LAWMAKING: A NEW CHALLENGE FOR SYSTEMS ENGINEERING

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(I) TRADITIONAL LAWMAKING

(II) SCIENTIFIC LAWMAKING

GOVERNMENTS

- NECESSARY
  - ORGANIZATION
  - STABILITY
  - PROTECTION
  - RESOLUTION DISPUTES

LAWS

- MEANS OF GOV'T
- SOLVE PROBLEMS

LEGISLATURE

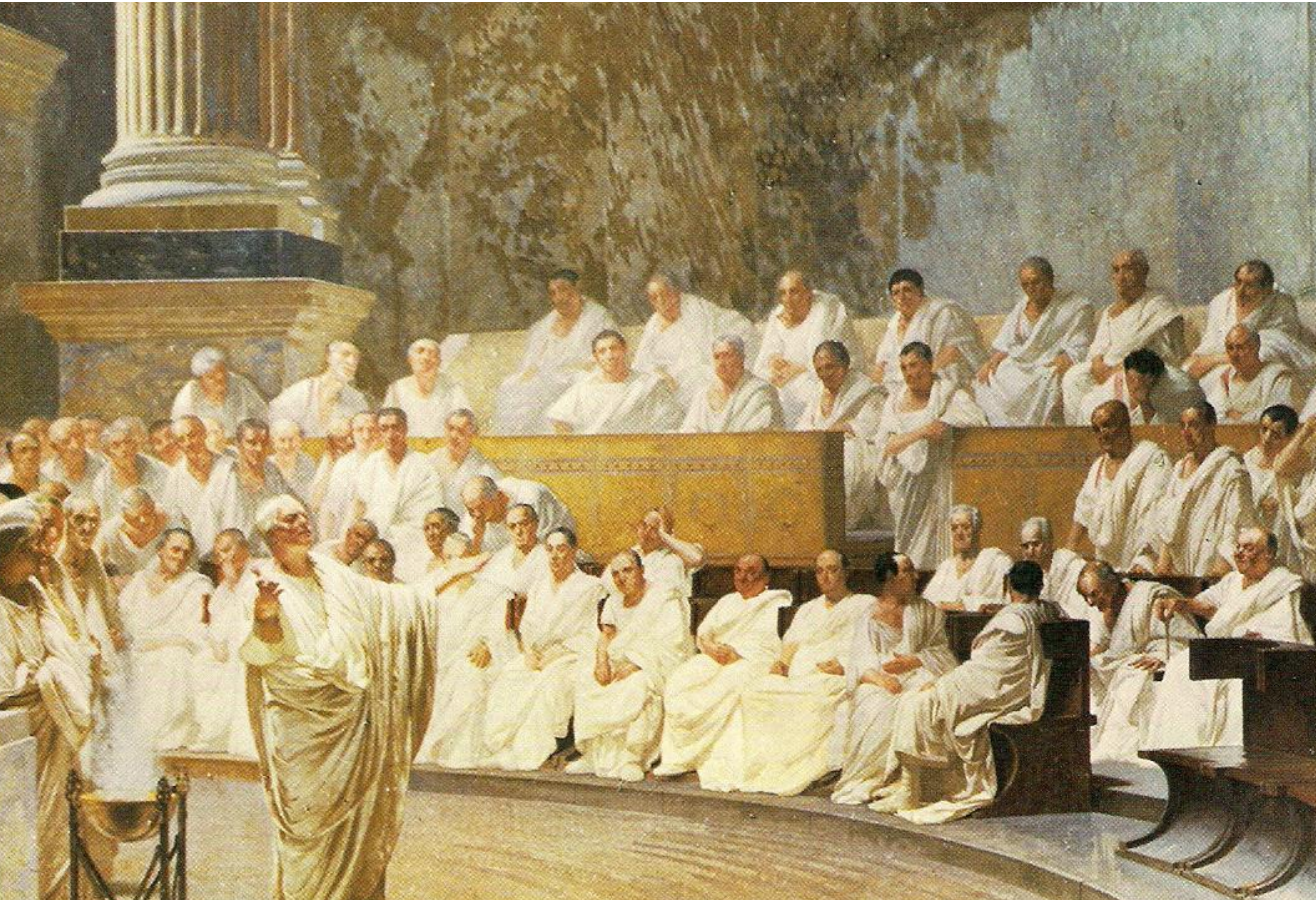
- CREATES LAWS
- TRADITIONAL METHOD OF LAWMAKING

(I)

