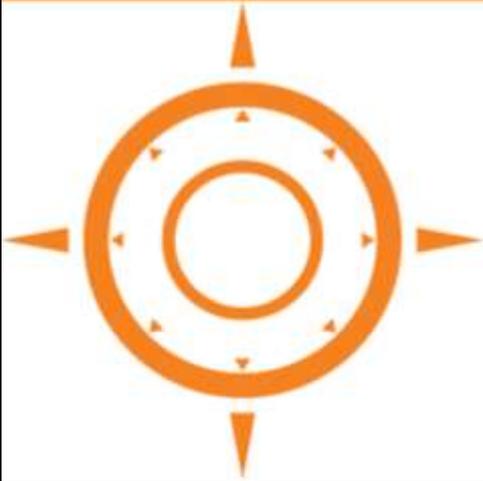


# Common Sense Advisory



## When Machines Learn, What Do People Do?

December 7, 2018

Donald A. DePalma, Ph.D.

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[https://smile.amazon.com/gp/product/1641770147/ref=oh\\_aui\\_detailpage\\_o03\\_s00?ie=UTF8&psc=1](https://smile.amazon.com/gp/product/1641770147/ref=oh_aui_detailpage_o03_s00?ie=UTF8&psc=1)

### **The Once and Future Worker: A Vision for the Renewal of Work in America**

The American worker is in crisis. Wages have stagnated for more than a generation. Reliance on welfare programs has surged. Life expectancy is falling as substance abuse and obesity rates climb.

These woes are not the inevitable result of irresistible global and technological forces. They are the direct consequence of a decades-long economic consensus that prioritized increasing consumption—regardless of the costs to American workers, their families, and their communities. Donald Trump's rise to the presidency focused attention on the depth of the nation's challenges, yet while everyone agrees something must change, the Left's insistence on still more government spending and the Right's faith in still more economic growth are recipes for repeating the mistakes of the past.

In this groundbreaking re-evaluation of American society, economics, and public policy, Oren Cass challenges our basic assumptions about what prosperity means and where it comes from to reveal how we lost our way. The good news

is that we can still turn things around—if the nation’s proverbial elites are willing to put the American worker’s interests first.

Which is more important, pristine air quality, or well-paying jobs that support families? Unfettered access to the cheapest labor in the world, or renewed investment in the employment of Americans? Smoothing the path through college for the best students, or ensuring that every student acquires the skills to succeed in the modern economy? Cutting taxes, expanding the safety net, or adding money to low-wage paychecks?

The renewal of work in America demands new answers to these questions. If we reinforce their vital role, workers supporting strong families and communities can provide the foundation for a thriving, self-sufficient society that offers opportunity to all.

## Topic of today's presentation

- The mainstream social and business impact of AI
- A view of where and how AI fits in the language sector
- Analysis of where it might not work – at least in the foreseeable future
- The requirement to re-think your business to reflect this new reality

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React to the mainstream discussion: existential crisis re. general economic change and effect on particular industries, roles, jobs

Determine how it actually fits in your world – AI in real world with different definition, role in automation and language, and practical application

Understand where it might not work – CRV radar image, NLP in Watson Health, NYT article, complexity of MT and confidence score

Gauge the actual impact on your business

Rethink your business to reflect the new reality – training will be a big issue

The buzz, hype, and reality of artificial intelligence

How and where AI intersects with language technology and services

The impact of investment in mainstream AI and related technologies

Existential crisis

Rise of the machines

Job loss

Job enhancement

Buggy whip and coal-powered Porsche

Business media and commentators trumpet the latest announcements from Google, Amazon, and DeepL. Their story is that machine learning and translation will eliminate the need for human translators and language service providers.

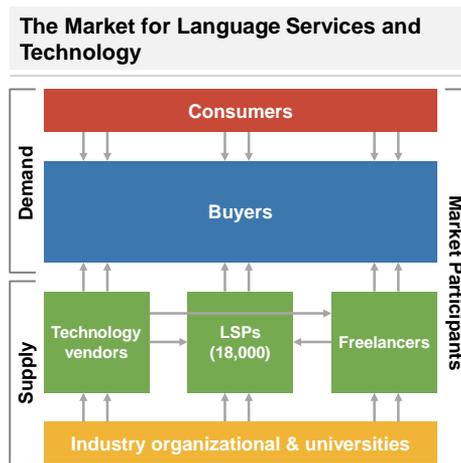
In this presentation, Dr. DePalma draws on Common Sense Advisory's research in the roles, capabilities, and technologies that support translation, localization, and interpreting.

He analyzes the role of machine learning in the language services sector and its impact on LSPs, employees and contractors, and the companies that buy their services.

I'd like to avoid "AI This" or "AI That" in the title since every other presentation at the conference will likely have AI in the title. I discussed this with Arle the other day and he agrees. Also, there is some overlap with the presentation he's making in London next month in terms of technology change over time, so we may be able to feed some ideas into each other's presentations.

This would allow me to discuss automation, process, and human capital development in the era of AI-driven automation.

# Comprehensive research for leaders



## How we gather primary quantitative and qualitative data

- ▶ Representative surveys of the market
- ▶ Confidential in-depth interviews with buyers and suppliers
- ▶ Ongoing reviews and briefings with ISVs
- ▶ Detailed reviews of technology products
- ▶ In-depth review and analysis of global websites
- ▶ Global consumer panels
- ▶ Research-based advisory sessions
- ▶ Strategy days
- ▶ Colloquia with buyers
- ▶ Consulting engagements and maturity assessments

Common Sense Advisory



We're a market research company and we apply a systematic market research methodology to the language services industry. We have a team of analysts on staff who focus on comprehensive in-depth research on best practices, processes, technology related to language services. Our specialty is to focus on gathering and analyzing primary data, meaning that we don't analyze data that others collect but get to the source ourselves. To achieve that, we interview and survey buyers and providers about what they do, and we also interview information consumers about how they consume the content provided by these companies. Each report we write takes months of research, analysis, and development before we can publish it. Because of our independence, methodology, in-depth statistical analysis, and objectivity, people have entrusted us with their data for over 14 years and also trust the insights we provide to them.

