

Integrating Risk Management into the Strategy Execution System

Dr. Robert S. Kaplan

Baker Foundation Professor, Harvard Business School



A emerging framework for risk management:

Category I: Risks from Employees' Undesirable and Unauthorized Actions

- Enterprises should strive to completely avoid Category I risks.
- The organization gets no benefits from allowing Category I risks to occur. They should strive to reduce their likelihood to zero.

Category II: Risks of Not Achieving the Enterprise's Strategic Objectives

- The risks that the enterprise accepts to execute the strategy and generate superior returns
- The organization must identify the principal risk events from their strategy and estimate their likelihood and impact
- It can then reduce the likelihood and impact of Category II risks through use of key risk indicator scorecards and cost-effective initiatives

Category III: Risks from Uncertain, Uncontrollable External Events

- Events that managers can neither predict nor influence; often managers “don't know they don't know” about such risk events
- Managers, however, can take prior actions to mitigate the impact of these events should they occur (e.g., build earthquake-proof structures; backup data centers in a distant region; insure; hedge)

A emerging framework for risk management:

Category I Risks: **Employees' Unauthorized Behavior and Actions**

- theft of cash and information
- accounting irregularities
- fraud
- bribery and corruption
- breakdowns in privacy and security
- loss or destruction of information
- discrimination and harassment
- illegal and unethical behavior

Failures in Controlling Category I risks

- Siemens Bribery and Corruption Scandal: 2007-09
 - Pay \$1.6 billion in fines and profit returns to US and German authorities
 - Pay \$850 million for internal investigations by outside lawyers and accountants.
 - Nine former members of Managing Board sued for \$28.3 million for breaching fiduciary duties
 - Two former CEOs agree to pay more than \$10 million to settle cases brought against them.
- Société Générale: The Jérôme Kerviel Affair
 - Upon discovery of Kerviel's unauthorized positions, the bank privately and quickly closes out the account, realizing losses of about €7 billion and books the loss against 2007 income.
 - Société Générale has to raise €5.5 billion in new capital to cover the losses.
- UBS: Kweku Adoboli arrested in an illegal trading scheme that loses \$2.3 billion
 - UBS shares declined to the lowest level in two-and-a-half years; CEO, Oswald Gruber, resigns on Sept. 24, 2011.
 - "the rogue trader incident is merely the tip of the 'casino mentality' iceberg that has existed at UBS for years."

Managing Category I Risks

Events caused by employees deviating from desired, legal, and ethical behavior.

- The risks (“known knowns”) that companies want to complete avoid. The goal is to reduce the probability of their occurrence to ZERO!
- Clear and frequently communicated Beliefs and Boundary Systems
 - Mission, Values, Codes of conduct
- Strong internal controls (e.g., segregation of duties), monitored by internal audit department, combined with standardized operating procedures, should drive the probability of compliance and business-as-usual risks essentially to zero

Category II Risks: Events that threaten the achievement of strategic objectives

- The risks the company is willing to accept to execute the strategy and generate superior returns
- What events can cause us not to achieve our strategic objectives?

A Dream Interrupted at Boeing (New York Times, September 6, 2009)

The **Dreamliner** — the first passenger plane to be made mainly with light plastic composites — **is now more than two years late** and still awaits its first flight tests. Boeing acknowledges that the problems have sorely tested the patience of suppliers and customers, and damaged its credibility. Already, **60 orders have been canceled, partly because of the delay.**

Stock analysts estimate that the company initially planned to invest \$8 billion to \$10 billion in developing the project, but could end up spending \$20 billion, including the penalties it will owe for delivery delays.

Boeing's August 2010 Announcement: Still more Dreamliner delays

EVERETT, Wash., Aug. 27 -- The Boeing Company said today that it now expects delivery of the first 787 in the middle of the first quarter 2011.

Boeing's Dreamliner Delays: 21 January 2011

Earlier this week, Boeing announced yet another -- now the seventh -- delay in the delivery schedule for its first 787 Dreamliner, pushing its initial delivery back at least three years later than originally planned.

The causes of many of the delays can be traced back to two problems. The first is that Boeing decided to outsource both the design and the manufacturing of the 787 to shift the economic risk onto those suppliers. With its previous aircraft, Boeing had outsourced only the manufacturing and maintained tight control over the design -- providing those suppliers with extremely detailed specifications of what each aircraft component should do. But by outsourcing both the design and the manufacturing, Boeing lost control of the development process.

The second problem Boeing encountered with the 787 was that it had never before built an aircraft with composite materials. It had previously used aluminum -- whose behavior in the real world is much better understood. Unfortunately, due to a lack of experience with composite materials, the software that engineers used to predict how the aircraft would behave did a poor job.

An in-depth Jan. 20 report from *Reuters* quotes a Boeing statement: "We made too many changes at the same time -- new technology, new design tools and a change in the supply chain -- and thus outran our ability to manage it effectively for a period of time."

BP refinery blast due to cost-cutting, report says

Two-year US inquiry blames oil group's culture

By Sheila McNulty in Houston and Ed Crooks in London

Cost-cutting at BP's Texas City refinery left it vulnerable to a catastrophe before the explosion in March 2005 that killed 15 people, a US government agency said yesterday.

The Chemical Safety and Hazard Investigation Board blamed "safety deficiencies at all levels of the BP corporation" for the accident and called on the board to appoint an extra member with expertise in safety.

The CSB said its two-year inquiry revealed an inadequate response to multiple audits revealing safety lapses, failure thoroughly to investigate and respond to previous accidents, the ignoring of federal regulations and a focus on production rather than safety.

