

24 July 2020

Approval through vote by correspondence of the proposal for the customization and validation of an automated voting system at IFAD

Distinguished Executive Board Representatives,

The Executive Board is invited to consider document EB 2020/130/V.B.C.2, and in line with resolution 215/XLIII of the Governing Council, is requested to approve that the Secretariat initiates development and implementation of the automated voting system provided by the selected company – Minsait – and proceeds with customization and validation of both the onsite and online voting solutions.

Executive Board representatives are invited to cast the votes of the members they represent in favour of, against, or to abstain with respect to this proposal. A written reply, specifying the vote cast ("yes", "no" or "abstain") should be submitted by midnight (Rome time), Thursday, 6 August 2020.

In accordance with rule 23 of the Rules of Procedure of the Executive Board, representatives are kindly reminded that:

- (a) Members and alternate members may cast a "yes", "no" or "abstain" vote by submitting a written reply by fax (+39 06 5459 3212) and/or e-mail (gb@ifad.org);
- (b) The absence of a written reply by the stipulated deadline will not indicate abstention but rather the absence of a member in the voting procedure; and
- (c) In the event of no reply from a member, the vote of the alternate member shall prevail.

The Executive Board will be informed of the result of this vote by correspondence in a timely manner.

Accept, Distinguished Executive Board Representatives, the assurance of my highest consideration.



Luis Jiménez-McInnis
Secretary of IFAD

Executive Board Representatives of the
International Fund for Agricultural
Development and respective recipients
of copies for information

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Investing in rural people

Proposal for the Customization and Validation of an Automated Voting System at IFAD

Note to Executive Board representatives

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Executive Board — 130th Session
Rome, 8-11 September 2020

For: Approval

Recommendation for approval

The Executive Board is invited to consider the present document and to approve the recommendation contained in paragraph 27.

Proposal for the Customization and Validation of an Automated Voting System at IFAD

I. Introduction

1. The Governing Council Bureau, in its Report on the Review of the Established Practice for the Process Leading to the Appointment of the President of IFAD (GC 41/L.9), recommended that the Secretariat explore the introduction of an automated voting system for potential use in the appointment of the President in 2021, and that the voting for the appointment of the President continue to be held by secret ballot. Following the endorsement of these recommendations by the Governing Council, the Secretariat worked with the Executive Board to agree on the specifications for such a system. Besides ensuring secrecy, the main requirements for an automated solution include confidentiality, verifiability and integrity of the vote. It should also implement a secure system that minimizes the probability of cyberattacks.
2. Following a thorough and transparent procurement process, submissions from five companies were evaluated on their commercial and technical merits, and the best entry was selected. The Executive Board was informed of the outcome at an informal seminar on 24 June 2020, when the selected company was presented together with its proposed system. A timeline was indicated for further action and, most importantly, for obtaining feedback from Member State representatives.
3. The negotiated procurement procedure was carried out on the assumption that a physical meeting of the Governing Council would be possible. However, following the outbreak of COVID-19 and the introduction of restrictions on assemblies and movements, Management, upon consultation with Member States, also decided to consider the option of online/remote voting. The online option mitigates, or even eliminates, the risk of not being able to elect and appoint the President of IFAD in 2021, thus ensuring the Fund's business continuity.
4. The company selected through the negotiated procurement procedure was Minsait.¹ A subsidiary of Indra Holding Tecnologías de la Información, the company is one of the top consulting and technology groups in the world, with 42 years of experience in developing electoral solutions at the international level. It can not only organize on-site elections with physical voting machines but also run online votes. These two options are described below, along with an explanation of how the requirements identified by the Board are addressed.

II. Objectives

5. The first objective of this document is to provide Board members with sufficient information for them to make an informed decision on the automated voting scenarios described in this document, taking into due consideration the impact of COVID-19 on the process of appointing the President of IFAD in February 2021.
6. The second objective is to request the Board's approval for the customization of the solutions for both scenarios (on-site and online) of the automated voting system, identified in paragraph 4 above, and to validate those scenarios with an external security company. Customization and validation are the two obligatory steps

¹ Since 2014, Minsait is a certified elections provider for the United Nations Development Programme. More information on the company can be found in the appendix or on their website: www.minsait.com.

needed to test the options with the Board and, ultimately, with the Governing Council.

