

Roadmapping Overview

International Technology Management

October 28, 1999

Outline

- What is Roadmapping?
- Comments on Successful Roadmapping
- Roadmap Development Process

Richard E. Albright
Technology Office

Bell Laboratories
Lucent Technologies
ralbright@lucent.com

We make the things that make communications work



Roadmaps and Roadmapping



A Roadmap

- is the view of a group of how to get where they want to go or achieve their desired objective. (*Discipline*)
- helps the group make sure the capabilities to achieve their objective are in place at the time needed. (*Focus*)

Roadmapping

- is a *Learning* process for the group.
- is a *Communication* tool for the group.

Types of Roadmaps *



- Science and Technology Roadmaps
 - ONR, Bibliometric methods
- Industry & Government Roadmaps
 - Semiconductor (SIA), NEMI Component Roadmaps
 - Aluminum Industry, Glass Industry,
- Corporate Roadmaps
 - Product Roadmaps
 - Manufacturing Roadmaps
 - Component Roadmaps
 - Product Technology Roadmaps

Key Objectives:

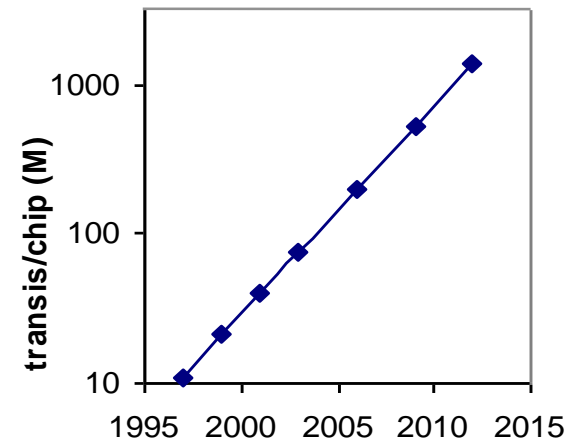
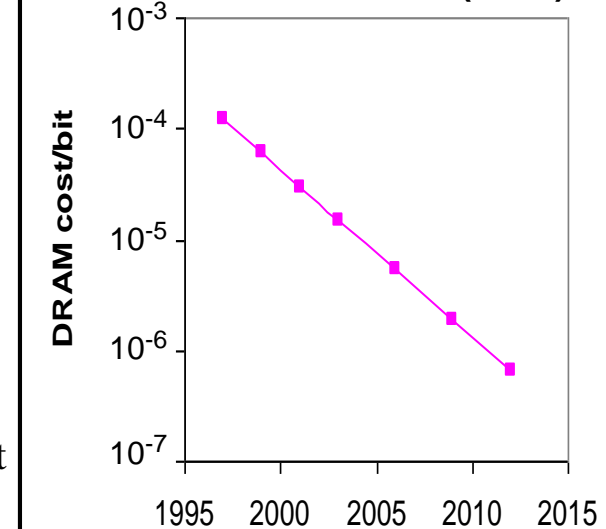
Identify or Set a Future Direction

Coordinate Execution

Set Direction

Coordinate Execution
Portfolio Management

The National Technology Roadmap for Semiconductors (1997)



* Roadmaps can represent the need, current/planned capability or both

Product Technology Roadmaps



- Disciplined, Focused, Multi-year, Business Planning Methodology
 - Driven by Market Strategy (Customers & Competition)
 - Drives
 - Product Families
 - Manufacturing & Supply Line Requirements
 - Linkage
 - Research
 - Standards
 - Intellectual Property
- Concise, Cross-Functional Vehicle
 - Learning
 - Communications

Product Technology Roadmap



Customer and Business Drivers

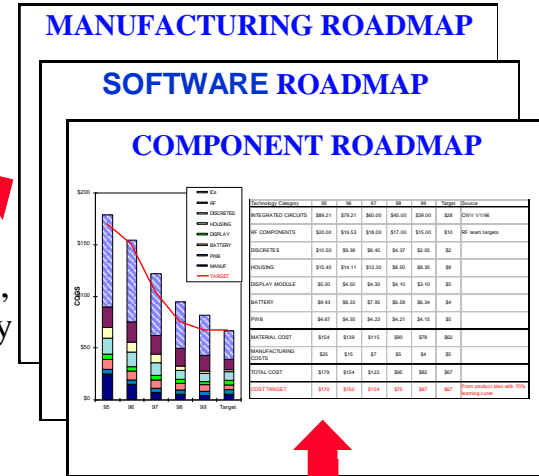
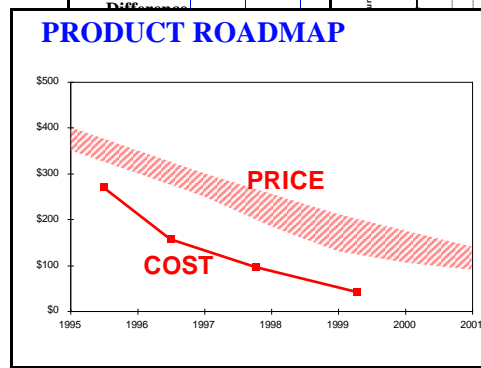
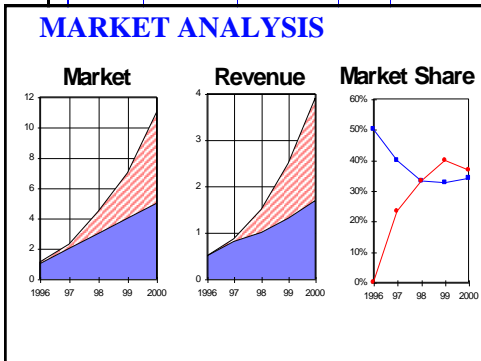
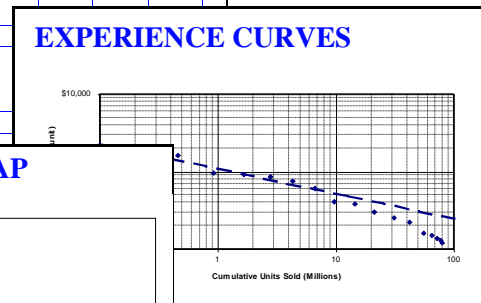


COMPETITIVE STRATEGY

	Advantage	Competency	Goals	Value Prop.
Lucent				
Competitor 1				

PRODUCT EVOLUTION PLAN

	1996	1997	1998	1999	2000	VISION
Product Attributes						
Customer Value						



Requirements



Availability



Needs, Supply



TECHNOLOGY ATTACK STRATEGY

	1996	1997	1998	1999	2000	2001
Lucent Attack Technologies						
Intellectual Property Strategy						