With that in mind, let's move on to today's topic. **END**

# Кому это важно в космическом масштабе?

*Фёдор Сологуб*

*Common Sense Advisory*



React to the mainstream discussion: existential crisis re. general economic change and effect on particular industries, roles, jobs

# AI means different things to different people



Buzzword

Artificial Intelligence



Technology

Machine Learning



Science

Predictive Analytics

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Complex graphic - <https://towardsdatascience.com/artificial-intelligence-fundamentals-making-machine-intelligent-d3f28f236c7>

AI > Machine Learning > Predictive Analytics = buzzword popularization, the practice, the science

Use this a unifying principle and return to it at the end

<http://www.vertexsoftwares.com/hire-php-developers/>

## Academics underscore the business imperative of AI

“The status quo of dividing up work between minds and machines is falling apart very quickly. Companies that stick with it are going to find themselves at an ever-greater competitive disadvantage compared with rivals who are willing and able to put ML to use in all places where it is appropriate and who can figure out how to effectively integrate its capabilities with humanity’s.”

- Erik Brynjolfsson and Andrew McAfee, “The Business of Artificial Intelligence: What It Can and Cannot Do,” *Harvard Business Review*, May 2017

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**NLP researchers: Allen Newell, Herb Simon, and Jaime Carbonell**

**Fortune: 25 ways is changing your business + 4 waves**

## World leaders see the value of leadership in this field

“Тот, кто станет лидером в этой сфере, будет властелином мира.”

“также будет делиться этими технологиями со всем миром как мы сегодня делимся атомными технологиями.”



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# Fortune, October 2017

<https://www.theverge.com/2017/9/4/16251226/russia-ai-putin-rule-the-world>

From September address to students across Russia.

However, the president said he would not like to see anyone “*monopolize*” the field.

“*If we become leaders in this area, we will share this know-how with entire world, the same way we share our nuclear technologies today,*” he told students from across Russia via satellite link-up, speaking from the Yaroslavl region.

“the one who becomes the leader in this sphere will be the ruler of the world.”

“Whoever becomes the leader in this sphere will become ruler of the world.”

if Russia is a leader in the field of artificial intelligence, “it will also share these technologies with the world as we are sharing atomic technologies today.”

## **But many LSPs are experiencing an existential crisis – even as they adopt AI**

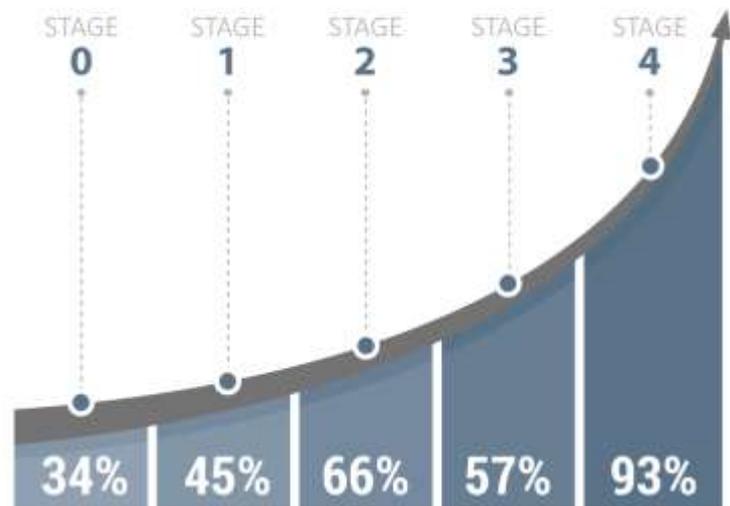
- Existential risk for linguists and language service companies
- Limitations of machine learning technology
- Application of AI to wrong project types
- Lack of LSP readiness in re-focusing their differentiation
  
- All of these result in concerns about:
  - Major concern: Job loss due to losing business to DeepL and Google
  - Worst case: The end of translation as a business



## MT adoption



### Based on LSP Metrix™ Operational Maturity



Source: "LSP Business: Percentage Adoption of MT" © Common Sense Advisory, Inc.

N = 486

Common Sense Advisory

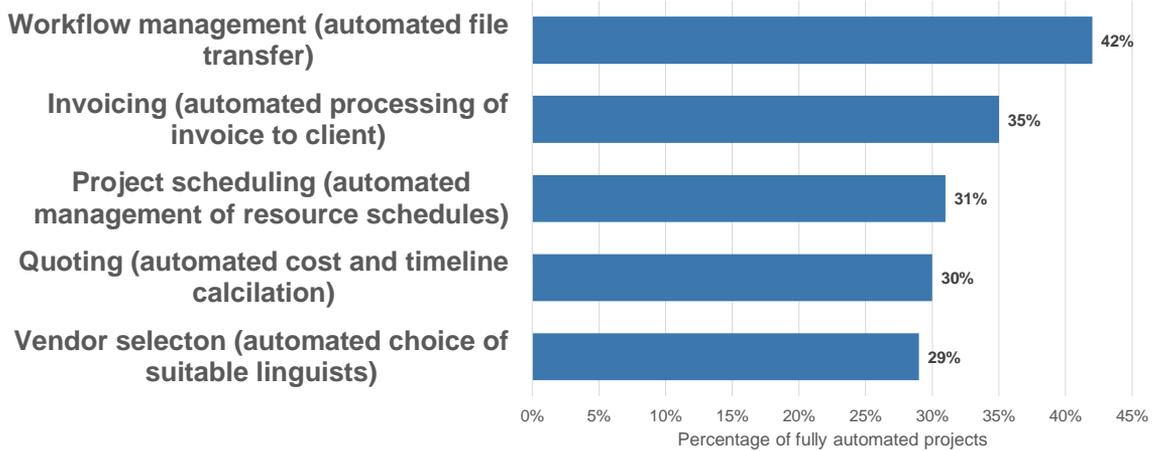


In our annual market survey, we asked respondents to tell us whether they use MT. Out of 486 responses, we found that [CLICK] 51% of LSPs already use one form of MT or another. Now, it doesn't mean it's neural MT, NMT was too new when we had launched that survey. However, we just closed the 2018 version of the survey and released the new market sizing information. From this year's data, we plan on reporting on NMT-specific data soon.

