

A beacon of light in uncertain times.™



Applying Risk Fundamentals to Emerging Technologies- Cryptocurrency, Coins and Digital Tokens

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Bear Hill Advisory Group is a boutique consulting firm with a decade of experience helping management teams and their boards understand their businesses better.

Services include business risk assessments, risk incident response plans, interim CFO services, and business process improvements.

Our goal is to help you manage your business of today while building for your business of tomorrow.

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Chief Executive Officer, Bear Hill Advisory Group, LLC



Jack is an expert in operational, financial and organizational management, strategies, and tactics. He is an expert in risk management, including business risk, risk agility and resiliency, information security risk, and insider threat programs.

He is a Certified Fraud Examiner, Certified Public Accountant, Certified in Fraud and Forensics, Certified Information Systems Controls, Cybersecurity SOC, and Cybersecurity Services. He is a member of ACFE, InfraGard, ISACA, AICPA, RMS, and NACD.

He authored the Business Crisis Diagnostic and Prevention Model™, which provides businesses with the framework necessary to identify impending business crises before they occur. He has authored or co-authored articles on Velocity of Risk and Customer Experience.

Do current risk management models work with innovative ideas?

From a risk management perspective, when considering new or unproven ideas, technology or processes how should we approach a workable risk solution?

How do we apply Risk Fundamentals to cryptocurrency, tokens and coins risk identification, analysis, response/mitigation, monitoring/reporting

Deck is a 'take away'- we're not covering every slide



Models and Risk Fundamentals- A quick tutorial/refresher

WHAT IS RISK?



Strategic and Enterprise Risk Management (SERM)

Approaches for integrating risk management into processes and decisions related to strategy, operations, programs and projects to create and protect value.

- Developing and Customizing Risk Management Strategies (Standards and Frameworks)
- Gaining Board and Executive Buy-In
- Integrating Risk Management into Decision Making
- Managing Risks in Strategy, Operations and Processes
- Risk Assessment Techniques
- Unconscious Biases and Decision-Making
- Understanding Risk in Business Models

WHAT IS RISK?



ISO 31000, *risk* is the “effect of **uncertainty** on objectives.”
and an **effect** is a positive or negative deviation from what is expected

- Both internal or external
- Goal oriented not event oriented
- Create and protect value

COSO, *risk* is the **possibility** that events will occur and affect the **achievement of objectives**.

NIST, the extent to which an entity is *threatened by a potential circumstance or event*, and typically a **function of: (i) the adverse impacts that would arise if the circumstance or event occurs; and (ii) the likelihood of occurrence.**



- Enterprise risk management as a process, effected by an entity's board of directors, management, and other personnel, applied in strategy-setting and across the enterprise, designed to *identify potential events* that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives (COSO)
- The combination of personnel policies, processes, and technologies that enable an organization to *cost-effectively achieve and maintain an acceptable level of loss exposure* (FAIR)

