1. Document Revisions

Date	Version Number	Document Changes	Name
12/10/2019	0.1	Initial Draft	Patrick Pham
1/21/2020	0.2	Add functional requirements	Patrick Pham
2/11/20	0.3	Add epics	Patrick Pham
2/27/20	0.4	Add Duplicate MAC Address Check Epic	Patrick Pham
3/4/20	0.5	Update contents based on Deepthi's feedbacks	Patrick Pham
3/11/20	0.6	Update OPM epics	Philip Leung
3/12/20	0.7	Updated R/W table	Philip Leung

2. Approvals

Date	Version Number	Role	Name

3. Introduction

3.1. Purpose

This document is to present the current business issues of Supply Chain Operations and requirements define the business solution. This document is also used to gain agreement with stakeholders and to provide a foundation to communicate to technical team (DSCOT) what the solution needs to do to satisfy the customer's and business' needs.

3.2. Project Summary

3.2.1 Objectives

AMDI project will deliver a system that utilizes secure, real-time connections to eradicate data errors between Amazon and Contract Manufacturers (EMSs). This system reduces the possibility of a product data driven issue creating a negative customer experience and costing Amazon in the forms of sales, poor ratings, replacement, quarantine, and rework. Not only does AMDI diminish the possibility of escapes, but the system also provides internal and external teams standard way to communicate and transmit data directly between Amazon and EMSs without compromising IP security.

3.2.2 Background

In July 2018, a task force was commissioned to assess the root causes and the extent of the problems in how we exchange product information with our EMSs. The task force conducted a process and technical gap assessment on five critical data elements (Purchase Order, Universal Product Code, Device Serial Number, MAC Address + Secret Code, and Whispernet Control Log) that we exchange with the EMSs (aka the factories) to produce Amazon Devices. The initial audit identified 25 externally communicated data elements, the data source, how transmitted to the EMS, how the data is used, "risks/failure modes/impacts," known escapes, and overall risk rating. Based on qualitative judgment of impacts to Devices quality, 14 data elements were classified as high risk, 6 medium, and 5 low. The issues identified in the audit, some of which still exist, stem from having multiple data sources, sending data via email, error-prone data manipulation, and inconsistent manual downloads.

Our first step in addressing the issues identified in the audit was focused on automating "key data exchanges" with our EMSs. The goal was to eliminate repeated incidents of shipping products with invalid product data causing negative customer experience. The

interim solution was to address this at each EMS individually versus systematically. A re-audit was performed at 7 EMS sites in March 2019 to evaluate whether the process changes were implemented onsite. Progress has been made, but the EMSs still need to go to multiple tools and data sources to get the information they need, and the process varies significantly by EMS. To truly solve the data errors between Amazon and the EMSs, a systemic scalable solution is required. AMDI is a systemic, scalable solution designed to solve the data errors and create consistency, traceability and scalability across all data sources and processes.

3.2.3 Business Driver.

1. **Business Driver 1 - Automation of manufacturing data exchanged between Amazon and EMSs:** all manufacturing data containing Amazon's IP will be automated from generation to consumption to ensure security of data exchange and prevent data escape at EMS sites.
2. **Business Driver 2 - Establishment of an operational standard to improve collaboration between Amazon and EMSs:** All EMSs and all programs under Device Operations will be operational under same standards and collaborative environment to improve operational efficiency and audit capability.
3. **Business Driver 3 - Self-services for new Onboard EMSs to reduce effort supported by OPM:** new onboard EMSs will be able to integrate with Amazon system and operational processes via self-services which require very minimum or none support from OPM.

3.3. Project Scope

3.3.1 In Scope Functionality

1. Data automation of 11 data feeds (Appendix 4).
2. Access Management for both internal users (Amazon) and external users (EMS).
3. Self-Serve EDI Configuration for EMS
4. Collaboration work space for internal and external users at EMS level.
5. Program data exchange status dashboard.
6. User helps

3.3.2 Out of Scope Functionality

Material POs to Suppliers, Warehouse Deals, and RL data transfer are not in this scope of the project.

3.4. System Perspectives

The AMDI will be the data hub of multiple data sources which require a tight control of user access. Except for program data exchange records, AMDI will not host any manufacturing date but interconnect with the data source to provide users access at the time request.

3.5. Assumption

1. The BOM datafeed in the future will depend on the integration between AMDI and APLM (BOM 2.0) in which APLM will be the source of truth of BOM. For the interim state, BOM datafeed still depends on integration with Agile to send BOM data to EMS's MRP system.
2. The workspace that share documents and data between Amazon teams (internal users) and EMS teams (external users) is approved by InfoSec.
3. Single-Sign-On (SSO) is an existing technical capability that can be used for AMDI to connect to other systems.
4. Size of all data feed files is not more than 5 GBs for SFTP and 256 MBs for AS2 (as data are sent via http protocol)

3.6. Constraints

1. Connection from EMS sites to Amazon systems may be slow or restricted due to government law and policy (in China or Viet Nam)
2. BOM data from APLM will not be available until Q3-2021 which limits BOM datafeed solution.