7. A detailed timeline is provided in section IX.

III. Budget

8. The Governing Council approved capital budget funding for the exploration of an automated voting system in February 2019. Of the funds earmarked for this system (US\$210,000), 24 per cent has already been committed, while the remaining 76 per cent (approximately US\$160,000) – not yet committed – covers the estimated costs of customizing and validating the on-site option. It is estimated that it should also cover costs related to customizing the online option. It should be noted that consideration of the online option represents a significant expansion of the original scope and costs of the project. However, Management hopes to contain costs and upon additional analysis will keep the Executive Board updated on costs as needed.

IV. Automated voting system – scenarios

9. As mentioned above, due to the importance of ensuring operational continuity at IFAD, and given that COVID-19 makes it uncertain that a physical Governing Council session can be held in February 2021, Management believes that the system should be developed for use either on-site or online.
10. According to the proposed timeline in section IX, the options would be tested with members on the sidelines of the Board session in September 2020 or at an informal seminar in September or October. In December, the Board would make the final decision on whether to implement one or neither of the options described in the present document for the appointment of the President of IFAD in 2021.

A. Scenario 1 – Election held on the premises with physical voting machines

11. This scenario allows for Member State representatives to cast their votes on voting machines set up in voting booths in much the same way as voting with paper ballots. Rather than stamping the name of the preferred candidate on each one of the ballot papers provided, voters would select their preferred candidate on-screen and confirm the vote cast. The solution proposed by Minsait will be validated by a third-party company in terms of security.

B. Scenario 2 – Election held online (internet voting)

12. The scenario allows Member State representatives to cast their votes from anywhere in the world. Access to the voting portal would be granted to voting representatives upon identification and authentication. They would be able to use their laptops or personal computers to cast a vote for their preferred candidate. At the end of the process, voters would be given a verification code as added assurance of the correctness of the results. A comparison of the main differences between using paper ballots and automated voting either on-site or online can be found in section V below. The solution proposed by Minsait will be validated by a third-party company in terms of security.

V. Differences between voting procedures

13. Below is a brief and high-level comparison of the voting process between paper ballots and automated scenario 1 (on-site) or scenario 2 (online), which is subject to change and will be further detailed during development, considering the IFAD requirements and technical capabilities of the system proposed by Minsait.

Main steps	Paper ballot	Automated voting system scenarios	
		On-site voting	Online voting
1	Calling of names	Calling of names	Receipt of e-mail
	Representatives are called in alphabetical order.	Representatives are called in alphabetical order. In case COVID-19 restrictions still apply, time slots could be organized for the representatives to enter the voting room in small groups, coordinated for social distancing.	Designated Member State representative receives an e-mail with a password to access the voting portal.
2	Moving to the table	Moving to the table	Confirmation of e-mail
	Tables will be divided according to the first letter of the formal name of Member States. Each representative moves to the appropriate table according to alphabetical order by country name.	Tables/rooms will be divided according to the first letter of the formal name of Member States. Each representative moves to the appropriate table/room according to alphabetical order by country name.	Each representative confirms receipt of e-mail. Their identity is confirmed using two-factor authentication (2FA).
3	Collecting the ballots	Collecting the token	Receipt of second factor for authentication
	Representatives collect their envelopes with the ballots and check that the Membership and contribution votes correspond to the total votes to which the Member State is entitled. Given the various ballot papers provided, calculators are at the disposal of representatives so that they can count the votes.	Representatives are each given a token in the form of a QR code.	Representatives receive a 2FA code on the mobile phone number they have registered with IFAD.
4	Signing for the ballots	Signing for the token	Confirming the identity
	Once the correct number of votes has been checked, representatives sign for receipt of their ballots and move to the booths.	Representatives sign for receipt of their QR tokens and move to the booths.	Representatives enter the code received into the online voting portal and thus authenticate their identity.
5	Voting using the stamps in the booths	Voting using the token	Voting in the portal
	Once in the booth, each representative uses one of the stamps provided to stamp the name of the selected candidate on the ballot paper(s).	The representative inserts their token into the machine. The number of votes is displayed on the screen. The representative verifies that the number is correct. If so, they can proceed to cast a vote. If not, the representative should return to the desk where they collected the token and ask for verification.	The number of votes is displayed on the screen. The representative verifies that the number is correct. If so, they can proceed to cast a vote. If not, the representative can abort the process and contact the help desk.
6	Casting the ballot	Casting the vote	Casting the vote
	The representative puts the ballot in the ballot box and goes back to their seat in the plenary.	The representative casts and confirms their vote. A voter-verifiable "paper trail" is printed with the various denominations. The representative puts the paper trail in the ballot box.	The representative casts a vote. To ensure correctness, the voter is given a numerical code corresponding to the voting right cast. The voter can check the list of codes on a separate page. This ensures that the vote has been cast and counted correctly and that it is secret.
7	Communication of results	Communication of results	Communication of results
In accordance with rule 41.2 of the Rules of Procedure of the Governing Council, "In the case of more than one nominee, if no nominee receives the required number of votes on the first ballot, a second ballot shall be taken in which the nominee who received the fewest votes shall not participate. This procedure shall be repeated until one nominee receives at least two-thirds of the total number of votes or the Council decides that such balloting be discontinued and decision be taken on another date."			

