

Comms Hub & Network (CH&N) Programme

Initial Pallet Validation (IPV) Workshop

Thursday 27th January 2022

Agenda & Presenters

Items	Timing	Presenters
Welcome & Session Scope	5 mins	Kayode Oluwatayo
Programme Status	5 mins	Kayode Oluwatayo
CH&N Testing Status Overview	5 mins	Kayode Oluwatayo
CH&N IPV Overview	10 mins	Kayode Oluwatayo
Current Processes and IPV Experience	20 mins	Brad Myers, Gary Williams
Break	5 mins	
IPV Key Considerations	40 mins	Parmjeet Dayal
Break	10 mins	
Customer Questions	40 mins	Charlotte Smith, Cristina Alves Ermida
Next Steps	10 mins	Kayode Oluwatayo



INITIAL PALLET VALIDATION (IPV) WORKSHOP

Welcome & Session Scope

Kayode Oluwatayo

Welcome & Scope of the Session

- Thank you for your time for this session. This is the first in a series of workshops which will focus on IPV (Initial Pallet Validation)
- This session will be focusing on the following topics:
 - Present current IPV processes and experience
 - Key IPV considerations and DCC's Strawman position to be developed
 - Understand feedback from the industry on the above during the Customer Questions section
- This session will be followed by further engagement on IPV – as detailed in the 'next steps' section at the end of the workshop



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Programme Status

Kayode Oluwatayo

Programme Status

Invitations to Tender have been issued for **2 distinct Lots which will comprise of two distinct elements of programme delivery**. These are:

- **Lot 1** – covers an aggregated solution to provide a Single Band 4G CH Service including devices, a WAN and supporting services
- **Lot 2** – covers a disaggregated solution to provide a service for Dual Band 4G CHs, including sub-lots for CH device provision, WAN provision and supporting services

The programme is **currently under commercial negotiation** for both lots. Timelines will be dependent on latest commercial developments .

The following slides are referring to lot 1 only. The assumption is that a lot of the thinking around IPV could be re-used also for lot 2.



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CH&N Testing Status Overview

Kayode Oluwatayo

CH&N Testing Status

PIT and SIT

- TAD is under development and up for agreement with TAG; DCC will present the final version for approval in March 2022
- Using the lessons learned from previous projects, a shift-left strategy has been included
 - testing strategy includes the proposal to undertake broader and more comprehensive testing earlier in the testing process, using real devices

UIT

- UIT proposal has been developed internally by DCC
- To be discussed with BEIS , followed by wider industry stakeholder engagement (estimated Q1 2022)



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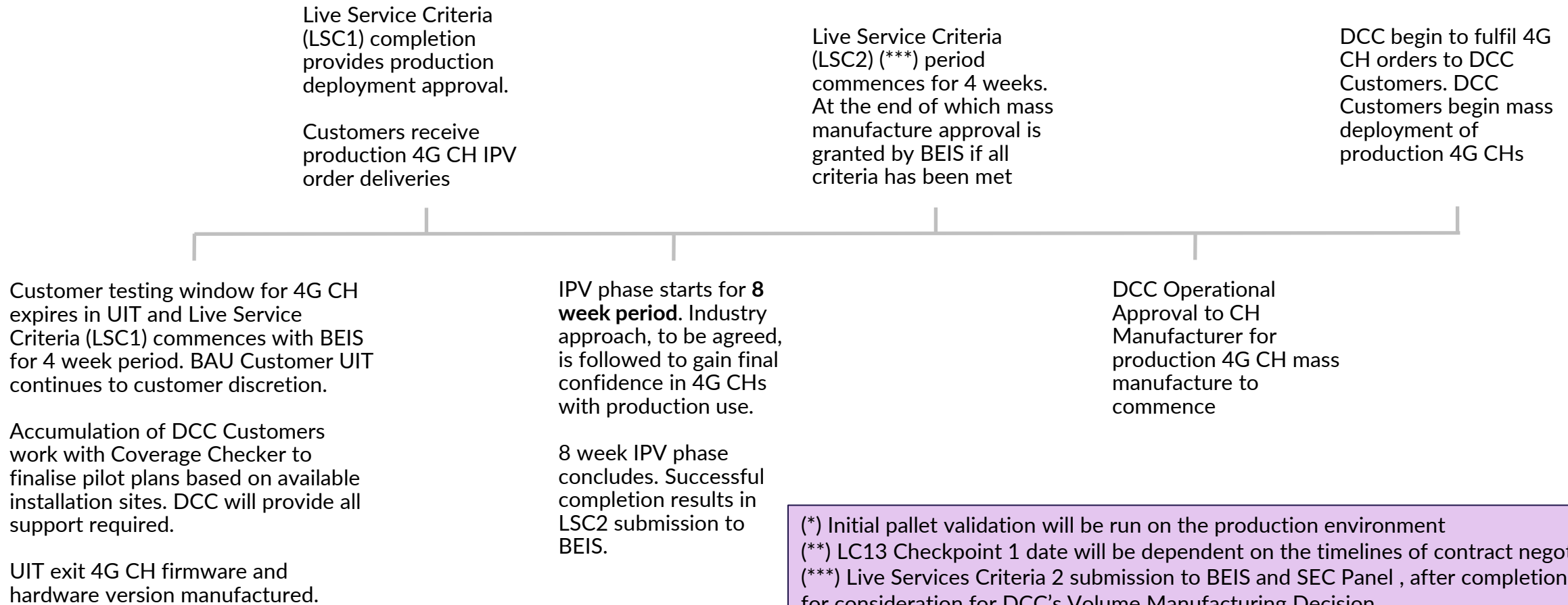
CH&N IPV Overview

