The market for IPOs is still open, and Titrolyte's new titanium extraction technology has blockbuster potential. Will a public offering yield fool's gold for the founders – or the real thing?

Too Soon to IPO?

by David Champion

As DIANE ASHTON WALKED TO HER car, she admired the sleek yellow Ferrari that had moved into the slot next to hers. The daughter of a motor enthusiast, Diane had fallen in love with sports cars at an early age. "You know," she mused aloud, "I could buy myself that car for Christmas, if I do what they want."

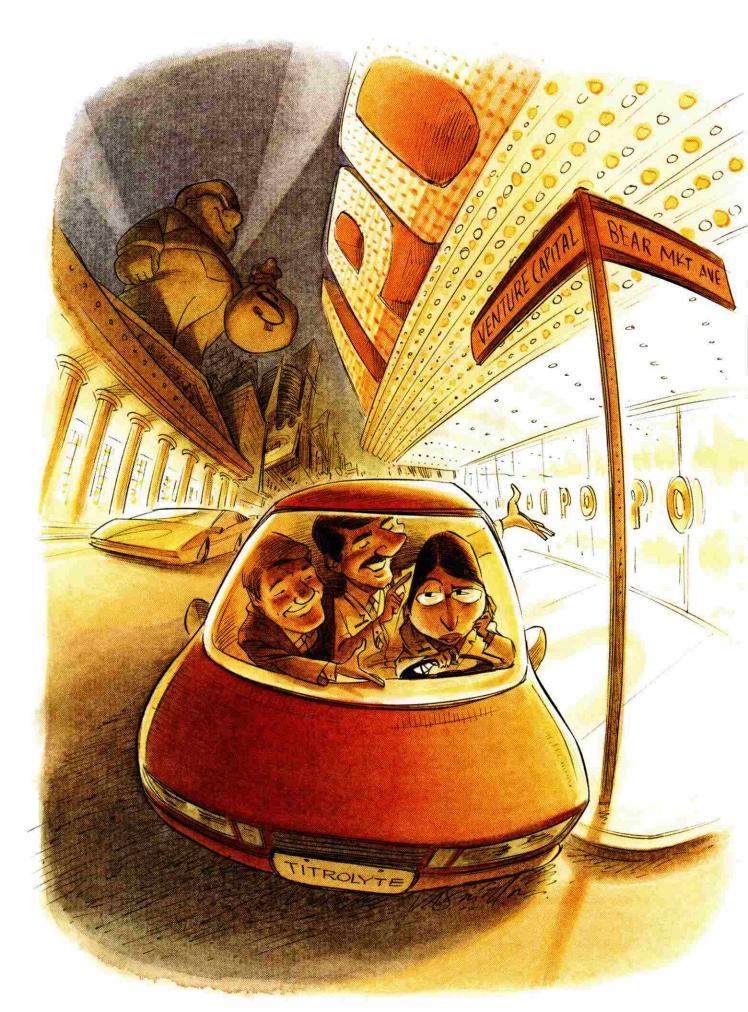
"They" were her business partner Sundeep Lal and principal investor Dick Rahilly. And what they wanted was for Titrolyte Incorporated, the company she and Sundeep had founded several years ago to exploit their new technology for producing titanium, to prepare for an IPO in the fall.

Diane sighed as she unlocked the door to her three-year-old Saab. She couldn't help but feel that they were rushing things. Still, she found it hard to express her misgivings in the face of Sundeep's enthusiasm and Dick's logical arguments.

Dick, always the voice of reason, had pointed out that, although Titrolyte could limp along, relying on its testing business, it would need a sig-

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nificant infusion of capital if it were to bring its new technology to market by itself. He had spelled out the alternatives.

"You've got a pretty clear choice," he had said in his quiet way. "You can go to Republic Engines now, or you can go to the market. The market's still interested in IPOs, and you can get more there than you probably would anywhere else. And even if the market tanks afterwards, well, you'll have more than the money Sundeep says you need. You could probably get as much as \$200 million in new capital through an IPO. Titrolyte would probably be valued at around \$3 billion in all."

