



Fostering Innovation: A Guide for the Actuarial Profession

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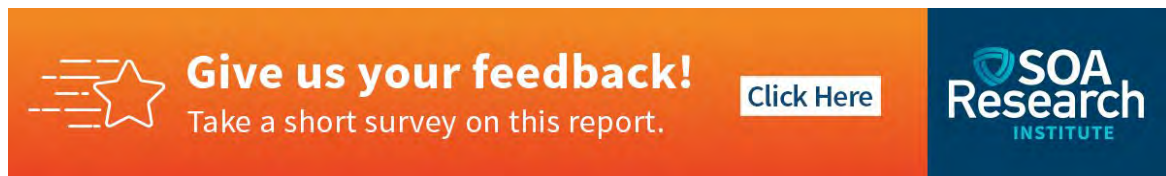


Fostering Innovation

A Guide for the Actuarial Profession

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A horizontal banner with an orange-to-red gradient background. On the left is a white star icon with horizontal lines extending from its left side. To the right of the star is the text "Give us your feedback!" in a large, bold, white font, followed by "Take a short survey on this report." in a smaller white font. Further right is a white rectangular button with the text "Click Here" in a blue font. On the far right of the banner is the SOA Research Institute logo, which consists of a blue shield icon and the text "SOA Research INSTITUTE" in white.

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Fostering Innovation

A Guide for the Actuarial Profession

Section 1: Use of Work Product

The data in this report has been summarized for public distribution. Some of the data presented in this report has been aggregated across all individual interviews and focus groups. In addition, not all data points collected from the interviews may be shown in this report. It is possible that different reviewers of the data could produce different conclusions than those that may be drawn from this report. As such, readers of this report should be cautious when interpreting the data and making decisions regarding specific strategies.

Milliman has prepared this report for the specific purpose of providing the results of our Fostering Innovation research project. In preparing this report, we relied upon the opinions and information provided by the interview participants. We have not verified the information provided.

Section 2: At a Glance

The Society of Actuaries (SOA) sought to investigate methodologies and characteristics associated with actuarial innovation, aiming to expand the industry’s capabilities for creativity. The SOA engaged Milliman to conduct in-depth interviews and focus groups with select actuaries who have demonstrated innovative skills, in order to derive key behaviors and characteristics that encourage innovation. This paper summarizes the results of those facilitated discussions, providing an outline of the innovative process that experienced actuaries follow. It also describes their opinions on education, SOA training, traditional and non-traditional roles and companies, and advice to both organizations and aspiring innovative actuaries.

In response to interview questions, actuaries generally said that their formal educational background was helpful for innovating in that it allowed them to collect a basket of skills within their field and from outside of their field. Many of the actuaries shared that their actuarial training was not necessarily useful in their path toward innovating and offered some suggestions for improvement. They also discussed the innovation benefits and challenges of traditional and non-traditional actuarial roles and organizations.

Participants in this project described the innovative processes, products, and companies they have developed. The “Current Innovations” section features some highlights about these innovators and their accomplishments.

Each actuary we interviewed had a slightly different approach to innovating, but ultimately followed a similar process, which we organized into five key steps:

Step One: Find Stakeholder Pain Points

Understanding consumer needs is fundamental for innovating. The first step toward innovating is to identify pain points in processes or products.

Step Two: Develop Your Action Plan

Once an actuary has identified the pain point(s) they plan to alleviate, they must determine crucial details and ask themselves several questions to formulate a plan.

Step Three: Garner Support

An idea will only succeed if it garners enough support from key influencers, so innovators must continue to generate buy-in by constantly selling their idea to others.

Step Four: Start, Stop, Review, Repeat

Everything that an innovator does after launching their idea determines the success of the design.

Step Five: Fail Quickly and Fail Well

A first idea may not succeed, nor the 20th idea, but innovators must expect this when they begin and remain persistent and passionate enough to continue to try again.

Each actuarial professional offered advice and guidance for actuaries in traditional roles looking to innovate, as well as for traditional actuarial companies seeking to foster innovation. They named several characteristics an actuary should strive to have to succeed in the innovative space, but also highlighted that *being innovative is not a skill, but a mindset that requires certain skills*. For companies, they posed that innovation must be integrated throughout the structural hierarchy to reach all levels of influence.

