



Language Convergence  
The Power of People and Technology



Dion Wiggins  
Chief Executive Officer  
dion.wiggins@asiaonline.net



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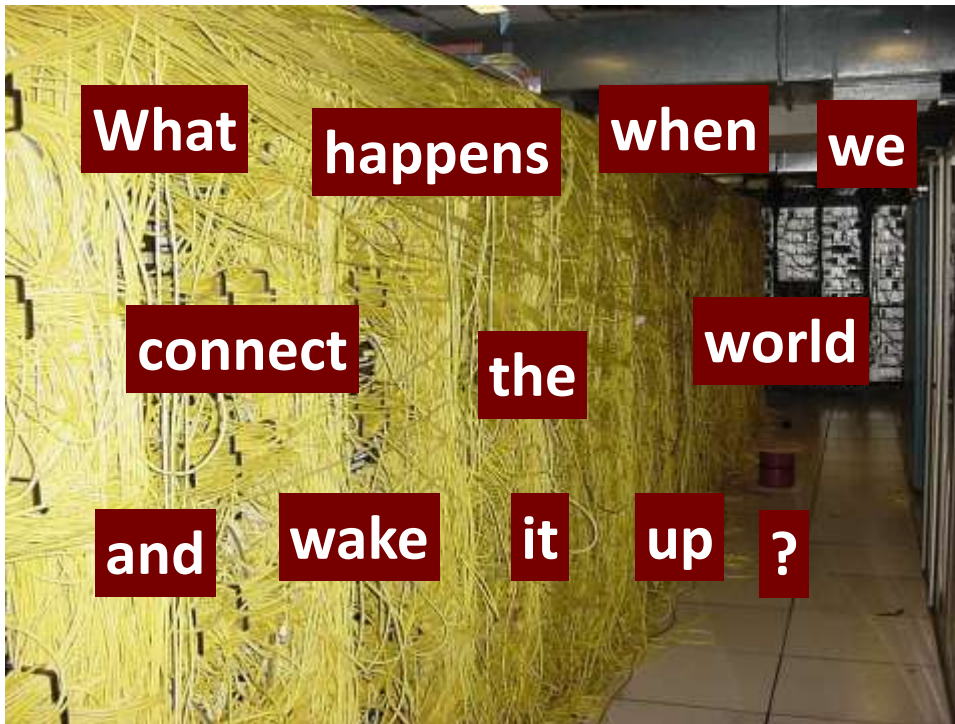


Redefining Connectivity

*The*  
**INTERNET of  
EVERYTHING**




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## Data Volume is Growing

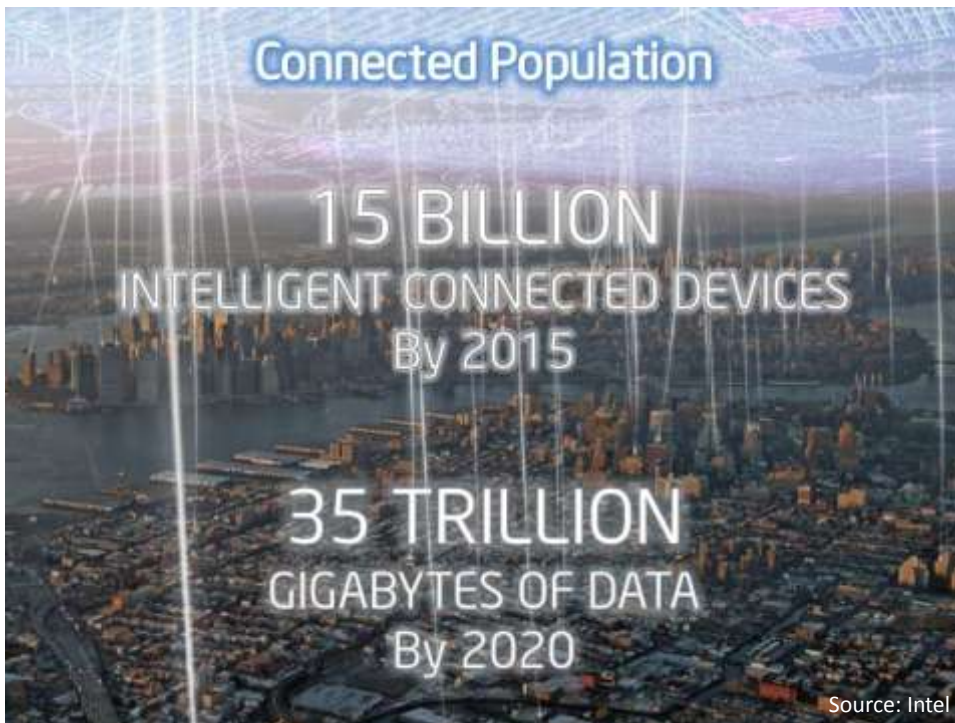


Worldwide IP traffic will quadruple by 2015



By 2015 nearly 3 billion people will be online.

