mojaloop

ISO 20022 and Mojaloop

mojaloop

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- So, for the purposes of this discussion…
  - I’m going to say “ISO”…
  - … and you can mentally complete it with your preferred pronunciation

What’s the problem?

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- Because one of the requirements for the proposal is that ISO20022 messaging is to be used…
- And Mojaloop has a proprietary message format

What should we do about this?

The journey of a thousand miles:

- What can we do quickest?

Then…

- What can we do best?

What's the core of the problem?

ISO20022 is:

…a common platform for the development of messages using:

- a modelling methodology to capture in a *syntax-independent* way financial business areas, business transactions and associated message flows
- a central dictionary of business items used in financial communications
- a set of XML and ASN.1 design rules to convert the message models into XML or ASN.1 schemas, whenever the use of the ISO 20022 XML or ASN.1-based syntax is preferred

https://www.iso20022.org/about-iso-20022
(emphasis mine…)

What is syntax?

“The rules that state how, and in which order, words and symbols must be used in a particular computer language”

Cambridge dictionary of English

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- ISO20022 is syntax-agnostic
- Mojaloop is syntactically organised…
  - …and some material that belongs to the syntactic organisation is contained in the messages

Quick (but not at all dirty…)

Initial targets

- Minimum changes to code
- Where changes are required, change the periphery rather than the core

Issues we need to address…

- Transaction type definition.
- Identifier types.
- Where’s the quotation?
- Two-phase commit.

The ISO20022 Business Application Header

“The Business Application Header is a header that has been defined by the ISO 20022 community, that can form part of an ISO 20022 business message. Specifically, the BAH is an ISO20022 message definition (head.001.001.0x) which can be combined with any other ISO20022 message definition to form a business message.

It gathers together, in one place, data about the message, such as which organisation has sent the business message, which organisation should be receiving it, the identity of the message itself, a reference for the message and so on.

The purpose of the BAH is to provide a consistent and predictable way for this data to be conveyed with the message, regardless of implementation factors such as the choice of network. This does not prevent such data being conveyed either within the ISO 20022 message definition itself, or as part of a network header.”

Issues we need to address…

- Transaction type definition.
  - Replace with a single category identifier
- Identifier types.
- Where’s the quotation?
- Two-phase commit.

Issues we need to address…

- Transaction type definition.
- Identifier types.
  - Payee DFSP always responds with an IBAN
  - Payer DFSP always uses the identifier type returned by the payee
- Where’s the quotation?
- Two-phase commit.

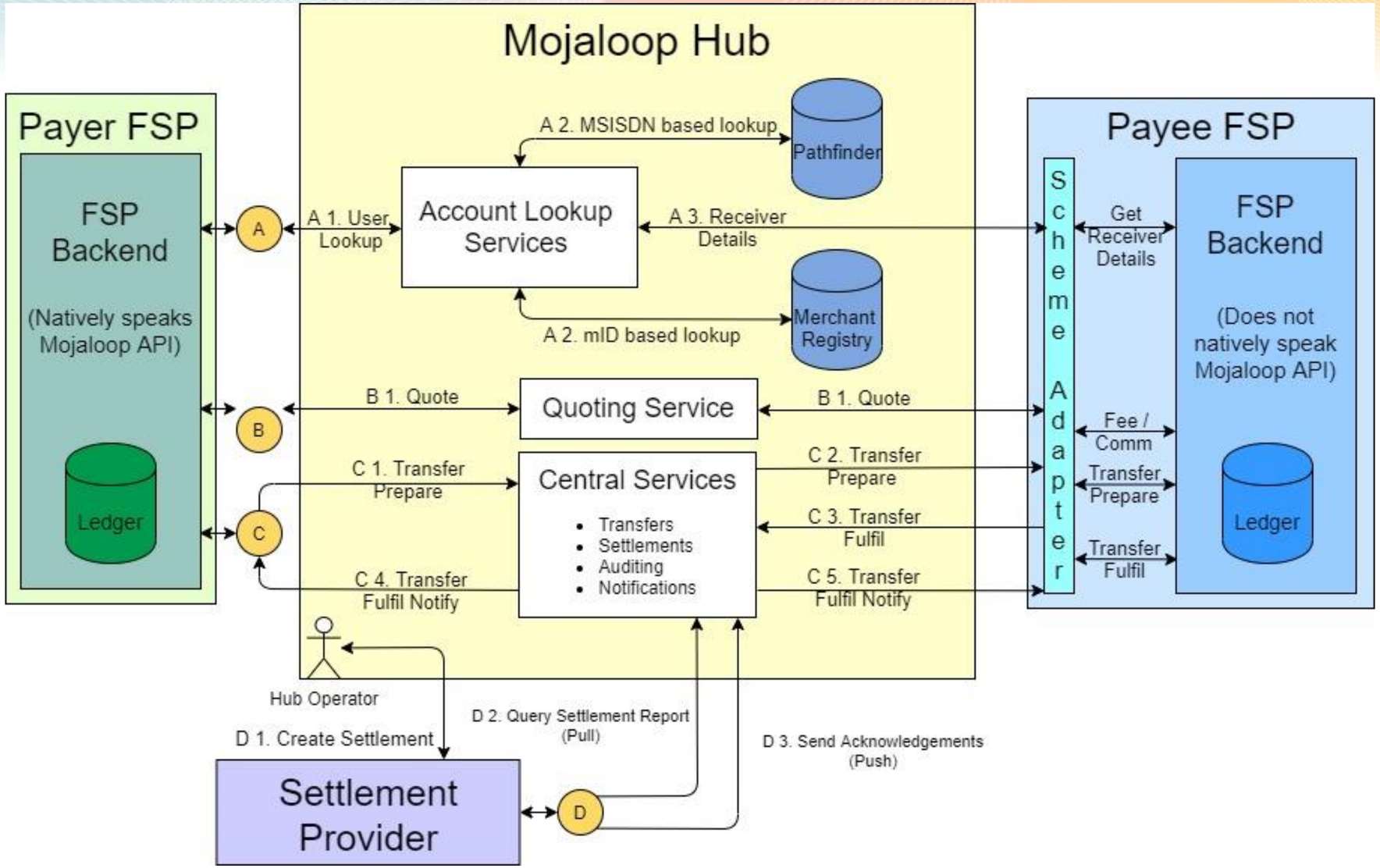
Issues we need to address…

- Transaction type definition.
- Identifier types.
- Where’s the quotation?
  - Define a document type in the Business Application Header
  - Use the related document field in the BAH to enforce orchestration
- Two-phase commit.