“Participant quotes are displayed in this manner throughout this report.”

Section 3: About this Project

3.1 DESCRIPTION

This report investigates how actuaries and actuarial firms across the insurance industry are fostering innovation within themselves and others, and the considerations they make when pursuing innovation. It explores their biggest successes— including how they evaluate their successes— and their biggest obstacles. This report highlights specific examples of innovative implementations across all organizational levels, and the top skillsets for actuaries in relation to innovation.

3.2 METHODOLOGY

Milliman’s research team collected data on innovation practices via interviews and focus groups with actuaries. Participants were selected for this project in two ways: the Actuarial Innovation and Technology Strategic Research Program Steering Committee (AITPSC) and other industry connections recommended several actuaries, who were invited to participate in our interviewing process; additionally, the SOA posted a request for volunteers to participate in this project.

In accordance with our research project plan, data was collected from 22 actuaries from around the nation via 15 extensive virtual individual interviews and two virtual focus groups, with four actuaries in one and three in the other. Researchers for this project made an intentional effort to ensure the actuaries interviewed included people from various demographic backgrounds (race/ethnicity, gender, age, religion, etc.). See the Appendix for a list of the primary interview questions asked.

3.3 PARTICIPANT EDUCATIONAL BACKGROUNDS

This study’s participants majored and/or specialized in various fields during their collegiate studies, but overwhelmingly pursued actuarial sciences and applied mathematics. Other specified majors and specializations in undergraduate studies included economics, Spanish language, aerospace engineering, psychology, and statistics. Some of the undergraduate minors that participants earned included economics, mathematics, Spanish language, Chinese language, and actuarial sciences minors. Participants attended various colleges and universities throughout the United States and abroad, and several earned graduate degrees, including MBAs, master’s degrees in actuarial sciences, and Ph.D.’s.

3.4 PARTICIPANT PROFESSIONAL BACKGROUNDS

This study’s participants reported working in over 40 different companies, including carrier groups and actuarial consulting firms. Several of the actuaries interviewed had founded their own companies. The actuaries interviewed either presently or previously worked in the United States, Canada, China, France, Ghana, Latin American and Asian regions, and more.

Numerous unique roles, titles, and focuses were specified— past and present— during data collection. A sampling of the roles held by our participants throughout their careers included product development, business finance, sales, actuarial analysis, risk management, investment operations, mutual fund assets, reinsurance, cashflow testing, pricing, data platforms, and actuarial transformation.

Participants named various insurance markets in which they presently or previously worked, including life, long-term care, Medicare, disability insurance, and retirement. Many of the interviewees have been professionals in the actuarial field for an average of 10 or more years.

Section 4: Background Influences on Innovative Mindset

Participants described the impact their education and actuarial training had on the development of an innovative mindset. They also shared the positive and negative impacts of traditional actuarial roles and less traditional roles on their ability to be innovative in the workplace.

4.1 ROLE OF EDUCATION IN INNOVATION

Education plays a key role in the development of an actuary, as most actuaries obtain college degrees before they enter the actuarial workforce. To further understand participants' innovative experiences, we asked them to describe their educational backgrounds and how they contributed to their success as innovators.

Several respondents said that their formal education was helpful for credentialing, foundational knowledge, and building valuable skills that have naturally transferred to their current roles. Their college education was multidisciplinary, which encouraged – and sometimes forced – students to travel outside of their ideological and academic bubble to interact with others. Not only did this strengthen networking and communication skills, but it also encouraged acknowledgement of diverse perspectives. This type of education builds student confidence in several areas of expertise that then carry over to their careers. They create a 'basket of skills' that they can use to pursue areas of interest that will eventually comprise their professional identity.

Conversely, some actuaries indicated that their formal background education was not pertinent to their current innovative trajectory. Instead, they created a basket of skills through on-the-job experience and self-education. *Many participants strongly believed that their multi-dimensional self-education outside of the classroom was the most helpful in their pursuit of innovation.* Nearly all of the participants said that they use books, online courses, podcasts, movies and television shows, or a combination of these to learn more about their current industry and the industries they want to explore more deeply. Education is not strictly limited to the classroom, as every interaction offers the opportunity to learn something new. For this reason, building a network of personal and professional contacts with the mindset that everyone has something to offer is invaluable for someone creating new ideas.