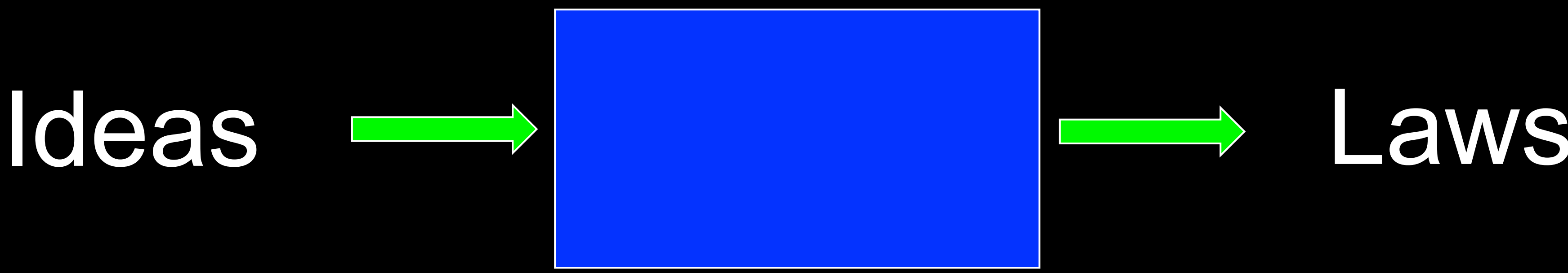
TRADITIONAL METHOD OF LAWMAKING

TRADITIONAL METHOD

1) BEGIN = IDEA FOR A LAW
2) TRANSCRIBE = BILL
3) LEGISLATURE = MODIFY
4) END = ENACT LAW

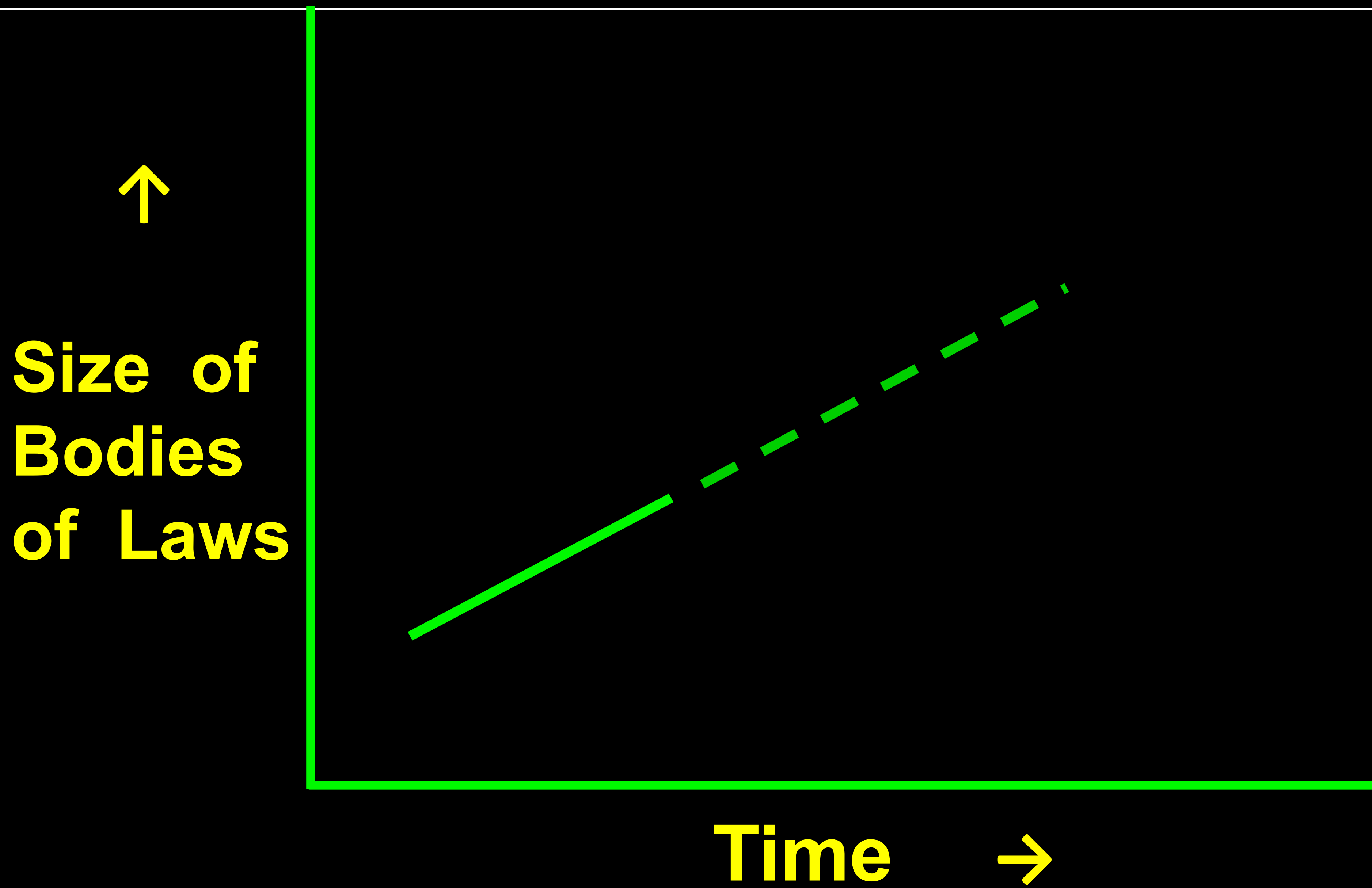


LAWMAKING PROCESS



PERFORMANCE T-M

- MAKING LAWS
  - <u>SUCCESS</u>
    - STATE GOVERNMENTS
      - 40-50,000 LAWS / YEAR


↑
Size of
Bodies
of Laws
Time →

PERFORMANCE T-M

- SOLVING PROBLEMS
  - <u>FAILURE</u> (!)

FAILURE OF LAWS

- Illiteracy, Poverty
- Health Issues, Pensions,