3.7. Risks

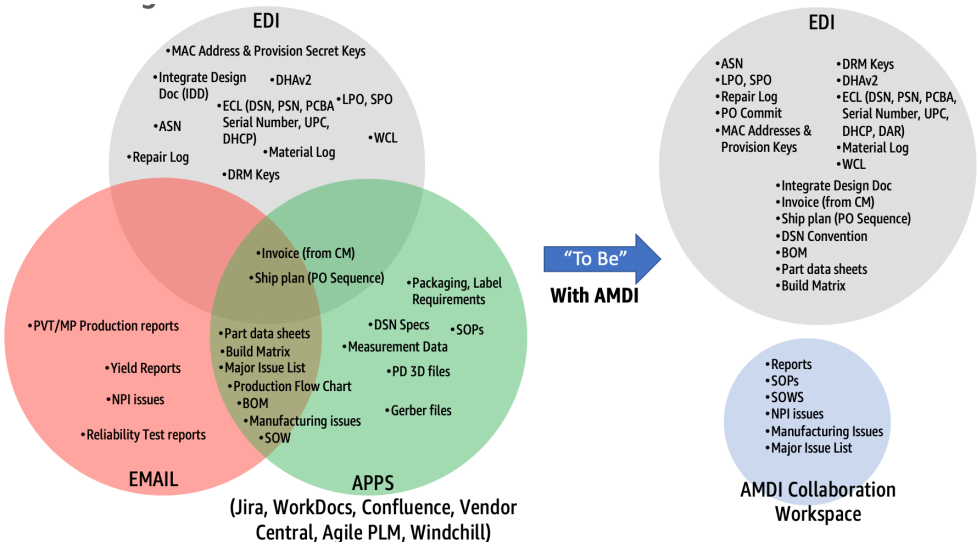
1. One of core functional requirements of the project is BOM data source which depends on APLM project delivery. Any delay of APLM will certainly impact AMDI delivery of this requirement.
2. EMS capability to integrate with AMDI via their interface may vary from EMS to EMS.

3.8. Issues

1. As AMDI requires to automate multiple data feeds at different sources, identify data owners and supports from them require commitment and management support.
2. OPM run different programs with different EMSs. Each program has different operational processes. Therefore, to standardize the operational process required identifying a common processes and compromising giving up current practices.

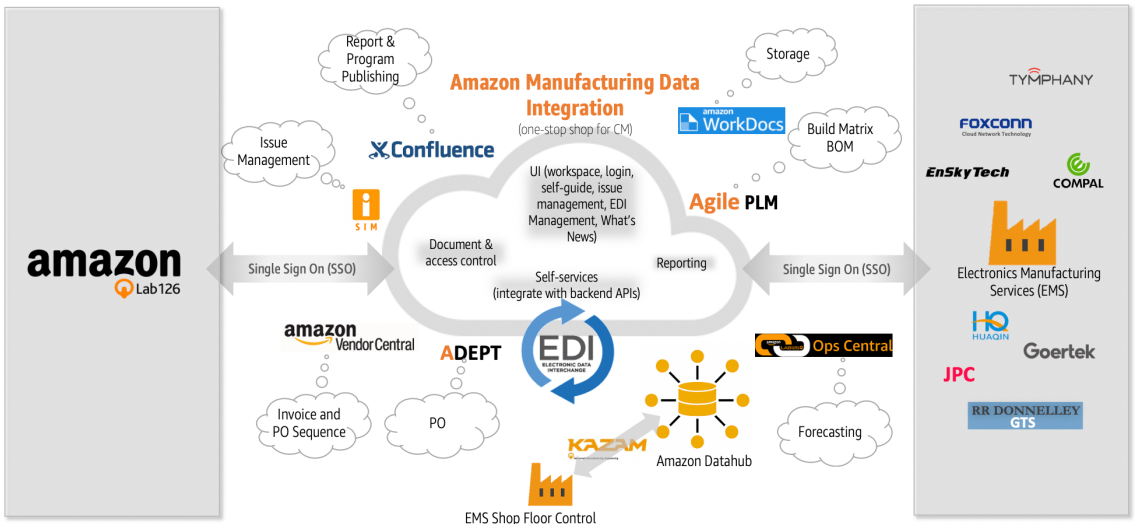
4. Business Process Overview

Current Business Process (As-Is) vs. Proposed Process (To-Be)



Prospected AMDI integration

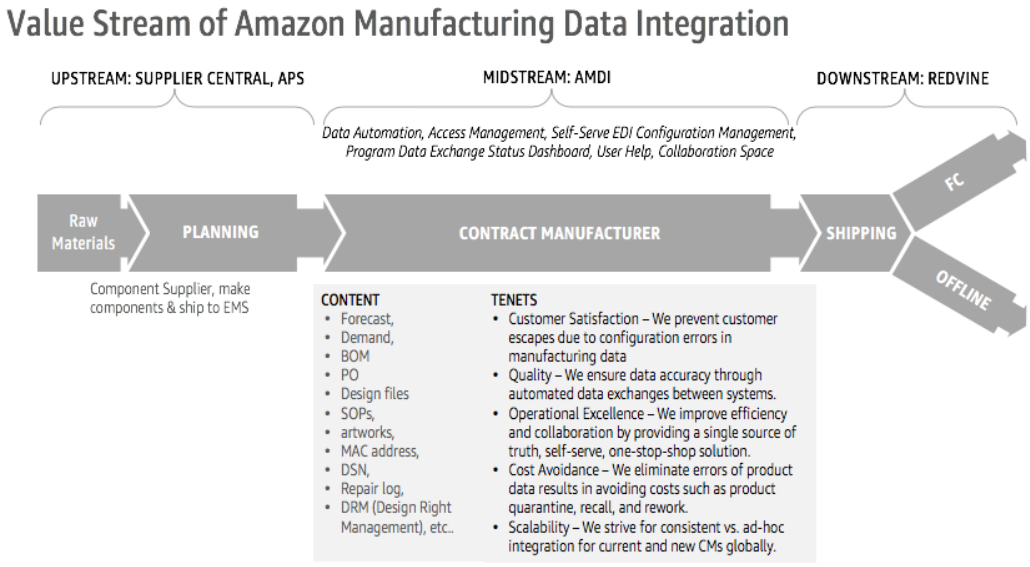
Vision of Amazon Manufacturing Data Integration



