

Actio: An OSS Anti-Financial Crime and Risk Management Solution

PI 17 Review
2022-04-27

Actio FCRMS - MVP Journey

Mojaloop PI 12

Actio PI 1 - PoC

The FCRMS workstream, through a partnership between Sybrin and LexTego, conducted a technology Proof of Concept to compose a fraud risk management solution exclusively out of Open Source Software (OSS) components and achieved:

- Peak through-put exceeding 8000TPS
- Turn-around time of less than 35ms

Utilising 5 sample typologies representing:

- SIM Swap Fraud
- Scams
- Account Muling
- Money-Laundering (Layering)
- Block-list management and interdiction

Mojaloop PI 13

Actio PI 2

The focus of this PI was to finalise the MVP solution component selection and architectural design.

Deliverables in this PI included:

- Implementation of ArangoDB for multi-modal DB support, including graph processing
- Implementation of a Mojaloop instance for testing and integration
- Implementation of a CI/CD pipeline
- Development of a Predicate Builder to facilitate typology development and scoring
- Construct an end-to-end flow utilising implemented components

Mojaloop PI 14

Actio PI 3

The focus of this PI was to extend the platform with additional components and functionality, specifically:

- The implementation of a Payment Platform Adapter to convert Mojaloop messages to ISO 20022-compliant messages
- Implementation of ISO 20022-compliant data flows inside Actio
- Data protection by design - Pseudonymisation of customer information in NiFi
- Configuration-driven rule and typology processing

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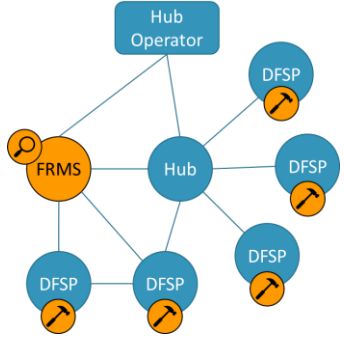
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Actio

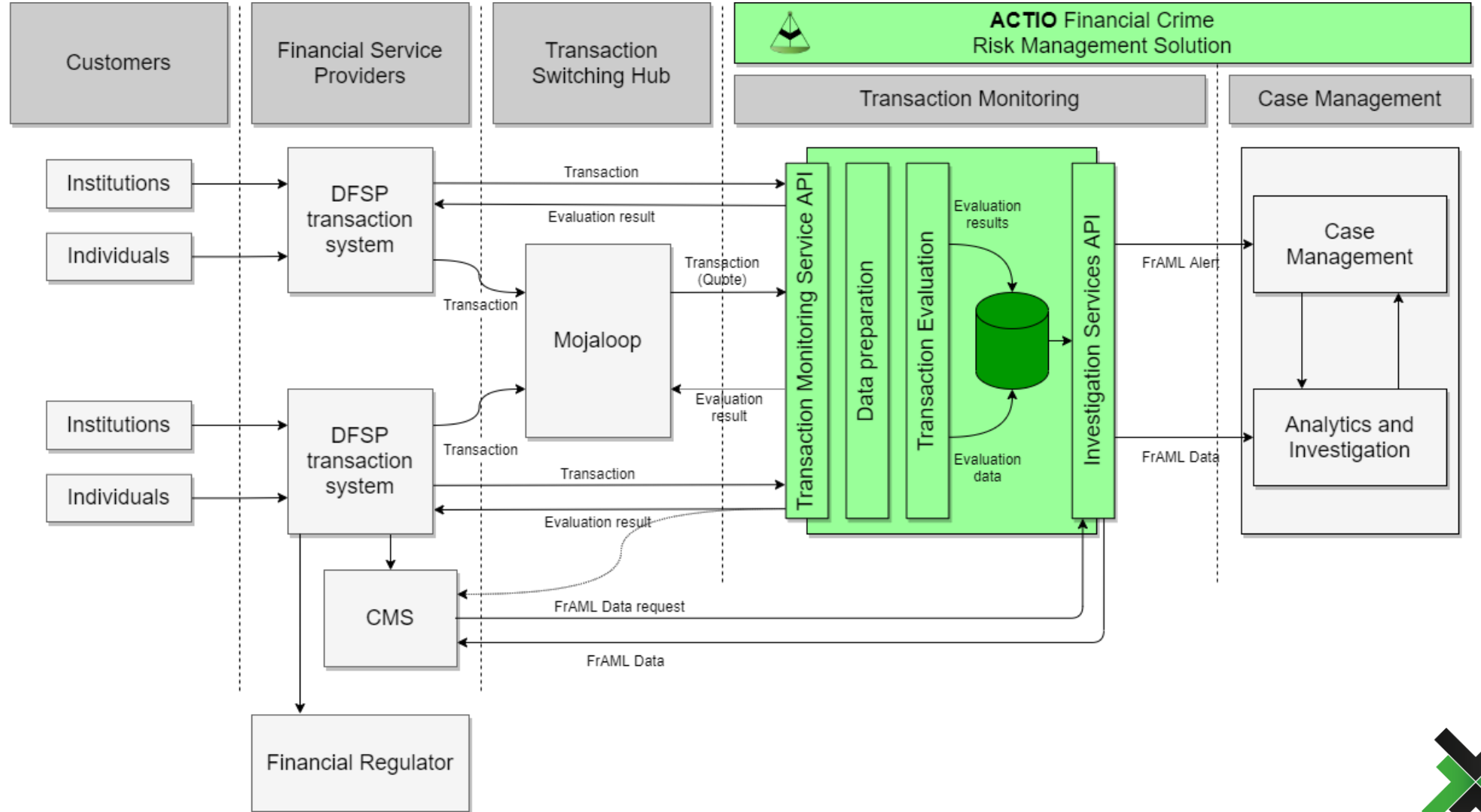
Actio is an Open Source real-time transaction monitoring platform that can ingest transaction messages in ISO20022 format and evaluate transactions for fraud and money-laundering behaviour using 35 pre-configured rules that support 31 pre-defined typologies.