- Unemployment, Debt…

EVALUATION OF TRADITIONAL METHOD

TEN DEFECTS

TRADITIONAL METHOD

DEFECTS

1) NO PROBLEM DEFINITION
2) NO PRIORITY
3) NO PURPOSE

DEFECTS

4) NO DESIGN EXPERTISE
5) MENTAL MODELING
6) INCOMPLETE COST EVALUATION

DEFECTS

7) NO RISK ANALYSIS

8) ETHICAL LAPSE (EARMARKS, PATRONAGE)

DEFECTS

9) LACK OF KNOWLEDGE

10) NO QUALITY ASSURANCE

DEFECT SUMMARY

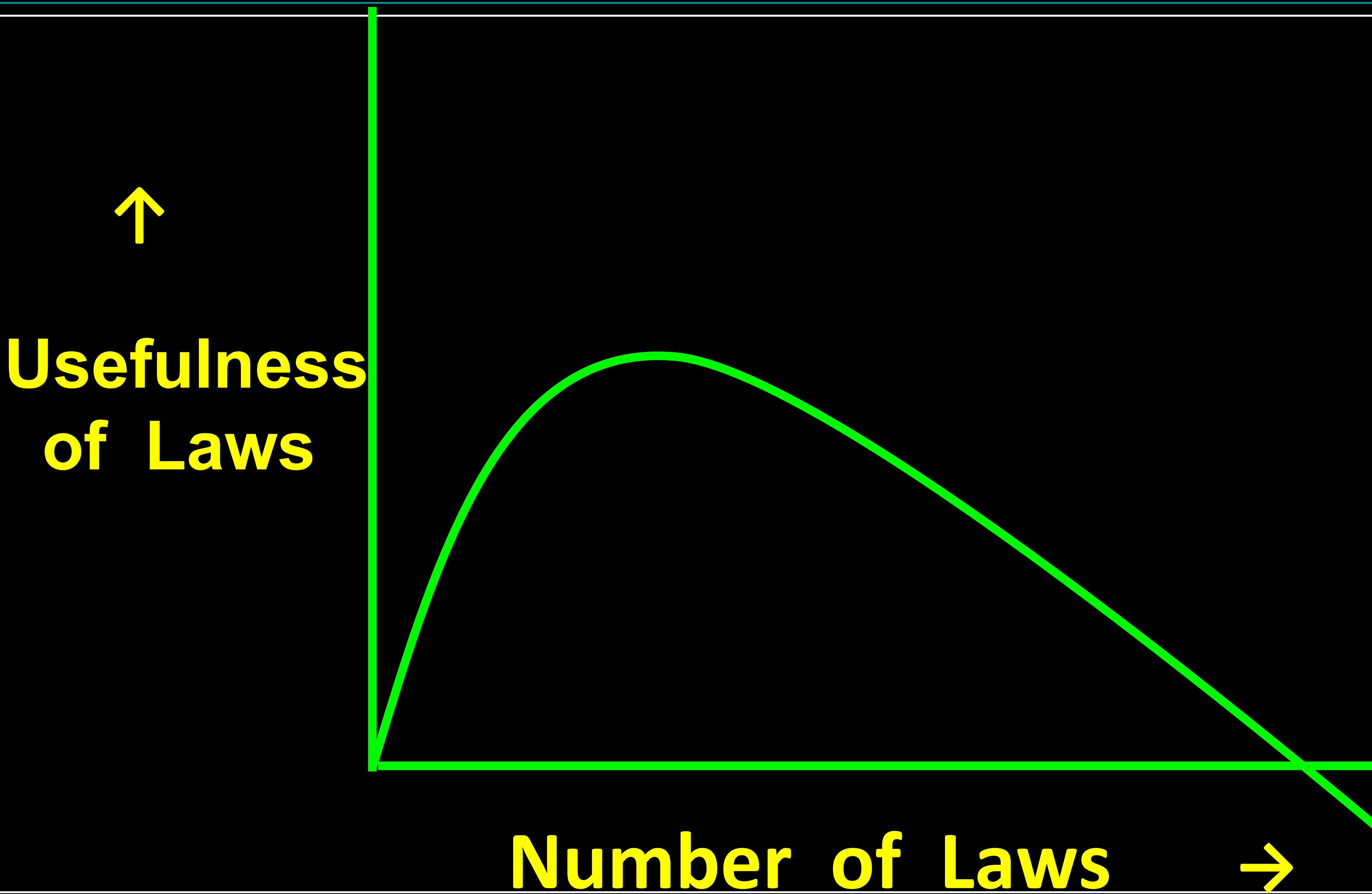
- Lack of Knowledge
- Lack of Expertise
- Compromise of Ethics
- Lack of Quality

