

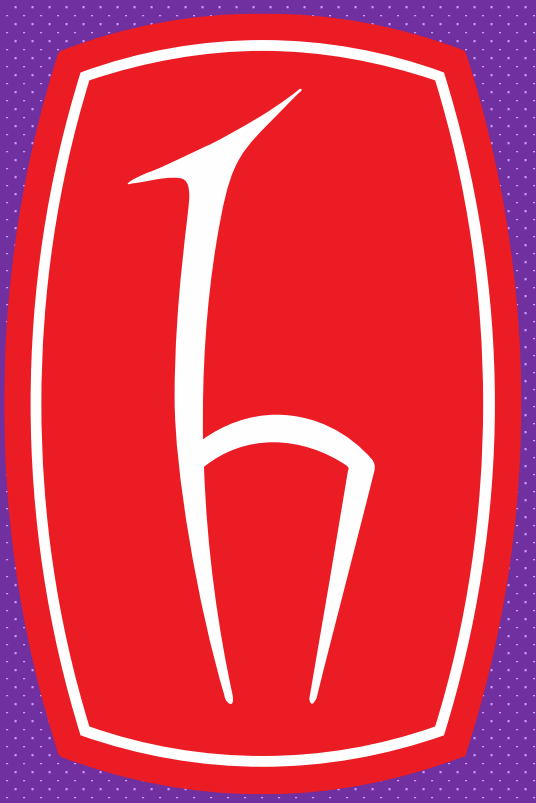
# ANTENNA DESIGN on FLEXIBLE SUBSTRATES

Müge Bengisu ERGÜN

Supervisor

Prof. Dr. Birsen SAKA TANATAR

Electrical and Electronics Engineering, Hacettepe University



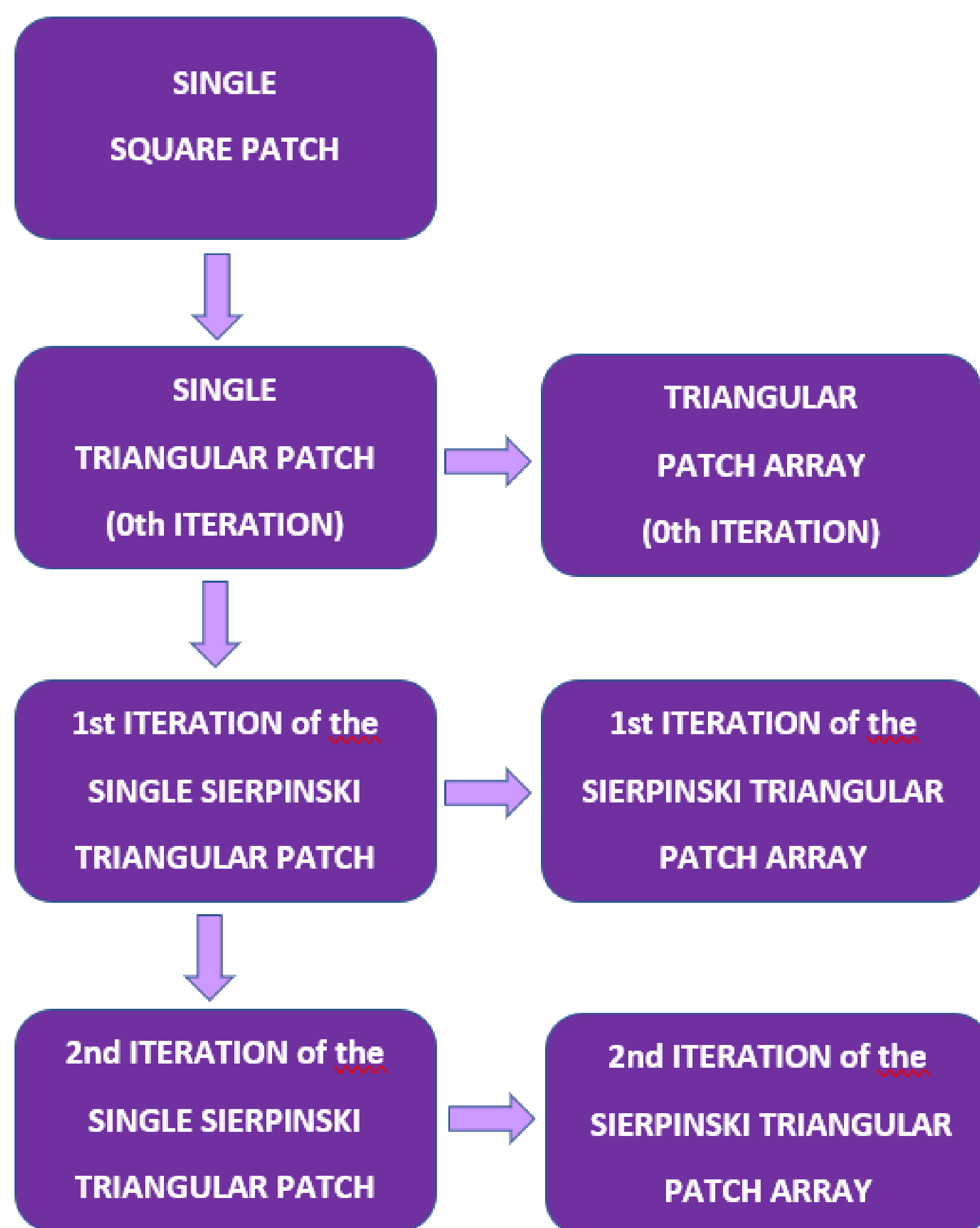
## INTRODUCTION

- ❖ With 5G technology, which is the basis of wireless communication, it has become important to consider the applicability of this technology.
- ❖ Therefore, flexible electronics have gained importance as they are more ergonomic, lighter and inexpensive.
- ❖ The fractal theory balances both the miniaturization and antenna resonance with effective bandwidth utility.

## SPECIFICATONS AND DESIGN REQUIREMENTS

- ❖ Applicability to flexible substrates
- ❖ Operating at 2.4 GHz
- ❖ Low reflection at different bending cases
- ❖ Cost Effective
- ❖ Improved fractal iterations
- ❖ Improved array designs

