EASA
European Union Aviation Safety Agency

EU-South Asia Aviation Partnership Project
(EU-SA APP)

Strengthening the partnership in aviation between the EU and South Asia

This project is funded by the European Union and implemented by the European Union Aviation Safety Agency

EU-SOUTH ASIA AVIATION PARTNERSHIP PROJECT

UAS Regulatory Framework and Airspace Integration Workshop

Ongoing and planned EASA activities on UAS

Antonio Marchetto
EASA RPAS Technologies Expert
Delhi (India), 10-12 September 2019

EU-SOUTH ASIA APP

Your safety is our mission.

An Agency of the European Union

Reminder of the 3 EASA Categories of Operation

OPEN category - Low risk

NO-PRE APPROVAL

LIMITATIONS: 25 kg, Visual Line of Sight (VLOS), height <120m, system of zones

3 Sub-categories: fly over, close, far from people

General public / recreational purpose

Model Flying, Photographers

SPECIFIC - Increased risk

Authorisation by NAA based on specific operation risk assessment (SORA)

Declaration in case of standard scenario; LUC

BVLOS operations (linear inspections, aerial work, …)

Transport of goods

CERTIFIED - Risk as manned aviation

Certification of UAS [by EASA], **approval of the operator and licensed pilot (unless autonomous flight)** [by the NAAs]

Air Taxi
International IFR (cargo, passengers)
Package delivery over people

Reminder of regulatory achievements

- **Implementing act (EU) 2019/947 and Delegated act (EU) 2019/945**
  - Published on 11th of June, 2019
  - Entered into force on 1st July 2019
- Implementing act:
  - Requirements related to operation
  - Requirements related to registration
  - Applicable 1st July 2020

https://www.easa.europa.eu/document-library/regulations/commission-implementing-regulation-eu-2019947

- Delegated act:
  - Requirements related to CE marking
  - Technical requirements for drones
  - Requirements for third-country operators
  - Fully applicable July 2022 (transitional period)

https://www.easa.europa.eu/document-library/regulations/commission-delegated-regulation-eu-2019945

What next?

- **October 2019: ED Decision with AMC/GM with regards to (EU) 2019/947**
  - https://www.easa.europa.eu/document-library/acceptable-means-of-compliance-and-guidance-materials/amc-gm-commission
  - Adopts JARUS SORA as AMC for risk assessment methodology for operations in the specific category
- **October 2019: Opinion with two standard scenarios (STS)**:
  - Urban VLOS (Visual Line of Sight)
  - Rural BVLOS (Beyond Visual Line of Sight)
- End 2019 / Start 2020: Opinion on **U-Space** (+ NPA with AMC/GM end 2020)
  - (*addressed with 3rd EASA PPT for this workshop*)
- Q4 2020: Notice of Proposed Amendment (NPA) for the **Certified Category** (including UAM operations) -> *addressed in this presentation*

Support to NAA for implementation of the European drone regulation

- Network of NAA Focal Points for drones initiated in July 2019
  - Objective is for EASA to support a collaborative network for NAAs to exchange on:
    - Potential difficulties linked to the implementation of the drone regulation
    - Experience gathered with operators while authorising drone operations with the objective to harmonize the approach at European level (STS or PDRA)
  - Next meeting: 6-7 November 2019

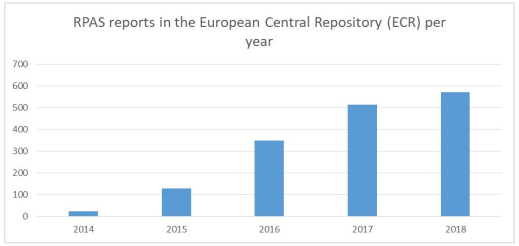
Implementation of the EASA Counter Drone Action Plan

- EASA C-UAS action plan released at Issue 2 in July 2019 with 5 actions
  - Launched:
    1. Geographical zones
    2. C-UAS technologies
    3. Occurrence reporting
  - Planned to be launched by the end of the year:
    4. Roles and responsibilities in case unauthorized drones are detected around ADR
    5. Gathering state-of-the-art data relevant to the consequences of a drone collision with manned aircraft

Research on drone collision with aircraft

- Although the new EASA regulatory framework includes measures to address air risk, such risk will still be present, especially considering the growing number of small drones being operated by the general public

