A Strategic Balanced Scorecard For a Publicly Funded Science and Technology Program

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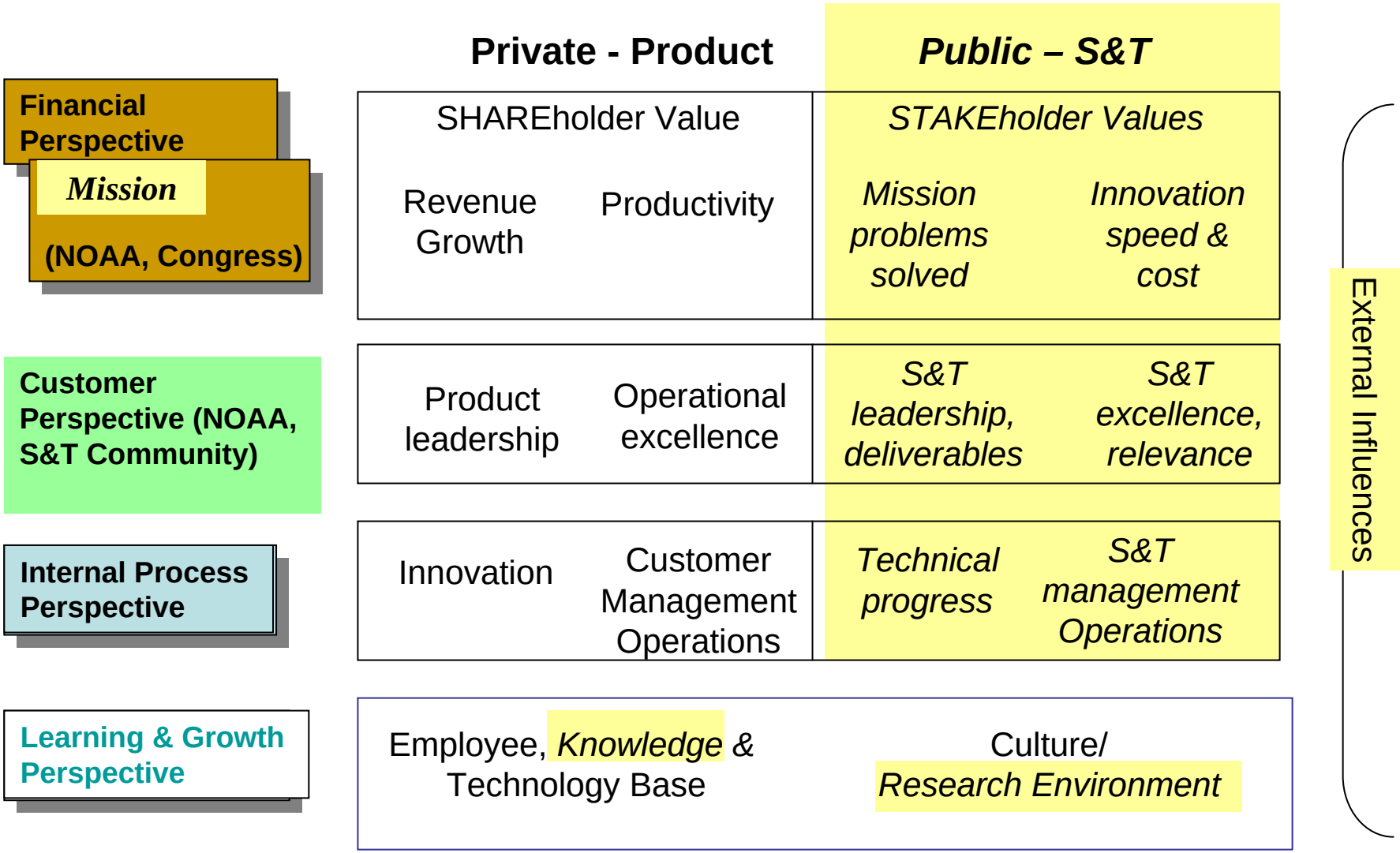
Motivation for better indicators for S&T organizations

- Increasing interest in stimulating scientific advance and innovation
- Increasing requirements to demonstrate value of organizations and portfolios
  - To S&T community
  - To agency heads and Congress
- Need knowledge of how to stimulate innovation (e.g., construct teams, motivate researchers)
- Current performance measurement systems fall short

Why a Balanced Scorecard based on organizational strategy?

