

Building Regional Produce Supply Chains

Helping Farms Access & Sell to Multiple Channels
Helping Large-Volume Buyers Access Regional Foods



The logo for FarmsReach, featuring a green leaf icon to the left of the text "FarmsReach". "Farms" is in green and "Reach" is in brown.

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EXECUTIVE SUMMARY

Whether the incentive is freshness, economic development, food safety, food resilience, healthy ecosystems, minimization of carbon footprint, or simply the desire for stronger community, the demand for regional foods is booming.

The increase in demand, however, is not being met. Obstacles to efficient regional distribution are numerous and incredibly complex, with dysfunctional and inefficient logistics, policies, and business operations all along the vertical.

While there are individual success stories along the supply chain, businesses, nonprofits and government agencies are still searching for ways to turn isolated achievements into replicable models of high-volume, regional food systems.

In August 2010, FarmsReach hosted the first Regional Produce Supply Chain Convening – a design workshop – to collectively envision and design *practical* solutions, whether or not they involved technology. Participants represented farms, aggregators (and food hubs), distributors, and end-business buyers.

The workshop revealed numerous systemic issues that must be addressed in order to create efficient regional logistics. The lack of capital available for small and medium-size farms, coupled with their lack of business skills, is a fundamental issue that has ripple effects down the supply chain. Meanwhile, regulations and policy imposed by end-buyers and the government have ripple effects back up the vertical to aggregators and producers.

We discovered many opportunities for innovation, investment and policy change for all stakeholders:

- Technical assistance for farms to improve business operations and lower operating costs
- Technical assistance and education to distributors and end-buyers to better understand seasonality, diverse varieties, growing practices, and true costs of food; and to pass this information to customers
- Aggregation infrastructure
- More efficient division of labor; focusing each stakeholder on their core competencies
- Revised regulations and policies that enable, not inhibit, small and medium-size farms
- Increased infusion of capital for all of the above

Based on these findings, FarmsReach is leveraging our experience, our existing software platform, and new alliance with St. Onge Supply Chain Engineering to focus on farms' core business operations.

Rebuilding efficient regional food systems will not be easy. It will require the combined effort of many players to turn the concept into a logistical reality. We hope our findings will assist other nonprofits, for-profit businesses, policy-makers, and funders to address these issues and rehabilitate this vital industry.



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- Diane Endicott, Good Natured Family Farms
- Mary Jane Evans, Veritable Vegetable
- Eric Hahn, Locavore Foods
- Earl Herrick, Earl's Organics
- Haile Johnston, Common Market
- Russ Lester, Dixon Ridge Farms
- Fran Lewis, Capay Organic Farm
- Fran Loewen, Blossom Bluff Farm
- Michael O'Gorman, Farmer Veteran Coalition
- Nicole Mason, Veritable Vegetable
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INTRODUCTION

“Regional food systems can especially increase employment, income, and output in rural areas, help address ‘food desert’ challenges in cities’ lower-income neighborhoods, foster civic engagement, and enhance urban-rural connections... [Regional] food systems are also an important market outlet for food that is produced in an environmentally sustainable fashion.”
(Union of Concerned Scientists, *Market Forces: Creating Jobs Through Public Investment in Local and Regional Food Systems*: <http://bit.ly/nEkOks>)

In August 2010, FarmsReach hosted a Regional Produce Supply Chain Convening in San Francisco, CA. There has been a surge in research for regional food systems and a flurry of new startups – both nonprofit and for-profit – setting up food hubs and regional distribution programs, the cornerstone of sustainable food systems.

Ultimately, produce distribution involves a lot of information management – of harvests, availability, inventory, logistics, regulations, and billing. There is a clear, obvious need for information technology to streamline these processes.

The challenge, however, is that solutions are elusive. All along the vertical, from farmers to aggregators to distributors to end-buyers, the issues are incredibly complex. Even among those who are “successfully” selling, distributing, or procuring regional foods, very few express that their operations are admirably streamlined and efficient, replicable and/or scalable.



As a company, our primary questions have always been: What tools can help regional food systems grow? How can we help farms using sustainable methods (typically small and medium-size farms) become more viable? We started as a nonprofit farmers market-to-restaurant distribution program in 2002, which led to our relationships with hospitals, large retail stores, and institutions to help them source more regional foods. Everyone confirmed that an electronic method to track real-time availability and place orders was an obvious solution. Thus, after countless hours of industry interviews and usability testing, we built one. Om Direct was released in 2008, and it was later revamped and renamed FarmsReach in 2009. Within a year, we had users in over 25 states. And yet, order volume remained negligible.

Surveying users, it was clear that the perceived “Achilles heel” of not having a real-time marketplace was actually just the tip of the iceberg.

In 2010, we were also one of the project leads of the San Francisco Foodshed Project (funded by the California Department of Food & Agriculture), where we signed up nine large institutions (hotels, caterers, corporate cafeterias and city agencies) and coordinated aggregation with partner nonprofit organizations, a farm aggregator, and three conventional distributors. Here, even with intensive hands-on assistance to both supplier and buyer, many unforeseen obstacles arose.

At this point, the fundamental question evolved from “Which tools are needed for regional food systems?” to “How does an efficient, effective regional food system even work?”

To try to answer this larger question, we hosted a Supply Chain Convening, where we invited stakeholders all along the vertical and from different regions in the U.S. who are known to “successfully” sell, distribute or procure regional, sustainably-produced foods. The format of the convening was not a conference but

rather a hands-on design workshop where we aimed to collectively come up with some real, *practical* solutions – whether or not they involved technology.

OBSTACLES WE KNEW

Consumers, and the restaurants, retailers and distributors that serve them, clearly want to connect with regional producers who use sustainable farming methods. However, building relationships between growers and buyers and facilitating significant volume sales are not easy.

It Takes More Than A Marketplace

We were the first scalable online marketplace for regional foods, and we were perhaps the first to confirm across many different farm sizes, different buyer types, and 26 states that there are more debilitating issues than the lack of real-time availability information and online ordering.

- **Cost**—Regional farms have no comprehensive resource to track prices for local products or conventional competitive products. Thus, regional farms' prices are notoriously volatile, inconsistent, and either too high (often) or unjustifiably low (not uncommon). For food service, retail and distributors with small margins, competitive pricing is essential but difficult for producers to provide.
- **Administrative burden**—Even with one-stop-shopping online to track availability across multiple farms, buyers usually need many more items in stock every day than what is available regionally. Regional-food buyers end up juggling orders across a mix of farms, farm aggregators, and conventional distributors. For each type of supplier, there are different systems for tracking availability and delivery schedules, and different processes and timing to place orders. Reconciling this on a daily basis for hundreds of produce items at a time is an enormous burden. (Medium-size, seasonally-focused restaurants in San Francisco needed on average 75-150 unique produce items in stock for their current menu. Larger institution and distributor inventory needs are greater.)
- **Bureaucratic or food safety restrictions**—Many institutional buyers must source from corporate-approved vendors, where smaller regional farms either do not qualify or are unwilling to go through the bureaucratic process. Other institutions, such as schools and hospitals, require suppliers meet even more stringent food safety regulations and/or insurance coverage minimums. Regional farms are often unaware of the regulations that apply to a particular customer and how to comply, or they are unable to afford getting certified or insured.
- **Quality and consistency**—Most buyers who procure regional foods appreciate and expect the freshest, best product. One of the benefits of regional food systems is the diversity of produce and the minimization of middlemen and standardization. Unfortunately, this can present a different problem, where there is *not enough* standardization. Buyers, especially larger institutions, have issues with *inconsistency* of product. In order to stock their high volumes, they must source from multiple sources for a particular item, and each source farm picks their crop at different points in growth or ripeness, and packs them differently. As a result, more labor is needed in the kitchen to manually sort and prep. Aggregators consolidate product from multiple farms, which is a benefit to the buyer, yet it can require even more labor to their customers.
- **Change adversity**—Very simply, sourcing from conventional distributors is easier, more consistent, and usually less expensive. In an industry notorious for tight margins and overworked labor, change is difficult even when there is a desire to support regional food systems and farmers. For distributors in particular, many have long-standing relationships with producers where they don't want to change or expand to include many more suppliers and many more, smaller transactions to move the same volume. Most distributors that buy directly from farms also report that the most common and preferred way to place orders is on the phone, with a negotiation with each farmer for that crop, for that harvest.

For all these reasons, it is no surprise that our marketplace platform resulted in underwhelming increases in actual regional sales volume. Speaking with groups that have since developed similar platforms, we can confidently assume that other online marketplaces targeted for many farms selling to restaurants, retail, or institutions have had similar outcomes.

It is one task to match food producers with end-buyers; it is an entirely different and *much* larger task facilitating significant volume transactions. Regional food sales volume is our metric that healthy foods are entering more channels and significant revenues are returning to farmers' pockets. We discovered quickly after launching our beta platform that the lack of marketplace information is just one piece of a larger problem.

A Need For Aggregation & Infrastructure

Transitioning from a predominately global food supply to a more distributed network of the 2.2 million small and medium-size farms in the U.S. requires new infrastructure and new models.

Currently, the majority of food travels through a centralized network of fewer large-scale producers, fewer large-scale processors, and fewer large-scale distributors. In some ways, this is a very efficient system.



Figure 1. Existing Centralized National & Global Network

Unfortunately, as consumers demand more regionally and sustainably-produced foods, the small and medium-size farms that supply these products aren't able to utilize these prevalent existing channels. (This can be for a variety of reasons, including each farm's volume being too small.)

