

Insurance and the Oracle

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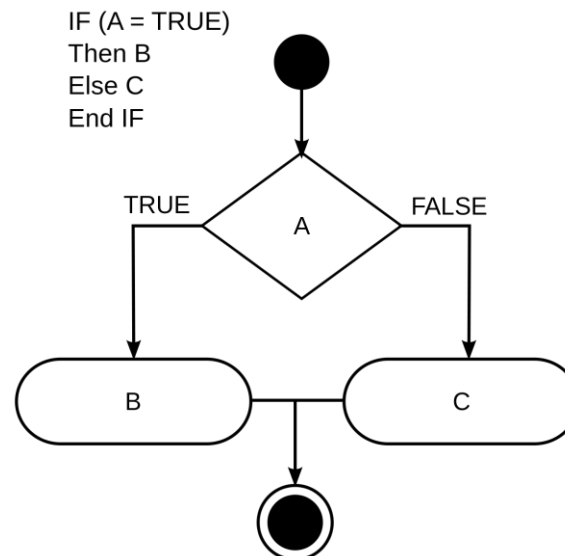


Blockchain in Insurance

- Insurance companies work with **many different players** and have a **long value chain**.
- As insurers operate in **increasingly complex business ecosystems**, they need to find an **efficient way to manage all these relationships**. This includes the goal of providing a **seamless customer experience**.
- In particular, certain processes can be **automated** and **simplified**.
- One such process is the **management of claims**.

Smart Contracts

- Smart contracts essentially **automate transactions** when their **triggering clauses** are **met in the real world**.
- Another essential element of blockchain-based smart contracts is the **ability of the blockchain protocol to monitor for events** that would trigger an embedded **“IF-THEN”** statement.



Insurance Policy as a Smart Contract



- An insurance contract is essentially a legally binding, independent promise of a benefit in return for payment of a premium **if an event occurs** of which it is still uncertain whether or when it will occur (insured event).
- In other words:
 - **IF** a certain event occurs
 - **THEN** a certain benefit must be provided
- Or in yet other words:
 - **IF** a loss has occurred
 - **THEN** a loss payment must be made

The question of “IF”

- Usually, the question **IF** an insured event has occurred and a payment must be made is decided by the **insurer** and its **claims handler** (or the court).
- In a smart contract, the question **IF** an event has occurred is **decided by the Oracle**.



Who is this Oracle?

- Smart contracts need Oracles to **resolve details that cannot be precisely known** at the time the contract is written.
- Oracles are **one or more external digital agents or sources** trusted by the blockchain participants (the parties of the contract).
- The Oracle **monitors the external parameters designed within the smart contract** and gives **direction or approval to execute the contract** if those parameters are met.
- In other words: The Oracle **interfaces** with the **real world**.

Types of Oracles

- **Software Oracles** handle information that originates from **online sources** (e.g. weather data, flight delays). The software oracle extracts the needed information and pushes it into the smart contract.
- **Hardware Oracles** capture information directly from the **physical world** (e.g. sensors) and send the data to the smart contract.
- **Consensus-Based Oracles** get their data from human or other **consensus** (which implies more than one source).

Do you trust the Oracle?

- The main challenge with oracles is that people need to **trust** these **outside sources of information**, whether they come from an online source or a sensor.
- The Oracle could provide **false information** and **can be tampered with**.
- Do you have **sufficient trust in the Oracle** so it can decide **IF** an insured event has occurred?



The Oracle in Life Insurance

- Some of the simplest IF-THEN types of insurance policies are **life insurance** policies.
- In their most simple form, life insurance policies **pay out upon the policyholder's death**.
- Can the Oracle decide about **life and death**?
- The software oracle could access “**Infostar**”, the electronic civil register maintained by the **Federal Office of Justice FOJ**. Infostar records birth, marriage, registered partnership, and death (among other things).



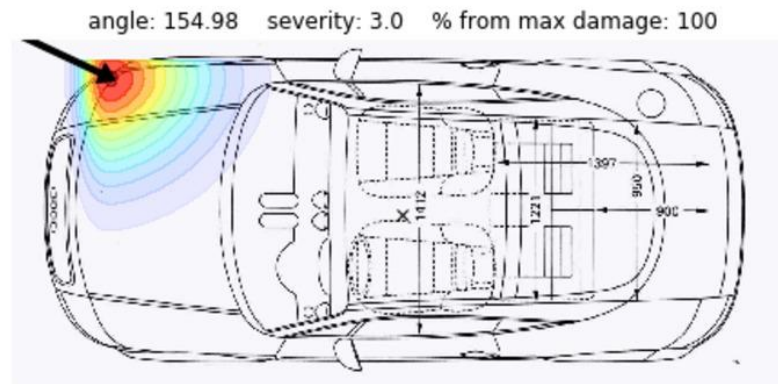
The Oracle in Crop Insurance

- **Crop insurance** provides insurance of agricultural land products against damage caused by **climatic events and natural hazards**.
- Can the Oracle decide about **climatic events**?
- The software Oracle could periodically check multiple sources of weather data, inter alia data provided by the **Federal Office for Meteorology and Climatology** (MeteoSwiss).



The Oracle in Hull Insurance

- **Hull insurance** pays in the event of **damage**, destruction or loss of the **insured object**.
- Can the Oracle decide about **damage to the hull**?
- The hardware Oracle could gather **data from sensors installed in the hull** and in other places in order to assess the



The Oracle in D&O Insurance

- **Directors and officers liability insurance** is liability insurance payable to the directors and officers of a company, or to the organization(s) itself, as **indemnification for losses or advancement of defense costs** in the event an insured suffers such a loss as a **result of a legal action** brought for **alleged wrongful acts** in their **capacity as directors and officers...**
- Can the Oracle decide if an **insured loss** occurred?
- The consensus-based Oracle could **access claims files** and **court data** in order to determine if... (why not?)



So you trust the Oracle?

- If you trust the Oracle, you can benefit from the **automation of the claims handling process** and the **reduction in frictional costs**.
- **Parameterizing** current forms of insurance and **coding** these policies onto **blockchain-based smart contracts** can **fundamentally alter insurance offerings** by
 - **lowering transactional costs** of simple policies to allow for lower-premium policies to be profitably administered and
 - **opening new markets** for insurance products since claims adjustors would no longer be necessary to effectively administer such policies.



So you don't trust the Oracle?

- If you are the **Insurer**:
 - Good for you! Usually it is up to the policyholder to prove if the insured event occurred. Let them do the work.
- If you are the **Policyholder**:
 - Good for you! You can prove that the loss occurred even if the circumstances indicate otherwise.
- If you are the **Oracle**:
 - Good for you! You will not be held liable for a false input.

Who else needs to trust the Oracle?

- The **regulator** needs to trust that
 - **reserving** for unearned premiums, claims, IBNR and ULAE is in line with the business plan although the Oracle has a say.
 - proper **BCM measures** are in place in case the Oracle has a disorder.
 - the Oracle is concerned for **fair treatment of customers**.
 - (the Oracle adheres to the **elemental perils regime**)
- The **actuary** needs to trust that possible scenarios (stress tests) can be predicted based on the performance of the Oracle.
- The **risk function** needs to trust that the Oracle will not be tampered with.

Who else needs to trust the Oracle?

- The **compliance function** needs to trust that the Oracle will fit into the compliance universe.
- The **finance function** needs to trust that there will be no sudden, very large automated payments hazardous to solvency caused by the Oracle.
- The **reinsurer** needs to trust that it can follow-the-fortunes based on input provided by the Oracle.

Thank you for your attention!

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