UNECE

Enhancing Transparency and Traceability of Sustainable Value Chains in the Garment and Footwear Sector

Explanatory Note for the Business Process Analysis Activity and the Generic Traceability Model

Version of 20-04-2020

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1. Business Process Analysis Activity – A summary

It is important to note that the Business Process Analysis is a first step in the development of data standards for traceability and transparency in Textile and Leather Value Chains. It is intended to cover the vast majority of use cases to ensure uptake and use of the standard. As a result, it is a documentation of what data is currently exchanged and then what additional data is needed in order to support sustainability compliance claims. At the same time, the Business Process Analysis **is not where decisions are made about the data standards and it is not a documentation of best practices.**

The business process analysis identifies as step 1, all of the existing value-chain partner roles, the existing processes and activities inside the value chain, all of the existing exchanges of data and the content of those data exchanges. As step 2, it attempts to identify what data is needed to establish transparency and traceability and where and when that data should be collected in the supply chain.

The results from the business process analyses will be:

1) An input to the much more technical data analysis and data standards development process, this is where specific data element standards and code lists will be decided upon and

2) An input to the development of implementation guidelines. This input will help the drafters of the guidelines to identify possible changes that could be recommended in order to allow and improve the collection of traceability data within value chains. It is during the development of the guidelines, where the business process analysis is only one input that best practice recommendations will be identified and included.

More information about the business process analyses to be carried out starts on page 5.

2. Purpose of the generic traceability use case diagram

To be read after reviewing the **Generic Traceability Use Case** found in annex 1.

The purpose of this diagram is to illustrate the principle processes for establishing traceability and how they can be applicable across different products – i.e. the model should be good for cotton, wool, viscose, leather, etc.

This is supposed to be a very high-level diagram. After we have agreed on the principle processes, we will develop much more detailed information for each process.

One important question that needs to be answered with regard to the **Use Case**, is the degree to which we want to add in complexity.

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3. Supply-chain partners

As currently drawn, there are six kinds of supply chain partner roles (some of which may be fulfilled by the same organization):

1) **Requestor of Traceability -** requests that a traceability process be implemented. This could be any down-stream supply chain partner that wants to make a "policy claim" to its clients. Therefore, it could be the spinner, the weaver, the manufacturer or a brand/retailer.

2) **Transformation partners**[1] - process or change one or more inputs to create a different output (i.e. farmer, ginner, spinner, weaver, dyer, garment manufacturer, etc.). It is the responsibility of the transformation partner to ensure that their output products have IDs and to link each ID to specific information. An output product may be a shipment, a batch or an individual product. What constitutes an output product and which information the transformation partner is required to associate with an output product's ID will depend upon the requirements of the "Requestor of Traceability".

   Examples of information that can be associated with an output product ID are: the ID of the transformation partner; a process id; a production date; a bill of lading; an ID for the location of processing (which may to down to the level of production line); an Initial type testing result and the IDs of product inputs.

   The ID of the transformation partner and/or the production location will, in turn, have information associated with them. Examples of such information are certifications, inspections, audits, organizations implementing these and the dates they were performed. Which information needs to be kept is, again, decided by the "Requestor of Traceability".

   One transformation partner will also have a special role as the "Entry point" where traceability begins and the first information about the product is registered.

3) **Providers of ID (and or ID labels)** supply identification. In order for a product or component to be traced it must be identified and have some form of identification and each party in the supply chain also needs to have an ID. This supply-chain partner's role is to provide the identification. It can be carried out by a transformation partner, but it could also be done by a Certifier or an Inspection organization or an association that specializes in identifiers (such as GS1) or a government (if, for example, a company is identified by its tax ID).

4) **Product-guardians** and traders - make no changes to product or raw material, they only store or transport or sell or purchase it. Their possession of the product is recorded in order to establish "chain of custody" since product "contamination" or "substitution" could take place during their custody.

