Glossary of Terms:

APS: Advanced Predictive System: software tool that provides quality control guidelines through the numerical analysis of the injection process data.

BLE: Bluetooth Low Energy: Wireless network technology with a reduced cost and power consumption compared to traditional alternatives.

CMS: Content Management System: centralised information server that captures process and predictive data for future analysis.

CPS: Cyber Physical System: is a computer controlled mechanism constituted by the close interaction of physical and software components.

DAS: Data Acquisition System:

EU: European Union

HVM: High Value Manufacturing: inclusive manufacturing approach where all areas of the supply chain have added value, contributing to the social, environmental, and financial sustainability of a company.

INFLATE: Incremental Fault-Tolerant Transmission Scheme: a protocol which transforms the corrected signals into information units, sends the most informative units first and the rest of the units incrementally to improve the quality of the information until the whole data is delivered

IoT: Internet of Things: refers to a network of physical devices that communicated via a combination of sensors, electronics and network connectivity to collect and exchange data.

LBCD: Location Based Content Delivery: delivers useful machine information and production statistics to the user's portable device via a downloadable application.

LCA: Life Cycle Assessment: technique to assess the environmental impacts associated with a product, process or material.

PCS: Production Control System: monitors the production process, offers full traceability of the production, predicts parts quality, identifies defect types and triggers early and predictive alarms to correct the production process

PREVIEW: PREdicti**V**e system to recommend **I**njection mould s**E**tup with process optimisation in **W**ireless sensor networks.

SPS: Setup Predictive System: provides recommendations and alarms to tune key parameters of the production process

WCN: Wireless Communication Nodes: hardware components that transmit the information from the DAS and APS through the use of novel wireless communication protocols.

WMN: Wireless Multi-hop Networks: Using other wireless nodes (antennas) as transmission devices to bridge distances when a specific wireless node is further away from the central server

Terminology:

Geofence: virtual geographic boundary

Hardware: Physical components of a computer or electronic systems/devices

In-network prioritisation: preferential transmission of sensor information containing the most global content to ensure timely delivery and speed data analysis process

Location determination module: responsible for determining the user's position relative to his/her proximity to an injection machine or other determined physical zone

Machine data: screw position, machine pressure and cycle time

Mobile app: a physical interface between a range of functionalities of the PREVIEW system and the user. It is compatible with a wide range of smartphones and tablets

Mould data: cavity pressure and temperature

Mould DNA: A machine learning model generated for a specific mould-machine configuration which contain data of the cavity temperature and pressure, machine configurations and parameters and parts quality

Polymer: a substance which has a molecular structure built up chiefly or completely from a large number of similar units bonded together, e.g. many synthetic organic materials used as plastics and resins

Process parameters: holding pressure, switch over position, back pressure, injection speed and position are acquired regularly at 100Hz frequency by the DAS during injection cycle

Productivity: A measure of the efficiency of a person, machine, factory, system, etc., in converting inputs into useful outputs

Robustness: The ability of a computer system to cope with errors during execution

Smart manufacturing: Broad category of manufacturing with the goal of optimising concept generation, production and product transaction

Software: Programs, operating software and applications used by a computer

Traceability: the capability to trace something, in some cases it is interpreted as the ability to verify the history, location, or application of an item by means of documented recorded identification