Actio context

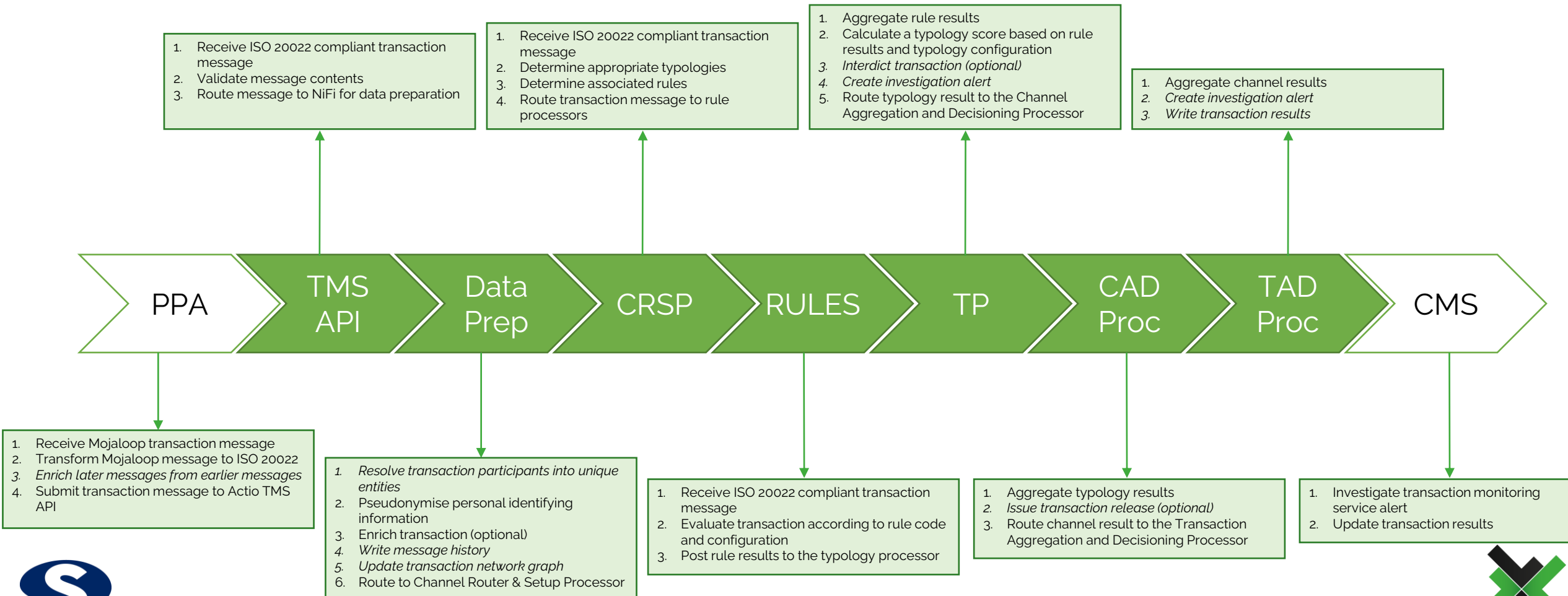


Semi-attached

- Centralised financial crime risk detection service hosted by the switch Operator
- Separate interface to receive transactions from switch participants and non-participants
- The Operator performs detection on all transactions routed to the FRM service
- Each DFSP would employ compliance teams