5. Business Problem and Solution

Business Challenges – Problem Solving Approach – Proposed Solution

BUSINESS CHALLENGE	PROBLEM SOLVING APPROACH	PROPOSED SOLUTION
Emails are used to send files that may contain sensitive and production data of Amazon devices	Sensitive data files should be stored and in a secure, collaborate space	A cloud application that provides users a collaboration and secure space to store and share data
Multiple data sources are used to validate and establish production, device data in EMS system	All legitimate data sources should be accessible in an integrated space.	A cloud application that integrates links to legitimate data source for EMS consumption.
Some EDI data exchanges still require human-touch to manipulate before they can be imported to EMS systems	All EDI data exchanges should be fully automated to eliminate human-touch required for complying EMS system	A self-service capability of EDI so that EMS can configurate their data ingestion which does not require further human-touch



6. Business Requirements

The requirements in this document are prioritized as follows:

Value	Rating	Description
1	Critical	This requirement is critical to the success of the project. The project will not be possible without this requirement.
2	High	This requirement is high priority, but the project can be implemented at a bare minimum without this requirement.
3	Medium	This requirement is somewhat important, as it provides some value but the project can proceed without it.
4	Low	This is a low priority requirement, or a “nice to have” feature, if time and cost allow it.
5	Future	This requirement is out of scope for this project, and has been included here for a possible future release.

6.1. Functional Requirements

Epic	Name	User	Priority	Dependency	Release
1	AUTOMATION OF MAC ADDRESSES DELIVERY TO EMS	System	Critical		P0
2	MAC ADDRESS DUPLICATION CHECK IN EMS TEST STATION	System	Critical		P0
3	AUTOMATION OF DRM (DIGITAL RIGHT MANAGEMENT) KEYS DELIVERY TO EMS	Sytem	Critical		P0
4	PROGRAM TIME LINE	OPM, EMS	High	Epic 9, 12	P1
5	CURRENT PROGRAM STATUS	OPM, EMS	Critical	Epic 9, 12	P1
6	PROGRAM BOM	OPM, EMS	Critical	Epic 9	P0
7	AUTO CREATION OF A PROGRAM HIERARCHY FOLDERS IN WORKDOCS	System	High		P1
8	NOTIFICATION OF NEW DOCUMENTS OR RECENTLY UPDATE IN WORKDOCS	OPM, EMS	Critical	Epic 9	P0
9	USER ACCESS MANAGEMENT	AMDI Admin, OPM Program Owner	Critical		P1
10	SELF-SERVICE EDI CONFIGURATION	CM	Medium		P2
11	SIM INTEGRATION	OPM, EMS	Low		P1
12	CREATION NEW PROGRAM IN AMDI WORKSPACE	OPM	High		P1
13	BULLETIN BOARD IN AMDI WORKSPACE	OPM, EMS	Low	Epic 9	P1
14	DATA FEED REPORT	OPM, EMS	Low	Epic 1	P1

EPIC 1: AUTOMATION OF MAC ADDRESSES DELIVERY TO EMS

Description: A system user want to have an automated mechanism to procure a batch of MAC Address for manufacturing and send MAC Address data to requesting CM which subsequently imported in their MRP system and Amazon Data Hub without manual touch.

Inputs: MAC addressed in encrypted csv format file placed in S3 by TPIVS.

Outputs: MAC address file sent to EMS via SFTP or AS2 folder endpoint and subsequently import to EMS MRP system.

Acceptance Criteria:

1. Record procurement date from IEEE
2. Record MAC Address requestor.
3. Generate MAC address data feed with Program Name, EMS Name, Site Name, Date Sent, Qty in the AMDI table.
4. Send MAC Address data file with .csv format via SFTP or AS2.
5. Automatically import MAC Address to EMS's system.
6. Get EMS Acknowledgement SUCCESS or FAILURE with Error code if the data transaction failed.
7. Record data transaction to AMDI table
8. Send email notification to OPM (only when the transaction - file sent to EMS and file import in EMS system failed) and publish transaction status (Success or Failure) in AMDI program dashboard.

Priority: Critical

EPIC 2: MAC ADDRESS DUPLICATION CHECK IN EMS TEST STATION

Description: A system user wants to capture every MAC address being assigned to assembled device at a line station at EMS site so that duplicate MAC ID will be reported to program users via email and dashboard view. Do we want to add MAC-ID check against Amazon master list for duplicate by verifying uniqueness of MAC-ID to Device active component ID.

Inputs: MAC_ID and DNS that are being assigned to a device at EMS test station.

Outputs:

Duplicated MAC_ID and assigned DSN sent to program users via email and Dashboard pulication.

Acceptance Criteria:

1. Duplicate MAC_ID and assigned DSN is detected and record (s) are sent to program users via email.
2. Duplicate MAC-ID assigned DSN is published in AMDI dashboard.
3. MAC-ID check against Amazon master list for duplicate by verifying uniqueness of MAC-ID to Device active component ID.