What's very interesting is that MT adoption follows the natural maturity curve of LSPs. [CLICK] The graphic on screen is based on LSP Metrix, the maturity model we developed to describe how LSPs evolve over the course of six developmental stages. You can see that nearly all of the most mature LSPs have MT capability – and those that don't are actually interpreting-centric companies. But that's not to say that the least mature LSPs don't use it as about a third of them already do.

The counterpart to this data is data on project management automation at LSPs.  
**END**

## Automation in project management at LSPs



Source: "Will AI Eliminate the Need for Project Managers?" © Common Sense Advisory, Inc.

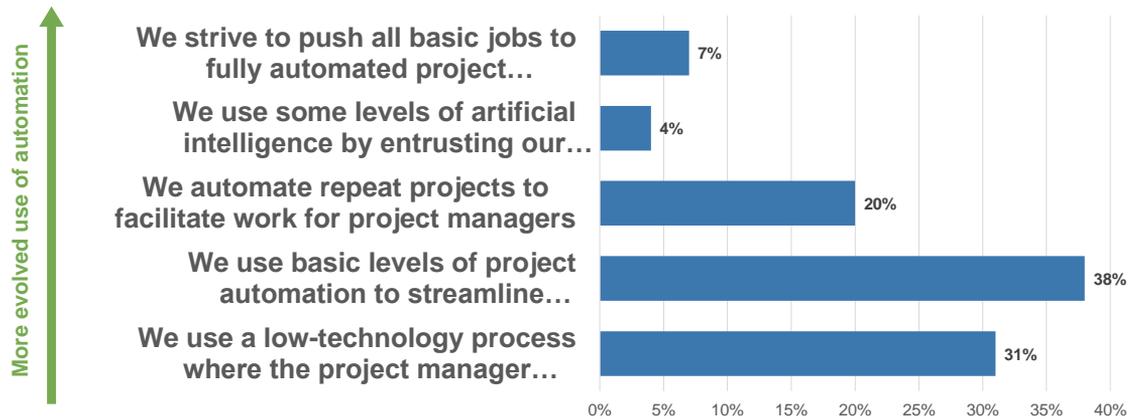
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In the same survey, we asked respondents whether they had implemented five commonly automated processes for any projects. Again, this is automation in general, not AI-specific. You can see here [\[CLICK\]](#) that 42% of LSPs use workflows for automatic file transfers. That still leaves a whole lot of LSPs with still very human-dependent processes. There's more such data in the research. [\[CLICK\]](#) Here's the data for invoicing, project scheduling, quoting, and vendor selection. I can't cover it all here, but for clients, you definitely will want to review the whole research piece. **END**

# Nascent use of machine learning in project management

To what degree do you use automation to coordinate projects?



Source: "The State of Project Management at LSPs" © Common Sense Advisory, Inc.

N=324

Common Sense Advisory



Another survey we conducted last year was with project management teams. 324 heads of project management teams told us about the degree of automation used on projects. Note that we asked for actual and not wishful practices. Answers mirror the same maturity evolution we typically observe at LSPs. [CLICK]

- **Automation adoption remains low.** Numbers may seem negligible with just 7% that strive to push all basic jobs to fully automated processes and [CLICK] 4% that use some level of artificial intelligence. Full automation is still in the early adopter phase. Those LSPs with higher levels of automation – particularly on basic jobs – can process jobs faster, cheaper, and more profitably. We also expect the balance in this graphic to shift over time to include much more automation. [CLICK]
- **Not surprisingly, we found that a low-tech approach dominates.** [CLICK] 38% of respondents that rely on automation to just streamline communication and file transfer – a common feature of TMSes and [CLICK] 31% have project managers coordinate everything personally.

One of the big questions then is why this shift toward greater automation? **END**

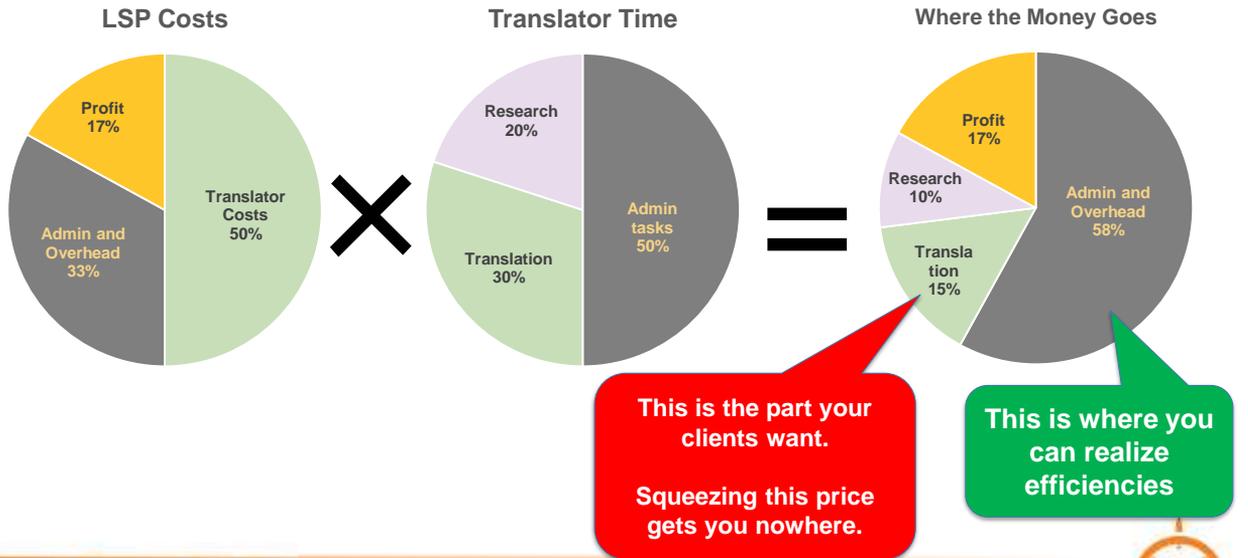
# Machine learning in the Language Sector

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Use title slides to help the audience follow the flow that was outlined in the agenda.

