PKI in e-Procurement – A Case Study
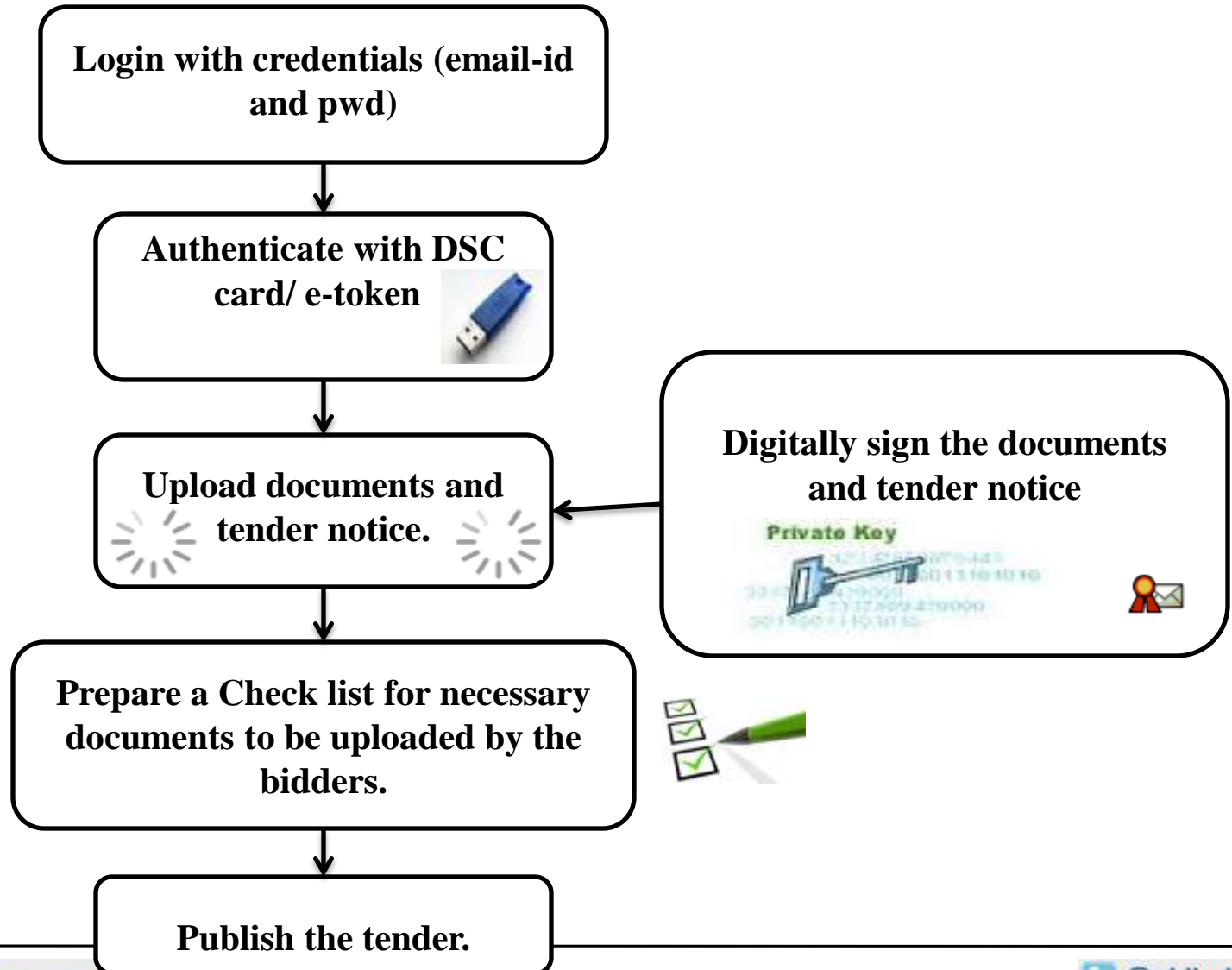
Sanjay Adiwal

Centre for Development of Advanced Computing (C-DAC)

Bangalore

Under the Aegis of

Controller of Certifying Authorities (CCA)

Government of India

Tender Creation Flow

```
Login with credentials (email-id and pwd)
        ↓
Authenticate with DSC card/ e-token
        ↓
Upload documents and tender notice.  ←  Digitally sign the documents and tender notice
        ↓                                Private Key
Prepare a Check list for necessary
documents to be uploaded by the
bidders.
        ↓
Publish the tender.
```

Tender Creation Flow

WELCOME

PLEASE ENTER USERNAME AND PASSWORD

EMAIL ID : tenderer@gmail.com

PASSWORD : ****************

SUBMIT

Tender Creation Flow

**WELCOME
TO
E-PROCUMENT**

Authenticate with DSC e-token

Tender Creation Flow

WELCOME
TO
E-PROCUMENT

TENDER NOTICE

Quotation for procurement of
tender item1 from desired
candidates.

