

Headquarters U.S. Air Force

Integrity - Service - Excellence

Revitalizing Systems Engineering (SE)



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Director

Acquisition Center of Excellence

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Revitalizing SE

- **Fundamental shift in AF Systems Engineering Policy and Practice**
 - **Elevate SE as principal consideration in solicitation, award, and execution**
 - **Drive SE to deliver products that exhibit “robustness”**



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SE End-State

Meet the warfighter's performance requirements

AND

■ **Products/systems that exhibit attributes of spiral capable/robustness:**

- **Are easily scalable/expandable to meet future capability needs**
- **Are desensitized to expected variability in manufacture and use**



**Supports Evolutionary
Acquisition Strategies!**

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Supporting Capabilities

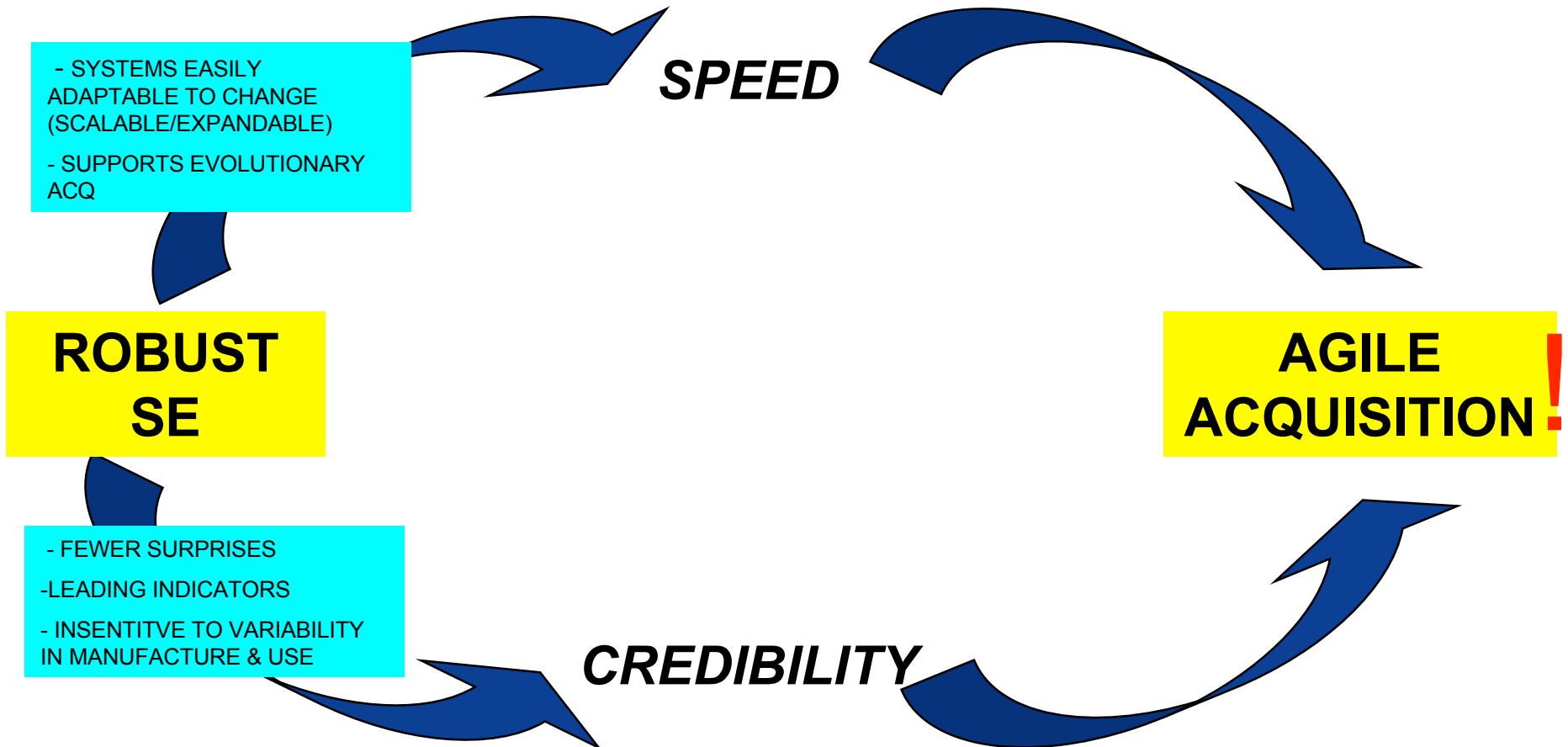


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Robust SE & Agile Acquisition

