

Integrity Risk Management: Identifying Risks and Strengthening Controls through DIGITALISATION

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Organisation Structure



Mr Woo Ying-ming, SBS, CSDSM,
Commissioner, Independent Commission Against Corruption,
Hong Kong, China

Operations
Department (OPS)

Law Enforcement

Not Dare
to be corrupt

Corruption Prevention
Department (CPD)

Prevention

Not Feasible
to be corrupt

Community Relations
Department (CRD)

Education

Not Want
to be corrupt

International Cooperation and
Corporate Services
Department (ICD)

International Cooperation
& Administrative Support

Three-Pronged Strategy

Statutory Duties for Corruption Prevention

ICAC Ordinance Section 12

Examine procedures of government departments and public bodies.

Advise them of changes in practices and procedures to mitigate corruption risks.

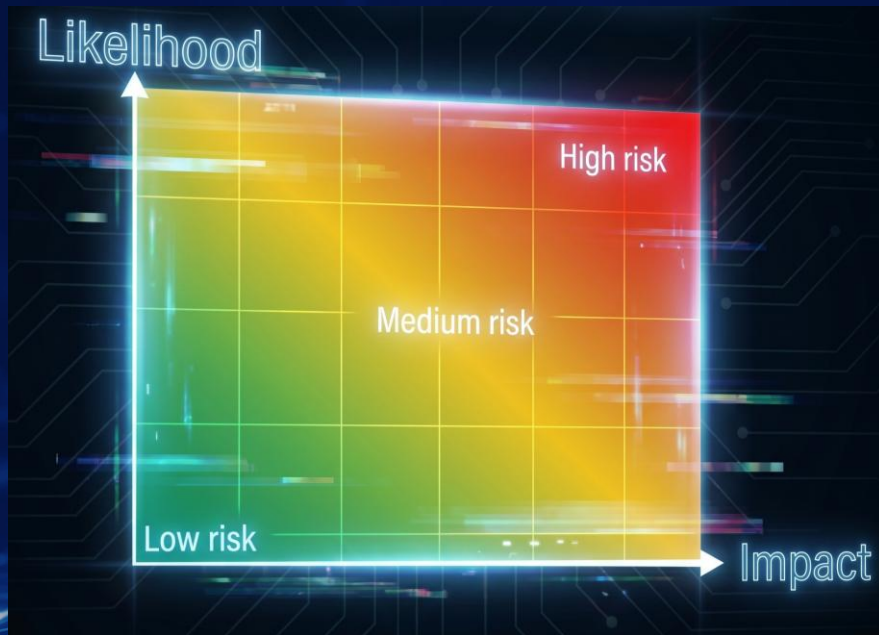
Public Sector

Private Sector

Provide corruption prevention advices upon request.

Identifying and Prioritising Risks

Risk Management Matrix



Risk Drivers



Common high risk areas:

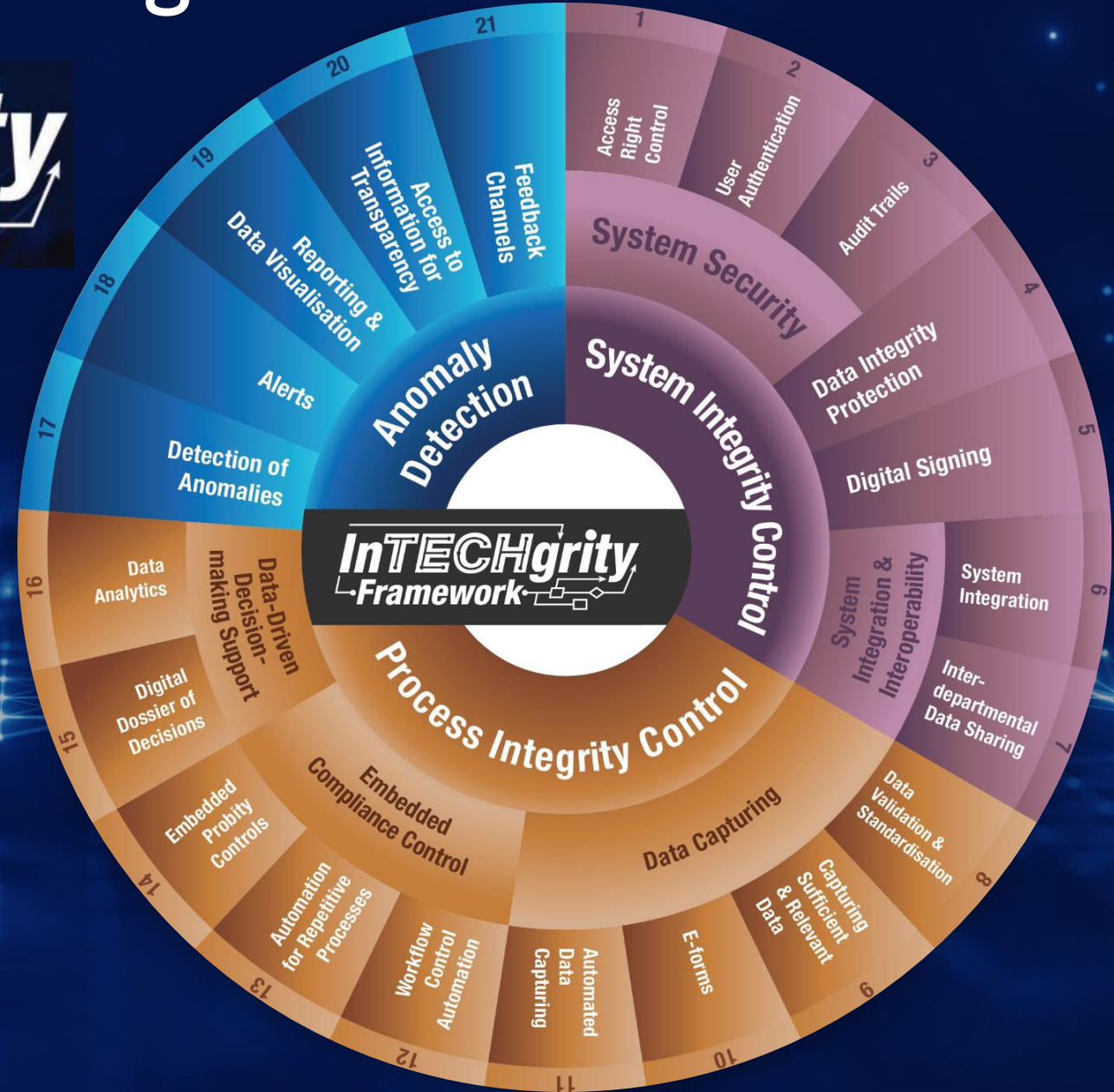


Designing and Digital Controls



3 Control Objectives

21 Integrity Control Needs





Blockchain-based e-certificate verification

CORRUPTION RISKS IN ACADEMIC CREDENTIAL VERIFICATION

- Use of falsified certificates to obtain admission or employment

NEWS > BREAKING NEWS

28-year-old deceives [REDACTED] with false credentials and possesses fraudulent certificate

BREAKING NEWS 13-01-2025 19:43 HKT



NEWS > BREAKING NEWS

Some 30 master students caught using false credentials to enroll in [REDACTED] Business School

BREAKING NEWS 04-07-2024 18:03 HKT



Key CP Features :

- Applicant shares an e-certificate embedded with a QR code
- Verifier scans the QR code or uploads the file to a designated verification portal
- Blockchain validates the certificate's integrity
→ any tampering triggers an alert

ACVP

Academic Certificate Verification Platform

Your Trusted Academic Certificate Verification Platform



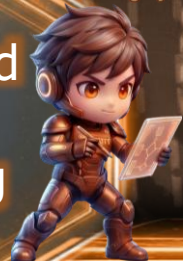
Verify Credentials

Drag & drop a PDF file or click to browse file.

Select File

Automated
Data
Capturing

Process Integrity



E-inspection system

CORRUPTION RISKS IN TRADITIONAL INSPECTION MONITORING

- Paper-based inspection checklist: human error, loss, poor accessibility, tampering
- Limited supervisory oversight during fieldwork
- Difficult to detect falsified reports (e.g. fake photos, inspection claimed at impossible times)

ICAC Press Release

The ICAC investigation revealed that on various occasions, A had instructed B to take photographs of XX facilities and alter the date and time of the photographs, which purported to have been taken on different days. Upon A's instruction, B used those photographs to compile the relevant daily inspection reports for submissions to the relevant government department.