TECHNOLOGY ROADMAP

Customer drivers	1995	1996	1997	1998	1999	VISION	Import.	Compet Position
Core technology								
Edge of age								
Liability								
User interface								
Religion								
Software								
Task time								
Power management								
Standard processor								
Microcontroller								
Voice engine								
Memory devices								
Long life								
Battery								
Radio								
Antenna								
Power amp								
Housing								
Enclosure								
PWB technology								
System design								
Manufacturing								
Accessories								
Audio quality								
Video recognition								
Voice coders								
ICIP algorithms								
Transducers								

Business-driven technology plan

Research, Manufacturing, Supply Line



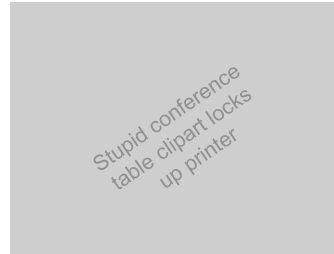
Why Roadmap? / Roadmapping Objectives

- Roadmapping is just **good planning**, with a heavy dose of technology (not just an afterthought).
- Roadmaps **link** business strategy and market data with product and technology decisions using a series of simple charts.
- Roadmaps highlight **gaps** in product and technology plans.
- Roadmaps **prioritize** investments based on drivers.
- Roadmapping results in **better targets**: more competitive and more realistic.

Successful Roadmapping

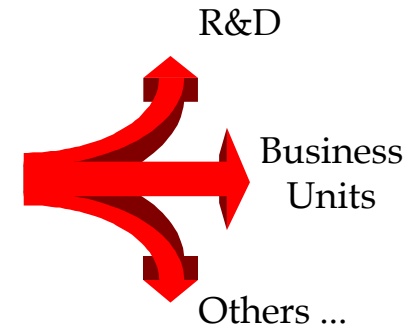
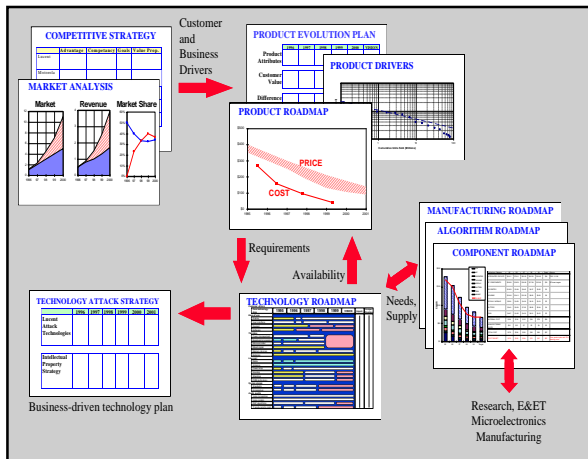


Three distinct parts ...



Creating the Roadmap

Roadmap Content



Using The Roadmaps

... all must be addressed for roadmapping to work.



Summary of MATI I Findings on Roadmapping

- Product-Technology Roadmapping is best introduced when:
 1. Product is **important** (growth, profit, strategic)
 2. **Sustained trends** exist in technologies and drivers
 3. Product is **threatened** (and they realize it!)
- Don't **automate** too much:

The challenge of roadmapping is organizational, not technical. Allow the politics, negotiation, and interaction to occur in person.
- Be **compelling**: Highlight the relevant and important items for the target audience, otherwise roadmaps will be ignored.
- **Show risk** on roadmaps or be careful how much detail is shared ... but still set aggressive targets. Readers assume that roadmap content is “certain.”
- Avoid **metrics** that reward “going through the motions.”
- **Customize output** to allow sharing and circulation.



Requires both:

- **Top Down Commitment**
 - Business Leader Support
 - Use Product Technology Roadmaps to manage the business.
- **Bottom Up Commitment**
 - Core team must see the value in supporting the process
 - They must have confidence that the roadmaps will be used long term
 - Don't get hung up at the roadblocks

Styles of Roadmapping

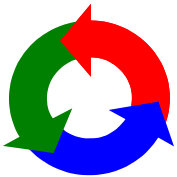


- **Intensive** - *Short term attack strategy*



- Prompted by new business start, major strategic change or new competitive threat
- Multidiscipline team meet several times to “complete” roadmap (and make strategic decisions)

- **Part of BU Fabric** - *Culture driven*



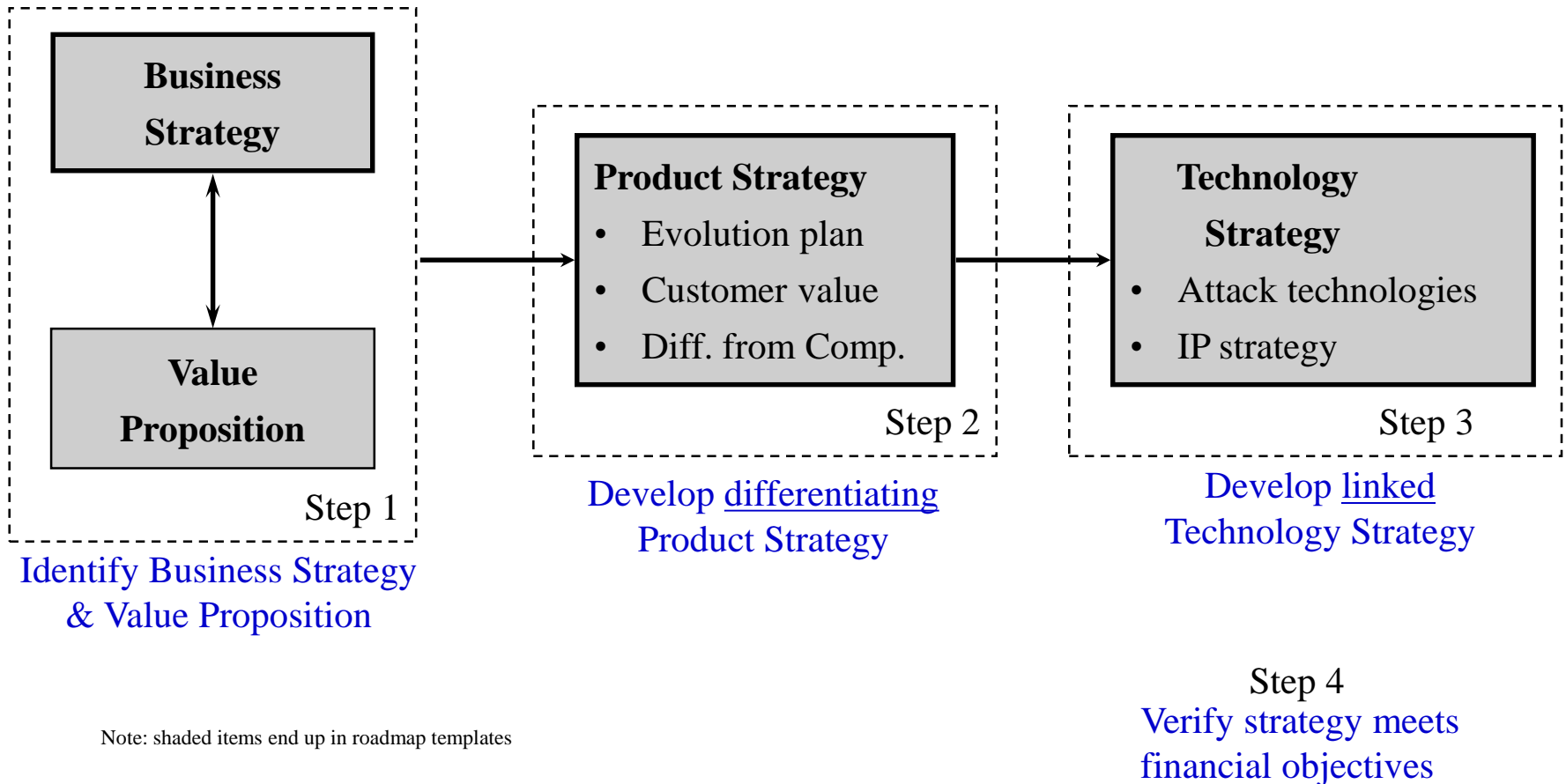
- Develop and maintain roadmaps as part of periodic team meetings (e.g. review a template per meeting)
- Review roadmaps periodically at BU-VP level
- Use roadmaps to monitor and run ongoing business