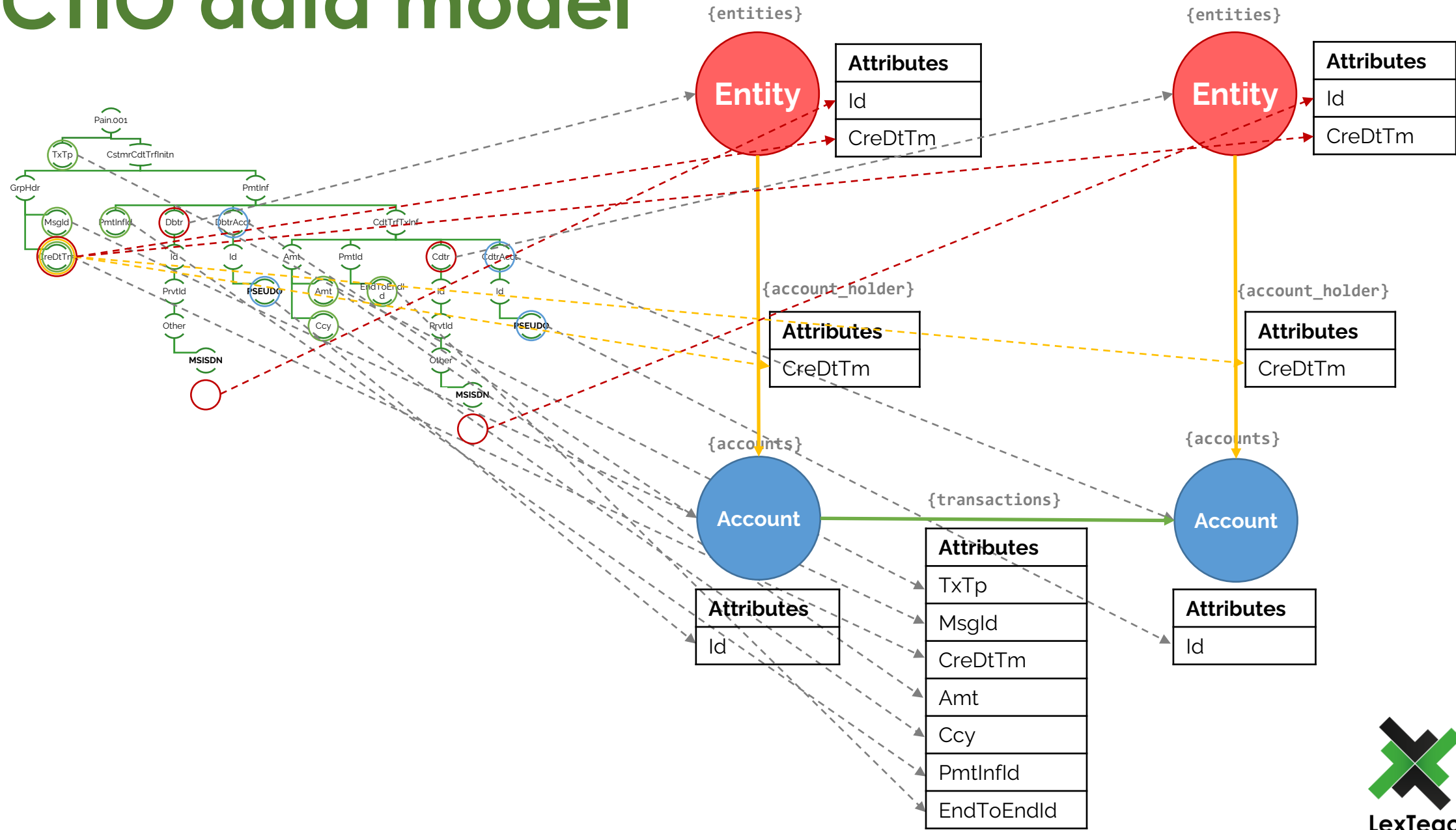
Actio Process Flow



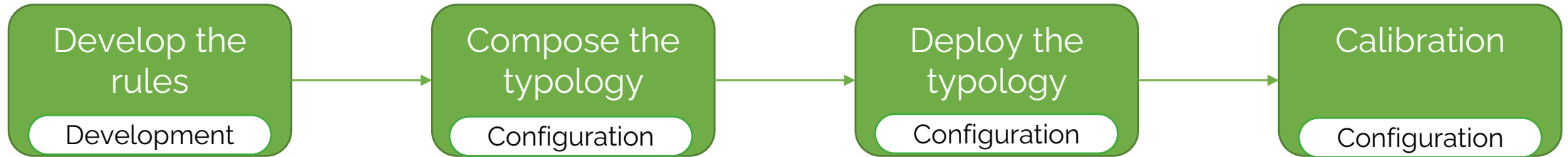
PI 6 Delivery

- Typologies (2 existing + **29 new**)
- Rules (9 existing + **26 new**)
- **Entity resolution**
- **Data model extension**
- Performance improvements
- Whitesource scanning
- Deployment automation

