URBAN AGRICULTURE IN NEW BRUNSWICK

Presentation Text

RALPH W. VOORHEES CIVIC ENGAGEMENT FELLOWS & COMMUNITY DEVELOPMENT FOOD STUDIO

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Part I. Introduction to Client and Project

[SLIDE EP Mission]

The Fall 2011 Community Development and Voorhees Studio worked with Elijah's Promise to develop a plan that explores the potential to grow and process food in New Brunswick, estimate the purchasing power for fresh produce in the city, and identify growing and processing models that include community economic development goals like job training, education, and entrepreneurial business development and community food security goals such as increasing access to healthy affordable food for community residents.

[SLIDE 3 Teams]

To address these questions, the studio divided into three research teams: urban agriculture, buying power, and mapping. The mapping team explored places to grow food in the city and mapped those locations. The urban agriculture team researched innovative ways to produce, distribute, and process food using cost effective, energy-efficient methods from production to post-consumption. The buying power team investigated who might buy produce grown in the city and what they might buy. The teams integrated what they learned to produce a few ideas to grow New Brunswick's Food Hub, improve food security, and increase jobs, education, and training.

[SLIDE Methods]

The team employed a variety of methods. We interviewed restaurant, University, and soup kitchen food buyers, toured the Rutgers Food Innovation business incubator in Bridgeton with Margaret Brennan, visited Professor Jack Rabin at the Rutgers Student Farm, chopped tomatoes at the Rutgers Food Development and Manufacturing Center in Piscataway, tested soil and learned about recycling water with Jack Rabin and Michele Bakacs from the Middlesex County Agricultural Extension Office, toured the Rutgers Farm Market with Jaymie Santiago, hosted the SouperVan and learned about their social enterprise, and we worked with Stacey Brody, Gwen Greenberg, Paul, and Lorena Gaibor to refine the maps, find what's growing and identify where we might grow. And we hosted a meeting with the Intersect Fund, EP, and City Planning to think about the potential to realize New Brunswick's Food Hub.

We met many extraordinary people and institutions along the way who are wonderful partners moving forward. So let's see where we can grow in the city!

Part II. Where to Grow Food in New Brunswick

[SLIDE Map Growing and Growable]

New Brunswick is a fairly dense city and we might not expect to find much food growing but food is growing all over. Rutgers, the New Brunswick Farm market, community organizations, religious groups, elementary schools, and RIPE, the Rutgers student permaculture club all garden in the city. And individual residents garden in their back, side, and front yards. After talking with community leaders, we identified places shown here in yellow where gardening could be expanded. You'll notice we include already existing open spaces like public parks, two large open spaces in front of the middle school, and many vacant lots. Rutgers, highlighted in red, has a lot of vacant land where things could grow.

[SLIDE Unity Square Map]

To get a better sense of what happens in a neighborhood, we took a closer look at the Unity Square community. The Unity Square community organization hosts three community gardens. A short walk around suggests just how green the thumbs of many of the city's residents are. Tomatoes, peppers, tomatillos, squash, and cucumbers peak out from backyards, and climb up trellises propped up along houses. Backyard, side yard, and front yard gardens abound! We also noticed just how large these backyards are. The homes on these streets offer ample opportunity for backyard gardening.

[SLIDE Rooftops Maps]

For those without ground space, flat roofs make great community gardening spaces! To get a sense of the potential for rooftop gardening, we surveyed roofs on parcels owned publicly, by non-profit organizations, or by Rutgers. We thought it might be easier to access these roofs for a gardening project. We used Bing Maps and its "Birds Eye View" to see if a roof was flat. We labeled flat roofs as "suitable," sloped roofs as "not suitable" and partially flat roofs as "partial" and left those we couldn't determine to survey

in person for another day. We found that out of 717 roofs, 122, more than half of the total area, are flat making them suitable for gardening. Most are on publicly owned parcels or they are Rutgers buildings.

[SLIDE Downtown Roof Map]

Many large institutional buildings downtown have flat roofs. Given their location, these buildings are accessible to many community residents. Buildings like the Bloustein School might create an opportunity to begin a rooftop project in the city, to provide training, and learn by doing. Rooftop gardening has many challenges and barriers but the approach is successfully used across the country.

