

Proposal for ‘Fundamental Reform’ of FIFA: Introducing Holy “FIFA Constitution” & Advanced AI-based Decision Making Methods for FIFA

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Received July 21, 2026; Revised August 23, 2026; Accepted September 01, 2026

Abstract FIFA is giant family having 211 member associations representing countries and territories world-wide. But FIFA does not have any excellent methods for decision-makings. Consequently, sometimes there may exist possibilities of having accidental errors while making good and big important decisions in FIFA; and there is no instrument in FIFA which can say about the “guaranteed satisfaction” of the 211 member associations at the real time instant of decision makings. In this work the author proposes a **Fundamental Reform** of FIFA by introducing four most important concepts : **FIFA Constitution, FIFA Parliament, FIFA Voting, FIFA Voting Machine**, and by introducing advanced models of AI-based Decision Making Methods exclusively for FIFA. It is strongly suggested than only **secret voting** needs to be conducted in the FIFA Parliament, not open “raise” hand voting, for taking decisions in the Parliament when voting is necessary. The total number of Members of the Parliament is T (value of T could be more than 300) and all of them will be the voters. Five voting methods are proposed. Whatever be the voting method suitably choosen in FIFA Parliament for an agenda-item, the voting and result declaration will take around one minute only. If the proposed theories/policies are adopted by FIFA/IFAB, then it is certain that in future there will be no eruption of any unexpected crisis or issues after any decision making in FIFA. The first and last Goal of FIFA is fulfillment of justice, fairness and satisfaction of four permanent children-like family members of FIFA which are: **Football Game, Football Fan, Football Science & Technology as a subject, and 211 member associations**. The term ‘FIFA GOAL’ is introduced, and this Goal is always to be scored by FIFA in all its activities.

Keywords: Children-like, FIFA Goal, FIFA Constitution, FIFA Parliament, FIFA Voting, FIFA Voting Machine, EVM, FEVM, IFEVM, CRDM, Secret Voting, Fuzzy Score, Intuitionistic Fuzzy Score, Fuzzy Training College

Cite This Article: Ranjit Biswas, “Proposal for ‘Fundamental Reform’ of FIFA: Introducing Holy “FIFA Constitution” & Advanced AI-based Decision Making Methods for FIFA.” *American Journal of Sports Science and Medicine*, vol. 14, no. 2 (2026): 34-48. doi: 10.12691/ajssm-14-2-2.

1. Introduction

FIFA is the international global governing body for association football, futsal, and beach soccer. While UN has 193 member countries, FIFA has 211 member associations representing countries and territories worldwide. The 211 associations belong to one of the six regional continental groups: AFC (Asia), CAF (Africa), CONCACAF (North & Central America and Caribbean), CONMEBOL (South America) and OFC (Oceania). The FIFA Council has 37 members, including one President, eight Vice-Presidents, and 28 other members chosen by regional associations. FIFA Council is the main strategic, supervisory, and decision-making body of FIFA between meetings of the FIFA Congress. The FIFA Congress is

made up of 211 national member associations from six(6) continental confederations. But the FIFA Council [1,2,3,4] is the main strategic, oversight, and decision-making body of FIFA (the global governing body of football). It sets the vision for the sport and runs the organization between meetings of the full FIFA Congress. The author in this research work reports that the existing structure of FIFA needs to be more powerful and correctly **REFORMED** at its fundamental level so that it can support 100% democracy in compliance with the FIFA GOAL (defined below) with full guarantee. FIFA Congress members are not large in number, and the author strongly suggests that all the Congress members could be directly included in each and every decision making process to make it a 100% democratically governed process. For a big an important decision, Democracy in FIFA structure can be easily practiced from ground level, and this work reports how to do the **FUNDAMENTAL REFORM** of the

existing FIFA for an 'Excellent FIFA'.

The football world and 211 member associations have been enjoying the excellent advanced kind of performance during 2022 and 2026 World Cup in particular. Unfortunately, FIFA is suffering from some recent crisis in July-August 2026. This research work is done to propose about a Fundamental Reform of FIFA, to provide a permanent solution for any such crisis in FIFA, today or anytime in future, and to provide FIFA/IFAB with advanced AI-based Decision Making Methods designed exclusively for FIFA/IFAB to solve any big or important agenda by introducing five most important concepts:

- (i) **FIFA GOAL,**
- (ii) **FIFA Constitution,**
- (iii) **FIFA Parliament,**
- (iv) **FIFA Voting Methods, and**
- (v) **FIFA Voting Machines.**

2. "FIFA Goal"

Everyday at every moment's mindset of FIFA, it is observed to be in-built that the first and last Goal of FIFA is fulfillment of justice, fairness and satisfaction of four permanent children-like family members of FIFA which are: Football Game, Football Fans, Football Science & Technology as a subject, and 211 member associations of FIFA. This Goal is always to be scored by FIFA, and is called hereby by the key term **"FIFA GOAL"**.

3. 'URGENT 9-Points Solution' in FIFA: a Proposal

First of all we present below an URGENT SOLUTION PROPOSAL by nine(9) key Points for solving any crisis in FIFA and for any kind of decision makings in FIFA/IFAB.

Point(1)

Change/removal of leadership or of any of the top officials of FIFA/IFAB can not provide even 1% solution of any sudden erupted crisis. Because the rootcause is the serious hidden fault inside the FIFA's skeleton backbone, not of any of the FIFA officials and not of any of the Hon'ble world leaders of football who may criticize FIFA leadership for his removal. FIFA World has to develop clear and powerful constitution so that human error does not occur in future in FIFA.

Point(2)

FIFA needs more SOUND, more COMPLETE & truly EXHAUSTIVE holy constitution for scoring FIFA GOAL with guaranty. The holy **"FIFA Constitution"** must incorporate 100% democracy in its literature for taking any important decisions.

And then the holy **"FIFA Constitution"** itself will continuously guide the FIFA officials on how to run FIFA, how to do everyday activities and new advanced type of activities for FIFA; and most importantly on how to take excellent decisions in compliance with the **"FIFA GOAL"** in this century. FIFA must score its **FIFA GOAL** without fail.

Point(3)

Construction of **"FIFA Parliament"** needs to be done urgently by including its following members:-

- (i) President of FIFA,
- (ii) Eight Vice-Presidents of FIFA,
- (iii) Members of the Board of Directors of IFAB, including Secretary(CEO) of IFAB,
- (iv) representatives from all the 211 member associations of FIFA,
- (v) President of UEFA & President of FA,
- (vi) 50 players of last five World Cups (10 from each World Cup), preferably top players
- (vii) Immediate past President of FIFA and of UEFA,
- (viii) Director & Two senior Fuzzy Expert Professors of 'Fuzzy Training College' of FIFA,
- (ix) The Head of the "IT Department" of FIFA,
- (ix) President of World Futsal Association,
- (x) President of BSWW, and
- (xi) Three Personalities from global business sectors:- CEO(Tesla), CEO(Google), CEO(Amazon).

The total number of members T in the Parliament may exceed 300, but for making a sound and complete team of members in the Parliament it is required in order to meet true democracy and the FIFA Goal. All democratic decisions in FIFA must be initiated from FIFA Parliament, and the results of FIFA Parliament is to be forwarded to FIFA Council which will assist President of FIFA for final adoption or rejection as President is the supreme authority in FIFA. The FIFA Congress will be **no more** in existence.

Point(4)

- (a) Chairman of "FIFA Parliament": President of UEFA,
- (b) Vice-Chairman of "FIFA Parliament" : President of FA,
- (c) Secretary of "FIFA Parliament" : Secretary of IFAB,
- (d) Presiding Officer (for Voting in FIFA Parliament) : the Chief of IT Department of FIFA.

Point(5)

FIFA Council needs to be reformed. Its function is to assist the FIFA President and Vice Presidents. Regarding any issue where democratical decisions are required, the first body to consider it is the FIFA Parliament, no other body. The proposed **FIFA Council** will have only **1+7+1 = 9 (nine)** members :-

- (i) The 'Senior Vice President' of FIFA will act as the **President** of "FIFA Council".
- (ii) All Vice Presidents of FIFA and the Director of FIFA Fuzzy Training College will be the **Members**.

Point(6)

Once **"FIFA Constitution"** is drafted and officially adopted by FIFA by the existing practiced method, the solution of any erupted problems/issues will remain in-built with **FIFA Constitution**, for the very present issue as well as for any future problems in this century. Once the FIFA Constitution is adopted officially, the old system will become null & void. The **"FIFA Constitution"** may be reviewed every five years, or anytime if there is any emergency, but by the "FIFA Parliament".

Point(7)

Utmost care should be taken so that the newly drafted "**FIFA Constitution**" does not contradict the existing FIFA/IFAB norms/rules. If any contradiction happens, it should be resolved.

Point(8)

All important decisions should be passed and adopted officially by **FIFA Parliament** democratically. In case of need of voting for taking any big or important decisions for FIFA, **secret voting** needs to be conducted for taking the decisions, not open "raise hand" voting. All the Members of the Parliament will be the eligible voters. Corresponding to every agenda-item which needs voting, a separate voting is to be conducted depending upon the properties and characteristics of the agenda-item.

Point(9)

For Voting in **FIFA Parliament**, separate modern AI-based "FIFA Voting Machines" of three different types need to be used by each voter inside the "FIFA Parliament", so that total time required for voting and for immediate Result declaration can be done in maximum one minute of time, irrespective of the number of voters be large or small.

