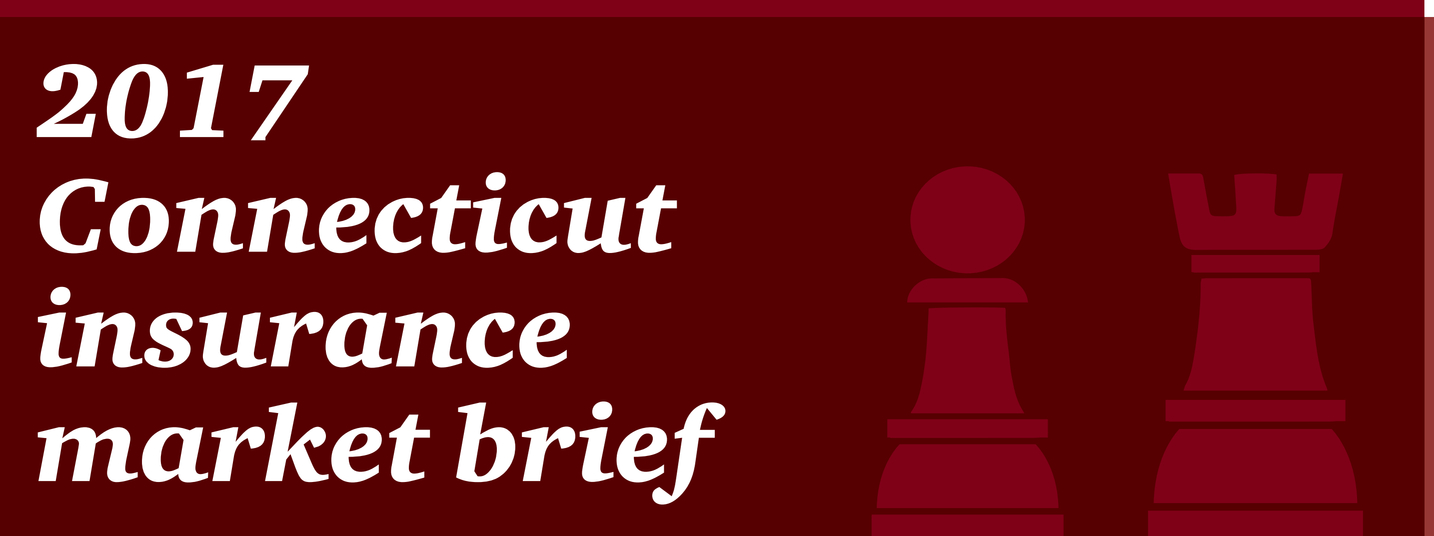
The sixth in a series on the Connecticut insurance market

November 2017



Ready, set, innovate

The insurance industry is embracing innovation to make game-changing advances.

About PwC

Connecticut is a vibrant and growing business community. With approximately 1,000 partners and staff in our Hartford and Stamford offices, PwC is committed to serving this state and its many thriving industries, including insurance.

As a leading provider of assurance, tax and advisory services to insurance companies, we have extensive experience helping this rapidly-changing industry innovate for growth and profitability. We help insurance companies innovate from ideation through execution, and help InsurTech companies accelerate adoption and scale their businesses to reach their full potential.

Globally, our network has more than 236,000 people in 158 countries. Our specialists have a proven record of helping insurers, in Connecticut and around the world, to look beyond the traditional boundaries of the insurance business, embrace new ways of working and interacting with customers, and develop new possibilities for what their business can deliver.

Learn more at www.pwc.com.

About Connecticut Insurance & Financial Services (CT IFS)

Connecticut Insurance and Financial Services (CT IFS), formed in 2003, is a statewide initiative of the MetroHartford Alliance comprised of 32 member companies in Connecticut's insurance and financial services sector. CT IFS' Board of Directors engages around a shared vision: to create competitive advantages in business attraction and retention, to sustain recruitment and education of a trained workforce and to increase public awareness of the industry's critical economic importance.

Learn more at www.connecticutIFS.com.

A message from PwC

This *2017 Connecticut insurance market brief* (Brief) is the latest in a series of reports on the insurance industry in Connecticut and its connection to the global insurance ecosystem. Additionally, this Brief is a companion document to the Insurance Market Summit (Summit) event held on November 15, 2017.

As we planned this year's Brief and Summit, we wanted to build upon our previous themes of innovation, the rapid pace of change, and disruption by emphasizing the game-changing impact these forces are having on the insurance industry now and in the near future.

Therefore, as you read this year's Brief, please pay close attention not only to what is happening in the world and our industry, and how fast it is happening, but the impact it is having on society, our customers and workforce.

It has been a pleasure working with Connecticut Insurance and Financial Services on the Brief and Summit and our sincere thanks goes to all who have participated. Through continued teamwork and investment in the industry, we can all play a part in helping Connecticut embrace innovation to make game-changing advances.

Paul V. Veronneau
Principal and Hartford Advisory Leader
PwC

A message from CT IFS

The game is on for the insurance industry – AI, autonomous vehicles, IoT, blockchain, cybersecurity and InsurTech. These elements demand agility, creativity and innovation. The insurance revolution is happening in Hartford. World-class companies and determined employees are driving change for all of us to live safer, healthier and longer lives. It's a partnership that's hard to duplicate anywhere in the world.

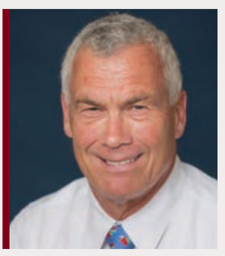
We are proud to explore this revolution with PwC, who provides an in-depth report on the insurance industry's continued transformation in this year's *Connecticut insurance market brief*.

We invite you to learn about today's leading trends, data and executive perspectives and gain an unparalleled view of the insurance industry in Connecticut and beyond.

The game-changing has begun. On behalf of CT IFS leadership, PwC and Connecticut's insurance industry, we hope you'll join us.

Susan Winkler
Executive Director
CT IFS

Michael Klein
Chair, CT IFS and EVP, President, Personal Insurance and Head of Enterprise Business Intelligence & Analytics
Travelers



Oz Griebel
President and Chief Executive Officer
MetroHartford Alliance

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Game changers
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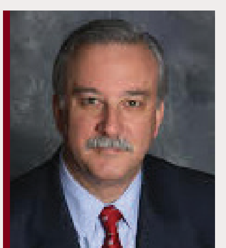
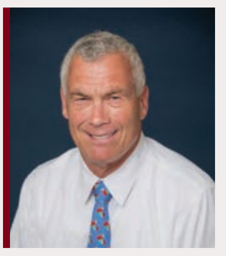


"Connecticut has a talent pool and infrastructure that is second to none. As Vantis Life has expanded, we have had the choice of locating new operations anywhere in the country. We chose to keep new operations right here in Connecticut where the cost of space is very reasonable and the availability of talented professionals is abundant. Connecticut is a strong micro-environment of insurance thought leadership located between two of the greatest centers of influence in the US – Boston and New York."

Peter L. Tedone
Incoming Chair, CT IFS
Chairman, President and Chief Executive Officer
Vantis Life Insurance Company



"The insurance industry is evolving at an extraordinary pace and Connecticut's insurers are the dominant leaders in developing the products and services demanded by individuals, businesses, and service organizations. Connecticut's highly-respected global brand and highly-skilled and creative employees combine to provide the preeminent experience, knowledge, and trust that make the state the 'insurance capital of the world'."

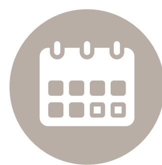
Oz Griebel
President and Chief
Executive Officer
MetroHartford Alliance

"With unmatched insurance talent, strong relationships between industry and government, vital new partnerships promoting InsurTech innovation, and a powerful concentration of world-class insurance companies, Connecticut is an insurance powerhouse. Combine those strengths with the beauty of our state, great quality of life, cultural richness, and affordability relative to other metro areas, and you have a combination that few, if any, places can match."

Luke Bronin
Mayor
City of Hartford

The year in review

The insurance industry has been making history in Connecticut for more than 200 years. The timeline below highlights newsworthy happenings in the past year that are contributing to our state's deep roots in insurance. Please refer to previous editions of the Connecticut insurance market publications for key events prior to November 2016.



Timeline of events*

November 2016

- Hartford Steam Boiler acquired Meshify, a startup company with technology that connects disconnected devices through the Internet of Things (IoT).
- Voya launched its Behavioral Finance Institute for Innovation which focuses on gaining deeper insights into the decisions of Americans regarding their financial and retirement planning activities.
- Hartford Steam Boiler announced a new IoT and sensor technology based service that acts as an early warning system to help businesses and insurers prevent or reduce loss.

December 2016

- Vantis Life was acquired by The Penn Mutual Life Insurance Company. The Vantis Life headquarters, its brand and its commitment to meeting the needs of middle income households will continue to grow at its Windsor, CT headquarters.
- Stacey Brown launched InsurTech Hartford, a platform to help promote startup businesses in the InsurTech community.[1]
- XL Catlin was awarded Highest in Customer Satisfaction by JD Power's inaugural Commercial Insurance Survey.

January 2017

- Katharine L. Wade, Connecticut Insurance Commissioner, named as Chair of The National Association of Insurance Commissioners' International Insurance Relations (G) Committee.[2]
- The Hartford entered into a $1.5 billion reinsurance agreement with Berkshire Hathaway covering certain of The Hartford's asbestos and environmental liability exposures.
- Nassau Re formed Nassau Asset Management from Phoenix's investment management operations as a standalone entity with two specialized asset management subsidiaries.
- MiddleOak merged with COUNTRY Financial, the largest farm bureau insurer in the US.
- XL Catlin launched a realigned property and casualty operating model to further the Company's superior client service and increase interactions with its partners.
- CT IFS hosted its 6th annual Get Hired career fair for college students with 27 insurance and financial services employers and two young professionals' organizations participating. Nearly 500 talented current students and recent graduates attended in pursuit of internships and full-time roles.

March 2017

- Northwestern Mutual celebrated its 160th anniversary.
- MassMutual signed an agreement with Human Longevity, Inc. (HLI) to offer HLI's whole genome sequencing product to eligible MassMutual customers, employees and financial professionals at a reduced price.
- The Insurance Law Center at the University of Connecticut School of Law and CT IFS hosted the first in a series of planned forums showcasing innovation in insurance.

Provided by companies/organizations listed, except where noted.

April 2017

- On April 1st, InsurTech Hartford hosted the first InsurTech hackathon in Hartford to help InsurTech startups and entrepreneurs refine their business plans and identify steps to take their ideas to the next level.[3]
- Cigna announced it has reduced its customers' use of opioids by 12%, halfway to goal of 25% by 2019.
- InsurTech Hartford presented *Digital Revolution – Are you prepared?*, an event attended by insurance entrepreneurs on April 19th. The program focused on the disruptive effects of the digital revolution, and what it means from a carrier's perspective.[4]

May 2017

- Upward Hartford, a space for startups and entrepreneurs designed to fuel technological innovation, creativity and growth, opened its new 27,500-square-foot, state-of-the-art, coworking facility in the Stilts Building in Hartford on May 1st.[5]
- MassMutual celebrated its 166th anniversary and refreshed its brand, celebrating the concept of interdependence and the power of mutuality.

July 2017

- Connecticut House Bill 7183 became effective July 1st, and changed the minimum capital requirements for sponsored captives and added a dormancy status, which enables sponsored or industrial insured captives to apply for a certificate of dormancy if they have ceased transacting insurance business.[9]
- Twenty-six high school students and college freshman participated in CT IFS' 9th annual Actuarial Boot Camp, hosted in two sessions by MassMutual. The week-long program provided math-passionate students with actuary-led math instruction, career guidance, soft skills exploration and interaction with local practicing actuaries.
- Harvard Pilgrim celebrated its third anniversary of offering health insurance in the Connecticut market.
- Cigna became the only national health plan to earn "Certified" status for both physician and hospital quality from National Committee for Quality Assurance.

Connecticut is a captive place

Connecticut welcomed two new captive insurers in 2017:

1. Keystone Indemnity Co.

2. Spectrum Communications Indemnity Inc.

Source: Connecticut Insurance Department.

June 2017

- The communities of Hartford and East Hartford, led by the Hartford/East Hartford Innovation Places Planning Team, were selected as Innovation Places, by CTNext, a subsidiary of Connecticut Innovations. The Hartford/East Hartford initiative will receive up to $2 million in implementation grant funds in fiscal year 2018 to begin implementing the team's vision to serve as business accelerators and incubators to help recruit next generation insurance companies, support new digital health technologies and recruit talent for aerospace/advanced manufacturers.[6]
- The Hartford entered into an agreement with Hartford-based Prudential Retirement to transfer pension benefits for 16,000 former employees of The Hartford.
- Connecticut lawmakers passed a bill that creates a pilot program allowing manufacturers and fleet service providers to test fully autonomous vehicles in Connecticut. The testing is intended to help the state determine how best to prepare for anticipated growth in driverless cars.[7]
- Symetra celebrated 60 years of being in the life insurance business.
- During the opening ceremony of the Travelers Championship, the Memorial Garden at TPC Highlands was dedicated in memory of Jay S. Fishman, the former Chairman and Chief Executive Officer of Travelers.
- More than 100 insurers, brokers, investors, entrepreneurs, accelerators, educators, students, interns, and service providers from 12 states and more than 40 companies attended InsurTech Hartford's *Build it or Break it* event held on June 29th. The program featured two panel discussions on InsurTech from both a carrier and an InsurTech company perspective.[8]

What makes Connecticut a great place to invest, work and/or do business for the insurance industry?

"We felt it was time to honor our commitment to Connecticut seniors by bringing our captive insurance company back home. Once we saw the creative energy of the captive movement in Connecticut, we at Masonicare decided that we needed to be a part of it."

Jon-Paul Venoit
President and Chief Executive Officer
Masonicare

August 2017

- Keystone Indemnity Company, Ltd., owned by Masonicare, was licensed by the Connecticut Insurance Department as the state's first healthcare liability captive insurance company.[10]
- Travelers acquired UK-based Simply Business, a technology company catering to microbusinesses, offering products online from a panel of carriers.
- The Connecticut Insurance Department recovered $4 million for Connecticut consumers and taxpayers in the first half of 2017.[11]
- InsurTech Harford hosted a networking event on August 31st. A group of investors shared their perspectives on why they see opportunity in InsurTech and several early-stage InsurTech startups pitched their ideas to the investors and received feedback.[12]

September 2017

- A total of 82 entrepreneurs competed in Hackathon Weekend, hosted by InsurTech Hartford and Upward Hartford. This 48-hour event, held on September 8-10th, encouraged entrepreneurs to present their business idea on Friday night and leave on Sunday evening with a solid startup company and a new network of contacts. The winning team was awarded a $5,000 cash prize.[13]
- Several Connecticut health insurers participated in Connecticut Health Council's D.C. Forum on September 13-14th in Washington D.C. The two-day program kicked off with remarks from US Senator Chris Murphy and featured four panels centered around innovation in the health sector, industry pioneers from Nashville, Federal perspectives on healthcare policy, and local perspectives on Connecticut's next steps.
- CTNext and three Connecticut insurers – Cigna, The Hartford and Travelers – have joined together with Startupbootcamp to launch an accelerator for insurance technology in Hartford.[14]

October 2017

- Bouvier Insurance's mergers and acquisitions in the past year have resulted in the need to increase CT staffing by 15%.
- Ten early-stage companies pitched their plans at Connecticut Innovation's one-day VentureClash held on October 20th at Yale University which provided them with access to digital health, Fintech, InsurTech and the Internet of Things experts, investors, customers and educators who are engaged in this clash of innovators.
- Charter Communications announced it is moving its captive insurance company, Spectrum Communications Indemnity Inc., to Connecticut.[15]
- Lincoln Financial Group celebrated the 50th anniversary of introducing its first variable annuity into the marketplace.
- The 2017 Collaborative on Captive Insurance: Creating the New Captive Revolution was held on October 25-26th at the Sheraton Stamford Hotel.[16]

November 2017

- Amica announced it is opening a new property and casualty company to further expand its reach in the Connecticut market.
- Voya launched "Voya Cares," which is designed to help people with special needs, and caregivers, plan for the future they envision.
- CT IFS presented its sixth annual Insurance Market Summit in Hartford on November 15th and collaborated with PwC to publish the *2017 Connecticut insurance market brief.*

Connecticut by the numbers

Connecticut is home to 169 cities and towns, ranging from cosmopolitan urban centers to quaint small towns according to the *2017 Connecticut Economic Review.*[17] Nestled between New York and Massachusetts in the Northeast corner of the US, approximately 3,576,452 people reside in the state.[18] Connecticut's median income of $70,331 is well-above the national median of $53,889 and fourth highest in the nation.[19] The state's seasonally adjusted labor force was approximately 1,923,200[20] and the seasonally adjusted unemployment rate was 4.8%[21] as of the end of August 2017.

Insurance in Connecticut

Connecticut's insurance industry is one of the largest in the world. It ranks third in the US in direct written premiums[22] and is an important part of Connecticut's economy. There are 1,449 domestic and nondomestic insurance companies licensed to do business in the state, including accredited reinsurers, US and foreign excess and surplus lines carriers, fraternal benefit societies and title companies.[23] Moreover, these insurers write approximately $33 billion in premiums annually[24] and contribute $13.7 billion to Connecticut's Gross State Product (GSP).[25]

What makes Connecticut a great place to invest, work and/or do business for the insurance industry?

"Having spent most of my professional career in the insurance industry, I have seen firsthand why Connecticut is the insurance capital of the world. Our highly-educated workforce, strategic location between Boston and New York, and large concentration of insurance and financial services companies and talent have all contributed to making Connecticut an industry leader. But it is the industry's commitment to innovation, in all its forms, that really sets Connecticut apart. The insurance companies here embrace the disruptive force of technology, often turning to the growing startup community for innovative ideas and business models. We have seen this come full circle with the creation of InsurTech Hartford, an accelerator specifically designed to help grow and promote insurtech companies in the region. It is this kind of forward-thinking and collaborative approach that gives me confidence about the sector's strength over the long term."

Catherine Smith
Commissioner
Connecticut Department of Economic and Community Development

Connecticut by the numbers

169
Cities and towns

3,576,452
Population

$70,331
Median household income

1,923,200
Labor force

4.8%
Unemployment

Source: US Census Bureau, Connecticut Department of Labor and Connecticut Economic Resource Center.

Employment and wages

At 2.6%, Connecticut ranks first nationally in insurance carrier employment as a percentage of total employment[26] and provides annual average wages of more than $85,466[27] for approximately 58,705 insurance carrier and related full-time employees.[28] And, according to Connecticut Economic Resource Center (CERC), one new job in the insurance industry adds 1.92 jobs to the Connecticut economy through induced and indirect effects.[29]

At 5.1%, the state also leads the nation in insurance payroll as a percentage of total payroll.[30] This can be attributed to the industry's workforce of relatively high-paying occupations such as management, legal, computer and math, and business and financial operations.[31] With 850 actuaries employed in the state and earning an annual mean wage of $118,510, Connecticut has the highest concentration of actuaries in the US.[32]

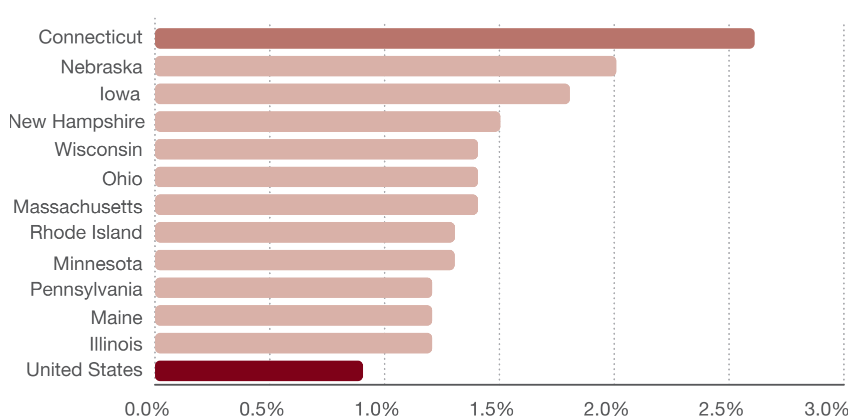
Top 5

departments/positions in the insurance and financial services industry to be in greatest demand in next 2-5 years:

1. Actuarial
2. Business analyst/ data analyst
3. Cyber security
4. Information technology
5. Underwriting

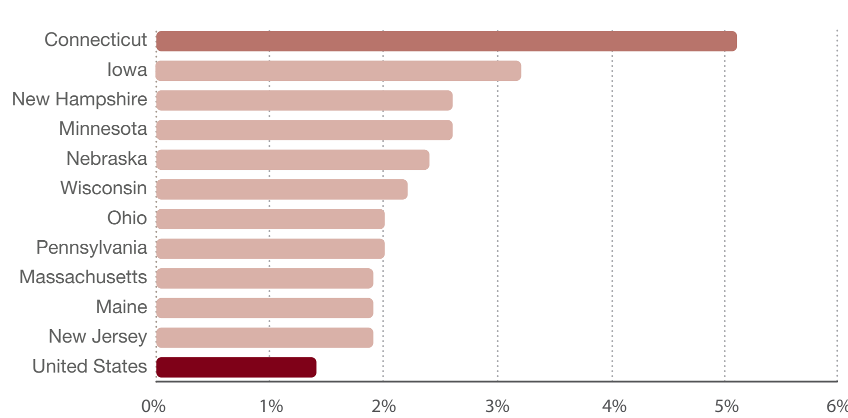
Source: CT IFS 2nd Annual IFS Human Resource Survey, April 2017.

Insurance carrier employment as a percent of total employment by state 2016
US overall and top states



Source: CERC calculation of Moody's Analytics data, August 2017.

Insurance carrier payroll as a percent of total payroll by state 2016
US overall and top states



Source: CERC calculation of Moody's Analytics data, August 2017.

Connecticut has the ***highest concentration of actuaries*** in the US.

Source: Bureau of Labor Statistics.

2017 representative sample of insurance company employees in Connecticut	
Company	Number of employees
Aetna Inc.	6,000
AIX Group, a member of The Hanover Insurance Group, Inc.	200
Amica	164
Bouvier Insurance	115
Cigna Corp.	4,400
ConnectiCare	725
The Hartford Financial Services Group, Inc.	6,800
Hartford Steam Boiler	490
Harvard Pilgrim Health Care	27
Lincoln Financial Group	675
Massachusetts Mutual Life Insurance Company	2,000
MiddleOak	60
Nassau Re	300
Northwestern Mutual	280
Prudential Financial, Inc.	1,653
Symetra	168
The Travelers Companies, Inc.	7,400
UnitedHealthcare	5,500
Vantis Life Insurance Company	90
Voya Financial, Inc.	1,800
XL Catlin	850

Source: Provided by companies listed.

