World’s Top Global Mega Trends To 2025 and Implications to Business, Society and Cultures
Mega Trends are transformative, global forces that define the future world with their far reaching impacts on businesses, societies, economies, cultures, and personal lives.

**Global Mega Trends**

<table>
<thead>
<tr>
<th>Trend</th>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urbanization – City as a Customer</td>
<td>Building and internet symbol</td>
<td>Future Infrastructure Development</td>
</tr>
<tr>
<td>Smart is the New Green</td>
<td>Wind turbine and geodesic sphere</td>
<td>Innovating to Zero</td>
</tr>
<tr>
<td>Social Trends: Gen Y, Middle Bulge, Sheconomy, Geosocialization</td>
<td>People and dollar sign with upward arrow</td>
<td>Health, Wellness and Well Being</td>
</tr>
<tr>
<td>Connectivity and Convergence</td>
<td>Atom and internet symbol</td>
<td>Future of Energy</td>
</tr>
<tr>
<td>Connect</td>
<td>Building and internet symbol</td>
<td>Economy: Beyond BRIC: The Next Game Changers</td>
</tr>
<tr>
<td>New Business Models: Value for Many</td>
<td>Sun with rays</td>
<td>New Business Models: Value for Many</td>
</tr>
</tbody>
</table>

Source: Frost & Sullivan analysis.
News Headlines in 2025

- Robots have entered our homes for personal use.
- Sensory devices guide our everyday lives.
- Mobile financial transactions are now in crypto-currencies.
- There are 6 million autonomous cars in Europe and North America.
- Big data has entered the Zettabyte era.
- 3D printing is commonplace. 4D printing is gaining mainstream acceptance.
- High Speed Rail to connect from China to Europe.
- Summer Sale: Low-cost holidays in space.
The Mega Trend Matrix
Understanding Implications of Key Mega Trends on Global Economy

Note: The size of the bubble represents the scale of opportunity within each Mega Trend. These Mega Trends have been plotted based on quantitative and qualitative reasoning.

Source: Frost & Sullivan Analysis
Future Connected Living Ecosystem
Connected life contains three important aspects of connected home, connected city, and connected work

**Connected Living** describes a world in which consumers use many different devices to experience compelling new services that integrate video, voice, and data services to provide access and ubiquitous connectivity anytime and anywhere.

**Connected Living Total Market: $730 Billion in 2020**

**Connected Home – 31%**
- Home Automation
- Home Energy
- Home Health
- Home Entertainment

**Connected Work – 15%**
- Mobility - Mobile email, Unified Communication
- Mobile Working
- Enterprise Social Networking

**Connected City – 54%**
- eGovernance
- eCitizens
- Smart transportation cards, connected cars
- E-learning
- Mobile banking
Case Study: Connected Home’s B2B Platform Of Deutsche Telekom
A platform-based approach that brings together leading companies

QIVICON B2B Business Hub including partners from...

- Automation (E.g. Belkin)
- Security (E.g. Pax)
- Health (E.g. Tunstall)
- Multimedia (E.g. Samsung)
- Appliances, electronics (A&E) Miele, Samsung
- Energy EnBW, Solon

- First company worldwide to offer a "software as a service’ connected home platform
- Open and independent B2B platform for partners
- Largest range of partners in the connected home space

QIVICON CONNECTED HOME PLATFORM for consumers aggregating service from all partners.

Consumer Homes
Sensorization of Things
Multi-Factor sensory-based trackers revolutionize the field of personal devices

The radial timeline diagram depicts which products are impacted in the next decade by sensory tracking technology in consumer electronics.