SECURE Certificate

UPLOAD DOCUMENT

Digitally sign the documents and tender notice.

Digital Signature Certificate

Tender Creation Flow
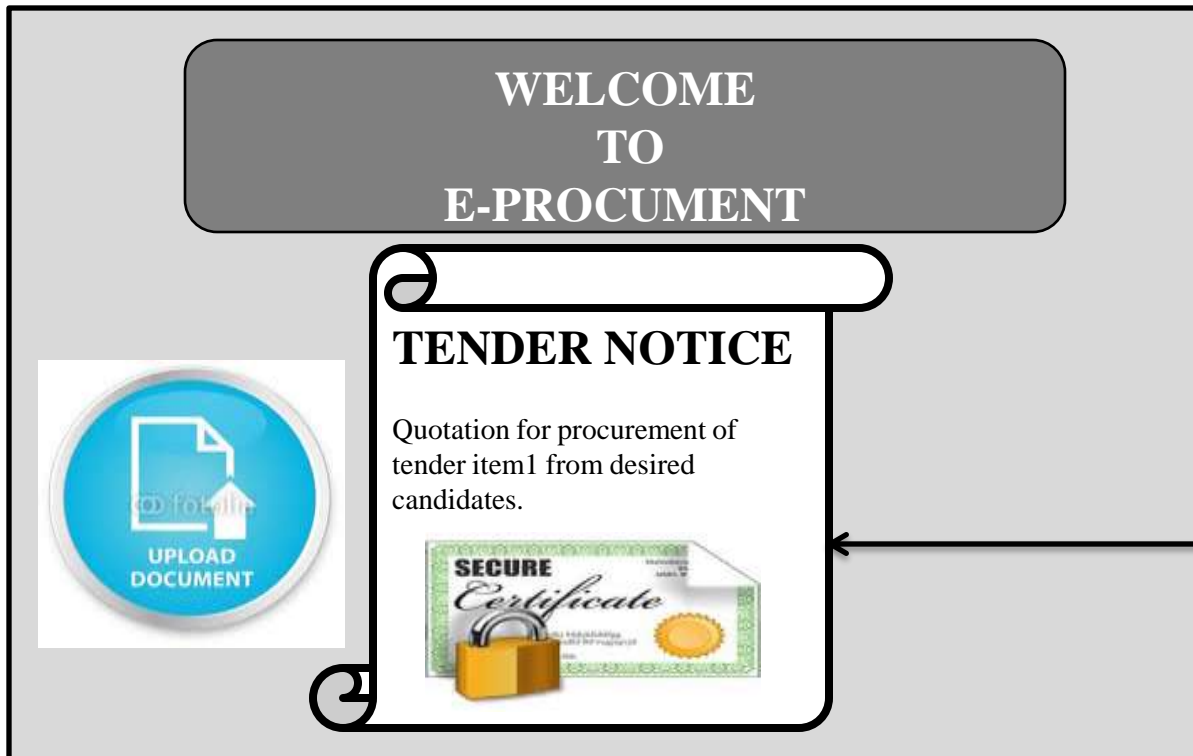
**WELCOME
TO
E-PROCUMENT**

Check list for necessary documents to be uploaded by the bidders.