[1] This includes outsourced activities of a transformational nature. The fact of being outsourced is related to payments and contracts – not to the nature of the activity. An outsourced activity can be almost any activity along the supply chain. For example, it can include large transformations such as dying or sewing or smaller ones like washing or ironing.

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5) **Auditors, and other Validators** - validate claims made about products or entities / organizations. In addition to auditors, these supply-chain partners could include certifiers, inspectors, brand auditors or self-auditors. Who is allowed to have this role is determined by the "Requestor of Traceability". This role provides the data that allows traceability to work by ensuring that processes along the supply chain are implemented in a way that supports the policy claim in question. They are not producing, transforming or undertaking logistic activities, but are key to ensuring the proper working of supply chain integrity (identifying, auditing, etc).

6) **Customers -** are usually the customers of the "Requestor of Traceability" so they could be the weaver who is buying "organic cotton thread" or the manufacturer who is buying "organic cotton fabric" – in addition to, or instead of, the final customer who purchases the garment.

4. Chain of custody information

As a product/component moves through this process from farm to store, it collects information which includes the IDs of components (for example if it is fabric, the IDs of all the spools of thread used to weave the fabric) and the IDs of all the parties who had custody.

As currently diagrammed, the verification of whether or not products have been transformed using acceptable practices and/or acceptable materials can take place either at the time of any transfer or at the end of the entire process. What is "acceptable" is decided by the "Requestor of Traceability".. The actual verification is done by checking all of the component IDs and the IDs of all supply-chain participants "attached" to the product as well as the information associated with those IDs.

The information linked to these IDs depends upon what the "Requestor of Traceability" has asked for and there are a wide range of options including test or audit results, the IDs for inputs and their origins, the certification status of supply-chain participants and/or the certification of specific locations, production lines or processes within a larger company), etc.

5. Additional layers of complexity

Additional layers of complexity that could be added, but which are not there now are listed below. Some of these may need to be added when the work moves from identifying the processes that exist today to how they could be modified in order to ensure different levels of transparency and traceability. Associated questions are inserted in parentheses:

1. To include **event recording** (UNCEFACT TT Level 0, or EPCIS structures) which includes recording all events associated with a product instance or batch, so this may require multiple entries while the goods are in the possession of one supply chain partner. For example, fabric may be cut, assembled into suits, buttons and zippers added, the suit ironed and then packaged within one facility. This would require at least 5 entries if all events are recorded.
2. **Physical control** (how?) of the goods at one or more points (where?) in the supply chain to be sure that all partners in the chain of custody have maintained their "good" behaviour. This could be done (when?) for every product, every batch of products (what is the definition of a "batch"?) or only as a periodic control (based on what risk analysis undertaken by whom?)

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3. **Volume reconciliation** for **mass-balance traceability system** (how and when and for all or which processes?)
4. **Book and claim system**. Used for cases where the asset itself has no identifying-specifying characteristics. For example . the amount of electricity used from renewable sources (the power is always 220 V 50 Hz whether its source is hydro , wind solar or carbon. Idem for the water sourcing.
5. Answers to questions about what information is needed, and where it can be collected, in order to support integration of textiles and leather into the **circular economy**
6. A traceability chain that traces **product type – product class characteristics and/or individual product characteristics**. With this level we can meet information requirements for the reuse / recycling and the end-of-life time of the product and the circular economy. On the other hand, this is much more expensive and technically difficult to implement.

The more detailed analysis of the Generic Traceability model can only begin after the Use Case diagram is agreed upon.

6. Business Process Activity – In more detail

6.1 Detailed analysis process: 5 steps

The process analysis we are undertaking consists of 5 steps, each of which builds upon the previous step. A brief overview can be found below:

1. Prepare a **Use Case diagram** identifying the principle processes for transparency and traceability. See Annex 1
2. For each process, develop an **Activity Diagram** showing the participants in the process, the actions/activities undertaken, the sequence of actions and any information flows
3. For each Activity Diagram prepare a **Business Process Description** which describes in text, "the story" behind the diagram as well as any information exchanges, including documents. These descriptions will also identify: types of legal requirements impacting the process; the sustainability risks for each process; methods (such as certifications) that could be used to address these risks; and the future goal for that activity. Future goals are expressed in the form of "user stories" which define, for individual actors, their goal for the activity and the benefit of achieving that goal. When preparing a business process description, examples of documents and information exchanges should be collected.
4. Note: After receiving the Business process description information from the business experts, the data experts will also determine for each activity its "nature" according to EPCIS event categories (transformation, aggregation, transaction, object). A more detailed description of the EPCIS categories is in annex 5. This information is needed by those doing the technical data modelling and also helps to identify at which points in the process new IDs need to be generated
5. **List of Document/Information Exchanges** – This is based on information in the Business Process Descriptions and lists all of the information (including documents) exchanged for the Use Case and identifies where the same information is exchanged in different business processes (activity diagrams)
6. For each of the Information Exchanges listed in 4, prepare **a List of Data Elements** (for example, date of delivery or product quantity) included in that information exchange. These are based on the list from step 4 and the examples of documents and information exchanges collected in step 3.

In parallel to the "Generic Traceability" process analysis, we will need to undertake a detailed analysis of the Cotton to Finished Garment Process as it exists now in order to provide inputs to the work on the first pilot under the project.

Then, we will "overlay" the Generic Traceability process on top of the existing process in order to determine where additional activities or data collection need to be added into existing processes.

In summary, we will undertake 2 ½ process analyses (as described in the 5 steps above)

1) One that is Generic for Traceability (see annex 1 for Step 1)

- To identify what data needs to be exchanged, with whom and when in order to establish traceability for **a policy claim** by the brand / producer / factory/farmer
- To identify what data needs to be exchanged, with whom and when in order to establish traceability for transparency about a **product's characteristics** (technical, environmental and social)

2) One for the Cotton to Finished Garment Process as it exists now (see annexes 2, 3 , 4 and 5 for examples)

- To identify what product and process data is currently exchanged, with whom and when

2,5) A Revised Cotton to Finished Garment Process that includes the actions and data needed for Traceability

- To identify if any new product or process data will be needed to implement the generic traceability process
- To identify when and from whom data should be collected in order to implement the generic traceability process – with a secondary objective of trying to minimize additional data collection and exchanges (i.e. costs)

The outputs from the above will be passed to the technical standards team who will use them to identify the specific data elements and codes to be recommended.

