

SCORECARDS & DASHBOARDS

Unit 3 – Data exploitation. Query languages and visualization

S3-3 – SCORECARDS & DASHBOARDS



V S
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KEY CONCEPTS:

- **Vision:** provides everyone in the organization a shared mental Framework that helps give form to the abstract future.
- **Strategy:** the board of priorities adopted to pursuit a mission according to the operating environment.
- **Objective:** a concise statement describing the specific things organization must do well in order to execute a strategy.
- **Target:** the desired result of a performance measure.

OUTLINE:

1. Balanced Scorecards (BSC)
2. Strategy Maps
3. Example: BSC in Healthcare
4. Dashboards Essentials
5. Scorecards vs. Dashboards
6. Examples of Dashboards: IT company and ICU.

1. BALANCED SCORECARDS (BSC)

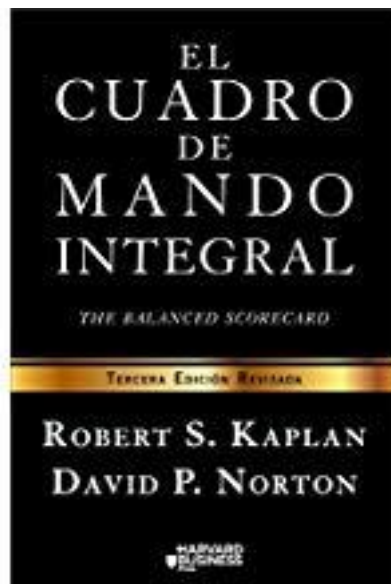
- BALANCED SCORECARDS (BSC)
 - TOP-DOWN methodology in organizations.
 - **Tool to manage long-term strategy.**
 - It is NOT: tool to design a strategy.

- BALANCED SCORECARDS (BSC)

“A carefully selected set of quantifiable measures derived from an organization’s strategy”.

By Robert Kaplan (Harvard Univ.) & David Norton (consultant Boston area)

BOOK: The Balanced Scorecard (in 1996)



- BALANCED SCORECARDS (BSC)
- Scorecard can be used as:
 - measurement system.
 - strategic management system.
 - communication tool.

HOW TO DESIGN A BALANCED SCORECARD:

Know **guiding principles**: objectives & strategy.

Split the strategy objectives into **actions**.

Strategy Objective Actions from **4 perspectives**:



Financial



Customer



Internal-Business-Processes



Linking & Growth.

HOW TO DESIGN A BALANCED SCORECARD:

- Strategy **Scores**: measure the actions for each strategy. *“If you cannot measure something, you cannot manage it”*.
- Target: the score value that we expect to reach.
- Program actions: specific short-term actions that must be done **to reach a target**. Tactics.

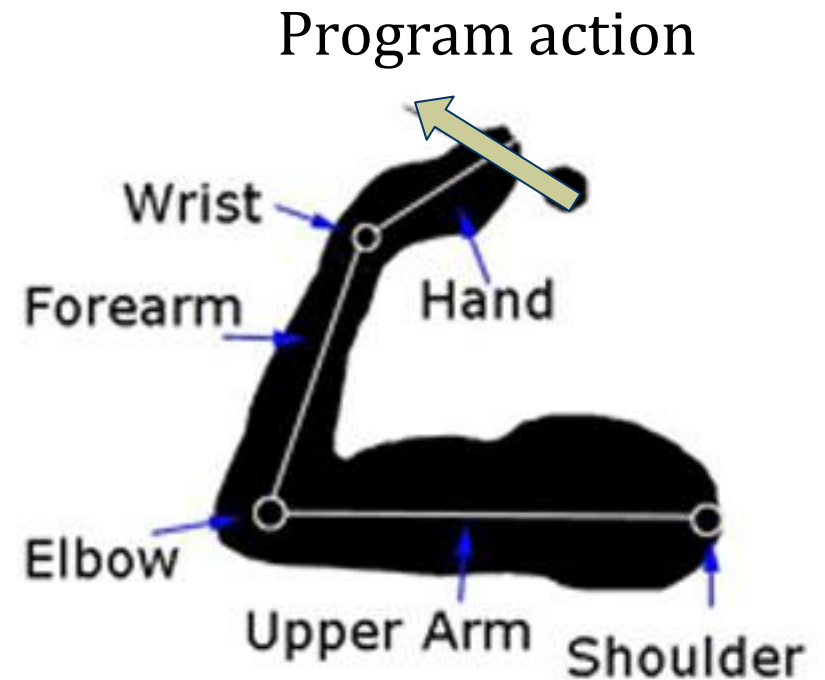
HOW TO DESIGN A BALANCED SCORECARD:

- Strategy **Scores**, Target, Program Actions.



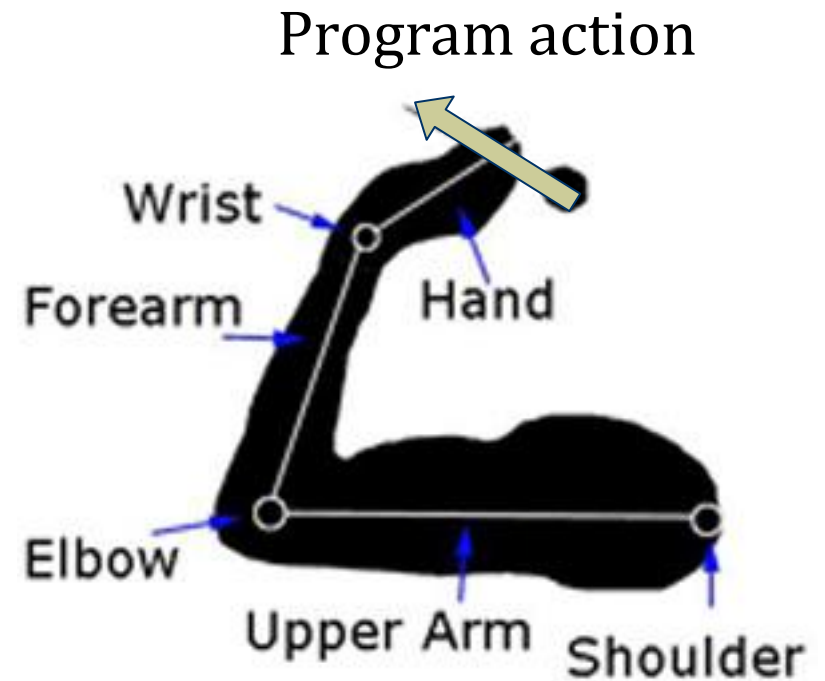
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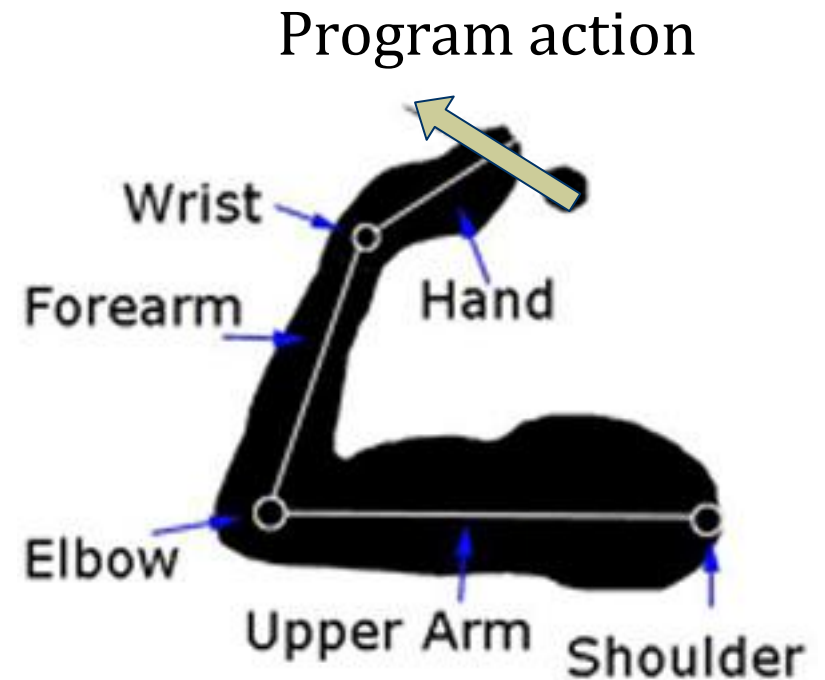
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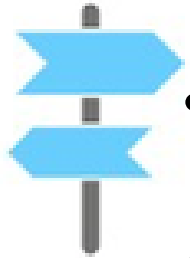
Linking & Growth.



