A FUTURE DAY IN THE LIFE OF DR. BROWN

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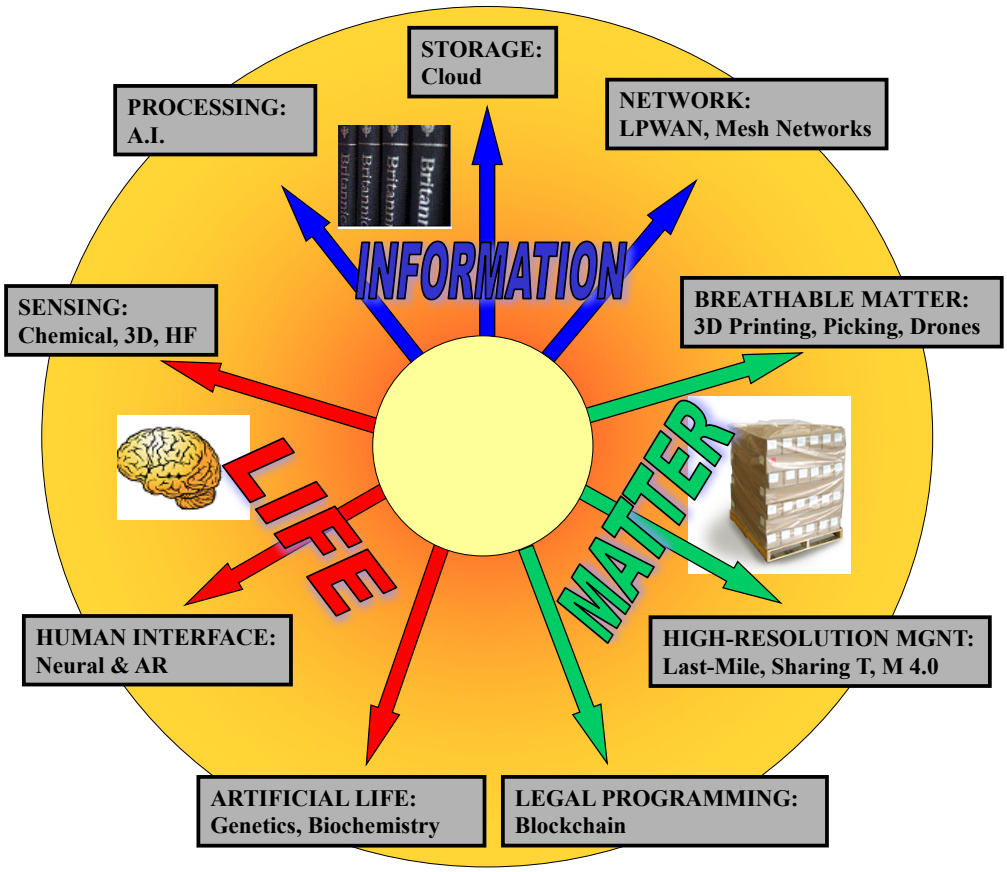
OVERVIEW

This project invites you into an imaginary future as we take Dr. Brown and her family through a day in their lives, illustrating many yet-to-exist pertinent technologies, their potential applications, and their possible status of development. It is not realistic today because we will assume that in our imaginary future, the state of development of the Internet of Things, Big Data and Cybersecurity is much more mature than it is currently. The project is designed to explore the potential use of technologies being developed by research laboratories. The state of development of the technologies required varies, and some of them may turn out not possible in the foreseeable future. The scenario is organized into nine vignettes: three that focus on life (Sensing, Human Interface and Artificial Life), three on information (Processing, Storage, and Networks), and three on matter (Breathable Matter, High Resolution Management, and Legal / Governance / Ownership). The diagram below illustrates these nine broad groupings. Each of the vignettes below will have more of a focus on one of the nine groupings than the others – indicated by the title on the page.



7:30AM - 8:30AM: ARTIFICIAL LIFE

TECHNOLOGY BRINGING INTELLIGENCE TO NOVEL NON-HUMAN LIFE FORMS

As the sun rises, Dr. Brown's dog, Muddy, has almost finished his morning walk and is heading back for breakfast at the family home. As Dr. Brown puts the meal on the table, she receives a notification that coffee and oranges are likely to run out so she places an order on her fridge.