Details about the FIFA VOTING METHODS, about the design of FIFA VOTING MACHINES, and about "COUNSELING SESSIONS" for the voters by the Chief of IT Department of FIFA and by "**FIFA Fuzzy Training College**" (see [5]) are presented in the subsequent sections.

4. Introducing "FIFA Voting" Methods for Group Decision Making in the FIFA Parliament

Group decision making, is the choice problem which proceeds in a multiperson setting who are experts in the subjects of agenda under discussion. There is a group of individuals (decision makers, experts, ...) who provide their testimonies concerning an issue in question. These testimonies are assumed here to be individual preference relations over some set of option (alternatives, variants, ...). The problem is to find a solution, i.e. an alternative or a set of alternatives, from among the feasible ones, which best reflects the preferences of the group of individuals as a whole.

In general, in various practices in different organization world wide, there are several nature of "Voting Methods" for Group Decision Making. The "open mode - raise hand" method" of voting for group decision making is not considered in this section, although in most of the small size committees in several organizations or in industries the decisions are usually taken by 'open mode - raise hand method', not by **secret voting** method. One major demerit of 'open mode - raise hand method' is that the decision makers (voters) know who votes in favour (or against) of the agenda decision in advance exactly at real instant of time, and consequently the final decision may contain biasness. In this section, five Voting methods for Group Decision makings are proposed for FIFA which are for the first time developed and introduced in this work. These voting methods developed exclusively for FIFA are

completely different from any of the existing voting methods in practice in the world currently. The five appropriate methods proposed s are:-

- (1) **FIFA Multiple Voting Method**
- (2) **FIFA Weighted Multiple Voting Method**
- (3) **FIFA Fuzzy Voting Method**
- (4) **FIFA Weighted Fuzzy Voting Method, and**
- (5) **FIFA Intuitionistic Fuzzy Voting Method.**

All the above five FIFA voting methods are strictly "**secret-voting**" methods, not by "raising hands" openly, in every Group Decision Making in the FIFA Parliament. Whatever be the number of voters, any of the above five type of voting can be concluded in FIFA Parliament within around one minute of time, including the final result declaration and display of the voting.

In each of the above voting methods, decision is taken by the corresponding T number of Group Decision Makers (members of FIFA Parliament, see **Point(3)** of Section-3 above). There are two types of Majority that could be followed by FIFA, about which the FIFA Parliament will give permanent decisions, by one-time raise-hand voting. Out of the two types of Majority, one is called by "**Half-Majority**" and the other is called by "**Two-Third Majority**" (analogous to what followed in elections in democratically elected government countries like India, America, ...). Usually in FIFA parliament, voting may be needed for finding the best possible solution of the several categories of issues, out of which three important type of issues are presented below:-

No(i): Suppose that there is an agenda item A in the FIFA Parliament meeting under discussion now, and needs opinion of the T members of the parliament for a unique solution. Suppose that out of T members, 5 numbers (or 6 or 7 or 8 or many but maximum T number) of solution proposals are proposed for the agenda item A from 5 members of FIFA Parliament which are Solution-1 (S1), Solution-2 (S2), Solution-3 (S3), Solution-4 (S4) and Solution-5 (S5). The Chairman of the FIFA Parliament will then discuss pros-and-cons of all the five Solutions of A with the members, and then he has to choose the best one out of these five Solutions S1, S2, S3, S4 and S5. Quite naturally, the Chairman has to go for voting to find the solution democratically. In this voting the five Solutions S1, S2, S3, S4 and S5 are to be called by a special name "**Solution Candidates**" or simply by the name "**Candidate**". Out of the five Candidates, one Candidate will win finally by voting. And this solution will surely provide complete justice, fairness, un-biasness and full amount of satisfaction to the four permanent children-like family members of FIFA which are:

- (i) **Football Game,**
- (ii) **Football Fan,**
- (iii) **Football Science & Technology as a subject, and**
- (iv) **211 member associations of FIFA.**

No(ii): Suppose that there is an agenda item A in the FIFA Parliament meeting under discussion now, and needs opinion of the T members of the parliament for a unique solution. Consider an hypothetical example: suppose that one agenda item A today is: opening of 5 number of "FIFA Branches" in 5 different countries in the world which could never play FIFA World Cup and also there are few more pre-defined criteria. But the problem is

that there are 11 applications from 11 such countries, where in the first phase (i.e. in Phase-I) the FIFA's decision is to open in only 5 countries (and slowly slowly further expansion will be thought about by FIFA to open more branches in future).

Thus the problem at the hand of the Chairman of FIFA Parliament in today's meeting is "How to choose 5 countries out of 11 countries, as all the 11 applicant countries are eligible as per pre-defined criteria"

The 11 application countries (Solution Candidates i.e. Candidates) are C1, C2, C3, ..., C10, C11. The Chairman of the FIFA Parliament has to choose the most appropriate 5 countries out of these 11 countries. Quite naturally, the Chairman has to go for voting to find the solution democratically. In this voting, all the 11 countries are candidates and wait for votes from the voters to win. Thus in this voting, the 11 candidates are to be ranked according to the number of votes each has got from the T number of voters. Each voter will vote for only 5 candidates, not more than 5. However, if any voter cast his/her vote for less number of candidates, it is acceptable. Out of five FIFA voting methods as listed above, which voting method is applicable in today's voting is to be uniquely chosen by the Chairman of the FIFA Parliament. This is explained in details in the subsequent sections here.

Finally the top 5 ranked candidate of the vote-result will be selected by FIFA for opening FIFA Branches in Phase-I. And this solution will surely provide complete justice, fairness, un-biasness and full amount of satisfaction to the four permanent children-like family members of FIFA which are:

- (i) **Football Game,**
- (ii) **Football Fan,**
- (iii) **Football Science & Technology as a (i) subject,**
- (iv) **211 member associations of FIFA.**

No(iii): Suppose that there is an agenda item A in the FIFA Parliament meeting under discussion now, and needs opinion of the T members of the parliament for a unique solution of type "Accepted" or "Not Accepted", like "Passed" or "Declined", like "YES" or "NO". Consider an hypothetical example: suppose that one agenda item A today is: Need of opening of two positions of "Senior Vice-Presidents" in FIFA instead of 1 as per present policy.

Quite naturally, the Chairman has to go for voting to find the solution democratically. In this voting, there is only one candidate in the voting whose name is "Accepted". After voting either the candidate "Accepted" will win the election or will lose the election. Which method of voting is to be applied will be clear in the subsequent sections in this work. If the candidate "Accepted" wins today, then the agenda A is passed in today's meeting. Otherwise Not passed.

And this solution will surely provide complete justice, fairness, un-biasness and full amount of satisfaction to the four permanent children-like family members of FIFA which are:

- (i) **Football Game,**
- (ii) **Football Fan,**
- (iii) **Football Science & Technology as a subject, and**
- (iv) **211 member associations of FIFA.**

Similarly, there are many more categories of agenda-items where voting is necessary for finding the most appropriate solution, using one unique FIFA Voting Method out of five methods listed above. The five type of FIFA voting methods introduced in this work is the first time proposed in any election/voting in the world. These five voting methods are highly meritorious and even can be implemented by the countries, organizations, universities, etc around the world in the high level Group Decision Making Process of their own systems.

The first four FIFA voting methods listed above are usually applicable for the following important purpose (Purpose-1):-

Purpose-1: To select most suitable n ($n = 1$ or more) number of candidates out of m contestant where $n < m$.

And the fifth FIFA voting method of the above list are introduced for the following two important purposes (Purpose-2 and Purpose-3):-

Purpose-2: To pass any "proposal" by the Group Decision Makers (i.e. FIFA Parliament members) democratically, paying full attention to fulfilment of the FIFA Goal.

Purpose-3: to pass a bill/agenda in a meeting by group decision making process in FIFA Parliament.

Out of the five FIFA voting methods listed above, the first two methods proposed above are crisp methods, not fuzzy methods or intuitionistic fuzzy method. These two methods are initiated for excellent understanding of the construction of the fuzzy voting methods and intuitionistic fuzzy voting methods for FIFA. However, for any important group decision making regarding any imprecise issues/problems, application of one of the fuzzy voting methods and the intuitionistic fuzzy voting methods is utmost desirable. Which one method is to be adopted for a given agenda-item depends upon the properties of the concerned agenda-item for which group decision making is to be done correctly and appropriately in FIFA Parliament. The Presiding Officer and the Director of Fuzzy Training College of FIFA may assist the Chairman of FIFA Parliament in choosing the appropriate voting method. Whatever be the voting method, the voting and result declaration in the Parliament will take around one minute only. All the five FIFA voting methods are strictly **secret-voting** methods, not by "raising hands method" in open mode environment.

4.1. Electronic Voting Machine (EVM) designed for 'FIFA Voting'

The FIFA voting machine in Multiple Voting Method is called by **Electronic Voting Machine (EVM)** of FIFA. It is a handy machine, looks like an Android Mobile Phone. Every voter will be given one EVM for casting his vote. Voting will go in parallel mode, i.e. every voter will cast his/her vote independently using his/her own EVM only, and within a pre-prescribed time range (usually maximum one minute). Obviously, the total number of EVM required for a voting process in the FIFA Parliament is equal to the total number of voters (i.e. parliament members) present. If any EVM is non-functional, quite obviously the Presiding Officer (who conducts the voting) will replace it by a fresh set of EVM.