Issues we need to address…

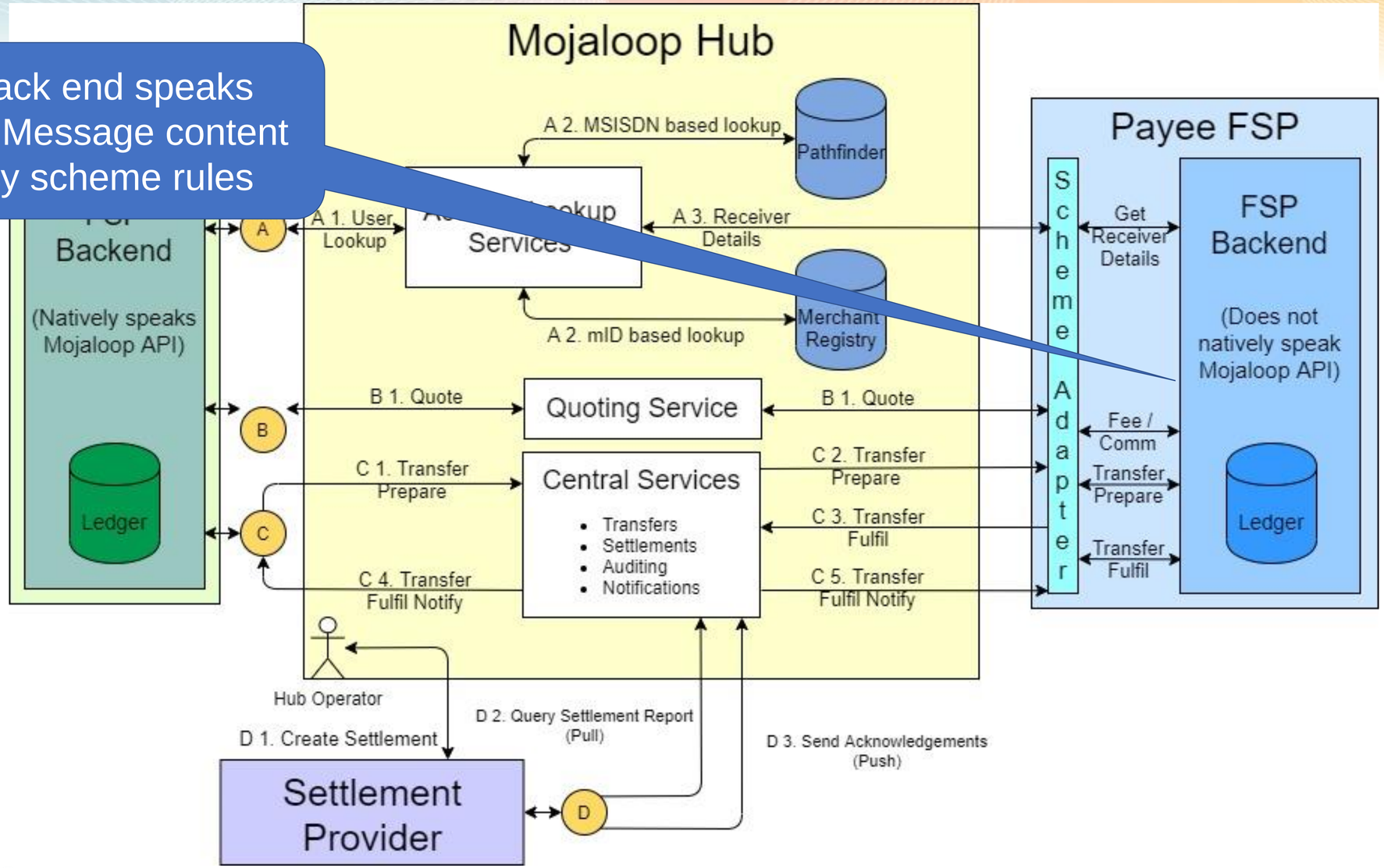
- Transaction type definition.
- Identifier types.
- Where’s the quotation?
- Two-phase commit.
  - Use the Signature field in the BAH?
  - Move the condition and fulfilment to the header?

What would need to change?



What would need to change?

