IoT and USPTO practice

Finnish patent attorneys' point of view
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In a study published in 2015, the McKinsey Global Institute concludes that the different applications of the IoT could generate between USD 3.9 and USD 11.1 trillion a year in economic value by 2025 – of which

- USD 1.2–3.7 trillion in factories,
- USD 930 billion–1.7 trillion in cities and
- USD 170 billion–1.6 trillion in human health and fitness.

In the European Union alone, the market value of the IoT is expected to exceed one trillion euros in 2020 (European Commission, 2015).
Some applications of IoT
from the remote monitoring of treatments for patients

Human

- Devices (wearable and ingestible) to monitor and maintain human health and wellness, disease management, increased fitness, remote health monitoring, telehealth systems

Agriculture

- Prescriptive farming, regionally pooled data analysis, predictive maintenance, real-time monitoring, predictive treatment of cattle

Home

- Home controllers and security systems, smart energy (thermostats and HVAC), smart lighting, home automation

Retail environments

- Self-checkout, in-store offers, inventory optimisation, food traceability, omni-channel operations, digital signage, in-store consumer digital offers, vending machines, near-field communication payment/shopping
Some applications of IoT
to the automated organization of factories, logistical chains and fleets of vehicles

Factories and worksites
Operating efficiencies, optimising equipment use and inventory, predictive maintenance, health and safety

Cities
Adaptive traffic control, smart grids, smart meters, environmental monitoring, resource and waste management, parking solutions, public infrastructure asset control, public safety and emergency response

Transport
Connected navigation, real-time routing, shipment tracking, autonomous vehicles and flight navigation, transport sharing, asset and fleet management, freight monitoring, automated public transport, marine and coastal surveillance

Vehicles
Condition-based maintenance, usage-based design, pre-sale analytics, e-Call, connected vehicles
The way the applications are treated depends on department where they are assigned – claim wording most probably has huge effect whether hurdle "abstract idea – not significantly more" arises
Story of US 14/187,102

Background and first OA

Earliest priority date 25.2.2013
Filing date 21.2.2014
60 claims, independent
   1 method
   1 apparatus
   1 software
Non-final OA 10.3.2016
   - Abstract idea
   - Not novel

1. A method for discovering, configuring, and leveraging relationships in Internet of Things (IoT) networks, comprising:
   - registering one or more objects into an IoT network; and
   - forming the one or more registered objects into one or more IoT groups according to usage associated with the one or more registered objects and interactions among the one or more registered objects.
Responses

Claims amended

______ assigning a relationship identifier to at least one visitor user to the IoT network according
to one or more interactions between at least one device associated with the at least one visitor
user and the one or more registered objects in the IoT network, wherein the relationship identifier
assigned to the at least one visitor user is inferred based on one or more of a time when the one
or more interactions occurred or a location where the one or more interactions occurred; and
______ controlling access that the at least one visitor user has to each of the one or more IoT
groups according to the relationship identifier assigned to the at least one visitor user.

Response:

Technical solution to address technical problem in particular technological environment (organizing,
discovering relationships, and controlling access in an IoT network)

DDR Holdings v Hotels.com – necessarily rooted in computer technology in order to overcome a
problem specifically arising in the realm of computer networks

Not broadly and generically claim use of the Internet to perform an abstract business practice