Education – whether formal or experiential – was cited as a lifelong endeavor that fosters an innovative mindset.

4.2 ROLE OF SOA TRAINING IN INNOVATION

For the early part of an actuary's career, the Society of Actuaries' credentialing curriculum is a major part of the actuary's life – and their desk space. We asked participants about their feelings regarding the long-term benefits of this foundational educational effort.

A few actuaries detailed the life lessons they learned throughout their exam process, such as perseverance and determination, handling uncertainty, and developing a big-picture perspective (due to the different disciplines studied in the exams), which were helpful while navigating the innovative process.

However, a vast majority of the interviewees stated that their SOA training did not contribute to or inspire their drive for innovation. Many shared the perspective that the SOA exams and exam training taught them to memorize and regurgitate information and to remain within the bounds of strict confines and rules, which consequently breeds a singular type of actuary¹. They contend that this process reinforces actuarial stereotypes and discourages innovation and creativity.

¹ Note that the SOA has since changed its core education process moving from lower cognition levels of learning (remember, understand) toward higher levels (analyze, evaluate, create).

“We are innovative and creative in spite of the exam process, not because of it. I consider the process to be like hazing, and I think that it should be altered or removed altogether.”

Participants noted that the study time required for the exam process monopolizes a time in a new actuary’s life that has great potential for creativity and innovation, leaving limited time to think of new ideas while studying. Further, participants reported that once an actuary has finished the exam process, they may have little energy or motivation left to bring creativity to their field.

The actuaries interviewed suggested several potential changes to address their frustration with the actuarial training process. Some of these changes included the addition of a structured analytics certification that tests on standardized ways to clean, visualize, and normalize data, as well as coursework and tests that dive into programming languages and translations (i.e., from Microsoft Excel to Python). Furthermore, participants proposed that Continuing Education Units (CEU) requirements should be adjusted, so an actuary can fulfill half of their CEU requirements through outside research and reports encompassing innovation.

4.3 TRADITIONAL ACTUARIAL ROLES AND ORGANIZATIONS

According to participants, there are many positive aspects of working in a traditional actuarial role and/or organization. For the purpose of this study, traditional actuarial roles and organizations include positions such as financial risk analysis, pricing, and modeling in well-established and/or long-standing actuarial or insurance carrier companies.

A benefit of working in large, well-established organizations is that these workplaces have many problems to solve, but offer a lot of resources, as well as a network of people for collaboration. In other words, the well-established workplace provides more issues to resolve, but more tools and people to work through those issues.

This plethora of opportunities may often result in a company’s ability to offer market-competitive compensation and professional advancement opportunities. In addition to the status, salary, and structure provided by traditional positions, many actuaries initially appreciated the predictability that exists in these roles. Such a directive-driven approach to working is possible due to predetermined company goals and initiatives. It may feel very cyclic, but interviewees attested that many people enjoyed the sense of accomplishment they felt after a productive day of completing designated tasks.

However, it is interesting to note that the stability and predictability of cyclic work may also be seen as a negative by employees in the workplace, especially in relation to creativity and innovation. When participants described some of the negative aspects of working in traditional roles and organizations, a common complaint was that they are highly regulated and structured which, in turn, limits effective communication between the project stakeholders.

Further, interviewees said that there was a high tendency to follow rubrics and pre-established factors in traditional roles and organizations. Instead of putting thought toward improving processes, employees were expected to follow protocol and complete tasks as they had always been done. The actuaries’ supervisors and senior managers were not looking for risky innovation that might conflict with the interests of other key company stakeholders. Many shared that they found the company hierarchy to be frustrating because their bosses lacked foresight and authority to utilize their new ideas to enhance existing processes.

In the same vein, participants expressed that it was difficult to innovate in their traditional actuarial workplaces because company leadership must be the ones to mandate change, not the employees. Even further, if a traditional actuary were to try to innovate independently from their supervisors, they risked overstepping authority and creating frictions with coworkers and leadership.

