

A Global Risks and Trends Framework (GRAFT):

OVERVIEW

Authors: Lois Tullo, *Executive-in-Residence, Global Risk Institute*

Editor: Sheila Judd, *Executive-in-Residence, Global Risk Institute*



**GLOBAL
RISK
INSTITUTE**

/Graft / Defined by the Free Dictionary “To join or unite closely”.

GRAFT brings together the process of strategy setting and risk management.

This paper provides an overview of the Global Risks and Trends Framework (GRAFT), a new approach designed to help organizations identify, assess and respond to global risks and trends in order to avoid pitfalls that could threaten an organization’s long-term survival or conversely to leverage for the benefit of the organization. The complete GRAFT process, including automated tools and case studies, will be released later in 2017/18.

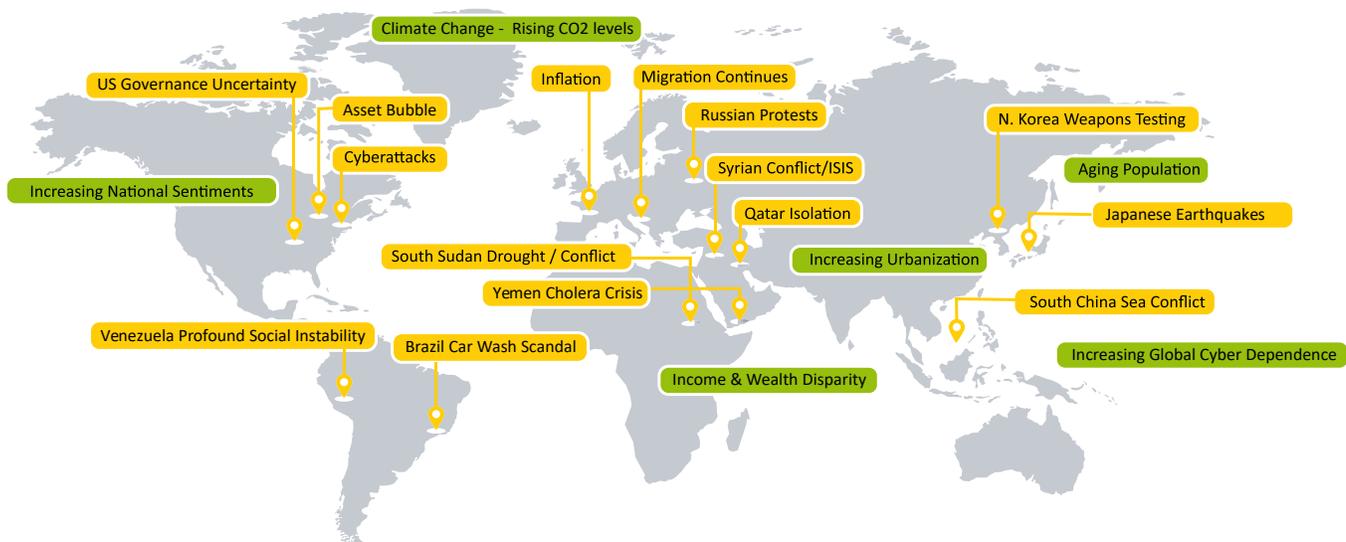
An Introduction to the Global Risks and Trends Framework

Risk and uncertainty are increasing everywhere in our world today. Reports of Cyber Attacks, Terrorism, Extreme Weather Events, Corruption, and Geopolitical as well as Societal Instability are a daily

occurrence. The Global Risks and Trends Framework (GRAFT)¹ is the result of observations, discussions, and analysis to provide a systematic framework with automated tools and examples to help organizations manage risk in an ever-changing world.

As we watch real-time events unfold on the daily news, Facebook Live, Twitter or YouTube Live, we witness the rise of global issues such as those seen in the interactive graph² in Figure 1. At the same time, we observe a loss of local and international community, environmental dependability, and moral foundation.

Figure 1 –Global Risks and Trends Unfold Around the World



1 Global Risks and Trends Framework or GRAFT – graft defined in the Free Dictionary “to join or unite closely”

2 Click on the yellow risks and green trends for more information on the highlighted issue

The argument between Absolutism and Relativism³ has been played out in National elections and is demonstrated through the growth of radical extremist groups and the rise in terrorist attacks. Relational strife is witnessed in quarrels that have lasted centuries, and in conflicts that are escalated by instant communication and the availability of weapons of mass destruction. Self-gratification and greed have led individuals, organizations, and countries that have unsatisfied passions taking what they want by any means possible.

From an organizational perspective, many questions arise:

- “How do we make sense of our changing world?”
- “How do we as an organization gain a shared perspective of the risks of local and world events?”
- “How do we adjust our strategies to align and take advantage of the long-term trends that are shifting the foundation upon which many of our organizations are built?”

In the 21st century there is no easy path; however, the Global Risks and Trends Framework (GRAFT) provides organizations with navigational guidance to maneuver the uncertain road ahead.

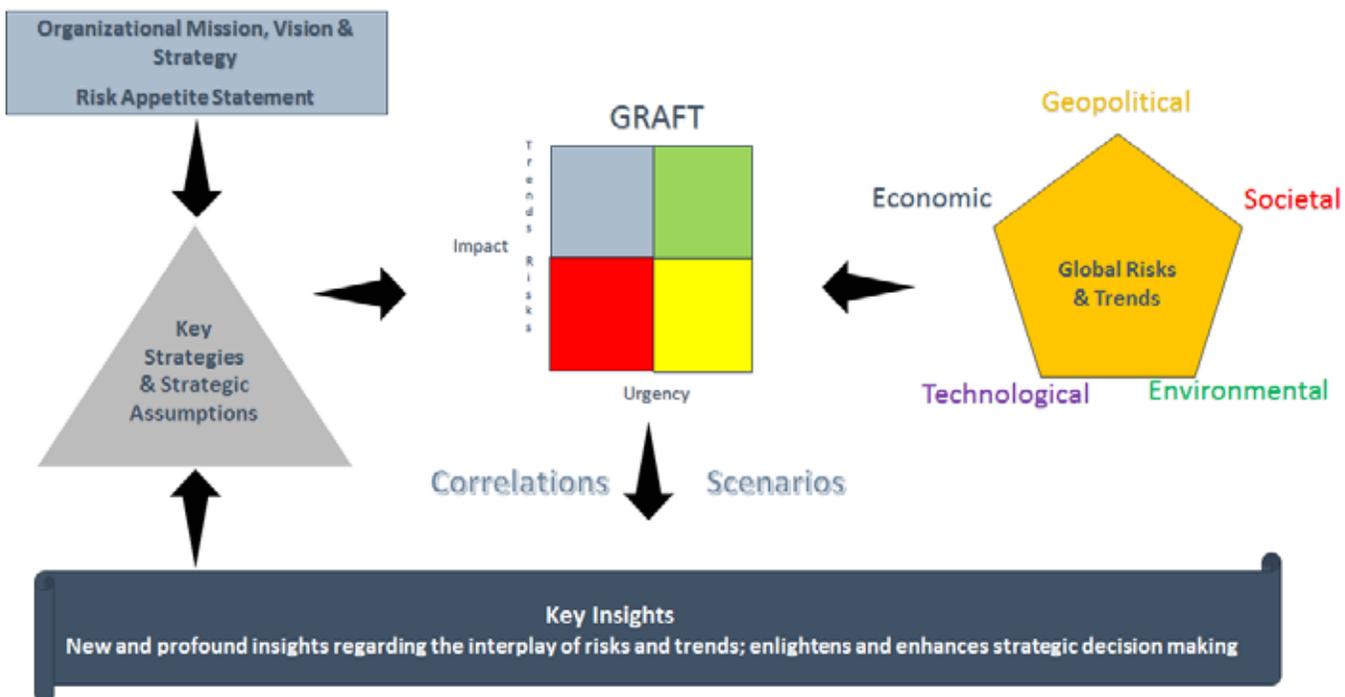
WHAT IS GRAFT AND WHY WOULD YOU USE IT?