1. FSP back end speaks ISO20022. Message content defined by scheme rules



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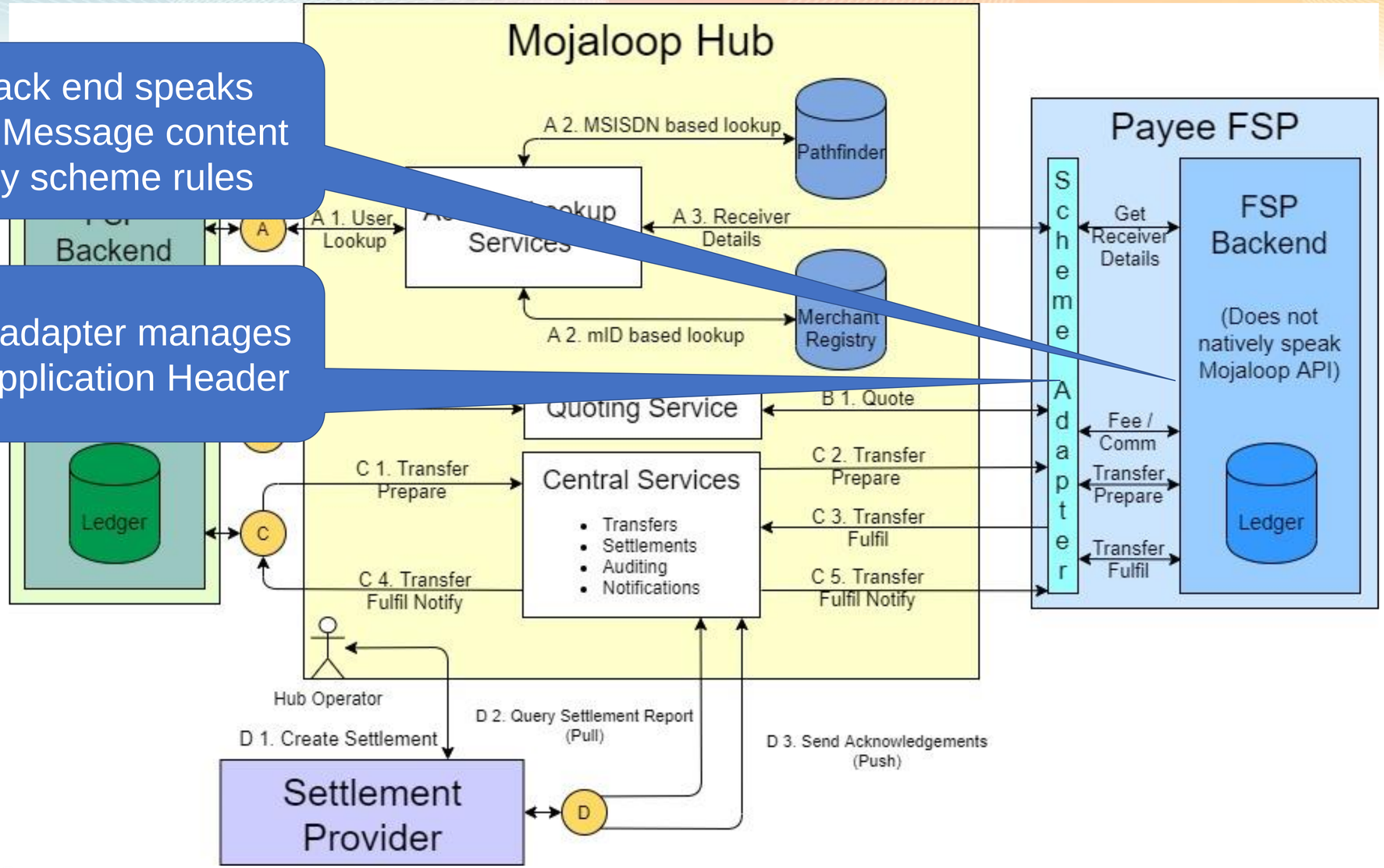

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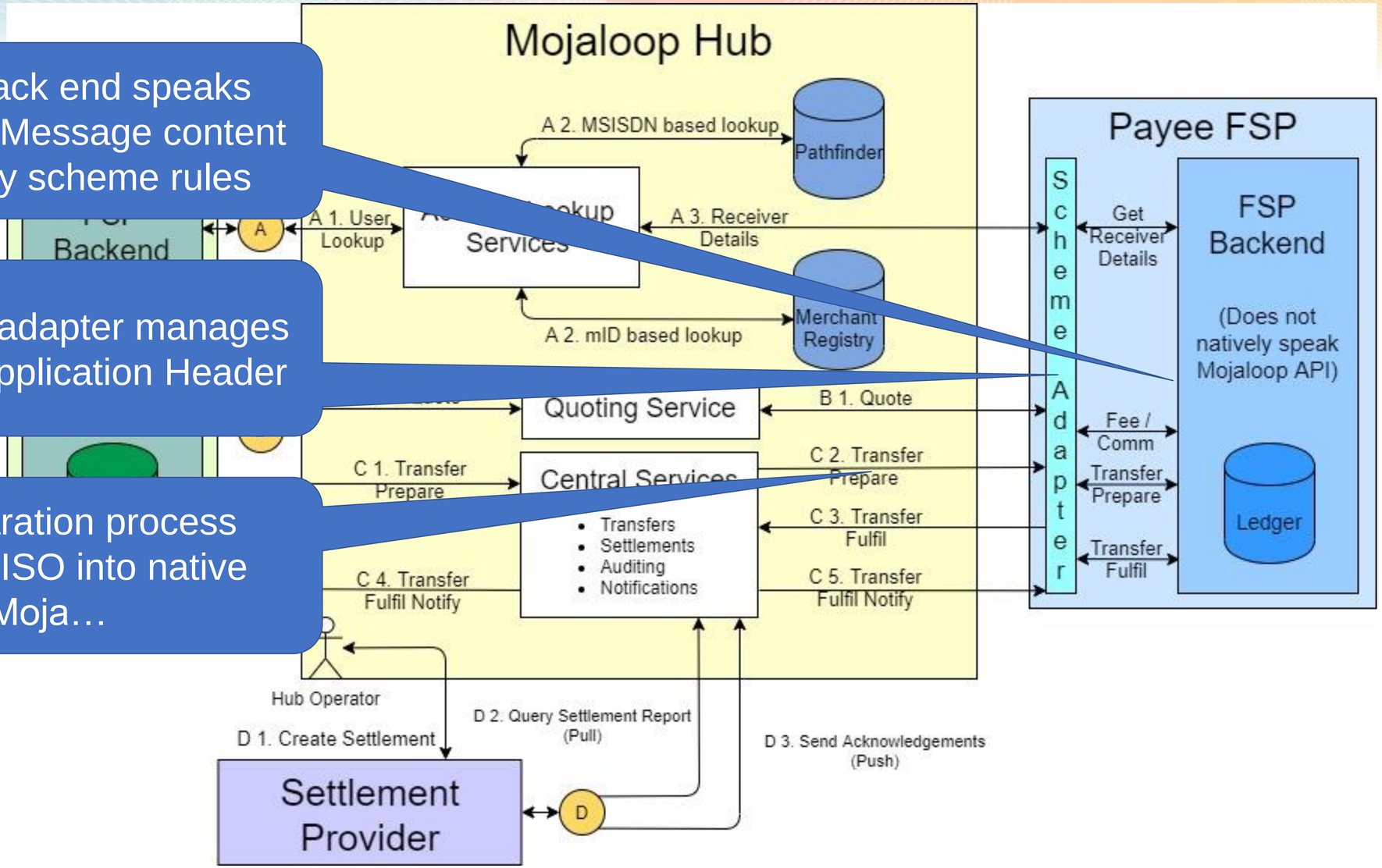