Furthermore, there is very little physical infrastructure for regional farms to efficiently pack or aggregate their product, whether the target market is their local community or across the country or world. Thus, most regional producers distribute their products directly to customers individually. (See Figure 2.)

There is an urgent need to rebuild physical aggregation points. This allows farms to share resources, minimize the number of trucks traveling the same distances to the same places, and, ultimately, expand their reach. (See Figure 3.)

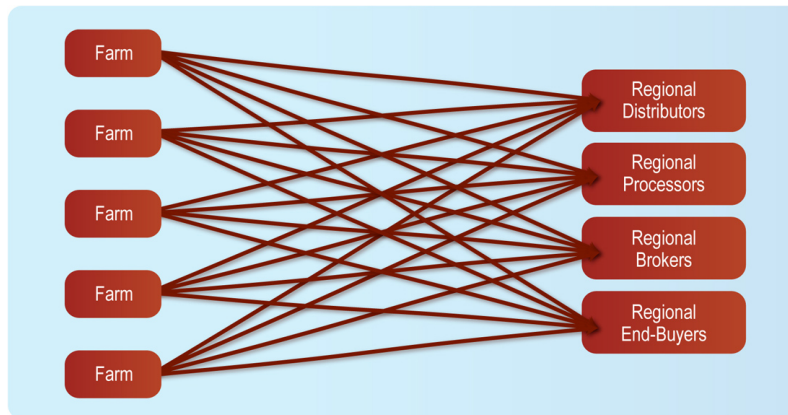


Figure 2. Prevalent Inefficient Regional Distribution

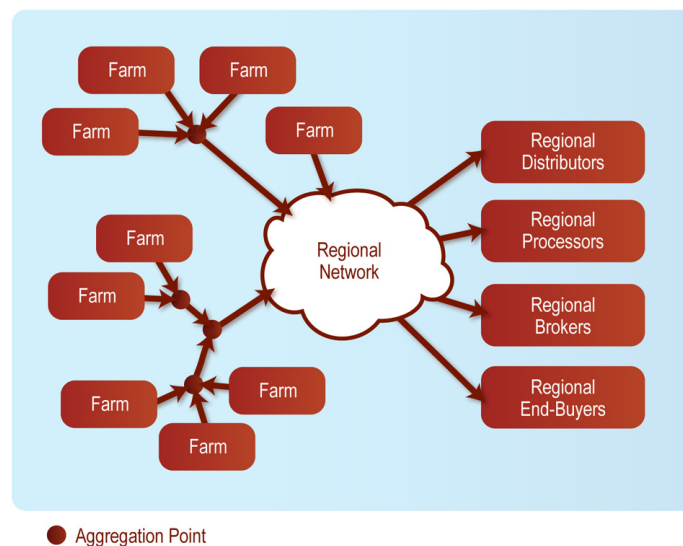


Figure 3. Aggregation Enabling An Efficient Regional Network

Each region is unique, where the soil, weather, and access to water greatly affect what can be grown through the seasons. To accommodate the diverse needs of consumers seeking sustainably-produced foods year-round, a *network of regional networks* could supply the consistency and volume throughout the country. (See Figure 4.)

A decentralized national network of regional hubs could operate on its own as well as *within* the existing centralized system. Efficient regionally-based aggregation simply allows small and medium-size farms to more easily access channels within their own community, and beyond.

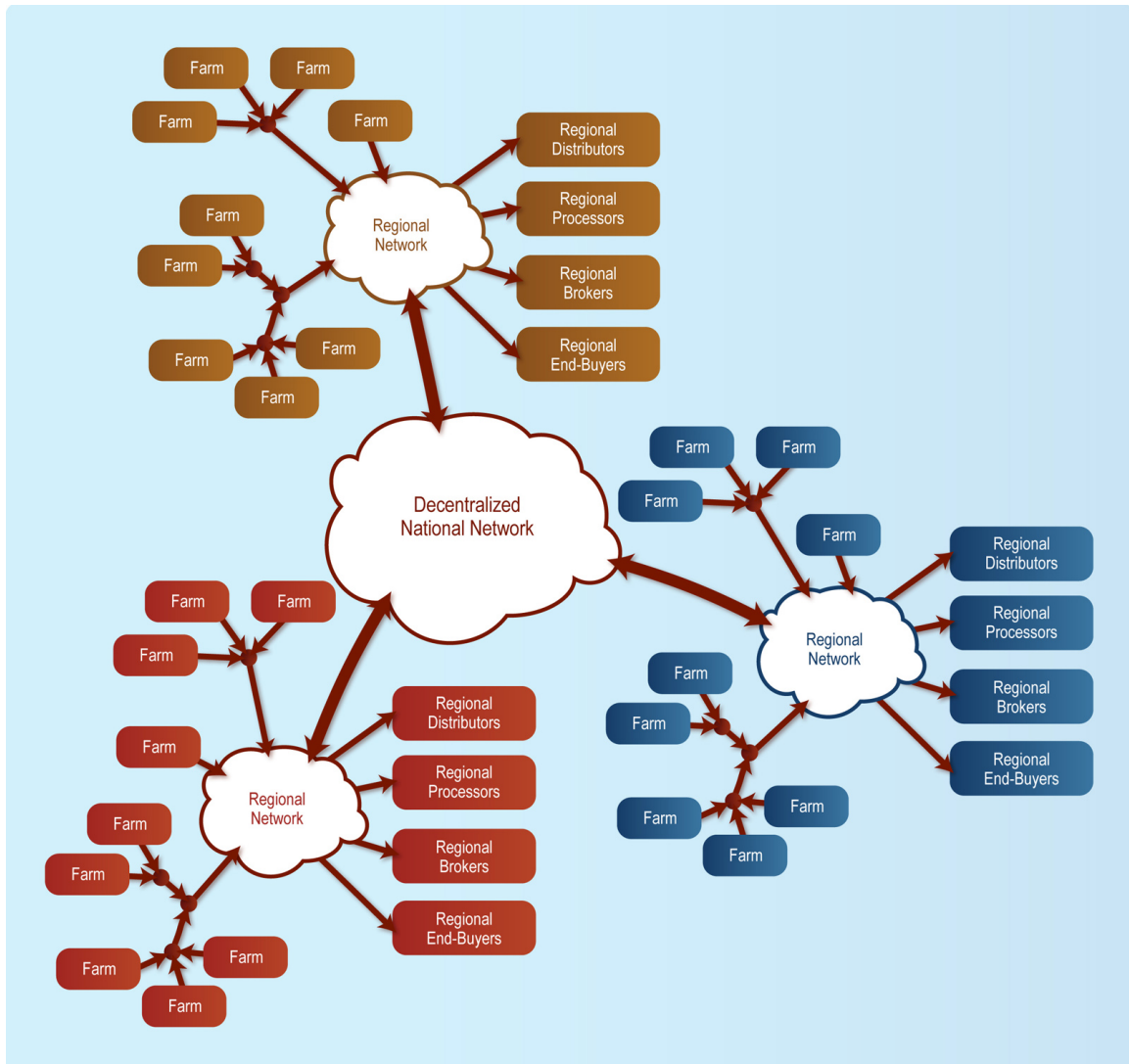


Figure 4. Regional Networks Enabling Decentralized National Network



Best Practices For Aggregators & Food Hubs?

Note: People use the terms “aggregator” and “food hub” loosely, as the models for both are evolving. For our purposes, an “aggregator” is any operation that aggregates product or information for regional food distribution; “food hubs” or “aggregation points” are any type of physical aggregation facility, such as a warehouse or cross-dock. (In reality, food hubs may house a variety of other services aside from distribution, such as education, processing, or retail.)

Having worked with early-stage aggregators when we launched our prototype in 2007, and after we confirmed the obstacles in “It Takes More Than A Marketplace” on page 6, we revisited the aggregator model and reached out to groups that were allegedly addressing these issues to see what tools may help.

Our team researched 111 aggregator operations across the country, some with physical food hubs and some without. We also referred to existing regional supply chain research and resources:

- “Locally Grown: Supply Chain Success Stories”, presented at the PMA Foodservice Conference, 7/28/10 (<http://bit.ly/o8vt43>).
- Wallace Center’s National Good Food Network (NGFN) monthly webinars (<http://bit.ly/poMWSX>).
- Note: The USDA preliminary findings in “Regional Food Hubs: Understanding the Scope & Scale of Food Hub Operations” (<http://1.usa.gov/phFWZN>) and UC Davis’ “Values-Based Distribution Networks: California Case Studies” (<http://bit.ly/vqyUxk>) were not yet released.

The different models varied greatly regarding:

- **Location**—Rural or urban
- **Target customers**—Consumers or business buyers, such as distributors, retail stores or restaurants
- **Infrastructure**—Ad hoc or brick-and-mortar
- **Logistics**—Own trucks, member farmer deliveries or third-party deliveries
- **Services offered**—Technical assistance, marketing, pricing advice, insurance coverage, packing, processing, etc.
- **Organizational structure**—Nonprofit, for-profit or hybrid
- **Financial health**—Self-sustaining or not

One thing they had in common, however, was that most had rudimentary tools for inventory management, like customized Excel spreadsheets or basic (yet pretty) online shopping carts. Some had sophisticated online sales tools for their customers, but were managing all the availability and ordering from farms on the backend manually.

It is difficult to know which models are replicable and will endure over time. Or, perhaps the ideal model that should be replicated will change over time. We knew that aggregators are needed to rebuild the infrastructure of a regional food system; the convening shed some light on which types are most promising. (For details, see “Role of Aggregators?” on page 22.)