✓ **Document for technical specification.**

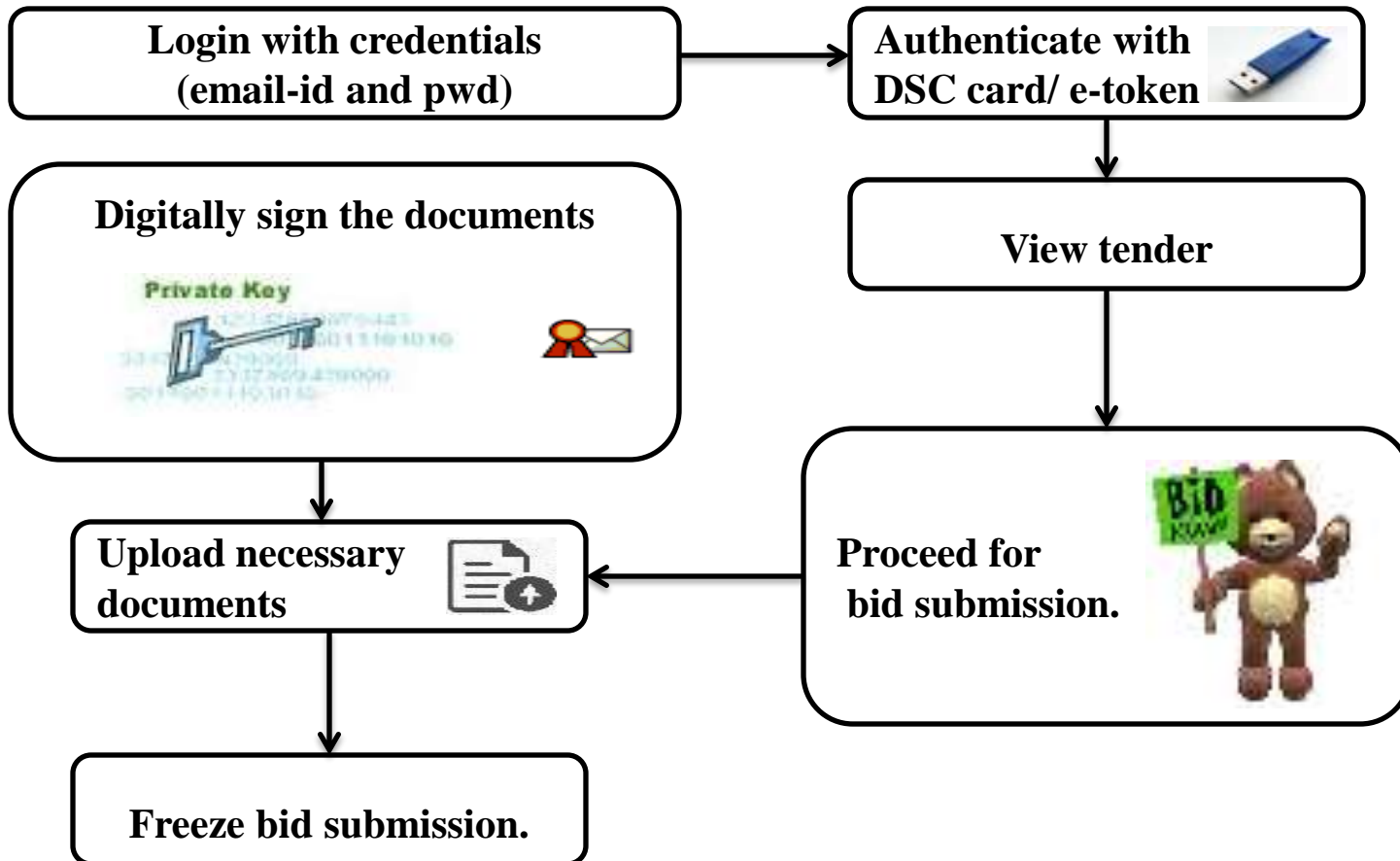✓ **Document for financial specification.**

✓ **Document for secondary specification.**

Tender Creation Flow

WELCOME
TO
E-PROCUMENT

☑ **Notice inviting tender for procurement of tender item1.**

PUBLISH

Bid Submission Flow

Login with credentials (email-id and pwd) → **Authenticate with DSC card/ e-token**

Digitally sign the documents

Private Key

View tender

Upload necessary documents ← **Proceed for bid submission.**

Freeze bid submission.

NOTE: The documents that are uploaded by the bidder are encrypted with tenderer's public key, so that tenderer can only decrypt.

Public Key

Bid Submission Flow

BIDDER LOGIN

WELCOME

PLEASE ENTER USERNAME AND PASSWORD

EMAIL ID : bidder@gmail.com

PASSWORD : ****************

SUBMIT

Bid Submission Flow

BIDDER AUTHENTICATION

WELCOME
TO
E-PROCUMENT

Authenticate with DSC e-token

Bid Submission Flow

BIDDER VIEW TENDER

WELCOME
TO
E-PROCUMENT

Bidder proceeds for bid submission of tender item1.