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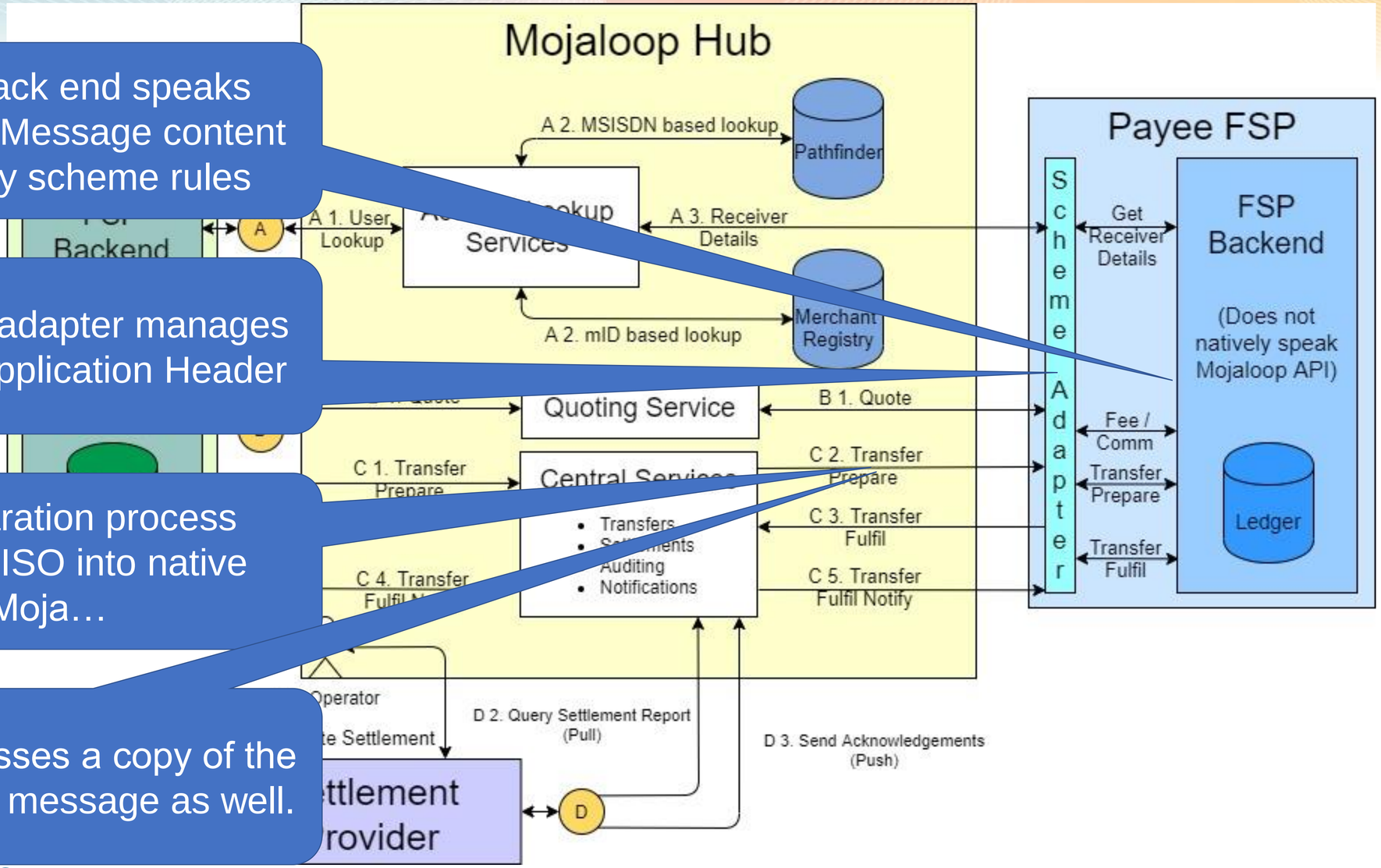

