

assistant director for geologic hazards and mapping

we came here seeking clarity...



image generated by google gemini

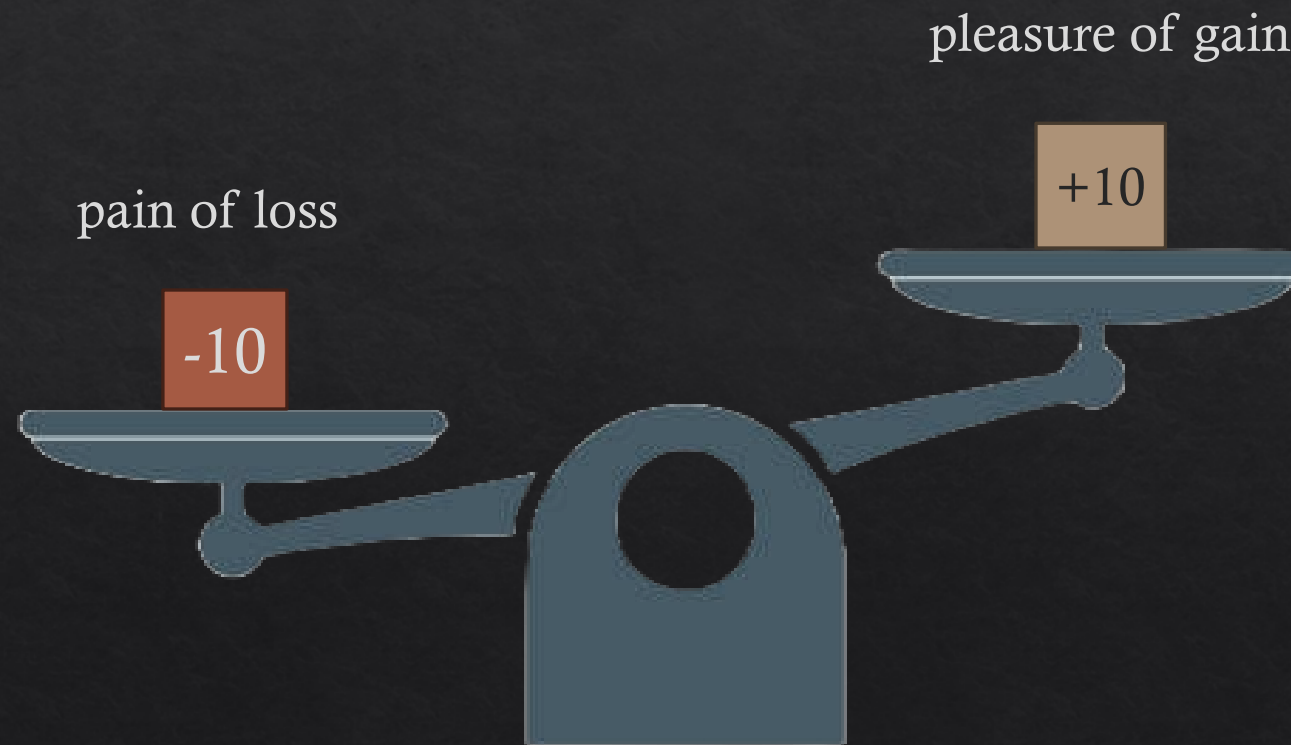
A stylized illustration of a brain composed of circuitry, symbolizing artificial intelligence or neural networks. The central part of the brain is a solid dark gray square, from which a complex network of gold-colored lines and circles radiates outwards, resembling a circuit board or a neural network. The lines branch out in various directions, ending in small circles of different sizes, creating a symmetrical, organic shape that fills the upper half of the image. The background is a solid dark gray, providing a high contrast for the gold circuitry.