[SLIDE Ways To Grow in the City]

Part III. Growing in the City

Now we'll discuss a few growing models to feed the imagination of homeowners, renters, religious institutions, restaurants, teachers, public employees, school children, hospitals, universities and everyone else! We start with backyard gardens.

[SLIDE – Backyard Garden]

Residential gardeners can grow food in a variety of places such as their yards, planters, raised beds, small hoop houses or greenhouses or even hanging porch baskets. Backyard gardening increases access to fresh fruit and vegetables and offers physical and mental health benefits, and may save gardeners money. Some residents pool their backyards and garden collectively to share produce. Residents can tend their own gardens or they can collectively hire a farmer. University of Maine volunteers grow food in senior citizens' gardens and, in exchange for their labor, receive some excess produce (University of Maine Cooperative Extension).

[SLIDE Community Garden]

Community gardening offers an opportunity to engage community residents, share resources, and build community networks while increasing access to healthy foods. Community residents can eat, share, or possibly sell what they produce.

[SLIDE St. Philip's Academy]

Rooftop gardening can take place in containers or directly on the roof's surface which is known as a green roof. An intensive green roof system produces the best yield, but it can be expensive to install, puts a heavier strain on the building infrastructure, and requires more maintenance (British Columbia Institute of Technology Centre for Architectural Ecology, 2009). Loyola University of Chicago and Trent University created rooftop gardens to benefit schools and surrounding communities. Faculty and students use the gardens for research and distribute the harvest to the community. They invite residents to the rooftop gardens to learn about the rooftop gardening process (Loyola University of Chicago Center for Urban Environmental Research and Policy; Trent University Environmental Advisory Board). The United Methodist Church in San Francisco installed a container rooftop garden to teach children about growing and then preparing food (Glide Memorial Church). And, in Hell's Kitchen in New York City, the Metropolitan Church of New York created a roof garden to distribute fresh produce through its food pantry (Metro Baptist Church). St. Philip's Academy in Newark is shown in the photo (St. Philip's Academy: EcoSPACES). They integrated their rooftop garden across the curriculum. The food students harvest takes center stage in their cafeteria, and they compost their food scraps on the roof completing their education about the food system.

[SLIDE Urban Orchards]

Apples, blackberries, blueberries, figs, nectarines, papaws, peaches, pears, plums, persimmons, raspberries, strawberries, and winter squash are just some of the foods that grow in urban orchards. An urban orchard can increase food security, teach children where food comes from, provide job training opportunities on fruit tree management, and provide fruit for food entrepreneurs. Fruit trees can be grown as street trees, in residential yards, near businesses, around University buildings, and lining College Avenue. They can be grown on a large lot in rows resembling a commercial orchard. Dwarf varieties are smaller which makes it is easier to pick the fruit and therefore better for education and agritourism, but yield is lower. The lots in front of the New Brunswick Middle School might be a good location for dwarf fruit trees. The Philadelphia Orchard Project layers trees with a top canopy layer of dwarf or semi-dwarf trees, a middle layer of assorted berry bushes, and a lower story of perennials to attract beneficial insects, build soil fertility, deter pests, and reduce the need for chemical spraying (Philadelphia Orchard Project). This might be a great model near schools as it provides fresh food and a great learning environment. But ur-

ban orchards are a long term investment. It takes years for the trees to bear fruit, and the maintenance and harvesting are time and expertise intensive. A partnership with fruit tree experts and students at Rutgers might leverage that expertise, contribute to an urban orchard training program, train community members in fruit tree management, and teach students in a real-world environment.

[SLIDE hoop houses]

Hoop houses, or high tunnels, are structures built from a series of metal or PVC piping molded into a semi circle or hoop shape and put into the ground or a foundation.

[SLIDE Hoop House 2]

Plastic or shade cloth, depending on season and growing needs, is placed over the hoop skeleton. The sides can be rolled up and down to regulate temperature using airflow. The closed environment shelters crops from heavy storms and winds, pests, and the spread of pathogens. In hoop houses, community groups can grow produce, seedlings, and flowers. Hoop houses are particularly well suited to the production of red peppers, basil, berries, spinach, tomato, eggplant, lettuce, chard, kale, salad mix and, with enough vertical clearance, dwarf trees. Big City Farms in Baltimore, MD built six 148' x 20' hoop houses, approximately 17,760 sq. ft. of growing space (about two-fifths of an acre). Growers walk around the hoop house throwing seeds arbitrarily. The project makes 120,000 dollars from the lettuce alone, a 200% return on investment from the 60,000 dollar building costs of the houses (Big City Farms, 2011).