GRAFT is a robust, systematic process for identifying, assessing, and responding to strategic risks posed by Global Risks and Trends⁴; it facilitates identification of potential opportunities to leverage Global Risks and Trends for the organization’s benefit.

The GRAFT process includes:

- A tool to facilitate identification and prioritization of relevant Global Risks and Trends, including those that could threaten an organization’s long-term survival or those that could be leveraged for the benefit of the organization;

Figure 2- Global Risks and Trends Framework (GRAFT) Overview



3 The age-old argument of what is considered right and wrong. Ethical relativism vs absolutism: research implications, Gael McDonald (Faculty of Business and Law, Deakin University, Melbourne, Australia) <http://www.emeraldinsight.com/doi/pdfplus/10.1108/09555341011056203>

4 GRAFT leverages the work of the World Economic Forum, by using the Global Risks & Trends as set out in its annual Global Risks Report as a starting point for identification of risks and trends.

- An assessment of the organization’s strategy and underlying strategic assumptions and dependencies for vulnerability to the Global Risks and Trends;
- A visual mapping of the relevant Global Risks and Trends based on urgency and impact to assist in prioritization, as well as identification of correlations that could heighten vulnerabilities or provide synergies;
- Consideration of scenarios to assess the potential impacts for the organization;
- Using the Key Insights gained through the risk and trend assessment process to evolve business strategies.

to make more informed decisions that underpin the long-term health of their organizations, and to avoid strategic pitfalls. Without a comprehensive, systematic process, organizations may overlook risks and/or trends that could lead to business failure. Over the past decade there have been numerous organizations that have suffered or failed because they did not recognize and adapt to global risks and trends.

KEY COMPONENTS OF GRAFT

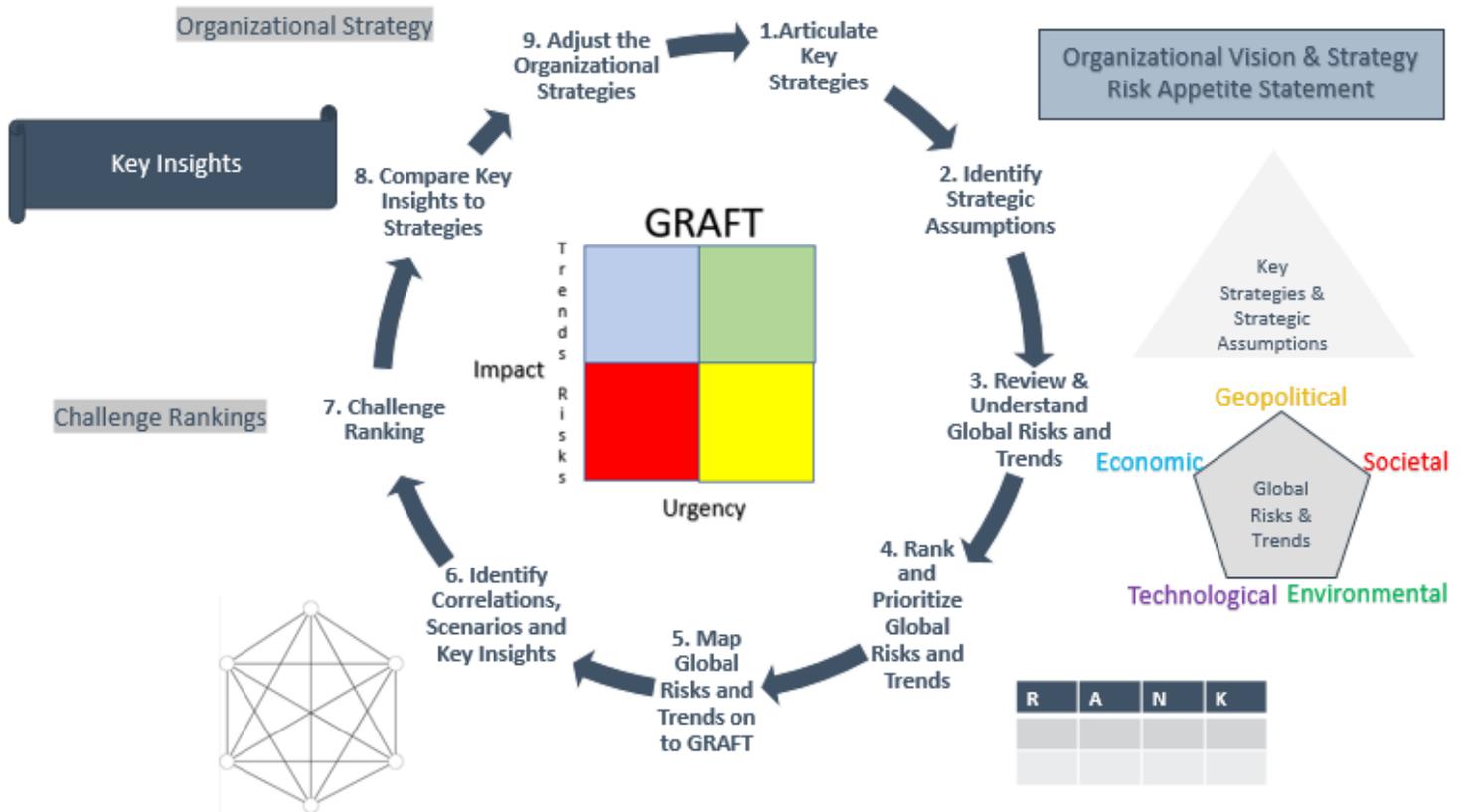
The GRAFT process comprises 9 steps, as illustrated below in Figure 3- GRAFT Application Wheel.

All of the steps will be explained in detail in the forthcoming release of the full GRAFT process. Here, we provide an overview of risk and trend identification (Step 3) and the visual mapping (a GRAFT output from Step 5 and shown in the centre of the wheel), which are key components of the GRAFT process.

KEY ELEMENTS OF GRAFT ARE SHOWN BELOW IN **FIGURE 2**.

GRAFT provides the framework to prepare your organization for an uncertain future. Integrating the GRAFT process into the organization’s strategic planning process enables leaders

Figure 3 – GRAFT Application Wheel



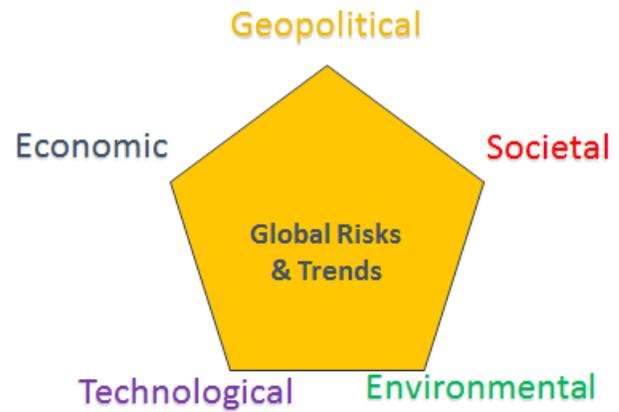
GRAFT uses the Global Risks and Trends identified in the World Economic Forum’s annual Global Risks Report as a starting point. The 2017 Global Risk Report identifies 27 risks and 13 trends for consideration, which are grouped into clusters, as shown below in Figure 4.

The GRAFT process involves reviewing the WEF’s Global Risks & Trends for applicability to their organization.

