

# USE OF GREEN COMPUTING IN DIASTER RISK REDUCTION

David F.A. Piesse

*Global Head of Insurance SUN Microsystems of California, Hong Kong*

*Email: david.piesse@sun.com*

## ABSTRACT

Micro insurance provides the protection required with micro loans in order to cover the policyholder for basic needs. Micro pensions provide a savings element in order to give some vehicle for providing for old age and retirement. Neither of these financial vehicles provides a buffer for risk mitigation in the wake of an occurrence of a natural or man made disaster and their sustainability is challenged by increasing natural catastrophes caused in part by global warming. The purpose of this paper is to show how innovative technology can provide this risk reduction in an eco-friendly fashion by applying both identity management techniques so that claims are handling quickly and low carbon dioxide emitting, portable data centres that are built not only to withstand earthquakes and hurricanes but also to apply to terrorism as well. The portability and flexibility of these data centres lends itself very nicely to the rural and semi urban areas of the world which is the predominant area for financial inclusion. This addresses operational risk and reinsurance. The reinsurance industry has the most to lose from a disaster and is also the industry can that quickly raise fresh capital whether by new start ups, traditional means or through the capital markets. This paper will show how a reinsurer could be strategically involved in innovative technology from end to end mitigation of risk. Such risk measures need to be in place before the mass microfinance take up in rural areas increases by 2Billion people world wide

## KEYWORDS

Eco Innovation, Microfinance, Green , Community

## THE PROBLEM

Firstly when natural disaster strikes in poor and rural areas there is loss of home, breadwinner and crops not to mention the post event morbidity that accompanies such events. It is therefore essential that a catastrophe risk financing strategy be in place for rural areas and now that these outlying areas are being financially included this can be used as a lever to obtain such umbrella protection and transfer the risk to the capital markets. Technology plays a part here as an enabler and in this paper we look at the aspects of technology in disaster risk mitigation and eco-innovation which enable us to apply technology in a green and friendly manner thus not adding to the problem while finding a solution.

Secondly the ubiquitous use of the INTERNET with social networking as a processing platform for rural areas and the increased progression of mobile phone technology is causing a massive global build out with new consumers, content, services and devices requiring more and more energy on the network. Innovation is required in order to address the confluence of financial inclusion and increased use of global energy resources.

Thirdly the need to be mobile in a disaster plan so we can react quickly by moving the technology to the problem and addressing the need. This plan then needs to be taken to the reinsurers to provide levels of warranties for catastrophe cover and securitisation.

## **ADDRESSING THE PROBLEM**

This requires an eco responsibility initiative on behalf of the world's largest countries combined with an eco innovation program driven by the world's largest companies. This means applying community concepts to energy and environmental changes. When one thinks rural areas one must think of mobility and fast access to people in event of a disaster especially in the area of making claims settlement monies available at first point of loss immediately using satellite techniques. Applying mobility to the disaster plan so we have eco friendly “green” technology that can withstand earthquakes, floods and the changing environment. These come in the form of non manned or modular data centres which can interact with mobile sensor devices in order to provide preventative actions for operational risk issues. In addition we use the use of smart card technology where business applications and processes can be held on mobile devices such as cell phones in order to identify the person securely by use of bio-metrics and authentication. As cell phone access is not always possible in rural areas techniques of NFC (Near Field Communication) are used where contactless payments and settlements can be made similar to the tap and go techniques in use in urban transport systems. In addition use of satellite technology for outreach is required for making claims settlements in event of a natural disaster, This it is very important the reinsurance industry embraces these technology enablers as warranties to bring the necessary protection to micro-finance operations.

## **CURRENT SITUATION**

Data centres currently in use worldwide are a drain on the planet's resources and power consumption has been doubling in recent years to the tune of 100 Billion Kilowatts of electricity which all adds up to a huge impact on the environment. So as the emerging markets and their rural populations come on line on the network in the next five years it will better impact the world around us if we see better efficiencies of scale, higher utilisation plus reduced power and cooling. Some of the biggest problems of our time are included in this list of current issues to address. .