The EVM will display a voter a page on its monitor

containing the names(titles) of the m Proposed Solutions on the monitor in a row. Minimum value of m is 1. EVM has good amount of memory in it. Just below each name of the Solution Proposal S on a displayed page, there is a corresponding button for casting vote to this Solution Proposal. Thus for the m number of contestant $S_1, S_2, S_3, \dots, S_m$, there are m number of corresponding m buttons. The contestants could be several alternative solutions corresponding to a given agenda problem. To cast vote in favour of a contestant S , just press the button below its name(title); and do it for maximum n number of contestants of your own choice. The EVM will not accept the case of more than n pressed buttons and will accept by default the first n buttons pressed. Thus a voter can give his votes to a maximum n number of contestants only.

For a single agendum, there could be m number of contestants $S_1, S_2, S_3, \dots, S_m$, and a voter has the right to vote for any k number of contestants where k less than or equal to n too. As mentioned above, by “voters” we mean T number of Group Decision Makers (members of FIFA Parliament).

Example (purely hypothetical)

Suppose that FIFA needs to select 4 Solution proposals corresponding to the issue P out of 6 solution proposals S_1, S_2, S_3, S_4, S_5 and S_6 available in hand (i.e. proposed by 6 members of FIFA Parliament). Throughout in this work, the phrase “Solution Proposal” has been synonymously used with the words: Candidate Solution or Candidate or contest-ants or Alternatives, for casting votes to them by the decision makers. There are T numbers of Group Decision Makers (voters) present today in the FIFA Parliament.

The Voting page on the monitor of EVM could be as below:

Name: S1	Name: S2	Name: S3	Name: S4	Name: S5	Name: S6
Solution Proposal Candidate e for P	Solution Proposal Candidate e for P	Solution Proposal Candidate e for P	Solution Proposal Candidate e for P	Solution Proposal Candidate e for P	Solution Proposal Candidate e for P

with one button below each contestant's name as shown below (button **E** stands for ENTER):



Thus, the EVM machine for this type of FIFA election will look as below:

Name: S1	Name: S2	Name: S3	Name: S4	Name: S5	Name: S6
Solution Proposal Candidate for P	Solution Proposal Candidate for P	Solution Proposal Candidate for P	Solution Proposal Candidate for P	Solution Proposal Candidate for P	Solution Proposal Candidate for P
					

Figure 4.1. Electronic Voting Machine (EVM)

It seems apparently that for every selection activity, a new EVM machine is to be bought because of the fact that each time the number of Proposed Solutions and/or number of requirements will change. But the situation actually is not so. Because the EVM machine is to be developed in a dynamic hardware architecture which will completely support the corresponding EVM software to be easily customized dynamically from the user's end to suit the selection under consideration, at real time requirement always.

4.1.1. Method of casting votes in EVM by a voter:-

In this example, a voter can press only 4 buttons at most in selection process, out of 6 recently developed solution proposals S_1, S_2, S_3, S_4, S_5 and S_6 . In case he press 5 buttons (i.e. more than 4), immediately there will be a warning sound and the EVM will not accept the 5th choice of the voter. The voters will cast votes seating in their own seats, every voter will be given one EVM as already mentioned earlier. All the T members of the FIFA Parliament can complete their cast of votes within few seconds.

4.1.2. CRDM Machine for Counting and Display of Results of a FIFA Voting

The machine used for Counting and Display of Results of a FIFA Voting is called by **CRDM Machine** (see Figure 4.2). The word CRDM stands for the phrase “Count & Result Display Machine”. The CRDM and all the three types of FIFA voting machines (other two are introduced in subsequent subsections here) are battery-operated. At the end of the voting, counting will be done by the corresponding software called by EVM software (other two software: FEVM software and IFEVM software are introduced in the subsequent subsections) of the CRDM machine and will take about 1-2 seconds of time for counting, ranking and then to declare the final results of the selection. In any FIFA voting, there will be requirement of only one CRDM and meant only for the Presiding Officer, not for the voters.

The CRDM has a good amount of memory. In the CRDM machine, there are eleven buttons and one Display Unit. Besides the Display Unit in the CRDM, LED display is also available on the big screen hanged on the wall inside the Parliament hall of FIFA. The eleven(11) buttons are the following:-

- (1) ON button
- (2) OFF button
- (3) YES button, to answer ‘Yes’ by voter
- (4) NO button, to answer ‘No’ by voter
- (5) GEN button (used only for any general traditional type of voting)
- (6) FUZZY button (used only for any fuzzy voting)
- (7) IF button (used only for any intuitionistic fuzzy voting)
- (8) ACTIVATE button, to activate all the voting machines
- (9) DE-ACTIVATE button, to de-activate all the EVM voting machines, and
- (10) COUNT & DISPLAY button (to display the final results).
- (11) PRINT button, to take the printout of the final results stored in memory.

In a voting, there will be requirement of only one CRDM with the Presiding Officer (the person conducting the voting) and of many voting machines (EVMs or FEVMs or IFEVMs) depending upon the type of voting to be conducted. Obviously, the number of voting machines required will be equal to the number of voters present today in the FIFA Parliament. The CRDM machine will not be given to the voters, it is only with the Presiding Officer who conducts vote in the FIFA Parliament.

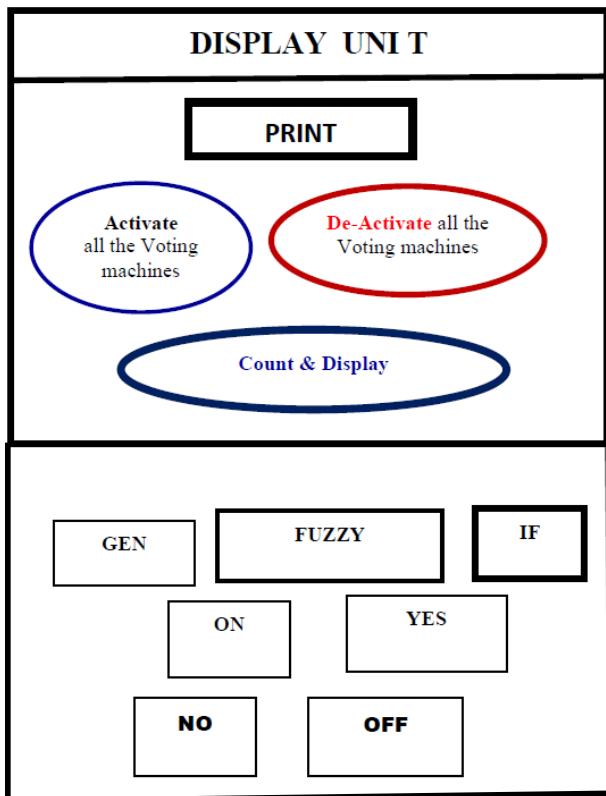


Figure 4.2. CRDM Machine (common for all type of Voting)

The LED display of results is done at two places:-

- (i) one on a separate big screen hanged on the wall inside the Parliament hall, so that every voter can see the results, and
- (ii) the other on the CRDM machine's Display Panel on the screen, typically using LCD (Liquid Crystal Display) technology with an LED backlight.

Results are not shown on the EVMs/FEVMs/IFEVMs machines, there is no such scope in the design of EVMs / FEVMs / IFEVMs machines. During the 1-2 seconds time of counting, nothing will be displayed on the big screen or on the CRDM machine.

The Presiding Officer (the person who conducts the voting) will have the following functions to conduct the voting:-

- (i) he activates his own CRDM by pressing the ON button.
- (ii) the very first important job of the Presiding Officer is to press the GEN button or FUZZY button or IF button, depending upon the type of voting to be conducted in this FIFA session.
- (iii) Once he press one of the three buttons GEN, FUZZY and IF, immediately a message will be displayed on CRDM screen : Are you yourself

aware about the type of the FIFA voting method chosen for this particular voting? If yes, then press YES button; otherwise press NO button. If NO button is pressed, then again one of the three buttons GEN, FUZZY and IF is to be pressed correctly, and so on.

- (iv) he distributes voting machines to the voters (one for every voter present).
- (v) next he Activates all the voting machines by pressing the "Activate" button of his CRDM, and announces the voters to start voting. It is expected that within few seconds of time, each voter can cast his own vote using his own EVM.
- (vi) next, after few seconds, he announces that the casting session of votes is over now.
- (vii) next he deactivates all the voting machines of the voters by pressing the "DE-Activate" button of his CRDM.
- (viii) next he presses the "Count & Display" button of his CRDM. The display of results will happen immediately at two places:-
 - (a) one on a separate big screen hanged inside the polling hall, so that every voter can see the results, and
 - (b) the other on the CRDM machine's display panel on the screen, typically using LCD (Liquid Crystal Display) technology with an LED backlight.
- (ix) the voters can see the results displayed on the big screen on the Parliament hall wall. However, the Presiding Officer can see the results in his "Display Unit" of his CRDM, as well as on the big screen both.
- (x) Once the voting, counting and result display jobs are over, the Presiding officer press the button OFF to end this session. But, immediately a message will be displayed on CRDM screen: Are you sure about the end of this voting session? If yes, then press YES button; otherwise press NO button. If NO button is pressed, then by de-default the CRDM remains status quo.
- (xi) As the results remain stored in the memory of the CRDM machine, the Printout of the results can be taken any-time after the end of voting by pressing the PRINT button of the CRDM machine by the Presiding Officer.