- STRATEGIC - Clarifies and communicates the strategy
  - S & T focus and performance
  - Focused management initiatives
- BALANCED - Avoids over emphasizing one perspective on what to value and measure
- SCORECARD - Identifies key indicators linked to strategy
  - Technical performance as expected?
  - If not, other indicators show bottlenecks

Strategy Map Balanced Scorecard has to be modified for publicly funded S&T



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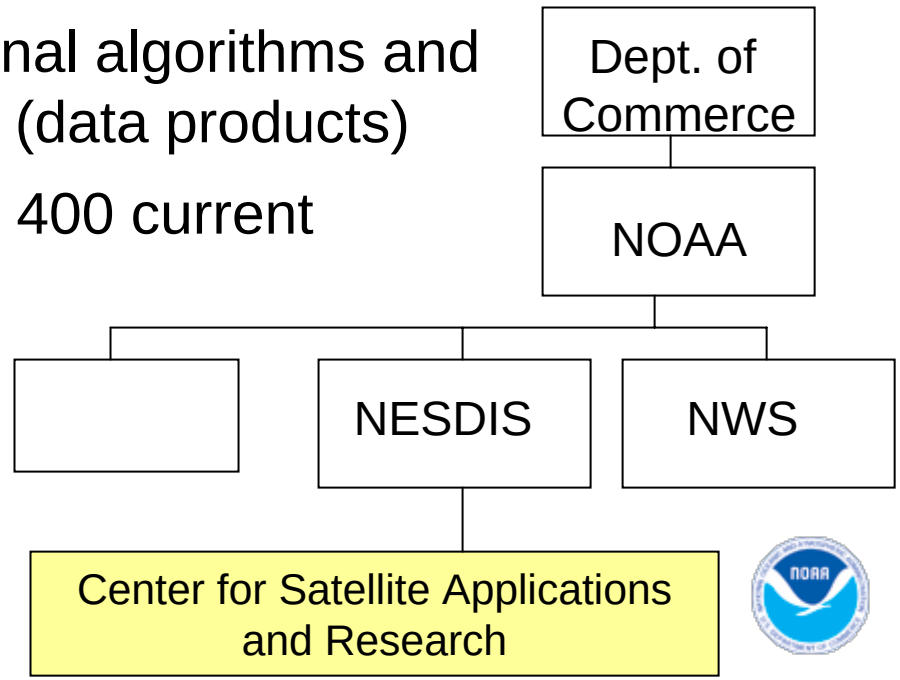
Developing a strategic balanced scorecard

- Gather information about the program from documents and interviews
- Begin a rough draft that simplifies the complexity, but uses their terminology
- Work with researchers to define real time measures of technical progress and seek to link these to mission
- Iterate to refine/define draft
- Seek verification from levels within the organization

Our Example - NOAA's Center for Satellite Applications and Research (STAR)

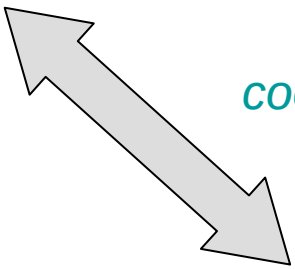
- About 70 scientists focused on atmospheric science
- Three divisions that encompass satellite meteorology, oceanography, climatology, and cooperative research with academic institutions
- Chartered to develop operational algorithms and applications using satellite data (data products)
- Also provide support to nearly 400 current satellite-derived products



Basic activities of STAR research projects

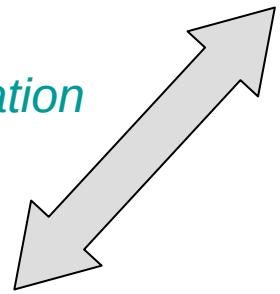
Impact on design changes in products and models