ACTIO data model

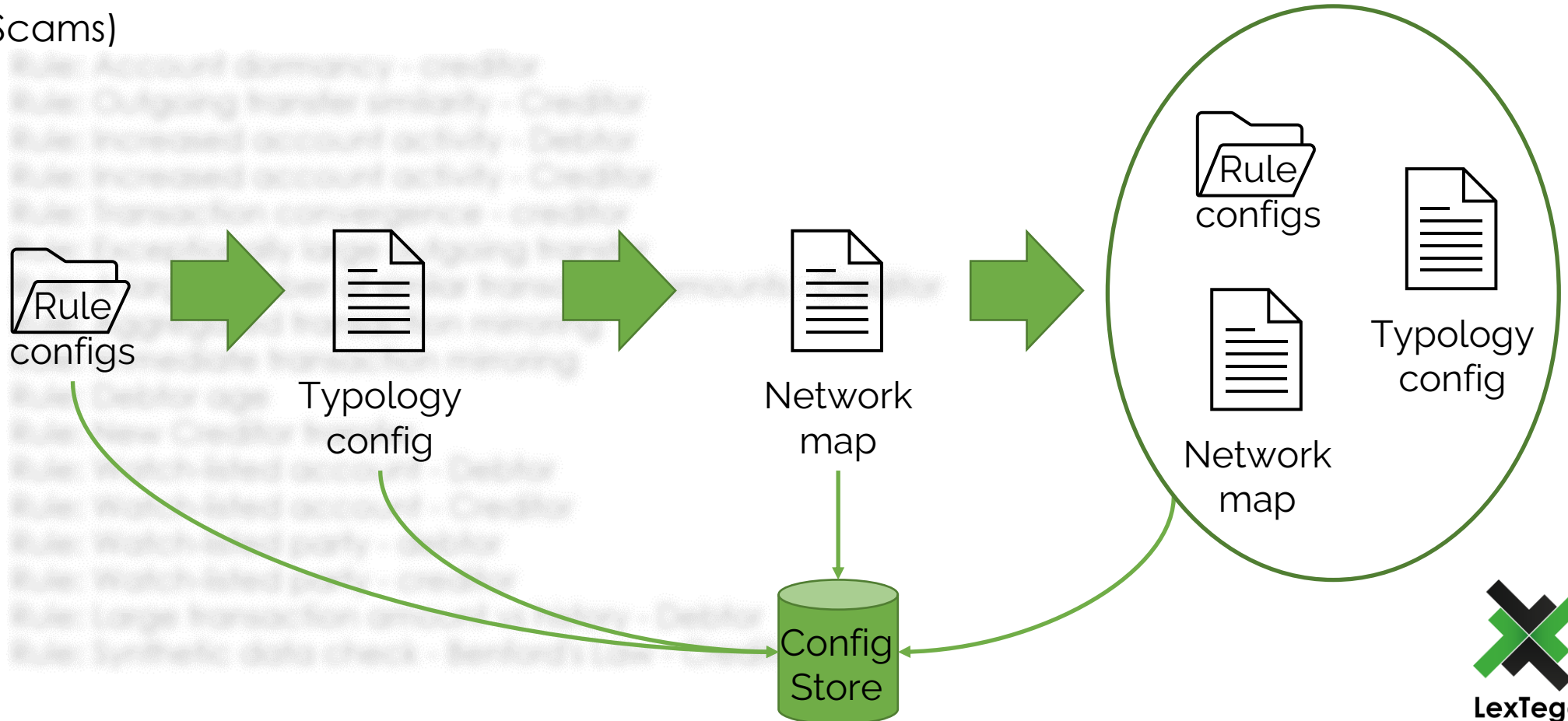


The typology life-cycle



- Typology 28 (Scams)

- 003@1.1.0
- 008@1.0.0
- 010@1.0.0
- 011@1.0.0
- 016@1.0.0
- 018@1.0.0
- 021@1.0.0
- 025@1.0.0
- 027@1.0.0
- 028@1.1.0
- 030@1.0.0
- 034@1.0.0
- 035@1.0.0
- 036@1.0.0
- 037@1.0.0
- 048@1.0.0
- 063@1.0.0



DevOps

Azure infrastructure breakdown and costing

Costing

To run the current setup will cost an average of
R24 000 (\$1527,12)/ R30 000 (\$1912,50) per month

Breakdown

The following shows the infrastructure being used be:

- **Disks - 28**
- **Public IP Addresses - 3**
- **Load balancers - 1**
- **Virtual machine scale set - 2**
- **Virtual Network - 1**
- **Route table - 1**
- **Network security group - 1**
- **Managed Identity - 1**

| NAME | TYPE | LOCATION |
|--|---------------------------|-----------|
| ACTIO | Container registry | West US 2 |
| ACTIO-FRM-vnet | Virtual network | UK South |
| AKS-ACTIO | Kubernetes service | UK South |
| FRM-Jenkins-Worker | Virtual machine | UK South |
| FRM-Jenkins-Worker-ip | Public IP address | UK South |
| FRM-Jenkins-Worker-nsg | Network security group | UK South |
| frm-jenkins-worker574 | Regular Network Interface | UK South |
| FRM-Jenkins-Worker_OsDisk_1_1bfe2bb6844b482b804151fadc193db7 | Disk | UK South |
| FRM-JMETER | Virtual machine | UK South |
| FRM-JMETER-ip | Public IP address | UK South |
| FRM-JMETER-nsg | Network security group | UK South |
| frm-jmeter220 | Regular Network Interface | UK South |
| FRM-JMETER_OsDisk_1_197e1452958249509198a6dd3e235ed1 | Disk | UK South |