Source: Frost & Sullivan Analysis
Gamification - solutions to generate $8 billion globally within a decade, driven by increasing need for consumer engagement

Gamification – a customer interaction approach to design behaviours, develop skills and engage customers

The use of game mechanics and design in non game context to impact engagement and outcome

**Gamification Market, Global, 2012-2020, ($ billion)**

- **2012**: 0.2
- **2013**: 0.4
- **2014**: 0.9
- **2015**: 1.8
- **2016**: 3.2
- **2017**: 4.9
- **2018**: 6.6
- **2019**: 7.5
- **2020**: 8.3

**Source:** Deloitte, Google Trends, Frost & Sullivan Analysis.

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**Uses**
- Mobile and tablet applications
- Software programs
- Educational tools

**Predicted areas of impact**
- Employee performance
- Education
- Personal development
- Customer engagement platforms

**Current enablers**
- Mobile
- Cloud
- Social networking
- Location based services

**Future enablers**
- Gesture control
- Augmented reality

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**Consumer App Usage Patterns, Global, 2012**

- Games: 20%
- Social Networking: 16%
- Entertainment: 14%
- Maps/Navigation: 10%
- Video: 10%

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**M82C-MT**

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**F R O S T & S U L L I V A N**
Sub Trend: Big Data Analytics
90% of the data in the world has been created in the last two years alone

Global Data Traffic to Cross 100 Zettabytes annually by 2025

Global Big Data Market to generate a revenue of over $122 billion by 2025

Source: IBM, Cisco, Frost & Sullivan Analysis
Big Data Deluge
Digital content is doubling every 18 months

**Structured Data**
- Database
- Data Warehouse
- ERPs
- CRMs
- Systems

**Unstructured Data**
- Web blogs
- Social Media
- Audio, Video
- Excel, CSV
- Online

**Types of Data-Enabled Services**
- Social Sentiment Analysis
- Data Analytics
- Marketing Optimization - Micromarketing
- Open Innovation
- Discovery and Navigation
- IT Economics
- Security Intelligence
- Asset Management
- Data Visualization

**Data Traffic per Year, Global, 2012 and 2020**
- Big Data is growing at 40% annually
- Source: IBM, Cisco, Frost & Sullivan Analysis

**Big Data Creates New Value Propositions for Businesses**
- **Cloud-connected cars**: Nissan is looking at analytics on sensor data and telematics to improve self-diagnostics
- **Facebook Personalized Marketing**: Facebook analyses location data to reach more customers with personalized, targeted products
- **Smart Factories**: Pepsi’s Latin American division merged customer, logistics, and manufacturing data to significantly improve its plant operations
- **Emergency Responses**: During Superstorm Sandy, 2012, Twitter hashtags were analysed to find out where power, fuel, food and water were urgently needed

Source: IBM, Cisco, Frost & Sullivan Analysis
Implication: Connectivity Is Pushing Convergence
Connectivity will Accelerate Convergence of Industries, Products, Technologies and Competition

INDUSTRIES

1. Space Industry
   ![Image of satellite]

2. Solar Industry
   ![Image of solar panels]

PRODUCTS

1. Car
   ![Image of car]

2. Unmanned Technology
   ![Image of drone]

3. Building Technologies
   ![Image of smart meter]

4. Smart Automation
   ![Image of gears]

TECHNOLOGIES

1. Space Industry + Solar Industry = Space Based Solar Power
   ![Image of solar panels integrated into a satellite]

2. Car + Unmanned Technology = Autonomous Cars
   ![Image of car and drone]

3. Building Technologies + Smart Automation = Smart Home Hubs
   ![Image of smart home hub]

Source: Frost & Sullivan analysis

Image Source: Creative Commons and Dreamstime.
Convergence is Driving Unconventional Players to Contest for New Markets!

• Google - Nest, Titan Aerospace

• Amazon - Dash, Fire TV

• Facebook – Oculus, Connectivity Labs
A **smart product** is characterized by an **intelligent sensing technology** that is increasingly being integrated with Internet technologies, thereby allowing the product to **react to and communicate** with the changing environment around it. This leads to **optimal operations and improvement in efficiency**.
Smart cities To Create Huge Business Opportunities With A Market Value Of $1.5 Trillion By 2020

Smart Building
CAGR: 8.8% (2012-2020)

Smart Healthcare
CAGR: 6.9% (2012-2020)

Smart Transportation
CAGR: 14.8% (2012-2020)

Smart Infrastructure
CAGR: 8.9% (2012-2020)