Notice inviting procurement

Document 1

Price:2313130
Technical
specification: abcdef

Document 2

Price:2313131
Technical
specification: uvwxy

UPLOAD DOCUMENT

Bid Submission Flow
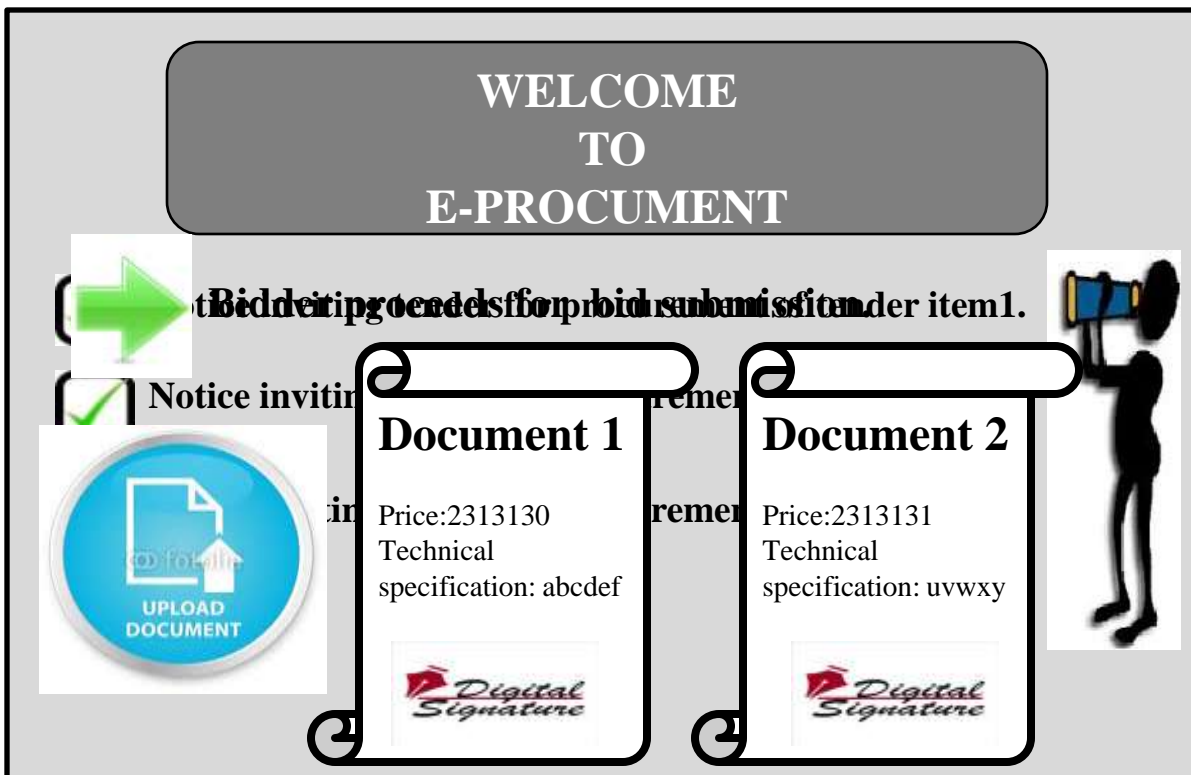
BIDDER PROCESSING TENDER

WELCOME
TO
E-PROCUMENT

Bidder freezes the bid and no modification can be done.

✓ **Your bid has been successfully submitted.**

Freeze It

SUBMIT

Tender Bid opening Flow

Login with credentials (email-id and pwd) → **Authenticate with DSC card/ e-token** → **Decrypt bids.**

Process conformation. ← **Verify the documents of the bidder.** ← **Open bid.**

Upload technical bid opening date. ← **Digitally sign the documents and tender notice**
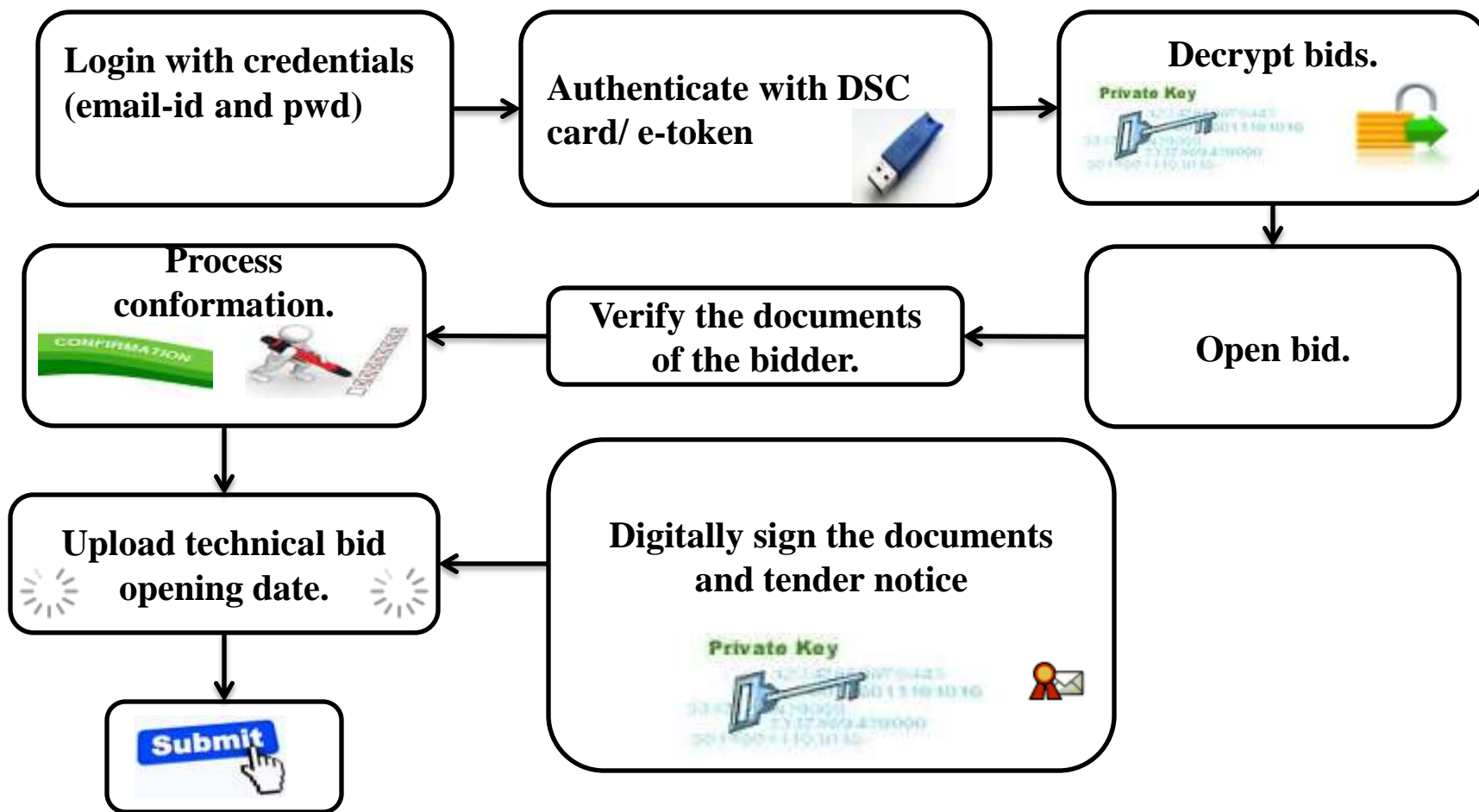
Submit

