

Appendix C: Staff Report - General Research Findings

In June 2018, the Emerging Technology Staff Advisory Team began interviewing experts and researching emerging technology in other cities. In all, the team conducted 59 interviews, researched 28 cities and other organizations, and had dozens of other interactions. The team also surveyed 80 participants who attended our first two Emerging Technology Open Working Group listening sessions on July 9 and July 23.

Who we interviewed	Listening Session Attendees
<ul style="list-style-type: none"> ● 13 Community Groups ● 7 Non-Profits ● 17 Private Sector ● 12 City Staff ● 10 Government ● Researched 28 Cities 	<ul style="list-style-type: none"> ● 57 Nonprofits ● 51 Community Members ● 29 Small Businesses and Industry ● 22 Private Sector ● 37 City staff

From this research, our team identified the parameters for the definition of emerging technology. We then used survey feedback to select guiding principles and identify City goals for emerging technology. Finally, we identify potential benefits and challenges associated with emerging technology as well as an initial list of recommendations.

The following notes reflect the Emerging Technology Staff Advisory Team notes upon the conclusion of the research phase in August 2018.

Definition of Emerging Technology

From City's perspective, emerging technologies include:

1. technologies,
2. applications of technology, and/or
3. business models

which:

- A. are in development and have only been tested at market level on a limited basis;
- B. The city identifies a public interest in governing because they are expected to have a measurable impact economically, socially, or ethically in the next five to ten years; and/or,
- C. Do not fit within existing regulatory categories or schemes within San Francisco.

The first part of the definition captures how technology advances. For example, widespread connectivity has led to the creation of new technologies as well as novel business models. The second part of the definition identifies when the City wants to be involved: early on. Local government needs to be involved when the public is likely to be impacted and when the technology cannot be easily regulated within the City's existing model.

