

A Work Project, presented as part of the requirements for the Award of a Master's degree in
Finance from the Nova School of Business and Economics.

General Title:

NAVIGATING TURBULENCE IN THE RAYTHEON TECHNOLOGIES MERGER

Individual Subtitle (VANESSA JOHANNA KOPP – 59954):

**BALANCING COMPLEXITY AND COMPLIANCE THROUGH STRATEGIC RISK
MITIGATION**

Work project carried out under the supervision of:

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Reading observations for jury: The knowledge cut-off date for this case study is April 03, 2020, the day United Technologies Corporation, Light Merger Sub Corp and Raytheon Company merged.

Abstract - group work

In 2019, United Technologies Corporation and Raytheon Company merged, creating a major aerospace and defence giant. The goal was to balance the volatility of commercial sales with the stability of defence contracts while innovating in areas like hypersonics and AI. However, merging two industry giants was not easy. They faced strict regulatory hurdles, had to address shareholder concerns, and managed to finalize the deal despite turbulent headwinds of the pandemic. The UTC-Raytheon merger exemplifies the complexities in modern mergers and acquisitions, illustrating how visionary goals must navigate the harsh realities of execution and market dynamics in the business world.

Abstract – individual work

The merger between UTC and Raytheon was subject to significant transaction value, completion and enforcement risks due to regulatory scrutiny, shareholder concerns and market volatility. Experts warned of additional challenges due to UTC's integration fatigue and the contrasting stock price performance in the past. Would legal safeguards such as 'Hell or High Water' and the Material Adverse Effect clause be enough to stabilise the transaction? An in-depth analysis of strategic risk mitigation—through due diligence, financial structuring, and risk allocation—reveals how these factors shaped the course of the deal. As COVID-19 shook global markets, a pressing question arose: could the merger have failed? By examining these challenges, the findings underscore the fine line between risk and resilience in high-stakes mergers and acquisitions.

Keywords: Merger & Acquisition, Merger of Equals, Shareholder Activism, Strategic Diversification, Synergies, Risk Management, Case Study

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Part A: Case Study

GENERAL PART

“Greg Hayes was a busy man last summer. The chief executive of United Technologies was finalising a \$30bn acquisition of the avionics specialist Rockwell Collins while also plotting a break up of his US industrial conglomerate by spinning off other businesses. Then he received a call. On the phone was Tom Kennedy, his counterpart at Raytheon, the defence group and one of the top five prime contractors to the Pentagon. Would he consider a merger between Raytheon and the aerospace businesses of UTC? The timing was not ideal but the proposal was.” (Pfeifer and Waldmeir 2019)

For Hayes, the idea of a merger with Raytheon wasn't entirely new. *"This had been on our radar screen . . . for a decade or more,"* he remarked after announcing the deal (Pfeifer and Waldmeir 2019). While the timing was challenging, the opportunity to combine two complementary A&D giants was very promising because the merger offered a perfect alignment of strengths. UTC sought the stability of defence contracts to balance the cyclicity of its commercial aerospace business, while Raytheon aimed to leverage UTC's advanced technologies, such as avionics and propulsion systems, to gain a foothold in the commercial sector. Together, the two envisioned creating a diversified aerospace and defence powerhouse capable of leading in both markets.

Despite the promising strategic reasons for the merger such as significant synergies, cutting-edge innovation in technology, and the potential to become a leading force in a rapidly changing industry, the path forward was filled with challenges. UTC was deeply involved in a massive restructuring because it was integrating a \$30 billion acquisition, all while spinning off two other major parts of their business. On top of this, the uncertainty of the global economy added a layer of risk that could affect the timing and ultimate success of the merger. While the move was bold and aligned with the long-term visions of both companies, it was stepping into a future full of unknowns.

United Technologies Corporation

In 1929, Frederick Renschler, founder of Pratt & Whitney, proposed a bold idea to his key client William Boeing, founder of Boeing Airplane and Transport Corporation. He suggested a consolidation of the two companies, combining his aircraft engine manufacturing business with Boeings airplane manufacturing business and the subsequent start of operating an airline together, which was put into practice in 1929 by creating the *"United Aircraft and Transport Corporation"* (United Technologies Corporation, n.d.). However, this merger was undone

only 5 years later in 1934 due to the Air Mail Scandal, which forbid airplane operators and manufacturers to be owned by the same company. Through this split, the “*United Aircraft Corporation*” was formed consisting primarily of Pratt & Whitney. During the 85 years since then, the company evolved and grew massively, finally becoming the “*United Technologies Corporation*” (UTC) after the acquisition of Carrier and Otis. Today, UTC is a manufacturer of aircraft engines and aerospace systems for commercial and defence customers, as well as building systems and includes four key business units: Otis, Carrier, Collins Aerospace Systems (in 2018 UTC acquired Rockwell Collins and merged it with its UTC Aerospace Systems Segment to form Collins Aerospace Systems) and Pratt & Whitney. Otis specializes in the manufacturing of elevators, escalators, moving walkways, and related services (Otis Elevator Company, n.d.). Carrier provides heating, ventilating, air conditioning (HVAC), and refrigeration systems, along with building automation, and fire and security technologies products (Carrier Global Corporation, n.d.). Collins Aerospace Systems is a manufacturer of systems and components for commercial and business aviation, military & defence, helicopters, space and airports (Collins Aerospace, n.d.). Pratt & Whitney is engaged in designing, developing, producing and maintaining a wide range of aircraft engines for commercial, military, business jet and general aviation customers (Pratt & Whitney, n.d.).

In 2018, UTC had total sales of \$66.5 billion, which are relatively evenly divided as 29% of sales are from Pratt & Whitney, 25% are from Collins Aerospace Systems, 19% are from Otis and 28% are from Carrier (SEC 2018b). The company mainly serves civilian customers, which is why only 14% of total sales were military-related sales in 2018 (SEC 2018b). Currently, the backlog stands at \$119.4 billion, with \$21.7 billion attributed to Otis and Carrier, stretching out nearly a decade into the future (SEC 2018b).

Recently, UTC decided to focus on their core business, which is the aerospace segment including Collins Aerospace Systems and Pratt & Whitney and thus wants to spin off Otis and

Carrier to become a pure player in the aerospace industry. The potential merger with Raytheon complements this vision by integrating UTC's strengths in advanced avionics and engines with Raytheon's expertise in defence systems. UTC's leadership views the opportunity of a merger with Raytheon as a transformative opportunity to strengthen its position as a leader in both commercial and defence aerospace sectors, aligning with its long-term goal of diversifying revenue streams and focusing on innovation. The merger would create a resilient business model that balances the cyclical nature of commercial aerospace with the stability of government contracts while unlocking opportunities for innovation and growth.

Raytheon Company

In 1922, on the third floor of an old, tenantless building near the Massachusetts Institute of Technology in Cambridge, Raytheon Company, originally known as the American Appliance Company, was founded (Raytheon Company 2022). The breakthrough innovation that later gave the company its name and its success was a tube that made it possible to operate radios from the socket instead of relying on batteries and was named Raytheon. Based on this groundbreaking invention, the company developed further products such as the microwave oven and the microwave radar and increasingly specialized in military applications. Today, Raytheon specializes in defence technologies and systems and is divided into two business units: Raytheon Intelligence & Space (RIS) and Raytheon Missiles & Defence (RMD). RIS develops integrated sensor and communication systems, cyber and software solutions, and electronic warfare systems, while RMD specializes in designing and producing integrated air and missile defence systems, naval and undersea sensor solutions, and advanced combat solutions, such as precision-guided munitions and hypersonic weapons (Raytheon Company, n.d.).

In 2018, Raytheon had total sales of \$27.1 billion, which are evenly divided as 47% of sales are from RIS and 53% are from RMD (SEC 2018a). Both RIS and RMD serve as prime contractors or major subcontractors on numerous programs with the U.S. Department of Defence, NASA, and international governments and approximately 81% of total sales in 2018 were military sales to the U.S. government (including foreign military sales through the U.S. government) (SEC 2018a). The current backlog stands at \$42.4 billion (SEC 2018a) and stretches several years into the future.

For Raytheon, the merger represents a strategic opportunity to expand its presence in the commercial aerospace market and create a more balanced entity while leveraging UTC's advanced aerospace technologies and a shared R&D division to enhance its defence capabilities, a vision strongly championed by the company's leadership.

Industry and market overview

The aerospace and defence (A&D) industry has long been a cornerstone of both U.S. economic growth and national security. By 2018, the sector was generating over \$929 billion in revenue, supporting more than 2.5 million jobs and establishing the U.S. as a dominant force in both commercial aerospace and defence markets (Aerospace Industries Association 2019). This leadership is built on a combination of government-backed defence initiatives and the rapidly expanding global demand for commercial aircraft. Behind the scenes, the sector's growth is driven by more than just cutting-edge technologies - it is also shaped by its unique market dynamics, high barriers to entry, and increasingly complex supply chains. At the heart of this dynamic industry are two distinct yet interconnected segments: the commercial aerospace sector, which serves global airlines, and the defence sector, which is heavily influenced by U.S. and global defence spending. In recent years, the commercial aerospace market has seen robust expansion, largely driven by a growing middle class in emerging

markets and a global push for fuel-efficient aircraft. As of 2018, the production backlog for aircraft orders remains strong, which reduces the business' cyclicalities, with air traffic continuing to rise above the historical average of 5.5% (DeNicolo, Matthews, and Buck 2018). The industry's profitability, however, is not immune to global macroeconomic shifts, facing several headwinds such as political & trade uncertainties and tariffs imposed on essential materials like aluminium and steel. Major commercial aerospace companies are now under pressure to optimise operations and further verticalize their supply chains to mitigate these risks. In parallel, the defence sector is also undergoing transformation. Historically, U.S. defence contractors have benefitted from significant government spending, with the fiscal year 2019 defence budget projected to increase by 3% to \$606 billion (DeNicolo, Matthews, and Buck 2018). The U.S. government's focus on military modernization, including missile defence, space capabilities, and cybersecurity, has driven demand for advanced defence systems. U.S.-based contractors like Raytheon, Lockheed Martin, and Northrop Grumman are the primary beneficiaries of these initiatives, particularly given the government's preference for American-made technology and the barriers created by regulatory requirements.

What makes the A&D industry especially unique is the significant barriers to entry. For commercial aerospace, companies like UTC have adopted a *"razor-and-blade"* business model (Pershing Square Holdings, Ltd. 2018). This model relies on selling high-value equipment, such as aircraft engines, at or near breakeven prices, while generating significant profits through decades of aftermarket sales of spare parts and services. Aircraft engines, for instance, require continuous servicing, creating a reliable long-term revenue stream for companies that dominate this space. The defence sector follows a similar pattern. Once contractors establish relationships with government clients, the high costs of switching providers, coupled with strict regulatory and security requirements, make it incredibly difficult for new entrants to break into the market. This results in an industry dominated by a

few key players who hold long-term government contracts and have well-established technological expertise.

By early 2019, one of the most striking developments within the A&D sector is the wave of consolidation reshaping the competitive landscape. A&D companies are increasingly turning to mergers and acquisitions to scale up, improve operational efficiency, and secure control over their supply chains (DeNicolò, Matthews, and Buck 2018). This trend is particularly pronounced in the defence industry, where the growing complexity of military systems, combined with cost pressures from government clients, has pushed contractors to seek efficiencies through vertical integration.

As of early 2019, the outlook for the aerospace and defence industry remains positive, driven by global defence modernization efforts and robust demand for commercial aircraft. However, trade uncertainties, rising production costs, and potential budget constraints in defence spending present challenges that industry players will need to manage carefully (DeNicolò, Matthews, and Buck 2018). To remain competitive, companies will need to continue investing in next-generation technologies such as artificial intelligence, cybersecurity, and autonomous systems, while streamlining operations and managing increasingly complex global supply chains. Despite these challenges, the industry's high barriers to entry, long-term government contracts, and growing demand for technologically advanced products ensure that aerospace and defence companies will remain vital players in the global economy for years to come.

Timeline of events

2015	UTC sold the Sikorsky helicopter business to Lockheed Martin Corp
2016	UTC successfully defended against a takeover bid from Honeywell International Inc
September 5, 2017	Rockwell Collins was sold to UTC

November 26, 2018	Completion of Rockwell Collins acquisition and announcement of Otis and Carrier spin-offs
June 8, 2019	Merger rumour date
June 9, 2019	Merger announcement
	...continuing on page 21

Merger overview

In early June 2019, whispers began circulating through the A&D industry about a potential landmark deal. Speculation intensified when "*a person familiar with the matter*," hinted that United Technologies Corporation, which was just planning to spin off its non-aerospace divisions, was possibly preparing to join forces with Raytheon Company, a major defence contractor. On June 8, the rumour mill buzzed, drawing the attention of analysts and stakeholders alike and within 24 hours, the whispers turned into reality: UTC and Raytheon announced a historic all-stock merger of equals (Roumeliotis and Brumpton 2019).

"On June 9, 2019, United Technologies Corporation, or UTC, Light Merger Sub Corp., a wholly owned subsidiary of UTC, or Merger Sub, and Raytheon Company, or Raytheon, entered into an Agreement and Plan of Merger, or the merger agreement, pursuant to which, subject to approval of UTC shareowners and Raytheon stockholders and the satisfaction or (to the extent permitted by law) waiver of other specified closing conditions, the UTC aerospace businesses and Raytheon will combine in an all-stock merger of equals." (SEC 2019). Accordingly, the merger itself was accomplished through the formation of a new UTC subsidiary established for the purpose of creating a merger entity, Raytheon Technologies, in which UTC and Raytheon could merge (Exhibit 1) (SEC 2019).