BP said it accepted responsibility for the explosion but disagreed with some of the CSB report, particularly many of the findings and conclusions.

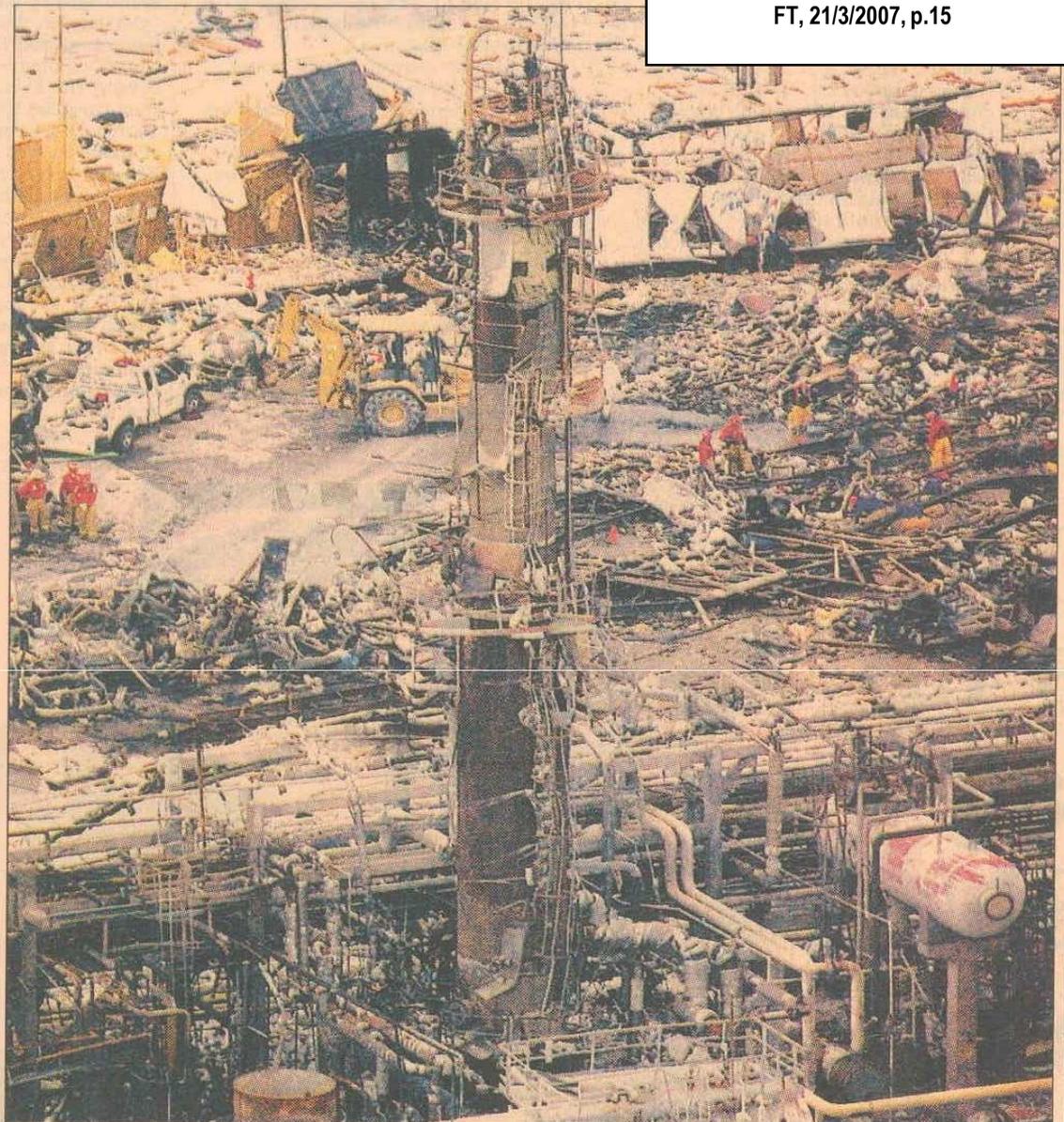
In spite of its disagreement, BP said it would give full and careful consideration to the CSB's recommendations, alongside the steps it was taking to improve safety.

Carolyn Merritt, CSB chairman, said: "The March 23 2005 accident at BP was avoidable. It was the inevitable result of a series of actions by the company. Among other things, they cut costs that affected maintenance and safety [and] they ignored the implications of previous incidents that were red warning flags. There was a broken safety culture at BP."

The explosion, in which 500 people were also injured, was the US's worst industrial accident in 15 years. The 335-page report called on senior executives to set up an improved incident-reporting programme – one without fear of retaliation – and use new indicators to measure safety performance. The CSB indicated regulators had failed to provide comprehensive scrutiny of the facility to uncover its alarming state of disrepair.

"The combination of cost-cutting, production pressures and failure to invest caused a progressive deterioration of safety at the refinery," Ms Merritt said.

The CSB said audits and studies revealing serious safety problems at BP were shared with executives in London and pro-



Catastrophe: 15 people were killed in the Texas City refinery blast

AFF

vided to at least one member of the executive board – John Manzoni, the chief executive of refining and marketing.

"Our findings show that both BP group executives and Texas City managers became aware of serious process safety problems

at the refinery beginning in 2002 and continuing through March 2005," said Don Holmstrom, the CSB's supervisory investigator.

He said they failed to apply lessons learnt after three serious incidents at the BP refinery in Grangemouth, Scotland, in 2000,

which could have helped prevent the explosion.

