



Risk Management in the Era of DLT and Real-time Settlement

Matthias Alexander Spühler



- Welcome and thank you for having me at PWS '18

About me

ELEVENEYE



Matthias Alexander Spuehler

1971, Swiss-based, married, three kids (16,14,9)

Managing Partner at eleveneye, Future Astronaut at Virgin Galactic and interims Group Chief Risk Officer (CRO) at Lykke.

25 years of expertise in entrepreneurship, project- and line management and organizational development, in the field of finance and IT in Switzerland, Germany, China, USA and Namibia within several industries.

2 ½ years in Namibia – first hand experience in what it means to have or not to have access to a financial system.

Since 2001, he has worked in the financial- as well as in the insurance sector, with customers like Credit Suisse, Helsana or W&W in Stuttgart, Germany

He holds swiss federal diplomas in electronics, technical telecommunication, computer- and business economics. Besides his MBA-degree, he is also certified Director for Board Effectiveness (HSG), in Corporate Governance of Enterprise IT® (CGEIT), Managing Successful Programs® (MSP) and enjoyed a Basic Space Training from NASTAR.

www.eleveneye.com - www.spuehler.org

“create prosperity not just wealth”

1) What ist Risk Management for you?

The biggest risk is, not taking any

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For me, Risk Management is the reason why this is possible ...
... more than once.

Taking measures to mitigate the risks



Altimeter

2 Parashoots

Automated parachute activation

- Opportunities, threats, actions

Topics



- Stories
- Risk Assessment Tasks
- Risk Management – shared common meaning
- DLT – Distributed Ledger Technology
- Real Time Settlement and 24x7
- Smart Contracts – brings negotiations to the front
- Moonshot

- Risk Management – Shared Common Meaning

Story: Lost in Translation ...



- Traveling to russia, wondering on the signs and then sitting in a room full of nice people talking Russian most of the time - having no clue what their are talking about.

[ɔl hjumən biɪŋz æː boʊn fɪ ænd ikwəl ɪn dɪŋnəti
ænd ɹaɪts. ðeɪ æː ɪndəʊd wið ɹɪzən ænd kənʃəns ænd
ʃʊd ækt təʊdz wʌn ənʌðə ɪn ə spiɪt ʌv bɪʌðəhʊd]

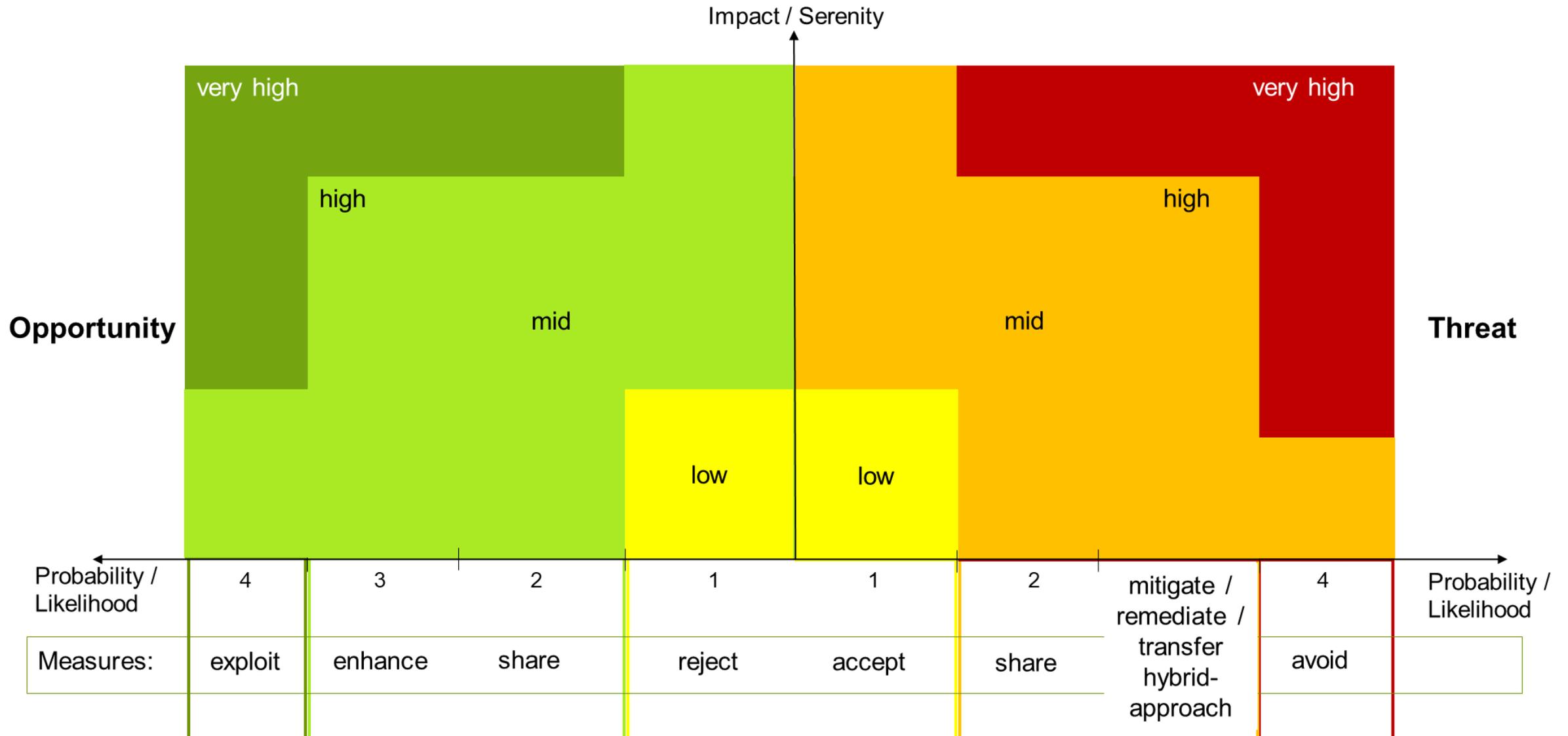
- Not understanding each other, even if we speak the same language, is one of the most essential parts, the foundation for successfull collaboration. And one of the biggest risks for errors - especially with distributed workplaces and communicating electronically.

Definition – Shared Common Meaning

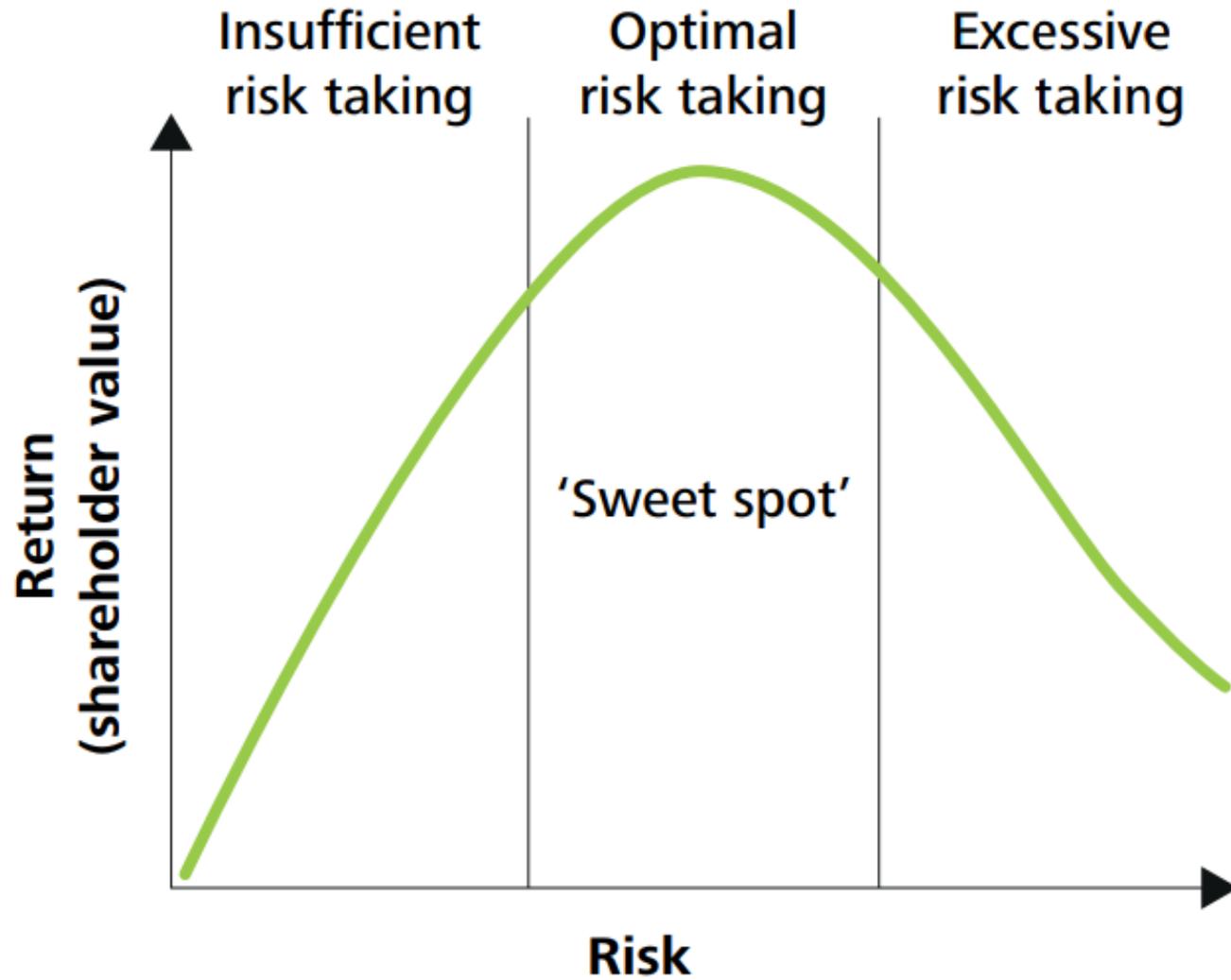


- (Enterprise) Risk Management

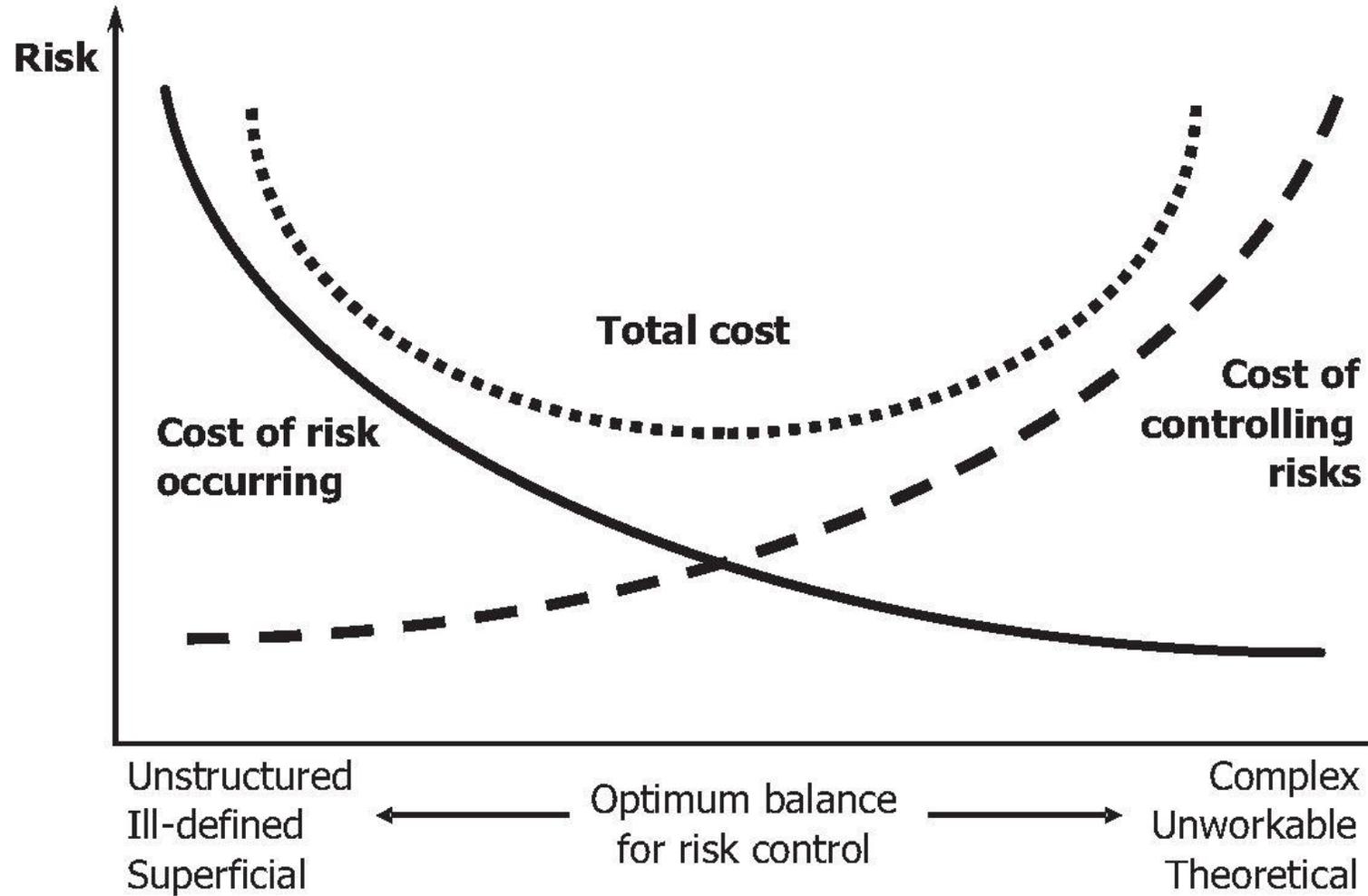
Risk Management & -Governance : Opportunities and Threats