Global Risks and Trends affect industries, companies, and geographic locations in different ways. GRAFT provides tools for organizations to assess the importance of these risks and trends, considering materiality of impact and timelines, as well as correlations and synergies between the risk clusters. GRAFT helps organizations identify which of the Global Risks and Trends are most relevant to their operations, both now and in the future, using tools that assist GRAFT users in the prioritization assessment.

GRAFT’s Global Risks and Trends mapping, (facilitated by an automated tool), categorizes prioritized risks and trends into four quadrants to show pictorially the degree of threat and urgency for each as shown below in Figure 5. Those closer to the bottom of the quadrant are deemed more material in terms of impact to the organization. Those closer to the left side of each quadrant are considered more immediate or near-term considerations. The bottom left corner of both

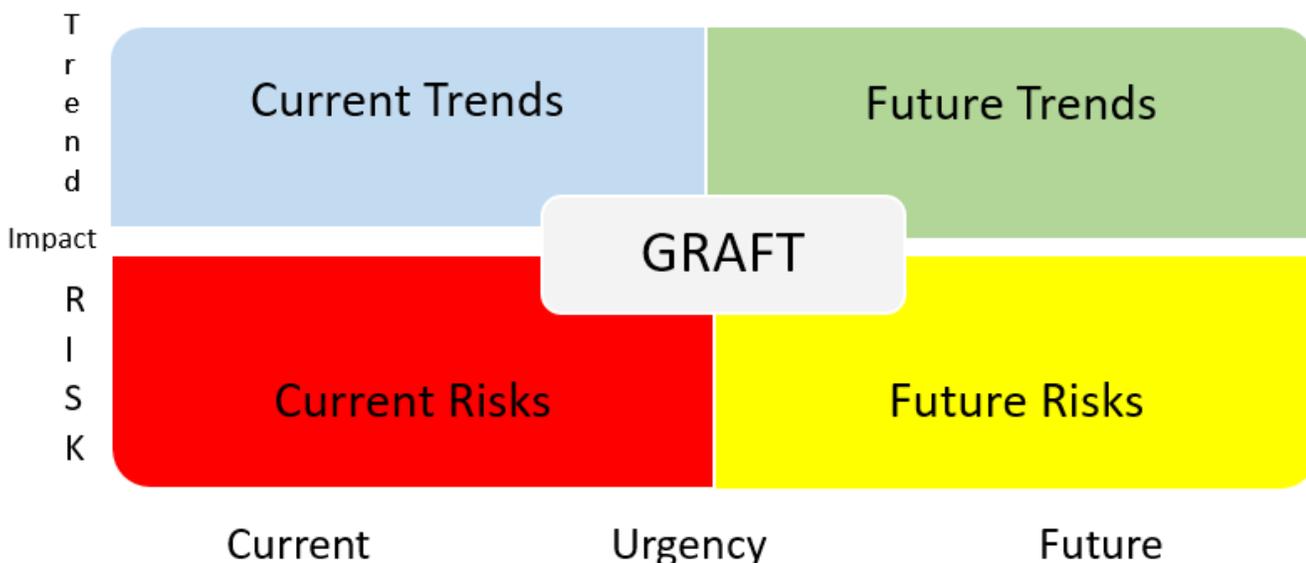
Figure 4: Global Risks and Trends Clusters



the RISK and TREND quadrants are considered to be the most immediate and impactful risks and trends.

The GRAFT pictorial risk and trend mapping also helps organizations quickly visualize the synergistic effects of risks that appear close together on the mapping, triggering a broader and more complete assessment of the combined effects of correlated risks on the organization and more holistic plan to address them. Whichever quadrant of GRAFT you find your organization addressing, GRAFT serves as an early warning system to take advantage of opportunities or avoid potential threats to your organization.

Figure 5: Global Risks and Trends Mapping



As part of the mapping process, GRAFT has users ask themselves: **What are the implications for our business of a particular risk or trend?**

THE RED ZONE

If your organization has risks that fall in the lower left area of the red zone, you are likely firefighting. However, it does not mean that these are the only risks requiring attention. Even when you are firefighting, it is important to identify the other risks that may compound, or maybe correlated with, your main risk, and would add fuel to your fire. For example, while the Canadian oil industry was addressing the downside reality of its sensitivity to lower oil prices, the Fort McMurray forest fire compounded effects, amplifying the impact on companies such as Syncrude and Suncor, Canada's insurance providers, the economy, government and people of Alberta and Canada.

THE YELLOW ZONE

The yellow zone indicates risks that could impact your organization in the future. Those closer to the bottom of the quadrant are likely to be more material in terms of impact to the organization. For risks in this quadrant, consider whether your organization is in danger of catching fire. Are there risks on the horizon that are already burning in a competitor's organization, or are there warning signs to indicate that your organization should be preparing to fight a new fire? Warning signs include regulatory fines at competitors, declining market share, growing debt levels, agriculture shortages, or regional social instability. Nokia was an example of a company that did not adapt to risks in the yellow zone, resulting in loss of market share which led to its eventual decline.

THE BLUE ZONE

Material (high impact) trends in the blue quadrant require urgent attention if they have not already been factored into your organization's strategy. Your organization is not yet burning, but ignoring the trend could have a significant downside. In the blue zone, you may see the evidence of others having launched a technology disruptor that could totally transform your industry. Examples of disruptive technologies include self-driving cars, smart watches, and streaming music. Tesla, AirBnB, Uber, and Grocery Gateway are a few examples of organizations that are disrupting their industries. Is a new technology putting the future stability of your organization in jeopardy?

THE GREEN ZONE

Future trends are set out in the green quadrant. You still have time to consider the future with optimism, asking questions such as⁵:

- *How will organizations and societies be transformed by emerging technology?*
- *Will the aging population put the future stability of our workforce in jeopardy?*
- *Will geopolitical power continue to diffuse or concentrate in the future?*
- *How will demographics affect my products appeal and market share?*

Some trends move more quickly than others. In the early 1960s, we saw the introduction of the computer chip. We watched as Moore's law was played out in an exponential growth rate of 46 percent a year seen in chip developments. However, in other fields the growth rates are significantly lower. The efficiency of electricity generation in large power plants has been rising by less than 2 percent a year⁶, advances in lighting have boosted its efficiency by less than 3 percent a year, and the energy cost of steel has been falling by less than 2 percent a year. This affords different levels of preparation time, depending on the trend, industry and technology.

⁵ <https://www.dni.gov/index.php/about/organization/national-intelligence-council-global-trends>

⁶ <http://www.politico.com/agenda/story/2015/05/energy-visionary-vaclav-smil-quick-transformations-wrong-000017>

GRAFT helps organizations see the Big Picture

Consider “The Blind Men and the Elephant” parable from Indian origins⁷. It is a story of several blind men who touch various parts of an elephant to know or learn what it is. To one blind man, he identifies the leg as a pillar. The tusk feels like a spear to another blind man, and so forth. Without a comprehensive view, each comes to an incorrect conclusion. Global Risks and Trends, viewed in isolation, are like the elephant described by the blind men. Each risk or trend viewed in isolation only presents part of the picture.

