

Evolution of the Strategy Map

1986-1991[©]

by

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Presentation date:	Venue:	Notes
Various	Various	Current

A strategy map is a visual tool that helps in telling the balanced scorecard "story". This story provides the answer to the question in the back of every employees mind: "why are we doing this?" To achieve the aggressive goals that are identified on the scorecard requires an effort on the part of employees that is above and beyond their daily job. Much individual creativity is needed to "make it happen." A compelling, logical story provides the necessary motivation.

One current model, called a strategy chart or map, borrows from a framework developed in System Dynamics and popularized by the proponents of systems thinking and organizational learning: the causal-loop diagram. It superimposes this diagram on a fixed skeleton that spans the financial-customer-internal-learning and growth system of classification. It then provides a generic causal linkage: "by doing/improving this (a learning and growth metric), we improve our internal processes as evidenced by improvement in this (an internal process metric), which in turn improves this customer requirement (a customer metric) which leads to improved financial performance (a financial metric). Analog took a more holistic view in developing the one slide summary of its balanced scorecard story.

Slide 1

Evolution of the Analog Devices Strategy Map (1986-1991)


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Slide 1

Strategy Map

Evolution of the Analog Devices Strategy Map: 1986-1991

Slide 2



TEXAS INSTRUMENTS, HIJI, JAPAN

FACILITY: 4" wafer fab and assembly of bipolar IC's
built 1974, 1300 employees

**OVERALL GOAL:
(1980)** "..to have our products rated #1 in quality by
more than 50% of our customers by 1985.."

RESULTS: defect levels reduced to 20 PPM (WSJ, 10/3/86)
average unit cost down by factor of 7
% customers rating them #1 in 1985:

linear products	—————>	45%
TTL products	—————>	60%

WINNERS OF 1985 DEMING PRIZE

"We've gone as far as we can in manufacturing. We are focusing on IC design for further defect reduction."
Kimio Nonaka, Manager of TQC

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c. October 10, 1986

Analog's tool for telling the scorecard story originated in 1986; upon my return from Juran's Impro 86. I was inspired by a booth and presentation given by Texas Instruments' Hiji Japan wafer fab. I summarized their story on this single slide.

Slide 3

ADI Wilmington Plant

Plant: Fab (4" & 6") and assembly of IC's
Built: various
1000 Employees

1987: Overall Goal: "Have our products rated number one in Total value by more than 50% of our customers

- performance
- price
- quality/reliability
- delivery
- support
- responsiveness
- cooperativeness/partnershipness
- ⋮
- ⋮
- ⋮

1992: Winner of the 1992 _____ Quality Award

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From a hand drawn slide presented October 14, 1986.

I created this fictitious version were I adapted the original to Analog's largest, and a strikingly similar, wafer fab. The message was clear: here's a possible future state for Analog, and ... someone's already there. This instantly reduced my proposal from a consultant's pipedream to a realistic possibility. The excitement that these two slides produced, prompted me to create a third version that applied to Analog's IC operations in total.

Slide 4

ADI QIP Goals
1992

To be rated #1 by our customers by achieving

- < 10 PPM defect levels
- >99.8% on time delivery
- < 3 weeks lead time
- < 20 weeks product design cycle times
- < 3 wks mfg cycle times
- Reduction in WIP by x25
- Reduction in changeover times by x250
- ⋮

Plus having the best prices/costs and performance

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From hand drawn slide presented October 14, 1986.

We understood that the key to our strategic success was to be the vendor of choice to our customers; to be number one on their list of favored suppliers. But how do we get there and stay there? This was our fledgling attempt to answer that question.

Over the next few weeks, this slide evolved into a two slide version: the first describing what was possible by 1992 (which I called the External Perspective), and the second one addressing how we could do it (which I called the Internal Perspective). The combination of possibilities, the resulting opportunities, and the required framework served as the basis for this early story.

Slide 5

ADI 1992 QIP GOALS
EXTERNAL PERSPECTIVE

To have our products rated #1 in
TOTAL VALUE
by more than 50% of our customers

based on:

- right products
- performance
- price
- quality/reliability
- lead time
- delivery
- support
- responsiveness
- cooperativeness
- willingness to form partnership

⋮

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c. October 28, 1986.

This and the following slide resulted from the meeting of 10/14/86 between Ray, Jerry and me, and incorporates our improvement of the previous two strawman proposal slides.

The external perspective is the way that ADI appears to its customers. It is the way that they would describe us if they were asked to give a reference. All of these attributes are measurable by the customer.