A fixed exchange ratio deal intended to create a combined company in which the post-merger ownership structure consisted of 57% UTC shareholders and 43% RTX shareholders, corresponding to an exchange ratio of 2.3348 (SEC 2019). UTC planned to issue approximately 648 million shares of UTC common stock to Raytheon shareholders as part of the merger (SEC 2019). Furthermore, as part of this transaction, United Technologies had to divest its two non-aerospace and defence divisions, Otis Corp (OTIS) and Carrier Corp (CARR) and distribute them to its shareholders in a tax-free manner (SEC 2019). UTC's shareholders received half a share of Otis and one share of Carrier for every UTX share they hold, marking the end of UTX as an independent entity (Cornell 2020).

The required spin-offs marked a strategic shift of UTC to move from a conglomerate, comprising of an elevator, air conditioning and aerospace business, towards a *"pure play"* aerospace & defence company after completing the merger with the military company Raytheon. The resulting *"platform-agnostic A&D company with a diversified portfolio"* (Exhibit 2) offered a wide array of products and services across various platforms and markets in both the defence and commercial sectors, achieving 2018 revenues of \$69 billion, positioning it just behind major industry rivals like Boeing and Airbus. Furthermore, the proposed UTC-Raytheon merger was noted to be the biggest ever in the sector (Exhibit 3). As shown in Exhibit 4 United Technologies estimated 2019 sales would decrease due to the spin-offs of its Carrier and Otis units. Still, a merger with Raytheon was expected to nearly restore the lost revenue, bringing sales back to approximately \$75.4 billion (Exhibit 4). This suggested the merger would effectively offset the financial impact of the spin-offs, maintaining the company's overall revenue.

Synergies from the United Technologies and Raytheon merger were projected to exceed \$1 billion in pre-tax cost savings within four years, resulting in a net of over \$500 million after accounting for integration costs. The combined entity aimed to achieve these significant

savings through supply chain efficiencies, corporate consolidations, and technological integration. Additionally, Raytheon Technologies planned to leverage its substantial R&D investments, which included approximately \$8 billion in 2019, across seven R&D Centres of Excellence with a workforce of around 60,000 engineers and 38,000 patents, to drive innovation, capture new market opportunities, and potentially realise further revenue synergies (RTX 2019).

Taking over as CEO of Raytheon Technologies was Greg Hayes, former CEO of United Technologies who called the mega-merger an *"innovative cash machine"* and mentioned that the beauty of the deal was a merger of equals with no premium. *"By bringing these two companies together, we get access to Tom's pristine balance sheet and an A rating on the debt. And with that flexibility, we can return \$18 to 20 billion to our shareowners over the next three years. That's about double they would have gotten with us as a standalone."*(RTX 2019)

GENERAL PART

Timeline of events

June 9, 2019	Merger announcement
June 9, 2019	Bill Ackman sends a letter to UTC CEO Greg Hayes, expressing concerns following a report about merger talks
June 17, 2019	UTC CEO Greg Hayes responds to the accusations against him and the merger
June 28, 2019	Daniel Loeb, through his hedge fund Third Point, criticises strategic rationale of deal
August 05, 2019	Pershing Square Holdings - Ackman's hedge fund - announces the exit from its investment in UTC
August 13, 2019	Third Point announces a reduction in its investment in UTC
October 11, 2019	Shareholder approval of UTC and Raytheon - transaction is expected to close in first half of 2020

January 8, 2020	The Common Market for Eastern and Southern Africa (COMESA) Competition Commission (CCC) has approved the transaction
January 2020	Turkey's Competition Authority (CA) has approved the transaction
March 13, 2020	The transaction is cleared by the European Commission (EC), conditional on the divestiture of a remedy package
March 26, 2020	The US Department of Justice (DoJ) clears the transaction on condition to divest Raytheon's military airborne radios business and UTC's military global positioning systems (GPS) and large space-based optical systems businesses. Canada's Competition Bureau approved the transaction.
March 30, 2020	The transaction has received all the necessary regulatory approvals and is expected to close on 03 April 2020
April 3, 2020	The spin-offs of Carrier and Otis are completed
April 3, 2020	The transaction has completed. United Technologies' name has changed to Raytheon Technologies Corporation, and its shares of common stock will begin trading on the NYSE under the ticker symbol RTX

Source: Mergermarket – RTX deal

INDIVIDUAL PART: VANESSA JOHANNA KOPP

Balancing complexity and compliance through strategic risk mitigation

“Execution risk is a big concern. (...) The merger,” said an industry expert *“adds complexity to an already complicated set of transactions being handled by UTC’s financial staff.”* (Pfeifer and Waldmeir 2019). The integration of two companies of this scale requires careful management of overlapping business areas, different corporate cultures and extensive technology systems. However, execution risk was just one of the several risks associated with this transaction.

These challenges were amplified by, among other things, the contrasting stock performance histories of the two companies. As Morgan Stanley noted, the merger combined Raytheon, a company that had proven to be an outperformer in the past, with UTC, a company that underperformed and was burdened by integration fatigue, repositioning efforts and M&A-related catch-up investments (Morgan Stanley 2020). This performance gap was a concern that the operational efficiency and financial performance of the combined company could be impaired. Therefore, a clear strategic vision and robust risk mitigation measures were required to reconcile these disparate developments.

Due diligence

To identify relevant risks prior to the announcement of the merger, Raytheon and UTC initiated a comprehensive due diligence process starting in January 2019 (SEC 2019). By gaining access to confidential data rooms and interviewing executives to gain deep insight into financials, business operations, regulatory concerns and cultural compatibility, the due diligence process not only identified and assessed risks but also reaffirmed the strategic rationale for the merger to provide a clearer path to integration (SEC 2019). Therefore, financial advisors from Evercore, Morgan Stanley and Citigroup reviewed the companies' financials and determined the fairness of the exchange ratio. Financial reviews confirmed the stability of the combined entity, which was supported by Raytheon's \$42.4 billion defence backlog and UTC's reduced complexity from the divestitures of Otis and Carrier. The value of \$1 billion operational synergies was confirmed to be achievable through aligning R&D, integrating aerospace and defence technologies and streamlining supply chains to reduce redundancies (SEC 2019). Regulatory reviews ensured antitrust compliance, including the divestitures and addressed legal obligations to minimise post-merger liabilities (SEC 2019). Cultural fit strategies aligned the differences between UTC's industrial workforce and

Raytheon's defence-focused workforce. Finally, due diligence protected intellectual property and enhanced cybersecurity to protect critical technologies and ensured a strong IT infrastructure that prepared the way for successful integration and future growth (SEC 2019).

In addition to stringent due diligence, the merger of Raytheon and UTC required several critical closing conditions that needed to be met, supported by a robust legal framework developed to manage risk and close the transaction (see Exhibit 12). These conditions included regulatory approvals, the completion of the Otis and Carrier divestitures, shareholder approval, compliance with applicable laws, confirmation that there would be no material adverse effect and maintenance of the tax-free status of the spin-offs under U.S. federal tax law (SEC 2019b). The regulatory approvals and the divestitures were not just procedural steps, but decisive measures to overcome the antitrust challenges. In this context, the “*Hell or High Water*” clause, reinforced by the “*Reasonable Best Efforts*” clause, required UTC to take decisive action, including divestitures and ensured that both parties actively cooperated to overcome regulatory hurdles (SEC 2019). The “*Material Adverse Effect*” clause, on the other hand, provided an exit mechanism that allowed either party to exit the agreement if long-term material changes negatively impacted the other party's business. To further strengthen the commitment and prevent an exit, the agreement provided significant termination fees: \$2.365 billion for UTC and \$1.785 billion for Raytheon (SEC 2019) (Exhibit 12).

Despite shareholder activism, the transaction was approved overwhelmingly by both UTC and Raytheon shareholders on October 11, 2019, a major milestone that helped move the deal forward. *"I am pleased that the shareowners of Raytheon and UTC voted in favor of our powerful strategic combination,"* said Tom Kennedy, Raytheon Chairman and CEO. *"Today's vote reflects a significant step on our path to unite two world-class companies with complementary technologies and supports our view that this merger of equals will create additional growth opportunities while delivering benefits to our shareowners, customers and*

employees." (United Technologies Corp. 2019). By March 30, 2020, all remaining regulatory approvals had been obtained, removing the final obstacles and allowing the merger to be completed (Mergermarket, n.d.). As part of this process, the spin-offs of Otis and Carrier were successfully completed on April 3, 2020 as the last closing condition to be fulfilled, thereby eliminating the main antitrust concerns (SEC 2019).

COVID-19 disruption

Despite detailed planning and a well-developed merger framework, the industry faced unprecedented challenges in early 2020 as the COVID-19 pandemic caused widespread disruption. Many M&A transactions were postponed or cancelled entirely. For example, Xerox's \$30 billion offer for HP was postponed indefinitely, while transactions worth over 100 billion dollars were cancelled in the US in the first half of the year (Emmerich and Norwitz 2021). Market volatility and economic instability caused buyers to question the viability of pre-pandemic deal terms, prompting companies to focus on stabilising operations and maintaining liquidity (Emmerich and Norwitz 2021).

The merger between Raytheon and United Technologies, completed on 3 April 2020, stood out amidst this turmoil and raised critical questions that drew the attention of investors, management and other stakeholders. The timing of the merger was particularly noteworthy as United Technologies' share price had fallen by almost 50% between the beginning of the year and the completion of the transaction (Exhibit 11). This dramatic decline reflected the significant impact of the pandemic on the commercial aerospace industry, where the collapse in demand for air travel forced airlines to cancel flights, ground planes and postpone orders for new aircraft and parts - key revenue drivers for UTC's aerospace businesses (Whiteman 2020).

The industry disruption underlined concerns about whether the pandemic could have been invoked as a Material Adverse Effect to renegotiate or terminate the merger agreement. Moreover, while the merger promised \$1 billion in annual cost synergies, it also presented significant challenges, including performance differences, integration complexity, market volatility and uncertainties in the aerospace and defence industry. Was the ambitious risk-return ratio justified or did it expose stakeholders to undue risk? How should investors, management and other decision-makers assess the long-term value of this transaction in light of these challenges?

Reflecting on the timing on the day of the merger, Greg Hayes, CEO of the newly formed RTX, acknowledged the challenges but expressed optimism: *“Bad time - sure, but again it’s a great time for us to come together and get working on what’s next.”* (Bloomberg Technology 2020). Despite the significant decline in the aerospace market, Hayes emphasised the new company’s financial resilience and strategic positioning during a CNBC interview on the day of the merger. When asked about the potential impact of the pandemic on shareholder returns, Hayes highlighted Raytheon Technologies’ robust financial foundation and ability to weather the downturn:

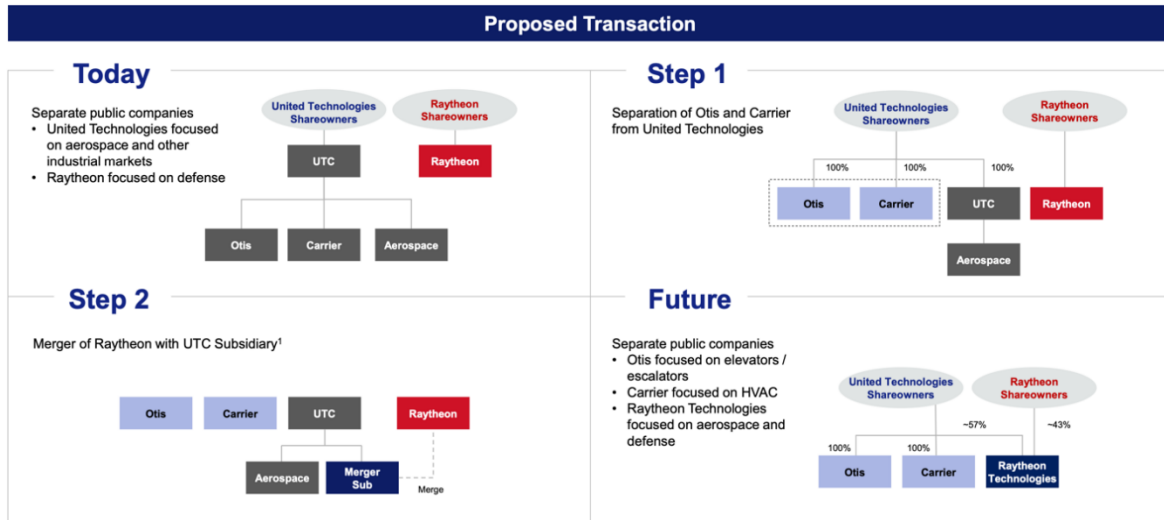
“Well look I think as we enter the merger today we get a very solid balance sheet. We’ve got about seven billion dollars of cash on hand, we’ve got five billion dollars of backstop financing. But more importantly we’ve got record backlog on the military side about seventy billion of current backlog as we deliver that we’re going to generate strong cash flows even with the commercial aerospace business down we still see positive cash flows for the year, we still see the ability to continue to pay dividends as we always have and I think that is very important.” (CNBC Television 2020). But since the pandemic outbreak, not only UTC’s but also Raytheon’s stock performance decline was more significant than most pure-play defence companies experienced. *“Raytheon has been the worst-performing stock (during the crisis)*

because they got tied into commercial aerospace through the merger," told Byron Callan of Capital Alpha Partners, Defense News, in an interview. *"But going forward, that may be the most interesting (stock) of all because there will be a degree of balance."* (Defense News 2020).

Why was the deal done if no or little value was created and the environment was far from ideal?

