



United Nations Assistance Mission for Iraq (UNAMI)

Recommendation to IHEC Board to Adopt Guiding Principles for Considering New Election Technology

As IHEC considers the use of technology to facilitate and improve the electoral process in Iraq, we recommend that IHEC adopt guiding principles that have become common in international best practice and which can help to establish and maintain public confidence in the electoral process. These guiding principles include:

1. Take a holistic view of the new technology*

Electoral processes involve more than just operations and technology. They include relevant laws, regulations and guidelines, social and political context, organizational culture, procedures developed to complement the technology and training of technicians and users. When technology is applied to any activity related to electoral administration and elections, it is important to consider carefully the electoral context in which the technology is used. For example, if technology is being considered for vote counting, the guiding principles that apply to vote counting also apply to the technology.

2. Consider the impact of introducing new technologies

When a new technology is being considered to replace another, an evaluation is required to assess the impact of the change on all stakeholders. Once the system is adopted, the transition phase needs to be carefully managed to ensure that problems do not occur and that all functions can continue to be effectively carried out.

Some strategies that can be used by electoral administrators to minimize the impact of new systems, new technology and changes on electoral processes include:

- Allow plenty of time for implementation and avoid starting implementation too close to Election Day.
- Keep in mind that implementation of a new project often takes longer than expected.
- Plan for new systems to be finished well before the earliest practicable election date and enforce cut off dates after which no system changes are allowed.
- Have alternatives ready to be implemented in case the new system cannot be used for whatever reason.
- Manage information about the technology and changes so that stakeholders do not have unrealistic expectations and do not impose impossible deadlines.
- Avoid imposing a new, untried or unsuitable technology.

* These principles can be found in papers located on the excellent website of aceproject.org. 1998-2006 © ACE Electoral Knowledge Network

- Schedule enough time to thoroughly test new systems.
- Provide training for staff and users as needed.

3. Transparency and ethical behavior while adopting new technology

Transparency means openness and accountability and is a key feature for the credibility of democratic elections. An indicator of transparency can be the access by electoral observers, both domestic and international, to all procedures at every stage of the electoral process.

With manual processes, transparency is relatively simple because the processes are usually visible and it is not difficult to provide access to observers. With the use of some technologies however it may be more difficult or even impossible for observers to testify that the outcome is correct. Electronic voting systems are an example where in some cases it is almost impossible to insure that the vote registered by the technology is the same as the vote cast by the voter and that the resulting vote count is accurate. On the other hand, the use of technology may enhance transparency once the data entry into the respective system is proved to be accurate and large quantities of data can produce meaningful reports with very few errors.

With the use of technologies, transparency may have to be provided in completely different ways depending on the technology. This may involve the use of techniques, such as creation of audit trails, creation of log files, code verifications, digital signatures and compilation checks, among others.

As a result, the skills needed by observers of electoral processes using various technologies, may be completely different than those needed to observe manual processes. To ensure transparency, Election Commissions may seek the assistance of specialized experts or auditors able to verify the accuracy of their systems and to provide special training to observers.

Related to the issues of transparency and trust, Election Commissions are expected to follow appropriate ethics when implementing new technology. For instance, when choosing technology suppliers, Election Commissions are supposed to ensure that the tendering processes are fair and open, without favoritism or corruption and that all government purchasing procedures applicable to the selection of technology are followed.

When buying hardware and software, Election Commissions must ensure that proper licenses are obtained. When using unlicensed or unregistered software, users run the risk of not being notified of known bugs, software fixes or upgrades.

4. Consider the security issues related to the new technology

Computer systems used for elections must include high levels of security. Unauthorized persons must be prevented from accessing, altering or downloading sensitive electoral data. Demonstrable security levels are another way of ensuring that election systems are transparent and trustworthy.

Various mechanisms exist to provide for computer security. These include password protection, encryption, verification programs and physical isolation. For IHEC the challenge of storing such equipment in the absence of well constructed warehouses which are currently prone to excessive heat and sand poses additional security measures to be overcome.