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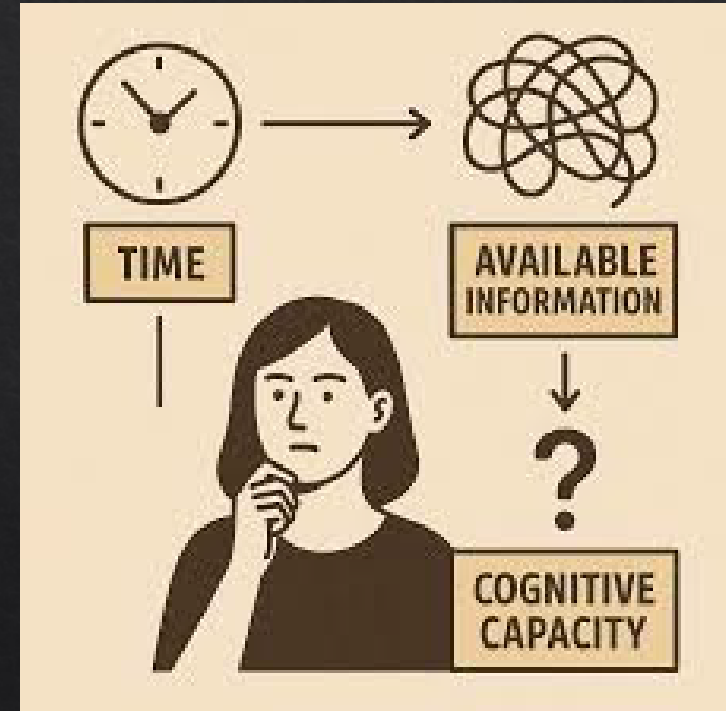
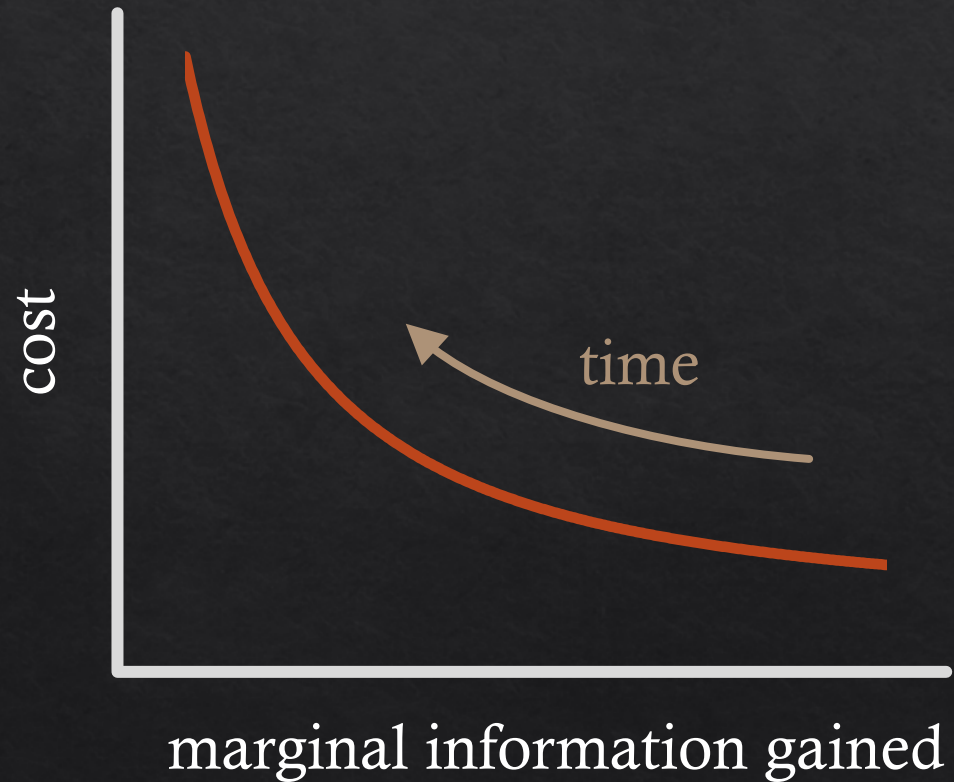
11  class Starship {
12  public:
13      Starship() {}
14      Starship(int x, int y, int z) {
15          x = x; y = y; z = z;
16      }
17      void move(int x, int y, int z) {
18          x = x; y = y; z = z;
19      }
20      void print() {
21          cout << "Starship: " << x << " " << y << " " << z << endl;
22      }
23  };
24
25  class Spaceship {
26  public:
27      Spaceship() {}
28      Spaceship(int x, int y, int z) {
29          x = x; y = y; z = z;
30      }
31      void move(int x, int y, int z) {
