



# SWIFT Institute Student Challenge

*Financial Solutions from the Next  
Generation*

**COMPETITOR'S HANDBOOK 2019**

*Supported by*  
Google Cloud Platform



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## 1. FOREWORD

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*We are living in a time of hyper-connectedness, whereby information and news is immediately available. Technological advances are creating many new opportunities, but threats as well. This is true in every aspect of our lives, including how we move money from one party to another.*

*Instant payments enable money to be exchanged between two parties in near real time. Retail commerce is no longer confined to traditional business hours; shopping can take place 24 hours a day, 7 days a week. In many markets cash as a means of exchange is on the decline. Instant payments are fast becoming the new normal.*

*Instant payments are not a new trend. More than 30 markets around the world already have solutions in place, and many more are developing or designing solutions in response to the increasing demand of customers and regulators for instant payments.*

*With any kind of payment there exists the potential for fraud (e.g. theft, money laundering, terrorist financing, etc.). When a payment takes days to execute, there is time for financial institutions to detect and investigate if the payment's instruction might be fraudulent. This, however, is a significant challenge for instant payments. By shrinking the transaction processing window from days to seconds / minutes, the time to detect and act on fraudulent payments is greatly diminished.*

*Instant payments require instant fraud detection. This need is increasingly triggering discussions around the use of artificial intelligence (AI). Machines are more capable than humans in the processing of large datasets. AI is able to detect and recognize patterns and anomalies based on historical data and transactional behaviours. So, how can AI make fraud detection ever more immediate and accurate?*

*The SWIFT Institute Student Challenge aims to tap into the minds of the next generation of thought leaders, entrepreneurs and practitioners in order to help solve this growing challenge.*

*I am therefore delighted to confirm that the **SWIFT Institute Student Challenge 2019** will take place in Europe, and culminate in a grand finale at Sibos London in September 2019.*

***The topic for the 2019 Student Challenge is - How can Artificial Intelligence improve fraud detection and prevention in instant payments?***

The aims of the SWIFT Institute Student Challenge are:

- (i) To present a challenge or scenario to the student community to analyse and produce new thinking, solutions and concepts.
- (ii) To help support and coach students and teaching staff in presenting these ideas to the financial sector.
- (iii) To help promote and commercialise these ideas within the financial sector, where possible, to affect change for the better.
- (iv) To provide an ongoing network and community for all participants and stakeholders.

*We are proud to have the support of Google Cloud Platform (GCP) for the 2019 Student Challenge. Google have kindly offered their educational resources for those students who would like to improve upon their knowledge of AI.*

*I look forward to receiving your submissions, and hopefully meeting you at Sibos, where you will have the opportunity to present your ideas to a global financial sector audience.*



Peter Ware

Director, SWIFT Institute

## 2. THE CHALLENGE

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The challenge has been selected by the SWIFT Institute based on current industry priorities and challenges.

### **The 2019 SWIFT Institute Student Challenge:**

#### ***How can AI improve fraud detection and prevention in instant payments?***

Instant payments enable money to be exchanged between two parties in near real time. The growth of e-commerce has led to changes in spending patterns. Retail commerce is no longer confined to traditional business hours; shopping can take place 24 hours a day, 7 days a week. In many markets cash as a means of exchange is on the decline, and waiting days for a wire transfer or digital wallet payment to settle is no longer acceptable. Instant payments are fast becoming the new normal, also allowing instant reuse of the funds.

Instant payments are not a new trend in the payments market. More than 30 markets already have solutions in place including TARGET Instant Payment Settlement (TIPS) in Europe, Faster Payments in the UK, the Zengin system in Japan, and National Payment Platform (NPP) in Australia (amongst many others around the world). More markets are developing or designing their solutions in response to the increasing demand of customers and regulators for instant payments.

The convenience and speed of instant payments in the P2P (peer to peer / person to person) space makes them attractive for use in other areas:

- P2B (peer to business) - e.g. point of sale transactions, e-commerce platforms, an alternative to credit cards, etc.);
- B2P (business to peer) - e.g. urgent lending, insurance pay-outs, etc.);
- B2B (business to business);
- G2P (government to peer) – e.g. tax refunds, etc.