DEFECT SUMMARY

- MISDIRECTED PURPOSE
  - Make Laws, NOT
  - Solve Problems

LAWMAKING RESULT

- INCREASING BURDEN LAWS
- PROBLEMS NOT SOLVED
- RESOURCES DIVERTED



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Usefulness of Laws
Number of Laws →

IMPROVE GOV'T

CORRECT DEFECTS OF

TRADITIONAL METHOD

EXPAND *SCIENCE*

TO ENCOMPASS LAWS

AND LAWMAKING

SCIENCE -- FORTE

- Knowledge
- Expertise
- Ethics
- Quality

(II)

SCIENTIFIC LAWMAKING

SCIENCE OF LAWS

Investigative Science

Creative Science

INVESTIGATIVE SCIENCE OF LAWS

INVESTIGATIVE SCIENCE

- MEASURE, ANALYZE OUTCOMES
- DEFINE MECHANICS

INVESTIGATIVE SCIENCE

- ACCUMULATE KNOWLEDGE OF LAWS

INVESTIGATIVE SCIENCE

- “HISTORY” OF LAWS
- BASIS OF QA

  PROGRAM OF LAWS

INVESTIGATIVE SCIENCE OF LAWS HAS BEGUN

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CREATIVE SCIENCE OF LAWS

CREATIVE SCIENCE OF LAWS

SYSTEMS ENGINEERING

APPROACH TO LAWMAKING

SYSTEMS ENGINEERING PRINCIPLES:

(A) DESIGN STANDARDS

(B) QUALITY ASSURANCE

(C) Q - IMPROVEMENT

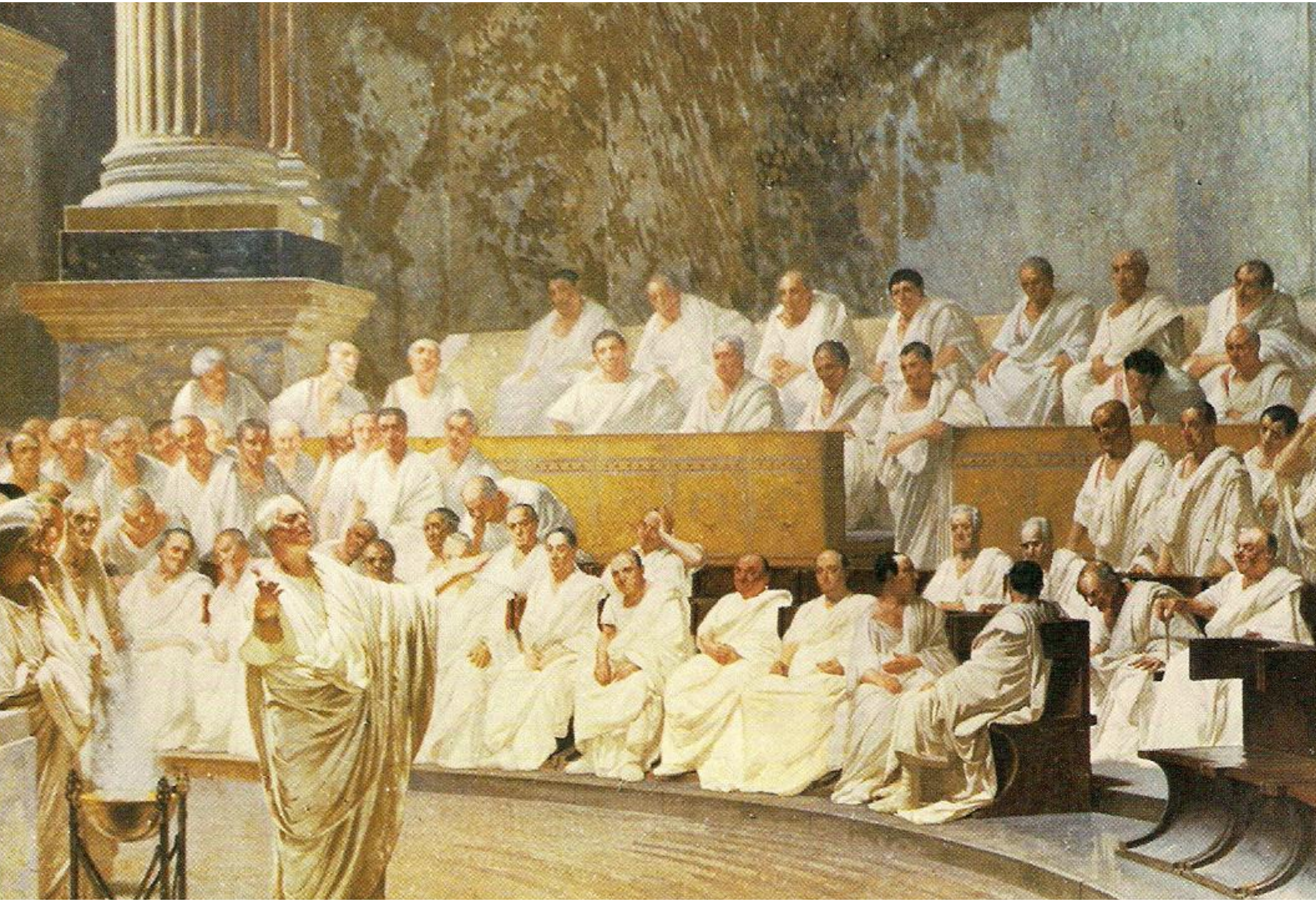
DESIGN STANDARDS

DESIGN STANDARDS

- DEFINE CUSTOMER
- DEFINE PROBLEM
- REVIEW CURRENT LAWS
- STATE PRIORITIES / GOALS

DESIGN STANDARDS

- CREATE MODEL OF LAW



MENTAL MODELING

- 3 – 4 – 5 Variables
- 5 – 10 Calculations / Hour

COMPUTER MODELING

- 10,000's VARIABLES
- 10^{15} CALC'L'S / SECOND

MODELING CENTER FOR LAWS

- LARGE UNIVERSITY
- COMPUTING CENTER
- COLLEGE ENGINEERING

MODELING CENTER

- RESEARCH / ACADEMIC
- SYNERGY WITH LEGISLATURES

DESIGN STANDARDS

- MODEL
  - Costs, Risks, Side Effects, Human R's…

MODELING OF LAWS

- ENGINEERING, LAW
- ECONOMICS, SOCIOLOGY
- MATHEMATICS, BUSINESS
- PSYCHOLOGY, POLITSCI…

MODELING CENTER

- CREATE, SIMULATE, OPTIMIZE LAWS
- GOAL = "IDEAL" LAW

MODELING CENTER

SUBMIT PROTOTYPE LAW TO LEGISLATURE FOR VOTE

Q – ASSURANCE

Q-Assurance

Empirical Methods:

<u>INVESTIGATIVE</u>

<u>SCIENCE</u>

MODELING CENTER

- MEASURE, ANALYZE OUTCOMES
- DEFINE MECHANICS

Q - Assurance

EVALUATE LAWS:

- "Necessary and Proper"
  - If Not, REPEAL

Q-A Program

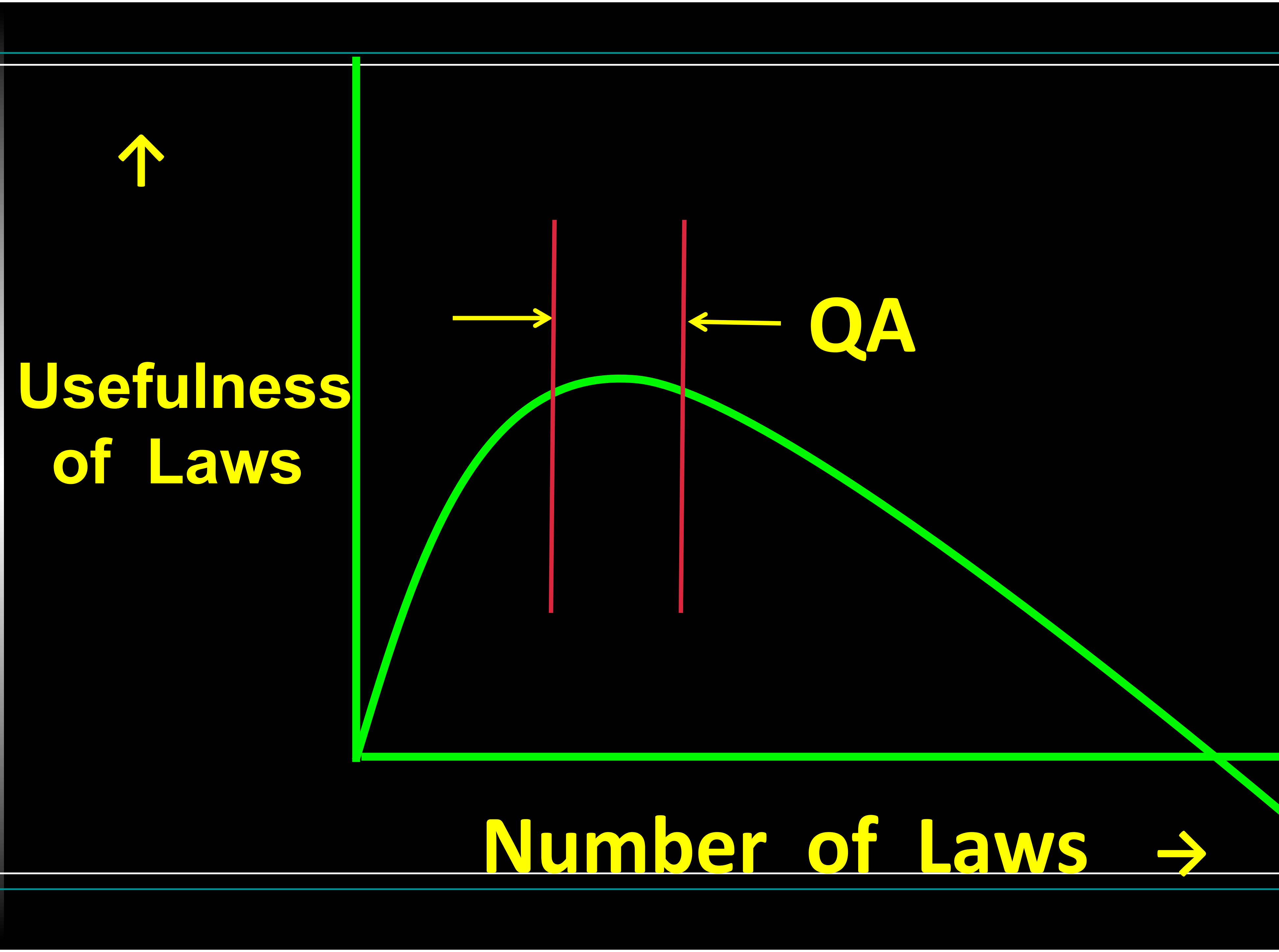
Repeal of laws:

- Ineffective / Outmoded
- Not Enforced / No Purpose
- Redundant / Conflicting
- Cannot Be Measured

Q-Assurance

Body of Laws:

- ▼ Size
- ▼ Cost
- ▼ Complexity



↑
Usefulness of Laws
QA
Number of Laws →

Q – IMPROVEMENT

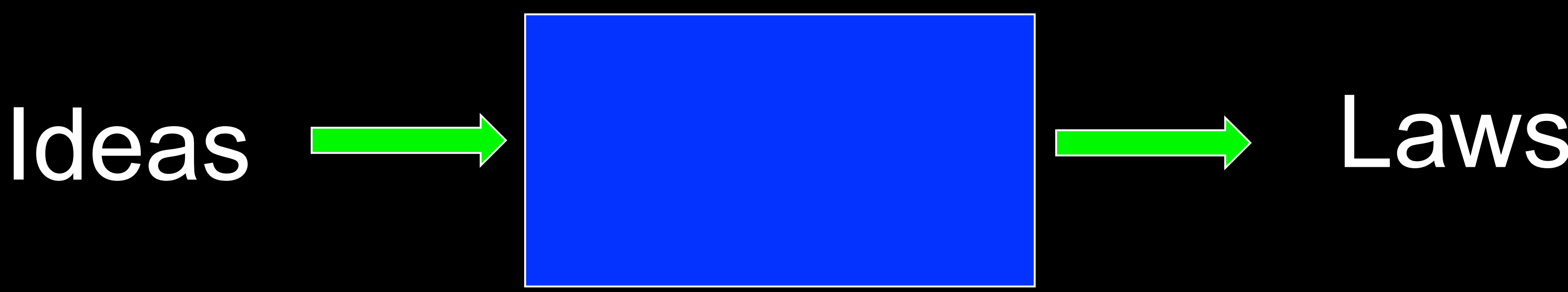
IMPROVEMENT STANDARDS

- Same as Design Standards
- Apply to Every Law

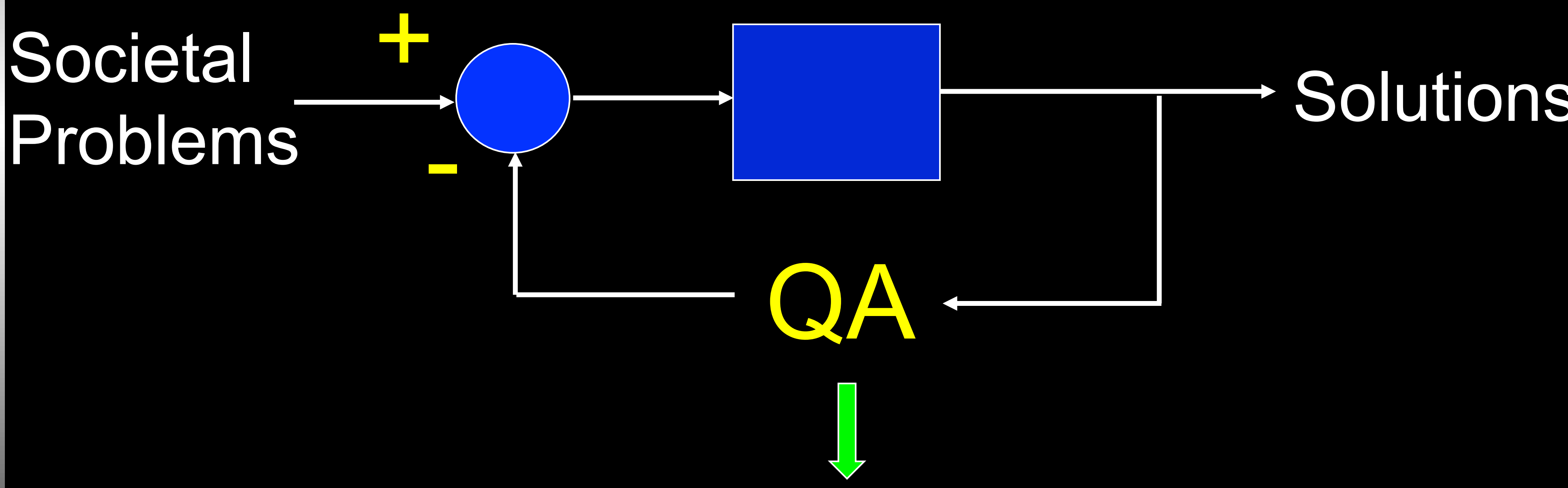
SE - IMPROVEMENT

- ▲ Effectiveness
- ▲ Cost – Efficiency
- ▲ Safety, Simplicity
- ▲ User – Friendliness