VI. Requirements and how they are met by the automated options

14. Secrecy

Scenario 1 (on-site)	Scenario 2 (online)
<p>The system uses an algorithm to randomly split the weighted votes of IFAD into several denominations.²</p> <p>Essentially, the printed vote gets broken into several pieces of pseudo-random weight that makes it practically impossible to trace the vote to the country responsible.</p>	<p>In order to maintain the secrecy of the vote, the system randomly adds the votes cast into a so-called "Elliptic curve homomorphic encryption".</p> <p>This uses a special mathematical function allowing one to determine the sum of all encrypted votes without having to decrypt a representative's individual vote.</p> <p>The system can thus fulfil the requirement of weighted voting without endangering secrecy since individual votes remain encrypted and thus unreadable.</p>

15. Integrity

Scenario 1 (on-site)	Scenario 2 (online)
<p>The voting machine allows for printing a so-called voter-verifiable paper trail which is randomly split in denominations and deposited by the voter in a ballot box.</p> <p>Should a recount or audit be requested, the ballot box would be opened and the votes counted and checked against the system result.</p>	<p>When casting the vote on behalf of their Member State, each voter receives a numeric code unique for each voting right and thus vote cast.</p> <p>This allows a voter to check that the signature of the vote count contains their numeric code and that the vote has not been tampered with.</p>

16. Verifiability

Scenario 1 (on-site)	Scenario 2 (online)
<p>A voter can see their vote on the paper audit trail and hence verify that the vote cast is recorded correctly.</p> <p>The voting machine can recount the votes, reading them back and showing the count on-screen as an additional verifiability feature.</p>	<p>The vote signatures provide additional assurance of the correctness of the result when reviewed by auditors or if a recount is required.</p>

17. Security

Scenario 1 (on-site)	Scenario 2 (online)
<p>In addition to the generic computer security safeguards such as firewalls and antivirus or anti-brute-force attack systems, the risks of an external attack would be mitigated by using the voting machines as stand-alone devices with no wireless connections.</p> <p>Other election-specific security measures such as vote encryption, digital certificates, blockchain security and intrusion detection would be implemented.</p>	<p>The online system would reside in a cloud, hence security measures need to be enhanced compared to scenario 1 (on-site).</p> <p>Generic internet security measures include: firewall, antivirus, secure software development life cycle, real-time traffic monitoring, protection against brute-force attacks, intrusion detection, 2FA, signed static content and device tracking.</p> <p>Security measures for elections include: voting encryption, homomorphic encryption, certificates and digital signatures, blockchain security, single-use links, universal verifiability, multifactor authentication, voter verifiability, blind signature and multi-voting.</p> <p>For more details please refer to the appendix.</p>

² Example in the appendix, page 13.

18. Identification

Scenario 1 (on-site)	Scenario 2 (online)
<p>A token, in the form of a QR code, is delivered to each representative.</p> <p>The representative signs for the receipt of the QR token and moves towards the booth. This is the same process as the one for voting with paper ballots.</p> <p>Voting machines only accept voting tokens which a) are valid and b) have not been used previously.</p> <p>Voting tokens provide the necessary credentials for Member State representatives to approach the voting machines and to provide the system with the information about the total number of votes to be cast by the Member State.</p>	<p>The delegation provides the credentials of the designated voter (official e-mail address, mobile phone number and possible other required information) through an official communication channel to the IFAD Secretariat.</p> <p>The voter is sent an e-mail with a link to access the online voting portal. After logging in, the voter receives a text message with a code (a one-time password) which constitutes a 2FA code. The code is sent to the mobile phone number that the Member State representative has registered with IFAD.</p>

19. Portability

Scenario 1 (on-site)	Scenario 2 (online)
<p>The voting machine can be transported in a case. See the appendix for images of the machine and its case.</p>	<p>The online option allows for voting from any location, as long as a reliable internet and mobile phone (including SMS) connection is available.</p>