Priority: Critical

EPIC 3: AUTOMATION OF DRM (DIGITAL RIGHT MANAGEMENT) KEYS DELIVERY TO EMS

Description: A system user want to have an automated mechanism to send DRM key file to CM based on the protocol that they configured in AMDI.

Inputs: Compressed DRM key file in S3 folder

Outputs: Compressed DRM key file in EMS directory folder.

Acceptance Criteria:

1. Capture compressed DRM key file in S3 folder.
2. Send the DRM key file to CM with pre-define EDI protocol.

3. Automatically import DRM Key file to EMS's system.
4. Get EMS Acknowledgement SUCCESS or FAILURE with Error code if the data transaction failed.
5. Record data transaction to AMDI table
6. Send email notification to OPM and publish transaction status in AMDI program dashboard.

Priority: Critical

EPIC 4: PROGRAM TIME LINE.

Description: All program team members want to view the health and current phase of a program in AMDI dasboard so that the all team members are seeing the same single source of truth in the timeline of a program, which include program mielstones, logic based on date. The progam milestones are based on PDP (PA, BRD, XRD, XVT, DVT, PVT, OK2SHIP, Sustaining, EOM) and each milestones are linked to associated documents in a defined folders in WorkDocs.
Inputs: Program PDP milestones are input by OPM program owners via AMDI web form. The input fields are: MILESTONE NAME, MILESTONE DATE, STATUS, and NOTES.
Outputs: a timeline chart in AMDI dashboard that shows current status and all program milestones with dates and the current date when users view.
Acceptance Criteria:

1. Completed milestones are color coded or marked
2. Users can see notes associated with each milestone date by using cursor hovering on the dates.
3. OPM program owner can edit MILESTONE DATE, STATUS, NOTES via the same input form.
4. Internal and external team members will have limited access based on user right defined for their function and team membership category.

Priority: High

EPIC 5: CURRENT PROGRAM STATUS

Description: Product development team members can view most up to date build status and reporting from EMS in AMDI dashboard. Daily status of xVT builds, yields, top issues, and latest findings are all in AMDI dashboard.
Inputs: Program name, EMS name, EMS site
Outputs: relevant daily reports from EMS site displayed in AMDI dashboard as links to Workdocs folders.
Acceptance Criteria:

1. Weekly status update during sustaining or in-between builds
2. Executive summary (from MTMs/STMs) which including top issues during NPI and quality alerts during sustaining.
3. The current status needs to be presented with:
    a. Cummulitavie plan and yield trend chart
    b. Yield reports for SMT (as a link to document stored in WorkDocs)
    c. Yield reports for FATP (as a link to document stored in WorkDocs)
4. OBA Reporting (as a link to document stored in WorkDocs)
5. CTB Reporting (as a link to document stored in WorkDocs)
6. FA/8D Report (as a link to document stored in WorkDocs)
7. Travel matrix (only available during build as a link to document stored in WorkDocs)
8. An editable input field for executive summary.

Priority: Critical

EPIC 6: PROGRAM BOM

Description: An OPM want to select the BOM of awared program being worked by a EMS in AMDI dashboard so that he or she can see relevant BOM information.

Inputs: Program Name, EMS name

Outputs: Essential BOM information are shown in the BOM panel in the AMDI dashboard.

Acceptance Criteria:

1. 53-LPNs listed with link to Agile
2. Indicate Life Cycle status
3. SW + Revision from Agile
4. Indicate open deviations/CR/RCOs.
5. Factory implementation status

Priority: Critical

EPIC 7: AUTO CREATION OF A PROGRAM HIERARCHY FOLDERS IN WORKDOCS

Description: An OPM program owner wants set up a new program with a new set of a standard hierarchy folder in WorkDocs so that the program team can upload, access, update, or delete program-relevant documents.

Inputs: Program Name, EMS name, EMS site

Outputs: a Workdocs hierarchy folders are displayed in the Workdocs panel in the AMDI dashboard

Acceptance Criteria:

1. After input program parameters, OPM program owner only need a click (create or submit button) to create a new WorkDocs hierarchy folders.
2. The Workdocs folder can be expanded or collapsed.
3. Access levels (R, W) are associated with predefined user roles

Priority: Medium

EPIC 8: NOTIFICATION OF NEW DOCUMENTS OR RECENTLY UPDATE IN WORKDOCS

Description: An AMDI user may choose to receive email update and indicator of any new documents or recently update document in AMDI dashboard so that he or she can take action.

Inputs: subscribed in program folder(s)

Outputs: email notification when a document is uploaded or updated

Acceptance Criteria:

1. Email notification sent to subcribers should have subject line as <Program Name>_<File Name of new or update document>_<status: new or update document>
2. Email body include the link to the new or update document which show revision number, date and time of document uploaded or updated and who did take the action on the document.
3. The WorkDoc folder that has files changed shows a visible signal (tag, icon, etc…) to the user until he or she opens the folder.

Priority: High

EPIC 9: USER ACCESS MANAGEMENT

Description: An AMDI admin user want to have an inteface to set up distinct user profile that defines access level to AMDI features, screen view ands actionable interface.

