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MINUTES
CITY OF FORT COLLINS
FUTURES COMMITTEE MEETING

Date: November 13, 2017
Location: Council Chambers, City Hall, 300 Laporte Ave.
Time: 4:00–5:00pm

Committee Members Present:

Wade Troxell, Chair
Kristin Stephens
Ray Martinez

Bob Overbeck

City Staff:

Darin Atteberry, City Manager
Jeff Mihelich, Deputy City Manager
Jackie Kozak-Thiel, (Staff Liaison)

Presenters:

J.B. Holston, Dean, Daniel Felix Ritchie School of Engineering and Computer Science,
University of Denver

Additional Staff Present:

Teresa Roche, Chief Human Resources Officer
Jackson Brockway, Business Analyst
Lance Smith, Utility Strategic Finance Director

Community Members:

Dale Adamy, citizen
Kevin Jones, Fort Collins Area Chamber of Commerce

Meeting called to order at 4:06 pm

Approval of Minutes:

Kristin moved to approve October minutes. Ray seconded. Motion passed unanimously. 3-0-0.

Chairman Comments: None

Think Tank Item 7-2017: Artificial Intelligence

J.B. Holston, Dean of the Daniel Felix Ritchie School of Engineering and Computer Science at the University of Denver, presented on Artificial Intelligence and its potential impact on municipalities.

- There is not a universally accepted opinion regarding the future of AI. Examples of headlines in the news:
 - *Artificial intelligence is going to change everything*
 - *Is AI riding a one-trick pony?*
 - *Google's AI guru predicts humans and machines will merge within 20 years*
 - *Without humans, artificial intelligence is still pretty stupid – Wall Street Journal*
 - *AI is NOT replacing us*
- Themes:
 - No one real answer as to AI's future
 - It's not too early to start discussing the regulatory, legislative implications for AI
 - Need to start getting multi-constituent group together to prepare.
- Background:
 - Different forms of AI: assisted intelligence, automation, augmented intelligence, autonomous intelligence
 - Different types of machine learning/data learning. The techniques that we're using to apply AI are changing due to massive amounts of data. Intersection of factors are causing pace of AI to increase.
 - We are improving our ability for AI systems to analyze data and visualizations by about 2% each year.
- Where AI fits into broader trends:
 - AI is allowing for processing of massive amounts of data in a way that's different than before.
 - Internet of Things enabling connected living in smart cities. We'll distribute about 20 billion systems everywhere by 2020 (sensors in energy management system, light poles – any sub-system you can imagine that reports data for optimization). AI will be needed to track and analyze the massive amount of data collected by these sensors and the location of data storage is unpredictable.
 - The data that these sensors are collecting will be reported and stored somewhere, but there are privacy and security implications for citizens.
 - The earlier you think about the big data and AI implications of smart cities, the better.
 - “Smart Solutions for Smart Cities” – ideally Fort Collins will have thought about these solutions 40 years out. Will have massive amounts of data that needs interpretation using AI.
 - If City is not processing, 3rd party vendors certainly will be.
- Impacts of AI on jobs:
 - Bottom-line: AI is not replacing jobs, it's replacing tasks.
 - Jobs affected by AI are going to be jobs that are very process and task-based. Entry-level accountants and associate attorneys are examples of impacted jobs.
 - Evolution of the employee – AI enabling a different form of work. Puts pressure on who you recruit and retain.
- McKinsey conducted research to decompose tasks in various jobs.

- Administrative and government jobs – if you decompose all tasks, administration and government jobs are less susceptible to automation.
- Tasks with unpredictable physical work, stakeholder interactions, applying expertise, and managing others are least susceptible to automation.
- Arguing that jobs that do not have routinizability are not at risk of being automated.
- How predictable is the task? Where it's predictable, the AI is automating.
- Transportation/motor vehicle automation. J.B.'s thoughts on AV demonstrations:
 - J.B. says City should play in the AV space in a really big way. Opportunity to be ahead of it and lean in.
 - Many conflicting opinions on this subject, though. Some predict by 2030 there'll be nothing but autonomous vehicles, others say it's such a complicated problem and we aren't there yet.
- By 2018, more than 3 million workers globally will be supervised by a “robo-boss”
 - Deficit for data scientists and data analysts can be addressed by increasing the training for students in those areas. Increase STEM at high school level.
- NVIDIA's AI may keep watch over smart cities of the future
 - Deep- learning AI system 'Metropolis' as example
 - We are not far from the ability of sensors to have extremely clear picture of what everyone is doing. There are tremendous policy implications. Who owns the data? How much of data can be shared?
 - Point: a lot of constituents affected by this don't know they're affected.
- Biggest discussion in AI right now is surrounding ethics. Examples:
 - Data makes it easier to give jail sentences, but there may be implicit bias in the algorithms.
 - Issue: these systems are self-learning and we can't quite figure out how they're learning. Discussion regarding how to slow systems processing down to make it less of a black box.
 - Good news: these machines are learning quickly, but we need to keep up.

Comments/Q&A:

- Philosophy in Fort Collins: public access to data is a positive thing and could lead to further innovation. Does J.B. agree with this philosophy?
 - J.B. agrees, but City should focus on the security and privacy implications and ability to process the data collected from sensors. Suggestion to have policies in place regarding images and other data that is collected.
- Are there think-tanks or other organizations that are handling AI transitions well?
 - They are emerging. Do not have them yet in CO, but we need a statewide effort to come up with expertise.
 - Carnegie Mellon, Stanford, Uber, Harvard (center at Harvard) have expertise.
- AI wants to kill robots. Reasoning behind getting rid of drones?
 - The push to regulate automated drones is because they have the power and ability to interpret at a very high rate. The technology is to the point that you don't need any human control.
 - *Artificial intelligence is now an arms race. What if the bad guys win* – article from the World Economic Forum discusses this further.

- An important foundational aspect of smart cities and AI is being a connected community. If you're a disconnected community, you will fall behind.
 - It's one thing to be connected, but also literacy of connectivity is important.
- Digital infrastructure in India: elections, federalized system for election technologies and able to take federal decisions and mandate state compliance.
- AI's impact on the profession of engineering?
 - Agreement that engineers of tomorrow have to be digitally literate.
 - Question in computer science of impact on AI because if AI can code, what will be the purpose of computer science.
 - Embed methodologies of design thinking. Need empathetic, agile-oriented mechanism to determine solution.
 - Bigger issue than AI in engineering is that they can't get enough women and minorities in field.

DO: Next Steps

- Think about Smart Cities solutions and policies.
- Consider workforce planning and the types of jobs that consist of tasks that AI will impact.
- Remember that there are a lot of unknowns with AI and things are changing quickly.

Additional Discussion:

None.

Meeting adjourned by Wade Troxell at 5:01 pm.