VII. Main risks and mitigation measures

20. Following is a brief description of the main risks identified and the corresponding mitigation measures.

Risk with paper ballot scenario	Mitigation measures
<p>The main risk is that the President of IFAD is not appointed due to the impossibility of holding a physical Governing Council meeting in February 2021.</p>	<ol style="list-style-type: none"> Using an online voting system would eliminate the risk of not being able to appoint the President of IFAD, allowing Member State representatives to cast a vote on behalf of their country remotely, providing they have access to a reliable internet and mobile phone (including SMS) connection. On-site voting would avoid staff having to engage in preparatory back-office work, considerably reduce interaction between Member State representatives and respect social distancing. For both options the rules and procedures will be amended to cover exceptional cases (inability to vote at a given time for technical reasons).
<p>Ballot preparation and counting is a cumbersome process, as highlighted by the Governing Council Bureau (GC41/L.9): "The preparation of the anonymous ballot papers required by rule 35.3 of the Rules of Procedure of the Governing Council for each of the ballots is a complex process, entailing the involvement of approximately 20 staff members in the days preceding the Governing Council meeting at which the President will be appointed. On the day of the Governing Council meeting, the process also requires the presence of a large number of essential staff to: (a) distribute the respective ballot papers to each of the Governors; (b) record each Governor's confirmation that they have received their full entitlement of ballot papers; (c) direct Governors to the voting booths where they are invited to stamp the ballot papers with a stamp bearing the name of the candidate they wish to vote for; (d) ensure that each Governor deposits his/her ballot papers in the ballot box; and (e) after the vote is closed, count the ballots. On average, a minimum of 20 staff members are needed for at least two hours to complete each ballot from the beginning of the proceedings to the announcement of its results."</p>	<p>The Governing Council Bureau, in its report (GC41/L.9), identified a mitigation measure, namely the possibility of introducing an automated system to "expedite the ballot counting process and increase workforce efficiency".</p>

Risks with scenarios 1 and 2	Mitigation measures
Security	<p>On-site voting would be a stand-alone exercise not requiring a wireless connection. Additional details are provided in paragraph 17 above.</p> <p>Online solution features several security measures, as outlined in paragraph 17. Additional work will be undertaken to detail the process and analyse the risks and vulnerabilities, bearing in mind that a guarantee of 100% cyber security is practically impossible.</p> <p>The security of both solutions will be checked and validated by an external company with specific security expertise.</p>
Usability by representatives	Training slots based on time zones, support on election day and additional measures may be implemented, as appropriate.
<p>Bespoke technology</p> <p>a) Given the specific field of automated/electronic voting and the lack of in-house expertise, reliance and trust in the vendor and its system is necessary.</p> <p>b) Dependence on internet and/or SMS connectivity.</p>	<p>a) The test and security validation activities will aim to mitigate this risk.</p> <p>b) Representatives entitled to cast the votes of their countries will need to ensure sufficient connectivity. Connectivity tests will be carried out with representatives if needed.</p>
Timeline	<p>The project for the on-site solution commenced in 2019, meaning there has been adequate time to develop the necessary components. Consideration of an online option has only recently emerged in response to the ongoing COVID-19 pandemic. As such, the timeline to deliver the project is much tighter.</p> <p>IFAD has communicated the time constraints to the vendors to ensure awareness of the need to deliver the solution and its validation on time.</p> <p>Furthermore, the vendor selected to implement the online option is the same vendor selected to implement the on-site option. In this way, the vendor is already aware of the high-level requirements, which apply to both the on-site and online options.</p>

21. Outside of the scope of this project, but nonetheless worthy of mention, is the fact that a system offering the possibility of voting online would mitigate unforeseen risks – such as those posed by COVID-19. It would safeguard operational continuity while supporting efficiency by making it possible for Member State representatives to participate in the governance of the institution even when it is not feasible or appropriate for all representatives to meet physically. At the informal seminar held in June to present the automated voting system, one Member State representative raised the possibility of using such a system to streamline decision-making in other instances. This proposal was welcomed and supported by other representatives, and Management will certainly consider how best to capitalize on its potential benefits.

VIII. Preparation for secret ballot – preliminary cost-benefit analysis

22. The preliminary cost-benefit analysis was elaborated to provide a comparison of costs among the different voting processes, namely paper ballots, automated on-site and automated online voting, in relation to tangible and intangible costs.
23. The main tangible cost considered in this preliminary analysis is related to the time saved by IFAD staff in preparing for the election with paper ballots, including setting up the various task forces, preparing the paper ballots and counting the ballots.