Roadmap Development Process



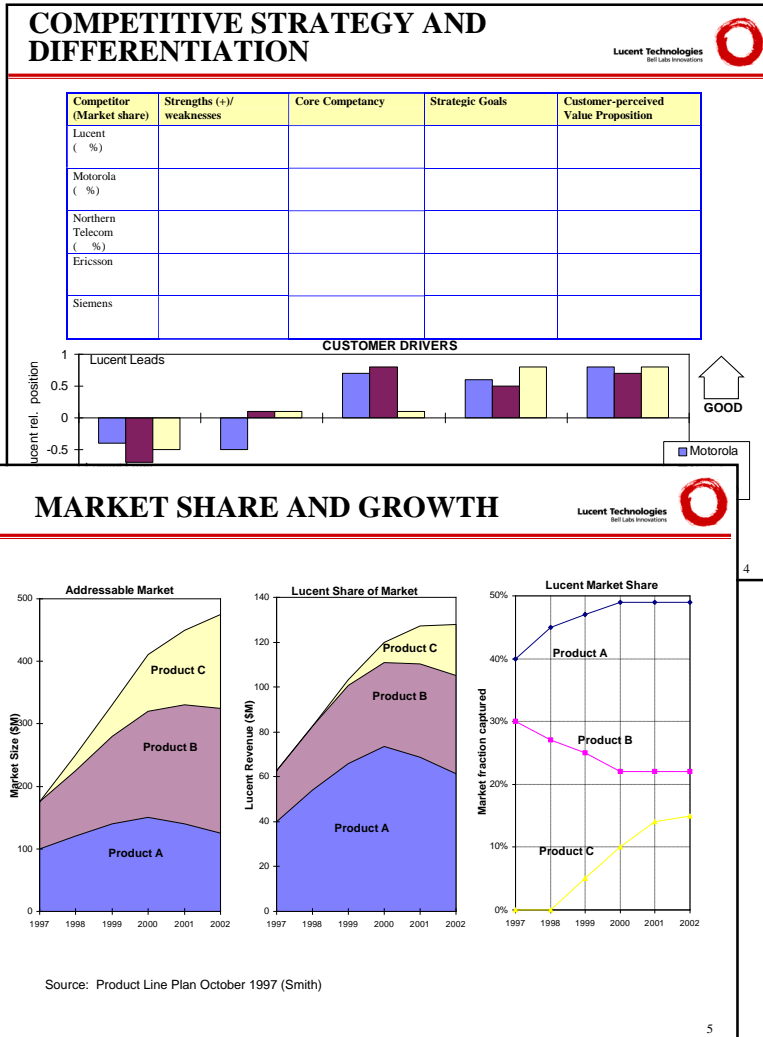
The Goal:

Develop a consistent, linked **business**, **product** and **technology** strategy.





1. Market and Competitive Strategy



- Clarify and document strategy and goals
- Incorporate customer feedback
- Provide competitive information
 - Competitive advantages
 - Competencies
 - Strategic goals
 - Value proposition
- Identify markets and targeted segments
- Market shares and growth

Step 1: Business Strategy & Value Proposition



Identify Scope of Roadmap
(what products or markets over what timeframe)

- Templates:**
- Competitive strategy & differentiation
 - Market Growth & Share

Who are the customers?

What is the Addressable Market?

Identify possible market drivers

Refine into customer drivers:

- * Based on customer perception (customer survey)
- * Identifies critical few drivers which make up buying decision
- * Identifies weightings in buying decision
- * Rates Lucent relative to competitors (e.g. CVA data)

Who are the competitors?
What is their mkt share, strengths/weaknesses
CC, Value prop. & strategy?