## Unpacking the impact of machine learning: Reduce the overhead of translation



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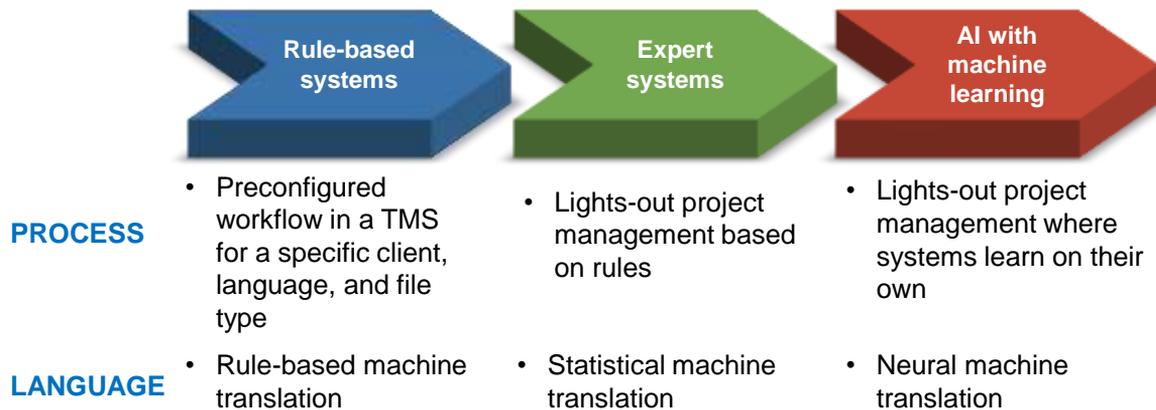
One way of visualizing the problem is this. Going back several years, we find that about half of LSP costs go to translation, with the other half divided in some fashion between overhead and profit, with overhead usually taking up the lion's share of that. Some of this is essential, such as costs to keep the lights on, buy computers, and develop technology. However, much of it goes to repetitive and manual tasks that do not add value.

In consulting with LSPs that have looked into their supply chain, we find a similar breakdown for translators. They spend about half their time on administrative tasks, such as sending emails, sending invoices, filling out forms, downloading and converting files, and marketing themselves. Again, some of this is inevitable, but the amounts are high. We find that they spend perhaps 30% of their time actually translating and another 20% doing research to support translation.

Multiplying these two things together shows us that the majority of what clients pay goes to overheads, and only about 15% ends up going to translation, which is all the client really wants. If we could find a way to reduce the admin and overhead and research categories, we could increase the percentage that goes to translators and to profit, which would be a win-win for everyone.

This presentation is fundamentally about how the industry can find and eliminate waste in the process to reduce these. Waste is a concept will explore in greater depth, but it includes both technical and process interoperability issues, as well as broader ones.

## The history of language industry automation



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- **First, [CLICK] there are rule-based systems.** These systems deliver the most basic automation. That's what you use when you process files in a rule-based MT engine that replaces each term by its translation and applies grammar rules to it. Similarly, that's what you use when a translation management system applies a preconfigured project plan for a specific client relying on preconfigured price sheet, translation memory, and translator list. When the system encounters an undefined situation, such as a new customer, or new language for a client, the pre-configured workflow stops and calls for human intervention. [CLICK]
- **The next level up from that are expert systems,** which go a step beyond pre-loading data for each scenario. Instead, they apply complex rules to quote rates and turnaround times, choose workflows, and select vendors based on project specifications. In this touchless environment, human intervention occurs when the system flags a need for it. For example, the software may discover a shortage of vendor options that can handle the work in the assigned turnaround time. [CLICK]
- **AI with machine learning is the most advanced form of automation.** As systems move beyond rules, they learn on their own by analyzing data in the absence of explicit direction using deep learning techniques. What happens is that you use automation to create automation. For example, an AI-driven system can predict timelines based on actual translator performance for

specific types of content. It flags the odds of a translation passing a pre-set quality threshold based on analysis of events such as whether the linguist opened a provided glossary.

On the next five slides, we're going to cover 5 examples of AI deployments. I'm now going to pass the baton shortly to Arle to talk about the role of artificial intelligence in machine translation. **END**



“Lights out” manufacturing is the term used for a manufacturing process where factories run fully autonomously, without any human intervention. The term is quite literal, with production occurring free of human necessities like lighting or heating, ventilation and air conditioning (HVAC).

## Process: Lights-out automation

Natural Language  
Processing

- Eliminate human-performed tasks where the human doesn't add value
- Augment capabilities of those humans who remain
- Enhance capacity
- Customize to client requirements

Confidence increases with data availability and analysis

The more testable and circumscribed situation of frequently performed tasks or operations for which you can capture innumerable test cases, permutations, and compare them with the expected outcomes.

PM can be tested and rolled out with utmost certainty of outcomes

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Asha Franz for Business Week DATE

Brain <https://towardsdatascience.com/artificial-intelligence-fundamentals-making-machine-intelligent-d3f28f236c7>

Uses machine learning to route jobs without manual intervention

Can **intervene** when projects are in danger

Handles **billing and payments**

Eliminates much of the **process overhead and mud**

Lights-out project management is a relatively new technology that seeks to eliminate the need for human project management for routine tasks. It leaves project managers free to focus on problems when they arise. It

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[click] Because it integrates with cloud-based translation environments, it knows when linguists are in danger of missing deadlines and can supply additional resources before it would be apparent to a human that there is even a problem.

[click] Lights-out systems can handle billing and payments. In fact, some of the earliest systems of this sort we have seen are free for use but make their profit off of fees for financial transactions under the theory that LSPs will be happy to pay minor fees if they can eliminate much of their PM overhead. In another case, we have talked to an LSP that has built its services around this sort of technology and as a result has no project managers, just vendor managers responsible for recruiting linguists.

[click] As a result, these systems can eliminate much of your overhead. Project managers can move up to become troubleshooters and experts in dealing with those projects that do require more human intervention because they no longer had to shuffle e-mails and files. This piece alone has the potential to reduce that big chunk of the pies I showed earlier that has to do with overhead and management.