1 Smart Governance and Smart Education

2 Smart Security
CAGR: 14% (2012-2020)

3 Smart Energy
CAGR: 19.6% (2012-2020)

4 Other Smart Infrastructure such as sensor networks, digital management of water utilities not included in other segments

5 Smart Transportation

6 Smart Healthcare

7 Smart Building

Notes:
1. The graph represents the market share of each segment in the smart city market.
2. Smart Education includes eLearning services for schools, universities, enterprises, and government.
Global Smart Cities in 2025
More than 26 global cities will be Smart Cities in 2025, and more than 50% of which will be from Europe and North America.

Smart Cities, Global, 2025

Select Smart City Projects in 2025¹
- Smart Cities in 2025

¹This list is not exhaustive. The cities highlighted here have implemented smart city projects in at least one of eight smart city aspects discussed in this study.

Image Source: Dreamstime and Frost and Sullivan Image Library.
Source: Forbes Smart City List, Innovation City Index; specific Smart Project Websites for each city; Frost & Sullivan analysis.
Sustainable/Eco Cities in 2025
Global Snapshot of Sustainable/Eco Cities in 2025

Note: Eco Cities are cities built on a green initiative, from buildings to transport, governance, city planning, energy, and technology. These cities are either upgraded or built from scratch.

Source: Siemens Green Index and Frost & Sullivan analysis.
The Next Game Changers in 2025 (Beyond BRICs)

High GDP growth, improved FDIs, and rapid industrialization to give rise to a new lot of emerging countries, beyond BRIC nations, that contend to become next decade’s economic leaders.

Note: The figure denotes GDP at market prices. Forecasts to 2025 have been extrapolated based on nominal GDP growth rate projections.

Source: International Monetary Fund, Oxford Economics, Frost & Sullivan.
## New Business Models

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B2C</strong></td>
<td>Co-Creation (Eg. Quirky.com)</td>
<td>Pay as you Go Insurance</td>
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<tr>
<td></td>
<td>On-Demand Services</td>
<td>Value for Many</td>
</tr>
<tr>
<td></td>
<td>Digital Media / Online Streaming Collapsing</td>
<td>• (Low Cost Models - Tata Nano)</td>
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<tr>
<td></td>
<td>Video Rentals: eg. Netflix</td>
<td>• Group Buying (Groupon)</td>
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<td></td>
<td></td>
<td>• Micro Financing</td>
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<td><strong>B2B</strong></td>
<td>Online Platforms</td>
<td>Alliance Based Models</td>
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<td></td>
<td>• E Rental (Workspaces)</td>
<td>Integrator Models (IBM Smarter Planet)</td>
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<td></td>
<td>• E Distribution (eg. Deliv)</td>
<td>Online Stock Trading – traditional brokers</td>
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<td></td>
<td>• E Exchanges</td>
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<td></td>
<td>• Hypermarkets</td>
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<td></td>
<td>• E-Travel: Concur</td>
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<td></td>
<td>Sharing: Corporate Car Sharing</td>
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<tr>
<td><strong>P2P/ C2C</strong></td>
<td>Online Retail (Eg. Ebay)</td>
<td>Sharing – Car Sharing</td>
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<tr>
<td></td>
<td>• E-Auction (eg. Taobao)</td>
<td>Peer-to-peer lending</td>
</tr>
<tr>
<td><strong>G2B</strong></td>
<td>Open Business Model (Online Bidding of Projects) – (e.g Chicago Open Data Model)</td>
<td>PPP - BOO, BOT, BOM</td>
</tr>
<tr>
<td><strong>G2G</strong></td>
<td>E-Records, E-Consultancy - (e.g G2G Information System like NEGIS)</td>
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</tbody>
</table>
Future of Clicks in Retail Industry
Global Online Retail Sales To Reach $4.3 Trillion By 2025 Accounting for 19% of Total Retail