Slide 6

ADI 1992 QIP GOALS
INTERNAL PERSPECTIVE

To constantly strive for the elimination of all
FORMS OF WASTE
at all entities, functions and levels within ADI

Manufacturing and Design	Other Areas
<ul style="list-style-type: none">< 10 PPM defect levels>99.8% on time delivery<3 weeks lead time<3 weeks mfg. cycle time<20 weeks design cycle25X reduction in active WIP250X reduction in changeover times	<div style="border: 1px dashed red; padding: 5px;"><ul style="list-style-type: none">timely financial reportingreduced turnovereffective meetingsactionable informationperfect safety records</div> <p style="text-align: center;">● ● ●</p>

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c. October 28, 1986.

The internal perspective identifies the means that were required to achieve the results of the previous slide.

Slide 7

ADI 1992 QIP GOALS
EXTERNAL PERSPECTIVE

To have our products rated #1 in
TOTAL VALUE
by more than 50% of our customers

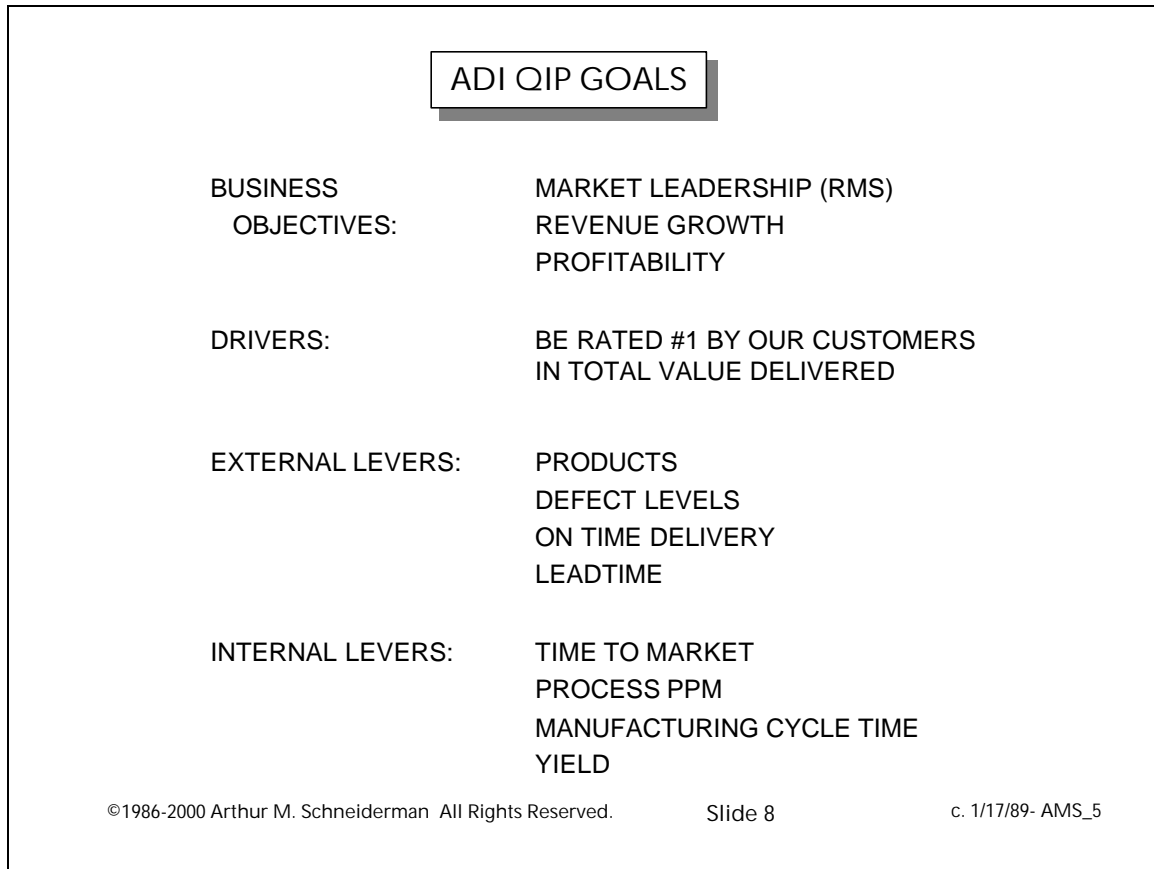
based on:

right products performance features price quality/reliability willingness to form partnership	lead time delivery support responsiveness cooperativeness
safety operating cost maintenance cost expected life resale value	durability serviceability reputation understanding aesthetics
• • •	

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rev. c. 7/31/87

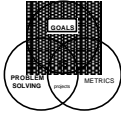
As the scorecard story was told, more customer purchase criteria were identified. To facilitate buy-in, I classified all suggestions as current or future and added them to the list. I postponed the culling process to some future date when we had achieved broader consensus.

Slide 8



In January of 1989, I combined the previous two slides onto a single slide, pared the drivers down to the vital few and added the three business objectives.