[Slide – Better than traditional greenhouses]

Hoop houses are less expensive than greenhouses.

[SLIDE Hoop House Adaptable]

Crops can be grown in the ground as opposed to hydroponically or in raised beds and can be configured or re-configured in a variety of shapes. The structures can be semi-permanent, temporary, or movable. In cities, this is an attractive feature since they go up quickly and can come down just as quickly.

[SLIDE Gleaning]

Gleaning and Food Rescue

Thus far we talked about ways to grow in the city. But there are also opportunities to make better use of existing leftover or overly abundant food. Volunteers and nonprofit organizations glean, or harvest what remains after a farmer is finished. "Food rescue" is the term used to describe getting prepared foods from cafeterias, caterers, and bakeries. Because New Brunswick boasts many restaurants, company cafeterias, and catering businesses, there may be opportunities to partner. City Harvest is a major food rescue non-profit organization in NYC. Using a fleet of green trucks, cargo bikes, and volunteers on foot, City Harvest collects high-quality surplus food from restaurants, Greenmarkets, wholesalers, grocers, farmers, and manufacturers, and redistributes it to a network of community food programs (City Harvest, "City Harvest: Leading hunger relief across NYC."). Through another program called, HarvestWorks, New York State growers receive incentives to harvest, pack, and deliver crops that might not be brought to market due to fluctuating prices and uncertain market demand. They also work with farmers at wholesale outlets and farmers markets within New York City to pick up produce that has not been sold at the day's end and would otherwise go to waste (City Harvest, HarvestWorks). Elijah's Promise already works with volunteers to gather food from farms and from restaurants and produce companies and these efforts can be expanded.

[SLIDE BEE]

Beekeeping

Urban beekeeping has become increasingly popular in the last few years. People are breeding honey bees for their delicious product, to make sure there will be colonies for future generations, and for the economic benefits. According to the New Jersey Department of Agriculture there are approximately 10,000 bee colonies in the state making honey bees a $2.5 million industry (New Jersey Department of Agriculture). Burgh Bees in Pittsburgh, PA is a non-profit community organization working in partnership with the Penn State Cooperative Extension on a strip of vacant land with a free five-year lease from the Urban Redevelopment Authority and the Mayor's office. Donations and honey sales support the apiary, which has five hives dedicated to educating new beekeepers. Burgh Bees has trained over 110 new beekeepers. It provides hive space for its members and has a pollinating garden (Burgh Bees).

[SLIDE Processing]

Value Added Production

Many of the growing models described here can produce more food than can be consumed during peak production periods. Value added production, in this case, light food processing, can extend the life of the harvest and create additional products for sale creating a year round community economic development model. Tomatoes can be turned into salsa, fruit into chutney, and vegetables into pickles.

Zoning: Making it All Possible

[SLIDE Zoning Map]

If New Brunswick community groups want to create a local food economy, they might advocate for changing the zoning law to allow and encourage agricultural uses, and updating the New Brunswick Master Plan to reflect such changes and facilitate the development of a food hub (New Brunswick Master Plan, November 10, 2004). In fact, any land use that is not expressly permitted in the Zoning Code is prohibited. And New Brunswick's Zoning Code, which contains ordinates to enforce the Master Plan's goals, does not address agriculture as a permitted land use (New Brunswick Zoning Code. June 6, 2007). Agricultural research on the Rutgers campuses and "fish farms" in the General Industrial District, seen here in dark purple, are the only agricultural uses permitted in the New Brunswick zoning. New Brunswick's Master Plan is a document that outlines and facilitates community development goals. It could be updated to address agricultural use, food insecurity, and economic development through local food production. Currently, the Master Plan does not address these goals (New Brunswick Master Plan).