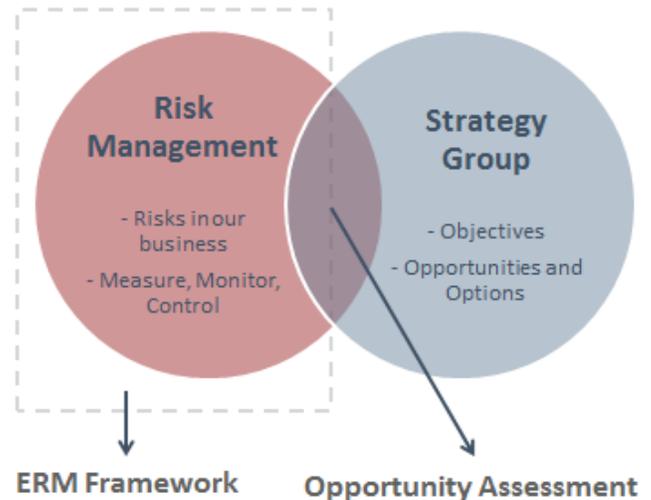
INTEGRATION OF GRAFT WITH CURRENT STRATEGIC AND ENTERPRISE RISK MANAGEMENT FRAMEWORKS

GRAFT is intended to be fully embedded into existing strategic planning processes. The GRAFT assessment should be refreshed in tandem with both regular strategic plan reviews, in conjunction with reviews of proposed material changes to strategy, and significant changes in the urgency and impact of Global Risks and Trends. GRAFT should also be integrated into existing risk management practices. Most enterprise risk management frameworks include consideration of the organization’s key business risks, i.e., the risks associated with business operations, including internal operational risks (risk of loss resulting from inadequate or failed internal processes, people, and systems). Enterprise Risk Management frameworks should also include consideration of external risks, including global risks and trends generally, but in particular those identified through the GRAFT process as most impactful to the organization.

The most effective application of GRAFT will involve collaboration between the business strategy and enterprise risk management groups as illustrated in Figure 6. Some financial institutions already have joint committees in this regard, which we consider leading practice.

Figure 6: Integration of Corporate Strategy and Risk Appetite

CORPORATE STRATEGY
Risk Appetite Statement



ASSISTING IN REGULATORY COMPLIANCE

Some regulators, notably the Federal Reserve in the US have made the risk identification requirement more rigorous under CCAR (Comprehensive Capital Analysis and Review). The implementation of IFRS 9 also includes a section that is assisted by the GRAFT process in identifying “Factors or indicators of changes in credit risk”. GRAFT was created to help organizations in addressing of the business implications of Global Risks and Trends. However, the implementation of the GRAFT process will also assist organizations in addressing the risk identification requirements under CCAR, and other regulatory requirements.

KEEPING CURRENT

Global risks and trends are inherently difficult to quantify. They impact organizations over an extended period of time with unpredictable volatility. Risk levels and timelines can change rapidly, and correlations can also evolve. The impacts need to be reassessed regularly in order to be kept current.

⁷ IoT Business Model for consumers – Critical Path Hurdles and the Blind men and the Elephant Parable, Juan Ramon Zarco, Posted on August 12, 2016 <https://jrzarco2001.wordpress.com/>

GRAFT uses observations of changes in the external environment to facilitate discussion and help organizations make strategic decisions by highlighting key insights that are gained from the intersection of the organization’s strategy and the correlations of key Global Risks and Trends. It is therefore important to see the tracking of developments pertaining to the relevant Global Risks and Trends and application of GRAFT as a dynamic and ongoing process.

To keep the event information current and to identify global risk and trend events, GRAFT users can take advantage of the Artificial Intelligence (AI) such as IBM’s Watson, or big data platforms such as ICEWS – the International Crisis Early Warning System; or hand-coded reports such as GSR – the Gold Standard Report, or SPEED, or MSCI’s ESG Metrics which use both human and automated coding⁸.

Updating the analysis when there are material changes in the Global Risks and/or Trends most relevant to the organization facilitates re-consideration of correlation analysis, scenario analysis, and worst-case analysis, providing insight for potential modifications in strategy or exit strategies. Whichever quadrant of GRAFT you find your organization addressing, GRAFT serves as an early warning system to take advantage of opportunities, or avoid potential threats to your organization.

Implementing GRAFT, and in particular making use of the Global Risks and Trends Map, provides an effective means of communication and understanding of the relative importance, urgency and impact of relevant Global Risks and Trends.

CONCLUSION

GRAFT is an important tool for identifying and assessing the potential impacts of Global Risks and Trends in the context of strategic planning. It provides a systematic and robust approach to ensure business strategies give appropriate consideration to Global Risks and Trends that could have a material effect on an organization’s strategy and its long-term success. Major unexpected events can

serve as inflection points, which can build to a point where they become triggers for change. This type of change might involve risks intensifying or crystallizing that may be missed by organizations without a systematic framework to identify their impact and urgency.

GRAFT provides the framework and toolset to manage the threat of global risks and trends, rapidly, effectively, and equitably⁹. The increase in global tensions, social, economic, and political events are the wake-up call to prompt leaders to reassess their preparedness in the face of an evolving risk landscape.

GRAFT implementation is most effective when business strategy and risk management groups collaborate to assess risks and trends and their potential impacts on the organization’s ability to deliver against its key strategies. GRAFT goes beyond, and is complementary to, an organization’s risk management processes; which are typically more focused on current, known risks and how they impact the organization’s performance under its current strategy.

By discussing the outputs of GRAFT at the senior management and Board level, GRAFT provides leaders with opportunities to learn from one another to address the increasing Global Risks and Trends.

NEXT STEPS

The [2017 State of Risk Oversight: An Overview of Enterprise Risk Management Practices](#)¹⁰ found that most organizations are struggling to integrate risk management with their strategic planning efforts. GRAFT provides a systematic approach for your organization to integrate risk management and strategic planning. The GRAFT Advisory Council at the Global Risk Institute is researching Best Practices to set a benchmark for GRAFT application.

⁸ *Using Big Data to monitor societal events shows promise, but the coding tech need work*, Thea Singer, Sept 30, 2016.

⁹ *Global Challenges Annual Report 2017*

¹⁰ https://erm.ncsu.edu/az/erm/i/chan/library/AICPA_ERM_Research_Study_2017.pdf

APPENDIX 1

Appendix 1 provides a detailed example of the GRAFT process and its outputs. In this case study, a bank reviews its loan growth objectives in the context of increasing risks that could result in credit quality erosion within its existing portfolio. Using the GRAFT process helped this bank refine its growth strategy and develop more targeted portfolio monitoring and proactive loan management practices. This allowed the bank to achieve its growth objectives and remain within its risk appetite for loan losses.

CASE STUDY:

ADDRESSING GLOBAL RISKS AND TRENDS AT “CANADIAN BANK”

Canadian Bank (CB)¹¹ is a major player in the Canadian prime and subprime mortgage industry. The board is concerned about Global Risks and Trends and how they may impact Canada and specifically CB and their portfolio of mortgage loans. The board of Canadian Bank (CB) has asked their CEO, Albert D. Morrison, to identify the implications of recent world events in the context

of potential adverse effects on CB’s portfolio. Albert used the GRAFT Application Wheel shown in Figure 6 to outline the nine steps that their organization went through with their management team to address the board’s concerns. This was an iterative process based upon the key learnings of the team.

Figure 7 – Canadian Bank



STEP 1. ARTICULATE KEY STRATEGIES

The process begins with a review of the organization’s vision, strategy and risk appetite, leveraging existing corporate documentation.

Our Vision - The Bank’s vision is to be a leader in providing financial services to all Canadians, with plans to expand into the US market.

Our Mission - We listen, and deliver exceptional services to empower our customers and partners.

Our Values - Customer Centricity, Diversity, Efficiency, Integrity, Passion, Respect.

Risk and Compliance Culture - The Bank has a compliance and risk culture that has been designed to support its customer portfolio.

11 Canadian Bank is a fictitious example of a Canadian Financial Institution created for the purpose of illustrating the GRAFT process.

