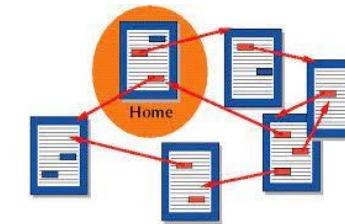


Modelling the World

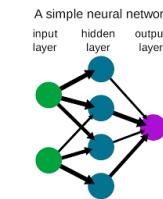
Antonio Camara
NOVA SST

Descriptions of problems (including words, images and numbers) led to:

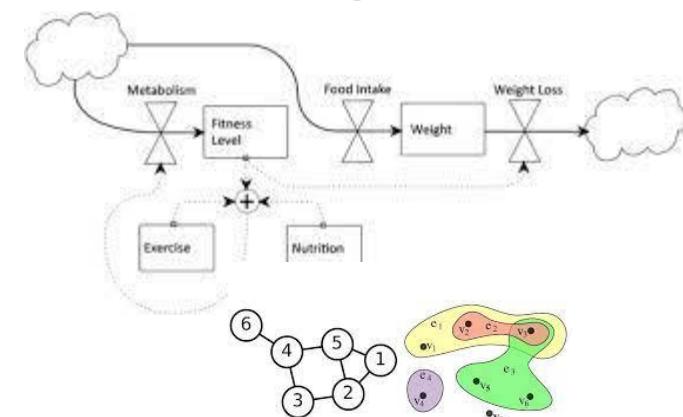
Hypertext and the World Wide Web (that can be represented in graph form) (Vannevar Bush, Ted Nelson and Tim Berners Lee)



Neural Networks (McCullough and Pitts)



Causal Diagrams with Systems Dynamics (and other simulation) Models (Jay Forrester)



Graphs and Hypergraphs (Claude Berge)

SMART TAGS IN USE

USE CASE ①

GEOGRAPHICALLY DISTRIBUTED THROUGHOUT A TERRITORY

Smart tags are fixed to GPS coordinates. Flexible usage including identification of restaurants and stores, or providing tourist information about places and monuments.



USE CASE ②

RELATIVE TO A STORE SHELF

Smart tags are assigned positions relative to a store shelf. Since the tags also know their location relative to one another, they can be used to identify where a user is in the store and orient them to other products they are looking for.



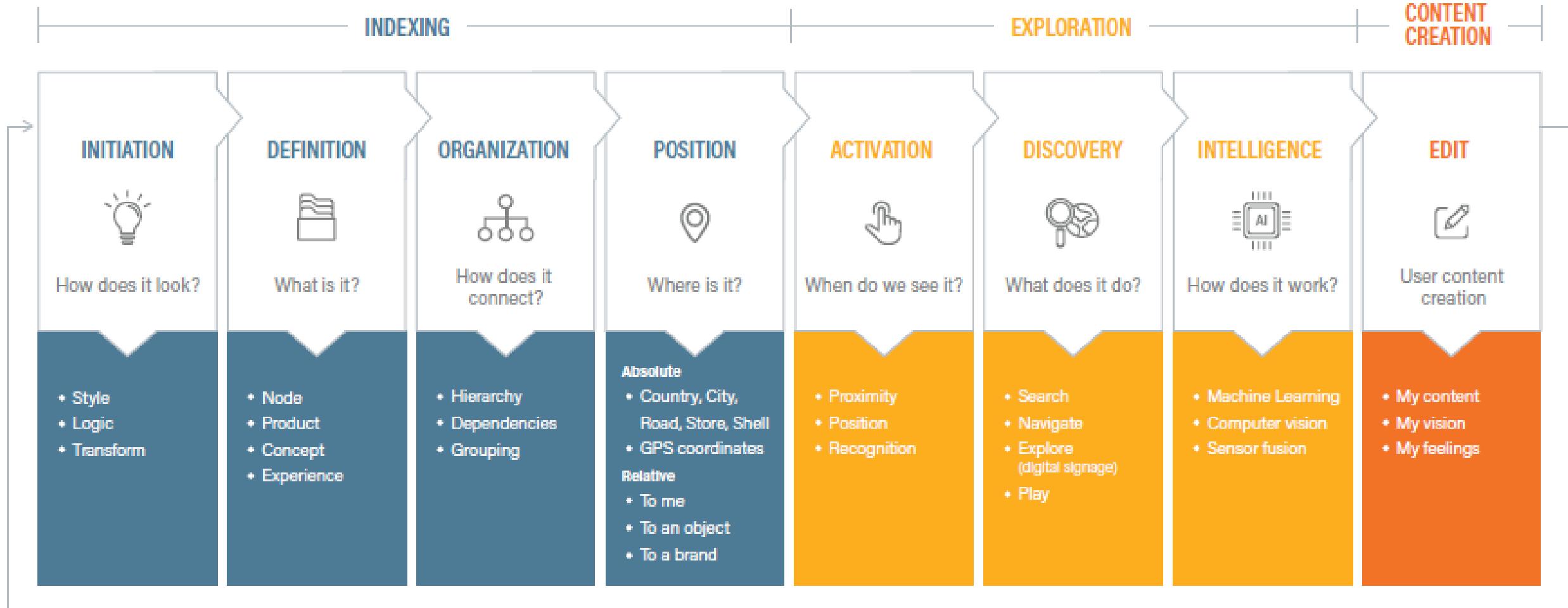
USE CASE ③

BRAND EXPLORATION

Smart tags can be assigned to a particular brand and organized around it to allow the user to explore the brand's world. A variety of content from the brand may be included and the tags can act as a hierarchical menu system.



THE USER APPROACH: SMART TAGS



Modelling the World

1. Traditional environmental modelling: Equations, differential and partial differential equations, other deterministic or stochastic numerical approaches
2. Multi-dimensional modelling: Introducing words (linguistic simulations using expert systems) and pictures (cellular automata and agent based modelling)
3. 1. and 2. were the Logic components in modern software architectures to solve problems
4. Sensors provide now abundant data suggesting machine learning approaches
5. New interfaces via augmented and virtual reality suggest new input, out and interaction modes
6. Verbal descriptions of problems are common to all these approaches. They are also the basis of Generative AI