Communication and coordination



Impact on design changes in satellites and instruments

Communication and coordination



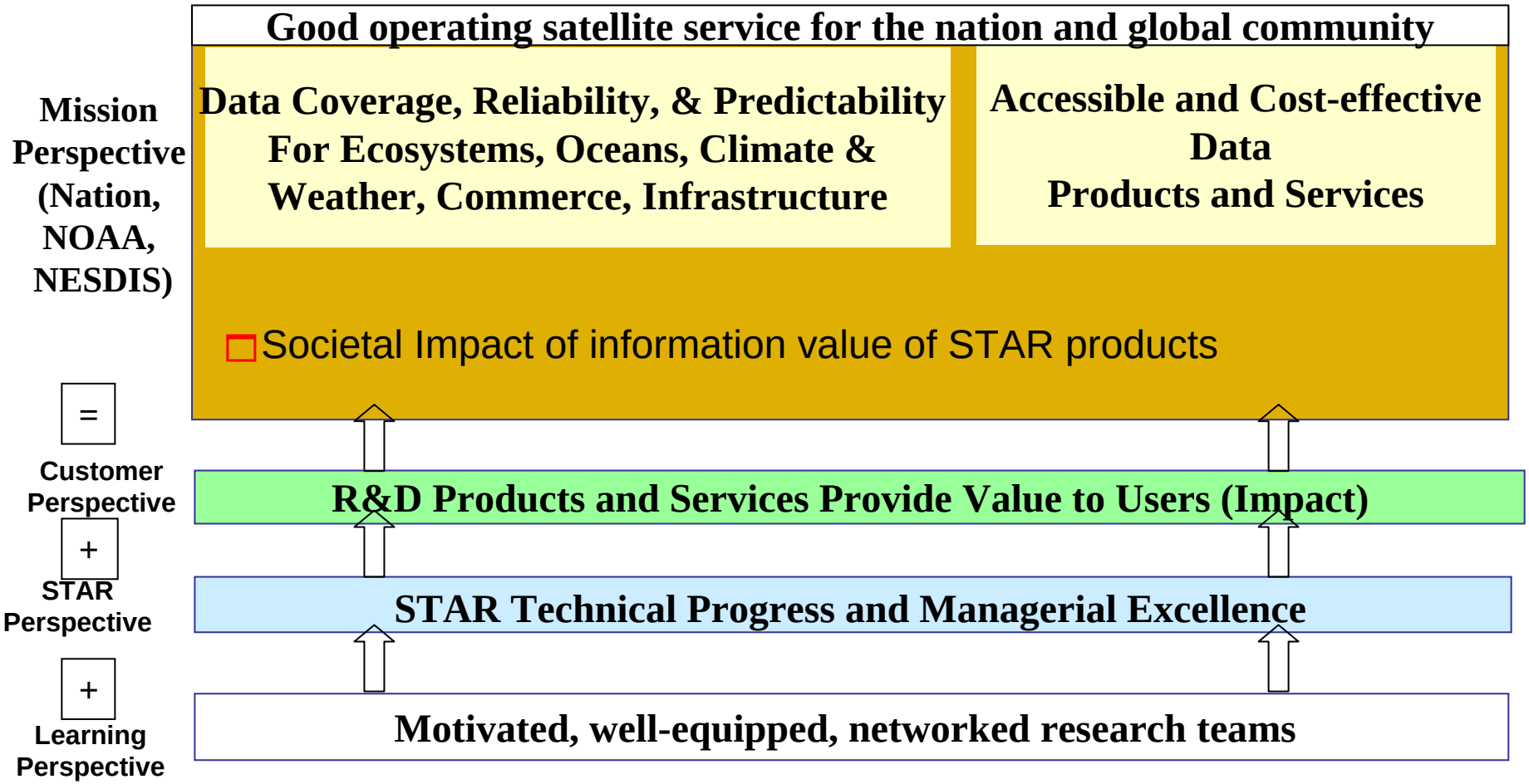
Quality Control activities

- Calibration
- Validation
- Correction of algorithms
- Correction of time series

