

Machine Intelligence at Draper

*Creating New Technologies,
To Better Understand Humans and to Better Humans*

Intelligence big-data



Cyber vulnerability prediction

```
attachEvent("onreadystatechange",H),e,attachE
boolean Number String Function Array Date RegEx
=function F(e){var t=_e=[];return b,ea
t[1]==!&&e.stopOnFalse){r=!;break)n=!;u&
?o=u.length:r&&(s=t,c(r))return this},remove
function(){return u=[],this},disable:function(){
re=function(){return p.fireWith(this,argument
ending",r=(state:function(){return n},always:
promise)?e.promise().done(n.resolve).fail(n.re
id(function){n=s,t[1][2].disable,t[2][2].
e},n.h.call(arguments),r=n.length,l!=|r|&&
r),l=Array(r);>t;t++)n[t]&&b.isFunction(n[t]
>table</table><a href="/a></a><input typ
/TagName("input")[0],r.style.cssText="top:1px
est(r.getAttribute("style")),hrefNormalized:
```

Quantitative finance



Data Rich

Humans

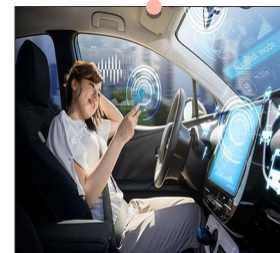
The Human - Machine



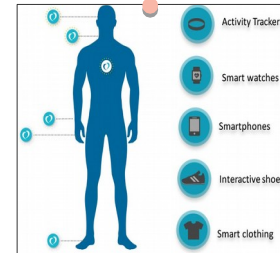
Medical and biomedical



Checkpoint screening



Autonomy

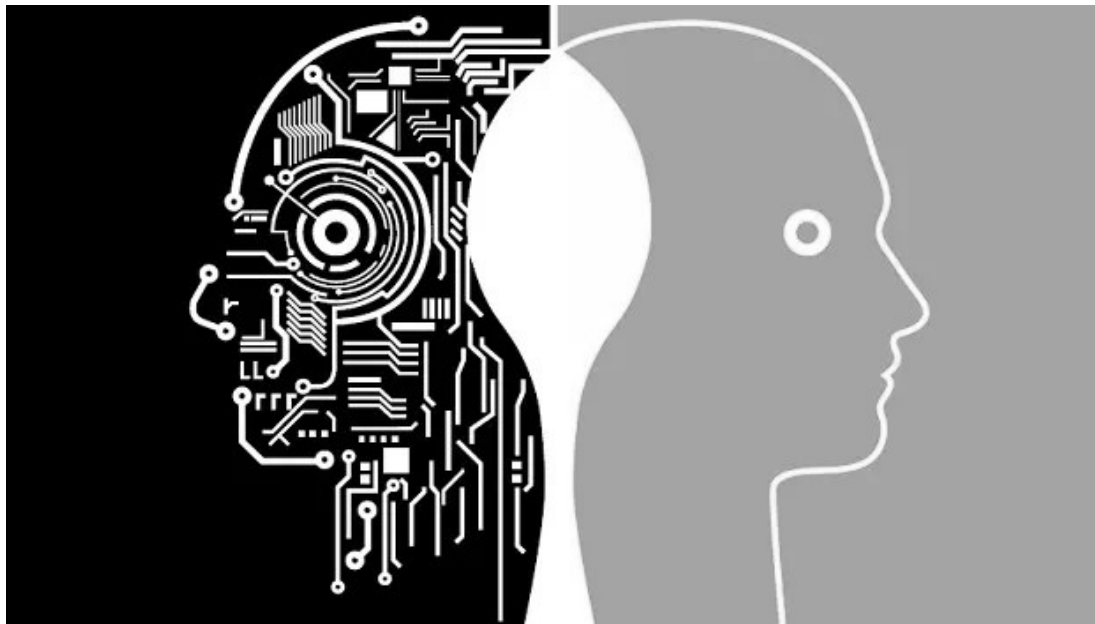


Biometrics

Data limited

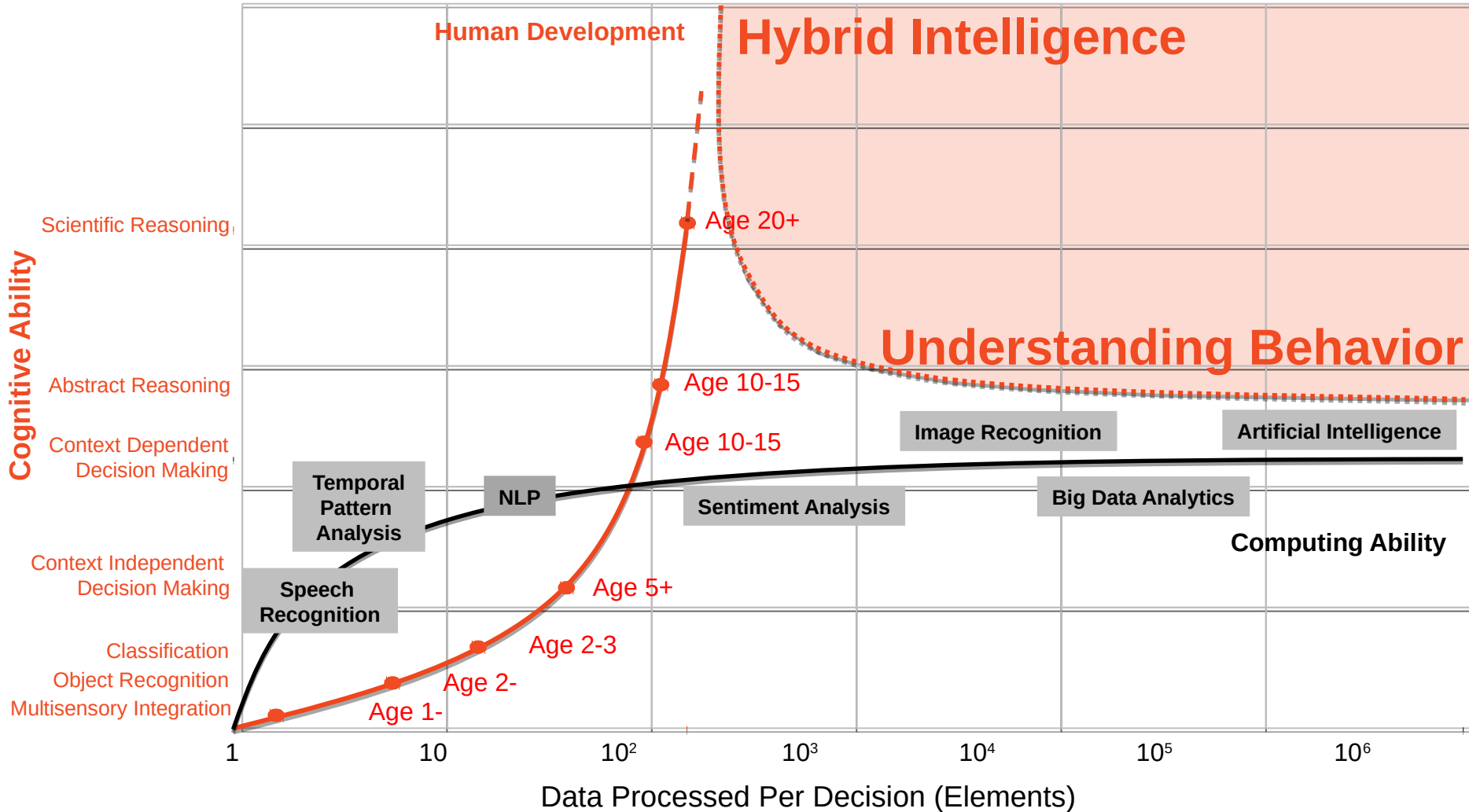
A Focused Set of Core Technologies

Understanding Behavior

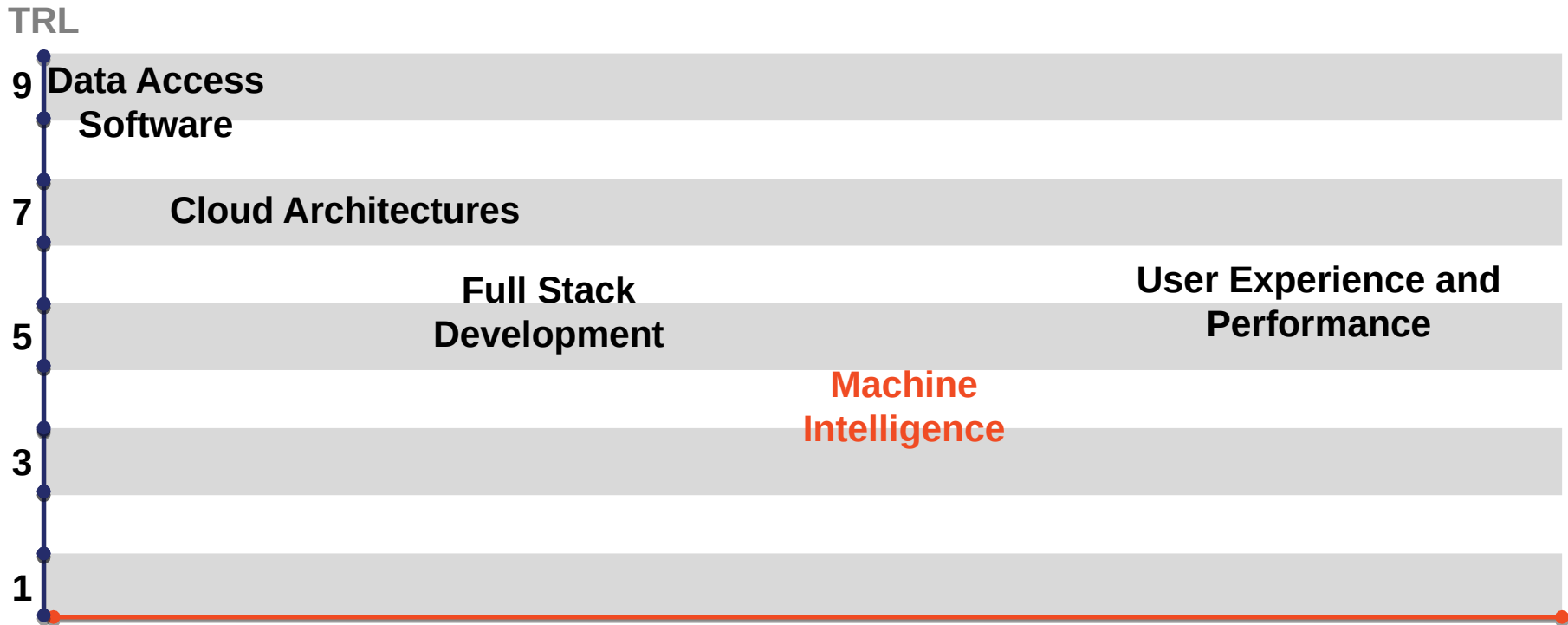


Hybrid Intelligence

Machine Intelligence at Draper



Traversing the Technology Landscape



Machine Intelligence

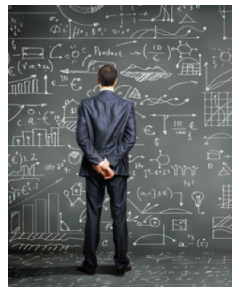
Hardware and Software



Software & Algorithms



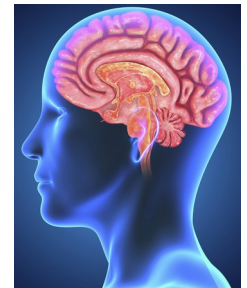
Human Algorithms



Human Interfaces



Humans



Humans Analytics



Advanced Screening Research

- Humans perform no better than chance at identifying threats
- Uses non-contact biometrics to identify deception
- 85%+ detection accuracy



Biomedical Data Analytics

- Predicting Alzheimer's disease progression
- Automating image processing for high-throughput experiments
- Deep learning for cancer diagnostics

Hybrid Intelligence



Search and Rescue

US National Guard

Commercial satellite image analysis

- Automatically identify subtle changes or major disaster areas
- See through water and fog
- Predict earthquake prone areas



Analysts

More data = more headaches

- We're producing lots of data, not enough people to analyze it
- Pure machines lack the analytic ability to understand data
- Turning the analytic process into a game