Muddy receives an alert through his feedback collar that there are some groceries to be picked up. Meanwhile, Dr. Brown is keeping a somewhat watchful eye on Muddy through the collar's 360 stereoscopic camera and location tracking displayed on the kitchen countertop. Dr. Brown isn't too concerned, though. She knows that if he were to veer too far off course, a geofence alert would be triggered.

At the neighborhood convenience store, Muddy receives further feedback through the collar, directing him to dog collection flap. After picking up the shopping, Muddy looks outside and notices the driverless taxi that has its destination set to return Muddy home. As he approaches the car, the door opens and Muddy and his cargo are securely fastened in, as the taxi pulls away from the curbside.

9:45AM – 11:45AM: SENSING

EMERGENCY HEALTH SENSORS AND 3D NAVIGATION

Muddy has arrived back home and is cleared for entry by the home defense system. As he walks into the kitchen, RFID tags allow for stock levels and use-by dates to be proactively monitored by the cloud kitchen IoT assistant.

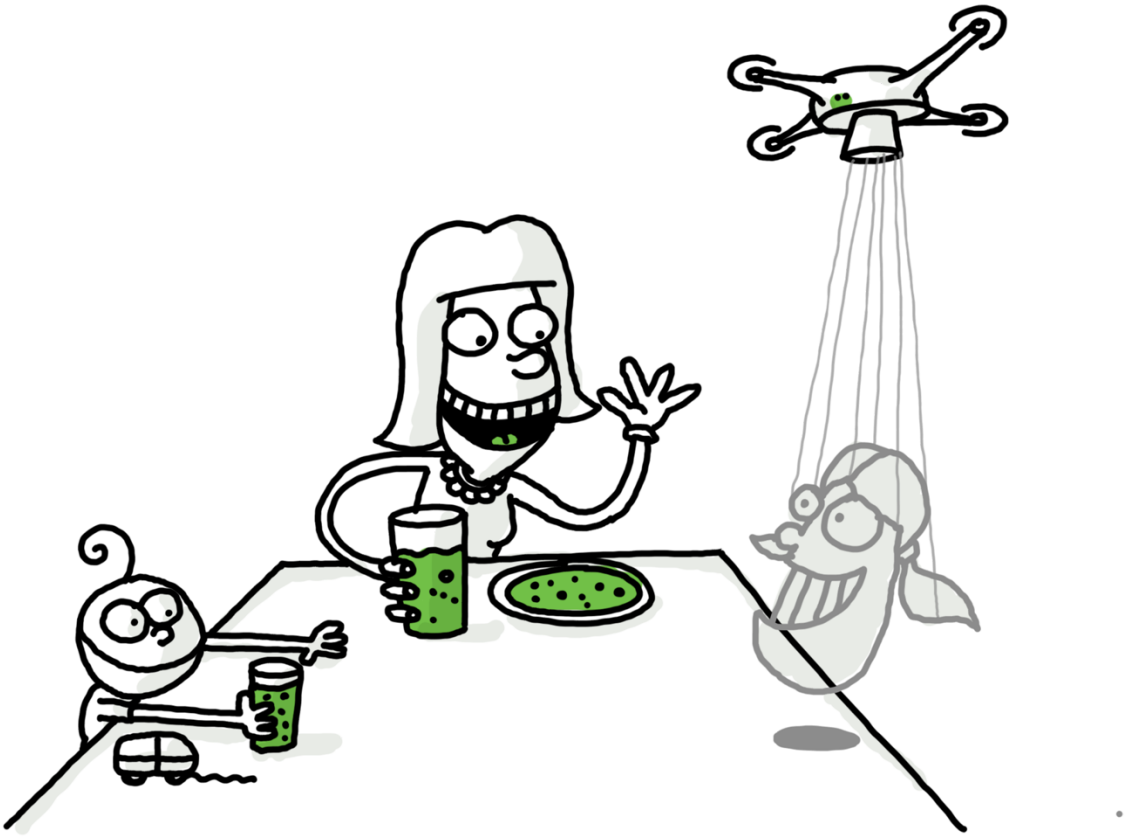
Just as Dr. Brown passes the last bag of oranges from Muddy to her robot assistant to put away she receives an augmented reality notification that a baby cot in the neighborhood has detected an arrhythmia in its baby's heart. Dr. Brown runs out of the front door looking over the baby's vital signs as her peripheral vision keeps track of the sidewalk's flashing emergency alert lights, guiding her to the address of the unfolding emergency.