EXHIBITS

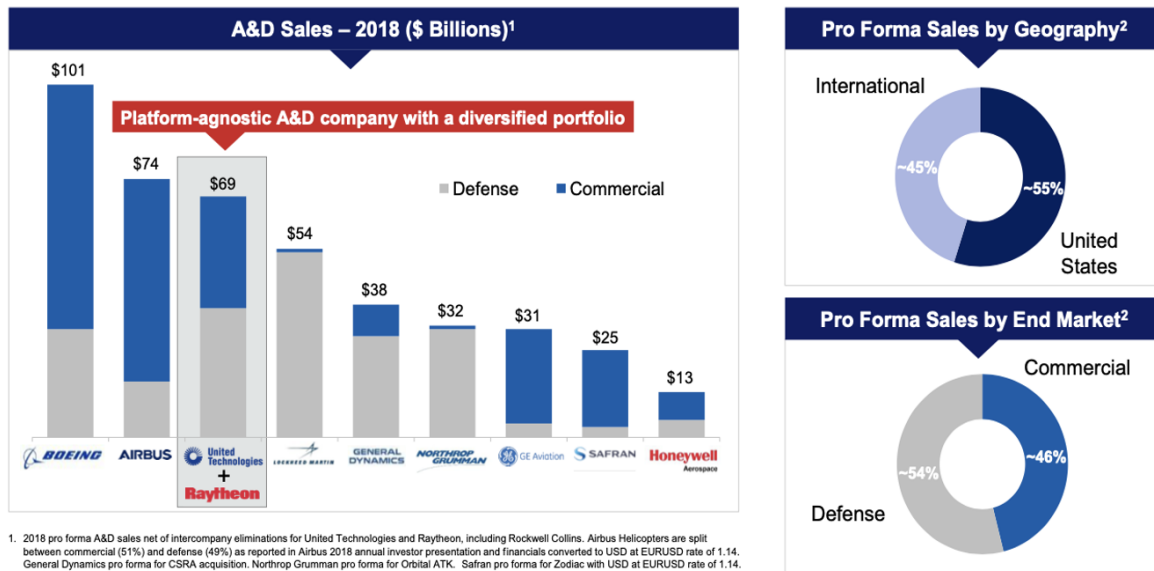
Exhibit 1. Transaction overview



Source: RTX 2019

Exhibit 2. Diversification within the A&D industry

Balanced Across Aerospace & Defense Segments



Source: RTX 2019

Exhibit 3. Previous takeovers in the sector

Go Big or Go Home

A United Technologies-Raytheon merger would be the biggest ever aerospace and defense deal. Here are the previous largest U.S. takeovers in the sector:

	Target Name	Acquirer Name	Announced Total Value ▼
2017-09-05	Rockwell Collins Inc	United Technologies Corp	\$29.5MB
2018-10-14	L3 Technologies Inc	Harris Corp	19.6M
2011-09-21	Goodrich Corp	United Technologies Corp	18.0M
1996-12-16	McDonnell Douglas Corp	Boeing Co/The	15.5M
2002-02-22	TRW Space & Mission Systems	Northrop Grumman Corp	13.7M
1994-08-30	Lockheed Corp	Martin Marietta Corp	10.0M
2017-09-18	Orbital ATK	Northrop Grumman Corp	9.2M
2015-07-20	Sikorsky Aircraft Corp	Lockheed Martin Corp	9.0M
2016-10-23	B/E Aerospace Inc	Rockwell Collins Inc	8.1M
1999-05-17	Gulfstream Aerospace Corp/DE	General Dynamics Corp	5.7M
2000-12-21	Litton Industries Inc	Northrop Grumman Corp	5.1M

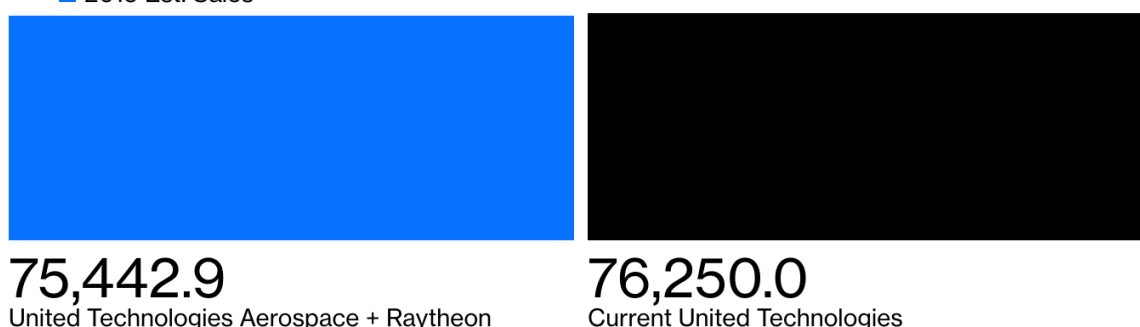
Source: Bloomberg 2019b

Exhibit 4. 2019 estimated sales pre- and post-merger

The Same, But Different

A Raytheon merger would replenish the revenue United Technologies is losing via the spinoffs of its Carrier and Otis units

■ 2019 Est. Sales



Source: Analyst estimates, Bloomberg, United Technologies

NOTE: United Technologies revenue for its current portfolio is based on the midpoint of its forecast range of \$75.5 billion to \$77 billion of sales in 2019.

Source: Bloomberg 2019b

Exhibit 5. 2019 estimated sales pre- and post-merger

Pro Forma Financial Profile

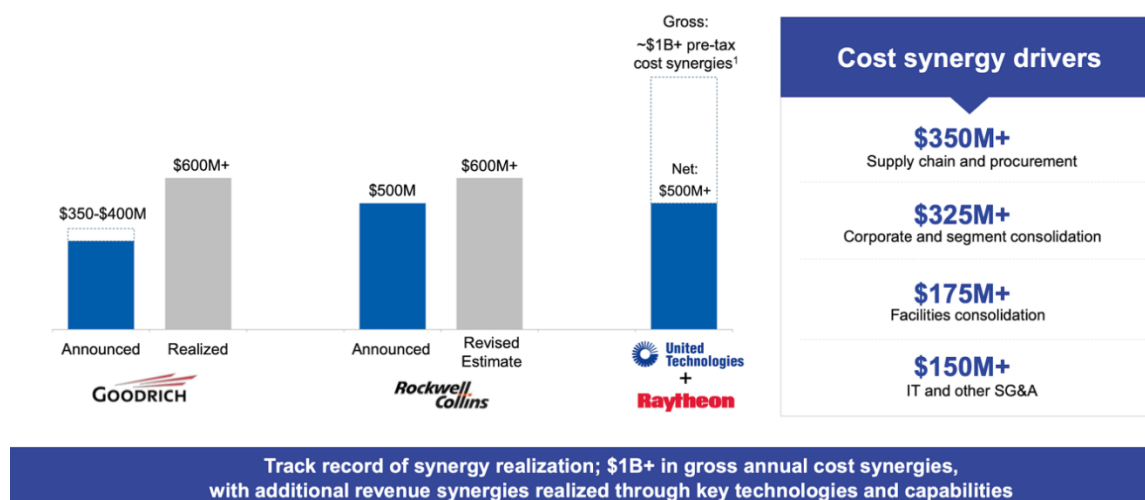
Pro Forma 2019E^{1,2}

	United Technologies	Raytheon	United Technologies + Raytheon
Sales ³	~\$44.7B	~\$28.9B	~\$73.6B
Operating Profit ⁴	~\$5.8B	~\$3.5B	~\$9.3B
Operating Margins ⁴	~12.9%	~12.2%	~12.6%
EBITDA ⁵	~\$8.0B	~\$5.4B	~\$13.5B
Free Cash Flow ⁶	~\$3.2B	~\$2.8B	~\$6.0B
Net Debt	~\$24B	~\$2B	~\$26B

1. Pro forma 2019 estimates based on current outlook provided by each company; excludes Otis and Carrier
2. Figures exclude pro forma synergies
3. Net of intercompany sales eliminations
4. Reflects business segment operating profit and margins net of eliminations
5. Excludes non-operating pension income/expense
6. Excludes one-time costs associated with United Technologies portfolio separation

Source: (RTX 2019)

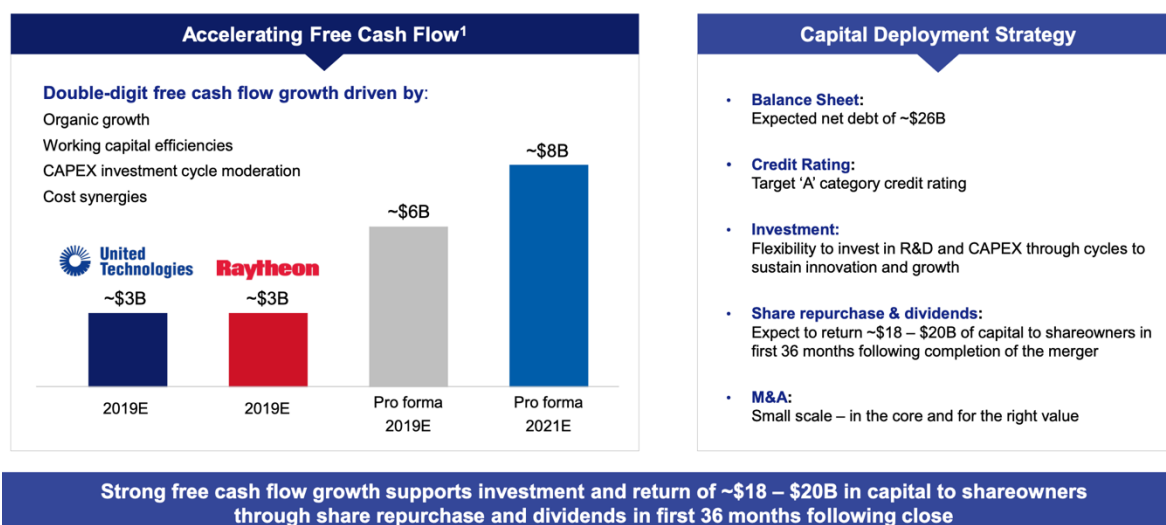
Exhibit 6. Value creation through cost synergies



Source: (RTX 2019)

Exhibit 7. Robust free cash flow generation

Robust Free Cash Flow Generation



Source: (RTX 2019)

Exhibit 8. Strategic rationale

Strategic Rationale



- Creates a premier systems provider positioned to define the future of A&D

- Highly complementary technology offerings and world-class engineering teams

- Balanced and diversified A&D portfolio that is resilient across business cycles

- Ability to deliver enhanced value to customers through cost-effective solutions

- \$1B+ gross cost synergies with additional technology-driven revenue synergies

- Attractive financial profile with strong cash flow generation and balance sheet

Source: (RTX 2019)

Exhibit 12. Overview of key contractual terms in the merger agreement

Summary merger agreement clauses

Provision	Section and Contractual Clause
Agreement and Plan of Merger	THIS AGREEMENT AND PLAN OF MERGER, dated as of June 9, 2019, by and among United Technologies Corporation, a Delaware corporation (“UTC”), Light Merger Sub Corp., a Delaware corporation (“Merger Sub”), and Raytheon Company, a Delaware corporation (“Raytheon”).
Formation: The Merger	§1.1 Under the terms of the merger agreement, Merger Sub, a wholly-owned subsidiary of UTC, will merge with Raytheon, with Raytheon continuing as the surviving entity and assuming all rights and obligations of Merger Sub.
Formation: Closing date, Effective time	§1.2 The Closing will occur on the first business day of the month that is at least three business days after all conditions have been satisfied or waived. §1.3 The Merger becomes effective upon filing the Certificate of Merger with the Delaware Secretary of State, but not before the completion of the distributions.
Certain Governance matters	§2.1 UTC will be renamed Raytheon Technologies Corporation and §2.2 will be headquartered in the Boston area. While the current CEO of UTC will maintain his position and the CEO of Raytheon will become the Executive Chairman of UTC for two years. The Board will consist of 15 directors, including 7 independent directors of UTC and 6 from Raytheon.
Merger Consideration	§ 3.1 Each share of Raytheon common stock issued and outstanding immediately before the effective time (excluding excluded shares and dissenting shares) will be converted into the right to receive 2.3348 shares of UTC common stock.
Material Adverse Effect Representations and Warranties	§ 4.1 The Material Adverse Effect (MAE) clause specifies that Raytheon and UTC make their representations and warranties subject to the absence of any event, change, or condition that would materially and adversely affect their businesses, operations, assets, liabilities, or financial conditions. As defined in §9.3(bb): “ <u>Material Adverse Effect</u> ” on Raytheon or UTC means any change, event or development (each, a “ <u>Change</u> ”) that has had, or would reasonably be expected to have, individually or in the aggregate with all other Changes, a material adverse effect on the business, financial condition or results of operations of Raytheon and its subsidiaries, taken as a whole, or UTC RemainCo and its subsidiaries. <u>Excluding</u> changes due to general economic or political conditions, failure to meet projections, the execution or announcement of the merger, market price changes, changes in laws or accounting standards, geopolitical conditions, natural disasters, industry-wide changes, and actions required by the agreement, unless these changes disproportionately impact Raytheon or UTC compared to others in their industries.
Fairness Opinion	§ 4.1 (v), 4.2 (v) The Boards of Directors of UTC and Raytheon received separate opinions from their respective financial advisors, Morgan Stanley & Co. LLC, Evercore Group L.L.C. (UTC), Citigroup Global Markets Inc., and RBC Capital Markets, LLC (Raytheon). These opinions, as of their dates and subject to various assumptions and qualifications, confirmed that the Exchange Ratio in the Agreement is fair from a financial perspective to UTC and Raytheon Common Stockholders.
Conduct of Business: Covenant	§5.1 Raytheon and UTC agree to conduct their businesses in the ordinary course and not make significant changes to their operations, capital structures, or material contracts without each other's consent, except for specified permitted actions.
Conduct of Business: No solicitation	§5.2, §5.3: Raytheon and UTC both agree not to solicit or engage in discussions about alternative transactions unless they receive an unsolicited superior proposal, in which case they must follow specific procedures before considering the proposal.
Additional Agreements:	§6.1 Raytheon and UTC will prepare and file the Form S-4 with the SEC, including the Joint Proxy Statement, and ensure it is declared effective and

