第 20 章CHAPTER 20案例研究：透過視覺原型設計提出棘手的問題Case Study: Asking Tough Questions Through Vision Prototyping

正如我們在第 3 部分中討論的，視覺原型設計是研究 AI 專案的重要使用者體驗工具。它也恰好是解決棘手問題（例如有關人工智慧道德、偏見等問題）的最佳和最有效的方法。本章涵蓋了構建視覺原型的實際“該做”和“不該做”，並介紹了使用視覺原型製作練習通過探索和遊戲來解決棘手問題的案例研究。

As we discussed in Part 3, vision prototyping is an essential UX tool for researching AI projects. It also happens to be the single best and most effective way to approach tough questions (such as questions about AI ethics, bias, and much more). This chapter covers the practical“dos”and“don’ts”for building a vision prototype and presents a case study of using a vision prototyping exercise to approach tough questions through exploration and play.

現場典型的工業管道看起來很粗糙——更像是 Netflix 劇集《奧術》（1） 中的地下城，而不是你在閃亮、有光澤的工廠廣告中看到的任何東西。當然，生鏽的管道存在安全隱患，但也是一筆巨大的開支。您可能沒有想到，但管道佔典型工廠投資的 40%——在大多數情況下，這項投資在大約 5-10 年內磨損得很快。了解工廠管道的剩餘壽命（並使用特殊塗層盡可能延長其使用壽命）是一項有利可圖的業務。

Typical industrial pipes in the field look gnarly—more like the Undercity in Netflix series Arcane (1) than anything you see in shiny, glossy factory advertising. Of course, rusted-out pipes are a safety hazard, but it is also a giant expense. You might not think it, but pipes make up as much as 40 percent of the investment in a typical factory—an investment that wears out quite fast in most cases, in about 5 – 10 years. Understanding the remaining life of factory piping (and extending its life as much as possible with special coatings) is a lucrative business.

通常，測量一段管道中剩餘材料的剩餘厚度是一個漫長的手動過程，需要精確測量，並由訓練有素的技術人員使用昂貴、靈敏的超聲設備進行 （2）。見圖 20.1。

Typically, measuring the remaining thickness of a material remaining in a section of pipe is a lengthy manual process that requires accurate measurements, with expensive, sensitive ultrasound equipment performed by a highly trained technician (2). See Figure 20.1.

幾年前，我與一家大型工業公司合作，該公司想要製造一種“設置一勞永逸”廉價永久傳感器的線束，該傳感器將安裝在管道上並持續監測剩餘材料的厚度，當管道的特定部分磨損得比正常情況更快時，向工廠主發出警報，
或者當一段管道接近其使用壽命時，可以更換或塗上特殊的耐腐蝕材料。

A few years ago, I was working with a large industrial company that wanted to create a kind of harness of “set it and forget it” cheap permanent sensors that would be installed on the pipe and continuously monitor the thickness of the remaining material, alerting the factory owner when a particular section of the pipe was wearing faster than normal, or when a section of pipe was approaching the end of its life, so it could be replaced or coated with a special corrosion-resistant material.

這家公司多年來一直致力於完善他們的小型廉價傳感器，並使它們像複雜、昂貴和精密的手動機器一樣準確，因為他們所要做的就是這個顯示簡單圖表的戰術 UI：X
軸上的時間和 Y 軸上的管道厚度，如圖 20.2 所示。

This company worked for years trying to perfect their small cheap sensors and make them as accurate as a complex, expensive, and sophisticated manual machines because all they had to go on was this tactical UI showing a simple graph: time on the X-axis and pipe thickness on the Y-axis, as shown in Figure 20.2.

在我們弄清楚如何使用該公司新的廉價“留置”傳感器準確測量剩餘管道材料的厚度後，我們沒有想到該怎麼做。

There was no vision for what to do after we figured out how to accurately measure the thickness of the remaining pipe material with the company’s new cheap “leave on” sensors.

儘管該公司花了數年時間開發新感測器，但無論他們多麼努力，使用廉價感測器都無法準確讀取管道厚度。然而，由於他們所要做的只是這種簡單的戰術 UI 設計，該公司只是繼續嘗試，因為他們認為他們需要的是準確測量管道厚度的能力，就像手動過程一樣。

And although the company spent years developing their new sensors, no matter how hard they worked, accurate readings of the pipe thickness using cheap sensors eluded them. However, because all they had to go on was this simple tactical UI design, the company just kept trying because they assumed that what they needed was the ability to accurately measure the thickness of the pipe, exactly like the manual process.