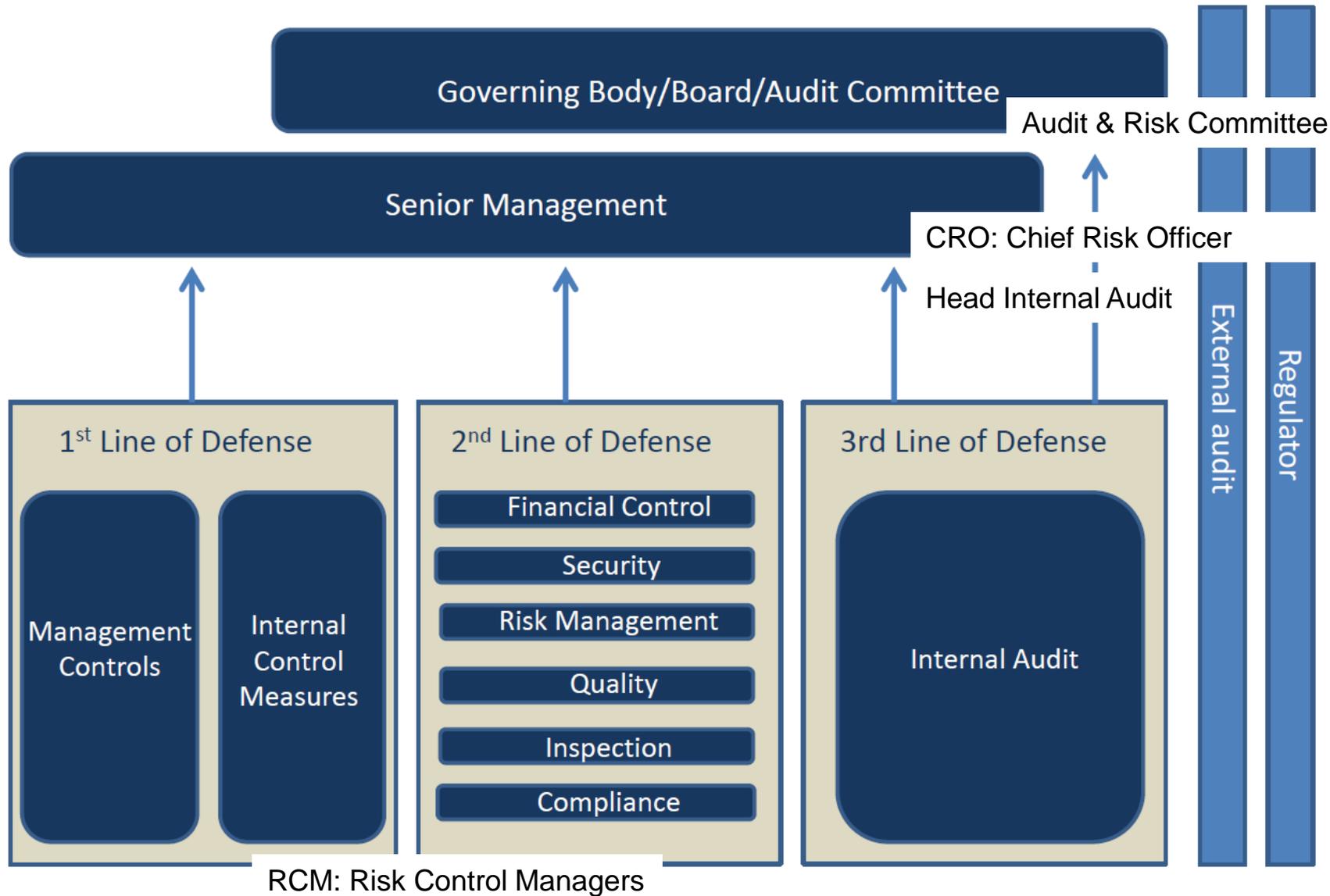
Strategic «Sweet Spot»



Risk Management Balance – Cost View



Three Lines of Defense Model



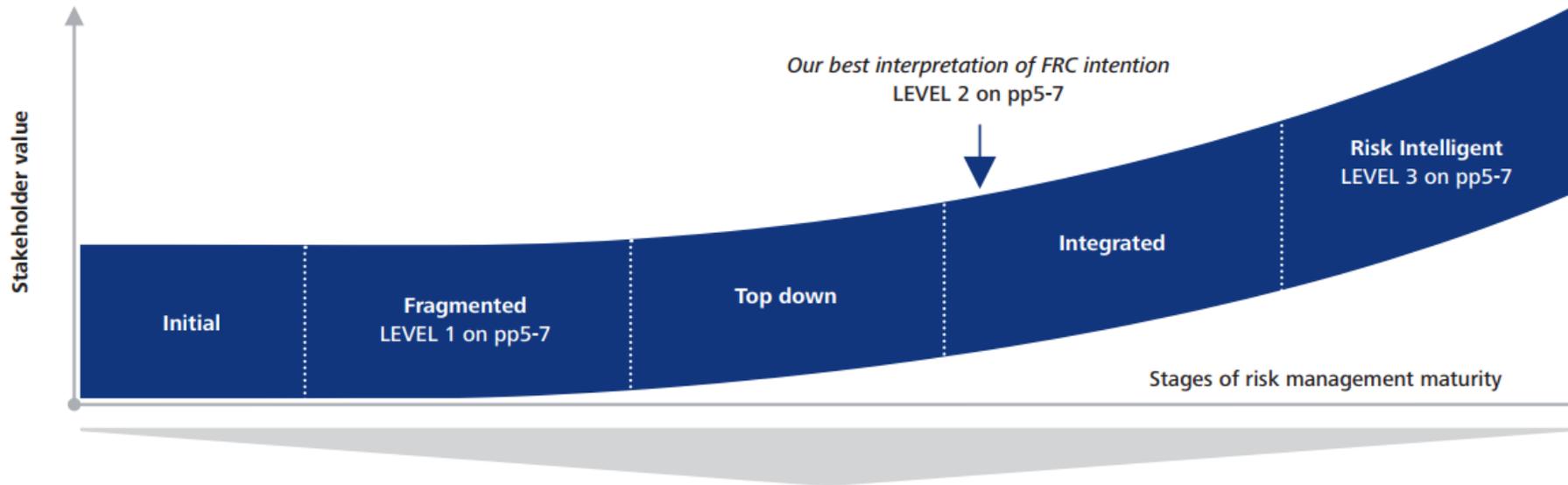
Global Risk Management Model

The risk management model provides **strength** and **stability** to the Group, supporting the Group's management and strategy

*General Model
for Risk Control
& Management*

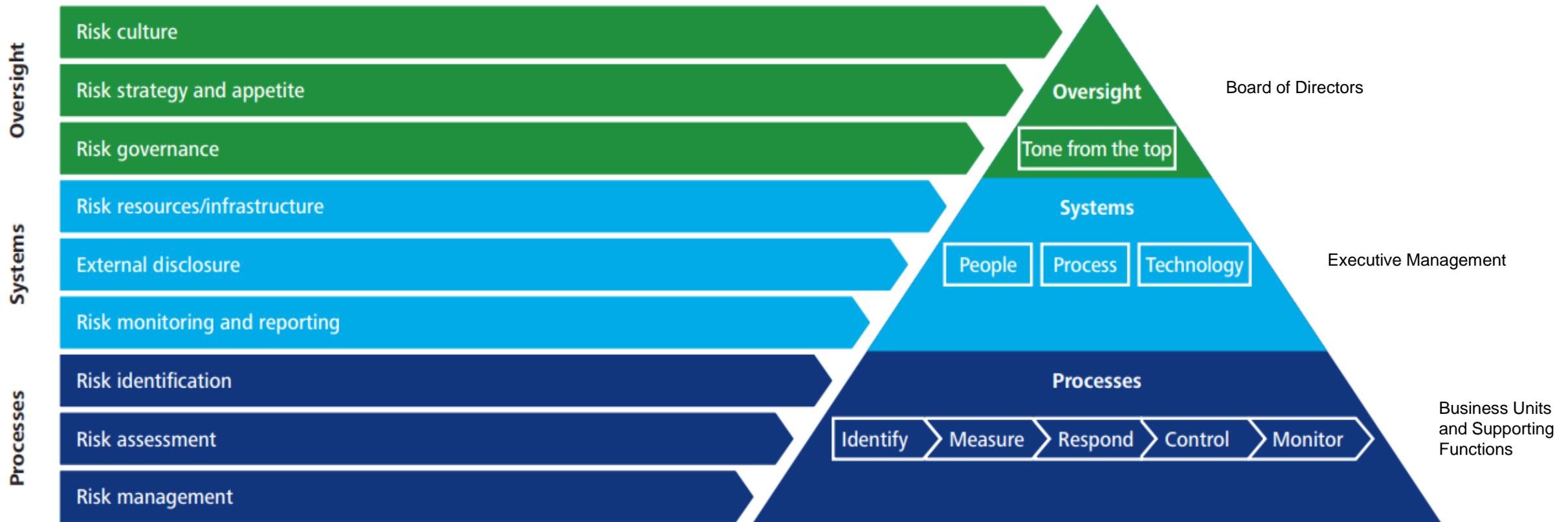


Deloitte: Enterprise Risk maturity modell



<p>Typical attributes</p> <ul style="list-style-type: none"> • Ad hoc/chaotic • Depends primarily on individual heroics, capabilities, and verbal wisdom 	<ul style="list-style-type: none"> • Independent risk management activities • Limited focus on the linkage between risks • Limited alignment of risk to strategies • Disparate monitoring and reporting functions 	<ul style="list-style-type: none"> • Common framework, programme statement, policy • Routine risk assessments • Communication of top strategic risks to the Board • Executive/Steering Committee • Knowledge sharing across risk functions • Awareness activities • Formal risk consulting • Dedicated team 	<ul style="list-style-type: none"> • Coordinated risk management activities across silos • Risk appetite is fully defined • Enterprise-wide risk monitoring, measuring, and reporting • Technology implementation • Contingency plans and escalation procedures • Risk management training • Clear input into Internal Audit and other assurance activity plans 	<ul style="list-style-type: none"> • Risk discussion is embedded in strategic planning, capital allocation and product development • Early warning risk indicators used • Linkage to performance measures and incentives • Risk modeling/ scenarios • Industry benchmarking used regularly
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Deloitte: Enterprise Risk Management Framework

