Motivation

- Microenterprises can provide income for the poor, without the need for corporate or governmental infrastructure.

- However, many among the poor lack the business savvy needed to start and sustain a profitable business.
Motivation

- Franchises provide proven business models that greatly reduce the skills required and the risk associated with starting a new business.

- Microfranchises applies the tenets of franchising to provide jobs, as well as needed goods and services for underserved communities.
Motivation

- Process of identifying microfranchisees and providing training is resource-intensive.

- Using web interfaces, event-driven workflow management software and mobile devices, it is possible for individuals to identify opportunities, arrange funding, manage inventory and budget, and receive instruction as they start and operate a business.

- Can greatly reduce the cost for initiating each microfranchise and expand the reach of microfranchisors.
Outline

I. Background Topics
II. Business Workflows, Events and Rules
III. Defining and Publishing Templates
IV. Using a Template
V. Adaptation of Templates
VI. Template Example
VII. Research Plan and Schedule
Outline

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Background Topics - Microfinance

• Provide small loans to the working poor to allow them to start a business or grow an existing one

• Several non-profit/for-profit organizations take donations/investments via the web and combine with others to fund a loan.
Background Topics - Microfranchising

- Leverage proven business model to increase chances of success.
- Create effective distribution mechanism for needed goods and services.
- Standardize products to simplify acquisition.
Microfranchising Example: Vodacom Phone Shop

- Provide cheap phone services to South Africans who do not own their own mobile phones.
- New owner responsible for startup capital of $3450 for 5 phone lines and to transport container to desired location.
- In a good location, such a shop can generate revenues averaging $1190/month for the owner and twice that for Vodacom.
Many corporations have small, simple tasks that can be completed anywhere by anyone with a mobile phone.

Using voice or text, users can complete tasks in their spare time and have payments credited to their accounts.
Background Topics - Mobile Devices

- Location-detecting capabilities can be used to connect vendors with consumers.

- Producers can get real-time data about potential markets. Better anticipate demand for products and make better decisions.
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Business Workflows and Roles

- Workflows will specify the processes involved in setting up and operating a business.

- Workflows are composed of operations that are assigned to one or more roles. Within an enterprise, each employee may fill one or more roles.

- Operations are assigned with input data and expect outputs to be provided upon their completion.
Driving the System with Events

- An event signals that something has occurred in a business’s environment.

- Associated with event data that describes the occurrence.

- May trigger rules that modify parameters within a business or initiate one or more workflows.
Reacting with Rules

• Rules consider event data and take appropriate action.

• May check to see whether constraints on parameters in the system are satisfied, infer new data, or execute a process.

• Rules may be composed into structures where each rule is conditionally evaluated based on the outcomes of earlier rules.
Tying it all together

• Events may be fired to signal that things have changed in the environment of the microenterprise.

• Rules will be triggered by the firing of one or more events and will evaluate the data produced by the events.

• The outcome of the rule may be that a workflow is initiated, or that a parameter’s value may be changed, or the system might conclude that, based on the event data, no action is necessary.
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What is a Template?

• A template is a model for a microenterprise that guides a microfranchisee through the process of starting and running a business.

• Parameters within the template provide customization for each franchisee’s specific circumstances.

• It includes events and rules that allow the system to react to conditions specific to a given environment.

• It provides a uniform interface that makes possible collaboration among instances of the same business and with suppliers and consumers.
Structure of Template

- Template
  - Business description and categories
  - Roles and salaries
  - Inventory constraints
  - Budget constraints
  - Events
  - Rules
  - Attributes
  - Workflows
  - Operations
  - Pricing
  - Products
  - Supplies
Specifying a Template

- Templates will be defined by multinational corporations, NGOs, individuals, or any other entity interested in starting a franchise.

- An intuitive web interface will provide a means to specify all components of the template and tie them together.
Publishing a Template

- Templates are published to a worldwide registry.

- An interface will allow translations to be easily specified by bilingual users and approved by the template creator.

- Usage statistics for existing template instances will be recorded and displayed to potential adopters.

- Verification of the identity and credibility of template creators is a research topic.
System Architecture

Global server contains business template repository and local server directory

User queries global server to find local template server

Local server publishes templates in global repository and also queries repository for templates to reuse

User sends/receives messages to/from local server

Local server contains user interface and communication software
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Discovering a Template

- Once templates are published in the registry, it is up to the potential microfranchisee, or an organization acting on his/her behalf, to identify the most appropriate business plan.

- A search can be performed and information about applicable templates can be returned with a simple voice menu or text-based interface.
Search Function

• Templates include metadata which describes what is required to start and run a business.

• A user will specify desired values for one or more parameters (i.e., available skills, materials, or capital) and the system will return the templates that are most appropriate.

• The metadata can provide mappings to ontological concepts to support searching in multiple languages.
Location-based Recommendations

- Potential microfranchisees may not always be aware of how their environment affects what type of enterprise they should start.

- The system needs to be able to consider available geographic data, as well as the presence of other businesses in an area, and make an intelligent decision.
Adopting a Template

• A microfranchisee can select a template to adopt from the registry and provide the values for any necessary parameters.

• The franchisor must then review the data submitted by the franchisee, potentially contact him/her or arrange a site visit, and approve the request.

• Approval by the franchisor will initiate the first workflow that will guide the franchisee through the initial steps for starting the business.
Financing the Enterprise

• The capital for an enterprise in some instances may come entirely from the entrepreneur and will be paid at the appropriate points in the workflow.

• Alternatively, the franchisor can provide some share of the funding; in most cases, the franchisor will integrate itself into the supply chain.