4.4 NON-TRADITIONAL ROLES AND ORGANIZATIONS

The actuaries interviewed for this project also described some of the positive aspects of working in their non-traditional roles and/or organizations. For this report, non-traditional roles and organizations include nonconventional positions (i.e., automation and business development) within traditional and non-traditional organizations, such as start-ups.

According to respondents, non-traditional actuarial positions and companies tend to be less structured and more open to adopting new ideas. Many said there were little to no constraints on the ideas they could come up with and attempt. While these roles require a strong actuarial foundation, they often provide more autonomy than traditional actuarial roles. This freedom allows actuaries to explore new opportunities and propose new directions that make sense for the business.

Building on this, actuaries say that innovative roles and organizations allow employees to pursue new ideas in a way that might not be facilitated in traditional organizations. Employees have freedom to experiment with their ideas and generate buy-in. If the idea is approved, the employee then gets to participate— and possibly lead— the project’s implementation, which does not always happen at traditional companies. These roles naturally lend themselves to more creative opportunities that require an actuary to be innovative.

Despite the many positives to working in an innovative setting, some negatives also exist, and should not be ignored. Participants stated that, in these innovative positions, goal setting is more difficult than in traditional roles and companies. This is typically because the goals are non-concrete, larger, vaguer, and do not have measurable deliverables with which you can gauge your progress. These characteristics may be unappealing to actuaries who prefer more structured work environments.

Working in an innovative environment implies an increased level of uncertainty, sometimes translating to less job security. Participants noted that decision-making in new, developing roles and companies has high stakes and higher risk than in traditional settings, because the decisions pose larger threats to the overall health and reputation of the developing company. In other words, a traditional organization may have built a foundation that allows them to “bounce back” and recover from poor choices, while an innovative organization may not yet have these supports integrated.

Further, whether an innovator is working in a traditional actuarial firm or in a start-up, trailblazing can be lonely and daunting; the unknown can be intimidating, and actuaries may not have many mentors to look to for specific advice when innovating in new areas. Participants stated that atop this stress, innovators may face pushback of some kind from their supervisors or stakeholders who fear the uncertainty that accompanies innovation. Explaining the idea thoroughly and holistically helps in overcoming this resistance.

“Some people in an organization seem to exist solely to oppose change. They may dread the unknown because of what it could bring: unpredictable financial performance; unsteady income stream; loss of reputation; even the loss of their job.”

Section 5: Innovators and Innovations

Each participant in this study described several of their innovative accomplishments in the actuarial profession and how they utilized their own innovative processes to do so. A handful of these actuaries offered to share some of their experiences and insights regarding their innovations. Summaries of the conversations are provided below.



Kelly Hennigan



Sherry Chan



Jennifer Haid



Andy Smith

5.1 NEW PROCESSES

Kelly Hennigan, FSA, CFA Vice President, Head of Investment Operations, *Venerable*, 17 years as an actuary

When you're working with people outside of the actuarial function, you must be innovative with how you work and communicate. I work in a smaller company that has spun off from a larger company, so building new processes where they previously didn't exist is largely innovative. The new processes could be data-centric, visualizing downstream effects, or even processes related to onboarding with a new partnership or vendor.

5.2 NEW PRODUCTS

Sherry Chan, FSA, EA, MAAA, FCA Chief Strategy Officer, *Atidot*, 21 years as an actuary

At Atidot, I help drive growth through both internal and external strategy to provide predictive analytics and artificial intelligence to life insurance companies. I served as New York City's first Asian and first female Chief Actuary, during which I inaugurated an online system that tracked Fiscal Note requests, ensuring complete submission deliveries. I had several different responsibilities in this role, and it is important as an innovator to be comfortable with uncertainty, risks, and tight timeframes. I suggest carving out time to think about a specific topic – it could be about anything – when you can be untethered from all electronics and other distractions.

