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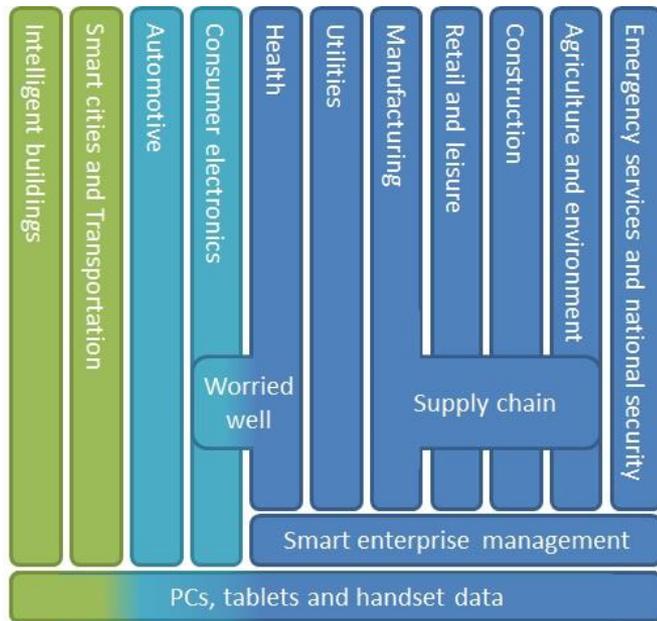
About the Machina Research Forecast Database

September 2013

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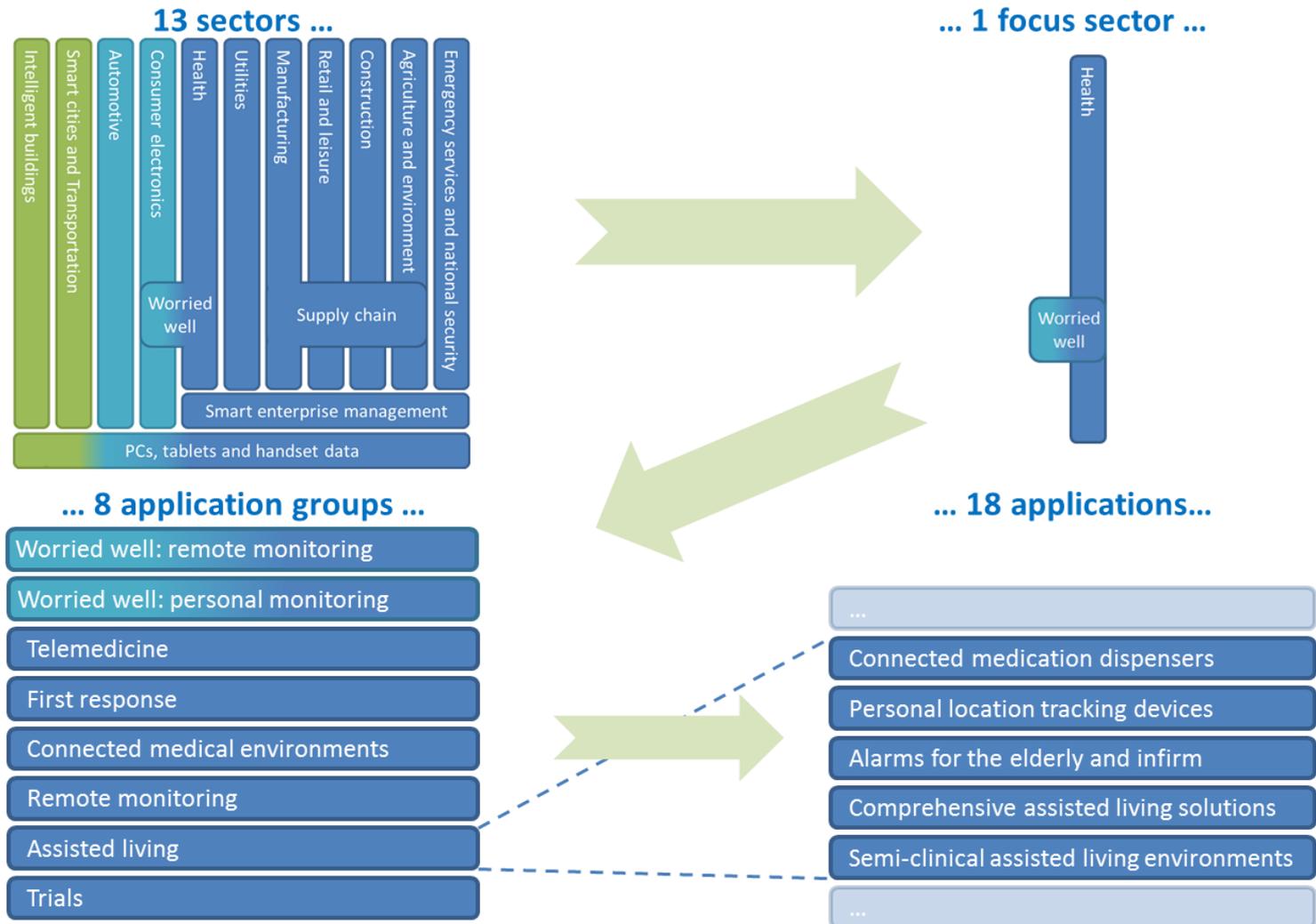