The CSB found fatigue, by some who worked 12-hour days for 29 or more consecutive days, played a role in the explosion.

Deepwater Horizons: An Engineered Disaster

Investigators have focused on the minute-to-minute decisions and breakdowns to understand what led to the explosion of the Deepwater Horizon, killing 11 people and setting off the largest oil spill in United States history and an environmental disaster.

More than five weeks before disaster, the rig was hit by several sudden pulsations of gas called “kicks” and a pipe had become stuck in the well. The blowout preventer, designed to seal the well in an emergency, had been discovered to be leaking fluids at least three times.

BP had fallen behind schedule and over budget, paying roughly \$500,000 a day to lease the rig from Transocean. The rig was 43 days late for starting a new drilling job for BP by the day of the explosion, a delay that had already cost the company more than \$21 million.

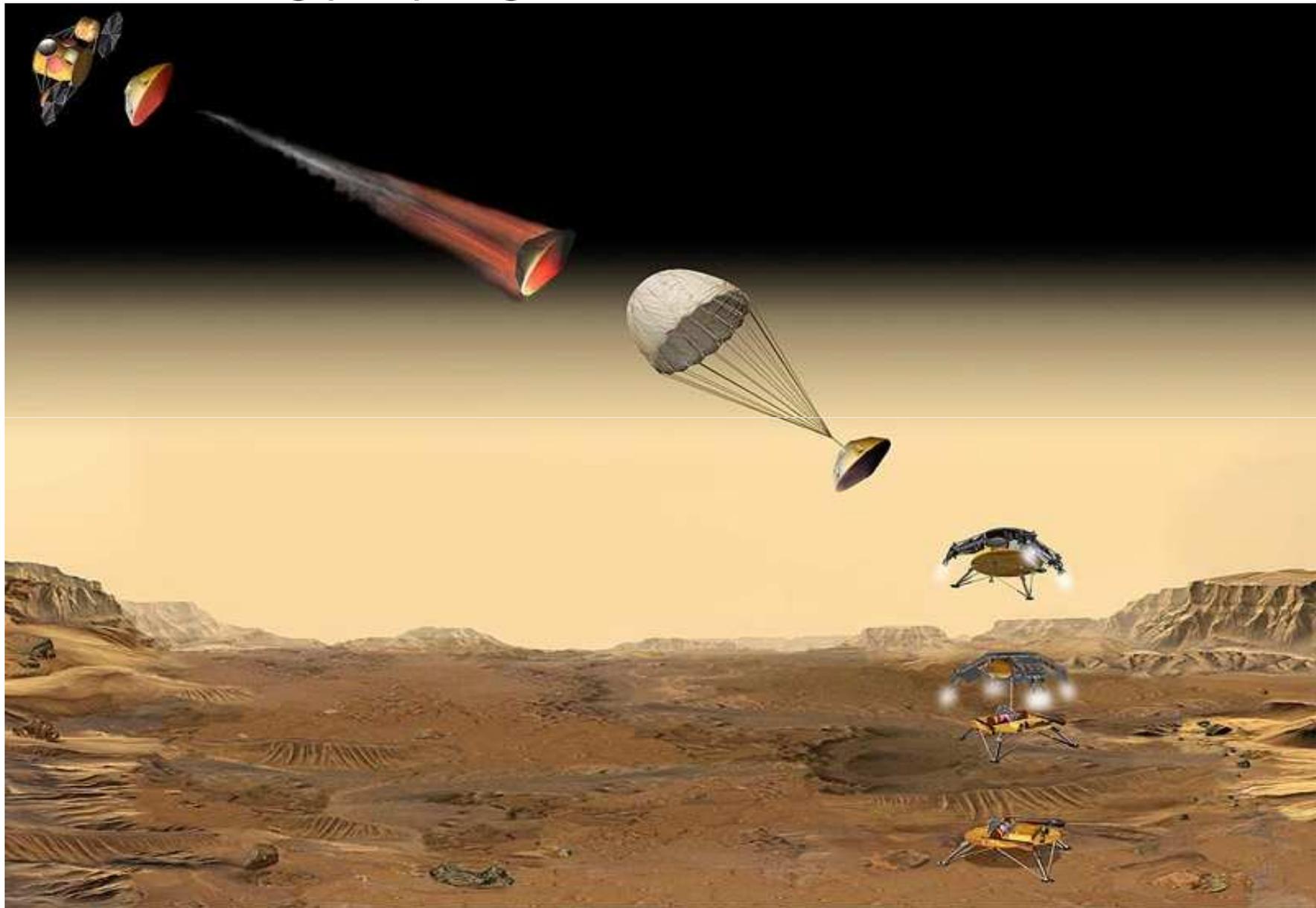
With the clock ticking, bad decisions went unchecked, warning signs went unheeded and small lapses compounded.

One Post Mortem about the Explosion on the Deepwater Horizon rig

An investigative panel recently concluded:

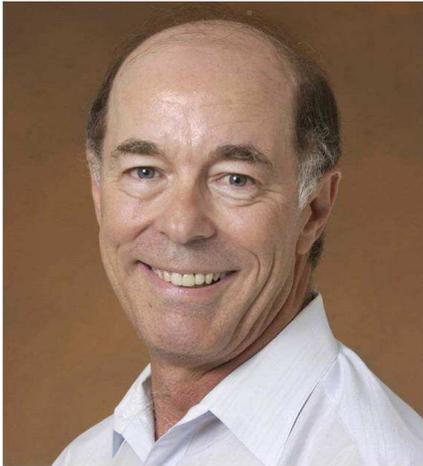
“The disaster ... can be attributed to “an organizational culture and incentives that encourage cost cutting and cutting of corners – that reward workers for doing it faster and cheaper, but not better”

A Case Study in Risk Management: The Mars Explorer Project: Entry-Descent-Landing (EDL) Stage



Key Elements in the JPL Risk Management System

Experienced project manager (Gentry Lee) appointed as “Chief Systems Engineer” for all JPL missions



“Risk mitigation is painful; not a natural event for humans to perform.”