5.3 NEW COMPANIES

Jennifer Haid, CFA, FSA CEO, *Club Vita*, 18 years as an actuary

Something invaluable I learned through my education was an understanding of data: what makes a good data set? How do we manipulate data to appropriately evaluate business outcomes? Knowing the answers to these questions and being able to explain technical concepts to different audiences is transferrable to whatever job or product you may work on. I think it's important for actuaries to curate a toolbox of skills based on things you find interesting - that's how you set yourself apart.

Andy Smith, FSA, MAAA Co-Founder and CEO, *Slope Software, Inc*, 17 years as an actuary

My brother-in-law and I pioneered a cloud-based actuarial modeling software. He brought his programming expertise and I brought my actuarial expertise. Our multi-dimensional perspectives of what we wanted our company to be helped us create something unique in the industry. Getting input and feedback from as many sources as you can – both inside and outside of your team – is crucial for developing a holistic and wide-reaching product and organization.

Section 6: The Innovative Process

While the innovative process is unique to each person, some common themes surrounding innovating stood out during the interviews and focus groups. These themes have been analyzed, consolidated, and sorted into five steps:

- Step One: Find Stakeholder Pain Points
- Step Two: Develop your Action Plan
- Step Three: Garner Support
- Step Four: Start, Stop, Review, Repeat
- Step Five: Fail Quickly and Fail Well

6.1 BEFORE YOU START

Before beginning the innovation process, participants noted that there are several potential obstacles to consider.

“Know your company, your department or team, and your role. If you are in a traditional company or are in a role where innovation is not required or expected, attune yourself to the desires and direction of the company.”

Put differently, an idea may not advance in the process if it does not align with other existing processes or products in the company. Actuaries should not set themselves up for failure by seeking out areas for innovation that their supervisors or stakeholders may consider to be of little value. Innovators, especially in traditional companies, must align their goals with company interests if they hope to move past the starting line.

6.2 STEP 1: FIND STAKEHOLDER PAIN POINTS

Understanding stakeholder needs is fundamental for innovating. The first step toward innovating is to identify pain points in the company’s processes or products.

“If you are not looking for problems to solve, you are not being innovative.”

These pain points may be difficult steps in a small process that get overlooked or may be major issues that have yet to be resolved. In order to gather data, one should interview members of their own team and of other departments, various levels of hierarchy (if possible), and people outside of their company – ideally the clients they serve, if their role permits.

While many innovations are brand-new, original concepts, an innovative idea can also build upon existing foundations and creatively improve existing solutions. As discussed later, an idea is never perfect, so the solutions already in place are also imperfect and can often be improved upon.

6.3 STEP 2: DEVELOP YOUR ACTION PLAN

Once an actuary has identified the pain point(s) they plan to alleviate, they must determine crucial details and important questions to formulate a plan of action. The answers to these questions should not be answered by the actuary alone, but should be developed alongside other stakeholders with relevant insight and expertise. An actuary must spend intentional time and effort finding the best answers to the following questions:

- **Who will benefit from the innovation?**

Ensure that the end users need this proposed innovation, even if they do not know yet that they need it.

- **Who will help achieve the end goal?**

Utilizing coworkers' various specialized skillsets can help an innovating actuary to create the best team possible. Guaranteeing that an innovator has the appropriate people for the correct tasks on their team for the idea's implementation is crucial to succeeding.

- **What is the new/updated product or process going to be? What will it look like?**

Though this will likely change over time, having a baseline is helpful when trying to express the idea to others and garner support.

- **When will the idea be implemented?**

Innovators tend to be ambitious, but participants stressed that, while innovating, one must establish a reasonable timeline. To determine what timeline is reasonable, it is helpful to observe how other departments and even companies time different steps in their product launches or process improvements. While innovating, one must allow time and room for error, but cannot allow the idea to become stagnant or obsolete; a structured (yet flexible) timeline is best suited for this process.

- **Where will the idea be relevant?**

Often, an innovation is transferable to other departments, offices, or companies. Knowing the idea's scope of users will help target an audience for support and sell the idea in a more streamlined way. The catch: an actuary may not know how helpful their solution will be for others until they ask them. For more guidance on gathering this input, re-visit Step One.