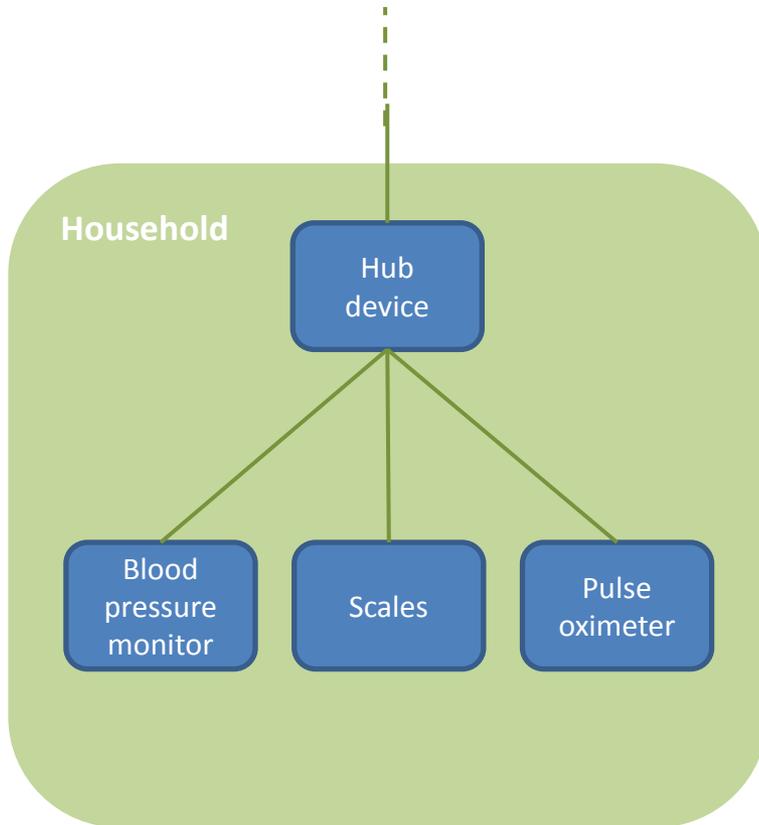- **The purpose of this document is to provide a guide to the Machina Research Forecast Database, the most comprehensive guide to the global M2M market opportunity.**

- **Our segmentation of the market is based on 12 M2M sectors, plus a thirteenth non-M2M sector 'PCs, tablets and handset data'.**

- **Within each of these 13 sectors there is a diverse set of devices, applications and services. As a result we base our analysis on individual applications, of which there are over 180 covering all of M2M. We then roll these applications up into application groups, of which there are 61.**

- **This is illustrated in the next slide giving the example of healthcare. In this example the healthcare sector has 8 application groups. One of the application groups, Assisted Living, comprises five distinct applications.**

- **All of the data in the Forecast Database is presented at the application group level.**

Example sector: healthcare

13 sectors …

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

… 1 focus sector …

Health

Worried well

… 8 application groups …

- Worried well: remote monitoring
- Worried well: personal monitoring
- Telemedicine
- First response
- Connected medical environments
- Remote monitoring
- Assisted living
- Trials

… 18 applications…

- …
- Connected medication dispensers
- Personal location tracking devices
- Alarms for the elderly and infirm
- Comprehensive assisted living solutions
- Semi-clinical assisted living environments
- …