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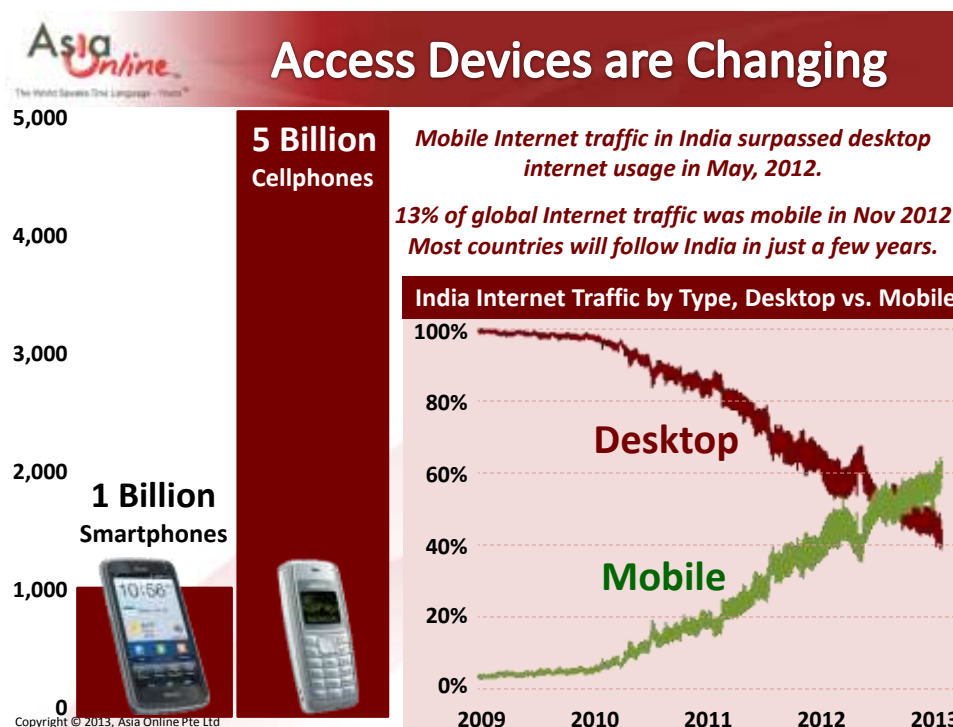


## Device Growth

***By 2015 there will be more than 15 billion devices connected to the internet .***

- We live in world which is **increasingly instrumented and interconnected.**
- The number of “smart” devices is growing everyday and the volume of data they produce is growing exponentially – **doubling every 18 months.**
- All these devices create new demand for access to information – **access now, on demand, in real time.**





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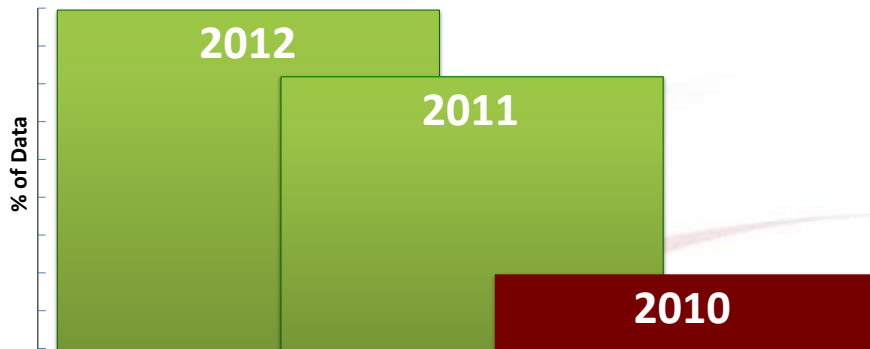
## More Data – More to Translate?





## Most Data is New Data

Everyday business and consumer life creates  
**2.5 quintillion** bytes of data per day.



**90% of data** in the world today has been  
**created in the last 2 years alone.**

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## The World We Live In

***Every day 15 petabytes of new information is being generated***

- A petabyte is one million gigabytes.
- 8 x more than the information stored in all US libraries.
- Equivalent of 20 million four drawer filing cabinets filled with text.
- In 2012 we have 5 times more data stored than we did in 2008.
- The volume of data is growing exponentially and is expected to increase by 20 times by 2020.
- We now have access to more data than at any time in human history.



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## The World We Live In

$$24 = \text{Human Translator} \times 365$$

*Google translates more in 1 day than all human translators in 1 year*

- Google's message to the market has long been that its business is making the world's information searchable and that MT is part of that mission.

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## The World We Live In

- **Common Sense Advisory Calculates:**
  - US\$33.42 billion earned for language services in 2012
  - Divide by 365 days
  - Divide by 10 cents per words

*LSPs translate a mere 0.00000067% of the text information created every day.*

**How much new text information should be translated?**

*Even if only **1%** of new text information created each day **should be** translated, that still means only **0.000067%** is translated by LSPs*

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## Translation Worthy Content?