This CRDM machine is the common machine for executing any of the five type of FIFA voting (mentioned earlier in the list). Whatever be the voting method, CRDM will always use the corresponding software using its own brain. For General traditional type of voting, CRDM will use GEN software; for fuzzy voting, CRDM will use FEVM software; and for intuitionistic fuzzy voting, CRDM will use IFEVM software, by default. However, it is necessary to note that this important prior decision is to be taken by the Presiding Officer (who conducts the FIFA voting) before the commencement of the voting. However, the FIFA voting machines for voters are different for different types of voting methods. For general traditional type of voting, the voters will use EVM machines; for fuzzy voting, voters will use FEVM machines; and for intuitionistic fuzzy voting, voters will use IFEVM machines.

Several sessions of voting can be done using the same CRDM machine. Each time CRDM is to be restarted by the Presiding Officer before the beginning of every voting, even if there are more than one voting needs to be held on the same day in a single meeting in the FIFA Parliament.

4.1.3 Cost of CRDM Machine and EVM Machine in the market

Cost of the CRDM machine and of an EVM machine will be very low and will be much less than the cost of a mobile phone. It is an one time investment by FIFA. The CRDM machine and all types of FIFA voting machines may be made by a good electronics company.

4.2. Weighted Multiple Voting Method of FIFA for selecting n number of Proposed Solutions out of m number ($n \leq m$)

For the sake of completeness of the literature on FIFA Voting, the author presents in this section the Weighted Multiple Voting Method. FIFA initially need not go for this type of voting until and unless the FIFA world gets aware of the common FIFA Voting methods. Thus this method may be kept on hold initially for one or more decades.

Suppose that there are m number of proposed solutions $S_1, S_2, S_3, \dots, S_m$ in a selection method by FIFA, out of which most suitable $n (< m)$ number of proposed solutions are to be selected by the T number of Members of FIFA Parliament present today in the meeting. In Weighted Multiple Voting Method, an Weight (w) is pre-fixed by FIFA Authority with each of the solution proposals $S_1, S_2, S_3, \dots, S_m$ respectively. Thus for m number of proposed solutions $S_1, S_2, S_3, \dots, S_m$, there will be m number of weights: $w_1, w_2, w_3, \dots, w_{m-1}, w_m$. In Weighted Multiple Voting Method, voting is done by the voters exactly as done in the Multiple Voting Method explained above, and using the same FIFA voting machine EVM.

Only difference is that, ranking is made according to the weighted scores of the contestants, not on the basis of total votes got by each candidate. (it is mentioned earlier that several alternative solutions proposed by different members of the FIFA Parliament is called contestants or candidates in this work throughout). The weighted scores is defined as below.

4.2.1. Weighted Multiple Score

Suppose that the m number of proposed solutions $S_1, S_2, S_3, \dots, S_{m-1}, S_m$ have their respective weights $w_1, w_2, w_3, \dots, w_{m-1}, w_m$, and the respective individual total votes obtained in the FIFA Parliament are $s_1, s_2, s_3, \dots, s_{m-1}, s_m$,

The Weighted Multiple Score of the candidate X_i is denoted by $S(X_i) = S_i$, and is computed using the formula $S_i = s_i w_i$.

Now all the m Solution candidates are ranked according to the m number of weighted multiple scores. For this, the weighted multiple scores S_i ($i = 1, 2, 3, \dots, m$) are now arranged in descending order. The candidate with maximum values of weighted multiple score is the topper and so on. The FIFA Parliament Authority selects the best n Solution candidates on the basis of weighted multiple

score. In Multiple Voting Method the word 'multiple' does not mean 'all of m', but means 1 or more than 1 (maximum n).

4.2.2. Knowledge of 'Multiple Voting' by the voters?

In the research work [5], which is regarding an excellent preparation method for World Cup 2030 (and for all future World Cups), it is proposed in sufficient length that FIFA must have a superb **Fuzzy Training College** to train the Intelligent Robot Referees, human referees, FIFA Officials, IFAB Officials, T number of members of the FIFA Parliament, the interested players and interested representatives from the 211 FIFA countries (who are not in the count T).

Just one or two sessions of counseling about the Multiple Voting Method using EVM for this type of decision making need to be provided by the Facilitator (Presiding Officer) and the Director of **Fuzzy Training College** to the voters, before the start of the voting. Hopefully, that will be sufficient. The Facilitator may do it by a series of online counselling too. Advantage is that the online counselling sessions may be well attended by large number of FIFA Fans too, sitting at their respective own stations.

4.3. Fuzzy Voting Method of FIFA for selecting n number of best Solutions out of m number ($n \leq m$) Solution Proposals

It is mentioned earlier that throughout in this work, the phrase "Solution Proposal" has been synonymously used with the words: Candidate Solution or Candidate or contestants or Alternatives, for casting votes to them by the decision makers (i.e. Parliament members of FIFA). Like Multiple Voting Method, Fuzzy Voting Method is also a kind of secret voting method for the selection of best Solution candidates out of many.

The unique advantage of FIFA Fuzzy Voting Method over FIFA Multiple Voting Method is that a voter in the FIFA Parliament cast his votes to each and every Solution candidate out of all the m number of proposed solutions contestants $S_1, S_2, S_3, \dots, S_m$, but for this he pre-decides ranking of all of them by his own intellectual judgment. He cast his votes by his own intellectual decision in terms of membership values in the interval [0,6]. Obviously the ranking differs from voter to voter. Consequently, the membership values too differs from voter to voter. But the ranking by the voters and the membership values decided by each voter are completely secret. Confidential ranking made in mind by a voter may be excellent or very good or good or not-good. But after integration of all the rankings done by the T number of Group Decision Makers, the final resultant ranking comes out to be most appropriate, most correct for FIFA and thus FIFA Goal can be easily met. Because all of T number of Group Decision Makers must accept it to be a democratically made "best ranking" by their best intellectual judgements. Out of m Solution candidates ranked finally, the top n Solution candidates are selected and the rest (m-n) Solution candidates are kept on hold for future requirement, if any by FIFA.

In this method, a voter will cast his votes to all the m

number of contestant Solution candidates imposing membership values. The best candidate (according to his own personal choice) he might offer the maximum membership value in the interval [0,6] by his own intellectual decision, and this could be 1 or .99 or .98 or any high value of his own decision. The membership value signifies the amount of choice of the voter by his best possible judgment for selecting the corresponding Solution S_i ($i = 1, 2, 3, \dots, m$). The voting machine used in FIFA Fuzzy Voting Method is called by Fuzzy Electronic Voting Machine (FEVM) of FIFA described below here.

4.3.1. How to Enter Membership Values by Voters: Three Rules

A voter, while entering membership values for all the m number of proposed solutions candidates $S_1, S_2, S_3, \dots, S_m$ using FEVM, must follow the three Rules as stated below:

Rule-1

In FIFA Fuzzy Voting Method, membership values of at most two decimal places are allowed. Membership values of more than two decimal places are not valid. Also, a membership value say .83 should not be pressed for 0.83 but .83 only, starting with decimal button B (see Figure 4.3). For example, .79, .92, 1, .40, 0, .02 etc are the valid membership values and .935, .800, 0.42, .870, 1.0, .036, 0.0, 0.00, .000, etc are invalid membership values in FIFA Fuzzy Voting Method. It is because of the reason that the Fuzzy Electronic Voting Machine (FEVM) of the Election procedure does not support any membership value which is of more than two decimal places.

The **Fuzzy Training College** of FIFA (see [5]) will give a 10-15 minutes counselling session about this inside the FIFA Parliament before all the members present, and ofcourse a series of online sessions will be offered in the previous week of the meeting.

Rule-2

Similarly, the membership value 1 should not be pressed as 1.0 or 1.00, but only 1. And the membership value 0 should not be pressed as 0.0 or 0.00, but only 0.

Rule-3

Another rule for voting is that: for a voter, a tie is not allowed by the FEVM, i.e. two membership values can not be equal. The ranking done by him is to be a strict ranking. The facility of choosing membership value upto two decimal places will help a voter to adhere to Rule-3 without any issue.

4.3.2. Why Only a Maximum of Two Decimal Places?

If desired by FIFA, a modified FEVM may be developed by the companies to support 3-decimal places or 4-decimal places, ... so on, which is not much significant and hence not necessary in conducting Fuzzy Selection of n proposed solutions out of m alternatives. Therefore this option is not considered here.

In Multiple Voting Method, a voter cast many votes not exceeding the number n of Proposed Solutions n (i.e. n number of votes or less) out of m ($>n$) number of options and ranking of m number of proposed solutions happens after the declaration of results. Because, in Multiple Voting Method a voter can not cast more than n votes, and the word 'multiple' does not mean 'all of m ', but means 1

or more than 1 not exceeding n . In contrast, in Fuzzy Voting Method, every voter does ranking of all the m Proposed Solutions by his own mind before casting votes with membership value for each proposed solutions. Consequently, in Fuzzy Voting Method the voters enjoy a better option, better personal freedom, more amount of democracy because he cast his votes to all the m number of contestant Proposed Solutions. This is the beauty of the FIFA Fuzzy Voting Method. This is the strength of the FIFA Fuzzy Voting Method in terms of democracy in T number of intelligent Group Decision Makers. This is the breaking philosophy of Fuzzy selection in pursuance of guaranteed score of FIFA GOAL.