24. The analysis is made under the assumption that two "ballots" take place (as was the case in the 2017 election). The costs described below are based on average IFAD staff costs for both professional and general service categories. Any discrepancies in the totals below are due to rounding.

Costs per hour are based on an average cost of General Service (GS) staff (US\$43) and Professional (P) staff (US\$92)	Hours	Overtime pay	GS staff	P staff	Total hours GS staff	Total hours P staff
Paper vote						
Admin ballot preparation group (prepares terms of reference for task forces & selection)	40	0	1	1	40	40
Ballot preparation group	12	0.5	10	10	180	120
Voting (incl. dry run)	10	0	17	13	170	130
Subtotal (in US\$)					16,770	26,680
Total (in US\$)					43,450	
Time spent by Governors	8					
Total (177 Governors)	1416					
Voting machine						
Election preparation	2	0.5	2	1	6	2
Voting (incl. 1-hour training)	4.5	0	8	2	36	9
Subtotal (US\$)					1,806	1,012
Total GS+P (US\$)					2,818	
Time spent by each Governor (incl. 1-hour training)	4.5					
Total (177 Governors)	796.5					
Time savings (only Governors)	619.5					
Internet voting						
Election preparation	3	0	0	2	0	12
Voting (incl. 4-hour training)	4.5	0	0	2	0	18
Hotline during voting (incl. 2-hour training)	4.5	0	3	0	13.5	0
Subtotal (US\$)					580.5	2,760
Total GS+P (US\$)					2,818.5	
Time spent by each Governor (incl. 1h training)	4.5					
Total (177 Governors)	796.5					
Time savings (only Governors)	619.5					

25. The above analysis does not include the help desk support foreseen in scenario 2, to be included should the scenario be confirmed. Also not included are the administrative costs related to security guards, printing of ballot papers, enrolling the voters in the online solution, cost of stamps and other various minor costs.
26. The analysis has, however, also identified a number of intangible costs/benefits for automated voting:
- Ensuring business continuity;
 - Time saved by Governors, as indicated in the table above;
 - Time saved by delegations and by Management;
 - Streamlined process for the appointment of the President of IFAD;
 - Supporting governance efficiency should Member States wish to use automated voting for other matters in the future;
 - Reduction in risk of errors.

IX. Indicative timeline

August 2020	<ul style="list-style-type: none"> ➤ Based on the positive outcome of the vote by correspondence, award contracts: <ul style="list-style-type: none"> • To Minsait for a) customization and b) testing at Sep. and Dec. Executive Board sessions • To external security company for validation of solutions
August-September 2020	<ul style="list-style-type: none"> ➤ Customization of solutions by Minsait ➤ Validation of solutions by the external security company
September/October 2020	<ul style="list-style-type: none"> ➤ Presentation and testing of the system <ul style="list-style-type: none"> • On the sidelines of September Executive Board session; or • At an informal seminar in Sept/Oct; and ➤ Discussion with the Governing Council Bureau
October/November 2020	<ul style="list-style-type: none"> ➤ Complete validation of online system, if needed ➤ Arrange for distribution of credentials, prepare for training and support material for Member State representatives ➤ Ongoing discussion with Governing Council Bureau
December 2020	<ul style="list-style-type: none"> ➤ Executive Board's final decision on feasibility of implementing and using the selected solution for the appointment of the President in 2021 ➤ Ongoing discussion with Governing Council Bureau
January 2021	<ul style="list-style-type: none"> ➤ Training on the selected system for Member State representatives
February 2021	<ul style="list-style-type: none"> ➤ Forty-fourth session of the Governing Council

X. Recommendation

27. In line with resolution 215/XLIII, the Executive Board is requested to approve that the Secretariat initiate development and implementation of an automated voting system for the scenarios of on-site and online voting with the aforementioned company to allow for customization and validation with the ultimate goal of testing both solutions with Executive Board representatives in accordance with the timeline indicated above, for possible use in appointing the President in 2021.

Onesait Democracy

IFAD Proposal
June 2020

minsoit



An Indra company

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- 03. Onesait Democracy Elections Online (ODEO)

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An Indra company

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Introduction

minsait



Indra Global Company

"We are a global technology company"

€ 3.0 Bn
Sales



52,000
employees



Projects in
+140
countries



Complete offering for
all industries

R&D 6-8% of sales + 200 deals with
research centers and universities

Leading clients in key geographies
and industries

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An Indra company

2

Our experience

Our experience is based on more than 400 projects developed over the last 42 years...