HOW TO DESIGN A BALANCED SCORECARD:

- Strategy Objective Actions from **4 perspectives:**

- **FINANCIAL DIMENSION:**



- A scorecard must encourage including the financial goal in the organization strategy.
 - The financial goals matches to the phases of the organization life-cycle:
 - Grow, Maintenance, Production.



HOW TO DESIGN A BALANCED SCORECARD:

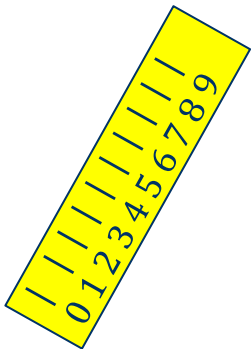
- Strategy Objective Actions from **4 perspectives**:



- **CUSTOMER DIMENSION:**

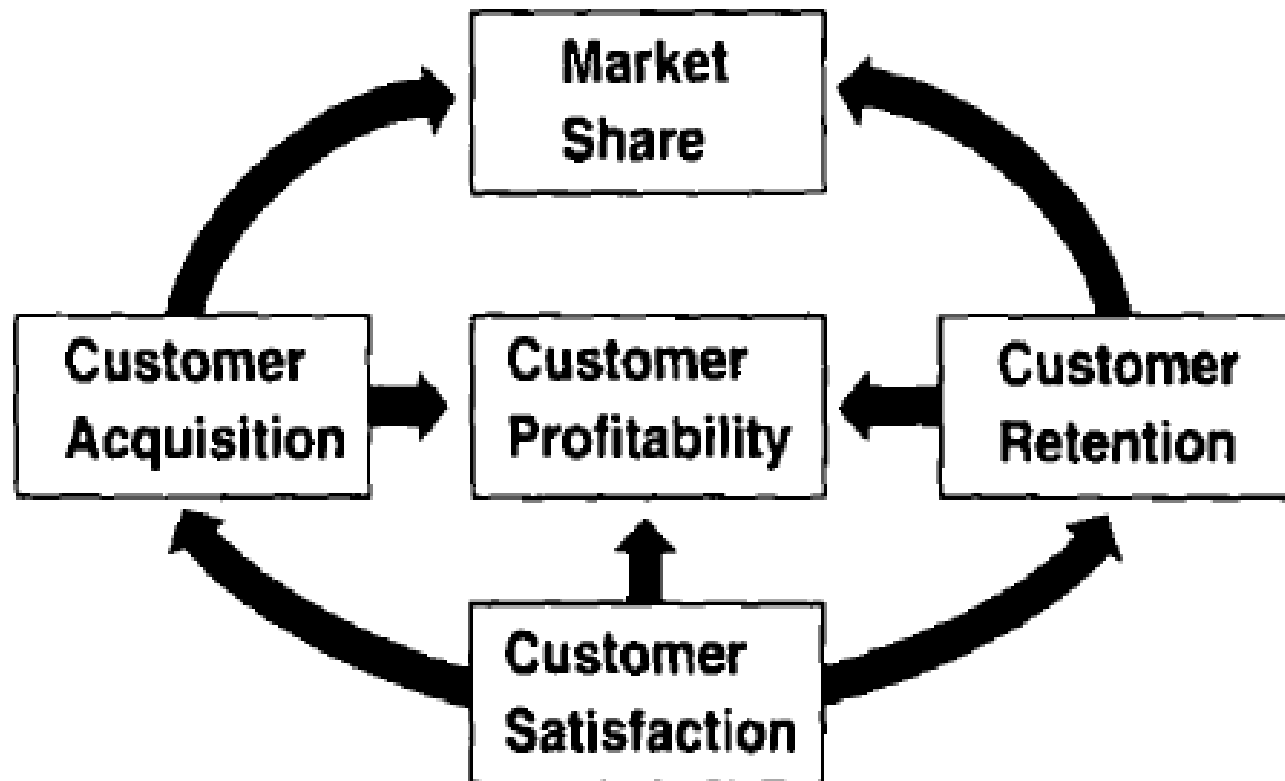


- Identify those **segments of clients and markets** they want to compete.
- **Key scores** of clients:
 - Market and Account Share (ES: *Cuota Mercado* DE: *Marktanteil*).
 - Customer Retention: maintain and increase the market based on customer segments.
 - Customer Acquisition: increase customer base in targeted segments.
 - **Customer satisfaction.**
 - Customer profitability (ES: *rentabilidad* DE: *Rentabilität*)



HOW TO DESIGN A BALANCED SCORECARD:

- Strategy Objective Actions from **4 perspectives**:
 - **CUSTOMER DIMENSION:**



HOW TO DESIGN A BALANCED SCORECARD:

- Strategy Objective Actions from **4 perspectives**:
 - **CUSTOMER DIMENSION**: Customer Satisfaction:



- Time: major competitive weapon: respond rapidly and reliably to customer requests (TOYOTA Japanese manufacturers).
- Quality.
- Price: whether customers care about current price.



HOW TO DESIGN A BALANCED SCORECARD:

- Strategy Objective Actions from **4 perspectives:**

INTERNAL BUSINESS-PROCESS DIMENSION:



- Once the financial and customer goals have been developed