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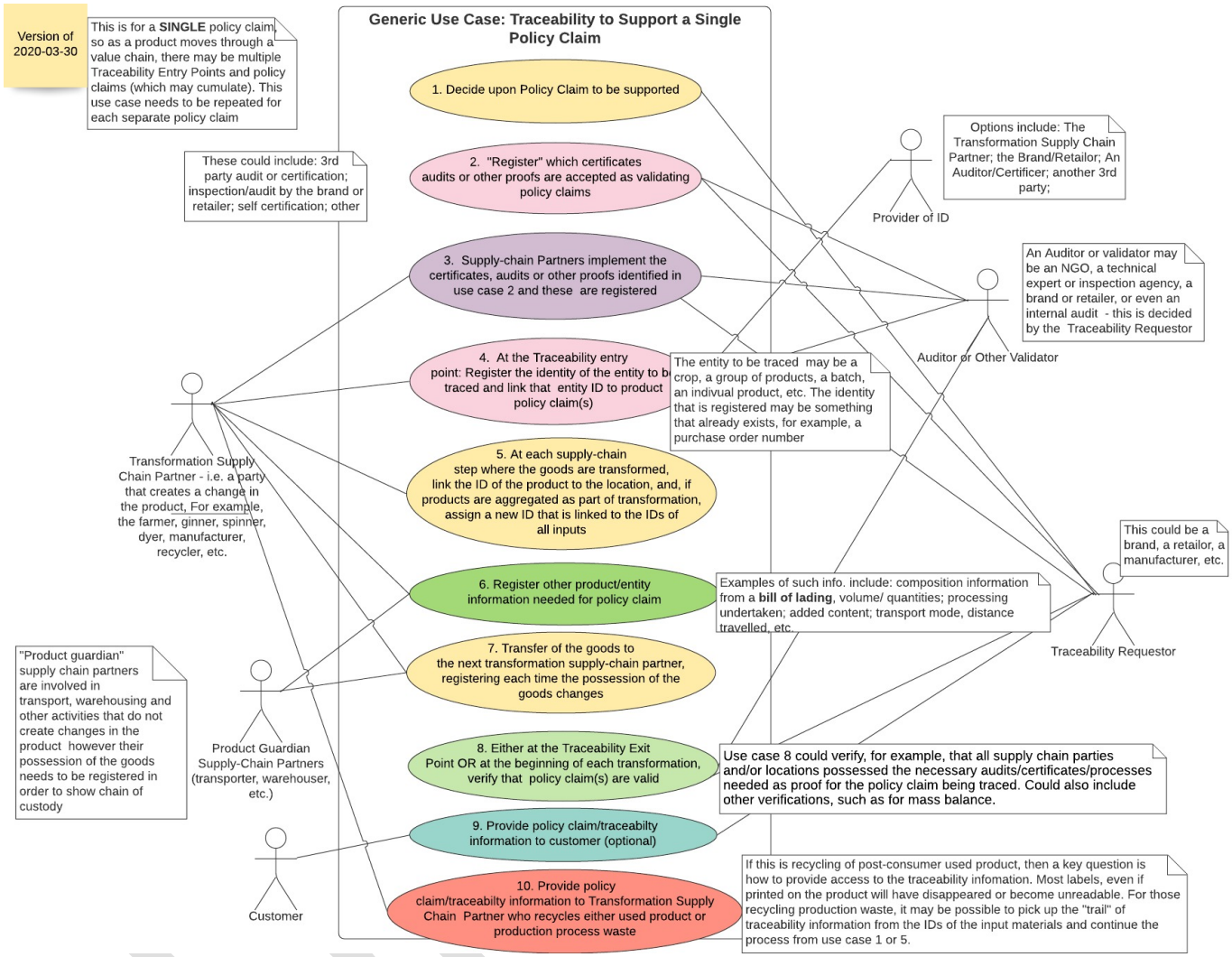
ANNEX 1 – Generic Use Case – Traceability