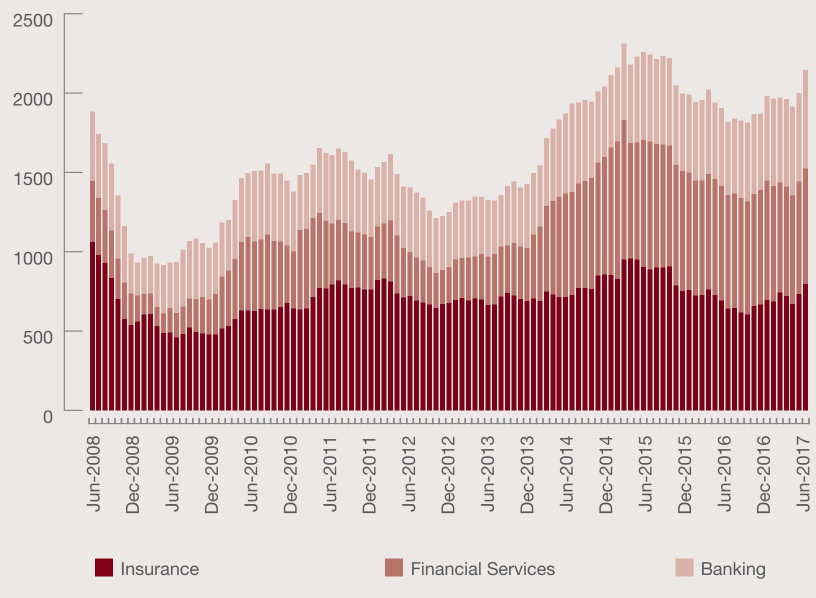
Connecticut occupational employment and average wage in the industry

Occupational category	Q1 2017 employment	Q1 2017 average wage
Management	7,300	$163,676
Legal	790	$135,825
Computer and mathematical	7,730	$98,459
Business and financial operations	14,520	$81,848
Sales and related	6,920	$77,910
Healthcare practitioners and technical	1,400	$74,935
Office and administrative support	17,330	$51,810

Source: Point in time estimates of occupational employment and wages for NAIC 524 Connecticut Department of Labor.

Connecticut insurance and financial services job openings by sector

There is steady momentum in Connecticut's insurance and financial services (IFS) industry as employers posted more job openings in the second quarter of 2017. The data represents internet job postings from 49 insurance, banking and financial services companies in Connecticut, which represents approximately 57% of the IFS industry employers, as reported by Connecticut Insurance & Financial Services (CT IFS), in partnership with SkillPROOF, Inc. Most in demand included banking, business analysts and information technology-based occupations, representing a solid portion of the 1,300 job postings within 10 areas of insurance and financial services specialty.



Source: Connecticut Department of Labor assessment of Q4/2016 numbers from Quarterly Census of Employment and Wages, August 2017.

Academic partnerships

CT IFS and its executive board members have long-standing, valued relationships with the local academic community. Many insurance executives participate on academic advisory boards and provide continued guidance regarding skill requirements for the next generation worker. Academic partnerships with the insurance industry create a business-ready pipeline of future talent.

Martin S. Roth, Ph.D.
Dean - Barney School of Business
University of Hartford

"Through close partnerships with risk and insurance companies, students are getting exposure to all of the industry's exciting career opportunities. Guest speakers, corporate visits, professional development workshops, internships, and project work are just some of the ways Barney School students make impactful connections with industry professionals. Firm-supported initiatives enable our students to pursue professional designations, and engage in our Risk and Disruptive Technology Institute and R.C. Knox Center activities, positioning them to be the next generation of risk and insurance industry leaders."

Michelle Kalis, Ph.D.
Provost
University of Saint Joseph

"Students at the University of Saint Joseph benefit from access to Connecticut's strong insurance and financial services industry and its breadth of opportunities for rising talent, especially as changes in global markets demand new skill sets. At the University of Saint Joseph, over 95% of our undergraduate students participate in some form of experiential learning prior to graduation. This real-world exposure, a collaboration between academia and the business sector, allows students to gain invaluable practical experience and carves inroads to rewarding, challenging careers in a dynamic industry."

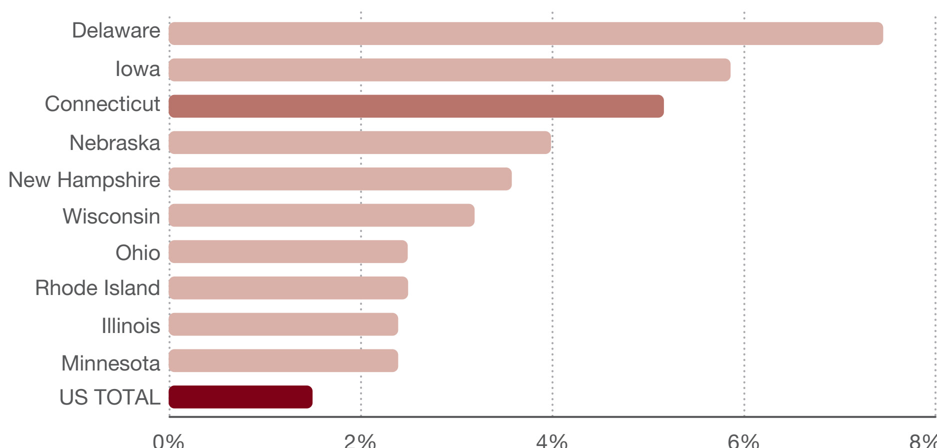
John Elliott
Dean - School of Business
University of Connecticut

"As part of Connecticut's flagship public university, the UConn School of Business has a rich history of collaborating closely with business and industry. In 2010, for example, we launched a cutting-edge MS degree in Financial Risk Management with extensive input and support from numerous risk management practitioners, the Global Association of Risk Professionals (GARP), and others. Engaging and partnering with the business community ensures that the educational programs we provide not only effectively prepare Connecticut's future workforce, but adaptively meet the needs of a rapidly-changing insurance/business environment."

Gross state product

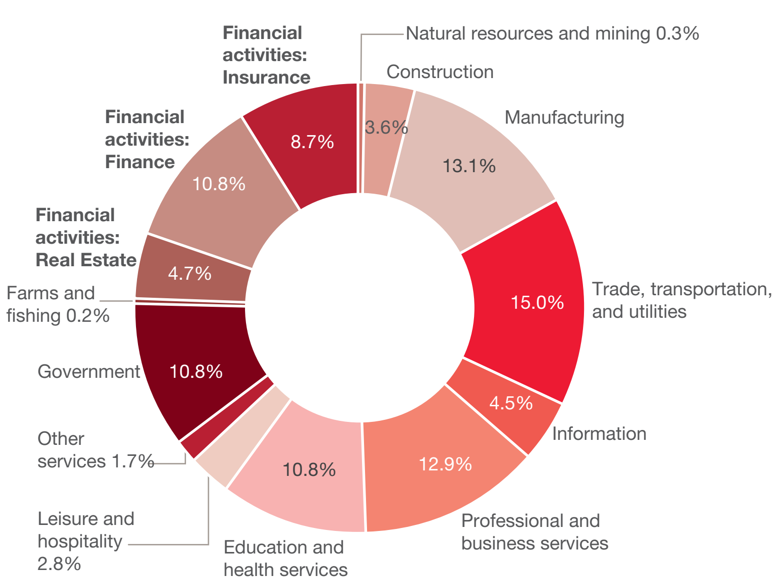
The insurance industry ranks third nationally in gross state product as a percentage of total gross state product and contributes 5.2% or $13.7 billion[33] to Connecticut's GSP. Connecticut defines "super sectors" for reporting purposes and the Financial Activities super sector includes insurance, financial services and real estate. The Financial Activities super sector is the state's largest by far, accounting for nearly 24.2% of Connecticut's GSP.[34] Moreover, the insurance and financial services (excluding real estate) activities combined comprise 19.5% of Connecticut's GSP,[35] demonstrating the importance of these sectors to Connecticut.

Insurance carrier gross state product as a percent of total gross state product by state 2016 US overall and top states



Source: CERC calculation of Moody's Analytics data, August 2017.

2016 Connecticut gross state product by super-sector



Source: CERC calculation of Economic Modeling Specialists International data, August 2017.

Connecticut's insurance industry

1,449
Domestic and non-domestic insurance carriers in CT*

58,705
Insurance carrier and related full-time employees

$85,466
Insurance average annual wage

$33 billion
In direct written premiums

$13.7 billion
Amount insurance contributes to CT's GSP

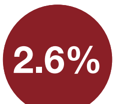
Connecticut ranks **#3** in the US in direct written premiums

1 new job=1.92 jobs
1 new job in the insurance industry adds 1.92 jobs to the Connecticut economy through induced and indirect effects

In the US – insurance employment as a percent of total employment

In the US – insurance payroll as a percent of total payroll

In the US – insurance GSP as a percent of total GSP



Insurance employment as a percent of CT employment

Insurance payroll as a percent of CT payroll

Insurance GSP as a percent of CT GSP

Connecticut's insurance industry sectors

Health

40 Domestic and nondomestic health insurers in CT

$7.7 billion
In direct written health premiums

Connecticut ranks **#1** in the US in direct written health premiums

Life

340 Domestic and nondomestic life insurers in CT

$17 billion
In direct written life premiums

Connecticut ranks **#4** in the US in direct written life premiums

Property and Casualty

Domestic and nondomestic P&C insurers in CT

$8 billion
In direct written P&C premiums

Connecticut ranks **#5** in the US in direct written P&C premiums

Source: Connecticut Economic Resource Center, Connecticut Department of Labor, Connecticut Insurance Department 2016 data and Connecticut Insurance Department analysis of National Association of Insurance Commissioners data.

**Includes accredited reinsurers, US and foreign excess and surplus lines carriers, fraternal benefit societies and title companies.*

Perspectives from Connecticut's insurance industry executives

Health

Mark Santos
President, New England Market
Aetna

"Aetna has embarked on a transformative strategy to move from being a health insurance company to a healthcare company. At the center of this effort is the goal to help each individual member achieve their best health – mind, body and spirit. To achieve this individual empowerment, we enable each individual to engage in their health journey through progressive technology, including a partnership with Apple and the Apple Watch, and to focus our support locally, at home, in their community and with their providers. Each individual has their own unique health ambitions, and Aetna will continue to provide the technology and innovative products to help achieve more healthy days throughout their lives."

Life/Retirement/ Reinsurance

Phillip J. Gass
Chief Executive Officer
Nassau Re

"We launched Nassau Re in New York in 2015 and decided to move our headquarters to Hartford when we acquired Phoenix the following year. The concentration of talent, expertise and innovation in Connecticut's insurance industry offers a tremendous foundation for our future growth."

Property and Casualty

Robert DiMuccio
Chairman, President & Chief Executive Officer
Amica

"Technology is allowing us to interact with our customers in ways that were unimaginable even five years ago. Insurers who find ways to leverage smart technologies to prevent, mitigate and resolve losses will maintain long-term and mutually-beneficial customer relationships."

Agency

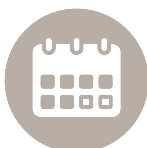
Rob Bouvier
President
Bouvier Insurance

"Bouvier Insurance has had a long-standing relationship with some of the top insurance carriers in the country, including Travelers and The Hartford, and doing business in Connecticut gives us the opportunity to work closely with our carrier partners to grow our business. Connecticut has a highly-skilled insurance workforce that has enabled us to expand and keep up with the rapid pace of change to better serve our clients."

Captive

Michael Maglaras
Chairman
Connecticut Captive Insurance Association

"The great thing about the captive movement in Connecticut is that we started from Day One with the idea that we had to distinguish our state in visible and meaningful ways if we were going to succeed as a captive domicile. I'm happy to report that we've done that...you know you've succeeded as a captive domicile when a successful captive, licensed somewhere else, chooses to fold its tent and set up shop in Connecticut."



Connecticut is an innovative place

The spirit of innovation has long been a part of Connecticut's history and culture and it is a spirit that continues to be strong today. Take a look at some of the inventions, patents and "firsts"– from the Constitution to helicopters to frisbees and wiffle balls to ESPN – that have "innovative" roots in Connecticut in the timeline below.[36 37]

1639

Connecticut adopted the Fundamental Orders, making it the first written constitution in Connecticut and the world.

1794

Eli Whitney patented the cotton gin to separate cotton from its seeds.

The first formal printed insurance policy in Connecticut was issued by The Hartford Fire Insurance Co.

1828

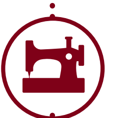
The first American Dictionary was published by Noah Webster.

1836

Samuel Colt invented the first gun with a revolving cylinder that enabled the gun to be fired multiple times without reloading.

1844

Horace Wells was the first to use nitrous oxide (laughing gas) as an anesthetic in dentistry.



1846

Elias Howe patented the sewing machine.

1892

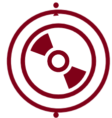
The first portable typewriter was patented by George C. Blickensderfer.

1920

Yale students invented a new game – Frisbee - using empty pie plates from Mrs. Frisbie's pies.

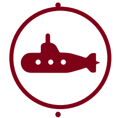
1939

Designed and piloted by Igor Sikorsky, the helicopter makes its first flight.



1948

Peter Clark Goldmark revolutionized the record industry with his invention of the long playing record (L.P. Records).



1954

The first nuclear-powered submarine, the USS Nautilus, was built and launched in Groton.

1956

David Mullany created the "wiffle ball". It was named for the "whiff" sound it made.

1979

Bill Rasmussen founded ESPN, a 24-hour cable sports television station.

1982

Dr. Robert Jarvik invented the world's first artificial heart.

Centers of innovation in Connecticut

InsurTech momentum is building around the globe, and in Connecticut, it's reshaping the insurance industry by driving innovation and growth. InsurTech is emerging as a component of broader innovation agendas, allowing for improved relevance of offerings, an enhanced customer experience and new distribution channels with a different cost structure. InsurTech is becoming less about the "if" and more about the "how."

Over the past year InsurTech has developed rapidly and we are seeing growing maturity from the new entrants in this space as well as interest from established insurers. On the following pages, we highlight a few recent examples of InsurTech and other initiatives and resources that are available for startups and entrepreneurs in the state.

Innovation in insurance has come a long way over the past year.

Source: PwC's FinTech Survey 2017.

Hartford InsurTech Hub

CTNext and three Connecticut insurers – Cigna, The Hartford and Travelers – have joined together with Startupbootcamp, to launch an InsurTech accelerator for insurance technology in Hartford.[38] The InsurTech Accelerator is part of Hartford InsurTech Hub and was established to:

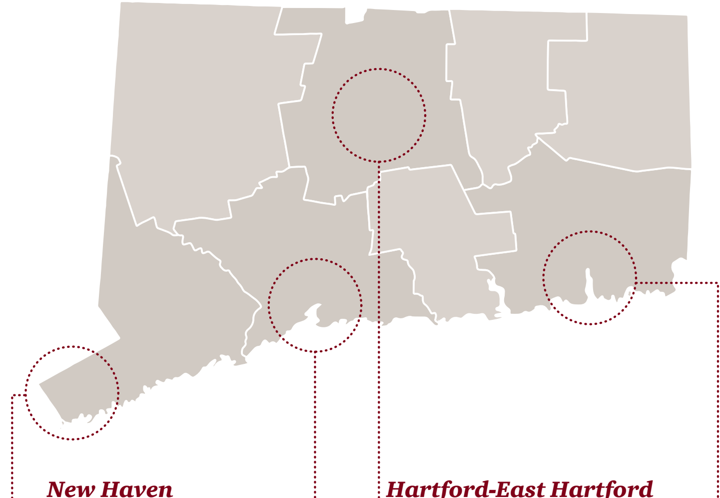
- Attract new talent and technology to Hartford.
- Provide entrepreneurs with the support, resources and connections they need to help grow their business.
- Build a culture of innovation in Hartford.

Each year, 10 to 12 startups will be accepted into a three-month accelerator program in Hartford, receive a $25,000 grant, coworking space for each startup team, and access to Startupbootcamp's global network of mentors and investors. To be eligible, entrepreneurs must have a working prototype and have secured startup funding from other sources ranging from $150,000 to $500,000.[39]

Innovation Places

In June 2017, CTNext, an organization in Connecticut that provides entrepreneurial support, named four Connecticut communities winners of their Innovation Places program: Hartford-East Hartford, New Haven, New London-Groton and Stamford. Over the next five years, the program will distribute $30 million to these winning cities and communities to help stimulate their local innovation ecosystem, including attracting talented people and increasing knowledge-sharing that leads to innovation.[40] On the following page, we highlight some of the organizations who have contributed to the development of Hartford's InsurTech Hub, part of Hartford-East Hartford's Innovation Place strategy.

Designated Innovation Places 2017



Stamford

- Accelerate innovation by providing young companies with access to mentoring by NatWest Markets Incubator employees and technical assistance by Innovate Stamford.
- Build an innovation community by linking the transportation center to anchor institutions and key venues and providing six areas with high-speed public Wi-Fi.
- Create a vibrant, urban piazza and connect culture from rundown space.
- Create colearning space to build a learners community and promote career advancement.

New Haven

- Connect New Haven's talent network by using the Ives Innovation Commons as a front door to entrepreneurship, collaborating with Yale Entrepreneurial Institute's expertise and using the State House as a central hub for art, innovation, and trade through workshops and events.
- Drive growth by creating a new, larger location for graduates from coworking spaces (e.g., The Grove), right-sizing space for growing companies in a developing tech campus and providing more capacity for biopharma companies at Science Park.
- Provide incubation help and guidance through programs such as the new Medtronic Incubator and HealthHaven Hub to help turn innovative ideas for medical devices and treatments into growing local companies.

Hartford-East Hartford

- Accelerate innovation and commercialization in InsurTech, Medtech and aerospace/advanced manufacturing.
- Develop the Trinity/Hartford Hospital area with diverse live/work/play opportunities.
- Network and connect the region's many assets through asset and cluster mapping, building networks and shared collaboration space.

New London-Groton

- Establish an industrial consortium to enhance the global competitiveness of Connecticut's naval undersea supply chain.
- Establish a commissary kitchen to serve as an education and business development vehicle to create new restaurants to fill up vacant spaces.
- Promote education, events and business development to connect people to spark new ideas and embrace innovation.
- Create a community concierge to assist employers with the recruitment, relocation and retention of employees by connecting them with local arts, cultural and community activities.

Source: Innovation Places, CTNext.

How innovative is your organization?

Five findings to guide strategy through execution

1. **Strategy, not size, matters in innovation spend**
   Improving the financial return on innovation is ultimately the name of the game. But when it comes to getting results, it's not so much about the size of your budget. It's about how effectively you spend it—from strategy through execution.
2. **From blind bets to viable business models**
   Innovation spending ultimately has to drive business value and financial performance. But for that to happen in a consistent way, innovators must understand and help define future business models that can support the innovations they create.
3. **Silo-busting innovation models**
   The days when innovation was mainly a sequestered process are decidedly gone. Companies are seeking the right mix of employees, customers, technology partners, and other contributors to push their thinking in novel directions, leading to innovative ideas and solutions.
4. **The X factor? Human experience**
   Innovation leaders are pulling people into the innovation process at the front end rather than simply pushing innovation out to them at the back end. They're casting a broad net while they're at it, seeking experience-honed insights from front-line employees, customers, partners, suppliers and more.
5. **Tech innovation leader or follower?**
   Today, technology-led initiatives comprise a significant part of the innovation mix at businesses across numerous industries. These businesses tend to think big, setting their sights on breakthrough innovations that will satisfy unmet needs and create new markets.

Source: PwC Reinventing innovation: Five findings to guide strategy through execution, 2017.

What advice would you give an entrepreneur in Connecticut just starting out in today's ever-changing environment?

"Take the time to understand the vast network of support that is available to you here. There's never been a better time to be an entrepreneur in Connecticut. But, few entrepreneurs succeed by working by themselves. It takes connections to resources; mentors who can challenge your assumptions, and help reveal your blind spots; and new team members; to turn your plans into purchase orders. In Connecticut, you're never more than two or three phone calls away from any type of help you might need. All you have to do is ask."

Michelle Cote
Managing Director
Connecticut Center for Entrepreneurship & Innovation
University of Connecticut
School of Business

Improving the financial return on innovation is ultimately the **name of the game.**

Source: PwC Reinventing innovation: Five findings to guide strategy through execution, 2017.

Upward Hartford

Upward Hartford is a 27,500-square-foot high-tech hub of innovation comprised of office and shared space for entrepreneurs and startups as well as a tech incubator for developers of next-generation robotics and wearable technology. The hub embraces the coworking movement as membership-based workspaces where diverse groups of members can work together in a communal setting and help shape a professional community that thrives on innovative synergy and social networks between its members. The mission of the hub is to make innovation accessible to every member of the community – from inner city high school students who can learn to code to young graduates who want to start a new business to members of the community who can partake in events and series that teach and inspire innovation and collaboration.[41]

InsurTech Hartford

InsurTech Hartford is a platform helping to advance the insurance industry through innovation. InsurTech Hartford brings Hartford's vast insurance resources together with passionate and creative minds and skills to drive change within the industry.[42]

Connecticut Innovations

Connecticut Innovations (CI) is Connecticut's strategic venture capital arm and is a leading source of financing and ongoing support for innovative, growing companies. By offering equity investments, strategic guidance and introductions to valuable partners, CI enables promising businesses to thrive.[43]

CTNext

CTNext provides entrepreneurial support and helps to build a robust community of entrepreneurs and accelerate startup growth by providing access to talent, space, industry expertise, services, skill development and capital to foster innovation and create jobs for people in Connecticut.[44]

Connecticut Center for Entrepreneurship & Innovation (CCEI)

CCEI helps students and faculty at the University of Connecticut become successful entrepreneurs by focusing their resources on high-impact ventures that tackle fundamental human and environmental problems; inspiring and supporting a robust entrepreneurial culture across academic disciplines and throughout Connecticut; and providing practical experience in entrepreneurship to prepare students to be more successful in their careers.[45]

Game on!

The insurance industry is changing from within as well as embracing new entrants and partnerships to win in today's fast-paced business environment. Below, we highlight what Connecticut insurers with operations in the state are doing to up their innovation game.

Aetna launched an initiative with Apple to make the Apple Watch available to Aetna employees and select large employers.

Amica launched a new core billing system to better serve its customers and make its representatives more efficient.

Bouvier improved its client experience through an investment in Applied Epic technology that provides enhanced mobile capabilities as well as 24/7 customer service.

Cigna's One Guide combines predictive analytics, a mobile app and personal guides to help customers stay healthy and save money.

Care Management Solutions, a **ConnectiCare** affiliate, began marketing products nationwide in support of plan sponsors with Value-Based Insurance Designs.

The Hartford introduced TREO, a new risk management information system, that uses data and analytics to help its largest commercial customers and risk managers better understand the risks that affect their business and identify drivers of cost.

Hartford Steam Boiler is building Internet of Things capabilities via investments, partnerships and one acquisition. They also implemented their first Robotic Process Automation process efficiency.

Harvard Pilgrim launched the HPHC Center for Innovation, with a focus on building, partnering and piloting innovative digital health solutions that will help drive enhanced service, improved quality and medical cost savings for its members.

Lincoln Financial Group is developing and implementing an enterprise-wide digital strategy that transforms the customer experience and redefines the way they connect with consumers and customers.

MassMutual provided the University of Vermont with $500,000 to fund a pilot program to expand the insurer's use of computational, social and data science.

Nassau Re redesigned and moved its websites to the cloud and began social media recruitment, improving customer experience, generating leads, increasing flexibility and building capabilities.

Northwestern Mutual accelerated its digital transformation and created new platforms, apps and millennial-friendly technology for its financial advisors and clients.