圖20.1 超音波管道檢查

Figure 20.1 Ultrasonic pipe inspection

資料來源：Davidmack / 維基共享資源 / 公共領域

Source: Davidmack / Wikimedia Commons / Public domain

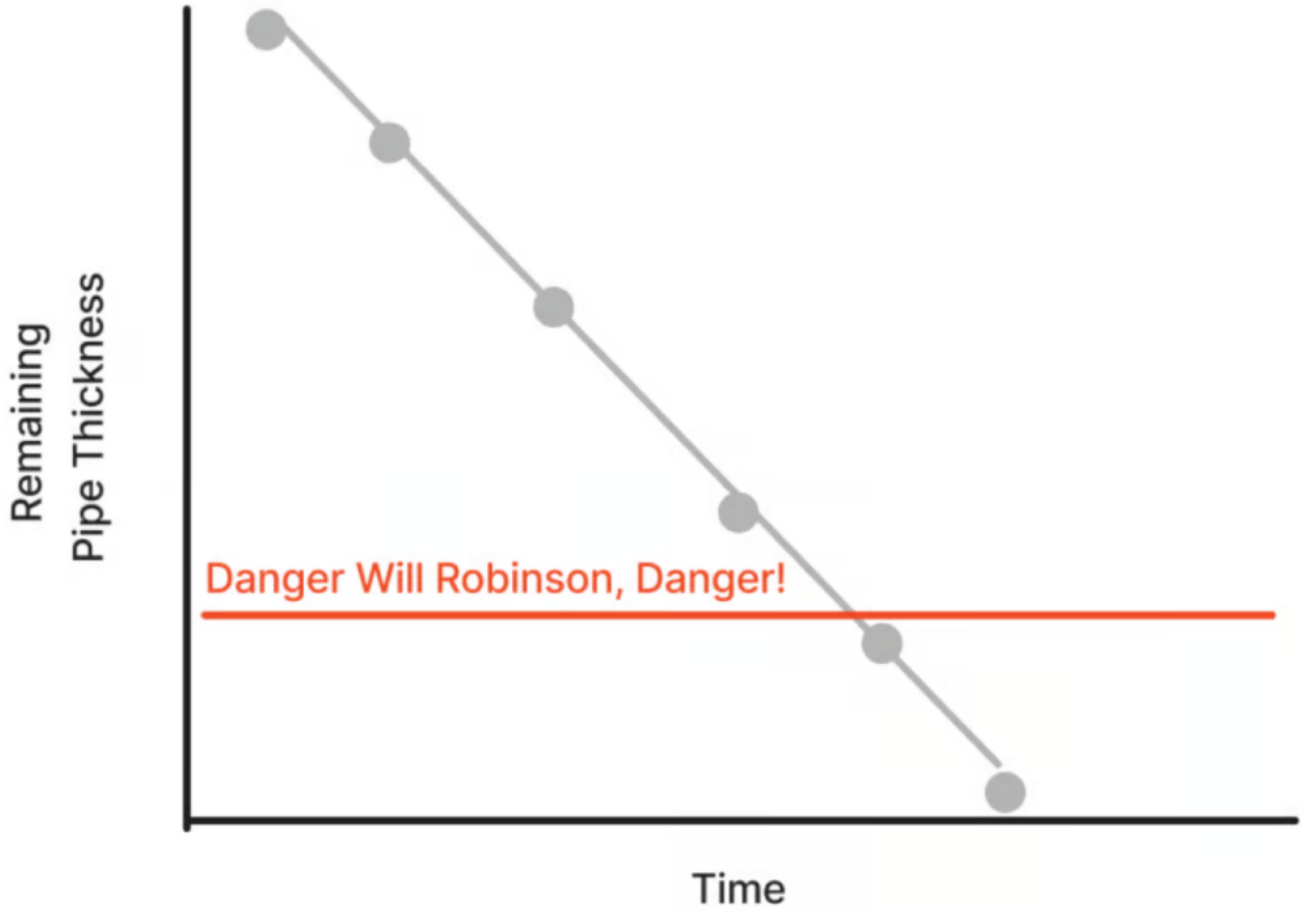

圖 20.2 顯示隨時間變化的典型腐蝕速率的戰術圖

Figure 20.2 Tactical graph showing a typical rate of corrosion over time

該公司從未嘗試過製作願景原型，因為，何必費心——每個人都知道該系統是如何運作的。他們有自己的用例、SME（主題專家）、銷售人員和了解他們的東西的產品經理，那麼為什麼有人會費心（我引用）“ #$%&@ 圖片 ”呢？嘆。

The company never tried to put together a vision prototype, because, why bother—everyone knew how the system worked. They had their use case, SMEs (subject matter experts), salespeople, and product managers who knew their stuff, so why would anyone bother with (and I quote) “ a #$%&@ picture ”? Sigh.

通過一些研究，我發現客戶不太關心這種準確確定管道中材料厚度的自動化解決方案。這是因為政府檢查協議已經強制要求定期進行準確的手動檢查讀數。相反，用戶最關心的是退化速度以及如何處理腐蝕，例如塗上內部管道塗層以減緩腐蝕。

With just a bit of research, I found out that the customers did not care that much about this automated solution accurately determining the thickness of the material in their pipes. That ’ s because

the government inspection protocol already mandated accurate periodic manual inspection readings. Instead, the users cared most about the rate of degradation and what to do about the corrosion, such as applying the internal pipe coating to slow down the corrosion.

