**July / August 2017 ICG Tech Analyst Program**

**Tech Project – Capital Markets Portfolio Manager**

**Overview**

The Technical Project is designed to reinforce the technical, financial and professional skills taught during the past five weeks and in particular to explore the application of computer technology in the development of complex business systems.

During the project, Analysts (and their team) will be required to perform the analysis, design, implementation and testing necessary to develop a representative application for use within Citi. While this exercise will not result in a system going into production, it will incorporate many of the elements of a real software development project.

The project will be continually assessed by the instructors. In addition to assessing progress, the instructors will be available to assist the Analysts to organise their development and resolve technical issues. Each team will be given a morning and afternoon time slot with both instructors to answer questions and demonstrate progress. Both slots will last for 10 – 15 minutes each.

The assessment will focus on

* Teamwork, clear communication and logical problem solving skills
* Requirements analysis and technical design
* Clean coding, efficient scripting and system testing
* High quality deliverables – user stories, design documentation, test cases
* Working to ambitious deadlines using agile best practices
* The use of appropriate tools and technologies
* The preparation of a business presentation to peers, instructors and managers

The system will be required to meet its requirements, but also note it is equally important that the system not be over-engineered.

The project will begin on Friday 4th August when the instructors will describe the project to the teams, split the group into their teams, re-arrange the room to accommodate groups and ensure all students have the basic technical set up to complete the project.

During this day, the groups will also prepare a plan and gain a reasonably comprehensive understanding of the requirements.

This will also allow the students time during the weekend to research tools and technologies needed to complete the project.

The development of the project will take place during the following week from Monday to Thursday.

On the Friday, the entire group will need to move to another Citi facility in Shanghai, to accommodate a town hall being facilitated in the current training room. The morning of this day will be spent by the students preparing and rehearsing their presentations and demonstrating and the afternoon will be the actual delivery of the presentations.

**Project – Portfolio Manager**

This project will see the analysts combine their capital markets knowledge, technical skills and teamwork to build an interactive analytics and reporting tool that will allow users to allow the creation of investment portfolios

The instruments that can be included in a portfolio include the following, Bonds, Stocks, Futures and ETFs.

The tool will support 2 separate views / users – an administrator and a fund manager

Typical use cases for the administrator include

* CRUD functions to maintain Fund Managers
* Ability to upload daily prices for all instruments
* Allow users to filter, sort, top and tail data sets, top, worst performing funds and their fund managers
* Visualize all result sets

Typical use cases for the fund manager include

* CRUD functions to maintain portfolios and positions
* Allow users to filter, sort, top and tail data sets, top, worst performing funds
* Visualize all result sets

Project teams will also be expected to demonstrate an awareness of the needs of production support and will therefore need include functionality for logging use of the system on a user / user basis and also integrate some basic monitoring capability in their system.

The project work leverages the following technical skills

* Test Driven Development
* Java 8 or .NET Object Oriented and /or Functional Programming
* HTML5, JavaScript, RESTFul Web Services and Spark Technologies
* Testing & Documentation

**Project Schedule and Objectives**

The project schedule will be completed in these phases:

* Phase #1 Specification, Analysis, Design and Planning Friday August 4th – Monday 8th @ 9am
* Phase #2 Delivery of Key Project Components Mon 7th August - Thurs, August 10th @ noon
* Phase #3 Integration and Testing Thursday, August 10th – all afternoon
* Phase #4 Presentation & Demo Preparation Friday, August 11th - all morning
* Phase #5 Presentation & Demo to managers Friday, August 11th - afternoon

Successful completion of the project required:

* Brief but appropriate documentation for business and system analysis, an architectural description (incorporating appropriate viewpoints such as data schemas), design
* Use of build-control and testing technologies (JUnit)
* Use of version-control (GitHub)
* The creation of code and necessary utilities to test and validate the system
* The preparation of a demonstration to peers, instructors and managers