Prudential launched PruNOW®, a new consultative service that enables predictive modeling of retirement patterns within a workforce. With this tool, employers can leverage their retirement plans to manage their total compensation and workforce needs.

Symetra is making the switch from traditional midyear performance reviews to Swift Check-In Conversations to focus performance management on the road ahead like a GPS rather than a rear-view mirror. Ongoing goal-setting and continuous feedback throughout the year will help Symetra adjust to the speed of business.

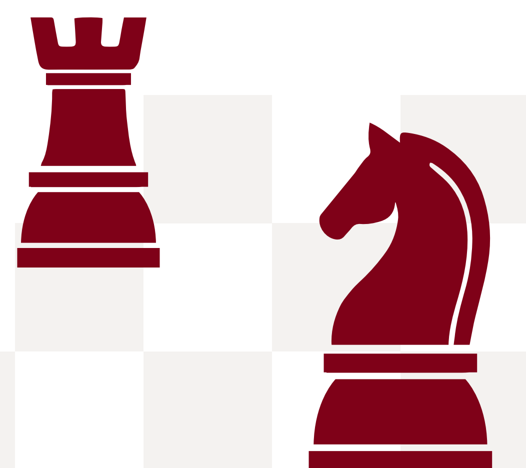
Travelers partnered with Symantec Corp. to provide pre-breach cybersecurity services to eligible Travelers cyber policyholders.

UnitedHealthcare and Qualcomm Incorporated continued to enhance its UnitedHealthcare Motion™ wellness program, which provides employees with activity trackers and offers medical-grade connectivity that feature safeguards to help keep data secure. In 2017, the program was expanded to 40 states and now includes access to additional customized activity trackers through a 'bring-your-own-device' model.

Vantis Life is comprehensively changing the way life insurance is sold and bought by digitizing the agent and consumer experience.

In its Employee Benefits business, **Voya** launched a new enterprise claims strategy initiative to completely transform how claims are processed to better meet the needs of its customers. Voya also launched an innovative, web-based eContracting tool in its Retirement business designed to get new producers on boarded more efficiently.

XL Catlin developed 20 new or enhanced products thus far in 2017, including Active Assailant, Workplace Violence and enhanced cyber coverages.



Source: Provided by companies listed.

Making a positive difference in our communities

Across the state, Connecticut insurers and their employees are positively impacting the communities where they live and work. As highlighted below, each year, they donate significant amounts of time and money to help those in need and make our local communities a better place through a variety of community initiatives, grants, charitable giving and volunteerism.

Giving back...It´s what insurers do!

Grants

The **Aetna Foundation**, Aetna and its employees contributed more than $6 million in grants, sponsorships, contributions and matching grants. Aetna employees also donated more than 80,000 volunteer hours to nonprofits and community organizations. The Aetna Foundation also provided a $40,000 grant to pay for 30 police officers in Connecticut to get trained in Mental Health First Aid.

A **Cigna Foundation** grant to Friends of Keney Park funded the purchase of 144 aquaponic growing tanks for Hartford's first production-scale aquaponics system.

The **Prudential Foundation** invested $1,215,000 in strategic grants to nonprofit organizations working to improve the education and workforce systems in Hartford and help small businesses grow. For example, they awarded a $150,000 grant to Achieve Hartford, a local education fund working to improve educational outcomes for Hartford children.

Travelers gave more than $1 million in funding to Capital Community College, Central Connecticut State University and the University of Connecticut for scholarships and to support Travelers EDGE, the company's career pipeline program. Scholarships were provided to 60 students across the three schools. Additionally, more than $440,000 in Travelers EDGE grant funding was directed to three Connecticut high schools to support academic programs and job shadow and internship opportunities.

To address growing teen drug use and provide integrated healthcare for local Connecticut families, the **United Health Foundation** gave $2.35 million in grants to The Governor's Prevention Partnership and The Village for Families & Children.

Voya Foundation, whose mission is to improve the quality of life in communities where Voya Financial operates and its employees and customers live, has a number of signature partnerships in Connecticut, including State Teacher of the Year, Unsung Heroes and Junior Achievement of Southwest New England.

Health and wellness

Cigna brought its Health Improvement Tour with free health screenings and health coaching to public libraries in Hartford's North End.

Harvard Pilgrim supports the Hartford Mobile Van that brings fresh produce into neighborhoods in Hartford and awards grants to community farms throughout Connecticut, including Brass City Harvest, Inc., Connecticut Food Bank, Inc., Green Village Initiative, New Haven Farms and Hartford Food System.

UnitedHealthcare provided funding for The Greater Hartford Arts Council's 2017 "Arts and Wellness" grants. Grants were given to Charter Oak Cultural Center, Easter Seals' Camp Hemlocks, Farmington Valley Arts Center and Harc, Inc. to produce programs that use creativity to enrich the lives and enhance the health and well-being of adults with physical disabilities and their families.

Education

ConnectiCare was the first health plan to join the Equal Coverage to Care Coalition organized by the UConn Health Disparities Institute. ConnectiCare's primary work on the coalition focuses on improving the health insurance literacy of Connecticut residents.

Lincoln Financial Foundation has a data-sharing agreement with Hartford Public Schools (HPS) to analyze the best paths for success and access to college for HPS students. Lincoln actuaries analyze and identify attributes and experiences from current college students from HPS to inform success plans for future college-bound high school students. The data analysis helps HPS detect high school students in need of focused post-secondary plans, promote a college-going culture, and reinforce district practices that support post-secondary success.

MiddleOak employees collected and donated school supplies to help families at a local school.

Mentoring and employment

Through Girls on the Run (GOTR), **Cigna** employees mentor girls in third through sixth grade. Cigna also hosted GOTR's inaugural Hartford-area run.

The Hartford partnered with the Connecticut Department of Labor and Capital Community College to launch an insurance apprenticeship program. The program offers an insurance-specific curriculum, paid on-the-job training and mentoring to equip students for key customer-facing roles in The Hartford's claims operation.

Northwestern Mutual provided three High School Inc. students with summer internships to get a hands-on experience in the financial services industry.

Travelers had 425 interns working in their Hartford office through Travelers EDGE and other company intern programs over the last year. This year marked the 10th anniversary of Travelers EDGE, which was created to increase the number of underrepresented students graduating college with bachelor's degrees and prepared for careers at Travelers and in the insurance and financial services industry.

Nearly 70 students from the Boys & Girls Clubs of Hartford, College Preparatory High School, Community Renewal Team, Girls for Technology, The Partnership's Youth Leadership Advisory Council and Our Piece of the Pie participated in a day-long series of education, career and health seminars led by **UnitedHealthcare** and The Governor's Prevention Partnership executives.

Community service and development

Employees from **Amica's** Hartford office participated in the Red Cross' Ready 365 Home Fire Preparedness Campaign, which sends volunteers into communities to educate residents about fire safety and fire-escape planning, and install free smoke alarms.

ConnectiCare sponsored the first Operation Recognize event at the Travelers Championship in June, which enabled tournament guests to record a video message of thanks to our country's deployed military men and women.

The Hartford donated $3 million to fund a founding partnership with Boys & Girls Clubs of America that will help develop the next generation's workforce, creating 30 college and career centers in the next three years across the US. On June 25th, the first college and career center opened at the Boys & Girls Clubs of Hartford.

Hartford Steam Boiler and its employees contributed funds, collected supplies and volunteered for more than 97 community events and organizations this past year. These included American School of the Deaf, Junior Achievement, Riverfront Recapture, Read to a Child, Habitat for Humanity, Stop Hunger Now, Making Strides Against Breast Cancer walk, and the United Way Day of Caring.

MassMutual and its employees supported several Connecticut nonprofits, including Allied Rehabilitation Centers, Educational Resources For Children, Foodshare, Inc. and the Manchester Area Conference of Churches.

Nassau Re sent C-suite and departmental management teams to several Habitat for Humanity builds in Hartford and Bridgeport.

Northwestern Mutual supported numerous charities, including Alex Lemonade Stand, The Eric Amenabar Scholarship Golf Tournament, Lea's Foundation and the "We are the Children" Toy Drive.

Prudential committed $1.6 million to redevelop 370 Asylum Street, an abandoned building in Hartford into a mixed-income housing complex with retail.

Symetra and its employees supported numerous charities and organizations over the last year, including Dakin Humane Society, Enfield Food Shelf and Elizabeth Park.

The 2017 **Travelers** Championship generated more than $1.7 million for New England charities.

Voya has a schedule of community service events and volunteer opportunities for its Connecticut employees, including park clean ups, blood drives, Special Olympics, participation in the annual March of Dimes and Juvenile Diabetes walks, food drives, among others.

On May 12th, **XL Catlin** held its annual Global Day of Giving, a company-wide volunteer day in which XL Catlin colleagues participate in hundreds of different charitable projects around the globe.

Volunteerism

For the "Chairman's Challenge" intern volunteer activity, 168 **Aetna** summer associates from across the country sorted through 28,537 pounds of food, including 13,401 pounds of produce, at the Foodshare locations in Hartford and Bloomfield. This is enough food to make nearly 24,000 meals that can be provided to Greater Hartford residents.

Cigna employees cultivated the Wilde Side Garden on the Bloomfield campus, which produces hundreds of pounds of food for Foodshare.

Employees from **Amica's** Danbury office volunteered in the United Way of Western Connecticut's Day of Action, an annual day of volunteerism across Fairfield and Litchfield counties. They volunteered at Ability Beyond, which offers day programs, residential living, transition services and employment programs to more than 3,000 individuals with special needs, and painted eight bathrooms.

Nassau Re provided volunteers monthly to staff a lunch at Hands on Hartford MANNA Community Meals.

Prudential invests its human capital to improve the well-being of the state's underserved communities, focusing on Hartford and Shelton. In Hartford, Prudential employees contributed 1,890 hours of volunteer services, including 231 hours of pro-bono services to help build the capacity of nonprofit organizations, which represents an in-kind contribution of approximately $75,000 in services. In Shelton, employees contributed 1,400 hours of service for approximately $33,800 in service.

Vantis Life and its employees sponsored the "Pup to Partner" program at the Fidelco Guide Dog Organization and provided support for the United Way.

More than 800 **Voya** employees in Windsor participated in its annual National Day of Service and volunteered at a number of charitable organizations which translated into a one-day total of 3,030 hours.

Arts and Culture

As a major donor to the Florence Griswold Museum, **Bouvier Insurance** supports the work of American artists who created their pieces in Connecticut and are recognized around the world. Bouvier Insurance is also proud to support the Shakespeare in the Park series, O'Neil Theater and Hartford Symphony Orchestra and is committed to keeping art, music and culture alive in the communities they serve.

Source: Provided by companies listed.

Connecticut state tax updates

Connecticut's deficit problems continue to drive tax developments in the state. The 2015 $1.5 billion tax hike (half of it on corporations) failed to alleviate the state's budget woes, as illustrated by its projected $5 billion budget deficit over the next two years. While not the only reason, the 2015 tax legislation has contributed to some of the largest corporations and wealthiest citizens leaving the state.

As such, it is no surprise that 2017 tax legislation in the state balanced a fine line of attempting to raise revenues to offset the deficit, while at the same time attempting to appease taxpayers and encourage economic growth in the state. Unfortunately for the state, there is little chance of escaping the current deficit without tax increases of some kind in the near future. Many of the tax proposals containing significant tax increases or revenue decreases lacked the support necessary to become law in 2017. Tax proposals impacting the insurance industry matched this trend, with few proposals actually becoming law and those which did held minimal significance. Below is a summary of these tax developments.

Legislative outlook

House Bill 5207

This legislative proposal would have imposed a surcharge on the net direct premiums of homeowners and renters insurance policies written on property or risks located or resident in this state, to fund the operating budgets of regional fire schools, certain training costs and fees and purchases of fire equipment. The proposal was placed aside shortly after being introduced and scheduled for public hearing, so specifics were never developed. As such, it failed to pass before the legislative session adjourned.

House Bill 6192/Senate Bill 230/Senate Bill 544

HB 6192 and SB 230 would have required the Connecticut Health Insurance Exchange to gain legislative approval prior to charging any assessment or user fee to health insurance carriers. This Bill was introduced and referred to the Joint Committee on Insurance and Real Estate, where it sat for the remainder of the legislative session. The Bill had no further activity after introduction. Lastly, SB 544 would have required the Connecticut Health Insurance Exchange to receive the approval of the joint standing committee of the General Assembly having control over insurance before increasing the amount of any assessment or user fee and implementing or altering any process used to increase the amount of any assessment or user fee. While this Bill was favorably reported, it too lacked momentum. As such, none of the bills passed before the legislative session adjourned.

House Bill 6375

This legislative proposal would have eliminated the premium tax on municipal health insurance plans. The Bill had no further activity after introduction, and failed to pass before the session adjourned.

House Bill 7013

Similar to a recent trend in many other states, HB 7013 authorizes domestic insurance companies to be designated as “domestic surplus lines insurers.” Surplus lines insurance policies written by a domestic surplus lines insurer are subject to the 4% surplus lines premium tax, but are exempt from the standard premium tax. Passed, effective 07/01/2017 as Act 17-125.

House Bill 7025

Effective as of October 1, 2017, Connecticut enacted legislation, Connecticut Corporate Divisions Law, which gives insurers the ability to divide a corporate entity into multiple corporate entities by electing the application of a Connecticut state statute. It expands the general Connecticut corporate statutes that permit other corporate actions via election of the application of a statute (such as conversion from a corporation to a limited liability company or merger). This change could be used by insurers considering the need to separate businesses from one entity into multiple entities. For example, an insurer who had core business and non-core business in one insurance company could use this statute to separate the two businesses held by one entity into two entities. To use this law a plan of division must be adopted, and approvals must be sought from the Department of Insurance and other certain third parties. This statute could prove to be very beneficial for insurers restructuring their operations or those planning for a transaction.

House Bill 7316

HB 7316 expands the legislative review of Connecticut’s economic incentive programs, including any business tax credit or abatement program, grant, loan, forgivable loan or other form of assistance, enacted for the purpose of improving economic development. The Department of Economic and Community Development must submit an expanded report on an annual basis by February 1 to the governor, the Auditors of Public Accounts and various legislative committees relating to appropriations, commerce, finance, revenue and bonding. The report must include recommendations as to whether any existing business assistance or incentive program should be continued, modified or repealed and the basis or bases for such recommendations, and any recommendations for additional data collection by the state to better inform future evaluations of such programs. On or before March 1, 2018 and annually thereafter, the legislative committees must jointly or separately hold one or more hearings on the report’s findings. Passed, effective 07/11/2017 as Act 17-226.

Senate Bill 787

This legislation was Governor Daniel P. Malloy's state budget proposal. Among other tax proposals, the Bill would have reduced the tax rate on insurance premiums from the current 1.7% down to 1.5%. The costs of lowering the tax rate ($22 million estimate) would have been funded by limiting use of tax credits that companies may apply against premium tax liability, including making permanent the current premium tax 3-tier credit cap and moratorium on film production tax credits. While reported favorably from Committee, the Bill failed to pass prior to the session adjournment.

Senate Bill 878

This proposal would have increased the nonrefundable tax credit for captive insurance companies on their initial tax report from $7,500 to $15,000 (still limited to no more than the initial year tax liability). While reported favorably from Committee, the Bill failed to pass prior to the session adjournment.

Senate Bill 1051

SB 1051 permits insurance companies that earn premium tax credits for investing in Invest CT funds (i.e., insurance reinvestment funds) to sell, assign or otherwise transfer the credits to any taxpayer. The transferee must claim the credit in the income year in which the transferee bought, was assigned, or was otherwise transferred the credit. Under prior law, insurance companies were only allowed to transfer the credits to their affiliates or carryforward excess credits. Passed, effective 07/01/2017 as Act 17-244.

House Bill 7501

Connecticut called a special session in hopes of passing a budget, since no consensus was made during the standard legislative session. On September 16th, the Connecticut General Assembly approved a budget plan drawn up by Republican legislators. The budget reflected $40.7 billion in spending over the FY2018-2019 biennium and included various tax measures such as eliminating some tax breaks, a phase-in of federal exemption levels for the estate tax, scaling back the earned income tax credit and the reduced premium tax rate (as previously proposed in HB 787). The bill didn't include many of the tax increases and new taxes found in the Democrats' budget proposal, such as a cigarette tax increase, a new tax on secondary homes, and a new tax on daily fantasy sports. On September 28th, Gov. Malloy vetoed the Republican budget plan, citing its spending reductions for higher education and other state programs as the primary reasons. On October 3rd, the Connecticut House chose not to vote on a veto override, which unfortunately leaves the State without a budget for the foreseeable future.

DRS Announcement No. 2017(6)

The Department of Revenue Services (DRS) issued an announcement informing each insurer that is a member of the Connecticut Insurance Guaranty Association (CIGA) that on or before February 17, 2017, the member insurer must pay a portion of their recently refunded assessments with respect to Legion Insurance Company to DRS. CIGA recently mailed to member insurers an assessment statement dated January 2, 2017 and refunded to its member insurers a portion of prior CIGA assessments made to meet CIGA's obligations with respect to Legion Insurance Company (2003 base year). No amount of the assessments shown on the statement as refundable to the member insurer with respect to the United Community Insurance Company (1994 and 1996 base year) is required to be paid to DRS because CIGA assessments paid by a member insurer during calendar years beginning prior to January 1, 2000, were not permitted to be offset against the member insurers premiums tax liability. If a member insurer did not offset any portion of an original assessment by CIGA with respect to Legion Insurance Company (2003 base year) against its Connecticut insurance premium tax liability for any calendar year, the member insurer must notify the DRS in writing. Issued 01/05/2017.

Insurance regulation in Connecticut

Led by Commissioner Katharine Wade, the Connecticut Department of Insurance's mission is to protect consumers through fair regulation of the insurance industry, outreach, education and advocacy. The Department has about 150 employees and manages an annual budget of $28 million. It is responsible for ensuring insurance companies doing business in the state are financially solvent, competitive, and engage in fair market practices and that state-based regulation remains relevant in a global economy.[46]

$4 million

The amount the Connecticut Insurance Department recovered for Connecticut consumers and taxpayers in the first half of 2017.

Source: Connecticut Insurance Department.

On the following pages, Commissioner Wade answers our questions and shares her perspectives on the insurance regulatory environment.

Adapting effectively in changing times: *A Connecticut insurance regulatory perspective*

Katharine L. Wade
Commissioner
Connecticut Insurance Department

Q: What impact is InsurTech having on insurance regulation and what should insurers bear in mind?

A: The industry is embracing technology to drive innovation. That is very indicative of its longstanding ability to adapt effectively to the changing times. Companies today are using InsurTech, big data and other technology to better understand their risks and develop new products, services and delivery platforms that meet the needs of the insurance buying public.

From a regulatory standpoint, this means that regulators must also be able to keep pace with those innovations to ensure consumers are protected and that carriers understand the risk they are underwriting and taking appropriate measures to mitigate risk. So regular dialogue between the Department and carriers and new market entrants is essential. When carriers develop new products, we strongly encourage them to meet with us before they make product filings so that we can understand the product and discuss any potential issues or concerns. In addition, we think it is important to encourage innovation and are willing to work with companies to test and pilot products with the appropriate regulatory guardrails to protect consumers.

The industry is embracing technology to drive innovation. That is very indicative of its longstanding ability to adapt effectively to the changing times. Companies today are using InsurTech, big data and other technology to better understand their risks and develop new products, services and delivery platforms that meet the needs of the insurance buying public.

Q: Captives continue to be a focus of the Department, what have been the developments over the last year?

A: The ability to form and take advantage of captive insurance is an important risk management option for the State's commercial and industrial organizations. The Department's Captive unit evaluates, licenses, regulates and examines captive insurers and risk retention groups in the alternative risk market, a segment that continues to grow. Connecticut has 15 licensed captive insurers, with the Captive Division licensing five new companies in the last year, two of which moved from Vermont and New York.

In the 2017 legislative session, the Department sought legislation to make Connecticut even more attractive as a state of domicile for captives. PA 17-198 reduced the minimum capital and surplus for sponsored captives from $500,000 to $225,000 and allows regulator discretion for further reduction. The law also allows for dormant captives and further clarified the segregation of the assets of protected cell captives.

Q: With your appointment as Chair of the NAIC's International (G) Relations Committee, what kind of impact or influence do you feel you might have on international regulation and how does development of the domestic capital work relate to international standard development?

A: In addition to serving as the G Committee Chair at the NAIC, I am member of both the International Association of Insurance Supervisors (IAIS) Executive and Financial Stability and Technical Committees. I am actively engaged in the IAIS' International Capital Standards (ICS) development to advocate for a methodology that is principles-based to give the US and other countries jurisdictional flexibility to accommodate differences in accounting and regulatory systems.

The NAIC is working on the development of a group capital calculation, a regulatory tool that will aggregate required capital for US groups, based on the NAIC risk-based capital standards, and will include non-US insurers, other affiliated regulated entities as well as an additional amount for nonregulated entities within the group. The NAIC's group capital calculation is designed to create a straight-forward, consistent approach to understand the total capitalization of an insurance group and evaluate net capital available to absorb unexpected losses across the group. The Federal Reserve Board is working on a building block approach for capital standards for insurers that own banks. The NAIC is providing technical assistance to the Federal Reserve because their work is closely aligned with the NAIC capital calculation work. We will continue to advocate for recognition of the domestic principles in the ICS.

Q: What legislative initiatives did the Department have this year to make it more competitive from a regulatory perspective?

A: PA 17-125 strengthens Connecticut's insurance industry by leveling the playing field for our domestic companies, making the state a more attractive domicile for insurers and offering consumers more choice of products in the surplus lines market. This act allows our domestic insurers to market their surplus lines products to Connecticut consumers. Prior to the passage of the law, domestic companies had to use an out-of-state affiliate to market their surplus lines products in Connecticut.

PA 17-59 maintains Connecticut as a national and international leader in insurance. It also continues to promote Connecticut, home to 32 reinsurers, as a vibrant, competitive domicile for reinsurance. This act updates Connecticut's statutes to reflect the January 2016 revisions to the Credit for Reinsurance Model Law adopted by the National Association of Insurance Commissioners (NAIC) for accounting standards for reinsurance transacting and also removes an antiquated accounting principle, put on the books nearly 70 years ago, that had disadvantaged Connecticut reinsurers by adding costs for Connecticut reinsurance consumers.

Q: How does Connecticut's regulatory environment enable the state to be a great place for insurers?

A: As regulators, our prime mission remains consumer protection and a very important part of that is ensuring our carriers are solvent and can make good on their promises to customers. The Department works closely with our domestic companies to understand their business issues and challenges so that we can work with them through good times and bad. As a result of our work to enhance our regulatory scrutiny of corporate governance, risk management and financial analysis of our domestics, the Department is recognized as a regulatory leader by our national and international peers.

Just as insurance companies compete for customers, we compete with other states for insurance companies. We are working hard to improve the efficiency and effectiveness of the Department in all areas – product review, licensing of companies and insurance professionals, financial regulation, etc.

Game changers

Source: Insurance CEOs participating in PwC's 20th CEO Survey.

