

## Financial Markets Law Committee (“FMLC”)

### Finance and Technology Scoping Forum

Date: Monday 22 May 2017

Time: 9.00am to 10.40am

Location: The offices of Latham & Watkins, 99 Bishops Gate, London EC2M 3XF



#### In Attendance:

Sanjev Warna-kula-suriya (Co-Chair)	Latham & Watkins LLP
Fiona Maclean (Co-Chair)	Latham & Watkins LLP
Clive Ansell	International Swaps & Derivatives Association (“ISDA”)
Antony Beaves	Bank of England
Kirsty Bell	Bank of England
Dr Willi Brammertz (dial in)	ACTUS
Peter Chapman	Clifford Chance LLP
Cat Dankos	Herbert Smith Freehills LLP
Joel Harrison	Milbank Tweed Hadley & McCloy LLP
Richard Hay	Linklaters LLP
Matthew Herbert	British Bankers’ Association (“BBA”)
Siân Jones	European Digital Currency and Blockchain Technology Forum (“EDCAB”)
Lewis Lee	CLS Bank International
Brian McDonnell	Addleshaw Goddard LLP
Nina Moffatt	Baker McKenzie LLP
Matthew Nyman	Clear Funding
Marina Paul (dial in)	Lloyds Banking Group
Simon Puleston Jones	FIA
John Salmon	Hogan Lovells International LLP
Nicole Sandler (dial in)	Barclays Bank Plc
Ian Sloyan	ISDA
Ian Stevens	CMS Cameron McKenna Nabarro Olswang LLP
John Taylor	Queen Mary University of London
Kathleen Tyson	Granularity Ltd
Emily Bradley	FMLC
Thomas Willett	FMLC

Registered Charity Number: 1164902.

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## **Guest Observers:**

Dr Vic Arulchandran	Nivaura
Jefferson Braswell (dial in)	ACTUS
Dr Robert Mark (dial in)	ACTUS
Dr Allan Mendelowitz (dial in)	ACTUS

## **Regrets:**

John Casanova	Sidley Austin LLP
Simon Evers	Crowell & Moring LLP
Monica Gogna	Ropes & Gray International LLP
Andrew Harvey	Global Financial Markets Association
Mark Kalderon	Freshfields Bruckhaus Deringer LLP
Nathaniel Lalone	Katten Muchin Rosenman UK LLP
Carmen Reynolds	White & Case LLP
Barnabas Reynolds	Shearman & Sterling LLP
Antony Zacaroli QC	3-4 South Square

## **Minutes:**

### **1. Introduction**

1.1. Sanjev Warna-kula-suriya and Fiona Maclean opened the meeting and gave a brief introduction.

### **2. Presentation by Clive Ansell on the foundations of an efficient derivatives ecosystem—the next generation of standards in data and processing and Q&A**

2.1. Clive Ansell began his talk on data and process standards by discussing the five key divisions established by ISDA’s Market Infrastructure and Technology Oversight Committee following the publication of a [whitepaper](#) on “The Future of Derivatives Processing and Market Infrastructure” that would focus the identification of challenges to avoid the fragmentation that exists in today’s derivatives market. These are:

1. common domain models;
2. product data;
3. participant ID;
4. common services (i.e. collateral); and
5. smart contracts.

- 2.2. Mr Ansell, and his colleague Mr Ian Sloyan, went on to highlight that although emerging technology provides countless opportunities for process transformation, existing foundations for the exchange of information will inevitably prevent market participants from capitalising on these opportunities. If non-scalable and unsustainable infrastructure is to be avoided, then decisive action needs to be taken in relation to data and process foundations. As such, it was stressed that a standardised model for expressing data and processes needs to be created that evolves the FpML<sup>1</sup> structures to provide greater organisation around common standards. This will ultimately enable consistent hierarchical representation across trades, portfolios and events; transparency between market participants and regulators; and allow market participants to comply with regulatory requirements in a cost-effective manner.
- 2.3. Further clarification as to what precisely is unsustainable with current information creation and exchange processes and technologies was raised by one Forum member. Mr Ansell stressed that the next generation of data and processing could create a new system that builds more requirements to store, transform and reconcile data. Therefore, if one captures information in the same way and stores it, dual side reporting will become easier. Mr Ansell expressed the view that, currently, the established environment poses issues with cost and difficulties in maintaining margins in the face of low transactions. It was suggested that standardised data and processes would result in a more liquid market that facilitates growth.
- 2.4. A second question arose as to the definition of distributed ledger technology (“**DLT**”) and if consideration could be given to whether there could be a role for the International Organization for Standardization (“**ISO**”) in promoting a common definition. Mr Ansell emphasised that ISDA is keen to partner with the broader community and wanted to generate further discussion. With regards to their definition of DLT, Mr Ansell stated that ISDA was focused on setting standards for the derivatives market and wanted to distance themselves from bigger, more technological debates.

### **3. Introduction by Dr Willi Brammertz to the ACTUS Project and Q&A<sup>2</sup>**

- 3.1. Dr Willi Brammertz presented to the Forum on Algorithmic Contract Types Unified Standards (“**ACTUS**”), the smart financial contract standard. Dr Brammertz began by exploring what is meant by the terms “financial contract” and “cash”, observing that

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<sup>1</sup> Financial products Markup Language.

<sup>2</sup> Please see Appendix I below.

financial contracts (which are exchange of cash flows) are prime candidates for conversion into smart contracts because, as an exchange of numbers, financial contracts are able to be represented by algorithms.