## Process: Increase the range of operational delivery



- Augment or enhance tasks such as look-up or promises like TAT
- Eliminate any task where wetware doesn't add value.
- Redirect humans to where they do add value
- Enhance the power of each human



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Demonstrate that machine learning may design workflows but larger scale design requires expert human insight and analysis. This will be a longish argument.

## Process: Use humans as validators



AI talent is scarce and expensive:

“Typical A.I. specialists, including both Ph.D.s fresh out of school and people with less education and just a few years of experience, can be paid from \$300,000 to \$500,000 a year or more in salary and company stock.” NYT 10/22/17

Established tech companies and start-ups will consume a lot of them.

And humans, knowing or not, are essential to the training discipline.

Core = intelligence derived from humans:

- Expert systems

- Business rules

Painstakingly gathered, modified, and built into software systems

Static systems okay for set processes like FANUC

But not good for dynamic situations:

- Driving cars

- Translating human language

Dealing with infinite variation

Machine learning but with humans still involved with Captcha and Wired

Singularity, rise of machines, Terminator, self-aware systems

## Process: Use humans for their insight – Чеховское ружьё and predictive analytics

- People see patterns and instruct software
- Observation:
- "One must never place a loaded rifle on the stage if it isn't going to go off. It's wrong to make promises you don't mean to keep." *Chekhov*
- The Rule of Chekhov's Gun in literary analysis:
  - Introduce a gun in Act 1
  - It must be fired by Act 3

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**ADD INFERENCE DETAIL – human scholars noticed this pattern, so you can build that into the algorithm.**

Chekhov's gun –

Introduce a gun in Act 1

It must be fired by Act 3

<https://www.quora.com/What-stories-have-a-Chekhov-s-gun>

<https://www.nownovel.com/blog/use-chekhovs-gun/>

"One must never place a loaded rifle on the stage if it isn't going to go off. It's wrong to make promises you don't mean to keep." -Chekhov

'Chekhov's Gun' is a concept that describes how every element of a story should contribute to the whole. It comes from Anton Chekhov's famous book writing advice: 'If in the first act you have hung a pistol on the wall, then in the following one it should be fired. Otherwise don't put it there.'

The term 'Chekhov's Gun' comes from something Chekhov allegedly said in the 1880s (it was noted down by Iliia Gurliand): 'If in Act I you have a pistol hanging on the wall, then it must fire in the last act'. This has become an oft-repeated phrase in fiction and scriptwriting classes because it describes simply how a story needs to obey its own internal logic and honour its most powerful images.

[https://en.wikipedia.org/wiki/Chekhov%27s\\_gun](https://en.wikipedia.org/wiki/Chekhov%27s_gun)

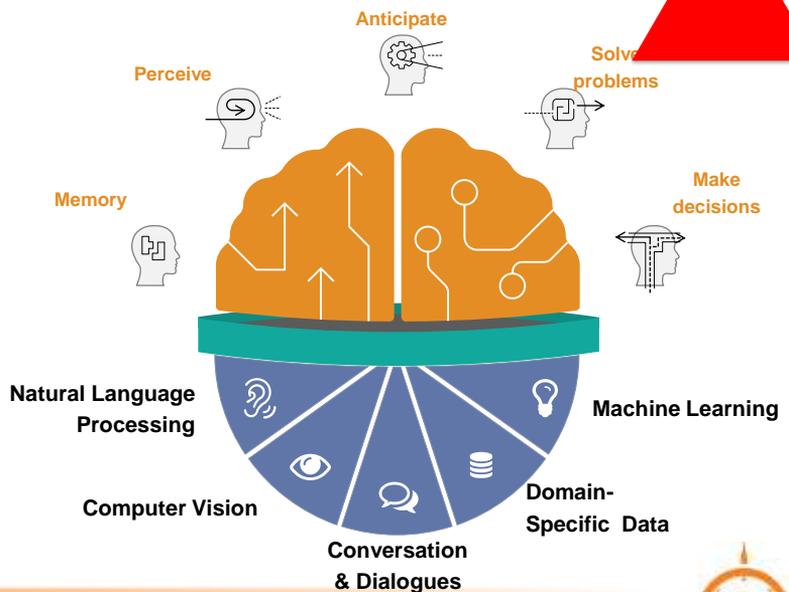
## **Process: Expect high confidence in automated PM**

- Use cases are well-defined instances frequently performed tasks or operations
- Tools and people can capture innumerable test cases, permutations, and compare them with the expected outcomes
- Confidence increases with data availability and analysis
- Conclusion: ML-based can be tested and rolled out with high certainty of outcomes



# Process: Augment humans with predictive power

- FUTURES



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Asha Franz for Business Week DATE

Brain <https://towardsdatascience.com/artificial-intelligence-fundamentals-making-machine-intelligent-d3f28f236c7>

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## Summary: AI impact on process automation and people

### Machine learning for LSPs:

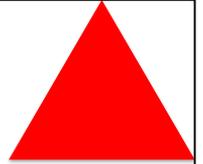
- Xxx
- Yyy
- Zzz

### What ML means for people:

- Xxx
- Yyy
- Zzz :



## Language: machine learning in language lags



- Some advances:
  - Augmented machine translation (pre-editing based n adaptive MT look-aheads)
  - Customization à la BW image of hedge vs topiary. Tools allow for Edward Scissorhands rapid and creative development. Can the technology amplify the skills of Linguists, others so that middling ones improve and great ones become even better and faster?
- Use the not-enough-linguists argument to address volumes
- Use the CRWB argument for bad translation vs none
- Dismiss the argument about centrality of Linguists as currently constituted to state the requirement for giving them superpowers



## Language: machine learning



- Tools allow for **Scissorhands** creative development
- Technology amplifies the skills of all linguists
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## Language: calibrate quality to requirements

- Eliminating, augmenting, anything-else people?
  - Not blood-brain barrier, or singularity, but the idea that performance can be enhanced
- Use the not-enough-linguists argument to address volumes
- Use the CRWB argument for bad translation vs none
- Dismiss the argument about centrality of Linguists as currently constituted to state the requirement for giving them superpowers

