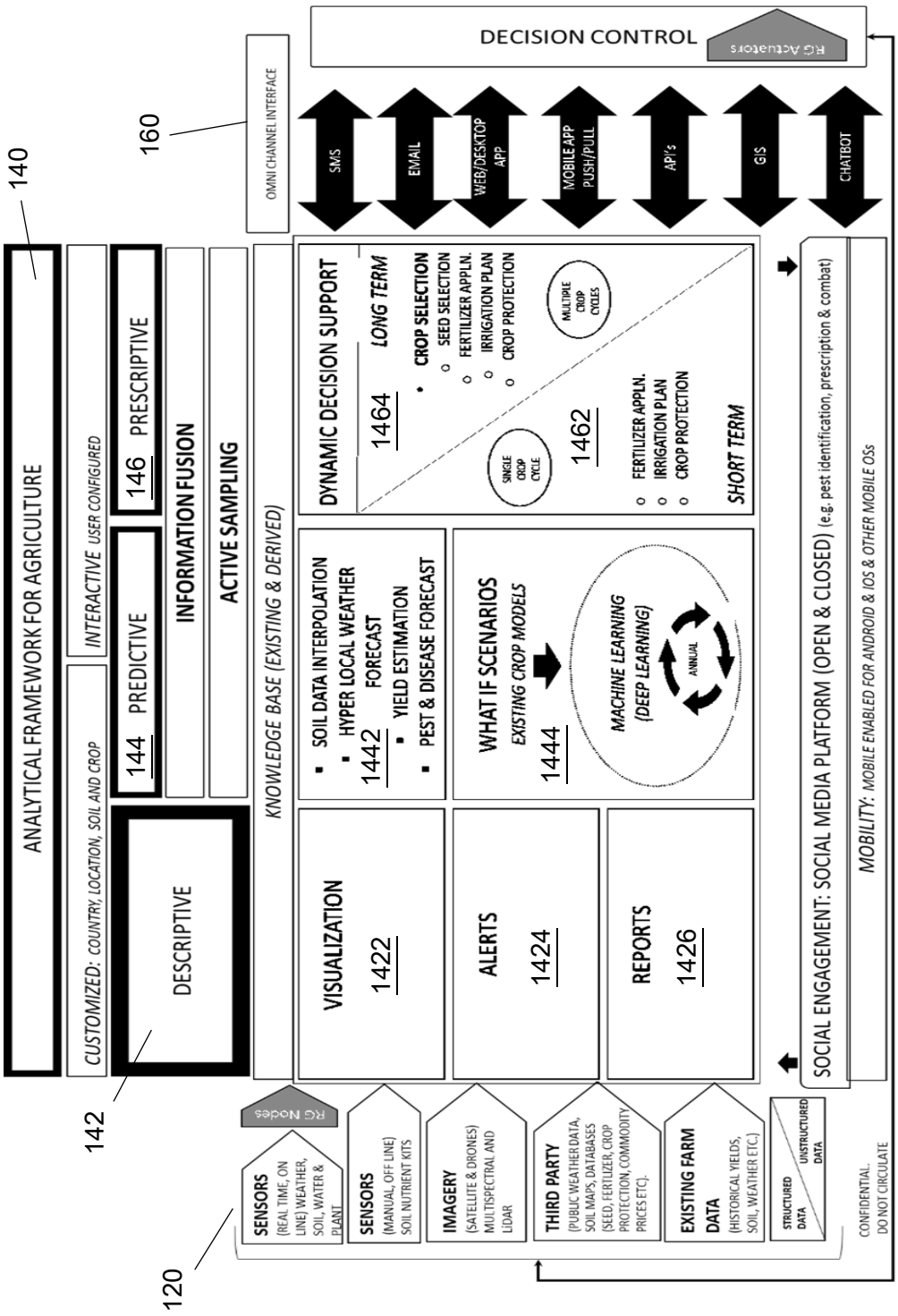

140
160
142
120
ANALYTICAL FRAMEWORK FOR AGRICULTURE
CUSTOMIZED: COUNTRY, LOCATION, SOIL AND CROP
INTERACTIVE USER CONFIGURED
DESCRIPTIVE
144 PREDICTIVE
146 PRESCRIPTIVE
INFORMATION FUSION
ACTIVE SAMPLING
KNOWLEDGE BASE (EXISTING & DERIVED)
OMNI CHANNEL INTERFACE
DECISION CONTROL
RG Actuators
SMS
EMAIL
WEB/DESKTOP APP
MOBILE APP PUSH/PULL
API's
GIS
CHATBOT
VISUALIZATION 1422
ALERTS 1424
REPORTS 1426
SOIL DATA INTERPOLATION
HYPER LOCAL WEATHER FORECAST
YIELD ESTIMATION
PEST & DISEASE FORECAST
1442
WHAT IF SCENARIOS
EXISTING CROP MODELS
1444
MACHINE LEARNING (DEEP LEARNING)
ANNUAL
DYNAMIC DECISION SUPPORT
1464 LONG TERM
CROP SELECTION
SEED SELECTION
FERTILIZER APPLN.
IRRIGATION PLAN
CROP PROTECTION
SINGLE CROP CYCLE
MULTIPLE CROP CYCLES
1462
FERTILIZER APPLN.
IRRIGATION PLAN
CROP PROTECTION
SHORT TERM
SOCIAL ENGAGEMENT: SOCIAL MEDIA PLATFORM (OPEN & CLOSED) (e.g. pest identification, prescription & combat)
MOBILITY: MOBILE ENABLED FOR ANDROID & IOS & OTHER MOBILE OSs
RG Nodes
SENSORS (REAL TIME, ON LINE) WEATHER, SOIL, WATER & PLANT
SENSORS (MANUAL, OFF LINE) SOIL NUTRIENT KITS
IMAGERY (SATELLITE & DRONES) MULTISPECTRAL AND LIDAR
THIRD PARTY (PUBLIC WEATHER DATA, SOIL MAPS, DATABASES (SEED, FERTILIZER, CROP PROTECTION, COMMODITY PRICES ETC).
EXISTING FARM DATA (HISTORICAL YIELDS, SOIL, WEATHER ETC.)
STRUCTURED DATA
UNSTRUCTURED DATA
CONFIDENTIAL. DO NOT CIRCULATE

