



The Joseph Initiative and Agricultural Transformation

Introduction

In Masindi, one of the leading maize producing districts in Uganda, change is in the winds. The Joseph Initiative (JI), a grain management and trading company, has in just three years established itself as a major actor in the area and is transforming the maize value chain.

The Common Fund (with resources from its Dutch Trust Fund) is supporting JI in response to its request under the Fund's Third Call for Proposals. CFC was an early seed funder for JI, providing US\$ 500,000 in longer term financing which enabled the company to finance its infrastructure investments. CFC's loan to JI was crucial to its rapid growth because the company's investments have a longer income generating horizon than regular trade and inventory finance. CFC's commitment to invest also had spinoff effects – other investors were subsequently more willing to offer the company shorter term financing.

JI is focused on delivering the highest quality produce to East African food manufacturers, with a vision to establish and manage "the first structurally-aligned, regionally-integrated, efficiently-capitalised and formal system for East African food production and trade"¹. The Joseph Initiative is nothing if not ambitious. The company wishes to not only turn a profit, but also transform the maize value chain, promote food security, improve rural livelihoods and maximises stakeholder value.

Already, the experiences of JI offer an informative case study of how innovative small-medium enterprises (SMEs) can drive positive change across the chain.

Maize is not typically thought of as a particularly interesting or exotic value chain and is often incorrectly characterized as a subsistence crop. Whilst certainly important for household food security, in reality maize doubles as a cash crop for most smallholder farmers. It is integral to smallholder's livelihood

¹ <http://www.josephinitiativetd.com/>



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strategies and often one of the main sources of agricultural income for the household.

In fact, maize is the most widely traded agricultural commodity throughout East Africa, facilitated by the free trade agreement between East African Community (EAC) states. Therefore, the performance of grain markets has a significant impact on people's welfare, and is critical to inducing pro-poor growth².

The demand for quality maize continues to grow with a fast urbanising East Africa. This is driven by cities such as Kigali, Nairobi, and Kampala and, according to JI, this demand is set to continue growing strongly in the coming years. This presents an opportunity for both JI and the maize farmers of Masindi.

However, to seize this opportunity considerable challenges must be overcome. It is therefore worthwhile to begin with a brief look at the context in which JI is operating.

Features of the maize landscape

Development projects and extension services

Many development projects or programmes have undoubtedly contributed to incremental positive changes in aspects of the

maize chain in Uganda. Often these projects are important for building the basic capacity of producers to move from subsistence farming towards farming as a business. For example some projects focus on seed, or on agronomic practices, and others on the provision of small loans. However, very few projects – or government extension services – have the capital and human resources to tackle the various segments of the maize value chain at scale over the long term.

For JI, with its local presence and long-term outlook, value chain development is precisely the aim. The reason is clear – improving the chain is good for both for the company, small-holder producers and consumers.

Traders

Traders are a feature of agricultural value chains throughout East Africa. Most smallholder farmers have little choice but to deal with traders due to a lack of reliable formal buyers and a lack of strong farmer cooperatives engaging in group marketing.

Sometimes portrayed as the 'bad-guys' in the chain, traders play a vital role in the absence of other formal buyers. They too face significant challenges in aggregating and transporting maize from remote corners of the country and marketing it through their networks.

Joseph Center, demonstration plot

Photo: Roger Bymott



²World Bank. (2010). Eastern Africa - A study of the regional maize market and marketing costs.

Available at <http://documents.worldbank.org/curated/en/2009/12/11620725/eastern-africa-study-regional-maize-market-marketing-costs>

Traders incur considerable transport and financial transaction costs, and face numerous risks including theft (of cash or maize), poor grain quality (containing foreign matter or being contaminated with aflatoxin), transport issues (vehicle breakdowns on poor and remote roads), market price fluctuations, and being short-changed by other larger traders that they on-sell to.

Understanding the challenges and risks that traders deal with helps to explain why there is often an absence of formal buyers in rural areas who trade with smallholders, and why group marketing by cooperatives is often fraught with difficulties. Traders' margins are typically small, cited at around 50 UGX/kg (US\$0.013/kg), which is roughly 10% of the farm gate price at present. Traders achieve profits only through efficiency and moving bulk quantities.