Example application: Comprehensive assisted living solutions

Household

Hub device

Blood pressure monitor	Scales	Pulse oximeter

- **Machina Research distinguishes between devices and revenue generating units (RGUs)**
- **There may be multiple RGUs per connections (e.g. applications such as navigation or usage-based insurance running on a car platform)**
- **Or there may be multiple devices per RGU, as in the example here:**
  - 1 RGU
  - 4 devices
  - 3 short-range connections
  - 1 Wide area connection …
- **In some cases the hub unit is counted in another category, e.g. a fixed broadband CPE**
- **Secondary/ backup connections are not counted**

Machina Research's 13 sectors

Sector	Definition	Application groups
Agriculture & environment	Applications and services related to various forms of primary industry (excluding mining and quarrying). Includes crop and livestock management and fishing.	Environmental monitoring; fishing (including fish farming, coastal fishing and deep sea fishing); land agriculture; and new energy sources.
Automotive	Applications and services using a vehicle platform or after-market device providing connected services used by the driver or provider of third-party services. It excluded supply chain applications which are considered elsewhere. It excludes the use of handsets, laptops or other devices within cars to access the same services.	Vehicle platform; security & tracking (e.g. stolen vehicle recovery); emergency assistance (e.g. eCall); vehicle recovery/ roadside assistance; entertainment and internet access; navigation; voice (where provided via an OEM concierge service); insurance (in the form of pay-as-you-drive insurance); lease, rental, HP and share car management; and manufacturer data (i.e. vehicle diagnostics).
Construction	Covers all types of applications related to building (and infrastructure) construction, including work undertaken by major construction firms and sole traders	Equipment monitoring (inventory management and usage monitoring); on-site visualisation (or architect, and other, plans); and site monitoring (alarms and CCTV).
Consumer electronics	All types of M2M connected consumer electronics, so excluding PCs, tablets and mobile handsets. Home network infrastructure is included in Intelligent Buildings. Consumer healthcare devices are included in Healthcare.	Audio visual displays; audio visual sources; household information devices; network equipment; personal multimedia; tracking applications; white goods; and other.

Machina Research's 13 sectors

Sector	Definition	Application groups
Emergency services & national security	Personal devices carried by emergency services personnel. Does not include connected vehicles (included in Automotive) or field healthcare (included in Healthcare). Also National defence applications.	Defence; emergency services; and homeland security.
Healthcare	All applications related to healthcare, including consumer health monitoring for the worried well, through to clinical environments and clinical remote monitoring of post-diagnosis patients.	Assisted living; clinical remote monitoring; clinical trials; connected medical environments; first responder connectivity; telemedicine; worried well – personal monitoring; and worried well – remote monitoring.
Intelligent buildings	All aspects of building automation and monitoring, including HVAC, central controllers, control panels, power management and alarm systems. Also includes home network infrastructure.	Building automations; network infrastructure microgeneration; and security.
Manufacturing and supply chain	Deals with all aspects of the manufacturing supply chain from the extraction of coal, gas, oil and minerals, through transportation and manufacturing of all products to warehousing and sale through vending machines. Sale through traditional retail is covered in the 'retail & leisure' category.	Extraction; manufacturing/processing; transport & distribution; vending machines; and warehousing/storage.

Machina Research's 13 sectors

Sector	Definition	Application groups
Retail & leisure	Covers use of connected devices in a retail context, including shop-floor equipment for both staff and customers, and a range of sector-specific applications (ranging from waitress order-taking devices to slot machines, and including ATMs).	Access control; consumer applications; goods monitoring and payment; and sector specific applications.
PCs, tablets & handset data	Includes mobile data services for the three types of personal communications devices used for packet-switched data access, i.e. handset/tablet and PC/laptop. It includes other mobile broadband connections such as PC back-up and WWAN/WiFi home hubs.	Handset/Tablet; PC/laptop
Smart cities & transportation	Connections to public transport systems (vehicles and management/information devices), all aspects of traffic management (including congestion tolls and car parking), and connectivity to other street equipment such as CCTV and digital signs.	Digital billboards; environment and public safety (which mostly comprises CCTV); public transport; and traffic management.
Smart enterprise management	The use of connected office equipment (e.g. faxes, photocopiers etc.) which are not specific to any particular vertical.	Office equipment; and specialist equipment.

Machina Research's 13 sectors

Sector	Definition	Application groups
Utilities	Use of connectivity to manage utility (gas, electric & water) distribution networks and end-points. Most prominent application is smart metering.	Electric vehicle charging; smart metering; and transport & distribution management (i.e. monitoring the utility distribution network).