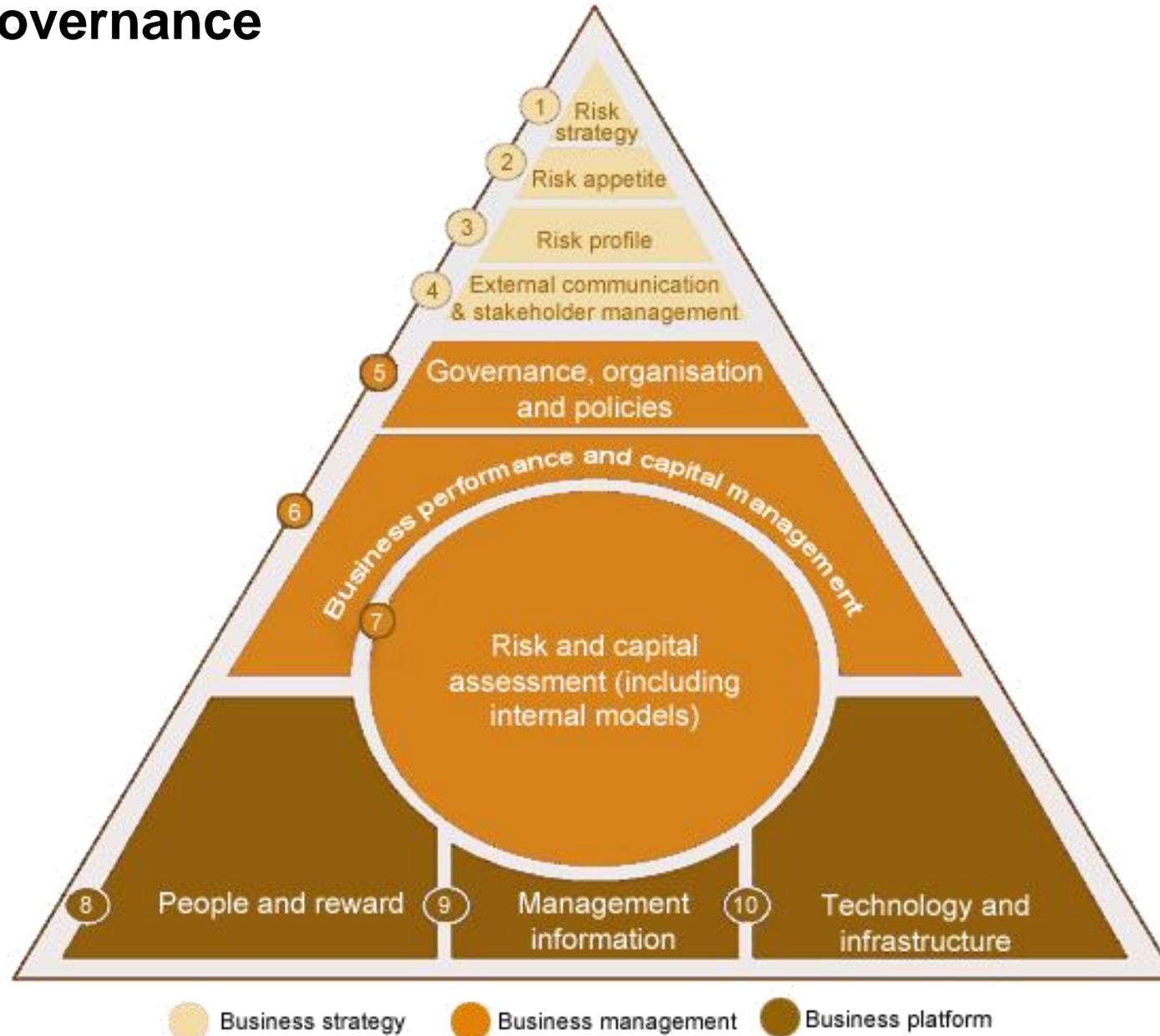


Deloitte: Enterprise Risk Management Framework



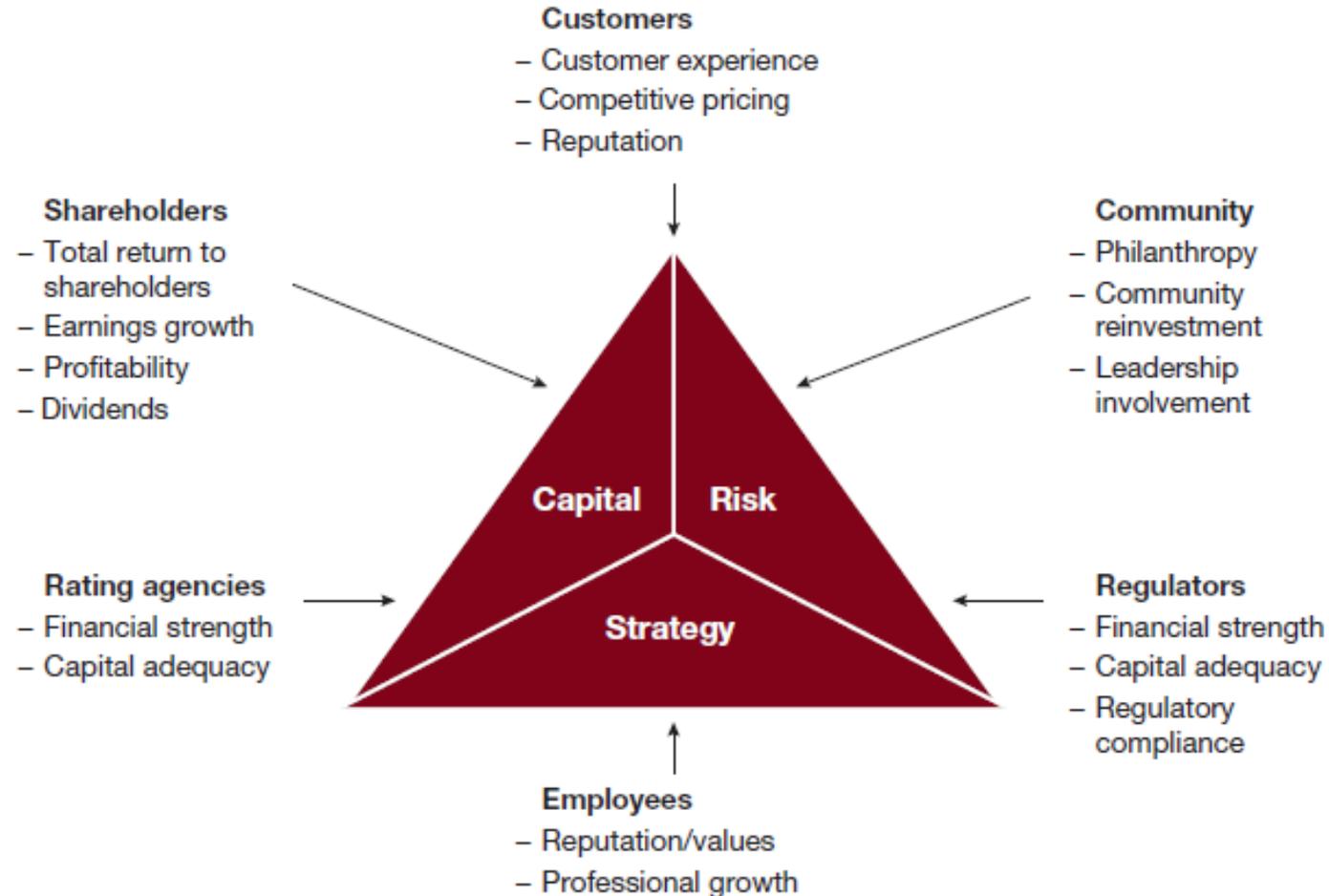
Risk Governance	Board of Directors (and the Audit Committee) <ul style="list-style-type: none"> • Foster a risk Intelligent culture • Approve risk appetite • Ratify key components of the Enterprise Risk Management (ERM) programme • Discuss enterprise risks with executive management 				Technology (all pervasive): <ul style="list-style-type: none"> • Provide periodic/ real-time dashboards to oversee risks • Make monitoring and reporting easier • Support timely maintenance and pre-empt problems • Facilitate risk escalations
Risk Infrastructure and Management	Executive management: <ul style="list-style-type: none"> • Define the risk appetite • Evaluate proposed strategies against risk appetite • Provide timely risk-related information 	Enterprise risk group: <ul style="list-style-type: none"> • Aggregate risk information • Identify and assess enterprise risks • Monitor risks and risk response plans 	Internal Audit: <ul style="list-style-type: none"> • Provide assurance on effectiveness of the ERM programme, and the controls and risk response plans for significant risks 	Risk Management: <ul style="list-style-type: none"> • Create a common risk framework • Provide direction on applying framework • Implement and manage technology systems • Provide guidance and training 	
Risk Ownership	Business units: <ul style="list-style-type: none"> • Take intelligent risks • Identify and assess risks • Respond to risks • Monitor risks and report to enterprise risk group 		Support functions: <ul style="list-style-type: none"> • Provide guidance/support to the enterprise risk group and business units 		

PwC: Risk Governance



PwC: Risk Governance

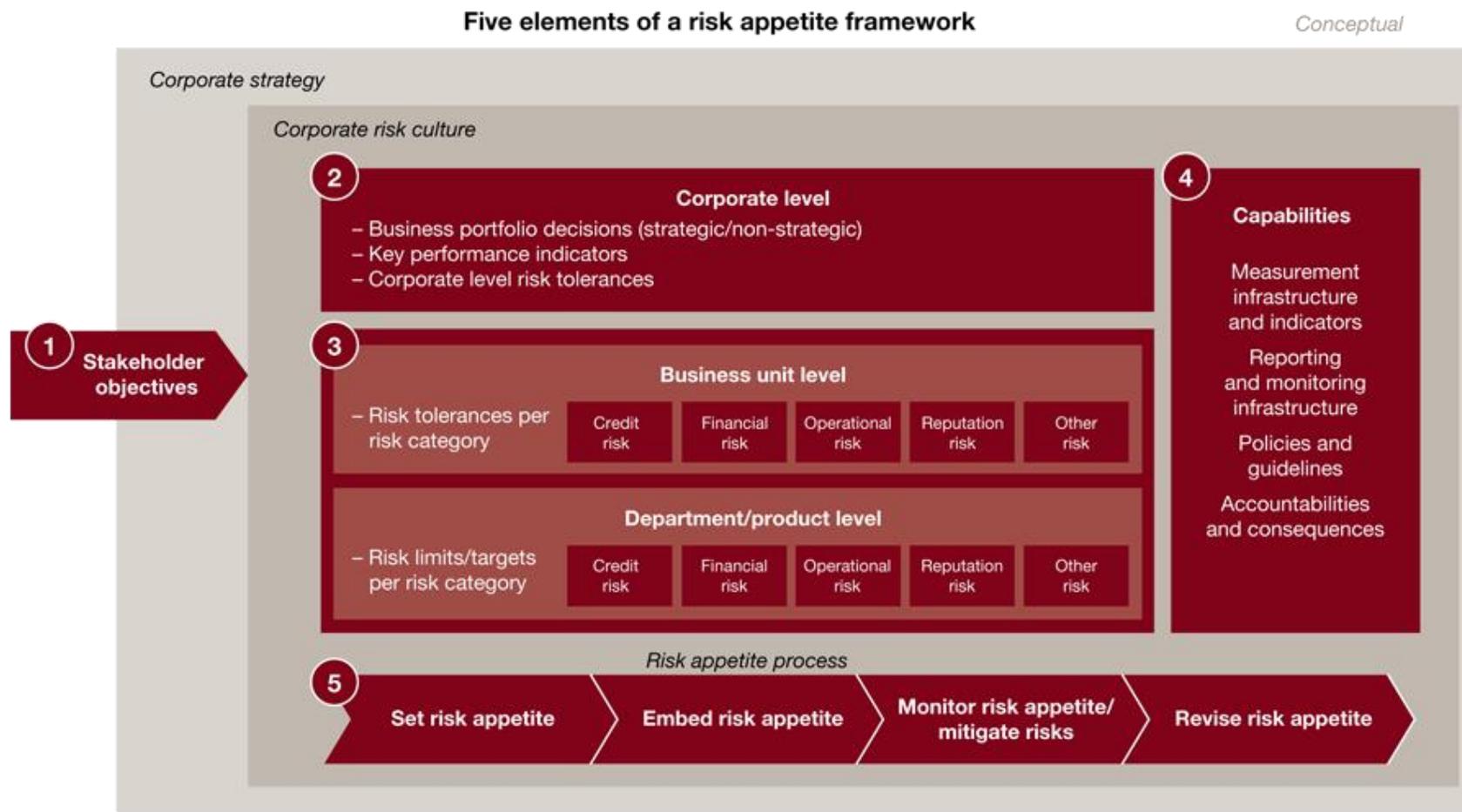
Regulators and rating agencies now require banks to align various stakeholder objectives to better balance strategy, capital, and risk



PwC: Risk Governance

1. Stakeholder objectives

Regulators and rating agencies now require banks to align various stakeholder objectives to better balance strategy, capital, and risk



PwC: Risk Governance

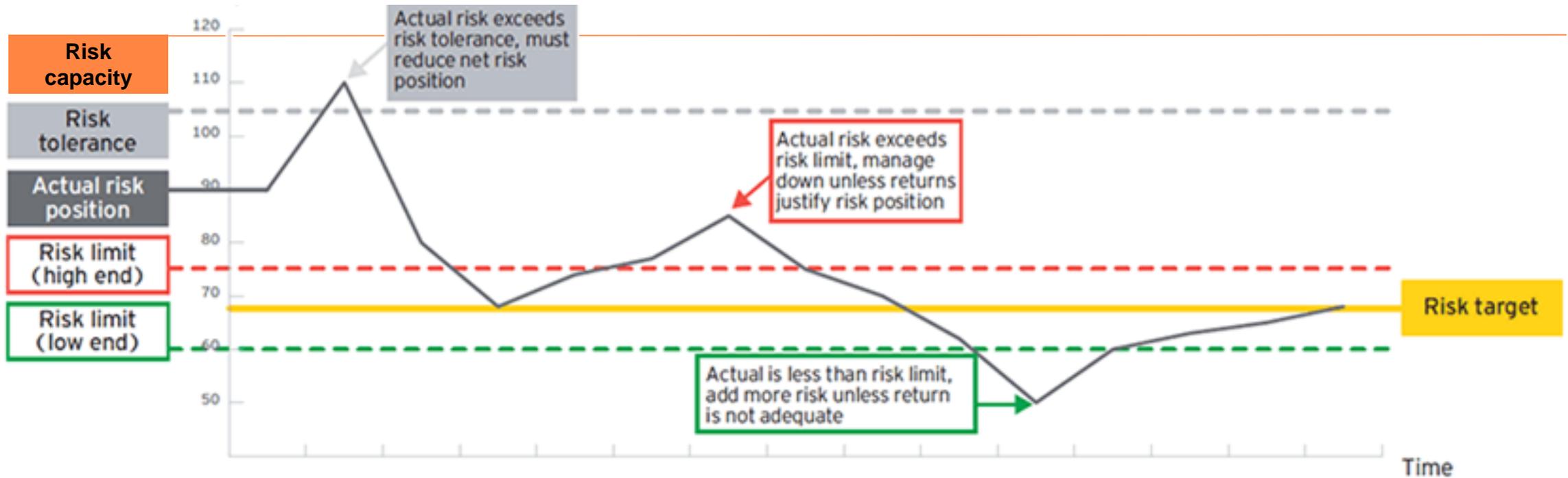
Corporate-level risk appetite and tolerances

Illustrative

Risk categories	Risk appetite					Economic capital allocated (in % of total EC)	Actual
	Low 1	2	Medium 3	4	High 5		
Credit risk						60%	
Financial risk – Market risk – Interest rate risk – Liquidity risk – Counterparty risk						25%	
Operational risk – Operational risk – Compliance risk – Corporate security risk – Technology risk						10%	
Reputation risk						1%	
Other risks – Strategic risk – Legal risk						4%	



Risk Elements - Timeline





Principle based approach



Governance Principles of the Board of Directors

“Tone at the Top”

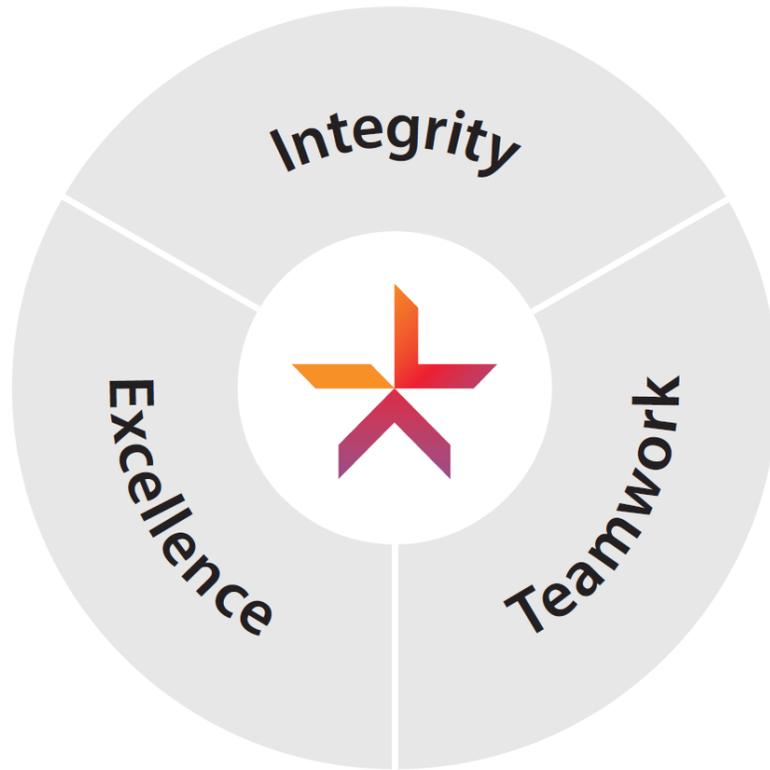
We shall be a "good citizen/company" shaping our future and be build to stay.

Creating long-term value and health of the Lykke Group in the interests of the stakeholders. The Board provides management with strategic guidance, and also ensures that management adopts and implements procedures designed to promote both legal compliance and the highest standards of honesty, integrity and ethics throughout the organization.

- **Compliance with Laws and Ethics:** The Directors ensure that procedures and practices are in place designed to prevent and identify illegal or unethical conduct and to permit appropriate and timely redress should such conduct occur.
- **Inform and Listen to Investors and Regulators:** The Directors take steps to see that management discloses appropriate information fairly, fully, timely and accurately to investors and regulators, and that Lykke maintains a two-way communication channel with its investors and regulators.
- **Continuous Improvement:** The Directors remain abreast of new developments in corporate governance and they implement new procedures and practices as they deem appropriate



The Lykke wheel – our Business Principles



We shall be a „good citizen/company“
shaping our future and be build to stay.

Integrity: We demand of each other and ourselves the highest standards of individual and corporate integrity. We safeguard Company assets. We foster an environment of trust with our co-workers, customers, communities. We comply with all Company policies and laws, and create an environment of transparency.

Excellence: We continually challenge each other to improve our products, our processes and ourselves to be known as global best in class.

Teamwork: We are dedicated to diversity, fair treatment, mutual respect and trust. We bring the best out of each other and elevate to highest performance.

- Risk Management – Shared Common Meaning

- What are your top 5 risks for this year?



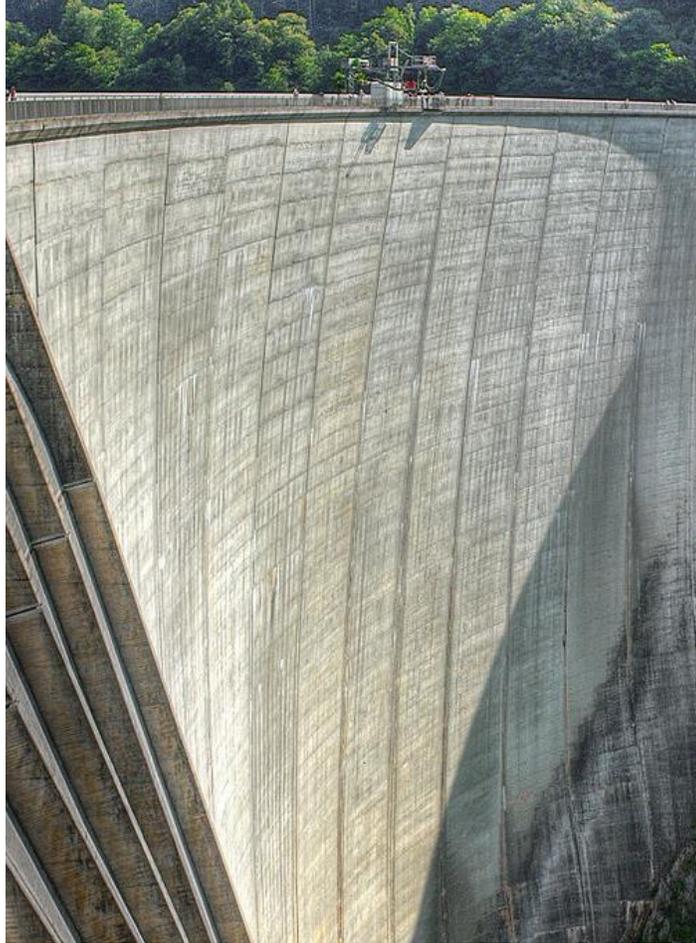
- Risk Assessment – what would you do?