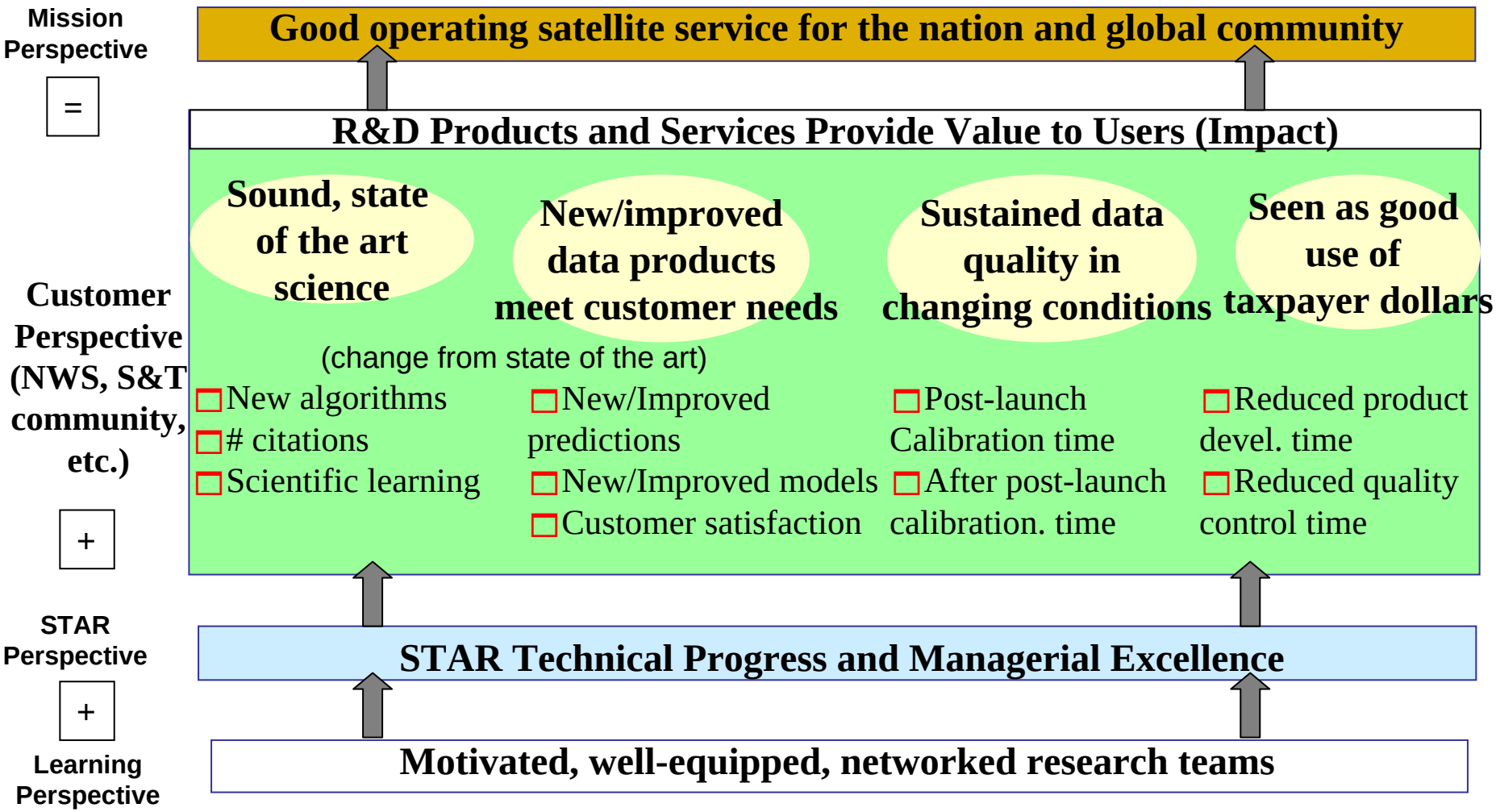
Research Activities

- Causes of errors in calibration or algorithms
- New methods