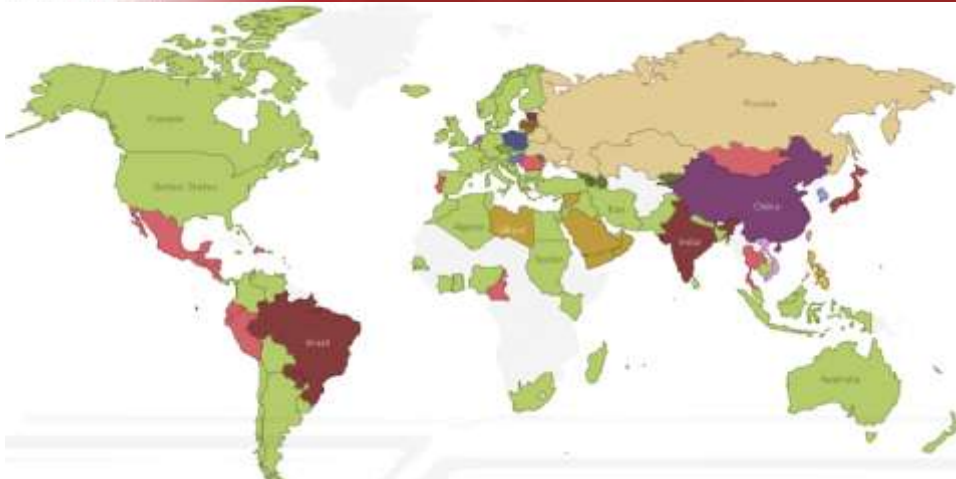
- With automation, an expanded view of what kind of content is worthy of translation will appear
- Same budget – more translated due to automation savings
  - Dell has increased it's volume of business and product related translation from 30 million words to 60 million words in two years.
- Social media will play a major role
  - Analysis and data mining of social media
  - Translations targeted at social media



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## World Map of Social Networks



**Think beyond Facebook and Twitter**  
**Think socially by market**

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Cyworld	Iwiw	Nasza-klasa	Skyrock
Facebook	Lidé	Odnoklassnik	V Kontakte
Friendster	Maktoob	One	Wretch
Hi5	Mixi	Orkut	Zing
Hyves	MySpace	QQ	

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## Social Media Means Big Data

### WHAT IS BIG DATA?


**VOLUME**  
Large amounts of data

**VELOCITY**  
Needs to be **analyzed** quickly


**VARIETY**  
Different **types** of structured and unstructured data

**VARIABLE**  
All the above **varied** by language


**Data Volumes**




**30 billion pieces of content** were added to Facebook this past month by 600 million+ users




**Zynga processes 1 petabytes of content** for players each day; a volume of data that is unmatched in the social game industry.



**More than 2 billion videos** were watched on YouTube... yesterday



The average teenager sends **4,672 text messages** per month



**32 billion searches** were performed last month... on Twitter.

**MT and Human Translation will play key roles**

Source: Gartner

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## Translation Streams

- As types of data change, a growing portion of the translation work for humans and machines will be in the form of translation streams.
- Project work will still be important, but will become a rapidly shrinking portion of the work as the industry grows.
- Speed will be a key factor
- Quality will suffer initially, but recover over 2-3 years



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## Discovery and Data Mining

- Automated translation for the purposes of discovering information will grow
- Cross border litigation
  - i.e. Apple vs. Samsung
- Patents
  - Millions of documents in each language
- Research
- Market Analysis
- Sentiment Analysis



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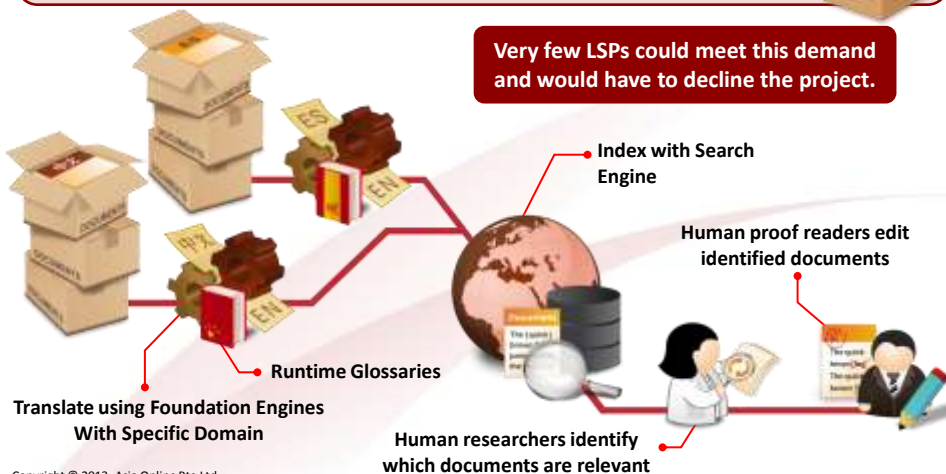
## Legal Discovery

### Client Requirements

- Translate 70,000 documents from Chinese to English within 1 week.
- Translate 40,000 documents from Spanish to English within 1 week.
- Some documents are legal, some are email, some are marketing.



Very few LSPs could meet this demand and would have to decline the project.