- **Why is your solution valuable?**

Nearly all of the participants in this study emphasized the importance of salesmanship and entrepreneurialism in their innovative processes. Actuaries striving to innovate must author, practice, and perfect their elevator pitches. A successful pitch recognizes the value in the product and emphasizes the difference it will make in the department's day-to-day flow or in the company's annual revenue stream. The pitch will aid in garnering the support – financial or otherwise – needed to successfully navigate the innovation process.

Potential barriers and obstacles to progress should remain at the forefront of an innovator's mind while they develop this action plan. An actuary trying to innovate should be proactive and understand the issues that other departments and teammates may encounter. They should use this information to their advantage to plan ahead by accounting for barriers from the start.

6.4 STEP 3: GARNER SUPPORT

Experienced actuarial innovators all agree that no successful innovative idea – especially in the actuarial profession – has been developed by a single person. The questions listed in Step Two must be answered with input from knowledgeable sources to help strengthen and streamline the idea.

“No single person – no matter how skilled or intelligent – has all of the answers or ideas, even for their own innovation.”

Naturally, the team of experts included in the development of an innovation will become stakeholders in the idea; however, their support alone will rarely suffice in helping the idea progress. An idea will only succeed if it garners enough support from key influencers, so innovators must continue to generate buy-in by constantly having conversations and selling their idea.

This may seem overwhelming to some actuaries, particularly those who do not consider themselves to be socially outgoing. Interviewees said to start small: talk with the team, the department, and adjacent departments to see where their concerns lie. Other functional areas involved in the project may not have the same end goals or see things in the same way for their departments, so an innovating actuary must be adaptive. However, there is always a common denominator across all departments, teams, and employees in the actuarial profession – they all want the best possible outcome, with the least amount of risk.

Actuaries should know their audiences even better than they know their idea. The project can be adjusted, but the consumer’s needs and company’s directives are far more difficult to alter. It is easier to get people on board when they can clearly see the goals that the innovator is trying to accomplish. This study’s participants recommended that innovators put effort toward convincing their most significant stakeholders that their innovation is not only valuable, but necessary.

“Try to predict their questions and concerns and be prepared to address them fully and honestly. Advocate for yourself and your idea.”

Innovators must be flexible during this step. While generating support for an idea, one may receive further input that fundamentally changes their original concept. When possible, successful innovators modify their idea to benefit their supporters, and move forward with the improved process.

6.5 STEP 4: START, STOP, REVIEW, REPEAT

Once an innovator has garnered support for their idea, they must strategically maneuver toward launching the first version of their idea. Several actuaries discussed the value of minimum viable products (MVPs) in their innovation processes. MVPs should represent the most basic version of an idea that can reasonably be put to market and represents the concept sufficiently. With an MVP, innovators must collect feedback for improvement.

“You do not have to launch your solution in its final form – in fact, you should not. If you have a decent skeleton of your idea that functions how you generally want it to and has the key features, send it out and collect feedback.”

This phase should serve as a pilot test. An innovator can collect feedback from a smaller segment of consumers rather than the entire target consumer base, which will allow them to gather valuable information in a reasonable amount of time and resources. They must utilize any available data and feedback from the project team alongside feedback from users.

Experienced innovators purport that launching an idea – whether it be a new process, product, department, or company – is not the most crucial part of the process. Rather, everything that an innovator does after launching their idea determines the success of the design. At this point, actuaries should stop looking forward (for likely the first time since they began this process) and start looking at the present. Observing data as it comes in should be top of mind for not only the head innovator, but for the teams and company involved.

Some innovative actuaries said that they get feedback from various sources: focus groups, market surveys, and others in the industry. Every piece of information available regarding the efficacy of the idea is crucial to improving its design.

“Including someone outside of the industry in your development process can be helpful for ensuring your idea is reasonable from other perspectives. Having perspectives vastly different from your own can help you shape your plan and adjust your product as needed.”

After launching, data should be observed as it comes in. Automated user data is a common tool, as it is valuable to be able to look at user data to see their habits, where they run into issues, and what they do when they run into these issues.

When pitching the idea to lead stakeholders earlier in the innovative process, the idea was purported to add value to the team and company. This must be proven through specific datasets if the project is to receive continued support.

