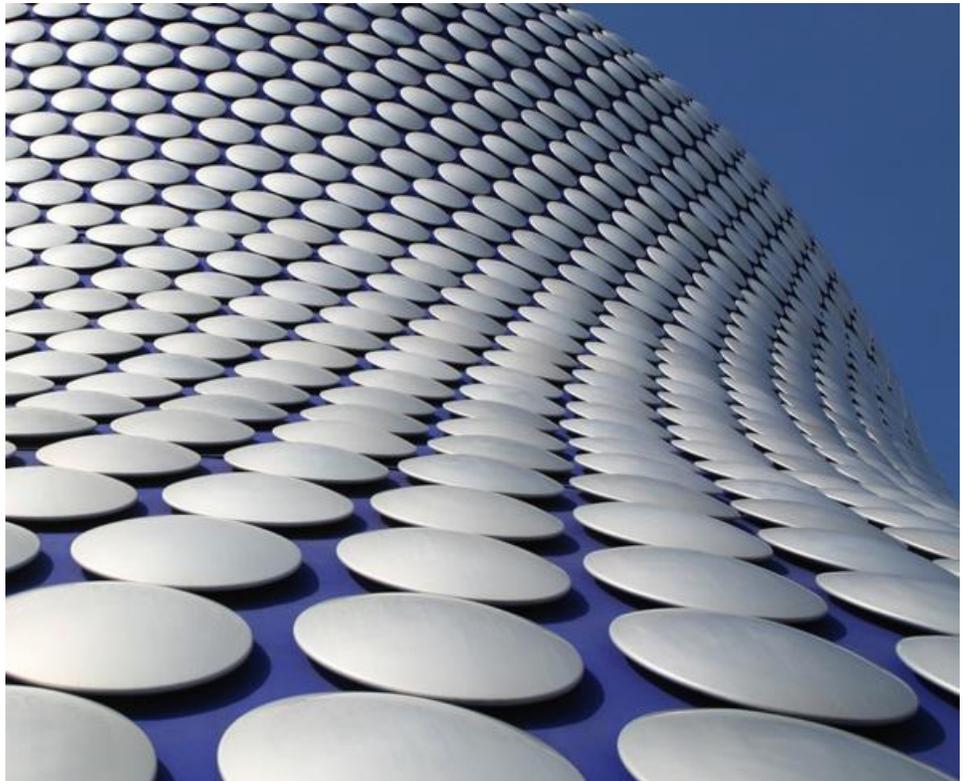# IT SOLUTION FOR NACCUG IN THE GAMBIA

30/10/2014

An Evaluation of the Fern Abacus CU Implementation

Is the implementation of the Abacus CU system for NACCUG in The Gambia appropriate to meet the broader goals of an ILCUF programme aimed at reducing poverty using the credit union model?

IT Solution for NACCUG in The Gambia

AN EVALUATION OF THE FERN ABACUS CU IMPLEMENTATION

1   EXECUTIVE SUMMARY

The Irish League of Credit Unions Foundation had final responsibility for a 3 year programme whose primary aim was to contribute to poverty reduction by means of expanding financial inclusion through the credit union model. A key component of this programme was the procurement and implementation of an IT solution to support the aims of the programme.

With the IT solution now implemented and operational, the Irish League of Credit Unions Foundation sought to determine if the objectives of the programme had been met. Part of this involved an evaluation of the activities undertaken in the selection, procurement and implementation of the IT solution deployed. The evaluation has concluded as follows;

Abacus CU, the preferred solution, from Fern Software was procured through a fair, transparent and informed process with the assistance of IS Options. The process involved seeking, obtaining and collating expressions of interest and evaluating those expressions of interest against clear and objective selection criteria. The choice of system provider appears to have been validated by the successful implementation of the solution and the ease of ongoing operations.

The system is secure for the protection of savings of credit union members. The security and resilience of the system have been well established in the credit union marketplace over time, and the functionality inherent in the system supports secure operations for the protection of members' interests.