Preparation of proxy statement	mailed to stockholders promptly. Both companies will hold their respective stockholder meetings to approve the merger.
Reasonable best efforts	§6.3 UTC and Raytheon will use their reasonable best efforts to complete the merger, including obtaining necessary approvals, filing required documents, defending against legal challenges, and taking steps to avoid delays, while cooperating fully on antitrust matters. Both parties agree not to engage in any conflicting transactions that could impede the merger, and certain obligations regarding the separation or distributions are governed by other sections of the agreement.
“Hell and High Water” Provision	§6.3(d) “UTC RemainCo and Raytheon, along with their respective subsidiaries and affiliates, shall take any and all steps necessary to avoid or eliminate each and every impediment under any Antitrust Law that may be asserted by any Governmental Entity so as to enable the consummation of the Merger as promptly as practicable, and in any event prior to the Outside Date (...)”
Conditions Precedent Closing conditions	§7.1 The main closing conditions for the merger between Raytheon and UTC include obtaining stockholder approvals, necessary governmental authorizations, and ensuring no legal prohibitions exist. Additionally, relevant registration statements must be effective, shares approved for stock exchange listings, and both parties must secure specific tax and solvency opinions. UTC must also complete the separation and distributions prior to closing.
Termination Termination fees	§8.1 The agreement can be terminated by mutual consent, if the merger is not completed by a specified date (with possible extensions), if stockholder approvals are not obtained, or if a governmental order prohibits the merger. It can also be terminated for significant uncured breaches or specific triggering events before stockholder meetings. §8.2 Upon termination, the agreement becomes void except for certain provisions, and termination fees may be owed by Raytheon (\$1.785 billion) or UTC (\$2.365 billion) under certain conditions, serving as the sole remedy unless there is willful breach or fraud.
General Provisions: Governing law	§9.8 “The merger agreement is governed by and will be construed in accordance with the laws of the State of Delaware, regardless of the laws that might otherwise govern under any applicable principles of conflicts of laws thereof.”
Enforcement and Jurisdiction	§9.10, §9.11 The parties acknowledge that irreparable damage would occur if the Agreement's provisions are not performed as agreed. Accordingly, they are entitled to injunctions to prevent breaches and enforce the Agreement in the Delaware Court of Chancery, with exclusive jurisdiction established for such matters.

Source: SEC 2019b

APPENDIX:

Appendix 1. United Technologies Corporation Consolidated Income (in \$mm)

	2013*	2014*	2015*	2016*	2017*	2018*
Revenue	61.074	62.879	61.342	62.319	66.274	75.166
Revenue RemainCo	31.781	33.074	32.655	33.575	36.121	43.340
Revenue Carrier	16.809	16.823	16.707	16.851	17.812	18.922
Revenue Otis	12.484	12.982	11.980	11.893	12.341	12.904
COGS	43.356	44.184	43.876	44.796	49.069	56.220
Gross Profit	17.718	18.695	17.466	17.523	17.205	18.946
Operating Expenses	8.035	8.083	7.297	7.815	7.735	8.936
Operating Income / (Loss)	9.683	10.612	10.169	9.708	9.470	10.010
Interest Expense	923	940	885	1.103	1.096	1.300
Other Non-Op. Income (Loss)	(17)	(25)	(15)	(184)	(427)	(715)
Abnormal Losses (Gains)	258	103	1.870	721	107	33
Pretax Income / (Loss)	8.519	9.594	7.429	8.068	8.694	9.392
Income Tax Expense (Benefit)	2.234	2.508	2.379	1.905	3.069	2.706
Extraordinary Gains (Losses)	(456)	(141)	(3.602)	9	-	-
Minority Interest	388	403	358	371	368	385
Net Income GAAP	6.353	6.824	8.294	5.783	5.257	6.301

Reference Items (in \$mm)

	2013*	2014*	2015*	2016*	2017*	2018*
D&A	1.912	2.045	2.115	2.215	2.539	2.882
D&A RemainCo	1.323	1.487	1.602	1.690	1.990	2.335
D&A Carrier	380	349	337	354	372	357
D&A Otis	209	209	176	171	177	190
EBITDA	10.542	11.516	11.024	10.691	11.905	12.800
EBITDA RemainCo					6.410	6.781
EBITDA Carrier					3.402	3.994
EBITDA Otis					2.093	2.025
CAPEX	(2.077)	(2.072)	(2.206)	(2.326)	(2.713)	(2.594)
CAPEX RemainCo	(1.689)	(1.757)	(1.862)	(1.892)	(2.254)	(2.159)
CAPEX Carrier	(266)	(228)	(261)	(340)	(326)	(263)
CAPEX Otis	(122)	(87)	(83)	(94)	(133)	(172)

*Rockwell Collins data fully consolidated to UTC in Q1 2019 and added manually for previous years. In addition, the company reports its fiscal year different to the calendar year. To account for that, Q4 2018 was extrapolated based on historical averages.

*For all subdivisions, Rockwell Collins is added to "RemainCo".

Source: Data derived from Bloomberg; own illustration

Appendix 2. United Technologies Corporation Consolidated Balance Sheet (in \$mm)

Assets	United Technologies Corporation*				Carrier	Otis
	2016**	2017**	2018	Q1 2019	Q1 2020	
Cash & Cash Equivalents and STI	7.497	9.688	6.152	6.240	768	1.207
Accounts Receivable	12.575	14.021	14.271	13.574	2.674	2.780
Inventory	10.643	12.332	10.083	10.474	1.556	599
Other ST Assets	1.325	1.577	4.997	5.114	970	928
Total Current Assets	32.040	37.618	35.503	35.402	5.968	5.514
Total Noncurrent Assets	65.373	77.299	98.708	101.978	16.033	4.010
Total Assets	97.413	114.917	134.211	137.380	22.001	9.524
Liabilities and Equity						
Accounts Payable	20.229	22.822	21.303	20.431	3.748	2.747
ST Debt	2.944	2.975	4.345	4.764	218	67
Other ST Liabilities	1.079	1.663	5.720	6.208	485	2.541
Total Current Liabilities	24.252	27.460	31.368	31.403	4.451	5.355
LT Debt	23.079	31.665	41.192	43.024	11.737	6.637
Other LT Liabilities	18.533	18.190	20.932	20.898	2.787	1.721
Total Liabilities	65.864	77.315	93.492	95.325	18.975	13.713
Total Equity	31.549	37.602	40.719	42.055	3.026	(4.189)
Total Liabilities & Equity	97.413	114.917	134.211	137.380	22.001	9.524
Enterprise Value (Estimate)***					35.795	16.973

*United Technologies Corporation financial data includes Carrier and Otis.

**Rockwell Collins data fully consolidated in FY 2018 and added manually for previous years.

***Estimate using comparables.

Source: Data derived from Bloomberg; own illustration

Appendix 3. Raytheon Consolidated Income Statement (in \$mm)

	2013	2014	2015	2016	2017	2018
Revenue	23.706	22.826	23.321	24.124	25.348	27.058
COGS	18.532	17.295	17.608	17.507	18.340	19.573
Gross Profit	5.174	5.531	5.713	6.617	7.008	7.485
Operating Expenses	2.170	2.308	2.611	2.444	1.435	1.519
Operating Income / (Loss)	3.004	3.223	3.102	4.173	5.573	5.966
Interest Expense	198	203	222	216	184	153
Other Non-Op. Income (Loss)	(17)	(7)	4	595	934	1.238
Abnormal Losses (Gains)	66	44	35	277	1.342	1.428
Pretax Income / (Loss)	2.757	2.983	2.841	3.085	3.113	3.147
Income Tax Expense (Benefit)	808	790	747	873	1.114	264
Extraordinary Gains (Losses)	(64)	(65)	(13)	(1)	(2)	1
Minority Interest	17	14	(3)	(31)	(23)	(27)
Net Income GAAP	1.996	2.244	2.110	2.244	2.024	2.909

Reference Items (in \$mm)

	2013	2014	2015	2016	2017	2018
D&A	445	439	489	515	550	568
EBITDA	3.449	3.662	3.591	4.688	6.123	6.766
CAPEX	(280)	(326)	(425)	(526)	(634)	(798)

Source: Data derived from Bloomberg; own illustration

Appendix 4. Raytheon Consolidated Balance Sheet (in \$mm)

Assets	2016	2017	2018	Q1-2019
Cash & Cash Equivalents and STI	3.094	3.400	3.608	2.093
Accounts Receivable	1.317	1.324	1.648	1.424
Inventory	725	594	758	882
Other ST Assets	6.179	6.008	6.123	6.557
Total Current Assets	11.315	11.326	12.137	10.956
Total Noncurrent Assets	19.423	19.534	20.533	20.620
Total Assets	30.738	30.860	32.670	31.576
Liabilities and Equity				
Accounts Payable	2.625	2.861	3.473	2.356
ST Debt	300	300	515	1.001
Other ST Liabilities	4.092	4.187	4.475	4.323
Total Current Liabilities	7.017	7.348	8.463	7.680
LT Debt	4.752	4.750	5.402	4.908
Other LT Liabilities	7.850	8.287	6.922	6.848
Total Liabilities	19.619	20.385	20.787	19.436
Total Equity	11.119	10.475	11.883	12.140
Total Liabilities & Equity	30.738	30.860	32.670	31.576

Source: Data derived from Bloomberg; own illustration

Appendix 5. Comparable Company Metrics*

Comparables	Ticker	Market Cap (in \$bn)	P/E	P/BV	EV/EBITDA	EV/EBIT	EV/Rev
Raytheon Corporation	RTN US	51,3	17,16x	4,32x	7,93x	8,66x	1,98x
BAE Systems PLC	BA/ LN	18,7	14,67x	2,65x	7,80x	9,80x	0,93x
General Dynamics Corp	GD US	45,4	13,77x	3,87x	10,95x	12,82x	1,58x
L3Harris Technologies Inc	LHX US	17,1	22,83x	5,15x	14,92x	18,36x	3,33x
Leonardo SpA	LDO	5,1	10,47x	0,98x	6,04x	13,92x	0,57x
Lockheed Martin Corp	LMT US	73,6	12,84x	52,78x	10,24x	11,86x	1,62x
Northrop Grumman Corp	NOC US	41,8	11,48x	5,10x	11,81x	14,31x	1,80x
SAAB	SAABB SS	4,6	27,31x	2,12x	12,60x	17,47x	1,18x
United Technologies Corporation	UTX US	65,6	10,02x	1,52x	13,33x	20,34x	2,07x
Airbus	AIR FP	74,6	21,31x	6,70x	6,36x	9,66x	0,72x
Curtiss-Wright Corp	CW US	4,4	16,01x	2,85x	10,19x	12,99x	2,01x
Dassault Aviation	AM FP	11,5	17,52x	2,35x	6,12x	6,83x	0,95x
General Electric Co	GE US	65,9	13,91x	2,13x	--	--	1,36x
HEICO Corp	HEI US	11,1	44,12x	7,97x	26,14x	31,50x	6,67x
Honeywell Int	HON US	96,4	14,35x	5,30x	13,03x	15,20x	2,44x
Howmet Aerospace Inc	HWM US	8,1	12,07x	1,48x	6,45x	9,26x	0,88x
L3 Harris Technologies Inc	LHX US	17,1	22,83x	5,15x	14,92x	18,36x	3,33x
Meggitt PLC	MGGT LN	4,7	20,30x	1,47x	10,71x	18,47x	2,28x
Moog Inc.	MOG/A US	3,0	24,30x	2,44x	12,07x	16,93x	1,38x
MTU Aero Engines Holding AG	MTX GR	9,4	18,27x	3,95x	11,94x	16,10x	2,03x
Safran S.A.	SAF FP	52,4	35,37x	3,83x	15,64x	25,20x	2,37x
Textron Inc	TXT US	10,8	13,66x	2,07x	8,02x	10,99x	0,93x
Thales Group	HO FP	24,9	22,08x	3,81x	10,36x	14,14x	1,19x
TransDigm Group Inc	TDG US	19,6	29,13x	--	17,06x	18,39x	7,99x
Woodward Inc	WWD US	5,0	22,07x	3,24x	16,85x	24,74x	2,64x

* All figures are based on FY 2018 financial data.

Source: Data derived from Bloomberg; own illustration

Appendix 6. Comparable Transaction Metrics

Target Company	Acquirer	Transaction Value (in \$bn)	Date	EV/EBITDA	EV/EBIT	EV/Rev
Raytheon Corporation						
Collins Aerospace	UTC	29,5	04.09.17	21,18x	27,31x	4,86x
Dassault Aviation SA	Dassault Group	1,0	28.11.14	17,55x	20,27x	2,16x
EADS	BAE Systems	5,0	12.09.12	9,50x	12,30x	1,70x
Esterline Technologies Corp	TransDigm Group	4,0	09.10.18	13,80x	21,86x	1,96x
L3 Technologies Inc	Harris Corp	19,6	13.10.18	14,57x	17,58x	1,95x
Wesco Aircraft Holdings Inc	Platium Equity	1,9	08.08.19	15,33x	19,88x	1,15x
United Technologies Corporation						
Avio Aero	GE	4,3	19.06.13	8,50x	--	--
Intelligrated	Honeywell	1,5	01.07.16	12,00x	--	--
KLX Inc	Boeing	4,2	01.05.18	14,09x	18,33x	2,29x
B/E Aerospace	Rockwell Collins	8,1	23.10.16	13,28x	15,42x	2,81x
Goodrich Corp	UTC	18,4	21.09.11	10,70x	--	--
Esterline Technologies	TransDigm Group Inc	4,0	09.10.18	13,80x	21,86x	2,50x

Source: Data derived from Bloomberg; own illustration

Appendix 7. NWC Cash Cycles: US Aerospace and Defence Industry Average

	2017	2018
Accounts Receivable / Sales	18,7%	21,0%
Inventory / Sales	22,4%	24,1%
Accounts Payable / Sales	10,0%	10,4%

Source: (Damodaran, n.d.)