Key Corruption Prevention Control Features:

- Mobile devices for on-site result documentation
- Upload restrictions to prevent use of stored/edited photos
- Photo/video capture with automatic timestamp & geolocation
- Data analytics to detect irregularities in inspection time, location, activity



Example: AI-Powered Football Integrity Analysis System

CORRUPTION RISK: Match-fixing

- Uses AI-powered computer vision to track body posture & movement of goalkeeper and players (within 20 metres of the ball) during gameplay
- Analyses reaction time, positioning, and effort to identify signs of intentional underperformance
- Flags suspicious or unnatural actions for review

Possible Anomalies Detected:

1. Goalkeeper moved to direction of shot slowly comparing with average ball speed



2. Player delayed restart (especially when opponent is leading)



Minor Maintenance Procurement Fraud

(Purchase of parts below USD 640/order)



**PROCUREMENT
STAFF**



**AWARD OF 320 PURCHASE ORDERS
(USD 1.7M) OVER 7 YEARS**



**MAINTENANCE
CONTRACTOR**



LUXURY GOODS

Minor Maintenance Procurement Fraud

Procurement stages

Internal Control

Initiating Purchase Requisition

Invitation to Bid

Evaluation of Bids

Management Oversight



CORRUPTION RISKS FOR MANUAL PROCESSES



No segregation of duties & weak oversight



Unnecessary repairs or overstated scope



Same companies (all owned by Contractor) repeatedly invited



Loss of invitation fax records



No Conflict of Interest Declaration



Inflate pricing



Undetected for years

TRANSFORMATION



DIGITAL CONTROLS



Automated workflow control with approval path (CN 12)



IoT equipment condition monitoring (CN 11)



Auto-generation of suppliers by rotation (CN 13)



Digitisation + Audit trail (CN 10 & 3)



Mandatory declaration in workflow (CN 8)



past/market price benchmarking (CN 16)



Anomaly detection alerts (CN 17 & 18)

Ensuring Effective Implementation

Traditional Approach

Audit Reviews



- Thorough, tailor-made, but slow
- Issues found only retrospectively
- Request supporting to prove implementation

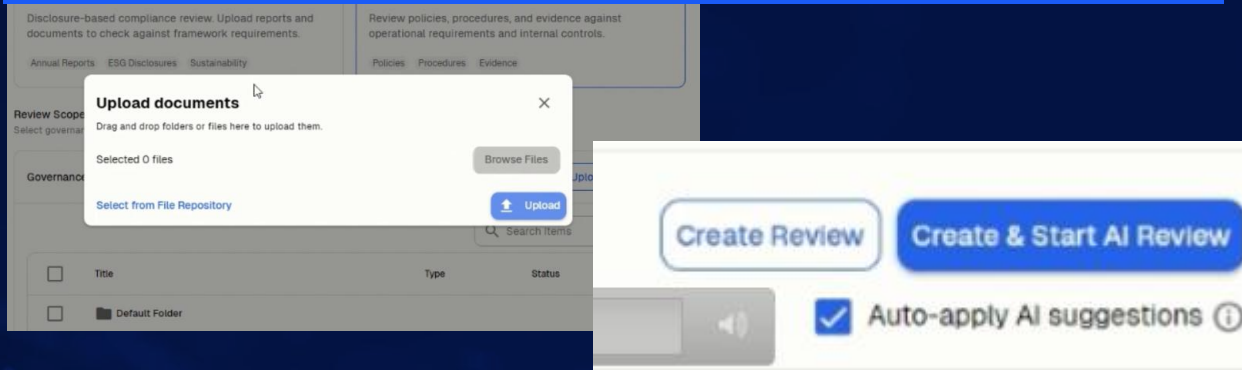
New Complimentary Approach



- Mandatory InTECHgrity assessment for new systems as **FUNDING PRE-REQUISITE**
- To review 200 systems/ year
- Advice provided upfront
- Submit system implementation details for our comments