- 3.2. Dr Brammertz then went on to examine the state of play as it exists today, drawing members' attention to the transaction processing level of a bank's operations. Through an appraisal of current modes of data storage—noting that while it is possible to move data between databases, the issue of how to move complex algorithms from one system to another is less clear—and the parameters of a sample contract, Dr Brammertz emphasised the efficiencies to be introduced by having data and algorithms stored in the same place and standardized to the ACTUS Standard. Dr Brammertz then took the Forum members through the ACTUS model in more detail, and provided a summary of the contract types which have already been developed, and those which are yet to be completed. It was noted that the target of ACTUS is faithfully to represent 99% of all financial contracts, and that a set of 32 self-executing financial contracts are ultimately expected.
- 3.3. Dr Brammertz concluded by stating that deploying ACTUS on a sector-wide scale and introducing a level of standardization at the transaction processing level of banks would foster improvements in areas of analysis such as risk, finance and regulation. As such, ACTUS could potentially foster the smooth functioning of the banking sector. One Forum member queried whether the expense of implementing ACTUS across the banking sector would impede its roll-out. Dr Brammertz expressed the view that cost benefit analysis for implementing ACTUS in the banking sector is positive.

#### **4. A presentation on innovation through IT risk and controls for emerging and enabling technologies by Matthew Herbert and Q&A**

- 4.1. Matthew Herbert delivered to the Forum an outline of the IT Risk and Controls Framework (“**ITRAC**”), a three month proof of concept initiated by the BBA to produce a global framework which would enable the acceleration of technology-enabled innovation and greater resilience in the banking industry.
- 4.2. Mr Herbert outlined how global efforts by banks to sanction emerging technologies are constantly obstructed by complex and repetitive IT Risk due diligence and global regulatory ambiguity. As such, this calls for a “living” banking industry IT Risk and Controls Framework that could provide a global solution to expedite due diligence and enhance Cyber Resilience by establishing IT Risk guidance and standards that adhere to global regulatory requirements.

- 4.3. Mr Herbert emphasised that the three month proof of concept demonstrates the possibility of forming a common ITRAC that could be applied to all FS IT Vendors to improve risk management and assurance throughout the supply chain.
- 4.4. Members queried if the controls will be standardised and if the BBA viewed this as just a U.K. initiative and if they had considered partnering with other organisations for an international standard. Mr Herbert stated that the intention was to make the ITRAC available to both vendors and banks, and that the BBA aimed to deploy a standardised service that would work across the globe. The Forum members reacted positively to this, affirming that global standards are required if acceleration of technology-enabled innovation and greater resilience in the banking industry are to be achieved.
- 5. An update on the DLT Governing Law and Jurisdiction Working Group by Emily Bradley (FMLC)**
- 5.1. Owing to time restrictions, this update could not be delivered. Therefore, Emily Bradley invited members to forward any queries concerning the DLT Governing Law and Jurisdiction Working Group to her directly.<sup>3</sup>
- 6. Administration: a short presentation by Emily Bradley (FMLC) on the operation of FMLC Working Groups**
- 6.1. Owing to time restrictions, the members agreed to defer this to the next Forum meeting.
- 7. Any other business**
- 7.1. No other business was raised.

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<sup>3</sup> Emily Bradley can be reached at [legalassistant@fmlc.org](mailto:legalassistant@fmlc.org).



**THE SMART  
FINANCIAL CONTRACT  
STANDARD**

# Table of Content



Financial Contracts in the Universe of Contracts

The Problem of Finance

ACTUS

Benefits

ACTUS, FinTech and Block-Chain

# What is a Financial Contract?



- Cash against cash
- Non-financial contracts are cash against goods



# What is Cash?

- A unit of measurement
- A number
- Ergo: A financial contract is exchange of numbers

# Financial Contract: Series of Payments



- Financial contracts are series of payments
- Payments are interlinked by pure mathematical formulas

- Financial contracts (the exchange of cash-flows) are complete contracts
- Financial contract most likely the only complete contract
- Financial contract is the prime candidate for a smart contract

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# The Reconciliation Problem

## BANK

### Analysis Level

Financial Analysis  $i = f(E[\text{Cash-Flows}], \dots)$   
RISK | FINANCE

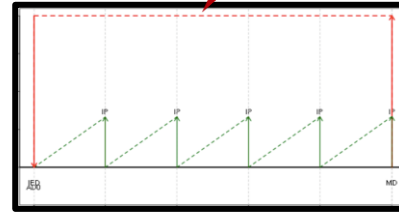
Expected CFL's under forecasted conditions