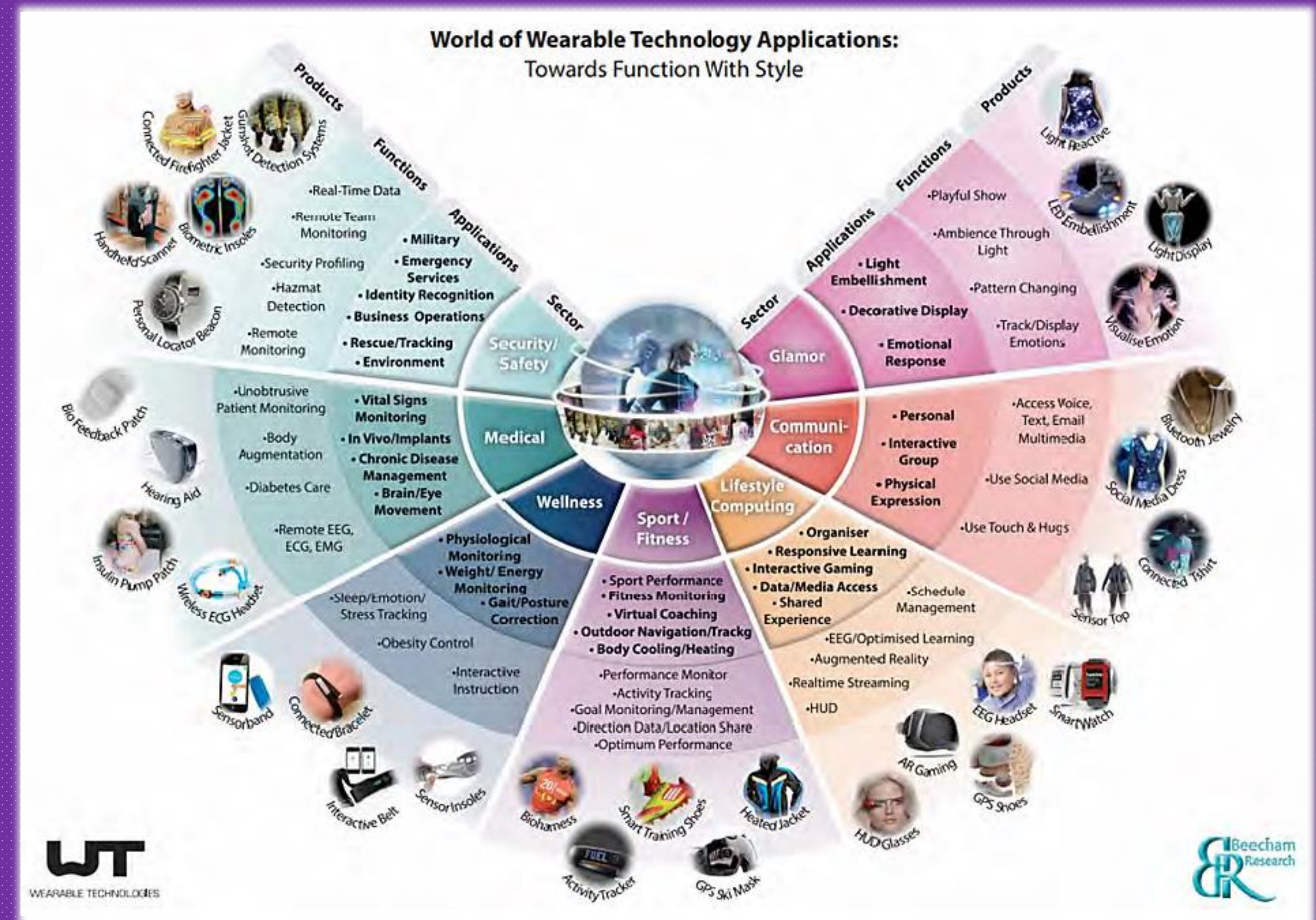
## SOLUTION METHODOLOGY



## REFERENCES

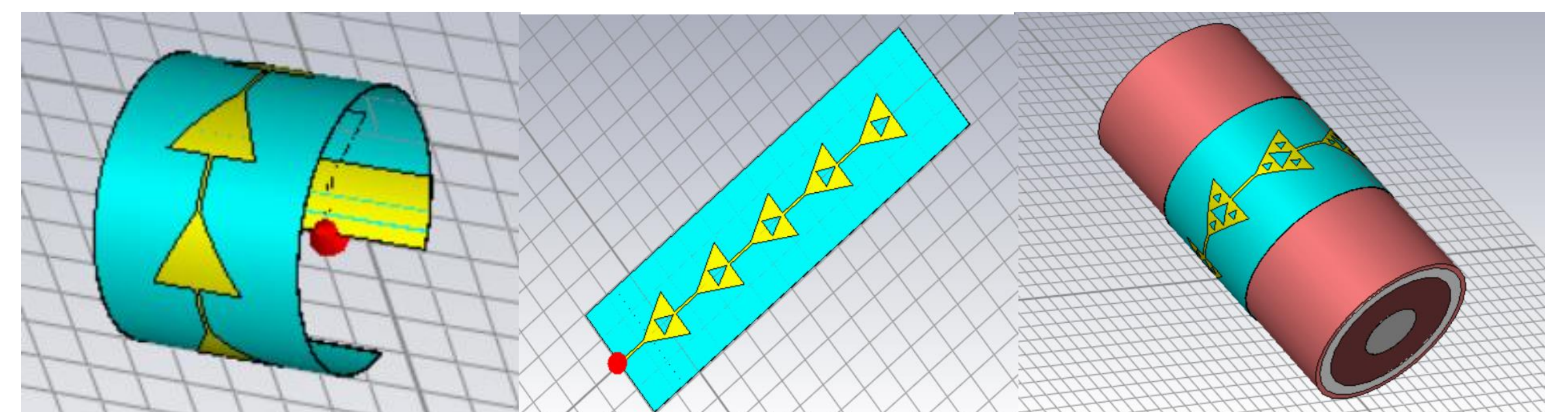
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## APPLICATION AREAS



## RESULTS AND DISCUSSION

- ❖ Antenna dimensions have been optimized to provide proper performance from the unbended case to the on the human arm, and the almost best average sizes has been presented.



DESIGN	CASE	S11 (dB)	VSWR	Z11 (Ohm)	REALIZED GAIN (dBi)
1ST ITERATION	UNBENDED	10.32	1.88	92.81	1.576
	BENDED	22.92	1.15	50.31	3.749
	BENDED ON ARM	11.62	1.71	60.89	-14.47
2nd ITERATION	UNBENDED	19.19	1.25	48.00	1.933
	BENDED	16.74	1.34	46.76	3.613
	BENDED ON ARM	11.84	1.69	69.02	-14.49

- ❖ As the number of iterations increases, it has been observed that the antenna parameters of the flexible antenna are less affected by bending ratio according to its unbended case.
- ❖ Since the tissues in the human body have higher relative permittivity, it was observed that the antenna efficiency deteriorated in the results on the human arm.

## ACKNOWLEDGEMENTS

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