- New products

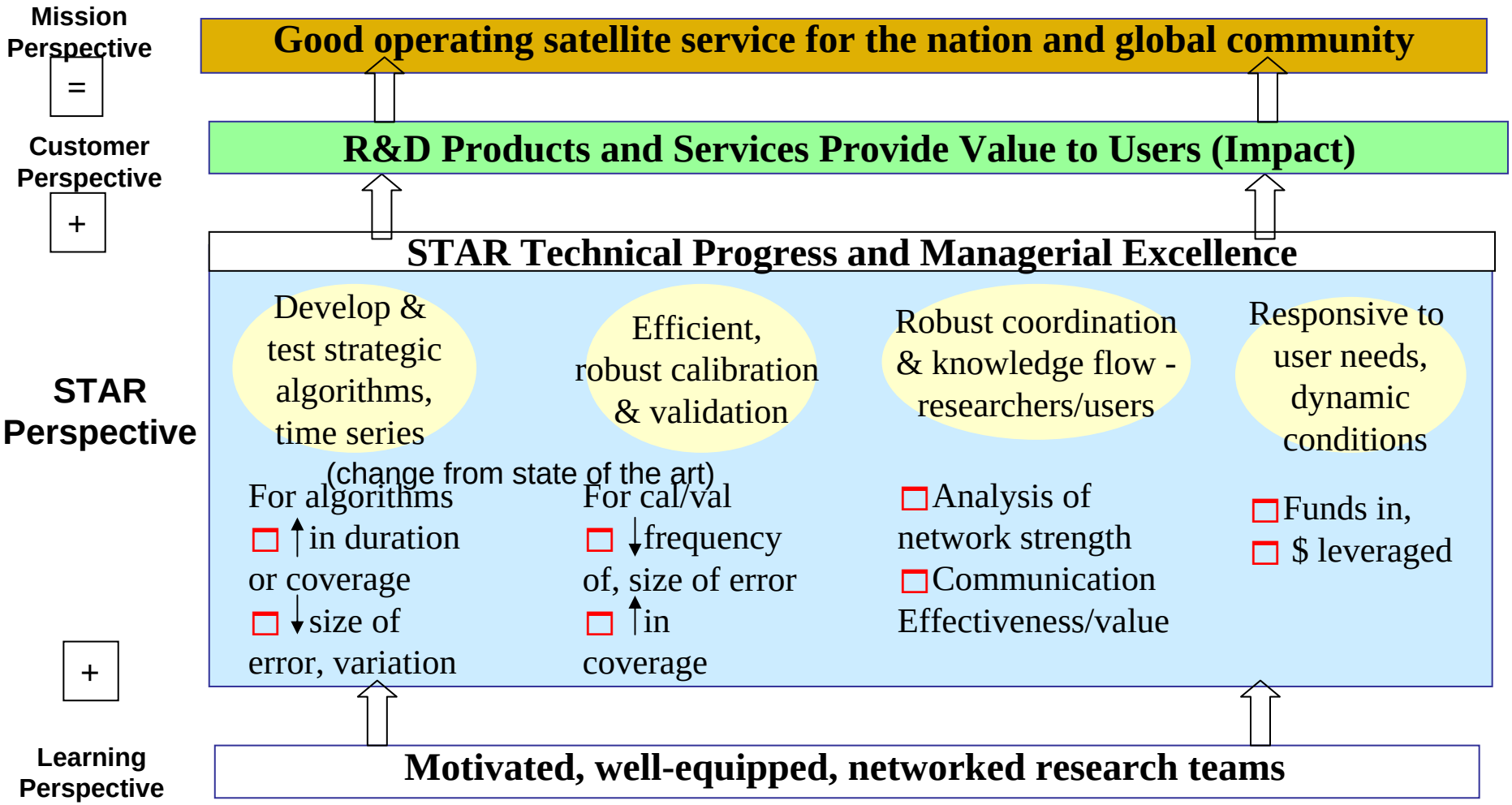
The organization's contribution to agency mission and multiple stakeholders