### Transaction Processing Level

Real exchanged CFL's

Under current conditions



Cost Ratio

60+%

-40%

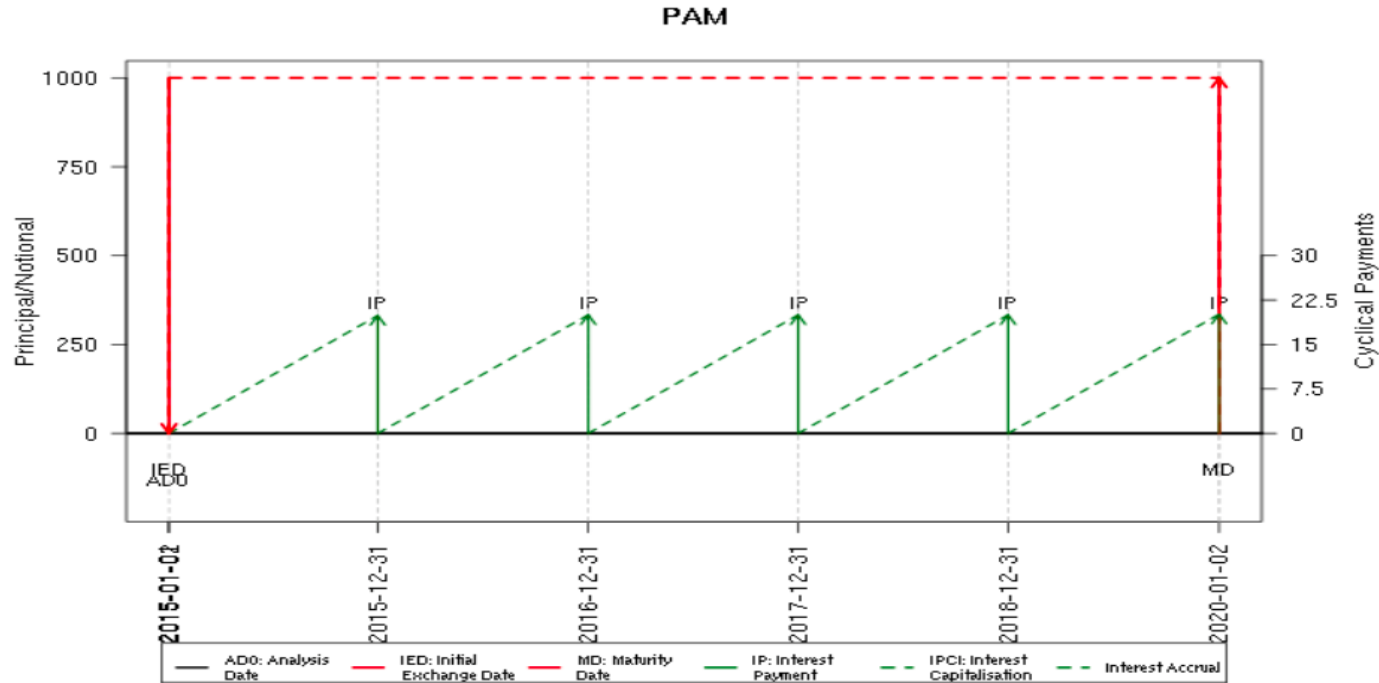
Cost Saving Potential 70%



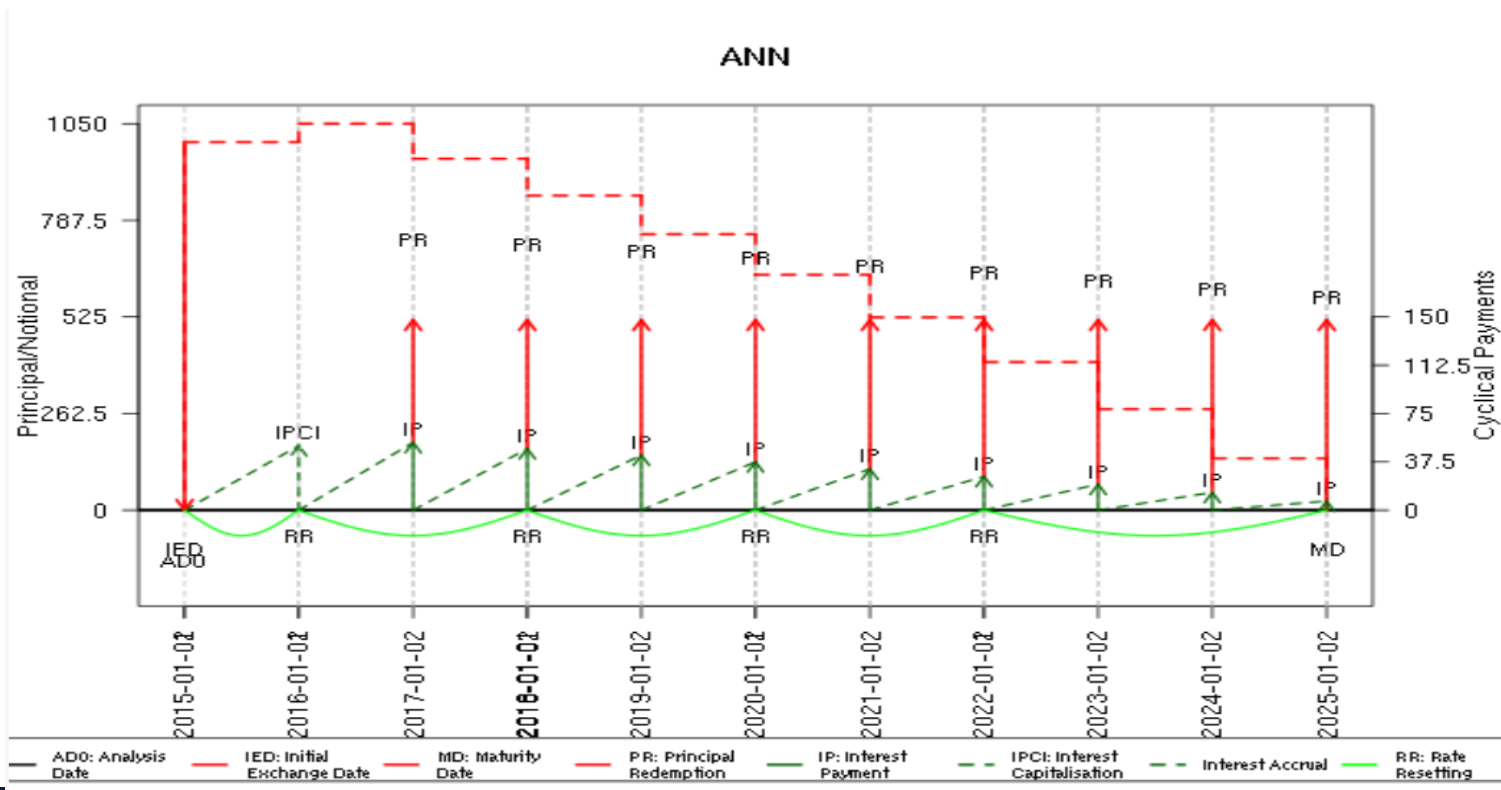
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Bank shall pay the sum of 1000 USD on 2013.01.01 (date)  
to Mr. Smith (obligor). Obligor will pay an interest of 10 % on a  
semi-annual basis and repay the full amount in 3 years.