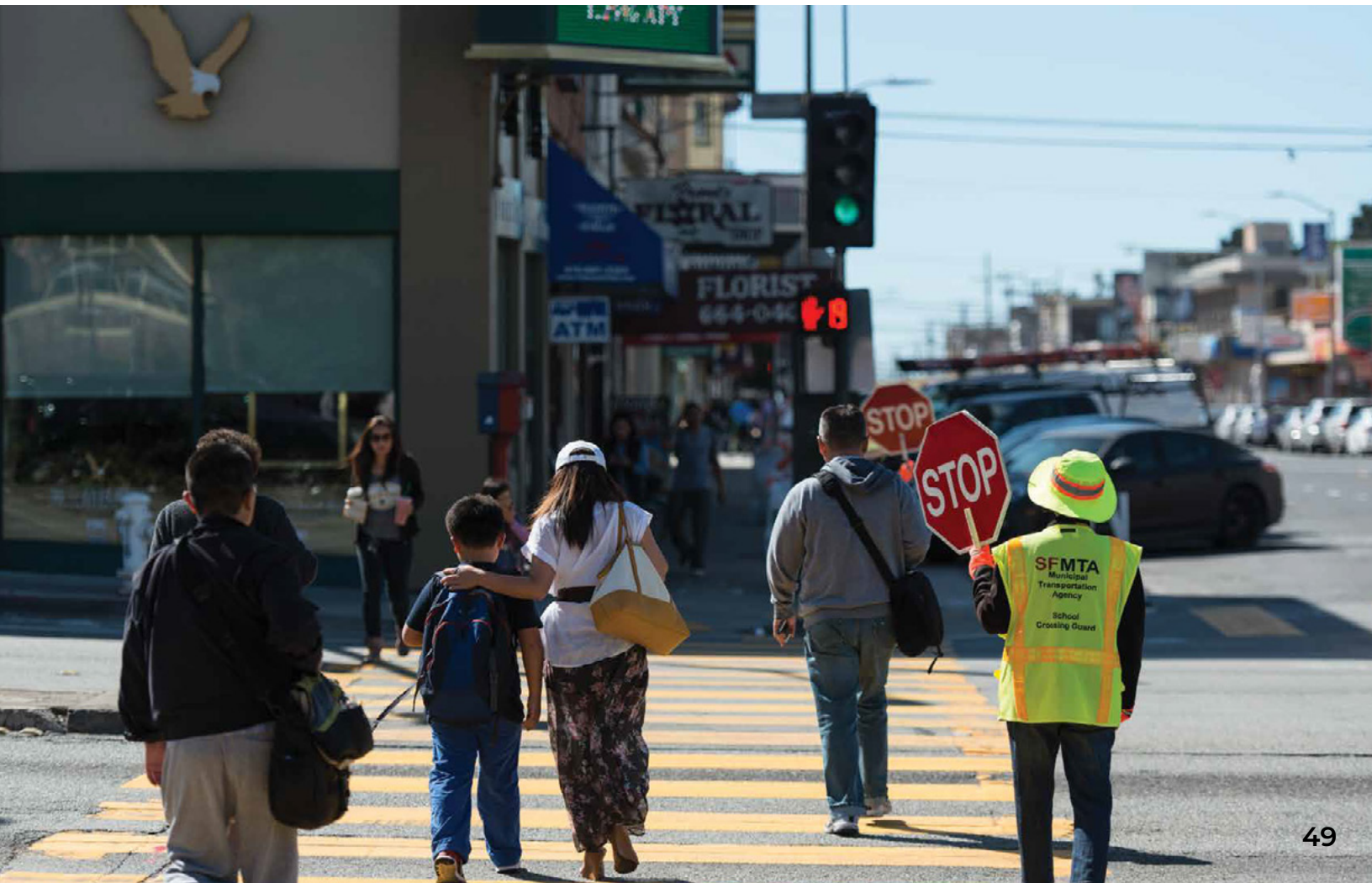
Guiding Principles

We asked survey participants from our Emerging Technology Open Working Group listening sessions to choose which principals they believed were most critical for the successful implementation of emerging technologies. The top ten results include:

1. Accessibility
2. Equity
3. Public Value
4. Regulation that is nimble and responsive
5. Net common good
6. Accountability
7. Collaboration
8. Public safety
9. Security
10. Sustainability

Going through the results in more detail, we also identified five major themes from the responses:

- 1. Quality of life.** Respondents believed a primary goal for emerging technology should be improving the quality of life for residents. This includes increased public safety, justice, prosperity, and livability.
- 2. Public-private relationships.** Respondents believed strong public-private partnerships were important for enhancing safety and providing equal services to all residents. Respondents described a responsive City framework that is not over burdensome and that fosters and promotes innovation.
- 3. Equity.** Respondents wanted to create a technology ecosystem in San Francisco that delivers an equitable distribution of the benefits of technology across all residents.
- 4. Innovation Leadership.** Respondents were well-aware of San Francisco's leadership as a center of innovation. They believed the best way to maintain this title is with a City leadership that is balanced and informed. City leadership should also allow the public to drive the process on technology decisions.
- 5. Informed Community.** Respondents focused on the need for informed, connected, and supported communities that understand and benefit from the opportunity brings, especially with regard to a higher quality of life.



How can emerging technology benefit San Francisco?

City leaders throughout the world, subject matter experts, industry members, and community groups all provided explanations of how new emerging technologies might improve quality of life in San Francisco. Our survey participants also are enthusiastic about the potential of emerging technology. When asked in a survey whether technology can have a positive impact on their community, all 60 respondents rated at least a four on a scale from one to seven (seven being a very positive impact on the City). Even more encouraging, 78% of respondents rated a six or seven.

The benefits identified from our research and survey responses include:

- bolstering quality of life for residents,
- improving City functions, and
- increasing engagement between residents and City government.

These benefits ranged from concrete examples in other cities to more theoretical future benefits. Many caveated these benefits with potential tradeoffs, risks, and other considerations, which we focus on in the next section.

Participants suggested that new technologies can be used to improve equity and safety for residents, encourage creativity and sustainability, and foster community. For example, new technologies might help the City ameliorate food deserts, improve mobility for residents with disabilities, or reduce carbon emissions. Technology could also be leveraged to connect artists for public works projects or provide tools for communities to organize and problem-solve.

Participants believed that new technologies might also be used to help the City run more efficiently. Technologies might help city planners and businesses understand trends to make informed decisions, including understanding and tracking displacement. Emerging technology could also bring a more agile and adaptive approach to the way City services are delivered. Technologies might also help the City advance priorities by reducing costs and creating new revenue streams. Additionally, technology has the potential to streamline bureaucracy, allow the City to respond to citizen demands more quickly, and improve coordination among services.

Respondents also described ways emerging technology could improve engagement between residents and the City. For example, technology might democratize services, allowing residents to understand City functions and improving transparency and accountability. Technology might make civic duties easier, like voting. Technology also might allow residents to engage with public spaces in new ways.