Switzerland – Verzasca Dam or Contra Dam



Risk Assessment

Where would you rather jump and why?

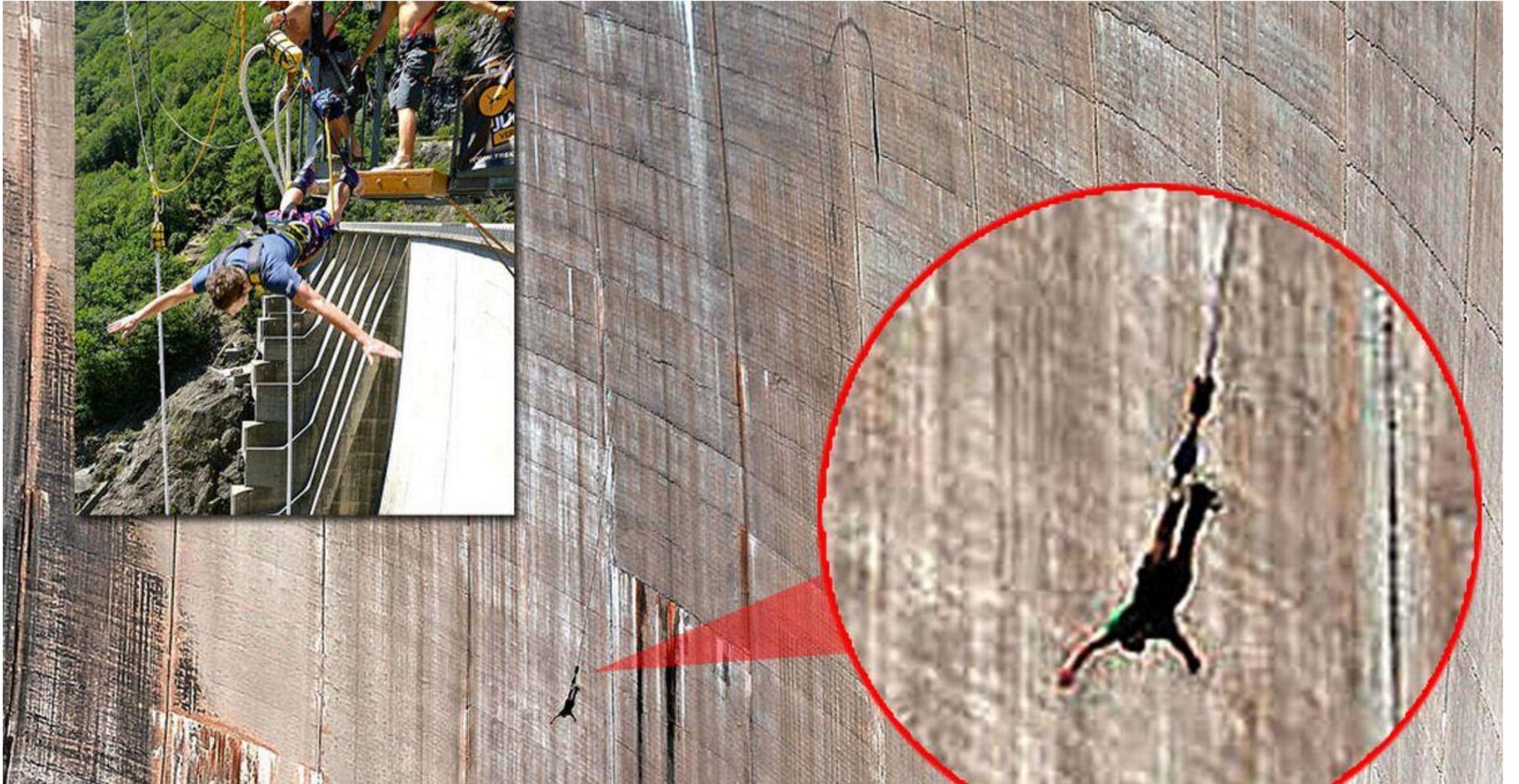


A)
200m



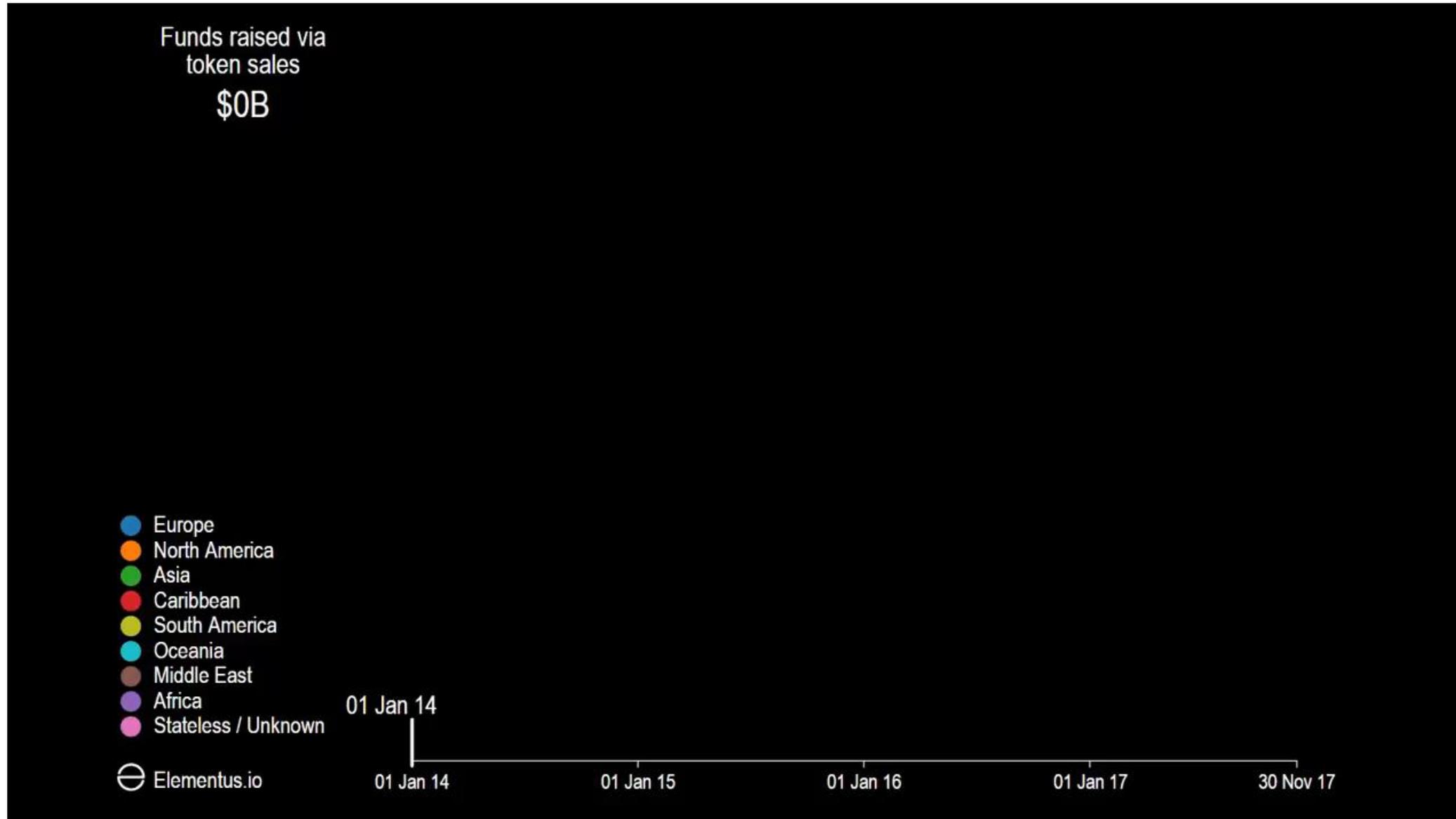
B)
60m

James Bond – Golden Eye Jump



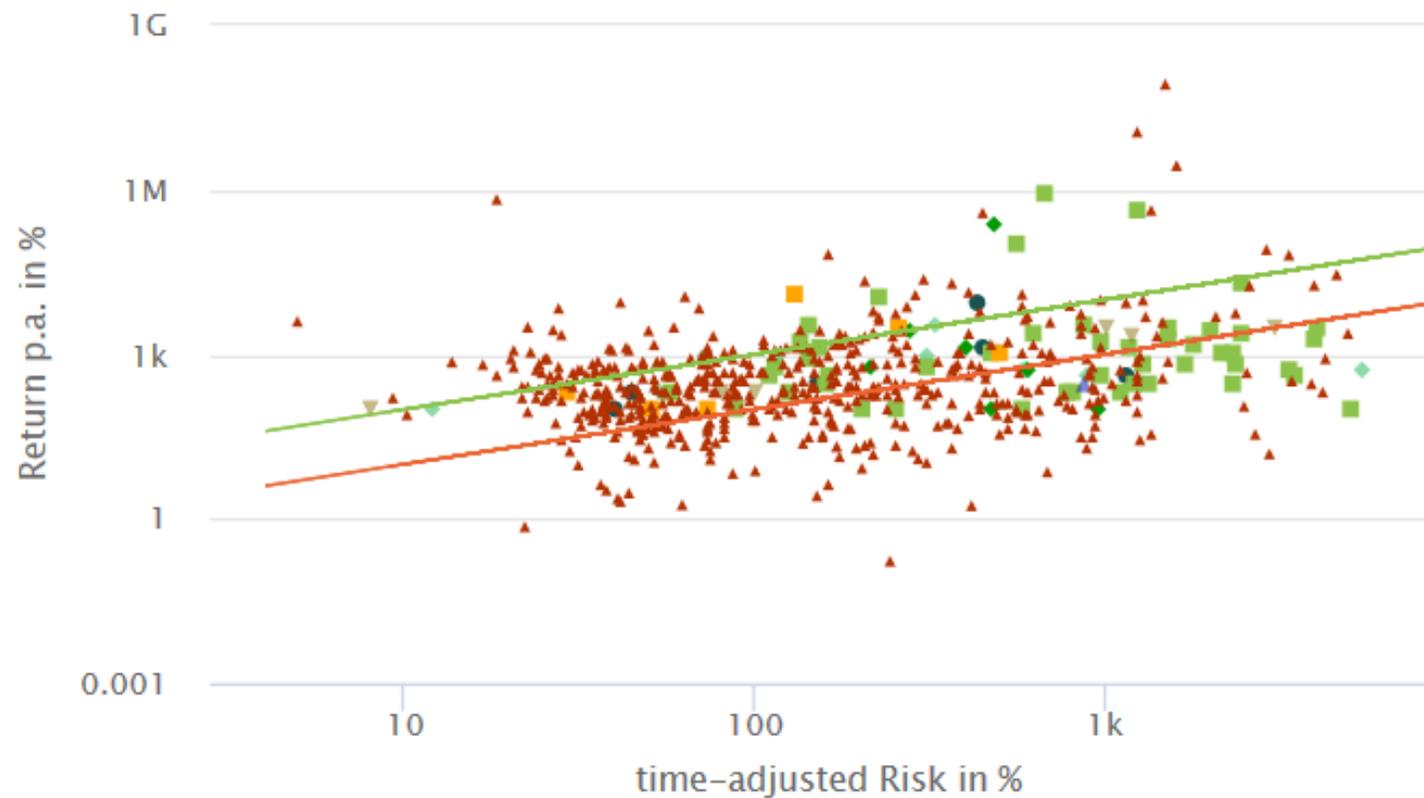
- Opportunities and Threats

Opportunity: Visualizing the ICO Explosion



Which cryptocurrency should I buy?

Risk* / Return of Crypto Currencies and Crypto Assets



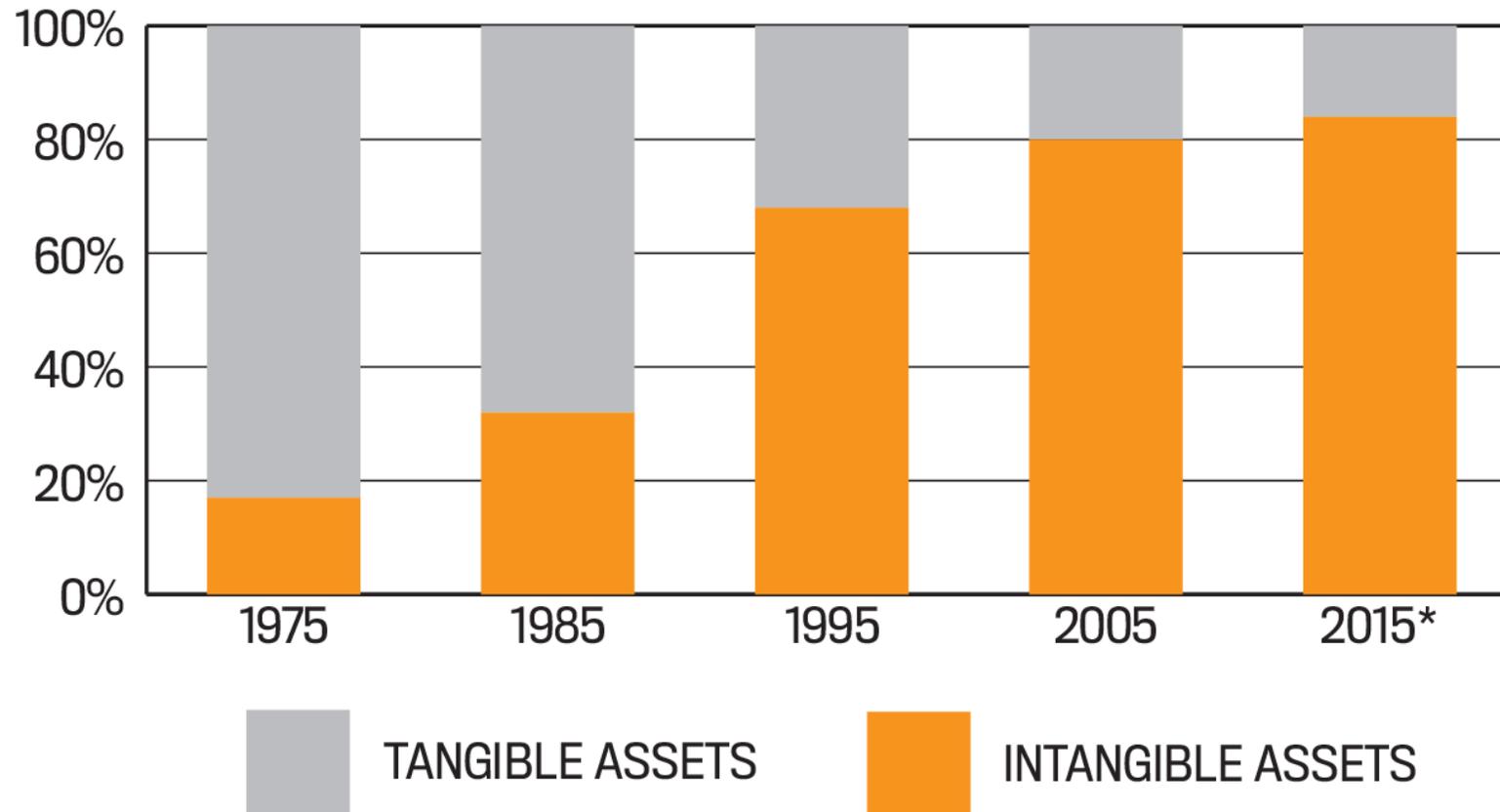
<https://www.cryptocointool.com/>



- How do you measure the values behind these big figures?
- How do you reduce the risk of a total default?