# The real Agreement Contracts and Algorithms



# Another Agreement





# Contract Terms Parameters of Functions



Endre vullumsandio dion endipsummy nos dolobore vel ut alis  
amet autem dionseq uismodigna feumsan dionse dolor  
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Bank shall pay the sum of 1000 USD on 2013.01.01 (date)  
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semi-annual basis and repay the full amount in 3 years.

# Effect of Central Data Stores

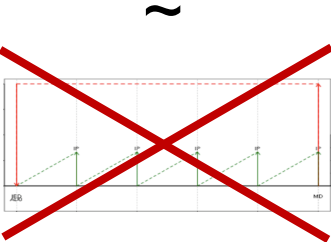
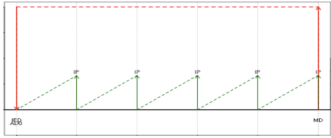
Analysis Level

Value Balance Sheet

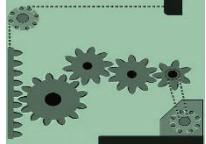
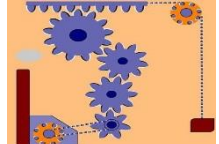


Data Store

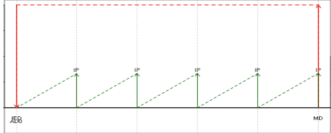
Data WITHOUT Algorithms



Transaction Processing

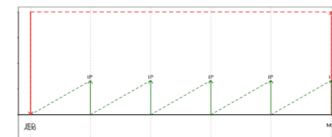


Data AND Algorithms



# ACTUS and Data Stores

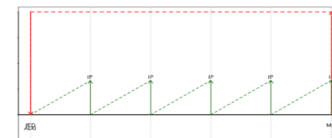
Analysis Results



Add Risk Factors

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ACTUS  
CFL-Algorithms



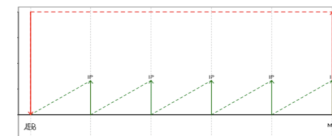
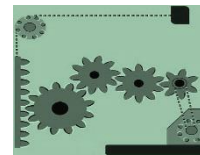
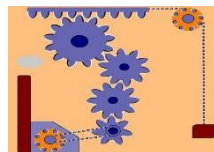
Data and Algorithms  
STANDARDIZED

ACTUS  
Data Store

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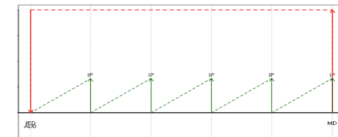
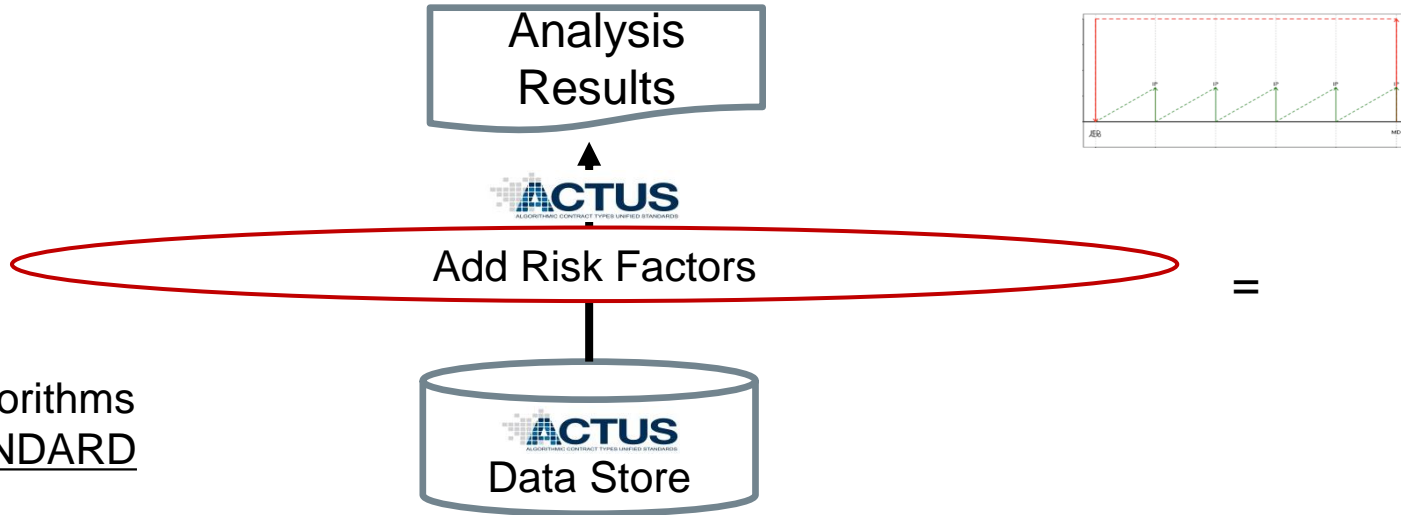
Data and Algorithms  
UNSTANDARDIZED