STRATEGIC PRIORITY 2017

Build and maintain Canada’s leading financial institution, serving an established mortgage market and growing market niche of subprime mortgages

- > Grew total assets under administration to \$100 billion
- > Continued to build deposits by 50% over 2016, to over \$10 billion
- > Maintain a strong capital position, with a Common Equity Tier 1 capital ratio of 16% and Total capital ratio of 18% at the end of 2016
- > Increase dividends paid to shareholders by 5% over 2016
- > Generate an adjusted ROE of 18%
- > Maintain a prudent credit risk profile of the loan portfolio, with net non-performing loans as a percentage of gross loans ratio (NPL ratio) of 0.20% and low net write-offs at 0.02% of gross loans
- > Maintain and manage strong liquidity positions, ending the year with \$2 billion in liquid assets
- > Build on our operational excellence
- > Invest to ensure our growth is managed and prudent

- > Continue to invest in customer experience for loans origination platform, IT security commensurate and digital marketplace operations
- > Continue to enhance the risk framework

Broadly, CB wants to grow its loan portfolio while maintaining its existing risk appetite. CB was considering expanding its coverage of the Alberta market specifically, by leveraging an automated platform with an AI search engine to expand the Bank’s target clientele; the platform also has an embedded adjudication tool that factors in social media information.

Step 1 of GRAFT begins with ensuring the key strategies of CB are articulated with objectives that:

- *define the ends that the strategy is designed to achieve within a specific period;*
- *outline the scope of the business landscape in which your company will operate; and*
- *highlight the organization’s competitive advantage (what you will do differently or better than the competition) to achieve the objective of your strategy.*

Albert completed the table below to summarize CB’s strategy objectives.

Table 1 – Canadian Bank Strategy

Strategy	Timing	Business Landscape	Competitive Advantage
To be a leader in the Canadian Residential mortgage market (prime and subprime).	Grow assets under management by 15% by 2019, maintain and manage a strong liquidity position of over \$2B.	Maintain and grow deposits by 15% by 2019, to over \$10B. Maintain NPL ratio under 0.30%.	Enhanced Customer experience for all Canadians.

STEP 2. IDENTIFY STRATEGIC ASSUMPTIONS

In risk modeling, it is important to identify the assumptions that the model is based upon, ensuring they are reasonable for the purpose of the model, and that they are updated as circumstances change so that model outputs remain useful. Similarly, in strategy setting it is important to identify the assumptions that the strategies are based upon and the critical factors for their strategies to be successful. Analysing the underlying strategic assumptions in concert with the changes in global risks and trends allows organizations and their leaders to identify, discuss, and model the implications of changes to the underlying assumptions. In these discussions, it is important to articulate how different scenarios of an event or trend could positively or negatively affect the underlying assumptions, and thus the level of success of the organization’s strategy.

As part of the GRAFT process, CB’s leaders identified the strategic assumptions that CB made for their strategy to be successful in the context of their geographical location and industry. CB’s suggested (but not exhaustive) list is provided in Table 2. Primary considerations included factors affecting demand for loans, loan quality, ability to raise funding for portfolio growth, and potential for changes in the regulatory environment, all in the Canadian context given their Canadian focus. Other factors, considered less relevant in the current Canadian context, were also considered in order to ensure a thorough analysis.

Identifying the underlying strategic assumptions was a new exercise for CB’s senior management who had not explicitly identified them (they were implicitly embedded in their planning process).

Table 2 – Example Strategic Assumption

Strategic Assumptions		Risk Trend	
Primary:			
1	Directionality of interest rates	Declining 	Rising
2	Stability of housing prices	Declining 	Rising
3	Directionality of unemployment rates	Declining 	Rising
4	Directionality of commodity prices	Declining 	Rising
5	Stability and liquidity in bond markets	Unstable 	Stable
6	Volatility and liquidity in Equity markets	Volatile 	Stable
7	Degree of volatility and liquidity in FX markets	Volatile 	Stable
8	Stability of credit rating	Unstable 	Stable
9	Degree of stability of the regulatory environment	Unstable 	Stable
10	Current demographic trends	Stable 	Changing
Other			
11	Security of computer systems	Unsecure 	Secure
12	Degree of stability of the Government (longevity, privatization, corruption, debt)	Unstable 	Stable
13	Degree of freedom of movement of and security of information	Limited 	Free
14	Degree of freedom of movement of individuals	Limited 	Free
15	Degree of social stability	Unstable 	Stable
16	Degree of peace	War 	Peace
17	Degree of the effect of Rule of Law	No 	Rule
18	Degree of Reliable of the infrastructure (power, telecommunications, water, etc.)	Unreliable 	Reliable
19	Access to skilled workforce	Limited 	Free
20	Law abiding workforce	Unstable 	Stable
21	History and prediction of infectious diseases	Unstable 	Stable

STEP 3. REVIEW AND UNDERSTAND GLOBAL RISKS AND TRENDS

Albert and his team then turned their attention to the specific Global Risks and Trends on the horizon using the World Economic Forum’s Global Risk Report for 2017¹².

The Top Global Risks from the World Economic Forum’s 2017 Global Risks Report are listed in Table 3 (below) and the Global Trends are listed in Table 4 (below). They are colour coded to reflect The World Economic Forum’s classification into five risk clusters: **Geopolitical**, **Societal**, **Economic**, **Environmental**, and **Technological**¹³.

TOP GLOBAL RISKS

1. Extreme weather events
2. Natural disasters
3. Large-scale involuntary migration
4. Terrorist Attacks
5. Cyberattacks
6. Failure of climate-change mitigation and adaption
7. Water Crises
8. Interstate Conflict
9. Unemployment and underemployment
10. Man-made environmental disaster
11. Failure of national governance
12. Fiscal Crisis/Sovereign Debt
13. Food Crises
14. Weapons of Mass Destruction
15. Data Fraud or Theft
16. Asset Bubble
17. State Collapse or Crisis
18. Biodiversity loss and ecosystem collapse
19. Profound Social Instability
20. Failure of Financial Mechanism or Institution
21. Spread of Infectious Diseases
22. Failure of Regional or Global Governance
23. Illicit Trade
24. Energy/Commodity Price Shock
25. Failure of Critical Infrastructure/ Information Infrastructure breakdow
26. Deflation and Inflation
27. Adverse affects of technological advances

Table 3 – Global Risks

From the World Economic Forum’s Global Risk Report:

A “**Global Risk**” is an uncertain event or condition that, if it occurs, can cause significant negative impact for several countries or industries within the next 10 years.

A “**Global Trend**” is defined in the World Economic Forum’s Report as a long-term pattern that is currently taking place and that could contribute to amplifying global risks and/or altering the relationship between them.

Unlike risks, trends are occurring with certainty and can have both positive and negative consequences. Trends can alter how risks evolve and interrelate, and they inform efforts at risk mitigation.

To gain context for understanding the Global Risks and Trends, Albert and team also reviewed the more detailed information regarding these risks and trends that is included in the full GRAFT e-book release.

TOP GLOBAL TRENDS

1. Rising Income and wealth disparity
2. Changing climate
3. Increasing polarization of societies
4. Rising cyber dependency
5. Ageing population
6. Increasing national sentiment
7. Growing middle class in emerging economies
8. Changing landscape of international governance
9. Rising Urbanization
10. Degrading Environment
11. Shifting Power
12. Rising Geographic Mobility
13. Rising Chronic Diseases

Table 4 – Global Trends

¹² <https://www.weforum.org/reports/the-global-risks-report-2017>

¹³ review of the Global Risks and Trends is included in Appendix 1 of A Riskier World: It’s Here, to be used to gain a common definition, factual backup for risks and trends, and insights. Use the information provided in Appendix 1 as input to the ranking and determination of the correlations between risks and trends. When reviewing the global risks and trends please keep in mind the key assumption the impact that the changing global risks and trends will have on your strategy.

STEP 4. RANK AND PRIORITIZE GLOBAL RISKS AND TRENDS

After reviewing and assessing each of the Global Risks, Albert’s team started the prioritization process by rating each Global Risk as High, Medium, or Low impact based on their assessment of relevance for the organization. The team then considered likely timelines and assigned a timing or urgency factor of (<1 yr., 1 – 5 yrs., 5 – 30 yrs.) for each.