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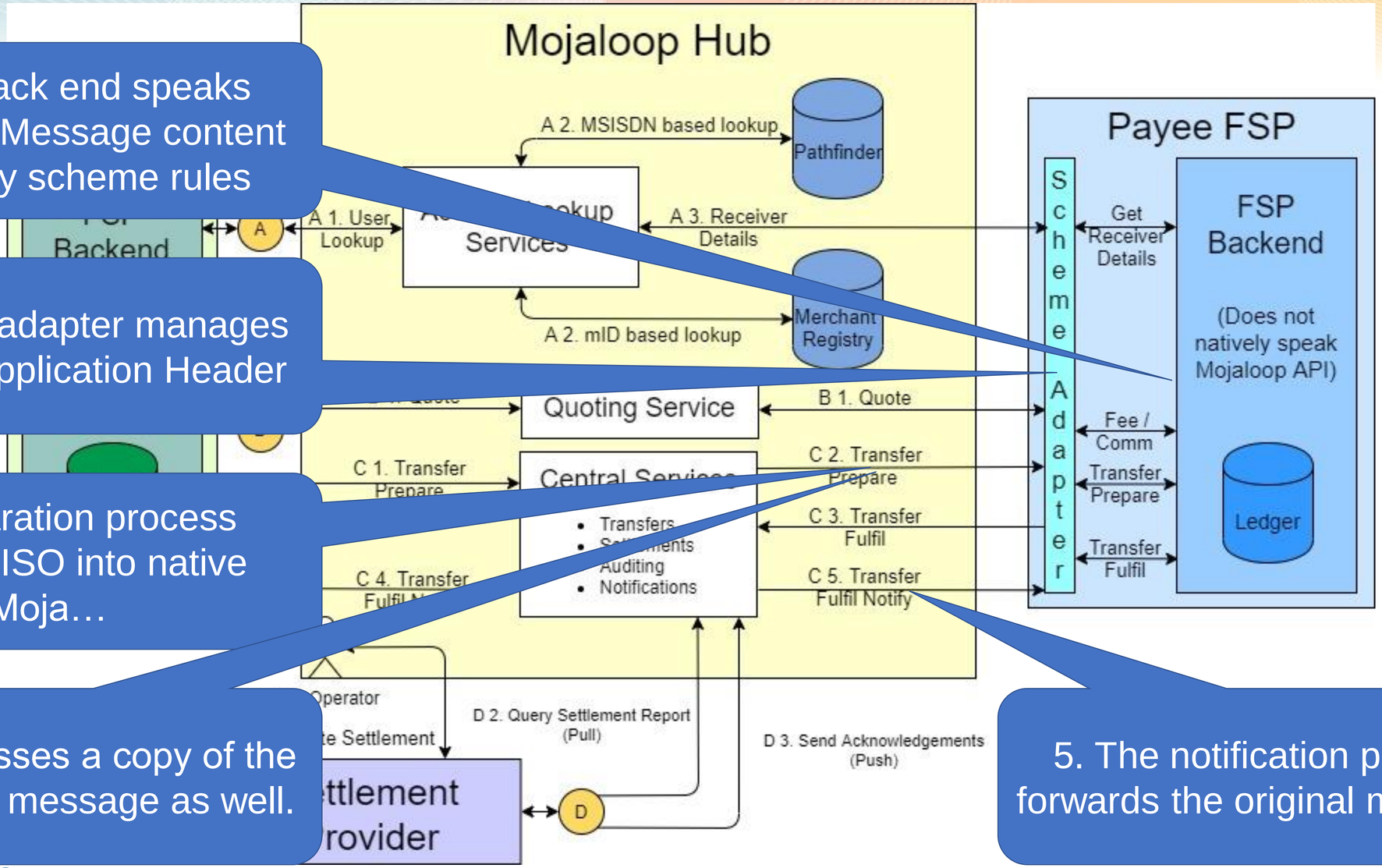

What would need to change?

Er, that's it…

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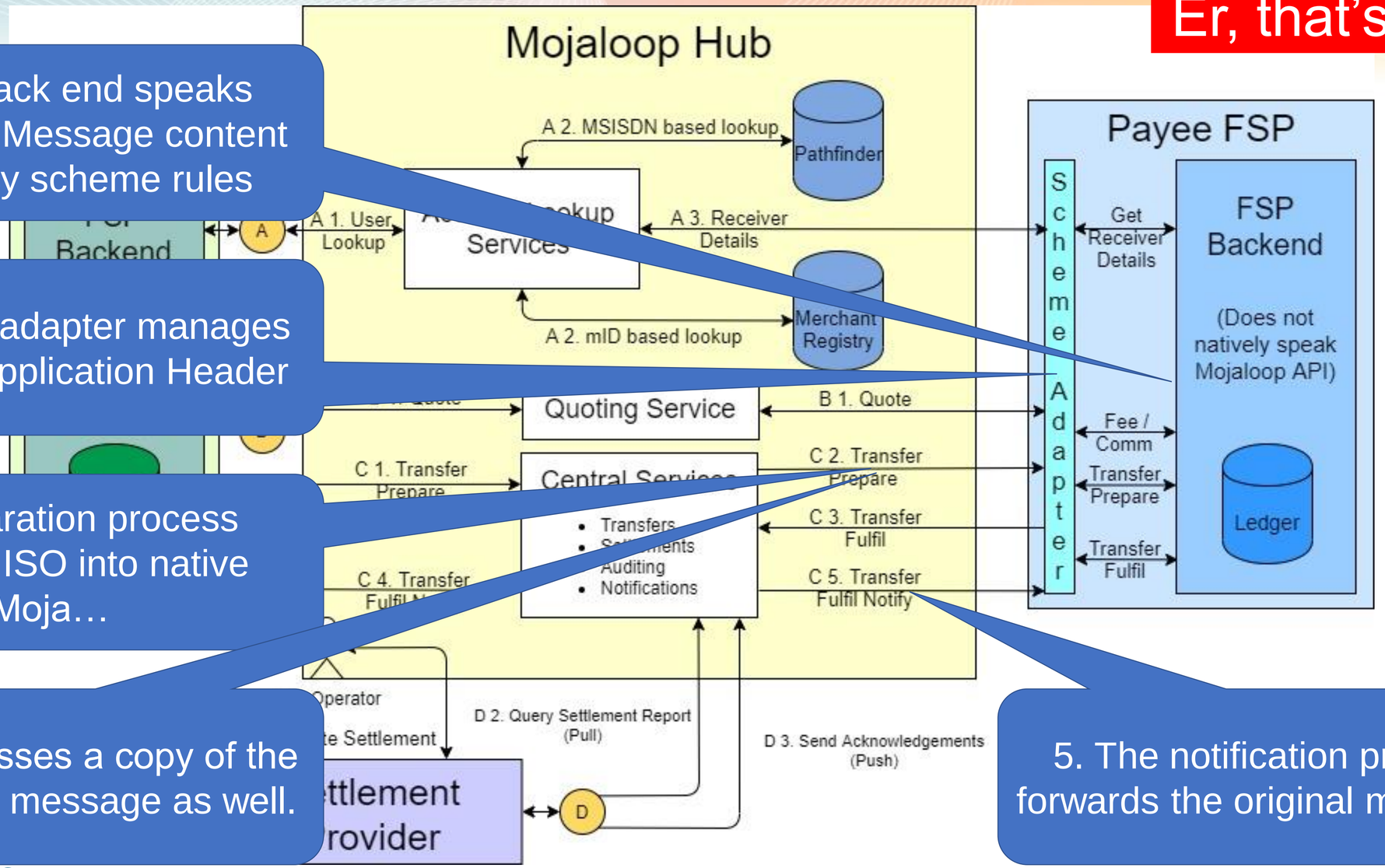

So, where does that get us?