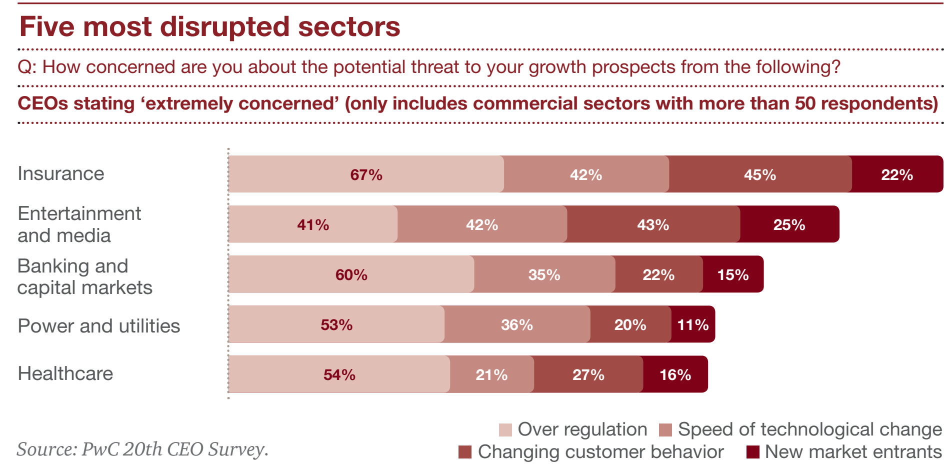
Ready, set, innovate

In today's ever-changing environment, insurers are under tremendous pressure to up their game. According to *PwC's 20th CEO Survey* released earlier this year, insurance is the industry most affected by disruptive change – based on the percentage of CEOs who are 'extremely concerned' about the threats to growth from over regulation, the speed of technological change, changing customer behavior, and competition from new market entrants. No other sector is facing as much disruption in these areas. But insurance CEOs are also among the readiest to embrace disruptive change and get in the game. For example, 67% insurance CEOs see creativity and innovation as very important to their organizations and 61% are exploring the benefits of humans and machines working together.[47]

Five most disrupted sectors

Q: How concerned are you about the potential threat to your growth prospects from the following?

CEOs stating 'extremely concerned' (only includes commercial sectors with more than 50 respondents)



Sector	Over regulation	Speed of technological change	Changing customer behavior	New market entrants
Insurance	67%	42%	45%	22%
Entertainment and media	41%	42%	43%	25%
Banking and capital markets	60%	35%	22%	15%
Power and utilities	53%	36%	20%	11%
Healthcare	54%	21%	27%	16%

Source: PwC 20th CEO Survey.

To capitalize on opportunities in today's game-changing environment, according to *PwC's 20th CEO Survey*, the top five areas insurance CEOs are to strengthen are digital and technological capabilities, customer experience, human capital, innovation, and competitive advantage.[48]

Insurers are recognizing the need to ***innovate*** and ***stay competitive.***

Most important area to strengthen (top five)

Q: Given the business environment you're in, which one of the following do you most want to strengthen in order to capitalize on new opportunities?

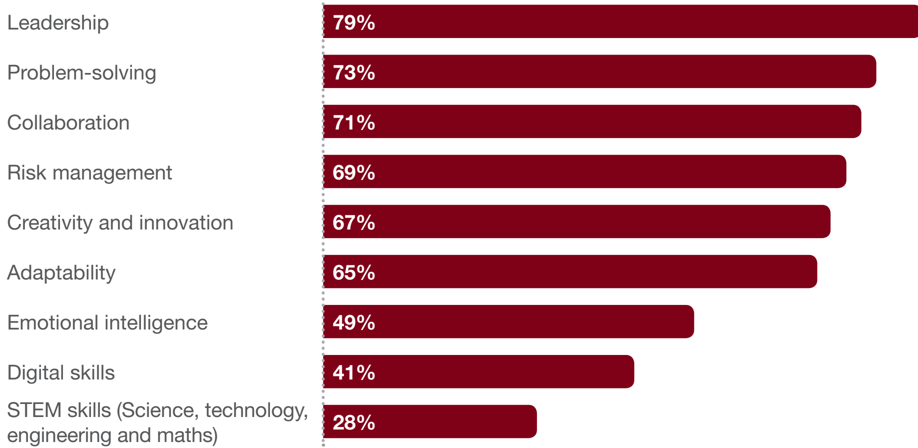
Area	%
Digital and technological capabilities	28%
Customer experience	24%
Human capital	11%
Innovation	9%
Competitive advantage	7%

Source: Insurance CEOs participating in PwC's 20th CEO Survey.

Prized skills

Q: In addition to technical business expertise, how important are the following skills to your organization?

Insurance CEOs who stated 'Very important'



Source: Insurance CEOs participating in PwC's 20th CEO Survey.

The pace of change in insurance is accelerating and insurers are increasingly looking to InsurTech to respond to business challenges and opportunities.

In this section, we highlight some of the game changers, innovations, and disruptors that are impacting insurers and how they are upping their game to win. For more information, please refer to the following PwC publications and articles: *20th CEO Survey, Top insurance industry issues in 2017, Global InsurTech Report - 2017*, *US Insurance deals insights 1H 2017*, *Getting fit for mergers and acquisitions* and *Workforce of the future.*

Insurance's new normal: Driving innovation with InsurTech

The pace of change in the insurance industry is accelerating, and while the insurance world won't change overnight, many insurers have begun to look outside their own organizations to respond to challenges and take advantage of opportunities. New products and services are developing to meet the needs of an expanding and changing customer base. Costs will begin to decrease as new ways of doing business evolve and emerging technologies, such as artificial intelligence (AI) and the Internet of Things (IoT), providing improved customer experience and streamlining back office operations. InsurTech is reshaping the insurance industry. Previously viewed as a disruptive force, it is now driving innovation across the sector.

In 2016, the insurance sector was in the midst of the FinTech revolution, with InsurTech disruption on the mind of 74% of insurers.[49] Today, while most respondents still see business as being at risk, InsurTech is becoming more widely understood and accepted. Gaining a better understanding of InsurTech has led the majority of respondents (56%) to estimate only between 1% and 20% of revenues being at risk as depicted in the graphic below.[50]

Percentage of revenues at risk to InsurTech companies

What percentage of your business (in terms of revenue) is at risk of being lost to standalone FinTech companies within the next five years?

Source: Insurance CEOs participating in PwC's Global FinTech Survey 2017.

45%

of insurance respondents currently partner with InsurTech.

Source: PwC Global FinTech Survey 2017.

Insurers are taking a more proactive approach to seize the opportunities offered by InsurTech, with 52% putting disruption at the heart of their strategy. [51] Additionally, insurers are the most active among financial institutions when monitoring FinTech to respond competitively and are increasingly partnering with innovators (45% in *PwC's Global FinTech Survey 2017*, versus 28% last year).[52] Partnering can assist incumbents to meet changing customer needs and target new segments (e.g., pay as you use insurance). New innovations will enhance incumbents' operations, such as the use of AI to improve efficiency by automating existing customer-facing underwriting and claim processes.

Prioritizing better risk insights and customer engagement

Insurers' focus has shifted to become more customer centric. Consistent with the results of *PwC's Global FinTech Survey* last year, customer engagement and the generation of better risk insights are identified as the most important innovation trends by 94% of respondents.[53]

Current InsurTech value propositions reflect these innovation trends. With market players focusing on IoT startups and solutions that leverage data usage and monitoring, new tools are being developed that will help companies align with customers' needs as they change from protective to preventative models. Alongside this shift, InsurTech companies are focusing on specific microsegments and developing products to reach them. The growth of specific products on demand (e.g., pay as you use) and peer-to-peer (P2P) models highlight this trend.

94%

of insurance respondents are prioritizing the generation of better risk insights and customer engagement.

Source: PwC Global FinTech Survey 2017.

Prioritizing customer engagement will enable products to be intuitive, easy-to-use and accessible. According to respondents of *PwC's Global Fintech Survey 2017*, only 16% and 25% of their customers currently engage with them through mobile and website respectively, enabling ample room to boost digital interactions. As participants expect these channels will be used by 81% and 90% of their clients in the coming years, insurers will need to focus their investments on connectivity and mobility.[54]

InsurTech companies are in a strong position to develop new products, drive market innovation, and help incumbents remain relevant to changing customer demands.

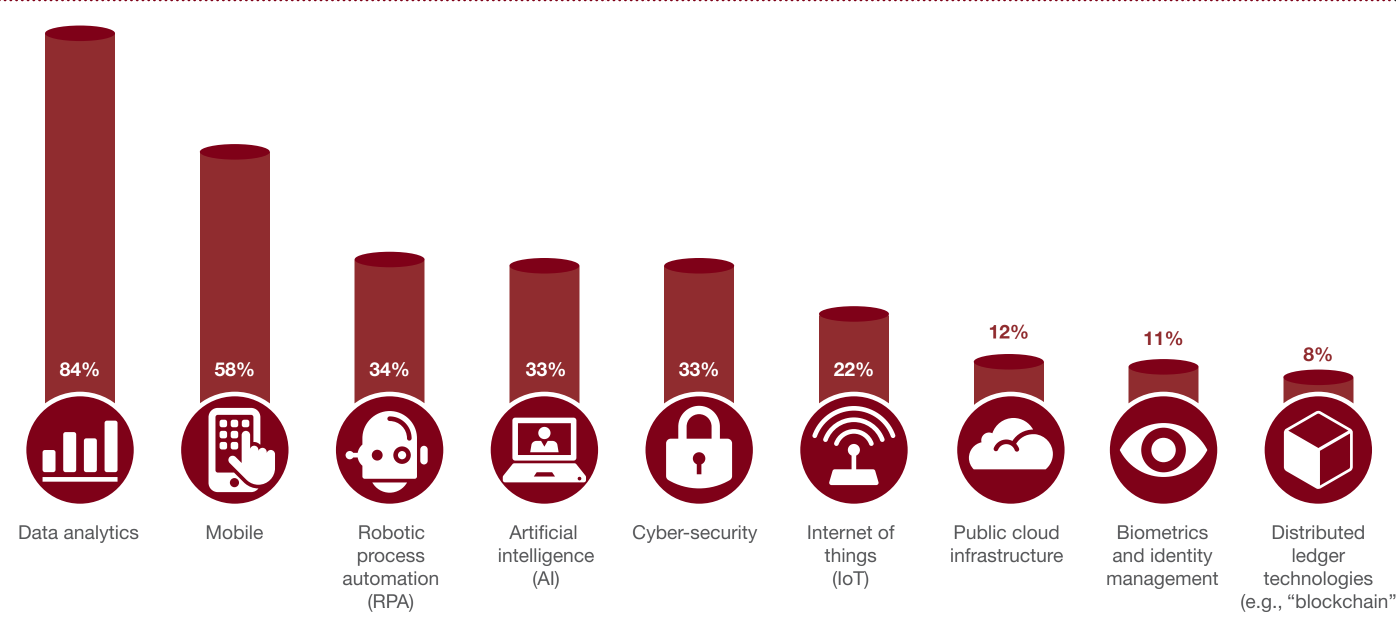
Analytics and mobile focused, but emerging tech on the horizon

Consistent with the trends highlighted for the industry, insurers plan to heavily invest in data analytics and mobile technologies to ensure better risk insights and customer engagement models. Many insurers are looking at emerging technologies such as AI and robotic process automation (RPA) for short-term investment as illustrated in the graphic below. RPA is already being used in back office operations to connect previously disparate systems. AI is streamlining simple claims and underwriting decisions, leaving experienced professionals free to work on more judgment-based decisions.

Compared to the broader financial services industry, insurance respondents to *PwC's Global Fintech Survey 2017* are prioritizing IoT (22%) over blockchain (8%), which highlights the industry shift from a reactive model to a more preventative risk management model leveraging available data.[55] IoT offers vast amounts of data in real time that will change the way insurers interact with their customers and manage risks to limit losses.

Relevant areas of technological investment over the next 12 months

What are the most relevant technologies for your business that you plan to invest in within the next 12 months?



Source: Insurance CEOs participating in PwC's Global FinTech Survey 2017.

68%

of insurance respondents expect to adopt blockchain as part of an in-production system by 2018.

Source: PwC Global Fintech Survey 2017.

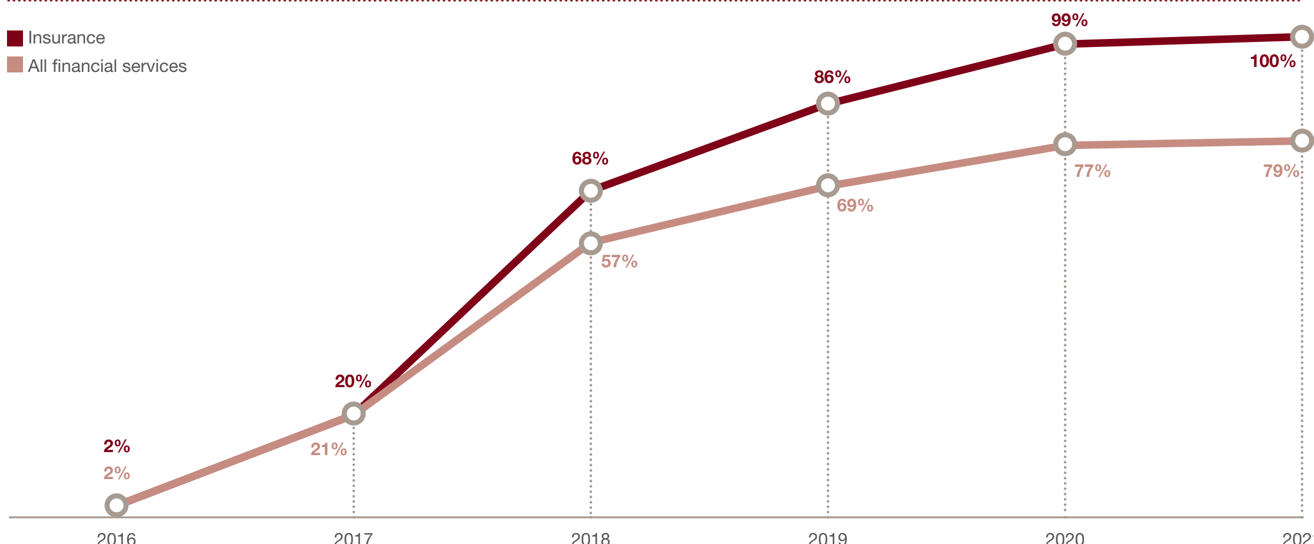
Insurance is primed for blockchain adoption

Blockchain is increasingly attracting the attention of survey participants. They are realizing the competitive advantage that this technology could bring to the design of new products and services with increased transparency, security and efficiency. While in last year's survey, only 17% of insurance participants recognized blockchain as a very important innovation trend, half are now exploring the technology in-house or are in the process of participating in some blockchain initiatives.[56]

A widespread adoption of blockchain technology is anticipated in the insurance industry, as 68% of the participants to *PwC's Global FinTech Survey 2017* expect to adopt blockchain as part of an in-production system or process by 2018 as depicted in the graph below.[57] This emphasizes the importance of the technology and its many use cases, including: (1) automated claims processes, which will deliver benefits to the customer while reducing costs; (2) streamlining data collection and payments, which can provide better visibility and controls for underwriting; and (3) the aggregation and allocation of catastrophe risks or losses which would enable better monitoring, understanding, and transparency of exposure and claims processes.

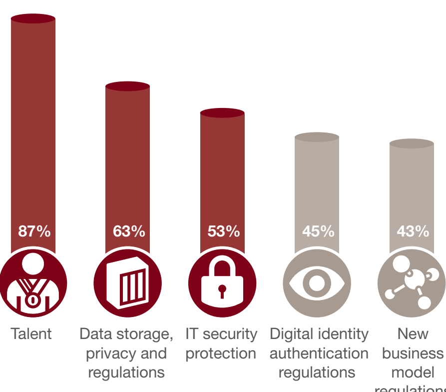
Cumulative blockchain adoption in insurance

What timeframe do you most likely expect your organization to adopt blockchain as part of an in production system/process?



Source: Insurance CEOs participating in PwC's Global FinTech Survey 2017.

Challenges the insurance industry faces in their ability to innovate



Source: Insurance CEOs participating in PwC's Global FinTech Survey 2017.

Traditional insurers should continue monitoring the InsurTech landscape, comprehending how it affects the market and focusing on relevant innovations. Ultimately, for insurers, it's no longer a question of whether or not they are involved with InsurTech, rather it is about how they leverage the InsurTech ecosystem.

Challenges can lead to opportunities

Investing in InsurTech related projects can be an opportunity for insurers to expand their products and services, increase their customer base, and leverage their analytical capabilities. Curiously, in this year's survey, incumbents responded that they expect to see a 13% return on investment (ROI) on these projects, substantially lower than the 20% expected by the overall financial services industry.[58] Time will tell if these more modest expectations, closer to product pricing expectations, reflect the mainstreaming of innovation investment throughout the insurance sector.

Talent is a key issue for insurers, with 87% of insurance respondents to *PwC's Global FinTech Survey 2017* having trouble in hiring and retaining people with the right skillset to innovate[59] as depicted in the graphic on the left. Insurers can attract talent by acquiring from startups, partnering with innovators, and fostering internal talent. However, most companies will need an updated staffing model to develop their talent accordingly.

IT security is also a pressing concern when taking into consideration the increase of consumer and risk data. Acquiring or partnering with InsurTech companies can mean that traditional insurers' legacy IT systems are introduced to new exposures and risks as they are integrated with new, often cloud-based platforms.

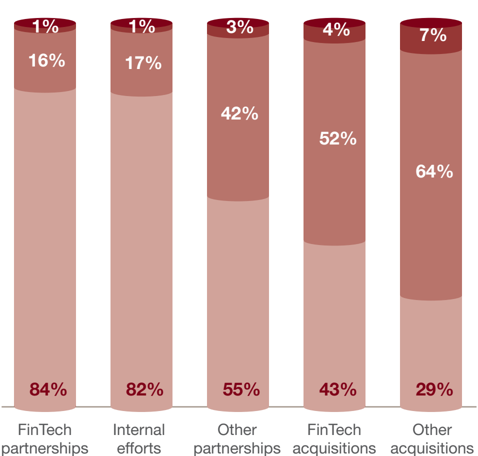
With InsurTech's spread across the sector, regulators and policy makers have begun to focus on these developments. For example, there is growing concern surrounding the unintended consequences that come from an overreliance on data analytics, such as higher risk policyholders being priced out due to more accurate information.

There is further concern in new data privacy rules, such as the General Data Protection Regulation (GDPR) in Europe, and the possible conflict with innovative digital strategies. Much of this is yet to be tested, and while the full force of GDPR is still largely conceptual, insurers should be aware of the possible implications to their digital strategy.

As InsurTech grows, we are also seeing a rapid rise in RegTech, with organizations increasingly looking at technology that can help them address these regulatory and compliance obligations more efficiently and effectively. There are numerous existing pain points in regulatory functions where RegTech can help, from client onboarding and compliance monitoring to regulatory reporting and fraud prevention. RegTech can also provide cost and headcount savings.

Changes expected in innovation sources

What changes do you expect to see in your sources of innovation over the next 3-5 years?



Increase Stay the same Decrease

Source: Insurance CEOs participating in PwC's Global FinTech Survey 2017.

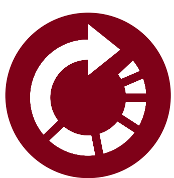
Implications

Effective innovation programs depend more on an organization's innovation processes, tools and culture than on how much is spent on R&D. An excessive internal focus and silo mentality, caused by minimal contact between business units, will often weaken innovation capabilities. The question is then: how to ensure innovation adds value to your company. Traditional insurers should continue monitoring the InsurTech landscape, comprehending how it affects the market and focusing on relevant innovations. Ultimately, for insurers, it's no longer a question of whether or not they are involved with InsurTech, rather it is about how they leverage the InsurTech ecosystem.

Insurers see their potential sources of innovation coming from partnering with InsurTech companies and through internal efforts as depicted in the chart on the left. While the majority of insurers see their company as good at generating ideas, only 17% of the insurance respondents to *PwC's 2017 Global FinTech Survey 2017* are confident in creating products with innovators.[60]

Fundamentally, incumbents need to decide how to leverage their own incubators and accelerators in relation to InsurTech. Opportunities include acquiring or partnering with innovators, serving as a source of experimentation for innovators, and capitalizing on their brand and large customer base. In the end, no matter the source of innovation, insurers need to ask themselves how they mainstream it into legacy cultures unaccustomed to the speed and agility of InsurTech.

Top InsurTech trends

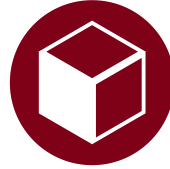


InsurTech is no longer seen as disruption, but rather a transformative force

The need for better risk insights and customer engagement is driving the transformation

Insurers are investing in key technologies, such as data analytics and mobile, that will support this transformation

Emerging technologies, such as RPA, AI and IoT are coming to the fore



Blockchain is more familiar and a majority of insurers expect to have use cases in production by 2018

Insurers and InsurTechs are collaborating to overcome industry challenges

Source: PwC Global Fintech Survey 2017.

Adapting to the velocity of change

Robert DiMuccio
Chairman, President & Chief Executive Officer
Amica

We all know that technology has changed the face of the insurance industry with ever-increasing speed. And as insurers, we must adapt to these changes to stay competitive in the marketplace.

> *By evolving with the needs of our customers, and providing them with the tools and features they want, we can live up to the service standards we've set for our respective companies. Being innovative and thinking creatively are two ways we all can accomplish that goal.*

As we've seen, technological features and enhancements can improve communication and help to more efficiently manage tremendous amounts of data. This is particularly important for insurers, who are always looking for ways to digitize claims and policy paperwork and become more agile. Ultimately, though, the ability to adapt stems from something very human and fundamental: being there for customers in ways that best fits their needs.

Amica has been around for 110 years, so we've had to assess and reassess our strategy many times throughout our history. More recently, though, it seems that the velocity of change is speeding up exponentially for all of us. As a result, we must constantly ask ourselves, "Are we giving our customers an experience that meets or exceeds their expectations?"

By evolving with the needs of our customers, and providing them with the tools and features they want, we can live up to the service standards we've set for our respective companies. Being innovative and thinking creatively are two ways we all can accomplish that goal.

Many innovative solutions have been introduced into our industry in recent years – from state-of-the-art claims, billing and policy software to geographic information system technology. All of them were meant to improve the overall customer experience, and all of them have made us more agile.

> *While technology provides us with tools for the future, we must not forget that this is still a people business.*

In my time as CEO, I've seen that implementing these projects and technologies often requires cross-divisional teams with varying business backgrounds. However, I've found that the most successful projects are the result of collaboration. We're always better when we work together.

Which brings me to my last point: While technology provides us with tools for the future, we must not forget that this is still a people business.

As insurers, our job is to provide support to our policyholders during some of the most difficult times in life – a car accident, a house fire or a tragedy involving a loved one. We can leverage digital tools and other technologies to help improve these customer interactions, but we always need to remember that there is a human being on the other side of that interaction.

When we find the perfect balance, that's when we all excel.

What do you see as the most game-changing opportunities for insurers?

"Technology enables insurance companies to enhance their business by increasing revenues, decreasing costs, and improving customer relations. As an active investor, we are looking to find and invest in a company that can disrupt the space by thinking about insurance opportunities in new ways. We believe the insurance industry should continue to innovate, and there is a huge opportunity to invest in incremental innovation."