Automated Compliance Analysis Tool

1. Upload specifications and start AI review



2. AI assesses whether InTECHgrity controls are fulfilled

18. Alerts Send auto-alerts to relevant users on matters/anomalies that require immediate attention Mandatory	Partially Fulfilled	In-scope
19. Reporting and Data Visualisation Generate relevant management/exception reports to facilitate monitoring, and where applicable, visualise key data to facilitate monitoring and support discovery... Mandatory	Partially Fulfilled	In-scope
20. Access to Information for Transparency Provide public and relevant stakeholders with easy online access to essential information to promote transparency and enable public monitoring Mandatory	Fulfilled	In-scope

3. With reasons and recommendations

18. Alerts

InTECHgrity Framework Appendix 1

However, there is no verifiable operational artifact (e.g., logs of actual alert dispatches, incident reports, or escalation records) demonstrating that alerts have been executed in production during the review period. Consequently, the requirement is not fully demonstrated by execution evidence, though capability exists in the documented design.

Supporting Evidence:

Tender System.xlsx [1, 2, 4, 5]

Gaps Identified:

No documented evidence of production alert events (logs or reports) confirming that auto-alerts were sent; no explicit escalation matrix or alert severity levels; no test evidence showing alert effectiveness or SLA/response times.

Recommended Improvements:

Provide verifiable operational artifacts of alerting (production logs, dashboards, or incident reports) during the review period; define and document alert escalation paths, severity levels, and response SLAs; implement periodic testing of alerting workflows and produce audit-ready reports validating alert delivery and

Show less Fullscreen



CP Solutions developed by Hackathon Participants

JustDo

Macao, SAR

Procurement Fraud Detection – Bid-rigging
Detect potential collusion by analysing and comparing similarities across submitted bid documents

Analyse files using Document Layout OCR

Similarity Analysis Engine

- Semantic Analysis
- Layout Analysis
- Image Analysis

The screenshot shows a document viewer interface. On the left, there's a sidebar with a search bar and a list of highlights. The main content area displays a document titled "Proposal For Urban Revitalization and Landscaping Project". The document is divided into sections: "Submitted To: Procurement Commission, Public Works Bureau, Macao SAR", "Submitted By: Golden Lotus Construction", "Submission Date: November 25, 2024", "Tender Reference: Urban Revitalization and Landscaping Project", "SECTION A: About Our Company", "SECTION B: Our Proven Experience", and "SECTION C: Project Execution Details". The "SECTION B: Our Proven Experience" section lists three projects: "Taipa Grand Park Redevelopment (2021-2023)", "Institute for Tourism Studies Greening Initiative (2019-2020)", and "Penha Hill Pathway Restoration (2020-2023)".



The screenshot shows the Similarity Analysis Engine interface. At the top, there are two panels for "Company J" and "Company F". Company J's file is "bid_7.pdf" uploaded on 9/18/2025, with a value of \$239,000. Company F's file is "bid_6.pdf" uploaded on 9/11/2025, with a value of \$271,000. Below these panels, there are tabs for "Semantic", "Layout", and "Images". The "Images" tab is selected, showing a "CRITICAL RISK" level with a 95% confidence. The "Image Similarity Analysis" section shows "2 findings". Below this, there's a "Content Comparison" section with two images side-by-side. The "Image Match Analysis" section shows a "Match Type: Similar Content" with a "Confidence: 90.6%". At the bottom, there's a "Suspicious indicators" section listing "Identical structural patterns detected". A hand icon points to an "Add to Report" button.



Uzbekistan

CP Solutions developed by Hackathon Participants

Blockchain-based Asset Declaration and Auditing Platform

Asset Declaration Form

Declare your assets transparently to maintain public trust and compliance with anti-corruption regulations.

Asset Category *

Investment Assets
Stocks, bonds, mutual funds

Real Estate
Land, buildings, properties

Asset Value (USD) *

\$ 13,000

Asset Description *

Asset description goes

Supporting Documents *

Zero-Knowledge Proof Status

Privacy-preserving verification of family relations

Valid

Re-verify

Reports

Automated reports of declarations

0xfb22...b908 Spouse

Net Worth

\$150,000

Anomaly Score

Risk Level

20% Low

0x4ce2...3037 Child

Net Worth

\$500,000

Anomaly Score

Risk Level

80% High

High Anomaly Detected

This family member's net worth appears unusually high compared to expected patterns. This may indicate potential asset transfers or undisclosed income sources.