What do we have?
Strengths/Weaknesses
Mkt sh., Core Competencies

BUSINESS STRATEGY

VALUE PROPOSITION

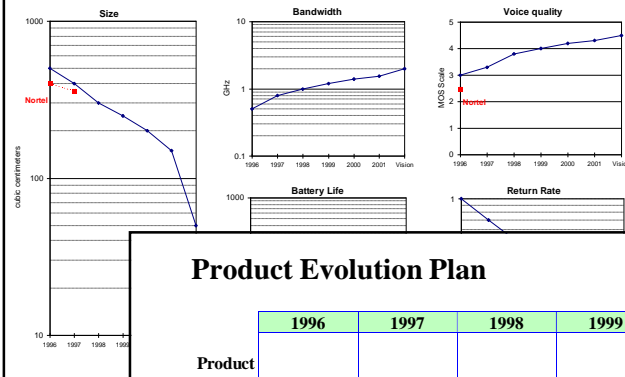


2. Product Strategy

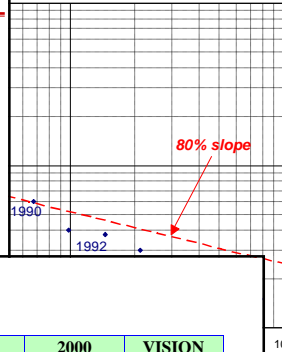


EXPERIENCE CURVES

PRODUCT DRIVERS



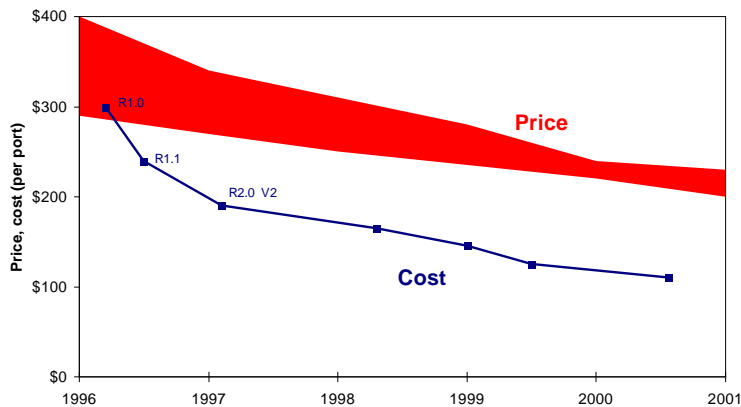
TERMINAL



Product Evolution Plan

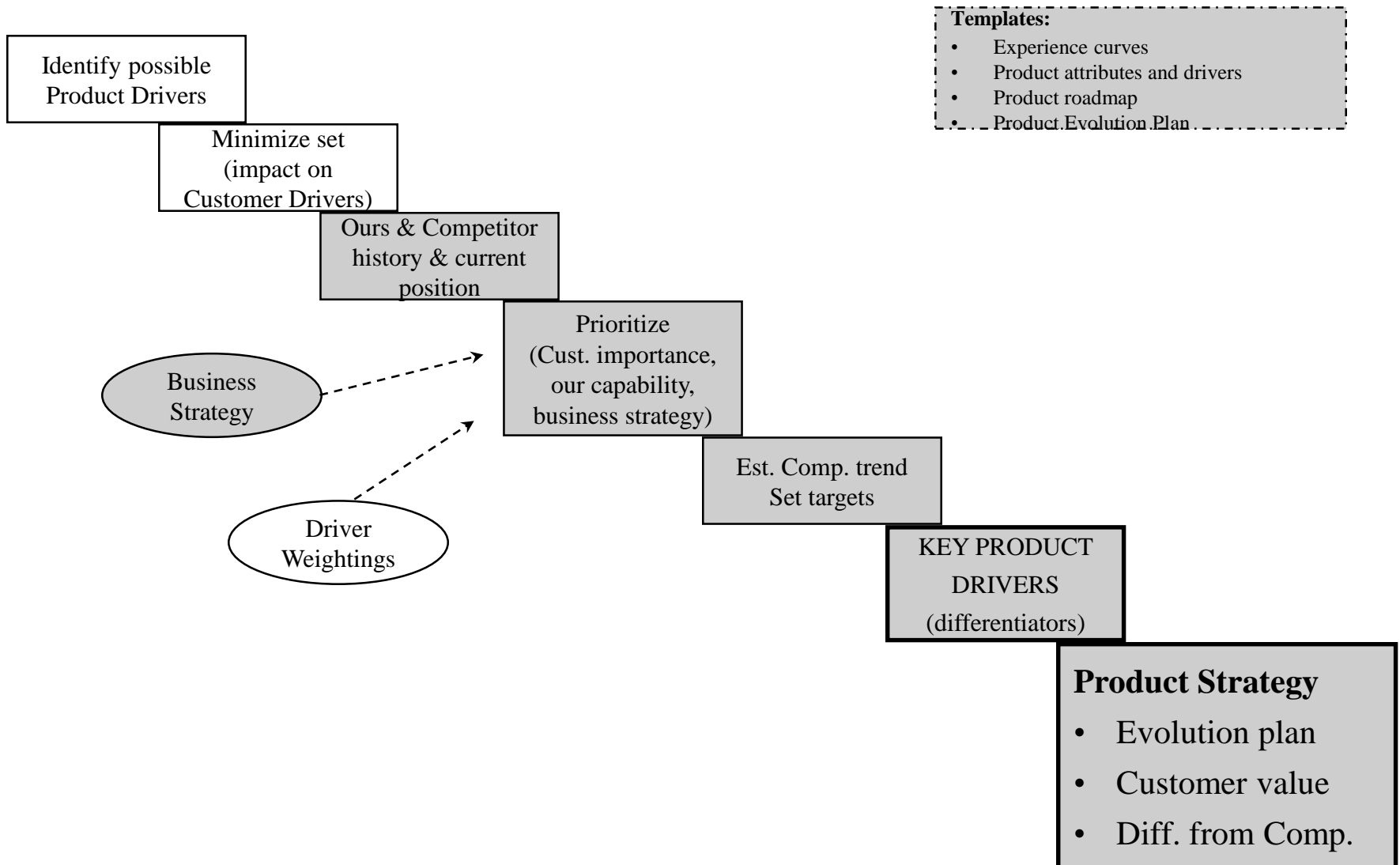
	1996	1997	1998	1999	2000	VISION
Product Attributes						

Product Roadmap



- History and projection in key product attributes
- Experience curves set targets
- Most critical product attributes
- Link product and technology plans to customer and competitive drivers
- Prioritize investments
- Clarify product release plan
- Trends in price, cost and features
- Evolution of product features

Step 2: Product Strategy



CUSTOMER PRIORITIES DRIVE ROADMAPS



*Drivers
Prioritized
by Customer
and Strategy*

*Product Drivers:
History and
Targets*

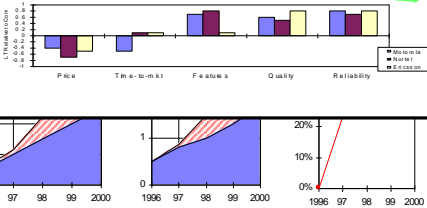
*Technologies
Critical to
Competitive
Success*

*Action Plan
and Gap Analysis*

COMPETITIVE STRATEGY

	Advantage	Competency	Goals	Value Prop
Lucent				
Comp. #1				
Comp. #2				
Comp. #3				

CUSTOMER DRIVERS



FEATURE PRIORITY MATRIX

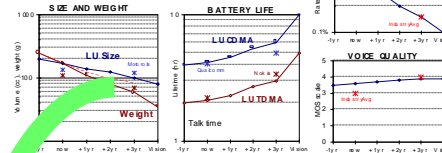
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Customer Value						

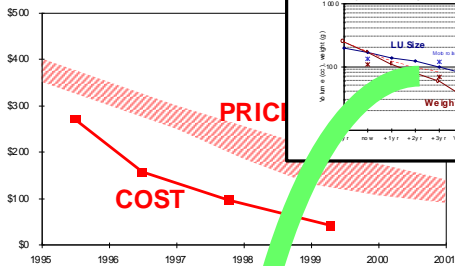
EXPERIENCE CURVES

PRODUCT DRIVERS

- KEY DRIVERS:**
- Price/Cost
 - Size and Weight
 - Battery Life
 - Return Rate
 - Voice Quality



