# KOMPSAT-2 COMMERCIAL USER SUPPORT TEAM (KOCUST) - ORGANIZATION AND ITS OPERATIONAL CONCEPTS -

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ABSTRACT   The KOMPSAT-2 was developed by KARI and it was successfully launched from Plesetsk, Russia on 28th July 2006. The Korean government decided the commercialization of the KOMPSAT-2 image data and direct reception services worldwide.   SPOT Image, based in Toulouse (France) was selected by KARI through an international open bidding as a foreign company for the KOMPSAT-2 image promotion over the entire world except the territory of Republic of Korea including the North Korea, the United States of America, UAE, Saudi Arabia, Kuwait, Qatar, Oman, Yemen, Egypt, Iran, Iraq, Jordan, Lebanon, and Syria. KAI (Korea Aerospace Industry Ltd.) is an engaged Korean company for this area.  KARI has responsibility to operate the satellite, data acquisition, archiving for the worldwide commercialization. For the processing and delivery of the KOMPSAT-2 image data to the users of KAI and SPOT Image, KAI has the binding contract with KARI. So KAI has the responsibility for the commercial ground station operation such as user support, data processing, and the data delivery. The KOMPSAT-2 ground station is hosted in KARI, so KARI has developed the concept of KOCUST (KOMPSAT-2 Commercial User Support Team) jointly with KAI to support the data processing and delivery as KOMPSAT-2 developer and satellite operator.  The main purpose of the KOCUST is to support the operational activities to provide the data and service quality to satisfy customers.  KOCUST will be organized by the members of KARI and KAI together. KARI members will mainly take the role of KOCUST coordination, data processing and user support in a public sector.  KAI members are going to take user desk, data validation and delivery et cetera, which are related with users.  This paper describes a summarized concepts of KOCUST like organization, dedicated tasks of each part and work flow of daily operation.

KEY WORDS: KOMPSAT-2, KOCUST, user support, work flow, team organization

## 1. INTRODUCTION

### 1.1 Purposes of KOCUST

The main purposes of KOCUST is to establish an efficient support system for the operation of KOMPSAT-2 IRPE(Image Receiving & Processing System), which is installed in KARI, Daejeon. Through the KOCUST, the KOMPSAT-2 data will be acquired, processed, validated and distributed for the worldwide commercialization. The data needs from the Korean and eventually foreign public sectors will be also satisfied. The most important tasks of KOCUST can be summarized as follows:

1. KOMPSAT-2 data acquisition, processing, distribution for commercial and public purposes
2. efficient manpower management
3. systemized and standardized work flow
4. stabilized data processing and management
5. harmonized user support

### 1.2 Tasks for KOCUST and users

The users of KOCUST consist of three parties; SPOT Image, KAI and public users.
The KOCUST entity is in charge of the whole management of the KOMPSAT-2 system :
• the study of the KOMPSAT-2 programming requests submitted by user

• the KOMPSAT-2 satellite resources global optimization
• the KOMPSAT-2 tasking
• the KOMPSAT-2 images validation
• the KOMPSAT-2 images production
• the information provided to user in the whole process loop
• the KOMPSAT-2 central catalogue functionalities and performances
The users are in charge of :
• interface with its clients requiring KOMPSAT-2 data
• dialogue with the clients, concerning the commercial aspects
• dialogue with KOCUST concerning the technical aspects of the programming requirements
• marketing, pricing and distribution policies

### 1.3 Organization of KOCUST

The KOCUST organization can be divided into two parts. The KOCUST coordination team is in charge of the whole management of KOCUST functions and mainly KARI members will take this position. Another part of KOCUST is operational staff, which will be occupied by KARI and KAI members. The main functions of KOCUST are operation of KOMPSAT-2 IRPE system,

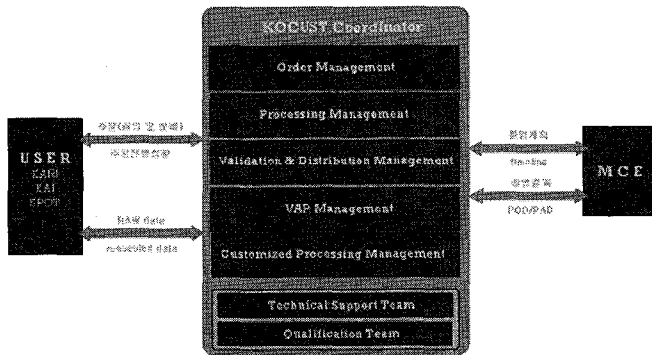provision of commercial services, and operational management work.



Figure 1. Functional Organization of KOCUST.