Balancing Innovation and Risk: The Message from Janus



“JPL engineers graduate from top schools at the top of their class. They are used to being right in their design and engineering decisions. I have to get them comfortable thinking about all the things that can go wrong. ... Innovation, looking forward, is absolutely essential, but innovation needs to be balanced with reflecting backwards, learning from experience about what can go wrong.”

Key Elements in the JPL Risk Management System

- **A 12 Person Risk Review Board is created for each project (G. Lee serves as chairman)**
 - **Experienced, respected technical experts from JPL, NASA, and companies**
 - **Independent of project**
 - **Conducts three full-scale 2 day reviews during the course of the project**
 - **Creates a culture of “intellectual confrontation”**
 - **Legitimizes rigorous questioning of the intended design**
 - **What bad things can happen to even good designs?**
 - **Creative paranoia – what can go wrong, what will you do if this component fails?**
 - **Forces project team to view their work from a different perspective**
- **The project team identifies and quantifies, and defends the critical project risks with a “heat map”**

Mars Explorer Project EDL Stage: Mid-Project Risk Assessment

CDR

Likelihood	5			5		
	4				3	
	3					
	2			6 7		
	1			1 2 4		
			1	2	3	4
		Consequence				

Rank & Trend	Risk ID	Approach	Risk Title
1	5	M	Bio-Marker Detection Capability
2	3	M	RADAR Reliability
3	7	R	Landing site survivability
4	6	W	Sub-surface Sample Acquisition
5	4	W	Power system performance
6	1	A	Heat Shield performance
7	2	W	Parachute performance

Criticality	Trend**	Approach
High	Decreasing (Improving)	M - Mitigate
Med	Increasing (Worsening)	W - Watch
Low	Unchanged	A - Accept
	New since last Month	R -Research

Key Elements in the JPL Risk Management System

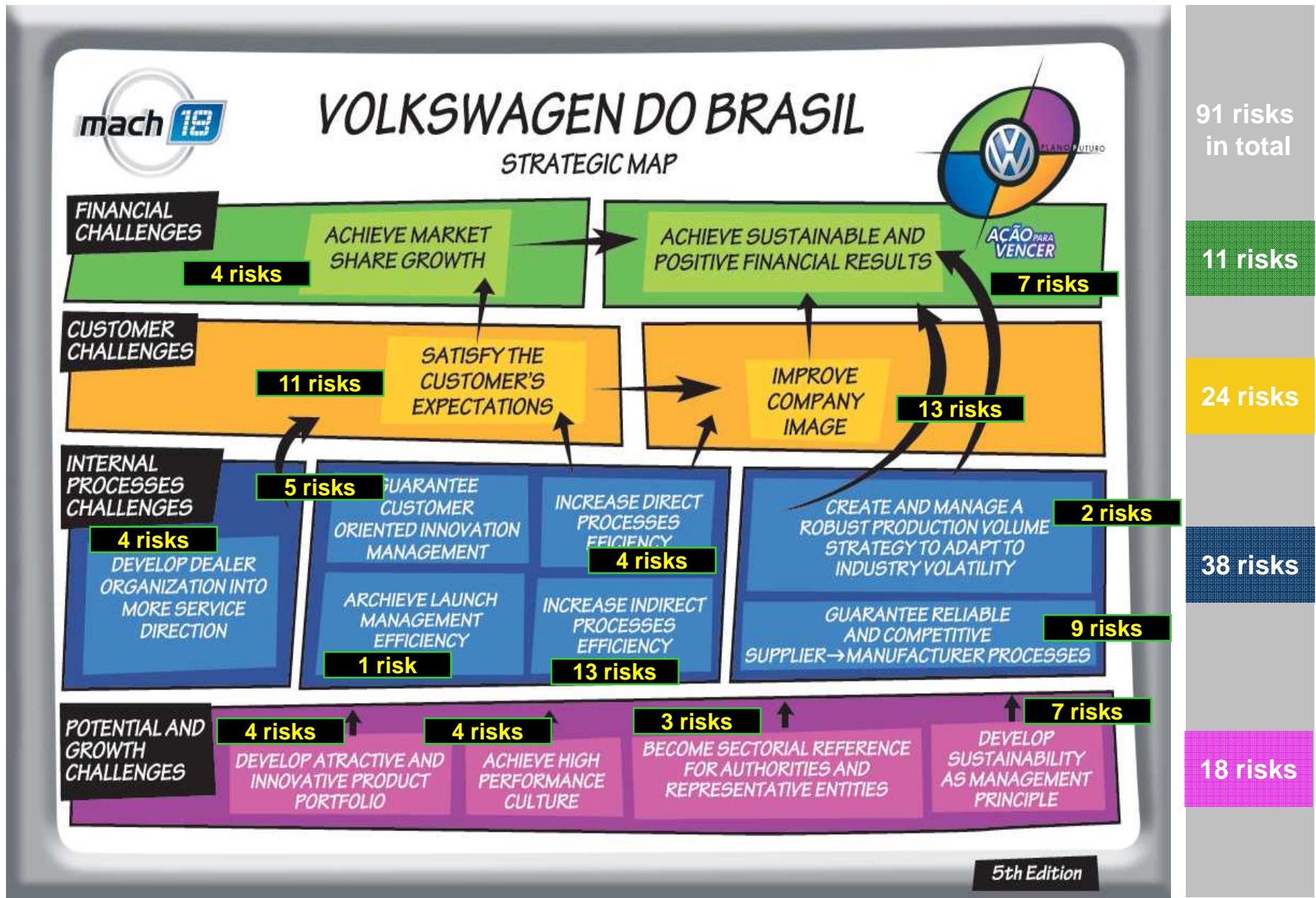
- **Establish cost and time reserves based on difficulty and predictability of each task**
 - A buffer (“rainy day fund”) for what could go wrong and still be solved within the budget and time frame of the project
 - For a new, complex component that had never been flown in space, the cost buffer could be 100%, and the time buffer up to 50%
- **The risk review panel and project team formed “tiger teams” to address mission-critical problems that the project team could not fix.**
 - Best technical experts from within JPL and, generally, anywhere in the world
 - Cost and time for the tiger team came from the reserves already established