The system is functional and is providing quality financial services to credit union members. The system functionality can be readily mapped to the functional requirements outlined by the National Association of Cooperative Credit Unions of The Gambia (NACCUG) as part of the procurement process. Functionality was given a percentage weighting of 47 in the selection process.

The solution is accessible to the wider credit union movement, including credit unions which focus on the poor. With the support of NACCUG and with the support of the system vendor, there should be no barrier to any credit union, irrespective of focus, implementing this IT solution for the carrying out the business of the credit union.

The solution implemented represents value for money, both in terms of the capital costs of system implementation and the operational costs of the solution. Cost was given a percentage weighting of 31 in the selection process. Equipment is sufficiently specified and appropriate to the requirements of the system and the price point desired, and the licencing terms applied by the software vendor are favourable to the credit unions. Operational costs were determined as the cost of operating the system, including licence costs, for a period of 5 years.

It appears that NACCUG and the credit union movement in The Gambia have developed the necessary human resources to use and maintain the IT solution, in conjunction with the system provider. The initial risk of over-dependency on a single IT Manager has been mitigated by the hiring by NACCUG of another IT Specialist, and the approach of Train the Trainer throughout the implementation ensures that there are sufficiently skilled personnel in place to run and to support the operation of the system. It is important to keep the component parts of the solution as common as possible e.g. common desktop machines and software, so as to make support as simple as possible.

There appears to be a case for a more formalised approach to the management of projects by the Irish League of Credit Unions Foundation to ensure that project artefacts are available retrospectively as a record of the work done, as an input subsequent projects and as supporting documentation for funding requests.

Given the changing nature of technology, it is important that NACCUG retains a strategic focus to ensure that the IT solution implemented is kept current to meet the objectives of the credit unions and to match the expectations and needs of current and future members. The need for Strategic Integration – the linking of Business Strategy and IT Strategy is ever present.

2   CONTEXT

The Irish League of Credit Unions Foundation had final responsibility for a 3 year programme whose primary aim was to contribute to poverty reduction by means of

expanding financial inclusion through the credit union model. Credit unions provide financial education, savings and credit to their members. They are financial cooperatives; members own their credit union and membership is restricted to a coherent geographical or professional community. The credit union operates, not for profit, but for the benefit of the membership.

A key component of the programme was the procurement and implementation of an IT solution with software, hardware and a communications infrastructure to support the requirements and objectives of NACCUG. In the overall context of the programme, the implementation of the IT solution is best seen as creating the appropriate platform upon which to build a more efficient and effective credit union movement for the mutual benefit of all involved; effectively IT is the enabler rather than the goal.

> **Increasing efficiencies through the deployment of appropriate software facilitates the expansion of credit union outreach and affords credit union personnel the opportunity to concentrate more on managing relationships with both present and potential members and less on repetitive administrative functions.**

The provision of an IT solution in itself is not capable of delivering the primary aim of this programme. But through Strategic Alignment, where the IT Solution forms a component part of a programme to deliver the ideas, the skills, the access channels and the business processes to support poverty reduction, a common platform has emerged upon which credit unions can build this capability.

Thus the choice of an appropriate IT solution was critical to the success of the programme.

3 SCOPE OF THE EVALUATION

The scope of this evaluation is to establish whether the IT solution obtained by NACCUG for implementation of the project:

- was procured through a fair, transparent and informed process
- Is secure for the protection of the savings of CU members
- Is functional and providing quality financial services to CU members
- Is accessible to the wider CU movement and in particular CUs which focus on the poor
- Represents value for money and a good use of resources

It should also establish whether NACCUG and the Gambian CU movement has developed the necessary human resources to use and maintain the IT system, and whether the software supplier provides adequate maintenance and upgrades (sustainability) and whether there are aspects of the programme that may be replicable elsewhere.