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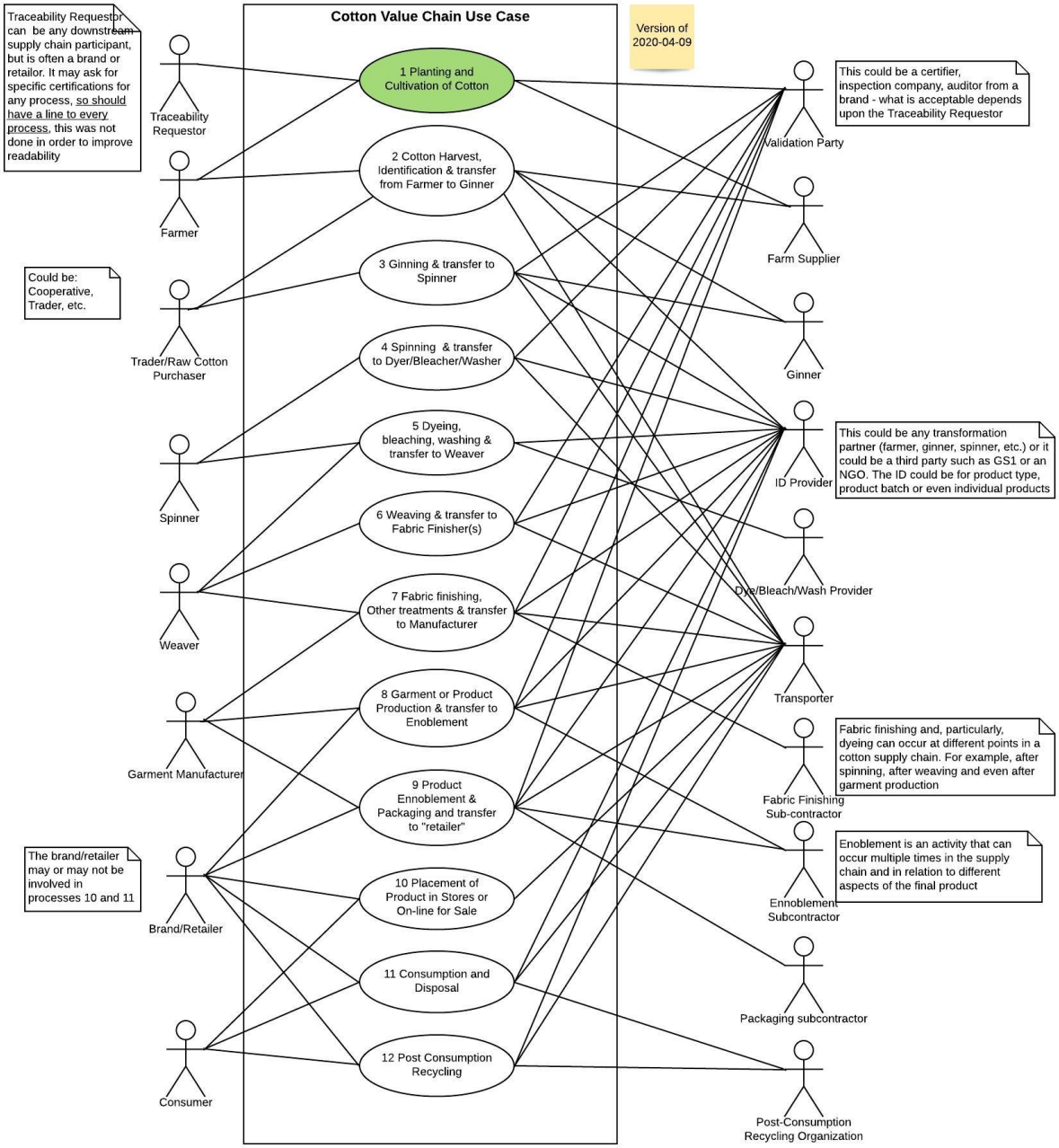
ANNEX 2 – Generic Use Case – Cotton Value Chain



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ANNEX 3 Activity Diagram Example for Use Case 1