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## The net: AI-based language processing is a work in progress

- Failure of high-profile Watson Health's NLP – in English: Globe 11/1/18
  - “Project Josephine was designed to solve a systemic problem with IBM's NLP – customers were telling IBM its products simply weren't working.”
  - “Limited NLP currently in use”
  - “Output errors not uncommon”
  - “Clients report attributes found with NLP are often inaccurate or missed”
  - “NLP developed by one team cannot be used by another”
- **"AI Hits the Barrier of Meaning" – NYT Intl 11/7/18 Melanie Mitchell**

## Л.Н. Толстой “Война и мир” sentence length = 230

Граф же Растопчин, который то стыдил тех, которые уезжали, то вывозил присутственные места, то выдавал никуда негодное оружие пьяному сброду, то поднимал 280 образà, то запрещал Августину вывозить мощи и иконы, то захватывал все частные подводы, бывшие в Москве, то на 136 подводах увозил делаемый Леппихом воздушный шар, то намекал на то, что он сожжет Москву, то рассказывал, как он сжег свой дом и написал прокламацию французам, где торжественно упрекал их, что они разорили его детский приют; то принимал славу сожжения Москвы, то отрекался от нее, то приказывал народу ловить всех шпионов и приводить к нему, то упрекал за это народ, то высылал всех французов из Москвы, то оставлял в городе г-жу Обер-Шальме, составлявшую центр всего французского московского населения, а без особой вины приказывал схватить и увезти в ссылку старого почтенного почт-директора Ключарева; то сбирал народ на Три Горы, чтобы драться с французами, то, чтоб отделаться от этого народа, отдавал ему на убийство человека, и сам уезжал в задние ворота; то говорил, что он не переживет несчастья Москвы, то писал в альбомы по-французски стихи о своем участии в этом деле,<sup>1</sup> — этот человек не понимал значения совершающегося события, а хотел только что-то сделать сам, удивить кого-то, что-то совершить патриотически-геройское, и как мальчик резвился над величавым и неизбежным событием оставления и сожжения Москвы, и старался своею маленькою рукой то поощрить, то задерживать течение громадного, уносившего его вместе с собой, народного потока.

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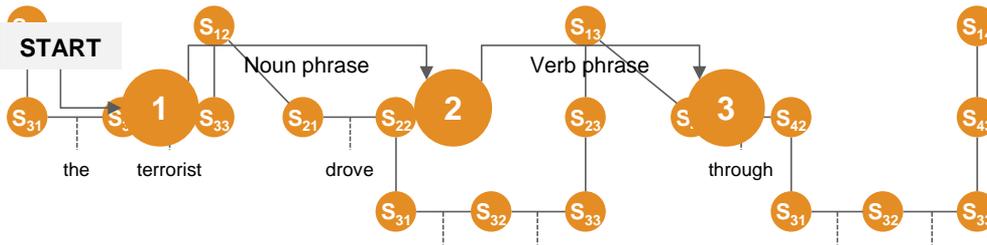
“But Count Rastopchin, who now shamed those who were leaving, now evacuated government offices, now distributed good-for-nothing weapons among the drunken riffraff, now took up icons, now forbade Augustin to evacuate relics and icons, now confiscated all private carts, now transported the hot-air balloon constructed by Leppich on a hundred and thirty-six carts, now hinted that he would burn Moscow, now told how he had burned his own house and wrote a proclamation to the French in which he solemnly reproached them for destroying his orphanage; now he assumed the glory of having burned Moscow, now he renounced it, now he ordered the people to catch all the spies and bring them to him, now he reproached the people for it, now he banished all the French from Moscow, now he allowed Mme Aubert-Chalmet, the center of all the French population of all Moscow, to remain in the city and ordered the old and venerable postmaster general Klyucharev, who had done nothing particularly wrong, to be arrested and exiled; now he gathered the people on the Three Hills to fight the French, now, in order to be rid of those same people, he turned them loose to murder a man and escaped through a back gate himself; now he said he would not survive the misfortune of Moscow, now he wrote French verses in an album about his part in the affair—this man did not understand the meaning of the event that was taking place, but only wanted to do something himself, to astonish someone or other, to accomplish something patriotically heroic, and, like a boy, frolicked over the majestic and inevitable event of the abandoning and burning of Moscow, and tried with his little hand now to encourage, now to

stem the flow of the enormous current of people which carried him along with it.”

<https://www.gutenberg.org/files/2600/2600-h/2600-h.htm>

<http://tolstoy.ru/upload/iblock/519/voina-i-mir.pdf>

## Problem: Managing state and context beyond the word



- раздел
- параграф
- предложение
- синтагма
- слово
- полное собрание сочинений
- книга
- часть
- глава

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A linguistic unit consisting of a set of linguistic forms (phonemes, words, or phrases) that are in a sequential relationship to one another.

Of course it's belles lettres

## NLP: Lower confidence in outcomes

- Translation must deal with context, meaning, register, dialect, locale, domain, and subjective choice plus that hierarchy of word, syntagm, etc. Consequences of bad or inadequate outcomes for translation are substantially higher and less predictable and testable due to unique instance of each piece of translated text
- 
- Text-level evaluation – forget about images, audio, or video unless it's speech-to-text
- Lower confidence: range of linguistic certainty, usefulness, applicability.
- 



# Summary: AI impact on language and people



**Warning:**  
**Autonomous**  
**systems must**  
**deal with imperfect**  
**states**

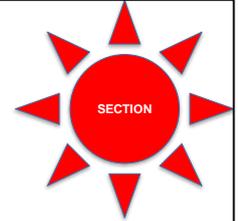
**For LSPs:**

- **Process**
- **Language**



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## The Learning Company

**MAX 3-5 SLIDES**

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Use title slides to help the audience follow the flow that was outlined in the agenda.

# Что делать?

**“Учиться, учиться  
и еще раз учиться”**

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Tolstoj's work was about the social conditions of his day

Толстой, Лев Николаевич

Ленин, Владимир Ильич

Чернышевский, Николай Гаврилович

Иоанн Креститель

(Luke 3:10–14)

Luke 3:10-14 New International Version (NIV)

<sup>10</sup> “What should we do then?” the crowd asked.