Maturity as a business unit

- More than 40 years of experience have helped us to develop a deep and healthy knowledge of the market and the latest trends in this sector at any time.
- Due to this knowledge of trends, we have recently expanded new areas of identification, protection and participation in our unit.



Experienced team

- The average staff turnover of our unit is over 10 years, which helps us with unique stability, experience and knowledge.
- Working within our unit, our professionals are constantly enriching their knowledge thanks to our company training programmes.

Certified UN Elections Provider

minsait



Our experience

...which has allowed our department to develop Electoral Solutions projects at an international level

- Our department is exclusively dedicated to electoral projects, and has full access to global resources in the company: financial, human and technological.
- We have been working for more than 40 years in 40 countries, proving organisational and technical capacity to synchronise and successfully carry out a large number of projects, adapting to specific standards and legislation for each electoral process.

Afghanistan
Angola
Argentina
Azerbaijan
Brazil
Burkina Faso
Chile
Colombia
Dominican Republic
Ecuador
Equatorial Guinea
El Salvador
France
Guinea-Bissau
Honduras
Iraq
Italy
Cote d'Ivoire
Jordan



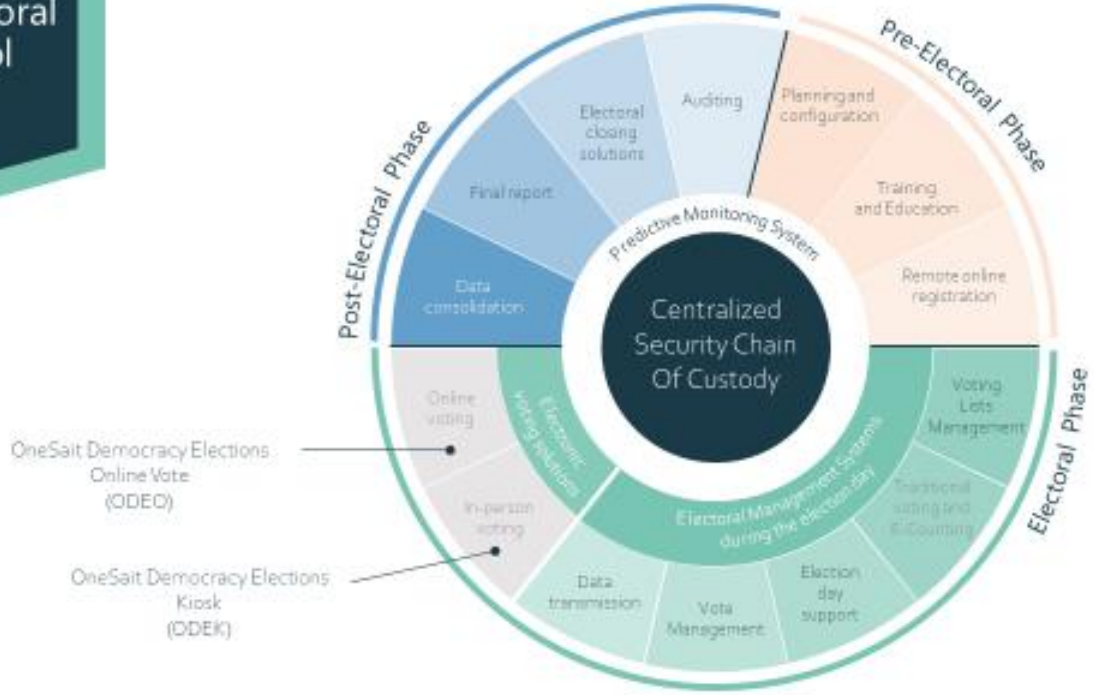
Libya
Malawi
Mauritius
Mexico
Morocco
Mozambique
Myanmar
Nepal
Nicaragua
Nigeria
Norway
Panama
Peru
Portugal
Slovenia
Spain
United Kingdom
US
Vanuatu
Venezuela

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4

ODEO
Full Electoral Control



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Our experience

Committed to quality: ISO 9001, ISO 27001 and CMMI Level 5



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6

Onesait Democracy Elections Kiosk

ODEK

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Onesait Democracy Elections Kiosk