1. Operation of KOMPSAT-2 IRPE system
   • reception and processing of user's new acquisition order
   • reception and processing of user's production order
   • standard products generation
   • interface with other receiving stations
2. provision of commercial services
   • registration and management of user
   • user support
   • KOMPSAT-2 central catalogue operation
   • data interface between receiving stations
3. operational management
   • management of image data
   • statistic generation and management
4. Technical support
   • calibration/validation
   • technical support for user

## 2. TASKS OF KOCUST

▶ KOCUST Coordination Team
  - Coordination of KOCUST
  - Support to SISA and KAI
  - Documentation management
  - Operational monitoring of KOCUST
▶ Order Management
  - Role of user desk
    • reception of new tasking or production orders from SISA, KAI and public sectors
    • user interface regarding orders
    • monitoring of order progress
    • statistic generation (orders, distributions etc )
  - Acquisition scheduling
    • feasibility study for each new tasking order
    • imaging proposal generation
    • interface with MCE
▶ Customized Processing Management
  - Special user required processing
▶ Processing Management
  - Standard Products Generation

  - Central catalogue operation and update
  - Image data backup
  - Image data database management
  - Processing of data provided by other stations
▶ Distribution Management
  - Image validation before delivery
  - Product packaging
  - Data distribution after validation
▶ VAP Management
  - Value-Added Product generation
  - Operate and maintain the homepage
  - Promotion material generation
▶ Technical Support Team
  - Task Force Team
  - Technical support for KOMPSAT-2 direct reception
  - System maintenance
▶ Qualification Team
  - Calibration/Validation
  - Image processing algorithm development
  - Image enhancement technique research

## 3. KOCUST OPERATIONAL SCENARIO

▶ Order Management
  • Phase 1
    - Gather all SPOT, KAI, KARI User Request everyday in the morning
    - Register the requests (assign the KARI reference number)
    - Make a User Request Progress Report for each order
  For each request,
    - Identify User Requests, if required
    - Definition of User Requests, if required
    - If requested data already exist, go to Phase 2
    - If requested data do not exist, go to Phase 3
  • Phase 2
    - Write a Production Order
    - Write the Production Order Number in User Request Progress Report
    - Send Production Order and User Request Progress Report to Processing Management
  • Phase 3
    - Make the Feasibilty Study(1) (Method: TBD)
    - Write an Imaging Proposal (ANNEX FORM_IP)
    - Send it to KAI, SPOT for User Confirmation
    - Make an Image Collection Plan (ANNEX FORM_AP)
    - Send it to MCE for Final Satellite Tasking Plan
    - Modify the K2 Imaging Request Progress (ANNEX FORM_IRPR)
    - If the proposed plan rejected by MCE, go to (1)
    - If the proposed plan confirmed by MCE, notify it to KAI, SPOT
    - Write the Imaging Order Number in User Request Progress Report

- Attach Imaging Order to User Request Progress Report
- Check repeatedly if required image acquired
- If required image acquired, go to Phase 2

▶ Processing Management
  - Accept all Production Orders from Order Management
  - Process the requested data
  - Generate Media or upload into FTP
  - Modify and check the User Request Progress Report
  - Send the User Request Progress Report to Distribution Management
For every new acquisition,
  - Update Catalogue
  - Send Catalogue Update Info to Central Catalogue
  - Data Backup
For raw data transferred from DRS quarterly(TBD) ,
  - Data ingestion
  - Data processing
  - Catalogue update (or for data archive etc)
  - Data Backup
For raw data transferred from Polar Station daily(TBD) ,
  - Data ingestion
  - Data processing
  - Catalogue update (ot for data archive etc)
  - Data Backup
  - Send Catalogue Update Info to Central Catalogue

▶ Customized Processing Management
  - Do the customized processing
  - Modify and check the User Request Progress Report
  - Send the User Request Progress Report to Distribution Management

▶ Distribution Management
  - Verify and check the appropriateness of generated image
  - If the data do not comply with the user's request, Modify and check the User Request Progress Report and send it to Order Management
  - If the data comply with the user's request, pack and send the data
  - Update the distribution status
  - Update the User Request Progress Report and send it to KOCUST Coordination Team

