XML Data Standards for Micro-finance Information Exchange

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1. INTRODUCTION

The recent decade has seen a remarkable evolution in micro-finance organization, efficiency and accountability. One of the largest factors in this development has been the ongoing standardization of operational processes, reporting formats and indicators. This progress has allowed us to envision a near future when micro-finance institutions can compete in mainstream capital markets and interact seamlessly with each other and with other potential business partners.

To do this requires the definition of standards for financial reporting and information exchange so that micro-finance institutions can effectively be documented, analyzed and audited. The 90s have seen a spate of work that seeks to standardize micro-finance operational processes and reporting formats to be more closely in accordance with those used in formal financial institutions [5, 1].

However, as more and more banks and financial institutions move to electronic information exchange and reporting, it is important that the micro-finance sector remains positioned to interface with mainstream financial institutions. Emerging standards for electronic financial data exchange should be adopted by micro-finance institutions where feasible, to meet the requirements for participation in the emerging b2b (business-to-business) electronic marketplace.

1.1 XML

XML, a meta-level data language with great flexibility and power, has emerged as the format of choice for data exchange across many industries and application domains [7]. XML is a specification language that allows the definition of new types of document formats (sometimes called vocabularies) that allow the conveyance of both data content and the semantics of that content. It is being chosen as the basis for specification languages across a variety of fields and uses too broad to mention.

Most, if not all, of the emerging standards in financial data exchange likewise rely on XML as the underlying structural language. In this paper we explore some of the information exchange needs of the micro-finance industry, describe suitable existing XML formats that meet some of these needs, and postulate new XML standards where none exist now.

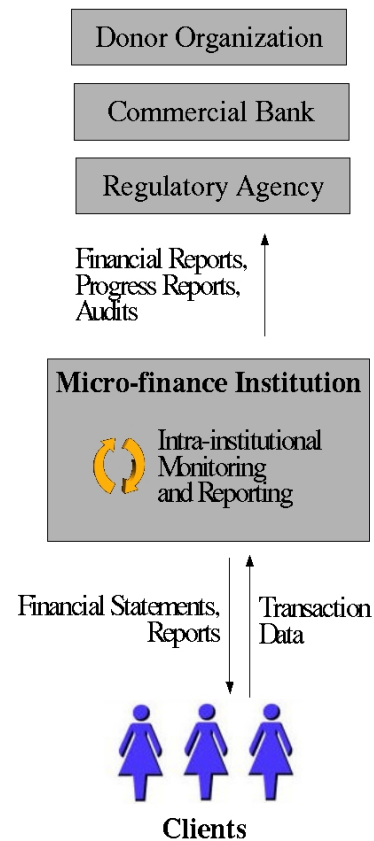## 2. INFORMATION EXCHANGE REQUIREMENTS IN MICRO-FINANCE

Figure 1: Typical information flows in a micro-finance institution.

The main information exchange requirement for micro-finance institutions lies in intra and inter-institutional financial reporting. This allows an institution to monitor it's internal status, allocate responsibilities and be audited or evaluated by outside institutions and/or agencies.

Another, type of reporting for micro-finance institutions is *social reporting* or *impact assessment*. Micro-finance institutions have other goals than the simple turning of profit through offering financial services. They also have social priorities, including the extension of financial services to otherwise under-served client communities, and to monitor

the social betterment and economic development of these clients.

Micro-finance institutions often attract loan capital or grants that are intended for specific social purposes, such as the betterment of a particular community or class of clients. Therefore it is important for institutions to be able to monitor, track and communicate their performance with regard to certain social indicators. However, the current state of standardization in this area is much less satisfactory than that in the area of financial reporting, primarily due to the lack of a strong reference model such as that can be provided by the formal financial services industry in the latter case.

Finally, another important area of information transfer in micro-finance institutions is that of transaction capture. Many micro-finance transactions occur in remote rural areas, and it has long been a vision of the micro-finance industry to fully or partially automate this process in order to reduce costly and time-consuming field visits. This has been the subject of several recent technology-driven experiments in the field [4]. However these attempts have generally not been found to be scalable or replicable, at least partially due to a lack of operational and data standards for transaction processing and documentation.

2.1 Inter- and Intra-institutional Financial Reporting

One of the most important kinds of information exchange conducted at micro-finance institutions is basic financial reporting. Many different kinds of financial reports are needed for the effective functioning of an institution. Waterfield and Ramsing give a long list of the specific types of reports often used in micro-finance [5]. These reports can be intended for a variety of audiences, and encapsulate different subsets of data for institutional performance and operations.

Teller / Operational Reports Reports to guide a teller or loan officer in conducting transactions, collecting payments, etc.

Portfolio Reports Reports to describe the quality or repayment performance of a loan portfolio. Includes such indicator calculations as loan aging, portfolio-at-risk and credit scoring.

Financial Statements The most common kinds of business documents, such as balance sheets and income statements.

Cash Flows Reports for monitoring actual and predicted cash flows. Used in evaluating performance and forecasting problems.

Summary Reports Broad, aggregate reports for upper management to guide institutional strategy and planning.