[SLIDE Tomato in Jail]

As the benefits of local food systems have gained attention, cities have amended their zoning codes to permit and promote agricultural land use. For example, Jersey City created an Agriculture use category in which community gardens, rooftop gardens, and green roofs are permitted in all zoning districts while commercial agriculture is permitted in most non-residential districts ("Jersey City Reexamination Report, Master Plan & Regulations," adopted Feb. 15, 2011). Chicago also amended its code to permit community gardens in all districts, except manufacturing, which are allowed to engage in on-site sales of surplus goods, as well as various types of commercial agriculture in most non-residential districts (Chicago Municipal Code, Title 17§§2-0207 through 17-0270.7). Cleveland is considering creating an Urban Agricul-

ture Overlay District, which can be imposed onto a designated land area (Cleveland Proposed Amendment to Zoning Code Ordinance, Draft Chapter 336A).

Part IV. Selling in the City

[SLIDE People Buying Power]

While New Brunswick is a small city, it has tremendous buying power. There are more than 55,000 residents in the city and more than half make less than 35,000 dollars a year. About fourteen percent of that income is spent for food. Producing low cost healthy accessible food would greatly extend their buying dollars and get good food into homes especially if models incorporate food stamps and other subsidy payments (ACS, 2009). New Brunswick is home to many restaurants, one medium grocery store, and will soon house a 45,000 square foot grocery store downtown. Bodegas and small stores are located throughout the city. All of these present opportunities to increase the pathway for produce from ground to community. New Brunswick is also home to several large institutions that purchase high volumes of food. Rutgers Dining Services serves about 130,000 meals per week (Tenore, 2011).

[SLIDE EP Buying Power]

Elijah's Promise alone has tremendous buying power through the soup kitchen, culinary school, catering operation, "Fresh is Best" program and A Better World Café. Catering serves about 400 meals per day and the soup kitchen between 200 and 250 (Fairbanks, 2011). Norna Fairbanks, the Food Purchasing Agent for all of Elijah's Promise with the exception of the café, has expressed interest in the potential for local buying within Elijah's Promise and local restaurants. Some of the top produce items that she needs, and would buy locally, include romaine lettuce, carrots, celery, tomatoes and garlic, and fruit. A Better World Café has high demand for kale, cabbage and lettuce.

[SLIDE Food Pantry Locations Map]

There is also interest in buying locally-produced processed foods such as salsa and relish for the Elijah's Promise entities other than the soup kitchen. And there are eleven food pantries in the city and fifteen emergency food providers. Many can distribute fresh or lightly processed fresh food to consumers.

Part V. Growing New Brunswick's Food Hub

In this section we suggest some ideas to expand New Brunswick's Food Hub, which is a community economic development effort centered around food that creates job training, jobs, and education while expanding community food security.

[SLIDE Example CSAs]

Community Supported Agriculture

Community supported agriculture, or CSA, links consumers with farmers and consumers share the risks and rewards. CSA members buy shares in a harvest, which usually provides enough produce to meet the needs of a small family. Often a set amount of produce is picked for each shareholder and is delivered or available for pick-up. Some CSAs include pick your own options and others use a "mix and match" system where members pick which items they want from a selection of offerings. Typically CSAs focus on produce but they may also include meat, dairy, bread, honey, cheese, and even wine through their own farms or in partnership with other local producers.

As a response to food insecurity and farmers seeking local buyers in Vermont, the Northeast Organic Farming Association established a Farm Share Program in 1994 that subsidizes CSA membership cost for low-income families (Northeast Organic Farming Association of Vermont). The program supports 1,400 individuals annually. Its success has given rise to CSAs in underserved areas statewide including Uprising Organics, a small, diversified farm in Washington State, which started its Food Stamp CSA (Uprising Organics Farm). The CSA is only 10% of their sales; the rest come from seeds, farmers' market, restaurants, and a local food co-op. Since Food Stamps cannot be paid in advance and CSAs are run by the money that is paid upfront for an entire season, Uprising Organics used seed money and donations from their local farmers, community organizations and residents to offset the risk. Each week, as the subscribers pay, the fund is replenished and used in subsequent years.

Another example: Just Food, a non-profit in New York City, works to improve "food access and security by increasing the production, marketing and distribution of fresh food." They hold seasonal workshops on how to start and organize a CSA, including "Accepting SNAP (Food Stamps) at your CSA" and "Out-

reach to Low Income Community Members," encouraging CSAs to diversify their payment options to attract all income level subscribers (Just Food).