Solutions Needed Now

Successful regional food distribution relies on effective inventory management, whether in the fields, the marketplace, or a buyer’s walk-in refrigerator. Thoughtful information technology for this very unique supply chain can provide this.

Also, with the advent of the industry-led Produce Traceability Initiative (PTI), by 2012, “both internal and external traceability programs will be required to effectively track and trace product up and down the supply chain, achieving whole-chain traceability” (United Fresh, Produce Traceability Initiative: <http://bit.ly/rfnbAi>).

Thus, there is an enormous opportunity to develop tools all along the vertical, so – not only farms and farm aggregators – but also distributors, hospitals, schools, restaurants, and institutions can comply with the PTI initiative and increase their regional inventory.

The industry is vast, and the obstacles for regional, sustainable food systems are numerous. There is no single software tool that can serve the entire vertical. The ideal solution is an integrated one, where different software applications can focus on different stakeholders and functions, and together we may provide a seamless solution that serves the entire food supply chain: the value chain.

During our convening, we collectively identified many of these obstacles and devised some possible solutions.

CONVENING PLAYERS & PROCESS

Methodology

We developed our Supply Chain Convening with the help of a San Francisco-based consultant who helps companies apply *design thinking* to transform their organizations and bring valuable, successful products to market. One of his previous clients was SAP, where he applied this methodology to devise software tools for other industry supply chains, so his experience was perfectly suited to address the elusive regional food system.

“Design has become a core competitive advantage for those companies who apply it well. However, while Design (capital D) is a recognized profession, complete with PhD’s in the field, the successful application of *design thinking* (lower case d), as with any business process, is not limited to a select few. Entrepreneurs, CEO’s, politicians, social activists, have all adopted *design thinking* to address their wicked problems. *Design thinking* can be applied to solve the most wicked problems and, when combined with Design, those truly elegant and market redefining [solutions] can be created. . .

Following the basic principles of observation, understanding and prototyping, applied in a rapid, cyclical manner, teams are able to quickly gain new insights and test both their understanding and proposed solutions.” (Excerpt and Figures 5 and 6 from convening facilitator: Matthew Holloway, Design Thinking: <http://bit.ly/njq39M>)

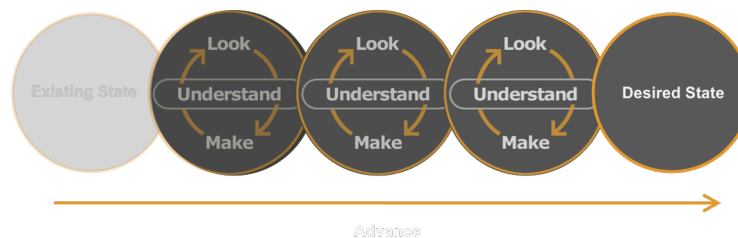


Figure 5. Design Thinking Iterative Process

In short, this process entails four distinct steps:

1. **Design Challenge**—Agreeing on the specific problem you are trying to solve; sometimes this may change during the process based on the teams' learning.
2. **360° Analysis**—Understanding all relevant influences on the problem: business and technological parameters, external market influences, physical environments, adjacent business contexts, the human, social and organizational constraints, and so forth.
3. **Synthesis**—Organizing the teams' analysis, create actionable insights, define design principles, and generate alternative solutions.
4. **Prototypes**—Rapidly evaluating and iterating on proposed solutions, gathering feedback, and refining solutions; accepting and learning from failures.

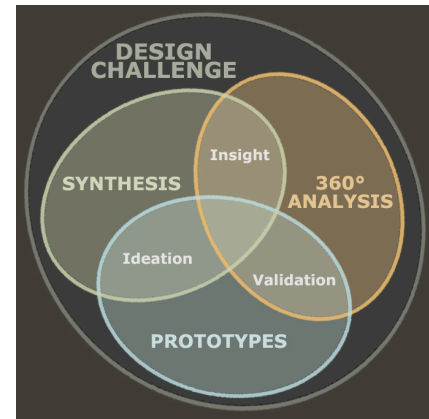


Figure 6. Design Process Framework

Participants

We invited five to ten of each stakeholder type along the vertical, focusing on the following types (also see Figure 7):

- **Farmer**—Producers of varying sizes, some with and some without organic certification.
- **Aggregator**—Producers or organizations that aggregate, market, and distribute product from multiple farms.
- **Distributor**—Distributors with freedom within their organization to buy directly from farms or aggregators.¹
- **End-Business Buyer (End-Buyer)**—Food service and retail operations, some with and some without freedom to buy directly from farms or aggregators.²

¹ Some distributors, especially those in the larger, global supply network, only purchase from other distributors or brokers.

² Some buyers, especially restaurant chains and larger institutions, require food suppliers be corporate-approved vendors, so they may not purchase directly from farms unless they go through a corporate administrative process.

Note: After much debate, we decided to not include Consumers in the workshop, as there are already overwhelming obstacles in the business-to-business market, which then serve consumers approximately 99.94% of the time. Alternative and farm-direct channels comprise ~.06% of total food sales in the U.S. (“Future of the Food & Society Initiative”, presented at the Kellogg Food & Society Conference, 2008).

We also decided to not include stand-alone Processors (for example, those who wash, slice and repack raw product), as the majority of regionally-sold foods from small and medium-size farms are not flowing through processing channels – at least not yet. (Some aggregators do offer farm processing facilities, however.)



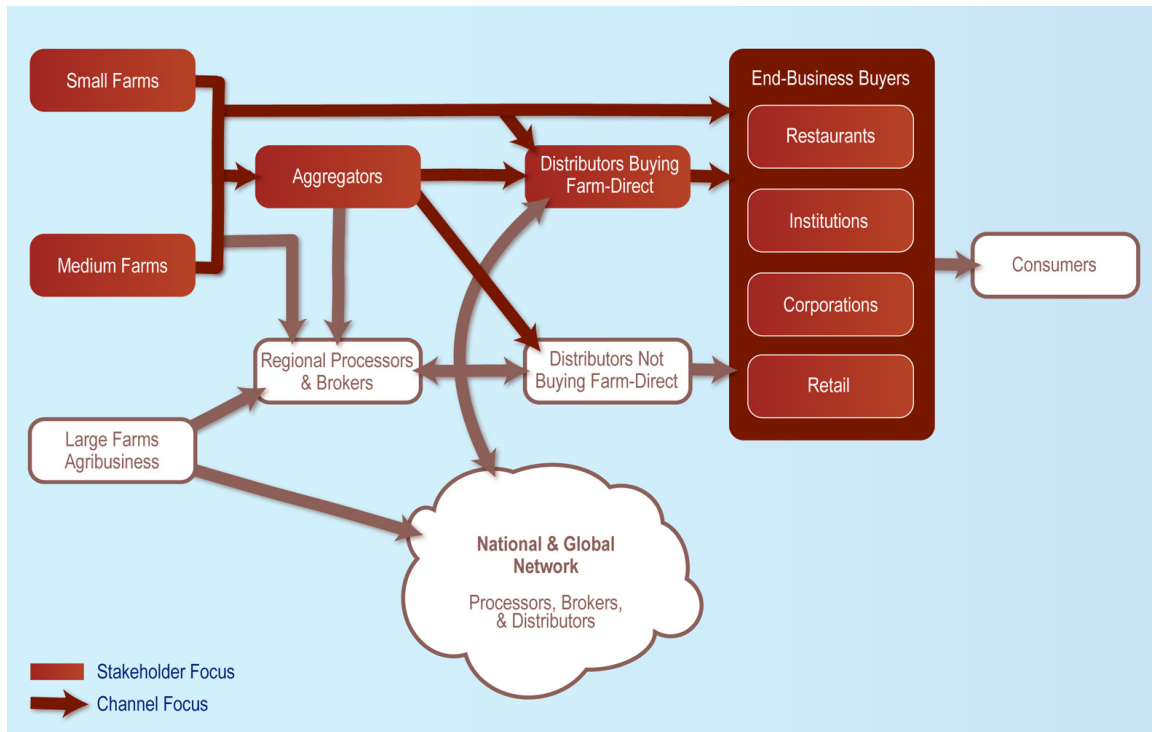


Figure 7. Convening Focus: Stakeholders and Channels

Instead of inviting a large group of participants with varying experience, we engaged a smaller number who are each very experienced and relatively successful selling or buying regional product. A smaller, focused group is more productive for this methodology. They have a deeper knowledge of and experience with what's possible as well as what's challenging in the current system.

Geographically, we invited farms, aggregators, distributors and end-buyers from all different regions of the country; however, the aggregators were the ones most willing to travel to San Francisco. You can see that they are the most regionally diverse group below. Also, we strove to invite a diverse cross-section of the vertical, but we weren't able to include every type of stakeholder or every ethnographic.

Still, once we were all together, many remarked what a unique workshop to have leaders of all types from across the supply chain and, especially noteworthy, having competitors in one room – working together for a shared mission to help healthy food systems grow.