Input: user type input

Output: user access profile generated in the AMDI database based on pre-define access

Acceptance Criteria:

1. User access to AMDI view and fuctionalities depend on the role mapped in the following user access matrix below

User types	AMDI admin		OPM Program owner		AMZN General user		MTM user		STM user		EMS admin		EMS Program owner		EMS user		EDI admin	
Data feeds	*Capability*																	
Dashboard	R		R		R		R		R		R		R		R		R	
Program Timeline	R	W	R	W	R		R		R		R		R		R		R	
BOM data	R	W	R	W	R		R		R		R		R		R		R	
Build Plan	R	R	R	W	R	W	R		R		R	W	W		R	W	R	
Yield Report	R	W	R	W	R		R		R		R	W	R	W	R		R	
Trend Report (NPI)	R	W	R	W	R		R	W	R		R		R		R		R	
Trend Report (Sustaining)	R	W	R	W	R		R		R	W	R		R	W	R	W	R	
WorkDocs Program standard folders	R	W	R	W	R	W	R	W	R	W	R	W	R	W	R	W	R	W
Bulletin board	R	W	R	W	R	W	R		R	W	R	W	R	W	R	W	R	W
Cost Panel	R	W	R	W	R													

2. Only AMDI admin can change role of existing users
3. User set up will be done by AMDI admin or delegated to OPM Program Owner.

Priority: Critical

EPIC 10: SELF-SERVICE EDI CONFIGURATION

Description: An EMS admin want to create or update EMS' EDI configuration, which is applicable for EMS system, so that EMS can receive all files sent by Amazon via EDI channel.

Input: EMS system parameters (defined by the Partner Integration team)

Output: complete integration between Amazon and EMS system, validated by a test EDI file.

Acceptance Criteria:

1. A web UI that allows EMS admin to submit or change system parameters so that EDI integration between EMS and Amazon can be created or updated. The input parameters for both EDI protocols are described below:
   a. For AS2: *AS2 Identifier, URL, Ecryption algorithm, Signing algorithm, SSL certificate* (upload capability), *Encryption certificate* (upload capability)
   b. For SFTP: *Host URL and Port Number, User Name, SSH Puplic Key, SFT Directory*
2. EMS admin can select EDI protocol of choice (AS2 and/or SFTP)
3. EMS admin can configurate or update AS2 or SFTP parameters
4. EMS admin can create multiple endpoints
5. EMS admin can test the end points

Priority: Medium

EPIC 11: SIM INTEGRATION

Description: an AMDI user want to create a trouble ticket directly from AMDI and its status.

Input: SIM input form

Output: SIM items which can be viewed, edited in the AMDI page

Acceptance Criteria:

1. A web form that allows AMDI users to submit or change trouble ticket in SIM.

Priority: Low

EPIC 12: CREATION NEW PROGRAM IN AMDI WORKSPACE

Description: An OPM Program Owner wants to create a PDP program milestones for a new program so that the milestones can be displayed in the AMDI Dashboard.
Input: PDP Porgram Miletones and customized sub-milestones
Output: Program Timeline bar in the AMDI Dashboard
Acceptance criteria:

1. A web UI that allows OPM Program owner enter new program information that include Product Family, Program Name, Award EMS, EMS site
2. The program major milestone dates are all required in order to save the program setup.
   a. Product Assessment Date
   b. HVT
   c. EVT Main FATP Start
   d. DVT Main FATP Start
   e. PVT Main FATP Start
   f. OK2Ship
   g. EOM
3. User can add one or more sub-milestones (maximum 5) under xVT with sub-milestone name and date. Each sub-milestone, user can add a note of maximum 256 characters.
4. User can add more than one EMS site per program.
5. For a program that target for international launch, user can add launch countries under PVT miletones and OK2Ship milestone. The list of countries is defined by OPM. If there is new countries added in the list, OPM should submit a Trouble Ticket so that the AMDI support team can add new countries from the backoffice.
6. User can see list of EMS sites based on selected EMS

Priority: High

EPIC 13: BULLETIN BOARD IN AMDI WORKSPACE
Description: AMDI users under a program want to have a bulletin board so that they can post or reply message related to their active program.
Input: Post or reply input text message in an input box
Output: Post or reply message in the bulletin board including the name of person who post message and date when the message is posted.
Acceptance criteria:

1. A web UI that allows user to type message 256 word limited.
2. The bulletin board list the post message from most recent to earliest
3. Post messages will be grouped based on thread
4. Each message show author name and date of post.
5. The bulletin board only show top 5 message. A link "Show All" will be clicked to display all posts.
6. Next to each main message have a link "Reply" to include the new post in the current thread.

Priority: Low

EPIC 14: DATA FEED REPORT
Description: AMDI users want to see all historical data feeds sent by Amazon to EMS so that they can trace any issue relate to manufacturing data.
Input: Selected program name and/or EMS name
Output: List of data feeds table with columns: Program Name, Data feed name, EMS Name, Site Name, Date sent, Data feed status, Error Code (s)

Acceptance criteria:

1. A table that displays all data feeds (maximum row is 30, then go to next page count)
2. User can sort records based on Program Name, Data feed Type, EMS Name, EMS Site, Data feed status, and Error code
3. Each Error code has a link to show a pop up table to explain what the error is about.

Priority: High

6.2. Non-Functional Requirements (NFRs)

Req#	Priority	Name	Description
NFR-01	1	Kazam Integration	A system user wants to access to Kazam so that AMDI can integrate with Amazon Data Hub via Kazam.
NFR-02	1	Agile Integration	A system user wants to access BOM data in Agile so that AMDI can extract BOM data and relevant document which can be subsequently rendered in AMDI dashboard
NFR-03	1	WorkDocs Integration	A system user wants to access document and metadata in Workdocs so that documents and be displayed in AMDI dashboard as reference links for AMDI users.
NFR-04	1	EDI System message log	A system user wants to record every EDI data transaction (sent and receive) between Amazon and EMS so that a transaction status can be sent to AMDI users via an email or a message in AMDI program dashboard.
NFR-05	1	Single-Sign-On (SSO) capability	A system user wants to access all integrated systems of AMDI via a single-sign-on (SSO) so that AMDI users will not be asked to log on again.