| | A | B | C |
|----|---|---------------------------|----------|
| 1 | NAME | TYPE | LOCATION |
| 2 | 0588f52d-9a7b-4887-bf09-a5ed3d478ce3 | Public IP address | UK South |
| 3 | AKS-ACTIO-agentpool | Managed Identity | UK South |
| 4 | aks-agentpool-30480506-nsg | Network security group | UK South |
| 5 | aks-agentpool-30480506-routetable | Route table | UK South |
| 6 | aks-generic-30480506-vmss | Virtual machine scale set | UK South |
| 7 | aks-systempool-30480506-vmss | Virtual machine scale set | UK South |
| 8 | aks-vnet-30480506 | Virtual network | UK South |
| 9 | kubernetes | Load balancer | UK South |
| 10 | kubernetes-a015e65079f3f49c19dce1dd0fdf7ef3 | Public IP address | UK South |
| 11 | kubernetes-a381573932a824408b760b86589a6fb5 | Public IP address | UK South |
| 12 | kubernetes-dynamic-pvc-013e64a6-7a77-4074-93ae-a50b68b21568 | Disk | UK South |
| 13 | kubernetes-dynamic-pvc-03629783-b23a-4ea9-93e5-89b80e9d82c0 | Disk | UK South |
| 14 | kubernetes-dynamic-pvc-16213c5a-24b1-43f6-a9b8-80ba76f88f66 | Disk | UK South |
| 15 | kubernetes-dynamic-pvc-18be815e-de5e-4395-bfc8-c58573943181 | Disk | UK South |
| 16 | kubernetes-dynamic-pvc-1b031406-04fe-4b66-8add-6089096411f1 | Disk | UK South |
| 17 | kubernetes-dynamic-pvc-2c5bdc6a-dbb2-4acd-929a-6adf5abeef8d | Disk | UK South |
| 18 | kubernetes-dynamic-pvc-3aabe64a-c4ed-4443-af73-61b53c8a48e9 | Disk | UK South |
| 19 | kubernetes-dynamic-pvc-557024bb-7072-49bd-a73b-da972cc24f76 | Disk | UK South |
| 20 | kubernetes-dynamic-pvc-5d017b4b-aa84-4e04-aff6-6e03c6348227 | Disk | UK South |
| 21 | kubernetes-dynamic-pvc-627a0d7b-7acc-419e-bc39-6922803d02c0 | Disk | UK South |
| 22 | kubernetes-dynamic-pvc-63967475-faf6-4a4a-a051-98efcfd19938 | Disk | UK South |
| 23 | kubernetes-dynamic-pvc-767d0a11-44e7-4bab-bd0e-70bc5cbd26b2 | Disk | UK South |
| 24 | kubernetes-dynamic-pvc-81bef141-72d7-4b9f-bfd6-7b08c2b35b4d | Disk | UK South |
| 25 | kubernetes-dynamic-pvc-81c781d0-b14c-49fe-b95b-7d41d69ec6e6 | Disk | UK South |
| 26 | kubernetes-dynamic-pvc-904bce2e-fb44-415b-a62d-f9d548e72f76 | Disk | UK South |
| 27 | kubernetes-dynamic-pvc-a69ddf98-125e-4222-b009-b755222ac79b | Disk | UK South |
| 28 | kubernetes-dynamic-pvc-ab00d6a6-17c9-4135-b08d-5a20f5b1655c | Disk | UK South |
| 29 | kubernetes-dynamic-pvc-ac7b29f5-d912-40f6-a4ba-cc063863930e | Disk | UK South |
| 30 | kubernetes-dynamic-pvc-c127843c-019a-422e-85f4-90340bd27cdb | Disk | UK South |
| 31 | kubernetes-dynamic-pvc-cbdcd9e1-6b2b-4714-bc4c-b9835304e3a1 | Disk | UK South |
| 32 | kubernetes-dynamic-pvc-dbd9818a-44ce-4698-823a-f96bb5d83c44 | Disk | UK South |
| 33 | kubernetes-dynamic-pvc-dc50d75e-7bd9-44d3-a73f-c4d39b46af60 | Disk | UK South |
| 34 | kubernetes-dynamic-pvc-f4c3ccf8-e3ba-40df-8646-f0b693407508 | Disk | UK South |
| 35 | kubernetes-dynamic-pvc-f9802457-5205-4b0d-a494-bcf655c11629 | Disk | UK South |
| 36 | kubernetes-dynamic-pvc-fd0da3ec-aabd-42a2-8217-86abf0695a13 | Disk | UK South |
| 37 | kubernetes-dynamic-pvc-fe204f77-9021-4080-9ab0-d66660ebd834 | Disk | UK South |
| 38 | | | |

Actio Demo

Actio Performance Demo

Project round-up

- 3 month PoC + 15 months to build
- 1060 epics, user stories and tasks
- 5 SMEs
- 4 architects
- 2 DevOps engineers
- 11 developers

Questions?