便條

NOTE

因此，實際上，使用廉價傳感器產生這些準確的讀數沒有任何價值。

Thus, in reality, there was no value in producing those accurate readings with cheap sensors.

換句話說，客戶關心的是精度，而不是準確性（見圖 20.3）。

In other words, the customers cared about precision, NOT accuracy (see Figure 20.3).

圖 20.3 精度與準確度。我們的客戶更關心精度

Figure 20.3 Precision vs. accuracy. Our customers cared more about precision

幸運的是，該公司開發的那些小型、廉價的傳感器已經非常擅長測量變化率（例如，傳感器很精確，只是不是很準確，如右圖 20.3 所示）。在普遍吸引力法則的另一個幸運轉折中，該公司已經是專門設計用於阻止腐蝕的內部管道塗層的領先供應商，因此人工智慧的預測具有明顯的價值，因為客戶已經在尋找阻止腐蝕的解決方案在他們最脆弱的管道中。真的，天作之合！

Fortunately, those small, cheap sensors the company developed were already very good at measuring the rate of change (e.g., the sensors were precise, just not very accurate, shown in the Figure 20.3 on the right). In the additional lucky twist of the Law of Universal Attraction, this company was already the leading supplier of internal pipe coatings specifically designed to stop corrosion, so there was a clear value in what AI could predict because the customers were already looking for the solution to stop corrosion in their most vulnerable pipes. Truly, a match made in heaven!

因此，我想出了一個新的願景原型：UI
使用各種管道塗層、預處理等方式顯示管道預期壽命的不同場景，並讓 AI
預測特定場景中會發生什麼，同時根據用戶的限制建議最佳行動方案。這個 UI
為公司贏得了多項專利 （3），並使公司在競爭中遙遙領先。我設計的願景原型也展示了公司的願景、領導力和承諾，並幫助完成了幾筆關鍵交易並建立了有價值的合作夥伴關係。圖 20.4 顯示了該專利中的線框圖之一。

So, I came up with a new vision prototype: UI displaying different scenarios of pipe’s life expectancy using various pipe coatings, preprocessing, etc., and having AI predict what would happen in a particular scenario while also suggesting the best course of action given the user’s constraints. This UI earned the company several patents (3) and moved the company way ahead of the competition. The vision prototype I designed also demonstrated the company’s vision, leadership, and commitment and helped close several key deals and enter into valuable partnerships. Figure 20.4 shows one of the wireframes from the patent.