2. Appendices.

Appendix 1: AMDI Project Team

Name	Role in project	Organization
Tony Li - Architect, Ops Engineering	PdM	Global Manufacturing &Ops Eng.
Philip Leung – Sr. OPM	PdM	Sustaining Operations
Tiffany Lu – Sr. OPM	PdM	Product Operations
Jeannie Lee – Ops Program Specialist	PdM	Product Operations
Patrick Pham – Sr Program Manager	PjM	Planning & OSS
Priyanka Verma – UX Designer	UX Designer	Planning & OSS
Deepthi Katepalli – Partner Integration Manager	SDM	SW-Supply Chain Technologies
TBD	SDE	SW-Supply Chain Technologies
TBD	SDE	SW-Supply Chain Technologies

Appendix 2: AMDI Stakeholders

Name	Role	Organization
Regien De Bleecker	Managing Dir, Devices Asia	Global Manufacturing &Ops Eng.
Patrick Xiao	Sr. Manager, Operations	Global Manufacturing &Ops Eng.
Chuck Desmond	Director Planning	Planning & OSS
Stephanie Aubrey	Business Systems, Sr. Proj Mgr.	Planning & OSS
Stone Guo	Sr. STM	Global Manufacturing &Ops Eng.
Peter Lam	Principal PM, Factory QMS	Global Manufacturing &Ops Eng.
Mick Cannon	Sr. OPM	OPM
David Coombes	Sr Mgr., Conf. Mgmt/Quality Sys	Quality and Lean

Appendix 3: AMDI Components

Features	Description
Data Automation	• Automate generation of data on the source end (mostly Amazon but can be EMS) • Automate EDI integration between Amazon and EMS systems • Automate ingestion of data on the destination end (mostly EMS but can be Amazon)
Access Management	• Identify different entities, programs, and the access level needed by user • Leverage Supplier Central's Access Management capability
Self-Serve EDI Configuration Management	• Configure SEDI settings to exchange data between Amazon and the EMS • Audit Testing Data Configuration • Self-serve SEDI setup by EMSs • Add, modify, enable, disable SEDI configuration by message • Defined SEDI real-time trigger for each data exchange
Program Data Exchange Status Dashboard	• View data exchange status for individual programs, including but not limited to status for the following data exchanges: Forecast, demand, BOM, PO, design files, SOPs, artwork, MAC, DSN, Secret/ DRM keys, repair logs, NPI Prototype Device Tracking, artwork • All activities are tracked real-time by user, trigger event, time, and status • View compliance status • Two views of the dashboard based on user (internal/ external) • Internal view provides a link to the source system (i.e. Agile, APS, Windchill, JIRA, Confluence, Device Tracking Tool, CodeSoft, etc.) • Provides an interface to the Collaboration Space • Monitor the status of files exchanged (project system sync times) • ~~View and track open issues logged in JIRA related to the program (all editing still directly in JIRA)~~
User Help Page	• User guide and help docs for users to use the system.
Collaboration Space	• Links to a secure document repository with no file size limit • Access is based on program page access • Real time updates, no lag in time • Templates by Program (artwork, labels, sample pictures, design) • Storage for and sharing of sensitive docs, such as prototype photos • Archive for files (or explore Agile, Confluence, to ensure no duplication) • View for existing Agile/S3/Workdocs/Emails/Confluence/JIRA

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356

Appendix 4: Data feed between Amazon and EMSs (current state)

No	Data Feed	Create	Transfer	Consume	Type	Current Owner	Direction	In-scope	EDI
1	DRM Keys	M	A	M	MP	FOS	AMZ→EMS	Y	Y
2	MACs MP	A	A	M	MP	STMs/OPMs	AMZ→EMS	Y	Y
3	BOM Creation/Updates	M	M	M	MP	TPM(EPM)	AMZ→EMS	Y	Y
4	Packaging/Label Requirements	M	M	M	MP	Paul Russell	AMZ→EMS	Y (as a BOM attachment)	Y
5	PO/PO Update/	A	A	A	MP	Planning	AMZ→EMS	Delivered (N)	Y
6	PO Forecast	M	A	M	MP	Planning	AMZ→EMS	Delivered (N)	Y
7	CTB, E&O Reports	M	M	M	MP	MM	AMZ→EMS	N	
8	SOPs, Production Flow Chart, TCD (Test Coverage Description) - MP	M	M	M	MP	STMs	EMS↔AMZ		
9	IQC Report	M	M	M	NPI/MP	OPM	EMS→AMZ	Y	N
10	First Article Inspection Report	M	M	M	MP	STM/MTM	EMS→AMZ	N	
11	Measurement Data	M	M	M	MP	?	EMS→AMZ	(Under Kazam?)	?