Fig. 1

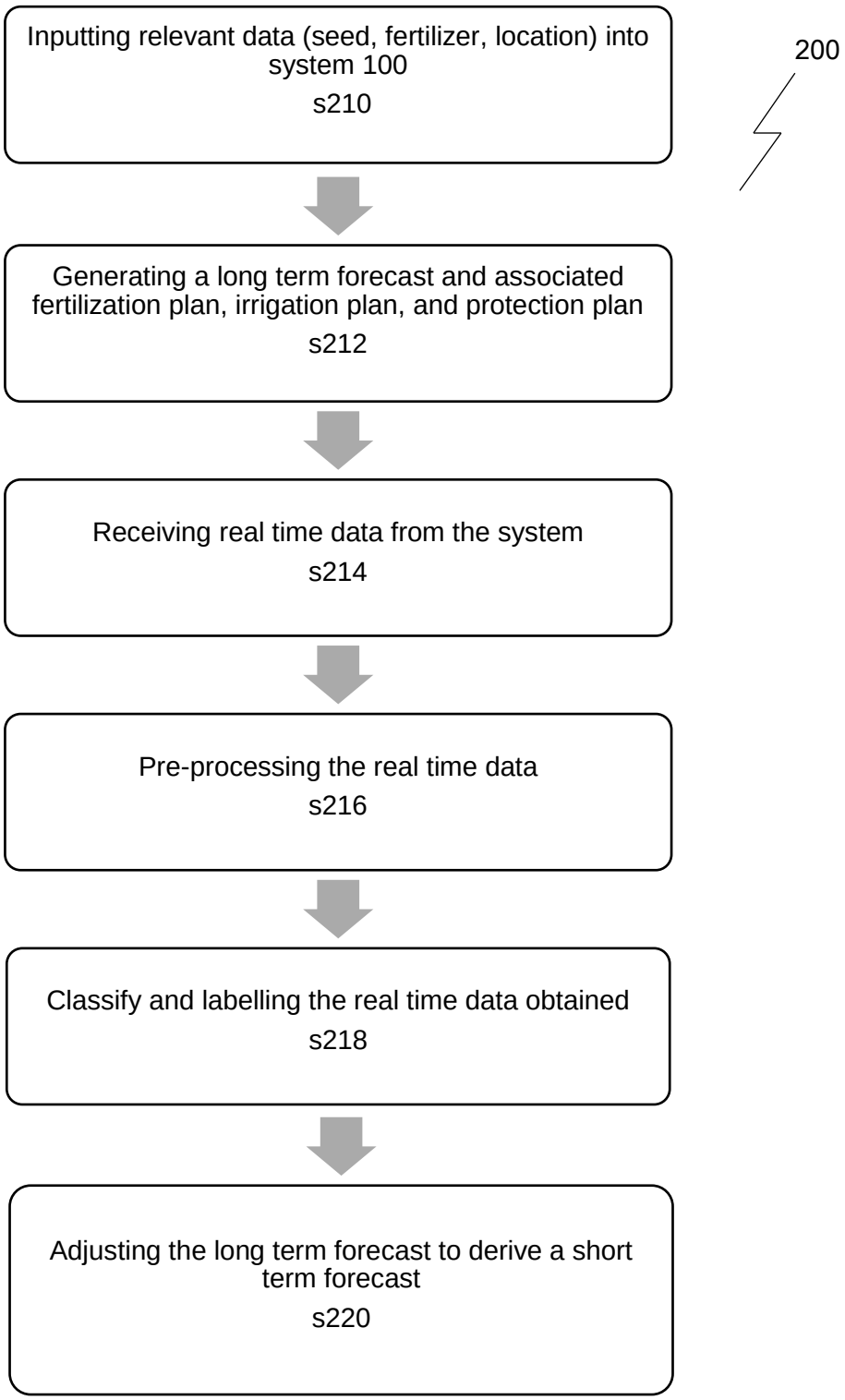

Inputting relevant data (seed, fertilizer, location) into system 100
s210
200
Generating a long term forecast and associated fertilization plan, irrigation plan, and protection plan
s212
Receiving real time data from the system
s214
Pre-processing the real time data
s216
Classify and labelling the real time data obtained
s218
Adjusting the long term forecast to derive a short term forecast
s220