4 SYSTEM PROCUREMENT

4.1 Process Outline

It appears that the system was procured through a fair, transparent and informed process. The Irish League of Credit Unions Foundation engaged the services of the independent consultancy company, IS Options, to assist with the procurement of the system. The Vendor Selection Process was overseen at all times by a committee formed from the Irish League of Credit Unions Foundation and from Irish Credit Unions supporting the process. Minutes from the meetings of this steering committee were provided to the author as part of the evaluation process.
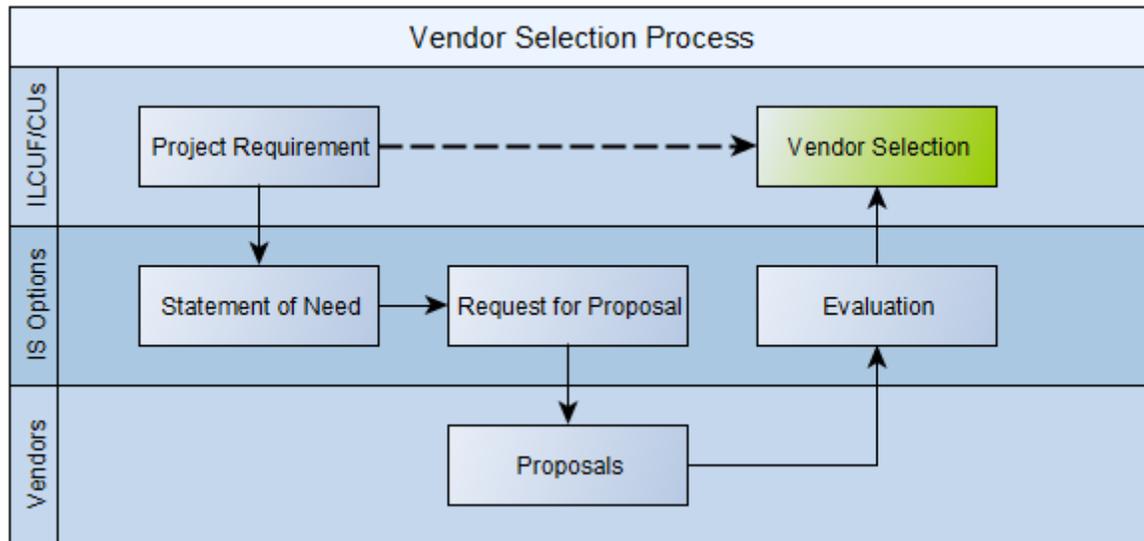
FIGURE 1 - VENDOR SELECTION PROCESS

Four IS Options documents were presented to the author;

- Statement of Need – Issued January 2012
- Request for Proposal (RFP) – Issued February 2102
- RFP Evaluation Summary – Issued March 2012
- RFP Report – Issued March 2012 (Final Draft)

4.2 Statement of Need

IS Options set out its evaluation methodology in the Statement of Need document, and built on this methodology with a discovery exercise involving a visit to a number of credit unions in The Gambia;

- NACCUG
- Ndembalanteh CU
- GPFCCU
- GTUCCU
- MHSCCU

This provided the project with a better understanding of current functionality and service provision in place in The Gambia, as well as communications technology available to

provide the backbone for credit union connectivity. Specifically, the document provided an Assessment Process and Algorithm[1] for agreement for use in the RFP.

4.3 Request for Proposal

The RFP document set out the terms for Vendor responses and the criteria being applied in the evaluation of responses.

The RFP scoring was based on a set of objective criteria as follows;

- Vendor financial stability
- Current functional match
- Vendors commitment to close functional gaps
- Depth and breadth of solution
- Vendors ability to deliver the solution
- Vendors ability to support the solution
-

8 vendors were invited to tender, based on the experiences of IS Options and on the Consultative Group to Assist the Poor (CGAP) system ratings from 2009[2] and the Accenture FSD Kenya 2010 assessment document[3].