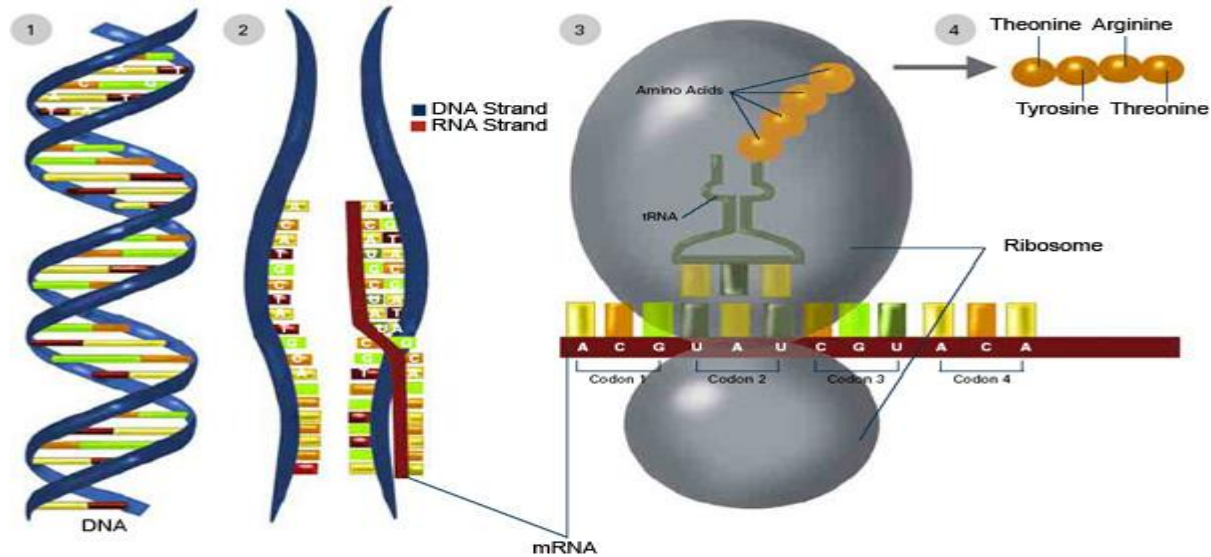
# ACTUS and FinTech Target Architecture



Data and Algorithms  
ACTUS STANDARD



# Smart Financial Contract Analogy with DNA



DATA

ALGORITHMS

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Financial Contracts in the Universe of Contracts

