

Concept:  
Iterated Reverse Modified Vickrey Auction with Reserve  
Maximum, Negotiated Finish and Tiered Bidding

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## 1 Preamble

The Independent National Electoral Commission is currently in the process of designing, procuring, acquiring and deploying a technical solution to assist in immediate voter registration and continuous voter registration thereafter. The general procurement principles which drive the development of this procurement strategy are generally as follows:

- A competitive process provides the commission with the best opportunity to procure the goods or services with value for money. Value for money includes both whole life costs and quality
- A public, clearly articulated and justified procurement strategy will guarantee the best outcome for the public, the commission and product/service providers.
- The procurement process must result in the real price given time and operational constraints
- The outcome must be achievable, believable and actionable. Time is of the essence. The process must ensure that the needs of the commission in terms of quantity, quality, time and location are met.

It is proposed that an iterated reverse vickrey auction amongst a prequalified set of providers will yield the best outcome for the Commission, this concept note elucidates the concept, theory and implementation of such a system and outlines the

considerations, options and compromises made in its design.

## 2 Objectives

The design objectives of the procurement process are as follows:

1. Prevent collusion between internal and external participants (public servants and vendors)
2. Prevent vendors forming cartels to artificially inflate or maintain high prices
3. Assure the timely delivery of quality product to meet the commissions objectives
4. Assure procurement of goods and services at real or below market prices
5. Exploit and leverage economies of scale
6. Design a procurement regimen that has a high level of transparency, auditability, security, non-repudiability, and replay
7. Risk must be valued, (specifically time risk), insured and mitigated to every extent possible.
8. Forestall procurement fraud by preventing vendors, public servants, contractors or any other person involved in the process from dishonestly obtaining an advantage, avoiding an obligation, gaming the system or causing a loss of public property.

9. Provide real-time widescale public visibility into the process, options and decisions and openly solicit opinion, comment and discussion
10. Provide a process that cannot be challenged, bypassed or controverted.

### 3 Concept and Considerations

The basic tenets of the bidding system to be implemented are as follows:

1. Same Specification: The specification of the items to be supplied are closely defined before hand and made public. In this case, the laptops, servers, fingerprint scanners, printers, consumables and other items are generically defined without prejudice to any supplier. The definition of the goods must be utterly generic and not favor any specific supplier. This outcome is guaranteed by a close specification of the use, conditions, circumstances and outcomes desired by the procurement. (The Apples with Apples criterion)
2. Qualified Bidders: Bidders are prequalified by generic capability and capacity. We do not want an experiment, we do not have the time to experiment. Basic pre-qualification criteria would include direct control<sup>1</sup>, volume produced in the last year, supply chain transparency, and proof of financial capability.
3. Baseline Reserve Pricing: The maximum price that the commission is willing to pay will be second lowest available open market price for the item in the United States without shipping, insurance and freight plus a factor of 1%. The 1% being an arbitrary, modifiable factor to permit at least one "lower-than" bid from each supplier.

<sup>1</sup>Direct Control: The bidding supplier must directly design, produce, manufacture, assemble or control the manufacture of the goods and may not be a distributor, reseller or agent

## 4 Implementation

### 4.1 Parameters

1. Quantity: The quantity of useable articles will not be less than  $120,000 + 5\% = 126,000$  units over the 4 week period of the voter registration exercise. A factor of 5% is introduced as a safety, logistical buffer margin to assure operations
2. Reliability Margin: A further reliability margin of expected failures over the period of operations will be added to the quantity at the manufacturers cost. The manufacturer will provide reliability data including aggregate Mean Time Before Failure data on each significant component of the system and provide immediate, in-country replacement capability.
3. Usable Period: The useable period will be 5 years. The expected useful life of the component/system specified shall be not less than 5 years. The manufacturer will provide for in-country maintenance and repair for this period and shall further provide for replacement with like, similar or better equipment in the event of being unable to repair the equipment. The manufacturer will provide at a minimum yearly preventative maintenance on all equipment.
4. Warranty Period: The all-in warranty period for the equipment shall be 5 years. During the warranty period the manufacturer shall guarantee the operation of the equipment as specified. All maintenance, replacement, repair and shipping costs from designated central service/maintenance/collection centers shall be at manufacturers cost.
5. Baseline Price: For purposes of bidding, the commission shall establish a baseline price below which all bids shall be. Any bid above the baseline price will be considered non-responsive and will be discarded without consideration. The baseline price shall be public and denominated in Nigerian Naira <sup>2</sup>.