Workshop participants:

- **Farmers**
 - Blossom Bluff Farm, CA
 - Capay Organic Farm, CA¹
 - Dixon Ridge Farms, CA¹
 - Farmer Veteran Coalition, CA
 - Frog Hollow Farm, CA
 - Heirloom Organics, CA
 - Swanton Berry Farm, CA
 - Thumbs Up Farm, CA¹
- **Aggregators**
 - Capay Organic Farm, CA¹
 - Common Market, PA
 - Dixon Ridge Farms, CA¹
 - Good Natured Family Farms, KS

- GreensGrow, PA
- Locavore Foods, MI
- Maryland Dept. of Agriculture (food hubs coordinator), MD
- Sappington Market/Farm to Family Naturally, MO
- Thumbs Up, a Growers Collaborative, CA¹
- Distributors
 - Earl's Organics, CA
 - FreshPoint Los Angeles, CA²
 - FreshPoint San Francisco, CA² (2 attendees)
 - Greenleaf, CA
 - SF Specialty, CA
 - Veritable Vegetable, CA (2 attendees)
- End-Buyers³
 - Bon Appétit Management Company, CA
 - Kaiser Permanente, CA
 - Ritz-Carlton Hotels, CA
 - Starwood Hotels, CA

¹ Farm as well as Aggregator.

² FreshPoint, a division of Sysco.

³ Under-represented due to last-minute schedule conflicts and a no-show: a national retail chain Produce Buyer, a university Sustainable Food Coordinator, and public school district Director of Office of Food Services.

Design Challenge

Before the convening, our team came up with a tentative Design Challenge as a starting point for discussion:

- Rethink how *regional farms* tap into *larger volume* channels.
- Rethink how larger volume buyers access regional foods.

We didn't specify farms that use sustainable production methods, as common belief is that when producers have successful, profitable operations, their inherent desire is to be stewards of the land – minimizing the use of toxic chemicals and synthetic fertilizers. Efficient regional distribution provides this essential farm viability.

After opening our Design Challenge for refinement during the workshop, it evolved into:

- Rethink how *farms* can access and sell to *multiple* channels.
- Rethink how larger volume buyers access regional foods.

The group felt that the distribution issue applies to all farms, not just those selling locally or regionally. In addition, the group felt that “larger volume” is not always the desired goal. Instead, the optimum system would allow farms of all types to sell to appropriate channels of all types and sizes.

We agreed that we would not emphasize farms selling only “locally”, but rather focus on how to help small and medium-size farms get their products into any combination of channels: local, regional, national or even international. Efficient regional distribution enables any of these, and is currently operating very *inefficiently*.

CONVENING RESULTS

Over the two days, many different perspectives were shared and collective wisdom uncovered. The next page shows an overview of the results, followed by details categorized by stakeholder type. (To view the raw data of obstacle themes, see “Appendix: Stakeholder Raw Data” on page 30.)

Overview

The diagram below provides an overview of the most pressing obstacles and proposed solutions related to the Design Challenge agreed on by all participants. (For more information, see “Design Challenge” on page 14.)

Most of the obstacles on the supply side have ripple effects to the buyer side, while some buyer-side obstacles limit or restrict the supply available to them.

Obstacles generally are the same for Farms, Distributors and End-Buyers, with or without Aggregators in the channel.

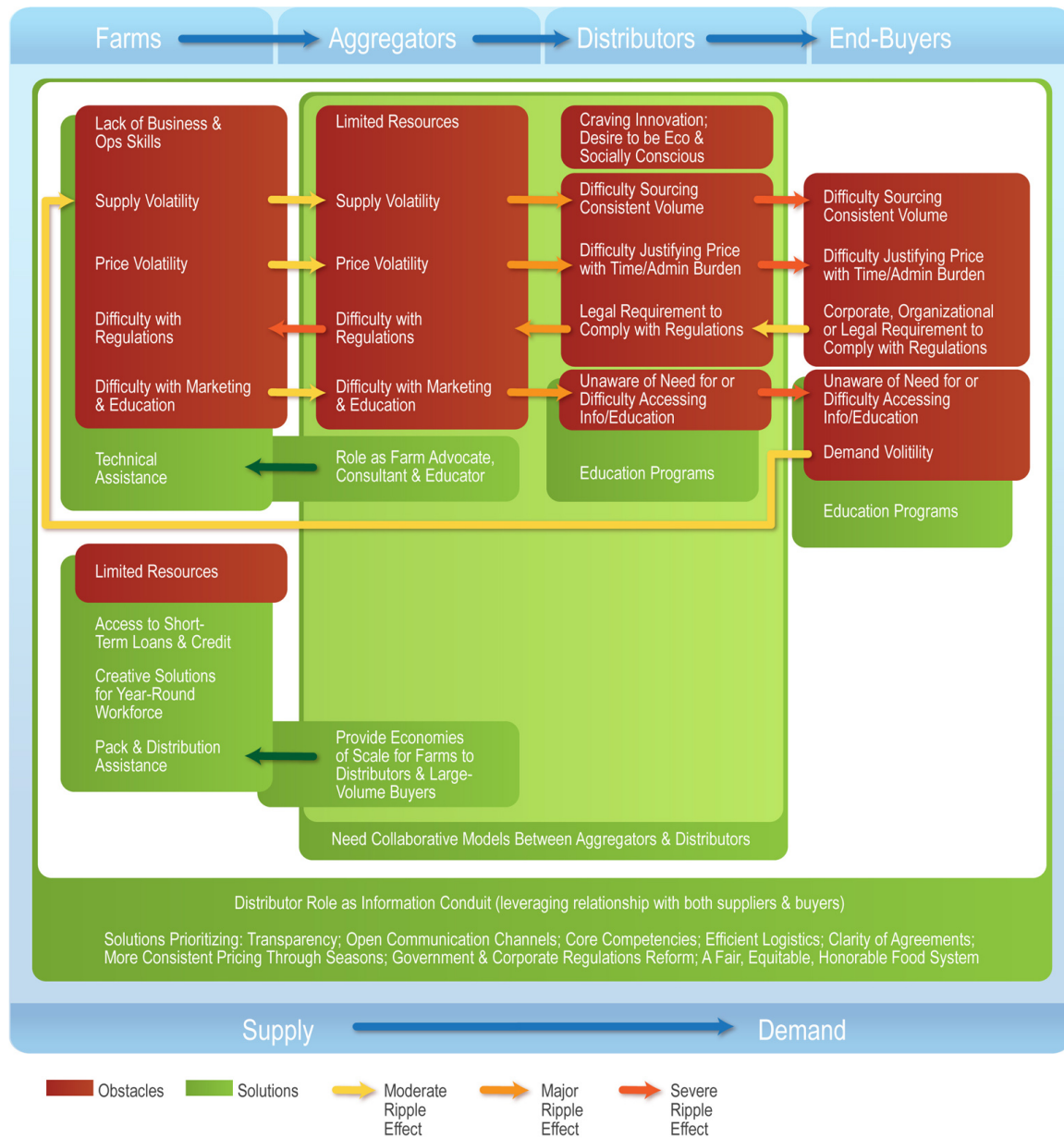


Figure 8. Convening Results Overview

Obstacles By Stakeholder Type

Below are details on the pressing obstacles and solutions identified for each stakeholder type.

Farms

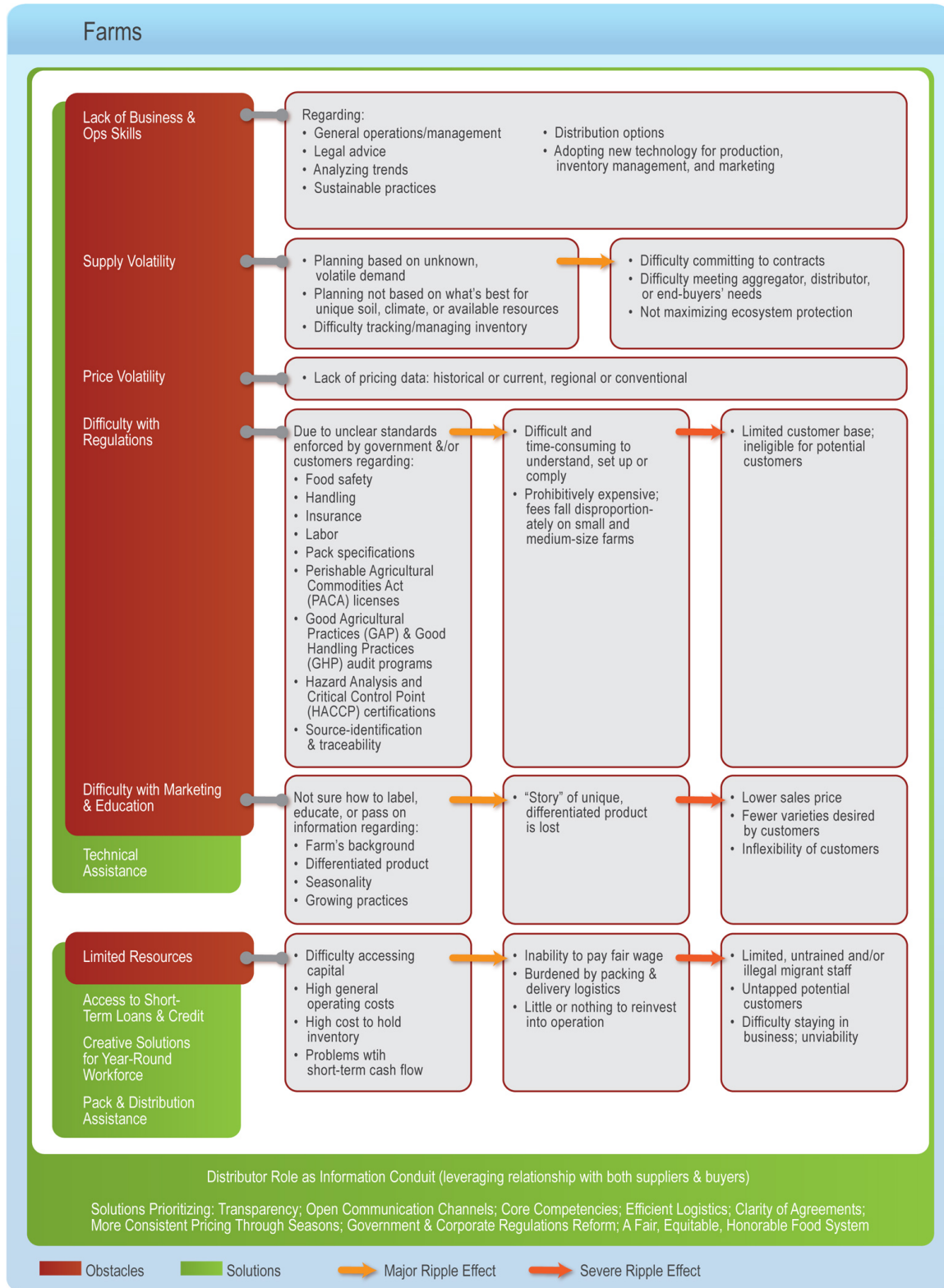


Figure 9. Farm Obstacles & Solutions

Aggregators

Many different aggregation models exist today: some viable operations and many unfortunately not. Aggregator participants in our convening are each revenue-generating, and most are profitable. Thus, the obstacles outlined below are not representative of *all* aggregation operations, but rather the models that have proven to be most successful thus far. (Also see “Role of Aggregators?” on page 22.)