<table>
<thead>
<tr>
<th>Country</th>
<th>Online Sales</th>
<th>Non-Online Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>$0.32 Trillion</td>
<td>$1.32 Trillion</td>
</tr>
<tr>
<td>China</td>
<td>$0.18 Trillion</td>
<td>$1.30 Trillion</td>
</tr>
<tr>
<td>Germany</td>
<td>$0.06 Trillion</td>
<td>$0.09 Trillion</td>
</tr>
<tr>
<td>Japan</td>
<td>$0.11 Trillion</td>
<td>$0.17 Trillion</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>$0.21 Trillion</td>
<td>$0.26 Trillion</td>
</tr>
</tbody>
</table>

Total Online Sales: $4.3 Trillion
Total Non-Online Sales: $18.7 Trillion
Total Retail Sales: $23.0 Trillion
Case Study: Audi City London - First Digital Car Showroom

Example of Future Digital Car Showrooms that will be “Unlimited”, Personalised, Socially Connected and Digitally Integrated

- Fully Digital, Retail-Style Cyberstore
- One-stop Experience for Entire Model Range
- Highly personalized customer dialogue
- Gamification, Augmented Reality Offers Tailor-made services
- Specially Trained Dealer Personnel Interactivity

London Flagship Store
Virtual Stores—New Generation of Grocery Shopping

Virtual stores are simulated brick and mortar stores that offer interactive shopping in public places by creating virtual products, which buyers can buy and order using their Smartphones.

**Tesco’s Subway Virtual Store**

1. Choose grocery item from “virtual shelves”

2. Smartphone App Registers Product of Choice

3. The product lands in customer’s “virtual cart”

4. The product is delivered to the customer at a time and date of his or her choice

**Virtual Store—The Fourth-Generation Retail Store**

- Single virtual store opened at subway
- Number 1 shopping app in Korea, with over 900,000 downloads
- Online sales increased by 130.0% since launch in 2011
- Home plus online membership increased by 76.0% since launch in 2011

Image Source: iStockphoto and Dreamstime

Source: Frost & Sullivan analysis.
3D Printing

The consumer and commercial products are expected to account for 28% of 3D printing revenues by 2020.

3D printing is a computer-driven additive manufacturing technology used for producing the final product from a digital model by laying down successive layers of material.

- Design: 3D printing begins with creating a digital model of the object, usually using CAD software.
- Print: The 3D printer slices the model into numerous digital cross-sections, and automatically builds the model using materials like thermoplastics.
- Finish: The final 3D printed object is then cleaned to remove overhung material and is polished for final use.

3D Printed Products in Key Industries:
- Human Organs
- Medical Devices
- Body Tissues
- Nano-medicine
- Pharmaceuticals
- Concept Modeling
- Prototypes
- Spare Parts
- End-use Parts
- Tooling
- Manufacturing On-demand
- Cutting Tools
- Customization
- Domestic Production

Global 3D Printing Market, Segment Breakdown, 2009 and 2020

Total Market ($Billion)

- 2009: $1.1 Billion
- 2020: $7.1 Billion

By Industry (% Share)

- Consumer & Commercial: 28%
- Automotive: 16%
- Architecture: 15%
- Industrial Application: 12%
- Aerospace & Defense: 5%
- Medical and Dental: 4%
- Other: 20%

Source: Frost & Sullivan Analysis
Rise of the Robots
Robots priced between $1,566 and $4,699 could enter our personal lives commercializing the personal robots market by 2020

Commercialization of Robotics
Steep fall in personal robots ownership prices from $150,000 to $1,000

ASIMO = $150,000
- Non-commercial
- Not for sale
- Available only on lending basis

LUNA = $1,000
- Commercial
- Currently available on auction basis
- Expected to retail between $1,000 and $3,000

Global Personal Robots Market

<table>
<thead>
<tr>
<th>2010</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1.29 billion</td>
<td>$17.39 billion</td>
</tr>
</tbody>
</table>

Robots at Home (Personal Robot Applications)

- Robotics for Elderly Care: Assisted Living
- Robots for household care
- Robots for companionship
- Robots as Teaching Assistants
- Robots as Nannies
- Robots as personal assistants