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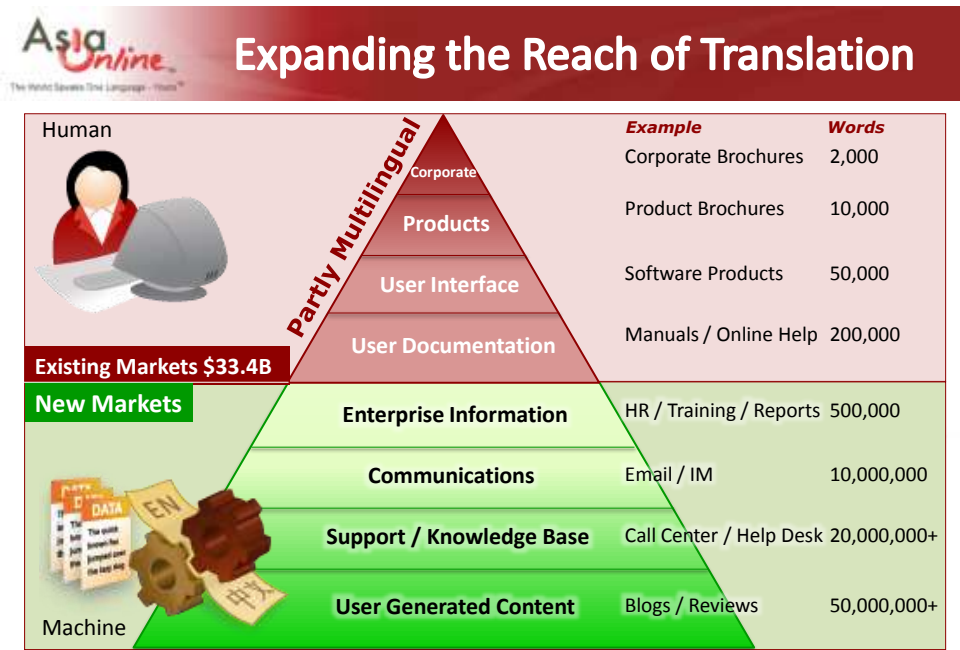
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Machine Translation or Nothing!

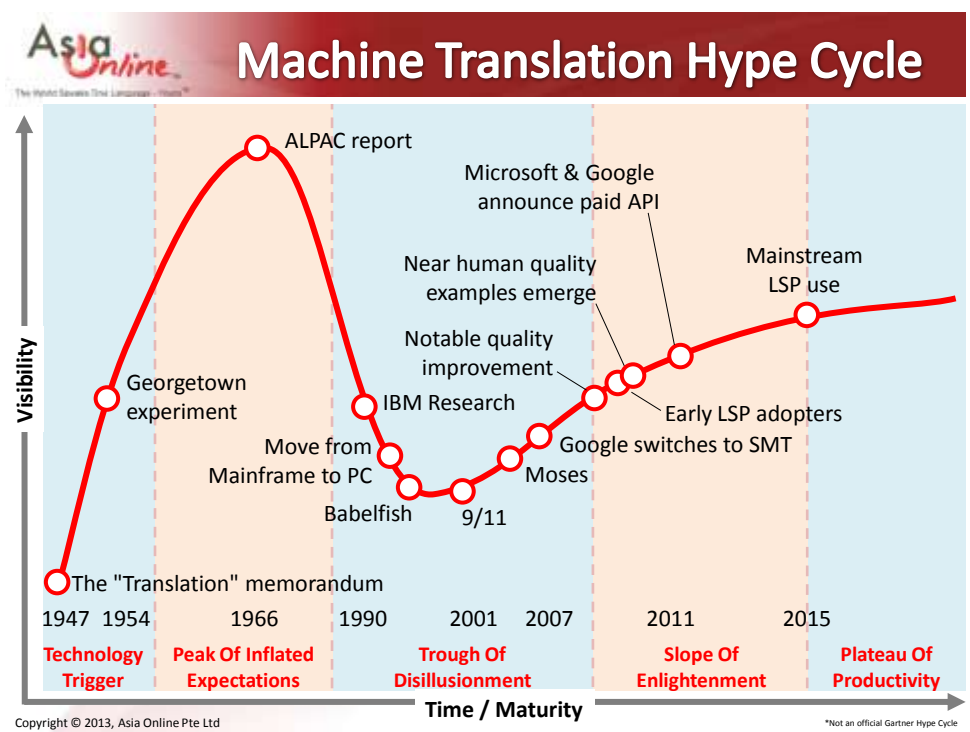
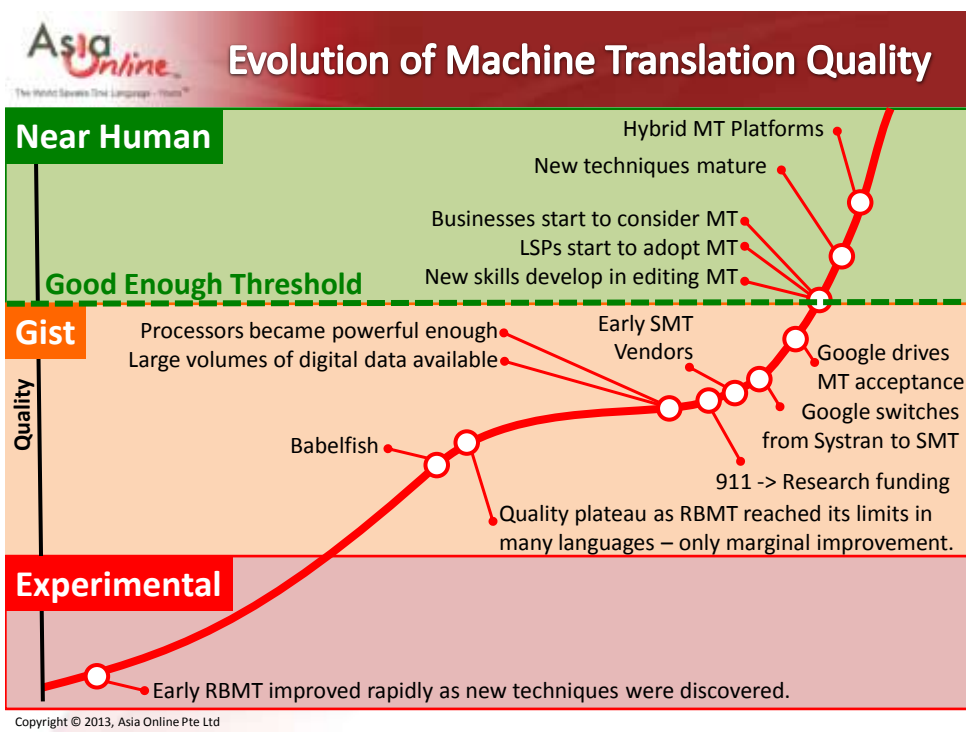
Translate 13 million historical patents from Japanese to English and also translate all new Japanese patents going forward. Follow this with the same task in many other languages.