MKT PRICE TREND

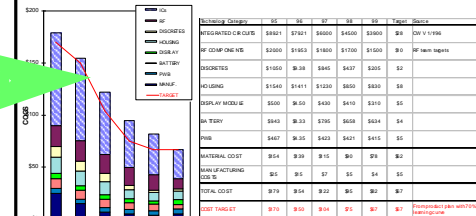


SUPPLIER ROADMAPS

MANUFACTURING ROADMAP

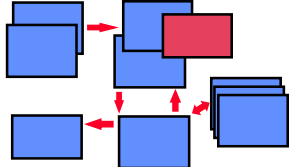
DEVELOPMENT PLANS

FORWARD COST MODEL



TECHNOLOGY ROADMAP

Customer drivers	1995	1996	1997	1998	1999	VISION	Import.	Compt. Position	Factor	MB
Ease of use										
Talk time										
Low cost										
Quality										



PRODUCT DRIVERS



DEFINITION:

Product drivers are the critical product attributes that customers make their buying decision on. They are usually measurable or quantitative in nature and are derived from customer drivers. **The selection or prioritization of product drivers forms the essence of your “strategic choice”.**

PURPOSE

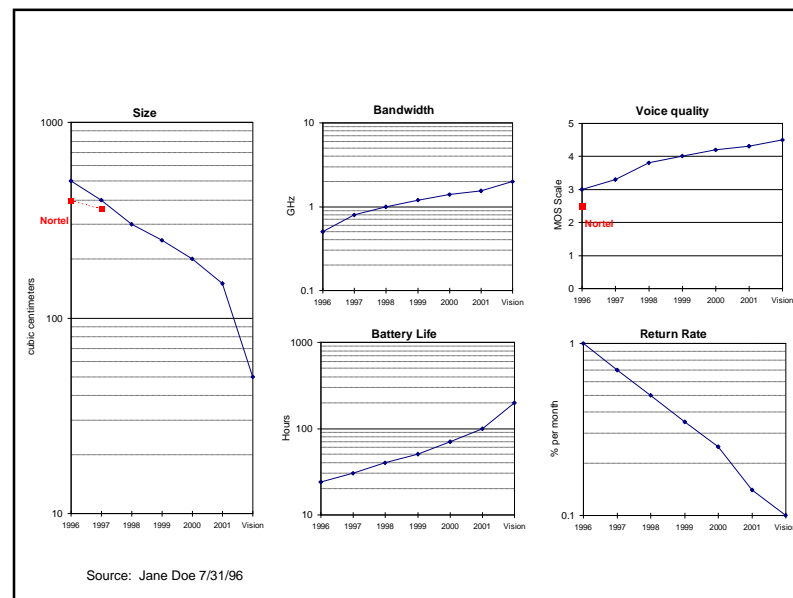
- Identify and communicate most critical product attributes
- Link product and technology plan to customer drivers
- Prioritize investments, set long-term targets and determine technology leadership strategy

INPUTS

- Industry history from product announcements (ours and competitors’)
- Experience curve reference lines
- Business and technology strategies

OUTPUTS

- Identify trends
- Identify Lucent’s position to Best Other Vendor (BOV)
- Long-term targets established



ISSUES

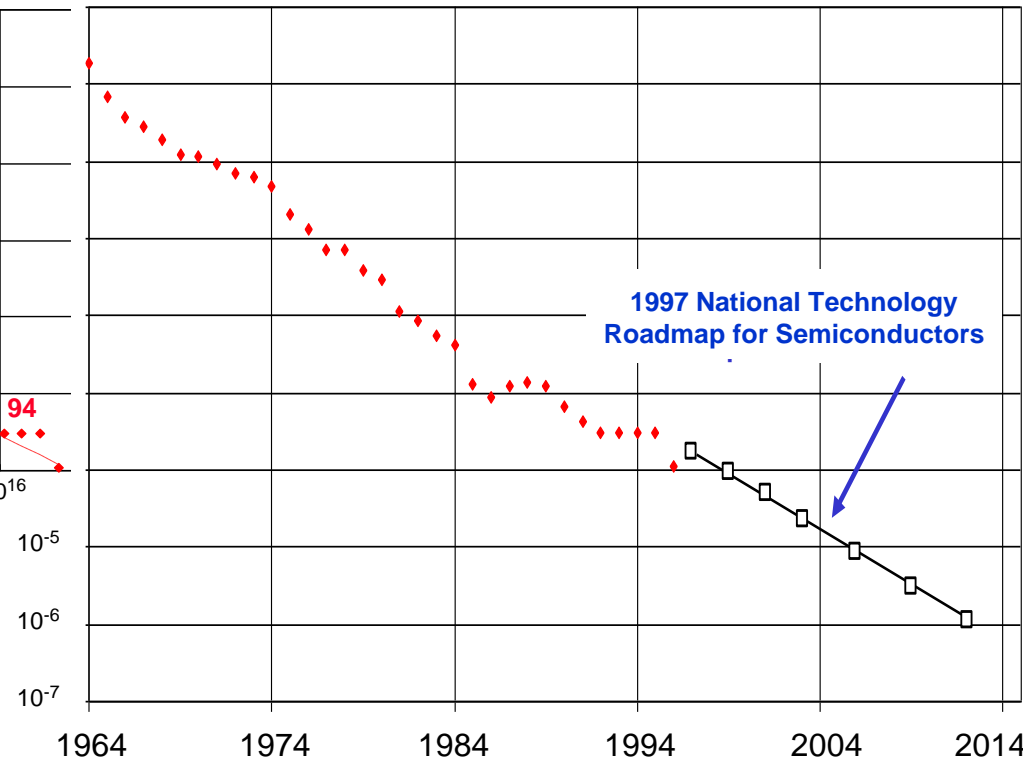
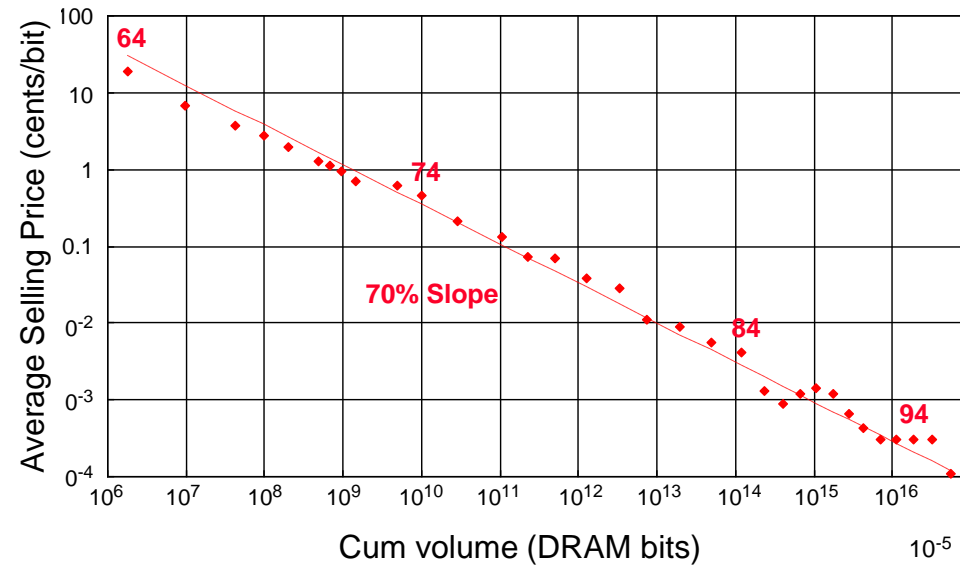
- Targets and preliminary driver prioritization can be set up front, but feasibility must be determined through iteration with product and technology plans.
- Use experience curves to set targets: 70% slope for leadership usually