Saeed Amidi
Founder and CEO
Plug and Play

Innovation: Solutions are usually elsewhere

Insurance is the industry most affected by disruptive change, according to the percentage of CEOs who are extremely concerned about the threats to their growth prospects from the speed of technological change, changing customer behavior, and competition from new market entrants.[61]

Insurers know they need to innovate to remain competitive. However, the industry's traditional conservatism and the dizzying pace of technological change has made it difficult to change. As a result, most insurers are looking outside the industry – typically in the InsurTech space (e.g., drones, sensors, IoT) – for the best ways to improve their systems, processes, and products. And there is no doubt industry stakeholders think InsurTech has real promise: annual investments in InsurTech startups has increased fivefold over the past three years, with cumulative funding of InsurTechs reaching $3.4B since 2010; based on the companies PwC's DeNovo platform follows.[62]

Most insurers are looking outside the industry for the best ways to improve their systems, processes, and products.

To facilitate a diverse approach to identifying new opportunities and potential partners from different industries and specialty areas, an **Enterprise Innovation Model** (EIM) is table stakes. An EIM facilitates:

- **New product and service development:** Being active in InsurTech can help insurers discover emerging coverage needs and risks that require new insurance products and services. As a result, they can improve their product portfolio strategy and design of new risk models.
- **Market exploration and discovery:** Prescient insurers actively monitor new trends and innovations, and some have established a presence in innovation hotspots where they can directly learn about the latest developments in real time and initiate innovation programs.
- **Partnerships that drive new solutions:** Exploration typically leads to the development of potential use cases that address specific business challenges. Insurers can partner with startups to build pilots to test and deploy in the market.
- **Contributions to InsurTech's growth and development:** Venture capital and incubator programs can play an important role in key innovation efforts. Established insurers that clearly identify areas of need and opportunity can work with startups to develop appropriate solutions.

28%

of insurance CEOs believe technology will completely reshape competition in the industry over the next five years, and another 58% say it will have a significant impact.

Source: Insurance CEOs participating in PwC's 20th CEO Survey.

Maintaining awareness, influencing the market, and identifying the right partners

To ensure an organization's innovation efforts are in sync with – or even driving – the latest developments in the market, an EIM needs a formalized yet agile process for identifying and incorporating best practices. Dedicated assessment of InsurTech advancements can enable insurers to identify and promote best practices and key technologies. Moreover, maintaining a close connection with the InsurTech market can help an insurer develop its external knowledge and relationships with innovators. Through this process, insurers can identify potential partners that can help them understand evolving technologies and their applications, and contribute to the development of the capabilities they desire.

With a deeper understanding of the market, capabilities and key players, insurers can be better positioned to facilitate innovation, ideation, and design. While some FinTech companies already have compelling insurance applications, insurers have a great opportunity to identify and design new potential use cases.

Fast prototyping is key to quickly creating minimally viable products (MVP) and bringing ideas to life. Early stage startups develop and deploy full functioning prototypes in near-real time and go to market with solutions that evolve with market feedback. In this scenario, the development cycle is shortened, which enables startups to quickly deliver solutions and tailor future releases based on usage trends, feedback and/or to accommodate more diverse needs. Established insurers can follow the same approach or can partner with existing startups that have an MVP to help them to move to the next stage, scaling.

The ways to accomplish all of this vary based on how the insurer plans to source new opportunities and ideas, how it plans on executing innovation, and how it plans to deploy new products and services. The following graphic provides examples of EIMs by primary function.

Enterprise Innovation Model required capabilities and connections

	Innovation Center	*Incubator*	*Strategic Venture Capital*
Sourcing	Ideas sourced from both inside and outside the company	Ideas mainly sourced from outside the company	Ideas sourced from outside the company
Structure	Dedicated corporate team constantly monitors trends and markets	Usually an external structure, but also "soft" internal incubators	New ventures division set up to identify and create new ventures
Operation	External connection with the ability to "plug" innovations into business units	Incubator explores and manages ventures to drive from ideation to execution	Pitch and invest model where the company provides cash and support for equity
Governance	Stage-gating process to balance procedural burden and risk	Export panel (internal/ external) provides high-level guidance and approval	Corporate network provides high-level guidance for investment
Go-to-Market	Idea/venture adopted under company's brand	Venture can go to market under its own brand or company's brand	Ventures stay in the market under its own brand

Regardless of the model they use, it is recommended that insurers of all sizes consider developing an innovation center and create an external connection based on potential future scenarios.

The innovation center

The innovation center is a structure at a corporate level that bridges external innovation with business unit needs and innovation opportunities. It relies on internal subject matter specialists and/or innovation champions to ignite and drive innovation initiatives at a business unit level. With this model, innovative new products and services go to market under the company's brand.

The innovation hub provides an outside-in view while promoting innovation internally. With this model, the company dedicates a team to constantly monitor trends and market activity, build and maintain relationships with key InsurTech players, identify potential future scenarios, and determine new partnership opportunities. In addition, the hub should be managed through business units to effectively innovate (i.e., building prototypes and scaling models). Execution is a key success factor, and it is recommended that insurers consider complementary innovation models to help promote positive outcomes.

The incubator

An incubator can drive innovation from idea to end product by identifying new opportunities and developing related solutions. Although it does require a significant investment of money and resources, it has proven especially effective in addressing complex problems and devising new approaches to them.

Although the incubator can be internal, external structures typically create unique development environments and attract necessary talent. Via an external approach, ideas come mostly from outside the company and a panel of internal and/or external innovation specialists provide high-level guidance and approval for the innovation the company is seeking through the incubator.

Although the incubator initially drives innovation, business units typically become involved during the development process. They have an important role, especially when planning to deploy new solutions within the organization. The incubator can be a startup that can go to the market under its own name.

One of the main strengths of the incubator model is that it facilitates execution. It holds an idea until a prototype is developed and an MVP is available. The gradual involvement of business units during the process enables the model to adequately scale. Upon adoption by its future owner, the incubator and business units can address any related challenges related to operating capacity, cyber risk, regulation, and others.

Instead of choosing one model over the other, we propose one that combines key elements from each. Companies can select elements based on their need for external innovation, the availability of talent, their ability to execute, and the amount of investment the organization is willing to commit.

Strategic venture capital (SVC)

The SVC model offers the opportunity to participate via stake or acquisition in relevant InsurTech related players. This is a way to influence and shape the development of specific startups (e.g., pushing them to solve specific problems), acquire key capabilities and talent, and/or as a way to derive value from strategic investments. In the SVC model, the company establishes a new ventures division, which sources ideas from the outside. The company provides funding and support for equity, while an SVC from this new structure explores, identifies and evaluates solutions and markets new ventures under its own brand. The funds SVC invests in a startup help new players augment their capabilities and scale their business model. This could lead to potential market joint ventures, acquisitions, or other deals to monetize the initial investment.

Established insurers with SVCs are usually leaders in specific market segments and leverage their experience and knowledge to select key ventures. To become more active with InsurTech, we see these structures linking to innovation centers, thereby enabling companies to connect ventures with business units. Instead of choosing one model over the other, we propose one that combines key elements from each. Companies can select elements based on their need for external innovation, the availability of talent, their ability to execute, and the amount of investment the insurer is willing to commit.

Enterprise Innovation Model operating options

	Innovation Center	Incubator	SVC
Innovation portfolio	High	Medium	Medium
Best practices	High	Medium	High
External knowledge and relationships	High	Medium	High
Ideation and design	High	High	Low
Prototyping	Low	High	High (indirectly)
Scaling	Low	Medium	High (indirectly)

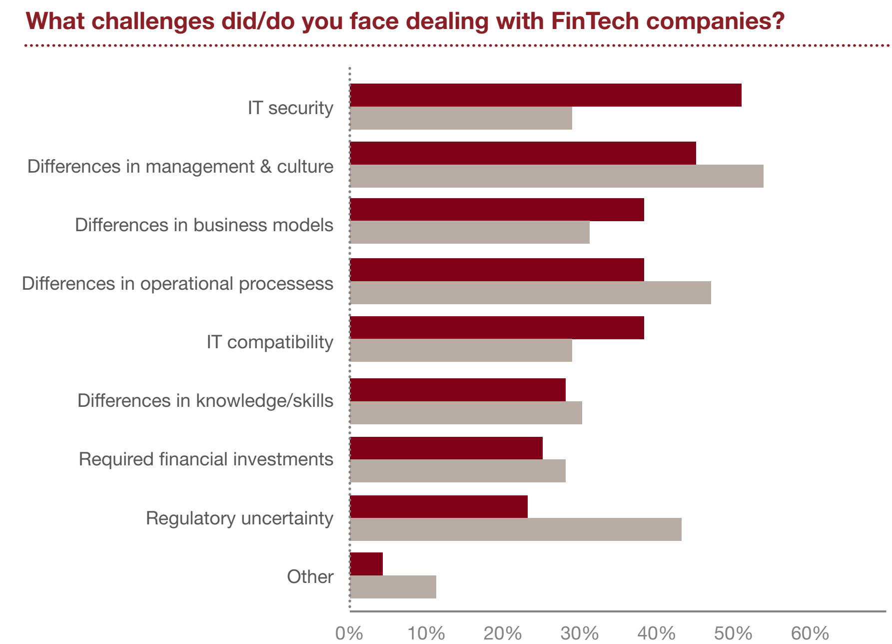
Enterprise Innovation Model operating characteristics

	Innovation Center	Incubator	SVC
Main objective	Ability to leverage an external connection to drive innovation and face implications of future scenarios	Accelerate, design, develop and execute solutions for complex industry challenges	Invest in strategic capabilities and talent, through acquisition or taking a stake
Trigger to adopt	Limited ability to respond to emerging trends and lack of relevant connections	Ideas to develop new sources of competitive advantage while protecting IP	Awareness of relevant startups and need to have an active participation
Key success factor	Sponsorship and ability to execute through business units	Ability to "plug" incubated solutions into business units	Leverage industry knowledge and future scenarios view for relevant ventures in early stage
Options for externally sourced	Supported by different players but a key corporate function	Ecosystem incubators and/or accelerator can be leveraged but IP has to be protected	SVC partners can be leveraged to identify potential targets, but a corporate structure should drive ventures and related innovation efforts
Most typical complementary model	Strategic Venture Capital	Innovation Center	Innovation Center
Ability to attract relevant talent	Medium to high if Innovation Hub deployed in innovation hotspots	High for external incubators	High by acquisition of JVs, challenge to retain talent
Investment considerations	Depends on FTEs and physical structure (in hotspots)	Can be optimized in an open model where new startup can be funded by external investors	Depends on available total funding and analyst capability (FTEs)

Bridging the cultural divide

Complicating the need to innovate is the fact that an insurer's culture often influences an external company's decision about partnering with it. In fact, according to *PwC's 2016 Global FinTech Survey*, over half of FinTechs see differences in management and culture as a key challenge in working with insurers. Insurers also realize this, and 45% of insurance companies agree that this is a major challenge.[63] Accordingly, insurers will need to assess the availability and compatibility of existing resources and determine how and where they can find what may not currently be available. By clearly articulating the organization's needs, defining explicit roles, and establishing a model for enterprise innovation, an insurer can address any underlying concerns it may have about partnerships.

While insurers can create internal structures to support innovation, most of them will have to enlist external resources in one way or another. In fact, it is expected that many talented professionals without insurance-specific skills will be the ones who wind up driving innovation.



Source: PwC Global FinTech Survey 2016.

Attracting and developing innovators

Insurers can create internal structures to support innovation, but success ultimately depends on having the right talent. And, most insurers will have to enlist external resources – ones with an entrepreneurial mindset and who are well connected to InsurTech.

There are four primary ways a company can attract and retain this kind of talent:

- **Acquire the new talent from startups:** This works well if the acquired company keeps running its business under its own startup rules, away from the acquirer's bureaucracy. Otherwise, if there is too much acquirer interference, retention will be a challenge in a market that covets innovators.
- **Attract the talent directly from the market:** This option typically requires a new mindset from the hiring company in terms of business role, work environment, and even location. Establishing a presence in relevant innovation hotspots will help to make an offer more attractive, facilitate external connections, and demonstrate the insurer's commitment to letting innovators be free to innovate.
- **Partner with startups, technology vendors, universities, researchers and other proven innovators:** This option represents a major opportunity because it enables the insurer to create the connections to and formal partnerships with new talent. However, while identifying desired capabilities is relatively easy, there will need to be strong alignment of purpose between the organization and the new partners for the relationship to work. In this case, the Innovation Hub should be the most helpful model.
- **Grow the talent:** This option is probably the least disruptive because it doesn't require external changes. Large organizations have the opportunity to discover

Bringing game-changing ideas to market that are built for tomorrow's customer.

talent within their structures. But, the organization will have to ascertain and leverage the mentality and professional background of employees in many different ways. Gamification, internal collaboration groups, and other resources can help in the search for potential in-house innovators, but most companies will need a more sophisticated staffing model to develop this talent.

Complementing these options is insurance industry leadership's advocacy of new methods to foster change in employee skill sets. According to insurance respondents to *PwC's 20th CEO Survey*, 61% are exploring the benefits of humans and machines working together and 49% are considering the impact of AI on future skills needs.[64]

Implications

In response to this rapidly-changing environment, incumbent insurers are approaching InsurTech in various ways, prominently through joint partnerships or startup programs. But whatever strategy an organization pursues, we expect InsurTech's main impact will be new business models that create challenges for market players and other industry stakeholders (e.g., regulators). In this environment, insurers will move away from trying to control all parts of their value chain and customer experience through traditional business models, and instead move toward leveraging their trusted relationships with customers and their extensive access to client data.

For many traditional insurers, we expect this approach will require a fundamental shift in identity and purpose. The new norm will involve turning away from a linear product push approach, to a customer-centric model in which insurers are facilitators of a service that enables clients to acquire advice and interact with all relevant actors through multiple channels. By focusing on incorporating new technologies into their own architecture, traditional insurers can prepare themselves to play a central role in the new world in which they will operate at the center of customer activity and maintain strong positions even as innovations alter the marketplace.

To effectively develop these new business models and capabilities and establish mutually-beneficial InsurTech relationships, established insurers will need to start with a well thought-out innovation strategy that incorporates the following:

- An effective EIM will take into account the different ways to meet an organization's various needs and help it make innovative breakthroughs. The model or combination of models that is most suitable for an organization will depend on its innovation appetite, the type of partnerships it desires, and the capabilities it needs. EIMs feature three primary approaches to support corporate strategy, partnering via innovation centers, building capabilities via incubators, and buying capabilities via a strategic ventures division. Companies can select elements from each of these models based on their need for external innovation, the availability of talent, their ability to execute, and the amount of investment the organization is willing to commit.

- Even though insurers can create the internal structures that support innovation, most of them will have to enlist external resources in one way or another. Accordingly, they will need to assess the availability and compatibility of existing talent and determine how and where they can find what may not currently be available. Much like with enterprise innovation models, there are certain ways that insurers can locate and obtain the resources they need, including acquiring it, trying to attract it, partnering, and/or growing it internally.

Beyond straight through processing: Leveraging AI in commercial insurance

Market trends

Softening prices, little or no organic growth, and increased competition have characterized most of the commercial insurance environment in recent years. These and other factors continue to attract new types of capital providers looking to diversify their investment portfolios with uncorrelated insurance assets.

Limited organic growth opportunities also have led to a broad consolidation of distributors, with an increasingly large number of private equity-backed brokers looking for short-term gains and opportunities to reduce systemic inefficiency. In turn, this has led to significant carrier investments in automation to facilitate effective and efficient straight through processing (STP).

More specific responses to market conditions from commercial insurance constituents include:

- **Distributor response:** Distributors are increasingly looking for ways to (1) negotiate more aggressively on individual transactions, (2) operate more efficiently, and (3) exert their bargaining power to gain higher commissions and other sources of revenue.

  In addition, brokers are becoming increasingly organized. They are looking to (1) reduce the number of carriers with whom they place business in favor of ones that have a broad underwriting appetite and are easy to do business with, and (2) exit the service arena, especially on small commercial accounts where margins are already extremely thin.

- **Carrier response:** Carriers are intensifying their efforts to compete for a "top 3" position with distributors by trying to (1) be easier to do business with, (2) increase product specialization and related underwriting expertise, (3) increase their appetite for more hazardous risk, and (4) lower rates and pricing.

  Although more and more carriers have invested in automated underwriting and pricing, broker/agent expectations are only increasing. They not only want to clearly understand a carrier's underwriting appetite, they also want to get near real-time quotes on the majority of standard risks without extensive manual data entry on their side. For now, carriers have avoided being "spread-sheeted" by using proprietary agent portals to increase ease of business interactions, rather than directly integrating with agency management systems and comparative raters. Distributors have not yet increased their demands for the latter two, recognizing that they could lead to a commission squeeze or even lose their appointment if the profitability of their book declines with a given carrier.

- **Customer response:** Last but not least, customers' behaviors and expectations are changing, too. They are becoming more comfortable researching business insurance online, and expect their shopping experience to reflect what they see in personal insurance. However, they are still turning to an agent to confirm their purchase decision and complete the deal. This is especially the case when businesses mature and risk management becomes more critical to their success.

Availability and access to large volumes of data, increasing processing power, cloud computing, open-source software, and advances in algorithms have fueled the rise of AI from academic curiosity to commercial viability.

As all this has been happening, AI has matured significantly, demonstrating that it can markedly improve existing STP. Below, we describe the AI technologies – including robotic process automation, natural language processing, and machine learning – that can increase commercial insurance's efficiency and effectiveness and thereby benefit investors, distributors, and carriers themselves.

The next generation of straight through processing

Although many carriers are already heavily automated, their initial focus has largely been on automated underwriting and pricing. This has left considerable manual intervention in the issuance process, post-bind audits, and other downstream transactions. All of these can be streamlined to further drive down costs. Once carriers move to truly mechanized underwriting, the next step is to embed third-party data feeds and advanced analytics to drive STP of risks.

For example, imagine a small business owner being able to enter just four pieces of information (e.g., business name, business address, owner's name and date of birth) on a policy application and receiving a real-time business insurance quote with the option to immediately purchase and electronically receive policy documents. Furthermore, imagine this approach having no impact on underwriting quality or manual back-end processing requirements for the carrier. Integrating AI techniques and additional internal and external data sources into small business processing have the potential to make this a reality.

A combination of leveraging internal data from prior quotes and policies, integrating external structured data feeds, and mining a business' website and social media presence could provide carriers with enough information to determine a business' operations, applicable class codes, property details, employment and payroll, and other key risk characteristics to underwrite and price low complexity risks. In cases where more information is needed, dynamic question sets with user-friendly inputs could streamline the application process without sacrificing underwriting quality.

The carriers that are the first to adopt the latest in AI-enabled STP will be preferred by their existing agencies, as well as be able to pursue alternative distribution channels that feature a more streamlined, user-friendly acquisition process that accommodates less sophisticated users.

How AI can improve STP

In addition to immediate cost improvements, commercial carriers that leverage internal and external data resources and apply AI to commercial processing can benefit from reduced turnaround time, better and more consistent decision-making, and improved agent/customer satisfaction.

Some of the most promising AI techniques that can help insurers improve STP include:

- **Robotic Process Automation (RPA)** is an area of AI that could increase STP efficiency and bring down costs at acceptable level of increased risk. RPA automates data entry, third-party data integration, form filling, and data validation. More advanced process mining techniques use machine learning to infer business processes from transaction logs, web and call center logs, email, and workflow logs. They profile the time it takes for different steps of the quote-to-issue process to be fulfilled and, to streamline the process, plot a distribution that enables the identification of outliers. They also track exceptions, and the reasons for them, thereby enabling greater efficiency. RPA is also tracking conformance and compliance with established standards, thereby leading to more consistent and compliant service delivery.

- **Machine learning** is building routing logic and underwriting-related models. For example, a detailed analysis of a commercial book of business over time can identify the need for no-touch, medium-touch or high-touch interaction models. This categorization enables better routing across multi-segment (i.e., small commercial, middle market, and large commercial) commercial insurers. In addition, machine learning can inform a wide variety of predictive models.
- Using open source technology, PwC has built **natural language processing** engines that continuously evaluate a large number of news and social media sources and report on key concepts.

  Commercial insurers and brokers can use this ontology of "key concepts" to traverse the output, identify drivers of specific risks, and refer to articles related to these risks. By indicating the relevance of articles insurers can "train" the natural language engine to look for specific sources and type of articles. As the system learns over time, it can graph trending topics, the sectors and companies associated with certain risks, and the underlying impacts if the risks develop adversely. We also have built a question-answer engine that enables risk experts to make natural language inquiries and retrieve relevant reports and documents to conduct further analysis. With natural language generation, the engine also can create risk profiles for senior management's consumption.

Even with their increased focus on ease of doing business, there is still much room for carriers to improve. There currently is a clear opportunity for prescient and proactive carriers to separate themselves from the pack, but doing so will require a competitive mindset that has not traditionally defined the industry. Small and medium commercial carriers must find ways to improve their cost structures to compete profitably in the long-term. AI enabled solutions offer some of the most promising ways to do this.

Implications

New investors in the commercial insurance market are increasingly looking for short-term gains and greater efficiencies from the industry. Moreover, distributors are looking for greater ease of doing business with commercial carriers and have demonstrated a willingness to favor the ones that can meet their expectations.

Commercial carriers have automated quoting in an attempt to facilitate effective STP. This has increased efficiencies, which has benefitted investors and helped improve the distributor experience. However, many manual processes and inefficiencies still remain. Once carriers move to truly mechanized underwriting, the next step will be to embed third-party data feeds and advanced analytics to drive STP of risks. Recent developments in AI can help carriers do this.

Changing business models and the "new" Enterprise Risk Management (ERM) model

Significant social, technological, economic, environmental, and political, forces are reshaping the needs and expectations of insurance buyers, as well as the business environment in which insurance providers operate.[65] Even a partial list of these forces is daunting: aging populations in developed markets, different needs and purchasing behavior of younger buyers of insurance, self-driving vehicles, telematics, AI, IoT[66], and persistent low-interest rates. With so many forces in play, it's difficult to determine the exact landscape of the new insurance world. But, it's not too early for insurers to prepare.

Regardless of exactly how they plan to address a rapidly-changing and more unstable world, one capability that will remain critical to all insurers' success is ERM. Below, we describe three key developments that insurers should incorporate into their ERM evolution.

Insurers' business models are changing and ERM needs to keep pace.

1.Stress testing will join economic capital as the main risk-decision tool

Value at risk (VAR)-based economic capital measures originated in banking and asset portfolio management more than 40 years ago. Over the last couple of decades, the insurance industry has widely adopted the concept. This is particularly true for insurers' credit and market risk taking, areas where the VAR concept is endemic. For some aspects of insurance risk, like statistical variability around a stable mean, the concept also fits well. In an insurance world where credit, market and insurance are insurers' main risks, economic capital is effective. But what if the world changes to one where other risks join these at center stage?

Life insurance in a persistent low-interest rate environment with rapidly-evolving distribution models provides a clear example of recent change and its implications for ERM. The bulk of many life insurers' liabilities and supporting assets are comprised of permanent type products they wrote when asset returns were markedly higher. These higher returns supported the stable distribution model of an upfront commission-based sales force. In turn, this fit the products' complex features that needed such a model to explain and sell them. Delivering on these guarantees necessitated focus on the credit and market risks they created. And VAR was developed to manage these risks.