Sundeep had been more aggressive. "You know, Diane, I really think we've got to do the IPO while we can," he had said. "It's not like we've got nothing to show. Time and time again, the technology has worked. We've solved most of the problems. We've got some positive cash flow from our testing business, which is more than most Internet companies have. In five years, we could be right up there with Republic Engines."

Republic Engines was one of the country's oldest companies and had been a media darling the past ten years. A market leader in a wide range of metals-based businesses – from aircraft engines to kitchen appliances – Republic was just the kind of company whose cost structure would be radically affected by Titrolyte's new technology. That was why, when Dick approached the company two years ago, Republic's VC arm had eagerly contributed to Titrolyte's second round of financing.

As Diane pulled out of the parking lot, she caught sight of Republic's bill-board: "Make your last oven a Cook-Brite." "Why not Republic?" she thought.

Eureka!

Diane had inherited her interest in chemical engineering, along with her passion for cars, from her father, who had worked for the R&D division of U.S. Synthetics, one of the world's leading plastics and synthetic fiber compa-

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nies. She had focused her research on temperature-resistant alloys, and her dissertation had won several academic awards.

Diane and Sundeep had met four years ago, shortly after Diane accepted an assistant professor post at MIT. A Stanford graduate, Sundeep had come to MIT on a postdoctoral fellowship. His research interests were close to Diane's, and the two started to collaborate on a number of projects.

Diane could vividly remember the day that she and Sundeep had made their fortuitous discovery. They had been experimenting for weeks with ways of extracting titanium from its oxide through electrolysis, a notoriously could be that big company ourselves?" Sundeep had asked Diane the next day. "VCs will fall over themselves to give us the money to make it commercial. Just think about it." Diane agreed to explore the idea.

Sundeep was certainly right about the VCs. Dick Rahilly, whose firm—Courtney, Wills & Rahilly—was considered to be one of the canniest VC houses on Route 128, was hooked after one demonstration. "This could be huge," he had said. "You could become as big as Republic Engines if you make this technology work." He agreed to invest \$20 million at once and had helped Diane and Sundeep draw up a business plan in less than two weeks. Two months later, the

"Why let some big company make most of the money out of the idea when we could be that big company ourselves?"

unreliable process. Late one evening, working on her own in the laboratory, Diane muddled the ingredients of a solution that they had decided to test as an electrolyte. Rather than start over, she tried it out.

Amazingly, the solution worked. In fact, it was extremely efficient and fast, requiring relatively little power. Better still, there were no signs of the side reactions that in most solutions reconverted the titanium into some other compound. No solution she had ever heard of isolated titanium so effectively, and, if it could be scaled up, the commercial possibilities were enormous. Durable and highly heat resistant, titanium was a key constituent of many specialty alloys, but it was also very expensive because it was difficult to produce. The technology would be worth billions to large manufacturers like Republic Engines, General Motors, and Boeing.

Inevitably, it was the Stanford graduate who first suggested starting their own company to exploit the discovery. "Why let some big company make most of the money out of the idea when we

company had completed an impressive \$40 million first round of financing.

Sundeep and Diane christened the company Titrolyte, a contraction of titanium and electrolyte. They rented space at the Barracks, a redeveloped military base with plenty of space that could be converted to the company's needs. The largest building in the compound, a former materials-testing laboratory, was converted into a plant for manufacturing titanium, while an adjacent warehouse was converted into a laboratory. The idea was to use the plant to test on an industrial scale the manufacturing processes that Diane and Sundeep would perfect in their lab. As early tenants, they had been able to get the space on very favorable terms, but expansion would be more expensive, since the booming Boston-area economy was spawning a host of property-hungry high-tech businesses.

It was agreed that Diane should be CEO, being the older and academically senior of the two. And, as Sundeep pointed out, there would be media value in putting a woman at the helm of what would be a very industrial business. Sundeep decided, to Diane's amusement, to call himself the CRO-chief research officer. Dick took a seat on the board and brought in two successful entrepreneurs whose companies he had financed. With the possibility of stock options down the line and the hefty first-round financing, recruiting junior researchers and lab technicians was easy. Just six months after the discovery, Titrolyte was up and running with a personnel roster of 15 people.

