EMERGING ISSUES

Internet of Things, Mobile, Robotics, 3D Printing, Artificial Intelligence

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POLLING QUESTION 1

What are you most looking forward to with emerging tech in the future?

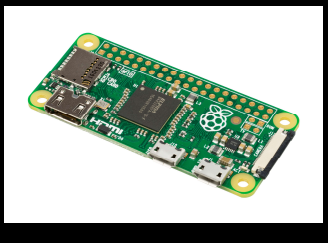
1. Cool gadgets in my home and car to make my life easier
2. Letting the machines do (most) of my work for me
3. Access to anything, anytime I want it
4. A safer, more productive, more connected world
5. Something else?

POLLING QUESTION 2

What are you most worried about from emerging tech?

1. 'Big Brother' invading my privacy
2. Cyber attacks that cripple the world (or at least parts of it)
3. Losing my job to robots and AI
4. Electromagnetic radiation contaminating my body
5. Something else?

IOT BASICS



- Function: flexible like a computer
- Connectivity: can add wifi to existing electronics
- Uses
  - Can attach to sensors to collect data
  - Actuators can control other devices
- Size: small, integrates well with other devices
- Cheap: Raspberry Pi with wifi ~$20

EXAMPLE USE CASES OF IOT

- Flo, Roost, Phyn – Water detection to help prevent or mitigate home water claims
- Fitbit, Striiv, etc. for health data
- See your box – IoT device inside shipping packages to track contents (particularly sensitive contents)
- Auto telematics devices such as Snapshot by Progressive
- Nest - smoke alarms, thermostats, security cameras, doorbell camera,
- Drones, while a separate category in their own right, can send video/photo data over internet. Can use for inspections, roof damage photos, etc.
- Beam Technologies – toothbrush that provides feedback and works with dental insurance companies to offer discounts

IOT POLLING QUESTION

Would you have your home security system linked to your phone via the internet?

1. No way, too easy to hack, I don't trust it
2. No, good idea but those things never work like they're supposed to
3. Sure, would be great to be able to control locks, lights and alarms from the convenience of my phone and get notifications if the alarm is triggered

OPPORTUNITIES AND RISKS OF IOT

Opportunities:

- Billions and billions of expected cost savings >> fuel efficiency, reduced maintenance, optimize operations
- Real time data collection >> shift toward loss prevention/mitigation
- Additional data points for insurers to use in pricing, underwriting, claims, etc.
- Possible touchpoint of additional customer interaction

Risks/Challenges:

- Interconnectivity of devices to critical systems
- One autonomous vehicle can generate about 4000 GB of data per day (just for one hour of driving) >> how feasible will it be to collect, analyze and store all this data
- Will savings and benefits be offset by new risks? >> cyber, product liability, business interruption, etc.

MOBILE POLLING QUESTION

Do you think driving data collected using mobile phones is reliable?

1. Yes – the data is very accurate
2. Not perfect, but no cost to insurer and better to use than having no data
3. Data isn't reliable enough. Need a dedicated telematics device.

MOBILE BASICS

- Provides a customer interaction opportunity through web, apps, texts, chatbots
  - Can be more than just policy purchase, renewal, and claim
  - Push notification for apps related to IoT devices in home
- Also a multi-purpose IoT device – built in sensors include accelerometer, gyroscope, magnetometer, GPS, barometer, proximity sensor, ambient light sensor, fingerprint scanner, camera, microphone, etc.
  - Accelerometer can measure driving behaviors
  - Fingerprint scanner for secure login to app
- Potential for large amount of data about customer: behavior, contacts, social networks, location, banks/payments, etc.
  - Where were they at time of claim?

EXAMPLE USE CASES OF MOBILE

- Insurify – take photo of license plate to get auto quote
- Measure driving on phone – Root, Carrot Insurance, Milebox, True Motion
- Snapsheet – mobile claims handling (including photo of car damage) to settle claim remotely
- Purchase policy on phone – Lemonade, Trov, etc.
- Push notifications for relevant coverage offerings (e.g., travel insurance offering based on phone location) - Neosurance

MOBILE RISKS & OPPORTUNITIES

- Apps for personal lines are being used. Is this approach suitable for commercial lines?
- How do we use photos as data?
- Are we ready, able and willing to accept massive amounts of data collected by mobile devices?
- How do we address security and cyber issues?
- Privacy concerns – what will consumers be comfortable sharing?
- Augmented & Virtual Reality – Farmers already using VR to train claims adjusters. What about in the field? What about uses by customers?

ROBOTICS

ROBOTICS BASICS

- Large interaction with Artificial Intelligence, but doesn't require AI
- Humanoid robots (e.g., C3PO) tend to focus on human interaction
  - Care givers
  - Toys for children
- Non-humanoid robots (e.g., R2D2) tend to be more task-oriented and do more repetitive or dangerous work
  - Robotic arms – cooking, bartending, factory work, surgery, etc.
  - Roomba to clean your home
  - Package/food delivery
  - Bomb detection
  - Farming – e.g., pruning and harvesting crops
  - Exploring Mars – Nasa Curiosity Rover

ROBOTICS INSURANCE IMPACTS

- Mostly relevant in commercial lines today with industrial robots
  - Coverages: mechanical breakdown, products liability, (less) work comp
- Personal lines impacts will only increase
  - More household robots (including toy drones)
  - Autonomous cars
- Does liability belong to robot owner or robot manufacturer?
  - What if you customize your robot?
  - What if robot damages your own property?
- Are robots susceptible to hacking?