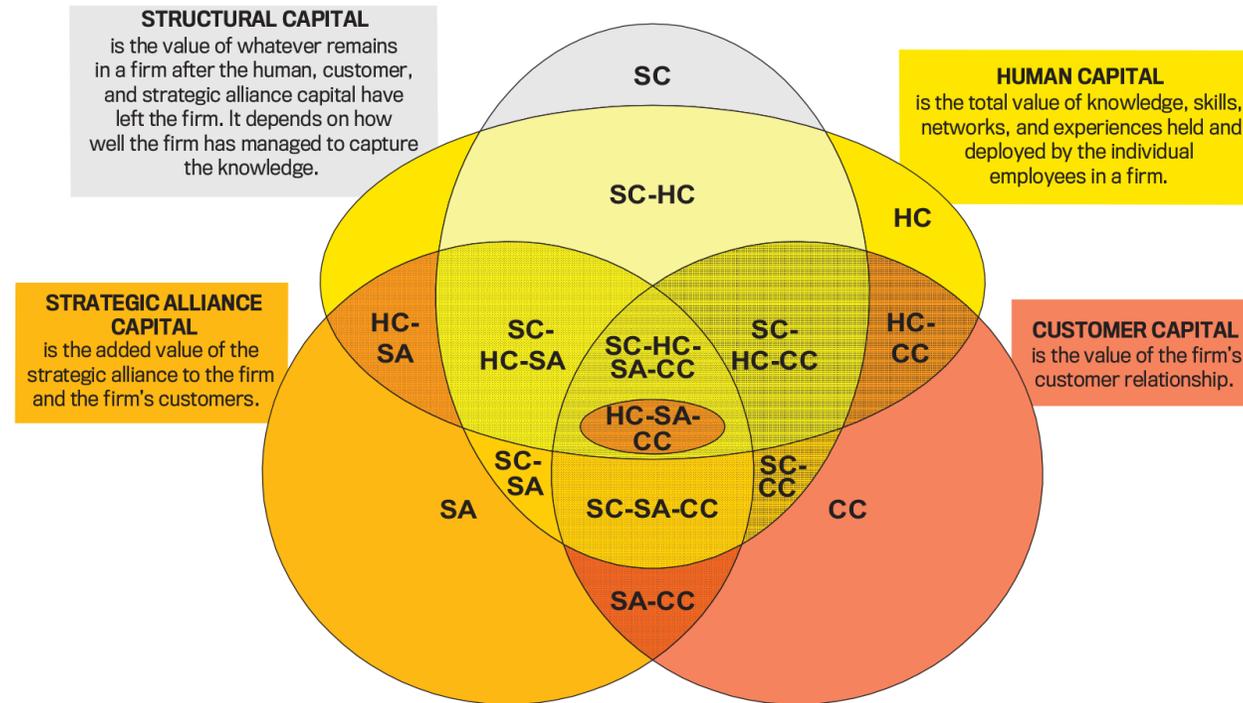


S&P 500 MARKET VALUE



Intangible Assets - intellectual capital (IC)

THE AREOPA 4 LEAF MODEL

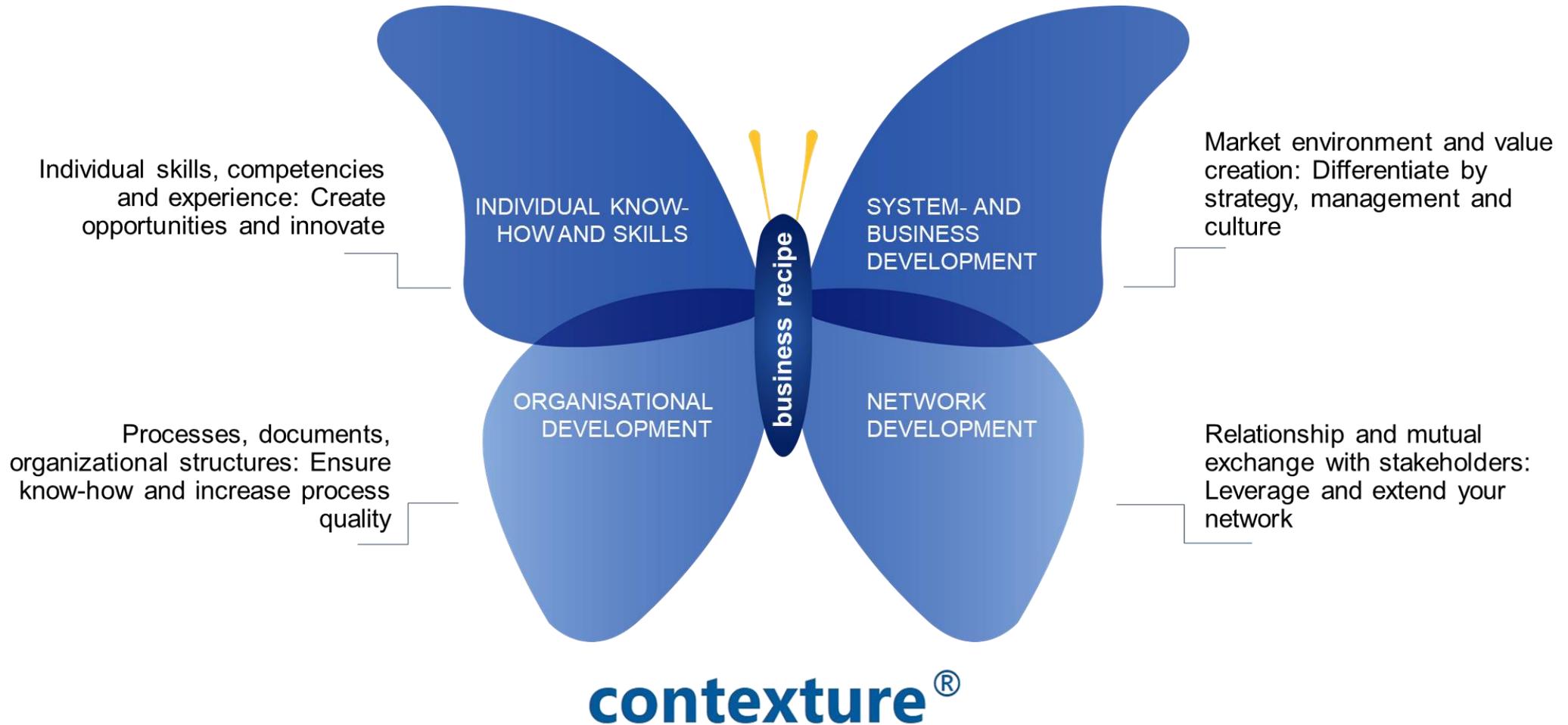


$$BV_{IC} = (AC_{IC} + EC_{IC}) - D_{IC} + (VI_{IC} - VD_{IC})$$

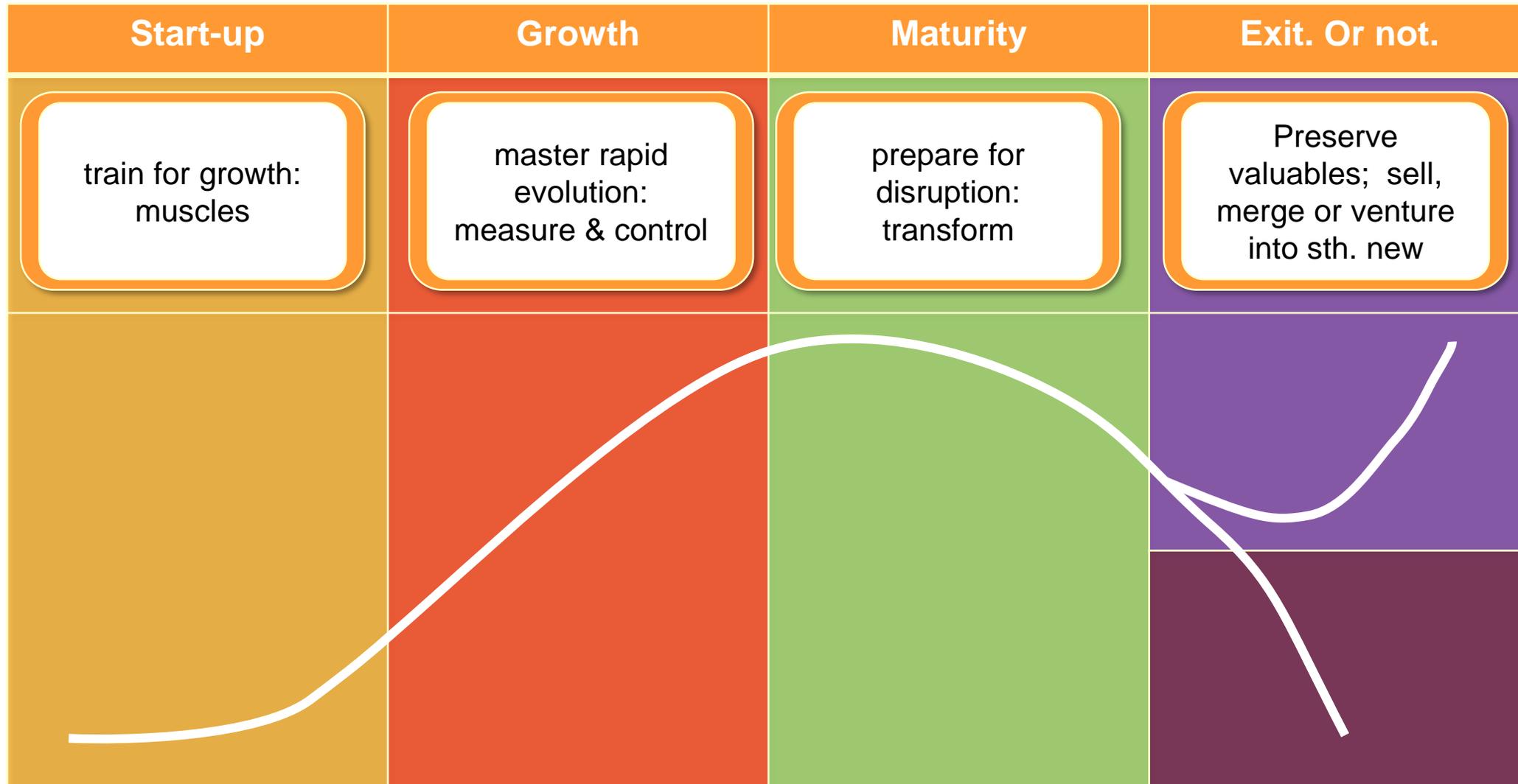
social capital (SC), human capital (HC), customer capital (CC), and strategic alliance/network capital (SA).

Sustainable build-up of Intangible Assets

-> Capacity Building



Where is your Company?



“create prosperity not just wealth”



"All that is necessary for the triumph of evil is
that good men do nothing."

Edmund Burke

Story: Spuehlers @ Namibia : 2007 - 2009

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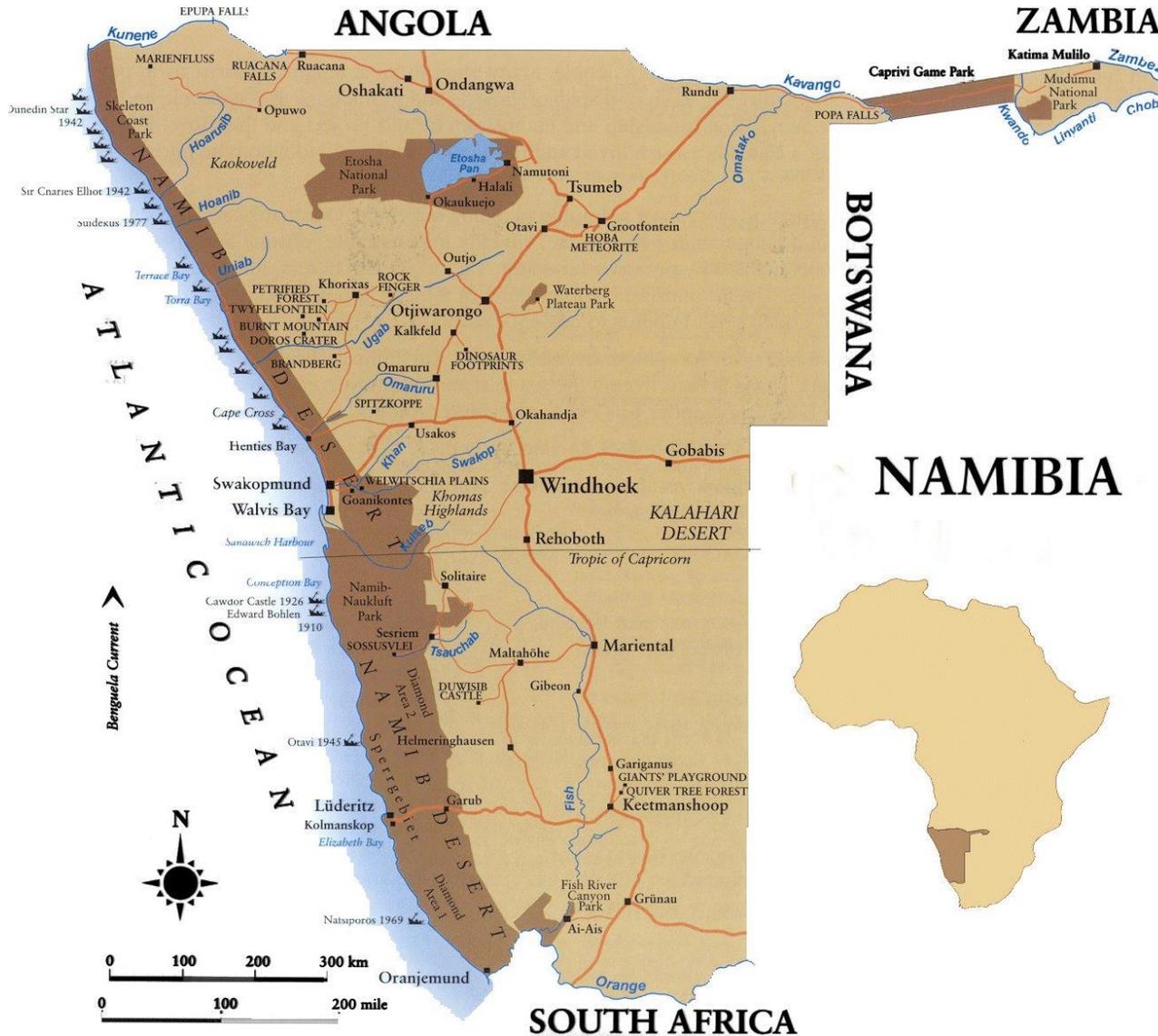


Story: Spuehlers @ Namibia : 2007 - 2009

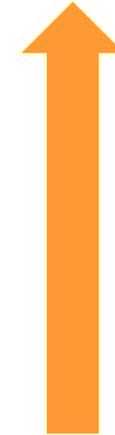


Mobile Payment - 2007

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0812234030



Real Time (Settlement)



201#0812234030#20



Mobile Banking – Banking the unbanked

- In 2002, researchers at [Gamos](#) and the [Commonwealth Telecommunications Organisation](#), funded by [Department for International Development UK](#) (DFID), documented that in Uganda, [Botswana](#) and Ghana, people were spontaneously using airtime as a proxy for money transfer.^[6] Kenyans were transferring airtime to their relatives or friends who were then using it or reselling it.
- In March 2007, Kenya's largest mobile network operator, Safaricom (part of the Vodafone Group) launched M-PESA, an innovative payment service for the unbanked. "Pesa" is the Swahili word for cash; the "M" is for mobile. Within the first month Safaricom had registered over 20,000 M-PESA customers, well ahead of the targeted business plan.