  - Airprox related to drones increase year by year and the effect of potential airborne collision between a UAS and a manned aircraft is a concern at all levels



- Additionally, malicious drone use can hardly be prevented with operational restrictions, remote pilot preparation and product requirements

  - To address all this, the tender for the research project "**vulnerability of manned aircraft to drone strikes**" (H2020 delegated funds) has been launched on 27.09.2019
  - https://ted.europa.eu/TED/notice/udl?uri=TED:NOTICE:453363-2019:TEXT:EN:HTML

Research on drone collision with aircraft

- 1.8 Million Tender
- Proposals accepted until December 17, 2019
- Selection of winning proposal early January
- Start of the project: shortly after selection
- Duration: 3 years (2 first phase, 1 second phase)

Research on drone collision with aircraft

- Objective of phase 1:
  - Building on the State-of-the-Art, reach validated results with regard to the **outcome, at local and aircraft level, of collision events**, in the identified "collision domain", of consumer / prosumer drones with CS25, CS23, CS29, CS27 manned aircraft
- Objectives of phase 2:
  - Identify effective ways of designing drones which are more "frangible" or more effectively dissipate energy during a collision event so that the outcome of a potential collision would tend to produce more contained damage to manned aircraft
    - The final outcome could be the insertion of a "frangibility" requirement among the technical requirements for drones in the Open category
  - Make available validated models (especially of drones) to Aircraft and UAS manufacturers
    - Aircraft manufacturers could use the models to test their design for resilience with a potential drone impact, on a voluntary basis
    - Drone manufacturers may use the validated models to further improve their design

EASA
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EASA UAS Certified Category of Operation: Status and Concept

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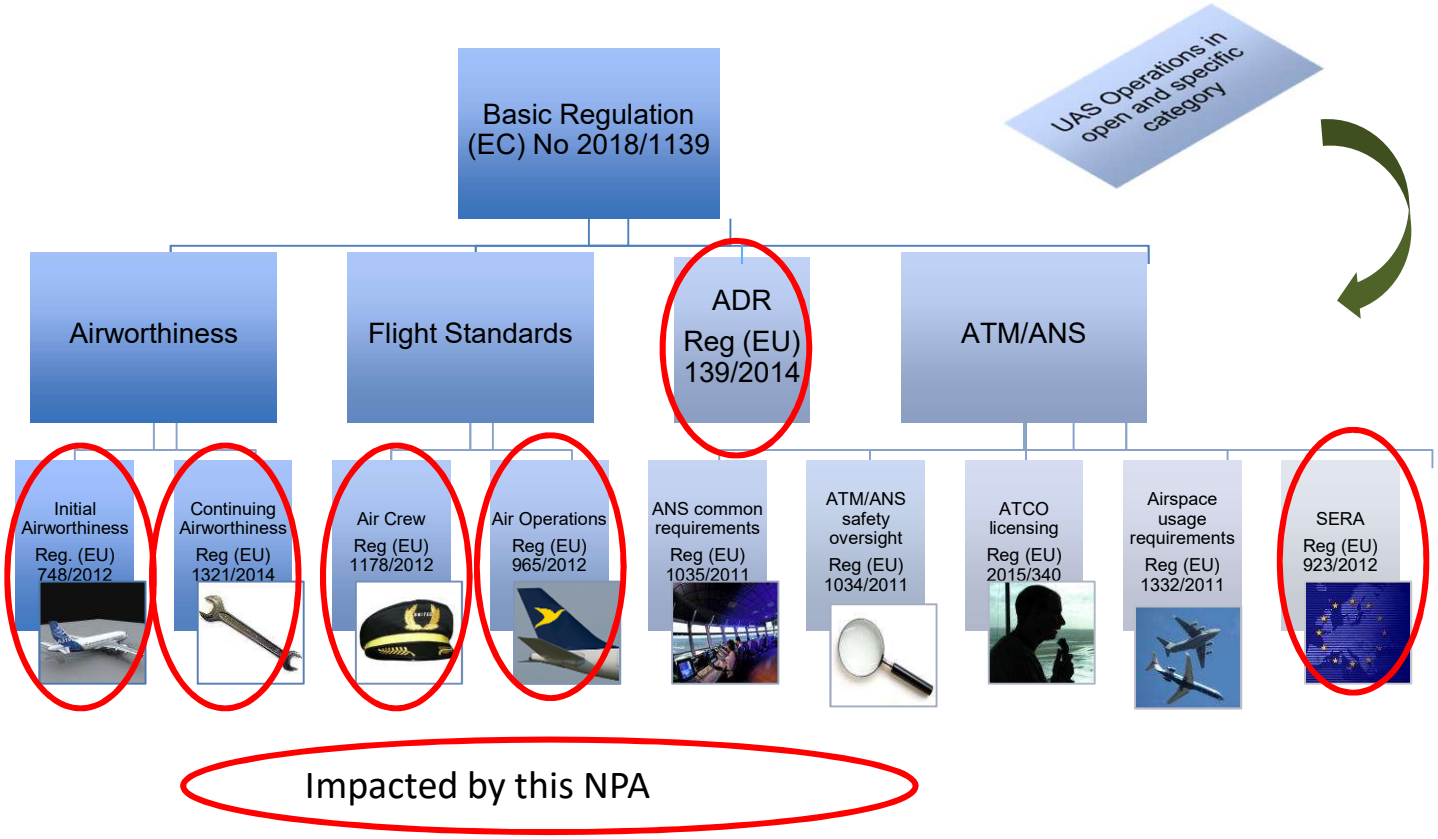
Status on certified category – NPA#1 scope