Several drones are dispatched from the hyper-local clinic and arrive with the appropriate equipment for infant resuscitation, alongside appropriately diluted adrenalin and fluid preparations for just such an occasion. A local community self-driving car has repurposed itself to serve as an ambulance, tracks Dr. Brown, and picks her to drive the last 1000 yards to the address at bullet train speed with all other vehicular traffic paused for a couple of seconds to allow them to pass safely with ease.

The concerned parents are just starting to grasp the gravity of the situation, and as panic is about to set in, they are relieved as Dr. Brown and the equipment drones enter the room to save their baby's life.

12:30PM - 1:30PM: HUMAN INTERFACE

AR INTERFACES FOR HUMANS



After a job well done and the neighbor's IoT psychological assessment assistant conducting a post-trauma interview, Dr. Brown sits down for lunch. The robot assistant has picked up the freshly squeezed juice from the other side of the kitchen and has placed a glass softly down for Dr. Brown and a plastic cup for her son. As the robot assistant exits, he switches the juicer to its silent self-cleaning program.

As the assistant leaves the room, Dr. Brown starts the daily family lunch debrief with her daughter and son. Her daughter's holographic head is broadcasted from a projection drone hovering above the table. While they reflect on their expedition holiday last year, Dr. Brown starts to forget her daughter is currently at college on the other side of the country, until that is, her daughter starts to recount the crazy virtual party she attended over the weekend with her new partner.

Everyone at the table is made aware that Dr. Brown has a call with a board member shortly that she needs 30 minutes to prepare for, and that the daughter is going to do some collaborative online shopping from 2pm at the spa with friends. With this, the call is closed and the robot assistant takes the son for his mid-day bubble bath. Dr. Brown requests one of the community self-driving cars for a prompt 1:55pm pickup – she'll take the call en route to the office.

2:00PM - 2:35PM: PROCESSING

AI REASONING AND PROCESSING LIKE HUMANS

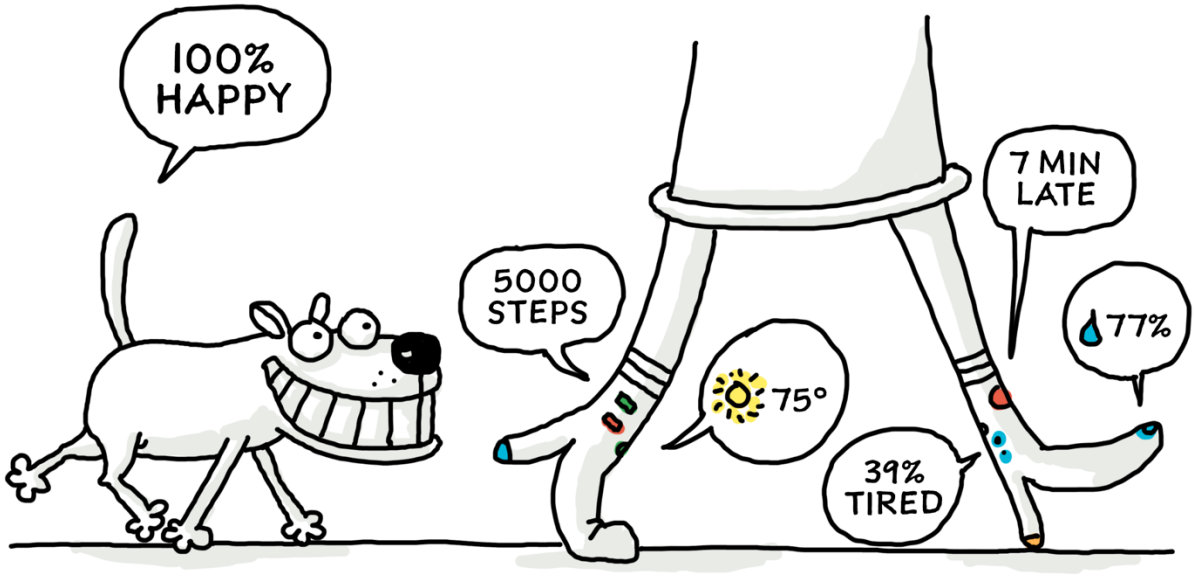
After a relaxing lunch and the daily debrief with her children, it's now time for business. Dr. Brown has just gotten into the community self-driving car and started her call a moment ago with a hospital board member in Sweden. Though she and the board member are each speaking in their native languages, the call is seamlessly translated. However, she decides it's time to cut the call short when her AI mood and personality analysis module informs her that the board member is genuinely incredibly frustrated, and it may be better to bring up the delicate issue of funding another time.