Source: Frost & Sullivan Analysis
While all Mega Trends are important, the selection and ranking of these trends indicate which seismic shifts will have particular relevance in shaping the landscape in which the world will evolve this decade.
Top Industries of the Future

Top Mature Industries by 2020

Growth Potential (2012-2030)

- Electronics
- Pharma & Healthcare
- ICT
- Energy, Power
- Oil & Gas
- Automobile
- Aerospace & Defence
- Chemical, Materials & Food
- Engineering & Construction
- Metals & Mining

Market Size Potential\(^1\) by 2020 ($Billion)

Top Emerging Industries by 2020

Growth Potential (2012-2030)

- Virtual Commerce
- Big Data
- Cloud Computing
- Managed Services
- Cyber Security
- Alternative Energy
- Urban Logistics
- Waste Management
- Wellness Industry
- 3D Printing

Market Size Potential\(^1\) by 2020 ($Billion)

1Relative score assigned for potential annual turnover (revenue / shipment) of the industry in 2025

1Measured by qualitative factors that have the scope to create a boom in the industry such as new patents, innovation cycle and industry impact

Source: Bloomberg, Frost and Sullivan Analysis
### Some Key Strategic Challenges

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(Fair) Trade</td>
<td>Providing social premium for community development projects; Balance between self-reliance and global market integration; Fostering export dependency</td>
</tr>
<tr>
<td>2</td>
<td>Collaborative Ecosystem</td>
<td>Shift from social intranet to online collaborative workspaces; Directly embedding collaborative processes to improve the speed and quality of their decisions</td>
</tr>
<tr>
<td>3</td>
<td>Economic Shifts</td>
<td>Changes in business strategies; China and India to lead the global economy in the near future; Looking Beyond BRICS</td>
</tr>
<tr>
<td>4</td>
<td>The Retail Issue</td>
<td>Look at internet retailing; look at the format of your retailing offer and how this fits into new trends for micro solutions driven by convenience</td>
</tr>
<tr>
<td>5</td>
<td>Complexity Management</td>
<td>New value chain partnerships; Integration of product innovations; Facing the impact of adjacent markets</td>
</tr>
<tr>
<td>6</td>
<td>Sustainable Development</td>
<td>Incorporation of increased interdisciplinary planning; Adopting new business models for collective ownership</td>
</tr>
<tr>
<td>7</td>
<td>Where You Live</td>
<td>Is your City ‘Smart’ or ‘Sustainable’; What are your City Planning Policies?</td>
</tr>
<tr>
<td>8</td>
<td>Government Inhibition</td>
<td>Focus on public-based solutions; Reduced foreign direct investments;</td>
</tr>
<tr>
<td>9</td>
<td>Sustainable and Livable Cities</td>
<td>Need for more green initiatives; demand for carbon neutral energy production and advanced spatial planning and urban design solutions</td>
</tr>
<tr>
<td>10</td>
<td>Organizational Changes</td>
<td>Need for more integrated solutions; Dynamic and flexible working practices; exterior innovations; structural changes</td>
</tr>
</tbody>
</table>

Source: Frost & Sullivan
From Macro to Micro: Taking Mega Trends from Information to Strategy Implementation

**Mega Trend**
Selected trends that impact your business and markets

**Sub Trend**
A sub-layer of trends that has a wide ranging impact

**Impact to Your Industry/Region**
Visualising the roadmap of these critical forces through scenario-building and macro economic forecasts

**Analysis of Opportunities and Unmet Needs**

**Impact on Future Product/Technology/Offer**
Learn More About “New Mega Trends”

New Mega Trends
*Implications for our Future Lives*
By Sarwant Singh

Publisher: Palgrave Macmillan

Join Our Mega Trend Group On LinkedIn

Mega Trends: Strategic Planning and Innovation Based on Frost & Sullivan Research
Mega Trending on My Trip to Helsinki.....
Thank You!

Iain Jawad
Director Strategic Partnerships
(+44) (0)20 7343 8311
lain.jawad@frost.com

“We Accelerate Growth”