OPPORTUNITIES AND RISKS OF ROBOTICS

- About 300,000 industrial robots sold in 2016. Several factors are expected to further drive demand. What is a 'robot'?
- We are removing workers from high hazard occupations. >> How does this change our WC exposure evaluation? Is payroll still a valid exposure base?
- Robots are being used to make deliveries, interview job candidates, administer medical care, and even run hotels. >> robotics are appearing even in non-high tech applications. How does this change our evaluation of these exposures?
- Would you trust a robot to protect you?
- On the horizon: Nanotechnology
  - Extremely small robots
  - High-risk/high-reward
    - Sample benefit: treating individual cancer cells directly
    - Sample risk: inhaling nanoparticles could lead to pulmonary diseases

3D PRINTING POLLING QUESTION

Would you be comfortable using 3D printed products on your home renovation project?

1. Absolutely, it should save me $$
2. No way, don't trust the strength and durability of those items
3. Maybe, if the contractor convinced me they knew what they were doing

3D PRINTING BASICS

- The industry consensus is that 3D printing has evolved beyond the hype, prototype and novelty stage and must be recognized as a mainstream technology.
- 3D printing is a process of making a three dimensional solid object of virtually any shape from a digital model.
- Common materials used are plastics, synthetic resin, plaster powder, glass powder, metal powder, thermoplastics, ceramics, food (oils and powders) and cement.
- Why is it so exciting?
  - Shorter development time for new products
  - More simplified production
  - Customization – complex shapes can be lighter & stronger
  - Less waste

3D PRINTING INSURANCE IMPACTS

- Is 3D printing a product or a process?
- Who is liable if something goes wrong? Software developer? Printer manufacturer? Printer operator? Materials manufacturer?
- What is the durability of 3D printed products?
- Prem ops risks become manufacturing?
- Significant risks presented by open platforms >> cyber and product liability
- Blurred line between general and professional liability

3D PRINTING RISKS & OPPORTUNITIES

- Less need to hold inventory – print on-demand
- Over 80 3D printed medical devices have been approved so far by the FDA. >> would you use a 3D printed body part?
- Construction materials are being made via 3D printing >> would you live in a house made from 3D printed bricks?
- Will this technology help bring manufacturing jobs back to the US? Or will the machines replace human workers?
- Can it achieve the size, scale and speed to fulfill expectations?
- Can items lost or destroyed be 'replaced' with new 3D printed items?
- Will some 3D printed items be stronger? safer? better risks?

AI POLLING QUESTION

Are you comfortable with your car automatically swerving to avoid a collision?

1. Of course – I want to be kept safe
2. No, because I don't think it is necessary
3. No, because I don't trust the car to make the correct decision

WHAT IS AI REALLY?

- Not rule-based systems (e.g. Expert Systems for Underwriting)
- "Learns" from supplied data & algorithms to recognize patterns & make probabilistic predictions
  - Source data can include numbers, text, images, videos, sound, etc.
  - Neural networks are common choice of algorithm – designed to mimic the brain
  - Can create a "black box" – we may not understand AI predictions/decisions
- Already at super-human levels for specific tasks
- Crap-in/crap-out rule for data still applies (and insurance data is not great)
- Still not at a general AI – some debate about when this comes (philosophical implications aside)
- Impact of AI has been compared to electricity – it affects everything

AI IN PRACTICE TODAY

- Image recognition
  - Classification – e.g., Cape Analytics determining roof type from satellite imagery
  - Evaluating property damage – e.g., Tractable identifying damage to car
  - Medical diagnosis – e.g., predict onset of cancer earlier and more accurately
  - Emotion AI – e.g., Affectiva recognizing emotions from facial expressions, such as tiredness of driver
- Natural Language Processing (NLP) – e.g., RiskGenius comparing policy contracts
- Line underwriting – scoring whether a new policy application needs human review
- Data security – identify previously unknown types of cyber threats
- Fraud detection – recognize patterns of fraudulent claims
- Recommendations – Get recommendations based on prior activity or purchases (e.g., Netflix, Amazon)

AI OF THE FUTURE

- Automated decision making in risky situations (e.g., car swerving for you)
  - How comfortable are we accepting decisions and predictions that we didn't make?
- Use of AI in pricing, particularly for less regulated lines and areas (e.g., UK)
- Bias is an issue – training data that reflects existing biases will persist in AI, and risk becoming trusted as the system is "intelligent"
- Are our data systems ready for AI?
- Impact on insurance jobs
  - Changing skill sets
  - Loss of (most?) jobs

UTOPIA OR DYSTOPIA?

Utopia

- Much better loss prevention & mitigation for existing risks
- Robots/AI do all our work!
- Total convenience
- Self-sufficience

Dystopia

- Significant new risks created by the use of newer technology
- No jobs / existential crisis
- Total susceptibility to hacking
- Loneliness

WHAT DO YOU THINK?