Unfortunately, according to smallholders, traders sometimes engage in unscrupulous practices. They are accused of not using accurate scales to 'cheat', or fixing low prices amongst themselves. In short, a volatile combination of high risks and low margins leads to low prices for producers and a lack of trust between producers and traders.

Farmers face an unenviable decision when a trader comes knocking – to sell or not to sell at the price the trader is offering. Individual farmers are price takers, not price makers. Outside of the harvest season farmers cannot be sure when another trader will be in the area and what price they will offer. Since JI has emerged on the scene, farmers have a reliable market option they never had before.

Quality and price

Another challenge in the chain is the lack of price responsiveness to quality. For the most part, maize is just traded up to the final buyer (often a large miller). Where quality is required, a few large traders have drying and cleaning facilities, however the capacity for this kind of quality differentiation in Uganda is limited.

Before JI started operations, there was no real incentive for farmers to make additional efforts to supply quality maize. Issues such as moisture levels in the grain or breakages had virtually no bearing on the prices that traders would pay. In the view of JI, this lack of price responsiveness to quality is one important reason why the chain remains under-developed.

The business model of JI is based around procuring, processing and marketing high quality maize for regional markets, for which the company receives a premium price. JI requires smallholders to also supply the company with quality maize, for which they too receive a premium price from JI. This involves sourcing maize with low moisture levels (preferably

Photo: Roger Bymolt



Joseph Initiative processing and storage facility

below 14%) that is free of foreign matter and contains the minimum of broken grains.

Farmer production knowledge and use of inputs

Smallholder farmers typically lack the production knowledge to achieve high yields, such as optimal plant spacing and timeliness of weeding and application of inputs (if used). Farmer yields in the area tend to range between 500kg/acre and 2000kg/acre depending on the seeds and inputs used, with common yields being around 800-1000kg/acre. By comparison, JI's nearby commercial farm yields over 3000kg/acre. This illustrates the size of the productivity gap that JI hopes to close.

Before JI, most maize farmers tried to get by using the minimum of inputs, often neglecting to use fertilizer or improved seed varieties. The reasons for low input use are varied. Some cite a lack of access and availability, whilst others lack of access to finance or savings to invest. Others still describe how low prices disincentivise them from investing maize profits back into the crop, perpetuating a cycle of low input → low output → low profit → low investment in inputs the following season. Compounding this, inputs in Uganda are notorious for being adulterated and may not perform as expected, leaving many smallholders to simply not take the risk.

JI understands that the company's fortunes are linked with those of smallholders. By increasing smallholder yields through the use of improved inputs farmers can receive higher profits and JI can procure greater volumes of maize from the areas it is already operating in.

The investment climate for SMEs in Uganda

JI and other SMEs also face various other challenges relating to the investment climate of the country. These challenges include currency exchange rate fluctuations, the quality of infrastructure, and various other issues related to the ease of doing business. By way of reference, Uganda was ranked 150th by the World Bank's Doing Business index in 2015³.

One of the biggest issues for SMEs in emerging economies generally – and in Africa specifically – is access to finance. SMEs are often regarded as having a high risk profile by formal lenders. This makes it difficult and expensive to raise the necessary capital at rates which are commercially reasonable in order to operate efficiently. Furthermore, the agricultural sector is generally regarded by financial institutions as one of the highest risk sectors. This constrains many entrepreneurs from succeeding in the market.

To overcome the challenge of finance JI was able to secure financing from CFC and later from other 'impact investment' funds⁴. CFC and other investors have assessed the company to be a financially sustainable business with excellent growth prospects which can achieve wider impact on smallholders and the local economy.

Value Chain Development with the Joseph Initiative

With the context in mind, this section describes how JI has managed to overcome numerous challenges on its way to becoming a sustainable company capable of transforming the maize value chain.

JI launched operations during the January 2013 harvest season. The main difference between JI and competitors is that JI's operations span across the agricultural value chain, including farm-gate procurement, logistics, drying, cleaning, bagging, storage, warehousing, and distribution. JI's core business is aggregating and procuring maize from smallholders in difficult to reach and dispersed places, where no other formal buyers go, and where even traders are infrequent between seasons.