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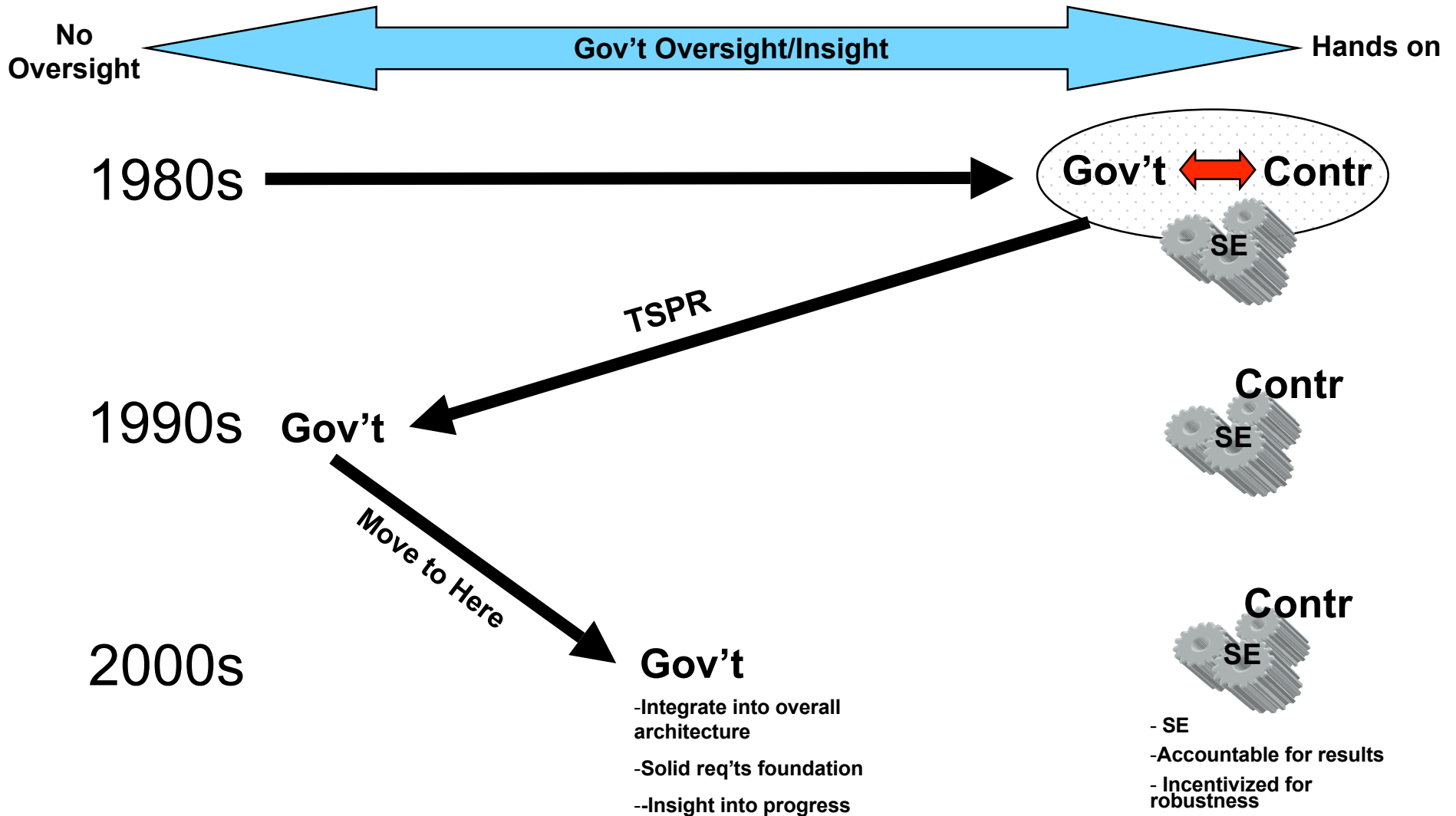
Why Change?