- What kind of opportunities and threats do you see?
- What kind of use cases for the customers do you see?

'Leapfrog' technology – 2007 – Use Cases



- One woman in the pilot project texted some money to her husband after he was robbed, so he could catch the bus home.
- Others said they had used M-Pesa to avoid being robbed, depositing money before a journey and withdrawing it on arrival.
- Businesses deposited money overnight rather than keeping it in a safe.
- People paid each other for services.
- And workers in the city used M-Pesa to send money to relatives back home: much safer than the previous option, entrusting the bus driver with an envelope of cash.

Mobile Banking – Banking the unbanked



Prepaid-Money as Life Insurance

- In 2015 shs. 4.2 Trillion was transacted through the mobile money platform representing **42% of the Kenya's GDP**.
- It has since expanded to Afghanistan, South Africa, India and in 2014 to Romania and in 2015 to Albania. M-Pesa allows users to deposit, withdraw, transfer money and pay for goods and services ([Lipa na M-Pesa](#)) easily with a mobile device.^[2]
- Following a 3-year migration project to a new technology stack, as of 26 February 2017, IBM's responsibilities have been transferred to Huawei in all markets.
- And there is an M-PESA API [<link>](#)



Mergims

Mergims is an online payment platform for urgent goods and services in Rwanda. It works to connect nationals living overseas with merchants in their home countries and enables them to pay for airtime, utilities, tuition fees and much more for their beloved ones.

*Louis Antonie Muhire
Founder and CEO*



Rwanda - Mergims

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The screenshot displays the Mergims website interface. At the top left is the Mergims logo, and at the top right are navigation links for Services, Newsroom, Why Us?, Contact, and a Login button. The main content area features a grid of 12 service categories, each with an icon and a label. The categories are arranged in three rows and four columns. The first two rows have alternating background colors (blue and white), while the third row has a light blue background. The categories are: Airtime (phone icon), Bills (credit card icon), Tuition (graduation cap icon), Vouchers (tag icon), Books (book icon), Audio (audio file icon), Eco Kits (wrench icon), Tickets (ticket icon), Groceries (shopping cart icon), Movies (film icon), Health (stethoscope icon), and Freelancer (code icon).

Airtime	Bills	Tuition	Vouchers
Books	Audio	Eco Kits	Tickets
Groceries	Movies	Health	Freelancer

Rwanda - Mergims



Focus on Personas and User Value Add



Old-age couple (Western world)

«We cannot get our mortgage renewed.»



35-year old man (Namibia)

«My bank account literally eats away my money.»



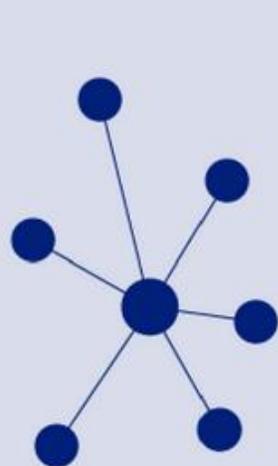
CFO of a Swiss SME

«FX takes too long and is way too expensive.»

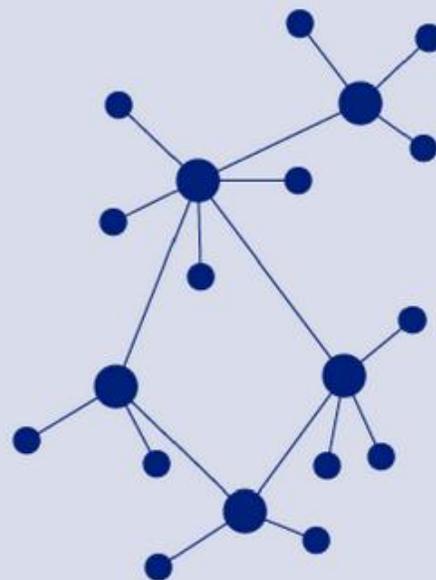
Simplify and create User Exitment



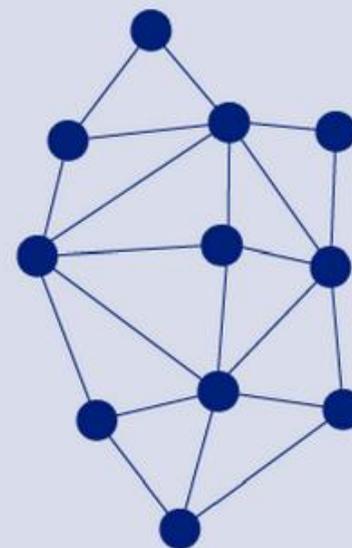
- Is Risk Management and Compliance different with DLT?



**CENTRALIZED
NETWORK**



**DECENTRALIZED
NETWORK**



**DISTRIBUTED
NETWORK**



Lykke: Global Footprint

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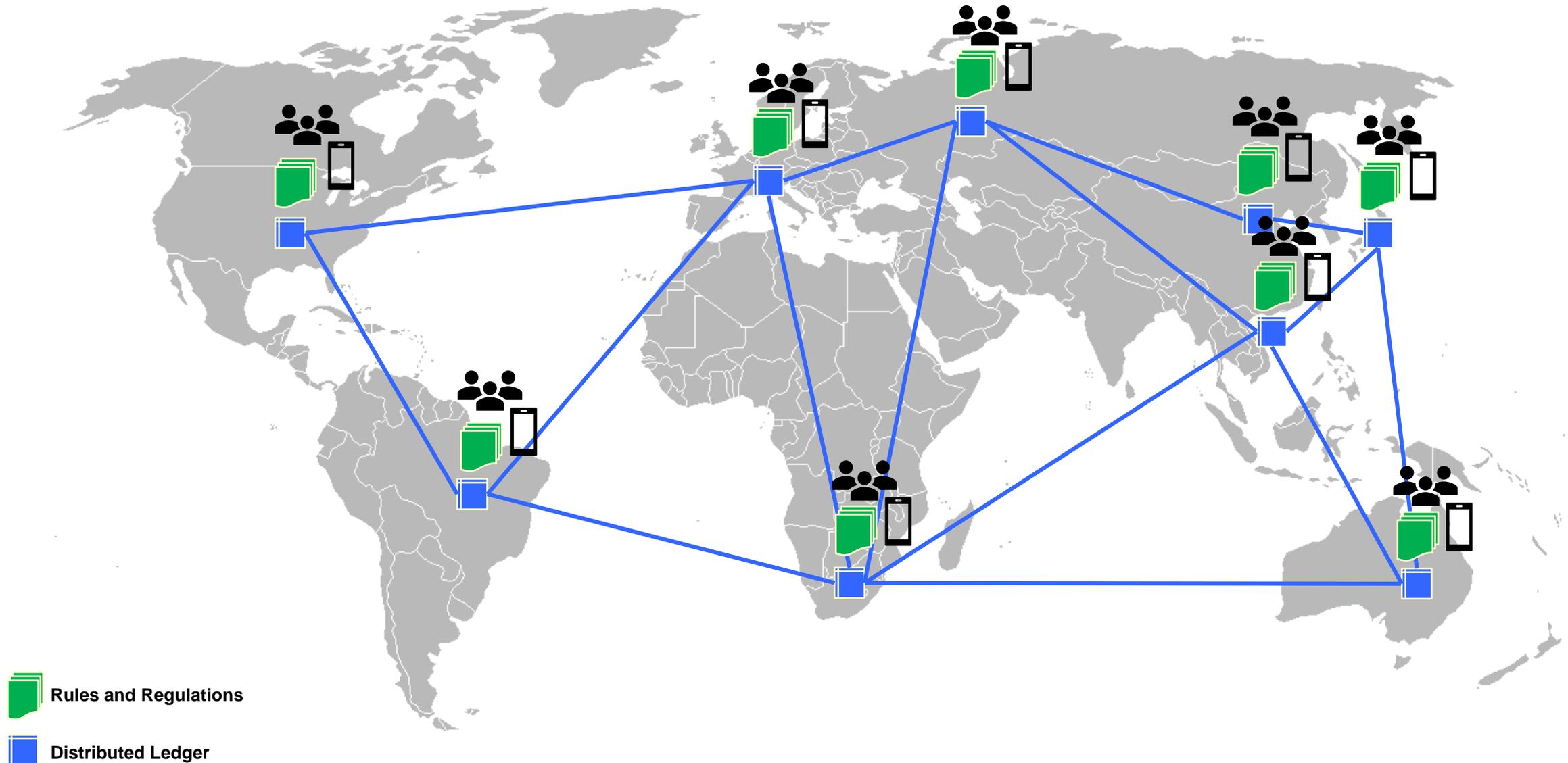




The image displays a grid of eight video conference thumbnails, arranged in three rows. Each thumbnail shows a different participant in a meeting. The names of the participants are visible in small text at the bottom of each thumbnail.

- Row 1, Column 1: SeamusHome
- Row 1, Column 2: Matthias Spuehler
- Row 1, Column 3: Niklaus
- Row 2, Column 1: Philipp Netzer
- Row 2, Column 2: Benedikt
- Row 2, Column 3: Dema
- Row 3, Column 1: Sergey Ivliev
- Row 3, Column 2: heinrichzetmayer

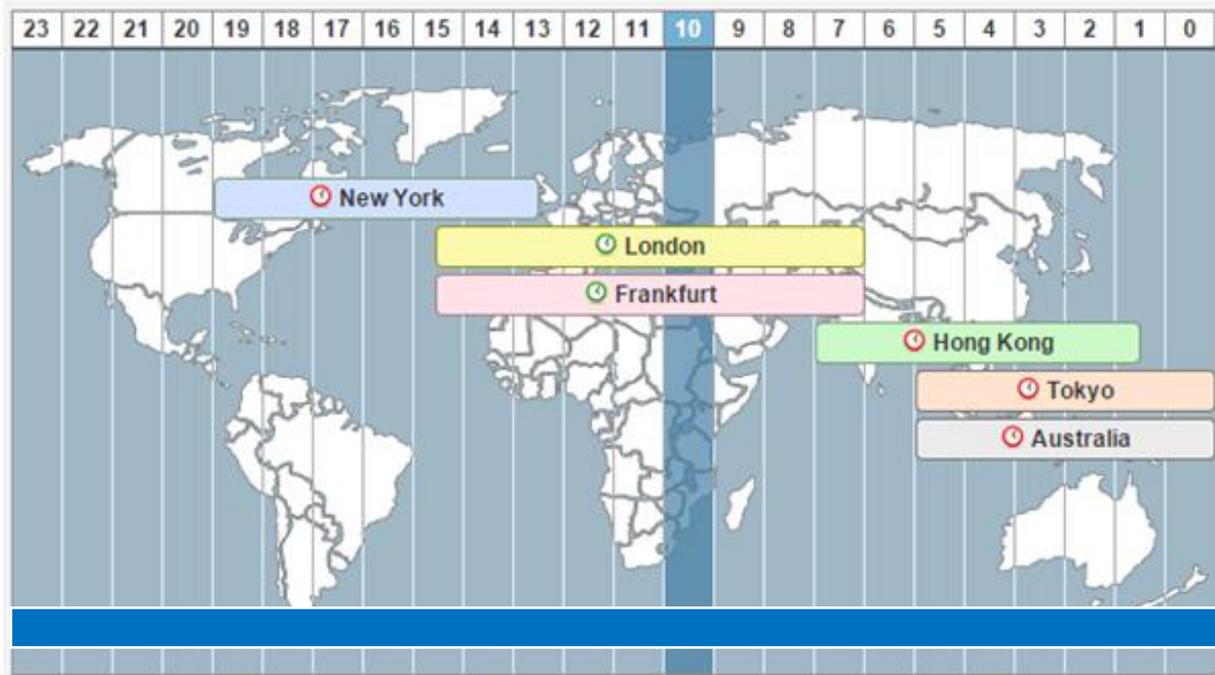
Global Distributed Network



- What are the opportunities and threats that are comming in with a global footprint?
- How could we have the risk and compliance part automated?

