



# SPARKL®

## Boost Operational Agility

How SPARKL® enables re/insurers to automate with multi-party smart policies

### Insurance Proof of Value

In association with



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# 01 SPARKL Proof of Value Programme

SPARKL® has developed a Proof of Value (PoV) programme to help re/insurers discover and assess how best to automate and monitor key parts of insurance processes with SPARKL smart policies.

SPARKL answers key questions for insurers:

**01** Do you really understand what kind of policy you're signing?

**02** How do you cope with multiple blockchains?

**03** How do you integrate cloud and enterprise systems?

**04** How do you face off to legacy systems?

**05** How do you get full-stack analytics?

The principal objective of this Proof of Value engagement is to scope and deliver a SPARKL smart policy solution in an accelerated time frame.

Additionally, SPARKL has been integrated with a variety of blockchain solutions, including:



The PoV has a fixed duration and includes:

- Working with the client to get the solution running in a production or representative setting
- Eliciting opportunities for, and benefits of, automation of parts of your re/insurance business processes
- Identifying where the value is expected to be derived, and how the value should be tracked and measured both for the remainder of the PoV and after
- Demonstrating measurable improvements against identified value and performance metrics
- Delivering a plan for further adoption

SPARKL is powerful technology providing insurers with a new and efficient way of handling re/insurance contracts - the smart policy.

It comprises the simple, declarative Clear Box® modelling language which couples with the lightning fast SPARKL Sequencing Engine to provide a unique solution for the design, modelling and enforcement of smart insurance policies.

Digitally-signed, every policy is customised to hold the terms and legal clauses you need to execute complex processes such as inwards, claims and settlements. You can integrate SPARKL smart policies with any of your existing systems, producing an analytics-friendly audit trail secured by the blockchain of your choice.

By applying SPARKL smart policies to your insurance processes and legacy estate, you can cut costs, reduce delays and improve claims handling across your operations.

# 02 What are the Challenges for Reinsurers?

Today's reinsurance firms have a unique and well-established place within the risk transfer market.

Renowned across the world for making major contributions to economic growth and development, reinsurers utilise countless technologies to support policy modelling systems - in fact, it's not unusual for management to invest millions of pounds to maintain and advance technical advantage over competitors.

Emerging blockchain technologies are one such example, having kickstarted an industry-wide effort to cut costs and improve agility across risk management tools.

## What do reinsurers do?

Reinsurers help primary insurance providers manage their risks by absorbing some of their losses after a catastrophic event.

As part of its risk management process, a reinsurer may pass on some of its risk to another reinsurer. This process reduces claim volatility and guards against extreme events, therefore reducing the severity of claims for the original insurer, as well as diversifying their portfolio of risks.

Only by sharing some of their risk with reinsurers is it possible for primary insurers to offer coverage against the major risks we face today such as floods, typhoons and terrorism.

## What's next?

New regulation and disruption introduces a layer of IT complexity and uncertainty into the industry not seen before.

Issues such as market conduct and solvency must be considered.

Insurance policies have particularly complex structures and ongoing costs, making smart contract-based automation a viable option for insurers.

This could enable reinsurers to create real value out of building systems on transparency.

With SPARKL, reinsurers can embrace blockchain technology for security, scalability, and flexibility using smart policies.