Semiconductor Memory (DRAM)

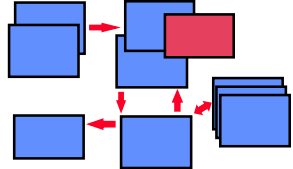


Experience Curve

Time Trend



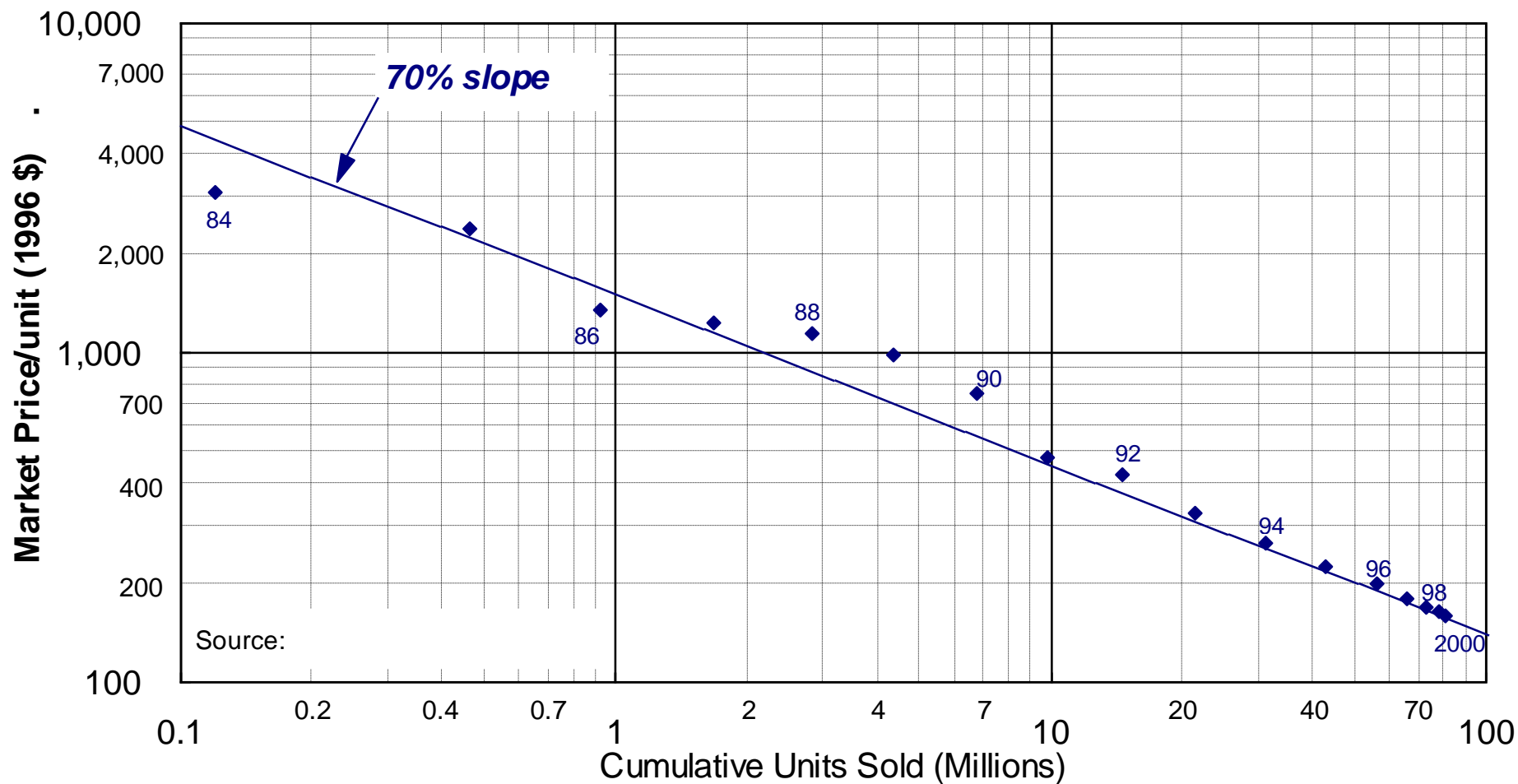
- The technology driver for all electronic industries
- Repeated, significant changes in product and technology: 4 bit --> 4 Megabit/chip --> ...
- “Moore’s Law” used to coordinate the many players in industry