- **Evolutionary Acquisition is the “norm” for how the AF procures future systems**
 - Robust SE minimizes scrap/rework and build/test/fix cycles when changes occur
- **SE capability (of both government and industry) has declined in recent years**
- **Good SE can mitigate program “surprises”**
- **Systems becoming more complex**
 - **System of Systems (SoS)**
 - **Family of Systems (FoS)**



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Evolution of Government Role in SE

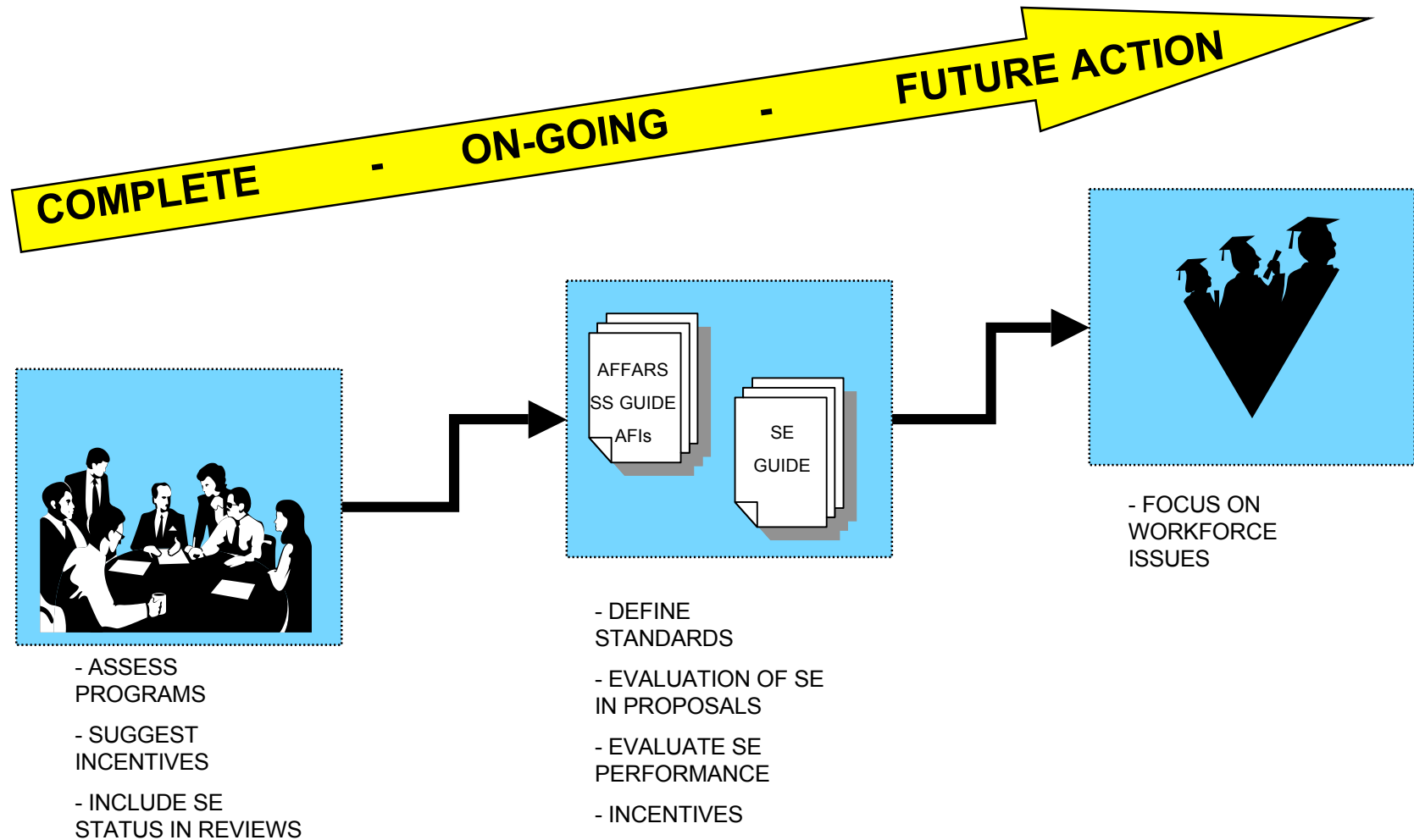


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Building Blocks to Robust SE

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Solicitations

- Evaluation of SE will be heavily weighted
- Solicitation requires contractors to:
 - Describe their SE process
 - Show how their SE process achieves the desired end-state
 - Explain how they plan to measuring their progress/success
 - They may suggest leading indicators they considered important
- SE Guide discusses folding SE considerations into solicitations
 - Available to Government and Industry



Contractors evaluated on their SE process - - we give desired outcome



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Program Execution

- Objective measures of progress toward desired end-state using contractor' SE process
- Leading indicators give insight into progress
 - Proposal will suggest leading/lagging indicators of success
- SE Guide discusses application of leading indicators to measure progress – there are many
 - No boilerplate – judiciously select
 - Examples:
 - Perf/Design/Product Specifications approved
 - Engineering manpower/ turnover rates
 - Drawing releases / changes (design maturity)