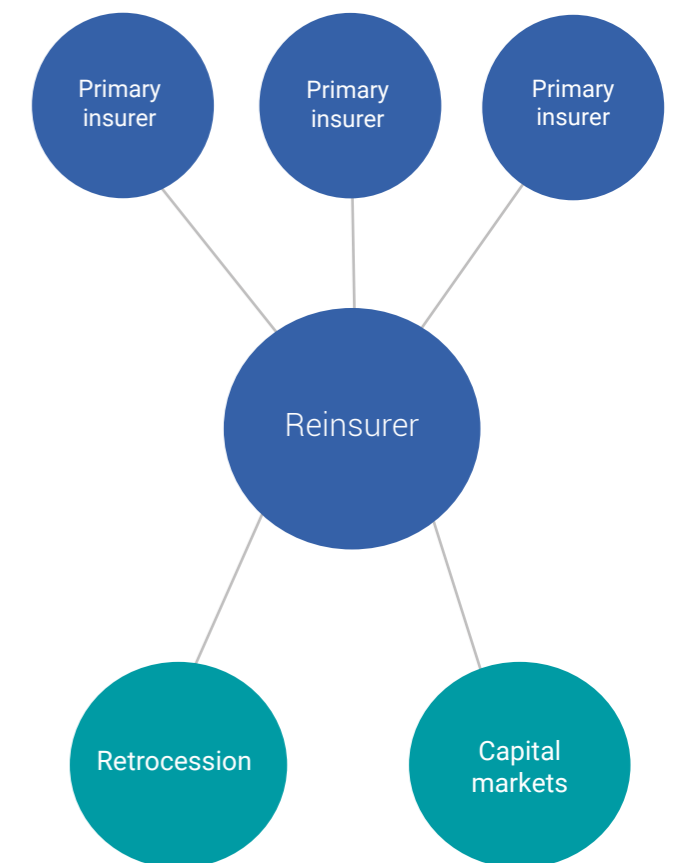


Figure 1: How it Works

# 03 How can Re/insurers embrace Blockchain?

Re/insurance contracts - or smart policies, as SPARKL calls them - can be secured and verified with blockchains. Depending on your requirements, there are many different types of blockchains that can be used for this process.

To start with, there are blockchains that track assets, such as [Bitcoin](#). These require proof-of-work and a consensus protocol to prevent tampering, as they're public and can be updated by anyone.

There are private - or permissioned - blockchains, where participants are generally known to each other and have permission to update the ledger.

Then there are hybrid blockchains for specific applications, such as tracking the provenance of branded goods and commodities. With these, a permissioned and a public blockchain could be linked for a purpose-built cloud or enterprise application.

A diamond tracking business, for example, might want to take out a smart policy to protect its assets. A **one-time, per-policy electronic document** can be drawn up, modelled, agreed and digitally signed by the diamond trackers and their insurance company.

It's a **policy** because, private or otherwise, it's a unique document expressing the benefits and obligation of each contracting party. It's **smart** because it automatically executes the terms of the document by itself.

Once signed, the policy is automatically deployed in a place that is itself specified as part of the policy. For example, a cloud datacenter from a whitelisted provider in a specific jurisdiction.

As the policy is notified of claims, endorsements and other policy-related events, it performs all the business operations required to integrate external systems and settle payments using fiat or digital currency.

Amongst other things, the policy might need to reference several different blockchains in the process:

**01** A hybrid blockchain combining, say, [Eris](#) and Bitcoin, to track the provenance of the diamonds.

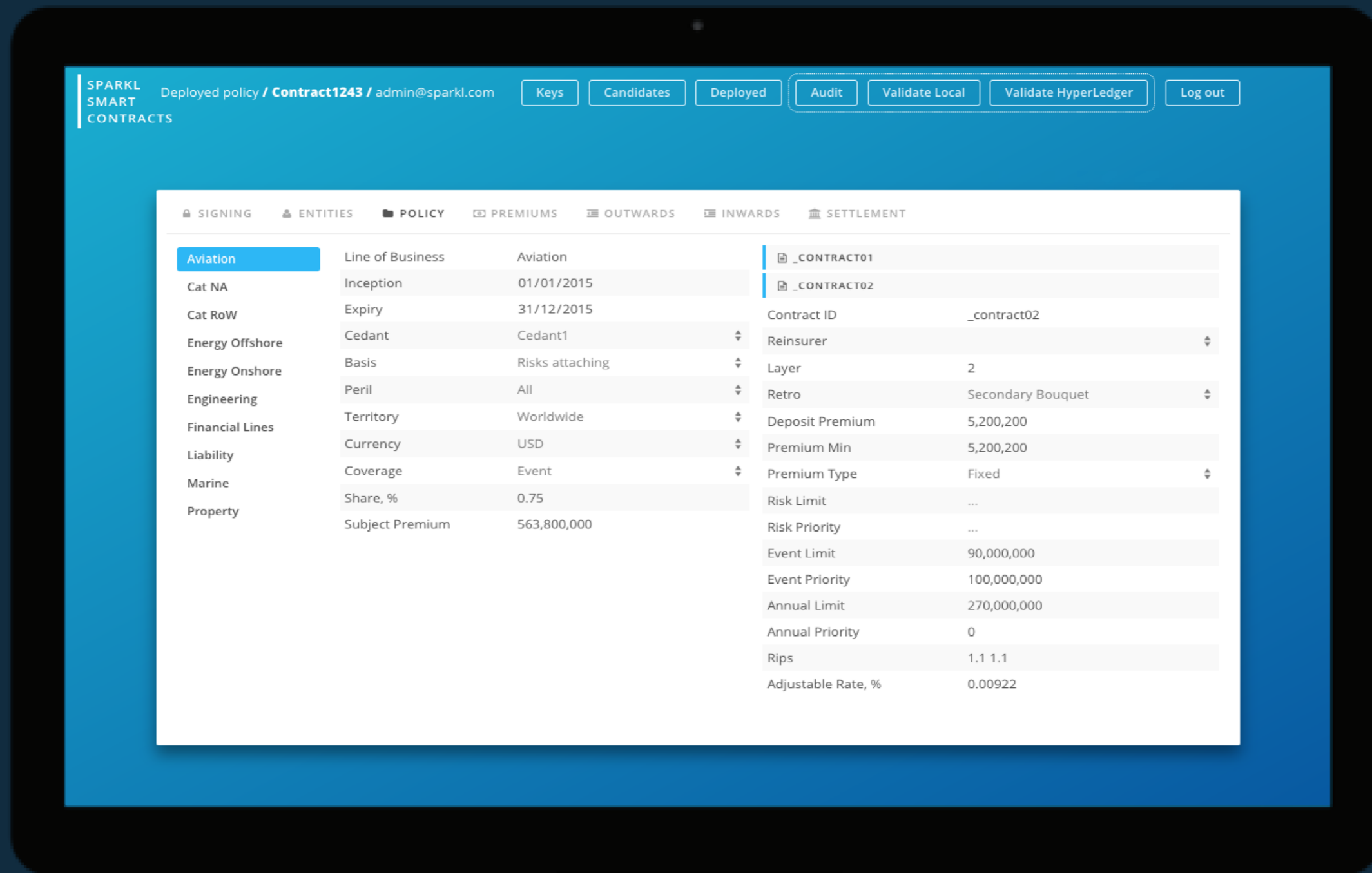
**02** The public Bitcoin blockchain for digital cash settlements.

**03** A permissioned blockchain, which tamper-proofs transaction workflows as events occur under the contract.

**04** Other blockchains relating to downstream smart policies between the insurer and, say, its reinsurers.

Parties in a smart policy might have other needs too - including embedding blocks of legal clauses, reporting, analytics, facing off legacy systems, integrating cloud and enterprise systems and achieving permission-based visibility of events and state.

# 04 Introducing SPARKL smart policies



SPARKL Clear Box® defines the smart policy, whilst the Sequencing Engine drives it. The chosen blockchain tamper-proofs the clean, connected audit trail.

Developers can take any ordinary blockchain, such as [Hyperledger](#), and quickly model, test and deploy smart policies on the SPARKL Developer Console, which can be accessed from your web browser.

Digitally-signed smart policies are authored either directly using Clear Box, or you can choose to use a custom domain-specific language (DSL), designed for a re/insurance business context.

This approach allows for a conventional all-nodes, mix-on-chain execution, as well as a more nuanced, selective execution depending on the level of trust between participants on the smart policy.

In either case, analytics based on tamper-proof audit logs can be applied to ad-hoc and automated reconciliation.

