) is the present value of expected future cashflows, discounted using a “risk-free” yield curve (i.e. term dependent rates)

All assumptions should be best estimate, with no prudential margins

The projections should allow for all expected decrements and policyholder actions, including lapses

POLICY BY POLICY

Valuation of technical provisions

Valuation of technical provisions based on a market consistent approach

Technical provisions should represent the amount that the insurance company would have to pay in order to transfer its obligations immediately to another insurance company

Technical provisions consist of a best estimate liability and a risk margin.

The calculation should be segmented by homogeneous product type

Technical provisions = Best estimate liability + Risk margin

Internal Model

Model Developed internally by insurance company

Must be approved by regulator

Internal model refers to a risk management system

- To analyse the overall risk position
- to quantify risks and to determine the economic capital required to meet those risks.

Internal model determines the insurer's regulatory capital requirements on the basis of the insurer's specific risk profile and the defined level of safety of the solvency regime.

Disclosure and reporting requirements

The disclosure requirements are intended to increase transparency and so are more extensive than the previous Solvency I reporting regime.

The results of the solvency calculation and details of the ORSA and risk management processes need to be disclosed privately to the supervisor in the Regular Supervisory Report (RSR)

- both qualitative information and Quantitative Reporting Templates (QRT).
- The RSR, including QRT, must be submitted annually, although under certain conditions a summary (material changes) RSR is acceptable. A subset of the QRT (to support the MCR calculation) is required quarterly.
- Local regulators are permitted to impose additional reporting requirements on insurance companies in the form of “national specific templates”.

Economic Scenario Generation

Used to produce market neutral valuation and scenarios of liabilities and assets

Economic Scenario Generator

- Simulate future states of the global economy and financial markets
- Based pn advanced modeling and estimation technology to produce empirically validated, realistic economic behavior, and its financial models

Used in

- Strategic Asset Allocation
- Economic Capital Modeling
- Asset-Liability Management
- Credit Modeling

Catastrophe Modeling

Catastrophe Modeling **uses data and analysis to create predictive models of risk and potential damage from natural disasters, extreme weather events, terrorism, and pandemics**. These models are referenced to estimate financial impact from catastrophic events.

Statistical Modelling – probabilities – simulation

Big Data – AI -

Catastrophe Modeling

- **Event Module**: The event module generates thousands of possible stochastic (random) event scenarios based on historical data and parameters that attempt to represent reality.
- **Hazard or Intensity Module**: The intensity module determines the level of physical hazard specific to geographical locations using the location-specific risk characteristics for each simulated event.
- **Vulnerability Module**: The vulnerability module quantifies the expected damage from an event conditioned upon the exposure characteristics and event intensity.
- **Financial Module**: The financial module measures monetary loss from the damage estimates. Insured loss estimates are generated for different policy conditions, such as deductibles, limits, and attachment points. Varying financial perspectives, such as primary insurance or reinsurance treaties, are also provided.

Components of InsurTech

Artificial intelligence (AI): AI automates and imitates human functions for quicker and more accurate responses.

Machine learning (ML):

- Modelling risks and pricing
- Underwriting and modelling customer behavior
- Deeper insights into customer needs and targeted products and services
- Process claims quickly
- Customize marketing to each client, giving them a competitive edge over other insurers.

Components of InsurTech

Internet of Things (IoT), Automation: IoT devices are connected to the internet, and this data can be collected and used in risk analysis.

- Taxi company has all its vehicles fitted with GPS trackers and cameras (crime, driving….)
- Wearable technology like Fitbits or Apple watches can be used to analyze health risk patterns.
- Home appliances can monitor water leakage etc.

New technologies: example self driving cars

Components of InsurTech

Smartphone apps: Apps may be designed for individuals or businesses.

- Apps help streamline the process of choosing policies
- Better customer experience
- More efficiency for insurer.

Drones: Drone technology is used in aerial surveys to inspect properties in dangerous zones

- Areas prone to earthquakes, liquefaction, erosion, or storm damage.
- Can be used to inspect and document building or vehicular crash sites

Components of InsurTech

Blockchain technology:

- Improves data security standards and builds a sense of trust between the insurer and insured
- Brings down transaction expenses.
- Frees human resources, quickly processes claims
- Increases the quality of data collection

Components of InsurTech

Extended Reality (XR) technologies

- **Training:** Insurers can create virtual customers through extended reality to train customer service teams on how to communicate with clients, and walk them through the purchasing process
- **Risk Assessment:** Underwriters can create XR simulations from on-site images and other illustrations to look for risks in buildings
- **Face-To-Face Interactions:** Augmented imagery also helps insurers communicate and interact remotely with their clients.

Components of InsurTech

Payment solutions

- Automation of the claims
- Automation of payments
- Smooth customer service
- Efficiency
- (New models example payments based on usage in car insurance)

Quoting solutions

- Replacing tedious processes, frustrating to customers
- Automated pre-approved quotes
- Easier to have and evaluate utiple options

Applications of InsurTech

Verification of Customer Identity

- The Know-Your-Customer (KYC) process
- Insurers have to collect all counterparty information to verify identities
- Sizable amount of data
- Some insurtech companies have used blockchain to develop prototype software that stores customer identification details from issuing authorities.

Managing Claims

- Companies can use blockchain technology to create a standardized claims document--evaluated by underwriters in real-time.
- They can also automate smart contract elements, ensuring its execution is flexible and transparent.

Applications of InsurTech

Smart Contract Formulation

- Smart contracts eliminate human interference, lower the risk of manipulation, and allow more transparency.
- It dramatically speeds up claim processing.
- It lowers administrative costs for the insurer. Because of this, companies can lower premiums, increasing market share.
- Both parties cannot lose agreement information. Smart contracts are trackable and irreversible.

Detecting Fraud and Risk Prevention

- A large number of claims are fraudulent.
- Companies can detect and eliminate the chances of fraud with a decentralized digital depository.
- This verifies the authenticity of the individual and the claim, safeguarding against duplicate transactions or third party interferences--enabling all transactions to public record.

Insurance Fintech's Examples