*It would take a human translator 152,257 years to translate all existing Japanese patents into English and would cost US\$ 40 billion.*

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Let us be honest about translation...

*Whether human or machine -  
where there is translation, there will be errors*

Machine translation  
errors make me laugh.

**BUT**

Human translation  
errors make me cry!



***Machine translation is not perfect. Neither is human translation.***

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We all make mistakes and have  
misunderstandings



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## Not Checking The Translation



**“I am not in the office at the moment.  
Please send any work to be translated.”**

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## Humans and Machines Together



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## Tell me "how"

<p><b>Google</b></p> <p>how do I how do I <b>love thee</b> how do I <b>get a passport</b> how do I <b>put this gently</b> how do I <b>live without you</b></p>	<p>how can I how can I <b>keep from singing</b> how can I <b>lose weight fast</b> how can I <b>last longer in bed</b> how can I <b>keep from singing lyrics</b></p>	<p>how does one how does one <b>become a saint</b> how does one <b>tree hill end</b> how does one <b>get mono</b> how does one <b>get ringworms</b></p>
<p><b>Google</b></p> <p>how do you how do you <b>take a screenshot</b> how do you <b>know</b> how do you <b>get pink eye</b> how do you <b>get mono</b></p>	<p>how can you how can you <b>mend a broken heart</b> how can you <b>get hiv</b> how can you <b>get herpes</b> how can you <b>mend a broken heart lyrics</b></p>	<p>how do individuals how do individuals <b>develop autoimmune diseases</b> how do individuals <b>acquire and develop language</b> how do individuals <b>influence public policy</b> how do individuals <b>manage stress</b></p>
<p><b>Google</b></p> <p>how do we how do we <b>see</b> how do we <b>see color</b> how do <b>websites make money</b> how do we <b>account for me</b></p>	<p>how can we how can we <b>be lovers</b> how can we <b>stop bullying</b> how can we <b>stop global warming</b> how can we <b>conserve water</b></p>	<p>how does an individual how does an individual <b>exercise self-control</b> how does an individual <b>judge right from wrong</b> how does an individual <b>invest</b> how does an individual <b>401k work</b></p>
<p><b>Google</b></p> <p>how do they how do they <b>do it</b> how do they <b>test for the flu</b> how do they <b>make almond milk</b> how do they <b>make baby carrots</b></p>	<p>how can they how can they <b>hear</b> how can they <b>hear unless</b> how can they <b>believe unless</b> how can they <b>film moonshiners legal</b></p>	<p>how can an individual how can an individual how can an individual <b>buy stocks</b> how can an individual <b>change history</b> how can an individual <b>start a business</b></p>
	<p>how can one how can one <b>person make a difference</b> how can one <b>person change the world</b> how can one <b>receive fundamental rights</b> how can one <b>destroy endospores</b></p>	

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## Rock Concert Audience Evolution

The illustration shows the evolution of rock concert audience gestures across four time periods:

- 1960's:** Three hands showing the peace sign (V-sign), a peace symbol, and a hand with a peace sign tattoo.
- 1980's:** Three hands showing the rock on (devil horns) gesture, a pentagram symbol, and a hand with a pentagram tattoo.
- 1990's:** Three hands showing the fist pump gesture, a fist with a bandage, and a hand with a fist tattoo.
- 2012:** Three hands showing a hand holding a mobile phone, a hand holding a digital camera, and a hand holding a flip phone.

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What Is Different This Time Around?

# Machine Translation

## 50 Years of eMpTy Promises

**Q** Why does an industry that has spent 50 years failing to deliver on its promises still exist?

**A** An infinite demand – a well defined and growing problem that has always been looking for a solution – what was missing was **QUALITY**

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**ACTUAL BURGER**

- MOST ATTRACTIVE ANGLE



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## Evolution...



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## Modern Translation on a Global Scale



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## What is Translation Automation?