Currently, in the formal financial services industry, there is a drive to formalize electronic financial reporting across a range of companies, industries and contexts. This has resulted in the creation of XBRL - eXtensible Business Reporting Language - an XML-based language for financial reporting. The development of XBRL is led by an international consortium of over 170 members, including some of the biggest names in the financial services, accounting and software industries, and various government agencies and standards-makers. It is intended to be used for the digitization of a wide range of business reporting documents: including accounting reports such as balance sheets and income statements, filings to regulatory agencies, tax returns for filing taxes, and 'financial statements of all sorts used to exchange financial information' [6]. Many, if not all, of the above micro-finance reporting requirements can be met by different 'flavors' of XBRL.

Yes, XBRL comes in 'flavors'. XBRL is actually a broader framework that is used as the basis for creating several more specific vocabularies that are used to define business documents. These vocabularies are called *taxonomies*, which are often joined together in the creation of a document instance. Here are three of the major XBRL taxonomy structures which could useful for micro-finance.

2.1.1 International Accounting Standards Framework
This is actually a combination of four taxonomies that together allow for the representation of the most common kinds of business documents, including balance sheets, income statements and cash flow reports. It includes the Primary Financial Statements taxonomy, which is supported by the Explanatory Discourses and Accounting Principles taxonomy which is used for documentation of accounting principles and explanations used in financial statements. It also includes the Accountant's Report taxonomy, for representing any associated notes made by an accountant upon review of the document. The fourth taxonomy is the Global Common Document (GCD) taxonomy, which is intended to contain elements that are common across a wide variety of XBRL documents. There are also efforts underway to create specific taxonomies that modify this framework for the accounting systems of other countries.

This framework can be used to represent a large number of micro-finance financial reports. Some extensions may be needed for information specific to the micro-finance industry or to credit reporting more generally. For example, some additions may be needed to document 'adjusted' reports that take into account soft loans and grants in analyzing an institution's performance, and various loan portfolio tracking and performance reports such as portfolio-at-risk and loan aging. Many of the operational reports used for micro-finance institutional management may also need some addition to the core IAS taxonomy. For this it may be wise to create a taxonomy for XBRL specific to portfolio tracking for the micro-finance industry, with support for different lending methodologies.

2.1.2 US Financial Reporting Taxonomy Framework
This is basically the United States equivalent of the International Accounting Standards Framework, which supports the US GAAP (Generally Accepted Accounting Principles) rather than the IAS (International Accounting Standards).

It shares the GCD and Accountant's Report taxonomies with the IAS Framework, but then includes the General Terms, Primary Terms, US GAAP Commerce and Indus-

try Terms, Notes and Management Discussion and Analysis, Management Terms and SEC Certification taxonomies, which are all specific to US GAAP standards.

This framework can be used by micro-finance institutions that conform to GAAP instead of IAS.

2.1.3 XBRL-GL

XBRL for General Ledger is a basic accounting taxonomy to represent an institution's chart of accounts, general ledger and associated journal entries. It supports sub-ledgers and is independent of any specific chart of accounts. It is flexible enough to support both US GAAP and International Accounting Standards. While this is probably not the most appropriate taxonomy for reporting by an MFI, it could be used for things like transferring data between software systems (for example between a portfolio and accounting system), transferring data between branch offices and the central database and for general data export to other components such as the reporting system.

2.2 Impact Assessment

Another important reporting requirement of micro-finance institutions is in impact assessment. Most micro-finance institutions have a charter that includes not only the simple offering of financial services, but rather the offering of financial services aligned with certain social causes, such as the economic betterment of a particular under-privileged class or community.

Often micro-finance institutions receive "soft loans" or grants from organizations such as national banks,development agencies, and international donors. This money is usually intended to support a certain social agenda of the donor organization, and micro-finance institutions often have to meet *social reporting* requirements to demonstrate the relevant impact of their programs.

Micro-finance institutions need to monitor other kinds of social indicators internally to evaluate their own performance. The types of indicators that are used varies widely between institutions, operating in different countries, with different kinds of clients, and with diverse social goals. In addition, external donor and funder organizations may request their own preferred indicators for monitoring progress.

This leads to a wide range of social reporting requirements for micro-finance institutions. MFI's find themselves tripping over themselves trying to fulfill a new set of reporting requirements each time they receive donor funds, a process which often entails changes in data collection, tracking and possibly even customization of the portfolio software. In fact this is a major reason micro-finance institutions often find off-the-shelf MIS and portfolio-tracking software packages unsuitable for their needs. Even though there has recently been a trend towards practitioner-specified impact assessment indicators [2], this still does nothing for the purpose of overall standardization of the social reporting process.

There are efforts currently underway to standardize the nomenclature for impact assessment and social reporting. It would be useful to standardize XML reporting formats around these nomenclatures. In doing so one needs to include a broad set of indicators that can fulfill the needs of most micro-finance institutions. This is a difficult task, as there are currently a wide variety of indicators and methods of impact assessment that institutions commonly use. These include both qualitative and quantitative indicators, longitudinal vs. point-in-time studies, and calculations specific to a particular type of client or social mission.

