Maynooth University Opportunity

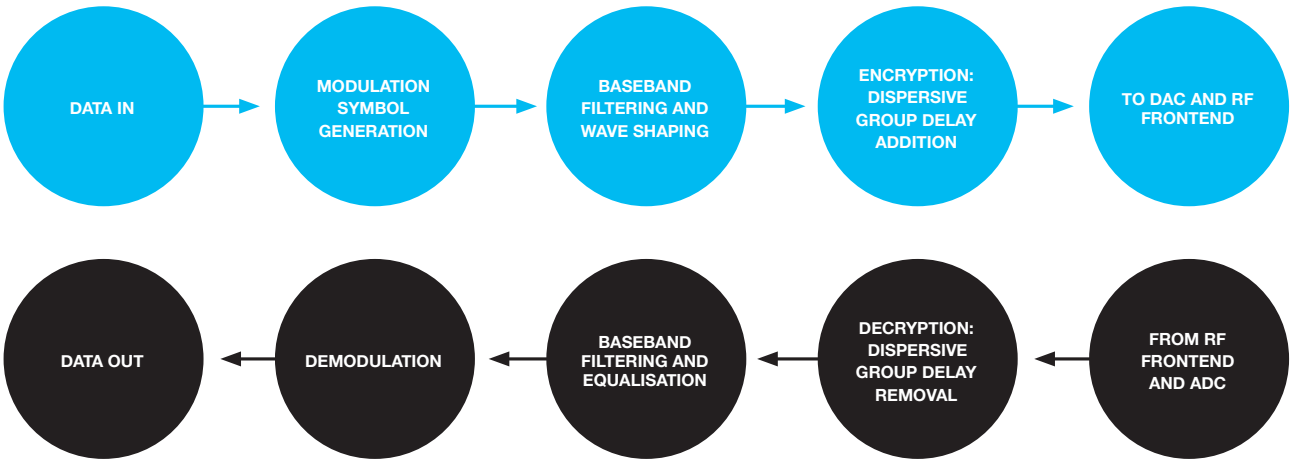
Physical Layer Encryption Scheme to Counter Eavesdroppers in Wireless Communications

Unmet need:

Modern wireless communication systems employ wideband modulated RF carriers to communicate the data of interest between the nodes in the network. The security of communications has been conventionally addressed in the data link layers through scrambling and data encryption schemes. These schemes however do not secure the air interface parameters such as modulation scheme and leave them susceptible to eavesdropping and interception by man-in-the-middle platforms.

Our Solution:

Physical layer security schemes such as directional modulation, DFT S OFDM and RF fingerprinting have been proposed. We have developed a novel physical layer encryption scheme based on the spectral profile of the intended modulated signal through deliberately introduced constellation distortion to conceal the modulation scheme. The scheme uses a dispersive filter in the modulator with unique group delay profiles unknown to the eavesdropper. The appropriate inverse filter is employed in the authorized receivers to recover the original modulated basebands for demodulation.



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Development Stage:
Stage3: Prototype.

What is sought:
We are looking to attract potential licences to productise the technology.

Intellectual Property:
Patent application filed (WO2020079284A1) and in progress. Details can be found here: https://worldwide.espacenet.com/publicationDetails/biblio?FT=D&date=20200423&DB=EPODOC&locale=en_EP&CC=WO&NR=2020079284A1&KC=A1&ND=5

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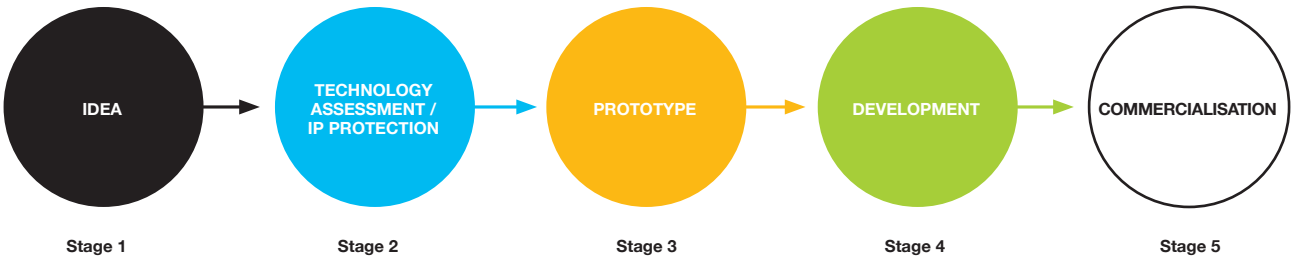
Development Stages of Opportunities



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