4.3.3. About Fuzzy Electronic Voting Machine (FEVM) of FIFA

The FIFA voting machine used in Fuzzy Voting Method is called by **Fuzzy Electronic Voting Machine (FEVM)**. It is a handy machine, looks like an Android Mobile Phone. Every voter will be given one FEVM for casting his vote. Voting will go in parallel mode, i.e. every voter will cast his vote independently using his own FEVM only. Obviously, the total number of FEVM required for a voting process is equal to the total number of voters present in the FIFA Parliament in today's meeting. If any FEVM is non-functional, quite obviously the Presiding Officer (who conducts the voting) will replace it by a fresh set of FEVM.

The Fuzzy Electronic Voting Machine (FEVM) when activated by the CRDM machine will display a voter a page on its monitor containing the names(titles) of the m Proposed Solutions on the monitor in a row. FEVM has good amount of memory in it. Just below each name of the Proposed Solution S on a displayed page, there is a corresponding button for casting vote to this Solution. Thus for the m number of contestant Proposed Solutions $S_1, S_2, S_3, \dots, S_m$, there are m number of corresponding m buttons.

Example (purely hypothetical)

Consider the case of today's meeting in FIFA Parliament which has to select 4 Proposed Solutions out of 6 recently developed Proposed Solutions S_1, S_2, S_3, S_4, S_5 and S_6 . There are T numbers of members present today in the FIFA Parliament. The architecture of FEVM machine is explained below.

The Voting page on the monitor of FEVM could be as below:

Name: S1	Name: S2	Name: S3	Name: S4	Name: S5	Name: S6
Solution Proposal Candidate for P	Solution Proposal Candidate for P	Solution Proposal Candidate for P	Solution Proposal Candidate for P	Solution Proposal Candidate for P	Solution Proposal Candidate for P

with one button below each contestant's name as shown below (button E stands for ENTER):



and with a "Number Keyboard" having $10 + 1 = 11$ buttons.

For each of the ten number 0, 1, 2, 3, 4, 5, 6, 7, 8, 9,

there is one exclusive button, and there is an additional but-ton which is decimal point button called by “**Button B**” as shown in Figure 4.3 below. (For an analogous type of real number data-entry upto two decimal places, the fuzzy pocket machine proposed to FIFA for decision making on evaluation of all the FIFA football matches as introduced in the book [7] needs to be followed)

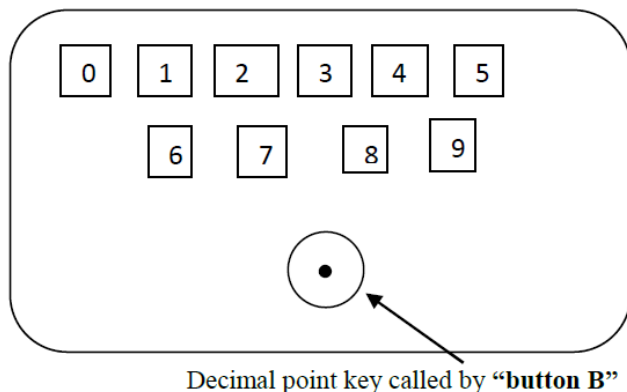


Figure 4.3. The button B for entering the character decimal (.)

The FEVM has good amount of memory in it. It seems apparently that for every future election in FIFA Parliament, a new FEVM machine is to be bought because the number of contestants or number of seats (vacancies) will change. But the situation actually is not so. Because the FEVM machine is to be developed in a dynamic hardware architecture which will completely support the corresponding FEVM software to be easily customized dynamically from the user's end to suit the election process under consideration, at real time requirement always.

Thus, the FEVM machine for this type of FIFA election will look as below:

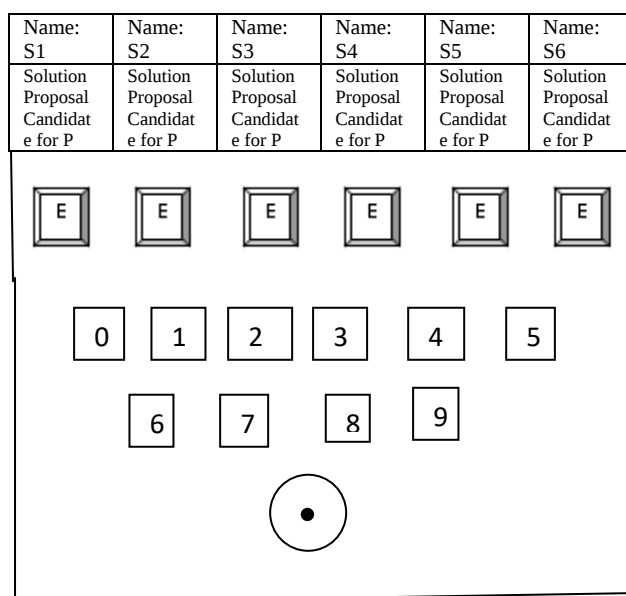


Figure 4.4. Fuzzy Electronic Voting Machine (FEVM)

For an analogous type of real number data-entry upto two decimal places, the **fuzzy pocket machine** proposed to FIFA in 2018 for decision making on evaluation of all the FIFA football matches introduced in the book [7] could be interesting.

4.3.4. Method of casting votes in FEVM by a voter in FIFA Parliament

In Fuzzy Voting Method, a voter (i.e. a member of the Group Decision Maker) casts his vote to all the m number of contestant Solution Proposals S1, S2, S3, ..., Sm, in this election. In case a voter does not vote for a candidate, the membership value for this candidate corresponding to this particular voter will be 0 by default.

Consider one Solution Proposal S. To cast vote to this Solution candidate S, the following steps are to be taken:-

Step-1: first of all press the button below the name of this fuzzy Solution Proposal.

Step-2: press the own-decided membership value using the “Number Key Board”. To put membership value 1, just press the button 1 and go for voting the next Solution candidate. Similarly, To put membership value 0, just press the button 0 and go for voting the next Solution candidate. To put a membership value, say .72, press three buttons in sequence: B button, 7 button and 2 button. Then, go for voting for the next Solution candidate. To put a membership value, say .9, press two buttons in sequence: B button and 9 button. Then, go for voting the next Solution Candidate. There is no ENTER button.

A voter has the right to vote any number of Solution Proposals less than or equal to m. But voting for less than m number of Solution Proposals by a voter is not desirable. In case a voter does not vote for a Solution candidate, the membership value for this candidate corresponding to this particular voter will be 0 by default. Once a voter completes his voting, he will leave the booth and the Facilitator (Presiding Officer) of execution of this Voting will e-submit this voter's votes to the Memory of the EVM. After that a fresh page is displayed on the monitor for the purpose of voting by the next voter. The same method is to be followed by the next voter, and in this way all the T voters (i.e. T number of members of the Group Decision Makers, assuming that all of T are physically present, could cast votes.

Nevertheless, let us consider a general real life case. Suppose that, out of T number of eligible voters, v numbers of voters were present physically to exercise their votes in a selection and the rest (T -v) number of voters did not make them physically present to cast their votes because of their personal issues or some other issues.

At the end of the selection activity (if held), the total amount of v number of membership values in favour of a Solution Proposal S out of v number of voters is termed as Fuzzy Score (s) of the “Solution candidate S” in this selection. The fuzzy score s of S surely satisfies the following inequality:

$$0 \leq s \leq v.$$

Thus for m the m number of Solution candidate, there will be m number of Fuzzy Scores, one score corresponding to each.

All these Fuzzy Scores are arranged in descending order. The Solution Proposal having the maximum amount of Fuzzy Score is the topper (most appropriate for FIFA) in this selection, and so on. The ranking of all the m Solution Proposals can easily be done looking at the descending order sequence.

At the end of the voting, counting will be done by the FEVM software and will take about 1-2 seconds of time for counting, ranking and then to declare the final results of the

selection activity. It is known to us that the Solution candidate getting highest number of total votes is the topper, and so on for making the rank. The machine used for Counting and Display of Results of a Voting is the same CRDM Machine (see Figure 4.2) as introduced earlier.

A voter will cast his votes to all the m Proposed Solutions in this selection in terms of membership value upto maxi-mum two decimal places. In case a voter tries to cast his vote to a contestant with membership value of more than two decimal places, it is unacceptable by the FEVM. Immediately there will be a warning sound but by default the FEVM will accept the value upto two decimal places by de-fault. On completion of his voting, the voter will leave the booth and then the Facilitator (Presiding officer) will store this page into the memory of FEVM. Immediately a fresh page will be displayed on the monitor so that the next voter can cast his votes. In this way, all the T members will complete their casting of votes. The Fuzzy Voting Method is a new selection system, highly updated and will play as the most relevant voting method in FIFA elections (and even applicable for the countries where Government is elected democratically, for United Nations, ECOSOC, UNSC,, and in different organizations including world universities).

4.3.5. CRDM Machine for Counting and Display of Results of a Voting

It is exactly same as presented earlier.

4.3.6. Weighted Fuzzy Voting Method for selecting n number of Proposed Solutions out of m number ($n \leq m$)

Suppose that there are m number of Solution Proposals $S_1, S_2, S_3, \dots, S_m$ in a selection process, out of which n ($< m$) number of Pro-posed Solutions are to be selected by the T number of Group Decision Makers of C . In Weighted Fuzzy Voting Method, an Weight (w) is prefixed by FIFA with a Solution Proposals exactly as done in Weighted Multi-ple Voting Method explained earlier. Thus, for the m number of Solution Proposals there will be m number of weights: $w_1, w_2, w_3, \dots, w_{m-1}, w_m$.

