## Concept Paper: Treatment of voter registration software solutions and costs

## (where UNDP procures digital registration solutions on behalf of EMBs)

*The purpose of this concept paper is to analyse recent digital voter registration procurement experiences, their implications and expenses, and pave the way for exploration of alternative options. The area of software costs and following national ownership rights appears to be one of the current major issues of concern, both in the early identification and investment phase but also for all future updates and sustainability. The paper also explores the option of developing ‘platform-independent’ software for biometric solutions to support Voter Registration/Civil Registration in UNDP implemented electoral projects.*

#### Context and background

In 2011, UNDP reportedly provided electoral cycle assistance to roughly 60 countries, just under half of which had elections also supported by UNDP. More than 50% of country offices are using the electoral cycle approach in programming. This approach facilitates better the introduction of more sustainable, appropriate, well-tested and affordable voter registration solutions and at the same time integrating electoral assistance into the broader cross-institutional and democratic governance agenda. Electoral projects consistently account for comparatively high expenditures, and particularly voter registration is often the most expensive activity in an electoral process. The high expenditures, the sustainability and the cost effectiveness of establishing digital voter registries is linked to increasing and extensive use of ICT as well as significant political, institutional and financial implications, and solutions are rarely corresponding with country realities.

Technological innovations in the capturing of information for voter registration exercises and the subsequent management of the data itself to form the registry, as well as its continuous maintenance, raise new issues with regards to cost effectiveness and sustainability. There are various methodologies for voter registration and any EMB will need to make their choice early in the process (periodic/permanent registration, high tech/medium tech/low tech registration, outsourced and in-house capacity).

The clear trend is, and has been for the last years, moving towards digital data-capture systems with biometric analysis functionality for voter registration (“electronic voter registration,” or EVR, for short), and within these systems there are several biometric technologies to apply. EVR solutions have so far been introduced, with varying features, in DRC, Togo, Nigeria, Senegal, Mozambique, Cape Verde, Sao Tome & Principe, Angola, Guinea-Conakry, Benin, Zambia, Sierra Leone, etc., and are currently underway in Comoros and Kenya with different results.

This has led GPECS to explore the possibility of alternative ways, better accommodating essential issues of sustainability, cost effectiveness and national ownership, including the possibility of exploring development of UNDP’s own platform-independent software to support registration exercises.[[1]](#footnote-1)

#### Indicative cost evolution

Although it appears as if prices have been subject to significant competition and costs have come down over the last years, customized software packages remain comparatively high and continue to present numerous challenges of proprietary rights, vendor-locks, etc. These are issues that seriously jeopardise the sustainability of the voter registries and their national ownership. To illustrate the expenditures of just the software part, DR Congo, Afghanistan and Guinea-Conakry together spent around $7 million for the purchase of their initial biometric software packages to support their individual exercises (footnote below for comparative examples on costs, which are extracted from UNDP/PSO cases of procurement of biometric voter registration equipment to support Country Offices, as well as annex 1 attached).[[2]](#footnote-2)

As illustrated through below examples it appears that the cost per kit has decreased slightly over the years despite the on-going technological innovations, even if some examples are not entirely comparing exact same kit details but the main accessory content is common. However, software costs remain comparatively high, particularly for smaller projects, e.g. Comoros where software costs amounts to 43% of contract value and about 60% of total kit cost, just for 70 kits. Unfortunately the software costs do not follow the number of kits and voters to be registered. Therefore it quickly becomes a proportionally unacceptable cost for smaller projects.

The price difference for the software primarily depends on the source codes, proprietary rights and databases amendment rights that come along with it; issues which most projects gets locked in manoeuvring. Furthermore, as illustrated in below statistics the biometric voter registration (BVR) investment is far from a one-off big investment but rather an on-going costly exercise to cover for maintenance, software updates, obsolete equipment etc. It is becoming increasingly difficult to justify these costly exercises at a time where donor funds and budgets are getting tighter.

At the same time, the market place reality shows that this is a very competitive market, and vendors are lobbying hard even before UNDP launches their tenders. It is still a market in development with an increasing number of players but it remains a high risk market with various interests and possibilities. How can UNDP better navigate in this market, ensure the dynamics, competition and sustainable solutions?

Since the area of software costs and following national ownership rights appears to be one of the current major issues of concern, both in the early identification and investment phase but also for all future updates and sustainability, this is what this paper will focus on.