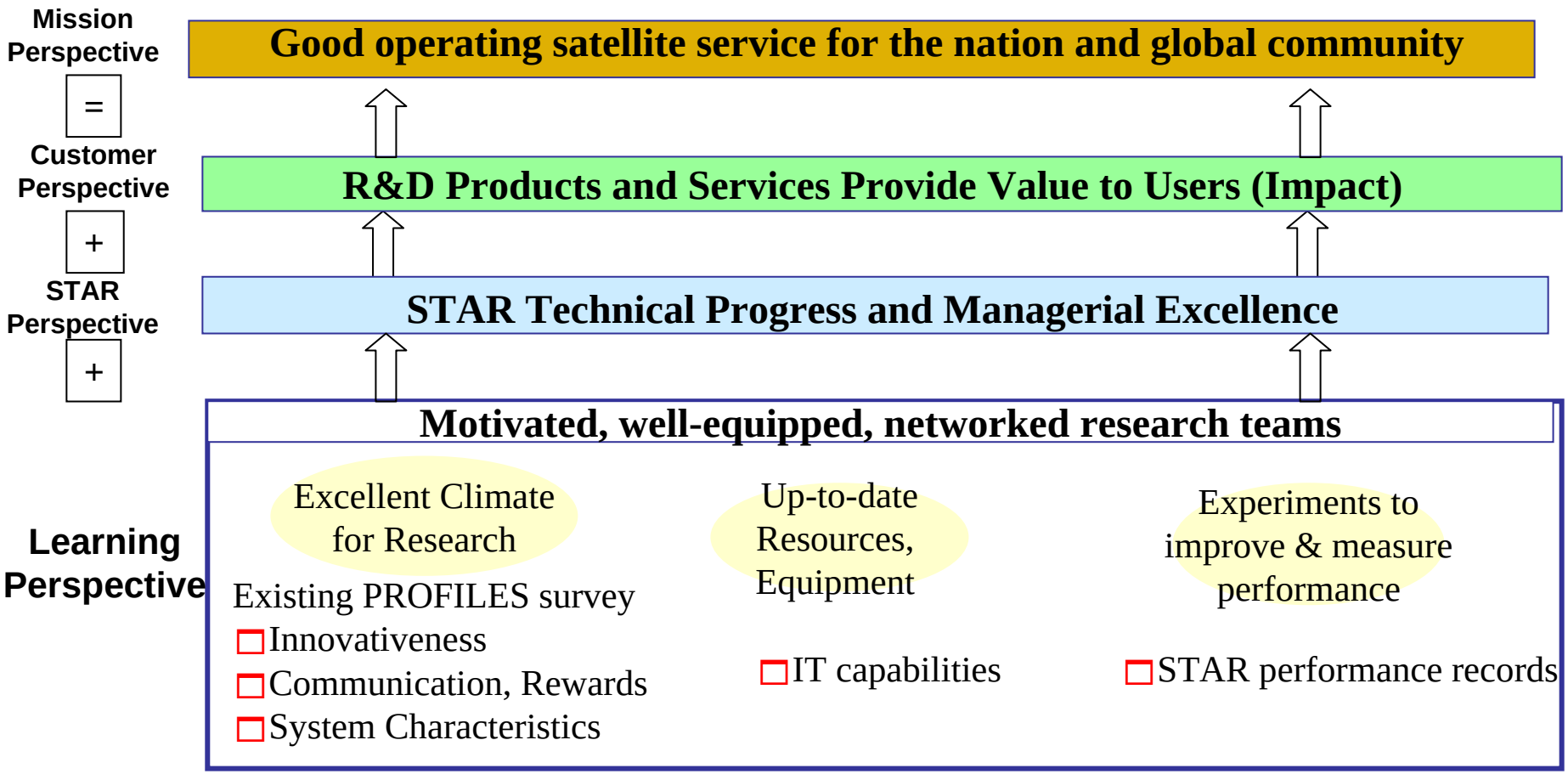
Delivering value to customers at the organizational level