In Weighted Fuzzy Voting Method, voting is done by the voters exactly as done in the Fuzzy Voting Method explained earlier, and using the same voting machine FEVM.

Only difference is that, ranking is made according to the weighted fuzzy scores of Solution Proposals, not on the basis of simply fuzzy scores of them.

4.3.7. Weighted Fuzzy Score

Suppose that the m number of Solution Proposals $S_1, S_2, S_3, \dots, S_{m-1}, S_m$ have their respective weights $w_1, w_2, w_3, \dots, w_{m-1}, w_m$, and respective Fuzzy Scores $s_1, s_2, s_3, \dots, s_{m-1}, s_m$,

If the weighted Fuzzy Score of the candidate X_i is $S(X_i) = S_i$, then it is computed using the formula $S_i = siw_i$.

Now all the m Proposed Solutions are ranked according to the m number of weighted fuzzy scores. For this, these weighted fuzzy scores S_i ($i = 1, 2, 3, \dots, m$) now arranged in descending order. The Solution Proposal with maximum value of weighted fuzzy score is the topper (most appropriate for FIFA) and so on. Then FIFA selects the best n candidates on the basis of weighted fuzzy scores.

4.3.8. Resolving “Tie” situations between/among Scores

If there happens only one tie situation (although the situation is very very rare one to happen in reality) between two(2) Solution Proposals according to their weighted fuzzy scores, then to select the best n Solution Proposals consider the following two cases:-

Case-1: Suppose that tie happens after best $(n-1)$ Proposed Solutions, while selecting the n th Proposed Solutions. Then the following rules may be adopted to resolve the issue:-

Rule-1: select the Proposed Solutions for which the developer has more experience in completing similar kind of Pro-posed Solutions compared to the other one.

Rule-2: If one and only one (not both) of the developers of these two Proposed Solutions is woman, then select this Proposed Solutions.

Rule-3: If both are women, select the Proposed Solutions for which the developer has more experience in completing similar kind of Proposed Solutions compared to the other one. If both have same number of experience, then consider their ages and the senior woman's Proposed Solutions is to be considered selected.

Case-2: If tie happens to elect the i th Proposed Solutions where $i < n$.

Then the following rule may be adopted by FIFA to resolve the issue:-

Rule-1: select both the Pro-posed Solutions

Rule-2: the n th Proposed Solutions (as per weighted-scores) is not to be selected.

If there happens only two number of tie situations (although this situation is an extremely rare situation to happen in reality), each between two Pro-posed Solutions i.e. one tie is between two(2) Proposed Solutions according to their weighted fuzzy scores, and the another tie is also between another pair of Proposed Solutions according to their weighted fuzzy scores, then to select the best (most appropriate) n number of Proposed Solutions the method can be generalized. Or if there happens a tie between three or more Proposed Solutions according to their weighted fuzzy scores, then to select the best n candidates.

4.3.9. Knowledge of ‘Fuzzy Theory’ by the Voters?

No. Prior knowledge is not required. However a knowledge of preliminaries about Set Theory is required.

Although the Voters need not require to have prior Knowledge of ‘Fuzzy Theory’, but few sessions of counseling about the significance of membership value and Fuzzy Voting Method in this election need to be provided by the Facilitator (Presiding Officer) and the FIFA Fuzzy Training College to its T number of members before the start of the election. Hopefully, that will be sufficient. Otherwise the Facilitator may do it by online counselling. Advantage is that the sessions of the online counselling may be well attended if desired even by the Football Fans sitting at their respective own stations.

4.4. FIFA Intuitionistic Fuzzy Voting Method

In this section an intuitionistic fuzzy voting method is

proposed and it is also for secret voting of strictly confidential nature. This type of work on decision making by using the theory of intuitionistic fuzzy sets were earlier done by several authors. It is expected that this new method will also be an well acceptable method in different kind of group decision making in wide varieties of Decision Making Problems besides FIFA, viz. in universities, colleges, in industries, in companies, so on with little changes so as to fit the organization. Like group decision making using fuzzy method, this method too can be well used in selection process, in election process, in estimation of the imprecise term "Quality" of a FIFA product or of a FIFA development D which needs evaluation by experts, in soft-estimation of the amount of quality in the form of a real number index for any kind of Solution development(s) of any fields viz. health of sports persons, Football education, medicine in sports, unemployment etc, to pass a bill/agenda in any meeting of FIFA Parliament by the members/experts on an erupted issue, or to decide on any new "Proposal" democratically, paying full satisfaction and justice, to select best out of m contestant where $n < m$, etc. etc. and always scoring FIFA Goal.

The four voting methods introduced above are well applicable to select n Proposed Solutions out of m ($n < m$) Pro-posed Solutions. Now consider a decision making case by FIFA Parliament about a Proposal (or about a proposed Solution or about addition of values to FIFA or even about donation of funds by a very rich football lover of the world or even a Welfare Proposal from the Ministry level of any FIFA country) and the decision is to be taken on whether "To Accept" or "NOT to Accept" it.

For obtaining a resultant decision on this issue by FIFA, another type excellent secret-ballot FIFA voting method called by Intuitionistic Fuzzy Voting Method is well applicable and utmost desirable in FIFA. In this method, instead of Fuzzy Theory of Zadeh [8], the Intuitionistic Fuzzy concept of Atanassov [6,9] is used. In such a Group Decision Making in FIFA Parliament, Fuzzy FIFA Voting Method can not be applied. Intuitionistic fuzzy approach can translate the YES / NO / NOT-SURE human thoughts into quantitative data in a much better way for many such imprecise problems if arises in FIFA. Because FIFA has to score FIFA Goal in each and every moment of its activities. The Intuitionistic Fuzzy Voting Method is one beautiful instance for understanding the power and beauty of application of Intuitionistic Fuzzy Set Theory of Atanassov [6,9]. In order to take decision by FIFA on such a Proposal while passing a bill/Agenda in the FIFA Parliament meeting, secret-ballot Intuitionistic Fuzzy Voting method is to be adopted by FIFA for best possible solution retaining a guarantee of scoring FIFA Goal. To find a solution in such cases, Fuzzy Voting method is not applicable, is not suitable.

4.4.1. Intuitionistic Fuzzy FIFA Voting Method in FIFA Parliament

To take any important "decision" DE about a single Proposed Solution S paying full satisfaction and justice to FIFA Goal, a new method is developed here using the philosophy of Atanassov's Intuitionistic Fuzzy Set Theory [6,9]. It is also a secret-voting method, not using the 'raising hand method'.

Consider a proposal DE about a single Proposed Solution S which needs to be passed by election in the FIFA Parliament. The final result is to be "Accepted" or "Not-Accepted". For getting a result, selection is to be conducted by the Facilitator by conducting a voting in the FIFA Parliament. Thus, in this voting, corresponding to the single Proposed Solution S, only one unreal contestant in this election whose name is "Mr.Accepted", none else. At the end of the election, either "Mr.Accepted" will win or he will lose. If he wins then the "decision" DE about the single Proposed Solution S will be accepted, otherwise the "decision" DE will not be accepted.

If he (Mr.Accepted) wants to win the election, he has to get majority of votes from T number of voters present today in the FIFA Parliament. But in this method voting style is different from the traditional voting style and also from the fuzzy voting style. It is developed here using the philosophy of Atanassov's Intuitionistic Fuzzy Set Theory [6,9].

Out of T number of voters (Group Decision Makers) in the FIFA Parliament present today for this particular single Proposed Solution S, each voter say Mr.V, will cast his vote in terms of membership value and hesitation value both, using a voter machine called by **Intuitionistic Fuzzy Electronic Voting Machine (IEFVM)**. Every voter may have some amount of hesitation while evaluation the Proposed Solution S. This hesitation may be nil or full. Consequently the hesitation amount will be in the interval [0,6].

Using IFEVM, a voter enters two data, the first one is for the membership value and the next one is for the hesitation value. He will enter two data $\langle \mu, h \rangle$ in the Intuitionistic Fuzzy Voting Machine, where the entry μ is for the membership value and the next entry h is for the hesitation value, in the sequence. It is known that in Atanassov theory [6,9], usually an intuitionistic fuzzy set is characterized by two independent decision makings, one for membership value $\mu(x)$ and the other for the non-membership value $\eta(x)$. The rest amount $h(x) = 1 - \{\mu(x) + \eta(x)\}$ is called by hesitation value of the decision maker. But in our proposed "Intuitionistic Fuzzy Voting method", we apply the independent duo "membership value" and "hesitation value", and the rest amount will be computed here as the "non-membership value".

Thus the rest amount $\eta(x)$ will be computed as

$$\eta(x) = 1 - \{\mu(x) + h(x)\} \text{ for each voter } x.$$

For the voter Mr.V, just prior to casting his vote, there could be four cases as mentioned below:-

Case(i):

The decision DE is well accepted by Mr.V in his mind, by his best possible intellectual judgment. He will enter two data $\langle 1, 0 \rangle$ in the Intuitionistic Fuzzy Voting Machine, where the entry 1 is for the membership value and the next entry 0 is for the hesitation value.

Case(ii):

The decision DE is rejected by Mr.V in his mind, by his best possible intellectual judgment. He will enter two data $\langle 0, 0 \rangle$ in the Intuitionistic Fuzzy Voting Machine, where the entry 0 is for the membership value and the next entry 0 is for the hesitation value.