Appendix 8. Key Financial Data FY 2018 (in \$ mm, unless stated otherwise)

	EPS ** (in \$)	# Shares (in mm)	Book Value	Share Price* (in \$)	WACC (in %)	Tax Rate (in %)
United Technologies Corporation	7,6	861	40.719	76,0	5,70%	21%
Raytheon Corporation	10,6	282	11.883	182,1	9,79%	21%
Combined Entity (for Cost Synergies)					8,56%	21%

* As of 29th of March 2019 (due to comparability to other valuation methods).

** UTC EPS incl. Carrier & Otis.

Source: Data derived from Bloomberg; own illustration

GENERAL PART

ii. Deal structure & motives

a. Merger of equals

The challenges that are reflected in the market's initial reaction to the UTC-Raytheon deal raise questions about the ownership, governance and strategic rationale of mergers branded as “*mergers of equals*”. In order to introduce students to the concept of a merger of equals (MoE), it is important to explain both the theoretical framework and the practical implications of this structure and apply it to the case of the UTC-Raytheon deal. The discussion should begin by reiterating the concept of MoE and ensuring that students understand the criteria: comparable size, market position, profitability and valuation. In this context, a critical reflection on the feasibility of the concept of merger of equals, similar to the concept of comparability, should be continued. In addition, the possible strategic rationale for labelling a transaction as a merger of equals should be explored.

Students should refer to the following reading to understand the various arguments behind the term “*merger of equals*”: *Can a merger of equals truly exist?* (Alluru and Thomas 2016) which suggests that less than 1% of the M&A deals could be classified as mergers of equals. Rather, the term “*merger of equals*” is often used as a tactic in mergers and acquisitions to: “*Circumvent regulatory hurdles & reassure anxious stakeholders, especially those of the ‘weaker’ partner*” (Alluru and Thomas 2016).

In the next step, students should challenge the post-merger realities that challenge the MoE narrative in the United Technologies - Raytheon merger:

- The post-merger ownership Structure split consisting of 57% UTC and 43% Raytheon supports the imbalance of power and challenges the perception of an equal partnership. Could the division be an indicator of UTC's dominance in the negotiations or a strategic intention to reassure stakeholders from the smaller, “*weaker*” partner?

- The governance division of 7 independent board seats for UTC and 6 for Raytheon also reflects inequality. Therefore, students should discuss whether this split supports a true MoE or reflects UTC's stronger bargaining position.

The following list of standard questions is proposed. The instructor is free to modify them:

- What are the arguments supporting UTC-RTN merger being a merger of equals and what are the arguments against it?
- What are possible challenges when creating a true equal merger between two companies of different sizes, operational focuses, and market positions, such as UTC and Raytheon?
- How does the UTC-Raytheon merger compare to other famous MoEs (e.g. the Daimler-Chrysler or Lafarge-Holcim mergers)? What can be learned from these MoEs regarding integration challenges and value creation?

GENERAL PART

iii. Value creation

a. Standalone valuation and relative analysis

The valuation exercise serves as a practical transition, linking the students' prior analyses to the valuation outcomes for UTC and Raytheon. To evaluate students results, instructors should use the provided Excel file as a guide to discuss the range of valuation results derived from various methods. For this case study, understanding the valuation is an important aspect because the deal was criticised by stakeholders for being financial irrational and for not showing obvious financial benefits and characteristics of a typical merger deal.

For the valuation exercise, students can apply simplified assumptions, which are largely predefined in the case study material and use the most widely used valuation techniques, such as discounted cash flow (DCF), comparable company analysis (CCA) and comparable

transaction analysis (CTA). The valuation results included in the provided Excel file offer examples using DCF, CCA, and CTA to estimate the standalone values for both UTC and Raytheon before the merger. These valuations are based on historical data from a recent period and use Q1 2019 as the cut-off date because this is the closest date to the merger announcement without including post-announcement volatility, providing a baseline for assessing the intrinsic value of each company.

For UTC, the football field chart (Figure 8) yields the following estimated values, calculated using different approaches:

- DCF Analysis: Depending on the assumptions used, the valuations range from around \$90.96 to \$162.91 for the mixed approach, with the perpetuity method, extending the potential valuation from \$98.69 up to \$207.21.
- CTA: Transaction-based multiples result in valuations between \$38.01 and \$113.47, reflecting differences across metrics like EV/Revenue, EV/EBIT and EV/EBITDA.
- CCA: This method yields a broader spread of values, with lower estimates starting at \$6.37 (EV/EBIT) and higher estimates reaching \$399.44 (P/BV).

For Raytheon, the football field chart (Figure 8) yields the following estimated values, calculated using different approaches:

- DCF Analysis: The mixed approach range extends from \$175.20 to \$242.07, with the perpetuity-based valuation falling between \$159.90 and \$220.85.
- CTA: The values derived from transaction multiples span from \$102.15 to \$592.05, depending on the metric applied.
- CCA: The spread here is particularly wide, with some valuations as low as \$41.34 and others as high as \$395.31 based on P/BV ratios.

It is beneficial for instructors to discuss the spread of valuation results, explaining why students might have obtained different values based on their assumptions and methodologies. Referring to historical stock prices can help students compare the calculated values with market pricing to better understand the relationship between perceived intrinsic value and actual market behaviour. In relation to this, it is important to discuss any potential premium associated with the merger in a next step.

An engaging exercise to close this topic and enhance student participation involves asking them to take on the role of shareholders for either UTC or Raytheon, then deciding whether they would support the merger based on their own valuation results. Here, the instructor can ask the students to vote for or against the merger by hand signal to capture the current opinion of the class. This activity can be repeated later, after additional aspects of the deal have been discussed, to see how their opinions may shift with a deeper understanding.

b. Merger premium and value creation expectations

The concept of a merger premium is critical to understanding the economics of the Raytheon-UTC merger. Participants should analyse the difference between the calculated intrinsic values and the merger terms to understand whether a premium is justified. Factors justifying a premium could be expected synergies, an improved market position or strategic advantages that would make the merged company more valuable than the two separately operating companies. However, it should be noted that these synergies remain speculative until the merger is finalized.

To gain an overall understanding of deal premiums, students could answer selected questions:

- What factors justify paying a premium for the companies' stock?
- Why should shareholders of Raytheon expect a premium for approving the acquisition?
- How does the presence or absence of synergies affect the size of the premium?

- How did Raytheon's shareholders possibly responded when the no premium had been offered? Could UTC have justified this approach by pointing to the strong strategic fit and synergies?
- Does the no-premium structure reflect disciplined capital allocation, or does it suggest a lack of confidence in the merger's potential for transformative growth? Would a small premium have been strategically beneficial to align the interests of both companies' shareholders, or would it have introduced unnecessary risks? If so favouring which party?

To enhance the discussion on the potential cost-saving synergies and their impact on the merger's valuation, it is essential to analyse the dynamics of the deal structure and the strategic decision-making involved. The expected cost-saving synergies of \$500 million, though modest relative to the size of the deal, may suggest a carefully calculated approach by UTC to not overpay, reflecting disciplined decision-making. This could be a strategic move, especially considering UTC's position as the larger entity in the merger, potentially allowing it to negotiate a lower premium or opt for a 'merger of equals' structure. Such a structure helps mitigate the high expectations that typically come with large premiums, aligning more closely with the actual value being offered to shareholders.

To provide a more detailed financial analysis, the instructor may choose to guide students in calculating the exchange ratio after completing all valuation exercises, utilizing their outputs alongside the actual stock prices. With the real-world 57/43 post-merger ownership split, derived from the actual exchange ratio of 2.34, students can recompute this structure by using their DCF valuations and actual stock prices, including estimated synergies. Appendix Figure 9 and Figure 10 serve as a reference, illustrating that the teacher's Excel valuation suggests a DCF-implied exchange ratio of 1.69, while the exchange ratio using stock prices yields 2.36 for the actual ownership structure of 57/43. The low DCF exchange ratio compared to the

almost identical exchange ratios using stock prices and the actual exchange ratio could indicate whether UTC managed to secure a deal favourable to its stakeholders or if the market conditions justified a no-premium deal.

While the management decided against the inclusion of a premium, students should understand the reasoning and perceptions of a no-premium deal and discuss the following aspects:

- Strategic fit: Students should debate whether the strategic alignment between the two companies - both leaders in aerospace and defence - could justify a no-premium deal.
- Acquisition at fair market value: UTC carries less risk as it ensures that the company does not overpay for synergies. However, students should consider whether Raytheon's shareholders would see this as undervaluing their company.
- Perceptions of shareholders: UTC's shareholders might appreciate the disciplined financial approach of avoiding a premium but could also question whether the target is worth acquiring if a premium is not justified. Conversely, Raytheon's shareholders may feel that a no-premium deal does not adequately compensate them for the future growth potential of their company.

While value creation expectations are a key driver of merger premiums, in the Raytheon-UTC merger the focus shifts to how value will be realised for both the acquirer and the target as there is no significant premium. To encourage critical thinking, the instructor should guide students and help them evaluate whether the Raytheon-UTC merger is consistent with typical value creation assumptions. The transaction deviates from conventional factors: the characteristics of the target (a large, publicly traded company), the lack of growth potential typically present in smaller or private acquisitions, the payment structure of the share exchange which creates dilution risk for shareholders and is contrary to the value-enhancing characteristics of cash deals and UTC's ongoing integration efforts which result from previous acquisitions. All of these factors bring into question whether the company is overextended, which could affect its ability

to fully realise synergies in this merger. To introduce another critical discussion of value creation, the following quote should be cited: *“Even though this acquisition adds scale and diversification, the economic benefits appear to be modest,”* said Robert Spingarn, analyst at Credit Suisse Group AG. *“We don't see the additional size significantly deepening existing divides or improving competitiveness.”* (Bloomberg 2019a). Finally, the quote should lead to a discussion about the justification of the merger, whereas students should debate whether the strategic direction of these companies justifies the merger despite the relatively modest synergy effects or not.

Having discussed relevant pros and cons of the deal in the context of value creation, the subject should shift towards the size of the deal and entities merging. Since it can be classified as a “megamerger”, students should explore the following journal article *Do mega-mergers create value?* (Hu, Li, and Wang 2020) and understand how acquirers' previous acquisition experience impacts the success and value of mega-mergers (deals over \$500 million). The study concludes that companies with more acquisition experience, i.e. with at least 12 completed transactions, are more likely to successfully complete mega-mergers and achieve higher shareholder value in both the short and long term (Hu, Li, and Wang 2020 ; Glubov, Yawson, and Zhang 2015).

The following list of standard questions is proposed. The instructor is free to modify them as they please:

- What lessons can be learned from other megamergers where experienced acquirers outperformed, and how can these lessons be applied to the Raytheon-UTC deal?
- With only \$500 million in synergies projected, does this figure meet the expectations for a deal of this size? What are the risks if the projected synergies are not achieved?

The instructor should lead a final interactive debate in which the class is divided into groups arguing either for or against the merger, focusing on specific aspects such as synergies, strategic direction, shareholder perception and the merger premium. Each group should present their

arguments based on the concepts discussed to determine whether the merger is justified in its current form.

c. Synergies valuation

In building upon the earlier discussion of value creation, the focus should shift to cost synergies, which are among the most quantifiable and reliable synergies in mergers. For the Raytheon-UTC transaction, cost synergies represent a major driver of the deal rationale, underlining the strategic emphasis on operational efficiencies and streamlined processes.

The projected gross annual cost synergies of \$1 billion by year four align with typical expectations for large-scale aerospace and defence mergers. However, achieving this level of savings requires a phased realisation, given the complexities of post-merger integration. To guide the valuation exercise, instructors should emphasise that synergies materialise incrementally rather than immediately, reflecting both integration timelines and industry practices (Bruner 2004; The Boston Consulting Group 2018).

For this exercise, students are provided with a baseline approach, but assumptions remain flexible to encourage critical thinking and discussion:

- **Phased realisation:** The percentages that contribute to full realization in Year 4 (e.g., 25%, 50%, 75%) are variable and can be modified by Students. This enables a discussion regarding the potential for synergies to develop at a quicker or delayed pace, depending on the realistic integration challenges.
- **Integration costs:** The total one-off integration costs of \$600 million are spread evenly over the first two years as a starting point. However, students are free to reallocate these costs across the timeline to reflect alternative assumptions about restructuring, severance or IT implementation timing.

The valuation applies the combined entity's WACC of 8.56%, ensuring consistency with the entity's capital structure and risk profile. Net synergies are calculated post-tax at a 21% rate. Figure 11 provides a clear visualisation of the phased realisation of net savings, while Figure 12 demonstrates the corresponding increase in enterprise value.

Instructors can use these assumptions as a basis for an intermediate discussion on the challenges of synergy realisation:

- Is the phased approach realistic? Could synergies ramp up more quickly, or are there risks of delays?
- How might frontloading or backloading these costs impact the net present value of synergies?
- Why is it important to test alternative scenarios in synergy valuation? How do changes to realisation timing or cost allocation affect the overall outcome?