Kayode Oluwatayo

CH&N IPV Overview

High Level Overview of Initial Pallet Validation(*) in context of overall Comms Hub & Network LC13b Plan.

Updates on dates are being discussed as part of the programme and will be presented as part of LC13 Checkpoint 1 (**).





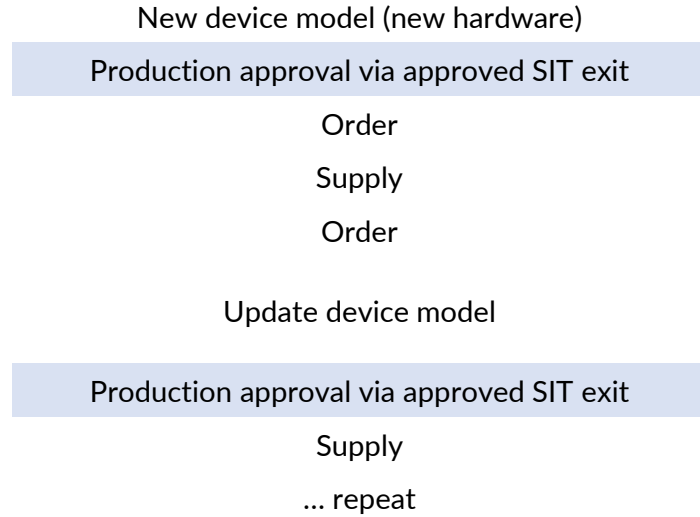
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Current Processes and IPV Experience