Identifying, Mitigating and Managing Category II Risks

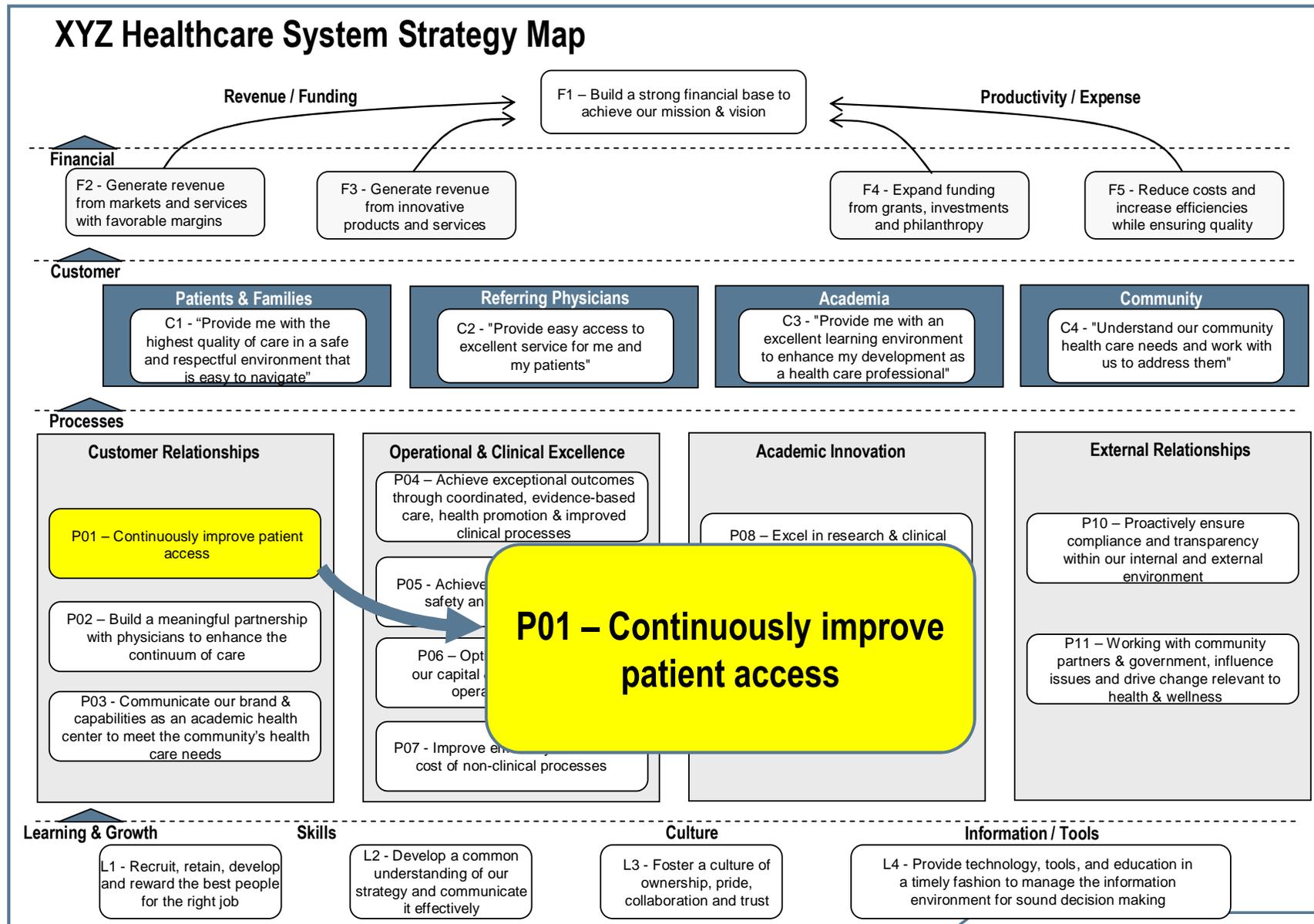
What can cause us not to achieve the strategic objectives on our strategy map?