5. Test the accuracy of results produced by the use of technology

Accuracy is vital to the credibility of an election, particularly voters' lists, vote recording, vote counting and the reporting of election results. To ensure that technological systems are

trustworthy, there must be ways to test and verify that data is recorded properly and that the manipulation of this data produces accurate outputs.

System accuracy may be tested by randomly entering known data into the system and verifying that the resulting outputs are correct. In addition, for voting systems, a test is supposed to be performed to verify that the same set of data processed through several randomly chosen, similar but independent systems produces the same results.

IHEC must ensure that it has the human resources with skills to perform these accuracy tests on a year round basis.

6. Protect privacy

Electoral computer systems often contain sensitive personal data on large numbers of individuals, which can include names, addresses and other personal details. While many countries have privacy laws and policies that place restrictions on access to personal information, as a general principle, every person has the right to personal privacy. In Iraq privacy laws and related protections are lagging behind other countries so IHEC must take extra measures to ensure individual privacy concerns. If a person's privacy is invaded by improper use of electoral data, both the person and the electoral process may suffer.

Security features built into electoral computer systems should take account of the need to protect the privacy of personal data held on them. Audit trails can be built into systems containing personal data to track and monitor which individuals have accessed or modified personal data and to prevent any unauthorized invasion of privacy.

7. Ensure inclusiveness

When a technology with impact on internal and/or external users is being adopted, it is critical to have a consultation process with those users or their representatives to ensure that their needs are met and that they are satisfied that the new system is acceptable and reliable. Consultations with political entities, their leaders, NGOs and civil society representatives about the technologies being considered can provide them with information that will increase the likelihood that the new technology will be successful and accepted.

Since election technology has the potential to directly affect the political process, it is important to engender a sense of ownership in its users, much more so than might be considered for other government systems. In addition, access and equity considerations are to be taken into account when adopting new technology to ensure that people with special needs are included (e.g., illiterate, disabled people).

8. Consider the technology cost-effectiveness

The adoption of new technology may require a substantial upfront investment, even if the benefits are considerable and possible long-term savings can outweigh the initial cost. In addition, relatively low-cost technology can also replace high cost, low-tech processes, leading to savings in the long-term. Costs with ongoing maintenance also need to be considered and may be much higher than expected.

Therefore, before making a commitment to implement new technology, it is important to determine whether it is financially viable by getting a complete account of all likely costs and savings, namely:

- basic up-front costs of the technology itself
- expected costs with add-on equipment such as peripherals and communications
- installation and implementation costs

- expected on-going troubleshooting and maintenance (addition of new features, and performance and capacity optimization) costs over system life span
- expected costs of warehousing related equipment
- expected costs related to documentation, design of new procedures, staff training and user training
- expected financial benefits from increased efficiency
- comparative costs of other available technologies that offer the same functionality

In addition, the following related studies might also prove useful:

- cost-benefit survey
- assessment of expected improvements in efficiency or service versus extra costs
- likelihood of funding and budgets during the project life span
- evaluation of likelihood of sharing the new system and related maintenance costs with other agencies or organizations
- assessment of the opportunity for joint ventures that could reduce costs without compromising integrity
- evaluation of similar solutions, if they exist, implemented by either other election commissions

These results of these considerations can help to identify additional functions, benefits and user satisfaction to be provided by a technology under investigation. These considerations can also help to provide a realistic estimate of expected costs or savings needed for a thorough evaluation of a technology's cost /efficiency ratio. This, in turn, can help determine whether the technology is worthwhile, viable and affordable.

Whenever possible, the expected life-span of the technology is also supposed to be determined. In principle, a technology that can be re-used for more than one purpose or for more than one election is more cost-effective than one that can only be used once before it needs to be replaced.

In addition, before accepting a technology purchase, there is a need to ensure that there are available funds to cover implementation costs as well as ongoing maintenance. Generally this implies commitments through the relevant government budgetary process.