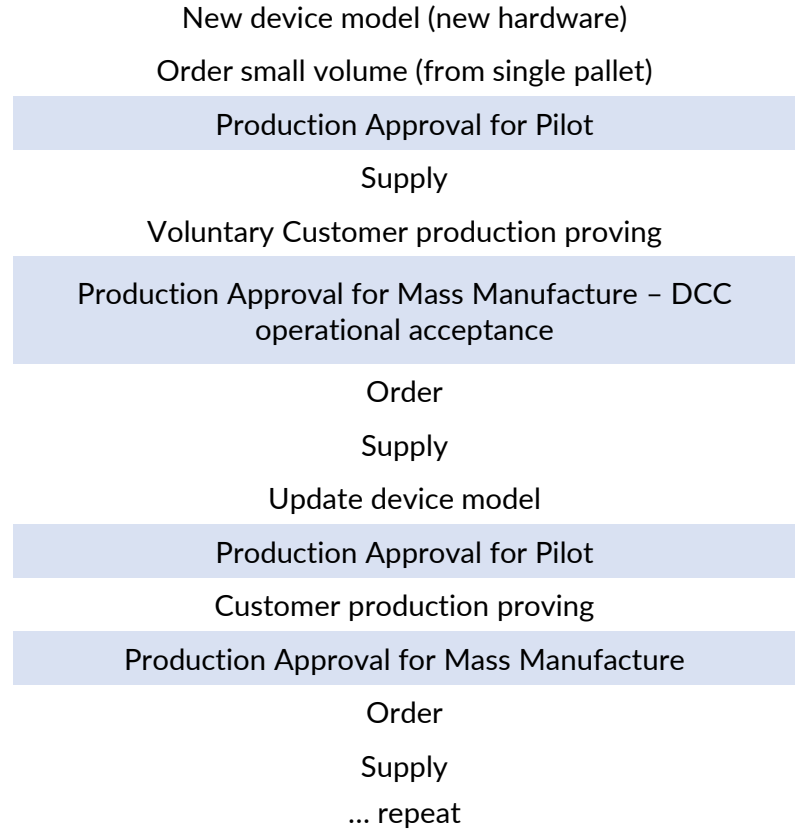
Brad Myers & Gary Williams

Incremental Improvements to CH Device Supply since Go Live

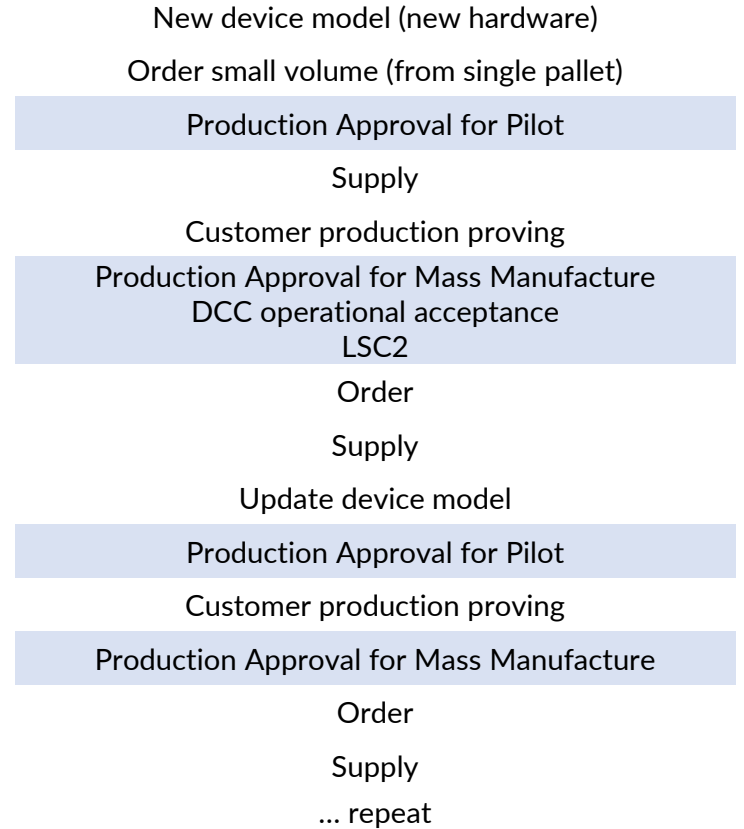
SMETS2 from 2016 thru 2019



SMETS2 from 2019 thru 2021



Network Evolution from 2022



The introduction of governance at key production stages has improved understanding of change and its impact on a wider number of device combinations, thereby reducing risk when applied in volume to the production estate. Customer involvement is voluntary but customers realise the benefits of taking part.

Lessons Learnt

Detailed below are the lessons learnt from previous programmes and DCC operational experience. This directly feeds into the Current IPV Requirements detailed on the following slide.

1. Comms Hubs should not be manufactured directly after SIT exit, without sufficient opportunity for customers to gain confidence with appropriate use in production.

IPV Lesson: IPV must be conducted to avoid CHs being manufactured at volume on hardware and firmware which could have defects discovered in production pilot use.

2. A production IPV phase should be conducted by DCC Customers and monitored by DCC to meet criteria to achieve Operational Approval for mass manufacture.

IPV Lesson: Lack of IPV on early releases meant that issues were discovered in production which introduced time delays and cost to industry to rectify with subsequent firmware releases.

3. Good Engagement with Key Stakeholders at all times. Key lesson from a programme point of view is to keep good lines of engagement open with DCC Customers and all key stakeholders.

IPV Lesson: This ensures confidence is built continuously and allows key stakeholders to react quickly with appropriate actions if significant issues are identified. This engagement approach is used on a weekly basis currently for BAU CH firmware delivery.