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Incentives

- **First incentive will be winning the contract based on sound SE approach**

- **SE will be significant part of award/incentive fee – possible areas may include:**
 - **Fee tied to indicators of success**
 - **Translation of customers needs – design,mfg and sustainment**
 - **Design for scalability/expandability**
 - **Design for insensitivity (mfg and use)**

- **But – end results are what counts!**
- **ACE Website** <http://www.safaq.hq.af.mil/ACE/>
 <http://cse.afit.edu>

Philosophy:

high payoff (fee) for success; high penalty for failure

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Summary

- **Environment requires products/systems be designed for scalability/expandability**
- **SE will be elevated in importance – solicitations, source selections, and performance**
- **Industry “CO-PARTNER IN SUCCESS”**

Government/Industry Collaboration!

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Everything Has a Price

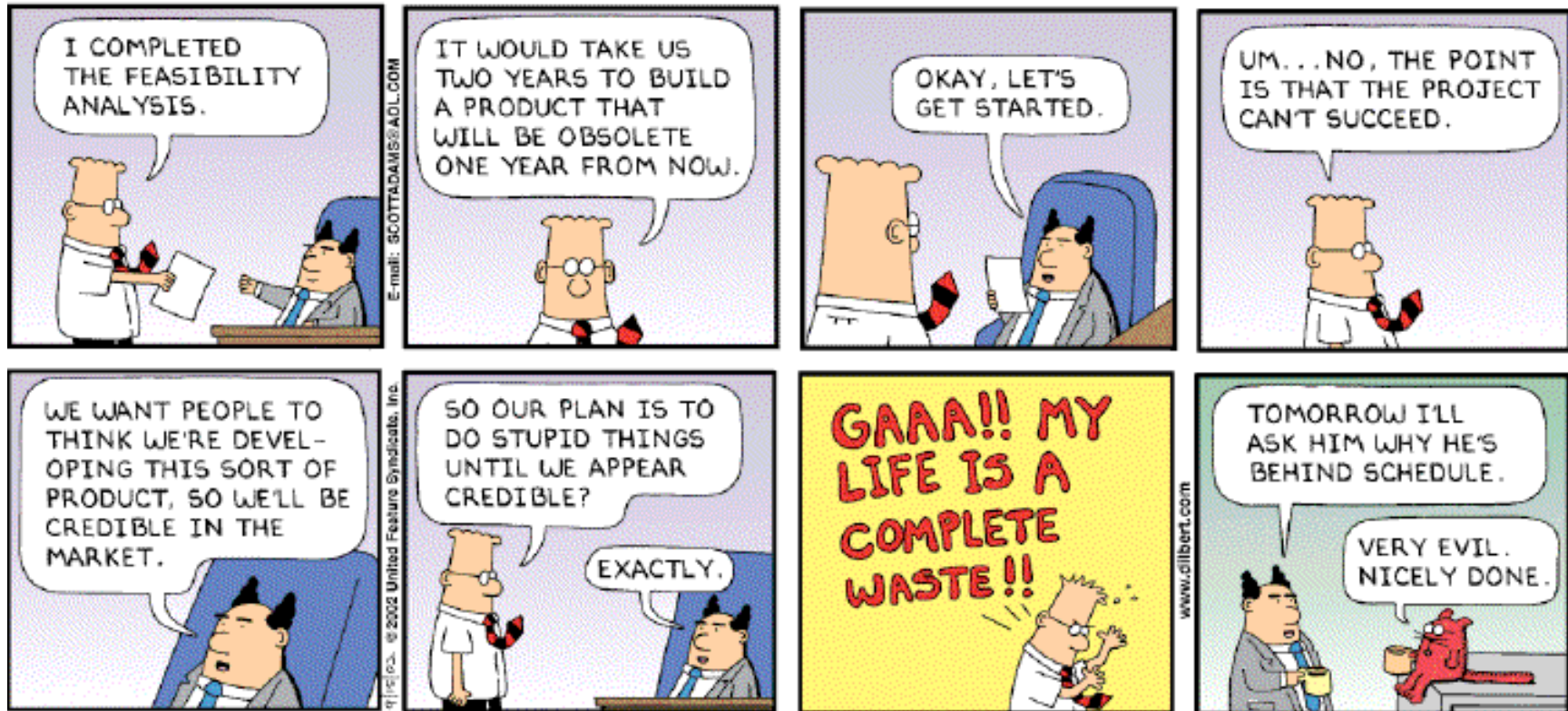
“It is not necessary to change. Survival is not mandatory.”

- W. Edwards Deming



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Credibility is key...



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