By allowing students to adjust key variables and debate their assumptions, this section creates room for active discussion and reinforces the importance of combining financial analysis with strategic execution. The instructor can guide students towards refining their reasoning and using the provided Excel calculations as a reference point for comparison.

Students should be reminded that looking at synergies in isolation when assessing value can sometimes lead to overestimation of their impact, since actual execution risks may diminish expected savings (Bruner 2004). By examining flexible inputs, students may recognize the sensitivity of valuation outcomes to fundamental assumptions and critically evaluate the feasibility of anticipated cost synergies. This exercise also provides an opportunity to contrast cost synergies with other forms of synergies discussed earlier. While cost synergies are often the most tangible and measurable, their realisation depends heavily on disciplined integration. Compared to more speculative synergies such as innovation and financial synergies in the Raytheon-UTC merger, though limited, offer a more tangible outcome in the form of a minor

WACC reduction, as shown in Figure 13. This shift, driven by refinancing benefits and the coinsurance effect, highlights a stabilising effect on cash flows, yet remains too small to generate significant standalone value.

To encourage critical thinking, instructors might pose the following question:

- Even if financial synergies do not create substantial value, could their stabilising effect support the merger's strategic goals, such as enabling long-term R&D investments or offsetting integration risks?

Using Figure 13, instructors can encourage students to discuss the trade-off between the feasibility of financial synergies and their potential contribution to value creation in the future.

INDIVIDUAL PART: VANESSA JOHANNA KOPP

iv. Balancing complexity and compliance through strategic risk mitigation

Having discussed all critical events and components of the merger, the last step of the teaching process aims to match the different pieces of the deal to one big picture to identify and evaluate both pre- and post-merger risks and understand how the legal clauses were designed to mitigate those risks.

To introduce the discussion the instructor may choose between two interactive approaches to actively engage the students in the conversation:

1. Scenario-Based Role Play: "You're the CEO": The goal is to put students in the shoes of a CEO announcing a major merger, focusing on the potential risks of the deal. The instructor assigns students the role of the CEO of UTC or Raytheon and gives them the task of preparing for a shareholder meeting where they must justify the merger in terms of its risks. The instructor should begin by asking, "If you were Greg Hayes, how would you convince your shareholders that this merger is worth pursuing despite the risks involved, such as market volatility, regulatory hurdles and integration challenges?" Students should be encouraged to develop the

key arguments, focusing on how to manage these risks, and present them as if they were giving a speech to shareholders. Other students can act as shareholders and raise concerns or ask critical questions about the risks. This forces the CEO not only to justify the merger, but also to demonstrate a clear understanding of how to manage and mitigate potential risks to the deal, making the legal and strategic considerations more tangible.

2. *Headline News Simulation – “Breaking the Story”*: In this creative introduction, the instructor simulates a breaking news story by announcing: “Breaking news: UTC and Raytheon have just announced a merger worth more than 100 billion dollars!” The students are then divided into groups and asked to imagine they are journalists or financial analysts reporting on the merger. Assuming they have all the knowledge taught in the case study, each group writes a short news report focussing on the potential risks and benefits of the deal, as shown in Figure 14. Some groups play the role of analysts and give a 2-minute summary of the risks of the business for a news report. After the presentations, the class discusses how these risks are presented to the public and what impact they have on the stakeholders.

Discussion outcomes can address both transaction-related risks and risks associated with the combined entity, as outlined in Figure 14. To broaden the risk framework, the instructor may introduce additional subcategories, including deal or target value risk, completion risk, and enforcement risk. The first category relates to the merger consideration and Material Adverse Effect (MAE) clause, while the others centre on legal risks that are managed and potentially mitigated through specific merger agreement clauses. Students should categorize the identified risks accordingly and elaborate on their implications.

a. Deal / target value risk

For example, regarding the merger consideration the form of all-stock payment should be identified by students as less certain compared to cash acquisitions and therefore implies value and synergy risk sharing between the acquiring and target entity due to market fluctuations between announcement and closing (Rappaport and Sirower 1999). This means the value of the consideration received by Raytheon shareholders depends on UTC's stock price at the time of the merger's completion. Given market volatility, the final value of the shares could differ significantly from initial valuations. As the acquiring company's stock price may fluctuate upon deal closing and the exchange ratio is fixed the final deal price is not predetermined (Rappaport and Sirower 1999). Therefore, target shareholders bear the risk of fluctuations in the acquirer's stock price, affecting the deal's value. In contrast, the acquirer's shareholders are guaranteed their proportional ownership in the combined company (Rappaport and Sirower 1999). Students should be able to answer the following questions:

- What are the potential financial consequences to Raytheon shareholders if UTC's stock price declines by 10%, 20% and 30% between the announcement of the merger (June 09, 2019) and the closing of the transaction (April 03, 2020), based on the fixed exchange ratio of 2.3348 UTC shares for each Raytheon share? Calculate the change in the total value per Raytheon share for each price decrease and discuss how these price fluctuations affect the total deal value.
- In an all-stock merger with a fixed exchange ratio, the value received by target shareholders can fluctuate wildly. What specific risks does this pose for Raytheon shareholders? Would a floating exchange ratio or another mechanism provide better protection against market swings?
- Collars can protect both parties in a volatile market. If a collar had been included in the UTC-Raytheon merger, how might it have protected Raytheon shareholders from a

significant drop in UTC's stock price? Define what a collar is and calculate potential outcomes if a collar had been used in this transaction.

Moreover, while there is an expectation that the announced synergies will materialize post-merger, historical scepticism around achieving synergies in large mergers - coupled with negative market reactions, activist opposition and a decline in both companies' stock prices following the announcement - suggests a considerable risk to the deal that the anticipated synergies may not be fully realised. Therefore, the overall question guiding the discussion should focus on the transaction's risk. A mega merger in this case requires significant financial and organizational resources and usually takes years of preparation. While the dealmaking experience of acquirers is a crucial factor in the success of mergers, students should analyse the positioning of UTC in this context. Bearing in mind that experienced acquirers are often more capable of reducing risks and creating synergies by effectively managing the complexities inherent in deals to generate value (Hu, Li, and Wang 2020). Therefore, students should refer to UTC's acquisition history, past financial performance and other factors driving the success of the integration. In this context, scepticism about the transaction, which was compounded by valuation concerns, should be addressed as a further deal and target value risk. As investors have pointed out the potential undervaluation of UTC and overvaluation of RTN, students should critically evaluate these concerns to understand their impact on the feasibility and resulting deal risk of the transaction (Morgan Stanley 2020).

The instructor should guide students to link the discussion of deal/target value risk to how the acquisitive reorganization mitigates broader risks. Based on Exhibit 1 of the case study, students should classify the UTC-Raytheon deal as a forward triangular merger where Raytheon merges into a wholly-owned subsidiary of UTC (Kumar and Sharma 2019). The instructor can prompt students to discuss why this structure was chosen over alternatives like statutory mergers or

reverse triangular mergers. Additionally, students should evaluate the strategic benefits in terms of liability management, shareholder approval and regulatory compliance.

In the context of deal and target value risk, students should also be introduced to the concept of a MAE clause, which allows either party to walk away from the deal if there is a significant long-term adverse change in the other business. Whereas MAE clauses are often invoked in cases where market conditions or a company's financial performance change dramatically between signing and closing a deal, the Hexion vs. Huntsman case should be used as a reference (New York Times 2008). With the background knowledge of this case, students should be sensitive to MAE clauses referring to long-term, fundamental changes and not to short-term or cyclical downturns. Thus, in the case of Hexion vs. Huntsman, the Delaware Court of Chancery ruled that Hexion could not withdraw from the merger with Huntsman despite Huntsman's disappointing earnings and increased indebtedness. Buyers, such as Hexion in this case, bear the heavy burden of proving that the changes are both material and adverse to the company's long-term operations (New York Times 2008).

To gain a better understanding of MAE triggering conditions the following scenarios can be discussed:

- The share price of one party falls by 30% between signing and completion of the merger due to market conditions.
- UTC's quarterly earnings fall significantly short of the projections that were disclosed during deal negotiations.
- Raytheon loses a significant defence contract with the US government which accounts for 25% of its annual turnover.
- Between the signing and closing of the contract, a global economic recession hits and severely impacts defence budgets and military spending worldwide.

- New defence regulations are enacted that restrict Raytheon's ability to export key technologies to foreign governments.
- A natural disaster (hurricane, earthquake) destroys one of UTC's key manufacturing plants, responsible for producing essential components.
- Raytheon experiences a cyberattack that compromises sensitive defence data, disrupts operations and damages its reputation.
- UTC fails to deliver a critical new defence technology on time, resulting in delays and lost contracts.
- Raytheon is the subject of government investigations into contract fraud, which could lead to heavy fines and the loss of future contracts.
- Worldwide demand for military technology is falling rapidly due to changes in global defence policy.
- The CEO of Raytheon resigns unexpectedly during the merger process, leading to uncertainty within the management team.

Continuing the discussion about additional merger-related MAE triggers, students should examine the implications of the COVID-19 pandemic within the case context. The instructor can guide this discussion toward the systemic nature of the pandemic's risk and add insights, such as how the COVID-19 pandemic has challenged the understanding of MAE clauses and their applicability in times of crisis. Courts generally consider the pandemic as a systemic risk affecting entire industries and therefore, often reject MAE claims (Emmerich and Norwitz 2021). However, to invoke an MAE clause in this context, it must be proven that the pandemic has disproportionately affected the target company compared to other companies in the same industry (Emmerich and Norwitz 2021). If a particular event, like the pandemic, impacts one company more severely than others in the same sector, it may constitute an MAE. Courts might view such disproportionate impact as valid grounds for an MAE claim. For example, in the

Simon Property Group vs. Taubman Centres case, the buyer argued that COVID-19 had an unusually severe effect on Taubman's business due to its reliance on indoor spaces and tourist traffic, setting it apart from other companies (Emmerich and Norwitz 2021). Nevertheless, Delaware courts maintain a high standard for proving an MAE, often focusing on a substantial, long-term adverse effect on the target's financial health and stability.

Given the challenges of proving an MAE, the instructor might encourage students to investigate alternative exit strategies, such as Interim Operating Covenants. These covenants could allow acquirers to exit a deal if the target fails to comply with the agreed terms and provide a possible way out if direct MAE actions are not likely to succeed (Emmerich and Norwitz 2021).

b. Completion risk

Furthermore, completion risks in large transactions should not be underestimated. As highlighted in the AT&T-T-Mobile case, if a mega-merger fails to close, the acquirer may face considerable financial penalties, such as breakup fees. In the case of AT&T's failed acquisition of T-Mobile, AT&T had to pay \$3 billion in cash and transfer \$1 billion in wireless assets to T-Mobile after abandoning the \$39 billion transaction, representing 10.2% of the total deal value (Wall Street Journal 2011). Such high breakup fees create an additional financial burden for both parties making it crucial to assess the risks of deal failure early on. In the case of the RTX merger, the fees of \$1.785 billion for Raytheon and \$2.365 billion for UTC served as financial safeguards to ensure both parties' compliance with the merger agreement (case study Exhibit 12: §8.1, §8.2).

The instructor should guide students to relatively assess these fees against the deal values calculated at UTC's closing price of \$75.5 on the first day of trading after the announcement and the closing price of \$49.93 on the merger date (case study Exhibit 11). Students should be able to calculate the deal values by multiplying the respective closing prices by the exchange

ratio of 2.3348 and then multiplying the result by the 648 million shares outstanding yielding in deal values of approximately \$114.23 billion as of June 10, 2019 and \$75.54 billion as of April 03, 2020. Results reveal a 1.56% breakup fee for Raytheon compared to the post-announcement deal value and 2.36% when measured against the post-merger deal value. In comparison, UTC's breakup fee corresponds to 2.07% of the post-announcement deal value and rises to 3.13% relative to the post-merger deal value. In this context, students should be familiarised that benchmarked against market standards, where breakup fees typically range between 0.3% and 6.2% of the transaction value, with an average of 2.7% and a median of 2.6%, both fees align with the standard range (Houlihan Lokey 2023). However, UTC's fee is substantially higher, particularly when calculated against the post-merger deal value, which reflects UTC's larger post-merger ownership stake of 53% and the potential higher perceived risk or cost to UTC in the event of a failed merger. Students should express the reasoning behind it, especially regarding the supposed "merger of equals" and address the need to critically evaluate how financial obligations are distributed in the merger agreement, particularly in light of each party's ownership share and risk exposure. For further insights, the paper "*Reverse Termination Fees in M&A*" can be referenced (Coates, Palia, and Wu 2018).

The term completion risk also refers to regulatory hurdles. In this context, students should take a look at the legal clauses and establish a connection between which clauses are aimed at reducing the completion risk and which ones address other risk types:

Students should then engage in the "*Risk Allocation Mapping*" exercise: Following the identification of deal risks, students could be given cards or sticky notes with different risks (e.g., completion, enforcement or target/ deal value risks) and have a look at the clauses from the merger agreement. They could physically map out how each legal clause addresses or mitigates a specific risk. This could be done as a group activity, with each group focusing on

different types of risks and then presenting their findings. The instructor should then guide the students towards the sample solution provided in Figure 16.

Another dimension of deal risk is the potential for proxy contests which can result from shareholder activism. Students should recognise that this can be the case when activist shareholders oppose a transaction or its terms and seek to disrupt or delay the transaction by, for example, advocating alternative strategies or seeking to replace the board. Students should then critically discuss whether this increased closing risk poses a significant threat to the success of the transaction and explore the wider implications of shareholder activism in such high-stake transactions. They might conclude that because Pershing Square has exited its position and Daniel Loeb has only divested a small stake, the overall risk of a proxy contest remains relatively low and thus represents only a small portion of the closing risk.

c. Enforcement risk

In terms of enforcement risk, students should understand that the “*Specific Performance*” clause is an effective legal tool in merger and acquisition agreements that allows one party to force the other to complete the transaction. If monetary damages are insufficient, specific performance ensures that the original terms of the contract are honoured.