In the meantime, the community car's sensors are detecting potholes and are continually filing reports with the local government transportation authority, while performing a slalom run along one of the main highways. Government highway funding has been cut recently so the early detection algorithms have really been proving their worth.

As she closes the call, Dr. Brown takes a moment to consider how she might use this trip to work more effectively now that the call will be rescheduled. The in-car assistant has the perfect idea: she ends up talking to the AI-enabled teaching assistant about the type of feedback she wants students to receive in her freshman class on biology. She focuses on how the bot will grade the first problem set, and what students should remember long-term.

2:55PM – 3:25PM: STORAGE

INFORMATION STORED IN A DISTRIBUTED, SECURE, AND EFFICIENT MANNER



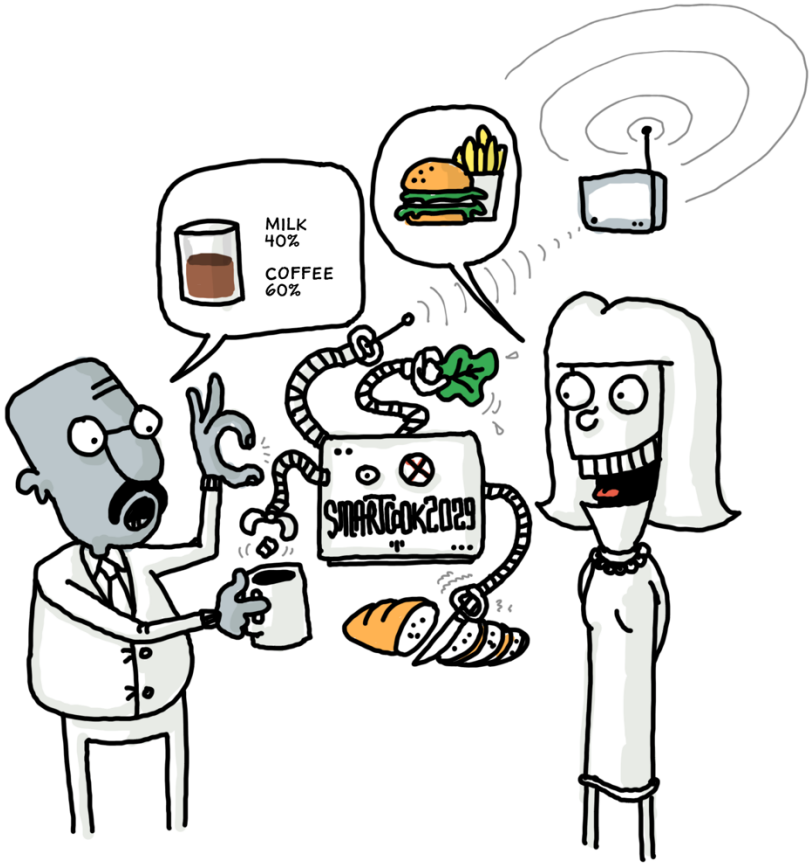
Even in this distant future, fresh air is still as appreciated after a challenging call. The car suggests Dr. Brown finish her trip to work walking with Muddy. Signaling her approval with a quick smile, the in-car assistant gets to work requesting the community car to pull over, intersect with, and amend Muddy's afternoon walk so that he can accompany her on the last mile to the office.

As Dr. Brown steps out of the car, her shoes immediately start to capture, process, and relay tile status information from sensors in the sidewalk to a remote data store. Alongside the overall environment status and maintenance data for the built environment, her personal stats are also uploaded for big data analysis.