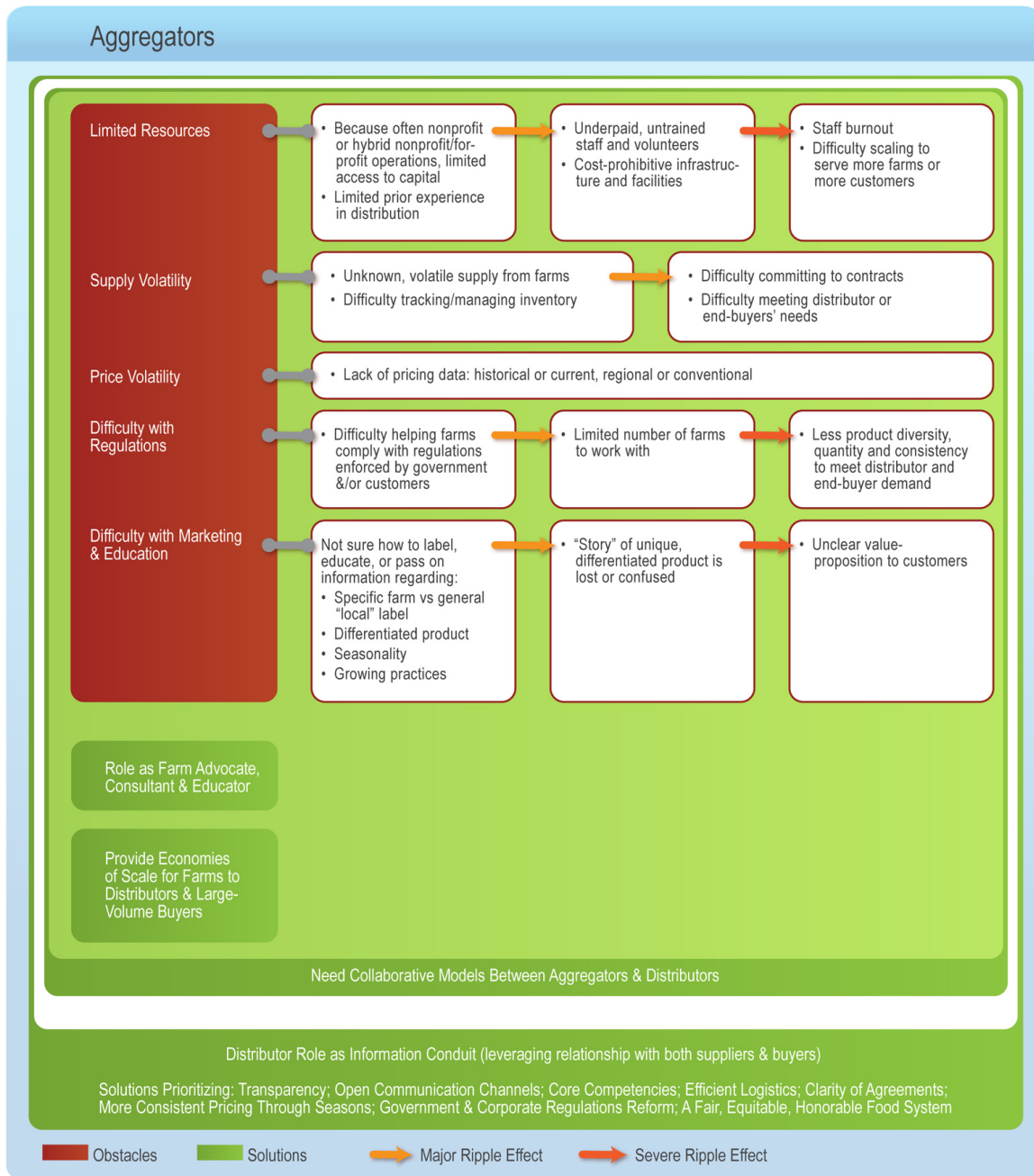


Figure 10. Aggregator Obstacles & Solutions

Distributors

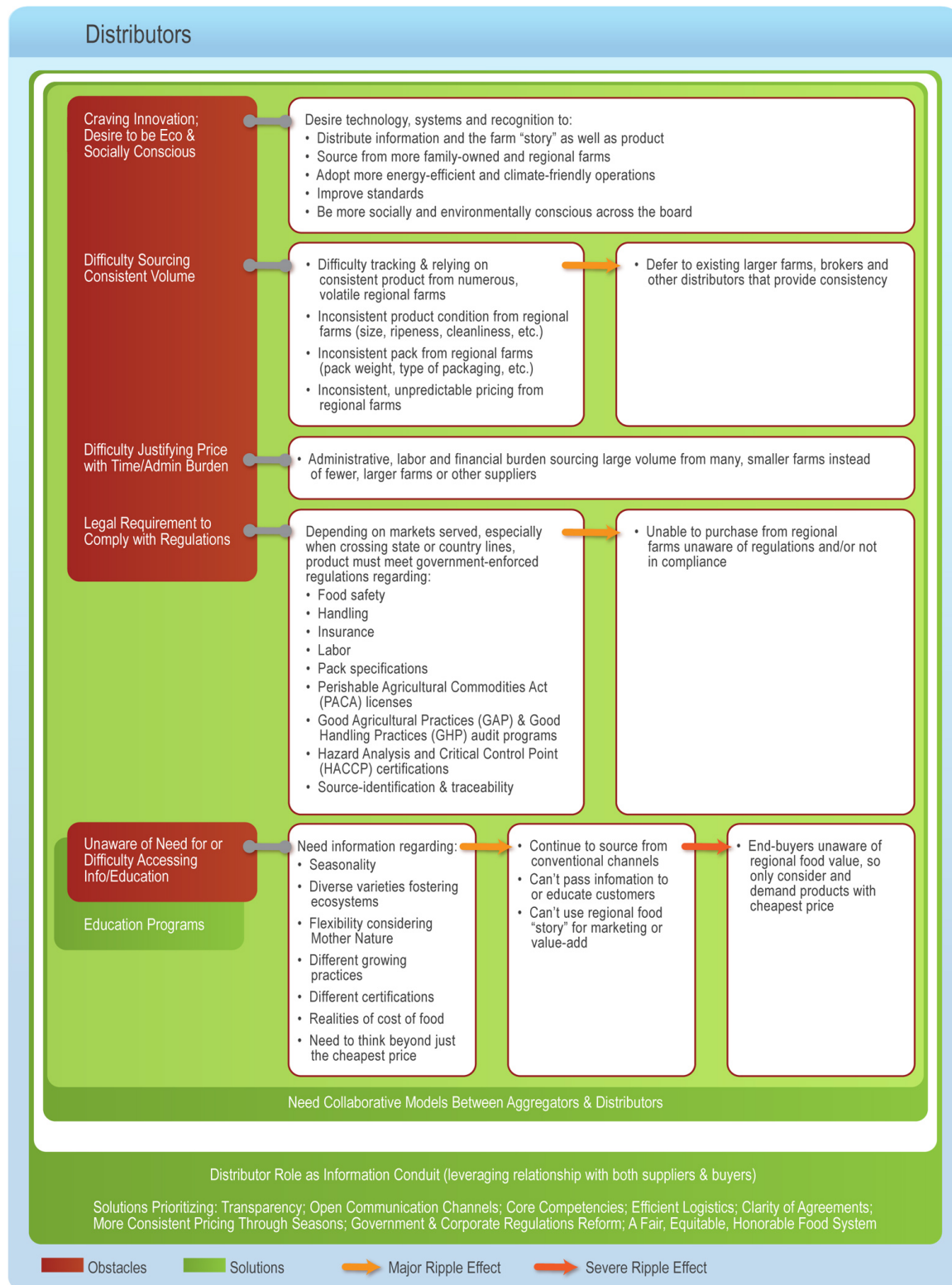


Figure 11. Distributor Obstacles & Solutions

End-Buyers

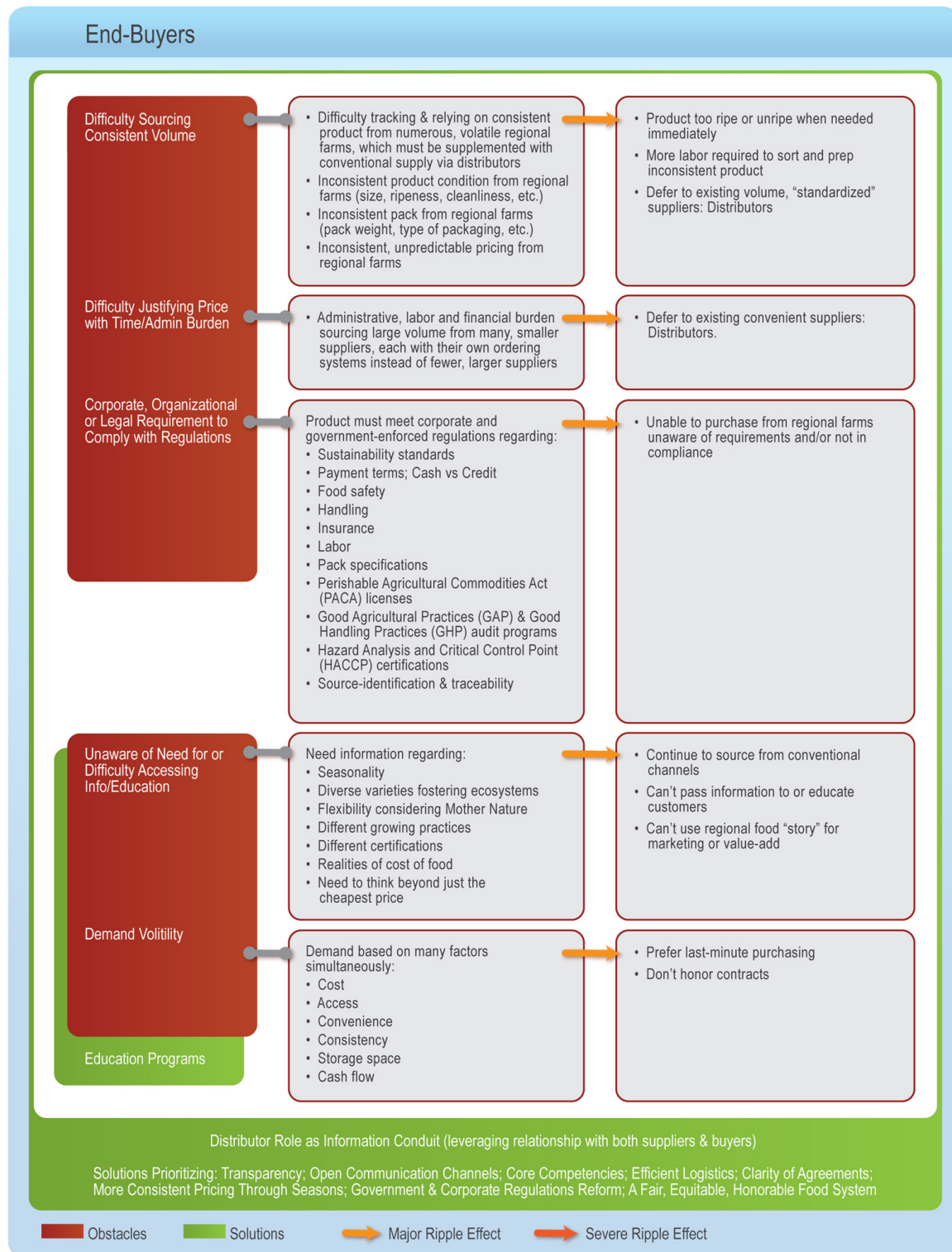


Figure 13. End-Buyer Obstacles & Solutions

KEY TAKEAWAYS

We hosted the convening to try to answer some big questions in the sustainable, regional food movement: *How does an efficient, effective regional food system work? How can farms access and sell to multiple channels? How can larger volume buyers access regional foods?*

While the obstacles we knew existed beforehand were validated, the workshop revealed much more detail and many other debilitating issues that we had not considered in this context. Rebuilding high-volume regional food supply chains will not be easy, but we hope our findings can assist efforts by other nonprofits, for-profit businesses, policy-makers and funders to rehabilitate this vital industry.

Integrated Solutions

The most debilitating issues are systemic, and the most impactful solutions will be as well.

Solving just one aspect of a compounded problem has minimal success. Some examples: Providing loans to farms without providing technical assistance on how to manage their operations; aggregating supply across several farms without helping them plan their crops to yield diverse, consistent product; or educating distributors and end-buyers on the value of purchasing “local” but not offering a method to access the products that meet their pack or food-safety requirements. Wonderfully-intended, yet myopic efforts such as these abound.

We also need to devise solutions that consider the product flow through the supply chain:

- Will each stakeholder gain value with the proposed new solution?
- Are there barriers that exist that will preclude a stakeholder from adopting it?
- How will it affect the relationship between existing suppliers or buyers?
- What ripple effects are there to stakeholders down the channel, or back up the channel?
- Is the proposed solution solving a fundamental flaw in the system, or is it a “band-aid” addressing a fixable inefficiency?
- Who else has already tried the proposed solution?
- Who else is currently working on this problem that could complement or supplement?

Finally, we need to consider the integration of many players – of all sizes – and diverse approaches. Perhaps new, alternative channels should be developed, but they should work in conjunction with existing conventional channels as well. Each unique region with its unique players will dictate what is appropriate. One size or one model does not fit all. Mosaics of different approaches should coexist. In a recent report by SustainAbility, they describe the benefits of these supply chain solution “mosaics”:

“...more complex networks have greater heterogeneity that can enhance value chain stability and offer a greater array of products and ingredients, ultimately enhancing consumer choice. This new perspective has industry leaders experimenting with building supply bases that are less linear chains and more interwoven mosaics.” (SustainAbility, *Appetite for Change*, <http://bit.ly/q5l4sk>)

Core Competencies & Efficient Logistics

Stakeholders should focus on what they uniquely do best.

Logistics and distribution are notoriously low-margin, capital-intensive operations that require brick-and-mortar facilities and trucks. While new models are emerging, moving food in the supply chain will always require efficient inventory management and trucking. Distributors already have this existing

infrastructure and decades more experience. They and new regional food suppliers should consider each other collaborative partners, not competition.

Regarding nonprofit organizations, they are known for effective advocacy programs, so they should ideally develop relationships with all stakeholders in the vertical to offer education and technical assistance. For nonprofits that want to offer any type of distribution service, due to their limited logistics experience and limited capital, they should complete a *thorough* business and financial analysis to see if this type of endeavor makes financial sense beforehand. Depending on underpaid or volunteer staff is not sustainable.