4.4 RFP Evaluation and Report

The RFP Evaluation Summary presented a high level view of the responses received from the vendors. The final report considered the submissions from the 6 respondents; there were 7 proposals considered in all (two vendors withdrew from the process and one vendor presented both a CUSO and a Software as a Service proposal). The Request for Proposal Report fully collated the responses received from the vendors and demonstrably showed how the IS Options recommendations were reached. The application of predetermined criteria to the responses received and ranked each responding vendor

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[1] Appendix B – Assessment Process and Algorithm in *Statement of Need for System Procurement Project* (IS Options; January 2012)

[2] CGAP 2009 Ratings for Abacus system are available online at
http://mixmarket.org/sites/default/files/CGAP_files/Fern_Software/Review_Abacus.pdf

[3] 'Automation of SACCOS; Assessment of Potential Solutions – March 2010' available online at
http://www.fsdkenya.org/pdf_documents/10-09-22_SACCO_automation_report.pdf

according to their evaluation score is evidenced in the report. Figure 1 provides a table of the weightings applied in the process of evaluation.

Category	Weighting - (%)
Functionality	47
References	4
Support	10
Project Delivery	4
Professionalism and Resourcing	4
Costs	31
Total	100

FIGURE 2 - SYSTEM EVALUATION: WEIGHTING

4.5 Final Vendor Selection

The final decision on the choice of vendor was made by a sub-committee of that referred to in Section 4.1 above. This decision was ratified by the main committee. The details of the steps taken in advance of the choice of Fern as the preferred vendor are documented in the minutes of the committee meeting of 7th August 2012.

4.6 Comment on System Procurement

It appears on the basis of the documents presented that the tendering process was fair, transparent and informed. The process applied by IS Options is clearly laid out and the scoring appears consistent with the stated requirements at the beginning of the process. The process appears realistic; there is an acceptance that no one vendor meets all of the stated requirements[4].

It should be noted that there is still an element of subjectivity inherent in the process. It would be unrealistic to expect that each of the 8 systems could be validated against the

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[4] Summary – The Gambian RFP Evaluations March 2012 pp:11.

vendors' response to NACCUG's requirements in the timelines that applied to the process. There is also some mention in the final report of adjusting functional rankings to '*reflect scepticism…*'. Notwithstanding these points, the IS Options assessment of the Abacus system from Fern appear to be supported by the documents referenced.

5   SOFTWARE IN SCOPE

The implemented solution comprises of a number of software components. For the purposes of simplicity, this document will consider the three key software components;

- Application Software – Core Credit Union Solution (to include Database Software)
- Server Software
- Client Software

5.1 Application Software

The software delivered by the project was Abacus CU. The system is the standard credit union software system supplied by Fern. There is a single version of Abacus CU used worldwide. The system is updated on a six monthly schedule.

The Abacus CU version at time of implementation was 1.8.2019. The current version in production is 1.8.2024-2. The last update was applied to the system on 16 July 2014. This provided evidence that the system is being updated on a scheduled basis.

The system provides all the facilities requested by the Gambian Credit Unions. Each credit union has an individual system license to use the system and there are 60 client access licenses which are under the control of NACCUG.

All the eleven credit unions in scope are live on the Abacus CU system.

Credit Union	Scope	Status
GPACCU	Ports Authority	Live
GPFCCU	Police Force	Live
GSCCU	Gambia Telecommunications Company (Gamtel)	Live
NAWECCCU	Water & Electricity	Live
CESCU	Catholic Teachers	Live
MRCCCU	Medical Research	Live
BIACCU	Airport	Live
Ndembalanteh	Community	Live
MHSCCU	Health Service	Live
GTUCCU	Teachers	Live
GAFCCU	Armed Forces	Live

FIGURE 3 - CREDIT UNION LIST AND STATUS

The database software shipped with Abacus CU was Microsoft SQL Server 2008 r2 Express. This product has a Lifecycle Start Date of 20 July 2010 and an Extended Support End Date of 9 July 2019[5]. This database software is used extensively throughout the world and is well supported by Microsoft. This database has a storage limit of 10GB of data. This is considered acceptable within the parameters of the credit union system and has not caused an issue to date, nor is it expected to cause an issue into the future. The primary benefit of using the Express Editions of MS SQL Server is that it is provided free of charge by Microsoft. Other versions of MS SQL Server incur additions licensing costs.