Designed to work with in-house and multi-party enterprise systems, you can easily integrate SPARKL with your preferred technology stacks - including your existing systems - for analytics and business reporting.

# 05 What can SPARKL smart policies do?

As a business stakeholder, I want to	SPARKL®
<b>Write</b> multi-party smart policies using a high-level, declarative language.	<b>Provides</b> the high-level, declarative Clear Box® native language. You can even define domain-specific contract languages (DSLs) for even simpler policy specification.
<b>Account</b> for different trust relationships between policy parties when it comes to real-time validation of policy execution.	<b>Enables</b> parties to choose how to validate a proposed policy state update, based on the trust relationship with the proposer.
<b>Include</b> integration logic in the same behaviour description as the policy.	Clear Box means logic usually external to smart policies and contracts (resulting in fragmentation) can be represented in the <b>same</b> behaviour description.
<b>Hand off</b> to legacy systems where appropriate in the smart policy logic, and to have those systems automatically <b>synchronised</b> in respect of policy execution.	<b>Allows</b> the behaviour of existing systems, regardless of technology, to be included in any smart policy flow - with a complete audit trail of those systems' behaviour.
Have <b>support</b> for parties signing a version of a policy, and for execution to occur according to that version.	<b>Supports</b> a comprehensive, automated policy signing workflow. It prohibits execution where a policy does not have the required signatures.
<b>Leverage</b> smart policies written by the community and made available by smart contract ecosystem	<b>Supports</b> the inclusion of arbitrary smart policies as part of behaviour descriptions, as well as providing a smart contract language of its own and support for DSLs.
<b>Involve</b> only a subset of parties in any one transaction in a policy to be able to see data relating to the transaction.	<b>Deals</b> naturally with this issue as part of its distributed intelligence orchestration.
<b>Make use</b> of powerful automation that helps me show compliance for regulatory and other requirements.	<b>Proves</b> that every step in policy execution occurred according to the terms of the original policy, coupled with analytics for ease of use.

# 06 Claims & Premium Processing

Claims and premium processing is a prime example of a reinsurance process where the use of SPARKL smart policies brings a significant benefit to the workflow.