Reality Strikes

Diane and Sundeep soon learned that what had been a fairly straightforward operation in the confines of an MIT laboratory was difficult to reproduce on a large scale. For one thing, the electrolyte solution was highly sensitive to temperature. If the electric current heated the solution by only a few degrees, the electrolyte would not perform properly. And even at the right temperature, the solution was not always reliable. A significant number of times, it just didn't work.

After much testing, they learned that the process was also extremely sensitive to impurities in the constituents of the solution. In the laboratory, it was relatively simple and inexpensive to ensure clean conditions. But when the constituents were purchased and processed in industrial-sized vats in the adjacent plant, it was much harder to control for impurities. And once a solution had stopped working, they had to clean out the equipment and start over again, a process that took at least a week.

The constant stop-and-go experimentation, not to mention the raw material wasted, proved to be very expensive. And the costs of testing were nowhere near offset by the revenues earned from selling titanium on the open market. Within just two years, Sundeep and Diane had to go back to their investors for more money. They had made progress with temperature control, but they still had some way to go in their quality control.

Despite their difficulties, Diane and Sundeep raised another \$60 million in

second-round financing; the VC community was still investing heavily in start-ups, and Titrolyte had, after all, solved some of the problems. The new round introduced an important investor in the shape of Republic Engine's VC arm, headed up by Ted McGann. McGann, who was considered the likely successor to Republic's CEO, was so enthusiastic about Titrolyte that he personally took the board slot that Republic's 10% stake entitled it to.

Building a Proper Business

Shortly after the second round of financing, Sundeep suggested selling materialstesting services as a way to generate more cash for Titrolyte's R&D. "A lot of biotechs are diversifying into contract services," he said. "They provide diagnostic tests for pharmaceutical companies. Well, we know a lot now about testing for materials quality," he pointed out. "Why not do it for other companies and use the cash flow to fund product development?"

Diane was skeptical. Surely, she argued, testing for materials quality would be something that companies would want to do themselves. Besides, the investment in time and effort to build up and market a testing business would drain resources from the company's core business.

The two partners appealed to Dick, who sided with Sundeep. "Companies like to subcontract this kind of work ously run the sales and marketing division for a large Midwestern specialty chemicals company. At 50, he saw the promise of a 5% stake in Titrolyte as an opportunity to step off the corporate treadmill.

The gamble was justified. Within six months of signing on at Titrolyte, Stan had landed testing contracts from three large chemicals companies. Within a year, the company had recruited five sales reps and 15 lab technicians. Testing revenues for next year—the new unit's first full year of operations—were expected to touch \$10 million. Sundeep was delighted with the forecasts. They proved, he believed, that Titrolyte was ready for an IPO.

Originally, Diane and Sundeep had planned to bring the company to market after five years. But over the past month or two, Sundeep had started to worry that Titrolyte would miss the bus. A week ago, he had sounded out Dick on the subject after a routine board meeting. "What's our window of opportunity?" he had asked. "I know we've got a much more solid business than most of the Internet and biotech stocks, but wouldn't we be affected if they tanked?"

Dick had recently started asking himself the same questions. In the past month or so, investors had become a lot choosier about IPOs, and his firm had just postponed a couple of planned issues. But Titrolyte, he reckoned, was the kind of company that might just

What had been a fairly straightforward operation in the confines of an MIT laboratory was difficult to reproduce on a large scale.

because it's not a very efficient use of their assets," he said. "But it is an efficient use of yours, and if you succeed, you'll have proved to investors that Titrolyte is more than an adventure in new technology."

To help them get started, Dick found a professional manager in the lanky shape of Stan Cooper. Stan had previreignite the market's enthusiasm. It had a tangible, nuts-and-bolts technology that could have a huge effect on a swath of everyday industries. And it was starting to make money with its testing business. He agreed to help Sundeep broach the idea with Diane.

"But it can't be that easy," Diane thought as she navigated the Fresh Pond intersection toward Route 2. "We don't feel like a \$3 billion company. We're not grown-up enough."