Fig. 2

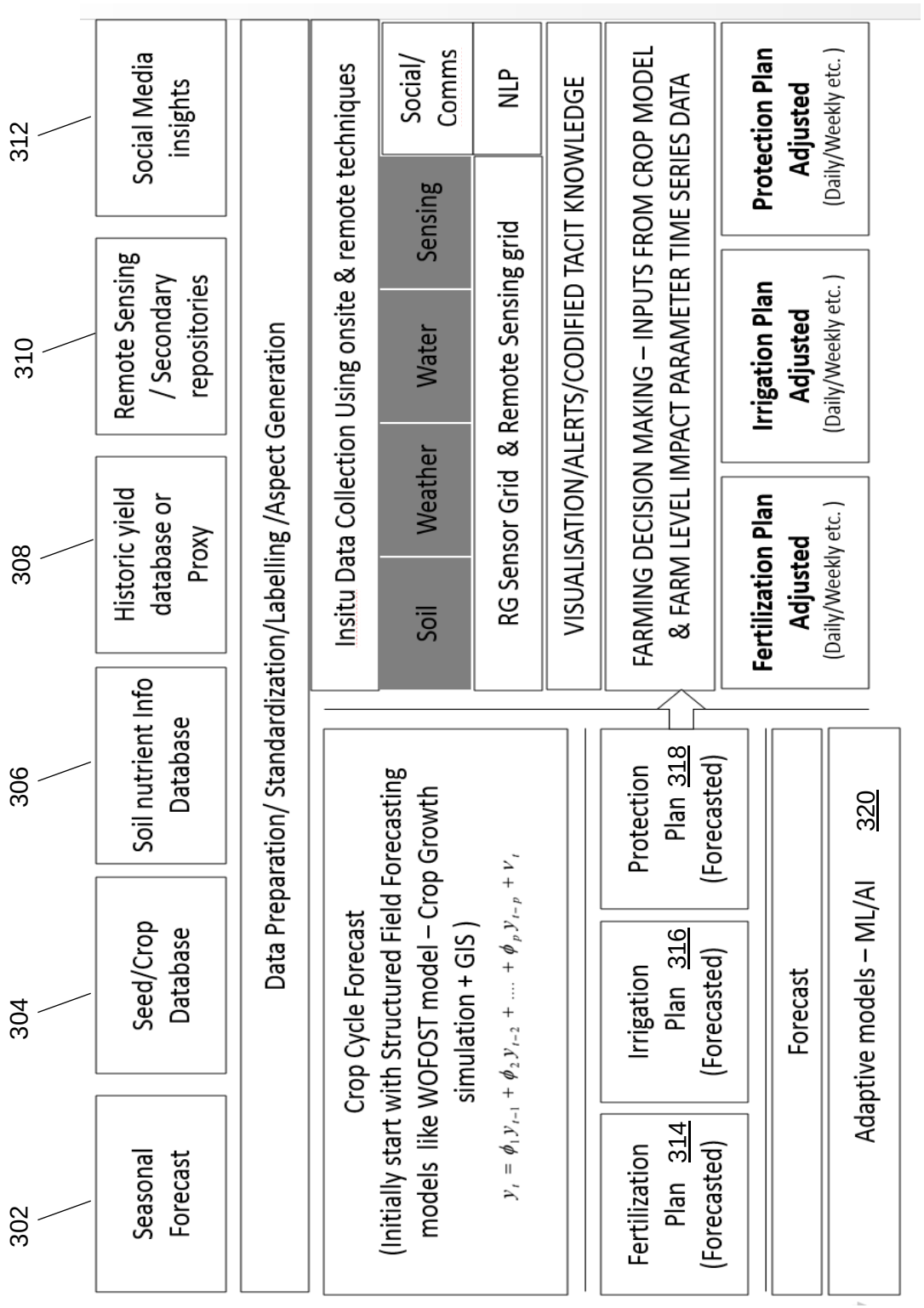

302
Seasonal Forecast
304
Seed/Crop Database
306
Soil nutrient Info Database
308
Historic yield database or Proxy
310
Remote Sensing / Secondary repositories
312
Social Media insights
Data Preparation/ Standardization/Labelling /Aspect Generation
Crop Cycle Forecast
(Initially start with Structured Field Forecasting models like WOFOST model – Crop Growth simulation + GIS)
$y_t = \phi_1 y_{t-1} + \phi_2 y_{t-2} + \ldots + \phi_p y_{t-p} + v_t$
Insitu Data Collection Using onsite & remote techniques
Soil
Weather
Water
Sensing
RG Sensor Grid & Remote Sensing grid
Social/ Comms
NLP
VISUALISATION/ALERTS/CODIFIED TACIT KNOWLEDGE
FARMING DECISION MAKING – INPUTS FROM CROP MODEL & FARM LEVEL IMPACT PARAMETER TIME SERIES DATA
Fertilization Plan 314 (Forecasted)
Irrigation Plan 316 (Forecasted)
Protection Plan 318 (Forecasted)
Forecast
Adaptive models – ML/AI 320
Fertilization Plan Adjusted (Daily/Weekly etc.)
Irrigation Plan Adjusted (Daily/Weekly etc.)
Protection Plan Adjusted (Daily/Weekly etc.)

Fig. 3