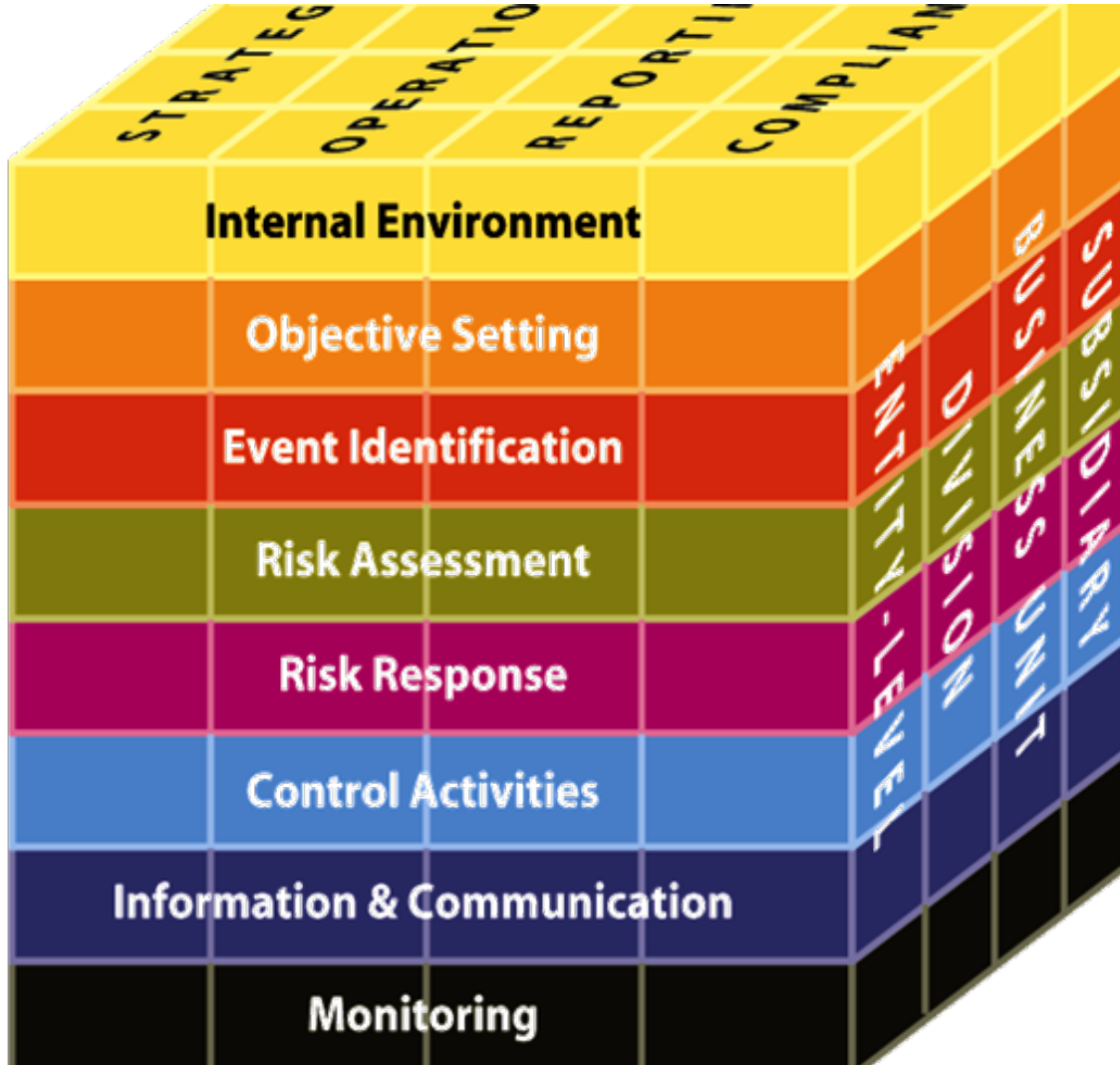
Risk management refers to a *coordinated set of activities and methods that is used to direct an organization and to control the many risks that can affect its ability to achieve objectives*. (ISO 31000)

- The term *risk management* also refers to the program that is used to manage risk. This program includes risk management principles, a risk management framework, and a risk management process.

The program *and supporting processes to manage information security risk* to organizational operations. (NIST)

- Including mission, functions, image, reputation, organizational assets, individuals, other organizations, and the nation, and includes: (i) establishing the context for risk-related activities; (ii) assessing risk; (iii) responding to risk once determined; and (iv) monitoring risk over time.