Finally, "Farm-to-City Market Basket Program" is a cross between a mobile grocery store and a community supported agriculture program. The produce comes from local farms and from small-scale wholesalers, offering us the freshest produce from their shelves. And we believe this is the best way to create sustainable change, as well as jobs, in our communities" ("Farm-to-City Market Basket Program"). The program provides weekly deliveries of healthy and affordable produce to neighborhoods in Milwaukee, Madison and Chicago. Most of the produce during spring, summer and fall comes from their Rainbow Farmer's Cooperative of small, family farmers, and others come from their network of local, larger-scale farms. And during the winter, they draw from their greenhouses at select farms, the Southern farmers in the Cooperative, as well as smaller, local wholesalers who keep fresh fruits and vegetables during the off-season available and affordable year-round.

[SLIDE Proposed LSA]

EP might create a hybrid CSA model we call locally supported agriculture, or LSA, where they grow for volume and quality providing jobs and food. One possible model of local production might include a variety of share members with different types. For example, Rutgers University might buy a set number of shares based on its needs, Elijah's Promise might purchase another set, and local residents still others. They could vary the share structure to enable local residents to pay as they go while the larger institutions offset the risk to the farmer by paying up front. CSAs could employ a variety of production methods including hoop houses, in-ground growing and terracing.

[SLIDE – Map]

In keeping with the idea of New Brunswick as a Food Hub, we identified a lot downtown across the street from Elijah's promise's soup kitchen and community garden. The lot is owned by the Community Builders and while it had been part of the downtown redevelopment effort it is currently vacant. We envision it as the heat of the food hub with a high tunnel production system, one stop shop, and a nearby orchard and have longer-term visions of a related food business incubator/processing center.

[Slide – Studio Testing Soil Photo]

The lot is covered in rock hardscape that would need to be removed and the soil might not be suitable for agricultural production due to heavy metal contamination. Heavy metal soil tests cost twenty dollars per sample at the Rutgers University Soil Testing Lab; however the soil services are currently set up for agriculture, lawn, garden, and turf grass, not urban gardening (Rutgers New Jersey Agricultural Experiment Station). It might be possible to create a partnership through Rutgers University that will allow for free soil testing with a handheld X-ray florescence detector that is made to perform tests for heavy metal contamination for soils. But long-term, it's really important to build a partnership with Rutgers to develop low cost easy-to-implement urban soil testing kits given the number of NB residents gardening.

We took one soil sample, which showed an eleven to one calcium (Ca) to magnesium (Mg) ratio which is not atypical in vacant urban lots; as that ratio suggests the presence of recycled pulverized concrete. In addition the soil is compacted in its current form, which presents a problem in that there is very little open space in the soil for air and water permeation, root growth, and soil dwelling organisms like worms. This means that growing on that lot will require bringing in soil, whether or an in ground or raised bed model.

To grow on the lots, we specifically looked at houses because they can be assembled or disassembled easily, extend the growing season, and can be oriented to many business and community food security urban agriculture models.

[SLIDE – SketchUp Model]

We met with RU Farming Professor Jack Rabin to think about a hoop house system. He showed us how to orient the houses to maximize air flow for cooling and suggested thinking about terracing to create flat areas for the houses and he introduced us to Michele Backus, the County Extension Officer who discussed water use. We found that the lot could comfortably hold ten 720 square feet hoop houses, producing 7,200 square feet for less than 20,000 dollars to build the structures (Rabin, 2011; Backus, 2011).

Water and energy are things to think about it any growing model. Here we talk about them in the context of hoop houses. Using alternative heating measures such as thermal massing can further extend the growing season. Thermal massing involves using a material with high heat absorbency to trap and store heat. To achieve this in a hoop house production system, barrels of water placed on the south facing wall

of hoop houses absorb heat during the day and stay warm through the night. We think using water as the thermal mass medium could produce enough heat to grow cool season groups in the winter comfortably.

[SLIDE Water & Energy Slide]

A comprehensive rainwater collection system includes rainwater harvesting using ferrocement tanks and streaming water into a drip irrigation system which delivers water slowly to plants which reduces run off, prevents overwatering, and doesn't strip the soil of essential nutrients. This system is easier to maintain water levels of plants, especially near root zone and can be controlled by hand or by an automatic timer (Urban Farmer Store, 2011).