Tender Bid opening Flow

TENDERER LOGIN

WELCOME

PLEASE ENTER USERNAME AND PASSWORD

EMAIL ID : tenderer@gmail.com

PASSWORD : ****************

SUBMIT

Tender Bid opening Flow

TENDERER AUTHENTICATION

WELCOME
TO
E-PROCUMENT

Authenticate with DSC e-token

Tender Bid opening Flow

TENDERER DECRYPTS AND OPENS BID

WELCOME
TO
E-PROCUMENT

Decrypt the bids that has been submitted.

Open the bids that has been submitted.

Tender Bid opening Flow

TENDERER VERIFIES DOCUMENTS

WELCOME
TO
E-PROCUMENT

Verification of documents of the bidder.

Document 1
submitted by bidder.

Document 2
submitted by bidder.
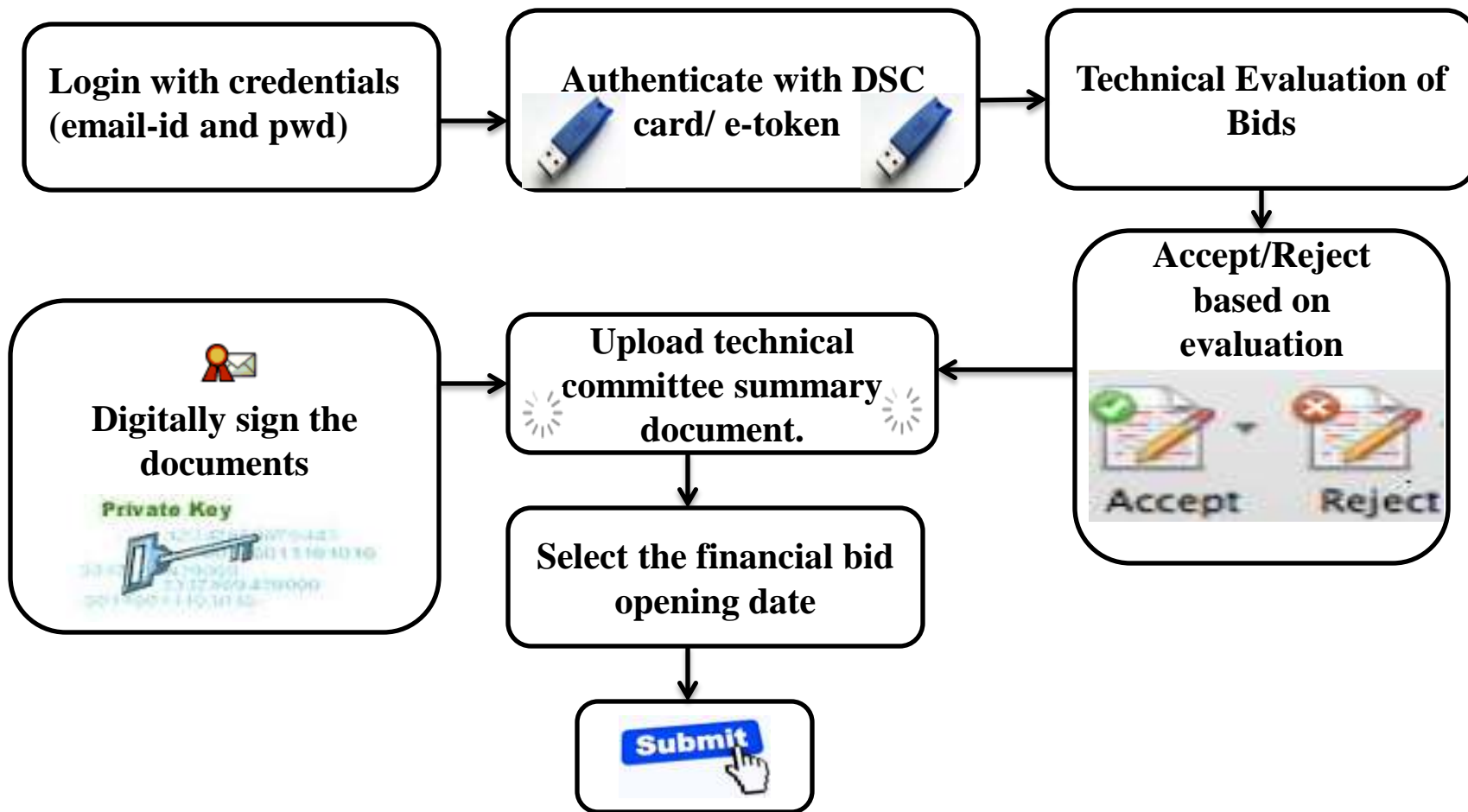
Tender Bid opening Flow