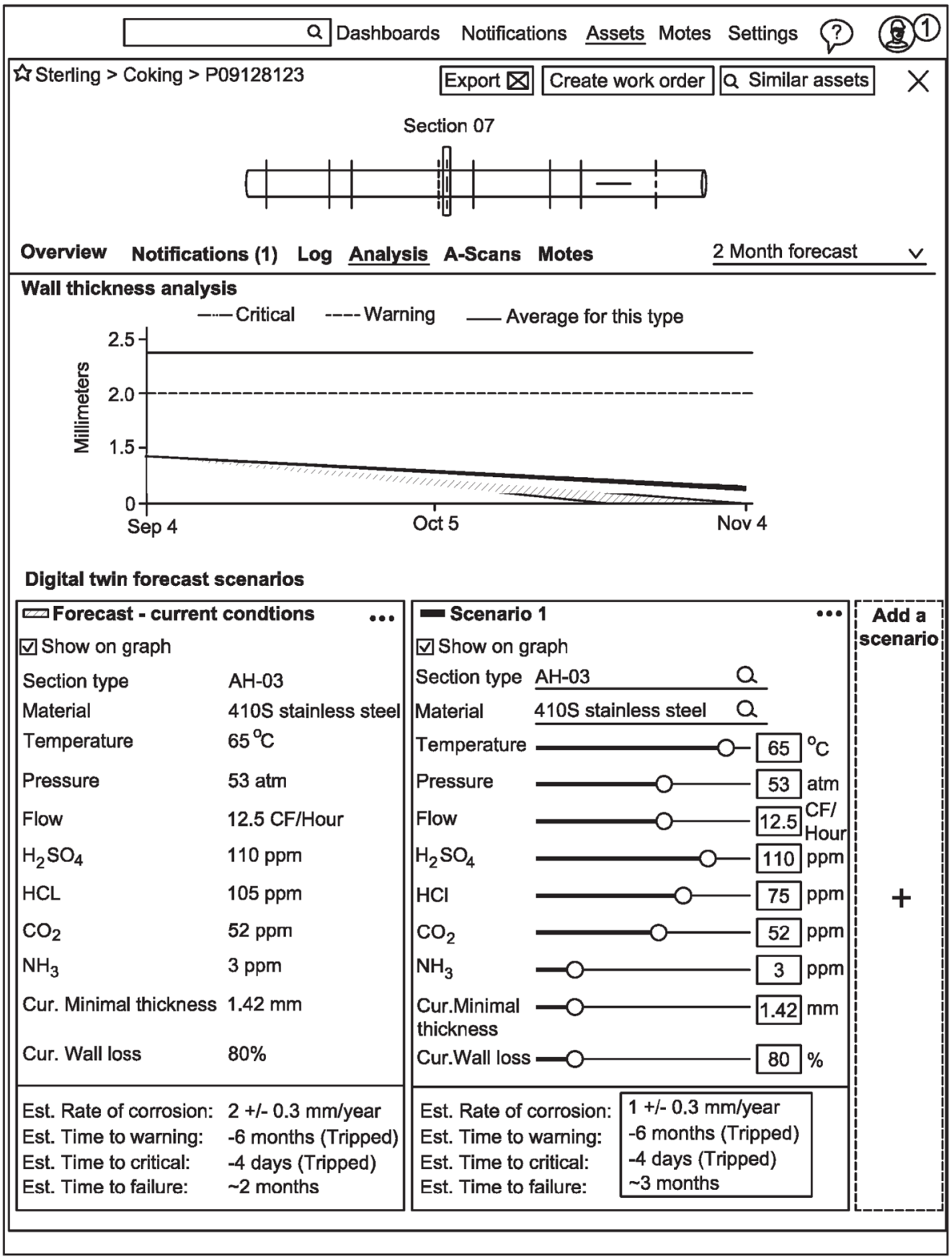

圖 20.4 AI 驅動的 UX 比較各種場景以延長管道的使用壽命

Figure 20.4 AI-driven UX to compare various scenarios to extend the life of a pipe

資料來源：BHGE、美國專利10976903、工業資產情報、https://patents.google.com/patent/US10976903B2/en?oq=10976903

Source: BHGE, US Patent 10976903, Industrial Asset Intelligence, https://patents.google.com/patent/US10976903B2/en?oq=10976903

在我設計這個新的願景原型之前，公司為解決錯誤的問題奮鬥了幾年。在整本書中，我們一直在討論為人工智慧驅動的產品選擇正確用例的重要性，這無疑是由於只從戰術角度思考而從一開始就選擇錯誤用例的另一個例子。然而，在這個特殊問題中還有更多的東西在起作用：不願意提出令人不舒服的問題。你看，為了建立一個有效的願景原型，在某種程度上將自己從現狀中解放出來是至關重要的。允許自己夢想可能發生的事情，以令人不舒服的問題為指導。問題越不舒服，你就越有可能接近問題的核心。視覺原型設計是一個絕佳的機會，可以提出有關人工智慧偏見和道德的尖銳問題，而不會正面攻擊這些討論，並讓整個團隊反擊這一問題。畢竟，您只是在做自己的工作，建立產品願景！

Before I designed this new vision prototype, the company struggled for several years to solve the wrong problem. Throughout this book, we ’ ve been discussing the importance of picking the right use case for your AI-driven product, and this was certainly another example of picking the wrong use case out of the gate due to only thinking in tactical terms. However, there was something more at work in this particular problem: the unwillingness to ask uncomfortable questions. You see, in order to build an effective vision prototype, it is vitally important to release yourself to some degree from the status quo. Permit yourself to dream about what could be, using uncomfortable questions as your guide. The more uncomfortable the questions, the more likely you are nearing the heart of the problem. Vision prototyping is the perfect opportunity to ask tough questions about AI bias and ethics without attacking these discussions head-on and making the whole team push back against this line of inquiry. After all, you are just doing your job, building out the product vision!

以下是一些提示，可協助您促進自己的視覺原型製作流程。

Here are some tips to help you facilitate your own vision prototype process.

視覺原型設計最佳實踐：

Vision Prototyping Best Practices:

1. 遊戲：遊戲的偽裝可能是提出令人不舒服的問題的完美工具！你不必對此成為一個真正的混蛋——你可以繼續成為一名工匠專業人士（4），但如果你願意問一些非常愚蠢的問題，這會有所幫助。使用幽默和樂趣，輕輕地玩給神聖的牛小費。允許自己和團隊享受一點樂趣。例如，我在上述腐蝕案例中的突破來自於我問道：「在這種情況下，人工智慧到底應該預測什麼？腐蝕圖非常簡單，一個中學生可以預測管道何時爆裂——這是一個簡單的線性方程！這種願意以非對抗性的方式進行一些遊戲並挑戰現狀，使討論朝著正確的方向發展，正如他們所說，其餘的都是專利和歷史。Play: The guise of play may be the perfect vehicle for asking uncomfortable questions! You don’t have to be a real asshole about it—you can remain an artisan professional (4), but it helps if you are willing to ask some pretty goofy questions. Use humor and fun, and gently play at tipping the sacred cows. Give yourself and the team the permission to have a little fun. For example, my breakthrough in the corrosion case above came when I asked, “Just what the hell is the AI supposed to predict in this case? The corrosion graph is so simple, a middle-schooler can predict when the pipe will burst—it’s a simple linear equation!” This willingness to play around a bit in a nonconfrontational way and challenge the status quo got the discussion going in the right direction, and the rest, as they say, is all patents and history.