For farmers, their obvious core competency is farming. Despite their desire to have direct relationships with customers, most are burdened by distribution. The existence of inefficiencies among conventional channels does not mean farms should have to or will want to deliver directly to customers instead. Often, however, farms will stretch their resources (sometimes too far) to deliver directly to avoid losing a sale.

We need to create solutions that allow regional product to flow more efficiently through existing channels, so farms and nonprofit organizations don't need to assume more responsibility or cost for distribution. Most importantly, small and medium-size farms each delivering directly to each customer is an extreme waste of resources and an environmentally unsustainable solution. (See Figure 2: "Prevalent Inefficient Regional Distribution" on page 8.)

Note: Since the convening, we have learned of new research in progress on the optimal placement of aggregation points. Bruce T. Milne, PhD, Biology Professor at University of New Mexico, is researching algorithms based on the *Horton-Strahler number* and the work of R.H. Whittaker. Both are used to analyze hierarchical, branching biological structures. ("Concepts of Optimal Allocation of Hubs within Foodshed Distribution Networks", presented at the New Mexico Foodprints & Foodsheds Workshop, 6/8/11.)

Farms As Business People

Regional food systems can't grow if food producers aren't operating viable businesses.

There are so many factors in the prevalent food system that favor big agribusiness and work against regional, small and medium-size farms that typically use more sustainable production methods. To ensure a fair, distributed network of conscientious farms producing healthy food, we need to help producers become more resilient, savvy business people.

Our convening made evident common deficient business practices of small and medium-size farms:

- Lack of working capital
- Underpaid/untrained staff
- Inadequate crop planning based on demand or available natural resources
- Arbitrary pricing
- Inadequate product packaging
- Inability to track or comply with regulations
- Lack of time or skill for sufficient business planning

These practices not only inhibit producers from running viable businesses; they ensure that regional food supply and demand remain misaligned and inefficient. There is a critical need and opportunity to help farming become a viable profession again, and inspire a much-needed new generation of people to enter the industry to produce food in the future.

A Need For Capital

Innovation and progress are nearly impossible in an undercapitalized industry.

Many debilitating obstacles to regional food systems originate on the farm. A majority of small and medium-size farms are undercapitalized and struggle to stay afloat. Coupled with a lack of personnel and business skills, it is no surprise that this industry is slow to embrace change. Our convening revealed many opportunities for improving regional distribution, but a fundamental issue is that those who produce and price the food, those in “the first mile”, are often destitute and don’t have the time or awareness to improve processes. Providing short-term loans and investment in farms, *supplemented with financial and operational advice*, could remedy this.

Beyond the farm, capital is needed to rebuild the infrastructure for regional distribution networks lost over the past century. Regardless of who does the consolidation at the new hubs – farms, aggregators, or distributors – we need new brick-and-mortar dock and storage facilities so each individual farm does not need to transport their goods the same long distances to get to market. (Also see “A Need for Aggregation & Infrastructure” on page 7.)

Finally, perhaps not as dire a need as helping farms’ basic viability or rebuilding consolidation points, aggregators and distributors need capital to expand their services and innovate to support regional food systems in general.