Stand alone electronic voting kiosk

The new generation of electronically assisted voting



ODEK



Carrying case

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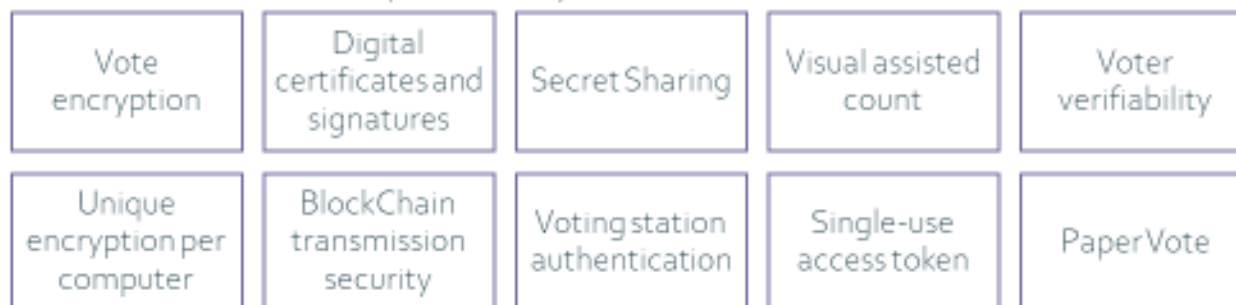
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Security measures

The combination of these security measures addresses all threats

Election-specific security measures



Generic computer security measures



Onesait Democracy Elections Kiosk

ODEK Features

Feature	ODEK
Touchscreen voting system	✓
Multi-Election and with distinct algorithms	✓
Secured execution	✓
Cryptographically protected vote printing	✓
QR reader for assisted counting and secure access control	✓
Touchless voting mode	🔒
Hot-swap batteries up to 12 hours duration	🔒
Integrable with various electronic pollbook technologies, including ODEI	✓
Central consolidation via Blockchain	🔒📄
Voting mode for the blind	✓
Various screen sizes (17" o 15")	🔒
Traditional mode of execution type of electronic voting	✓
Ballot-marker execution mode	✓
Individual voter audit for voters (also for blind voters)	✓
Advanced visual audit of the entire ballot box	✓

✓ Available 🔒 Optional 📄 Need additional centralized servers



ODEK

- Secured execution
- Various operating modes
- Multi choice
- Multi algorithm
- QR Reader
- Printer
- Removable battery
- Blockchain results consolidation
- Transparent and auditable

Minsait Election Solutions

10

Algorithm to split the weighted votes of IFAD on paper (example)

Country	List	Total Vote	Token 1	Token 2	Token 3	Token 4	Token 5	Token 6	Token 7	Token 8	Token 9	Token 10	Token 11
Guyana	C	14,697	6,718	7,979									
Haiti	C	13,489	6,717	6,772									
Honduras	C	13,711	6,716	6,995									
Hungary	A	13,456	6,715	6,741									
Iceland	A	13,551	6,718	6,833									
India	C	93,544	6,717	8,997	13,997	19,998	29,998	13,837					
Indonesia	B	41,822	6,720	8,995	13,997	12,110							
Iran (Islamic Republic of)	B	18,243	6,718	8,995	2,530								
Iraq	B	18,480	6,716	8,996	2,788								
Ireland	A	30,191	6,716	8,996	13,999	480							
Israel	A	13,601	6,717	6,884									
Italy	A	202,020	6,718	8,999	13,998	19,996	29,790	29,823	29,702	29,904	29,792	3,288	
Jamaica	C	13,537	6,718	6,819									
Japan	A	235,766	6,716	8,997	13,998	20,000	29,689	29,929	29,736	29,848	29,754	29,682	7,417
Jordan	C	13,834	6,719	7,115									
Kazakhstan	C	13,453	6,718	6,735									
Kenya	C	15,331	6,719	8,612									
Kimberly	C	13,430	6,718	6,712									
Kuwait	B	96,543	6,718	8,997	13,996	19,996	29,925	16,911					
Kyrgyzstan	C	13,420	6,718	6,702									
Lao People's Democratic R	C	13,615	6,720	6,895									
Lebanon	C	13,596	6,717	6,879									
Lesotho	C	13,748	6,716	7,032									
Liberia	C	13,465	6,717	6,748									
Libya	B	29,439	6,718	8,996	13,725								
Luxembourg	A	17,893	6,716	8,996	2,181								
Maldives	C	13,734	6,716	7,018									

