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Contribution to WTIS-13

SOURCE:	Machina Research
TITLE:	Measuring M2M

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Measuring M2M

WTIS Mexico City, December 2013

About Machina Research

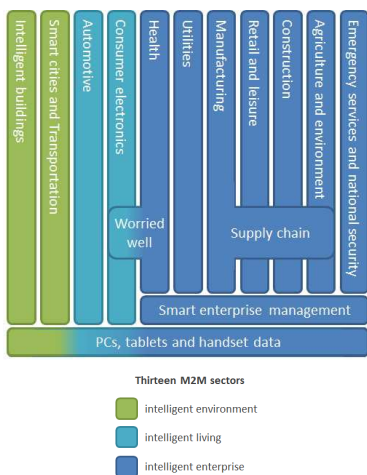| Market/demand side	Provider/supply side

- **Quantifying the opportunity for M2M**
  - **Forecast Database** providing 10 year forecasts across 201 countries for 61 application groups
  - **Sector Reports** annually updated reports on our 13 sectors (including Automotive, Healthcare and Utilities)

- **Addressing the issues that determine success**
  - **Research Notes** - 3 per month on major qualitative issues such as platforms, value chain roles, big data, NFC, and security
  - **Strategy Reports** - covering areas such as Big Data, platforms, modules/devices, CSP best practice, etc.

Advisory Service and Custom Research

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What is M2M?

Intelligent buildings | Smart cities and Transportation | Automotive | Consumer electronics | Health | Utilities | Manufacturing | Retail and leisure | Construction | Agriculture and environment | Emergency services and national security

Worried well | Supply chain

Smart enterprise management

PCs, tablets and handset data

Thirteen M2M sectors

- intelligent environment
- intelligent living
- intelligent enterprise

- **Our definition: "Connections to remote sensing, monitoring and actuating devices, together with associated aggregation devices"**
- **An incredibly diverse range of products and services with no consistent definition**
- **Much of the statistical information relates solely to cellular M2M, so we will focus on that, but it is only a fraction of the market**
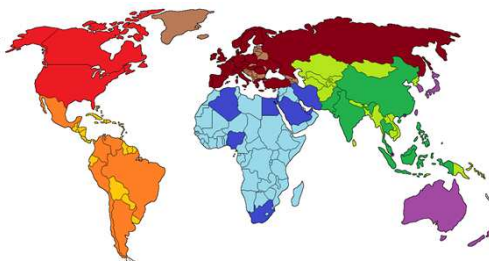
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We collect a wide range of data on the M2M market worldwide to feed our forecasts

Ten year forecasts (2012-22) including millions of data points

- **For each of 60+ application group we forecast:**
  - Connections
    - Split by tech (2G, 3G, 4G, short range, MAN, FWAN and satellite)
  - Traffic
    - Split by tech (WWAN, short range, MAN, FWAN and satellite)
  - Revenue
    - Split by value chain components (including device, connectivity support and applications)

- *201 countries, 6 regions*

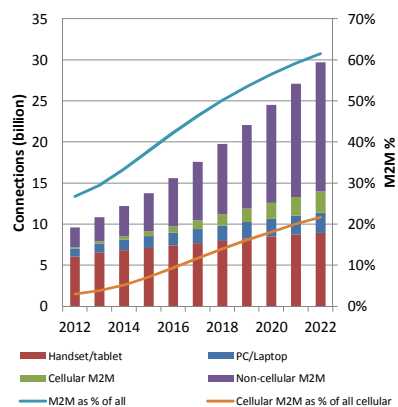**Machina Research**   **4**

We forecast 30bn M2M devices in 2022, of which 2.6bn are cellular

- **Total**
    - o At the end of 2012 there were 10m connected devices, of which 2.5 million were M2M
    - o By 2022 M2M will account for >60% of all connected devices
- **Cellular**
    - o M2M accounts for 3% (190m) of cellular connections in 2012, growing to 22% (2.6bn) in 2022

Machine-to-machine's share of cellular connected devices, 2012-2022
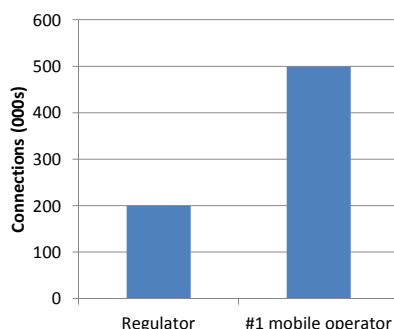Source: Machina Research 2013

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Available data: how good is it?