[SLIDE Compost Bin]

Compost

We recommend that EP develop a composting system to regularly amend the soil and save money. There is room on the vacant lot to incorporate this. Composting completes the food cycle, reduces trash, presents educational opportunities, and enriches the growing soil for local farmers. Composted soil can produce higher yields, is a natural way to control pests and disease, and helps to remediate contaminated soils. Small scale composting of food and plant waste in backyards and community gardens also reduces the cost of buying soil and fertilizer for gardens. On a larger scale, there is the potential for job creation at composting facilities, transporting and distributing compost and if there is enough supply and demand there is also the potential to create revenue through the sale of compost. In urban areas, composting bins are often the best choice as the process can draw pests. The cost of bins ranges from $20 to several hundred dollars, or bins can easily be constructed from materials found at a local hardware store. GrowNYC in New York City manages all of the city's farmers markets and includes a booth at many where community members can drop off their food scraps and other compostable materials and GrowNYC then transports everything to the Brooklyn Botanic Garden and other organizations with similar needs (GrowNYC).

Choosing a Model

Now that we have the hoop houses in place, we need to determine what sort of business model works best. The challenge is choosing the model that best achieves EP's objectives. EP could create a small business incubator for food production and processing. Or, they could grow for a niche market to sell high end products to maximize the job creating opportunities. Even further, a model could produce herbs, to-

matoes, and zucchini, which are widely used and incorporate education opportunities as well as lots of great food for community residents.

[SLIDE One Stop]

The Food Hub is a wonderful conceptual way to expand into other areas too. We mentioned earlier that many New Brunswick residents are growing food in their yards. On the same lot where we're proposing to put the high tunnels, there is enough room to create a one-stop community gardening center. A "one-stop-shop" for local residents can provide resources, equipment, tools, soil testing and remediation, and information to garden safely, effectively, and efficiently. Isles CDC in Trenton is using an empty shipping container as a green house and tool shed. Elijah's Promise might do something similar engaging children and artists to paint it with a garden theme which would make a fantastic piece of public art.

[SLIDE Orchard]

Orchard

Also nearby the proposed high tunnel location and one stop shop, there is some land that could possibly be used as an urban orchard. Even if that land doesn't work out, the opportunities to plant urban fruit trees are boundless. Fruit trees can be grown as street trees to increase the urban canopy, decrease the urban heat island effect, and yield fruit for passers-by. Elijah's Promise could grow their own fruit trees to provide food for their soup kitchen, Better World Café, and food training classes. Fruit could be grown in partnership with Rutgers University to train students in urban fruit tree management (reducing the cost of tree maintenance) while simultaneously providing access to healthy food for residents or EP. The food can also be grown or harvested and transformed into another product, which could be sold or used in EP's food enterprises - maybe New Brunswick apple sauce? And of course, food could be grown and sold at farmers' markets, local grocery stores, or bodegas.

While we have focused on EP in this proposed section, many of NB's residents, community organizations and institutions are already engaged in producing and processing food. We hope that the food policy council helps to facilitate the development of partnerships and networks to make green things grow all over New Brunswick.

[SLIDE What now?}

Part VI. What Now?

Now that you've heard all of the exciting options for growing and processing food in New Brunswick, we hope you're excited to get down to the business of actually choosing and implementing a model. New Brunswick could work collaboratively with residents to figure out which models will work best for them. Outreach could take place in the form of public meetings, focus groups, surveys, or some combination of these activities. Key questions to answer include Who, What, Where, Why and How will you grow? Once the goals have been identified, Elijah's Promise and partners could begin building resources and necessary capital. Funding could be acquired in the form of grants or other in-kind donations of materials. And partnerships could be built. Next, the community will need to consider who will do the labor associated with the chosen model. Will it be run as a business with the entrepreneur providing the labor? Will Elijah's Promise hire someone to plant and maintain the garden? Will volunteers be used? Or will it be some combination of these options? The community could then begin thinking about how to acquire or secure the land they would like to use for growing. This can be one of the most challenging, and critical, steps, as plenty of evidence indicates that community gardening efforts are too often discarded in favor of "higher and better uses." Once the land is secured, the community could begin acquiring materials, carrying out and maintaining the model. At this stage of the game, Elijah's Promise, community members and other partners can enjoy the "fruits" of their labor. They can plant, grow, harvest and eat, process or sell the food!

[SLIDE Thank you to everyone who made this possible]

[SLIDE Studio Team]

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