<sup>11</sup> John answered, “Anyone who has two shirts should share with the one who has none, and anyone who has food should do the same.”

<sup>12</sup> Even tax collectors came to be baptized. “Teacher,” they asked, “what should

we do?”

<sup>13</sup> “Don’t collect any more than you are required to,” he told them.

<sup>14</sup> Then some soldiers asked him, “And what should we do?”

He replied, “Don’t extort money and don’t accuse people falsely—be content with your pay.”

## AI: Change happens

Paul Virilio in *Open Sky* posits that every time you introduce a new technology:

- You also introduce the accident of that technology
- You have a responsibility to anticipate not just the good it can do but also the bad it can wreak, not just the glory but also the ruin
  
- Thus, when you introduce:
  - Automobiles, they inevitably crash into one another
  - Renewable energy, you may decrease the need for coal
  - Automation, you eliminate buggy whips
  - Machine learning, you change the way you work

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Paul Virilio was a French cultural theorist, urbanist, and aesthetic philosopher. He is best known for his writings about technology as it has developed in relation to speed and power, with diverse references to architecture, the arts, the city and the military.

Virilio believed that [technology](#) cannot exist without the potential for accidents. For example, Virilio argued that the invention of the locomotive also contained the invention of [derailment](#).<sup>[7]</sup> He saw the Accident as a rather negative growth of [social positivism](#) and [scientific progress](#). He believed the growth of technology, namely [television](#), separates us directly from the events of real space and real time. In it he suggested we lose wisdom and sight of our immediate horizon and resort to the indirect horizon of our dissimulated environment. From this angle, the Accident can be mentally pictured as a sort of "fractal meteorite" whose impact is prepared in the propitious darkness, a landscape of events concealing future collisions. [Aristotle](#) claimed that "there is no science of the accident", but Virilio disagreed, pointing to the growing credibility of [simulators](#) designed to escape the accident— which he argued is an industry that is born from the unholy marriage of post-WW2 science and the [military-industrial complex](#).

"One day the day will come when the day will not come." Bleak, but passionately

political in its analysis of the social destruction wrought by modern technologies of communication and surveillance, *Open Sky* is Paul Virilio's most far-reaching and radical book. Deepening and extending his earlier work, he explores the growing danger of what he calls a "generalized accident," provoked by the breakdown of our collective and individual relation to time, space and movement in the context of global electronic media. But this is not merely a lucid and disturbing lament for the loss of real geographical spaces, distance, intimacy or democracy. *Open Sky* is also a call for revolt—against the insidious and accelerating manipulation of perception by the electronic media and repressive political power, against the tyranny of "real time," and against the infantilism of cyberhype. Virilio makes a powerful case for a new ethics of perception, and a new ecology, one which will not only strive to protect the natural world from pollution and destruction, but will also combat the devastation of urban communities by proliferating technologies of control and virtuality.

## Inventory your wetware

- Don't expect to hire a bunch of AI engineers, but do expect to have it built into your tech.
- XX through the ML experts
- How can people use tech better



iOS



PHP



AWS ML



TENSORFLOW



PYTORCH



ANDROID

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Roles	Functions	Titles
Executive management	The Bosses	Founder, President, General Manager, C-level staff, VP, Director
Mid-level management	Oversee day-to-day operations	Production Manager, Sales Manager, Marketing Manager, Operations Manager, Team Manager, Team Lead
Project management	Coordinate projects	Senior Project Manager, Project Manager, Project Coordinator, Project Assistant, Interpreter Scheduler, Interpreter Liaison
Account management	Service and grow existing accounts	Account Manager, Client Service Specialist, Director of Strategic Accounts
Sales	Acquire new clients	Business Development Manager, Account Executive, Sales Estimator
Marketing	Promote the brand	eMarketing Associate, Marketing Coordinator, Tradeshow Coordinator
Vendor management	Recruit and manage suppliers	Vendor Manager, Resource Manager
Linguist	handle language-related tasks	Translator, Interpreter, Terminologist, Reviewer, Editor
Engineering	Process and test complex files	Localization Engineer, Software Localizer, Software Tester
IT and product development	Support hardware and software installations and develop new	IT Support, Computer Support Specialist, Network Architect, Software Developer)

Jobs from GMS – which. Will still be needed?

## 12 steps for LSPs to prepare for AI



Source: "Will AI Eliminate the Need for Project Managers?" © Common Sense Advisory, Inc.

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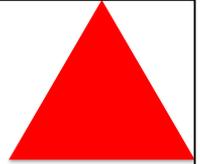
We identified 12 steps that you need to consider to ramp up for AI. No worries, you don't have to read them all right now, I'm going to go over each of them in the next slides. **END**

## Apportion old and new jobs

- Marketing specialist
- Data scientist
  
- More customer-facing
- More data-facing



## Beyond translation, localization, and interpreting



- Content processing:
  - Author
  - Optimize
  - Curate
  - Personalize
- Analysis:
  - Determining keywords
  - Analyzing social semantics
  - Testing ad campaigns
  - Predicting customer behavior
- Workflow:
  - Analysis and optimization
  - Informing chat and bots
- Market entry:
  - Determine best targets
  - Design websites
  - Segment customers
  - Target advertisements
  - Price products
  - Forecast sales
- Speech:
  - Recognizing speech
  - Optimizing

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## What's your superpower? Plan your learning journey

- today
- Six months
- A year
- Five years
- Don't restrict yourself



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Image from O'Reilly

## Learning company redux

- Plans
- OECD and other data in general
- Tech training in particular
- Graphic of people bring evacuated to high ground NYT