#### Exploration of alternative models:

Today, UNDP supports EMBs in their EVR procurement processes either through UNDP COs or UNDP/PSO but there are no long term agreements (LTAs) established for this kind of equipment and software yet with such varying features and requirements. In order to explore ways to avoid the many vendor-locks and ensure continued national ownership rights, the first concern would be to create more ‘awareness’ of the issues and to formulate requirements very clear in the initial bidding document to vendors and in the following contracting process. Possibly, the second concern would be to explore how UNDP can more actively counter these vendor-locks and it would make sense to review UNDP bidding documents & templates with these new concerns in mind. However, zooming out a bit looking wider for alternatives it may also be worth exploring the opposite side of the vendor proprietary solutions.

One way to possibly counter the many negative implications where millions of $-dollars invested in IT solutions for voter registration ends up in vendor-locked or non-sustainable solutions is the idea of developing platform-independent software. In this case, UNDP would have to break the grey area of “Proprietary” vs. “Open Source” issues.

Opposite the proprietary solutions, the goal of the open source design is to make the transfer of ownership as easy as possible.  Past experiences have however also shown that IT capacities of some national election institutions were insufficient to absorb the complexity of the systems delivered to them. Furthermore, the ‘Open Source’ platforms do not necessarily offer a one stop solution, since there is a lack of standards and integration and it’s allegedly plagued with version control issues. Finally, it is understood that the “Open Source” requires one tool for database, one for programming, one for web based, one for registration kits – total of four. In other words, possibly a complicated alternative in most of UNDPs programme countries.

In order to justify the huge amounts of money that goes into electoral projects it would make good sense to initiate a process of exploring the option of developing a ‘platform-independent’ software package for biometric solutions to support Voter Registration (and Civil Registration?) in UNDP implemented electoral projects. However, at the same time also to question this approach. The idea is foremost to get a clearer overview of possible alternative ways to how it’s done today, as well as to clarify the enormous risk implications of moving into such area of proactively setting up ‘in-house arrangements’ for such complex operations, even if cost savings could be significant. In such case, the idea would most likely build on a standard software ‘off the shelf’ to be tailored and customised to specific country context together with local EMB counterparts. The software should be thoroughly tested and piloted, and would be installed on vendor’s equipment based on competitive process. The software solution should ideally be both for registration software for the kits, as well as software for biometric suitability check/AFIS. The question is merely; would it be appropriate for UNDP to take that ownership..?

Therefore a detailed feasibility study should be initiated as soon as possible; maybe there are alternatives we yet don’t see clearly. If the study’s resulting analysis and risk assessment proves too ambiguous and too risky then the study at least supports to justify why UNDP supported electoral projects consistently account for comparatively high expenditures and why UNDP continues to spend these enormous sums in this area. Further, supporting the point that there are currently no other alternatives for the effective expenditure of donor funds and increasing national ownership.

Exploring advantages and disadvantages/risks of the option of developing ‘platform-independent’ software, particularly the following should be taken into consideration:

#### Advantages:

* Break Dependency

Break UNDP’s/EMBs dependency on commercial companies to provide biometric software solutions, particularly when EMBs/electoral projects need to do continuous software upgrades and counter issues of proprietary rights etc.;

* Cost Efficiency

As it appears through illustrated examples, software expenses account for between 6-43% of voter registration project costs, 9-59% of kit costs.

The costs spent for a project of developing own software could possibly be around US$1 million or more. The projected cost saving is possibly almost around $0.3-1 million per project, depending on size and country. When multiplied across the countries where UNDP will be involved in electoral assistance projects, where often, voter registration is part of anticipated results, the cost saving could be substantial. In addition, the indirect and on-going costs of dealing with these software companies are also reduced.

* Enhance Capacity Building in EMBs

A basic standard software package could be developed up front and then later customized hand-in-hand with IT counterparts at the EMB. It is anticipated that in most cases commercial companies would not be willing to do so due to proprietorship and other trade secrets.

* Simplified Procurement

From a procurement perspective, there is no need to tender the requirement each time (as currently done); however some central initiative should be taken, probably through PSO, to possibly enter into LTAs/make arrangements for:

* LTA/International Consultants (IC) retainer set-up? with a few IT/Software Developer/s. The set-up should be output based and on a ‘as and when required’ basis
* LTA for Hardware
* LTA for biometric algorithm

The specifications for such requirements could be drafted by the IT/Software Developer/s.