WELCOME
TO
E-PROCUMENT

Select the technical bid opening date: 22/04/2015

☑ **Technical bid opening date has been uploaded successfully.**

SUBMIT

Technical Evaluation flow

Technical Evaluation flow

TENDERER LOGIN

WELCOME

PLEASE ENTER USERNAME AND PASSWORD

EMAIL ID : tenderer@gmail.com

PASSWORD : ****************

SUBMIT

Technical Evaluation flow

TENDERER AUTHENTICATION

> **WELCOME
> TO
> E-PROCUMENT**
>
> **Authenticate with DSC e-token**

Technical Evaluation flow

TENDERER EVALUATE BID

**WELCOME
TO
E-PROCUMENT**

Technical evaluation of bids.

Accept or reject the bid.

Technical Evaluation flow

TENDERER ACCEPT OR REJECT BID

**WELCOME
TO
E-PROCUMENT**

Technical evaluation of bids.

Accept or reject the bid.

Technical Evaluation flow

TENDERER UPLOADS SUMMARY

WELCOME
TO
E-PROCUMENT

TECHNICAL COMMITTEE SUMMARY DOCUMENT

Digitally sign the technical committee summary document.

Technical Evaluation flow

QUALIFICATION OF BIDS

**WELCOME
TO
E-PROCUMENT**

N number of bids are submitted. Among the submitted bids **X** number of bids qualify for next round.

☑ Quotation bidders 1.

☐ Quotation bidders 2.

☑ Quotation bidders 3.

.
.

☐ Quotation bidders 4.

☑ Quotation bidders 5.

