Roadmapping, SWOT and Business Allignment

By Alejandro Sanz
Place: Amsterdam
GUIDED BY ..........

 .......... Alice & company
- Why roadmapping

- What kind of roadmapping

- Interfaces and alignment: who does roadmapping

- Tools to enhance and maintain the alignment in time

- SWOT

- Balance to be maintained
IT IS ABOUT WAR AND STRATEGY.

- Where are you going to battle
- When are you getting in engaged in combat
- What are your weapons
- Against who are you crossing swords

- Remember Napoleon: Strategy is the art of trading-off time and space (terrain)........(and there is much more terrain to concede than there is time)
The one that plans the battle from his headquarter before the fight, has the more strategic factors on his favor.

The victorious warriors first win and then they go to war.

The defeated warriors first go to battle and then they try to win.
1. Why Roadmapping.
A mitigator of uncertainty in strategic Product-Technology-Market (PTM) choice
Most technology does not arrive at the customer.

A Product-Market approach matches technologies in products with customers in markets.
SOME ELEMENTS ON ROADMAPPING.

- Provide a framework to develop scenario an assess their corporate-wide impact.

- It needs contribution from different levels in the organization.

- It includes both explicit and tacit knowledge

- It is time dynamic and NOT frozen needing continuous revisiting.

- Support companies concentrating on technology trajectories for sustainable product development decisions

- It enables firms to plan beyond the short term and immediate set of technologies at hand.
Alice: 'Would you tell me, please, which way I ought to go from here?'
Cat: 'That depends a good deal on where you want to get to,'
Alice: 'I don't much care where--'
Cat: 'Then it doesn't matter which way you go,'
'--so long as I get SOMEWHERE,' Alice added as an explanation.

`Oh, you're sure to do that,' said the Cat,

if you only walk long enough.'
2. What type of Roadmapping.
ROADMAPPING(S).

Market Roadmap
“Know Why”
- Knowledge of current & future Market / Business Opportunities
- Company Strategies
- Environmental Stringencies
- Industry Trends
- Regulatory Drivers
- Competition

Product & Service Roadmap
“Know What”
- Potential Product & Services Offerings: Both Pull & Push
- Strategic Capability Needs

Technology & Process Roadmap
“Know How”
- Progressive, Alternative & Disruptive Solutions / Processes
- Intra & Inter -Structure
- Partnerships
- Suppliers

Ensures alignment of Technology & Product Development Plans with Market Opportunities

Push

Influences

Drivers / Thrusts

Pull

Options

Needs / Requirements
3.

Interfaces
Aligning.
NOT-URGENT AND IMPORTANT.

- **Urgent / Important**
  - Crises - Pressing problems
  - Deadline-driven work - Firefighting

- **Not Urgent / Important**
  - Long-range planning - Visioning
  - Anticipate problems - Invest in future

- **Urgent / Not Important**
  - Interruptions - Some meetings
  - Urgency creates the illusion of importance

- **Not Urgent / Not Important**
  - Non-productive busy work - Phone calls
  - Escape from Quadrant I - “Watching TV”

---

Put in motion today what is necessary in order to have the right technology, processes, components, and experience in place to meet the future needs for products and services” (Motorola)

Typical location of technology intelligence and Technology/business/market roadmaps
TECHNOLOGY ASSESSMENT PROCESS.

Scoping:
- Define firm’s Target markets
- Predict firm’s ability to change and redeploy resources

Searching:
- Survey, discover & search
  - For emergent technology
- Predict & assess market needs

Evaluating:
- Plan development of new technology
- Project how technology serves market needs and competitive goals

Committing
NOT TOO BIG ..... AND ..... NOT TOO SMALL.
### Technology Competitive Position

<table>
<thead>
<tr>
<th>TRL Level</th>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Base</td>
<td>Likely waste of resources</td>
</tr>
<tr>
<td>6-8</td>
<td>Key</td>
<td>Opportunities for present competitive advantage</td>
</tr>
<tr>
<td>4-6</td>
<td>Pacing</td>
<td>Opportunities for future competitive advantage</td>
</tr>
<tr>
<td>1-3</td>
<td>Emerging</td>
<td>Likely waste of resources</td>
</tr>
</tbody>
</table>

**Essential in the Business**
- Little competitive impact

**Well embodied in Products & process**
- High impact today

**Under experimentation**
- Competitive advantage likely to be important

**Early research stage**
- Potential unknown but promising

**Industry average**
- Alarm signal for survival
- Alarm signal for present
- Alarm signal for future

**Opportunities for future**
- Competitive advantage
- The perception of the roadmap as an exercise to justify the R&D programs needs to be corrected at the grass-root of the process. Involve supply/value chain, product development and strategic marketing.