Case(iii):

Mr.V has complete hesitation (100%) regarding the decision DE. Probably, he could not do evaluation of the

decision DE. He will enter two data $\langle 0, 1 \rangle$ in the Intuitionistic Fuzzy Voting Machine, where the entry 0 is for the membership value and the next entry 1 is for the hesitation value.

Case(iv):

Mr.V has some amount of hesitation in his mind by his best possible intellectual judgment. He neither can accept nor can reject the decision DE. He can partially accept it, because he can not fully accept it. He will enter two data $\langle \mu, h \rangle$ accordingly in the Intuitionistic Fuzzy Voting Machine, where the entry μ is for the membership value and the next entry h is for the hesitation value.

4.4.2. Four Types of Scores in Intuitionistic Fuzzy Election/Selection

Suppose that, out of T number of voters (i.e. the total number of members in FIFA Parliament), v numbers of voters were present physically to exercise their votes in an election and the rest $(T - v)$ number of voters did not make them physically present to cast their votes because of their personal issues or some other issues.

At the end of the election (if held), the total amount of v number of membership values out of v number of voters is termed as his (i.e. of Mr.Accepted) **Membership Intuitionistic Fuzzy Score (m)** in this election. His m Score surely satisfies the following inequality:

$$0 \leq m \leq v.$$

The total amount of v number of hesitation values is termed as his (of Mr.Accepted) **Hesitation Intuitionistic Fuzzy Score (h)** in this election. His h Score surely satisfies the following inequality:

$$0 \leq h \leq v.$$

And, total amount of v number of non-membership values is termed as his (of Mr.Accepted) **Non-Membership Intuitionistic Fuzzy Score (η)** in this election. His η Score surely satisfies the following inequality:

$$0 \leq \eta \leq v.$$

It also follows from the Atanassov's Constraint [6,9] that, the equality $m + h + \eta = v$ will be satisfied. The value v is thus equal to the **Total Intuitionistic Fuzzy Score** in this selection/election.

4.4.3. About Intuitionistic Fuzzy Electronic Voting Machine (IFEVM) of FIFA

The voting machine used in Intuitionistic Fuzzy Voting Method is called by **Intuitionistic Fuzzy Electronic Voting Machine (IFEVM)**. It is a handy machine, looks like an Android Mobile Phone. Every voter will be given one IFEVM for casting his vote. Voting will go in parallel mode, i.e. every voter will cast his vote independently using his own IFEVM only. Obviously, the total number of IFEVM required for a voting process is equal to the total number of voters present. If any IFEVM is non-functional, quite obviously the Presiding Officer (who conducts the voting) will replace it by a fresh set of IFEVM.

The IFEVM has two buttons, below the displayed name **Mr.Accepted** and displayed decision statement, shown as **m-Enter** and **h-Enter**. The m-Enter key is pressed first of all while casting vote to enter the membership value. Next the h-Enter key is pressed to enter the hesitation value. The Intuitionistic Fuzzy Electronic Voting Machine

(IFEVM) for this selection/election in FIFA will look as shown in Figure 4.5 above.

The "Number Keyboard" has $10 + 1 = 11$ buttons.

For each of the ten number 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, there is one exclusive button, and there is an additional button which is decimal point button called by "**Button B**" as shown in the figure (For an analogous type of real number data-entry upto two decimal places, the fuzzy pocket machine proposed to FIFA in 2018 for decision in evaluation of the football matches as introduced in [7] could be interesting for giving a perusal):-

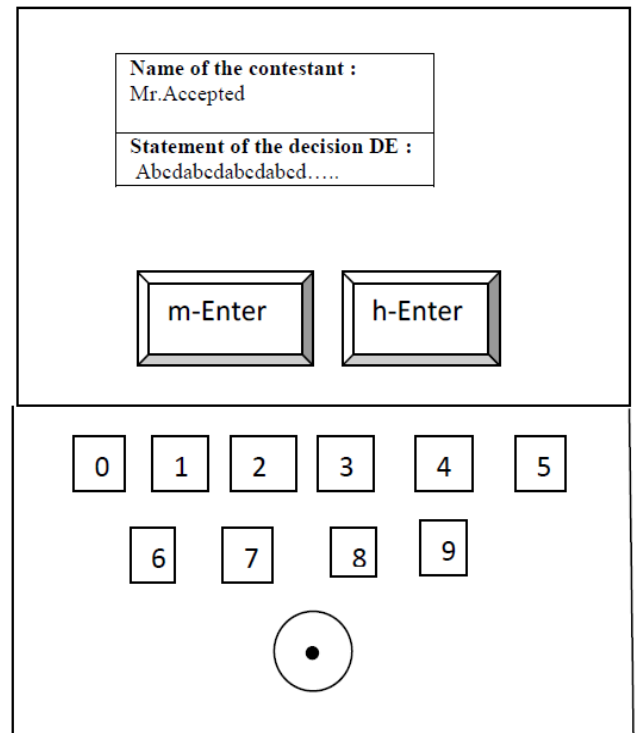


Figure 4.5. Intuitionistic Fuzzy Electronic Voting Machine (IFEVM)

The IFEVM has good amount of memory in it. It seems apparently that for every election, a new IFEVM machine is to be bought because the number of contestants or number of seats (vacancies) will change. But the situation actually is not so. Because the IFEVM machine is to be developed in a dynamic hardware architecture which will completely support the corresponding IFEVM software to be easily customized dynamically from the user's end to suit any election under consideration, at real time requirement always.

At the end of the voting, counting will be done by the IFEVM software and will take about 1-2 seconds of time for counting, ranking and then to declare the final results of the selection activity. The machine used for Counting and Display of Results of a Voting is the same CRDM Machine (see Figure 4.2) as introduced earlier.

4.4.4. CRDM Machine for Counting and Display of Results of a Voting

It is exactly same as presented earlier.

4.4.5. How to know whether 'Mr.Accepted' (or Mr.YES) has won the selection/election or not?

Suppose that, out of total T voters of FIFA Parliament, v numbers of voters were present physically to exercise

their votes and the rest (T-v) number of voters did not make them physically present to cast their votes because of their personal issues or some other issues. To win the election by him (i.e. by Mr.Accepted), he must gain the majority after the counting is over by the machine IFEVM. On case to case basis, the FIFA/IFAB pre-decides to implement one policy out of the “Half-Majority” policy and “Two-Third Majority” policy in the corresponding election for declaration of the final results.

4.4.6. If “Half-Majority” Policy be Adopted by FIFA

In the case of “Half-Majority” policy if adopted by FIFA, the initial mandatory requirement is that $v \geq T/2$ for going for the concerned voting today. Otherwise, this election will be declared as postponed to some other suitable dates by the corresponding Presiding Officer.

Suppose that the initial mandatory requirement condition $v \geq T/2$ is fulfilled and therefore the election is conducted. Then, to win the election by the candidate **Mr.Accepted**, his score-values must satisfy the following two conditions:

- (i) $m > v/2$ and
- (ii) $\eta > h$

Justification:

In “Half-Majority” policy, to win the election by him (by Mr.Accepted), “Total of membership values” must be greater than half of the “Total Intuitionistic Fuzzy Score” where v number of voters exercised their votes in today’s election.

i.e. we need the condition $m > v/2$ to be satisfied, which is the condition(i).

Besides that, the hesitation values should not be high in accumulation. Consequently, Hesitation Intuitionistic Fuzzy Score (h) must be less than the Non-Membership Intuitionistic Fuzzy Score (η). Hence the condition(ii) is necessary.

And then, If both the conditions are satisfied, it will mean that he (Mr.Accepted) has won the FIFA election in today’s voting.

Otherwise, he (i.e. Mr.Accepted) will lose the election and consequently the Chairman of the FIFA Parliament will reject the agenda-item A declaring as “Rejected”.

If condition(i) is satisfied but not the condition(ii), then an acceptance/rejection of this decision DE will be finalized by FIFA.

4.4.7. If “Two-Third Majority” Policy be Adopted by FIFA

In the case of “Two-Third Majority” policy adopted, the initial mandatory requirement is that $v \geq 2T/3$ for going for the concerned election. Otherwise, this election will be declared as postponed to some other suitable dates by the corresponding Facilitator (Presiding Officer). Suppose that the initial mandatory requirement condition $v \geq 2T/3$ is fulfilled and therefore the election is conducted.

Then, to win the election by Mr.Accepted, his score-values must satisfy the following two conditions:

- (iii) $m > 2v/3$ and
- (iv) $\eta > h$

Justification:

In “Two-Third Majority” policy, to win the election by

him (by Mr.Accepted), “Total of membership values” must be greater than two-third of the “Total Intuitionistic Fuzzy Score” where v number of voters exercised their votes in today’s election.

i.e. we need the condition $m > 2v/3$ to be satisfied, which is the condition(i).

Besides that, the hesitation values should not be high in accumulation. Consequently, Hesitation Intuitionistic Fuzzy Score (h) must be less than the Non-Membership Intuitionistic Fuzzy Score (η). Hence the condition(ii) is necessary.

And then, If both the conditions are satisfied, it will mean that he (Mr.Accepted) has won the election, and hence the agenda item A is passed.

Otherwise, he (Mr.Accepted) will lose the election and hence the agenda item A is NOT passed.

If condition(i) is satisfied but not the condition(ii), then an acceptance/rejection of this decision DE (agenda item A) will be finalized by FIFA President, not by the Voters.