- Arguments supporting novelty and inventive step: moot, new prior art
- Arguments supporting "not a mere abstract idea" – unpersuasive
  Claims still doing comparing or studying user’s characteristic data, directed to comparing new and stored information and using rules to identify options
- Process does not require special computer function, can be performed by a human using pen and paper
- Well-known human interactions and activities in a social networking environment
- Then analysis Step 2A, Step 2B
1. (Currently amended) A method for discovering, configuring, and leveraging relationships in Internet of Things (IoT) networks, comprising:
   registering, by a processor, one or more objects into an IoT network;
   forming, by the processor, the one or more registered objects into one or more IoT groups according to usage associated with the one or more registered objects and interactions among the one or more registered objects;
   inferring, by the processor, a relationship between an owner user associated with the IoT network and at least one visitor user to the IoT network according to one or more interactions between at least one device associated with the at least one visitor user and the one or more registered objects in the IoT network;
   assigning, by the processor, an a-relationship identifier to the inferred relationship between the owner user and the at least one visitor user to the IoT network according to one or more interactions between at least one device associated with the at least one visitor user and the one or more registered objects in the IoT network, wherein the relationship identifier assigned to the at least one visitor user is inferred based on one or more of a time when the one or more interactions occurred or a location where the one or more interactions occurred; and
   controlling, by the processor, access that the at least one device associated with the at least one visitor user has to each of the one or more IoT groups according to one or more permissions associated with the relationship identifier assigned to the relationship between the owner user and the at least one visitor user.
3rd OA 17.1.2017

Claim limitations still doing comparing or studying user’s characteristic data
Just an interactive method using electronic device to access another electronic device or a server to share common interest information among family, friends, and others
(repeats ”pen and paper”)

Response to 3rd OA

No claim amendment
Response repeated previous arguments (Enfish) plus:
McRO inc v Bandai Namco Games America
"considered in their entirety to ascertain whether their character as a whole ..
Office memorandum "improve computer-related technology by allowing
calendar performance of a function not previously performable by a
calendar"
.. Focus on a specific means or method that improves the relevant technology
2nd Final Action 28.7.2017

Explains the idea behind 2A and 2B steps to assess abstract idea and significantly more (plus cites some court decisions)
a program that directs machine to provide the recited functionality simple describe mere instructions to implement an abstract idea on a computer

Conventional or generic technology in a nascent but well-known environment, no claim reflects an inventive solution to any problem presented by combining the two

Organising information through mathematical correlations and verifying ... is akin to comparing information to a control.

Not rooted in computer technology – the resource manager can be a person – plus pen and paper
Call, AFCP + result

Call to examiner: dependent 8, 9, 10 + 24 to claim 1, might be allowable
AFCP+response, Claim amendment reflect the call

Examiner:
More time will be needed

2nd RCE 24.10.2017
continuation 15/817,275 filed 19.11.2017 (claims seems to be those filed in 1st RCE)
Notice of allowance 5.12.2017
Issue Notification 31.1.2018
Counterpart in EPO

WO application-> EP2959641 (pending)

EPO:
- WOISA: all features technical-but not novel
- Chapter II: assigning and controlling steps added to claims
- EPO: No support for all amendments
- Claims to 15 when EPO entered + support for previous amendments given
  - EPO examination: Not novel, provide alleged inventive contribution as problem-solution
  - Response: Objective technical problem: how to dynamically determine permitted access for an IoT device with other IoT devices

1. A method for discovering, configuring, and leveraging relationships in Internet of Things (IoT) networks, comprising:
   - registering (810) one or more objects into an IoT network;
   - forming (830) the one or more registered objects into one or more IoT groups according to usage associated with the one or more registered objects and interactions among the one or more registered objects;
   - assigning (1130) a relationship identifier to at least one visitor user to the IoT network according to one or more interactions between at least one device associated with the at least one visitor user and the one or more registered objects in the IoT network, wherein the relationship identifier assigned to the at least one visitor user is inferred based on one or more of a time when the one or more interactions occurred or a location where the one or more interactions occurred; and
   - controlling access that the at least one visitor user has to each of the one or more IoT groups according to the relationship identifier assigned to the at least one visitor user.
1. An architecture of an internet of things (IOT), characterized by comprising: multiple levels of IOT service platforms, wherein a superordinate IOT service platform is configured to manage a subordinate IOT service platform, and also manage accessed special service platform and service gateway; and each level of IOT service platform, special service platform and service gateway directly provide IOT service access for third-party applications.
Remember technical disclosure plus: USPTO more flexible to amendments and allows multiple independent claims in same category; continuation applications.

Thank you for your interest.

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