- Translation automation has been occurring piece meal over the last few decades, with major advances being offered by the personal computer, the internet and translation memory systems among others.
- These advances automate tasks that were either labor intensive or just not possible with a human only approach. Benefits have been delivered to enhance scalability and productivity.
- Translation Automation Includes:
  - Data Extraction and Conversion
  - Translation Memory Management
  - Project Management
  - Human Resource Management
  - Terminology Management
  - Machine Translation

***MT has only recently become a part of these tools***



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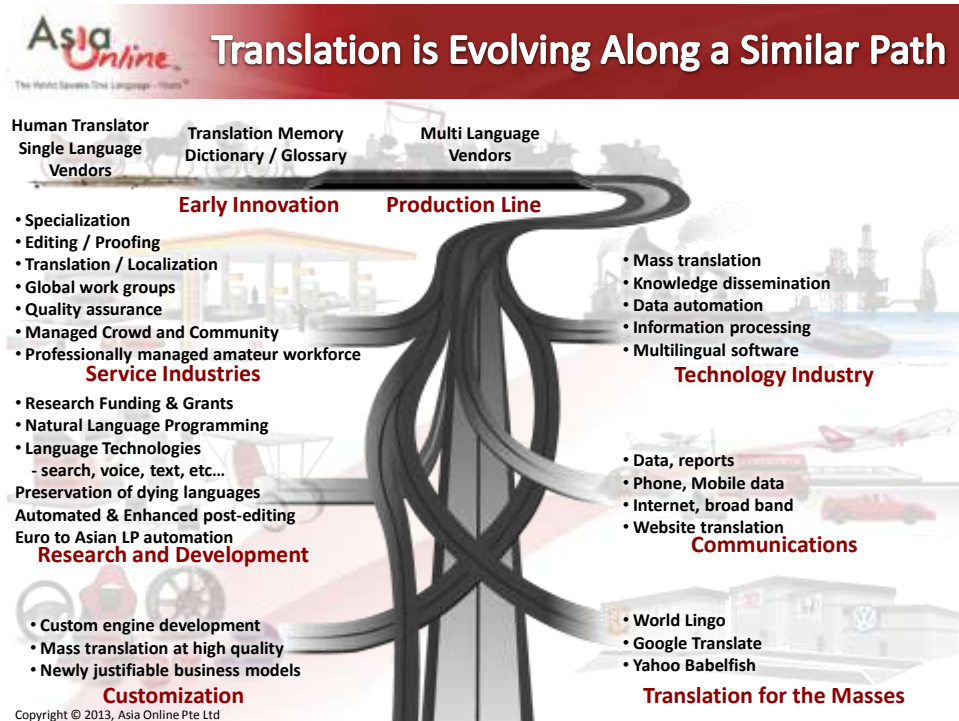
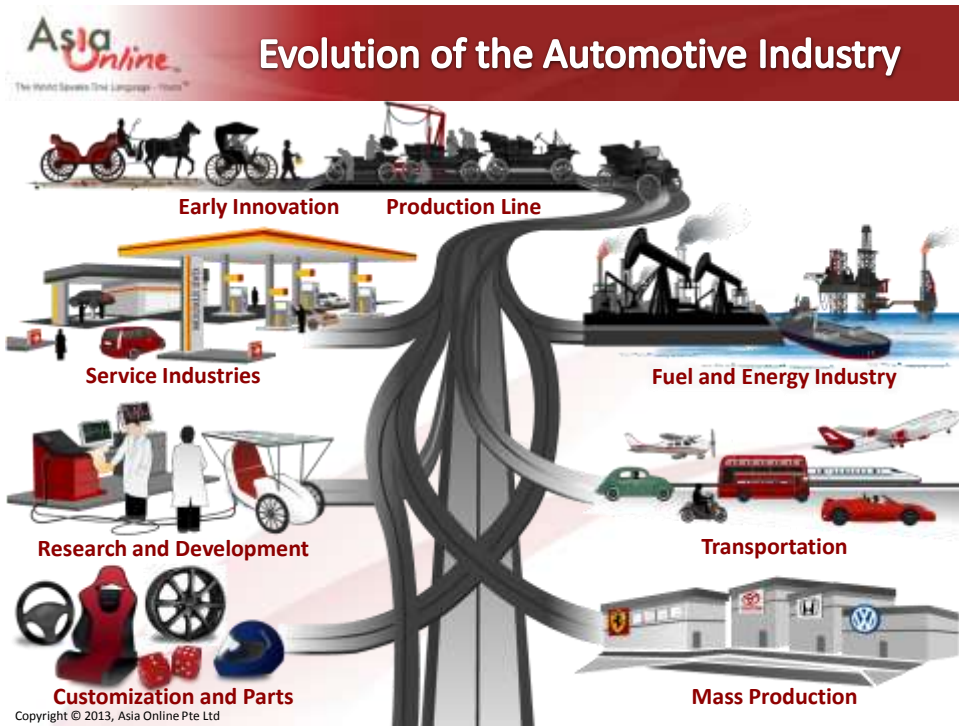