Photo: Joseph Initiative



A Network of Joseph Centers

The critical backbone of the JI's supply chain is an established and rapidly expanding network of village-level grain procurement and service distribution centres, known as Joseph Centers. Essentially they offer smallholders an 'ecosystem' where farmers can procure inputs, obtain knowledge through demonstration plots and extension services, apply for rural finance, and of course trade their maize with JI.

Joseph Centers are located in rural communities, and have been strategically situated around 2.5 – 4kms from each other in order to conveniently serve smallholders. Currently JI manages a network of 60 Joseph Centers, with 40 around Masindi and a further 20 in Mubende. Joseph Centers give JI a very local presence, and are each staffed by two trained Village Procurement Officers from the same village.

As the JI managing director described, this local presence allows JI to make a demand signal to smallholders to invest in their maize. *"We are saying, we will pay for quality, we will be your stable buyer, we have local presence, and we will support you with knowledge, access to inputs. If you want to grow, we'll show you how, if you need advice we are here for you – because we will both benefit".*

³The Doing Business index rankings take into account several indicators across ten topics: starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting minority investors, paying taxes, trading across borders, enforcing contracts and resolving insolvency. See <http://www.doingbusiness.org/rankings>

⁴In addition to CFC, JI lists the following as partners: Agilis Partners Ltd., DOB Equity and DFID. See <http://www.josephinitiativeitd.com/#partners>



Shelling maize at a Joseph Center

Joseph Centers feature a basic 'crib' storage facility where purchased maize is aggregated. The advantage of the crib storage is that it allows for natural drying and safe storage of grain until it reaches sufficiently low moisture levels for shelling and transportation to the large-scale JI processing facility. Joseph Centers also sell inputs such as improved seed and quality fertilizer, which smallholders can purchase at competitive prices. There is also the option for smallholders to buy these with a small loan.

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As mentioned above, adulterated inputs is a real problem in Uganda (and throughout the region), affecting a farmer's decision to invest. JI says that in recent tests fertilizer purchased at village level showed nitrogen levels to be only 40% of what they are packaged to be. Likewise, maize seed germination rates were found to be 60-65% rather than 95%.

To remedy this situation, JI procures quality inputs at source in Kampala and markets these to farmers through the Joseph Centres. These quality inputs have a substantial effect on yields, as farmers themselves observe in Joseph Center demonstration plots⁵.

Demonstration plots and Asili Farms

Maize demonstration plots have been established adjoining each Joseph Centre. The JI Agronomist explained: *"Village procurement Officers provide extension services to farmers from the demo plots, offering advice on production practices and demonstrating the effectiveness of quality inputs in different combinations. Farmers are offered a set of six trainings each at the demo plots. The trainings focus on land preparation, planting, weeding, fertilizer application, spraying, and harvesting. Each training targets up to fifty farmers at one time".*

Demonstration plots are central to transferring technologies to farmers and encouraging them to invest and professionalise. The demonstration plots use only technologies that are readily available to smallholders, such as different combinations of improved hybrid seeds, quality fertilizers, herbicides and pesticides.

Many of these technologies are tested at the 1000 hectare (2471 acre) Asili Farms, a sister company of JI. The Asili Farms manager explained: *"Asili Farms is like a training site. We test everything here with our crops under local conditions so it is like a centre of knowledge. When we introduce these technologies to farmers we know they work, and it's not just us preaching".* This knowledge is brought together by the Agronomist in a protocol document on best practices for local conditions.

Asili Farms applies conservation agriculture (CA) practices⁶. JI is serious about promoting sustainable land management practices, soil diversification, watershed management and crop diversification in order to achieve long-term sustainability.

The JI agronomist explained how changes in plant spacing practices have probably been the simplest to implement. Farmers were previously broadcasting maize, but now are planting in 25cm x 75cm rows. This has increased the plant population per acre from around 17000 to 21000 for practicing farmers.

The agronomist discussed why some farmers might not follow best practices – *"some have been burned by others when encouraged to change practices."* Farmers agreed: *"Yes the demo plot is very important. It gives us confidence, because seeing is believing".*

⁵ The quality hybrid seed varieties offered to supplying farmers are Pannar 15, Pannar 67, FICA 6H, FICA 9H and Naseco 10H.

⁶ See <http://www.fao.org/ag/ca/>

Smallholder access to credit

A major issue constraining smallholders from achieving much higher yields and profits is their ability to afford inputs and farmers often need to raise credit.