- For each objective, identify the key risk events and risk indicators for each strategy map objective
- Aggregate risk indicators into a Key Risk Indicator (KRI) scorecard
- Set priorities for initiatives to mitigate the major risk events

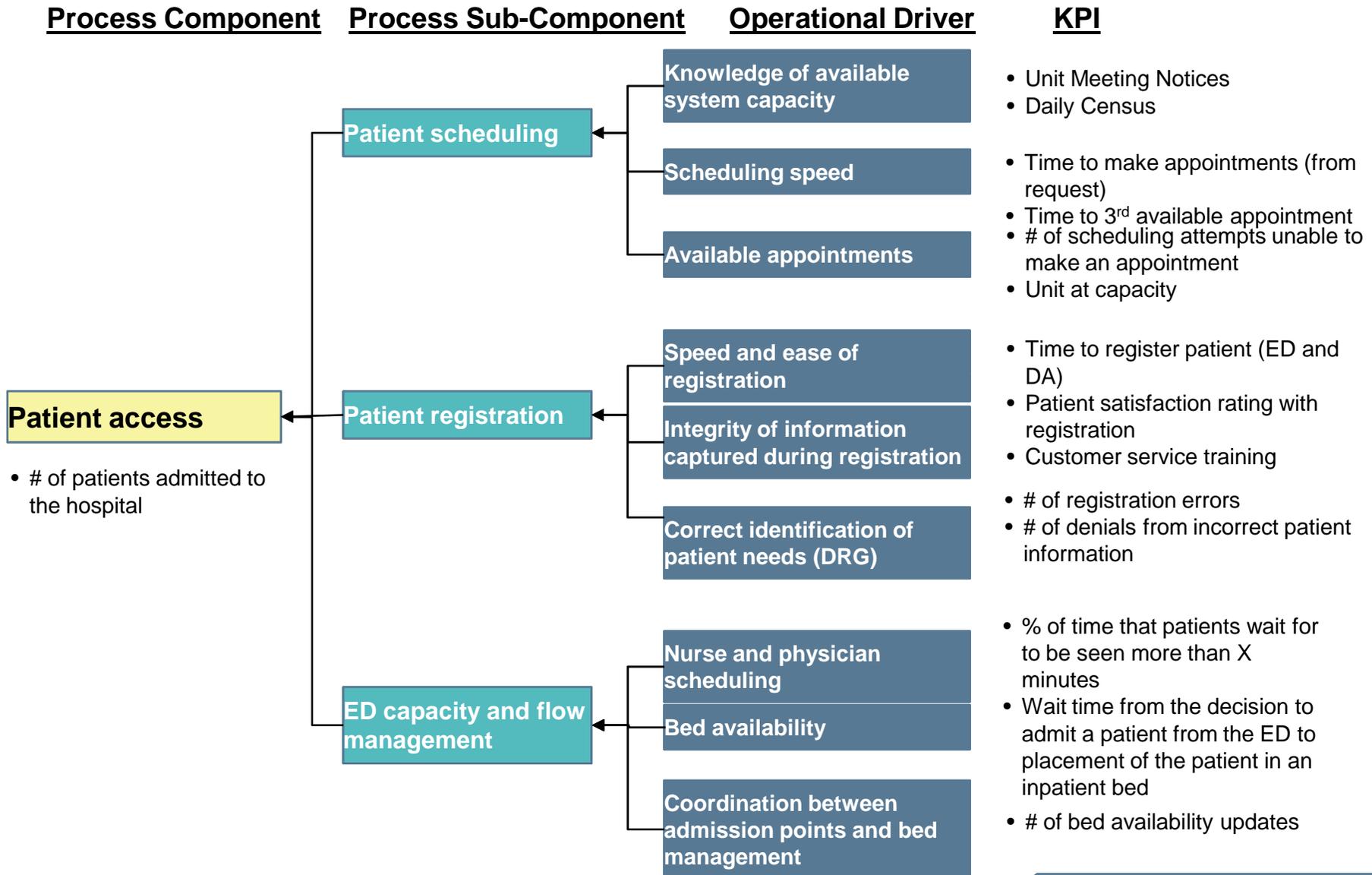
VW do Brasil identifies risk for each strategy map perspective