Current IPV Requirements

- The IPV requirements below are **not** those which shall be proposed for the CH&N programme, the purpose in this slide is to provide an example set used for releases today. These were tracked for Dual Band releases last year however these would be appropriately **adjusted** for any other future CH releases to gain confidence in the particular features of that release
- The only customer journey DCC expected customers to complete for new installs was “*I want to install a Smart Meter system*”, as all other customer journeys are dependant on customer and / or consumer behaviour
- The IPV criteria for 4G CHs will be determined via customer engagement that this workshop is a part of

KPI	Target	Notes
Incidents (Severity 3, 4 & 5)	n/a	No high severity 1 or 2 incidents. Severity 3,4,5 incident to be investigated, with a clear path to resolution
Incidents (Severity 1 & 2)	0	
SRV success	90%	Baselined against previous firmware. Target could be in excess of 90%.
Prepay SRV success	90%	Baselined against SMETS2 performance. Based on SMETS2 OPR target.
OTA success	95%	Excludes download failures
HAN Diversity	X	Specific to release, based on behaviours in SIT & UIT, and agreed with Ops in advance, i.e. for TOSH & WNC DBCH this has been set as 2 different GSME combinations, for EDMI DBCH-f (Fylingdales) this is set to 3 ESME combinations
Minimum install volume	X	Specific to release, dependant on anticipated volume from industry and agreed with Ops in advance, i.e. for TOSH & WNC DBCH this has been set as 40, for EDMI DBCH-f (Fylingdales) this is set to 100



INITIAL PALLET VALIDATION (IPV) WORKSHOP

IPV Key Considerations

Parmjeet Dayal

IPV Key Considerations

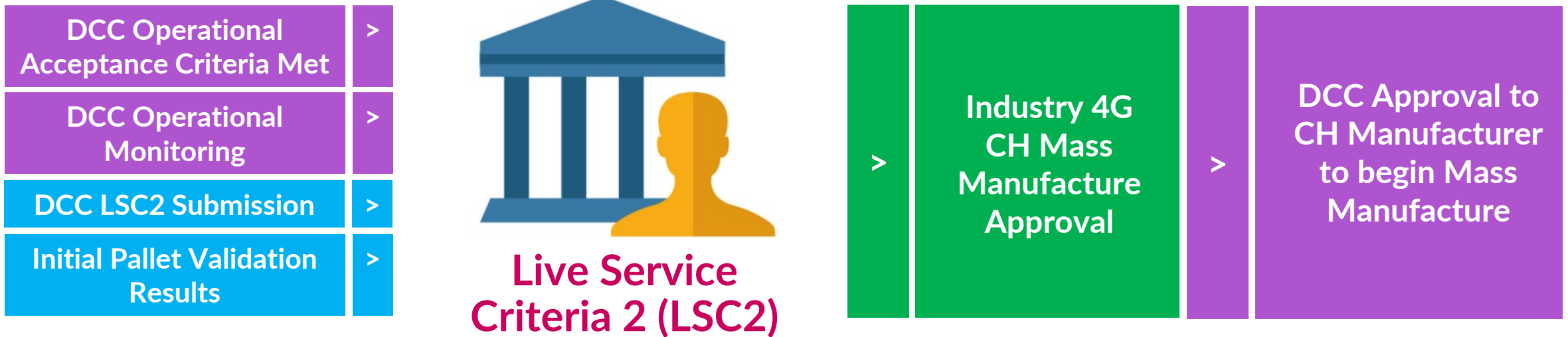
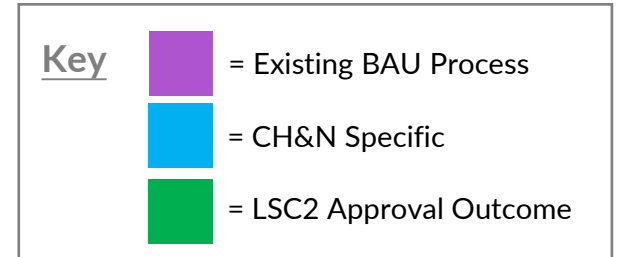
Introduction

- In this section DCC will present what it believes are the key considerations of Initial Pallet Validation (IPV) for the Comms Hub and Network Programme
- DCC has proposed a strawman to offer DCC's current position and promote discussion
- Questions will be asked throughout the presentation to gain initial thoughts and feedback on the key considerations and the DCC Strawman position
- The valuable input and direction from this workshop will inform the IPV approach for which DCC will issue a formal consultation and manage with appropriate customer engagement