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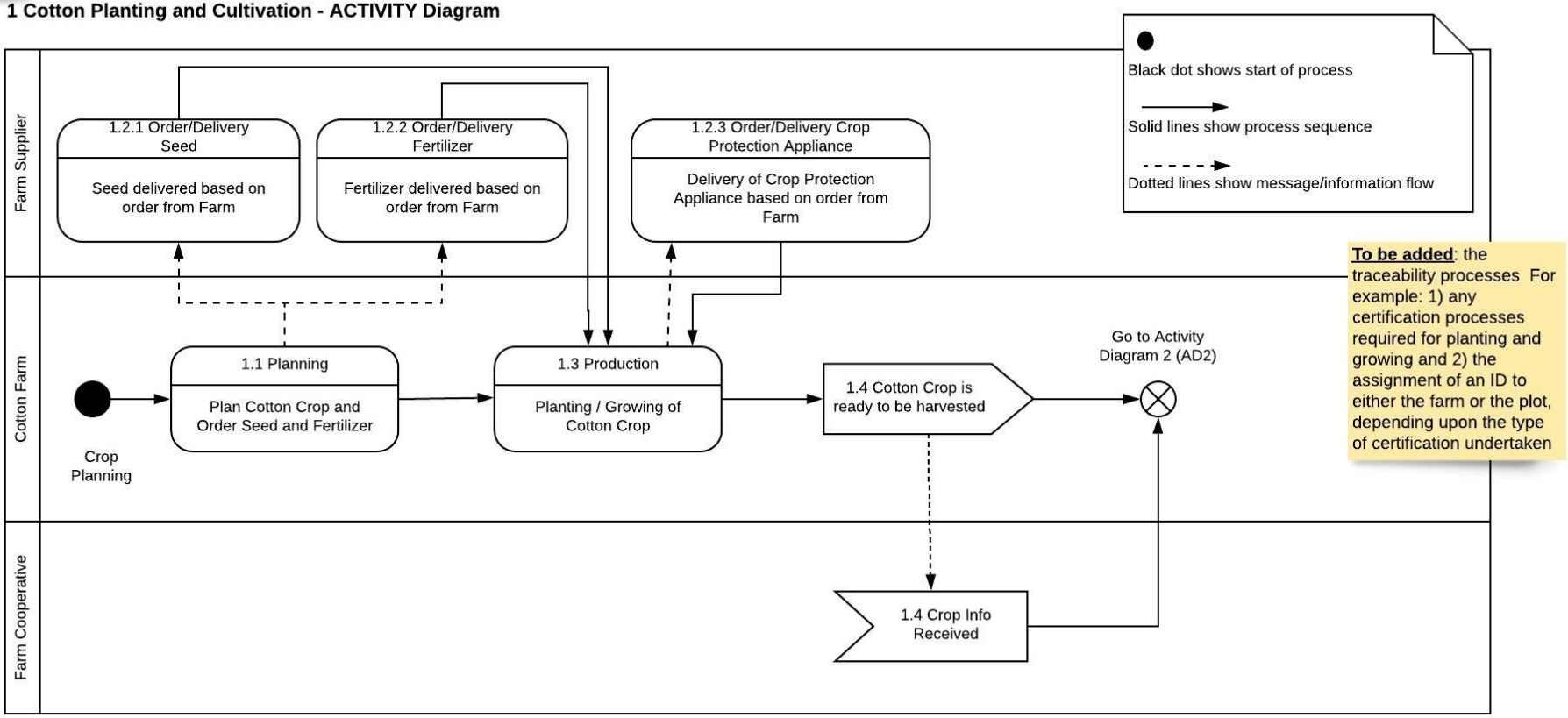
1 Cotton Planting and Cultivation - ACTIVITY Diagram



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ANNEX 4 Business Process Description Example for Use Case Activity Diagram 1

Name of process area	**Cotton Value Chain –** The information in this example was "invented" as an example, it needs to be filled in by a cotton supply chain expert				
Name of business process activity (use case)	1. Cotton Planting and Cultivation				
Process participants	Cotton Farm, Farm supplier, Farm Cooperative				
Input and criteria to enter/begin the process	Information available for crop planning. This is what has to be completed before this process can begin. For example, for spinning, the cotton has to have been ginned and delivered to the spinner before the process can start				
Parallel Processes	List any processes from the use case diagram that can be undertaken either completely or partially in parallel with this process. If it is only partially in parallel, explain.				
Description of Activities A step by step description of what happens in the process. If parallel or overlapping steps must be finished before the next step, the first two digits of the number should be the same with a third digit added. For example, step 1.1 is followed by parallel steps 1.2.1 and 1.2.2 which are then followed by 1.3	**Description** Needs to mention all of the participants to this step in the process	**Periodicity** Daily, monthly, every 8 weeks, yearly, etc.	**Required Documents + Who sends doc to Who Incudes entry of data into computer systems (include name of system)** Examples of all documents or images of data entry screens (screenshots) should be collected Please scan document/screenshots into a pdf file and use the following naming convention for the file: The activity number (using a dash and not a period), the document name and your participant initials. For example: "2-5 CMR HB.pdf"	**Required Other Information / Communication method + Who sends info to Who** Examples of emails, pdfs, etc need to be collected Please send a pdf or image of the communication and use the following naming convention for the file: The activity number (using dashes and no periods), the communication method, the purpose and your participant initials. For example: "2-3 SMS time-of-delivery HB.pdf"	**User Stories** **For each user story indicate who is the individual user.** For example, the truck driver (not the transport company) or the inspector (and not the inspection company) NOTE: there can be more than one User Story for an activity **In this column you can go beyond the process as it is today and say for activities what your goal for the activity is in the future and the benefit of realizing that goal**
	1.1 Crop planning by the farmer	Yearly in January	Plan made and kept by farmer	None	Individual (as a): farm owner Goal (I want): to have the largest possible crop at the best time