However, now that asset returns are much lower, supporting this distribution model will be difficult. Fortunately, other less costly models are available and probably preferable to younger buyers of insurance. This demographic group has shown a preference for a more fit-to-purpose protection model that is less permanent and less complex. As a result, credit and market risks cease to be ERM's overwhelming focus. Instead, strategic and operational challenges created by transitioning to and maintaining the new business model take center stage, as do the risk tools that can address these challenges. Among these, stress testing figures most prominently.[67]

Trends in the property and casualty sector also point to a shift in risk focus and risk management tools. Impending and actual changes in the nature of driving and vehicle ownership will radically and permanently alter the auto insurance landscape. Developing an understanding of the implications of these changes and their risks to an insurance enterprise needs a tool like stress testing. Similarly an increased emphasis on assisting customers with mitigating and managing their own risks, rather than just insuring them, moves more of an insurer's risk profile out of the traditional risk-taker role and into a service provider model. VAR is a good risk tool for a risk taker, but stress testing is the tool best suited to the service provider model.

Lastly, rapidly-emerging technologies, also shape insurers' own capabilities. Insurers have begun to modernize their back offices and computing power continues its exponential growth. Operational challenges and resource demands to implement new and improved risk tools, like stress testing, we expect will diminish significantly. With benefits going up and costs going down, it seems clear that stress testing is on its way to a prominent ERM role.

As insurers start to help customers mitigate and manage their own risks, the former's risk profile will move from that of traditional risk-taker toward a service provider.

2. *Customer analytics decision platforms will become the key focus of model risk management efforts*

Model risk management (MRM) is currently receiving extensive ERM focus. Much of the original impetus may have come from European companies seeking to validate their Solvency II internal models. In the US and Canada, due in part to direct or indirect regulatory encouragement, the scope goes beyond economic capital and solvency models, and most insurers seek to apply their efforts to all models.

The early priority for validation has skewed toward economic capital and complex liability valuation models. Insurers with advanced MRM capabilities have begun to focus more attention outside of risk and financial reporting models. This is to be expected to some degree, as insurers model validation activities work their way through their inventory of models. In addition, as they develop a working experience of risk rating their models, many are reconsidering the irrecoverable nature of product pricing decisions and the importance of getting those models right. In other words, while small errors in financial and risk reporting models can be rectified once errors are uncovered, losses from inadequate premium charges are permanent.

The impetus for higher attention to pricing and risk selection models is further amplified when insurers implement newer, nontraditional approaches. Without a long history of successful use, newer customer analytic models put a higher priority on their timely and thorough validation. Additionally, we have observed insurers further enhancing their level of attention when these models move to autonomous execution mode. In this mode, the model makes decisions in an automated fashion without manual intervention or deliberation. Deploying more models of this sort is a common feature of most visions of the near-term future of insurance. As their use expands, so too should ERM's focus on effective risk management of these models. In an environment in which these types of customer analytics decision platforms become an insurer's key business engine, they also will become the key focus of MRM efforts.

3.Risk diversification measurement will become the single most important element in economic capital calculations

There is a continuing focus on the effectiveness of economic capital modelling, especially in connection with the International Association of Insurance Supervisors and regulatory efforts outside of the US. In the US as well, insurers continue to look at how they can improve their calculations. However, one area that we believe attracts insufficient attention is diversification.

Not only is an effective understanding and quantification of diversification an important goal in the current insurance environment, it will become even more critical in the future. As the new risk profile moves away from a credit/market nexus to a more diverse insurance, business and strategic risk set, managing the interaction between and among them will be especially important. If customers move to a more holistic view of insurance and blur the distinctions between life, property and casualty and health, just quantifying the diversification across all insurance risks will be a key task on its own.

Implications

If they haven't done so already, Chief Risk Officers should start to sketch out a few versions of what their company might look like in the future and consider what might be required of their ERM capabilities. They can adjust and clarify this high-level roadmap as the future becomes clearer.

Considerations they should keep in mind while creating this roadmap include:

- On the life side in particular, credit and market risks will cease to be ERM's overwhelming focus, and we expect stress testing will figure more prominently with new business models.
- Assisting customers with mitigating and managing their own risks instead of just insuring them will move more of an insurer's risk profile out of the traditional risk-taker role and into a service provider model. VAR is a good risk tool for a risk taker, but stress testing – which is becoming cheaper and easier to do – is better suited to the service provider model.
- As advanced customer analytics decision platforms become an insurer's key business engine, they will become the key focus of MRM efforts.
- As insurance becomes more holistic for customers, quantifying diversification across all insurance risks will be a key task for insurers.

Property and casualty insurance core transformation: Beyond the first wave

Insurance carriers are making an unprecedented investment in transforming their policy, billing and claims systems and processes. We are in a unique period where the convergence of aging legacy platforms, complex market dynamics, and a mature vendor landscape has made transformation a top priority for carriers of all sizes and profiles. Core system transformations continue to be a top priority for insurers – regardless of size and product mix.

Trends in the following three areas have been dominating our recent conversations with the industry:

- **Digital transformation and analytics:** Carriers are looking to extend their core platforms to develop the foundation for digital transformation and analytics. They have more ambitious visions for how these programs should drive growth strategies and are no longer satisfied with simply implementing a new platform and then searching for ways to achieve benefits in the post implementation environment. Looking forward, a successful transformation should include broader strategies for data analytics, a positive digital customer and agent experience, and underwriting efficiency.

- **Greenfield and cloud:** Carriers are looking at alternate delivery approaches that align with their broader organizational visions. Some of them have recently started to explore the business and architectural simplicity of greenfield and cloud delivery scenarios.

- **Specialty and excess and surplus (E&S):** An increasing number of carriers' core transformation focus is on modernizing platforms that process specialty and E&S products. We expect the next wave of transformation will impact specialty line carriers, which we categorize as nonadmitted (E&S), Bermuda, and London market carriers.

Insurers are looking for more than just up-to-date systems. They also want digital and analytics platforms that can help them realize the full benefits of a core transformation.

Digital and analytics platforms

Several carriers have increased their investments in core transformation and recognize they need to add digital and analytic platforms to realize the following, additional benefits and capabilities:

- **Better data and analytics:** In recent years, carriers have recognized the value of building or improving an enterprise data warehouse (EDW) in parallel with traditional core transformation initiatives. This has enabled them to plan for strategic data analysis and build necessary components into core systems. Modernizing core systems often leads to more reliable data, and when this data is coupled with strategic data analytics initiatives it facilitates improved process metrics, work queue volumes, and claims fraud detection.

- **Better customer and agent experience:** Good customer and agent experiences most often occur with modern underlying core platforms, most of which now offer self-service capabilities and can even open new customer channels. Carriers are looking to advance core system capabilities by customizing an agent and policyholder portal layer that enables users to intuitively interact with the system; a claims transformation can improve the claims reporting, servicing, and resolution process and fundamentally alter how a customer interacts with the carrier's claims processing division. Billing transformation programs also typically include self-service capabilities that can improve the overall customer experience.

- **Improved underwriting efficiency:** This can be a direct benefit of any core transformation simply because of the resulting modern screen flow. However, carriers can gain much more by coupling the screen flow with an operational redesign that integrates the underwriting department with the new system

Insurers are getting ambitious. Looking forward, a successful transformation should include broader strategies for:

1. Data analytics
2. A positive digital customer and agent experience
3. Underwriting efficiency

capabilities (although this may entail an assessment and reconfiguration of the underwriting organization.) This is of particular importance in commercial and specialty lines transformations that seek to automate repetitive manual tasks but still require experienced underwriters to fully evaluate risks.

Greenfield implementation

Greenfield offers design simplicity that can enable carriers to break from the architectural complexity of the past.

Over the past two years, carriers have become increasingly interested in greenfield transformations. Such a transformation provides simplicity and gives carriers a unique opportunity to reinvent their business, IT, and organizational culture. This is in contrast to traditional transformation programs that unfortunately can "recreate the sins of the past" and implement relatively obscure business scenarios for the purpose of transferring the existing book of business.

A greenfield implementation approach tends to be straightforward. It eliminates the need to integrate with antiquated legacy platforms and can lead to speedier delivery time. It also tends to require fairly simple product design, which makes it well suited for mid-tier carriers that are looking to leverage off-the-shelf vendor products.

Some key advantages of a greenfield approach are its product and solution simplicity, increased speed to delivery, and the opportunity it provides the organization to break with the past. However, there are disadvantages if a carrier doesn't go into this kind of implementation with eyes wide open. For instance, it will limit book of business conversion capabilities in the near term, and can create some intermediate operational challenges by adding to the overall portfolio of applications in the near term.

Cloud technologies

Cloud technology alleviates the need for in-house IT staff.

Though cloud deployments are not new for insurance carriers, their scope has primarily been limited to productivity applications with minimal connectivity to the broader enterprise ecosystem. However, there are different expectations of the cloud today.

The five key factors behind them are:

- **Aging infrastructure:** Many carriers looking to modernize their core systems are discovering that their on-premise hosting environment is insufficient to support new core system technology, as well as customers' and agents' real-time "always on" expectations. Cloud solutions can meet many business and IT needs, and carriers now have a viable option to deploy new core systems in the cloud instead of investing in upgrading and maintaining new IT infrastructure.

- **Expanding technology ecosystem:** Many small to midsize carriers do not have the capital or resources to support the complexity of a large transformation, but without transformation they are constrained in their ability to respond to the market. Technology companies are beginning to offer complete, integrated ecosystems that include all the technology that runs core operations. This includes standard integrations of key ancillary systems and digital front-end portals and mobile, data analytics, underwriting desktops, and predictive modelling. Better yet, automated refresh capabilities keep product versions up-to-date.

There now are complete, integrated ecosystems that include all the technology that runs core operations, and automated refresh capabilities keep product versions up-to-date.

- **Need for new products and markets:** Insurers need to quickly respond to changing market conditions to compete in a very competitive landscape. Cloud core systems provide carriers the opportunity to quickly test and learn new business ideas – such as new products or expansion into a new market – with minimal investment.

- **Need to facilitate product development and innovation:** IT is beginning to shift from being a provider of all technology services to a broker or orchestrator of business services and technology innovation. Creativity requires experimentation and, by nature, many experiments fail. Core systems in the cloud can help carriers reduce the cost of the experimentation and failure cycle, enabling them to greatly increase the potential for innovative ideas and solutions.

- **Talent shortages** – It is difficult for many carriers to attract enough skilled employees, not least in infrastructure hosting and core development and testing. Cloud core systems alleviate the need for a full complement of IT staff because cloud solution providers already employ many of these resources.

Specialty and E&S

Over the past decade, standard lines carriers have been challenged to improve profitability through reduced IT expenditures and policy acquisition costs. In response, these carriers have made significant investments in modernizing their aging policy administration platforms to improve automation and speed-to-market.

A significant share of the standard lines market now operates on a modern policy administration platform, with a final group of very large carriers starting to migrate to commercially off-the-shelf platforms over the next three to five years. The next wave of transformation will impact specialty line carriers, such as nonadmitted (E&S), Bermuda, and London market carriers. Although they historically have been insulated from the deflationary pressures of technological automation, three factors have aligned that will help accelerate their transformations over the next five years.

- **Organic growth:** Over the past decade, the specialty market has outpaced industry growth averages and, thanks to a variety of market dynamics this will continue. However, maintaining these increased growth patterns while managing their historically low policy acquisition costs will be a challenge for many specialty and E&S companies. They are likely to respond by increasing and improving internal underwriting staff, as well as through increased use of technology to automate lower value aspects of the policy placement process. For example, specialty carriers will automate back office and clerical work through new policy administration systems, while empowering their specialist underwriters to continue risk selection and pricing.

- **Technological maturity:** Commercially available policy administration systems have traditionally focused on standard market products, requiring extensive customization to meet specialty carriers' unique needs. For E&S and Bermuda carriers, products that now support multisegment program policies, feature robust manuscript forms functionality, and can set Individual Risk Premium Modification (IRPM) factors at exposure and policy levels. For London market carriers, vendors are now supporting accelerators that enable

New policy administration systems can help specialty carriers automate back office and clerical work, ease their reporting burden, and improve their risk-based decision making.

core systems to interact with the Lloyd's and companies markets using ACORD XML standards, and integrate their back office systems with the relevant Xchanging market systems.

- **Organizational reporting/controls:** Many specialty carriers have difficulty providing sufficient data to their internal auditors and enterprise risk managers for the purposes of regulatory and group reporting. Modern policy administration systems enable underwriters, actuaries, and internal controllers to more effectively track and analyze the carrier's book of business. These systems support granular exposure, risk concentration, and premium reporting, thereby easing the reporting burden. Moreover, powerful predictive analytics platforms enable underwriters to marry internal and external risk models to their expert judgment, resulting in a clearer decision making and more effective management across the enterprise.

Implications

Carriers have increased their expectations of core transformations and increasingly look to transformation to include robust digital and analytics capabilities. They will continue to look at alternative delivery options to simplify their technology environment and implementation roadmaps. Many transformation programs are starting to include portal and data warehousing components, and off-the-shelf package solutions are well equipped to integrate those components with the core back office systems.

DOL Fiduciary Rule – Not just a compliance exercise

The US Department of Labor (DOL) established a new standard for fiduciary investment advice that is currently on a bumpy path toward full implementation.[68] Despite the latest potential change to the implementation date, what is consistent is that under the new Fiduciary Rule (the Rule), an investment recommendation given with respect to an employee benefit plan or an individual retirement account (IRA) is considered fiduciary investment advice and therefore must be in the "best interest" of the investor. With 50% of US financial assets held in retirement accounts, the impact of the Rule is significantly affecting insurers, broker dealers, and investment managers.

The purpose of the rule

The DOL has long been concerned that people rolling over assets from an employer sponsored pension plan to an IRA are not being well advised and, as a result, are investing in products that are not most suitable for their needs and/or are unnecessarily expensive. Central to the DOL concern is what it perceives to be a lack of transparency around the standard under which an advisor is providing advice and how he/she is compensated.

To address these concerns, the DOL expanded the definition of the term "investment advice" under the Employee Retirement Income Security Act of 1974 (ERISA), thereby imposing fiduciary status under both ERISA and the Internal Revenue Code on firms and advisors who provide investment advice under this expanded standard. A fiduciary must adhere to the duties of prudence and loyalty and is prohibited from acting for his/her own interests or in a manner adverse to

those of the ERISA plan participants or IRA beneficiary. Accordingly, fiduciary status will have a fundamental impact on advisor compensation, as advisors who are fiduciaries may not use their authority to affect or increase their own compensation in connection with transactions involving an ERISA plan or IRA.

A catalyst of organizational change

Despite potential upcoming modifications, the Rule as it currently stands continues to drive widespread transformative change in the insurance industry. In some cases, these changes have been contemplated for some time by insurance manufacturers and distributors.

Compensation: The DOL's impetus to address and mitigate potential conflicts of interest is core to the distribution compensation changes currently underway in the industry. Some insurers have already been considering compensation changes to better align with their sales strategies, such as the transition from variable commissions to a level-fee structure for annuities. Insurance manufacturers and distributors are working to address the Rule by improving transparency of distributor compensation and revising their distribution strategies to limit their potential exposure. To facilitate this transition, carriers and distributors need to understand the current compensation hierarchy and how it might change by answering the following questions:

- For each distribution channel, are distributor(s) considered fiduciaries and if so what exemptions/exceptions are being used?
- How will changing the compensation structure impact agents' total compensation and incentives?
- Do you anticipate agent attrition to other carriers/distributors that will pay "conflicted" compensation?
- How will you address ancillary compensation, such as marketing allowances and 12-B1 fees?
- How will you ensure that compensation arrangements (by distributor, product, etc.) are easy for agents to understand while maintaining compliance?
- How should the carrier and distributor best coordinate and communicate to ensure they are addressing each other's regulatory needs?
- What is the cumulative future impact of compensation changes to company performance?

In addition, carriers and distributors will need to safeguard against personal and organizational conflicts of interest by considering the following:

- How do you pay your workforce and others, including non-cash compensation?
- How can you best maintain and manage potential conflicts? Can you design a tool that:

- Defines the recipient, amount and reason for a particular compensation transaction?
- Helps determine if conflicts are permissible and/or require additional disclosure?

- Can you incentivize agents to sell products and/or certain product classes over others?
- How do you ensure that there is regular, clear, and informative communication – both internally and externally – on impending changes?

Product rationalization: The Rule is intensifying focus on product rationalization by both carriers and distributors. A smaller product portfolio (and resulting streamlined distribution channel) can help distribution organizations better understand the specific compliance risks when providing “best interest” advice to consumers, reduce product-specific agent training needs, and help drive a scalable operating model.

Product rationalization will also represent an opportunity for insurers to have more profitable product portfolios that can focus on their most successful endeavors. Insurers will be more intensely focus on designing products that are less capital intensive, and more transparent.

Data capture and monitoring: The Rule makes capturing and maintaining new types of data a high priority for carriers and distributors. Agents will need to track from the time contact is made with a client how they acted in his/her best interest. This record – which should be readily available to customers – will help enable ongoing monitoring and evidence that agents are being compliant (i.e., defensibility). The automation of data collection is paramount for insurers and distributors to maintain compliance while allowing for scalability.

Facilitating effective compliance

The DOL Fiduciary Rule represents a new and unique challenge for many distributors. Compliance should play an increasingly active role by:

- Providing formal compliance oversight and governance over distributors and carrier distribution arms.
- Performing periodic review testing to ensure compliance with regulations and internal policies is upheld.
- Maintaining a traceability matrix that outlines key strategic and operational decisions related to Rule requirements, providing the company defensible documentation to mitigate potential losses.

Implications

Many distributors and insurers' distribution arms have already undertaken significant evaluations of their business and operating models, including customer segmentation analysis and consideration of different channels for fiduciary advice and non-fiduciary communications (e.g., educational materials).

- Expect to see continued and increased investments in digital and online channels, including the exploration of robo-advisors.

- Some insurers are selling their broker-dealers to reduce their regulatory exposure, driving an increase in M&A activity within the insurance industry. This trend is likely to continue with the consolidation of smaller, independent and regional broker-dealers over the next three years.

- The DOL's move to increase transparency and eliminate conflicts of interest is driving a convergence of regulation toward a broad fiduciary standard. In the future there might be collaboration to create a uniform standard between the DOL and the Securities and Exchange Commission (SEC).

Potential Rule delay

On June 9, 2017, the core Rule regulation and certain provisions of the associate Prohibited Transaction Exemptions (PTEs) became applicable while other Rule provisions were scheduled to go into effect on January 1, 2018. In August, as a result of issues raised in President Trump's February 2017 memorandum, the DOL has proposed to extend the transition period while it re-examines the Rule until July 1, 2019.

- On August 30th, the DOL published a proposed delay in the Federal Register, beginning a 15-day comment period. Following the comment period, the DOL will re-evaluate and finalize the Rule proposal.

- During the potential 18-months delay, investment advice fiduciaries will still need to comply with the Impartial Conduct Standards of the Rule PTEs – specifically, to (1) give prudent advice that is in retirement investors' best interests, (2) charge no more than reasonable compensation, and (3) avoid misleading statements.

- The DOL had issued a non-enforcement policy during the original transition period from June 9, 2017 through January 1, 2018. The comment period has also asked whether this nonenforcement period should be extended to July 1, 2019.

Impact of the potential Rule delay

- The DOL has suggested that three current PTEs could be impacted by their revisions, including the Best Interest Contract Exemption (BICE) and PTE 84-24. Additional modifications could also include a revised "conditions-based" system for compliance by Advisors.

- The DOL is considering the removal of the BICE anti-arbitration rule, which originally had been proposed to reduce the ability of commission-based brokers from preventing clients from bringing class action lawsuit claims.

- Although the potential delay in implementation has caused some uncertainty, the majority of the industry has continued their readiness and implementation

efforts for the Rule as it currently stands. Regardless of political developments, the Rule's core framework is likely to remain intact. The industry has generally agreed with the Rule's primary goal to improve retirement investor protection, minimize potential conflicts and to make significant strides toward a higher customer standard of care.[69]

The financial reporting, operational and business impacts of insurance accounting modernization

Modernization of insurance accounting is finally here. The Financial Accounting Standards Board (FASB) issued its final guidance on enhanced disclosures for short duration contracts in May of 2015 and published an exposure draft in September of 2016 on targeted improvements to the accounting for long-duration contracts.

Financial reporting modernization will affect the entire organization, not just the finance and actuarial functions. Operations and systems; risk management; product development, marketing and distribution; and even HR will need to change.

After literally decades of deliberations, the International Accounting Standards Board (IASB) has finished its long-standing project to develop an accounting standard on insurance contracts and published IFRS 17, 'Insurance Contracts'. Moreover, additional changes in the statutory accounting for most life insurance contracts are coming into effect; a company can elect to have Principles Based Reserving (PBR) effective on new business as early as January 1, 2017. Companies have three years to prepare for PBR with all new business issued in 2020 required to be valued using PBR.

The impact of these regulatory changes is likely to be significant to financial reporting, operations, and the business overall. Instead of approaching accounting modernization as a compliance exercise, companies should view the changes holistically, with an understanding that there will be impacts to systems, processes, profit profiles, capital, pricing, and risk. Planning effectively and building a case for change can create efficiencies and enhanced capabilities that benefit the business more broadly.

FASB's targeted changes

In May of 2015, the FASB issued Accounting Standards Update (ASU) 2015-09, Disclosures about Short-Duration Contracts. Rather than changing the existing recognition and measurement guidance in US GAAP for short-duration contracts, the FASB responded to views from financial statement users by requiring enhanced disclosures for the liability for unpaid claims and claims adjustment expenses. The disclosures include annual disaggregated incurred and paid claims development tables that need not exceed 10 years, claims counts and incurred but not reported claim liabilities for each accident year included within the incurred claim development tables, and interim (as well as year-end) roll forwards of claim liabilities.

The enhanced disclosures became effective for public business entities in for year-end and interim reporting periods in 2016, and became effective for non-public business entities in 2017. The new disclosures may require the accumulation and reporting of new and different groupings of claims data by insurers from what is currently captured for US statutory and other reporting purposes. Public companies are currently preparing now by making changes to existing processes and systems

and performing dry runs of their processes to produce these disclosures. Non-public business entities have a one-year deferral to allow additional time for preparation.

In 2016, the FASB issued a proposed ASU on targeted improvements to the accounting for long-duration contracts. Proposed revisions include requiring the updating of cash flow assumptions and use of a high-quality fixed income discount rate that maximizes the use of market observable inputs in calculating various insurance liabilities, simplifying the deferred acquisition costs amortization model, and requiring certain insurance guarantees with capital market risk to be reported at fair value. The FASB also proposed enhanced disclosures which include disaggregated rollforwards of certain asset and liability balances, additional information about risk management, and significant estimates, input, judgments, and assumptions used to measure various liabilities and to amortize deferred acquisition costs (DAC). No effective date was proposed, and transition approaches were provided with the recognition that full retrospective application may be impracticable.

IASB issues a new comprehensive standard

The IASB's journey to a final, comprehensive insurance contracts standard is complete. After reviewing feedback from field testing by selected companies in targeted areas, the IASB completed its deliberations.

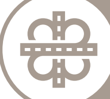
In May 2017, the IASB finished its long-standing project to develop an accounting standard on insurance contracts and published IFRS 17, 'Insurance Contracts'. The standard applies to annual periods beginning on or after January 1, 2021.