Wireless Terminals Experience Curves



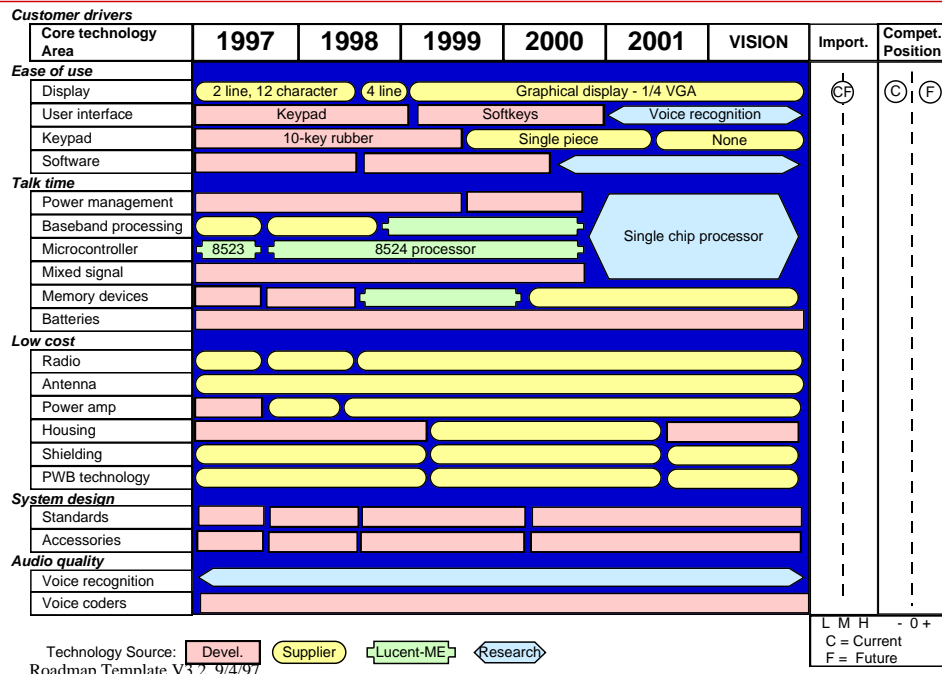
ANALOG HANDSET PRICE



3. Technology Strategy

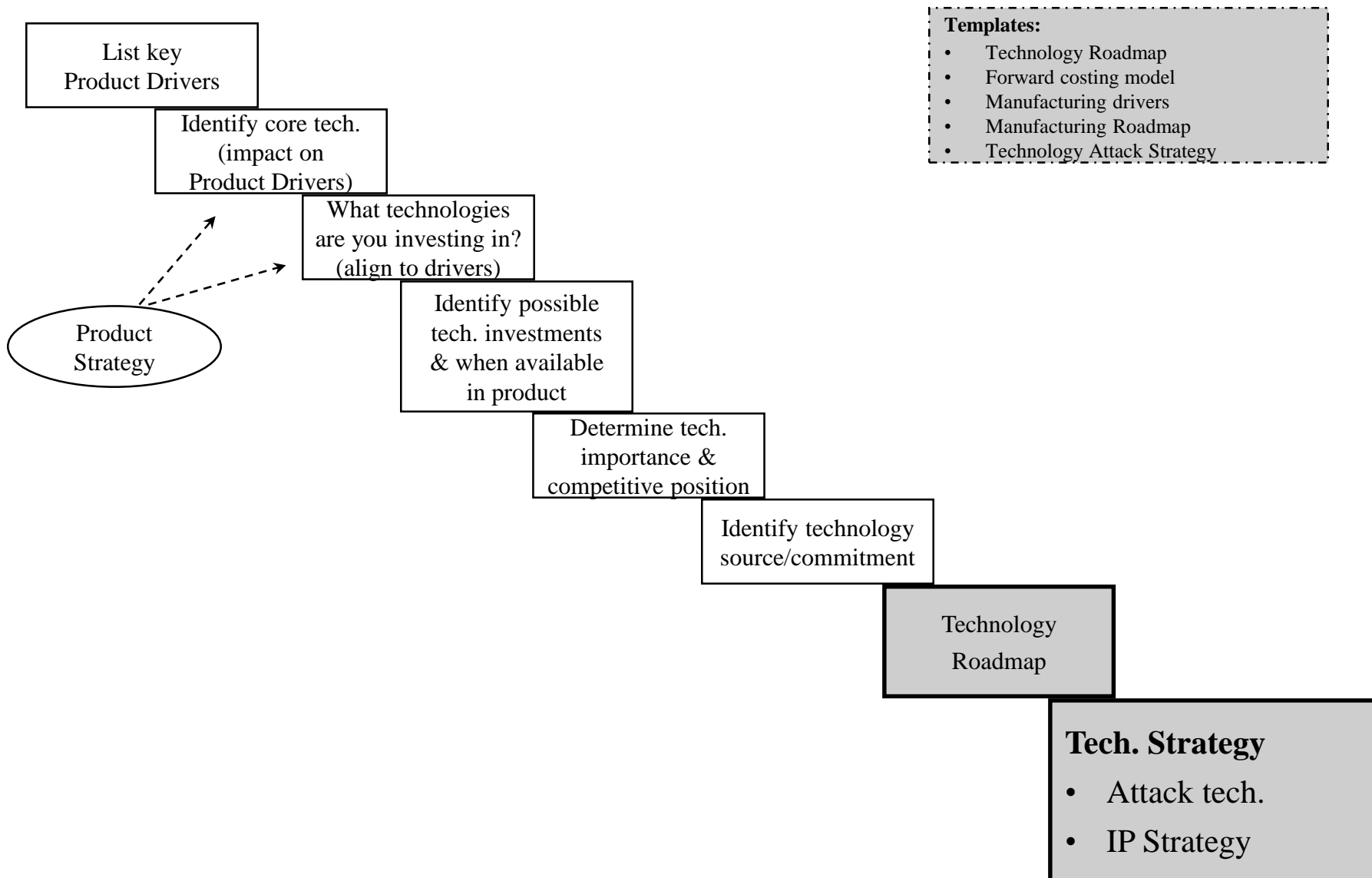


TECHNOLOGY ROADMAP

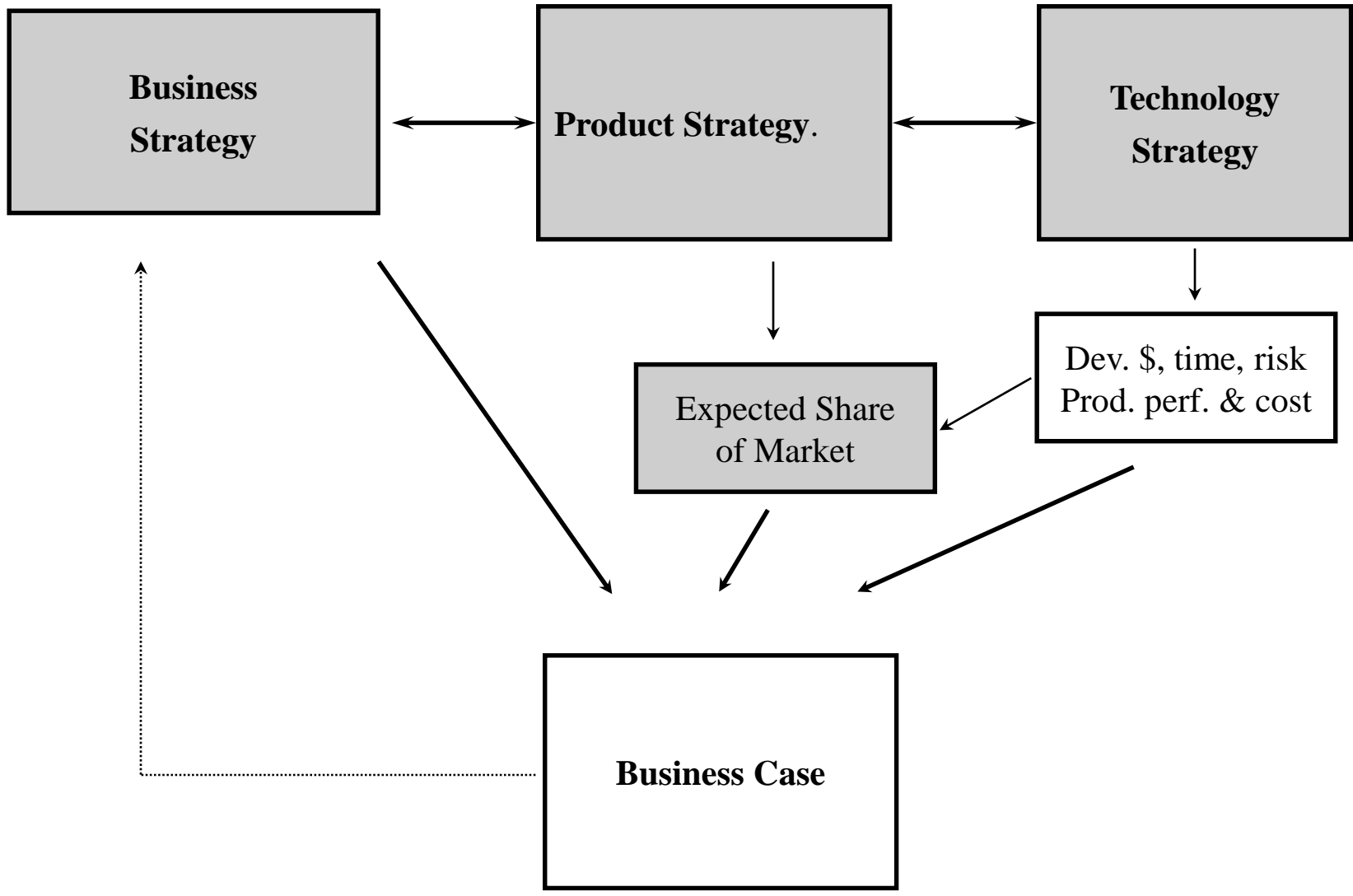


- Planned technology changes, and when they will be introduced into products
- Prioritize technology investments
- Research and development plans
- Planned technology trends, grouped by drivers
- Importance, competitive position, source and funding status