For all the success of its testing unit, Titrolyte had not yet adjusted to being the kind of business that actually sold products and services. For instance, it was completely unequipped to provide many of the HR services that Stan had first customer—first by charging them the wrong amount, then by giving them the wrong account number. As Stan was acutely aware, this sort of thing did not cast Titrolyte in a very professional light. He had passed that message on to Sundeep and Diane only two weeks ago. "You know," he told them, "companies our size are expected to do a much bet-

For their part, the longer-serving employees disliked the fact that the new business took up so much of their laboratory space.

Which Direction?

"What do you think I should say to them?" Diane asked her husband, Don, that evening after their daughter had gone to bed. "Sundeep and Dick have called the shots pretty well so far," she explained, "but I can't help worrying that we'll end up flat on our faces. We still don't know why the electrolyte is so unreliable, whatever Sundeep likes to say. What if we still haven't solved the impurity problem two years from now? What's the market going to say about that? What I worry is that we'll go public and get a lot of hype but go nowhere. Dick doesn't seem worried, but he'll probably be out of the business pretty soon after the IPO.

"You remember Andy McKendry, the computer scientist we used to see at MIT parties? He and a couple of his friends went public with this virtual real-estate company back in the early 1990s, just before the Internet got going. Their idea was to give virtual tours of properties on a computer terminal. Everyone raved when they saw the demo, the graphics were really fantastic, but they could never get all the bugs out of the programming. In the end, the market gave up on them, and they filed for bankruptcy."

"Have you talked with Ted McGann?" Don asked. "He's a big fan of yours, isn't he? Surely Republic would be interested in putting more money in."

"Not yet," Diane replied. "Dick mentioned that possibility, but I got the feeling that Sundeep would be dead set against it, and I didn't want to get into a debate in front of Dick. You know how defensive Sundeep can be. I think he's competing in some way with Republic Engines, and he doesn't want to be beholden to them. I know he doesn't like my talking to Ted all that much. But I can't see us getting as big as Republic without their help."

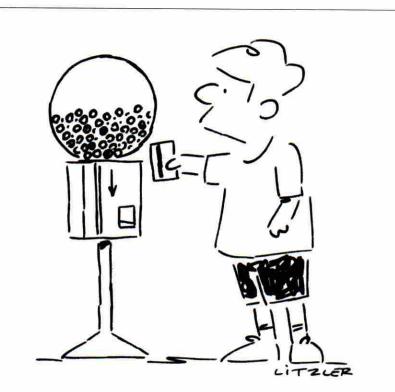
continued on page 42

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taken for granted. There was no organized health care plan, for example, nor was there a pension scheme. Stan was not amused to discover that his first paycheck had bounced because Titrolyte's two-person treasury team had failed to transfer money to the payroll account on time.

The company's lack of business systems had been thrown into sharp relief when Titrolyte had incorrectly billed its ter job with their books than we do. We don't even have a formal budgeting process."

Diane was also concerned that Titrolyte was losing its sense of identity. Absorbing all the new staff had posed problems, and the newcomers didn't mingle much with the original staff. Diane wondered whether they weren't starting to resent the fact that R&D had made little progress over the past year.



Is Titrolyte ready to make an IPO?

Five commentators offer their advice.



"It seems to me that the time has come to look not for investors but for a technology partner."

William Bourne is an investment specialist at Scudder Investments in Tokyo.

Diane Ashton and Sundeep Lal need to spend more time reviewing their strategic options—the company's lack of budgeting and business systems suggests they have not allocated much, if any, time to planning for the future. Even a one-day off-site meeting would bring to light a range of choices other than the two presented here.

That said, Diane and Sundeep are right to worry about cash flow. A quick calculation suggests that Titrolyte is spending some \$30 million per annum. Even if the company is selling \$5 million per annum of manufactured titanium and raising another \$10 million from specialty testing, it will run out of cash within a year. Titrolyte needs to find money somewhere.