With this in mind, the instructor should introduce the Tyson-IBP case as an example of the application of this clause: Tyson attempted to back out of its merger with IBP, citing financial disclosure issues, but the Delaware Court of Chancery enforced “*Specific Performance*” and required Tyson to fulfil its obligations (New York Times 2001). This set a precedent showing that courts can compel companies to honour their agreements despite unforeseen problems (New York Times 2001). In the merger between UTC and Raytheon, “*Specific Performance*” and therefore also the “*Hell and High Water*” clause played a critical role in supporting compliance and strengthening commitment. Given the strict antitrust requirements, the clauses

ensured that both companies complied with the requirements of the merger even under difficult circumstances to achieve the strategic objectives.

To wrap up the discussion, the instructor can optionally ask about the weighting of the risks using the “*Interactive Polling and Merger Outcome Debate*”: The instructor should use a live polling tool to have students vote on the most significant risks for the UTC-Raytheon merger. After presenting the results, students discuss in small groups why certain risks were categorised as higher or lower, linking their arguments to the risk-return trade-off. Students then predict the success of the merger based on these risks by framing it as a class-wide bet.

d. Who ends better off?

After summarizing and ranking the key risks for both parties, the instructor should pose the question: “Given the identified risks, which party is better off in this merger? Are UTC shareholders more insulated from risk compared to Raytheon shareholders, or vice versa?”

The instructor should guide the analysis by first identifying deal/ target value risk as the most obvious concern, particularly due to market volatility. Raytheon shareholders bore the majority of the deal/ target value risk due to the all-stock consideration and their diluted 47% post-merger stake, which reduced their influence on strategic decisions and increased their dependence on UTC's performance, particularly its ability to realise synergies and exploit market opportunities.

The discussion should then focus on completion risk, assuming that UTC shareholders were more heavily burdened due to their responsibility of meeting regulatory requirements by spinning off Otis and Carrier and assuming higher break-up fees. However, Raytheon shareholders were not completely shielded from risk, as they depended on UTC's ability to obtain regulatory approvals to consummate the merger and were also required to pay a termination fee, although a smaller amount.

The instructor should ask students to evaluate the significance of enforcement risk, which was mitigated by robust merger agreement clauses such as Specific Performance obligations. However, due to the high threshold nature of the MAE clause, it would have been difficult to invoke this clause, particularly in volatile times such as the COVID-19 pandemic. Consequently, the transaction may also have had to be executed in an unfavourable environment, creating significant enforcement risks for both parties in addition to the underlying deal risk. Students may feel that UTC shareholders were better off overall due to their majority control and the long-term strategic benefits of the merger with historical outperformer Raytheon. Raytheon shareholders, while protected from some risks, faced greater short-term uncertainty related to share price volatility and their dependence on UTC's long-term execution. Students should then debate which party ultimately benefits more, taking into account the trade-offs each party must make. UTC shareholders faced higher completion risks associated with the spin-offs, while Raytheon shareholders faced higher transaction value risk due to market volatility. Weighing these factors will make it difficult for students to reach a definitive conclusion, emphasizing the need for improved mechanisms to balance the risks.

The instructor should encourage students to propose some measures to balance the risk dynamics of the merger, such as collar mechanisms or a floating exchange ratio to protect Raytheon shareholders from fluctuations in UTC's share price. In addition, the students could propose performance-based incentives, such as earn-outs or contingencies tied to post-merger milestones, which could align interests and encourage synergy realization. In addition, enhanced MAE clauses that take into account exceptional events such as pandemics or industry-specific downturns could provide more flexibility and mitigate long-term negative effects by allowing for termination in the event of significant value destruction.

GENERAL PART

v. ***Risk-return trade-off: Why was the deal done?***

As highlighted in the previous sections, the merger of UTC and Raytheon is a good illustration of the complexity of strategic decision-making in mergers and acquisitions. To answer the central question “Why was the deal done?”, students should create a structured pro and con list that summarises the key factors that form the decision-making framework and promotes a balanced assessment of the trade-offs involved this transformative transaction similar to the one provided in Figure 17.

Students should assess that the deal presented significant upside potential due to operational synergies, which promised cost savings and increase efficiency. Additionally, the merged entity benefited from a coinsurance effect, balancing UTC’s cyclical revenues with Raytheon’s stable government-backed contracts to enhance overall creditworthiness. Furthermore, the combined entity was well-positioned to leverage enhanced R&D capabilities, driving innovation in critical future-oriented technologies such as autonomous systems, AI, and hypersonic weapons. These advantages positioned the merger as a strategic move to establish long-term leadership in an increasingly consolidated and competitive aerospace and defence market.

However, students should identify the risks as equally significant. First of all, they should name the integration challenges as a key concern, particularly as UTC was navigating the complexities of spinning off Otis and Carrier while integrating Rockwell Collins. In terms of the deal structure students should raise the questions of fairness, due to the 57/43 equity split and all-stock consideration. Moreover, students should mention the timing of the merger during the COVID-19 pandemic which added further uncertainty, intensified market volatility and therefore amplified risks. The voices of critics and activists, who pointed to a possible overestimation of the management and mentioned the possibility of value destruction through a conglomerate discount, should also be included in the overall assessment.

To conclude the case the instructor can guide the final discussion in two possible directions:

- Risk-return trade-off: Students should critically assess whether the strategic benefits of the deal, such as synergies, innovation, diversification, and long-term positioning, were sufficient to justify the risks, including integration challenges, shareholder dissatisfaction, and external uncertainties like the pandemic.
- Alternative management decisions: The instructor can encourage students to debate various courses of action management could have taken, considering the broader context of the deal:
 - Could management have renegotiated terms to better address shareholder concerns, such as adjusting the equity split or incorporating partial cash consideration to mitigate perceived inequality?
 - Would terminating the deal have been a choice, even at the cost of breakup fees, given the ongoing spin-offs and heightened risks posed by the pandemic?
 - Was proceeding with the merger the optimal decision, focusing on the potential long-term strategic benefits despite the short-term uncertainties and integration complexities?

EPILOGUE

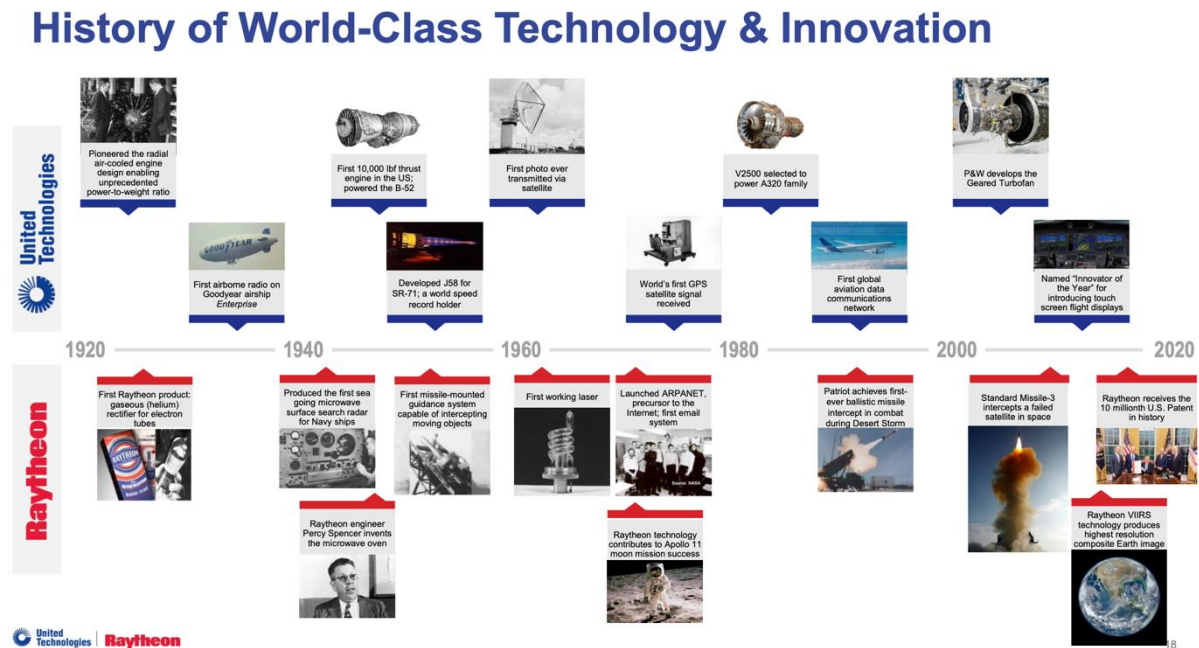
When United Technologies Corp. and Raytheon Company announced their merger in 2019, scepticism was high, as relevant shareholders saw it as an ill-conceived merger which lacked rationality and was poorly timed. However, in the face of uncertainty, leadership held firm, driven by a vision of building a diversified aerospace and defence powerhouse. By the time RTX emerged in April 2020, the world stood still amid a global pandemic. The commercial aerospace industry struggled, yet the merger revealed its true value. Raytheon's robust defence business, supported by government contracts, provided a lifeline, proving the strength of a

diversified portfolio. As competitors resorted to layoffs, Raytheon reallocated employees to its defence segments, safeguarding jobs while adapting to market realities (Bloomberg 2020).

Fast forward to 2023, under Greg Hayes's leadership, RTX stood successful. The company not only weathered the storm but RTX's defence business has thrived amid growing geopolitical tensions and global unrest, driving increased demand for advanced military technologies and showing a record backlog of \$196 billion (Rajan 2024). As RTX solidifies its position as a leader in both aerospace and defence, the architect of the merger, CEO Greg Hayes, announced his retirement in 2024 and Chris Calio stepping in as CEO. In retrospect, however, the formation of Raytheon Technologies Corporation turned out to be a strategic success, as it provided the merged company with stability and resilience at a time of global uncertainty (Rajan 2024).

APPENDIX

Figure 1. Historical background of UTC and Raytheon

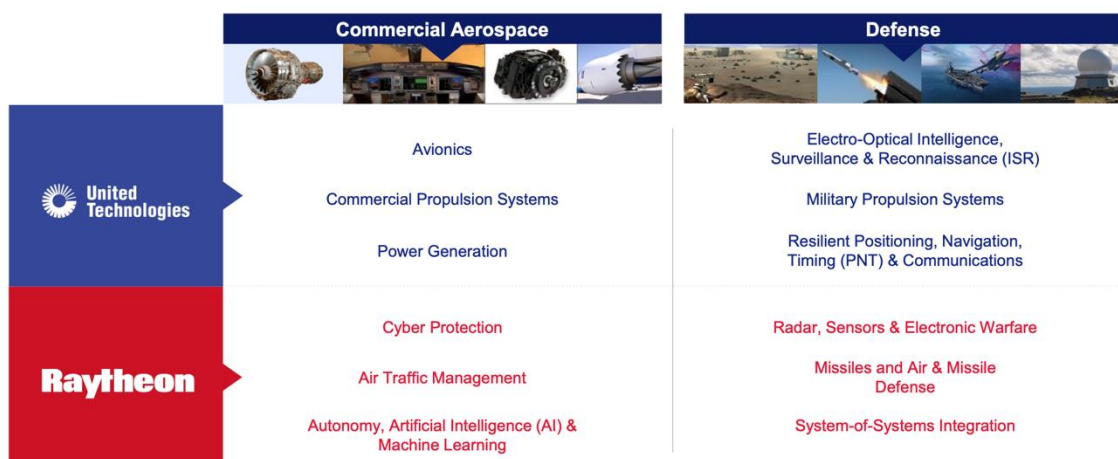


Source: (RTX 2019)

Figure 2. Existing capabilities of UTC and Raytheon

Existing Capabilities Are Highly Complementary

Representative capabilities brought to combination



Source: (RTX 2019)