- real-time settlement and 24x7

Trading Hours

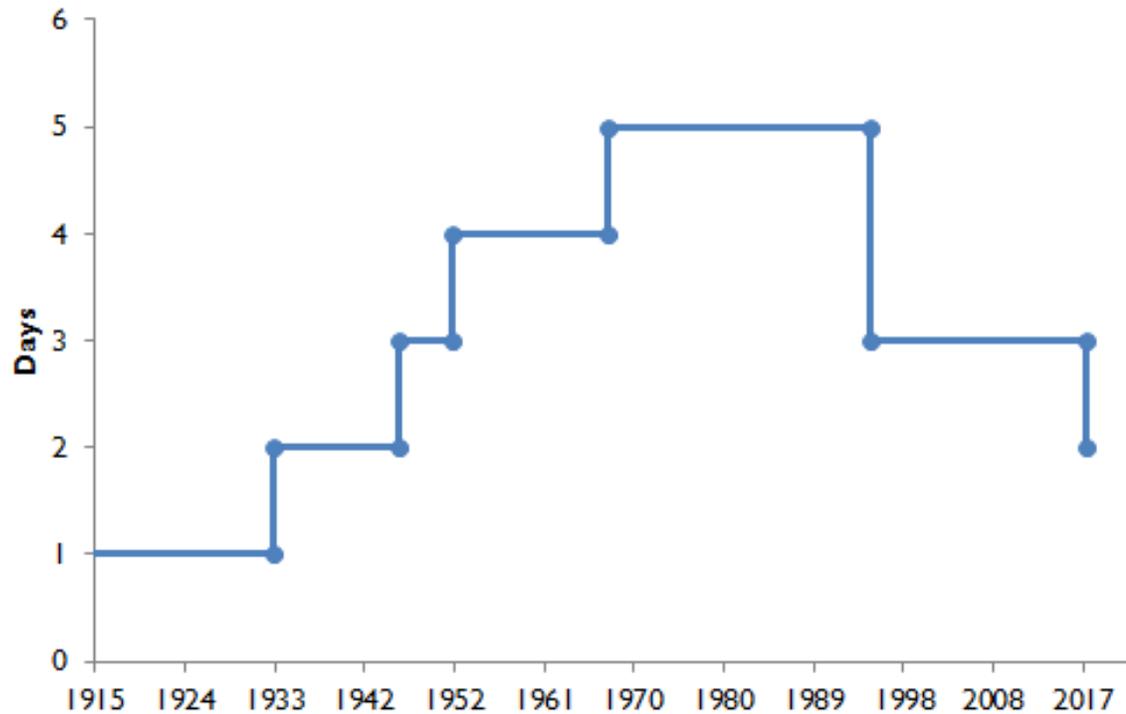


Settlement

Settlement over the long-term

Number of days between initial trade and final settlement

New York Stock Exchange | 1915-2017



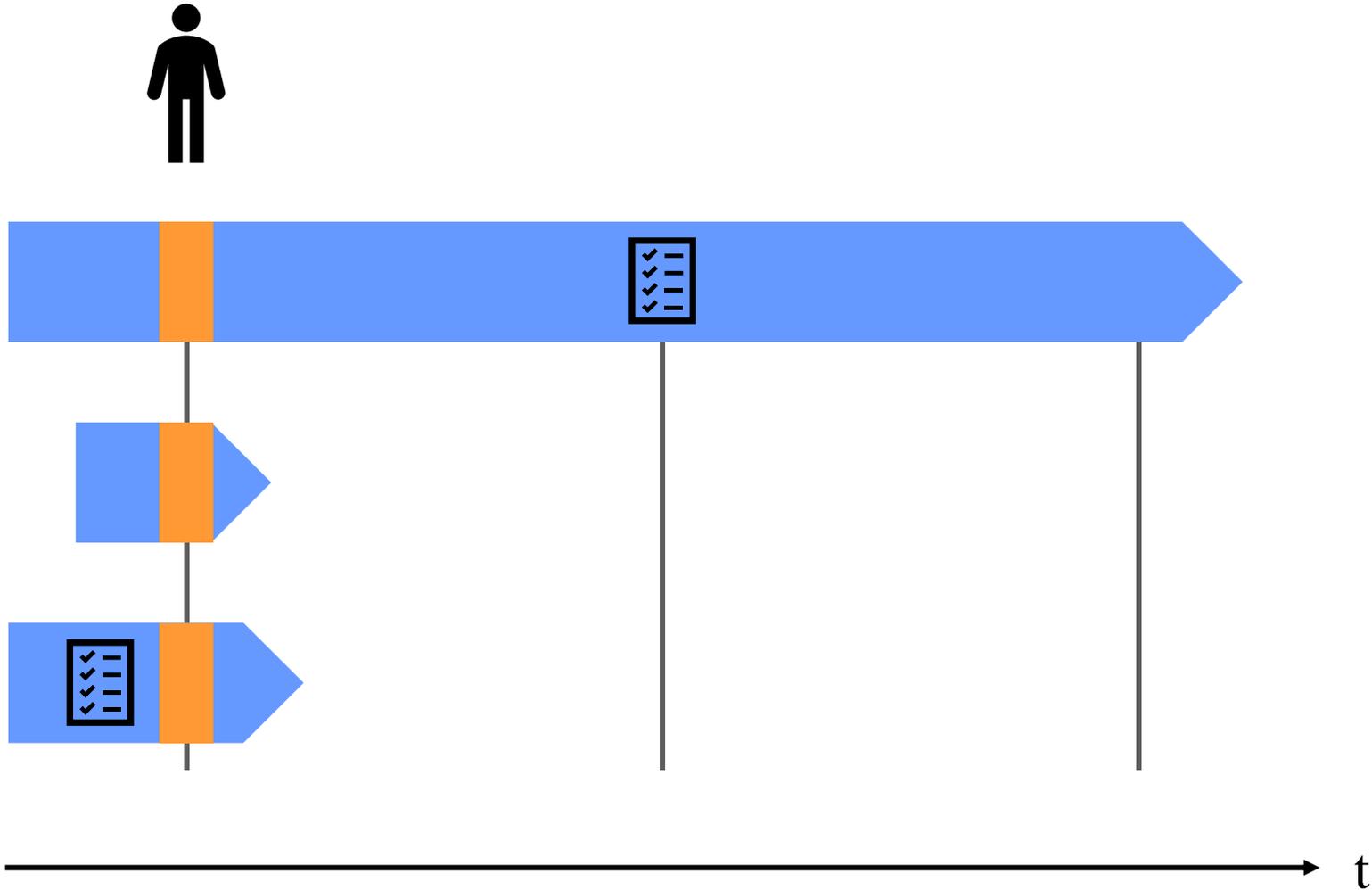
Source: Kenneth Levine



RTS
real time settlement

- What are the risk and opportunities with 24x7 and real-time settlement?
- What are the implications?

Transaction time



- What examples do you have where there is a improvement in the process by moving the negotiation to the beginning?

Smart Contracts – moves negotiations to the beginning

Legal Fling

Home About our app Awesome features Screenshots FAQ Download

Get explicit about sexual consent

Secured in the blockchain

This showcase is powered by LiveContracts.io

SUPPORT PROJECT

Be the first one to have a LegalFling

Subscribe with your e-mail and be one of the first to receive the LegalFling app.

App screenshots

LegalFling allows you to request consent from any of your contacts. Sit back and relax while your fling confirms.

Easy as one, two, three

During a fun night you meet your fling. Now it's time to get consent. Does your fling really want to take it further? Simply open the LegalFling app, scroll to your contacts and send a request. Your sexual preferences, including your do's and don'ts are automatically communicated.

Are you into BDSM but your fling isn't? LegalFling matches sexual preferences automatically, so you're immediately aware what your fling doesn't appreciate and will not consent to.

Hopefully you will not be needing this further down the road. But just in case, feel safe knowing that there is a legally binding agreement. Any violation can be dealt with quickly and privately.

Overview Fling Settings

Live Contract overview

Below is an overview of the terms your counterparty has requested you to accept before you have sex.

- Photo & Video
- Use Condom
- STD Free
- Explicit Language
- BDSM

By clicking "Accept & Fling" you agree to have sex under the above stated terms.

Deny Accept & Fling

Generating Livecontract Permission sexual intercourse

Safe sex redefined

LegalFling is the first blockchain based app to verify explicit consent before having sex.

- Do's and don't's .**
LegalFling matches your sexual preferences with that of your fling, making the do's and don't's clear to both of you.
- Blockchain based .**
The LegalFling app verifies mutual consent. Only the transaction hash is stored and timestamped in the blockchain, so your privacy is guaranteed.
- Fully protected .**
Took a spicy video or photo? You don't want that to go viral? With LegalFling any leaking of footage is a breach of contract and easy to take to court.



- Risk Assessment – what would you do?

Story: Virgin Galactic

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Story: Virgin Galactic

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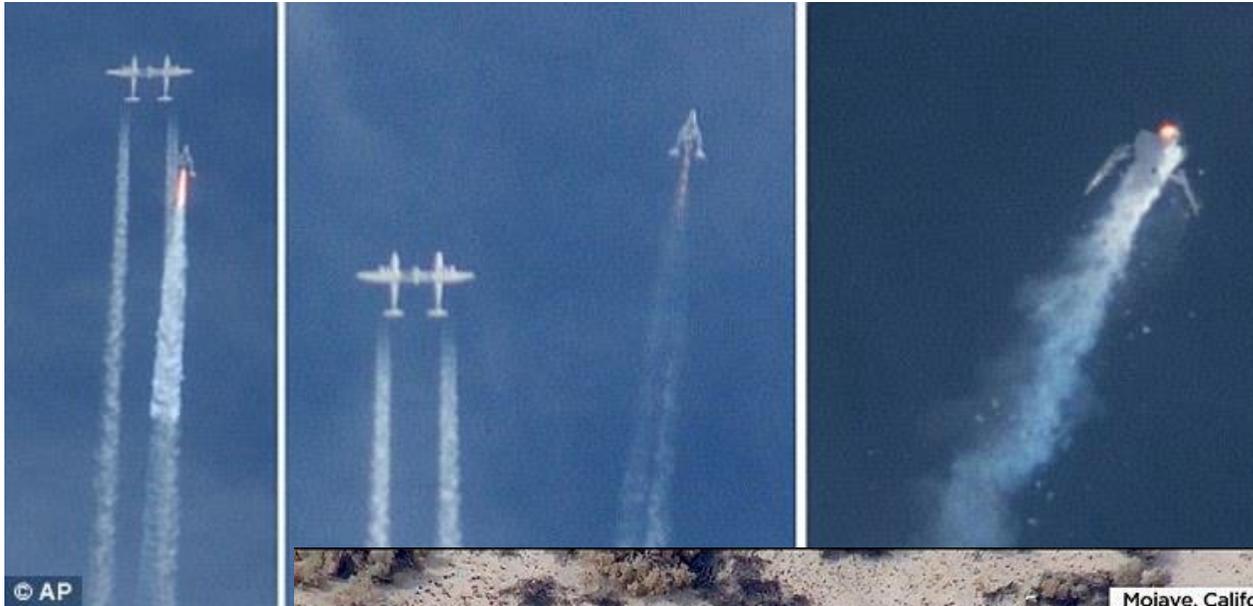
Story: Virgin Galactic

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Photo by MarsScientific.com and Clay Center Observatory

VG Crash: 31. Oktober 2014



DID FATAL FLAW BRING DOWN VIRGIN SPACESHIP?



4 As plane prepares to descend, 'feathering system' is activated, lifting the craft's tail to a 65-degree angle which slows it down and drags it back towards Earth.

3 Rocket shuts down and plane coasts to 328,000ft, crossing the edge of the atmosphere and entering space. Pilots (above) and passengers experience weightlessness.

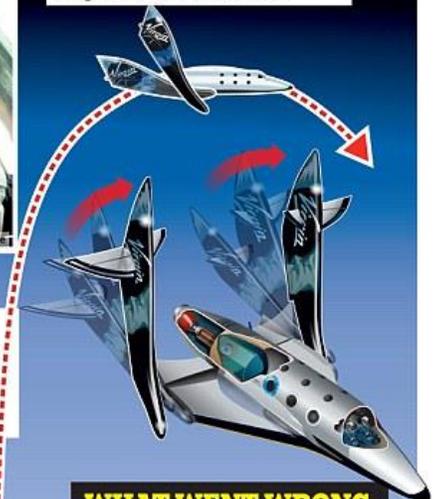
WHAT SHOULD HAVE HAPPENED:

1 WhiteKnight2 mothership takes off in the Mojave desert like an aeroplane, but with a rocket plane attached.

2 At 50,000ft, plane is released, firing its rocket engine and accelerating to 2,500mph.

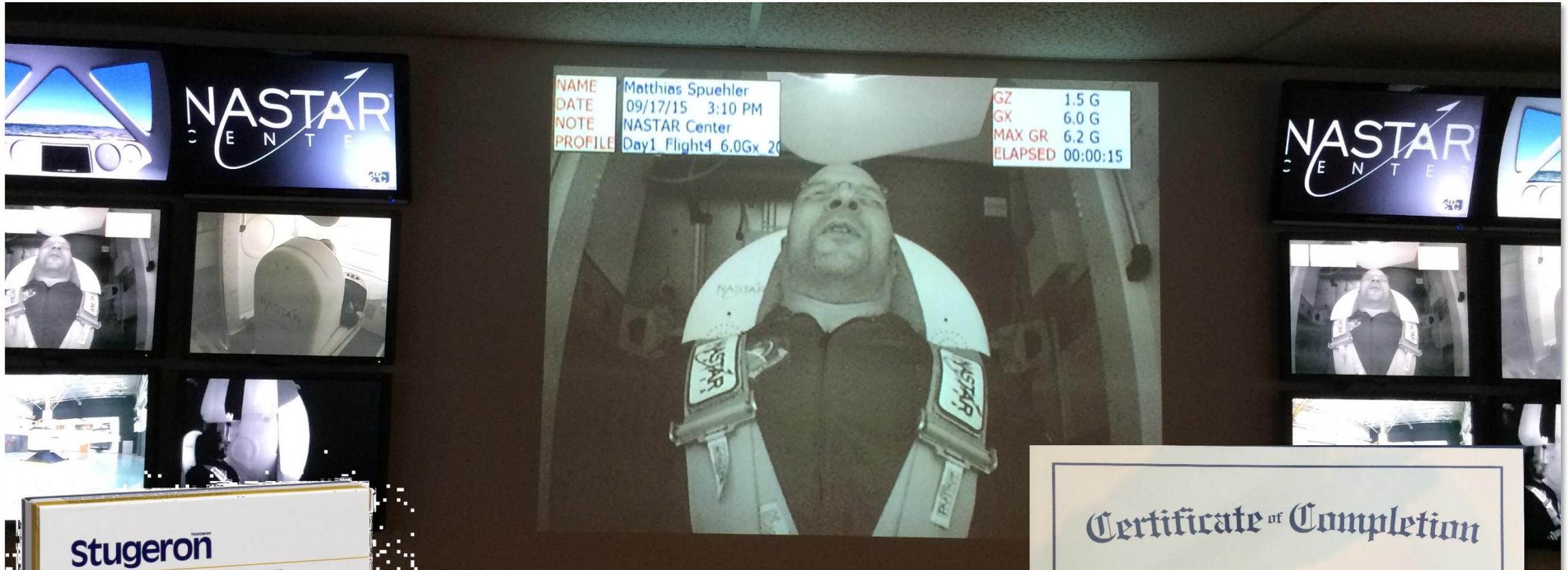
WHAT WENT WRONG:

Feathering system activated too early, while ship was ascending. It was destabilised and torn apart. One pilot escaped by parachute, the other plunged to his death.



- Would you fly?
- Would you stay in the programm?
- What do you think are my biggest fears / the biggest risks from my point of view?

Preparation – Mitigation the risks



August 2016

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**Shoot for the moon.
Even if you miss, you'll land among the stars.**

ELEVENEYE



MIKE KILLIAN / AMERICASPACE.COM.COM

Conclusion

- **The biggest risk is not taking any.**
«no risk, no fun»
- **Shared Common Meaning (SCM).**
Agree and use on a common language and glossary
- **Simplify and creat user Exitment**
Focus on costumer value add, experience and excitement not technology
- **DLT - Risk Management and Compliance layers**
Create a global business layer with risk and compliance elements and automate them.
- **Real Time Settlement and 24x7**
Add pre-transaction plausy-checks and pre-settlement validations.
- **Smart Contracts**
Move negotiation to the front without loosing flexibility
- **Aim big -> Shoot for the moon**
Even if you miss, you'll land among the stars..

Your expertise and contribution is wanted.

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- Write down your most important proposal or lessoned learned from the last two days.
- Please share it with all of us.

Questions and answers



? & !