Dick Rahilly is right to advise against looking for funding from Republic Engines—the company will use its inside knowledge of Titrolyte's problems to negotiate a deep discount off any potential IPO price. Moreover, Diane and Sundeep would almost certainly be locked in for a period of time. As a result, they might find themselves working as hard as they do now but without the same equity upside.

Is the IPO a better alternative? Once again, Dick is probably right that a quick IPO would more than solve the immediate cash problem, but Diane and Sundeep should be aware that many of their new investors may be amateurs who

will desert the company when the investment climate changes. Professional investors are likely to be more loyal because they can differentiate Titrolyte's real business from the hopes and aspirations of a dot-com IPO. And if the company finds it needs more money down the road—and can make a good business case for a secondary offering—it should find professional investors quite receptive even if the climate for new issues is unfriendly. But their ability to identify real business logic also means that they will stay away if they feel the price is too high.

What's more, Titrolyte is clearly not ready for many aspects of an IPO. Professional investors tend to be unforgiving of companies that don't have reliable budgeting processes or competent treasury operations. I suspect that the effort of bringing the company's business processes up to scratch in time for an early IPO would distract Diane and Sundeep from the technical problems that they must resolve if the venture is to be all they hoped for.

Which brings me to the real issue. So far the company has spent about \$100 million without solving the impurity problems. Will Titrolyte be able to scale up the titanium extraction process by itself? It seems to me that the time has come to look not for investors but for a technology partner. A discussion with Ted McGann to make use of Republic's expertise is a good starting point. Perhaps Republic could lend Titrolyte some engineers with expertise in industrial-scale metals processing.

Of course, the company still has its cash flow problem. But rather than throw capital at R&D, Diane and Sundeep could solve that problem by refocusing their investment. As Stan's sales success has demonstrated, there's clearly a gap in the market for specialty chemicals testing, and Titrolyte should have little trouble obtaining bank financing to grow that business. Over time, the positive cash flow from the testing would fund Titrolyte's R&D.

Finally, I'd like to remind Diane and Sundeep that the \$3 billion IPO estimate is a small fraction of Titrolyte's potential value. If they really believe that the technology can be scaled up, they should not be in such a hurry to release the company's equity.



"I'd always advise a company to take the riskier path if it meant that they could more quickly secure a dominant position in the marketplace."

Tim Draper is the founder and managing director of Draper Fisher Jurvetson, a leading venture capital firm in Redwood City, California.

The goal of venture capitalists is to take risks that result in exceptional returns. Since most investors are risk averse, the VC will, according to the laws of probability, be rewarded for taking on more risk. On that basis, I'd always advise a company to take the riskier path if it meant that they could more quickly secure a dominant position in the marketplace.

The successful execution of a risky plan, like any other, requires a well-thought-out strategy for funding. For a company like Titrolyte, an IPO could provide both a substantial infusion of capital and continued access to the capital markets. But not every company is ready to go public, and many of the issues that Diane raises in this case would make me uneasy as an investor at any stage.

Before proceeding with an IPO, Titrolyte's managers must address a number of basic issues in the company that are problematic for a business at any stage of development, let alone one looking to go public.

First, some people at Titrolyte appear to see an IPO as the end of the road. That attitude has to change. I invest in entrepreneurs who want to build large companies and change the world; I am wary of individuals who are focused solely on financial reward. An IPO is just one step toward realizing the entrepreneurial dream of creating a lasting business, and the managers of any new company must believe that their equity is the most valuable investment they could possibly own. In this case,

though, I would suggest that management lock up their shares for at least two years.

Second, a company going public must have a clear vision of its market and the steps it will take to dominate this market. Titrolyte's venture investors did not invest in a materials-testing company, nor would public investors be interested in one. Management's goal is to produce titanium, and that is where the company's efforts should be focused. Testing may be tempting for its cash flow, but Titrolyte must consider whether the resulting distractions would incur opportunity costs and increase time to market for the core business.