Figure 3. Combined product offering of RTX

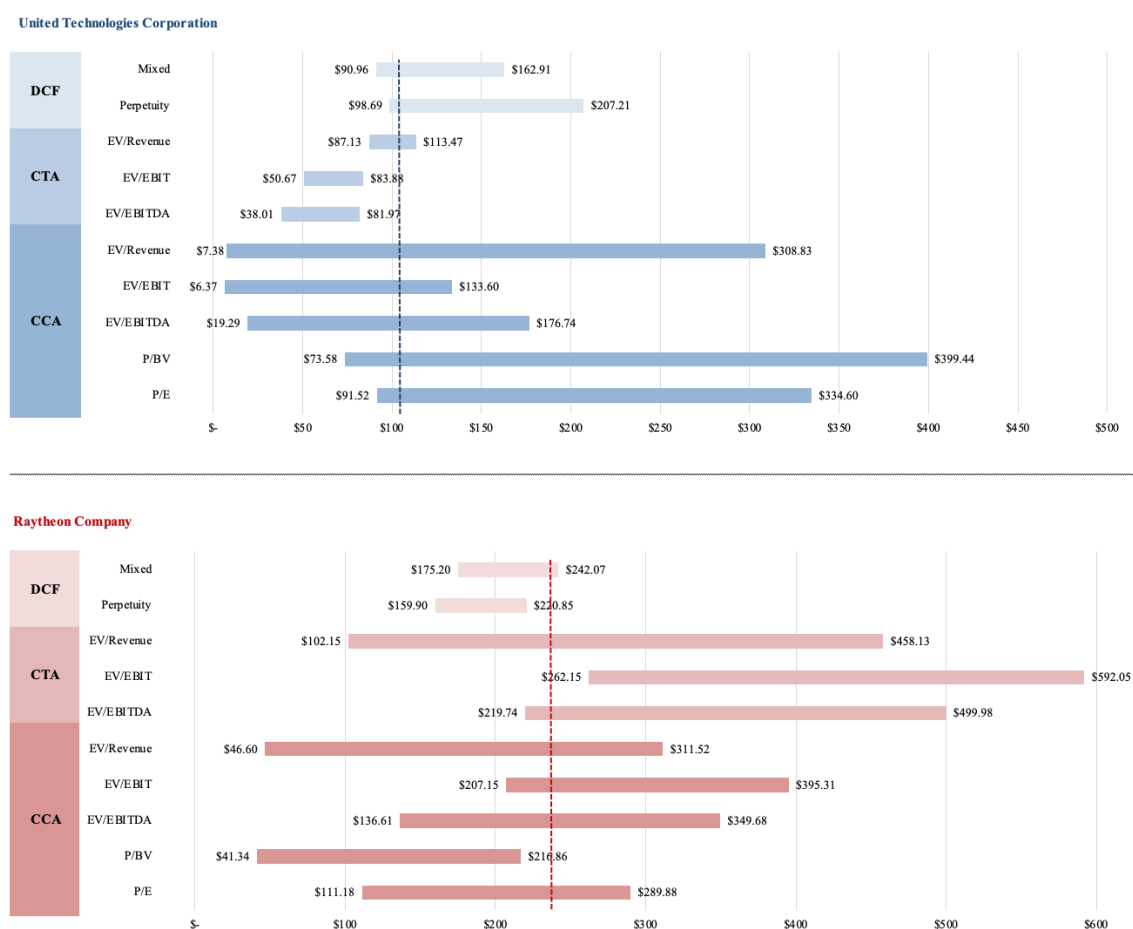
Leader in High Technology A&D Segments

Pro Forma 2019E¹



Source: (RTX 2019)

Figure 8. Football Field charts for UTC and Raytheon



Source: Own illustration

Figure 9. Exchange ratios using DCF valuation

Cost Synergies		\$13.347									
UTC											
Number of pre-merger shares	862,3										
Synergy share (a)	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Pre-merger value (31/3/2019)	\$101.401	\$101.401	\$101.401	\$101.401	\$101.401	\$101.401	\$101.401	\$101.401	\$101.401	\$101.401	\$101.401
Synergies received	\$1.335	\$2.669	\$4.004	\$5.339	\$6.674	\$8.008	\$9.343	\$10.678	\$12.013	\$13.347	\$13.347
Pre-merger value + synergies	\$101.401	\$102.736	\$104.071	\$105.405	\$106.740	\$108.075	\$109.409	\$110.744	\$112.079	\$113.414	\$114.748
Per-share merger value (including synergies)	\$117,6	\$119,1	\$120,7	\$122,2	\$123,8	\$125,3	\$126,9	\$128,4	\$130,0	\$131,5	\$133,1
RTN											
Number of pre-merger shares	280										
Synergy share (1-UTC's synergy share)	100%	90%	80%	70%	60%	50%	40%	30%	20%	10%	0%
Pre-merger value (31/3/2019)	\$54.615	\$54.615	\$54.615	\$54.615	\$54.615	\$54.615	\$54.615	\$54.615	\$54.615	\$54.615	\$54.615
Synergies received	\$13.347	\$12.013	\$10.678	\$9.343	\$8.008	\$6.674	\$5.339	\$4.004	\$2.669	\$1.335	\$0
Pre-merger value + synergies	\$67.962	\$66.627	\$65.293	\$63.958	\$62.623	\$61.288	\$59.954	\$58.619	\$57.284	\$55.949	\$54.615
Per-share merger value (including synergies)	\$242,7	\$238,0	\$233,2	\$228,4	\$223,7	\$218,9	\$214,1	\$209,4	\$204,6	\$199,8	\$195,1
Exchange Ratio (RTN/UTC)	2.06	2.00	1.93	1.87	1.81	1.75	1.69	1.63	1.57	1.52	1.47

Source: Own calculation

Figure 10. Exchange ratios using stock prices

Cost Synergies			\$13.347								
UTC											
Number of pre-merger shares	862										
Synergy share (a)	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Pre-merger value (31/3/2019)	\$65.552	\$65.552	\$65.552	\$65.552	\$65.552	\$65.552	\$65.552	\$65.552	\$65.552	\$65.552	\$65.552
Synergies received	\$0	\$1.335	\$2.669	\$4.004	\$5.339	\$6.674	\$8.008	\$9.343	\$10.678	\$12.013	\$13.347
Pre-merger value + synergies	\$65.552	\$66.887	\$68.222	\$69.556	\$70.891	\$72.226	\$73.561	\$74.895	\$76.230	\$77.565	\$78.900
Per-share merger value (including synergies)	\$76,0	\$77,6	\$79,1	\$80,7	\$82,2	\$83,8	\$85,3	\$86,9	\$88,4	\$90,0	\$91,5
RTN											
Number of pre-merger shares	280										
Synergy share (1-UTC's synergy share)	100%	90%	80%	70%	60%	50%	40%	30%	20%	10%	0%
Pre-merger value (31/3/2019)	\$50.982	\$50.982	\$50.982	\$50.982	\$50.982	\$50.982	\$50.982	\$50.982	\$50.982	\$50.982	\$50.982
Synergies received	\$13.347	\$12.013	\$10.678	\$9.343	\$8.008	\$6.674	\$5.339	\$4.004	\$2.669	\$1.335	\$0
Pre-merger value + synergies	\$64.330	\$62.995	\$61.660	\$60.326	\$58.991	\$57.656	\$56.321	\$54.987	\$53.652	\$52.317	\$50.982
Per-share merger value (including synergies)	\$229,7	\$225,0	\$220,2	\$215,4	\$210,7	\$205,9	\$201,1	\$196,4	\$191,6	\$186,8	\$182,1
Exchange Ratio (RTN/UTC)	3.02	2.90	2.78	2.67	2.56	2.46	2.36	2.26	2.17	2.08	1.99

Source: Own calculation

Figure 14. Merger risk overview

Risks related to the transaction
The merger is subject to conditions, some or all of which may not be satisfied, or completed on a timely basis, if at all. Failure to complete the merger could have material adverse effects on UTC and Raytheon.
Delay or failure by Otis SpinCo and/or Carrier SpinCo to complete financing transactions in connection with the separation and the distributions may delay or prevent the completion of the merger.
The merger is subject to the expiration or termination of applicable waiting periods and the receipt of approvals, consents or clearances from several regulatory authorities that may impose conditions that could have an adverse effect on UTC, Raytheon or the combined company or, if not obtained, could prevent completion of the merger.
The merger agreement contains provisions that limit UTC's and Raytheon's ability to pursue alternatives to the merger, could discourage a potential competing transaction counterparty of UTC or Raytheon from making a favourable alternative transaction proposal, and provide that, in specified circumstances, each of UTC and Raytheon would be required to pay a termination fee.
The exchange ratio is fixed and will not be adjusted in the event of any change in either UTC's or Raytheon's stock price; there is no (and will not be until the completion of the distributions) trading history with respect to the shares of the UTC aerospace businesses on a standalone basis after giving effect to the separation and the distributions.
Each party is subject to business uncertainties and contractual restrictions while the merger is pending, which could adversely affect each party's business and operations.

Completion of the merger may trigger change in control or other provisions in certain customer and other agreements to which UTC or Raytheon is a party, which may have an adverse impact on the combined company's business and results of operations following completion of the merger.
Uncertainties associated with the merger (including the separation and the distributions) may cause a loss of management, personnel and other key employees, which could adversely affect the future business and operations of the combined company following completion of the merger.
If either the Otis distribution or the Carrier distribution, together with certain related transactions, were to fail to qualify as a transaction that is generally tax-free for U.S. federal income tax purposes, including as a result of subsequent acquisitions of stock of UTC (including pursuant to the merger), UTC and UTC's pre-merger shareowners could be subject to significant tax liabilities
The unaudited pro forma combined financial information in this joint proxy statement/prospectus is presented for illustrative purposes only and may not be reflective of the operating results and financial condition of the combined company following completion of the merger.
UTC's executive officers and directors and Raytheon's executive officers and directors have interests in the merger that may be different from, or in addition to, UTC's shareowners' and Raytheon's stockholders' interests.
Following the merger, the composition of the combined company board of directors will be different than the composition of the current UTC Board or the current Raytheon Board.
Risks related to the combined company
The combined company may be unable to successfully integrate the UTC aerospace businesses and Raytheon and realise the anticipated benefits of the merger.
The combined company may not be able to engage in desirable capital-raising or strategic transactions following the merger.
Upon completion of the merger, Raytheon stockholders and UTC shareowners will have different rights under the combined company's governing documents than they do currently under Raytheon's and UTC's governing documents, respectively.
The future results of the combined company may be adversely impacted if the combined company does not effectively manage its complex operations following the completion of the merger.
Each of UTC and Raytheon expects to incur substantial expenses related to the completion of the merger and the integration of the UTC aerospace businesses and Raytheon.
The market price of the combined company common stock after the merger is completed may be affected by factors different from those affecting the price of UTC common stock or Raytheon common stock before the merger is completed.
The market price of the combined company common stock may decline as a result of the merger, including as a result of some UTC and/or Raytheon stockholders adjusting their portfolios.

Source: (SEC 2019)

Figure 15. Sample solution risk mapping of legal clauses:

Deal/ Target Value Risk	Completion Risk	Enforcement Risk
Merger Consideration (§3.1): Establishes the exchange ratio, ensuring shareholder value is appropriately managed.	Reasonable Best Efforts (§6.3): Ensures both parties make the required efforts to complete the merger	Specific Performance (§9.10, §9.11): Allows for court enforcement of the agreement's terms, ensuring that both parties fulfil their obligations.
Fairness Opinion (§4.1(v), §4.2(v)): Confirms the fairness of the exchange ratio, reducing the	Hell or High Water Clause (§6.3(d)): Requires parties to take necessary actions to mitigate antitrust issues,	Governing Law (§9.8): While not directly a risk factor, it supports Enforcement Risk by leveraging the Court of

risk of undervaluation or overvaluation of the deal.	ensuring regulatory compliance.	Chancery's business-friendly laws and expertise in M&A cases.
MAE Clause (§4.1(v), §4.2(v)): Defines specific conditions that could allow termination if a significant adverse event occurs, providing a legal framework for disputes.	Conditions Precedent (§7.1): Specifies closing conditions that must be met, directly tied to the risk of the deal not closing.	MAE Clause (§4.1(v), §4.2(v)): Defines specific conditions that could allow termination if a significant adverse event occurs, providing a legal framework for disputes.
	No Solicitation Clause (§5.2, §5.3): Prevents the target company from engaging in competing transactions, thus reducing risks to deal completion.	
	Termination Fees (§8.1, §8.2): Acts as a deterrent against parties backing out of the deal, securing commitment and mitigating the risk of failure to complete the transaction.	

Figure 16. Who ends better off? / Risk evaluation or overview

Deal/ Target Value Risk	Completion Risk	Enforcement Risk
<u>Changes in acquirer's or target's value</u>	<u>Whether or when the deal will be completed</u>	<u>Whether the deal will still be enforced</u>
-Type of Consideration: Stock -Raytheon shareholders bore significant risks tied to UTC stock volatility due to the all-stock consideration, compounded by ownership dilution (47% stake) -Material Adverse Effect: The high threshold for invoking MAE limited options to adjust or renegotiate during volatile periods such as COVID-19 Valuation Concerns: Shareholders raise concerns about UTC's potential undervaluation and RTN's overvalued position	-Regulatory Approvals depending mainly on UTC's success in completing the spin-offs of Otis and Carrier -Breakup Fees reflected market practices but higher burden for UTC in case of termination -Raytheons dependence on UTC's ability to secure regulatory approvals -Legal aspect of shareholder activism: potential proxy contest	-Legal framework reduces overall enforcement risk in situation of breach, favourable governing law -Enforcement risk due to MAE clause's stringent thresholds that prevented easy exit, even under pandemic-driven volatility

Figure 17. Final assessment - risk-return trade-off

Pro

Operational and Financial Synergies:

- cost savings from shared supply chains, improved creditworthiness, and risk reduction via coinsurance

Diversification and Resilience:

- balances UTC's cyclical revenues with Raytheon's stable government-backed contracts, reducing dependency on individual market segments.

Innovation Promotion:

- enhances R&D capacities, enabling advancements in future-oriented technologies (e.g., AI, autonomous systems, hypersonic weapons) and supports long-term market leadership through innovative aerospace and defence solutions.

Long-term Market Positioning:

- positioning of the new entity as a leading player in a consolidated market environment, increased competitive intensity and regulatory challenges.

Con

Environment and Timing:

- high volume of prior merger activity undertaken by UTC (Collins acquisition and spin offs), A&D industries merger trend, Covid downturn

Equality?

- merger of equals but 57/43 split
- debt levels, financial situation, historic stock performance, valuation results

Integration challenges:

- UTC's integration challenges with the ongoing integration of Rockwell Collins while simultaneously managing the spin-offs of Otis and Carrier, stretches its resources and creating additional complexity ahead of the Raytheon merger.

(Questionable) Deal Risk Balance:

- significant deal value risk disadvantaging Raytheon shareholders due to the all-stock consideration compounded by the COVID-19 pandemic and the inapplicability of the MAE clause., while UTC bears a higher burden of completion risk

Shareholder critique:

- overconfidence of management (hubris, empire building), undervaluation of UTC, RTN is a business of inferior quality, conglomerate discount

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