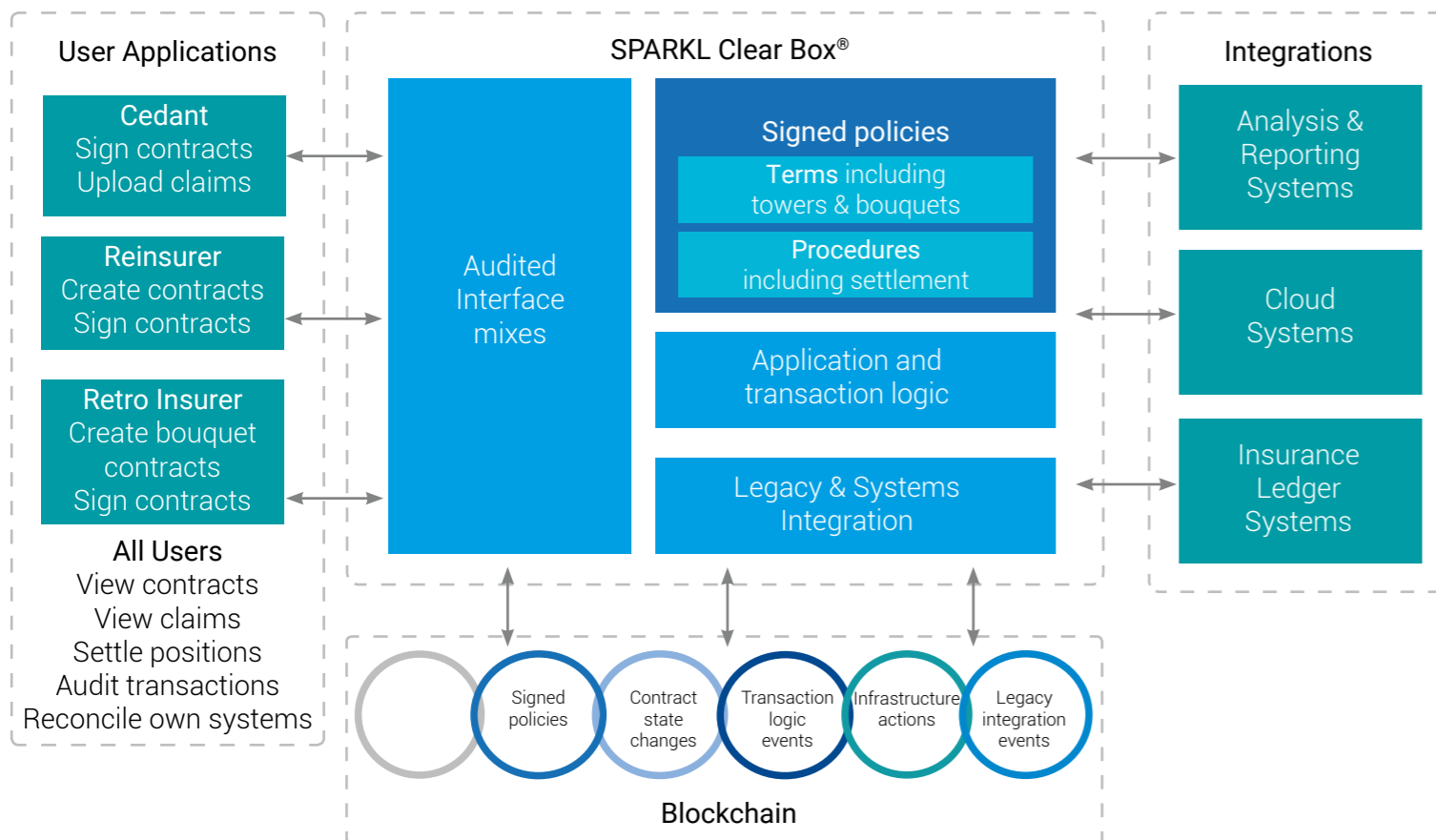
It includes a complex series of calculations with a defined order, but with varying triggers and restrictions.

SPARKL ensures:

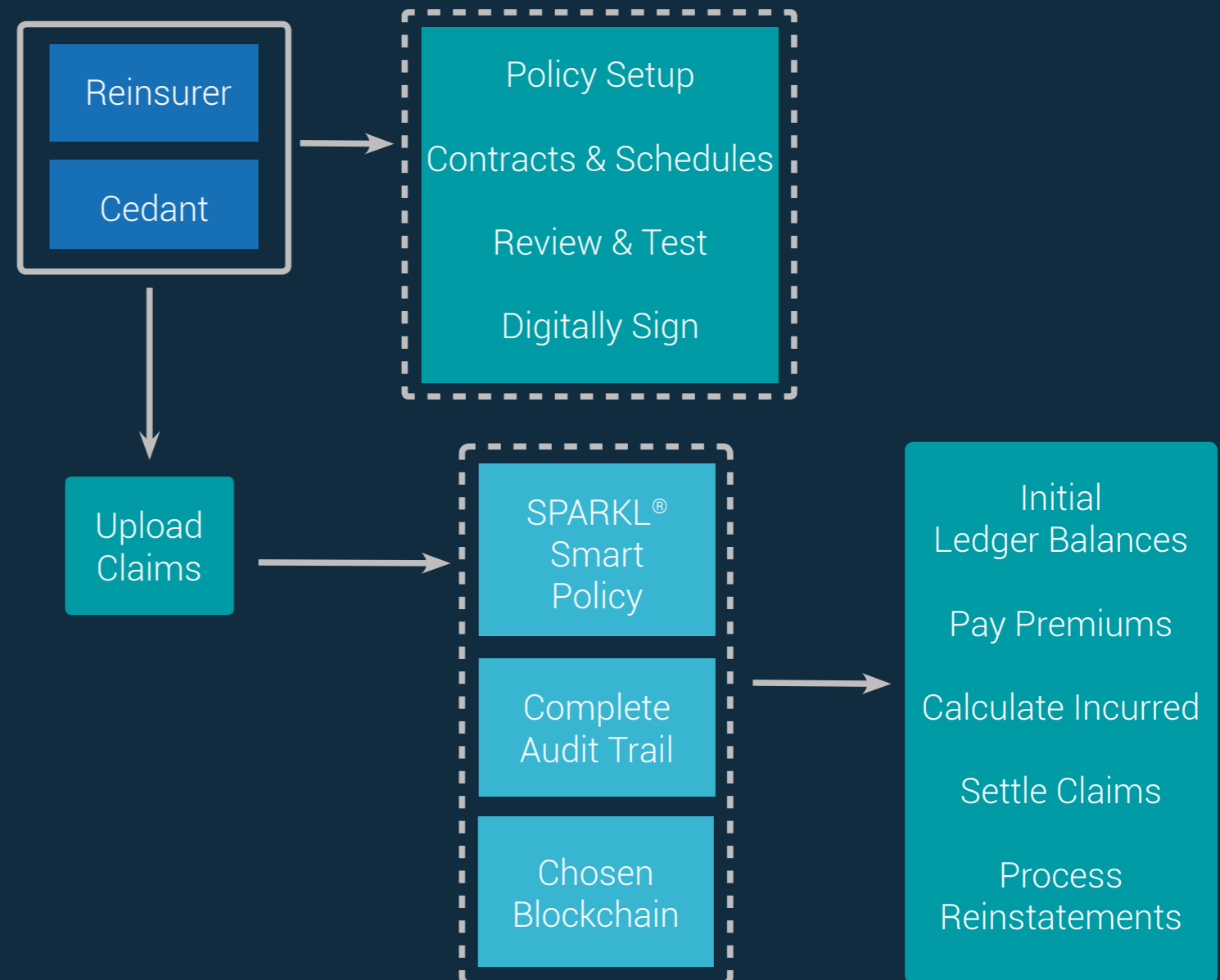
- Underlying policies fit within the program
- Losses fall within the defined policy terms
- Processes are applied in the correct order
- Claims are applied individually or grouped appropriately
- Various policy limits are properly applied
- Any premium & claim payments required are calculated, processed and communicated
- Any remaining reserves are calculated correctly and set up in accounting systems
- The overall relationship is monitored and any resultant ledger entries are calculated and applied correctly

A solution that accommodates this entire process should include tools for devops, integration, reporting, audit and analytics - all of which SPARKL provides through Clear Box® and the SPARKL Sequencing Engine.

## Developer View



## Business Stakeholder View



# 07 SPARKL Value Proposition

New blockchain solutions for smart contracts can be hard to deliver for the enterprise.

Because they are written as programming code, or "**code-on-chain**", smart contracts and policies can be too low-level for executives - and even developers, at times - to interpret and manage efficiently.

The result? The end product is more buggy and complex than ever before - only contributing to the black box swamp that exists in every enterprise. With limited support in the way of analytics, business and compliance reporting, this just doesn't work.

**SPARKL® solves these challenges to  
make blockchain work for you.**



## Integration

Create workflows which integrate multiple blockchain solutions as well as your cloud and enterprise systems.



## Legacy Systems

Have your legacy systems participate in the same blockchain-secured workflow.



## Vendor Lock-in

Change blockchain provider at any time without sacrificing security or performance.



## Analytics & Reporting

Provide a tamper-proof, analytics-friendly audit trail of every individual event, complete with cause, for data analysis and regulatory compliance.



# Let's Talk

For more information or to see a demo, drop the team an e-mail at [talk@sparkl.com](mailto:talk@sparkl.com).

SPARKL® designs and develops the SPARKL technology in London, UK. We work with partners including Cisco and Intel to market the products to innovators and customers worldwide.