2. 想像並瀏覽各種場景：在第 16 章“案例研究：繆斯/紀律性腦力激盪”中，我描述了 AI 頭腦風暴技術的基本用戶體驗，稱為“書尾”，在該技術中，您採取一個解決方案並將其盡可能地拉出來，然後將其放在一邊並再次執行以尋求不同的解決方案。雖然團隊沒有立即想到分析各種場景，而是使用簡單的圖紙快速記錄各種想法，而不會陷入一個特定的解決方案，但我能夠在一小時內引導他們找到最終解決方案。這種「即時記錄並繼續前進」技能對於領導成功的視覺原型設計會議至關重要。（查看第 19 章“RITE，AI 研究的基石”，以了解有關如何執行此操作的更多詳細資訊。Imagine and Walk Through the Various Scenarios: In Chapter 16, “Case Study: MUSE/Disciplined Brainstorming,” I described the essential UX for AI brainstorming technique called “bookending,” in which you take a solution and draw it out as far as it would go, then put it aside and do it again for a different solution. While the team did not hit upon the idea of analyzing various scenarios right away, using simple drawings to quickly document various ideas without getting stuck on one particular solution, I was able to guide them to a final solution within an hour. This “document live and move on” skill is essential for leading a successful vision prototyping session. (Review Chapter 19, “RITE, The Cornerstone of Your AI Research,” for more details on how to do this.)

3. 把你的自我放在一邊，真正保持好奇心：政治敏銳度以及表現出體貼和尊重的核心技能甚至比腦力激盪技巧更重要。願意以輕鬆、有趣、隨意的方式引導探索，以避免用你不舒服的探究性問題激怒人們。通常，團隊已經處於臨界點——您所需要的只是朝著正確的方向輕輕推動。保持謙卑、耐心、關懷，但又堅持不懈。Set your Ego Aside and Get Genuinely Curious: The core skills of political acumen and showing consideration and respect are even more important than brainstorming skills. Be willing to lead the exploration in a lighthearted, fun, casual way to avoid pissing people off with your uncomfortable probing questions. Often the team is already at the tipping point—all you need is a light push in the right direction. Remain humble, patient, caring, yet persistent.

4. 假設現實的約束：「人工智慧到底應該預測什麼？」這個問題暴露了哪些數據實際上可用，哪些只是一廂情願的想法。雖然由於沒有技術而無法進行準確的厚度測量，但精確的變化率可供我們使用。設計不是藝術！約束是燃料;它們是推動設計向前發展的原因。您不需要所有部分來解決問題;事實上，當資訊有限時，創造力往往發揮得最為強烈，而這往往正是使用者體驗的閃光點。UXer 的技能在於暴露約束並精簡使用案例，使團隊專注於僅使用現有（或易於獲得）的資產為客戶提供最大價值。Assume Realistic Constraints: The question“ Just what the hell is the AI supposed to predict? ”exposed what data was actually available and what was merely wishful thinking. While the accurate thickness measurement was unavailable because the technology was not there, the precise rate of change was there for us to use. Design is not art! Constraints are fuel; they are what makes the design move forward. You do not need all the pieces to solve the problem; in fact, creativity often kicks in hardest when the information is limited, and that is often exactly where UX shines. The skill of the UXer lies in exposing constraints and thin-slicing the use case to focus the team on delivering the greatest value for the customer using only the existing (or easily obtainable) assets.

5. 玩「無所不能的人工智慧」遊戲：通常，在腦力激盪過程中，假設你的人工智慧從一開始就無所不能，然後在弄清楚價值從何而來這個最重要的問題後弄清楚如何訓練它可能是一種有用的技術。諸如“ 如果你擁有全能的人工智能怎麼辦？你能用它做什麼？您將如何為客戶提供價值？在前面的腐蝕案例研究中，正是這個問題產生了嘗試管道塗層和預處理的不同場景的想法，並讓 AI 預測特定手動輸入的場景會發生什麼，同時還根據用戶的限制建議最佳行動方案。Play the“ Omnipotent AI ”Game: Often, during brainstorming, it can be a useful technique to assume that your AI will be omnipotent out of the gate and then figure out how to train it after you figure out the all-important question of where value comes from. Questions such as“ What if you had the almighty AI? What would

you be able to do with it? How would you deliver value to the customer? ” In the corrosion case study earlier, it was this very question that yielded the idea of trying different scenarios with pipe coatings and preprocessing and having AI predict what would happen with a particular manually entered scenario while also suggesting the best course of action given the user ’ s constraints.