<sup>2</sup>Currency not critical? can be changed

6. **Product Specifications:** The capabilities of each item will be defined in the most general terms in terms of performance, architecture and minimum output in order to prevent deliberate or inadvertent vendor specification
7. **Warranty and Maintenance:** The vendor must commit to provision of warranty and maintenance services for the usable period of the equipment. The vendor will have or will establish support/service/collection centers in each of the 6 geopolitical zones. Warranty repairs shall not exceed 2 weeks.

#### 4.2 Bidder Prequalification Criteria

1. The quantity bid for shall not be more than 10% of verified yearly output. This criterion gives comfort that the vendor can meet the volume demand in a timely fashion.
2. **Proof of Financial Capacity:** The vendor will furnish proof that they have the financial wherewithal to produce, deliver, support and maintain the product in the volumes specified.
3. Vendor must have direct control of the manufacturing process.
4. **Supply Chain Concurrence:** The vendor will demonstrate the ability of their supply chain to deliver components at the rate and volume required to satisfy the order.
5. The vendor will provide a satisfactory quality assurance plan to assure the commission that the products delivered meet the reliability specifications previously produced by the vendor.

#### 4.3 Prebidding Considerations

1. **Time Value of Delivery:** Delivery over, say a 10 n week period costs less than delivery over a shorter period, say 6 weeks. (This could be formulated in a more mathematical fashion but in the interests of understanding we will use an example.) This is due to disruption of the supply chain, manufacturing schedules, previous order commitments and logistics. It is in the

commissions interest to ensure that the winning supplier will abide by their time commitments and also to have an avenue of changing suppliers in a timely fashion should it emerge, post win that the winning supplier is unable to honor their commitments. By assigning a significant counter incentive to default we can more closely manage supplier behaviour.

2. **Time Bound Escrow:** It is proposed that the commission establish, measurable, verifiable delivery milestones, designed to ensure suppliers deliver to committed timescales. Prebid the suppliers will commit to depositing the cash value equivalent to the first milestone in an escrow account.
3. **Independent Verification of Performance:** The commission will appoint a reputable, legally registered, competent escrow agent or ombudsman to adjudicate the release or disbursement of the suppliers escrowed funds. In the event that the escrow agent determines, at the commissions instance and request for verification, that a milestone has been missed:
  - In the event of the concurrence of the ombudsman that a milestone has been missed, the commission may at its sole and incontestable discretion determine the allocation of the escrowed funds,
  - Should the milestone have been passed such value as allowed in escrow by previous agreement shall be retained and this agreement iterated.
  - On complete delivery the escrowed sums shall be returned to the supplier.

Alternate arrangements are possible so long as

- There is a significant penalty for delayed delivery
- Penalty payment can be effected quickly to assure onward payment to another supplier
- The penalty exaction is overseen by an independent, credible third party
- Milestones are clearly defined and successful completion of a milestone can be specifically measured

- Increased delay will mean an increasing penalty
4. Outfitting of Bidding Rooms: Each bidding room shall have a light, flag or other indicator that can only be on in one room at a time. This shall be used to signal the lowest bid.
  5. Prequalified suppliers will be notified of the commissions reserve price at least 3 days before the bidding commences.
  7. At designated intervals, say, 10 minutes, each team will submit a new bid or hold. Each team can either repeat their last offer or lower their offer. Offers from a team are only allowed if less than their previous offer. (Consistent decrement rule)
  8. For the first hour there will only be decrements of \$10 or more allowed, in the second hour decrements of \$5 or more are allowed

## 5 Conduct of the bidding

1. Each bidder will sign a letter prefixed by the standard specification attesting to a full and complete understanding of the specification in every particular and guaranteeing their capacity to supply equipment meeting or exceeding that specification
2. Pre-qualified and willing vendors will each be designated a secret letter (A-Z). The letters will be non-contiguous and will a randomly generated. There will be no way for any of the bidders to determine the letter of the other bidders.
3. Each supplier will provide a sealed single page bid prefixed by the standard configuration, their assigned letter and a single price per unit.
4. The commission will open the bids in the presence of all suppliers and designate the second lowest bid as the baseline price. (The baseline price is different from the reserve price, above which the commission will not pay. e.g for Laptops, the reserve price will be \$350)
5. Each bidding team will retire to a bidding room without conferring with any of the other bidders. The bidding teams may not leave the bidding rooms for the duration of the auction. Any member of a suppliers bidding team leaving the bidding room will be conducted to a secure staging area for the duration of the auction.
6. The duration of the auction shall be 2 hours or such other duration as may be determined by the commission
9. At the close of bidding the winning bidder shall be the one with lowest bid recorded prior to close. There shall be 15 minutes warning of the impending close.
10. The conditions of a Vickrey auction shall apply to the final offer price. The final volume shall be calculated from the vendors previously submitted reliability data. The calculation process to be published prior to the bidding.

## 6 References and Bibliography

(So many it would take too long to list)