#### Disadvantages & Risks

* The software solution is only as good as the implementation, massively depending on local conditions (policy, legal institutional frameworks, the institutional and physical infrastructure, staff skills of IT literacy etc.)
* High reputational risk for UNDP; the more complex technology is employed, the more risk is inherent
* Many other processes beyond UNDPs control but related to the software and data collection may reflect negatively on UNDP and jeopardize reputation and impartiality, and the perception of a quality-product, e.g.:
  + Data validation processes; these may include the use of data validation dictionaries and double-blind data entry etc. and is very important in the process of maintaining accurate registries.
  + Supporting legal framework; when implementing new systems it is important to have clear laws and procedures which support it. (E.g. to detect duplicate registrations clear laws, procedures and mechanisms on how such duplicates will be resolved.) etc.
* To set-up such in-house arrangements means ‘High cost up front, fund raising required’
* UNDP remains with ultimate responsibility.
* Technology life cycle management issues; the rapid evolution of any operating system means that most systems from a decade ago, if still operational, are obsolete. For how long can/will UNDP guarantee technical support and upgrades? These on-going changes are not limited to the operating systems but just as much the data storage devices and equipment[[3]](#footnote-3).
* Commercial companies may not agree to this approach (to ‘only’ deliver the equipment) and protest to this approach, refuse to participate in tenders, limiting competition in the market place.
* This initiative may also have impact and utilization in other fields of work such as candidate nominations, results management, logistics, assets, delimitation, administration, HR, salaries, etc. Can UNDP cope with that?
* Jeopardy of organizational politics (by individuals and groups) within the EMB or government who interfere with successful implementation for personal interest or misconceptions.
* Political leadership may not be interested in having an accurate register, staging UNDP for failure or scapegoat.
* There are now many types of equipment on the market, with varying speed and levels of efficiency; Technological delays and failures are common and may reflect negatively on UNDP when implemented collectively. Should UNDP prioritize some solutions to others?
* Lack of compatibility/Need of Integration: Integration of biometric technology into existing systems may require procurement of new systems or replacing existing equipment and software, e.g. with other biometric technologies, with existing infrastructure including existing hardware e.g. computers, and software, with existing operating systems, data capture systems; with other government systems: passport office etc. Is UNDP perceived to be introducing yet another product?
* Testing/piloting of equipment and software during the post-election period is necessary before the actual procurement. (Compatibility of various parts or subsystems, quality of images and other data, accuracy and comprehensiveness of information, testing of infrastructure, climate, training of staff etc etc.) If UNDP is not part of this site validation testing process, how will we ensure the later quality and avoid negative reflections on UNDP?

At this point, additional issues for consideration appear, here called parking lot issues, which similarly would need to be addressed before moving into such area:

#### Parking lot issues

* Should this software only be for voter registration or also available for e.g. civil registration?
* Should the software template be based on existing template/specific country experience? If so, to be discussed with the relevant EMB since they possibly have the ownership of the software.
* What are the associated costs for installation, maintenance, upgrades and security? Benchmark-prices?
* Who should be able to ‘buy’ it?
* What should it cost/cost structure?
* Who ‘owns’ this software?
* Should UNDP decide to engage in this the organization should consider whether to employ in-house Software Developers for the initial development of their own independent software solution, and later for maintenance, repair, necessary upgrades, on-going ‘helpdesk services’ and technical support, trainings etc. or, alternatively recruit ICs with a few IT/Software Developer/s and subsequently set-up a retainer system for SW developers, output based and on a ‘as and when required’ basis. But who should administrate all this?

The purpose of this paper was to question how/if UNDP could handle voter registration software solutions & costs differently, likely possibilities and implications, and pave the way for exploration of any alternative options, including the option of developing ‘platform-independent’ software for biometric solutions. In this process, the deeper examination of issues, the more associated risks appeared but it naturally requires a professional feasibility study before any clearer decisions are facilitated. Since the area of software costs and following national ownership rights is one of the current major issues of concern in terms of sustainability and cost efficiency, something needs be done proactively in this area. It is therefore recommended:

#### Recommendations:

* Based on above, the idea is to explore this initiative further through recruitment of two well reputed independent IT consultants with electoral experience and possibly UNDP experience. The consultants should undertake an assessment and feasibility study to further validate the decision and high reputational risks associated with this initiative.
* Action plan be developed to take this initiative to the next step
* Clarify certain expectations by different units, departments
* Discuss estimated timeline for submission of complete assessment report/feasibility study:
* Discuss anticipated scope and estimated length of report
* Discuss estimated cost for development and testing
* Discuss availability of funds
* Discuss target group(s):
* Discuss potential peer reviewers (names and areas of expertise)
* Engage with PSO in a comprehensive risk analysis and the exploration of possible solutions based on their daily experience and expertise in this area.
* Engage with PSO in their idea of a UNDP internal software repository
* Possibly set up a team of in-house UNDP ICT experts, LSO, PSO and relevant experts to further collaborate on the clarification of outcomes and next steps.
* Immediately consider how PSO from a central point of view can take a more active approach in ensuring further sustainable procurement of software solutions, in its current set-up, and possibly review bidding templates to this extent/share with Country Offices.
* Consult several good publications on this very topic:
  + EISA's Voter Registration in Africa ([www.eisa.org.za/PDF/vrafrica.pdf](http://www.eisa.org.za/PDF/vrafrica.pdf))
  + IFES' book Civil and Voter Registries: Lessons Learned from Global Experiences. (Ed.Michael Yard).
  + IFES’ Direct Democracy: Progress and Pitfalls of Election Technology. (Ed. Michael Yard)

1. This idea was initially developed in 2008 by PSOs Special Advisory Team on Elections (SAT) but the concept was archived, as too risky and too complex. It was again brought up in the EC-UNDP Thematic Workshop on Information Technology and Elections Management in Mombasa, 5-9 March 2012. [↑](#footnote-ref-1)
2. The following examples are extracted from UNDP/PSO procurement cases:

   1. In 2005 DRC spent $42 million on procurement for their voter registration solution. The 10,000 biometric voter registration (BVR) kits accounted for $25 million ($2,500 per kit), while the registration software accounted for $5.7 million – $570 per kit, equal to 18.5% of total cost per kit and 13.5% of total contract value. In 2008 another $2,184,174 was spent on updating the VR Software and refurbishing the VR Kits, $215,825 accounted for software updates and modifications while $146,746 accounted for the refurbishment. In 2010 DRC decided to buy 10,000 new kits.
   2. In 2008 Guinea-Conakry procured 1,000 BVR kits for the registration of voters, at the price of $6.6 million. The total cost of the Registration Kits was $3.2 million ($3,207 per kit); in addition, the registration software cost was $986,000 ($986 per kit) – equal to 23.5% of total cost per kit and 15% of total contract value.
   3. In 2010 Benin spent $11.5 million on BVR equipment and training including AFIS; hereof $8.9 million on the 3,215 digital kits, ($2,766 per kit), $879,726 on customized registration software pack ($273.6 per kit; 9% of total kit cost and 7.6% of total contract value) and $701,775 on AFIS duplicate analysis solution.
   4. In 2010 Zambia conducted the procurement of 1,000 digital mobile registration kits, software and power supply, worth $4.69 million. Hereof $3,261,710 was spent on the kits ($3,261 per kit) and $300,000 was spent on software –$300 per kit, equal to 8.4% of registration kit cost and 6.4% of the total contract value. In 2011 the contract was amended to the amount of $90,000 to extend technical support services.
   5. In Comoros in 2011 $1.16 million was spent on BVR, hereof only $339,539 was spent on the 70 registration kits ($4,850 per kit) and $498,754 on the software –$7,125 per kit, accounting for about 59% of the overall kit cost and 43% of the contract value.
   6. In 2011 Sierra Leone spent $3.2 million on BVR equipment, $2.26 million for 800 VR Kits ($2,831 per unit) and $253,400 on software ($316.75 per kit) –equal to 10% of the total cost per kit and 7.9 % of total contract cost. In 2012 another project for AFIS Duplicate Analysis and printing of Voter Cards is being developed, worth $1.93 million, where software accounts for $350,218; bringing total VR investment to $5.13 million.
   7. Nepal is expected to place an order in the near future for the delivery and implementation of a custom developed software system for voter registration, including biometric data, for an estimated value of $3 million.

   (Prices for DRC and Benin cases were originally quoted in EUR and have been converted to USD for comparison using UNORE official exchange rate 30-Jun-12) [↑](#footnote-ref-2)
3. Peter Wolf, IT Expert, International IDEA: JTF presentation on Technology Lifecycle, 2009 [↑](#footnote-ref-3)