32          x = x; y = y; z = z;
33      }
34      void print() {
35          cout << "Spaceship: " << x << " " << y << " " << z << endl;
36      }
37  };
38
39  class Bridge {
40  public:
41      Bridge() {}
42      Bridge(int x, int y, int z) {
43          x = x; y = y; z = z;
44      }
45      void move(int x, int y, int z) {
46          x = x; y = y; z = z;
47      }
48      void print() {
49          cout << "Bridge: " << x << " " << y << " " << z << endl;
50      }
51  };
52
53  class Main {
54  public:
55      Main() {}
56      Main(int x, int y, int z) {
57          x = x; y = y; z = z;
58      }
59      void move(int x, int y, int z) {
60          x = x; y = y; z = z;
61      }
62      void print() {
63          cout << "Main: " << x << " " << y << " " << z << endl;
64      }
65  };
66
67  int main() {
68      Starship s(1, 2, 3);
69      Spaceship sp(4, 5, 6);
70      Bridge b(7, 8, 9);
71      Main m(10, 11, 12);
72
73      s.print();
74      sp.print();
75      b.print();
76      m.print();
77
78      return 0;
79  }

```

minimizing regret: maximizing risk

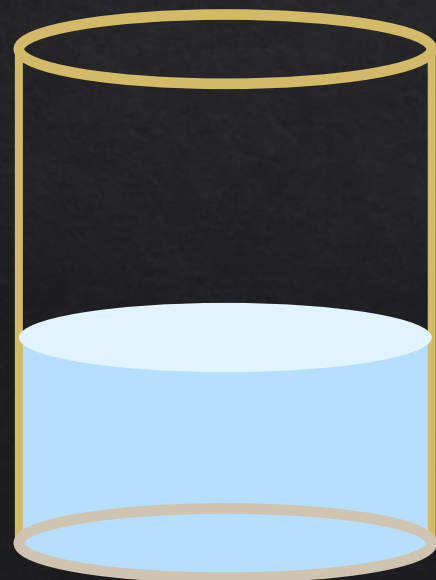
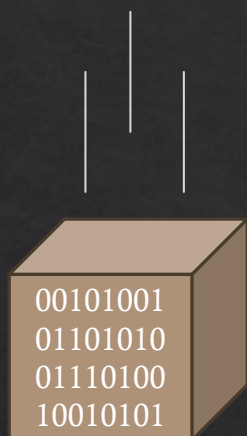


marginal benefit and bounded rationality





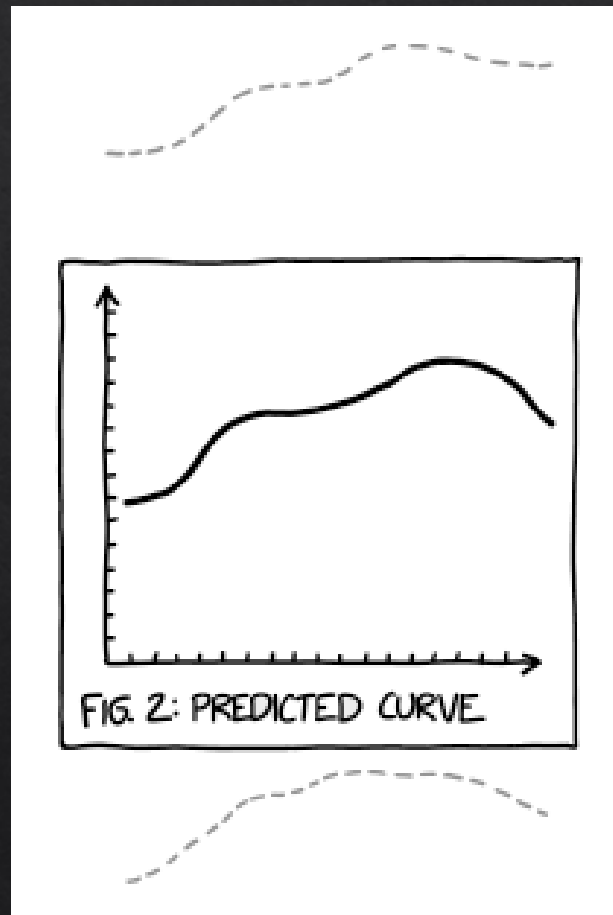
an ethical minimum



- 5-sigma
- ethical threshold
- no knowledge