***Many are worried that automated translation tools will replace human translators.***

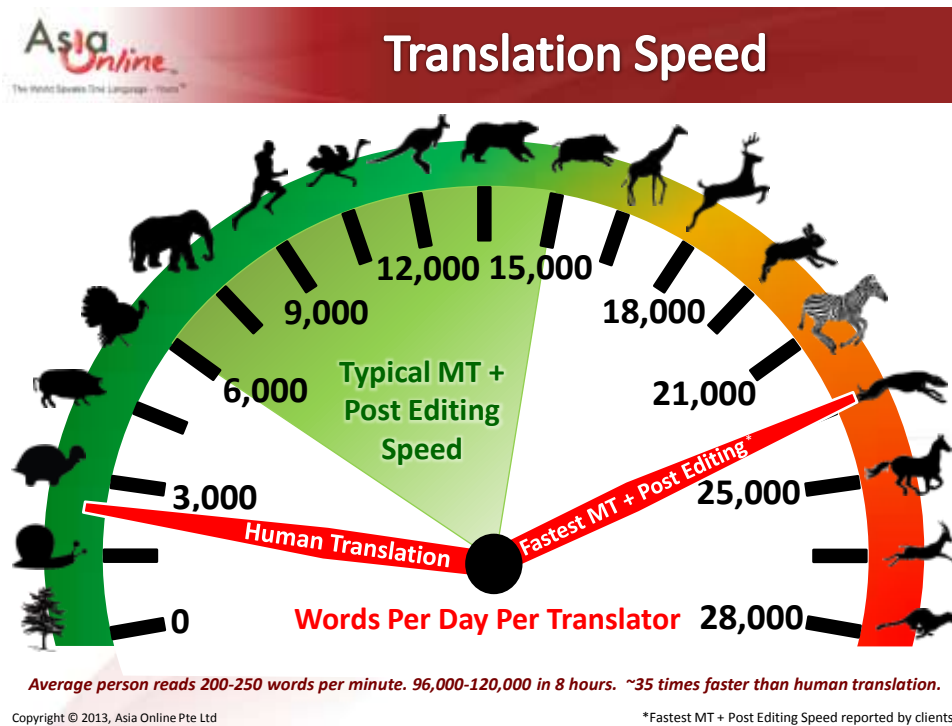
**This will not happen.**

***However, human translators using automated tools will replace human translators who do not use such tools.***

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## Top 5 Reasons For Not Adopting MT

- 1. Perception of Quality**
  - Many believe Google Translation is as good as it gets / state of the art.
  - This is true for scale, but not for quality.
- 2. Perception of Quality**
  - Perfect quality is expected from the outset and tests using Google or other out-of-the-box translation tools are disappointing.
  - When combined with #1, other MT is quickly ruled out as an option.
- 3. Perception of Quality**
  - The opposite to #2. Human resistance to MT. "A machine will never be able to deliver human quality" mindset.
- 4. Perception of Quality**
  - Few understand that out-of-the-box or free MT and customized MT are different.
  - They don't see why they should pay for commercial MT as quality is perceived as the same.
- 5. Perception of Quality**
  - Quality is not good enough as raw MT output.
  - The equation is not MT **OR** Human. It is MT **AND** Human

Quality  
The quick brown fox jumped over the lazy dog

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## Quality is a Factor of Purpose

### Establish Clear Quality Goals

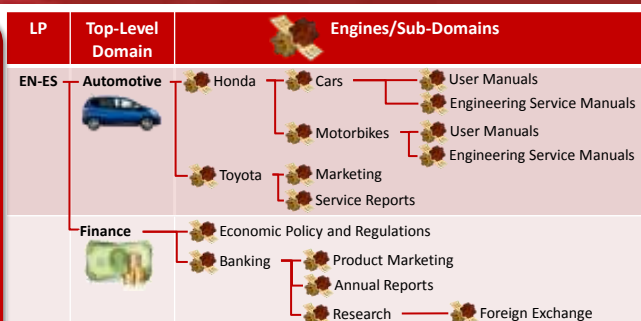
- Step 1 – Define the purpose  
Step 2 – Determine the appropriate quality level

- **Document Search and Retrieval**
  - **Purpose:** To find and locate information
  - **Quality:** Understandable, technical terms key
  - **Technique:** MT
- **Knowledge Base**
  - **Purpose:** To allow self support via web
  - **Quality:** Understandable, can follow steps outlined
  - **Technique:** MT + Human for early documents
- **Search Engine Optimization (SEO)**
  - **Purpose:** To draw users to site
  - **Quality:** Higher quality, near human
  - **Technique:** MT + Human (student, monolingual)
- **Magazine Publication**
  - **Purpose:** To publish in print magazine
  - **Quality:** Human quality
  - **Technique:** MT + Human (domain specialist, bilingual)

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## Professionals Move Away From Free MT

*Growing acceptance that quality from a focused custom engine targeted at a specific audience and writing style*



Spanish Original	Se necesitó una gran maniobra política muy prudente a fin de facilitar una
Before Translation:	cita de los dos enemigos históricos.
Business News	Significant amounts of cautious political maneuvering were required in order
After Translation:	to facilitate a rendezvous between the two bitter historical opponents.
Children's Books	A lot of care was taken to not upset others when organizing the meeting
After Translation:	between the two long time enemies.