12	Tooling	M	M	M	MP	MPM	AMZ→EMS	N	
13	PD 3D files	M	M	M	MP	PD	AMZ→Suppliers	Y	N
14	Traceability/ECL	A	A	A	MP	QEM/STMs	EMS→AMZ	N	
15	SOW	M	M	M	MP	OEMs/BPB	EMS↔AMZ	(need to check with Biz owner – Roger Deleon)	TBD
16	Gerber Files	M	M	M	MP	EE/ME/TPM(EPM)	AMZ→EMS	Y	Y
17	PVT/MP Production Reports	M	M	M	MP	OPMs/STMs	EMS→AMZ	Y (Kazam usage?)	Y
18	Reliability Test Reports (Is it ORT or RTT?)	A?	A?	A?	MP/NPI		EMS→AMZ	Ask/Need more info	TBD
19	MACs NPI	A	A	M	NPI	STMs/OPMs	AMZ→EMS	Y	Y
20	DSN Specs	M	M	M	NPI	OPMs	AMZ→EMS	Y	Y
21	Build Matrix	M	M	M	NPI	TPM(EPM)	AMZ→EMS	Y	Y
22	SOPs, Production Flow Chart, TCD - NPI	M	M	M	NPI	MTMs	EMS↔AMZ	Y	N
23	XVT Tatto Code	M	M	M	NPI	OPMs	TPM(EPM)	N	N
24	Device Code	M	M	M	NPI			N	N

A: Automate, M: Manual

Appendix 5: OPM's pain points & proposed solutions

What pain points do you have with your EMS that you think could be automated?	Do you have a proposed solution for your pain point? If so, please provide an idea.
SMT/FATP Yield data dashboard to help understand program's health. Currently, this dashboard doesn't exist (check on Kazam Dashboard release schedule) The new DB changes current EMS practice today to send yield report to AMZN	Create a dashboard view to show every 15 minute update. This will help team to do failure prevention or mitigation
Sustaining has to provide weekly management reports that show yield, units shipped, etc. Every EMS has a different format and if it is an accessory (e.g. remote control), then it's harder to see information on our (Lab126) systems like I/O report. As a result, it is a very manual process to roll up data/information into a report. (check on Kazam Dashboard release schedule)	All EMS's feed into a database with a standard report format. OPMs can then push "one button" to extract a final report.
BOM Accuracy	Create an AMZ system that can be used at any EMS where they can get and upload this data
WCL Process Ingestion/submittal, repository for loading data (VPN in China, make it difficult), Mac Address/Wide Vine keys (transferred), test logs sharing /OBA logs sharing (SW) . Can we cross-check with Kazam's team if they can capture all data of production.	
BOM (NPI+MP) version control and accuracy, build related information such as build matrix and travel plan, issue tracking/dashboard for status, equipment or fixture list, cost/quotes.	

Build related information such as build matrix (lowest priority because creation of BM is very vary and manual process) and travel plan, issue tracking/dashboard for status, equipment or fixture list, cost/quotes.	Adjust build matrix management via workdocs URL and sync with Agile (under WD share file). Change current practice today with excel and emails.
Daily/regular factory update and issue tracking/reporting are through emails. Difficult to track and archive. Need a common space to store and download, update, share.	Bulletin board or dashboard for illustration, store and pull data, update/track daily issue (similar but not necessarily same as jira).
-Weekly update including yield (first pass, last pass), deliveries, POs, ship dates - traceabilities were not uploaded - actual UPH -pareto chart, top yield hit percentage fluctuation - PO, invoice, pay -FRO vs. return rate	Would like to have a dashboard which contains all the above info
Lack of visibility to "day to day" status (POs planned, factory factors such as UPH, lines, shifts), POs/SKUs in production, yields FPY/RPY (Top 3-5 issues), lack of clear EMS resources as POCs for issues	An Ops dashboard that has a tab (or link) that would contain this info. It could leverage the data from Kazam but needs the dashboard created and needs data from other systems such as DAR tool
There have been a couple instances where WhisperNet control log have been incorrectly created or uploaded. 8D reports from both tablet EMSs indicate there is manual data entry when new 53s are created on the EMS side. A system that links A2 BOM approved changes to reflect in EMSs side automatically would reduce manual work by EMS	
CTB Report, Production reports (OBA, yield reports, etc.), claims/cost tracker	Tools that will mow the data on demand
- File sharing is difficult due to most counterparts not being able to access files outside of their office or access is slow (VPN) - Communication of status for WCL ingest/fulfillment/shipping, a clear status by DSN built by the EMS	- An app accessible from phone/web page from work/personal computer - Web page (factory/WorkDocs)/App mentioned above For more questions - JP Poisson (jjepoi@)
- Clear to build/material/build matrix - Build Readiness - Daily Reporting - 5-6 different files have to be open with 5-6 presenters (morning & afternoon meetings)	- Amazon driven system that can be implemented across ALL EMSs to standardize input & output.

Appendix 6: EDI File Formats & Info Sec Approved Communication Protocols

File Formats supported:

1. EDI standards:
   - ANSI X12 (North America)
   - UN SEDIFACT (Global, but predominately Europe)
   - TRADACOMS (UK retail industry)
   - Rosetta Net (Global semiconductor and telecom)
   - Zengin (Japan)
2. XML
3. JSON
4. Flat files (Both Positional and Delimited)
5. CSV (delimited with header lines, restricted document model)

6. Binary (Pass through)

Info Sec approved communication protocols supported by SEDI:

1. AS2
2. SFTP
3. Https
4. S3 (Internal Only)
5. Alexandria (Internal Only)
6. EDX (Internal Only)

Appendix 7: Product FAQs

1. How and when will we measure success for the product?

The following metrics will measure the success of this project:

a) Zero system data transfer issues creating an impact on customer experience and/or factory escapes.
b) Elimination of the need for EMSs to manually manipulate product data.
c) 75% adoption and usage rate by Amazon Device Core team and Strategic EMSs within 12 months after product launched.
d) AMDI was launched.