“One of the most difficult parts of the innovative process is getting your organization to be patient and wait for results to come in. It takes time but is necessary.”

This step should be a continuous, repeating process that is consistently evaluated for amendments and adjusted as needed. There are always ways to improve.

6.6 STEP 5: FAIL QUICKLY AND FAIL WELL

In the innovation space, risk of failure is high. A first idea may not succeed, nor the 20th idea, but innovators must expect this when they begin and remain persistent and passionate enough to continue to try again. One of the actuaries interviewed is a writer and discussed the importance of being able to “kill your darlings.”

“No matter how much you love your idea and think it could work, it may not, and if you want to thrive in the innovative space, you must be okay with letting your idea go.”

Several of the other actuaries interviewed agreed with this sentiment. Innovators can always change their plan or think of another one; it is okay to fail, just fail quickly, and recover even faster.

Actuaries are trained to be successful – to use the correct equations, find the correct answers every time, build the correct models – but innovators fail far more frequently than they succeed. An actuary must be willing to adopt an adaptive mindset to create something new and impactful.

“Have an open mind. Just because things have never been done a certain way does not mean they cannot be done that way.”

Section 7: Fostering Innovation

7.1 FOSTERING INNOVATION FOR ORGANIZATIONS

While *Section 6: The Innovative Process* detailed the steps that experienced actuaries took as individuals looking to innovate, there are also steps that traditional organizations can take to encourage their actuaries to be more creative. This study's participants – most of whom lead either their own teams or their own organizations – provided insight into how companies and organizations can foster innovation amongst their employees.

- **Create a culture of innovation**

Most of the actuaries in this study agreed that innovation is not a destination, but a process or culture that must be present throughout the organization. While there may be several opportunities for actuaries to innovate in a traditional company, these opportunities are not currently being pursued because companies are not explicitly telling their employees what is available to them. By being transparent with their employees about their options for pursuing innovative projects, companies can remove an important bottleneck to innovation and foster an innovative culture in their workplace.

- **Support innovation**

An innovative environment starts from the top. If an organization wants its actuaries to be innovative, the actuaries must see that the organization is a safe place in which they can be creative and present new concepts. Respondents shared that oftentimes there is a “committee of good ideas,” wherein a handful of the company's supervisors are the only ones who can approve or deny new ideas. While this is sometimes necessary from a regulatory and/or financial paradigm, this may greatly discourage employees from attempting to bring their ideas forward. To combat this, innovative professionals advise companies to encourage their supervisors and managers to cultivate innovative safe spaces within their individual teams.

- **Integrate innovation**

Actuaries are trained to follow rules and guidelines. Because innovation requires one to consider possibilities outside of existing rules and guidelines, it can be difficult for actuaries to be willing to think creatively in this way. An interviewee who founded their own company uses this actuarial tendency to their advantage: they made it a rule in their organization that employees must bring up ideas and pain points as they see them. They even set aside time each week or month for collaborative meetings wherein employees were able to discuss their innovative ideas.

- **Incentivize innovation**

When possible, using incentives can help encourage actuaries to brainstorm and share ideas for innovations more regularly and enthusiastically. Gratification and praise on a performance review can go a long way, as can public praise and support. Financial incentives can be effective as well and may include bonuses for innovative processes or a share of the new product sales revenue.

7.2 FOSTERING INNOVATION FOR ACTUARIES

7.2.1 INNOVATOR CHARACTERISTICS

All of the actuaries interviewed for this report have worked in traditional actuarial roles at some point of their careers. According to them, innovation is not a skill, but a mindset that requires certain skills. These are some of the most crucial qualities and skills that encapsulate the entrepreneurial spirit. Actuaries should strive to have many of these traits in order to be successful in the innovative space. The characteristics below are listed in order from most to least mentioned by actuaries in this study.