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Definitions: technology

Technology	Definition	Notes
2G	Second Generation mobile connectivity.	This includes GSM (and extensions GPRS and EDGE) and CDMA.
3G	Third Generation mobile connectivity,.	Comprises W-CDMA, CDMA 1x EVDO and a few other similar technologies.
4G	Fourth Generation mobile connectivity.	This comprises LTE (3GPP Long Term Evolution) and WiMAX (802.16e and 802.16m). There is some controversy about the definition of 4G today. Machina Research recognises that technically LTE and WiMAX technologies may not meet the ETSI definition of 4G, but for our purposes they are considered to be so.
MAN	Metropolitan Area Network	Comprises a range of medium-range technologies including powerline and community WiFi.
Satellite	Two-way connectivity between a ground-based device and a satellite	Typically used only for niche applications and/or in remote parts of the world.
Short-range	Any local area network connection including WiFi, Zigbee and Ethernet.	These connections are considered to also have a wide area connection (either fixed or wireless) associated with them. In Machina Research's reports there is no traffic registered under short-range. The traffic is measured only under the associated wide-area network technology as appropriate.
Wide area fixed	Any fixed line connection including PSTN, ISDN, Cable, DSL and fibre.	The vast majority will be DSL or cable but may include dedicated E1/T1 connections and similar.

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Definitions: geography

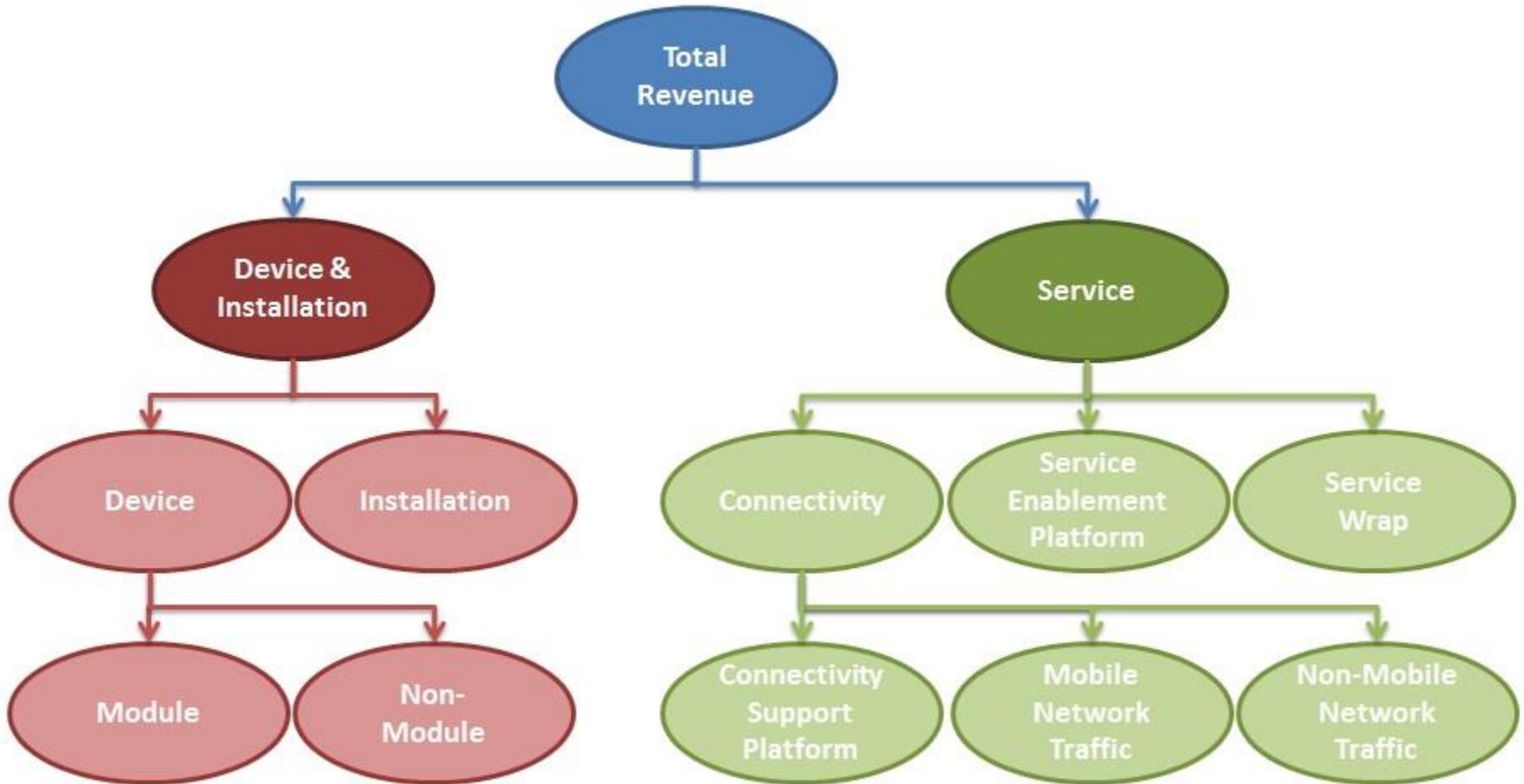| Term	Definition
Developed Asia-Pacific	The most economically developed countries in the Asia-Pacific region, comprising all countries east of Iran and south of Russia. Includes Central Asian former Soviet states.
Emerging Asia-Pacific	The less economically developed countries in the Asia-Pacific region, comprising all countries east of Iran and south of the former Soviet Union
Europe	All of Europe including Russia, the Caucusus republics and Turkey and all points west, including Greenland and Iceland.
Latin America	Comprises all territory in the Americas outside of Canada and the US. Therefore includes all Caribbean states.
Middle East & Africa (MEA)	Comprises all of Africa as well as the Middle East from Iran in the east and all states south of Turkey.
North America	Solely Canada and the US