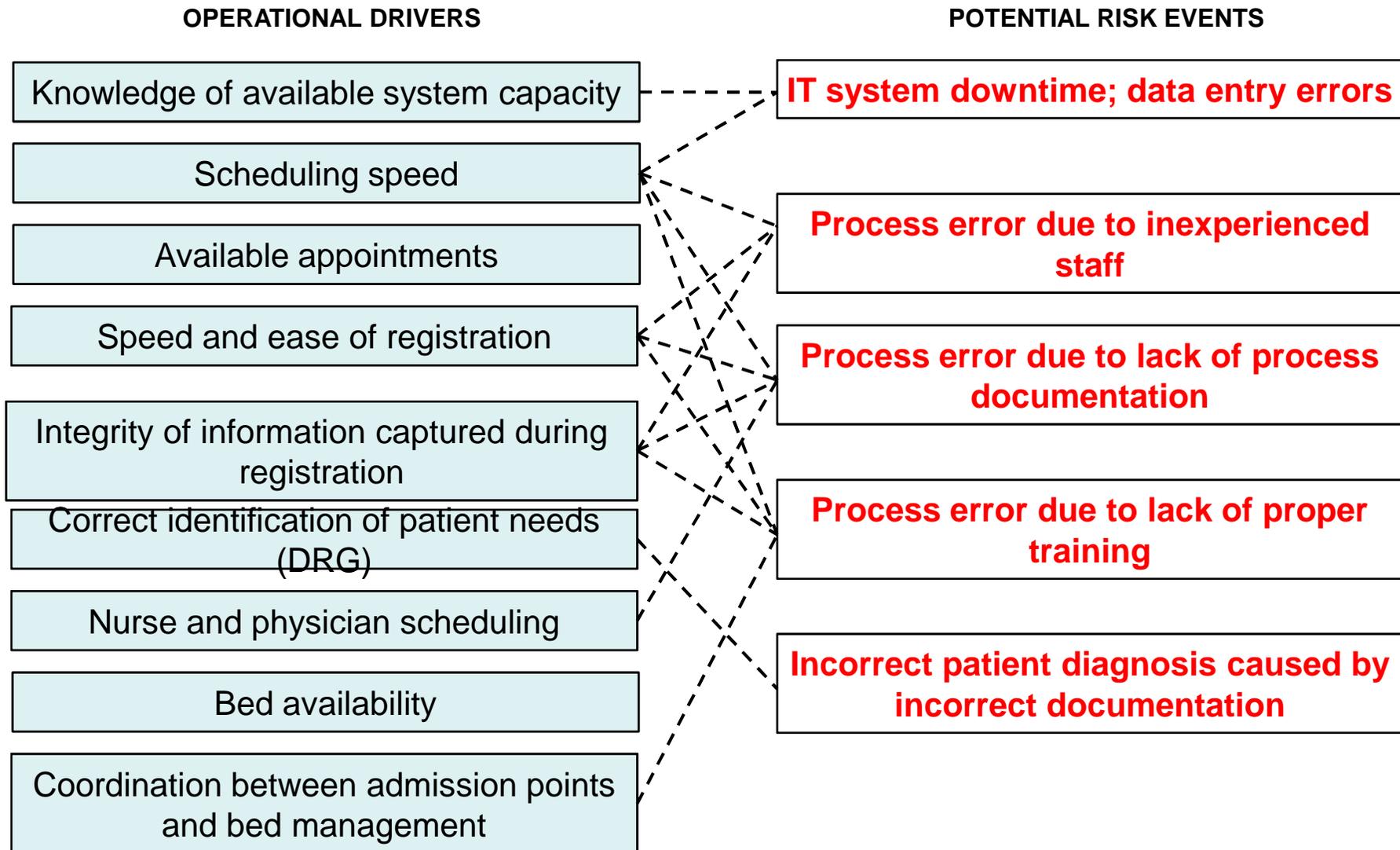
Healthcare System Strategy Map



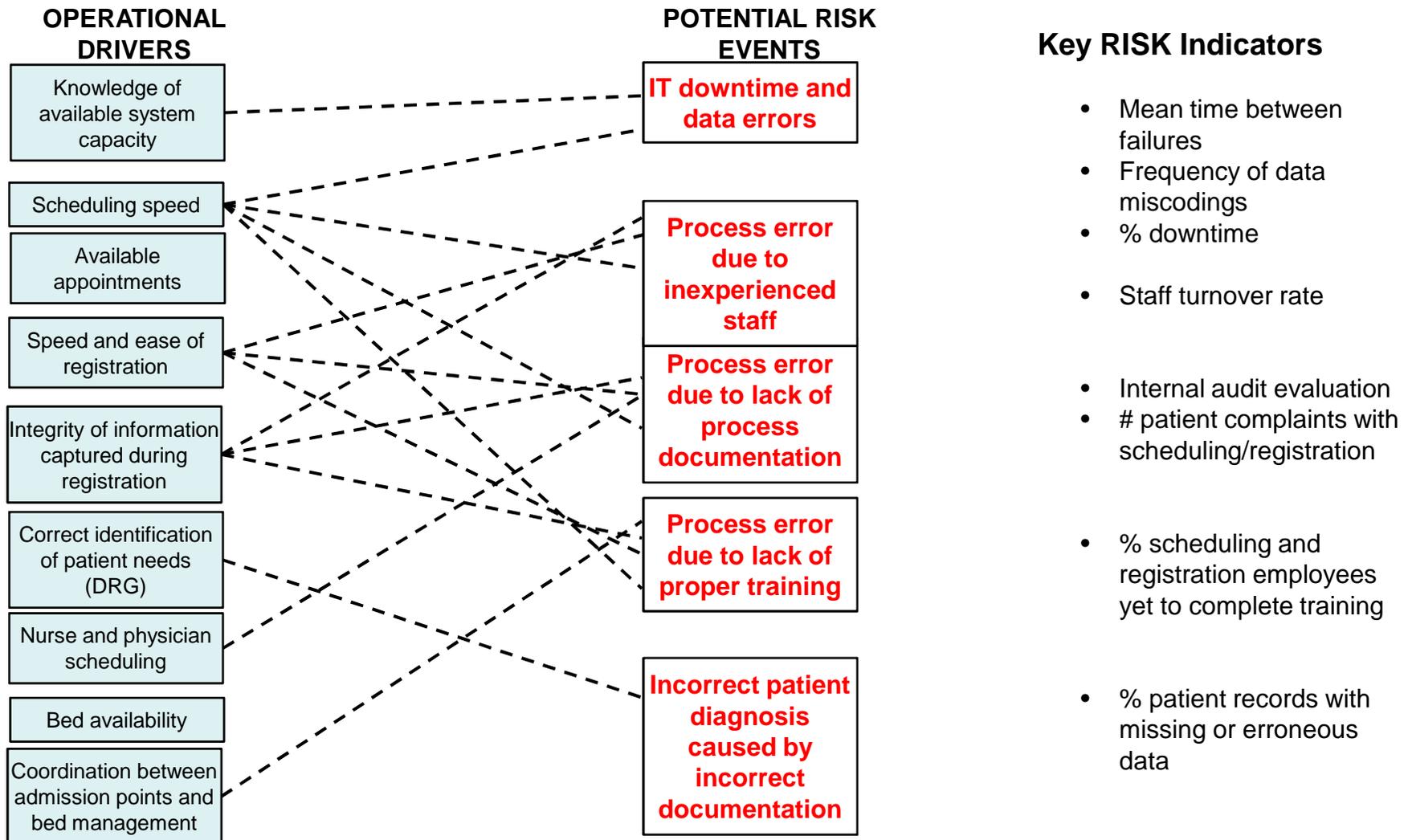
Patient access can be further decomposed into success factors, operational drivers, and associated KPIs



Identify potential risk events that could impact achievement of the strategic objective.