Operations type #1: IFR operations for the carriage of cargo in airspace classes A-C and taking-off and landing at aerodromes under EASA's scope.

Operations type #2: UAS Operations in congested (e.g. urban) or non-congested (e.g. rural) environment using pre-defined routes in volume of airspaces where U-space services are provided. This includes operations of unmanned automation system – based aircraft (ASBA), carrying passengers (e.g. VTOL air taxis) or cargo. Take-off and land could be at any aerodrome or any designated landing port, vertiport or landing site.

Operations type #3: same as Operation type #2 with manned ASBA, including operations in airspace where U-space service is not available

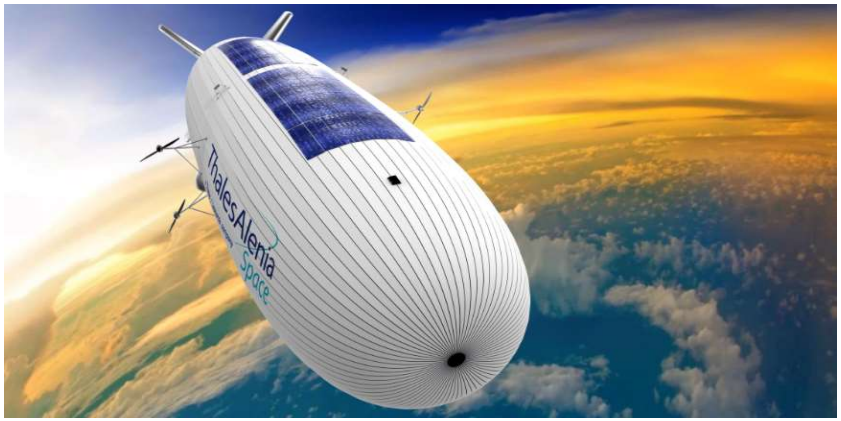
Which regulations NPA#1 will affect



IAW: Some EASA UAS certification projects

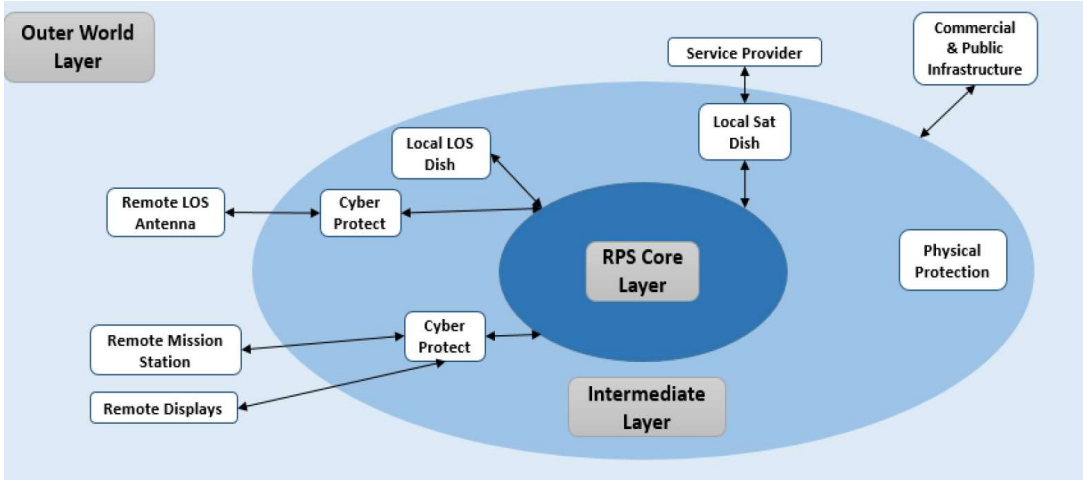
- EASA can certify UAS since 2008 with Policy E.Y1301