However, microfinance interest rates are high and can often exceed 50% p/a for smallholders in rural areas. Such interest rates reflect both the cost of reaching smallholders and managing smallholder accounts, as well as high default rates and the challenges of securing smallholder loans. From the perspective of banks and microfinance institutes, high interest rates are justified because they represent the real cost of working with smallholders and the performance of microfinance loan portfolios. Unfortunately, it also makes lending an expensive and risky prospect for most smallholders.

JI offers a route to more affordable and accessible smallholder financing through its partnership with Opportunity Bank. JI is able to track smallholder's maize farming performance over several seasons and judge their ability to repay the loan, thereby reducing risk for both lender and borrower. This enables Opportunity Bank to offer loans at a lower interest rate of 30% p/a (15% over a six month season)⁷.

A common cause of non-performing loans is when farmers divert money that they have borrowed from inputs to consumable items. For obvious reasons, using loans for consumable items does not generate a return on investment and can leave a farmer in a vulnerable situation when it comes to repayment⁸. To avoid such a situation, JI Village Procurement Officers help to facilitate the loan process between smallholders and Opportunity Bank. JI has developed a pricelist of common inputs and services that a farmer may wish to get a loan for and smallholders must indicate what the loan is actually for. After making an application for a loan, farmers do not actually receive the money, but rather a credit note for the inputs or service that the loan was requested for. This is redeemed at the Joseph Centres. In this way, farmers are not tempted to divert the loan for other purposes. When farmers sell the maize back to JI, the loan money is deducted.

Side-selling to traders and not making the loan repayment is of course another risk. This is mitigated in several ways. First, the local presence of the JI Village Procurement Officers means that borrowers are known personally, so cannot easily disappear. Second, farmers are required to take loans as a small group of 10-15 members, with the group guaranteeing the loans of each member. A deposit of 25% is required to secure a loan and members do not get their 25% deposit back until all

group members repay their loans. Therefore, farmers need to choose group members they feel they can trust and should be of a similar capacity.

Loans are typically in the range of 100,000 UGX (US\$27) to 1,000,000 UGX (US\$270) for farmers without credit history and without collateral. For those with a credit history and collateral larger loans are possible through the JI and Opportunity Bank partnership. Farmers taking loans are also required to take the prudent step of crop insurance against extreme weather, for which a 3.5% premium is added.

Procurement

JI's strategy to procure from smallholders might not seem exceptional at first, however consider that very few SMEs source maize directly from smallholders. JI must have an exceptionally efficient system to be able to consolidate, clean, store and market high volumes of grain. In its first year of operation, 80% of all JI's transactions with smallholders involved less than 200kgs of maize at one time. Indeed, JI claims to be the only SME operating at this end of the market who sources their maize in such small quantities at origin. Last season 15,000 farmers supplied JI, and by the end of 2015 JI expects this number to reach 50,000 smallholders supplying up to 30,000 MT.

"The demo plot is very important. It gives us confidence, because seeing is believing".

JI takes an innovative approach to its maize procurement from smallholders. Unlike all other buyers, JI prefers to buy cob maize and do the shelling themselves. This is to avoid losses and degradation which can occur during the shelling process using local methods. JI uses a scientific formula to calculate maize cob to grain conversions and make payments to smallholders accordingly. Shelled grain weight is approximately 80% of the weight of cob maize. JI prefers to buy cob maize so that it can manage and maintain quality from the source. In this way, the company is able to monitor maize moisture levels before shelling the grain, and is able to avoid foreign matter (such as small stones) and possible aflatoxin contamination.

The maize in the Joseph Center crib is sorted according to its moisture content. Compartment A has maize of between 12-16% moisture, B 16-20%, and C 20-24%. Compartmentalising the maize helps the company to know how long to leave it in the crib for further drying. In this way, JI can ensure that the maize is only shelled when it is sufficiently dry, with the

⁷This is very close to commercial lending rates of major banks to businesses in Kampala

⁸See Centre for Financial Inclusion. (2014). Microfinance Banana Skins 2014: The CSFI Survey of Microfinance Risk.