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## Upstart LSPs

### ***Innovation from Outside the Industry***

- A small number of new LSPs will be very technology driven, highly automated and provide new business models
- “Upstarts” will be fast and agile businesses, highly adaptive to change in order to meet and create new market opportunities.
  - New techniques
  - Crowd sourcing
  - Editing on the run... Mobile phones while on the train or bus
- “Upstarts” will capture market quickly, taking some business from established LSPs in addition to new business.
  - Larger more traditional LSPs will struggle to compete and will evolve to slow to block the challenge.
- Many will be focused on lower quality, rapid turn around, smaller, ad-hoc translation projects.
  - 1-6 pages projects
  - Pay by credit card in advance
  - Limited quality control
  - High volume of jobs
  - High levels of automation
  - Fast delivery times
- A key market focus will be smaller companies embarking on their first globalization and localization projects
  - Results may cause some disillusion



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## By Year End 2015

***Leading LSPs will be translating more content in 1 year than in the previous 5 years combined.***

- Globalization is increasing
- Information creation is accelerating
- Translation automation is a mainstream tool
- MT quality is improving
  - Many examples of MT productivity rates matching the equivalent of an 85% fuzzy match on translation memories
- MT + Post Editing is rapidly becoming the norm
- Overall translation speed is increasing

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## Despite Growth, Acute Shortage

***Translation Demand is increasing.  
Translator Supply is decreasing***



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## The Impact of a Translator Shortage

### ***Skilled Translator Supply is Shrinking***

- It is already clear that at 2,000-3,000 words per day per translator that demand is many multiples of supply.
- LSPs are having trouble finding qualified and skilled translators
  - In part due to lower rates in the market and more competition for resources
- **Wave of new LSPs and translators**
  - Many will try to capitalize on the market opportunity created by translator shortage, but with deliver sub-standard services
  - Lack of experience – both new LSPs and translators
  - Lower quality translations will become more common place



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## By Year End 2015

***There will be more demand for translators and more translators than ever before. Roles in the industry will evolve & change.***

- **Post-editing MT a key skill**
  - Some resources will not be able to adapt well
  - Others will evolve quickly and excel
- **New pool of resources**
  - Easier for early career translators
- **MT project management**
- **MT customization skills**
- **More technical skills**
- **Consulting skills**
  - What can be done with a combination of MT and human translation
- **Systems integration and workflow**

***Many specialists will re-invent themselves around MT***

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## Maturing End Customers

### *Translation buyers are understanding the value of localization processes and data*

- Prior to mainstream adoption of translation automation, most localization was mostly outsourced
  - No consideration for translation assets being created
- As enterprise globalization strategies mature, so does the understanding of the translation assets being created
- Many enterprises are assessing strategies and making notable changes
- Improvements in processes:
  - Requisition, purchasing, management and metrics.
- Working to avoid vendor lock in and enabling greater vendor choice
- Improvement in skills:
  - Vendor management
  - Translation memory management
  - Some are bringing MT in house and outsourcing the post editing only (both commercial and open source)

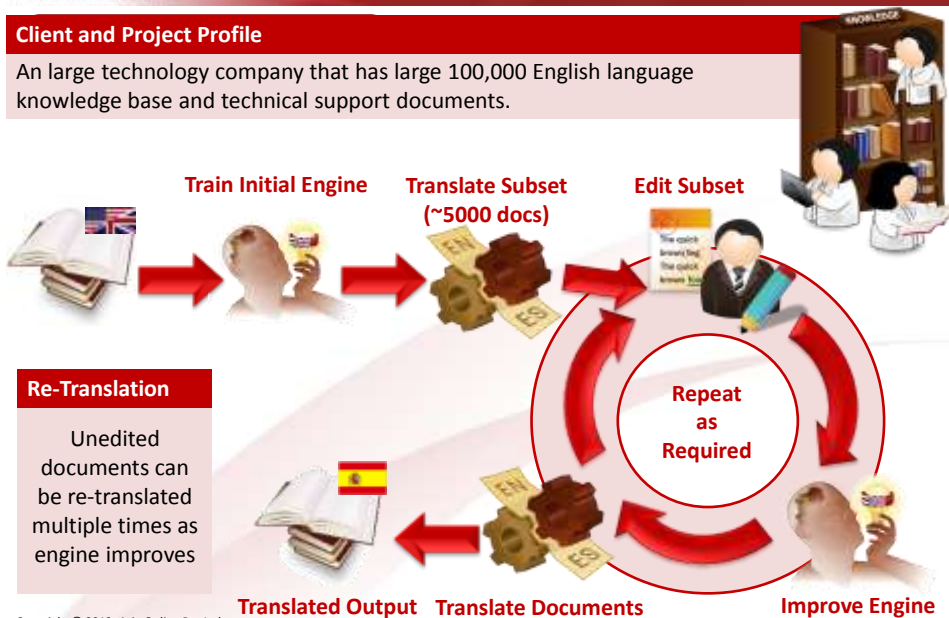
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## Re-Translation Will Become Common

### Client and Project Profile

An large technology company that has large 100,000 English language knowledge base and technical support documents.



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## Monolingual Translations Grows Quickly

- Compromises on quality are acceptable in some cases:

Medical  
Financial information  
Publication



Travel and product reviews  
User generated content  
Forums  
Blogs



**Monolingual translation:**  
**Step 1: MT**  
**Step 2: Post edit without looking at target content**

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## Closing Thoughts:

**Buckminster Fuller** (July 12, 1895 – July 1, 1983)

- American architect, author, designer, inventor, futurist and one of the key innovators of the 20<sup>th</sup> century.



**"We are called to be architects of the future, not its victims."**

**"Don't fight forces, use them."**



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## Language Convergence The Power of People and Technology



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Chief Executive Officer  
[dion.wiggins@asiaonline.net](mailto:dion.wiggins@asiaonline.net)

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