Step 3: Technology Strategy



Step 4: Verify Roadmap Meets Financial Objectives





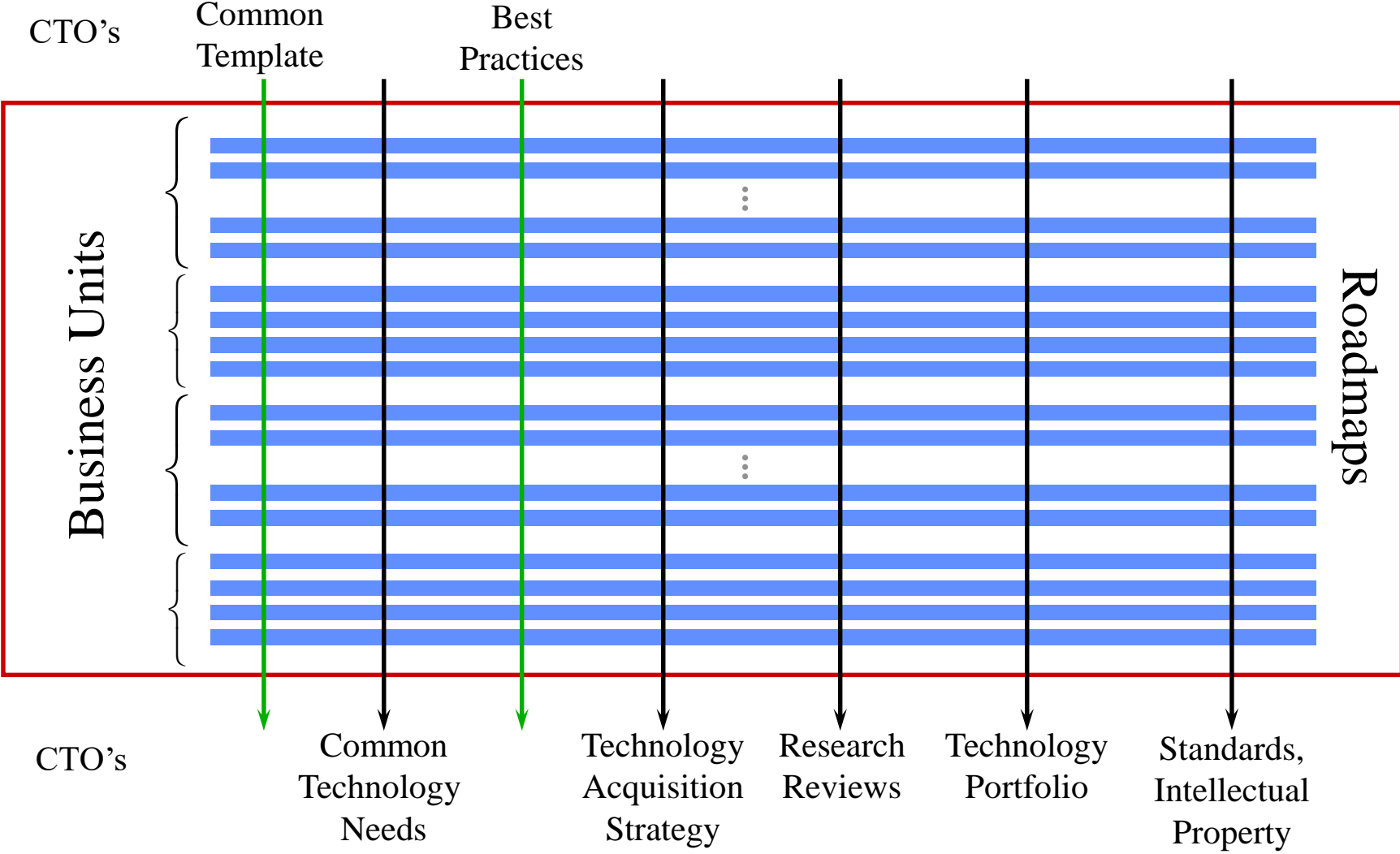
Central Support Role in a Multi-Business Corporation:

- Deploy
- Integrate
- Teach
- Cross Roadmap Planning
 - Technology and Business Strategy



Roadmaps and Technology Strategy

For Technology Strategy, the CTO's Role:





Summary

Discipline & **Focus**
Learning &
Communications



“Where’s the Roadmap? Can I see it? Am I on it? “

“If it’s not on the Roadmap it doesn’t get funded! “