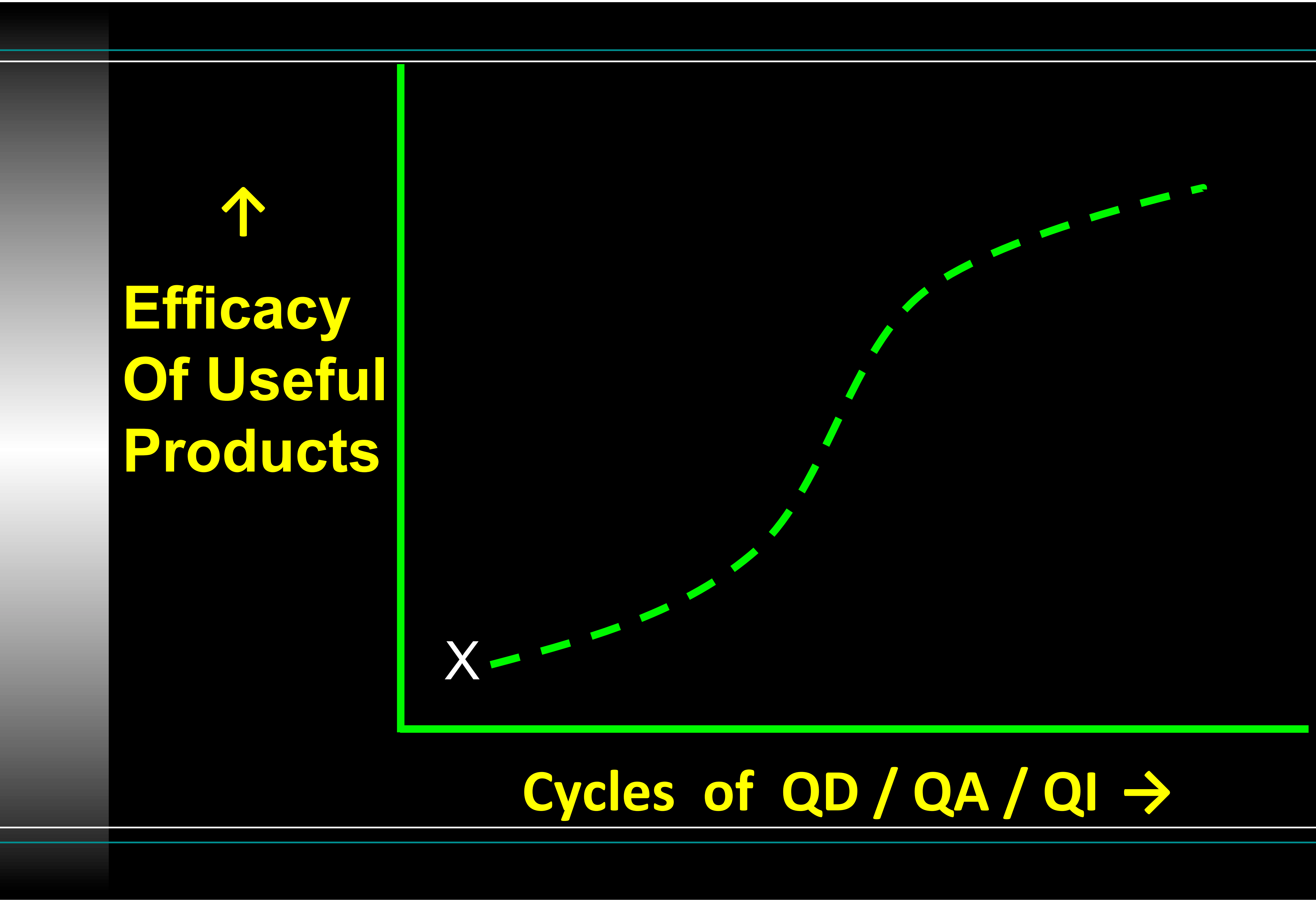
TRADITIONAL LAWMAKING



SCIENCE – DIRECTED LAWMAKING



"Weed Out" Non - Productive Laws


↑
Efficacy
Of Useful
Products
X
Cycles of QD / QA / QI →

SCIENTIFIC LAWMAKING

- **Self - correcting in the direction of <u>optimum outcomes</u> in the best interests of the people**

FAVORABLE SCENARIO

1) LAWMAKING BECOMES KNOWLEDGE INDUSTRY

2) QUALITY STANDARDS

FAVORABLE SCENARIO

3) KNOWLEDGE GROWS

4) GOV'T MUCH MORE EFFECTIVE

5) ADDRESS AND SOLVE NEXT HIGHER ORDER OF PROBLEMS

SUMMARY

TRADITIONAL METHOD

- OUTMODED, DEFECTIVE
- FAILS SOLVE PROBLEMS

SUMMARY

SYSTEMS ENGINEERING

- CORRECT DEFECTS T-M
- DEVELOP STANDARDS

SUMMARY

SYSTEMS ENGINEERING

- DERIVE, APPLY KNOWLEDGE
- IMPROVE GOVERNMENT AND THE RULE OF LAW

SUMMARY

SYSTEMS ENGINEERING

- ADVANCE SCIENCE LAWS
- LAWMAKING → 21^{ST} CENTURY

THANK YOU