COMMON RISK MODELS – COSO/RMS



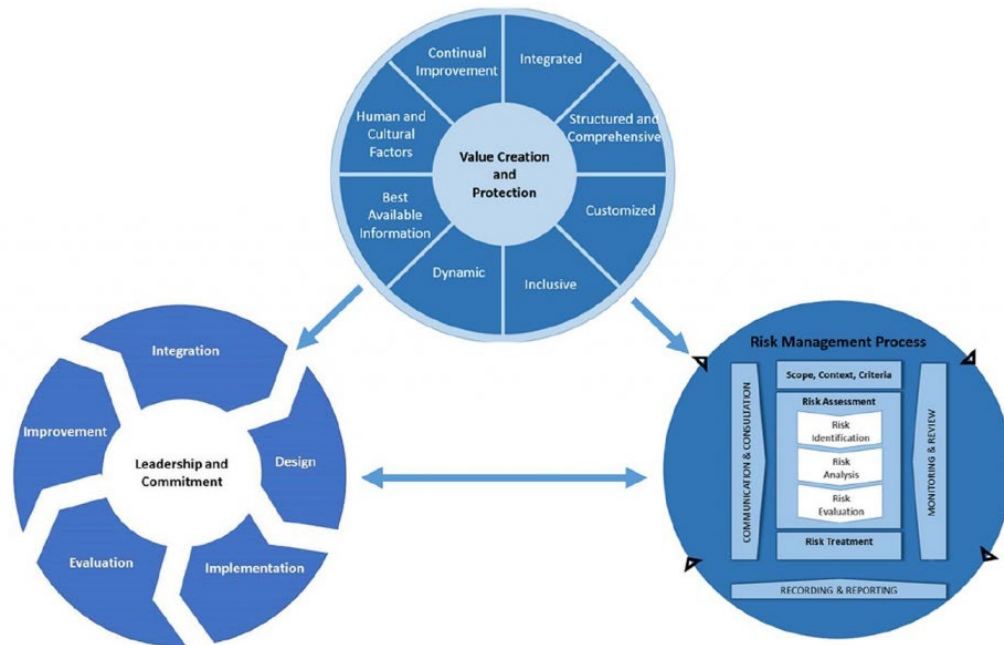
The 5 Risk Management Components



COMMON RISK MODELS – NIST/ISO 32000



ISO 32000



National Institute of Standards and Technology

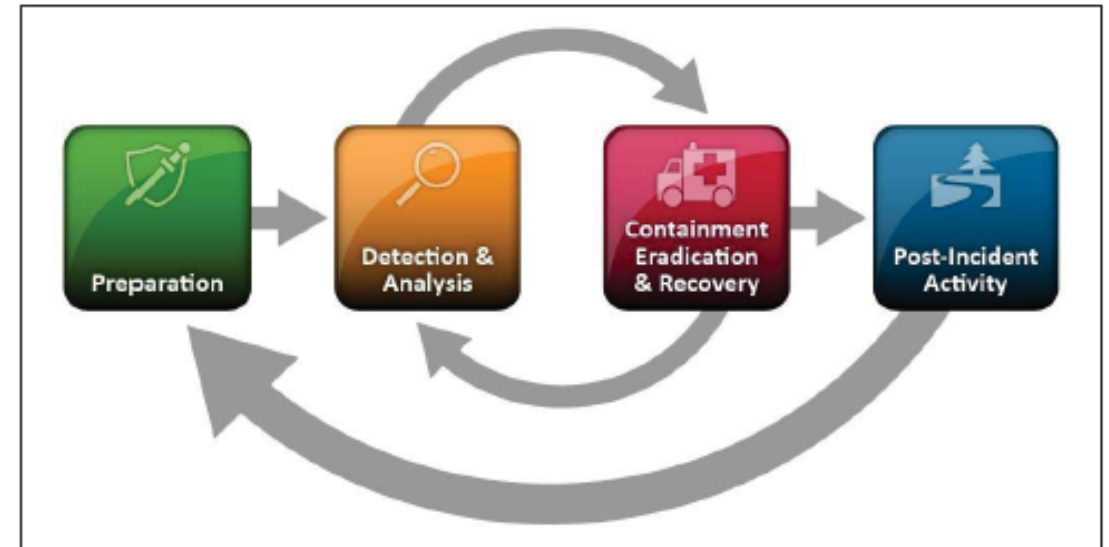
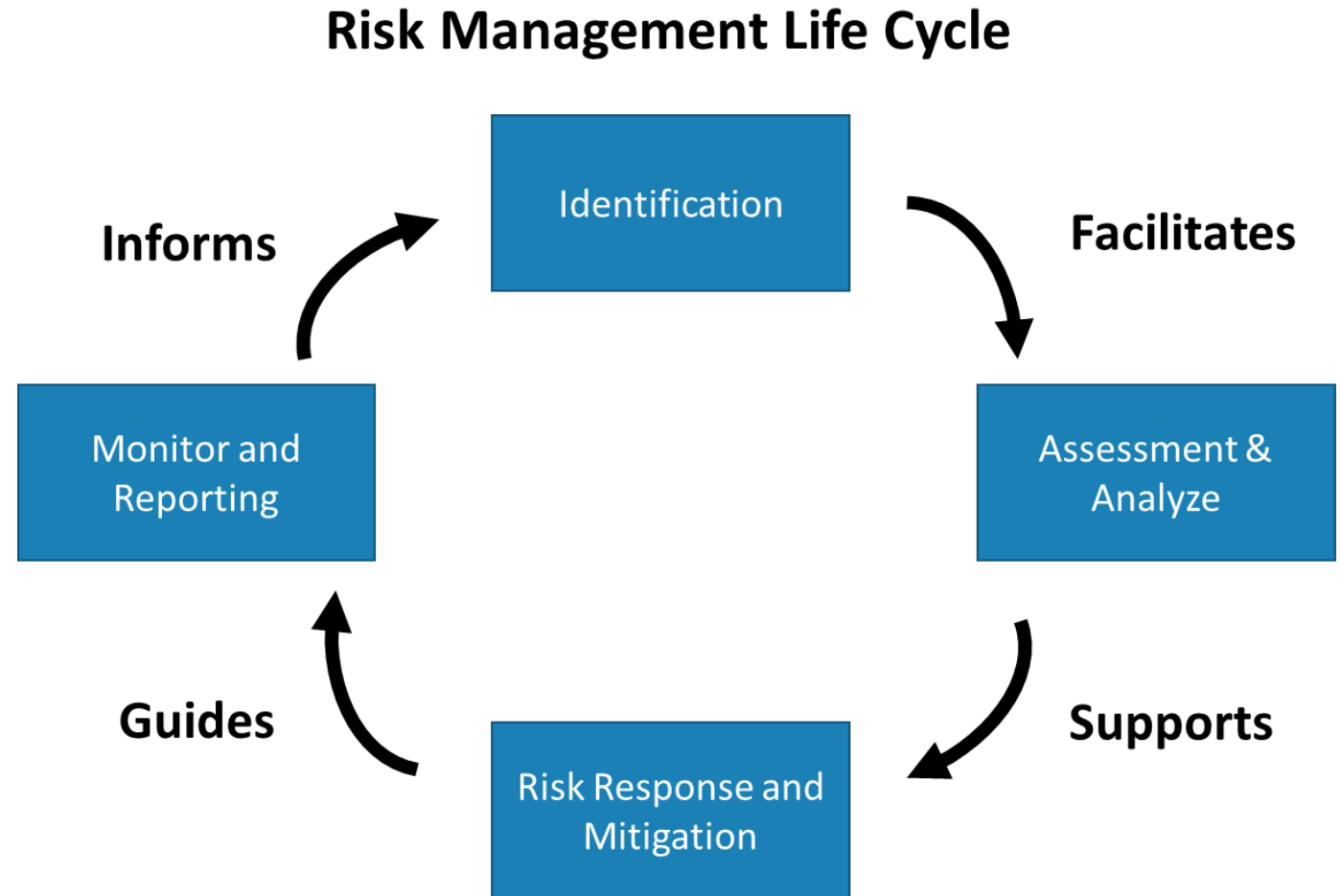


Figure 3-1. Incident Response Life Cycle

- **Governance-**
 - **Risk Capacity**
 - **Risk Appetite**
 - **Risk Tolerance**



Risk Capacity

Risk Capacity

“The amount of risk the organization can actually bear.”

Most often a measure of the company's ability to

- Maintain standards of performance; or
- Maintain levels of capital

Risk Appetite

Risk Appetite

“The total exposed amount that an organization wishes to undertake on the basis of risk-return trade-offs for one or more desired and expected outcomes.”