The Euro Retail Payments Board (ERPB) has the most widely accepted definition of instant payments:

*Electronic retail payment solutions available 24/7/365 and resulting in the immediate or close-to-immediate interbank clearing of the transaction and crediting of the payee's account with confirmation to the payer (within seconds of payment initiation).*

To meet these requirements significant investment is required by banks, retail merchants and other players involved in the payment process. In addition to building and connecting to a centralised, 24/7/365, instant payment market infrastructure, traditional batch and file processing operations must migrate to single / gross processing environments, new acquisition channels must be built, internal queueing and processing must accelerate, and new payment applications are required. A study of the Federal Reserve Banks of the USA has shown that the majority of the cost (85-90%) of introducing instant payments in a country relates to upgrading banks' internal applications and the creation of new acquisition channels. Only 10-15% is required for building a central market infrastructure.

There is also a significant downside to instant payments. By shrinking the transaction processing window from days to seconds / minutes, the time to detect and act on fraudulent payments is greatly diminished. For example, TIPS<sup>1</sup> enables 24/7/365 payments across 34 SEPA (Single Euro Payments Area) countries with an end-to-end transaction time of 10 seconds. Whatever technology is implemented to support instant payments, solutions must also support a bank's ability to detect and prevent fraud. In an instant payment environment, how can you be sure that a payment is legitimate and complies with anti-money laundering (AML) rules? The element of trust in the introduction of new payment schemes is key to adoption.

The real-time and always available characteristics of instant payment solutions present a key challenge for existing fraud detection and AML systems. New 'smart payments' present further challenges. How can you be sure of the identity of a payer and payee when payment requests are based on phone numbers or email addresses rather than bank account numbers? With the advent of open banking through PSD2 in Europe, the relationship between a bank and its customer's changes, which could subsequently change the model for fraud detection. Would a customer be prepared to share details across multiple accounts / banks to improve security of their accounts? Could

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<sup>1</sup> The new European TARGET Instant Payments Settlement service.

customers play a bigger role in terms of detection (e.g. could fraud detection become more 'personalised'?)?

Could money itself be made to be 'smarter'? For example, what if you gave your child EUR 10 to spend as they wish, but the 'money' itself prevented it from being spent on cigarettes? Central banks such as the Bank of England have talked about the potential programmability of payments, whereby tax would be automatically routed to the tax authorities when, for example, buying a cup of coffee (with the balance being paid to the coffee shop). Could smart (e.g. 'intelligent') money be programmed to combat fraud and satisfy compliance rules? Or would smart money present further opportunities for fraud?

Real-time fraud detection is the real-time execution of fraud-detection algorithms in order to detect fraudulent activity. It makes use of forensic and predictive analytics. As such, it often triggers discussion around the use of artificial intelligence (AI). How can AI make fraud detection more immediate and accurate?

Machines are more capable than humans in the processing of large datasets. AI is able to detect and recognize patterns and anomalies based on historical data and transactional behaviours. AI systems have proven benefits and show even greater potential, but there are challenges to overcome:

- *Lack of reasoning*: In AI algorithms based on machine learning using neural nets it can be difficult to explain why it took a certain decision. In the financial industry, from a regulatory perspective, decisions must be transparent and auditable.
- *Initial data set*: AI models are typically trained by using large amounts of data to learn patterns and correct behaviours. It is a challenge to obtain the initial mass of data required to set up the system. Classified data sets and fraud cases are required to conduct the training. It is important to ensure new types and patterns of fraud are included as part of the initial data set.
- *Rapid scaling*: There are risks in scaling at a fast pace. If there is an undetected fraud within the training data, machine learning may train the system to ignore that type of fraud in the future.

Instant payments obviously require instant fraud detection and prevention. Potential solutions could result from the application of AI.

The 2019 SWIFT Institute Student Challenge, therefore, focuses on instant payments and AI. Specifically, the challenge is:

***How can Artificial Intelligence improve fraud detection and prevention in instant payments?***

Students are welcome to interpret this challenge as they wish. Ideas can result in technology, marketing or regulatory based solutions, amongst others. You may look at solutions that improve the way we look at money today and existing instant payment systems. You may have ideas on creating brand new methods of facilitating instant payments. Or you may look at money in a completely different way from today (e.g. the creation of 'smart money'). There are no limitations on this challenge, as long as you explore ways through which AI can help to detect and prevent fraud, thereby increasing the overall security of payment transactions in an instant payments environment.

### 3. SUPPORT BY GOOGLE CLOUD PLATFORM

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We are proud to have the support of Google Cloud Platform (GCP) for the 2019 Student Challenge. Google have kindly offered their [set of educational resources](#) for those students who would like to improve upon their knowledge of AI. This is not mandatory for your participation in the Student Challenge, but is a resource that is available for you to take advantage of. If you are new to AI, we recommend starting with the self-study Introduction to Machine Learning Problem Framing course.