Getting to good

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4. Our objective: Mojaloop is the accepted standard for orchestrating RTRP systems that use ISO20022 messages
5. We can work on the Mojaloop changes that will be required for a thoroughgoing ISO20022 whatever the message content is…

Mojaloop services

If we thought of a Mojaloop implementation as service-based, what services would it provide?

- Transfer orchestration
- Identity resolution
- Security management
- Liquidity management
- System of record
- Settlement


A message-agnostic Mojaloop…?

Mojaloop services

Which of these services depend on knowing what the format of a message is?

- ✗ Transfer orchestration
- ✗ Identity resolution
- ✗ Security management (well, with the possible exception of condition/fulfilment.)
- ✓ Liquidity management
- ✓ System of record
- ✓ Settlement

Mojaloop services

Which of these services depend on knowing what the format of a message is?

- ✗ Transfer orchestration
  - ➢ This is implicit at the moment and enforced by the participants. We may need to think about representing this in the switch…
- ✗ Identity resolution
- ✗ Security management
- ✓ Liquidity management
  - ➢ We need to obtain the proposed transfer amount to test
- ✓ System of record
  - ➢ We need to convert message content to ledger content
- ✓ Settlement
  - ➢ We need to convert message content to ledger content

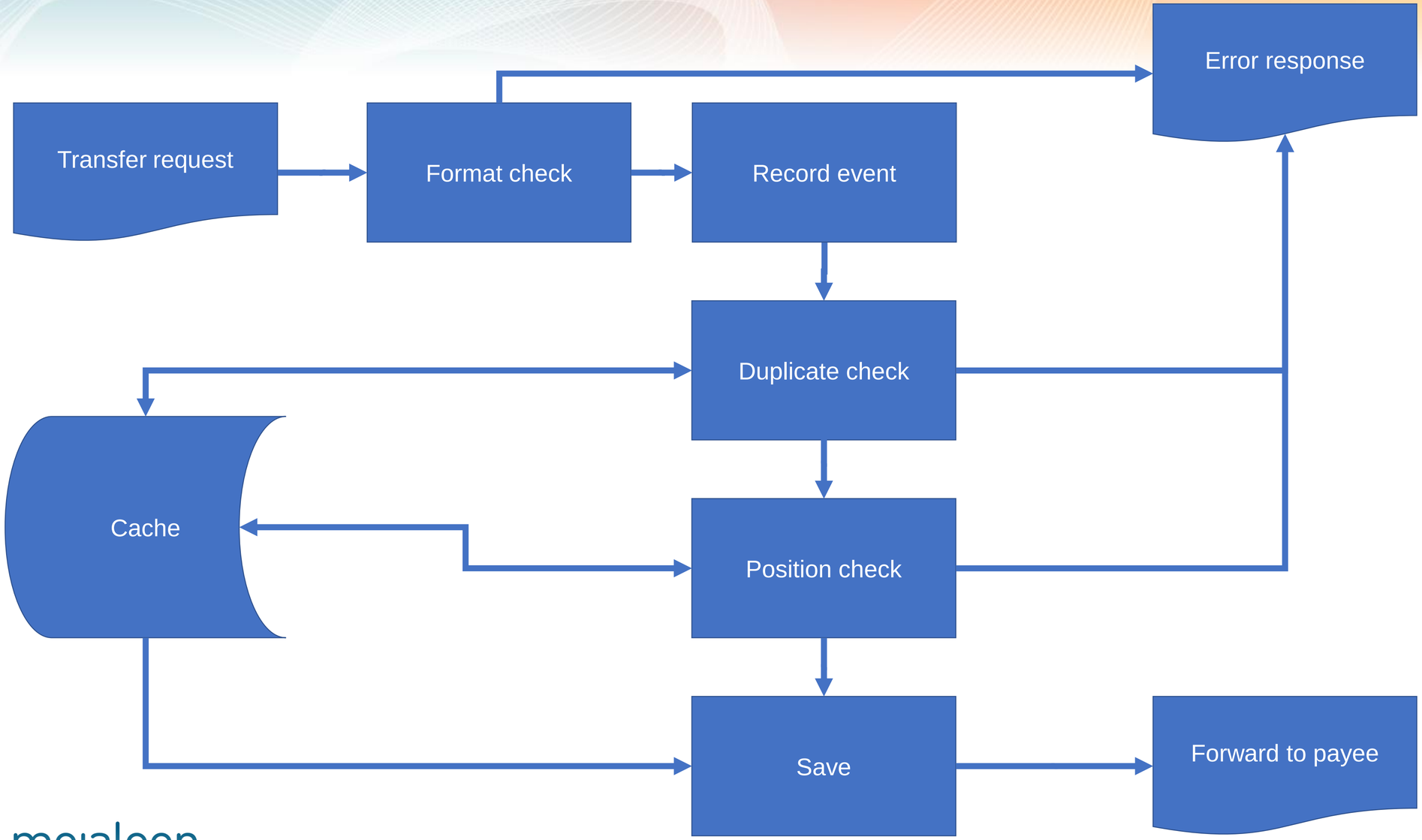
So we can imagine a message-agnostic Mojaloop architecture:

1. Message orchestration is independent of message format
2. Identity resolution is independent of message format
3. Security management is independent of message format
4. For liquidity management, I need to be able to abstract the amount from wherever it is in the **POST /transfers** message
   - ➢This could be done by a Rule
5. For settlement management, I need to construct the system-of-record information associated with a **POST /transfers** message
   - ➢Again, this could be done by a Rule
6. For the fulfilment check, I need to be able to find the fulfilment.
7. For reporting, I need to be able to extract the system-of-record entries, together with any ancillary categorisation information I might require, and move them to the reporting database.