M2M connections in country X
Source: Machina Research 2013

NB – mobile operator is present in multiple territories, but market X is dominant territory

- **We use a bottom-up approach with 180+ different methodologies**
- **We also collect all operator and regulator data that we can find as a top-down check**
- **There is often a substantial disparity, either apparent through disparities with operator numbers (see left), or with what size of market we'd expect to see**

- **What causes the disparities?**

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Challenge #1: M2M can not be defined by type of device

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Challenge #1: M2M can not be defined by type of device

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Challenge #2: M2M can not be defined by type of SIM, IMSI, tariff or payment

- **Even if we narrow down to cellular M2M, there is still no universal definition:**
    - **Many devices are fitted with MFF (M2M form-factor) SIMs** – but that is not all of M2M
    - **Many operators have specific M2M IMSI ranges (e.g. MCC-901)** – but not all M2M connections use them
    - **Many operators have specific M2M tariffs** – but not all M2M devices use them
    - **There are certain models of payment (i.e. with no variable traffic payment such as Kindle) that can be equated with M2M** – but there are substantial exceptions

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Challenge #3: What is an M2M technology?

- **There are a diverse range of technologies that can support "M2M" connections, including:**
    - PLMN cellular – GSM, CDMA, UMTS, LTE, WiMAX etc.
    - Low-power wide area networks – SigFox, Weightless
    - Short-range – Zigbee, Z-Wave, DSRC, Ethernet
    - Wide-area fixed technologies – DSL, Cable
    - Other – Mesh, Broadband Powerline, Satellite
- **Most counts are of cellular, but that's only a fraction of M2M and only counting that may not reflect market sophistication**
- **Also cellular may be used as part of a solution but not necessarily connect the end device (e.g. aggregation point for smart meter connections)**

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Challenge #4: Activity level

- **In handsets there is typically a requirement for a device to be active in the last 3 months (or maximum 12 months) to be 'active'.**
- **Does the same definition also apply to M2M? What about devices that report only by exception, e.g. eCall, stolen vehicle recovery?**
- **What about clusters of devices under a single RGU (see above)?**
- **In some cases devices generating no traffic are still revenue generating. In others they are not but they have the potential to be useful or revenue generating.**

"They also serve who only stand and wait."

John Milton

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Challenge #5: Where does an M2M connection call home?

- **M2M connections are sold at a regional or global level**
- **In many cellular cases all devices of a certain type or for a certain customer will be homed in a particular country, or given an MCC-901 code**
- **Many M2M connections are footloose, e.g. container tracking – Where does that connection count? Where it is registered? Artificially boosts certain markets.**
- **In future we will see regular localisation of SIMs using subscription management: who counts the SIMs and when?**

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What we count

- We distinguish connections from revenue generating units (RGUs)
- We include all technologies – our bottom up methodology allows for that
- We do not distinguish based on payment method
- We include all device types that are individually addressable (either directly or through a gateway) but no peripherals
- We count tablets separately, but we do count them (as our clients might not agree with our segmentation)
- We count all connections that generate revenue/traffic or would be capable of generating revenue/traffic
- We count a SIM where we believe it is active

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What should the ITU track?

- **M2M is a critical growth area and the ITU needs to track its development**
- **Cellular connections is the only really viable thing to track (along with traffic) currently**
- **To produce anything meaningful needs a consistent set of definitions – I have outlined some of the challenges associated with this, above, and our approach**
- **MNOs will have different definitions and any data collection activity will need normalisation**

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Our suggestion: cellular M2M connections and market share tracking

- There is a clear benefit to mobile operators (first) to determine how the market is growing and (anonymously) determine market share
- Well established practice in other sectors
- We have been negotiating with MNOs for some time to collect M2M connections information, normalise it, segment it, and distribute it back to those MNOs
- Each MNO would know only the total figures (with whatever geographical/sector granularity we agree) plus their own market share
- We already have a framework established to do this, but lack a consensus amongst operators or a test-case
- A regulatory impetus would help: if you would like your country to be the first, come and talk to me

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Contact me

Matt Hatton
Director
matt.hatton@machinaresearch.com
Mobile: +44 7787 577886
Skype: mattyhatton
Twitter: @MattyHatton

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