On reaching the threshold of the office premises, the front door opens automatically. Dr. Brown's office is already set to her favorite light, humidity, and temperature settings. The computers in the room are back on, and her first appointment of the day with a student is highlighted on the main wall, alongside the student's recent concerning grades. The educational IoT assistant has highlighted a selection of potential in-class solutions specific to the student's individual needs and behavioral traits.

4:20PM - 4:40PM: NETWORK

INFORMATION SHARING NEAR AND FAR



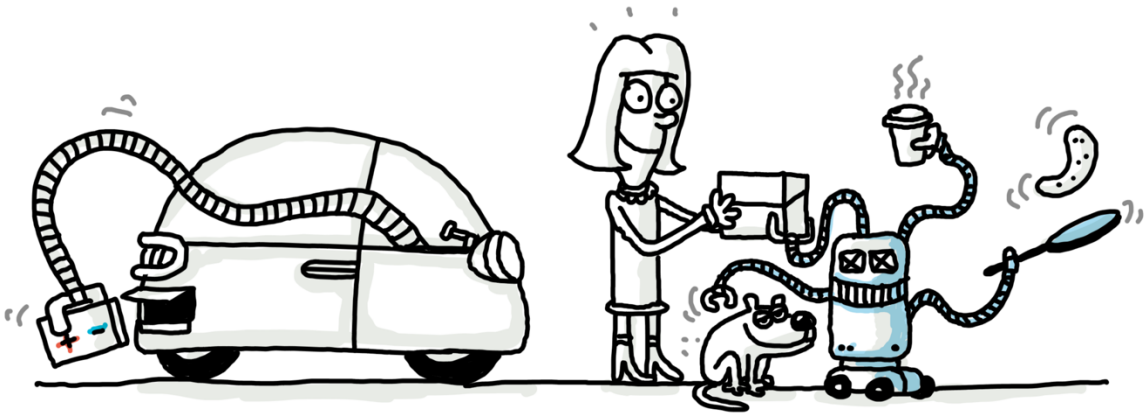
After her first few student appointments Dr. Brown consults her office networking app to see which relationships currently need attention. Mike, the head of human resources, has indicated to the system that he's concerned that he hasn't been getting enough face time to discuss the upcoming contractual changes with her over the past few months. Seeing this, Dr. Brown schedules an afternoon snack appointment through her virtual assistant.

As she enters the room, Mike – who is well known for loving his artisan coffee – is using precise hand gestures to guide the robot cook on how to obtain the optimum coffee to cream equilibrium. Dr. Brown says hello to Mike and starts discussing his recent award for a record high in robotic staff efficiency levels. Taking a quick pause, she makes eye contact with the robot cook who determines through facial recognition that Dr. Brown is here for her pre-ordered protein salad. Once Dr. Brown takes the salad, lights highlight optional side dishes that would complement the meal.

All the while, the robot cook has been communicating its current storage levels via RFID to campus supply trucks for replenishment. Exiting her chat with Mike, Dr. Brown is informed her balance has been charged as she makes eye contact with a scanner. A pleasant voice informs her an additional discount was applied for her fifth healthy meal this week!