2. When will we begin realizing business benefit? What is the biggest risk to realization?

The true benefit of AMDI will begin to be realized in Phase 1 when the data exchange from Amazon to the EMS is automated for all five areas of concern: MAC, DSN, UPC, BOM, and PO. Additional benefits including the NPI InfoSec upgrades will be realized in later phases of the project. The benefits of the program will not be realized without the adoption of, usage of, and buy-in of Amazon Device employees and EMSs. Amazon Devices will also have to work to ensure that the EMSs don't revert to manual processes and emails.

3. When conceptualizing the solution, what was the most hotly debated topic?

The cost avoidance and customer-facing value is mainly achieved during production; whereas the intellectual property security benefits would be mostly realized during NPI. As such, the team debated whether or not intellectual property, and therefore NPI, should be within scope for AMDI. We believe NPI should be included in the scope. The team recognizes concerns around the potential need for NPI to have flexible and slightly different processes. The expectation is that by PVT AMDI is fully utilized, and the data exchange is 100% automated.

We also discussed whether to include 3P. We decided to build AMDI for 1P first, then roll it out to 3P once the baseline functionality is established.

4. What other options were considered besides the solution you are proposing?

These options were discussed, but are not recommended:

a) Force the EMSs to modify their ERP system to match Amazon's data input structure.
b) Implement a SEDI solution without a portal interface.
c) Force EMSs to add headcount to double or triple check human edits.
d) Stay the current course, do nothing, and accept the existing risks.

5. How does/do the top alternative(s) compare to the recommended solution?

The options discussed in question #4 are not considered viable alternatives to the recommended solution. While the above solutions take care of a portion of the problem:

a) The first solution is not realistic. We can't expect our multibillion dollar a year EMS suppliers to completely overhaul their ERP system to do business with Amazon.
b) A SEDI solution without a portal interface would eliminate the flexibility of having a collaboration workspace as well as remove an end user's visibility of data transfers and therefore would not solve the major NPI InfoSec issues.
c) Additional manual data touches are inefficient, not scalable, and do not eliminate the issue at hand.
d) With this recommendation, we would be turning a blind eye to serious customer impacting issues.

6. How are we leveraging existing technologies and competencies to drive scale and reduce investment costs?

AMDI will leverage Supplier Central's account management, including access and invitation features. AMDI will expand the SEDI feature set for all message types required by the EMSs to produce an Amazon Device. AMDI will be the front-end access to utilize other systems such as APS, Supplier Central, Agile, Windchill, etc.

7. **What will happen to the business if the project is not approved?**
   The year over year increase in SKUs and geographies will continue to increase the current risk associated with product data-driven issues creating impacts on customer experience and/or factory escapes. Critical data exchanges will continue through insecure channels such as email, WorkDocs, WeChat, WhatsApp, etc.
8. **What is the smallest scope, shortest timeline, and fewest resources to deliver some component or aspect of your recommended solution that could be usable but not necessarily useful? Would we learn anything if we completed that first? Is that your first planned release? If not, then what is?**
   The Minimum Lovable Product (MLP) includes the AMDI for automatic data exchange between Amazon and the EMS for MAC, DSN, UPC, BOM, and PO Automation to reduce the potential for manual error. Phase 1 should contain these MLP critical items. The rollout plan includes a pilot with one EMS for one program, releasing capabilities every few sprints. Once Phase 1 is complete and the pilot EMS has successfully utilized AMDI for the program, the deployment will expand to additional strategic and long-term EMSs. The exact criteria for which EMSs will be defined during the planning phase.
9. **Does AMDI eliminate data handling errors in the EMSs' Shop Floor Control (SFC) system?**
   AMDI does not aim to change how EMSs' SFC system should work, nor does it generate manufacturing data for the manufacturing floor. However, AMDI ensures the data imported into SFC is authentic from Amazon and untouched before the data is transferred or imported to the MES/SFC system. EMSs are still responsible to make sure the data from Amazon is propagated into their MES/SFC system automatically to avoid any human errors. Data accuracy in the EMSs' MES/SFC needs to be validated by systematic testing during production.
10. **What are EDI and SEDI?**
    Electronic Data Interchange (EDI) is the system-to-system exchange of business documents in a standardized electronic format between business partners. SEDI (Simple Enterprise Data Integration Service) is Amazon-owned Tier-1 message processing EDI platform that provides validation, transformation, and reliable/secure delivery of business documents. SEDI is certified as a Known System following the InfoSec Data Protection Model.

Appendix 8: Acronym List

EMS – Contract Manufacturer
COE – Correction Of Errors
DVT – Design Validation and Test
EDI – Electronic Data Interchange is the system-to-system exchange of business documents in a standardized electronic format between business partners.
ERP – Enterprise Resource Planning is the integrated management of core business processes, often in real-time and mediated by software and technology.
NPI – New Program Initiative
OPM – Operation Program Manager
PDP – Product Development Process
PVT – Production Validation and Test
TPM – Technical Program Manager
SEDI – Simple Enterprise Data Integration Service) is Amazon owned Tier-1 message processing EDI platform that provides validation, transformation, and reliable/secure delivery of business documents.
VPN – Virtual Private Network.