- Sales, product development and research have different time horizons (1 year, 3-5 years, 5-15 years). Exploration vs. exploitation balance.

- Use internal and external expert input. Companies can be biased by it’s passed history, competences and markets.

- Include knowledge obtained from outside the organization: Suppliers, partners and customers.
## Basic risk assessment matrix for business intelligence (BI)

<table>
<thead>
<tr>
<th>Variable</th>
<th>LOW</th>
<th>MEDIUM</th>
<th>HIGH</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technology</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- How mature are the selected technologies within the market place?</td>
<td>Experienced with mature technology</td>
<td>Minimal experience with technology</td>
<td>New technology limited experience</td>
</tr>
<tr>
<td>- How mature are the selected technologies within the organization?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- How many different technologies will co-exist?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Do we have proper IT support?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Do we have modeling tools to support deployment?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Complexity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- How complex is the BI application itself?</td>
<td>Simple, minimal workflow impact</td>
<td>Moderate, some workflow impact</td>
<td>Mission critical will require extensive re-engineering</td>
</tr>
<tr>
<td>- How extensively will the workflow have to change? Will it be completely reengineered?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- How many products will be involved?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- How many sites will be supported?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- What degree of supporting models, distribution of data, process and controls</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Integration</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- How many interfaces will the BI have</td>
<td>Stand-alone, no integration</td>
<td>Limited integration required</td>
<td>Extensive integration required</td>
</tr>
<tr>
<td>- What are the external interfaces</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- How much source data redundancy exist</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Can the primary KItS from various data sources be matched?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Do we have incompatible standards? No Standard?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Do we have “orphan” records as result of referential integrity problems?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Organization</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- How much risk will business management tolerate?</td>
<td>Solid internal support</td>
<td>Supportive to a large extend</td>
<td>Little internal support</td>
</tr>
<tr>
<td>- How much financial and moral support can we expect when the project encounters hurdles?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Project team</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- How much experience does the team have with successful implementation of BI?</td>
<td>Business experience, business driven, knowledge rich, talented, great attitude.</td>
<td>Some business experience, business driven, talented, some knowledge, fair attitude.</td>
<td>No business experience, only technology driven, limited talent, bad attitude.</td>
</tr>
<tr>
<td>- How broadly based is that experience?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- How well balanced is that team?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- How is the team morale?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- How likely is it that we may lose one or more team members</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Do our team members’ skills cover all the basic disciplines?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- How active will the business representative be?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- How strong is the project manager?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Financial investment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- How fast can ROI be expected?</td>
<td>Possible ROI within a very short time</td>
<td>Possible ROI within a moderate time frame</td>
<td>Possible ROI after a few years</td>
</tr>
<tr>
<td>- How likely is it that the costs will outweigh the benefits?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Can financial risk be mitigated by using only proven technologies?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Actions based on the traffic light:

- **Green**: Go ahead with the project
- **Yellow**: Caution, proceed slowly
- **Red**: Stop, reevaluated before proceeding.

### Risks are factors or conditions that may jeopardize a project. Risk should be assessed.
"But I don't want to go among mad people," Alice remarked.

Oh, you can't help that," said the Cat: "we're all mad here. I'm mad. You're mad."

"How do you know I'm mad?" said Alice.

"You must be," said the Cat, "or you wouldn't have come here."
THE ROLE OF FUNCTIONAL MODELS (PROTOTYPES).

- Build the roadmap with a series of functional models as measurable milestones.

- Protos can help you to evaluate the research/technology developments and help to have an objective assessment of the degree of maturity.

- Confirm the basic principles, and the initial process feasibility, tools and functionalities.

- It imposes a planning/scoping discipline in the roadmap.
EFFICIENCY AND EFFECTIVENESS IN PRODUCT DEVELOPMENT.