self-efficacy and uncertainty intolerance



SCIENCE TIP: IF YOUR MODEL IS BAD ENOUGH, THE CONFIDENCE INTERVALS WILL FALL OUTSIDE THE PRINTABLE AREA.

from xkcd

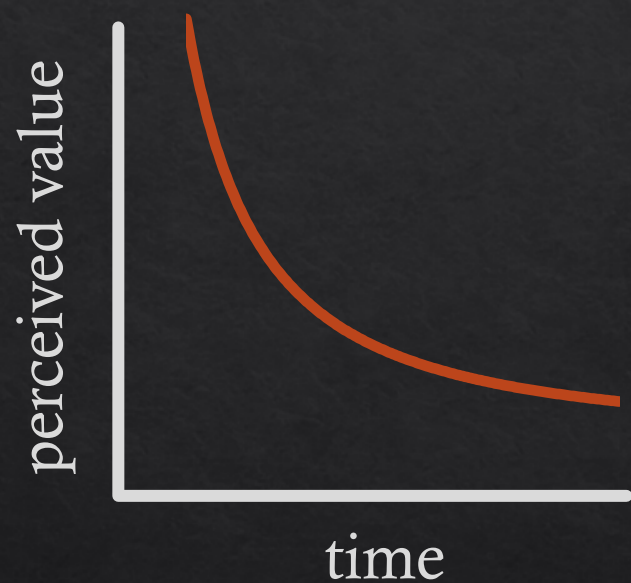


a framework

move towards action when...

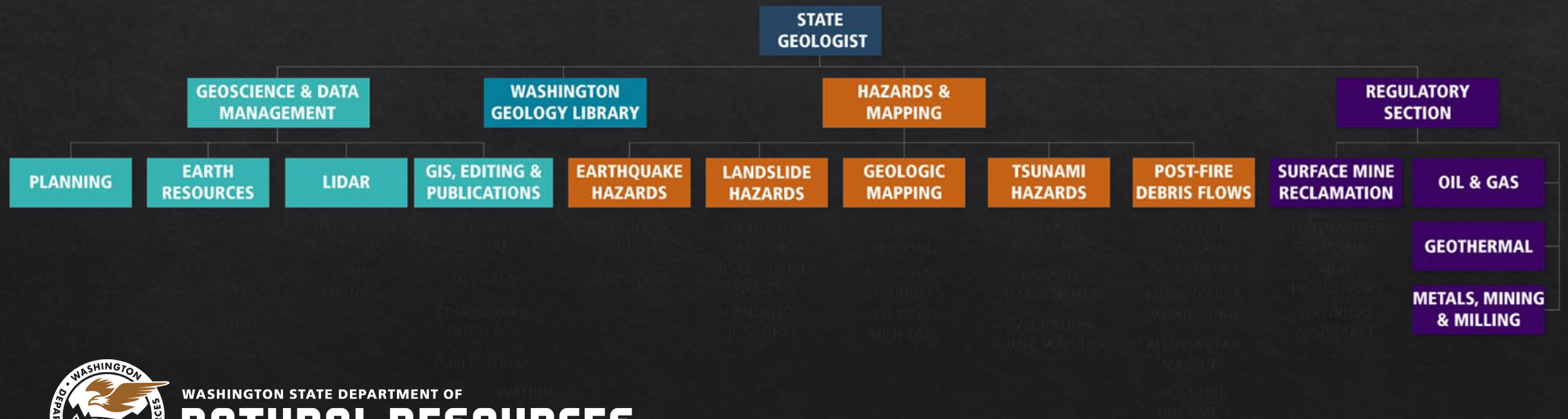
criteria	rationale
information gain is diminishing	new data unlikely to shift the decision
decision utility is understood	accounted for loss aversion
ethical minimum is met	credible evidence → potential harm
satisfactory course of action is known	optimal path may forever be elusive

diffuse and distant threats are a weak spot



moving towards action...but not far enough