9. Evaluate efficiency

It's often assumed that new technology is more efficient than the old one, but this might not be the case in practice. It is possible to replace an efficient manual process with an inefficient automated one if the new process is not carefully thought through. When deciding to implement a new technology, it is important to ensure that the new system is more efficient than the one it replaces.

One of the anticipated benefits of technology is the ability to perform accurately large complex tasks in a relatively short time compared to the time needed to undertake the tasks manually. While this may enable election commissions to reduce costs by deploying fewer staff, it may also lead to additional pressure on staff as productivity rises and more is expected of them.

10. Evaluate sustainability

Technology is generally expensive to acquire, but if it is sustainable, and able to be used for more than one purpose or more than one election, it can be more cost-effective in the long term.

New technology may also require the use or availability of other technologies or specific infrastructures, such as communications and electrical energy networks. For example, if a country has an intermittent power supply, implementing a network of personal computers may not be the best choice. High humidity or high levels of dust or sand may also restrict the choice of appropriate technology.

In general, local infrastructure must be capable of supporting a chosen technology. If it is not, it could mean that the technology being considered is not appropriate or that there is a need to upgrade the infrastructure, in which case costs and benefits should be carefully assessed.

There is also a need to evaluate the technical and financial capacity of the election commission to maintain a new system during an agreed upon or required time span. Usually, it is desirable for an adopted technology to be used for several years; therefore funds will need to be secured, not only for initial implementation, but also for the foreseeable life of the technology. These funds need to be budgeted for and guaranteed before committing to a new technology.

Another aspect related to the sustainability of a new system is the availability of skilled staff to run and maintain it, either by the Election Commission or by outside service providers. The costs associated with keeping staff skills up-to-date and the capacity of the Election Commission to retain trained staff need to also be considered.

Another potential pitfall is attempting to do too much too quickly. Instead of implementing a radically new technology (compared to the existing local technology) in one step, it may be more appropriate to gradually implement change over a series of electoral events.

11. Evaluate the ability of technology to adapt to new election regulations

A technology that is flexible is also more likely to be cost-effective and sustainable. It may be desirable to adopt a technology that has the potential for more than one use if this does not compromise the primary need for the technology.

In cases of transitional environments, where the future of election management methods is uncertain, it is desirable to avoid purchasing technology that is highly specialized and inflexible, and to purchase instead more generic products that can facilitate the use of a wide range of applications.

Another of the perceived advantages of using technology for elections is its ability to provide users with greater flexibility and more options. Therefore, procedures may be implemented to ensure that the new technology does not reduce flexibility by limiting the number of options available. For example, it may be more desirable to introduce electronic voting as another option to using manual ballots, rather than completely replacing manual ballots with electronic voting, to ensure that users without electronic skills or access are not disadvantaged.

12. Consider the service provided to the users and their trust in the new technology

Elections are largely about providing a service for its clients, the voters. When choosing a new technology, the level of client service—ease of use and voters' satisfaction—as well as

how the technology is perceived by its users needs to be a priority consideration for the EMB in order to ensure that the credibility of the electoral process is not jeopardized.

There are a number of strategies that can be adopted to reduce users' unrealistic expectations or suspicion and ensure trust:

- assessment of stakeholder receptivity to review specific technologies
- clear definition of technology objectives
- use of open and regular consultation process with all relevant stakeholders
- verification of legal implications of adopting a specific technology
- use of rigorous technology evaluation processes including need for and implementation risks
- provision of appropriate levels of security for the electoral process different tasks
- verification of funds availability to cover all implementation, maintenance and training costs
- setting up transparent tendering and purchasing processes accepted by all stakeholders
- organization of effective training strategies both to electoral administrators and users
- assessment of references, use of external audits and verification checks to assert the trustworthiness of external vendors, technical staff, software programmers and consultants involved in supplying and/or maintaining technology

Besides a rigorous and well-structured implementation process, the successful adoption of a new technology requires the acceptance, trust and satisfaction of its users.

Respectfully submitted,

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