- Includes acceptable boundaries
- Identifies the level of risk that the organization is willing to accept

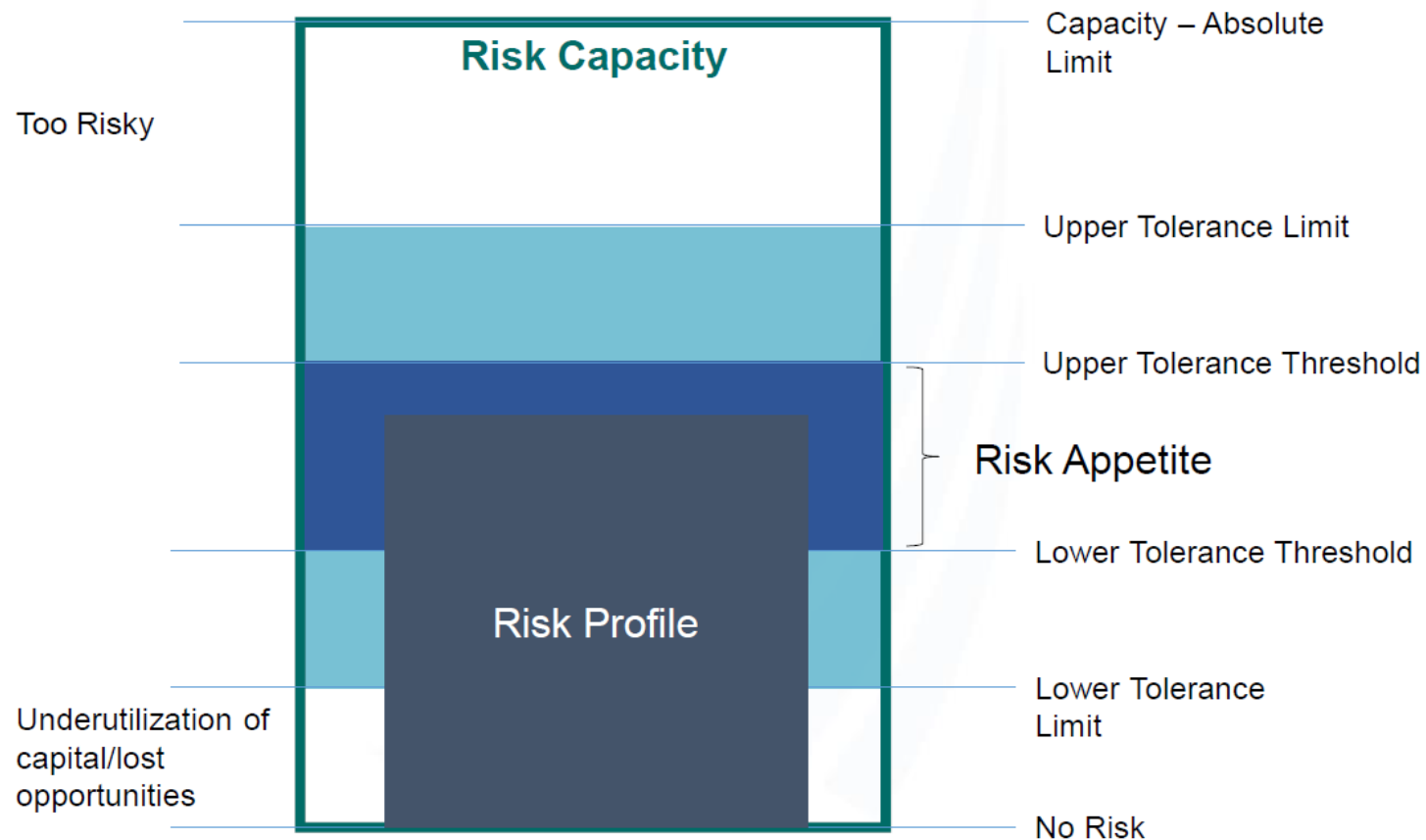
Risk Tolerance

Risk Tolerance

“The amount of uncertainty an organization is prepared to accept in total or more narrowly within a certain business unit, a particular risk category, or for a specific initiative.”