System-of-record extraction

- I take a message (in whatever format) and derive a set of Mojaloop standard ledger entries from it.
- This could include the condition (which we will need later…)
- All subsequent operations (e.g. position update) work off the standard ledger entries and are therefore message independent
- But we can manage scheme-specific operations via the Rules architecture

Existing Mojaloop Process: transfer request



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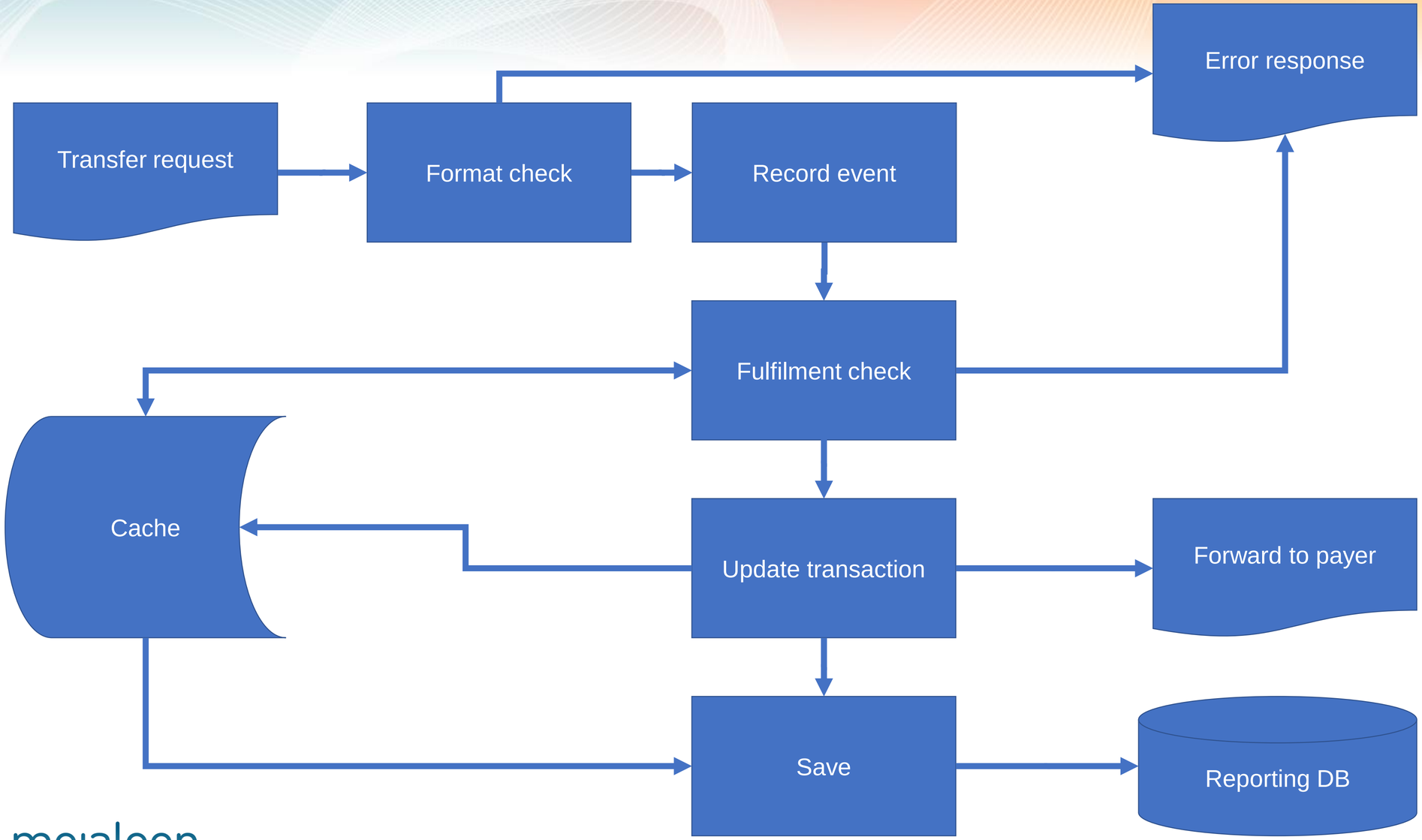
Existing Mojaloop Process: transfer response



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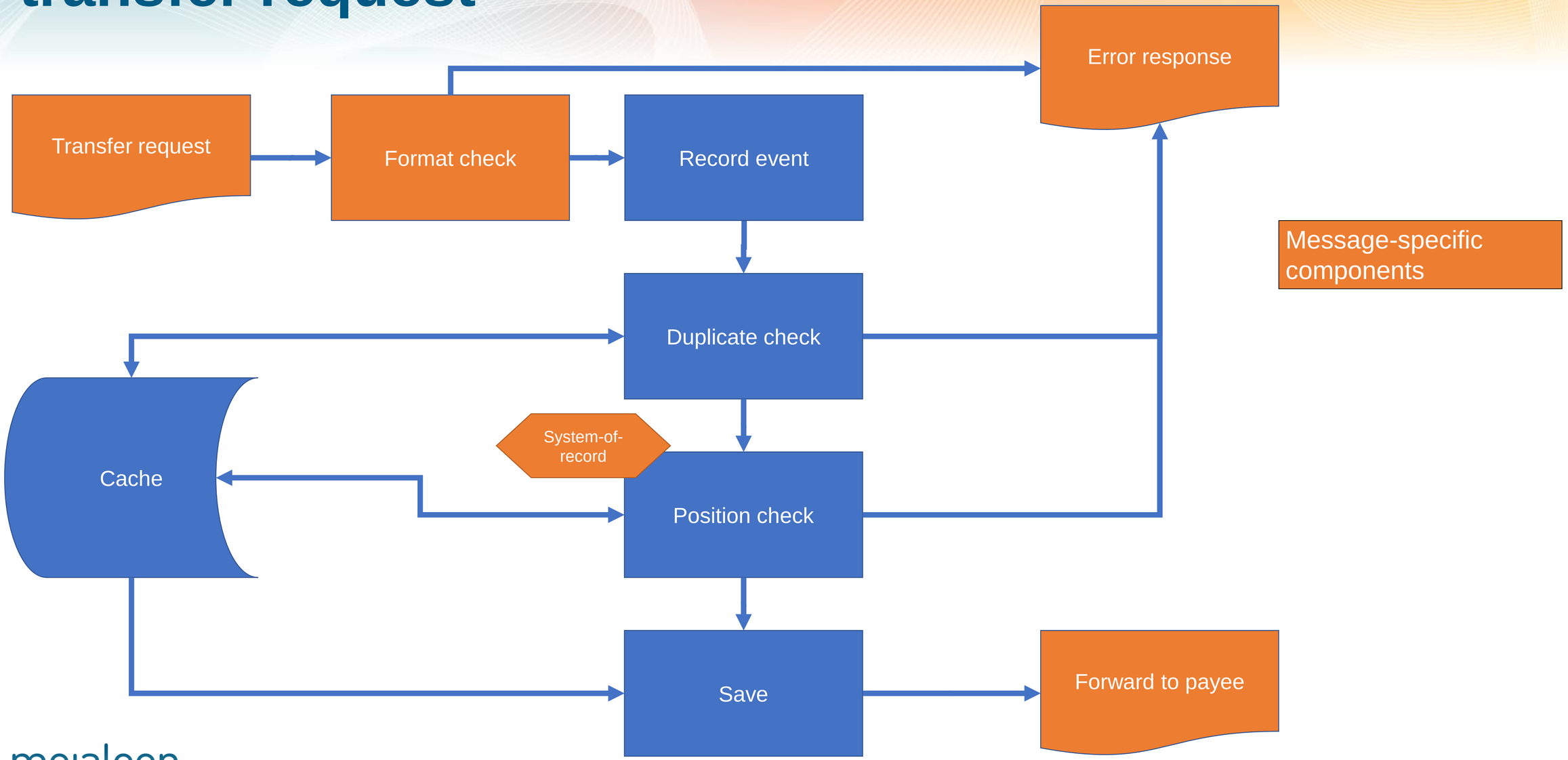
Message-agnostic Mojaloop Process:
transfer request