IFRS 17 requires a current measurement model, where estimates are remeasured in each reporting period. The measurement is based on the building blocks of discounted, probability-weighted cash flows, a risk adjustment and a contractual service margin (CSM) representing the unearned profit of the contract.

IFRS 17 liability measurement model

Contractual service margin

Unearned profits recognized systematically over the coverage period.



Risk adjustment

Reflects the compensation that the entity requires for uncertainty. Quantifies the value difference between a certain and an uncertain liability.

Discounting

Discounting future cash flows using a 'top-down' or 'bottom-up' approach to obtain discount rates that reflect the characteristics of the liability.

Estimate of future cash flows

Explicit, unbiased and probability weighted estimate of future cash flows.

For presentation and measurement, entities are required at initial recognition to disaggregate a portfolio (that is, contracts that are subject to similar risks and managed together as a single pool) into three groups of contracts: onerous, no significant risk of becoming onerous, and remaining contracts.

Changes in cash flows related to future services should be recognized against the CSM. The CSM cannot be negative, so changes in future cash flows that are greater than the remaining CSM are recognized in profit or loss. Interest is accreted on the CSM at rates locked in at initial recognition of a contract. To reflect the service provided, the CSM is related to profit or loss in each period on the basis of passage of time.

Under IFRS 17, entities have an accounting policy choice to recognize the impact of changes in discount rates and other assumptions that relate to financial risks either in profit or loss or in other comprehensive income (OCI). The OCI option for insurance liabilities reduces some volatility in profit or loss for insurers where financial assets are measured at amortized cost or fair value through OCI under IFRS 9.

A simplified premium allocation approach is permitted for the liability for remaining coverage if it provides a measurement that is not materially different from the general model or if the coverage period is one year or less. However, claims incurred will need to be measured based on the building blocks of discounted, risk-adjusted, probability-weighted cash flows.

The variable-fee approach is required for insurance contracts that specify a link between payments to the policyholder and the returns on underlying items, such as some "participating," "with profits" and "unit linked" contracts. The interest on the CSM for such contracts is accreted implicitly through adjusting the CSM for the change in the variable fee. The variable fee represents the entity's share of the fair value of the underlying items less amounts payable to policyholders that do not vary based on the underlying items. The CSM is also adjusted for the time value of money and the effect of changes in financial risks not arising from underlying items such as options and guarantees.

The income statement will be transformed significantly. Rather than being based on premium due or received, insurance contract revenue will be derived based on expected benefits and expenses, allocation of DAC, and release of the CSM and risk adjustment. The insurance contracts standard also requires substantial disclosures, including disaggregated rollforwards of certain insurance contract assets and liability balances.

Statutory accounting: The move to principles-based reserving

The recently adopted Principles-Based Reserving (PBR) is a major shift in the calculation of statutory life insurance policy reserves and will have far-reaching business implications. The former formulaic approach to determining policy reserves is being replaced by an approach that more closely reflects the risks of products. A three-year voluntary adoption period began January 1, 2017. Management must indicate to their regulator if they plan to adopt PBR before 2020.

PBR's primary objective is to have reserves that properly reflect the financial risks, benefits, and guarantees associated with policies and also reflect a company's

own experience for assumptions such as mortality, lapses, and expenses. The reserves would also be determined assessing the impact under a variety of future economic scenarios.

PBR reserves can require up to three different calculations based on the risk profile of the products and supporting assets. Companies will hold the highest of the reserve using a formula based net premium reserve and two principle-based reserves – a Stochastic Reserve (SR) based on many scenarios and a Deterministic Reserve (DR) based on a single baseline scenario. The assumptions underlying principles-based reserves will be updated for changes in the economic environment, changes in company experience, and for changes in margins to reflect the changing nature of the risks. A provision called the "Exclusion Tests" allows companies the option of not calculating the stochastic or deterministic reserves if the appropriate exclusion test is passed. Reserves under PBR may increase or decrease depending on the risks inherent in the products.

PBR requirements call for explicit governance over the processes for experience studies, model inputs and outputs, and model development, changes and validation. In addition, regulators will be looking to perform a more holistic review of the reserves and it is critical that:

There is no "one size fits all" approach to addressing the FASB's and IASB's changes. Each company will likely be starting from a different place and may have different goals for a future state.

- The PBR reserve process is auditable, including the setting of margins and assumptions, performing exclusion tests, sensitivity testing, computation of the reserves, and disclosures.
- Controls and governance are in place and documented, including assumption oversight, model validation, and model risk controls.
- Experience studies are conducted with appropriate frequency and a structure for sharing results with regulators is developed.
- PBR will introduce volatility to life statutory reserving causing additional volatility in statutory earnings. Planning functions will be stressed to be able to forecast the impact of PBR over their planning horizons because three different reserve calculations will need to be forecasted.

Implications

A company's approach to addressing these changes can vary depending on a variety of factors, such as the current maturity level of its IT architecture and structure, potential impact of proposed changes on earnings emergence and/or regulatory capital, and current and planned IT and actuarial modernization initiatives. In other words, there is no "one size fits all" approach to addressing these changes.

Each company likely will be starting from a different place and may have different goals for a future state. A company should invest the time to develop a strategic plan to address these changes with a solid understanding of the relevant factors, including similarities and differences between the changes. In doing so, companies should keep in mind the following potential implications:

Accounting and financial reporting

- Where accounting options or interpretations exist, companies should thoroughly evaluate the implications of such decisions from a financial, operational, and business perspective. Modelling can be particularly

useful in making informed decisions, identifying pros and cons, and facilitating decisions.

- Financial statement presentation, particularly in IFRS 17, could change significantly. Proper planning and evaluation of requirements, presentation options, granularity of financial statement line items, and industry views will be essential in building a new view of an insurer's financial statements.

- Financial statement disclosures could increase significantly. Requirements such as disaggregated rollforwards could result in companies reflecting financial statement disclosures, investor supplements, and other external communications at lower levels than previously provided.

- Change is not limited to insurance accounting. Other areas of accounting change include financial instruments, leasing, and revenue recognition. For example, the impact of changes in financial instruments accounting will be important in evaluating decisions made for the liability side of the balance sheet.

Operational

- Inherent in each of these accounting changes is a company's ability to produce cash flow models and utilize data that is well-controlled. Companies should consider performing a current state assessment of their capabilities and leverage, to the extent possible, infrastructure developed to comply with other regulatory changes such as Solvency II and ORSA and identify where enhancements or new technology is needed.

- Given the increased demands on technology, computing and data resources that will be required, legacy processes and systems will not likely be sufficient to address pending regulatory and reporting changes. However, this creates an opportunity for these accounting changes to possibly be a catalyst for finance and actuarial modernization initiatives that did not historically have sufficient business cases and appetite internally for support.

- As these accounting changes are generally based on the use of current assumptions, there will be an increased emphasis on the ability to efficiently and effectively evaluate historical experience on products by establishing new or enhancing existing processes. Strong governance over experience studies, inputs, models, outputs, and processes will be essential.

- As complexity increases with the implementation of these accounting changes, there may be an impact on the amount of resources needed. Depending on how many bases of accounting a company is required to produce, separate teams with the requisite skill sets may be necessary to produce, analyze, and report the results. Even where separate teams are not needed, the close process will place additional demands on existing staff given the complexity of the new requirements and impact to existing processes. Depending on the extent of the impact, companies will need to review their current close process and may need to implement changes to the process and controls in order to address any newly identified risks.

Astute insurers realize that they can use the IFRS/FASB requirements as a catalyst for change and that the most effective and efficient use of their investment will be to consider what they deliver to their business partners and modernize in an integrated manner.

Efforts to modernize functions in silos instead of holistically increases the chance of future inefficiencies and disruption.

Finance, risk, and actuarial modernization: The benefits of an integrated approach

What is your company's budget for modernization? With IFRS 17 now a reality and FASB's Long Duration Contracts project coming into view, many insurers are seeing potential compliance costs escalate to hundreds of millions. CEOs are rightfully asking what benefits, if any, they will get from such a significant investment.

Astute insurers realize that they can use the IFRS/FASB requirements as a catalyst for change and that the most effective and efficient use of their investment will be to consider what they deliver to their business partners and modernize in an integrated manner.

Traditional approaches to modernization typically have seen individual functions working in silos to develop modernization plans that alleviate the pain points in existing processes. Such approaches have paid inadequate attention to 1) the interrelatedness of processes, functions and reporting across the finance, risk and actuarial functions, 2) development of a wider vision that aligns the collective interests and priorities of the finance, risk, and actuarial functions, 3) the expectations of all stakeholders, particularly the business insight they seek, and 4) a roadmap that recognizes the enterprise-wide overlaps/gaps of various inflight projects.

In contrast, an integrated modernization approach requires interaction among different functions to create a future state vision, roadmap and business case that aligns their different interests and satisfies key stakeholder expectations. Specific benefits of an integrated approach to modernization include lower costs, greater efficiencies, adaptive technology solutions, better risk management, more effective use of resources, and better business insight.

The benefits of modernizing the finance, risk and actuarial functions in an integrated manner, as well as the key steps that characterize this approach are described below.

The case for change

The need to comply with new accounting and regulatory developments has traditionally been the driver of change. This certainly remains true with the release of the new IFRS 17 standard. Costs are expected to run into the hundreds of millions for firms depending on their scale, complexity and current technology capabilities.

Considering the size of investment, CEOs expect results that go beyond minimum compliance. They expect finance, risk, and actuarial functions to become more relevant to the business through timelier reporting and insights that help communicate the value of the business to external stakeholders. To meet this aspiration and deliver enhanced capabilities across the organization, adopting an integrated approach to modernization is essential.

There are several examples of a siloed approach to modernization leading to inefficiencies. A case in point is some European insurers' implementation of Solvency II. They had the chance to replace legacy IT systems from the 1980s and 1990s, but many of them chose to upgrade existing systems or bolted on new

ones. As a result, making a further systems change – which will be necessary to meet new IFRS 17 requirements – will be both challenging and costly.

Another key risk of adopting a siloed approach to modernization is overinvesting in one function at the expense of another. For example, building a state-of-the-art investment function at the expense of supporting risk capabilities may lead to ineffective risk management and could severely hamper management's ability to make informed business decisions, optimize capital, and/or manage the business through a change in economic environment.

CEOs want finance, risk, and actuarial functions to become more relevant to the business and better engage with stakeholders to communicate its value.

While an integrated modernization initiative requires substantial executive commitment, funding, and time, approaching operational change holistically can provide a significant return on that investment by promoting better business practices, more openness to and ability to affect innovation, and a tangible competitive advantage. Insurers should consider what competitive disadvantage they may face if their peers successfully modernize and are able to deliver better and timelier business insights. Typically, an integrated modernization approach safeguards against this and is the most effective methodology to achieving a mutually-agreed future state that meets strategic priorities, collective goals of key stakeholders, and is adaptable to an ever-changing market environment.

Integrated modernization versus traditional modernization approaches

An integrated modernization approach drives more consistent, standardized, and efficient outcomes by aligning the impact of the change across all functions and leverages the benefits from consolidation of activities and technology solutions. Traditional approaches struggle to succeed because they address too narrow an issue and ignore how other stakeholders' strategic objectives could be achieved if the program also took them into account.

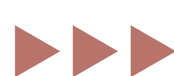
Incorporating new and complex operational and technology changes while dealing with ongoing operational and development pressures challenges even the most efficient organizations. It is imperative to develop an integrated strategic plan, roadmap and blueprint of supporting technology needs that clearly sets out the staging and phasing of activities to address the potential complexity of ongoing initiatives across divisions.

In an integrated modernization, executive management is engaged and there is an appropriate level of interaction among different functions.

Perhaps the most important difference between an integrated modernization approach and the approaches most insurers have followed to date – and a key determinant of success – is the level of cross-functional executive management sponsorship and engagement that facilitates the appropriate level of interaction among different functions. Developing a modernization strategy that provides a path to real change includes visualizing a compelling future state, articulating and communicating expectations, defining a roadmap with achievable goals, articulating the supporting technology requirements, and avoiding overreach during the implementation.

Traditional Modernization Approach

- C-suite not informed or limited involvement
- Siloed projects
- Single-solution oriented
- Stakeholders have limited involvement
- Data, systems and processes developments not aligned
- Not cost effective
- Difficult to embed



Integrated Modernization Approach

- C-suite informed and involved
- Cross functional project management and execution
- Alignment of stakeholder objectives and priorities
- Alignment of data, systems, and process developments
- Lower overall costs
- Easier to embed

Steps to modernize in an integrated manner

1. **Ensure executive management involvement:** An integrated modernization approach is by definition far-reaching and will result in a noticeable change to an insurer's people, processes, data and systems across many core functions. Because of the scale of change, it is imperative that executive management is engaged as early as possible to:

    - Drive and promote interaction among finance, risk and actuarial leaders.
    - Appreciate the impacts on the organization's future operating model and culture.
    - Confirm external stakeholders' expectations, thereby validating that their expectations align to the project's strategic vision.
    - Provide the required level of support and sponsorship for a successful rollout.

2. **Develop an integrated future state vision, roadmap and technology blueprint that is agreed upon by finance, risk and actuarial:** After obtaining executive management's support and confirming external stakeholders' expectations, the next step is to develop a future state vision that aligns finance's, risks and actuarial interests and priorities. This will occur when senior management from each functional team articulate the future state needs of their respective areas and identify areas of common need and interest. Areas of commonality tend to include data that provides a "single source of the truth," consistent assumptions, consolidated calculations platforms, centralized processes, and information warehouses.

    Execution of the vision requires a comprehensive roadmap with prioritized and suitably phased workstreams; a dedicated implementation team; and an appropriate business case and budget. A blueprint for the supporting technologies should be specified that can support the overall business requirements.

3. **Project rationalization:** Review the mandates of existing change programs to ensure they align with the new vision and roadmap. Too many other priorities are a barrier to progress, but these other priorities are often disconnected efforts that, if brought together and rationalized, ultimately can support an integrated solution.

4. **Translate strategic objectives into operational processes and technology requirements:** Business and IT often do not have a common language to specify, understand, and translate strategy into operational implications and then technology requirements. A good way to provide one is by developing "user stories" that appropriately capture the types of outcomes the business is looking for from operational and technology changes. For example, a typical user story for a valuation process is, "As a valuation actuary, I want to leverage a consolidated data source for input data used in the valuation process so that I can avoid multiple data reconciliations."

5. **Review target operating models and incentive plan:** Target operating models will need to be enhanced to take greater advantage of new capabilities, technology, and ways of working that leverage operational efficiencies and allow resources to be redeployed to higher value-adding work. Further individual behavior and actions are governed by incentives, and those incentives will need to be changed to reflect the new world and support the holistic objectives of the integrated modernization program.

6. **Get the right skills:** Typically, a firm may have limited resources with the necessary skills to manage the complexity of such a large-scale transformation program. Firms that have successfully carried out these projects have partnered with strong advisors that can help steer, manage and challenge the project execution. A strong advisor can help firms avoid common pitfalls that could kill a project before it gets off the ground, help build momentum throughout the implementation, and manage messages to internal and external stakeholders.

7. **Target "quick wins":** Many modernization journeys fail because they're multi-year programs but the business only sees benefits toward the end. Rather, a successful modernization initiative carefully phases and stages three- to six-month tactical "quick wins" that provide tangible benefits and build confidence in the execution capabilities of the implementation team.

Integrated modernization results in more efficient data, systems, processes and operating models that are better equipped to deliver greater business insights and support a firms' management met its strategic objectives.

Implications

Modernization projects have moved beyond a "nice to have" and are increasingly necessary for insurers to meet new regulatory and financial reporting requirements, as well as to effectively and efficiently produce and analyze the metrics the organization needs to adequately price risk and manage the business.

An integrated modernization approach can give an insurer a significant competitive advantage through:

- Cost efficiencies, from taking advantage of natural overlap among functions and avoiding duplication of effort and unnecessary disruption.

- Future adaptability, notably the flexibility to meet new accounting and regulatory compliance needs and stakeholder expectations.

- Efficiency gains, including process consolidation, streamlining and automation, and strengthened internal linkages and reduction of internal silos.
- More effective use of human capital, which will be more keenly focused on analysis and business insights.
- Internal consistency of metrics, reporting and reconciliations.

While meeting the demands of current business pressures and regulatory demands under a single modernization initiative is an involved process, we expect the benefits to approaching operational change holistically will promote better business practices, greater innovation, and ultimately provide a distinctive competitive advantage.

The deals environment

US insurance sector announced deal value has more than tripled to $10 billion in the first half of 2017, compared to $2.9 billion in the first half of 2016.[70] Activity remains robust in the brokerage sector. Among insurers, megadeals have been impacted by uncertainty in terms of the direction of tax and regulatory reforms, although some clarity has come by way of the implementation of the Department of Labor's fiduciary rule. A healthy appetite for deals should continue in the second half of the year as insurers seek to divest capital-intensive or underperforming businesses, and newly funded private equity-backed insurers continue to pursue US insurance sector assets.

M&A activity in the insurance sector tripled to $10B compared to $2.9B the same time last year.

Source: S&P Global Market Intelligence.

Key highlights - 1H 2017 deal activity

There were 249 insurance deals announced for a disclosed $10 billion 1H 2017 (including 227 deals with undisclosed deal values). Only three announced deals valued in excess of $1 billion, amounting to a total of $7.8 billion. Insurance broker deals remained the most active, comprising 90% of deal volume. For insurance underwriter deals, the life sector led the market in terms of volume, and property and casualty contributed the most to deal value.[71]

Insurance sector value by the numbers

$10B

244% Increase in deal value versus 1H 2016

58% Decrease in deal value versus 2H 2016

Insurance sector volume by the numbers

249

0% Flat deal volume versus 1H 2016

3% Decrease in deal volume versus 2H 2016

Source: S&P Global Market Intelligence.

Subsector highlights

Life and annuity: The sector has been suffering through a persistent low interest rate environment that has weighed on insurers' investment portfolios. Nevertheless, the US Federal Reserve has raised the fed funds rate two times this year and there are signs that other central banks are considering tighter monetary policies as inflation increases. Opportunities remain for insurers to exit capital-intensive or non-core businesses, with ongoing investor interest in closed blocks and narrow concentrations.

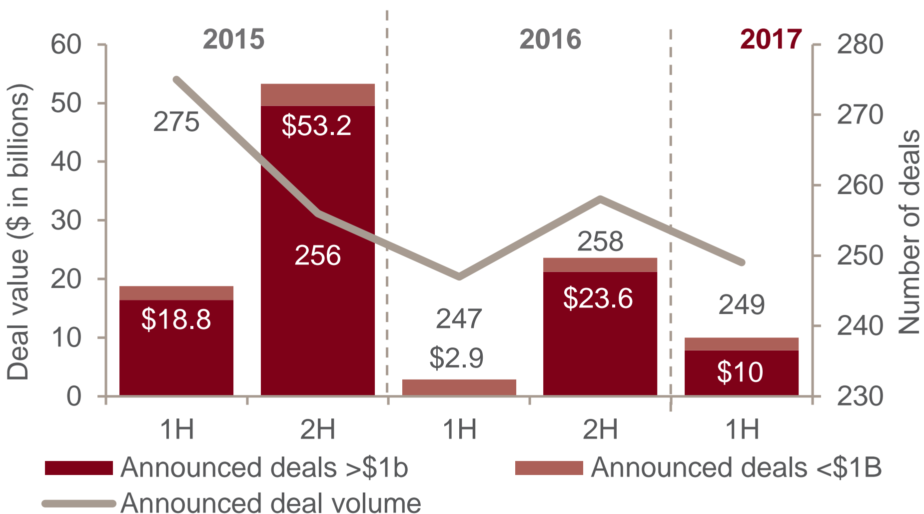
Property and casualty: Deal activity declined in the first half of 2017, as companies continue to manage macro pressures. However, opportunities remain for small to medium size companies to build much-needed scale through consolidation.

Insurance brokers: The segment continued to be the most active in terms of deal volume in 1H 2017. The most activity came from several serial acquirers buying regional brokers, further consolidating the market.

Health insurance: In light of recent government anti-trust rulings, mega-deals are off the table in favor of smaller acquisitions and joint ventures.

InsurTech: An InsurTech landscape has emerged and is attracting more and more interest from investors that look for insurance specific solutions.

Insurance M&A deal volume and value



Source: S&P Global Market Intelligence.

Implications

Even though announced deals have been light in the first half of 2017 compared to the second half of 2016, activity should intensify in the remainder of 2017 as insurers focus on cutting costs, achieving scale, and enhancing and streamlining or consolidating dated technologies.

Macroeconomic environment: The muted economic recovery, persistent low interest rates, and geopolitical uncertainty continue to constrain insurers' revenues and profitability. Life insurers have used both divestitures and acquisitions to manage the low-return environment and transform business models.

Regulatory environment: Increased oversight and uncertainty, the current presidential administration easement of certain regulations, the US Department of Labor Fiduciary Rule – all happenings spurring deal activity.

Technology: Insurers have been slower to adopt new technologies compared to banks and other financial services companies. But the times may be changing; insurers are increasing technology investments.

Foreign interest: Asian firms are continuing to expand their global footprint in the US insurance market, and Canadian buyers are also expressing interest in acquiring US companies.

Public offerings: Several major global insurers have responded to the low-growth environment in the US with significant divestitures or restructuring. There is also market speculation that other large insurance companies have similar divestiture or restructuring plans.

Private equity/hedge funds/family offices: Gone are the days of insurance brokers exclusively reigning in the private equity space. Recently, private equity firms have been entering the life and annuity market with confidence that they are better investment managers than insurers.

Getting fit for mergers and acquisitions

The disciplines that enable restructuring of established companies are also essential levers for helping deals succeed.

PwC's approach is called *Fit for Growth*.[72] This powerful discipline, which is described in detail in the book, *Fit for Growth: Strategic Cost Cutting, Restructuring, and Renewal*,[73] rests on three pillars. First, companies that are fit for growth focus on a few differentiating capabilities that lie at the heart of their competitive advantage. Companies identify those capabilities that are unique to the company and lie at the heart of its identity. Second, they align their cost structures with those capabilities. Recognizing that not all costs are bad, fit-for-growth companies manage their costs tightly and thoughtfully, freeing up funds to further invest in the "good" costs that strengthen a company's differentiating edge. Third, they organize for growth. Based on their differentiating capabilities, fit-for-growth companies design an operating model that enables and sustains cost reductions and then create the right conditions for managers to drive growth.

Typically, the *Fit for Growth* approach is used to realign existing resources at established companies with long operating histories. But the approach can also prove to be a powerful lever when companies are reorganizing and changing shape because of a significant merger, acquisition, divestiture, or spin-off.

Fit for Growth has special relevance in deals. It provides a set of guidelines that can help confirm the deal is being sought for the right reasons, that the right synergies are being pursued in the right ways, and that the new businesses are being stood up the right way — across all phases of M&A or separation.