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[5] http://support2.microsoft.com/lifecycle/search/?sort=PN&alpha=sql — Accessed on 25/10/2014

5.2 Server Software

The server software implemented was Microsoft Small Business Server 2011, which has a lifecycle start date of 9 March 2011[6]. This software version requires a well specified 64-bit infrastructure. Given the fact that this project included the implementation of a completely new platform, the server software is an appropriate choice to support the client infrastructure.

It is expected that this server software, and the component parts therein will continue to be supported for a considerable period of time.

5.3 Client Software

The operating system on the client machines is Microsoft Window 7 Professional. This software has a lifecycle start date of 22 October 2009 and has an Extended Support End Date of 14 January 2020[7]. Microsoft have introduced Windows 8 (current version is 8.1). However, most enterprises have been slow to adopt Windows 8, and Windows 7 continues to be commercially available, supported by Microsoft, and indeed preferred by most organisations using Windows desktops.

5.4 Software Update Process

Software updates are downloaded onto the NACCUG IT Manager's laptop. The IT Manager subsequently takes the updated software to each site and updates each terminal from the laptop. It would be possible to have this process automated. However, updates would be at risk from power disruptions. In addition, this process allows the IT Manager to assess the status of each site from an IT context and answer any questions that credit union personnel may have. NACCUG are satisfied that the current process of system updates suits their requirements.

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[6]
http://support2.microsoft.com/lifecycle/search/default.aspx?sort=PN&alpha=Windows+Small+Business+Server+2011&Filter=FilterNO – Accessed on 25/10/2014
[7] http://support2.microsoft.com/lifecycle/search/default.aspx?sort=PN&alpha=Windows+7+Professional&Filter=FilterNO – Accessed on 25/10/2014
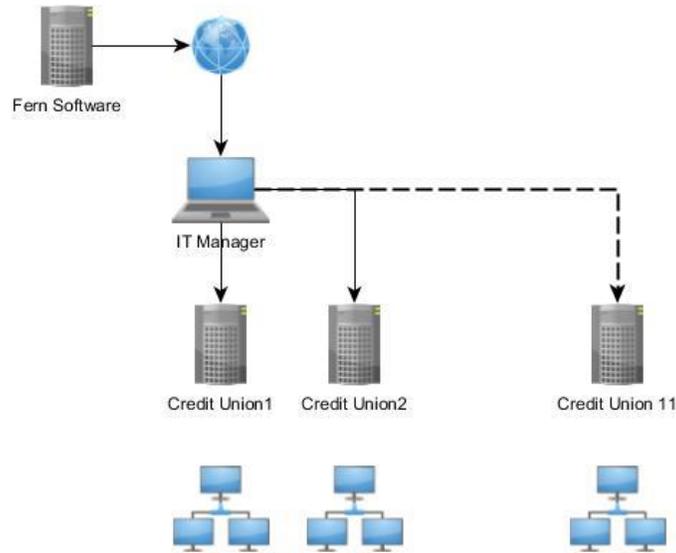
FIGURE 4 - SYSTEM UPDATE PROCESS

6   HARDWARE IN SCOPE

6.1 Server Hardware

The server initially supplied to the Teachers Credit Union was supplied by NSSL. The subsequent 10 servers were supplied to the project by Fern at more reasonable terms. These servers were Dell PowerEdge Servers. Each server was configured and hardened by Fern in Belfast and the servers were subsequently shipped to The Gambia by courier.

Dell PowerEdge Servers are used extensively throughout the world. Dell is a well-established hardware company and all of its products are well supported and maintainable. Additionally, Fern have extensive experience of the provision of Dell Servers and are in a position to quickly diagnose problems that might arise.

6.2 Client and Other Hardware

Hardware, other than the servers, was sourced locally in The Gambia and paid for by each individual credit union depending on their own credit union requirements.