Available at <http://www.centerforfinancialinclusion.org/publications-a-resources/browse-publications/610-microfinance-banana-skins-2014>

minimum of breakages, and is not contaminated with stones and dust. Obtaining quality maize at source is vital for JI to be able to transform it into grade 1 maize at its processing facility and market it at a premium in regional centres.

This shelling arrangement is positive for farmers too. Smallholders save time and labour costs incurred by manual threshing or by taking their maize into town to shell with another small operator. JI charges farmers for this maize shelling service at the same rate of town operators, or slightly less due to volumes (3500 UGX per bag).

However, smallholders did express some 'fears' about selling cob maize rather than grain. Bad experiences with traders in the past has many cautious of being cheated. Whilst farmers are confident that the JI scales are accurate, there is more uncertainty around how final prices to farmers are calculated with the cob-grain conversion ratios. This is further complicated when JI pays different prices for quality (a premium is paid for low moisture levels), and when loans for inputs and shelling costs are deducted. Said one farmer, *"We don't understand how the deduction are done, and moisture meters are new to us too"*.

This highlights the importance of good sensitisation with smallholders to explain how prices are calculated. The strong growth in supply to JI suggests that this sensitisation is going well. Sensitisation will be an ongoing process as JI continues to scale its operations.

Farmers report that since JI has begun its operations the price of maize has increased significantly from around 300 UGX/kg to

500 UGX/kg at harvest time. It is obviously difficult to attribute all of this increase to JI. However, in effect JI acts like a floor price in the market with which traders have to compete. This improves the system, and farmers always have a good market option.

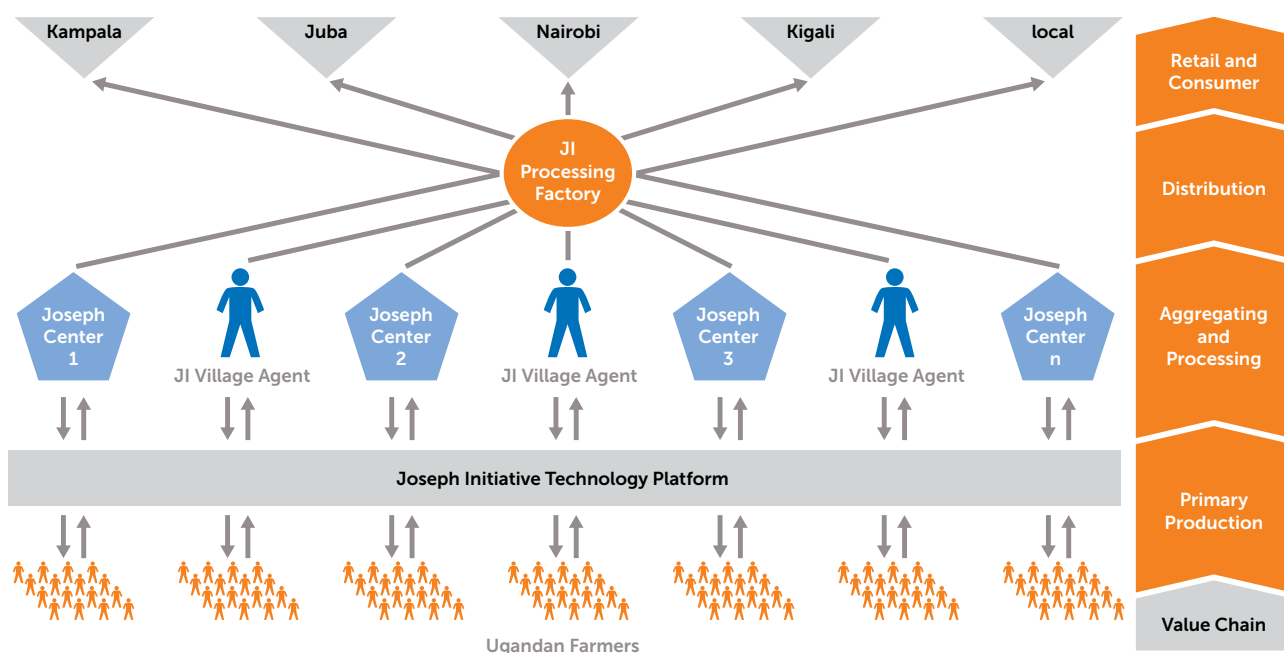
JI Technology Platform

All of the elements of JI need intense coordination, which requires systems and technology. This technological edge is paramount to efficiently working with smallholders, and is an area where other SMEs sometimes fall down.