- ❖ **Curiosity:** Explore new information and ways of doing things
- ❖ **Sociability:** Be a people-person, *or fake it*
- ❖ **Stubbornness:** Question and challenge traditions
- ❖ **Creativity:** Actively desire to make something new
- ❖ **Understanding:** Empathize with customer experiences and pain points
- ❖ **Networking skills:** Search for collaboration AND mentorship
- ❖ **Comfort with failing:** Know it will happen, but do it quickly and do it well
- ❖ **Passion for learning:** Learn about topics and areas outside of your field
- ❖ **Adaptivity and courage:** Handle change and uncertainty well
- ❖ **Confidence:** Take risks and be comfortable being uncomfortable
- ❖ **Visualization:** Be able to see the bigger picture, not just the details
- ❖ **Subject area expertise:** Continue to learn about your own current industry's trends and needs
- ❖ **Communicative skills:** Become skillful at translating between different professional languages (e.g., technical vs. non-technical)
- ❖ **Perseverance:** Keep trying, even if you do not succeed for a while
- ❖ **Flexibility:** Be open and willing to change
- ❖ **Humility:** Empower those you work with

7.2.2 ADVICE FROM INNOVATORS

The sixth section of this report, *The Innovative Process*, provided guidance for actuaries who are looking to innovate but do not know where to start. At the end of each interview, we asked participants what advice they would give to an actuary in a traditional role or company that is looking to innovate. Here is what they said:

- **Differentiate yourself by learning more**

Build extra skillsets and expose yourself to new things constantly. Learn more about product management, modern technologies, and/or topics outside of the actuarial profession that may integrate well with your ideas. Utilize applications for ongoing learning and education and listen to speakers/read books for motivation and inspiration. Participants suggested *The Lean Startup* by Eric Ries and *Start with Why* by Simon Sinek.

“Do not assume all the answers are in your actuarial books or your company’s existing body of knowledge.”

- **Give yourself time to have a process**

Be open-minded in a controlled way. Carve out time where you are not distracted by your phone, television, coworkers, or life, and think about a specific topic. Be selfish during this time – demand it of yourself – so that you may be helpful later on.

- **Find and resolve pain points**

Talk to enough people within the organization to understand what problems are important to them. Their problems may not be what you think they are or what you think they should be. While doing this, be sure to ask about their ideas for fixing the problems – there may be ideas you had not considered.

“There will always be more than one solution. If you can only think of one solution, start asking around for other ideas.”

- **Appeal to hierarchy**

Larger companies may take more time to evolve, so approach innovation in these organizations with a patient mindset. To help quicken the process, attune yourself to company priorities so key decision-makers may more easily recognize the value in your ideas.

- **Network and collaborate**

Develop networking skills. There is a wealth of knowledge that you can harness through the power of networking. You may do this by seeking out Employee Resource Groups that have innovative project opportunities, or by joining interest groups inside or outside of the company, depending on your organization’s guidelines for external projects. Ask to shadow someone in your company on the sales team, the I.T. team, every relevant team so you can learn what each team will need.

- **Explore external opportunities**

Learn what other companies are doing and how they solve problems, but also how other fields are solving their problems. Other industries may have processes that, if modified, could serve as a suitable solution to your identified pain points.

- **Have a drive for innovating**

Enter creative and competitive contests of any kind (i.e., cooking, Lego-building, slogans for companies, etc.) to practice regularly utilizing your innovative skills.

“Take on as much responsibility as you need to until someone comes by and says you should not. In other words, assume more authority than you have unless someone says otherwise.”



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Section 8: Authors



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Section 9: Acknowledgements

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Appendix: Primary Interview Questions

- Please describe your educational/career background.
- What are some innovative projects you have worked on or are currently working on?
- What, if any, are the major differences between your previous traditional actuarial positions or traditional companies, and the role you have now/company you work with now?
- What qualities/characteristics do you have/do you think would be beneficial for innovation?
- Did/has anything in your educational background helped in your innovating?
- Did/has anything in your SOA/exam training helped in your innovating?
- Is there a process for innovation at your current organization/in your current role?
- What are some of the biggest/most common obstacles to innovation?
- Do you have any advice for actuaries currently in traditional roles that want to be more innovative?
- What advice do you have/how do you foster innovation within an organization/your team?
- How do you identify pain points/problems that need to be solved? How do you collect information about customer needs/consumer opinions/etc.? From an outside source? Inside?
- Do you offer any incentives for innovative ideas?



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