7   SYSTEM CAPABILITIES

7.1 Functionality

The Abacus CU system has delivered to the project the functionality required to support the desired platform (Branch Capable), infrastructure (5 Regional credit union bases) and processes involved in the operations of the credit unions in The Gambia, including the management of member services in a secure and stable IT environment, the fulfilment of compliance and legislative requirements, and the potential to grow the reach of credit union movement to those currently not being served.

The functionality was verified by means of User Acceptance Tests carried out in the Gambia prior to the system going live. The progression from pre-production through UAT to production appears to have been appropriately documented and authorised. Section 8 provides further information on User Acceptance Testing.

7.2 Usability

Usability was of primary concern throughout the RFP and Evaluation processes. The evaluation identified a number of systems, subsequently eliminated as part of the creation of a short list, where concerns were expressed on the usability of the proposals. Both documents referenced by IS Options as part of the RFP process referenced the high degree of usability inherent in the Abacus system.

The fact that the selected system required no bespoke development, with delivery of an off-the-shelf product to the credit unions, further reinforces the system's suitability for the environment in which it is being used.

7.3 Reliability

The implemented system is in operation in credit unions and financial organisations throughout the world, and it has proven to be reliable where implemented. The experience in The Gambia appears to have been positive to date with respect to the reliability of the system.

7.3.1 System Backups

Each credit union takes a system backup to an external hard drive daily. Each backup is logged in a backup log book. This log book is verified by the NACCUG IT Manager at each site visit.

Should a server failure occur, there is a desktop available at each credit union that can fulfil the role of the financial system server on a temporary basis. In such an instance, the system backup from the external hard drive will be restored to the desktop machine until the problem is fully rectified.

7.3.2 Standby Server

NACCUG retains a standby server on which the Fern Software is pre-loaded. The NACCUG IT Manager takes a backup every time he visits a credit union site; at least once per month. On his return to NACCUG, this backup is transferred to the standby server. In this way, NACCUG has a copy of the data from each of the sites that is no more than one month old.

7.3.3 Adequacy of Backups

Any backup regime should have the following;

- On-site and Off-site storage of backup media
- Testing of backup media

There is both an On-Site and an Off-site element in current backup process. However, the value of the Off-Site backup on the standby server in NACCUG is weakened significantly by the timeliness of the data. The backed up data can be up to a month old. In effect, the Recovery Point Objective – the amount of data at risk of being lost – is one month. Given this situation, it is crucial that the credit unions have a more timely alternative in place.

Ideally, the credit unions should have a local backup retained on-site, and a copy of that same backup taken off-site. If the on-site backup was lost, the credit union could revert to the off-site version, which could be up to a month more current than the backup retained by NACCUG.

In addition, the credit unions should perform a restore of the backed up data periodically. This could be performed on the standby server at NACCUG, and would give NACCUG, the credit unions and the IT Manager some assurance that the financial system is recoverable in the event of failure.

7.4 Performance

The system as implemented is performing as expected. The system does rely on the cellular network for connectivity via Virtual Private Network (VPN) connections, but this does not appear to have caused issues to date.

7.4.1 Remote Access and Branch Locations

The system is capable of supporting branch access, to allow for credit union operations from locations remote to the 'parent' credit union. In the process of the evaluation, Fern confirmed that they can access a rural branch location from their centre in Belfast. This level of connectivity and availability ensures that the solution supports financial inclusion through the delivery of credit union services to dispersed rural communities.

7.5 Scalability and Supportability

7.5.1 Accommodating More Credit Unions

The credit union system, and the platform on which it runs appear scalable. Adding additional credit unions to the current platform would appear to be a straightforward exercise of adding the necessary component parts and configuring the communications channels to establish connectivity. All hardware and software artefacts are readily available to prospective credit unions, and the skillsets appear to be available and transferrable locally. Any credit union wishing migrate to the existing platform would additionally benefit from the experience gained in the running of the platform over the last number of years.