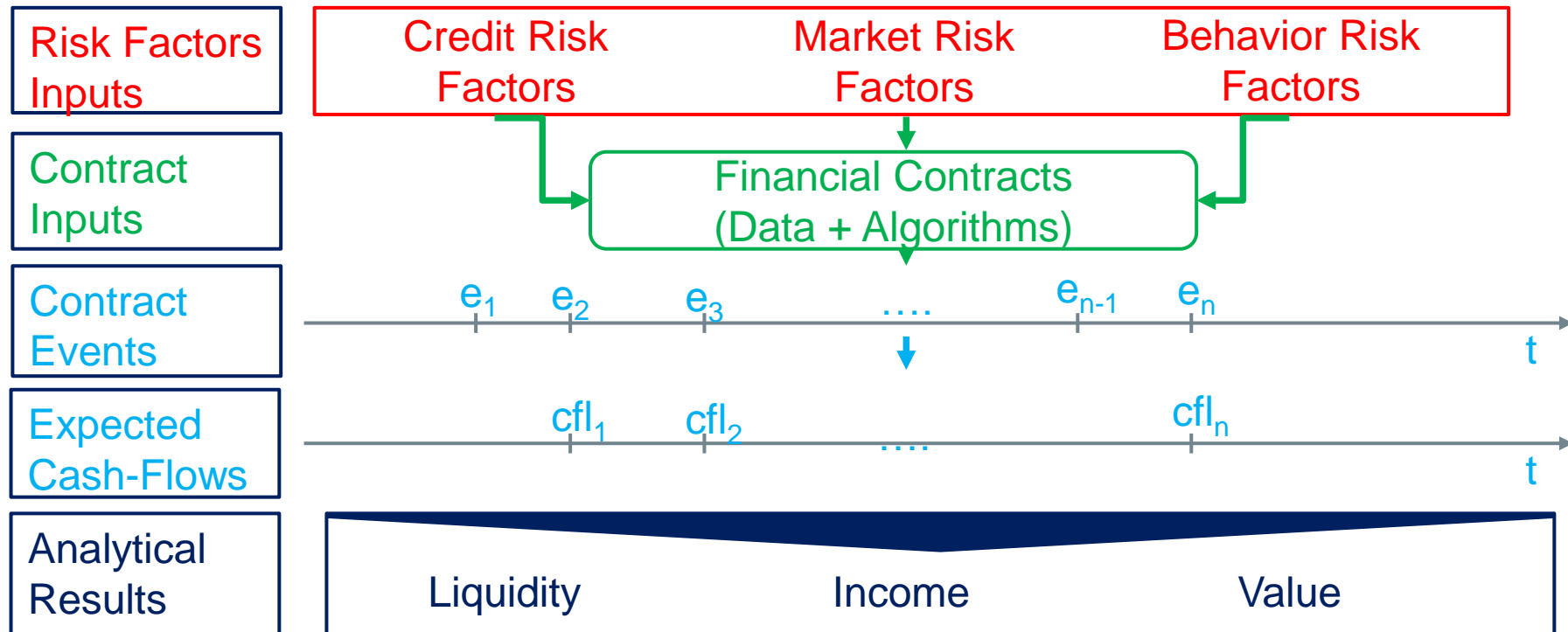
The Problem of Finance

**ACTUS**

Benefits

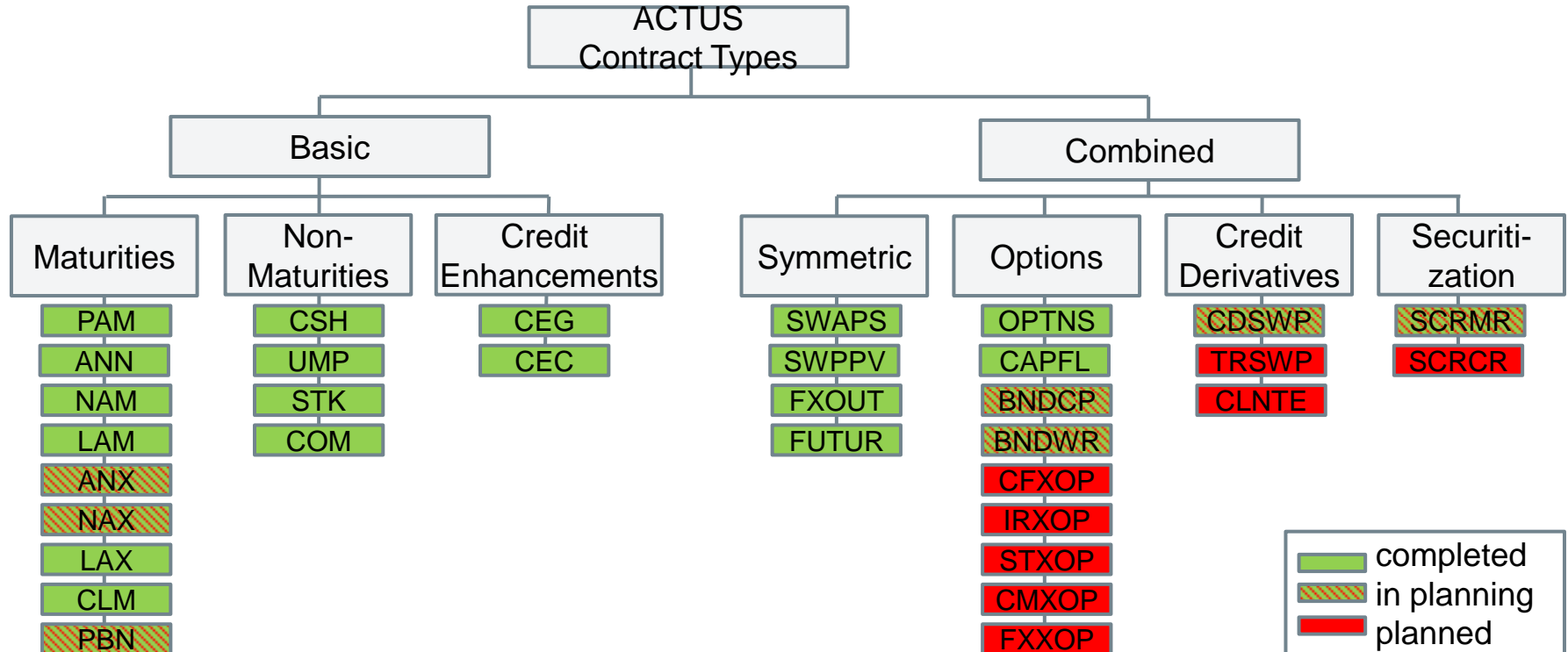
ACTUS, FinTech and Block-Chain

# The Model



# ACTUS Contract Types

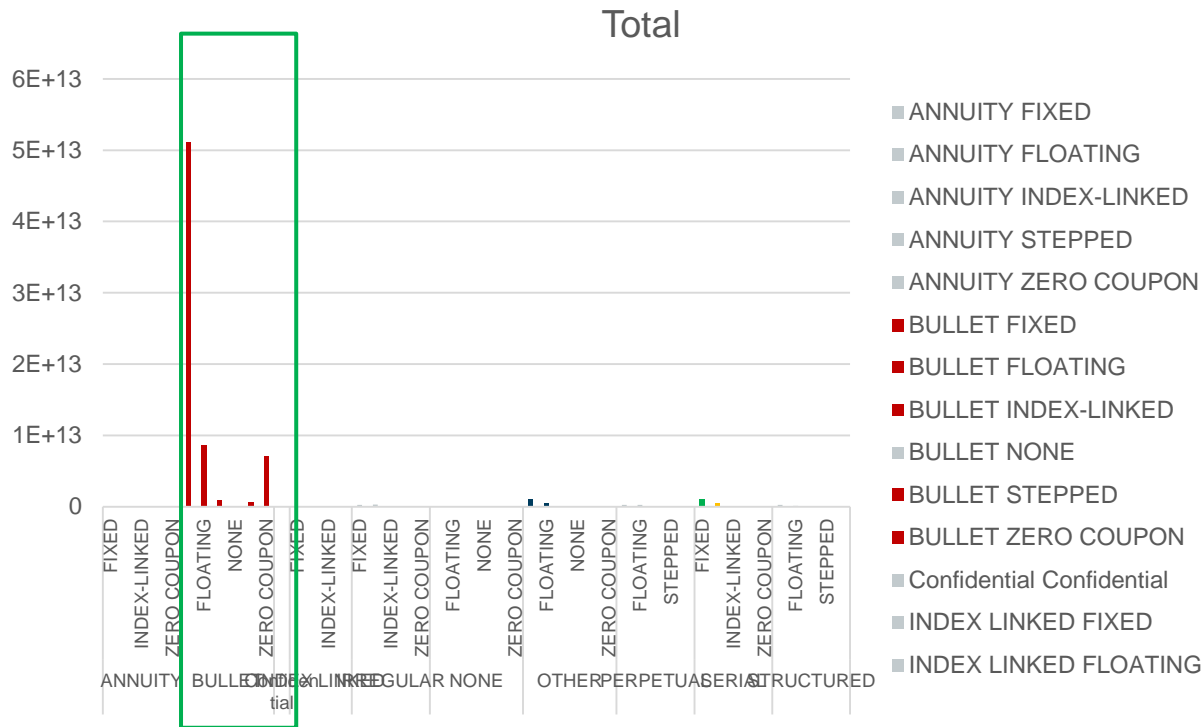
## Overview, State of Development



\* Definitions and explanations to the Contract Types may be found in the «CT-Description» Excel sheet.