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Definitions: forecast metrics

Metric	Definition	Notes
Connected devices	M2M connected devices are defined by Machina Research as "connections to remote sensing, monitoring and actuating devices, together with associated aggregation devices"	Where there are multiple short-range sensors included in a complex single unit (e.g. a car or aeroplane) then Machina Research counts that as a single connection.
Revenue generating units (RGUs)	Distinct from connected devices, this is the number of paying customers associated with the M2M connections.	Multiple linked devices with a single payment or bill count as one RGU. Using multiple services over a single connection counts as multiple RGUs.
Traffic	The amount of network traffic created per annum by the associated revenue generating units.	Presented in terabytes (i.e. millions of megabytes) per annum in the data sheet.
Total revenue	Income from the sale of devices or services. Includes device costs where connectivity is integral, module costs where devices can optionally have connectivity enabled, monthly subscription, connectivity and traffic fees.	Presented in EUR million and USD million per annum in the data sheet.
MNO addressable revenue	A subset of total revenue that is addressable by a mobile network operator.	Presented in EUR million and USD million per annum in the data sheet.
MNO expected revenue	A subset of addressable revenue that Machina Research expects the MNO to achieve.	Presented in EUR million and USD million per annum in the data sheet.
Mobile network traffic revenue	The revenue accruing from the carriage of cellular traffic and is therefore guaranteed for MNOs.	Presented in EUR million and USD million per annum in the data sheet.

Definitions: forecast metrics

Metric	Definition	Notes
Total Revenue (Device & Installation: Device)	The Device component of Total Revenue (Device & Installation)	
Total Revenue (Device & Installation: Installation)	The Installation component of Total Revenue (Device & Installation)	
Total Revenue (Service)	The total of ongoing revenue components relating to an M2M application, incuding usage and subscription fees.	
Total Revenue (Service: Wrap)	The proportion of Total Revenue (Service) fees that corresponds to the actual application 'wrapped' around a connection.	For instance, fees for an Alarm Receiving Centre in the case of a connected alarm system.
Connectivity services revenue	Comprises service enablement platform revenue and connectivity revenue.	
Total Revenue (Service: Service Enablement Platform)	(Potentially) connectivity technogy agnostic horizontal M2M platform components.	Such as might be offered by Jasper or Ericsson's DCP. Platform functionality that is independent of the technology that is used to connect an end-device (for instance, business rules, reporting, support for APIs, etc.)
Total Revenue (Service: Connectivity)	Revenue corresponding to mobile connectivity.	Functions such as SIM control, IMSI management, etc., plus mobile data traffic revenues
Total Revenue (Service: Connectivity: Connectivity Support Platform)	Mobile network specific horizontal platform components.	Functions such as SIM control, IMSI management, etc.

Revised revenue forecast metrics

Further questions

- **If you have further questions about the Forecast Database, or anything else that Machina Research does, please contact enquiries@machinaresearch.com**