5:00PM - 5:10PM: BREATHABLE MATTER

FINE MANIPULATION - ASSEMBLY TASKS THAT UNTIL NOW ONLY HUMANS COULD DO



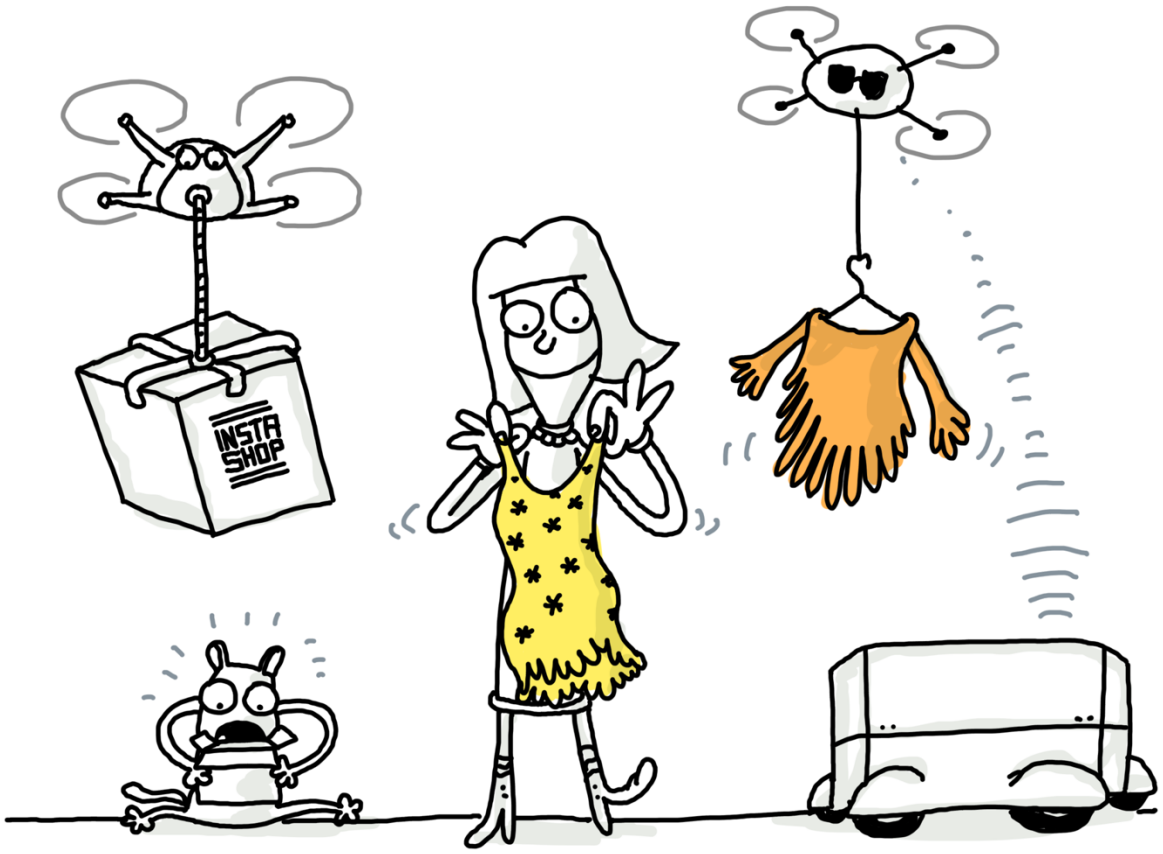
Having left the office after finding out some of Mike's efficiency secrets, Dr. Brown gets in the community car that picked her and Muddy up from the office and requests a stop at a human-less grocery store. En route, she puts in an order for a coffee and sandwich. On arrival, Dr. Brown exits the vehicle and walks up to the attendant robot. In route, the car breathes solar power battery packs and routes other packages using empty trunk space. Muddy has walked across to the pet grooming robot that detects Muddy's physiology and gives him a backrub and ear tickle.

Dr. Brown confirms with the picking attendant robot her coffee and sandwich. At the same time, the robot continues making sandwiches and pancakes for another customer. The store is busy with many of the community self-driving cars briefly stopping on their way back to workers' residences. In the back of store several other robots are packing and restocking shelves.

As Dr. Brown smiles in satisfaction with the first sip of a well-deserved coffee, payment is taken automatically from her account and she gets back into the community car.