After this initial assessment, the team then proceeded with a more granular ranking, ranking each of the Global Risks from 1 to 27 based upon impact to CB, from highest to lowest. Table 5 shows the output of CB’s ranking highlighting the risk of a housing bubble and inflation.

Table 5 – Global Risks Ranking

Global Risks	Magnitude/ Impact <i>Low, LM, Medium, MH, High</i>	Timing <i>Immediate, Mid 3-5 yrs., Future > 5yrs</i>	Prioritization <i>1 - 25</i>
1. Extreme weather events	H	I	13
2. Natural disasters	M	M	21
3. Large-scale involuntary migration	H	I	18
4. Terrorist Attacks	M	M	12
5. Cyberattacks	H	I	6
6. Failure of climate-change mitigation and adaption	M	F	26
7. Water Crises	M	F	14
8. Interstate Conflict	M	M	10
9. Unemployment/underemployment	M	I	5
10. Man-made environmental disaster	ML	M	22
11. Failure of national governance	H	M	11
12. Fiscal Crisis/Sovereign Debt	H	M	8
13. Food Crises	M	M	15
14. Weapons of Mass Destruction	H	I	18
15. Data Fraud or Theft	H	I	3
16. Asset Bubble	M	I	1
17. State Collapse or Crisis	M	F	20
18. Biodiversity loss and ecosystem collapse	M	F	27
19. Profound Social Instability	M	M	17
20. Failure of Financial Mechanism or Institution	M	M	9
21. Spread of Infectious Diseases	M	M	25
22. Failure of Regional or Global Governance	M	F	19
23. Illicit Trade	M	I	4
24. Energy/Commodity Price Shock	H	M	7
25. Failure of Critical Infrastructure/Information Infrastructure breakdown	H	F	23
26. Deflation / Inflation in major economy	M	M	2
27. Adverse affects of technological advance	M	F	24
28. Global Risk Specific to Organization			

PRIORITIZE AND RANK GLOBAL TRENDS

Next, Albert’s team reviewed each of the Global Trends to ensure that they understood and gave consideration to each, then rated each Global Trend based on impact of High, Medium, or Low on the organization. They also assigned a

timing of immediate (I), medium term (M) or future (F) and then refined the ranking to order the Global Trends from 1 to 13 based upon impact to CB. The results are documented in Table 6, below.

Table 6 – Global Trends Ranking

Global Trends	Magnitude/ Impact <i>Low, LM, Medium, MH, High</i>	Timing <i>Immediate, Mid 3-5 yrs., Future > 5yrs</i>	Prioritization <i>1 - 25</i>
1. <i>Rising Income and wealth disparity</i>	<i>H</i>	<i>I</i>	<i>1</i>
2. <i>Changing climate</i>	<i>H</i>	<i>M</i>	<i>12</i>
3. <i>Increasing polarization of societies</i>	<i>H</i>	<i>M</i>	<i>5</i>
4. <i>Rising cyber dependency</i>	<i>H</i>	<i>I</i>	<i>6</i>
5. <i>Ageing population</i>	<i>M</i>	<i>I</i>	<i>3</i>
6. <i>Increasing national sentiment</i>	<i>M</i>	<i>I</i>	<i>8</i>
7. <i>Growing middle class in emerging economies</i>	<i>H</i>	<i>M</i>	<i>7</i>
8. <i>Changing landscape of international governance</i>	<i>M</i>	<i>F</i>	<i>4</i>
9. <i>Rising Urbanization</i>	<i>H</i>	<i>M</i>	<i>2</i>
10. <i>Degrading Environment</i>	<i>M</i>	<i>F</i>	<i>13</i>
11. <i>Shifting Power</i>	<i>M</i>	<i>F</i>	<i>10</i>
12. <i>Rising Geographic Mobility</i>	<i>M</i>	<i>M</i>	<i>9</i>
13. <i>Rising Chronic Diseases</i>	<i>M</i>	<i>F</i>	<i>11</i>
14. <i>Global Trend specific to Organization</i>			

STEP 5. MAP GLOBAL RISKS AND TRENDS ON TO GRAFT

Albert’s team then used the GRAFT mapping tool to populate the GRAFT Map, the output of which is shown in Figure 8. The GRAFT Map illustrates risks and trends that have been prioritized both as urgent and high impact. This facilitated a discussion of the events on the horizon that may have the most significant impact on CB’s portfolio.

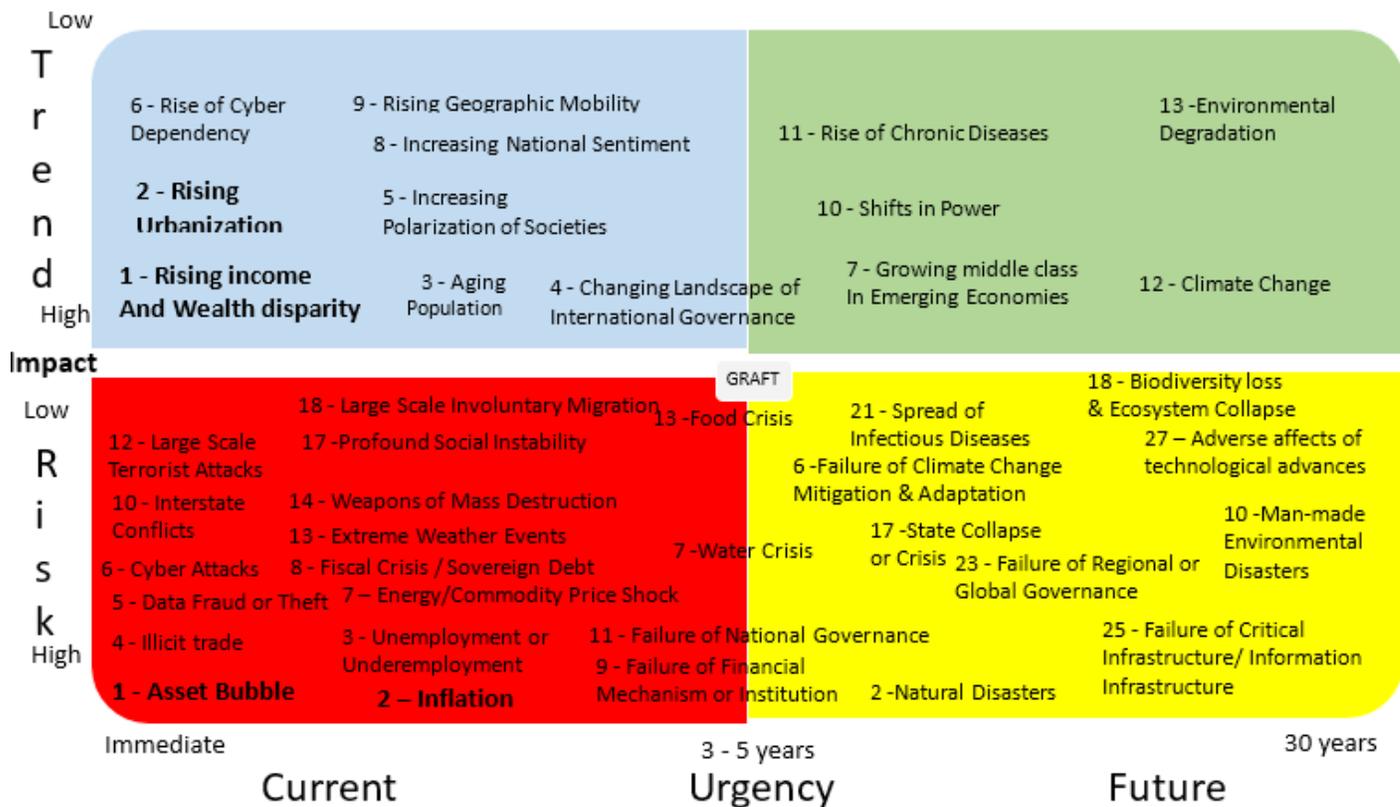
the lower left corner of the **RED** zone, you can see the urgent and immediate ranking of the global risks:

1. *Asset Bubble*
2. *Inflation / Deflation*
3. *Unemployment / Underemployment*
4. *Illicit trade*
5. *Data fraud or theft*

In the lower left corner of the **BLUE** zone, the ranking of the urgency and immediate ranking of the global trends:

1. *Rising income and wealth disparity*
2. *Rising urbanization*
3. *Aging population*
4. *Changing landscape of international governance*
5. *Increasing Polorization of societies*

Figure 8 – GRAFT Map

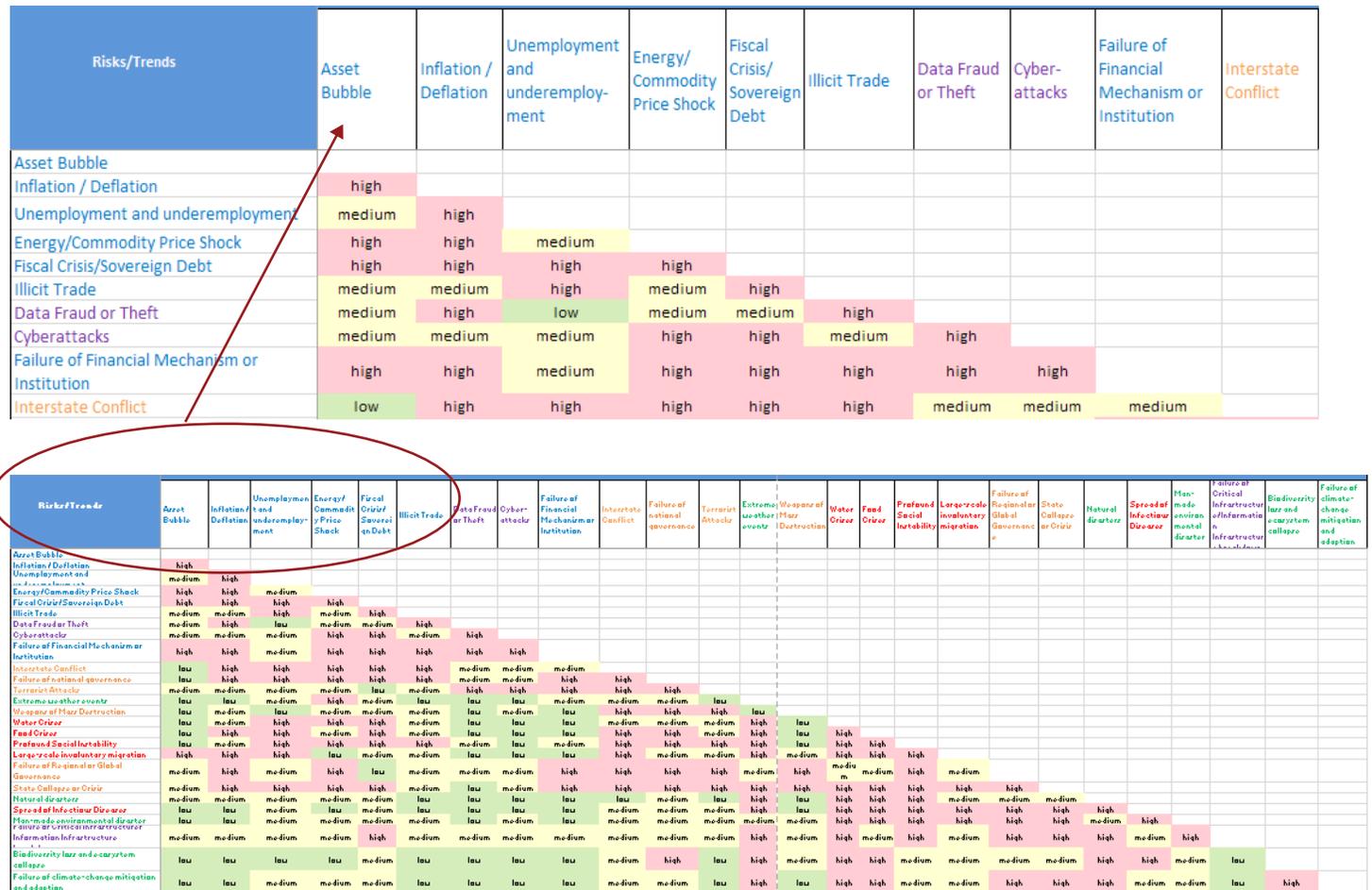


STEP 6. IDENTIFY GLOBAL RISK AND TREND CORRELATIONS, MAGNITUDE, IMPLICATIONS, AND ORGANIZATIONAL KEY INSIGHTS

With the ranking and prioritization of the Global Risks and Trends completed, CB compared, and discussed, the top trends and their interaction with the top risks at

their organization. Next, they identified the correlations between each of the Global Risks and Trends, assisted by the GRAFT Correlation matrix tool (Figure 9).

Figure 9 – GRAFT Correlation Matrix Tool

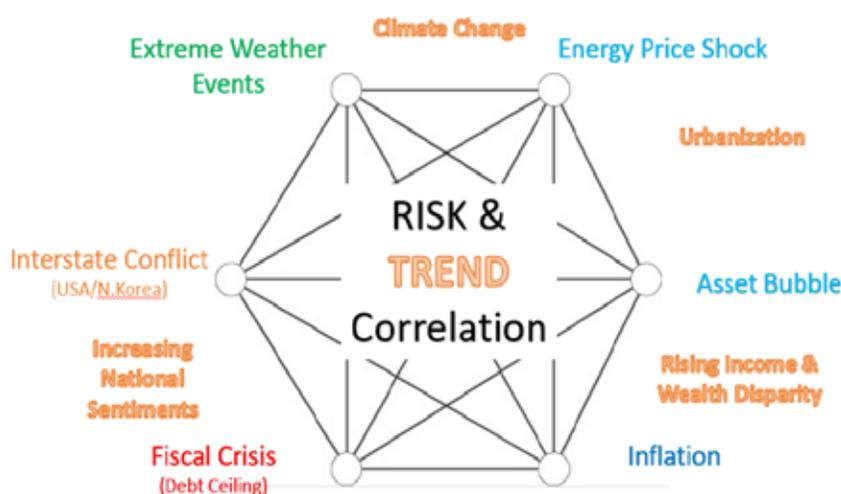


STEP 7. RE-ASSESSMENT AND CHALLENGE RANKING

Throughout the process, CB was assessing and challenging the rankings and correlations through discussion sessions with senior leaders. They found that as they reviewed the Global Risks and Trends, unforeseen forces outside their home market had an impact on their portfolio. This led to the inclusion of a larger set of risks and trends for analysis.

CB observed the impact that trends of the Canadian housing bubble, rising urbanization, climate change, aging population, national sentiments, cyber dependency and sovereign debt, which would be adversely impacted by a rise oil prices, inflation, unemployment, and interstate conflict. Looking forward, CB is considering the impact that global events such as the unfolding of events on the political horizon in the United States, the Brexit EU discussions, OPEC oil production, North Korea missile testing, power shifts in several countries including Brazil, Venezuela, and Turkey; and the correlation of these global events will have on the Global Risks and Trends affecting CB and their rankings and prioritizations. These are illustrated below in Figure 10.

Figure 10 – GRAFT Risk Cluster Pentagon of Global Risks and Trends



STEP 8. IDENTIFY KEY INSIGHTS AND COMPARE INSIGHTS TO STRATEGY

CB then identified Key Insights stemming from the correlation of the prioritized Global Risks and Trends.