- More granular than risk appetite
- May be tiered
- When exceeded, risks are escalated for risk response

Visualize Risk Appetite Choreographed



RISK MANAGEMENT COMMON GROUND



Risk Governance:

- Risk Capacity
- Risk Appetite
- Risk Tolerance

Risk Response:

- Cost Versus Benefit
- **Accept, Avoid, Mitigate, Transfer**
- $\text{Residual Risk} = \text{Inherent Risk} - \text{Control Risk}$

Risk Identification:

- Asset
- Threat
- Vulnerability
- Time/Application

Monitoring and Reporting:

- KRIs
- Reporting
- Communications

Risk Assessment/Analysis:

- **Possible/Probability Occurrence***
Possible/Probability Impact (primary and secondary)
- Risk Ranking

Terminology:

- Risk Asset
- Threat Actor
- Threat Community
- Vulnerability
- Impact

**BIAS
ALERT**

PROBABLE VERSUS POSSIBLE



Almost anything is possible; we need to focus on probable within a degree of error.

Focus on more probable and/or damaging events first.

High-value assets.

High-frequency threats.

Probable threat communities and threat actors.

Triage methods can help identify.

IDENTIFYING RISK “THEMES”



Risk identification “brainstorming” participants stick to “their” themes.

Risk is *calibrated* against what we know and think we know (read/hear) – environment, organizational structure, processes, controls, or what we currently monitor.

Generally, we should spend more time on risks that we have already experienced.

Innovation is particularly difficult because it is the unknown.

Discussion of risk should be anchored in time

Risk that happened in the past

Risk that you believe are current trends

Risk that you will encounter in the future

Speed of the Risk VoR™ impacts risk management

Velocity of risk – The speed of the causation, impact, duration, and normalization of an event on a risk asset

This impact may be positive – upside or opportunity risk – or negative – downside or adverse risk

VoR impacts event onset, duration, recovery, and normalization.

HOW DO WE GUARD AGAINST POOR DECISION MAKING



1. Get data from multiple sources within the organization
 - a. Include individuals with a balanced perspectives with varied incentives to avoid bias
 - b. Use both internal and external sources to consider the full landscape
2. Use Data to Combat Key Biases
 - a. Avoid availability bias by using only available data
 - b. Anchoring bias the first piece of data is believed at expense of further data
3. Reconcile Reactionary Thinking with Analytical Reasoning
 - a. Gut feelings is Reactionary Thinking (Availability Heuristic Bias)
 - b. Analytical Reasoning- Data or slow thinking

Graphic by LDAPWiki



4. Avoid Groupthink Bias, Bandwagon Fallacy
 - a. Interview junior members first
 - b. Interview Senior members separately
 - c. Then bring two groups together and share results
5. When presenting to other business partners break complex concepts into small easy to use concepts readily understandable
6. There are many more listed here, learn about Cognitive Thinking

Graphic by LDAPWiki



Cryptocurrency and other Emerging Technologies

“A new idea is delicate. It can be killed by a sneer or a yawn; it can be stabbed to death by a quip and worried to death by a frown on the right man’s brow.” — Charles Bowers

“The future ain’t what it used to be.”- Yogi Berra



Innovation:

- new idea,
- method, device
- introduces something novel.

Multi-stage process by which organizations transform ideas into **new or improved products**, services, or processes.

- **Technological innovations**
- **Scientific breakthroughs**
- **Business model innovations**
- **Social innovations**

**Make a list of
your own in 5
minutes**

INNOVATION SINCE 1959 (NOT FACT CHECKED)



call waiting
911,
microwave oven,
water bottles,
cell phone,
rear light on car,
seat belts in all seats,
air bags,
reflection wrong way of highways,
man on the moon,
vaccines,
TSA,
personal computer,
video games,
automatic sliding glass doors,
check out scanners,
debit cards,

CD,
floppy disk,
thumb drives,
pods,
freezes dried,
tang,
hot pockets,
space station,
space shuttle,
mini nuke,
cruise missile,
stealth fighters,
AWACS,
satellite phones,
communication satellite,
in line skates, Cable TV,

social media,
texting,
bicycle helmet,
baby on board sign,
flat screen TV,
led TV,
tv remote,
satellite tv,
satellite radio,
streaming services,
reality TV,
docudrama,
podcasts,
influencer ,
camera phone,
electric car windows,
home alarms,
solar watch,
smart watch,