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	Farmer plans cotton crop and plans initial seed and fertilizer orders				Benefit (so that): My farm can be profitable and support my family and workers
	1.2.1 Order/Delivery Seed Order sent by Farm to Farm Supplier who delivers Seed	Yearly in February	Order from farmer to farm supplier and invoice from farm supplier to farmer	Availability of seed / SMS from farm supplier to farmer Delivery date /SMS from farm supplier to farmer Delivery location inside farm / SMS from farmer to farm supplier	Individual (as a): Goal (I want): Benefit (so that):
	1.2.2 Order/Delivery Fertilizer Order sent by Farm to Farm Supplier who delivers Fertilizer	3 times a year in March, May and July	Order from farmer to farm supplier and invoice from farm supplier to farmer	Availability of fertilizer / SMS from farm supplier to farmer Delivery date /SMS from farm supplier to farmer Delivery location inside farm / SMS from farmer to farm supplier	Individual (as a): Goal (I want): Benefit (so that):
	1.2.3 Order/Delivery Crop Protection Appliance Order sent by Farm to Farm Supplier who delivers Crop protection appliance	Yearly in May or June	Order from farmer to farm supplier and invoice from farm supplier to farmer	Availability of crop protection appliance / SMS from farm supplier to farmer Delivery date /SMS from farm supplier to farmer Delivery location inside farm / SMS from farmer to farm supplier	Individual (as a): Goal (I want): Benefit (so that):
	1.3 Production Planting / Farmer grows of cotton crop	Yearly from March to September	None	None	Individual (as a): Goal (I want): Benefit (so that):

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	1.4 Ready to Harvest Crop Crop is ready to be harvested by Farmer who sends estimated harvest to Farm Cooperative	Yearly in September or October	None	Information on expected yield /SMS or e-mail from farmer to farm cooperative	Individual (as a): Goal (I want): Benefit (so that):
Output and criteria to exit the business process	The cotton is ready for the farmer to harvest it. The criteria to exit usually becomes the input criteria for the next process				
"Common" exceptions/problems	Example: Poor weather results in loss of crop				
Circular economy related observations	For example, if there are waste products from this process that could be re-used and/or if one of the inputs could be a recycled product				
Other Observations, in particular related to traceability needs for different activities					

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The 2 sections below are being filled in separately, based on information already provided by supply-chain participants. The draft versions will be circulated for comment at a later time			
Related laws, rules, regulations	Laws regarding child labour as well as pesticide and fertilizer use		
Sustainability Risks, Criteria and Validation If the list is too long this section can be moved to an annex.	**Sustainability risks (hot spots) within this process**	**Sustainability criteria and standards to address the risk**	**Validation methods for criteria and standards**
	Child labour	XXX Guidelines	For example, Certification, Audit, Inspection, Self-evaluation, etc.
	Use a new line for each risk		

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ANNEX 5 EPCIS Event Descriptions to be added to the completed Business Process Descriptions

Basic Event Types to align with EPCIS (Electronic Product Code Information Services)

Transformation event captures the relationship between one or more objects that are fully or partially consumed as inputs or as outputs (3 product parts make 1 product)

Aggregation event objects or processes are grouped (products or batches grouped). For example, several bales of cotton may be put in one container, or several garments in one box.

Transaction event one or more objects become associated or disassociated with one or more business transactions. For example, an object becomes associated with a purchase order or invoice.

Object event an event happened to an object that was not one of the other 3 types of events, for example the object was shipped

For more information: https://www.gs1.org/standards/epcis-and-cbv-implementation-guideline/12#3-Anatomy-of-an-EPCIS-event+3-5-EPCIS-Event-types-and-action

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