IPV Key Considerations – The Role of IPV in CH&N

- The key difference in the Comms Hub & Network programme is that Live Service Criteria 2 (LSC2) is part of the decision whether the 4G Comms Hubs will be mass manufactured. A key industry input into this will be output of the 8 week Initial Pallet Validation (IPV) activity
- As discussed earlier in the workshop versions of Initial Pallet Validation have taken place in previous programmes and is now a BAU approach which is key for the release of any significant CH hardware or firmware into the production environment

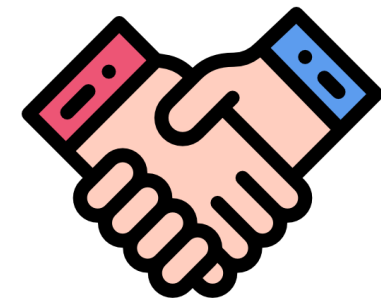


IPV Key Considerations – The Role of IPV in CH&N

Defining the Ask for IPV

- The purpose of IPV is not to repeat testing, it is to gain confidence in scenarios which can only be gained in production (e.g. real world device installation) and to increase invaluable operational insight
- The DCC believes that IPV will provide:
 - ✔ Confidence that the 4G CHs and new process (e.g. *new coverage checker approach*) are ready to be used in live production installations
 - ✔ Ability for DCC Customers to prove their chosen devices and processes in the field with initial small volumes
 - ✔ Risk reduction to mass manufacture by using IPV phase results to make an informed decision
 - ✔ DCC Operations insight into the performance of 4G CH's by tracking against proven operational performance metrics in the production environment

IPV Key Considerations – The Role of IPV in CH&N



Overview of Proposed IPV Strawman

The proposed IPV Strawman aims to provide a bespoke strategy for the CH&N programme, building upon lessons learnt and the current approach for CH firmware releases into production today

KPI	Target	Notes
DCC Customer Participation	2	Minimum of 2 DCC Customers (Suppliers) to complete IPV*. Ideally DCC would encourage as many DCC Customers as possible to participate to gain the maximum value from the activity
Customer Journeys	2	Minimum of “I want to install a Smart Metering System” and “I want to exchange my 3G Comms Hub to a 4G Comms Hub” journeys to be completed. Ideally DCC would encourage DCC Customers to run as many customer journeys and critical commands as possible
Customer SRVs Run	To Be Consulted	Based on pre-engagement with key stakeholders it has been recommended that in addition to the customer journeys specific SRVs are also identified which DCC Customers consider to be vital e.g. read request, scheduling reads. DCC will work with customers to identify and agree these
Incidents (Severity 3, 4 & 5)	n/a	For hardware or firmware, no high severity 1 or 2 incidents at time of IPV mass manufacture approval. Severity 3,4,5 incident to be investigated, with a clear path to resolution or within agreed defect masks
Incidents (Severity 1 & 2)	0	
SRV success	Operational Baseline	Baselined against current 2G/3G CH SMETS2 performance
Prepay SRV success	Operational Baseline	Baselined against current 2G/3G CH SMETS2 performance. Based on SMETS2 OPR target. To be noted, Prepay Customer Journeys would need to be executed for this KPI to apply.
OTA Success	N/A	To be proven in pilot post IPV in production, once new approved firmware version is available

* Future workshops will discuss mitigations which have been used in previous programmes whereby, IPV results from DCC Customers can be combined to achieve 100%. The scenarios and governance for this will form part of the final consultation.

IPV Key Considerations – The Role of IPV in CH&N



Overview of Proposed IPV Strawman - Continued

The proposed IPV Strawman continued

KPI	Target	Notes
HAN Diversity – Install Device Combinations	To Be Consulted	To be discussed and consulted with DCC Customers, likely to be the installation combinations which are to be used in the field. Device Model Combinations also likely to be linked to those which are used in the defined UIT window, which will have concluded prior to IPV commencing .
Minimum Install Volume	To Be Consulted	Minimum install volume to be consulted, dependent on what DCC Customers believe is achievable with sufficient notice and planning. Indicatively for Fylingdales DBCH this was 100+. *Low install volumes could skew success criteria so this will need to be factored into stated SRV success
Prove New Processes	To Be Consulted	Based on pre-engagement with key stakeholders it has been recommended that in addition to the new CHs this IPV phase would also be used to prove new or enhanced processes resulting from the CH&N programme e.g. changes to the Coverage Checker and any associated process changes. DCC will work with customers to identify and agree these.
Installation Conditions	To Be Consulted	To be consulted with DCC Customers. DCC will work with customers to ensure that as large a variety of Installation Conditions as possible can be proven e.g. edge of coverage, premise types