washington geological survey



WASHINGTON STATE DEPARTMENT OF
NATURAL RESOURCES
DAVE UP THE GROVE | COMMISSIONER OF PUBLIC LANDS

a counterfactual to consider

THE DAILY GAZETE

VOLUME XLVIT, NO. 187

WEDNESDAY, DECEMBER 21, 1952.

PRICE TWO CENTS.

MEGA TSUNAMI HITS WEST COAST AND KILLS...NO ONE!

Early Warning System Saves Millions as Pacific Spares Human Life

Miracle On The Pacific: Coastline Evacuated In Record Time

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New Anti-Seismic Architecture Drill Praised

Tidal Wave Preparedness

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Drill Praised

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Scientist Hailed As Hero: 'We Beat The Sea' He Declares

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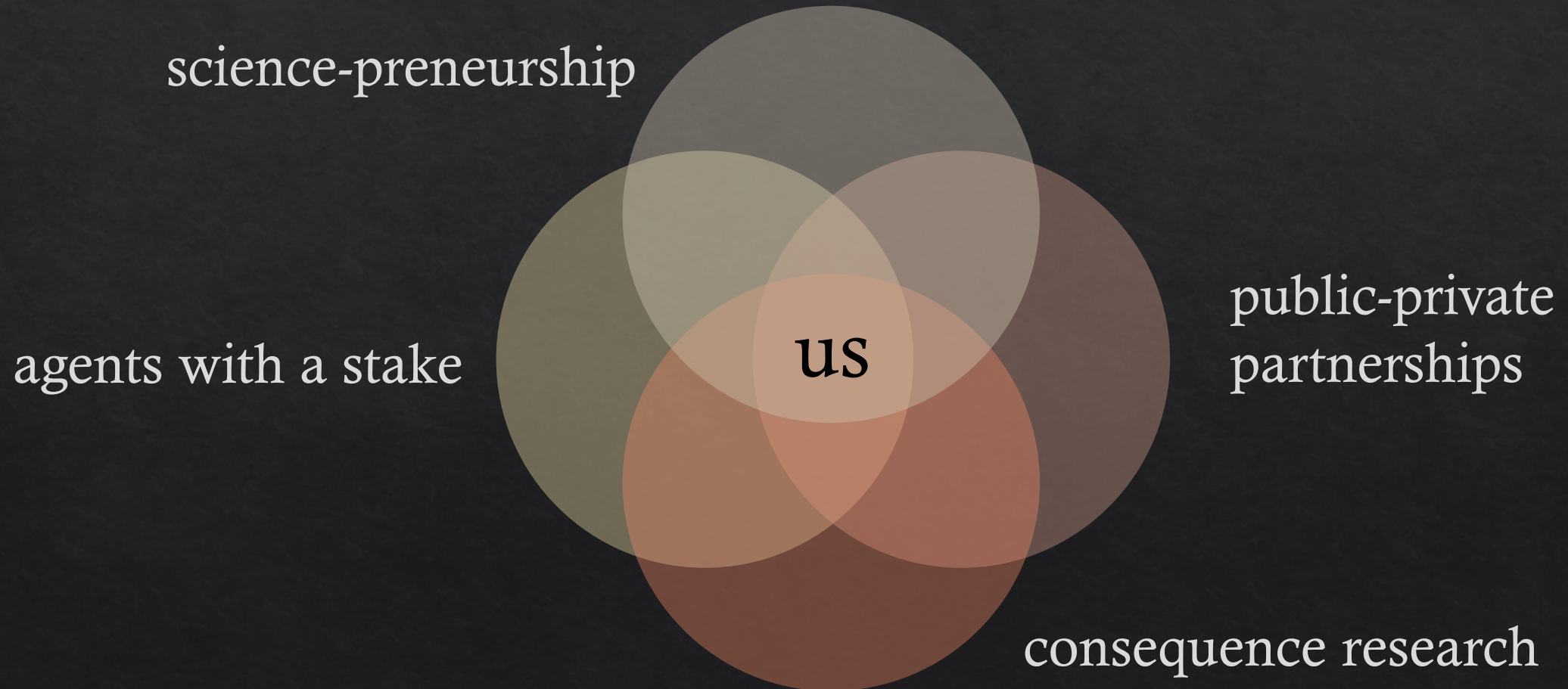
image generated
by google gemini



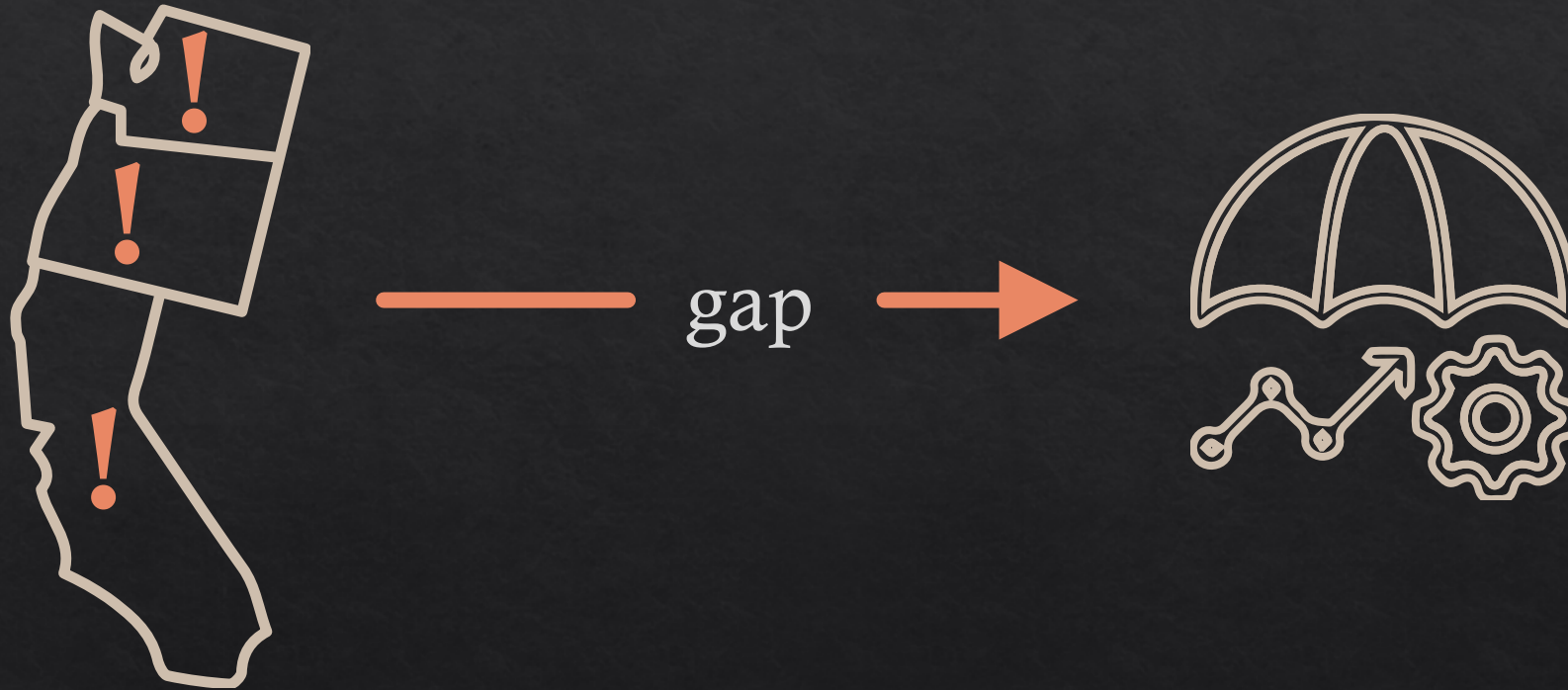
we are the heros



generating societal change: shifting incentives



science-preneurship



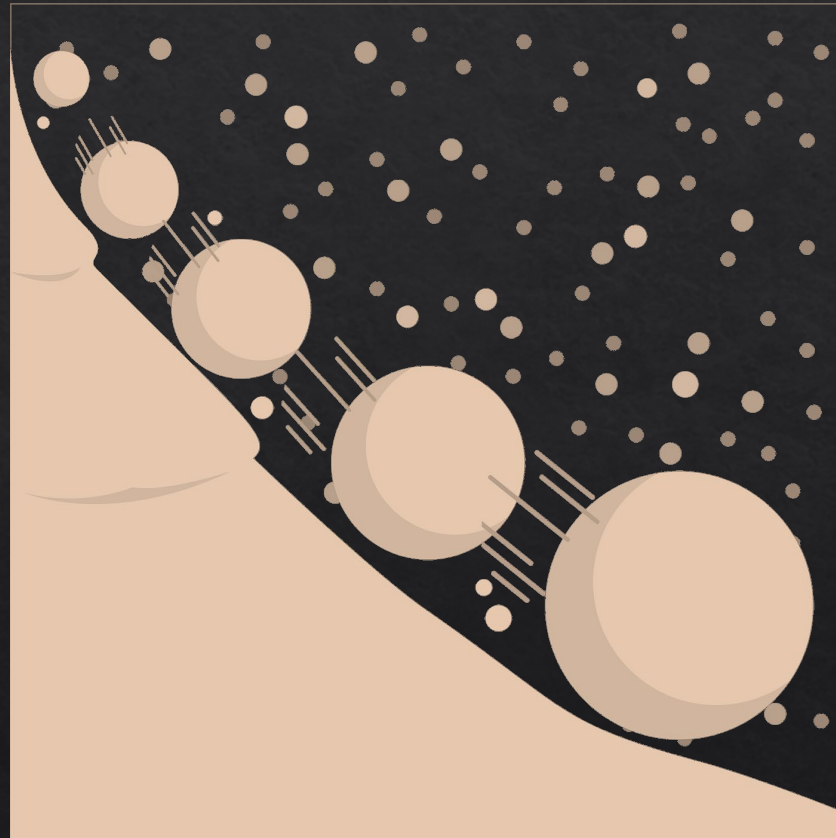
agents with a stake



public-private partnerships



from hazard to consequence





outward



thanks

geologyportal.dnr.wa.gov

dnr.wa.gov/geology

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washington geological survey

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