AIRBUS DEFENCE & SPACE



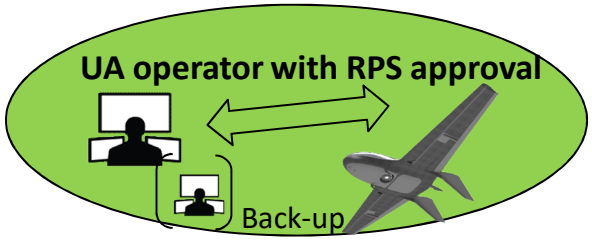
RPS: ICAO Layer Concept

- Layer 1 - **RPS Core Layer**: all elements and equipment essential for the crew to operate the RPA:
- Layer 2 - **Intermediate Layer**: all assets, equipment and resources required to support the RPS operation, to provide interface between the core and external layers and to provide protection from "undesired inputs" such as hacking, lighting, power failures, EMI etc.
- Layer 3 – **Outer World Layer**: Commercial & Public Infrastructure, External Networks, C2Link Service Provision

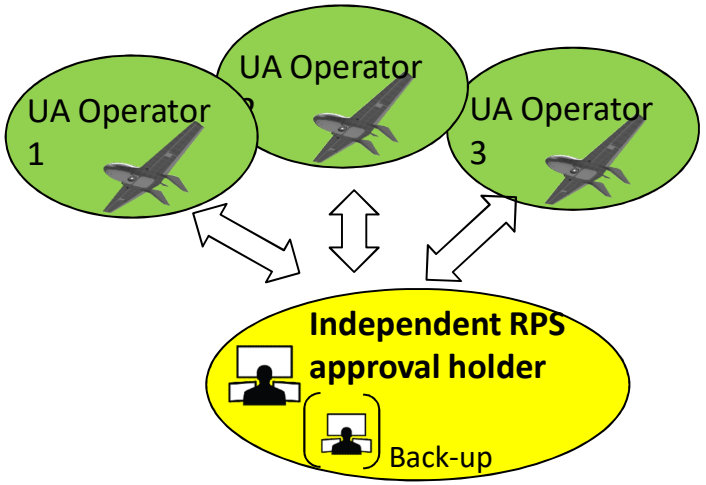


RPS: increasingly complex operational concepts

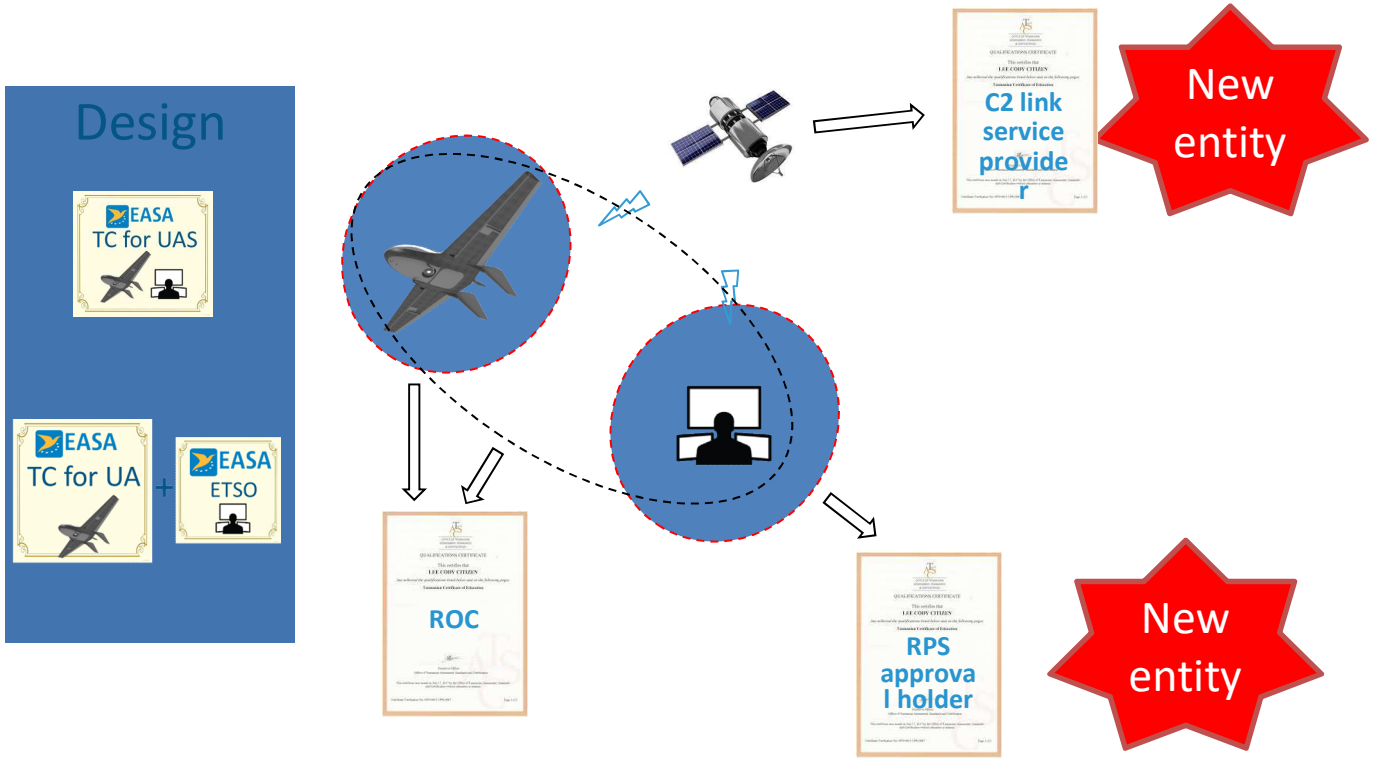
- One RPS can control one UA at a time
  - Handover possible
  - Availability of backup RPS may reduce requirement for RPS



- One RPS can control multiple UAS
  - Handover possible
  - Backup RPS may be mandatory
- One RPS can control different UA types
- One RPS serves UA from different Operators