IPV Key Considerations – The Role of IPV in CH&N



Reasoning for IPV Importance

For each KPI DCC has justified reasoning for inclusion in the proposed strawman. As part of this engagement DCC will make adjustments where required based on customer and key stakeholder feedback.

KPI	Type	Reasoning for KPI
DCC Customer Participation	Production Confidence	This is based on supportive participants in similar previous events, DCC believes that ultimately a greater number will support and this coverage will give DCC and customers confidence that 4G CHs are ready to replace 2G/3G CH for mass rollout installations.
Customer Journeys	Can't Prove In Testing	This is based on journeys suggested previously for similar events, DCC believes if installation and replacement are not proven as a bear minimum then there is significant risk to switching manufacturing to a CH which is unproven in production use. Additional CJs are likely to be proven in the timeframe.
Customer SRVs Run	Can't Prove In Testing	In addition to the customer journeys, DCC Customers can gain additional confidence that critical SRVs operate as expected for their processes and devices with the new 4G CHs.
Incidents (Severity 3, 4 & 5)	Production Confidence	A proven position for changes to production CHs, in DCC's experience this is the bear minimum that DCC Customers and key stakeholders will accept for a CH change as significant as this.
Incidents (Severity 1 & 2)		
SRV success	Can't Prove In Testing	A proven position validated for all production CH changes.
Prepay SRV success	Can't Prove In Testing	A proven position validated for all production CH changes.
OTA Success	N/A	To be proven in pilot post IPV in production, once new approved firmware version is available.

IPV Key Considerations – The Role of IPV in CH&N



Reasoning for IPV Importance

For each KPI DCC has justified reasoning for inclusion in the proposed strawman. As part of this engagement DCC will make adjustments where required based on customer and key stakeholder feedback.

KPI	Type	Reasoning for KPI
HAN Diversity – Install Device Combinations	Production Confidence	DCC believes this is vital for the IPV phase and will be driven by the device model combinations which customers want to prove in the 8 week allocated period. DCC will support the position customers wish to take but believes that proving device model combinations is crucial for confidence.
Minimum install volume	Production Confidence	This is another factor which will be linked to what DCC Customers can realistically achieve within the timeframe but a volume too small could skew results or be too small to effectively prove the 4G CHs.
Prove New Processes	Can't Prove In Testing	Based on pre-engagement with DCC Customers, where the CH&N either introduces new processes or alters existing processes (e.g. coverage checker before installation) DCC Customer will want to prove these end to end in production. Although not directly related to the new CH product this an important element DCC Customers will wish to gain confidence.
Installation Conditions	Can't Prove In Testing	All installation conditions can not be proven in testing under lab conditions, as a result for previous CH releases issues have come to light in operational use. The introduction of this KPI will place an emphasis on proving as many identified installation conditions as possible.

IPV Key Considerations – DCC Strawman Position

Minimal Level

- DCC recommends that an agreed minimal level of activity is conducted during the IPV phase to ensure that sufficient confidence is gained. Therefore DCC Operations believes that within the 8 week IPV phase it is imperative that an agreed minimal level is conducted
- The minimum level of IPV activity would be agreed as part of the future consultation. Example items which make up the minimum could include:
 - A pre agreed number of DCC Customers should have completed all proving activity (e.g. 2 Suppliers)
 - Agreed Device Combinations proving combinations reflective of devices to be I&C after mass manufacture
DCC Customers (suppliers) select the device manufacturers and combinations required
 - Agreed Customer Journeys Run for each combination (Detailed on following slide)
 - Minimum Install Volume