The printed vote gets broken into several pieces of pseud-random weight that makes it impossible to trace the vote to the country voting using the weight info



IFAD requirements

The modern architecture allows for an easy deployment of customization and customer-specific functionalities like weighted voting, or COVID-19 protected touchless voting mode

Identification

- ID card with QR code

Security

- All the measures on previous slides

Secrecy

- Vote encryption
- In Database individual votes not stored, only totals
- On paper votes: broken into tokens of pseudo-random weight

Sanitizing

- Data can be wiped securely from kiosks
- Data deletion procedures

Data retention

- Data will be erased following instructions from IFAD. Not later, not sooner

Verifiability

- Voters can see their votes on paper
- The kiosk can recount the paper votes reading them back and showing the count on screen

State of the Art Kiosk Voting

Onesait Democracy Elections Online (ODEO)

State-of-the-art Internet voting

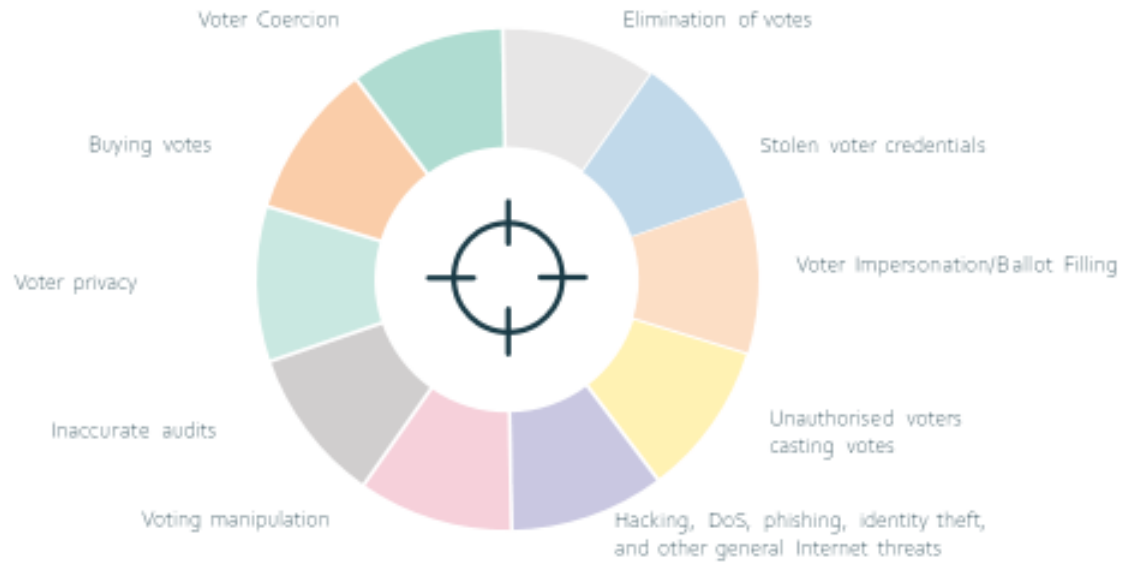
minsoit



Making online voting robust

Threats to online voting

Face your threats and you are closer to defeating them



mins01t

An Indra company

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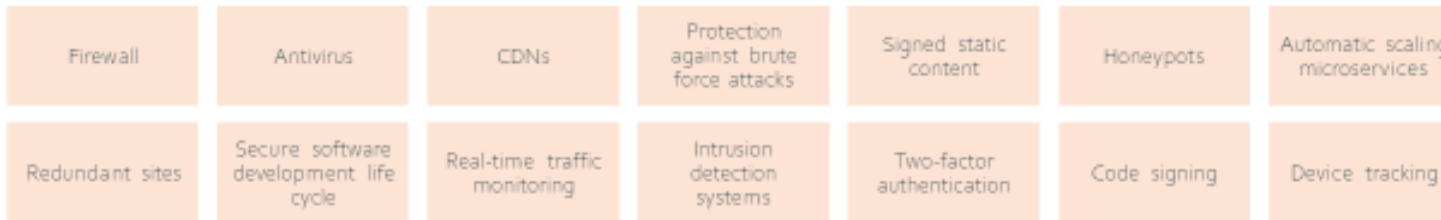
Security measures

The combination of these security measures addresses all threats

Specific security measures for elections



Generic Internet security measures



IFAD requirements

The layered architecture allows for an easy deployment of customization and customer-specific functionalities like voter and candidate registration flows, integration with ID cards, usage of specific cryptographic algorithms