Thank you very much



Matthias A. Spuehler



matthias.spuehler@eleveneye.com



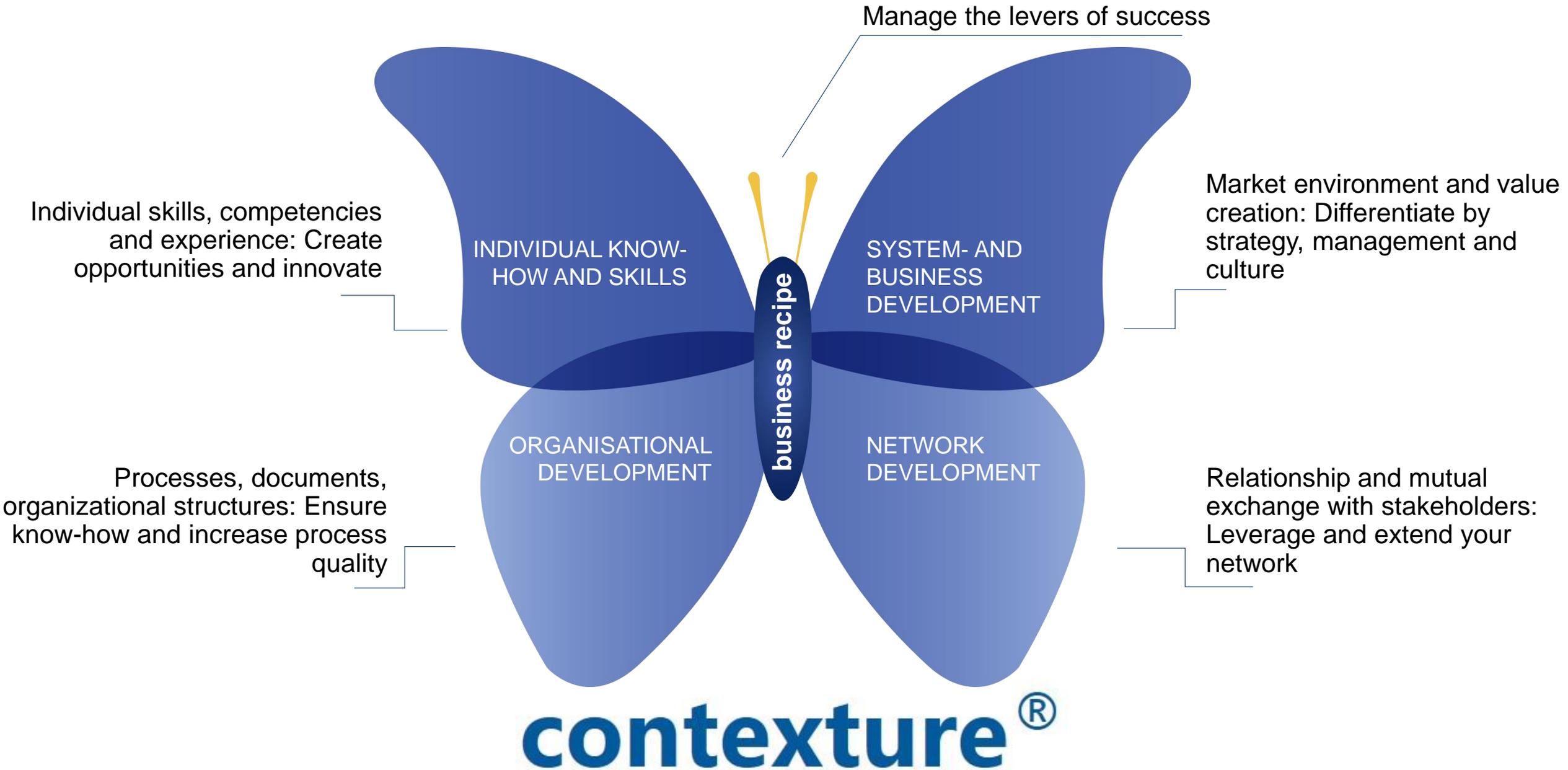


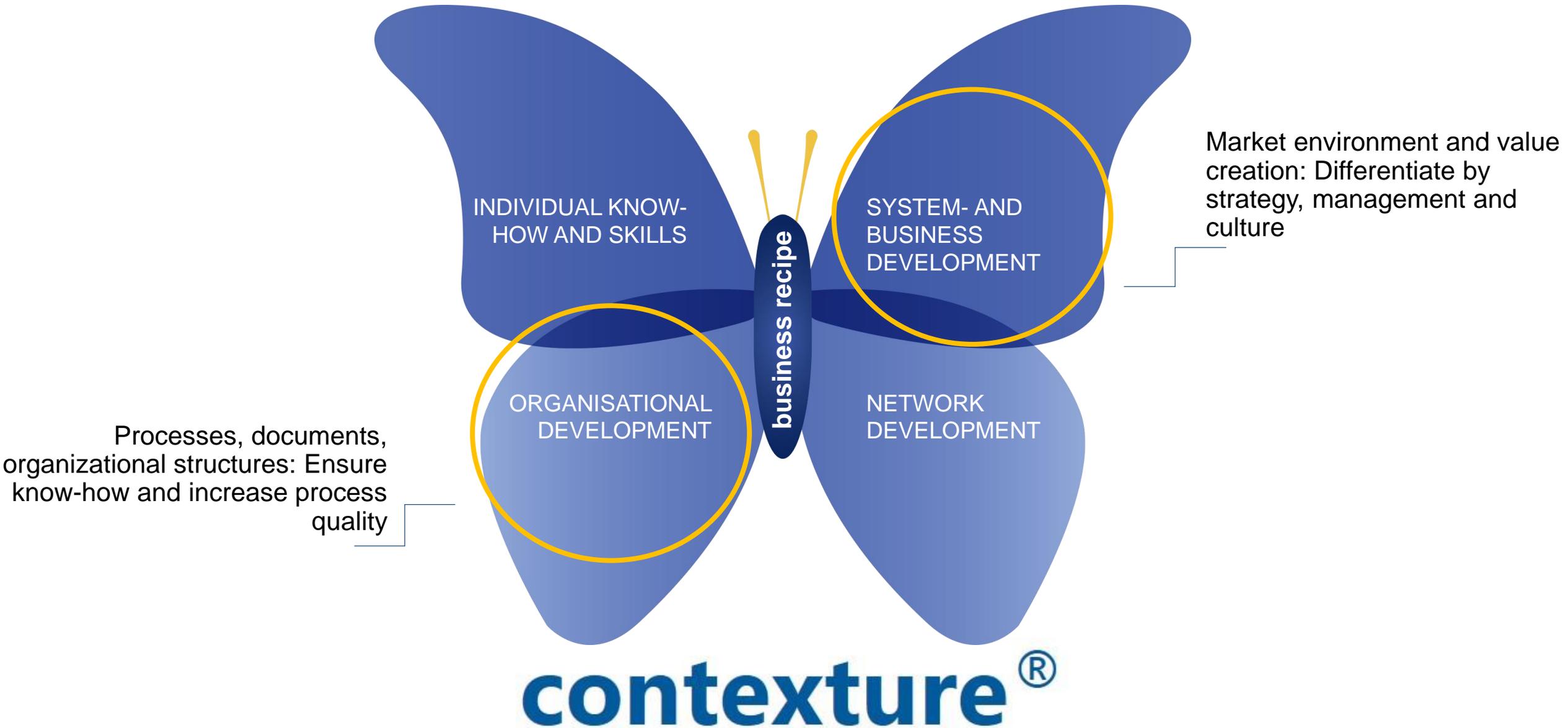
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Source

- www.eleveneye.com
- <https://www.federalreserve.gov/econresdata/feds/2016/files/2016095pap.pdf>
- <https://www.bis.org/cpmi/publ/d101a.pdf>
- [DTL in securities post-trading
https://www.ecb.europa.eu/pub/pdf/scpops/ecbop172.en.pdf](https://www.ecb.europa.eu/pub/pdf/scpops/ecbop172.en.pdf)
- <https://www.bis.org/cpmi/publ/d157.pdf>
- Implications of fintech developments for banks and bank supervisors
<https://www.bis.org/bcbs/publ/d415.pdf>
- <http://www.bbc.com/news/business-38667475>
- <http://www.techweez.com/2015/05/07/ten-takeaways-safaricom-2015-results/>
- <https://qz.com/873525/safaricom-m-pesa-has-kenyas-government-worried-what-happens-in-the-event-of-a-crash/>







5 Fraud Risk Management Principles



1. The organization establishes and communicates a Fraud Risk Management Program that demonstrates the expectations of the board of directors and senior management and their commitment to high integrity Control and ethical values regarding managing fraud risk.
2. The organization performs comprehensive fraud risk assessments to identify specific fraud schemes and risks, assess their likelihood and significance, evaluate existing fraud control activities, and implement actions to mitigate residual fraud risks.
3. The organization selects, develops, and deploys preventive and detective fraud control activities to mitigate the risk of fraud events occurring or not being detected in a timely manner.
4. The organization establishes a communication process to obtain information about potential fraud and deploys a coordinated approach to investigation and corrective action to address fraud appropriately and in a timely manner.
5. The organization selects, develops, and performs ongoing evaluations to ascertain whether each of the five principles of fraud risk management is present and functioning and communicates Fraud Risk Management Program deficiencies in a timely manner to parties responsible for taking corrective action, including senior management and the board of directors.



The Ten Principles of the UN Global Compact

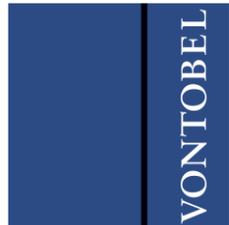


United Nations
Global Compact

Corporate sustainability starts with a company's value system and a principled approach to doing business.

We commit ourselves to the UN Global Compact Principles like many other global players.

UNGC Members are more than **9'000 companies and 4'000 non-business like.**





The Ten Principles of the UN Global Compact



United Nations
Global Compact

Human Rights

- [Principle 1](#): Businesses should support and respect the protection of internationally proclaimed human rights; and
- [Principle 2](#): make sure that they are not complicit in human rights abuses.

Labour

- [Principle 3](#): Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;
- [Principle 4](#): the elimination of all forms of forced and compulsory labour;
- [Principle 5](#): the effective abolition of child labour; and
- [Principle 6](#): the elimination of discrimination in respect of employment and occupation.

Environment

- [Principle 7](#): Businesses should support a precautionary approach to environmental challenges;
- [Principle 8](#): undertake initiatives to promote greater environmental responsibility; and
- [Principle 9](#): encourage the development and diffusion of environmentally friendly technologies.

Anti-Corruption

- [Principle 10](#): Businesses should work against corruption in all its forms, including extortion and bribery.



Risk landscape

Risk

<p>Strategic Commercial Reputational</p>	<p>Organisational Operational</p>	<p>Financial</p>	<p>Compliance Regulatory</p>
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Risk, control and assurance continuum

Approach

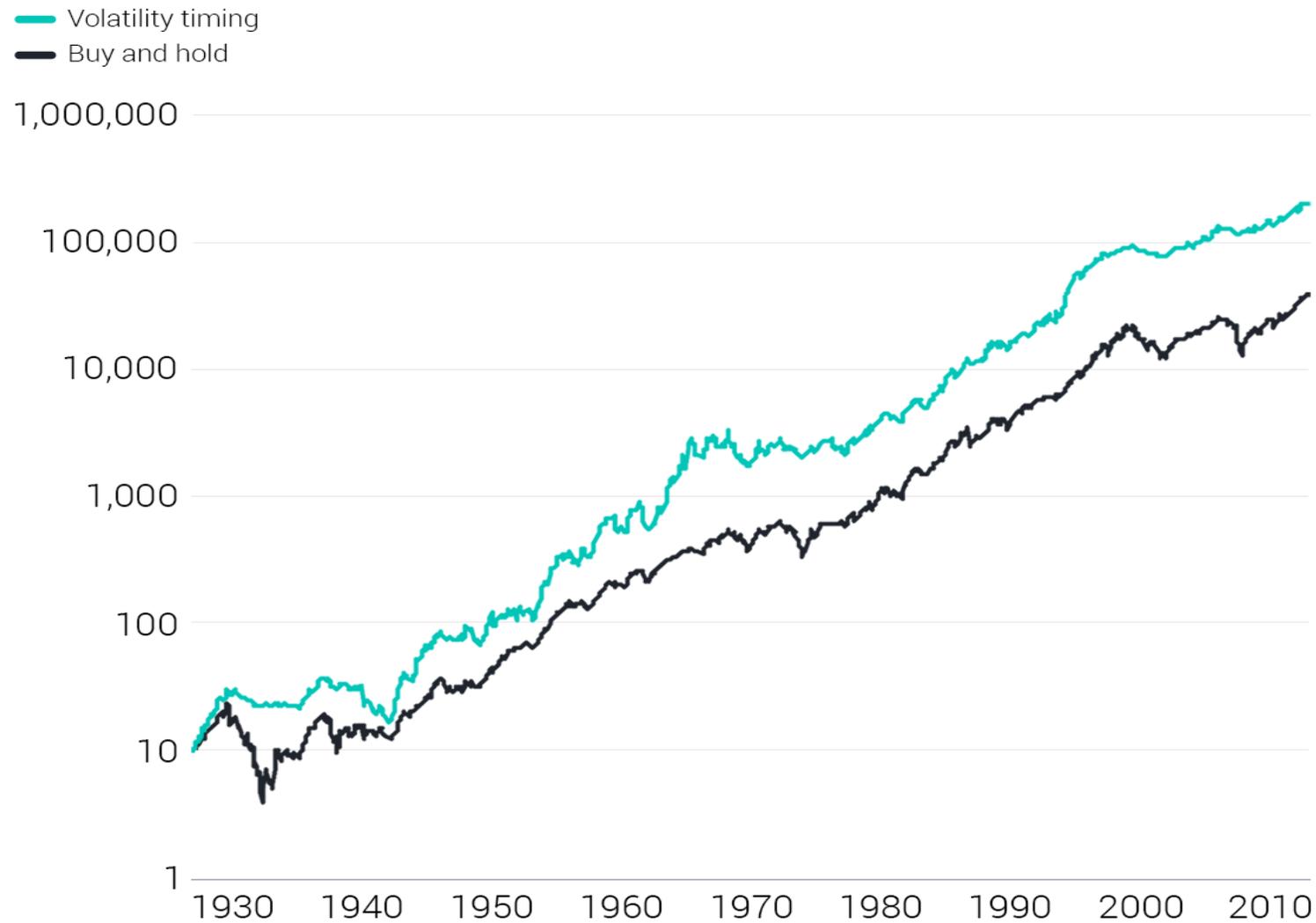
<p>Risk strategy</p>	<p>Risk assessment</p>	<p>Design Implementation Management</p>	<p>Monitoring</p>	<p>Assurance</p>	<p>Outcomes</p>
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Lines of defence

Response

<p>1st line: people, processes & technology</p>	<p>2nd line: management & oversight</p>	<p>3rd line: internal audit</p>	<p>4th line: external assurance</p>
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Development – Volatility timing or Buy and hold



Source: Moreira, A., und Muir, T. (2016), Volatility Managed Portfolios. Working paper, Februar 2016, Yale School of Management.