6. 問：「什麼會讓它有價值？」：這個問題對於人工智慧專案來說絕對是關鍵。未能儘早提出這個問題並抓住每一個機會繼續提出這個問題，這就是為什麼許多公司追求“閃亮的便士”，而忽略了觸手可及的成堆黃金。問：「為什麼這些資訊很有價值？」然後一遍又一遍地問它。然後接著問：「什麼會給我們這些資訊？」在早期的用例中，準確測量管道的厚度對於合規性很有價值。然而，考慮到廉價傳感器的技術水平，該信息不可用。因此，通過問，“是什麼讓這個解決方案有價值，只知道精確的降解速率，而不是絕對準確的厚度？我發現了解如何降低腐蝕速率以延長管道的使用壽命更有價值。如果我們理解這一點，那麼我們就可以問，“好吧，什麼可以實現腐蝕速率的預期降低？中小企業的答案是“預處理和添加管道塗層”。從此層級的問題定義中，很容易升級到一個 UI，以顯示執行此操作的不同場景。同樣，從這個問題的定義中，也很容易準確地看出人工智慧在哪裡發揮作用並增加價值。Ask,“ What Would Make it Valuable? ”: This question is absolutely key for AI projects. Failing to ask that question early and continue asking it at every opportunity is why many companies pursue“ shiny pennies ” while ignoring piles of gold within their easy reach. Ask,“ Why is this information valuable? ” Then ask it again and again. Then follow it up with,“ What would give us that information? ” In the earlier use case, accurately measuring the thickness of the pipe was valuable for compliance. However, that information was not available, given the level of technology of cheap sensors. So, by asking,“ What would make this solution valuable as is, knowing only the precise rate of degradation, not the absolute accurate thickness? ” I uncovered that there is even more value in understanding how to decrease the rate of corrosion in order to extend the life of the pipes. And if we understand that, then we can ask,“ OK, what could accomplish this desirable decrease in the rate of corrosion? ” The answer from SMEs would be“ preprocessing and adding pipe coating. ” From this level of problem definition, it is easy to step up to a UI that would display different scenarios for doing that. Likewise, from this problem definition, it is also quite easy to see exactly where AI comes into play and adds value.

7. 追蹤數據：視覺原型討論後期的另一個有力問題是透過提出諸如「誰擁有訓練模型（機器學習）所需的資料」之類的問題來關注誰將提供資料？我們如何獲得它？你聽過「跟著錢走」這句話嗎？嗯，「追蹤數據」是一回事，但對人工智慧來說。我們在第

4 章「數位孿生：系統實體元件的數位表示」中介紹的數位孿生練習非常適合與小組一起進行此類分析。Follow the Data: Another powerful question for the later stages of the vision prototype discussion is to focus on who would supply the data by asking questions like “Who has the data we need to train our model (Machine Learning)? How do we get it?” Have you heard the expression “follow the money”? Well, “follow the data” is the same thing, but for AI. The digital twin exercise we covered in Chapter 4, “Digital Twin: Digital Representation of the Physical Components of Your System,” is ideal for doing this type of analysis with a group.

8. 進入現場：實地研究對於真正了解不同工作人員在進行安裝、檢查和工作流程時遇到的所有活動部件、工件和挑戰至關重要。第一手實地研究是無可替代的。Go into the Field: Field studies are critical to really understand all of the moving parts, artifacts, and challenges different crews encounter while doing the installation, inspection, and workflows. There is just no substitute for firsthand field research.

9. 這需要一個村莊：作為一名用戶體驗人員，您的有效性取決於問題的質量。用溫斯頓·丘吉爾的話來說，“永遠不要讓一場好的危機白白浪費。如果產品開發陷入困境，可以利用這場危機作為槓桿，通過實地研究匯集多種觀點，或者邀請來自不同業務部門（BU）的競爭對手中小企業聚集在一起，一起進行披薩、啤酒和人工智能腦力激盪討論，“以幫助設想公司的未來”。利用與客戶和供應商的共同創造和參與式設計。如果您需要創建更正式的腦力激盪練習或為會議提供更多結構，請使用您最喜歡的腦力激盪技巧，例如“六頂帽子”（5）或“要完成的工作”（6）。It Takes a Village: As a UX person, your effectiveness is about the quality of your questions. In the words of Winston Churchill, “Never let a good crisis go to waste.” If the product development is stuck, use this crisis as a leverage to bring together multiple perspectives through field research or invite rival SMEs from different business units (BUs) to come together and bury the hatchet together over some pizza, beers, and AI brainstorming discussion “to help envision the future of the company.” Leverage co-creation and participatory design with customers and vendors. Use your favorite brainstorming techniques, like “Six Hats” (5) or “Jobs to Be Done” (6), if you need to create more formal brainstorming exercises or provide more structure for the meeting.

雖然最佳實踐很重要，但如果我不提及在視覺原型設計實踐中要避免的一些嚴重錯誤，那我就失職了。

While the best practices are important, I would be remiss if I didn’t also mention some critical mistakes to avoid in your vision prototyping practice.

要避免的視覺原型設計錯誤：

Vision Prototyping Mistakes to Avoid:

1. 不要瞄準太近：願景原型的時間範圍應該是一到兩年到「永遠不」。任何設計為在兩到三個衝刺中發布的東西都是戰術原型，因此，它受到不同的限制。Don’t Aim Too Close: The vision prototype time horizon should be one to two years to “never.” Anything designed to be released in two to three sprints is a tactical prototype, and as such, it is subject to different constraints.