# World Bond Portfolio Coverage with PAM (Q1 2015)



Faithful representation of 99+% of all financial contracts

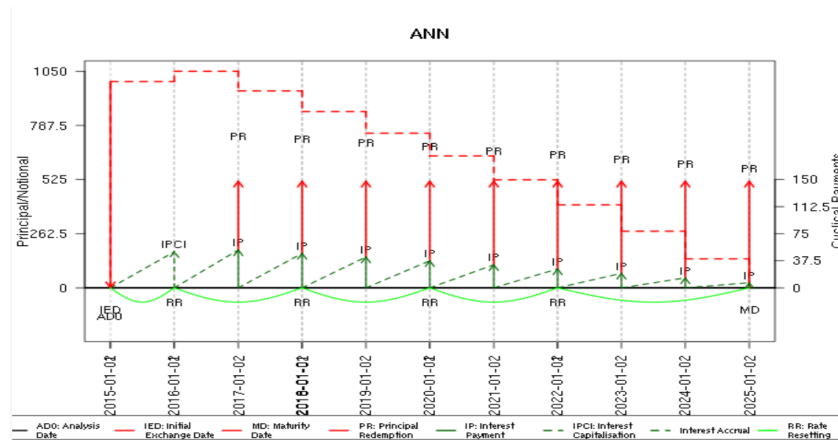
We expect a set of about 32 self-executing financial contracts

To become THE financial standard for the analytic use case

- Strong presence at very large central banks
- Proof of concept at
  - Very large Swap Custodian
  - Very large Central Bank
- Official ISO 20022 RMG member

# ACTUS is Open Source

Homepage: <http://actusfrf.org/>



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Financial Contracts in the Universe of Contracts