INNOVATION SINCE 1959 (NOT FACT CHECKED)



electric car,
micro aggression,
global warming,
3D printers,
hover board,
instamatic camera,
digital camera,
Polaroid,
copy machine,
key pad,
key card,
Walkman,
Nanu,
ear buds,
Bluetooth,
WIFI,
internet,
email,
cyber crime,
water purifiers,

pacemaker,
artificial heart,
heart transplant,
lung transplant,
hearing head thing,
night vision,
GPS,
heated car seats,
cooled car seats,
cruise control,
semi autonomous cars,
software applications,
CarMax,
domino's,
grub hub,
ride share,
digitalization,
fax machines,
word processor,
document shredder,

Keurig's,
coffee pod,
air fryer,
my pillow,
pet rock,
Jarts,
creepy crawlers,
Johnny west,
johnny quest,
pee wee Herman,
sponge Bob square pants,
air tags,
calculator, translators,
crypto currency,
block chain
E-books,

PET scans,
MRI,
Dog GPS chips,
plastic bags,
self check out,
self pumping gas,
Telemedicine
UFC fighting,
Tablets

INNOVATION- THINGS THAT DISAPPEARED



Drive in theaters,
Milkman,
Charles Chips
doctor visits at home,
unlocked doors,
whippings in school,
bringing radios to school,
afternoon world series games,
ice cream trucks,
community,
roaming the neighborhood,
freedom of expression,
common sense,
personal responsibility,
riding bikes without helmets
glass bottle milk,
Pet rocks,
Wish nicks,
Electrical tubes,
Princess phones,
Party-lines

A BRIEF HISTORY OF CRYPTOCURRENCY



Early Concepts and Pioneers:

In 1983, David Chaum introduced an encrypted system of digital money called eCash. Later, in 1995, he developed another secure transaction system named DigiCash

His invention of the “blinding formula” demonstrated how digital tokens could be securely sent and received without relying on a central authority.

Bitcoin Emerges (2008-2010):

In the wake of the 2008 housing bubble burst, Satoshi Nakamoto published the groundbreaking whitepaper titled *“Bitcoin: A Peer-to-Peer Electronic Cash System.”*

Nakamoto proposed a scarce supply of 21 million bitcoins and introduced the consensus mechanism called proof-of-work (PoW) for transaction verification. It forces computers to solve algorithmic puzzles to validate transactions on the blockchain.

Bitcoin’s Rise to Prominence:

Bitcoin’s journey from relative obscurity to global recognition is remarkable. It became a household name, and the total crypto market cap surpassed \$3 trillion in 2021. (\$1.9 Trillion as of Feb. 12, 2024)



Cryptocurrency/ Coin are a *digital currency in which transactions are verified and records maintained by a decentralized system* using cryptography, rather than by a centralized authority.

Crypto tokens are *digital representations of interest in an asset* or used to facilitate transactions on a blockchain.

WHAT DID IMPORTANT/ FRAUDSTERS PEOPLE SAY?



"I don't have the time to try to convince you if you don't believe it or understand it." - Satoshi Nakamoto

"It's money 2.0, and it's a huge, huge, huge deal." - Chamath Palihapitiya

"Bitcoin is a techno tour de force." - Bill Gates

"Bitcoin won't last but crypto is here to stay" - Eric Snowden

"Whenever the price of cryptocurrency is rallying, people start spending a lot more." - Erik Voorhees

"The blockchain does one thing: It replaces third-party trust with mathematical proof that something happened." - Adam Draper

SAMPLE COMPANIES ADOPTING



T Mobile

 *norwegian*



dish
NETWORK

intuit.



PayPal



virgin
atlantic



“You can use an old map to discovery a new world”- Albert Einstein

“When you come to a fork in the road- take it”- Yogi Berra

WHAT RISKS CAN YOU IDENTIFY?