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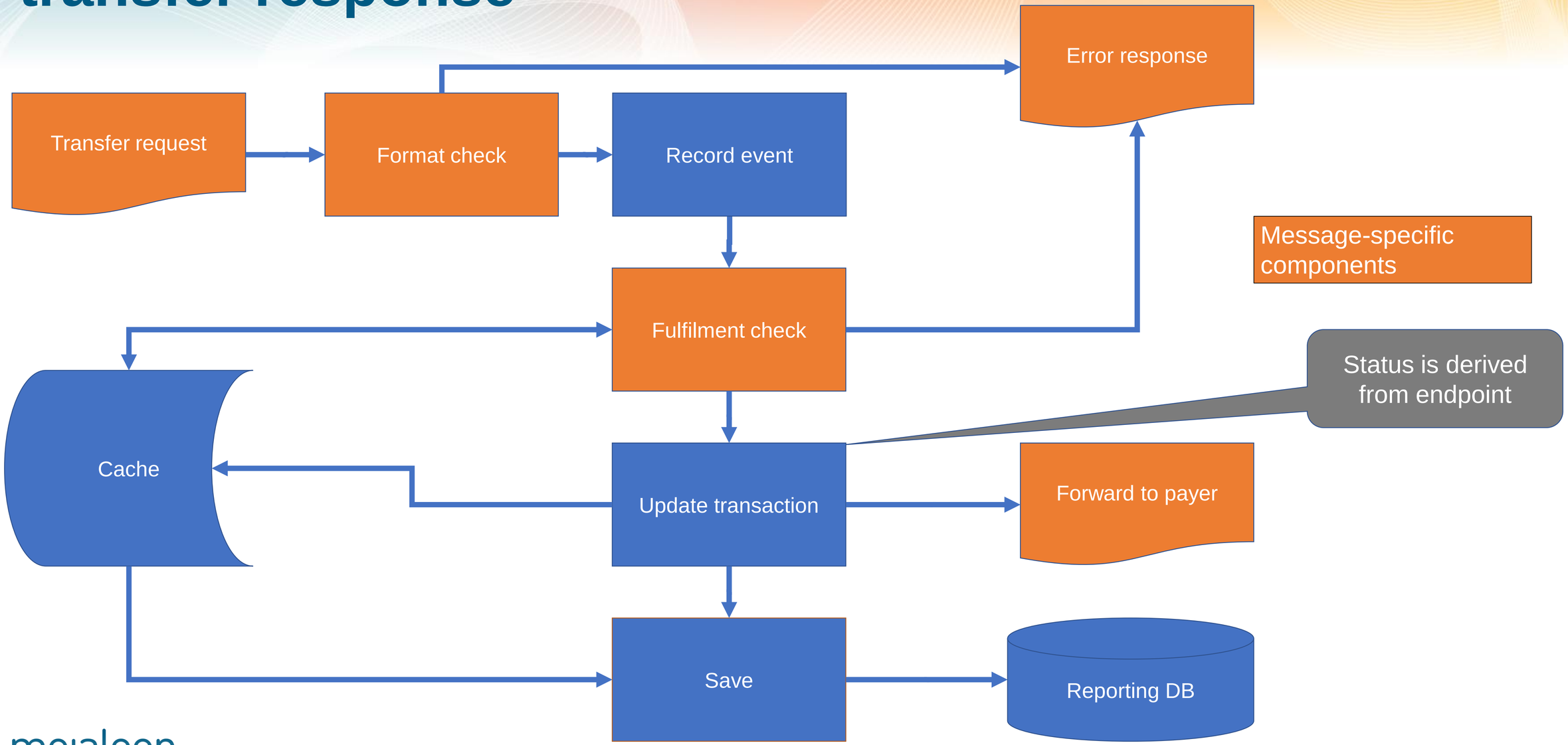

Tasks for creating a new Mojaloop scheme

- Create a system-of-record rule
- Modify the Swagger definition to support the message formats required
- Configure the error message format
- Create a Rule to obtain the fulfilment
- Create a reporting process to enrich the system-of-record information where required.

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- In the context of implementing a scheme, this is not an onerous overhead
- We can support standard out-of-the-box message types
- But the simple version of this does require that all participants use the same message scheme. Multiple-format schemes *could* be supported, but would need additional conversion functionality…

Any questions?