• Another option is for a new instance of a template to be advertised on a public site where lenders can provide all or part of the capital. The start of the business will then be contingent on the provision of the entire amount.
Alerts and Feedback

• For franchisors and private lenders, the system provides a comprehensive audit trail.

• Each time the franchisee or his/her employees completes an operation, any data associated with that operation will be recorded.

• The exact progress and financial situation of a business is available to interested parties at all times.

• Franchisors can set up alerts to monitor businesses for warning signs and intercede if appropriate.
Financial Management Tools

• Many operations will involve the sale or purchase of goods and services.

• The system will maintain a detailed record of the business’s inventory and budget.

• Events will monitor these records, and rules will advise the franchisee when it is necessary to buy more supplies or take some other corrective action.
Modularity in Templates

• A franchisor can design multiple business models with the intent of combining instances of those different models together.

• One model can provide supplies to or consume the products of a second model.

• The recommendation engine can take into account the presence or absence of related franchises when suggesting a template for an entrepreneur to adopt.
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Adaptive Parameters

- In many cases, template parameters will be determined by the franchisee’s environment or financial situation.

- However, some parameters will not be dependent on other factors and may be varied; variations in these values may cause the business to be more or less successful.

- By observing the relative success of each instance of a template, in conjunction with the values that have been supplied for its parameters, the system can attempt to recommend an optimal value for an adaptive parameter for a given scenario.
Adaptive Rules

• Consider value of objective function calculated for each instance of a template with respect to the values assigned to the parameters for that instance.

• Each rule dictates an adjustment for an adaptive parameter based on past performance; these adjustments are aggregated and used as a basis for a recommendation to the user.
Example Parameter: Size of inventory

• A franchisee selling physical goods may keep more or less of each good in stock.

• Purchasing more goods at a time usually means getting a better deal from suppliers. It also gives the seller the opportunity to potentially make more sales in a given time period.

• However, it also increases the potential for loss due to spoilage or theft.
Corresponding Rule

- Rule could assess effect of different sizes of inventory on profit in different environments.

- For example, in a hot climate, food may spoil faster and it may therefore be beneficial to keep a smaller inventory. Probable traffic in a given location may be another factor to be considered.

- System can analyze trends in profits for past instances of a given template for different inventory sizes in areas with hot and cold climates or with low or high demand and make a recommendation for a new instance of the template.
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Example Microfranchise

• Scojo Foundation provides affordable reading glasses through a “business-in-a-box” solution.

• An individual entrepreneur receives training in vision screening and business skills, then secures a $100 kit by consignment.

• Franchisee gives vision tests and sells glasses at a small markup; buys more pairs from Scojo as needed.
Example Microfranchise: Template

<template>
   <template_name>Scojo Reading Glasses</template_name>
   <location>Param</location>
   <inventory_value>Param</inventory_value>
   <staff><owner share='100%'>Param</owner></staff>
   <starting_capital currency="USD">100</starting_capital>
   <events>...</events>
   <rules>...</rules>
   <workflows>...</workflows>
</template>
Example Microfranchise: Events and Rules

**Event: Inventory_Arrived**
- Quantities: 10 Style A
- 15 Style B

**Rule: Update_Inventory**
- **Condition:** Quantities > 0
- **Action:** Add_to_Inventory
- **Alt. Action:** Remove_from_Inventory

**Event: Pair_Sold**
- Selling Price: $4.50
- Product: Style A

**Rule: Check_Inventory**

**Event: New_Model_Introduced**
- Purchase Price: $2.50
- Description: Sunglasses
- Image: <Image>
- Min Order Quantity: 10

**Rule: Check_Budget**
- **Condition:** Budget > Purchase Price X Min Order Quantity
- **Action:** Purchase
Example Microfranchise: Workflow

Pick up glasses from distributor at Location A

Travel to Location B to sell glasses

Test new customer

Recommend new glasses

Order new inventory

Inventory > threshold OR Order pending

No inventory remaining

End Process
Example Microfranchise: Progress Reports

• 3/28 – Purchased 55 pairs for price $110
  ▫ 20 Style A
  ▫ 15 Style B
  ▫ 20 Style C

• 4/1-4/7 – Sold 25 pairs for revenue: $127.55
  ▫ 4/1 12:15PM – Sold 1 Style A for $3.85
  ▫ 4/1 3:23PM – Sold 1 Style C for $5.25
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Research Plan

- Web interface for designing templates.
- Interface for finding and adopting templates.
- Interface for funding and supervising enterprises.
- Support for language independence.
- Modularity of businesses and collaboration among multiple businesses.
- Interfaces for different types of mobile device.
- Mechanism for evolution of templates.
- Example scenario design and deployment.
# Schedule

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<tr>
<th>Task</th>
<th>Expected Completion Date</th>
<th>Current Status</th>
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<tbody>
<tr>
<td>Design of system representation for business templates</td>
<td>March 30th, 2011</td>
<td>Ongoing.</td>
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<tr>
<td>Design and implementation of system architecture and communication framework</td>
<td>April 15th, 2011</td>
<td>Ongoing.</td>
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<td>Implementation of web interface for designing templates</td>
<td>April 30th, 2011</td>
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<td>Implementation of mobile interfaces</td>
<td>June 30th, 2011</td>
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<td>Implementation of backend for collaboration support</td>
<td>July 30th, 2011</td>
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<tbody>
<tr>
<td>Implementation of mechanism for evolution of templates</td>
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<td>Needs to be designed and implemented.</td>
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<td>Example template and scenario design</td>
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<td>Trial deployment</td>
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<tr>
<td>Defense</td>
<td>December 1, 2011</td>
<td>Planned.</td>
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Papers


Questions?