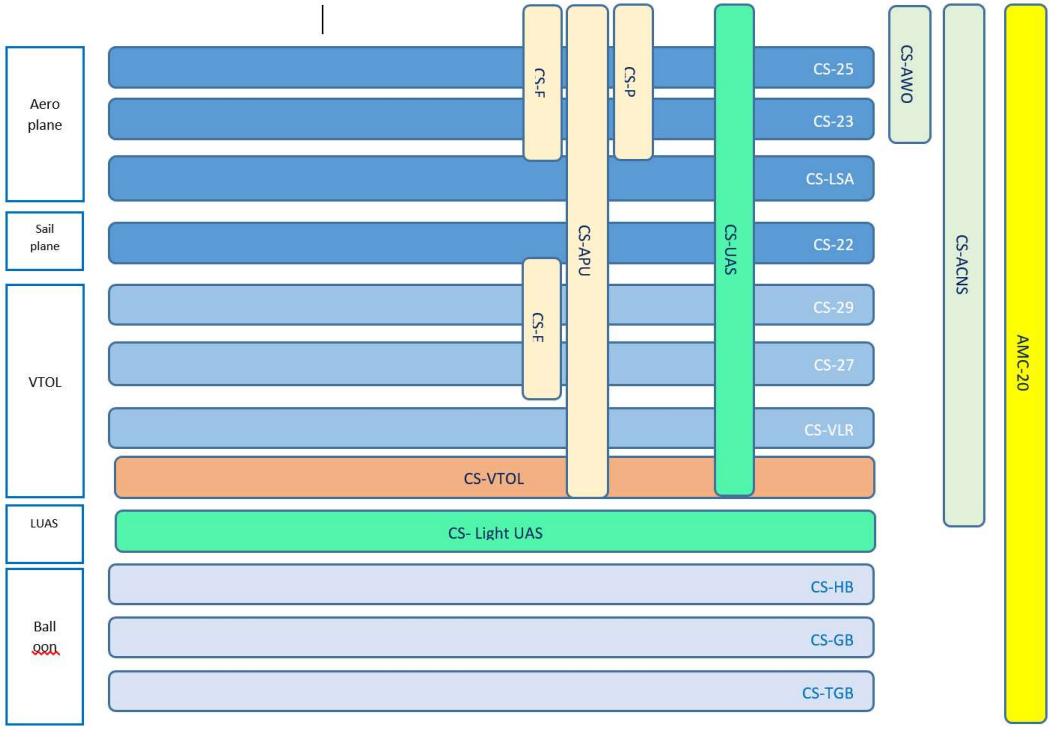


Approval Holders Concept



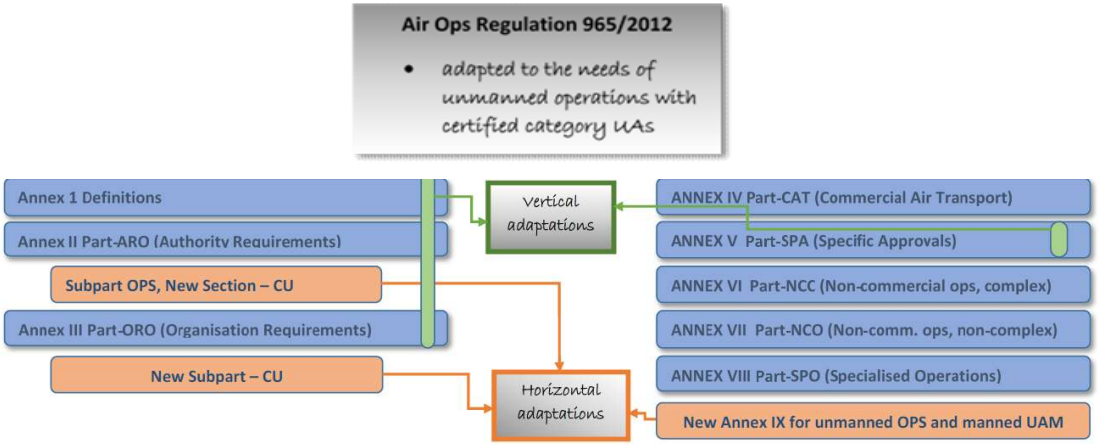
IAW: Concept of CS architecture

- For NPA after 2020

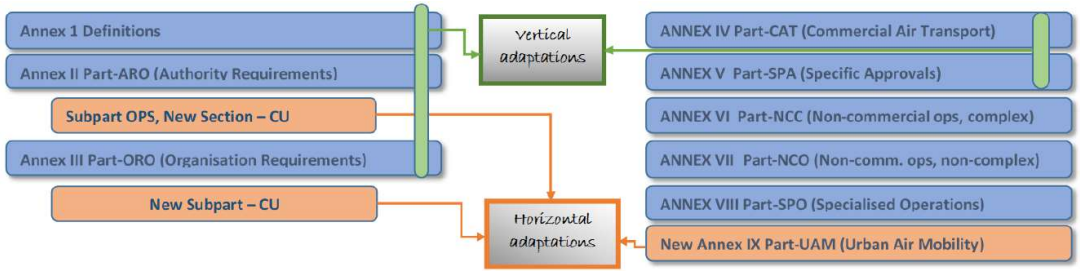


Impact on OPS regulation

Option 1



Option 2



UAM: Plan for Vertiports

- Assist national authorities in establishing a European harmonised approach for Vertiports.
  - Send Request for Information (RFI) to european VTOL manufacturers,
  - Develop non-formal requirements ('Vertiports Manual')
  - Use as baseline existing EASA CS/GM for heliports collocated with aerodromes in the scope of BR, ICAO Annex 14, Vol II – Heliports and inputs received from VTOL manufacturers,
  - Timeline: same as for Certified Category NPA#1 (Q4 2020).