- Rising prices for power and increased power demands of data centres
- Rising concern about climate change and environmental impact
- New regulations and interest in financial rating groups for green and carbon footprint
- Disaster risk recovery in rural and semi-urban areas

Microfinance loans and insurances are traditionally sold by agents known as MFI's or microfinance institutions. These institutions are securitised and funded in conjunction with large banks and insurers to sell smaller range products to the financially excluded community through various distribution channels. In some cases these products are sold through post offices and an emerging trend to supermarkets. However in many cases access to the villages is difficult and innovation is required to reach the 3 points of microfinance which is outreach, sustainability and benefit for all in terms of inclusion, profitability and opportunity to rise higher in the pyramid. Currently the cost of transaction can be high to deliver these services and there is little protection should a disaster occur. Recent drives by the world's reinsurers in this space have opened the doors and now is the time to take up the whole challenge as a sector.

The microfinance sector requires its own key performance indicators and data warehousing segmentation as can be illustrated by the importance of the women as purchasers of loans and protection and how they pay back the loans and lay out beneficiary plans. The use of predictive modelling to evaluate loss in terms of natural disasters is a key element of technology enablers. In 2008 we have seen more interest in this sector from the actuaries and loss adjusters in the insurance industry at large. In conjunction with the rise ] of the next generation INTERNET and social networking the move to community based education and financial inclusion will be greatly increased by these trends.

## THE SOLUTION

The solution comprises a confluence in status quo changes by organizations and new technology advances catalysed by global events and trends namely global warming issues, inflation, alleviation of the poor, terrorism, the dependence on the mobile phone and globalization.

A mobile innovative, eco friendly data centre solution for rural deployments disaster recovery and colocation near low cost or alternative power sources is a starting point to address some of these issues in a holistic fashion. We need the computing ability but need to provide it a different way to the existing large data centres tied to offices. This new data centre provides shock absorption for earthquakes or transportation, innovative power cooling, access to low cost renewable/alternate power sources and no carbon dioxide emissions plus ability to link to standard connections to operate easily.. In micro finance terms this is a technology enabler that can bridge the digital divide and get to the last mile which is covered in a later section. By deploying smart card technology and community development i.e. Providing open source to the community at large for the mobile programming language JAVA many innovations will be brought to the table by the community through their social networking.

Modern networking has freed the data centre from being tied to office space. The mobile green data centres can be wheeled into car parks, buried underground, put onto ships and cooled by the ocean plus many other out of the box thinking deployments. Thus the data centre has become here a single device and not a facility which is a key status quo change. This has huge implications on the environment and on microfinance disaster risk mitigation. In order to transport our solution the whole device is housed in the size of a normal shipping container so it can be easily transported to rural areas. Sensors in the device check and alert for soil movements, excessive temperature, high humidity, unauthorized entrance, smoke/fire, water leaks and unauthorised transport plus many other activities matching the field deployment at hand. Also the payloads are recycled for the environment. Figure 1 shows an external view of such a device. .To achieve the solution we have to address the last mile.