IPV Key Considerations – DCC Strawman Position

Customer Journeys

- The below customer journeys are aligned to those which have been recommended for the UIT phase of testing. Practically it may be difficult to run some journeys in the production environment due to constraints with timing and friendly customer availability
- DCC has highlighted the perceived achievable journeys in purple below for the strawman position. The other journeys are also recommended but ultimately DCC Customers will decide which they are able to within the allotted IPV timeframe:
 - **CJ1 - I want to install a Smart Metering System**
 - CJ2 - I want to move my consumer from credit to prepay
 - CJ3 - I want to action a Change of Tenancy (CoT) with an existing Smart Meter
 - CJ4 - I want to change an existing Smart Meter consumer tariff
 - CJ5 - I want to gain a consumer with an existing Smart Meter (CoS)
 - CJ6 - I want to help my consumer top up a Smart Meter in prepayment
 - **CJ7 – I want to exchange my 3G Comms Hub to a 4G Comms Hub**



IPV Key Considerations – DCC Strawman Position



Installation Conditions

- Based on input from key stakeholders DCC also understands that a key benefit which IPV can provide is the ability to gain confidence with operational, in field conditions which can not be proven in the conventional test phases
- These installation condition scenarios will be developed with key stakeholders as part of these workshops and engagement. We have listed some indicative scenarios below for the strawman to be discussed and developed.
 - **Edge of Coverage** – DCC believe that there would be value in working with customers to prove the new hardware at the edges of coverage or known areas of reduced coverage in relation to areas with stronger coverage
 - **Variety of Premises Types** – DCC Customer may wish to select varying premise types or installation locations. DCC would work with Service Delivery partners to assist DCC Customers in site selection or any other information required
 - **Coverage of areas within Central and South Region** – DCC Customers may wish to select installation locations across the C&S region with super friendly customers and regular booked installs
 - **Installer feedback capture** – Vital in the early days that installers in field experience is captured, reported and shared. Each DCC Customer could moderate feedback in their organisation and potentially draw out themes to feedback
 - **Mesh Replacement** – 2G/3G Mesh Replacement scenarios will not be proven in the IPV pilot. This will be managed by DCC Operations once the replacement technology is available at a future post go live date. An approach will need to be developed where mesh replacements are managed in a coordinated manner to ensure service is maintained

IPV Key Considerations – DCC Strawman Position



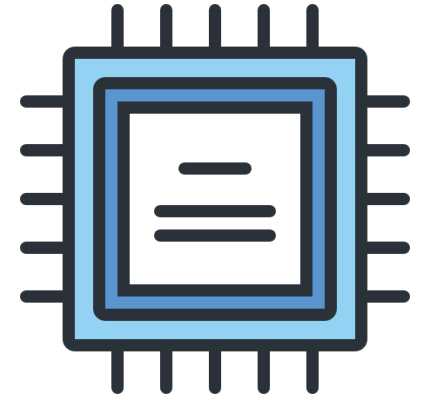
IPV Order Volumes – Limited Volume or Customer Order Led?

- DCC's strawman recommendation would be that DCC Customers order the volume they believe is required by their organisation to ensure that all aspects of confidence can be met, as opposed to being limited to a volume determined by DCC
- IPV is a proving activity so the DCC strawman position would be that excessive units are not manufactured i.e. only the volume required to gain confidence are manufactured and delivered. This eliminates the potential of high volumes of undesirable CHs entering the future supply chain
- In previous programmes this activity has been limited to CHs distributed from a limited number of pallets, split across participating DCC Customers. For this CH&N programme DCC Customers will need to determine if this approach continues to be acceptable or whether DCC Customers would wish to order IPV Comms Hubs in greater volume, based on their own confidence strategies
- The final details would need to be agreed with successful bidders as part of the procurement process however it is likely that:
 - Parameters would be set by the programme e.g. orders by pallets, layers of pallets
 - There will be no forecasting, just one off orders for volume linked to the IPV activity
 - Orders would be binding to DCC Customers

IPV Key Considerations – DCC Strawman Position

IPV Manufactured Hardware and Firmware Version

- To allow customers to gain the maximum value from the IPV activity the DCC strawman position recommendation is that the hardware and firmware versions manufactured will be those which are approved after UIT for Live Service Criteria 1 (LSC1)
- The firmware will align to the GBCS Version and Technical Specifications communicated as part of the programme. DCC will discuss this at TABASC and the relevant technical forums
- Once the decision is taken to manufacture IPV CHs after LSC1 this will be a committed industry position and these manufactured CHs must then be the CHs used for the IPV activity
- Live Service Criteria 2 (LSC2) will be the governance approval for 4G CH mass manufacture hardware and firmware versions. Once LSC2 approval is granted this will be followed by a final instruction from DCC to the CH manufacturer to commence mass manufacture