AI is making it easier for people to do things every day. AI also provides new ways of looking at existing problems, from rethinking healthcare to advancing scientific discovery. And of course improving fraud detection and prevention in financial services.

*We want to use AI to augment the abilities of people, to enable us to accomplish more and to allow us to spend more time on our creative endeavours.*

***Jeff Dean, Google Senior Fellow***

Using the Google library of open source projects, public datasets, APIs and more you may find the tools you need to tackle the SWIFT Institute Student challenge.

Google, along with experts from the financial industry and SWIFT, will be part of the judging panel for the Student Challenge

Finally, Google will work with the overall winner of the 2019 Student Challenge to help refine their idea, and if possible, make a mock-up in a demo environment.

## 4. WHO CAN ENTER

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The Challenge is open to students currently enrolled at any recognised University or further educational establishment in Europe. Students must not be in full time employment and must be at least 18 years of age. Professors, readers and teachers are permitted to assist their students with their submission, but the submissions must be in the name of the students.

Submissions can be made by individual students or by teams of students (across the same or different universities or colleges). Every submission is expected to give their entry a name, which relates to either their idea or their team (e.g. Instant Solutions, Team Alpha, etc.). This is purely to help distinguish one submission from another.

Entry into the challenge does require a commitment in terms of time, media exposure and potentially cost to each entrant. The rewards, however, are significant. There is a cash prize, professional coaching, and exposure of your ideas to the global financial industry.

Shortlisted applicants will be invited to attend a coaching workshop and a showcase event where they will present their idea. Both will take place in London, UK in September 2019.

## 5. BENEFITS OF ENTERING

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The benefits of participating in the Challenge are:

- (i) The opportunity to engage with the global financial industry and make a practical and positive difference to the financial sector;
- (ii) to stimulate innovation and creative thinking amongst students;
- (iii) to receive both financial and reputational benefits;
- (iv) to showcase and attract possible research and grants from the financial sector.

The SWIFT Institute will ensure all shortlisted participants are supported throughout the process. One of the challenges for any new idea is its concise and complete presentation in a way to attract interest. The SWIFT Institute will host one-to-one calls with shortlisted participants to both mentor and coach participants to construct a presentation in the most effective way in terms of content and delivery. A full day coaching workshop will also be held just prior to Sibos in London for all shortlisted participants. This has proved to be highly successful in the past and is of great benefit to student development.

## 6. HOW TO ENTER

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To enter the challenge, please log onto [www.swiftinstitute.org/swift-institute-challenge/](http://www.swiftinstitute.org/swift-institute-challenge/) where you will find details and instructions on how to upload your submission. Your submission should define your solution to meet the challenge:

### ***How can AI improve fraud detection and prevention in instant payments?***

Your submission should be a free format written report of no more than 1,000 words entered into our online entry form. Supporting documentation can be uploaded in .pdf or PowerPoint format. It should explain in full detail your solution, and include diagrams, flow model, etc., as applicable.

Your submission will be assessed and ranked. The highest ranked submissions (up to a maximum of eight) will be invited to participate in the coaching workshop and then to present their solution at the annual Sibos conference, which takes place in 2019 in London from 23 to 26 September.<sup>2</sup> The coaching workshop will be held on Sunday 22 September.

The decision of the judges to arrive at the top eight entries will be final. Individual rankings will not be disclosed. All submitting teams will be notified as to whether or not they have made it through to the top eight.

Upon notification that you have made it through to the top eight, details of the coaching workshop and Sibos, where final presentations will take place, will be confirmed.

### **Please note:**

*Any information submitted will only be accessible by the SWIFT Institute administrators and the judges during the judging phase. All submissions should be clearly marked as copyrighted by the submitting team. The intellectual property relating to your submission remains with you.*

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<sup>2</sup> A maximum of two members of each of the eight finalist teams will be invited to the coaching, and to attend and present at Sibos.

## **7. THE JUDGES**

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The SWIFT Institute has a pool of judges across the financial industry including a number of senior SWIFT staff. The judges are looking for innovation and free thinking that when applied will make a real practical difference to the banking sector and its customers.

These judges have an unparalleled source of experience and are able to give encouragement and qualified feedback at every stage of the challenge.

We find that many judges (and audience members who will see the final presentations) after the event continue to take an interest in maintaining contact with contestants, and can ultimately open doors to exciting new possibilities.

## 8. TIMESCALES

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The website will be open for submissions from 01 December 2018 through to 30 June 2019. Judging of all entries will take place in July 2018. The Coaching Workshop will be held on Sunday 22 September 2019, and the Final on Wednesday 25 to Thursday 26 September 2019, both held in London.