0x0548...fc3e Parent

Net Worth

\$75,000

Anomaly Score

Risk Level

10% Low

Analysis Summary



Family Members

3



High Risk

1



ZK Proof
Valid

Assigns a risk score by comparing an individual's net worth against benchmark references

E-channel to report suspicious activity

Report Suspicious Activity

Help maintain transparency by reporting suspicious asset activities that may indicate corruption or undisclosed wealth.

Target Official *

Ruzimurodov Bekhruz

Suspicious Asset Type *

Undisclosed Property

Detailed Description *

221b baker street

Evidence/Proof *

Important Guidelines:

- Only upload evidence you have legally obtained
- Ensure photos/videos are clear and show relevant details
- Documents should be authentic and verifiable
- All uploads are stored securely on IPFS

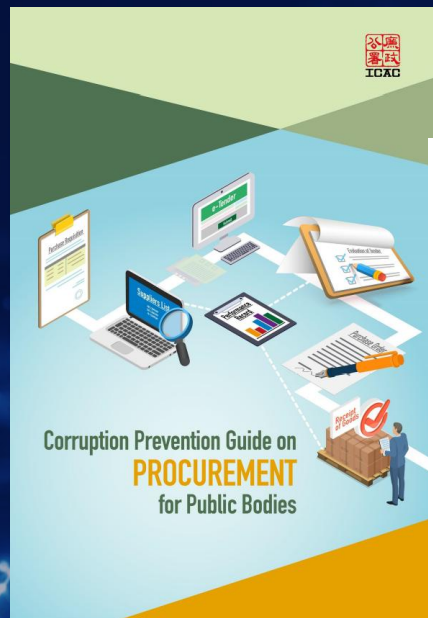


Upload evidence files

Corruption Prevention Guides



CPAS



3.2 INITIATING PURCHASE REQUISITIONS



Major Corruption Risks

- Placement of unnecessary or excessive orders.
- Splitting of orders to circumvent more stringent controls for higher-value purchases.



Common Inadequacies

- ✗ Lack of an established budgeting process.
- ✗ No justifications on the need for raising purchase requisitions.
- ✗ Inadequate monitoring or scrutiny to assess the need for purchase.
- ✗ Lack of a mechanism to detect split orders.



Red Flags

- 🚩 Instances where quantities of items requested significantly exceed the typical usage pattern without a valid reason.
- 🚩 Repeated purchases of the same goods/services with the value often just below a monetary threshold warranting approval from a higher authority.
- 🚩 Instances of unbudgeted purchases or purchases exceeding budgeted amounts without proper justifications.
- 🚩 A pattern showing purchases being pooled together while the normal approving authority is away from office.



Corruption Prevention Controls

- Put in place a robust budgeting process to facilitate a proper control on initiating purchase requisitions –
 - formulating a budget covering, among others, major procurement items and the estimated expenditure;
 - taking into consideration any expiration of term/service contracts;
 - stating any major assumptions made;
 - explaining any significant difference with the budget and actual expenditure on procurement of the previous years;
 - submitting the budget for approval by the designated authority (e.g. board, finance committee); and
 - subjecting the approved budget to mid-year review to ensure any significant variance has been accounted for.



Case Scenario – Splitting Orders

A director of an organisation solicited and accepted illegal kickbacks from a contractor as a reward for awarding a number of contracts to that contractor. The organisation required contracts worth over a specified monetary threshold to be approved by a committee. To circumvent the control, the director split the purchases into smaller contracts and instructed the contractor to submit bids just below the specified threshold.

5 DIGITALISED CORRUPTION PREVENTION FUNCTIONALITIES FOR PROCUREMENT

- 5.1 INTRODUCTION
- 5.2 SYSTEM CONTROL ENVIRONMENT
- 5.3 PROCUREMENT
- 5.4 CONTRACT ADMINISTRATION

Thank you
See you in Hong Kong