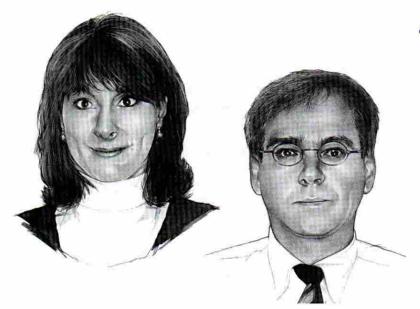
Finally, well before an IPO, managers must put in place the financial controls that are necessary for running a public company. Titrolyte is clearly unprepared for communicating financial information to public shareholders and the SEC. What's more, Titrolyte seems to lack any internal budgeting and planning processes, which is disturbing in a company seeking to raise a substantial amount of capital. A company considering an IPO should not still be working out payroll.

Diane doesn't trust Dick's advice because she thinks that he will be out of the business soon after the IPO. That's a very questionable assumption. As a venture capitalist myself, I am not in the business of pushing companies to the public market before they are ready, cashing out, and letting the company wither away. I invest in companies that I believe will be market leaders years from now, long after the lockup periods have expired. A large portion of my personal assets is tied to the stock of companies I invested in years ago. Furthermore, I have never sold a share of the companies on whose boards I serve.

At the end of the day, I'd advise Diane to talk to her partners and board about her concerns. Assuming they need capital, another round of venture financing led by Republic Engines could be an interim solution—it would guarantee that the company had cash. Besides, the timing of "concept" IPOs like this one is unpredictable. The investment bankers could come in tomorrow and say, "You need another nine months of operations."

In the meantime, Titrolyte's managers should start preparing the organization for a potential IPO and begin to communicate their corporate vision to investment bankers and potential investors. Titrolyte can get there, but they have a ways to go. Should the company go public someday? Absolutely. Are they ready? Probably not yet.

FEBRUARY 2001 43



"What makes for a successful offering isn't necessarily what makes for a successful company. And we're not convinced that Titrolyte can maintain its value over the long term."

Sarah Mavrinac is an associate professor and Neil Jones is an affiliate professor at INSEAD in Fontainebleau, France. Their research focuses on communications and information flow in capital markets and on the management of high-technology firms.

The IPO option is tempting. The market is hot, and the company has solid backing from both its VC and its major customer. Titrolyte's product is technologically feasible and has real market potential. The company even generates some of its own cash. With this foundation, Titrolyte could probably launch an extremely successful offering, raising significant sums for both corporate research and its current owners.

But what makes for a successful offering isn't necessarily what makes for a successful company. And we're not convinced that Titrolyte can maintain its value over the long term. Sooner or later the market will figure out that Titrolyte doesn't yet have the resources or capabilities of a mature business.

To truly judge the value-creating potential of an IPO, you need to look beyond the offering itself to consider how the company will fare in the months and years following the transaction. Unfortunately, research suggests that companies often have difficulty managing the change to public status. After a brief honeymoon period, many experience a steady (and sometimes steep) fall in their share price. A recent study of IPOs by Ernst & Young, for instance, shows that the market value of the typical company fell by \$60 million each year in the three years following an IPO.

Why these difficulties? Well, when a company goes public, the market bets on its performance potential. At the time of the IPO, investors cannot know with any certainty how well the company will fare. They'll base their judgment on a number of signals about the issue's quality: the identity of the underwriter, for example, the support of the VC, the talent of the research staff, and the current state of product development.

But after the issue, investors start to look for signs that the company can deliver on its promise. In other words, they'll start looking at the way the company is managed. And research shows that the most successful new companies all had clearly defined decision-making structures, well-developed internal systems, and strong communications networks before their IPOs. Indeed, companies that are fully prepared for an IPO can often earn suprapositive returns; "successful" companies in the Ernst & Young study saw their market value rise by almost \$200 million a year in the three years following their IPOs.

An IPO is not just about short-term fundraising. It's about the transfer of ownership and the assumption by managers of a long-term fiduciary responsibility. Once they have cashed in their shares and allowed others to take over the risks of ownership, Titrolyte's managers have an obligation to deliver per-

formance for those new owners. We don't see much evidence that they are prepared to do so.