Broadly speaking, there are several kinds of institutional performance a social indicator can measure:

Outreach Clients served, in terms of specific demographics (gender, income level, race, profession, location, etc.)

Poverty Alleviation Economic development of clients.

Enterprise Development Performance of client business and investments.

Group Evolution Monitor formation and development of lending groups.

Once a common vocabulary of social indicators and reporting formats is established, it should be relatively straightforward to frame an XML specification around it. This specification may be broad enough not only to be used for micro-finance, but across a range of development sector reporting scenarios, such as those faced by NGOs and other non-profit organizations.

2.3 Transaction Capture

Another important data collection requirement for micro-finance institutions lies in transaction capture. The business of micro-finance institutions is in outreach - serving clients that are not adequately served by the mainstream financial sector. Often there is a geographical component to outreach as well - institutions often end serve clients and communities
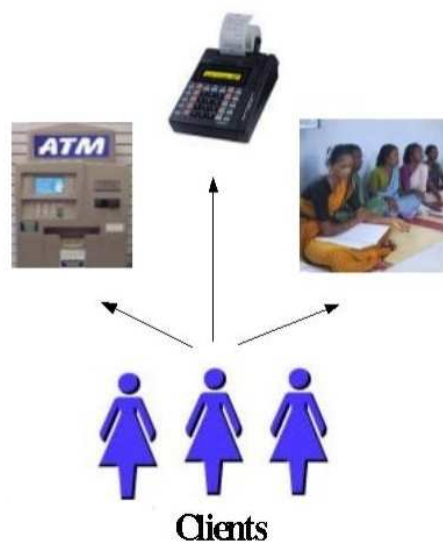

Figure 2: Some transaction processing options for a micro-finance client.

in remote rural areas. This often makes transaction processing a time-consuming and arduous process, with either clients traveling to urban centers where the institution has an office, or field staff of the institution traveling to villages to document payments and collect funds.

This means that transactions can take place in a variety of places and a variety of ways for micro-finance institutions - in village meetings, at market day in the local urban center, at the institutional office, or at a local bank - just to list a few possibilities. Recently there have been other experiments to partially or fully automation of this process, using technologies such as smart cards, ATMs and hand-held computers [4].

To support this kind of variability and allow room for experimentation, micro-finance software systems need to capture transactions from several electronic and analog mediums. For this to be feasible we need a single transaction data format that all of them can conform to.

2.3.1 IFX

IFX is an XML standard intended for communicating transactions between financial institutions and their customers, between financial institutions and other financial institutions, and potentially directly between customers [3]. It is supported and developed by the IFX Forum, a non-profit international consortium of financial institutions, technology companies and service providers, and builds on the earlier OFX and Gold standards. It provides support for a wide variety of types of transactions and client data requests, including payments, withdrawals, deposits, account inquiries, funds transfers, etc.

The most compelling aspect of IFX is that it can be common across a wide variety of service delivery mechanisms. The client interface can be through a teller, an ATM, a hand-held computer, a paper form or the internet. In fact, this distinction can be made transparent to the underlying transaction processing system, if all of these mechanisms conform to the IFX standard. This allows systems to be configurable for a variety of transaction points, allowing micro-finance institutions maximum flexibility in service delivery. This would also allow experimental delivery mechanisms to be easily re-targeted to new institutions or new contexts.

Almost all micro-finance transactions should be supported by the current IFX specification. There may be some additional specifications needed for specific needs of micro-finance, including support for the loan application process, and also for some of the specificities of different lending methodologies. IFX once had an active effort to support loan applications, but that effort appears to have left the specification incomplete, and probably does not support some of the more specialized information required in a micro-finance loan application (particularly for the information needed to calculate some of the social indicators described in the previous section.)

3. CONCLUSION

In this document we have described some of the information exchange requirements facing micro-finance institutions. Obviously the first task facing the industry in this regard is of standardization. While financial and operational reporting has made significant progress towards standardization across the sector, other types of reporting, such as those used for impact assessment and social progress monitoring, still remain very fragmented and disorganized.

Choosing appropriate standards is important, as it allows for easier communication between business actors, and allows for the establishment of benchmarks for performance, outreach and scale. Broad data and process standardization is clearly one of the missing pieces in the evolution of micro-finance into a mature commercial industry.

In this paper we have listed some emerging XML standards that could be used for electronic information exchange in the micro-finance industry. XML has become the established meta-language for structured data transfer across all industries and applications. Several XML standards exist which are relevant to the micro-finance industry. These can be used as a starting point for the evolution of comprehensive data formats for the micro-finance sector, much as mainstream financial and business reporting standards were also appropriated for meeting micro-finance reporting needs.

However, significant work still remains to fully investigate these standards for applicability to micro-finance needs. Gaps need to be highlighted where existing standards are incomplete or too restrictive. Example documents need to be created which reflect usage of these standards for micro-finance. Additions to existing standards (or entirely new standards) need to be proposed when no suitable standards exists now.

These tasks will take time, and will require the involvement of all of the major players across the micro-finance industry. For this purpose it may be prudent to form an international consortium responsible for looking at data interchange standards for the micro-finance industry.

4. REFERENCES

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