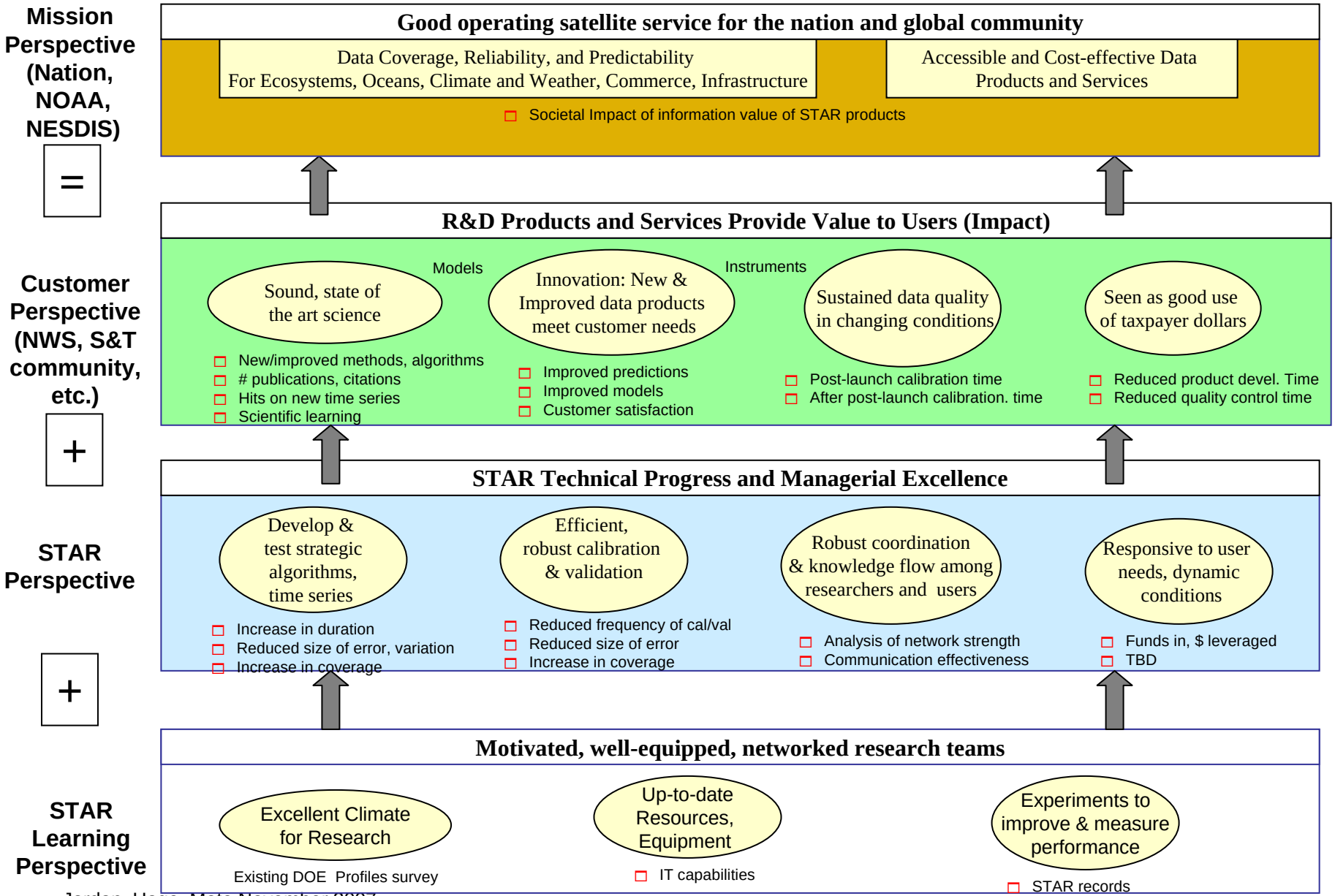
S&T technical progress and managerial excellence at project level



The foundation – matching resources and management practices to strategies



NOAA/STAR Strategy Map and Balanced Scorecard **REVISED** 03/2006



Summary and Conclusions

- Balanced scorecards that reflect strategy and multiple stakeholders definitions of “success” provide better information for policy makers and managers than ad hoc sets of indicators.
- Linking performance to management practice and theory is key.
- Generalizable, real time measures of S&T progress linked to organizational and mission goals are key.
- Our research is making progress on all these fronts.