## Who's at risk? Anyone who doesn't plan the Terminator

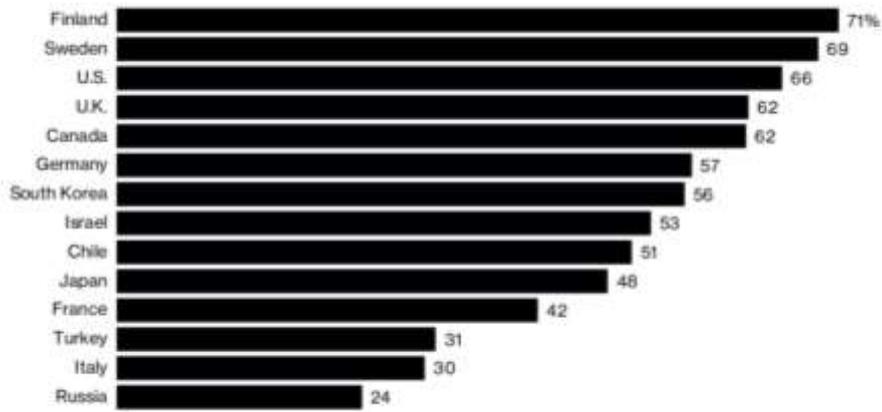
- **List of jobs from GMS** - At-risk, sheltered and safe in place, in-demand, varying degrees of shortages
- Image of multiple steps
- Competition with other industries for engineering, integration, and PM talent



## FIND DATA:

### Learning company: tech without training = bye-bye

Share of workers who recently received employer-provided training\*



\*Training received in the year prior to the survey, which was administered in 2012 or in some cases 2015.  
Data: Organization for Economic Cooperation and Development

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- Research suggests that multiple barriers operate to restrict small firm investment in training and greater effort is thus needed to overcome them. Analysis across countries shows that many policy instruments are narrow in that they address only one or two of the barriers. However, there are some tools – notably among levy schemes and employer networks - that address a range of barriers faced by small firms and have promoted real commitment to training among smaller firms.



PGRADING WORKFORCE SKILLS IN SMALL BUSINESSES:  
INTERNATIONAL REVIEW OF POLICY AND EXPERIENCE

Professor Ian Stone  
Durham University Business School, UK

Report for Workshop on  
'Skills Development for SMEs and Entrepreneurship',  
OECD LEED (Local Economic & Employment Development) programme  
Copenhagen, 28 November 2012

## Related research

- The State of Project Management at LSPs
- Will AI Eliminate the Need for Project Managers?
- LSP Business: Percentage Adoption of MT
- How AI will Augment Human Translation



## Recently published research

- The Chattering Class: Help Clients Localize Chatbots
- Enterprise Language Shifts Point to LSP Opportunity
- Advanced Metric and KPI Use for LSPs
- Seven Less Common Production Metrics to Track
- TechStack: Optical Character Recognition
- Translation / Interpretation Technology Adoption Patterns at LSPs
- 6 data highlights with data characterizing LSPs at each stage of maturity
- 12 data visualization on staffing and business elements



## AI affects models, but don't over-think it

- Language still requires people
- AI is similar to other technology changes

### Recommendations:

- LSPs that resist advanced automation will become the boutiques of tomorrow
- Buyers will start expecting and demanding it
- Automation-driven LSPs are already taking work from you
- Heavy automation will help you avoid costs
- AI does not mean letting go of your PMs

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- **Why? Because LSPs that resist AI will become the boutiques of tomorrow.** Alas, there will be a surplus of dead-end shops. AI will be a good differentiator until most vendors have it as was once the case with translation memory and translation management systems. To stay ahead of the competition, you need to be the quickest to adapt new ways to do business as they emerge. The longer you wait, the less it will matter as a differentiator and the further behind you will fall. [CLICK]
- **Another element is that buyers will start expecting and demanding it.** Once clients figure out they can push much of their content to platforms that require no human PM – and therefore avoid the markups associated with project management – their demand will shift. Even though not every content stream must or will go the AI route, more and more content streams will be susceptible to this approach. Luckily, the shift will be slow because buyers have big operations that don't change overnight. And some industries like tech are more likely to move quickly on this than verticals like legal or health care. That delay leaves you the time to explore and develop robust systems. [CLICK]
- **I'm also sorry to report that automation-driven LSPs are already stealing work from you.** Consider the opportunities where other providers offer rates and turnaround times with which you just can't compete. It's not enough to simply dismiss their offering as low-quality. Instead, challenge your own

approach to time and cost savings. The project management role served by LSPs is becoming less vital. Lights-out solutions are becoming good enough – and they’re already pulling clients away from traditional models. [CLICK]

- **Heavy automation will help you avoid costs.** Fully AI-driven jobs are typically small resulting in a rather low percentage of your revenue. However, without automation, those jobs monopolize a great portion of your project management manpower. When you consider the investment needed in AI development, think in terms of cost avoidance rather than significant new revenue generation. [CLICK]
- **AI does not mean letting go of your PMs.** Automation may mean slowing new PM hiring because you’ll be able to process more and more volume with fewer resources – that will enable greater scalability with lower cost and effort. You’re unlikely to fire your current PMs – it’s hard enough to retain them as is. When staff becomes more productive, they can handle more projects, which makes them even more valuable. You will still need project managers and will always need them: Enabling them to focus on jobs where they can add value will help with employee motivation and retention. **END**

## If translation became free, what value can an LSP add?

- Manage source content and its transformations
- Analyze usage among languages, systems, and transformations
- Introduce textual analysis across clients and corpora
- Provide performance analytics
- Improve every piece of content you touch
- Structure and categorize content metadata and analytics
- Expand into related and adjacent functional areas
- Manage cultural nuance in social media

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Organize the content, shepherd it, transform it, manipulate, re-purpose

What LSPs do beyond translation that provides value

They have data on so many parts of the CX that they can use it to advise the companies.

4T words under management – organize the data into something useful

AI and PM – first step is to see how current systems are laying down data to make it more accessible and formalized so AI bots can interpret correctly

Digital transformation – get the metadata ready, too

## Existential angst in the language sector



MT and AI work beyond anyone's wildest imagination. Translation and real-time interpreting are free. Then what?

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If MT hype plays out, what will you be?  
Prepare yourself for what will come

## Thank you.

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- Blog: [www.globalwatchtower.com](http://www.globalwatchtower.com)
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iOS



PHP



AWS ML



TENSORFLOW



PYTORCH



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