CB compared the correlation relationships to the organization’s mission statement (what is our purpose) and vision (what are we trying to achieve). The exercise of comparing the GRAFT relationships to the mission and vision facilitated a discussion confirming and contradicting some of the participants’ previous views. CB next compared the prioritized risks and trends to their underlying success assumptions to identify the key relationships and potential event drivers that would impact the organization’s ability to achieve their goals.

Albert then discussed with his team the impact and correlations that Global Risks and Trends relationships had on CB’s high-level business strategies. The outcomes of those discussions are summarized in Table 8 – Correlation Implication and Key Insights Table.

CB leaders acknowledged the growing array of factors, both domestic and international, that could potentially result in higher loan losses. They concluded that certain areas of the portfolio (e.g., loans with high loan to value ratios AND low debt service coverage ratios, loans to seniors, loans to small business owners), would be more at risk than others and that more granular portfolio monitoring, isolating the higher risk segments, would be beneficial. Segmenting the portfolio by vulnerability would facilitate a better understanding of the level of risk in the portfolio, and would allow for stress testing these segments to quantify potential downside impacts. It would also allow for implementation of Early Warning Indicators designed to flag when risk factors reach a designated level of concern so that pro-active steps (e.g., more active and early collections efforts) can be taken to reduce the potential for loan losses.

Table 8 – Correlation Implication and Key Insights Table

Primary Risk or Trend	Identify Correlated Risk or Trend	Magnitude of Correlation and Implication	KEY INSIGHTS Events or Potential Events Stemming from Correlation of Trends and Risks
Inflation/Rate Hikes	Inflation/Rate Hikes	<p>Increasing inflation could lead Bank of Canada to continue increase interest rates.</p> <p>While inflation has been low, Q2 Canadian GDP increased by 4.5% and September gasoline prices increase by 10 – 20 cents per litre.</p> <p>Each 25 bp rise in the lending rate equates to approximately \$50 increase in interest payments on the average Canadian mortgage. 30% of borrowers cannot afford even a 1% increase in interest rates, increasing likelihood of loan payment arrears or defaults.</p>	<p>Even if Canada’s inflation remains low, Bank of Canada continue to increase rates (to encourage continued investment in Canadian debt securities) as a result of rate hikes in other countries.</p>
Inflation/ Rate Hikes	Asset Bubble	<p>Housing prices have increased by over 30% in the last year in major markets. A recent foreign buyers’ tax is cooling the Greater Toronto Area market, and is increasing the risk of the housing bubble bursting. High ratio loans extended in the last year are at risk of negative equity if prices fall by more than 10%.</p>	<p>Negative equity combined with inflation-driven interest rate increases that strain overextended borrowers’ capacity to make payments could result in higher loan losses.</p>
Inflation / Asset Bubble	Sovereign Debt/ Mortgage Debt	<p>Canadian Debt to GDP levels are at all-time highs. Increasing inflation may lead to increased interest rates, straining repayment capacity.</p>	
Inflation / Asset Bubble	Unemployment / Underemployment	<p>Announced increases in Ontario provincial minimum wage may lead to layoffs and closing of some small businesses.</p>	<p>Minimum wage earners that are laid off, and small business owners, are at increased risk of defaulting on their loans.</p>
Inflation / Asset Bubble	Energy price shock	<p>Energy prices remain low, however, many extreme weather events, and geopolitical event risks in the USA, North Korea, the Middle East, Venezuela, Turkey, and Russia could lead to an energy price spike.</p>	<p>Increasing oil prices would benefit oil companies and employees in Alberta and lead to lower default rates there. However, the rising dollar and increased input prices could lead to layoffs in manufacturing in Ontario and Quebec, resulting in increasing loan default rates.</p>
Inflation / Asset Bubble	Increasing national sentiment	<p>The strain on resources along with the unknown outcome of involuntary migration into Europe has increased national sentiments. Brexit vote prompting Britain to leave the EU. Further European votes may lead to further breakup of EU.</p>	<p>Increasing national sentiment outside Canada may lead to fluctuations in currencies and further inflationary pressures, exacerbating concerns regarding asset bubble / negative equity and loan default risks.</p>
Inflation / Asset Bubble	Rising Urbanization	<p>Increasing urbanization has fueled inflation in the housing sector, disproportionately increasing house prices in large urban centres versus smaller cities and rural communities.</p>	<p>There is no one interest rate policy that appropriately addresses the need of a diverse Canada. This may lead to increases in nonperforming loans disproportionately spread across Canada.</p>
Inflation / Asset Bubble	Aging population	<p>Many seniors and new seniors living on fixed incomes remain exposed to inflation due to remaining unpaid high debt levels.</p>	<p>Non-performing loans and loan defaults may increase for borrowers who are seniors.</p>
Inflation / Asset Bubble	Rising wealth & income disparity	<p>Many new home buyers may be priced out of the market as the income gap continues to widen and housing prices continue to stay high.</p>	<p>New home owners are even more at risk of interest rate increases as they are stretched to take higher loan to value mortgages, and have higher payment to income ratios.</p>

STEP 9. ADJUST THE ORGANIZATIONAL STRATEGIES AND ACTION PLANS FOR THE IMPLICATIONS OF THE GRAFT MAPPING AND CORRELATION INSIGHTS.

Figure 11- Map out an action plan to prepare for changes in the Global Risks and Trends



The GRAFT review highlighted the credit risks associated with a potential increase to inflation and underlying interest rates in concert with lower house prices and high debt levels, as well as the potential compounding effects of rising unemployment/underemployment, energy price changes, widening income disparity, urbanization and an aging population.

The management team reviewed these considerations in the context of their strategy for loan growth within the current risk appetite. They concluded that the automated tool with front-end search tool would allow them to target potential clients with an acceptable risk profile and that the Alberta market was less vulnerable to rising energy prices.

As a result CB modified their growth strategy to specifically target Alberta using the new tool on a test basis¹⁴; they also decided to avoid potential borrowers in more vulnerable sectors.

In addition, they identified opportunities for enhanced portfolio monitoring and proactive collection strategies should the identified risks materialize and credit quality begin to deteriorate (see Step 8 outcome). Further, they opted to increase their loan loss provisions by 15% on high ratio mortgages in manufacturing based urban centres.

Summarized below in Table 9.

Table 9- Revised Canadian Bank Strategy

Strategy	Timing	Business Landscape	Competitive Advantage
To be a leader in the Canadian Residential mortgage market (prime and subprime) with expansion into provision of mortgages with a fintech AI interface for adjudication.	Grow assets under management by 15% by 2019, maintain and manage a strong liquidity position of over \$2B.	Expand footprint in Alberta. Maintain and grow deposits by 15% by 2019, to over \$2B. Maintain NPL ratio under 0.30%. Increase LLP by 15%	Enhanced Customer experience for all Canadians, provided through a fintech interface, and supported by a risk management foundation.

¹⁴ CB is collaborating with a Fintech provider to test an AI front end that searches 145,000 databases to provide a recommendation of approval or decline in their adjudication process.

CONCLUSION

Prior to implementing GRAFT, CB had an “as required process” to identify and evaluate the impact of risks that were external to the organization. CB’s enterprise risk management framework focused mainly on Credit, Market, and Operational Risk, without an explicit focus on strategic risks and opportunities.

By following the GRAFT process, CB leaders completed a systematic and thorough review of risks and opportunities. They confirmed their intuitive concerns surrounding Canada’s asset bubble and rising rates. More importantly, use of GRAFT stimulated awareness and discussion of a broader range of risks, leading to the development of a more targeted growth strategy as well as a plan to develop enhanced, segmented portfolio monitoring, downside analysis to quantify the magnitude of loan losses under a variety of downside assumptions and implementation of early warning indicators to prompt early action in the face of actual market deterioration.

By implementing GRAFT, senior leaders and the Board were able to enhance both their approach to loan growth and to risk management.