5:15PM – 6:35PM: HIGH RESOLUTION MANAGEMENT

MANAGING TINY QUANTILES OF MATTER



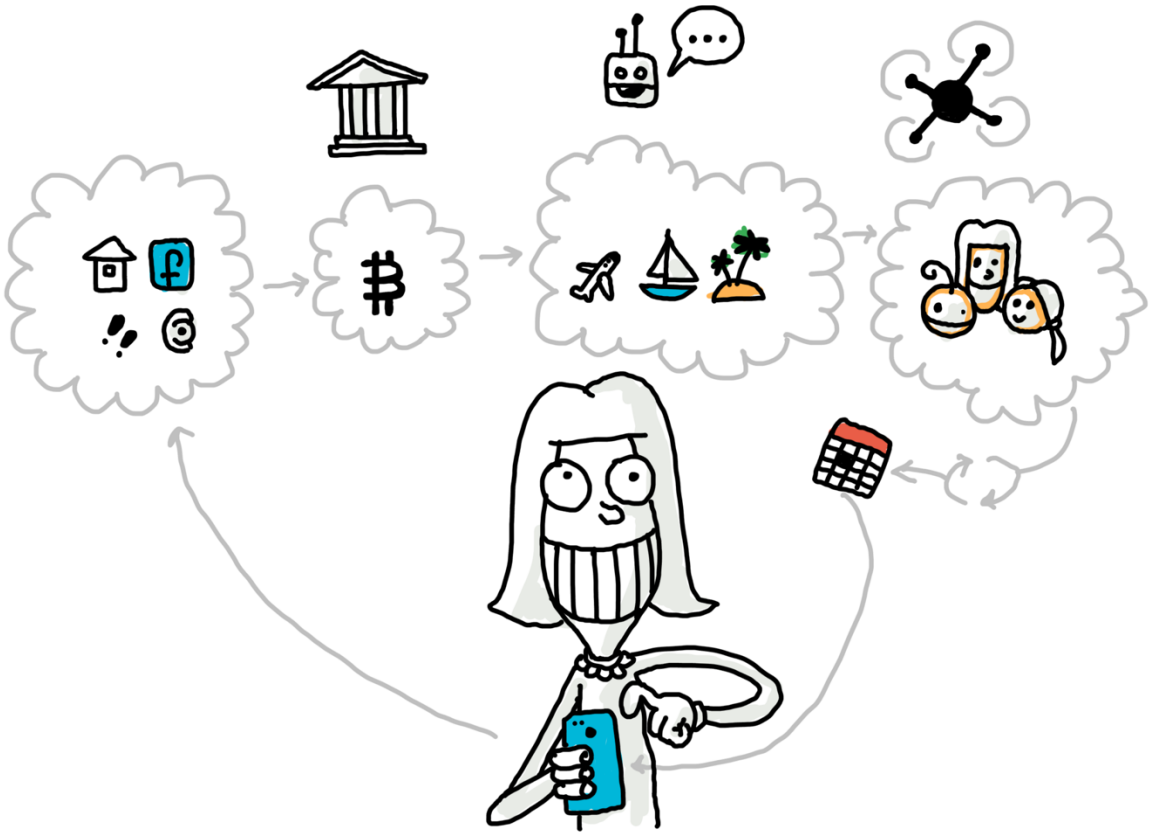
As the community self-driving car continues on its route back to her home, Dr. Brown receives a notification that construction robots nearby have just completed a new pop-up shop from her favorite designer! Dr. Brown decides to make a brief diversion on the way home, and notifies the in-car assistant with a strong intentional thought.

Dr. Brown arrives in the midst of another pop-up shop being put together on the other side of the road from packets transported in spare space in the trunks of the other community self-driving cars. RFID enabled supply chain is continually monitoring stock levels. Dr. Brown selects her look for the week ahead and by picking up the items she triggers the proof of delivery and purchase. Payment is automatic and the pending balance is collected on exit.

One more summer dress, Dr. Brown thinks. All the dresses in her size and favorite cut are pushed forward on the rail, but there is nothing else that catches her eye and she makes her way out back to the car. The clothing RFIDs are wiped on exit – they will now be used to monitor the time until the clothing should be replaced for the upcoming autumn winter season.

7:30PM – 10:00PM: LEGAL PROGRAMMING

TECHNOLOGIES ENABLING NEW CONTRACTS, PAYMENTS, AND GOVERNANCE SCHEMES



Finally, Dr. Brown makes it home. After saying goodnight to her son and Muddy she retires upstairs to review the household finances. Her IoT negotiation agent's holographic avatar appears and suggests changing the utility company to which she sells her social media and home activity data. Apparently, there is a great joining bonus for those with more than 35 years of social media history and more than 5k followers. Immediately her cryptocurrency balance is updated.

Before Dr. Brown settles into bed, the IoT negotiation agent re-emerges to politely suggest that now would be the optimum time to book a family vacation, given her daughter's recent exam stress, and her son's recent success in the kindergarten entrance examination. She agrees and the negotiation agent updates all calendars, requests and receives approval for holiday time from work, and pre-books the community self-driving car for an express journey to the airport.

As she lies down, Dr. Brown is pleased to learn that her family has overtaken their closest friends in overall exercise and activity rates. The next calendar item on the wall is two hours of pre-breakfast reinforcement learning, but that will wait for the morning, she thinks, as she selects her favorite full sensory ambient sleep playlist and closes her eyes.