Develop a Key Risk Indicator (KRI) scorecard to track risk events



Use a “risk map” to determine the risk priorities by the probability and impact of each event

Adverse Consequences

High	5	15	25
Medium	3	9	15
Low	1	3	5
	Low	Medium	High

Likelihood

RISK EVENT	FACTOR	RANK
IT system failure	$4 \times 4 = 16$	2
Process error due to lack of proper training	$2 \times 2 = 4$	4
Process error due to inexperienced staff	$3 \times 2 = 6$	3
Process error due to lack of process documentation	$1 \times 2 = 2$	5
Incorrect patient diagnosis caused by incorrect documentation	$4 \times 5 = 20$	1

Identify action plans or initiatives required to eliminate, reduce, or transfer the risk – or conversely take advantage of it.

Objective	Significant Risks	Factor	Actions / Initiatives
Continuously improve patient access	Incorrect patient diagnosis caused by incorrect documentation	20	<i>Establish Multiple Review Points</i>
	IT system failure	16	<i>Add Redundancy Internally and Externally</i>
	Process error due to inexperienced staff	6	<i>Staff Hiring Process Review</i>
	Process error due to lack of proper training	4	<i>Registration and Scheduling Process Training and Testing Program</i>
	Process error due to lack of process documentation	2	<i>Registration / Scheduling Process Documentation</i>

Category III: The risk from non-controllable external events

- What are the non-controllable external events that can cause the strategy or the entire enterprise to fail?
- Often these are risks that “we don’t know we don’t know”
- Need for “risk envisionment”
 - Scenario planning, War-gaming, Stress tests, and Tail risk meetings

Scenario Planning: Why?

- Provide a rational process for defining the plausible boundaries of future states of the world.
- Strategy workshops help us choose which game should we play in the current environment? What should be the value proposition we offer to targeted customers to position ourselves for competitive advantage?
- Scenario Analysis reveals that many possible future environments can exist. How will our current strategy perform in the various possible futures?

A simple 2 × 2 scenario analysis about possible economic futures as of December 2008

		Economic Growth	
		Severe Recession	Moderate Recession
Global Credit and Capital Markets	Liquidity Restored	<p>Battered but Resilient</p> <ul style="list-style-type: none"> • Prolonged recession of 24 months • Financial and regulatory reforms instituted • Modest growth resumes in emerging markets (BRIC countries) • Banks, companies and consumers gradually reduce leverage • Moderate recovery of trade 	<p>Regenerated Global Momentum</p> <ul style="list-style-type: none"> • Moderate recession of 9-12 months, followed by resumption of strong economic growth • New, effective regulatory regimes • Cost of capital decreases • Rapid de-leveraging • Global trade and capital flows recover quickly
	Volatile, Illiquid,	<p>Long Freeze</p> <ul style="list-style-type: none"> • Recession lasts more than 5 years (similar to Japan after 1990) • Ineffective regulatory, fiscal and monetary reforms • Slow growth in all geographies • Government takes over capital allocations • Globalization decreases as countries become more nationalistic and protectionist 	<p>Stalled Globalization</p> <ul style="list-style-type: none"> • Moderate recession of 1-2 years, followed by slow economic growth • Limited economic and regulatory reforms • Banks strive for highly safe leverage ratios • Government allocates capital as lender of last resort • Reduced trade and capital flows

Risks	Measurability	Risk assessment approaches	Risk Mitigation objective	Control approaches
Category I Employee misconduct and misbehavior	High: can <i>measure</i> probability and impact	Control-self assessments; Diagnostic controls; Near-miss data collection; Operational loss data bases	Drive incidence of occurrence to zero	Internal control; Boundary systems; Mission and value statements; Internal audit
Category II Strategy execution	Medium: can <i>estimate</i> probability and impact	Risk maps with nominal scales; Statistical risk estimation models (VaR, risk-adjusted capital, risk-based performance measures)	Reduce likelihood and impact in cost-efficient way	Key risk indicator scorecards; Risk mitigation initiatives; Risk reviews at strategy review meetings
Category III External, uncontrollable	Low: cannot measure or estimate likelihood; can only <i>envision</i> .	Risk envisionment; Scenarios; War games; "Tail- risk" assessments; Mental models	Reduce impact, should risk occur	Contingency planning; Insurance and hedging programs (limited)

Additional observations on risk management practices

- “Jamie Dimon is the Chief Risk Officer of J P Morgan Chase. He sets the tone at the top.”

Barry Zubrow, CRO of J P Morgan Chase

- “Everyone does risk management in bad times. The strong test of risk management is whether it works in good times. Will top management stand behind the risk managers, avoiding temptation, and saying no to things that put the enterprise at risk?”

M.D. Ranganath, Chief Risk Officer, Infosys