2. 不要只顯示一堆螢幕：記得利用用例！將您的願景原型構建為流程，以解決特定問題並端到端解決問題中的實際用例;例如，不要過早停止流程，而是繼續前往客戶從您的解決方案中受益的最終畫面。（請參閱我們在第 3 章「人工智慧專案的故事板」中關於適當結論重要性的討論。Don’t Just Show a Bunch of Screens: Remember to leverage the use case! Build your vision prototype as a flow to solve a specific problem and address the actual use case in question end to end; for example, don’t stop your flow too soon, but keep going to the final screen where the customer benefits from your solution. (See our discussion on the importance of appropriate conclusion in Chapter 3, “Storyboarding for AI Projects.”)

3. 不要只是丟棄 Figma 原型：多年來，我嘗試將願景原型呈現為 11 × 17 份講義、海報、互動式原型等各種內容。根據我的經驗，視覺原型的理想交付系統是一段一到兩分鐘的視頻，並帶有畫外音，以用例開頭：“作為工廠主管，我真的很關心延長管道資產的使用壽命並控制安全問題造成的停機時間.....”然後繼續畫外音，同時逐個螢幕逐步解說。最後明確認識到原型為這個特定用例提供的價值：“現在我了解了工廠的哪些部分需要塗上管道塗層，並有場景顯示哪些塗層是理想的，這樣我就可以為工廠中的所有管道提供最佳的使用壽命和安全性。我還可以制定和維護操作計劃，同時更換所有管道，並最大限度地減少因不可預見的安全問題和合規性而導致的停機時間。砰！就拿它來說，“克隆人的進攻”！Don’t Just Drop a Figma Prototype: Over the years I’ve tried presenting vision prototypes as everything from 11 × 17 handouts, posters, interactive prototypes, and more. In my experience, the ideal delivery system for a vision prototype is a one- to two-minute video with a voiceover that starts with a use case: “As Plant

Supervisor, I really care about extending the life of my pipe assets and controlling the downtime caused by safety issues … ” then continue your voiceover while you do a screen-by-screen walk-through. End with an explicit recognition of the value the prototype delivers for this specific use case: “ Now I understand which parts of my plant need to have the pipe coating applied, and have the scenarios showing which coatings are ideal, so that I can deliver the optimal life and safety for all the pipes in my plant. I can also create and maintain the operational plan to replace all of the pipes at the same time and minimize downtime due to unforeseen safety issues and compliance. ” Bam! Take that, “ Attack of the Clones ”!

4. 不要 Lorem Ipsum：內容至關重要，需要得到應有的尊重和關注。拼出流程中的實際步驟，並使其盡可能真實。這意味著數字必須相加，名稱必須切合實際並符合行業標準，測量必須合理，等等（我傾向於大量利用 ChatGPT 和 Claude 等 LLM 為視覺原型創建合理的內容，並與團隊檢查我的內容以確保一致性和真實性。Don ’ t Lorem Ipsum: Content is vital and needs to be treated with the respect and attention it deserves. Spell out the actual steps in the flow and make them as authentic as possible. This means numbers have to add up, names have to be realistic and match industry standards, measurements have to be reasonable, etc. (I tend to heavily leverage LLMs like ChatGPT and Claude to create reasonable content for a vision prototype and check my content with the team to ensure consistency and realism.)

5. 不要擔心每一個可能的極端情況：去吃肉吧！請務必先進入主要用例，然後才考慮超越它。擁有涵蓋的完整用例列表不是目標，而是願景！大多數視覺原型僅涵蓋 1-2 個用例。Don ’ t Worry About Every Possible Corner Case: Go for the meat! Be sure to come to the primary use case first and only then consider going beyond that. Having a complete list of use cases covered is not the goal—the vision is! Most vision prototypes cover just 1 – 2 use cases.

6. 不要將原型與實施混淆：在構建解決方案的 MVP 時，不要太深入、太快。用 J. R. R. 托爾金的話來說，“ 你害怕進入那些礦井。矮人們探究得太貪婪、太深。你知道他們在 Khazad-dum 的黑暗中醒來了.....陰影和火焰」（7）。在構建你的想法時，你也應該害怕深入研究太深。夢想盡可能大是可以的，但在建造時，要考慮實施的實際成本，並好好考慮如何降低它！讓 MVP 的第一次通過盡可能簡單，確保客戶使用您的新產品，然後在確定一切正常後升級您的解決方案。Don ’ t Confuse Prototype with Implementation: When it comes to building the MVP of your solution, don ’ t delve too deep too quickly. In the words of J. R. R. Tolkien, “ You fear to go into those mines. The dwarves

delved too greedily and too deep. You know what they awoke in the darkness of Khazad-dum … shadow, and flame ”(7). When building out your idea, you, too, should be afraid of delving too deep. It is okay to dream as big as possible, but when it comes to building, consider the actual cost of implementation and think well about how to lower it! Make the first pass of the MVP as simple as possible, make sure customers use your new product, then upgrade your solution after you ’re sure everything is working well.