4.4.8. How to enter membership values and hesitation values in IFEVM by a voter : Rules

A voter, while entering membership value and hesitation value for the contestant “Mr.Accepted” using IFEVM, must follow the following two Rules:

Rule-1

In Intuitionistic Fuzzy Voting Method, each of membership value and hesitation value of at most two decimal places are allowed. Membership values and hesitation values of more than two decimal placed are not valid. Also, a member-ship value say .83 should not be pressed for 0.83 but .83 only, starting with decimal button B. For example, .79, .92, 1, .40, 0, .02 etc are the valid membership values and .935, .800, 0.42, .870, 1.0, .036, 0.0, 0.00, .000, etc are invalid membership values in Intuitionistic Fuzzy Voting Method. It is because of the reason that the Intuitionistic Fuzzy Electronic Voting Machine (IFEVM) of the Election procedure does not support membership values which is of more than two decimal places. The same rule is applicable while entering hesitation values two.

Rule-2

Similarly the membership value 1 should not be pressed as 1.0 or 1.00, but only 1. And the membership value 0 should not be pressed as 0.0 or 0.00, but only 0. Same rule is applicable for hesitation value.

4.4.9. Knowledge of ‘Intuitionistic Fuzzy Theory’ by the Voters?

Prior knowledge of Set Theory is required. And then, just few sessions of counseling by **Fuzzy Training College** about the significance of membership value, hesitation value and about the Intuitionistic Fuzzy Voting Method in this election need to be provided to the members of FIFA Parliament.. He may do it by online counselling too, one week prior to the meeting. Advantage is that the online counselling sessions may be well attended if desired by the Football fans too, sitting at their respective own stations.

5. Counseling Sessions for the Members of FIFA Parliament

For many of the agenda, there could be the necessity of taking final decision in the FIFA Parliament by one of the five FIFA Voting Methods (Secret Voting method as proposed in this work, strictly avoiding “Raise Hand” method of voting). There are three types of FIFA Voting Machines which are: EVM, FEVM and IFEVM. Voters in the FIFA Parliament will be provided machine by the Presiding Officer according to the unique applicable method which is very simple as mentioned earlier. The Presiding Officer and the Director or one senior Professor of the **FIFA Fuzzy Training College** (see [5]) will conduct a Counseling session of 10-15 minutes duration for the voters inside the FIFA Parliament Hall prior to the commencement of Voting. However, this duo Experts may also provide open On-line Counseling one week before the meeting date, which will facilitate even the world fans or any football lover of the world to become aware of FIFA Voting machines sitting at their own stations. During Online Counseling, the duo Experts may take few classes on basics of Fuzzy Theory of Zadeh (see [8] and [7]) and on Intuitionistic Fuzzy Theory of Atanassov (see [6,5,9,10]).

6. No “Reverse Democracy” in this proposed Fundamental Reform FIFA

Present structure of FIFA is very good, and all the FIFA Officials have been working very nicely being in this structure for several decades, but surely the present structure is not Excellent for the four children-like family members of FIFA which are : Football Game, Football Fan, Football Science & Technology as a subject, and 211 member associations. There is no practice of “Reverse Democracy” in this proposed Fundamental Reform. To understand the “Reverse Democracy”, consider a simple example presented below:-

Consider our United Nations (UN). For an instance, corresponding to some extremely important hypothetical agenda which is say: “whether to include the country C as a new member in UN?”. The existing practice of UN is that at the very first level it is to be decided by the UN body UNSC. If the UNSC recommends the country C for inclusion of the country C as a new member of UN, then final approval is given by the General Assembly (GA) of UN using voting method. The UNSC has only five(5) **permanent** members without democracy, because VETO power exists in UNSC. Five(5) countries mean only 2.6 % of the total 193 in UN!! It means that if UNSC says the result “NO” by the decision of its five own permanent members, then it becomes completely and permanently “NO”, as the GA then has no power and authority to say “YES” on overtaking this “NO” of UNSC. It is to be noted that GA has 193 permanent members, but faith of the country C does not depend upon these 193 members at the beginning, it only depends upon five members of UNSC (as they have VETO power to exercise), although UNSC has 10 non-permanent members. However, if UNSC says “YES”, only then the GA has power to say

“YES” or “NO” by democratical decision taken in GA.

Now imagine of a ‘hypothetical’ but extremely important Question as posed below:-

Regarding the agenda in UN about inclusion of the country C as a new member in UN, if two parallel sessions held by the Secretary General for taking decision independently: one in UNSC and the other in GA exactly at the same moment of time, and if UNSC decides “NO” whereas the output result in GA be “YES” by 193 votes out of 193 cast votes (i.e. 100% votes in favour), then how to justify the justice and fairness of UN on this agenda??

The very next question arises : What are or Who are responsible for such a contradictory decision results of UNSC & GA in UN ??

The author made a very good solution for UN on the above mentioned practices of UN, and it was already communicated in the year 2024 by email to His Excellency Hon’ble Secretary-General of UN submitting that this practice of UN is a kind of **“reverse democracy”**. In 2024, the author submitted a research work on “Reform of UN” to His Excellency, in which he also made a strong comment that this practices need to be made corrected : i.e let the GA takes decision at first by its 193 voters and let GA say “YES” or “NO” in a purely 100% democratic process by Secret Voting method, not by simple “Raise Hand” voting method. This will give more justice, more fairness, more satisfaction and more amount of democracy to the world countries on this planet, and this kind of reformed-development if followed by UN will surely be more “Sustainable Development” compared to the development by existing practices of UN.

6.1. An interesting Element of Difference between the Two Giants FIFA and UN

But there is a major difference between FIFA and UN. World people from kindergarten children upto old people, almost all know about football, all know about FIFA World Cup. Whereas a percent of the educated world people know about UN. The author seeks more & more involvement of the world people to be with UN from all the world countries. Almost all world people from kindergarten children upto old people love and enjoy FIFA, whereas on the other side people respect UN. FIFA is like a viral something in the blood and mindset of almost all world people from kindergarten children, to youths to young people upto old people, in particular this kind of love and respect for FIFA has exponentially taken growth during last 8-10 years mainly by the extreme hard work and extremely dynamic contributions of FIFA towards each member countries of FIFA. Today in 2026, one call from FIFA is sufficient to unite all the world countries to enjoy life more and more, irrespective of religion, irrespective of border issues of countries, irrespective of languages, irrespective of culture, irrespective of food habits, etc etc to list a few only out of many. Thus FIFA today provides “UNITY but in huge DIVERSITY” in the world. Even two countries being locked in a devastating mutual war are also ready to play FIFA World Cup games, and that is the hidden beauty of “Football & FIFA”. It is because “Football & FIFA” are in every house in every country in the world, in particular the

youths become like mad during world cup for enjoyment.

Democracy needs to be incorporated at the maximum possible amount (unlike UN) at the grassroot level corresponding to all issues which needs 'Group Decision Making'. For a major reform of "FIFA Methods", every reader must read the work [5] to understand the in-built weakness of present FIFA. Without reading the work [5], one can not be equipped with the complete knowledge about the "Too Obsolete Methods of FIFA Methods" as clearly justified in the work [5]. Considering the four children-like family members of FIFA, the FIFA Constitution needs to be more and more closer to the T number of members of the FIFA Parliament. Consequently, for FIFA the proposed "FIFA Constitution" can surely play to convert the existing "Very Good FIFA" into an "Excellent Superb FIFA". And surely FIFA can score its FIFA GOAL by adopting the fundamental transformation proposed in this work.

7. Conclusion

In this work a major **Fundamental Reform** of FIFA is proposed. The existing structure of FIFA is very good but not an excellent in order to score FIFA Goal genuinely. It is observed during last decades that FIFA always take excellent care of its four permanent children-like family members which are : Football Game, Football Fan, Football Science & Technology as a subject, and 211 member associations. FIFA has to always retain the health of its four children-like family members by scoring FIFA GOAL No decision of FIFA should effect their health condition. Unfortunately, FIFA is suffering from some very recent crisis in July-August 2026. This research work is done to propose about a **Fundamental Reform** of FIFA, to provide a permanent solution for any such crisis if erupted in FIFA-world today or anytime in future, and to provide FIFA with advanced AI-based Decision Making Methods designed exclusively for FIFA to solve any big or important agenda by introducing five most important concepts :

- (i) **FIFA GOAL,**
- (ii) **FIFA Constitution,**
- (iii) **FIFA Parliament,**
- (iv) **FIFA Voting Methods, and**
- (v) **FIFA Voting Machines.**

Five types of FIFA voting methods are proposed in this work. All the three FIFA voting machine are powered by **7.5 volt** rechargeable battery. Whatever be the voting method suitably choosen in FIFA Parliament for an agenda, the voting and result declaration (LED Display) will take around one minute only.

Change/removal of FIFA any high official of FIFA and of IFAB can not provide even 1% solution to any erupted crisis if any fault in decision making by him occurs. Because the rootcause is the serious hidden fault of the FIFA's skeleton backbone structure, not of any of the FIFA officials and not of any of the Hon'ble world leaders of football who criticize FIFA suggesting one's removal. In this work a Holy Constitution of FIFA is proposed which itself can lead to future superb model of FIFA. Let us recollect the precious words of **Einstein** for the world people:-

"We cannot solve our problems with the same thinking we used when we created them"

ACKNOWLEDGEMENT

The author is thankful to both the **Referees** for their valuable suggestions to improve the manuscript.

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