Increase in effectiveness 
“doing the right things”

Increase in efficiency 
“doing things right”

90% of costs specified

90% of costs incurred

Number of projects run on parallel

Individual project cost

Idea development

Demonstrator development

Development for serial production

Number of projects
**WHAT TYPE OF MODELS/PROTOTYPES.**

**TRL 4 Proof-of-Principle Prototype (Model)** (also called a breadboard). This type of prototype is used to test some aspect of the intended design without attempting to exactly simulate the visual appearance, choice of materials or intended manufacturing process. Such prototypes can be used to “prove” out a potential design approach such as range of motion, mechanics, sensors, architecture, etc. These types of models are often used to identify which design options will not work, or where further development and testing is necessary.

**TRL 6 Functional Lab Prototype (Model)** will, to the greatest extent practical, attempt to simulate the final, materials and functionality of the intended design. The functional lab prototype may be reduced in size (scaled down) in order to reduce costs.
The SWOT Analysis.
WE ARE ALL TOO FAMILIAR WITH THE ...MATRIX...(1/2).
Yes but...

What qualifies something as harmful, helpful, or even as meaningful topic?
**PLOTTING THE VARIABLES.**

External factors: business specific or PESTEL or megatrends
- Faster pace of technology innovation
- Increasing availability of knowledge and the ability to use it
- Growing number of consumers in emerging economies
- Developing of technologies that empowers communities
- Global labor and talent market
- Increasing adoption of scientific data-driven management techniques
- Shift of economic activities between and within regions
- Aging population in developed countries
- Geopolitical instability
- Growth of public sector
- Increasing sophistication of capital markets
- Increasing constrains on supply or usage or natural resources
- Shifting industry structure and emerging forms of organization.
QUANTIFYING AND QUALIFYING STRENGTHS AND WEAKENESSES.

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation</td>
<td>Lack of innovation knowledge and diffusion</td>
</tr>
<tr>
<td>Leadership</td>
<td>Weak leadership and communication skills</td>
</tr>
<tr>
<td>People Skills</td>
<td>Limited interpersonal and negotiation skills</td>
</tr>
<tr>
<td>Financial Management</td>
<td>Lack of financial management and control</td>
</tr>
<tr>
<td>Marketing</td>
<td>Limited marketing and promotion skills</td>
</tr>
<tr>
<td>Technology</td>
<td>Limited technical knowledge and skills</td>
</tr>
<tr>
<td>Customer Service</td>
<td>Poor customer service and response times</td>
</tr>
</tbody>
</table>

Table: SWOT Analysis

- Weaknesses: Lack of innovation knowledge and diffusion, Weak leadership and communication skills, Limited interpersonal and negotiation skills, Lack of financial management and control, Limited marketing and promotion skills, Limited technical knowledge and skills, Poor customer service and response times

**Strengths**
- Q - Qualify
- A - Adapt
- N - Need
- T - Take

**Weaknesses**
- Q - Qualify
- A - Adapt
- N - Need
- T - Take
IT IS NOT ABOUT PAINTING THE ROSES.
THE JURY (AND THEIR PROCESS) ARE IMPORTANT.
**PRODUCT-MARKET-TECHNOLOGY PORTFOLIO CRITERIA.**

- **Feasibility**
  a) Existing dev. capabilities
  b) Existing prod. Competences
- **Production capacity**
- **Development potential (tech life cycle)**
- **Implementation expenses**
- **Fit to timing strategy**

- **Future prospects**
  - Customer benefit (trend of demand)
    a) Subjective valuation
    b) Communication expenses
  - Potential of diversification
    a) Competitive environment
  - Security of substitution
PFEIFFER TECHNOLOGY PORTFOLIO MATRIX.

- Technology attractiveness
  - Technology-need relevance
  - Technology-potential relevance
  - Time needs
  - Further Development potential
  - Diffusion process

- Resource strength
  - Know-how strength
    - Level of know-how
  - Financial Strength
    - Stability of know how
    - Budget
    - Consistency of budget

Legend:
- INVEST
- SELECT
- DESINVEST

Legend:
- Low
- High
COMPANY BENEFITS MATRIX.