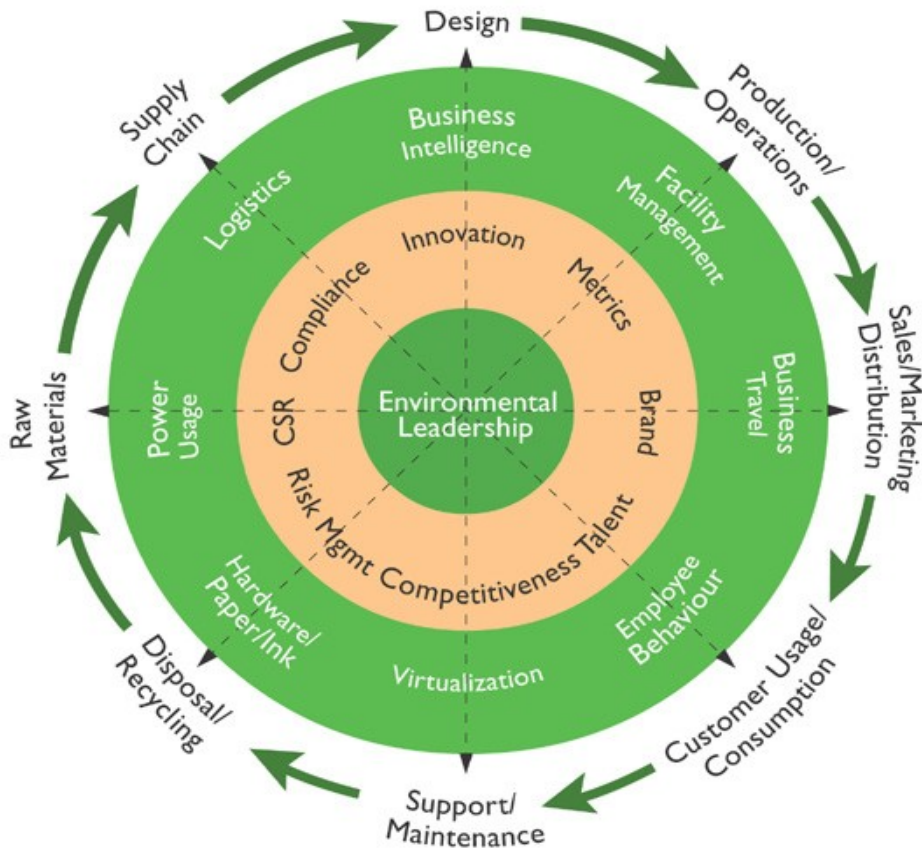
Figure 1 – Mobile Data Centre for Rural Deployment



## WHAT IS THE LAST MILE FOR RURAL COMMUNITIES

The last mile is the final leg of delivering connectivity from a communication provider to a customer. It is the first mile for the customer to the world. In business terms this is described as getting any deliverable to the final customer and consumer. In order to achieve this shifts are required in status quo by IT and Telecommunication companies to move from a digital or technology divide to an “*opportunity divide*” where that could be financial, social community, connectivity or disaster risk mitigation where technology becomes the enabler. This is a major shift to eco innovation on behalf of communities as enterprises link themselves to these communities. So the last mile is the key starting point to enable reach and scale to bring more service to the people and more people to the service in the event of natural disaster. To achieve all this there is a need to aggregate the supply chain in rural areas to the top needs of financial services, health care, education, retail and entertainment. This transforms this the existing value chain shown on the Dan Esty wheel shown in Figure 2 where we combine innovation to environmental leadership.

Figure 2



## **CLAIMS MANAGEMENT IN RURAL AREAS**

Rapid claims settlement is necessary in rural areas as low income people have insufficient access to funds to manage a crisis after a natural disaster. Conventional documentation requirements must be replaced by alternate evidence. In this regard smart cards and cashless payments must come into play. Skilled processes need to be eliminated thus keeping room for innovations in technology. Claims must be managed fast and efficiently through toll free hot lines, kiosks with a single point of claims management. Various technology enablers are required to meet the needs of claims paying in event of a catastrophe namely INTERNET based access in rural areas, satellite based access, audio visual communication, micro payments on mobile phones, pre paid disaster cards, computerised claims management and tele-education and e-learning all used in conjunction with the modular data centre. This a complete preparation plan which includes pandemics and terrorist risks.

## **ADVANCES IN MOBILE BANKING**

Mobile banking and peer to peer lending are greatly driving advances for mobility in rural areas as mobile wallets and collections by contactless payment techniques start to drive remittances or sending payments home from country to country. Remittances are greatly increased when a disaster occurs in a home country and overseas workers send money home to distressed relatives. This is a source of catastrophe protection here as savings products can be created to provide some micro protection against natural disasters ie some kind of pooled fund. As current banking transaction datasets do not readily support these new generation mobility products we will see a large shift in use of mobile phone architectures in 2009 making the cell phone and INTERNET platform in wider use and secure service level agreements. Mobile banking is here now in the mainstream and will be a key driver and enabler for the advancement of microfinance payments and collection.