Technical Evaluation flow

TENDERER SUMBITS SUMMERY

WELCOME
TO
E-PROCUMENT

Select the financial bid opening date: 22/04/2015

☑ **Financial bid opening date has been uploaded successfully.**

SUBMIT

Financial Evaluation flow
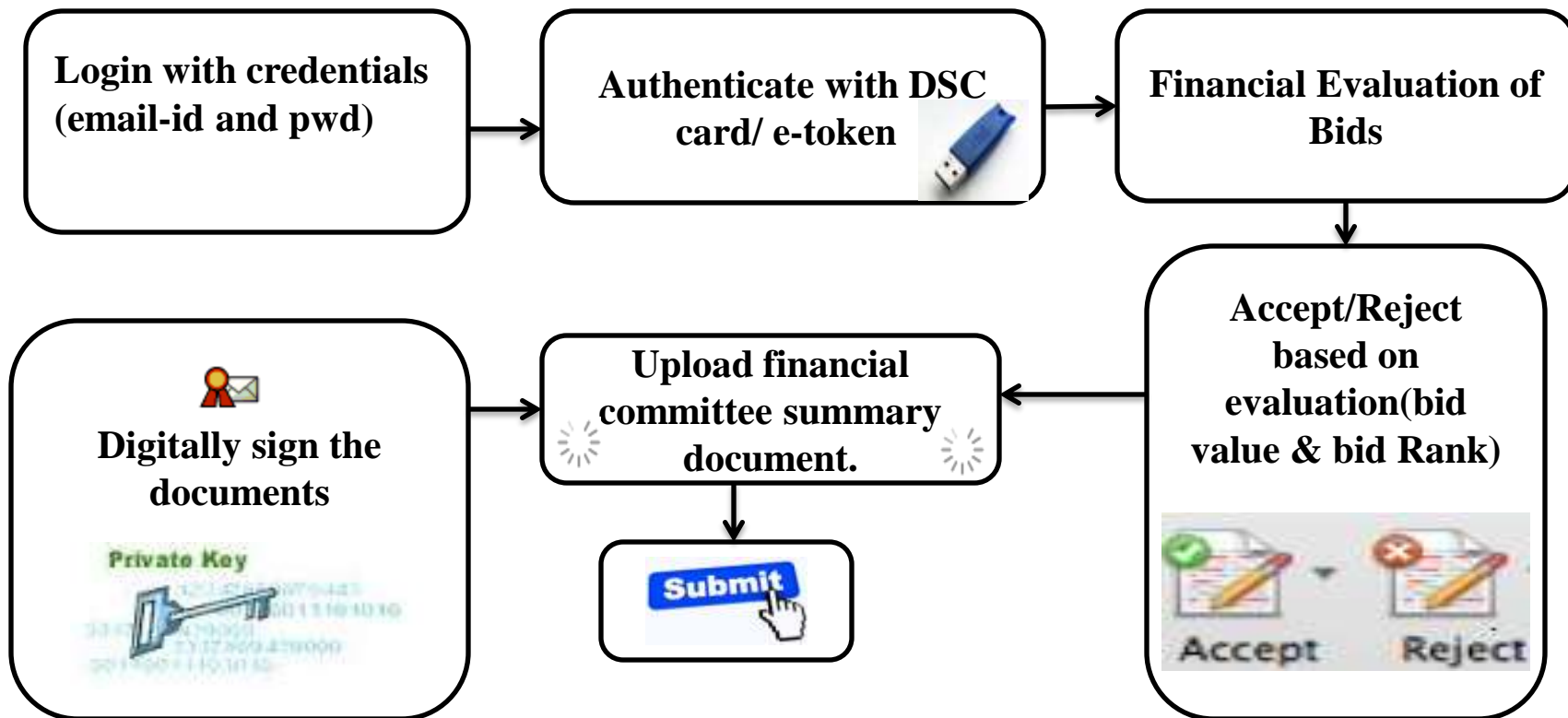
Financial Evaluation flow

TENDERER LOGIN

WELCOME

PLEASE ENTER USERNAME AND PASSWORD

EMAIL ID : tenderer@gmail.com

PASSWORD : ****************

SUBMIT

Financial Evaluation flow

TENDERER AUTHENTICATION

WELCOME
TO
E-PROCUMENT

Authenticate with DSC e-token

Financial Evaluation flow

TENDERER EVALUATE BID

**WELCOME
TO
E-PROCUMENT**

Financial evaluation of bids.

Accept or reject the bid.

Financial Evaluation flow

TENDERER ACCEPT OR REJECT BID

**WELCOME
TO
E-PROCUMENT**

Financial evaluation of bids.

Accept or reject the bid.

Financial Evaluation flow

TENDERER UPLOADS SUMMARY

WELCOME
TO
E-PROCUMENT

FINANCIAL COMMITTEE SUMMARY DOCUMENT

SECURE Certificate

UPLOAD DOCUMENT

Digitally sign the financial committee summary document.

Digital Signature Certificate

Financial Evaluation flow

TENDERER SORTS THE BIDS

**WELCOME
TO
E-PROCUMENT**

Tenderer sorts the bids based on the quote value.