Titrolyte's reporting systems are especially weak. Once the company goes public, management will have to spend an enormous amount of time and money communicating to a curious and demanding audience—even the most basic financial reporting structure costs anywhere between \$250,000 and \$500,000 to maintain. At the moment, Titrolyte's management doesn't even seem capable of conversing effectively with its existing owners. Republic, which holds a 10% ownership share, hasn't even been notified of the potential for an IPO, let alone brought into a meaningful discussion.

Preparing for an IPO is a serious undertaking, requiring far more investment in time, talent, and money than Titrolyte has yet made. To be sure, an IPO can be exciting, and it might generate tremendous reward for the company's owners in the short term. But the effort of preparing for the IPO now could distract Titrolyte's management away from the critical growth and technology issues it still has to resolve. Unfortunately, over the long term, the pressures of running a public company could so overwhelm the management team that this company could fail-despite its promise.

44 HARVARD BUSINESS REVIEW



"The arguments in favor of an IPO are also compelling. There's no doubt that an IPO will generate more cash."

The cofounder of Chemdex, a B2B marketplace for scientific supplies, **David Perry** is currently president and CEO of Ventro, a builder of and service provider to B2B marketplaces.

As a manager of Titrolyte, my number one priority has to be getting the cash I need to commercialize the company's titanium extraction technology. If I run out of money before I can bring the technology to market, then I have failed. All other goals must be secondary to that one. I can't afford to let my focus on that objective be distracted by the testing business. The cash it could generate will come too late.

Given that, there are just three options that Titrolyte should consider: it can go public; it can raise cash privately from its existing investors, especially Republic; or it can look for an acquirer (most likely Republic).

If I were Diane or Sundeep, I would immediately reject the third option. The company is more valuable to them than it is to anyone else. No one knows more about the technology than they do. No one can have more confidence in their ability to deliver it than they do. The choice between the other two options, however, is much less clear.

There's a lot to be said for raising money privately from existing investors. It would be easier, because Titrolyte would be dealing with a limited number of known quantities. The transaction costs – fees to lawyers and accountants – would be low. And there would be much less risk that sensitive information would leak to potential competitors.

Longer term, there are other advantages. Diane and Sundeep will be able to make decisions driven by the company's needs rather than by the obligation to meet shareholders' quarterly expectations. One of the biggest disadvantages of being public is precisely that executives have to spend a lot of time managing expectations. For Titrolyte, that task will be complicated by the uncertainties surrounding the technology.

But the arguments in favor of an IPO are also compelling. There's no doubt that an IPO will generate more cash. By giving the company a higher valuation, an IPO would also mean less dilution for Diane and Sundeep personally. And it would create a liquid market for the stock, which would let them cash in some of their rewards sooner. On top of that, the buzz surrounding a successful IPO is often useful to a growing business.

Going forward, though, investors will have concerns about Titrolyte's ability to bring its technology to market. That's not an insurmountable problem by itself—biotech investors, for example, routinely cope with uncertainty over when their companies will actually come up with their wonder drugs. But unfortunately, Titrolyte has other problems. Its business systems are clearly not yet up to public-company standards. It's hard to see that a company with such a weak treasury operation would be able to stand the rigors of quarterly reporting.

The lack of a developed HR function is also worrisome. A company in this kind of industry needs to be sensitive to health and safety issues or it will face the threat of legal action by employees.

What's more, Titrolyte is likely to find the labor market more difficult once it has gone public. Without the prospect of cashing in after an IPO, the financial incentives for new people to join the company will be considerably reduced. At the same time, Titrolyte's existing employees, made rich by an IPO, will be less motivated to stay on.

So what should Diane and Sundeep do? If I were in their shoes, I would interview some investment bankers to get a real sense of the money that an IPO could raise. If Dick's expectations that Titrolyte could get \$200 million are confirmed, they should take their findings to Ted and ask him whether Republic could provide half that amount on terms that value the company reasonably close to the \$3 billion IPO estimate. At the rate Titrolyte is consuming cash, \$100 million should easily be enough money to complete development of the company's technology.

But if Republic does not bite, Diane and Sundeep should immediately start preparing the company for an IPO six months from now.

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