Take 10 minutes and with your table list the risks in cryptocurrency you can identify.

You can be as high level or granular

We'll then select a few of these and build out:

- Description/definition
- Assessment/Analysis
- Response
- KRI's/Monitoring

PARTIAL LIST- HOW DID YOU DO?



- Volatility and Price Fluctuations
- Regulatory Uncertainty
- Security Risks
- Liquidity Challenges
- Reputation Risk
- Operational Complexity
- Financial Reporting
- Environmental
- Market Acceptance
- Market Manipulation
- Lack of Consumer Protections
- Project Risk (associated with tokens)
- Token Utility and Adoption
- Technological Obsolescence
- Psychological Factors (impact of FOMO)

Market Risk:

- Cryptocurrencies can be subject to significant market volatility, even among major coins. (Bitcoin 7/7/23-7/8/23)
- Investors need to be prepared for sudden price fluctuations and adjust their holdings based on their risk tolerance.
- Fluctuations based in data and statistical relationships?
- Visibility into volatility?

Impact on your assessment?

KRI?

Frequency of monitoring?

Market Risk Indicators:

Historical Price Data:

- Opening price, high price, and low price
- Volume

Market Sentiment and News:

- Social Media
- News

Technical Indicators:

- Moving averages
- Bollinger Bands

Blockchain Metrics

- Network activity
- Hash rates

Market Capitalization and Dominance:

- Total market cap
- Bitcoin dominance

External Factors:

- Macroeconomics
- Regulatory Developments
- Adoption and Partnerships

Machine Learning Models:

- Regression analysis
- Random Forests

Volatility of Cryptocurrency

- High or low volatility?
- Frequency of swings?
- Ability to hedge against swings?

Impact on your assessment?

KRI?

Frequency of monitoring?



Legal and Regulatory Risk:

- **Governments and regulatory bodies** worldwide are closely monitoring cryptocurrency transactions.
- Track these transactions, regulate major exchanges, and even strip encryption protections.
- Some countries, like China, cryptocurrencies have been banned altogether.
- Securities and Exchange Commission (SEC) is considering new regulations that may classify widely traded assets like ether (ETH) and XRP as securities.

Impact on your assessment?

KRI?

Frequency of monitoring?

Security Risk:

- While the underlying cryptography and blockchain technology are generally secure, the technical complexity of using and storing crypto assets can be a hazard for new users.
- Fraud, scams, hacks, bugs, cybersecurity vulnerabilities

Impact on your assessment?

KRI?

Frequency of monitoring?

Environmental Concerns:

- The energy-intensive process of mining cryptocurrencies, especially Bitcoin, has raised environmental concerns.
- Mining requires substantial computational power and contributes to carbon emissions.
- Maturity will bring environmental concerns to the forefront

Impact on your assessment?

KRI?

Frequency of monitoring?

Market Manipulation

- Cryptocurrencies are susceptible to market manipulation due to their relatively small market size and lack of regulation.
- Pump-and-dump schemes, false rumors, and coordinated trading can affect prices.
- Owner education is important to mitigate risk

Impact on your assessment?

KRI?

Frequency of monitoring?

RECAP OF RISK ASSESSMENT REQUIRED FOR CRYPTOCURRENCY



- **Mapping Vulnerabilities:** Risk assessments proactively identify **potential vulnerabilities**. By understanding how criminals might exploit specific products or services, you can address these vulnerabilities before regulatory, civil, or criminal scrutiny arises
- **Resource Planning:** Once vulnerabilities are identified, you can **determine the controls** needed to mitigate them. This **risk-based approach** allows you to devise effective strategies and allocate scarce resources appropriately
- **Development Strategy:** In the fast-paced cryptocurrency sector, **growth and innovation** are constant endeavors. Risk assessments guide decision-making, such as determining which new coins to list on exchanges. Leveraging risk assessment insights aids organizational development efforts
- **Evolving Dialogue:** Risk assessments should facilitate **ongoing dialogue**. Insights and feedback from senior management, auditors, consultants, and stakeholders contribute to refining risk management practices

QUESTIONS AND CONTACT INFORMATION



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