1. Quotation from bidder1 of value Rs.00001.

2. Quotation from bidder2 of value Rs.00002.
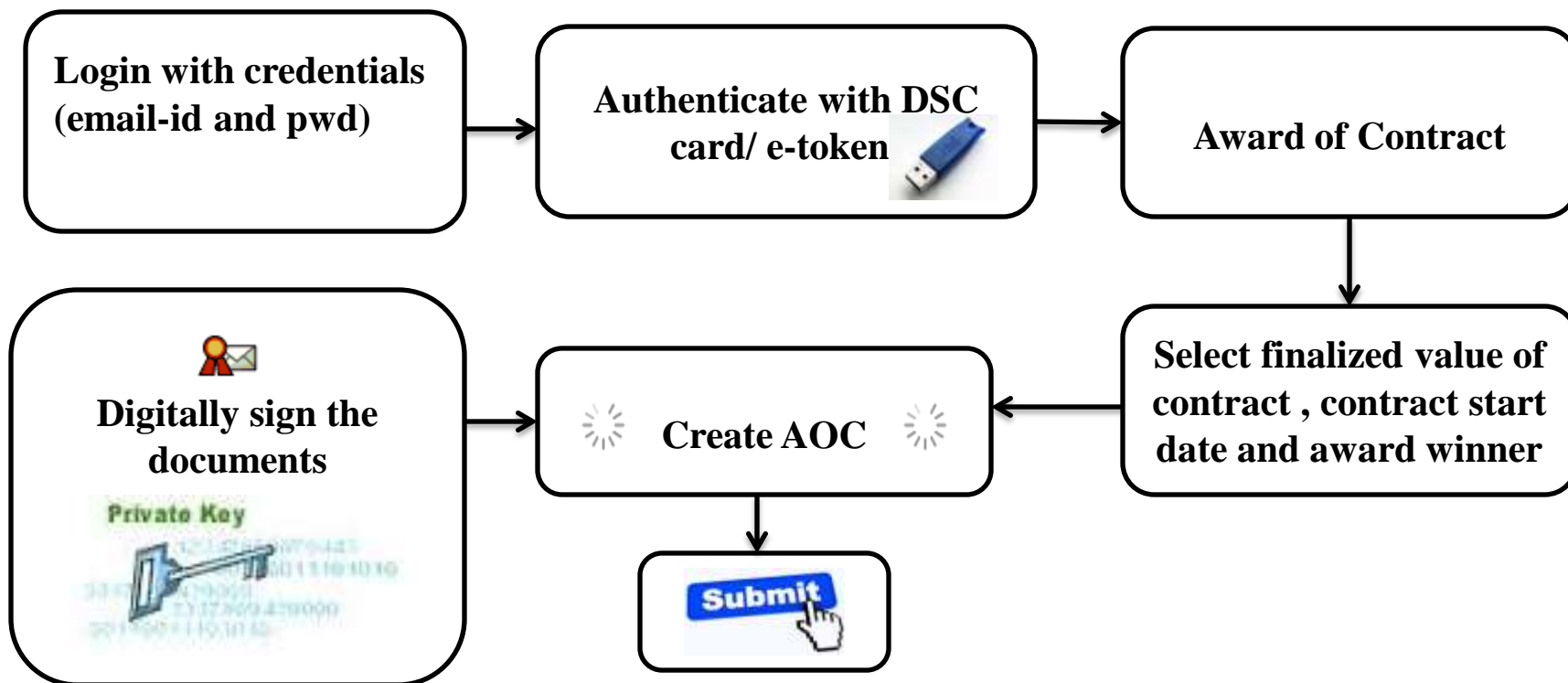
3. Quotation from bidder3 of value Rs.00003.

Financial Evaluation flow

TENDERER SUBMITS SUMMERY

**WELCOME
TO
E-PROCUMENT**

☑ **Financial committee summary document been uploaded successfully.**

SUBMIT

Award of Contract (AOC) flow

```
┌─────────────────────┐      ┌─────────────────────┐      ┌─────────────────────┐
│ Login with          │      │ Authenticate with   │      │                     │
│ credentials         │ ───▶ │ DSC card/ e-token   │ ───▶ │ Award of Contract   │
│ (email-id and pwd)  │      │                     │      │                     │
└─────────────────────┘      └─────────────────────┘      └─────────────────────┘
                                                                     │
                                                                     ▼
┌─────────────────────┐      ┌─────────────────────┐      ┌─────────────────────┐
│                     │      │                     │      │ Select finalized    │
│ Digitally sign the  │ ───▶ │ Create AOC          │ ◀─── │ value of contract,  │
│ documents           │      │                     │      │ contract start date │
│ Private Key         │      │                     │      │ and award winner    │
└─────────────────────┘      └─────────────────────┘      └─────────────────────┘
                                      │
                                      ▼
                                  [ Submit ]
```

Award of Contract

TENDERER LOGIN

WELCOME

PLEASE ENTER USERNAME AND PASSWORD

EMAIL ID : tenderer@gmail.com

PASSWORD : ****************

SUBMIT

Award of Contract

TENDERER AUTHENTICATION

**WELCOME
TO
E-PROCUMENT**

Authenticate with DSC e-token

Award of Contract

AWARD OF CONTRACT

WELCOME
TO
E-PROCUMENT

AWARD OF CONTRACT

Value of contract: 20000

Contract start date: 25/04/2015

Contract award winner: XYZ
Pvt. Ltd

Award of Contract

TENDERER CREATE AOC

WELCOME TO E-PROCUMENT

Create Award Of Contract(AOC)

AWARD OF CONTRACT

Contract of the tender is given to XYZ Pvt. Ltd

SECURE *Certificate*

Digitally sign the award of contract.

Digital Signature Certificate

Technical Evaluation flow

TENDERER UPLOADS NOTICE

**WELCOME
TO
E-PROCUMENT**

☑ **The contract has been given to XYZ Pvt. Ltd..**

SUBMIT

Thank You

pki@cdac.in