Role Of Aggregators?

Aggregators are essential, but which types? The best models work in conjunction with existing distribution networks, not against them.

While aggregator models are still being developed and existing operations have varying levels of success, the “ideal” role of the aggregator is very controversial. Some people feel they should aggregate *information* – not product or logistics; distributors should expand their services instead of creating entirely new aggregation operations. Others feel that aggregators are an essential new stakeholder in the supply chain to provide logistical economies of scale for small and medium-size farms to sell to larger-volume distributors and end-buyers.

Because different models are still emerging, and because our convening also validated the need for diverse “mosaics” of approaches, we support any of the following:

Note: some aggregators may include more than one of the models below in their operation.

- Aggregators that assist with business operations, marketing and/or sales only; they aggregate information only.
- Aggregators that consolidate and distribute product for farms not able or wanting to distribute to designated customers themselves. Issues arise when farms offer product to the same customers through an aggregator as well as through their own direct-delivery routes.
- Aggregators that consolidate product for specific demographics not currently served by existing distributors (for example, aggregating from farms and other sources, such as food banks, to supply food pantries).
- Aggregators who assist with packing and preparation for delivery by a separate distributor or other third-party delivery service.
- Aggregators whose operation is accepted by or working in conjunction with other local distributors.



As the industry continues to evolve, we need to figure out models where aggregators and distributors are collaborating, or at least not competing. As new physical food hubs are developed in rural or urban areas, there is inevitable opportunity for both aggregators and distributors to serve these new consolidation points.

There is consensus that farms need technical assistance to become more business-savvy, and most aggregators have inherent missions to improve farmers' well-being and return to them adequate compensation. Aggregators are well-positioned to provide that technical assistance to the farms they serve. Helping their farms' viability allows them to achieve their mission as an organization; helping improve the consistency of their farms' collective supply allows them to better meet the needs of their customers. New models may include partnerships between aggregators and nonprofit organizations to provide this technical assistance.

Evolution Of Distributors?

The more distributors do to serve the needs of their customers seeking regional foods, the less end-buyers will try to work around them by asking farms to deliver directly.

In the prevalent system, distributors are in a unique position of working directly with producers as well as end-buyers. They hold extensive real-time knowledge about their suppliers' availability as well as their customers' inventory needs, product feedback, and compliance requirements.

As the conduit between producer and buyer, why not operate as *information distributors* as well as *product distributors*? Numerous issues exist today because of supply and demand misalignment, confusion about regulations, and the loss of the "farm story" en route down the vertical. This is an opportunity for distributors to play a key, hands-on role in aligning supply and demand, educating farms to comply with regulations, and differentiating regional products to increase demand.

Distributors expressed a strong desire to help regional farmers, and a craving for innovation. This new role could satisfy both.

Regulations & Policy

Government and corporate-imposed regulations need to be clarified, standardized (at least somewhat), and made affordable to allow small and medium-size producers to sell to more channels.

There are an overwhelming number of regulations imposed by federal, state, local and corporate governing bodies regarding:

- Food safety
- Handling
- Insurance
- Labor
- Pack specifications
- Perishable Agricultural Commodities Act (PACA) licenses
- Good Agricultural Practices (GAP) & Good Handling Practices (GHP) audit programs
- Hazard Analysis and Critical Control Point (HACCP) certifications
- Source-identification & traceability

Worse, producers typically sell to multiple regions and multiple channels, and each region or channel (and sometimes different customers within the same channel) may have different requirements.



Some examples:

- Institutions require vendors have \$1 to \$2 million insurance coverage, which is often difficult for small and medium-size farms to afford.
- Different states have different labeling guidelines.
- Distributors selling to a national network require certain types of boxes and specific pack counts of a particular product; restaurants may require that same product be packed in a different size or weight; schools may require that product be pre-washed and processed; hospitals may require that product be triple-washed or sanitized.
- Different corporate customers have their own unique requirements, application processes, and contact department regarding procurement – none of which is easily accessible to a potential new farm vendor.

It is a costly, time-consuming burden setting up compliance licenses and insurance, and there are currently no easy methods to track these myriad policies and requirements that vary by end-buyer type. We need policies and regulations that allow farms to more easily and affordably get their product into different channels.

Source Identification & Transparency

Whether for food safety or to differentiate regional products for customers, we need better systems to track where food comes from, and this information needs to be retained as product travels through the supply chain – regardless of middle-men.

The upcoming Produce Traceability Initiative (and whatever technologies emerge to support it) in 2012 may be successful in “whole-chain traceability”, but there is also the need to keep the “farm story” intact, so consumers can connect better with where their food comes from and are encouraged to demand more regional, sustainably-produced products.

Different approaches exist about which exact “story” should be conveyed. “Local”, specific farm names, and details about each farm’s environmental stewardship or carbon footprint are commonly used. Which marketing strategy is most effective often depends on the target customer demographic and their preexisting awareness about the benefits of regional and sustainably-produced foods.

Ownership Structures

The effort to rebuild regional food systems is still in its infancy, and we already see some trends that would indicate some new, interesting ownership structures may emerge. Some of these are:

- Collaborative models across nonprofits and for-profits and across different stakeholders in the vertical
- Inequities in capital across stakeholders
- The introduction of different types of aggregators
- The evolution of distributors
- A desire to focus on core competencies

The most successful will likely be those that prioritize one of the key tenets expressed among our convening participants: “A Fair, Equitable, Honorable Food System”.

Short-Term & Long-Term Strategies

It can be difficult to envision how a regionally-based food system would work when there are so many fundamental dysfunctional aspects in the current system. There are clearly some critical norms that need addressing immediately, such as farms’ basic viability, but there is also the need to lay the groundwork for

the more systemic, wider-reaching solutions, such as incorporating new distribution models and changing policy.

There are enough players working in or for the regional food system movement. To successfully resolve the many issues identified, we should be cognizant of where each of our efforts falls in the continuum of this system reform, and try to work collaboratively – or at least share information.

Different Points of View

There are many, diverse players in the industry. For any effort in rebuilding healthy regional food networks, different points of view need to be respected and heard, and communication channels between all stakeholders should be open.

One challenge for our convening, at least initially, was participants' anchored points of view. Many people who work in food production and distribution have been in the industry a long time, thus having strong opinions about how things operate and what's possible. While experience absolutely validates conviction and belief systems, we witnessed overwhelming progress when perspectives were opened and judgment suspended.

In many ways, the produce industry is still operating much as it has for the past 50 years or more. Relationships and processes that have endured decades can be difficult to modify. However, there is a necessity to evolve and innovate, ironically, as we strive to rebuild the functional, regional food systems that prevailed a century ago.

FARMSREACH GOING FORWARD

The FarmsReach platform is evolving with the industry to continue helping regional and sustainable farms expand their reach. We were the first scalable online marketplace for regional foods in 2007; however, after four years of real-world testing and an extraordinary convening of supply chain stakeholders, it's now known that a basic business-to-business marketplace (even if built by the best developers) will not generate significant increases in regional sales.

The convening laid out very clearly the deeper industry issues, which now guide our platform development to focus more specifically on producers, and contingently other service providers that serve stakeholders anywhere in the supply chain.

St. Onge Supply Chain Engineering

A defining factor in the next generation of FarmsReach is our alliance with St. Onge Supply Chain Engineering, a world-recognized supply chain strategy and logistics consulting firm. The existing FarmsReach application was built by Silicon Valley veterans, so it is technically extensible and scalable. Now, with St. Onge managing our software product management and development, we are able to leverage their supply chain expertise and greatly expand the capabilities of FarmsReach.

Employing agile software development, our platform will be iterative and continually evolve based on user feedback as well as complementary software tools developed by third-parties. (See the next section "Open Architecture & Information-Sharing".)



Open Architecture & Information-Sharing

No single software tool can solve all the complex issues in the current system or satisfy all stakeholders. There's an obvious need for a whole host of tools to address obstacles for farms, aggregators, distributors, and end-buyers regarding:

- General operations
- Financing
- Inventory management
- Marketing & sales
- Distribution & logistics
- Regulatory compliance
- Education

When there is *much* to be improved in the current system, our approach is to foster collaboration among the various software tools so that, together, we can more quickly achieve priorities for the vertical identified in the convening:

- Alignment of supply & demand
- More efficient logistics
- Transparency & source-identification
- Better, open communication across stakeholders
- A fair, equitable, honorable food system

Therefore, the FarmsReach architecture will allow integration with these upcoming third-party applications that provide supplementary or complementary services.

For more information about our upcoming release or specific features, please contact us: info@farmsreach.com.

OTHER OPPORTUNITIES

In previous sections, we outlined many obstacles to regional food systems; however, we also discovered many opportunities to facilitate more efficient, higher-volume regional distribution.

Below are some examples of where attention and capital are needed. Many of these are most effective when implemented systemically as described in "Integrated Solutions" on page 20.