The overall winner of the Student Challenge will be announced at the end of the Sibos conference.

### *Timeline*

<b>03 Dec 2018</b>	<b>09 Jan 2019</b>	<b>30 Jun 2019</b>	<b>15 Jul 2019</b>	<b>31 Jul 2019</b>	<b>22 Sep 2019</b>	<b>23 to 26 Oct 2019</b>
Launch of Challenge	Submission Website Open	Deadline for all Submissions	Judging of Submissions	Notification to all submitters of whether they are in the Top 8	Coaching Workshop in London	Sibos in London

## 9. THE PRIZES

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There are numerous positive outcomes of being involved for students ranging from expert coaching and mentoring through to media coverage and exposure to members of the global financial industry. This is of course in addition to the kudos of winning the Challenge.

An engraved commemorative plaque will be presented to each of the eight shortlisted entries.

### Semi-Finalists

The eight shortlisted teams will be invited to attend the world's premier annual financial industry conference, Sibos, taking place in London from 23 to 26 September 2019.

- Two complimentary week long passes to attend Sibos London (value of approx. EUR 3,200).
- SWIFT Institute will pay for two economy airfares and hotel accommodation to attend Sibos London (for those entrants who are not based in London).
- One day coaching session to refine the pitch before the showcase event.
- The opportunity to make a 10-minute presentation (including Q&A) to an audience of global financial industry executives and media.

### Winning Team

The winning team will be decided through a combination of digi-voting from an audience of financial industry professionals and a panel of expert judges.

- Promotion to SWIFT's 11,000 member organisations around the world, and introductions to members who express interest in meeting you
- The winning entry will receive a cash prize of GBP 20,000.<sup>3</sup>

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<sup>3</sup> The winning team is responsible for any taxes that may be incurred upon winning the cash prize.

## **10. RULES AND RESTRICTIONS**

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By submitting this application each applicant agrees that the SWIFT Institute may share any submitted material with competition judges, SWIFT staff and partners. Further it is recognised and accepted that any material submitted may be freely published by SWIFT and its media partners in the spirit of the competition.

All semi-finalists must present at the showcase to remain eligible.

The overall Challenge winner will be selected and announced at Sibos. Each team of finalists will present their idea to an audience of global financial industry professionals during Sibos. The audience will use digi-voting to select their stand out presentation. The audience is likely to change throughout the presentations, and therefore the same audience will not necessarily see all eight presentations.

There will also be a panel of expert judges, made up of senior industry professionals, who will see all eight presentations. They will also select their stand out presentation.

The audience and judges scores will be combined, thereby arriving at an overall winner. Only the winner will be announced. The remaining participants will not be ranked in any way. All decisions will be final.

The winning team will receive a cash prize of GBP 20,000 (to be shared amongst the members of the winning team as agreed by the members). The winning team is responsible for any taxes that may be incurred upon winning the cash prize.

The Challenge shall be governed by the laws of the Kingdom of Belgium notwithstanding its conflict of law's provisions. Applicants submit to the exclusive jurisdiction of the courts in the Kingdom of Belgium.

## **APPENDIX – BACKGROUND INFORMATION**

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**SWIFT Institute** is the research arm of SWIFT. It aims to provide knowledge through sponsored research projects. The SWIFT Institute unites academic study with the practice of global finance to bolster the spread of big new ideas. Through the funding and publishing of a broad range of cutting-edge research, we encourage collaboration between thought leaders in finance and academia. The nearly 40-and counting grants awarded for independent research demonstrate the Institute's commitment to engaging the industry with relevant, constructive debate. The SWIFT Institute makes incisive research possible and ensures that the findings are effectively disseminated across the globe.

For more details please visit [www.swiftinstitute.org](http://www.swiftinstitute.org)

**SWIFT** is the Society for Worldwide Interbank Financial Telecommunication, a member-owned cooperative through which the financial world conducts its business operations with speed, certainty and confidence. More than 11,000 banking organisations, securities institutions and corporate customers in over 200 countries trust us every day to exchange millions of standardised financial messages.

For more details please visit [www.swift.com](http://www.swift.com)

**Sibos** is the premier annual event for the financial services community. The conference and exhibition are organised by SWIFT, and facilitate debate, networking and collaboration around the future of payments, securities, cash management, trade and financial crime compliance. For one week every year, Sibos connects some 8,000 plus business leaders, decision makers and thought leaders from financial institutions, market infrastructures, multinational corporations and technology partners. Sibos takes place in London in 2019 from September 23 to 26.

For more details please visit [www.sibos.com](http://www.sibos.com)

### **CONTACT US**

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