Direct company benefit

Indirect company benefit

- Synergy effects
  a) In development
  b) in construction
  c) Appropriate distribution channels
- Utilization of competences
- Image gain
- Strategy conformity
  a) fit to product range
  b) fit to marketing
  c) fit to timing strategy

- Economic efficiency
- Business volume potential
  a) Demand expectations
  - Economization potential
DOING THE RIGHT THINGS AND LEARNING.

From A.D. Little innovation excellence 2009
IT IS ALL ABOUT LOOPS ......

VIEW OF THE WORLD
1. Shifting Economic Power
2. Growing Pressure on Natural Resources
3. Growing Stakeholder Demands on Business

VIEW OF MARKETS, INDUSTRIES, CONSUMERS
1. Changing Industry Landscape
2. Changing Consumer Landscape
3. Changing Labor Landscape
4. Changing Technology Landscape

VIEW OF YOUR BUSINESS

VISIONARY LEADERSHIP
"Making Sense"
1. Creating awareness
2. Building understanding
3. Developing insights
4. Defining implications

STRATEGIC LEADERSHIP
Strategy
From problem solving to delivering today and preparing tomorrow

OPERATIONAL LEADERSHIP
"Choices and Actions"
1. Selecting the path
2. Defining options
3. Making choices
4. Taking actions

Leadership Team
Engaged, aligned, committed team balancing collective and individual interests

Leader
Increasing influence and impact among all “stakeholders”

Organization
Building versus exploiting capabilities
Dynamic Value Chain Strategic Choice
- Surfing the S curves
- Clockspeed
- Value chain design
- Innovation strategy

Innovation Capability Development
- Idea generation
- Innovative culture
- Seeing further ahead
- Organizational agility
- Breakthrough projects

Innovation Capability Deployment

Leadership and Execution
- Project leadership and management
- Talent deployment
- Great project teams
- Freedom vs. discipline

Measurement and Adjustment
AND AND LOOPS.

**Observe**
- Implicit Guidance & Control
- Cultural Traditions
- Genetic Heritage
- New Information
- Previous Experience
- Unfolding Circumstances
- Outside Information
- Unfolding Interaction With Environment

**Orient**
- Cultural Traditions
- Genetic Heritage
- New Information
- Previous Experience

**Decide**
- Decision (Hypothesis)
- Implicit Guidance & Control
- Unfolding Interaction With Environment

**Act**
- Action (Test)
........ Flagging deviations from the original scenario.

The learning and info-gathering from the past supports the dynamic for the creation of other roadmaps and give credibility for the influence it has on decisions makers.
'Who are you?' said the Caterpillar.

Alice: 'I — I hardly know, sir, just at present — at least I know who I was when I got up this morning, but I think I must have been changed several times since then.'

Cartepiller: 'What do you mean by that?'
'Explain yourself!'

Alice: 'I can't explain myself, I'm afraid, sir' 'because I'm not myself, you see.'

Caterpillar: 'I don't see,'

Alice: 'I'm afraid I can't put it more clearly,' 'for I can't understand it myself to begin with; and being so many different sizes in a day is very confusing.'
7. Concluding Remarks.
KEY FACTORS IN THE SUCCESS OF ROADMAPPING.

- Top Management support
- Champion
- Open for Make-or-buy (not inner focused)
- Cross-function Nature
- Continuous Revisiting/ updating
Define the process, the team and the focus BEFORE choosing the tools.

The contrary is an often expensive, frustrating and ill-born exercise
- Roadmap formalizes and integrates diverse information input across the organization, strengthening the linkage between operation and strategic technology choices.

- Roadmapping is closely linked to the innovation initiatives or an organization and provides a guide to more effective decision-making within these initiatives. Its effectiveness is dependent on the outcomes it produces (it MUST be TANGIBLE and useful benefits into the future)
WHAT SHOULD YOU EXPECT FROM SWOT AND ROADMAPPING.

Guidelines for:

- Establish critical success factors
- Resource allocation
- Competence gap analysis
- Strategic work-force planning
- Environmental scanning
- Framework to determine the relevance of BOTH the internal and external appraisals.
- Enhance leadership
The primary advantage we want to achieve in all forms of maneuver is........

time.
THAT’S ALL.
THANK YOU.