▶ KOCUST Coordination Team
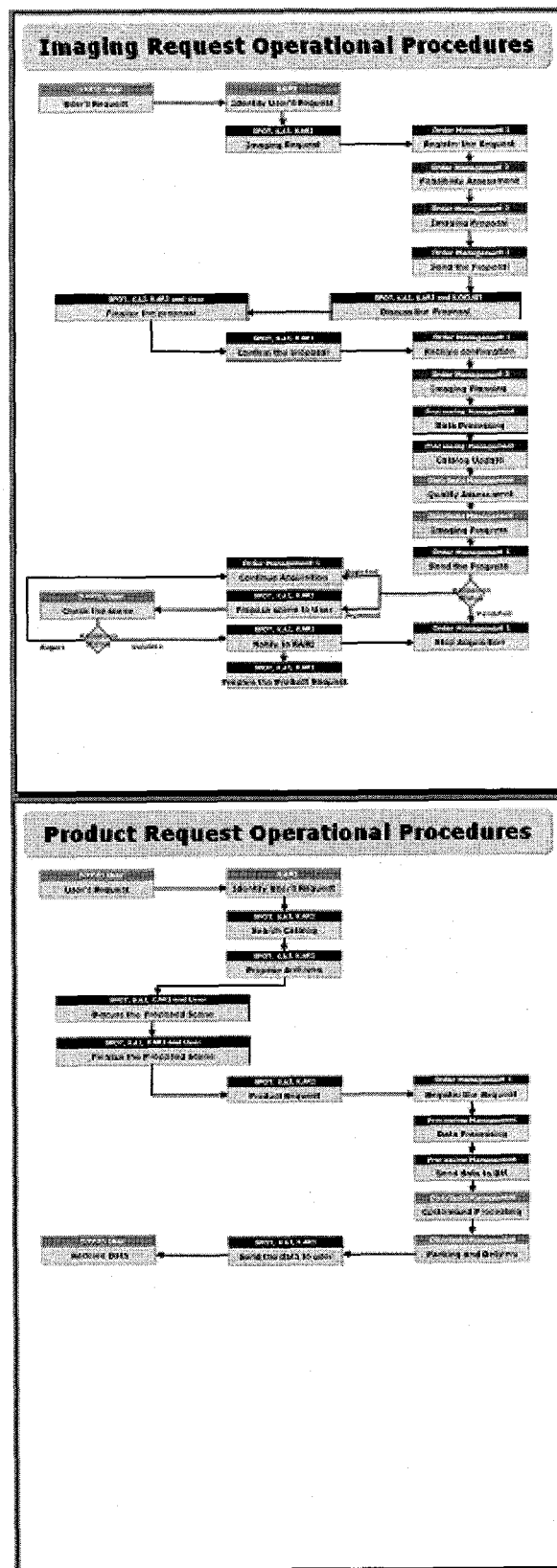  - Close the user request and approve it



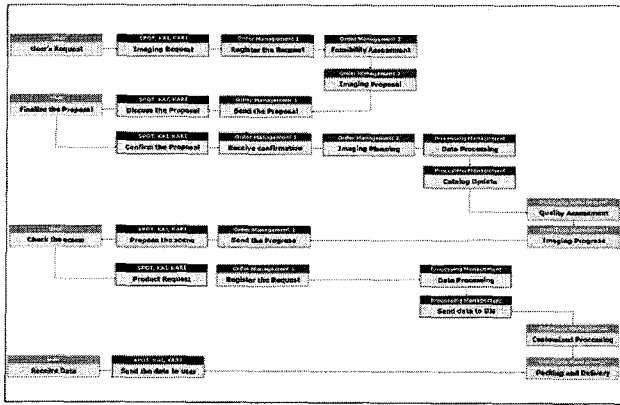Figure 2.  KOCUST Working Procedures
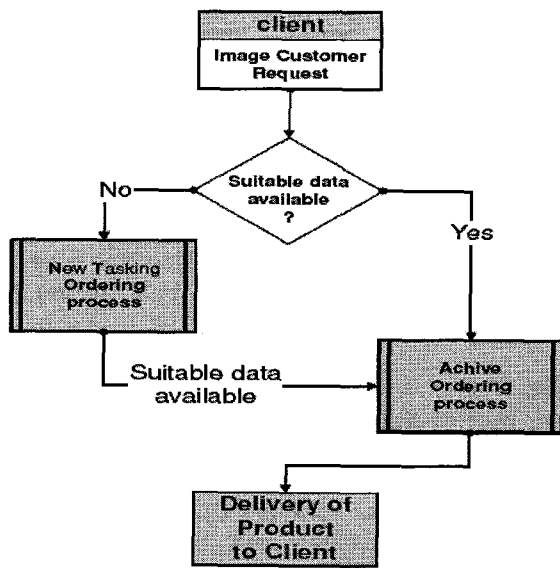
Figure 3. KOCUST Operational Process



Figure 4. Two KOMPSAT-2 Data Ordering

Process

## 4. CONCLUSION

As shown in Figure 4. the users of KOMPSAT-2 images will give their order in two ways. The Archive Order for the archives images and the New Tasking Order for new acquisition will be gathered through SPOT Image and KAI. These orders should be handled and processed efficiently to satisfy the user. Korean government decided to commercialize the KOMPSAT-2 data, so not only the data quality but also the operational procedures should be qualified to international standard for market. To prepare this operational qualification, and to satisfy the user needs KARI has decided to make a virtual unit for the support of commercial activities by SPOT Image and KAI. In this paper the rough description of KOCUST organization and functionalities were described

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