The Problem of Finance

ACTUS

**Benefits**

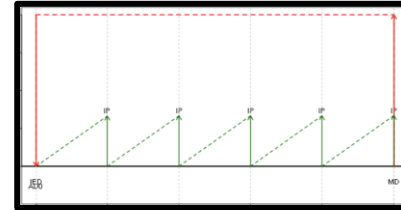
ACTUS, FinTech and Block-Chain

# Consistency Between Processing and Analytics

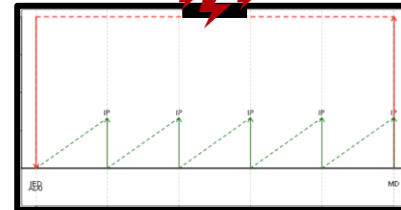
## BANK

### Analysis Level

RISK | FINANCE | REGULATION

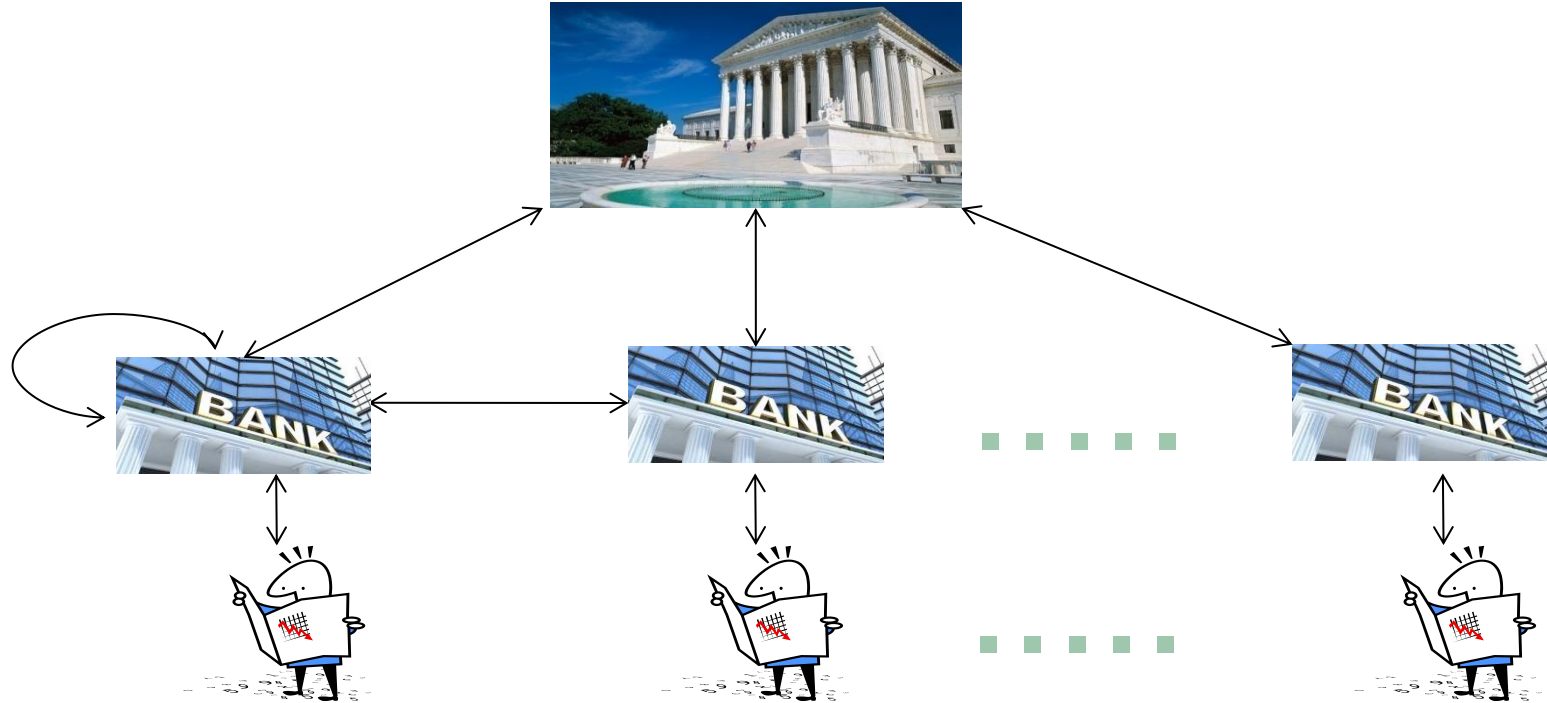


### Transaction Processing Level



Improved  
Quality!

# The Entire System will Benefit



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Financial Contracts in the Universe of Contracts

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ACTUS, FinTech and Block-Chain



- ACTUS does not depend on FinTech or Block-Chain
- However: In order to avoid a Fintech Chaos (which could be much worse than what we have today), ACTUS is a necessary condition for the well-functioning of the sector

# Operation of FMLC Working Groups

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Emily Bradley, FMLC Legal Assistant

**Registered Charity Number: 1164902.**

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Standing forums are convened quarterly to provide a space for exploration and discussion

# FMLC

Scoping Forums

Working Groups

Working Groups

Working Groups are convened ad hoc to address a specific issue of legal uncertainty

N.B. Working Groups may be established on the basis of: 1) a recommendation from a Scoping Forum; 2) a stakeholder proposal; 3) a consultation request; or 4) Secretariat research.

# Working groups: objectives

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- The ultimate function of a Working Group established by the FMLC is to assist the Committee to address a specific issue of legal uncertainty by expressing an authoritative consensus.
- Pursuant to this aim and to the FMLC's remit, a Working Group will have the following objectives:
  1. to encourage discussion and the expression of a range of views;
  2. to build consensus that can be expressed in an FMLC publication; and
  3. to produce a draft publication to which, ideally, as many Working Group members have contributed as possible.

# How are working groups initiated?

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- Working Groups are established by the FMLC on the basis of a note specifying the relevant legal uncertainty (the “brief”).
- This brief defines the scope of work to be undertaken. It serves a threefold function:
  1. to establish controls over the group’s output on behalf of FMLC Members;
  2. to inform prospective contributors as to the scope of the project; and
  3. to assist the Chair and Secretariat to allocate appropriate resources to the project, according to its expected size and complexity.
- In the case of work recommended by the members of a Scoping Forum or any other stakeholder(s), the brief should be prepared by the person or persons making the recommendation and put before the FMLC Committee for approval. (The FMLC Secretariat will normally offer formatting and other assistance in preparing the brief.)

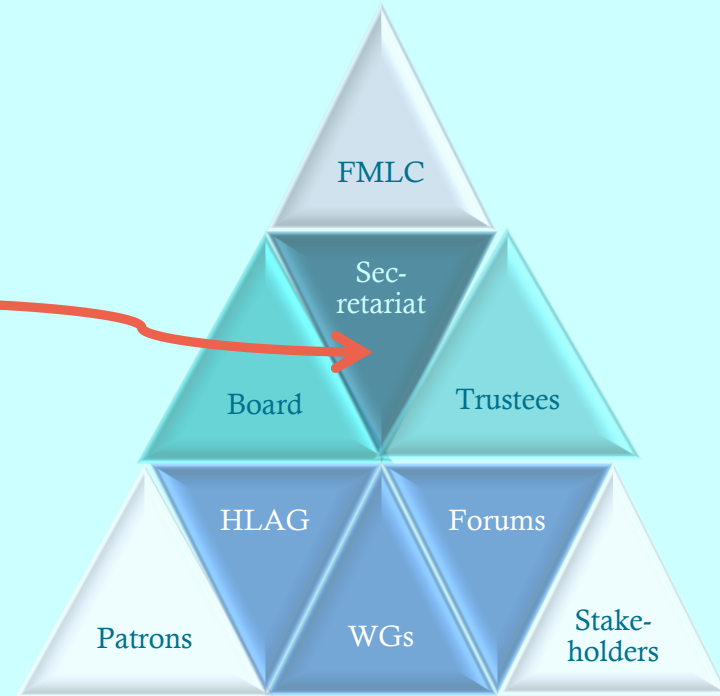
# Working groups: conduct of business

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- Working groups are convened under Terms of Reference, including conduct of business guidelines. These include the following:
  1. to encourage a diversity of perspectives, Working Group participation is limited to one member per organisation;
  2. to ensure accountability and transparency, alternates are, as a general rule, not permitted to attend meetings; and
  3. to foster individual engagement, Working Group meetings are to be attended in person, where possible. (Accordingly, the FMLC Secretariat does not provide dial-in details for working group meetings unless a member is based abroad.)
- Work within the Group follows a schedule (“Milestones”) established at the inaugural meeting and implemented by the FMLC Secretariat.

# Working groups: FMLC Secretariat

- The Secretariat supports the Chair and the Working Group during meetings, and manages Group-related communications outside meetings.
- The Secretariat helps draft and circulate meeting agenda and related documents in advance of Working Group meetings and takes minutes.
- Contributors are asked to send draft submissions to the Secretariat, whether directly or in copy.



# Any other business

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**Financial Markets Law Committee**

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