IPV Key Considerations – DCC Strawman Position

Strawman Summary

KPI	Target	Notes
DCC Customer Participation	2	Minimum of 2 DCC Customers (Suppliers) to complete IPV*. Ideally DCC would encourage as many DCC Customers as possible to participate to gain the maximum value from the activity
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Incidents (Severity 3, 4 & 5)	n/a	For hardware or firmware, no high severity 1 or 2 incidents at time of IPV mass manufacture approval.
Incidents (Severity 1 & 2)	0	Severity 3,4,5 incident to be investigated, with a clear path to resolution or within agreed defect masks
SRV success	Operational Baseline	Baselined against current 2G/3G CH SMETS2 performance.
Prepay SRV success	Operational Baseline	Baselined against current 2G/3G CH SMETS2 performance. To be noted, Prepay Customer Journeys would need to be executed to ensure SRV’s are run.
OTA Success	N/A	To be proven in pilot post IPV in production, once new approved firmware version is available
HAN Diversity – Install Device Combinations	To Be Consulted	To be discussed and agreed with DCC Customers, likely to be the installation combinations which are to be used in the field.
Minimum Install Volume	To Be Consulted	Minimum install volume to be agreed, dependent on what DCC Customers believe is achievable with sufficient notice and planning.
Prove New Processes	To Be Consulted	It has been recommended that in addition to the new CHs this IPV phase would also prove new or enhanced processes resulting from the CH&N programme e.g. changes to the Coverage Checker
Installation Conditions	To Be Consulted	To be agreed with DCC Customers. DCC will work with customers to ensure that as large a variety of Installation Conditions as possible can be proven e.g. edge of coverage, premise types



INITIAL PALLET VALIDATION (IPV) WORKSHOP

Customer Questions

Charlotte Smith & Cristina Alves Ermida

Customer Questions

Log in to www.menti.com



IPV Strawman Confidence

Please use Menti to answer questions, DCC will display the live results and feedback as we progress

Question 1

Following this presentation, on a scale of 1 to 10, what is your confidence in the proposed IPV strawman as an approach to prove 4G CHs in production?

(1 = Very Low Confidence through to 10 = Very High Confidence)

Potential Missing KPI's

Please use Menti to answer questions, DCC will display the live results and feedback as we progress

Question 2

Based on the proposed IPV strawman presented, do you believe there are any key KPI's missing?

(Yes / No)

We'll spend some time to capture details of key KPI's attendees believe could be added

KPI Targets

Please use Menti to answer questions, DCC will display the live results and feedback as we progress

Question 3

Based on the proposed IPV strawman presented, do you agree with the KPI targets defined?

(None / Some / All)

We'll spend some time to capture details of key targets attendees believe could be adjusted

IPV CH Ordering

Please use Menti to answer questions, DCC will display the live results and feedback as we progress

Question 4

Do you believe that CHs ordered for IPV should be a Limited Volume or Customer Order Led?

(Limited Volume / Customer Order Led*)

* As noted earlier, customer orders would be related to requirements for the IPV activity only i.e. the volume required for IPV are manufactured and delivered. This eliminates the potential of high volumes of undesirable CHs entering the future supply chain.

Minimal Level

Please use Menti to answer questions, DCC will display the live results and feedback as we progress

Question 5

Do you agree that a minimal level of activity is required for IPV for 4G CHs? i.e. if this agreed minimum level is not achieved for the installations then required steps for resolution will need to be taken

(Yes / No)



INITIAL PALLET VALIDATION (IPV) WORKSHOP

Next Steps and Actions

Kayode Oluwatayo

Thank You and Next Steps

- Information gathered from the industry will be collated by DCC and assessed
- Updates will be added to the proposal for IPV
- Based on the changes, DCC will communicate if 1 or 2 workshops will be needed for IPV. The future IPV workshop will aim to:
 - Present/discuss the final proposal for IPV (will incorporate industry feedback)
 - Discuss the options around voluntary/mandatory IPV
- The date of the following IPV workshops will depend on the feedback received

Comms Hub & Network (CH&N) Programme

Initial Pallet Validation (IPV) Workshop

Thursday 27th January 2022