Potential Challenges of Emerging Technology

In addition to identifying opportunities that technology presents for San Francisco, participants shared concerns about obstacles that could prevent the city from realizing its goals. Broadly, concerns can be sorted into three buckets, relating to concerns about the:

- public sector's role
- technology itself
- intersection of City government, technology, and the community

On the government side, some participants are concerned about the City's politics as well as its ability to be nimble, not overregulate, and to use data to make informed decisions. Participants worried that political calculations, special interests, and/or a lack of strong leadership might impede the successful implementation of emerging technology. Respondents also believed bureaucracy, including government silos and the instinct for rigid governance that is then interpreted differently within government are two barriers to creating an effective framework for emerging technology. Also highlighted are questions around whether the City can leverage data to identify problems and find solutions.

On the technology side, some participants responded that they were fearful of technology, while others focused on the potential for bad actors or issues of privacy, security, and safety. Participants voiced concern that companies might focus too narrowly on profits without mitigating unintended consequences of their products and services, leading to subpar privacy and security.

Participants also had broad concerns at the intersection of government, technology, and the community. This includes poor communication between and different pacing of government and technology companies, lack of accountability, and misaligned incentives between (and within) sectors. Participants also worried about a lack of awareness and outreach to communities and had limited faith that emerging technology would be used to target problems that are important to the community.

Potential Recommendations

The Working Group's initial research was focused on information gathering from experts and understanding the aspirations and concerns from advocacy organizations and communities. Along the way, experts and participants included recommendations to consider as the Emerging Technology Open Working Group moved forward. Below are some suggested recommendations, grouped by topic.

Big Picture recommendations:

- **Create a vision and goals.** Create a vision and series of goals for emerging technology companies to respond to when they're seeking to work in San Francisco.
- **Build a city network.** Convene a network of cities to encourage testing in small and mid-size cities that can inform governance across cities and provide paths for technologies to scale
- **Reinforce good behavior.** Find opportunities to praise and support PR for companies that enhance city values or goals

Regulatory recommendations:

- **Create a single "front door" with one point of contact in the City.** This could include a simple checklist that provides guidance on what companies can and cannot do and a mechanism to guide companies through the process and tell them who they need to talk to. This system should be designed to incentivize companies to engage with the City.
- **Experiment.** Use experimentation as a principle, and have a streamlined process for experimentation. One way to do this without fixing the market is to create testbeds, like FAA is doing with drones. Demonstration projects allow the city to have a standardized way to pilot new technologies.
- **Use outcomes oriented compliance.** Create a performance based system that says what the City seeks but not how companies have to get there for regulatory standards. For instance, define "this is what it means to be safe" and require companies to show how they can meet that standard.
- **Iterate.** Regulate adaptively and have a multi-step regulatory process. This relies on continuous monitoring to keep track of concerns, find problems, and propose and implement minimal regulations to solve them.
- **Give time to small companies.** Provide small and early stage companies with time to comply with new regulations in a way that doesn't put them out of business.

Equity and Accessibility recommendations:

- **Rely on community advocates.** Work with trusted organizations to reach vulnerable populations and train them to train residents on how to use new services
- **Use purchasing power.** Use government purchasing as an incentive to make products **accessible**
- **Find ways to engage affected communities.** Create a channel for people who haven't been able to participate or who have been disadvantaged through technology to open a channel of conversation. Do not try to work on these problems without having people who are affected by the problem there.

Data and privacy recommendations

- **Work with outside organizations for data analysis.** The City could pilot a partnership with a 3rd party (e.g. a university) to disaggregate and analyze data and create reports for the City.
- **Ensure interoperability.** The City should ensure data interoperability so more than 1-2 companies can emerge.
- **Don't reuse data.** Data gathered for one purpose shouldn't be reused for another purpose without checking in with the data source.
- **Require data collection transparency.** Regulate that companies provide transparency around what's going to happen with the data they collect
- **Require data deletion standards.** Ensure that companies do not store data for longer than is needed for the reason it was collected.

Forecasting recommendations:

- **Coordinate with communities with insider knowledge.** Coordinate with external communities like the World Economic Forum and the Venture Capital community
- **Balance between experts and private sector.** Recognize that experts are much better at predicting new technologies than business models that will be successful, while the private sector is better at identifying business models
- **Forecast for the largest number of possibilities.** Identify a wide set of probable futures - rather than a single, most probable one - and develop a strategy that will handle the largest number of possibilities (not necessarily the most probable possibility).
- **Use patent trends.** Review patent trends to understand how companies are thinking about the future

Conclusion

Our conversations with experts and our community provided the City with a solid foundation for approaching a framework for emerging technology. This process helped us temperature check how communities feel about emerging technology and where and how people thought the City should leverage new technologies. It also allowed us to check any blind spots we might have, identify what people believed to be major pain points, and clarify areas for further research.