## **ECO INNOVATION IN ACTION**

Figures 3 and 4 illustrate the use of a modular data centre in action. Figure 3 shows the data centre on an earthquake simulator during which it still functions.

Figure 3

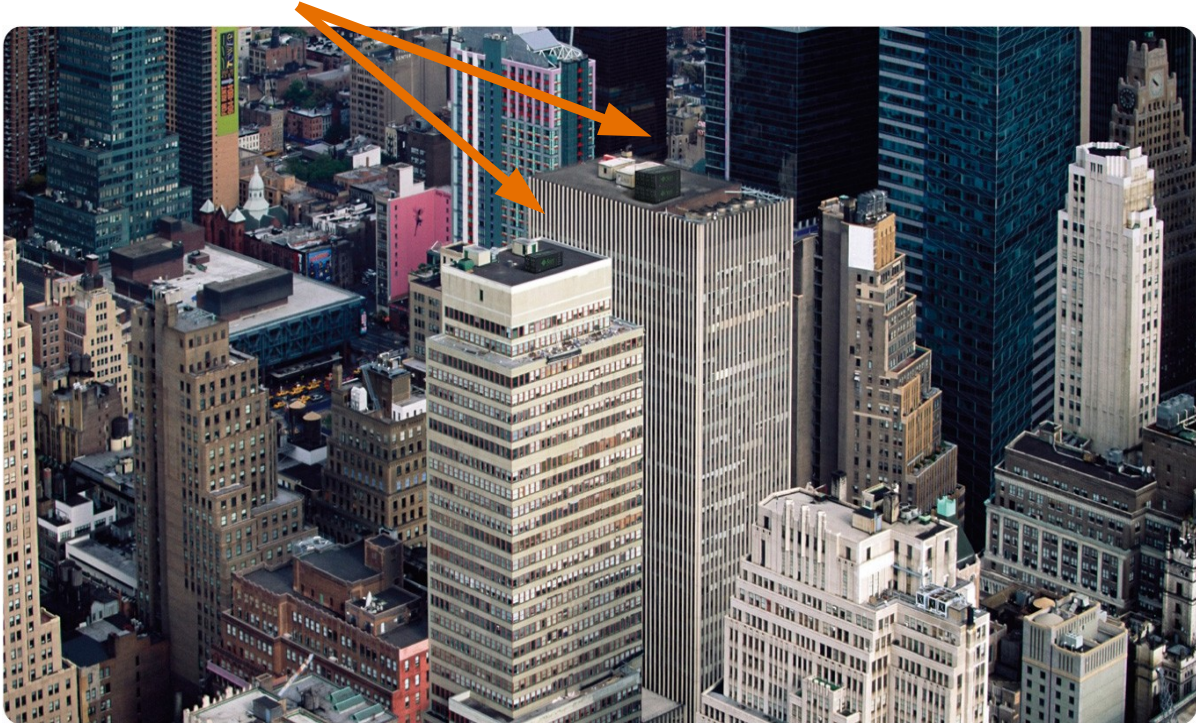


Figure 4 shows several of the modular data centre devices sitting together on a ship acting as a floating data centre in order to provide capacity in a green and friendly way and Figure 5 shows sitting on a rooftop to maximise space. .

Figure 4



Figure 5



## CONCLUSIONS

- ✓ **There needs to be more capital market coverage of rural based regions leveraged by financial inclusion and managed in the reinsurance alternate market.**
- ✓ **To achieve the lower cost of transaction GREEN IT for environmentally friendly innovation must be applied in conjunction with mobility.**
- ✓ **Social networking in communities will favour the financial insurance sector.**
- ✓ **A period of hyper disruption has started and will last for 5 years where non financial players will enter the market and offer microfinance products.**
- ✓ **In light of this disruption there needs to be disaster recovery mechanisms in the insurance claims space to ensure fast settlement of claims in event of natural disaster.**

## REFERENCES

[www.sun.com/blackbox](http://www.sun.com/blackbox)  
[blogs.sub.com/blackbox](http://blogs.sub.com/blackbox)  
[askblackbox@sun.com](mailto:askblackbox@sun.com)