7. 不要太執著：最後，不要太執著於結果。你的執行長可能認為未經訓練的人工智慧可以進行腦部手術，或者人工智慧可以在幾毫秒內連續處理數 TB 的數據，或者月亮是由奶酪製成的，或者早餐前有多達六件其他不可能的事情。在這種情況下，您將無能為力。在《薄伽梵歌》中，克里希納說：“ 讓你只關心行動，而不是行動的果實。不要讓行動的結果成為你的動機，也不要執著於不作為」（8）。有時索倫會贏;您可能只是不幸成為 85% 失敗的人工智慧驅動專案之一的一部分。只需盡最大努力幫助您的團隊、學習並繼續前進。Don ’t Get Too Attached: Finally, don ’t get too attached to the outcome. Your CEO might believe untrained AI can do brain surgery, or that AI can continuously process terabytes of data in milliseconds, or that the moon is made of cheese, or as many as six other impossible things before breakfast. There is nothing you are going to be able to do in that case. In the Bhagavad Gita, Krishna says: “ Let your concern be with action alone, and never with the fruits of action. Do not let the results of action be your motive, and do not be attached to inaction ”(8). Sometimes Sauron wins; you might just be unlucky enough to be a part of one of those 85 percent of AI-driven projects that fail. Simply do your best to help your team, learn, and move on.

偏見和道德的戰略討論與構思、願景原型設計和專利密切相關。作為使用者體驗專業人士，您處於獨特的位置，可以幫助您的組織解開複雜和敏感的主題，同時幫助您的公司發現新想法並申請與人工智慧相關的專利。重要的是讓團隊專注於積極、創造性的努力，同時你也利用創造性的動力來解決人工智慧道德和偏見的棘手問題。

The strategic discussions of bias and ethics are closely tied to ideation, vision prototyping, and patents. As a UX professional, you are in a unique position to help your organization unpack complex and sensitive topics while also helping your company uncover new ideas and file AI-related patents. The important thing is to keep the teams focused on the positive, creative endeavor, while you also use the creative momentum to address the tough questions of AI ethics and bias.

考慮以下著名的禪宗公案：一個學生看到另一個學生吸煙，並感到困惑。「我以為師父說我們抽煙時不能打坐嗎？」另一個精明地回答說：「我問師父，我們打坐時是否可以抽煙，他說當然可以。」這一切都與主要焦點有關！只要你能保持對願景原型設計和創意腦力激盪的關注，以及恰好出現的人工智慧道德和偏見問題，如果這些重要考慮因素也成為你討論的一部分，很少有人會反對。

Consider the following famous Zen Buddhist koan: One student sees another smoking, and is puzzled. “I thought the master said we could not meditate while we smoked?” The other shrewdly replied: “I asked the master if we can smoke while we meditated and he said certainly, yes.” It’s all about the primary focus! As long as you can maintain the focus on vision prototyping and creative brainstorming and questions of AI ethics and bias just happen to come up, few people will object if those important considerations also become part of your discussion.

參考

References

1. 1. 奧術（電視劇）（2024）。維基百科，維基媒體基金會。https://en.wikipedia.org/wiki/Arcane_(TV_series)1. Arcane (TV series) (2024). Wikipedia, Wikimedia Foundation. https://en.wikipedia.org/wiki/Arcane_(TV_series)

2. 2.超音波管道檢查（nd）。維基百科。https://en.wikipedia.org/wiki/Ultrasonic_testing2. Ultrasonic pipe inspection (n.d.). Wikipedia. https://en.wikipedia.org/wiki/Ultrasonic_testing

3. 3. BHGE，美國專利10976903，工業資產情報。https://patents.google.com/patent/US10976903B2/en?oq=109769033. BHGE, US Patent 10976903, Industrial Asset Intelligence. https://patents.google.com/patent/US10976903B2/en?oq=10976903

4. 4. 尼特斯，J.（2008）。藝術家，而不是混蛋。UXmatters。www.uxmatters.com/mt/archives/2008/11/artists-not-assholes.php4. Nieters, J. (2008). Artists, not assholes. UXmatters. www.uxmatters.com/mt/archives/2008/11/artists-not-assholes.php

5. 5. 六頂思考帽（2025）。團體地圖。www.groupmap.com/portfolio/six-thinking-hats5. Six Thinking Hats (2025). Group Map. www.groupmap.com/portfolio/six-thinking-hats

6. 6. 烏爾威克，AW

（2016）。要做的工作：從理論到實踐。創意咬出版社id_0000。6. Ulwick, A. W. (2016). Jobs to be done: Theory to practice. Idea Bite Press. https://a.co/d/iGk9vnV

7. 7. 托爾金，JRR

（1991）。指環王（第二版）。哈珀柯林斯出版社有限公司7. Tolkien, J. R. R. (1991). The Lord of the Rings (2nd ed.). HarperCollins Publishers Ltd.

8. 8. 不執著的藝術——你如何評價你的韌性？（2024）.

LotusPeople.com，https://www.lotuspeople.com.au/art-non-attachment-ate-resilience8. The art of non-attachment – how would you rate your resilience? (2024). LotusPeople.com, https://www.lotuspeople.com.au/art-non-attachment-ate-resilience