7.5.2 Accommodating Bigger Credit Unions

Accommodating growth within an existing credit union would also appear to be straightforward given the nature of the Abacus CU system and the licensing model applied for use of the software.

7.5.3 Supporting Credit Unions in Production – First Level Support

Credit unions currently working on the implemented platform are supported by an IT Manager employed by NACCUG. The IT Manager was selected by an interview panel of 8 members from a pool of 8 suitable applicants. The IT Manager chosen emerged as the unanimous choice of the interview panel.

The IT Manager was previously employed by Sinrika Technologies, and he brought to the venture a great deal of experience in Networking and in relevant software, as well as working on systems development to support Rural Finance Projects. The IT Manager received the training needed to carry out his work from Fern in Belfast and subsequently in The Gambia.

An additional IT Specialist has since been recruited by NACCUG to support the IT Manager. In the author's opinion this was a necessary step to mitigate against the risk of the IT Manager becoming unavailable to support the solution.

7.5.4 Second and Third Level Support

Fern supply second and third level support through their office in Belfast. This support is governed by the terms of a Service Level Agreement between Fern and NACCUG.

7.5.5 Non-Production Environments

NACCUG have implemented a Disaster Recovery facility at their headquarters in their headquarters in Banjul.

The Test Environment is hosted on the IT Manager's Laptop.

8   SYSTEM ACCEPTANCE

8.1 User Acceptance Testing

> "*Acceptance... testing determines whether a system satisfies its acceptance criteria, usually by checking desired system behaviors against the customer's requirements. The customer or a customer's representative thus specifies or directly undertakes activities to check that their requirements have been met...*"
> (IEEE, p4-6)

Prior to the implementation of Abacus CU, 10 of the sites in scope were using a version of the Progress system, so data migration to the new platform was necessary. The GPACCU site was using manual ledger cards and Abacus CU had to be setup manually for that credit union.

After data transfer had been completed, reports were run on both systems and the overall balances for Savings and Loans were verified. Further testing on individual accounts was carried out and each test conducted was verified and signed off. Sign off was by the Fern representative and the NACCUG IT Manager for each of the changeover sites.

Any issues that arose during the data transfer were resolved satisfactorily before the Fern system was put into production.

9   EFFICIENCY

By implementing a modern credit union system, the credit unions have benefited in terms of efficiency of service delivery, service support and service improvement. The system has provided a means of identifying what is working and what is not. It has allowed credit unions to concentrate their resources on the items that need the most immediate attention.

Having a common platform in use, supported for all credit unions by a common support infrastructure, using personnel who have built up a knowledge and capability over time, benefits all credit unions involved. It will be important to remember this as credit unions move forward. Credit unions might benefit from a formal IT procurement process, supported by NACCUG, to ensure that the benefits that have been realised to date continue into the future.

Efficiencies in credit union operations have a corresponding benefit for credit union members. By simplifying some of the credit union processes, the system allows credit union personnel to concentrate on the relationship with their members, which is a key part of the success of the credit union. The credit unions can build on this through the principles of ongoing education.

10 INNOVATIVE APPROACH

The IT solution is comprised of well-established technologies from a well-established vendor on a well-established platform. It is probably more reasonable to anticipate innovation and creativity in the way the solution is used by the credit unions rather than from the solution itself – innovation is as much comprised of people and processes as it is technology. For example, the solution provides a platform for Branch Networking. This enables a new way of working; centralisation of functions, greater availability etc.

Credit unions continue to work on how best to use the tool that has been delivered to grow the reach of the credit union movement and promote mutual self-help. With the assistance of NACCUG, the scope for innovation on the platform and for co-operation among co-operatives, in terms of support and of new business development would appear to be great. The credit unions have access to information now that was often hidden in the older system. While this meets a compliance requirement, the challenge is to find ways to use to use data to support decisions, reduce risk and most importantly, to meet the needs of the credit union members.

