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CROSS-SUPPORT CONCEPTS FOR THE 1990's: INPE/BRAZIL

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14. Abstract/Notes

Within the effort to develop its satellite mission, many items of interest for cross-support of Space Data Systems will probably be considered by INPE. These possibilities are certainly conditioned to cronogram and economic limitations to be imposed to INPE satellite mission and other related missions, considering that specifications for the satellite and other related missions of INPE are still under way. It is expected that, timely, well defined cross-support concepts will influence technical solutions, whenever they are considered of interest for the organization, as well.

15. Remarks *Paper presented in Session 3 of the first meeting of the Consultative Committee on Space Data Systems, Oct. 5, 1982 - Toulouse, France (Presented by: Eduardo Whitaker Bergamini).*

SUMÁRIO

Como parte do esforço para desenvolver sua missão satélite, muitos itens de interesse para apoio cruzado de Sistemas Espaciais de Dados serão provavelmente considerados pelo INPE. Estas possibilidades estão certamente condicionadas às limitações de cronograma e econômicas a serem impostas à missão satélite do INPE e a outras missões a ela relacionadas, considerando que as especificações para o satélite e outras missões relacionadas, do INPE, estão ainda em andamento. Espera-se que conceitos cruzados de apoio, oportunamente definidos, venham a influenciar soluções técnicas, sempre que elas venham a ser, da mesma forma, consideradas de interesse da organização.

. PROGRAMMED BRAZILIAN SATELLITE MISSIONS:

. 1 - DATA COLLECTION MISSION

. 2 - EARTH OBSERVATION MISSION

. PRESENT STATUS:

. TECHNICAL SPECIFICATIONS FOR THE "DATA COLLECTION MISSION" ARE UNDER WAY AND EXPECTED TO BE COMPLETED BY DECEMBER 1982, FOR THE:

. ON BOARD SEGMENT

. GROUND SEGMENT

. INPE'S PRIVATE SPACE DATA SYSTEM NETWORK - REDACE SYSTEM - IS EXPECTED TO START ITS OPERATIONS BY 1987, IN SUPPORT TO THE TWO PROGRAMMED SATELLITE MISSIONS.

. INPE'S REDACE SYSTEM WILL PROBABLY HAVE A PROTOCOL IMPLEMENTED UP TO THE NETWORK LEVEL WITH STANDARDIZED ACCESS PROCEDURES FOR HOST SYSTEMS.

. A TRANSPORT (SYMMETRIC TO SOME EXTENT, FOR TT&C DATA COMMUNICATION) LAYER IS ALSO BEING PLANNED FOR END-TO-END USER/PROCESS DATA COMMUNICATIONS. IN THIS SENSE, A HOST OF THE REDACE SYSTEM COULD BE ACCESSED BY OR CONTAIN PROCESSES WHICH COMMUNICATE WITH OTHERS THROUGH THE TRANSPORT LAYER OF THE PROTOCOL.

- EXPECTED INTERFACES OF THE REDACE SYSTEM WITH OTHER NETWORKS (PRELIMINARY):

  - ESA
  - NASA

- SPACE-TO-GROUND COMPATIBILITY WITH THE REDACE SYSTEM IS EXPECTED TO BE ACHIEVED IF THE SPACE SEGMENT BEHAVES OR IS INTERFACED AS A "HOST" SYSTEM. THE SAME CONCEPT IS EXPECTED TO BE APPLIED IN INTERNETWORK IMPLEMENTATIONS WITH THE REDACE SYSTEM.

- REAL-TIME OR NEAR REAL-TIME DATA COMMUNICATIONS, THROUGH INTERNETWORK IMPLEMENTATIONS, ARE EXPECTED FOR (AT LEAST) ORBITAL DYNAMICS CONTROL PROCESSES.

. NON-REAL-TIME INTERNETWORK DATA COMMUNICATIONS INTERFACE COULD BE CONSIDERED BY MEANS OF A X.25/CCITT BASED PROTOCOL.

. THE PUBLIC PACKET SWITCHING DATA NETWORK OF BRAZIL IS EXPECTED TO START ITS OPERATIONS BY 1983.

. THE PUBLIC PACKET SWITCHING DATA NETWORK OF BRAZIL WILL HAVE ITS PROTOCOL BASED ON THE X.25/CCITT PROTOCOL. THIS NETWORK WILL MAKE PART OF THE "TELEBRÁS SYSTEM" AND WILL BE OPERATED BY THE STATE OWNED "EMBRATEL" COMPANY.

. INPE IS DEVELOPING A PRIVATE "DATA COLLECTION AND DISSEMINATION NETWORK", NAMED "RECODI SYSTEM", WHOSE PURPOSE IS TO OFFER STANDARDIZED SERVICES AMONG THE DATA BASES AND USERS TO BE CONNECTED TO IT.

. THE "RECODI SYSTEM" WILL USE A PROTOCOL (AT LEAST) BASED ON THE "TELEBRÁS SYSTEM" PACKET SWITCHING NETWORK, TO IMPLEMENT ITS "LOW VOLUME" DATA COMMUNICATION CHANNELS.

. THE "RECODI SYSTEM" IS EXPECTED TO ENTER IN OPERATION BY 1987. "RECODI" IS BEING CONCEIVED AS AN AUTONOMOUS SYSTEM WHOSE "LOW VOLUME" DATA COMMUNICATION CHANNELS WILL PROBABLY BE COMPATIBLE WITH THE "TELEBRÁS SYSTEM" PACKET SWITCHING NETWORK.

. INPE WILL CONSIDER CROSS-SUPPORT INTERFACE CONCEPTS FOR THE 1980's.

. IT IS HOPED THAT INTERFACES WHICH WILL HAVE TO BE IMPLEMENTED BETWEEN INPE AND OTHER SPACE AGENCIES, IN SUPPORT TO ITS PRESENT SATELLITE MISSIONS WILL CONTRIBUTE FOR CROSS-SUPPORT IN THE 1990's.

. POSSIBLE ITEMS TO BE CONSIDERED BY INPE FOR CROSS-SUPPORT:

- . END-TO-END DATA SYSTEMS
- . REDACE SYSTEM (DATA SYSTEM)
- . TIME CODING (DATA SYSTEM)
- . GROUND STATIONS (DATA SYSTEMS):
  - . RADIO LINKS (RF)
  - . RANGING CAPABILITIES
  - . TRACKING CAPABILITIES
- . RECODI SYSTEM (PRODUCT/SERVICES)
- . MISSION OPERATION CENTERS (PRODUCT/SERVICES)
- . TT&C DATA STRUCTURES
- . ORBITAL DATA STRUCTURE.