- For all stakeholders
 - Regional leadership and strategy to implement and monitor regional food distribution programs
 - Capital for nonprofit and for-profit operations related to all opportunities below:
 - Startup and growth grants/investment
 - Credit and financing vehicles and tools
 - Development of physical food hubs and aggregation facilities (regardless of who does actual aggregation: farms, aggregators or distributors)
 - Policy reform regarding food safety, handling, insurance, etc. (For more information, see "Regulations & Policy" on page 23.)
 - Industry standardization regarding pack specifications, labeling, traceability, etc.
- For farms
 - Business consulting, technical assistance and technology to reduce operating costs: "do more with less" (Also see "Farms As Business People" on page 21.)
 - General operations
 - Managing and training year-round staff
 - Business development

- Precision agriculture
 - Food safety and regulation compliance
 - Bar code and sensor hardware and technology for cross-platform traceability
 - Loans
 - Short-term loans for cash flow, etc.
 - Long-term loans for capacity-building, land, etc.
 - Investment
 - Coupled with business operations and management advice
- For aggregators
 - Business consulting and technical assistance for new operators or existing stakeholders assuming aggregation role
 - Inventory management tools – for procurement from producers as well as sales to customers downstream
- For distributors (could also apply to processors or brokers)
 - Improved inventory procurement tools – to replace or work in conjunction with legacy systems
 - Improved sales tools to track and transmit more detailed source-farm data to end-buyers – to replace or work in conjunction with legacy systems
 - Business consulting, technical assistance and technology to adopt role as “information conduit” as well as “product conduit” (For more information, see “Evolution of Distributors?” on page 23.)
 - Educational programs regarding:
 - Seasonality
 - Biodiversity
 - Growing practices
 - Certifications
 - Real cost of food
- For end-buyers
 - Improved inventory procurement tools – to replace or work in conjunction with legacy systems
 - Business consulting, technical assistance and technology regarding:
 - Inventory/menu-planning
 - Standardization of and/or farm-inclusion in corporate regulations re: food safety, handling, insurance, etc.
 - Educational programs regarding:
 - Seasonality
 - Biodiversity
 - Growing practices
 - Certifications
 - Real cost of food

CONCLUSION

After nearly a decade working with farms and aggregators and co-leading the government-funded San Francisco Foodshed Project, we hosted a Supply Chain Convening to demystify how to create efficient, high-volume regional food systems.

As a technology company, we were clearly interested in learning which software tools may be needed, but what we all collectively discovered compelled us to share the findings to educate and enlist more players needed in this movement.

Basic Principles

- Obstacles to regional food distribution are incredibly complex, with dysfunctional and inefficient logistics, policies and business operations all along the vertical. Online marketplaces won't translate to significant regional sales volume until deeper debilitating issues are addressed.
- We need to rebuild aggregation systems and infrastructure to allow small and medium-size farms to sell not only locally – but to other regional, national and international channels.
- As small and medium-size farms become viable and more profitable, they inherently want to use environmentally sustainable methods and pay fair wages to workers.
- New regional distribution networks can operate both outside and inside the prevalent centralized agribusiness supply chain. It is not essential or likely feasible to create a completely separate, “alternative” food supply system and infrastructure.

Overview of Findings

- The most debilitating issues are systemic, and the most impactful solutions will continue to be systemic as well.
- Innovation and progress are nearly impossible in an undercapitalized and currently unviable industry. There are many opportunities for investment and strategic focus.
- Stakeholders should concentrate on their core competencies.
- Most farms want (and need) to focus on farming, not delivering individually to each customer.
- Farms need to become better business people.
- We need to find collaborative models between aggregators and distributors. The more distributors do to serve the needs of their customers seeking regional, sustainable foods, the less other stakeholders will try to work around them.
- Inexperienced nonprofit organizations should not be doing distribution.
- Government and corporate-imposed regulations need to be clarified, standardized, and made affordable.
- We need better traceability systems.
- New ownership structures are emerging.
- Both short-term and longer-term strategies need to be implemented now.
- There are many diverse players who have been in the industry a long time. Progress can be achieved more quickly when perspectives are opened and judgment suspended.

The Road Ahead

FarmsReach is leveraging our experience, our existing platform, and new alliance with St. Onge Supply Chain Engineering to focus on the most debilitated stakeholders in the supply chain: farmers. Our open architecture and intention to foster collaboration across the vertical ensure we remain a neutral data provider for emerging third-party solutions.

There are many opportunities to help rebuild healthy regional food systems. While our convening represented a subsection of the entire food supply chain, it highlighted several critical areas that need addressing now. Until we resolve these issues, regional food distribution will likely remain fragmented and require extensive, manual alignment of supply and demand and one-on-one education.

SustainAbility's recent food system report highlights large-volume buyers' desire for a more reliable, consistent, sustainable food supply. Regional food systems will be the most successful and profitable when they are supplying these volume purchasers as well as their local communities.



Ultimately, large-volume buyers and smaller regional farms share the same goal: healthy, fresh, sustainably-produced foods for all.

“...Nearly a billion people — half of them farmers — are undernourished, while another billion consume too much...Changing the status quo is urgent. There is risk here, certainly, but also enormous opportunity if we perceive the challenge to be not whether we feed nine-ten billion people sustainably, but how. A sustainable food system — one that is reliable, resilient and transparent, which produces food within ecological limits, empowers food producers, and ensures accessible, nutritious food for all — has been defined. How quickly can we make it real?”
(SustainAbility, *Appetite for Change*, <http://bit.ly/q5I4sK>)



APPENDIX: STAKEHOLDER RAW DATA

There was an overwhelming amount of information generated during the two-day workshop, all of which was verbally communicated and captured primarily hardcopy. Below we transcribed the top obstacle themes identified by each stakeholder team in the 360° Analysis phase. Wording and categories created by each team are retained below. (For details, see “Convening Players & Process” on page 11.)

Farm Themes

Internal Ops/Biz Mgmt

- Difficult to access capital.
- Labor costs and lack of trained workforce.
- Complexity to track/manage inventory (product, pack, etc.)
- Difficult to get name out and differentiating your product.
- Burden of getting set up with required insurance, PACA, etc.
- Trucking, shipping, receiving is necessary but a time and resource drain.
- Burden of basic overhead.
- Cost to hold inventory.
- Need for legal advice.

Pricing

- Lack of historical and current pricing.
- Marketing local but necessarily a specific farm.
- Price volatility: farms due to weather; what retailers & wholesalers are willing to buy also volatile.
- Contracts:
 - Farms can't commit ahead of time;
 - Aggregator contracts x% of sales with customers not knowing exactly which farms will supply.
- Complexities of PACA terms farms aren't familiar with.

Regulations

- Compliance with food safety, labor, trucking, and other regulations is expensive, time consuming and requires energy and attention.

Supplying aggregators

- Limited pricing knowledge: historical and real-time.
- Need more clearly defined expectations, marketing, labeling, accounting.
- Aggregators' business affected by volatile Mother Nature and seasonality.
- Farms have short-term cash flow.
- Farms have limited capital for reinvesting in their supply.

Customers (produce buyers)

- Need to educate them about seasonality, need to be flexible and okay with and aware of new varieties and differentiating different growing practices & certifications.
- Risk that distributor works back door with farmers and ousts aggregator.
- Challenges of meeting customer requirements re: insurance, compliance, and other legalese. No standards.
- Once customer commits to something/purchasing, they don't honor it.

Aggregator Themes

- A fair, equitable, honorable food system requires respect and adequate compensation for growers and laborers.



- For sustainability, you need both economic viability as well as a story that tells the ethos and legacy of farming to the consumer. (Re-establishment of connection to the seasons.) Should emphasize organic practices, but not only organics.
- Require farm to consumer transparency.
- Efficiency of distribution needs to be addressed.
- Values and compensates for the unique quality of items. (Education!)
- Farmers need help/training to adopt new technology, analyze trends, etc. Don't expect to not learn yet another system on our own!
- Provide market information: prices by region, demand, etc. Collect it and make it accessible.
- Farmers need credit, short-term loans to help with cash flow.
- Promote crop growth in climate appropriate places and protect the ecosystem that supports farming.
- Clarity of agreements between buyer, aggregator and farmer is KEY.
- Cooperation models are not 1-size-fits-all. We need diverse ways to connect to markets.
- Cost of complying with growing practices and food safety standards falls disproportionately on medium and small farmers. Ideally, we create a way to offset that (mechanisms, marketing).
- Promote more consistent pricing through seasons (instead of flux with highs and lows).
- Loyalty is reward for supplying quality, ethical produce. Encourages buyers to not chase price only.
- There should be some baseline standards to qualify for an aggregated system (food safety, etc.)
- Part of this collaboration should include services that help small and medium farmers share knowledge.
- Use values as marketing advantage – show that local/sustainable farms outperform others.
- Encourage creative collaborations to staff farms (artisans, seasonal craftsmen, etc.) “Migrants workers” doesn't have to be a bad thing...
- Buyers and consumers need education at the point of transaction.

Distributor Themes

- Strengthening core competencies of farmers and distributors through partnerships.
- Distributing information is as important as distributing product.
- Growers need to communicate with the buyers, distributors then inform & educate customers.
- Distributors to advocate for appropriate food safety for growers of all sizes.
- Distributors crave innovation and adoption of sustainable energy usage.
- Understanding realities behind cost of food.
- What is the role of distribution and education?
- Distributors hold/carry feedback for marketing, different customers, quality, packaging, sizing, taste, price, ripeness.
- Distributors are LINK between grower and customer.
- What is the collaborative model that serves intersection of market supply & demand?
- Operating w/ ecological and social conscience supporting local living economies.
- Communication can be marketing.
- Distributors have empathy for growers.

End-Buyer Themes

- Need for tool to connect and create dialogue between end-users and growers to enable planning (e.g., menu-planning).
- Tool to streamline purchasing and delivery from various sources.
- Understanding of buyers' constraints set by corporate head office (e.g., cash vs credit terms) and sustainability standards.
- Questions of cost, access, convenience and consistency are interwoven for buyers. Can't address just one.
- Maximized access to as much grower info as possible.



Our mission is to help small and medium-size farms access and sell to more channels, thereby infusing communities with healthy, sustainable, regionally-produced foods.

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