11 LOOKING FORWARD

This programme has provided NACCUG with a technology platform upon which to build a stronger and further reaching credit union movement in The Gambia, when credit union membership has increased *from 47,632 in December 2012, to 62,688 at the end of September 2013'*[8]. It is important however for all concerned to stay mindful of the fact that technology changes quickly; new developments in portable and cellular technologies lead to changing expectations for some and great opportunities for others, perhaps those who have never been provided a service by a financial institution before. And credit unions are primarily about service to members and mutual self-help.

The IT deliverables of this programme are already two years into a 5 year cycle (the cost of ownership of the solution was calculated over 5 years). It is vital therefore that a strategic view be taken of the future direction of service provision to members and

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[8] http://ilcufoundation.ie/index.php/where-we-work-2 - Accessed on 24/10/2014

potential members, and that the role of the implemented solution, in its current form and possible future incarnations, be understood and planned for. NACCUG should not lose sight of the importance of Strategic Integration – the link between Business Strategy and IT Strategy. It is primarily Business Strategy that will deliver the ultimate goal of poverty reduction through the credit union model.

12 ADDITIONAL COMMENT

12.1 Retention of Documentation

The author requested a number of items of documentation to support the project evaluation. Some of the documentation requested did not appear to be held by the ILCU Foundation locally. One example is User Acceptance Test results. In the opinion of the author, the artefacts produced by the projects that the ILCU Foundation undertakes or supports should be available locally in portfolio. These documents could provide key learnings for a Post Project Review, a retrospective record of nature of the work undertaken by the Foundation and might serve as an input into future projects.

12.2 Formalising Project Management Processes

Building on from the comment in [DDDD] above, it is the opinion of the author that a formal implementation of Project Management methodologies should be considered by the Foundation for future projects of this type. This project appears to have benefited to a great extent from the fact that Fern is a well-established and mature organisation within the credit union systems marketplace. If this project had required a degree of bespoke development however, the additional complexity might well have impacted on the cost and schedule of the project.

While the author acknowledges the success of the Foundation to date, the formalisation of Project Management Processes may well make it easier for the Foundation to grow its work in portfolio.

13 SUMMARY

It appears that the IT elements of the ILCUF run programme to reduce rural poverty in the Gambia by expanding the Gambian cooperative credit union movement in rural areas and by consolidating the Gambian cooperative credit union movement nationally have been carefully considered and appropriately implemented. From RFP through vendor selection, implementation, testing and go-live, consideration has been given to how best to support the goals of the programme using IT as an enabler, and a functional, resilient and scalable solution has been put in place by the programme, providing NACCUG with a platform upon which it has already started to build, as evidenced by the growth in the number of credit union members between December 2012 and September 2013.

The solution implemented has supported the drive towards poverty reduction through financial inclusion. In putting 5 connected bases in place it has broadened the reach of the credit union movement, with a strong and stable credit union platform that meets the needs of NACCUG, the individual credit unions and allows for the efficient provision of services to existing and potential members for the mutual benefit of all. And in consolidating dispersed data into meaningful information, it allows the credit union to meet regulatory requirements and provides Management Information to support decision making and reduce risk.

It is important that NACCUG take a strategic view of how the IT solution will continue to provide member credit unions with the tools they need to meet their objectives. Technology changes quickly, and it is important that the credit union movement be able to respond to changes in technology that support developments such as branchless transactions and electronic access channels.

About the Author

John O'Mahony is an IT Specialist who is currently working with a number of credit unions on IT infrastructure, compliance and audit projects. John previously worked with the telecommunications firm Eircom, the last 12 years of which was spend as an IT Project Manager and an IT Internal Auditor. John has a long history of involvement with credit unions, having served as a Director of St. Gabriel's Credit Union in Cork for a period of 10 years. He retains an involvement as a committee member to this day.

John holds a Degree in Mutual and Credit Union Business from University College Cork and a Diploma in Project Management from the Centre for Project Management, University of Limerick. He is at present creating material for the IT module of the Credit Union Degree Course on offer from University College Cork.

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