The JI Technology Platform (JITP) is the technological backbone of JI enabling it to effectively monitor operations in real time. The customised software 'Grains Chain' is designed to run on smartphones and tablets in the field. It allows JI to update prices, track transactions with smallholders, monitor inventory across all 60 Joseph Centres, monitor stocks in the JI processing and storage facility, and quickly compile company reports for analysis.

When farmers bring their maize to the Joseph Centre for the first time they are registered in the system on smartphones. The purchase order includes the number of kilograms sold, the moisture content of the maize (as measured with moisture meters on site) and several other data points. The software then calculates how much the farmer should be paid based on the number of bags, the current market price, and the maize quality (particularly relating to a low moisture content).

The Joseph Initiative's supply network is coordinated entirely on the Joseph Initiative Technology Platform. JI is now rapidly integrating advanced management practices including mobile payments, forward contracting capabilities, and biometric identification.



Processing and marketing to large buyers

All of the aggregated maize procured from smallholders in the Joseph Centres gets transported to the JI processing facility outside Masindi. Here, up to 500 MT of maize can be efficiently cleaned per day (although JI is not currently running at full capacity). Maize that still retains excess moisture levels is diverted to industrial dryers. This is the final stage before storage in JI's silos, which can handle up to 7000 MT. CFC has played an important role in financing the upscaling of the processing and storage facilities with a long term loan of US\$ 500,000 over seven years.

Until recently, JI supplied large brokers who on-sold to millers. However in recent months JI has made tremendous in-roads to dealing with large millers directly. Today, Nairobi Milers, Minimex (Rwanda) and the World Food Programme are among JI's biggest customers.

Success factors

In such a challenging business environment, the JI Managing Director was asked what he considers to be the key success factors. Why has JI succeeded where others have failed to kick on and scale up?

"A bottom up approach was taken from the very beginning. In fact, we started out first raising pigs, and then became interested in sourcing animal feed. It was only when we started producing our own feed that we encountered the maize value chain and became attracted to the idea of creating change in the chain. So we started off from the position of maize consumers, before becoming small maize traders ourselves. We then spent 6 months with farmers before doing anything further to develop the JI vision. This experience was the basis for success".

Now, with operations rapidly expanding, JI offer the following factors for success:

People: The modular approach of JI and its Joseph Centres requires an excellent team to manage the system and actively troubleshoot on a regular basis. Clear roles and responsibilities and employee accountability are important in this regard. JI also succeeds due to its excellent knowledge of the area and movements in regional maize markets. By the end of 2015, JI expects to be employing 720 people.

Systems: Aggregating and procuring maize from smallholders in difficult to reach areas requires well-functioning systems to be efficient and competitive. Joseph Centres are integral to the system, as are the Village Procurement Officers that staff them. Efficiency is a necessity at every stage, particularly in procurement, credit, transportation to the processing facility, and ultimately in regional sales.

Photo: Roger Bymolt



Smallholder farmers outside a maize crib just before harvest time

Technology: Integral to making systems work is technology. The JI Technology Platform allows JI management to remotely track every component of the business even when in Kampala or out of the country.

Capital: Others who have tried this business model tend to be under-capitalised and fragmented. Some can manage a piece or two of the puzzle, but it is very difficult to address the entire chain to drive change. This is precisely what JI is trying to achieve.

Changing the chain

JI has had considerable impact on the maize value chain in just three years, and is establishing itself for the long term. JI is illustrative of how an SME can play a powerful role in transforming agricultural value chains and improving the livelihoods of smallholder farmers.

To be sure, not all SMEs will perform as JI has done and be able to successfully overcome the challenges of working in a developing country context. It is for this reason that conventional lenders are wary of lending to SMEs.

However, CFC recognises the transformative potential of SMEs such as JI and is willing to take calculated risks in financing enterprises it believes in – even when other financial institutions are unwilling. As the case of JI illustrates, when CFC acts, other financiers are more willing to follow.

With support of partners such as CFC there is every reason to think JI can continue to scale up, delivering not only value for shareholders, but also impact for smallholder farmers.

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