To understand why the *Fit for Growth* approach is so valuable in deals (combinations or separations), remember that success in deal making — a high-stakes, expensive undertaking — is never assured. Our research shows that successful deals tend to fit with or enhance acquirers' core capabilities systems.[74 75] Deals that don't have such a capabilities fit usually fail to create shareholder value. At the same time, it is clear that companies are putting more at stake when they undertake transactions. There has been a resurgence in the number of transformational deals, as companies set out to expand their market reach, broaden their product portfolios, and add significantly to their technical resources and management talent. In a 2017 PwC survey, 54% of respondents said that their company's biggest deal in the last three years had been "transformational," up sharply from 29% percent in 2010.[76]

Amid the pressure to eliminate redundancies and find synergies, deal-making teams can easily lose sight of what's important and what needs to be preserved. That's why *Fit for Growth* has special relevance in deals. It provides a set of guidelines that can help confirm the deal is being sought for the right reasons, that the right synergies are being pursued in the right ways, and that the new businesses are being stood up the right way — across all phases of M&A or separation.

Implications

The *Fit for Growth* methodology itself forces companies to consider models that may suit the post-deal environment better. Companies that can tilt against the bias that "our way of doing things is always best" and demonstrate receptiveness to outside approaches will always have a shot at getting better returns on their deals. Companies that make acquisitions and merger decisions through a capabilities lens and adopt a *Fit for Growth* approach through the process will have a higher chance of success.

Federal insurance taxation

Legislative outlook

Congress is considering comprehensive tax reform that lowers business and individual tax rates, and makes United States (US) businesses more competitive in the global economy. The Trump administration and Republican Congressional leaders have set an ambitious goal of completing action on tax reform in 2017.

There is bipartisan interest in tax reform but Democratic Congressional leaders have set forth conditions Republican Congressional leaders find objectionable. Lacking a filibuster-proof, 60-vote majority in the Senate, Republican Congressional leaders are expected to consider tax reform under a special legislative procedure known as budget "reconciliation." Budget reconciliation bills, unlike most legislation, cannot be filibustered in the Senate and therefore require a simple majority (51 votes) for passage. Congress must adopt a budget authorizing tax reform under budget reconciliation procedures.

At this stage in the process, many tax reform details remain to be decided. For insurance companies, various tax reform proposals may affect the US tax treatment of their domestic and foreign operations.

"Big Six" joint statement on tax reform

On September 27, 2017, the Trump Administration and Congressional Republican leaders released a nine-page "unified framework for fixing our broken tax code" (the Framework) that includes specific goals for lower business and individual tax rates. The Framework statement is the latest product of tax reform discussions by a working group known as the "Big 6" – consisting of Treasury Secretary Steven Mnuchin, White House National Economic Council Director Gary Cohn, House Speaker Paul Ryan (R-WI), Senate Majority Leader Mitch McConnell (R-KY), House Ways and Means Committee Chairman Kevin Brady (R-TX), and Senate Finance Committee Chairman Orrin Hatch (R-UT) – and builds off an earlier July 27th joint statement.

The Framework calls for a 20% corporate tax rate, a new 25% rate for certain passthrough business income, and international reforms that include a territorial tax system and a one-time mandatory repatriation tax. The Framework proposes 100% full expensing for five years, effective after September 27, 2017, while partially limiting the deduction for net business interest expense. The plan "aims to eliminate" the corporate alternative minimum tax (AMT). It would repeal the Section 199 domestic manufacturing deduction and "numerous other special exclusions and deductions" but retains the research credit and the low income housing tax credit.

The Framework would replace the current seven individual tax brackets with three brackets with rates set at 12%, 25%, and 35%, while leaving open the possibility of providing a fourth higher tax bracket for upper-income individuals to meet President Trump's goal of ensuring that tax reform "tremendously" benefits the middle class and not "the wealthy." The Framework proposes to roughly double the standard deduction, increase the current $1,000 child tax credit, and repeal the individual AMT and the estate tax. While the plan would repeal "most itemized deductions," tax incentives for mortgage interest and charitable donations generally would be preserved, along with incentives for work, higher education, and retirement security.

The Framework calls for the House and Senate tax committees to provide specific details of tax reform legislation and resolve many open issues. Congress first must pass an FY 2018 budget resolution that is expected to provide reconciliation protections that would allow a tax reform bill to pass the Senate with a simple majority, instead of the 60 votes generally required. The budget resolution also is expected to specify how much of the tax cuts can be deficit-financed over the budget period, with the remainder having to be offset by eliminating or limiting current-law income tax deductions, preferences, and exclusions.

Healthcare legislation

Despite pressure from the Trump administration to revisit healthcare legislation, Republican leaders have been unable to garner adequate concensus/support for their proposals and have therefore said it is "time to move on" and consider comprehensive tax reform.[77]

Implications

There is little detail on specific tax reform proposals that could affect the insurance industry at the time of this document's publication. Accordingly, insurance companies will need to closely monitor how various tax reform proposals may affect the US tax treatment of their domestic and foreign operations as tax reform efforts advance later in 2017. PwC will provide timely updates on developments as they arise.

Administrative developments

A number of administrative developments occurred in 2016 concerning insurance companies.

These developments affected insurers in various lines of business:

- **Life insurers:** The most significant development for life insurers remains the adoption of Life Principles Based Reserves (PBR), effective as early as January 1, 2017, for some companies and some contracts issued on or after that date. A number of tax issues will arise as a result of the adoption of Life PBR, and the IRS and Treasury Department provided its first guidance in Notice 2016-63, setting forth rules for implementing the 2017 CSO mortality tables for purposes of testing the qualification of contracts as life insurance contracts. Life PBR remains on the annual Priority Guidance Plan, was recently identified as one of 13 "campaigns" to which the IRS will devote significant examination resources, and is the subject of an Industry Issue Resolution (IIR) project. Two other 2016 administrative developments are particularly important for life insurers. First, Notice 2016-32 provides an alternative diversification rule under section 817(h) for a segregated asset account that invests in a government securities money market fund. The new, alternative diversification rule in Notice 2016-32 facilitates such investments. Second, Field Attorney Advice 20165101F concludes that a change in the computation of the statutory reserves cap that applies to life insurance reserves is a change in basis and therefore required to be spread over 10 years. Although Field Attorney Advice is not precedential, this conclusion was controversial and companies are still considering the issue as potential changes in basis arise.

- **Non-life insurers:** IRS Attorney Memorandum (AM) 2016-002 addresses the mechanics of a change in method of accounting for unearned premiums by a Blue Cross Blue Shield organization that fails to meet the medical loss ratio (MLR) requirement of section 833(c)(5). The guidance is helpful to a broader class of nonlife insurers than Blue Cross organizations because it illustrates the operation of the unearned premium reserve and the application of section 481 to changes in accounting method more generally. In addition, in early 2017, the Departments of Labor (DOL), Health and Human Services (HHS) and Treasury issued Frequently Asked Questions about ACA implementation, including guidance defining the term "health insurance coverage." Under that guidance, the provision of Medicaid coverage to Medicaid recipients as a Managed Care Organization, and the provision of coverage under a Medicare Advantage organization or plan or a Medicare prescription drug plan is not "health insurance coverage." This interpretation could have the effect of excusing some companies from the compensation deduction limitation of section 162(m)(6) and could clear up confusion created by two prior Chief Counsel Advice memoranda (201610021 and 201618010).

No payments will be required in 2017 under the ACA Health Insurance Provider fee as a result of that fee's suspension under the Consolidated Appropriations Act of 2016. Health insurance providers are still required to file Form 8963 for the 2017 year pending legislative developments on the repeal and replacement of the ACA. Finally, some insurers (particularly health insurers) anticipate significant guaranty fund assessments as a result of the liquidation of the Penn Treaty America Insurance Company. Many such companies (other than Blue Cross organizations) account for those payments on a reserve basis as premium-based assessments under Rev. Proc. 2002-46.

- **Captive insurance companies:** Section 831(b) allows certain small, nonlife insurance companies to elect to be taxed only on investment income and not on underwriting income. This provision remains a significant administrative priority for the IRS. For example, Notice 2016-66 identifies a significant number of such companies as participants in "transactions of interest" for which reporting is required. Those reporting requirements are broad and a large number of companies are in the process of reporting. The IRS also has identified "micro captive" insurance companies as a "campaign" issue that is a priority for the IRS in targeting its examination resources. The recent IRS win in Avrahami v. Commissioner, could draw yet more attention to captive insurers that elect to be taxed under section 831(b).

- **Regulations under Section 385 (characterization as debt or equity):** In the spring 2016, the IRS and Treasury Department proposed regulations that would establish a contemporaneous documentation requirement that must be satisfied for certain related party debt to be respected as debt and recharacterize as equity certain instruments that were intended to be treated as debt for Federal income tax purposes if they are issued in connection with certain distributions and/or acquisitions, even if they met the documentation requirements. The proposed regulations generated significant Congressional and taxpayer concern, including nearly 200 unique comment letters. In the fall 2016, the IRS and Treasury Department released final and temporary regulations. The government made significant changes in the final regulations in response to taxpayer comments. In particular, the scope of the proposed regulation was narrowed for many (but not all) insurance companies in the final and temporary regulations. However, the final regulations make no special provision for life insurance companies that are prevented from joining a consolidated return by the life-nonlife consolidated return limitations, nor do they provide specific guidance on the treatment of a company's obligations under funds withheld reinsurance. See discussion below on the revocation of these regulations in October of 2017.

- **Regulations Under Section 987:** The IRS issued final and temporary Section 987 regulations in December 2016. The final regulations implement an accounting regime based largely on proposed regulations issued in September 2006, to account for income earned through a qualified business unit (QBU) that operates with a functional currency different than that of its owner (e.g., foreign branches). Similar to the 2006 proposed regulations, the final

regulations generally do not apply directly to insurance companies but may be relevant to non-insurance affiliates. See discussion below on the revocation of these regulations in October of 2017.

2016 -17 priority guidance plan

As in prior years, the IRS and Treasury jointly issued a Priority Guidance Plan outlining guidance it intends to work on during the 2016-2017 year. The plan continued to focus more on life than on health or property and casualty insurance companies.

The following insurance-specific projects, many of which carried over from last year's plan, were identified as 2016-2017 guidance priorities:

- Final regulations under §72 on the exchange of property for an annuity contract. Proposed regulations were published on October 18, 2006.
- Regulations under §§72 and 7702 defining cash surrender value.
- Guidance on annuity contracts with a long-term care insurance rider under §§72 and 7702B.
- Guidance under §§807 and 816 regarding the determination of life insurance reserves for life insurance and annuity contracts using principles-based methodologies, including stochastic reserves based on conditional tail expectations.
- Guidance on exchanges under §1035 of annuities for long-term care insurance contracts.
- Guidance relating to captive insurance companies.

Less clear is what projects the 2017-2018 Priority Guidance might include. This uncertainty is due in part to three Executive Orders issued in the early days of the Trump Administration. The first Executive Order, E.O. 13771, requires that for every newly issued regulation, at least two prior regulations be identified for elimination, and sets the goal of zero total incremental cost of all new regulations. The second Executive Order, E.O. 13777, directs agencies to establish a Regulatory Reform Office and a Regulatory Reform Task Force, with the goal of limiting regulatory burden by identifying outdated and ineffective regulations. The third Executive Order, E.O. 13789, aims to identify significant regulations issued by the Treasury Department since 2016 that are deemed to be overly burdensome, complex, or overreaching the IRS's authority. In October 2017, the Treasury Department released its 'Second Report to the President on Identifying and Reducing Tax Regulatory Burdens', which recommends Section 385 and Section 987 should be withdrawn, modified, or revoked. Although the application of these notices to tax guidance may prove to be limited, they nevertheless could cause the IRS and Treasury Department to prioritize projects differently. In addition, the selection of items for inclusion in the 2017-2018 Priority Guidance Plan will be affected by the recent change in Administration.[78]

Implications

- Life insurers should consider the effect of Life PBR tax issues on product development, financial modeling, and compliance as some companies consider a January 1, 2017, effective date.
- Nonlife insurers who move in and out of insurance company status (or whose products move in and out of insurance contract status) should consider whether the recent AM sheds light on the application of section 481 to insurance specific items such as unearned premium reserve.
- Health insurers can expect significant changes in tax rules and, in particular, one-time transition rules as a result of the 2017 suspension of the Health Insurance Provider Fee and continued uncertainty around the fate of the ACA.
- Captive insurers – particularly micro captive insurers – should be prepared for additional IRS scrutiny as a result of the Priority Guidance Plan item promising guidance and the identification of the micro captive issue as a "campaign."

Workforce of the future: The competing forces shaping 2030

We are living through a fundamental transformation in the way we work. Automation and 'thinking machines' are replacing human tasks and jobs, and changing the skills that organizations are looking for in their people.

We are living through a fundamental transformation in the way we work. Automation and 'thinking machines' are replacing human tasks and jobs, and changing the skills that organizations are looking for in their people. These momentous changes raise huge organizational, talent and HR challenges – at a time when business leaders are already wrestling with unprecedented risks, disruption and political and societal upheaval.

The pace of change is accelerating. Competition for the right talent is fierce. And 'talent' no longer means the same as 10 years ago; many of the roles, skills and job titles of tomorrow are unknown to us today. How can organizations prepare for a future that few of us can define? How will your talent needs change? How can you attract, keep and motivate the people you need? And what does all this mean for HR?

This isn't a time to sit back and wait for events to unfold. To be prepared for the future you have to understand it. In PwC's *Workforce of the Future: The competing forces shaping 2030*, we looked at how the workplace might be shaped over the coming decade. We drew on research that began in 2007 by PwC and the James Martin Institute for Science and Civilization at the Said Business School in Oxford and a specially commissioned survey of 10,000 people in China, India, Germany, the UK and the US. This has given us insights into how people think the workplace will evolve and how this will affect their employment prospects and future working lives.

The messages for leaders

Act now: This isn't about some 'far future' of work – change is already happening, and accelerating.

No regrets and bets: The future isn't a fixed destination. Plan for a dynamic rather than a static future. You'll need to recognize multiple and evolving scenarios. Make 'no regrets' moves that work with most scenarios – but you'll need to make some 'bets' too.

Make a bigger leap: Don't be constrained by your starting point. You might need a more radical change than just a small step away from where you are today.

Own the automation debate: Automation and AI will affect every level of the business and its people. It's too important an issue to leave to IT (or HR) alone. A depth of understanding and keen insight into the changing technology landscape is a must.

People not jobs: Organizations can't protect jobs which are made redundant by technology – but they do have a responsibility to their people. Protect people not jobs. Nurture agility, adaptability and reskilling.

Build a clear narrative: One-third of workers are anxious about the future and their job due to automation – an anxiety that kills confidence and the willingness to innovate. How your employees feel affects the business today – so start a mature conversation about the future.

The four worlds of work in 2030

No exploration of the future of work will ever be conclusive. Indeed, one of the defining characteristics of our age is its ability to surprise and confound. We developed 'Four Worlds of Work' for 2030 which will kick start your thinking about the many possible scenarios that could develop, and how to best prepare for the future. Remember that your starting point matters as much as your destination; the best response may mean radical change, or perhaps just a few steps from where you are today. Your resulting strategy will inevitably mean a combination of obvious, 'no regrets' actions and the occasional, educated leap of faith.

In a world with few rules, a vibrant market of specialists and niche profit-makers race to serve the needs of individuals and powerful affinity groups.

1. Innovation rules: The Red World

In a world with few rules, a vibrant market of specialists and niche profit-makers race to serve the needs of individuals and powerful affinity groups.

A world of innovation with few rules: The Red World is a perfect incubator for innovation. New products and business models develop at lightning speed, far more quickly than regulators can control. Technology encourages the creation of powerful, like-minded, cross-border social 'bubbles'. Businesses innovate to create personalization and find new ways to serve these niches. There are high rewards for those ideas and skills that best meet what companies and consumers want. But in a world with few rules, the risks are high. Today's winning business could be tomorrow's court case.

Agility and speed are essential: Big business has been outflanked in a digital-enabled world that's teeming with small entrepreneurial companies. Digital platforms match worker with employer, skills with demand, capital with innovator, and consumer with supplier. This enables serial entrepreneurs to reach far beyond their size in terms of influence and scale.

Anxious to compete, larger employers fragment to create their own internal markets and networks to cut through old-style hierarchies and encourage and reward workers to come up with new ideas. The pace of development and testing of new products and services has accelerated, increasing the risk of brand damage and failure.

What it means for workers: Specialization is highly prized in the Red World and a career, rather than being defined by an employer or institution, is built from individual blocks of skills, experience and networks. Near-zero employee organizations are the norm. Organizations of a few pivotal people use technology, the supply chain and intellectual property, rather than human effort and physical assets, to generate value.

The commercial value of learning takes precedence; a university degree is seen as less valuable than specific and relevant skills or experience. Workers know that the most sought-after skills will mean the biggest reward package. Many move frequently and stay only as long as the project or business lasts. Contract negotiations are key and ownership of intellectual property and the freedom to work are as important as financial incentives.

2. Corporate is king: The Blue World

Global corporates take center stage. Consumer choice dominates. A corporate career separates the haves from the have nots.

Global corporations take center stage. Consumer choice dominates. A corporate career separates the haves from the have nots.

Capitalism reigns supreme: In the Blue World, companies see their size and influence as the best way to protect their prized profit margins against intense competition from their peers and aggressive new market entrants. Corporations grow to such a scale, and exert such influence, that some become more powerful than nation states. Success depends on a productive workforce as large companies compete for the best talent. They push past the limits of human ability by "investing in augmentation" technology, medication and implants to give their people the edge.

Extreme talent: Corporations may dominate the Blue World, but workforces are lean. Exceptional talent is in high demand – employers secure a core group of pivotal high-performers by offering excellent rewards but otherwise buy in flexible talent and skills as and when they're needed. Human effort, automation, analytics and innovation combine to push performance in the workplace to its limits; human effort is maximized through sophisticated use of physical and medical enhancement techniques and equipment, and workers' performance and wellbeing are measured, monitored and analyzed at every step. A new breed of elite super-workers emerges.

What it means for workers: For workers in the Blue World, the pressure to perform is relentless. Those with a permanent role enjoy excellent rewards, as

do in-demand contract workers with specialist skills – but both know that their future employability depends on keeping their leading-edge skills relevant. A corporate employer separates the haves from the have nots; companies provide many of the services, from children's education, eldercare and healthcare, previously provided by the state. The price workers must pay is their data. Companies monitor and measure obsessively, from the location of their workforce to their performance, health and wellbeing – both in and outside the workplace. Organizations use the data to predict performance and importantly, to anticipate people risk.

The need for a powerful social conscience is paramount. Workers and consumers show loyalty toward organizations that do right by their employees and the wider world.

3. Companies care: The Green World

The need for a powerful social conscience is paramount. Workers and consumers show loyalty toward organizations that do right by their employees and the wider world.

Companies have to care: In the Green World, corporate responsibility isn't just a nice-to-have – it's a business imperative. Companies are open, collaborative organizations that see themselves as playing an essential role in developing their employees and supporting local communities.

Reacting to public opinion, increasingly scarce natural resources and stringent international regulations, companies push a strong ethical and green agenda. This is characterized by a strong social conscience, a sense of environmental responsibility, a focus on diversity, human rights and fairness of all kinds and a recognition that business has an impact that goes well beyond the financial. Trust is the basic currency underpinning business and employment. Companies have to place their societal purpose at the heart of their commercial strategy.

The automation conundrum: Automation and technology are an essential element of the Green World as they help to protect scarce resources and minimize environmental damage. Technology is used extensively to replace the need for travel, driving rapid innovation in communications technology. But the question of where people fit into the automated Green World looms large. Technology is a double-edged sword for Green World employers – it allows them to meet their ethical and environmental agenda, but at what cost to humans?

What it means for workers: Employees enjoy family-friendly, flexible hours and are encouraged to take part in socially useful projects. They trust their employer to treat them fairly in terms of pay, development and conditions and in return are expected to reflect the culture of the company in their approach and behavior. The high-ethical standards to which companies are held has cascaded down to employees; conduct and ethics are taken very seriously at work and performance is assessed against a wide range of measures, including how efficiently workers manage their travel and resources.

Fairness and social good are dominant. Businesses with a heart and artisans thrive in a bustling and creative market with a strong emphasis on ethics and fairness.

4. Humans come first: The Yellow World

Fairness and social good are dominant. Businesses with a heart and artisans thrive in a bustling and creative market with a strong emphasis on ethics and fairness.

We're all in this together: In the Yellow World, workers and companies seek out greater meaning and relevance in what they do. A strong desire for 'fairness' in the distribution of wealth, resources and privilege drives public policy, leading to increased government intervention and consumers and workers voting with their feet. Workers find flexibility, autonomy and fulfilment, working for organizations with a strong social and ethical record. This is the collective response to business fragmentation; the desire to do good, for the common good. A wider range of work is regulated by a concept of 'good jobs' and decent work; moving away from traditional employer/employee relationships.

The two sides of technology: Technology has helped to create the vibrant Yellow World by lowering barriers to entry by providing easy access to crowdfunded capital and a worldwide market. This enables entrepreneurial companies to compete in areas previously within the domain of large organizations. But there is a central conflict around technology and automation; in the Yellow World, people are less likely to take the downsides of automation without a fight. As more people are impacted by technical advances and see their skills become obsolete, disaffection and the push-back against policies that seem to favor the 'elite' grow. However, 'invisible technology' such as AI-driven 'back office' functional support and the automation of tasks that are damaging or impossible for humans, still pervades.

What it means for workers: Workers feel the strongest loyalty not to their employer, but to people with the same skills or cause. The Yellow World is the perfect breeding ground for the emergence of new worker guilds, similar to the craft associations and trade fraternities of the Middle Ages. These guilds develop in order to protect, support and connect independent workers and often provide training and other benefits that have traditionally been supplied by employers.

Implications: The 'no regrets' moves for organizations

Organizations are faced with an array of choices when looking at the future. This requires an understanding of the possibilities – both desired and undesired – to plan accordingly. No matter what the future holds, PwC believes there are some 'no regrets' moves that apply universally, which are highlighted below.

Linear predictions don't cut it

- Plan for multiple and emerging visions of the future using a scenarios approach.
- Understand clearly how each creates different workforce challenges and implications.

Make decisions based on purpose and values

- Build a future-looking understanding of how humans and machines might collaborate to deliver your corporate purpose.
- Clarify your values and behaviors that underpin your policies, processes, decision-making and priorities.
- Identify and engage with internal and external stakeholders to manage their expectations and cocreate the future of work.
- Create an open and transparent narrative on how you are influencing, planning and delivering on the future of work – for your organization, society and individuals.

Embrace technology as a force for good

- Clarify how robotics and AI can enable the redesign of work, enhance productivity and customer experience, and enable a focus on more value-added tasks.
- Use sophisticated workforce planning and predictive analytics to plan for talent pipelines in multiple future scenarios.
- Look for ways technology can enhance your people offering for potential and existing employees.

Focus on the humans and the humane

- Understand the skills you have in your workforce now and the gaps to the skills you will need in the future.
- Think beyond simplistic concepts like 'we need more STEM skills'.
- Strengthen innovation, creativity, empathy and leadership capabilities in your business alongside critical technology skills.
- Make talent and capabilities management a matter of urgency – or risk losing the battle to harness technological breakthroughs and innovation in your sector.
- Build and nurture adaptability in your workforce by harnessing a flexible talent mix, new ways of working and learning, and radically different career paths.
- Redesign traditional 'one-size-fits-all' HR programs and policies to deliver on new learning and development models, career paths, capability models and the redesign of jobs and compensation frameworks.

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Footnotes

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