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ACTIVITIES (D5)

Knowledge management in the digital transformation (2)

Author: Dr. Lucie Campagnolo
MEDES - IMPS, France, lucie.campagnolo@medes.fr

Mr. Lionel Baize
Centre National d'Etudes Spatiales (CNES), France, lionel.baize@cnes.fr
Prof. Alain Luciani
University Paris Est Creteil, France, alain.luciani@aphp.fr

IMAGE PROCESSING FROM SPACE TO EARTH FOR THE BENEFIT OF CITIZEN'S HEALTH

Abstract

The Centre National d'Etudes Spatiales (CNES) is willing to open up towards non-space ecosystems to foster inter-disciplinary innovation for the benefit of the economical, societal and environmental development. In particular, CNES is promoting "Connect, by CNES" initiative to fuel disruptive innovation and drive economic development through the use of space solutions, the challenge being to integrate and federate new players, show them the benefits of space solutions to ultimately bring them into the economy of terrestrial activities. In particular, "Connect, by CNES" initiative aims at partnering with leading actors from non-space domain such as environment, healthcare or mobility eco-systems. In this context, CNES and the French Society of Radiology (SFR) have initiated a collaboration to promote co-innovation, enable capacity building and ultimately solve challenges that are common to both sectors.

The French Society of Radiology (SFR), national scientific society binding all French radiologists, together with its 11000 members, aims at promoting education, research and innovation in the field of radiology and medical imaging. Radiology is not only therapeutic and diagnostic, it also covers: advanced imaging treatment algorithms, image texture analysis, and artificial intelligence. The associated toolbox aims at providing key prognostic tools, eventually allowing more preventive, more predictive and more individualized practice of medicine. Such technological approach is very similar to the one that can be found in satellite images analysis and post processing. Both domains encounter common challenges, such as the need to rapidly process a large amount of data, to detect, extract and analyze weak signals and to convert the information into operational product for the user.

This paper aims at describing the knowledge exchanges between CNES and SFR in the field of image processing approach and technology, wherever they have been acquired by an earth observation satellite engineer or a physician. The paper will first focus on the common challenges to solve and then illustrate the cross-fertilization between both fields of activities with the benefits linked to the latest technical progress. It will also highlight the limit of such transdisciplinary approach. Finally, the benefits of knowledge sharing between earth observation and radiology will be discussed. The objective of such program is to pave the way for a truly collaborative approach, where each partner pools its skills, expertise, network and resources to accelerate scientific and technological advances of both actors for the benefit of the citizen