Slide 9



The diagram shows a central square labeled 'GOALS' with a grid pattern. It is flanked by two overlapping circles: the left one is labeled 'PROBLEMS SOLVING' and the right one is labeled 'METRICS'.

ADI QIP GOALS

BUSINESS OBJECTIVES:

- MARKET LEADERSHIP (RMS)
- REVENUE GROWTH
- PROFITABILITY

DRIVERS:

- BE RATED #1 BY OUR CUSTOMERS IN **TOTAL VALUE DELIVERED**

EXTERNAL LEVERS:

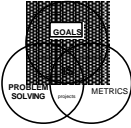
- PRODUCTS
- DEFECT LEVELS
- ON-TIME DELIVERY
- LEADTIME
- PRICE
- RESPONSIVENESS

INTERNAL LEVERS:

- TIME TO MARKET
- PROCESS PPM
- MANUFACTURING CYCLE TIME
- YIELD

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By April of 1990, the external perspective had to be broadened to include the newly emerging requirements of price and responsiveness.



ADI QIP GOALS

BUSINESS OBJECTIVES:

- MARKET LEADERSHIP (RMS)
- REVENUE GROWTH
- PROFITABILITY

DRIVERS:

BE RATED #1 BY OUR CUSTOMERS
IN **TOTAL VALUE DELIVERED**

EXTERNAL LEVERS	INTERNAL LEVERS	TIME TO MARKET	PROCESS FPM	YIELD	MANUFACTURING CYCLE TIME	GENERALIZED CYCLE TIME
PRODUCTS		⊙	△			
DEFECT LEVELS		⊙		△		
ON-TIME DELIVERY		△	⊙	⊙		
LEADTIME		△	⊙	⊙		
PRICE RESPONSIVENESS		⊙	△	⊙		⊙

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Slide 10
4/8/90-04080-2a
rev 4/22/91

My final version of this slide, created in April of 1991, provided the visual for many presentations.

The symbol in the upper left hand corner of this slide is the QIP logo. Throughout my tenure at Analog, the management group continually asked and re-asked the question "what are the most important things that we need to do to delight all of our stakeholders, taken as a group?" The highest common denominator of the many answers to that question always remained the three business objectives stated on this slide. And over that period, the principal bottleneck in achieving those business objectives was customer satisfaction.

Now today things may be different at Analog. More than a hundred fold increase in stockholder value (that's right folks, 11/2/90 stock price: 15/16ths (split adjusted), 6/19/00: 98) has been created and customers are lining up to buy their products (leadtimes on some released products are being quoted in years, rather than weeks). So employee satisfaction, given the tight labor market and the allure of the current batch of high tech startups, might have risen to the top of the list. But then, it was the customer, the customer, the

Evolution of the Analog Devices Strategy Map: 1986-1991

customer. We also knew that customers were choosing suppliers on this elusive basis called value. The biggest challenge we faced was defining what they meant by it, and that marked the principle way in which the scorecard story evolved between 1986 and 1991.

But we also began to recognize that there was not a simple connection between what we had identified as the external levers (the importance weighted gaps in meeting customer requirements) and the internal levers (the internal processes having the greatest effect on closing these gaps). The stumbling block in making the connection was the absence of a one-to-one relationship between internal and external levers. In other words, the internal lever could not be actuated independently. For example, a person working on yield improvement knew that their efforts would impact several external levers. They also new that those working on other internal initiates could do the same. They audit trail became muddy and so did the resulting story.

As a system dynamics student since the early 1970's, I was well aware of causal-loop diagrams. But I believed then (and believe now) that they are of very limited value in clarifying these types of multiple relationships. Furthermore, and most importantly, they gave no indication of the strength of the relationships. And so I turned to one of the of 7 Management and Planning (7MP) Tools developed in Japan in the late 1970s: the Matrix Diagram. It allowed me to pictorially capture not only the existence of a relationship, but also its strength. The needed decoder ring was that a circle-within-circle was used to symbolize a strong relationship, a single circle alone was for a moderate relationship, a triangle represented a weak relationship and a blank cell corresponded to in insignificant or nonexistent one.

This matrix proved invaluable in telling the scorecard story. Ask that same person who's working on yield improvement "why are you doing this?" and they'll likely tell you:

"By improving yield, and reducing yield variability I'll be helping to improve our delivery performance and helping us to grow in new, cost competitive markets. Also, it will help the manufacturing people reduce lead time since they'll be better able to plan production. And the quality folks tell me that low yields and high yield variability is an important contributor to our defects. All of these improvements will make our customers happier and they'll want to buy more of our products. The more they buy, the more money we'll make and the faster we'll grow. And the more Analog makes, the bigger my quarterly bonus and when we add that new fab, I'll have a good chance of promotion to fab manager."

Now to me, that's the telling of a great scorecard story.