- The main internal processes are:
 1. Innovation processes
 2. Operations processes
 3. Post-sale process



• INTERNAL BUSINESS-PROCESS DIMENSION



Jpatrick McCann [Follow](#)

Director of Regional Events at C2Eventz



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We offer three kinds of service
GOOD-CHEAP-FAST



HOW TO DESIGN A BALANCED SCORECARD:

- Strategy Objective Actions from **4 perspectives:**

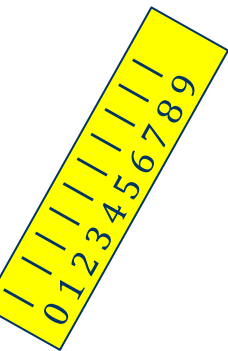


Learning & Growth DIMENSION:



Goals to follow in order to induct new infrastructures to improve aspects of previous dimensions.

- Invest in the future.
- Key scores:
 1. Employee capacities.
 2. Information system capacities.
 3. Motivation, power, delegation and objective coherency.



HOW TO DESIGN A BALANCED SCORECARD:

- **EXAMPLE 1: 'Kenyon Stores'**
 - **Financial:** aggressive growth , maintain overall margins.
 - **Customer:** customer loyalty , complete product-line offering.
 - **Internal Business Process:** Build the brand, fashion leader, quality product, superior shopping experience.
 - **Learning and Growth:** strategic skills, personal growth.

| Dimensions | Guiding principles | Scores | Target | Program actions |
|----------------|--------------------|--------|--------|-----------------|
| Financial | | | | |
| Client | | | | |
| Internal Proc. | | | | |
| Learn&Grow | | | | |

2. STRATEGY MAPS

STRATEGY MAPS:

- **Measures** must be chosen **more “strategically”**.
- **Relate** specific high level objectives
- Causal relationship between objectives indicated in the “Strategy Map”.

STRATEGY MAPS:

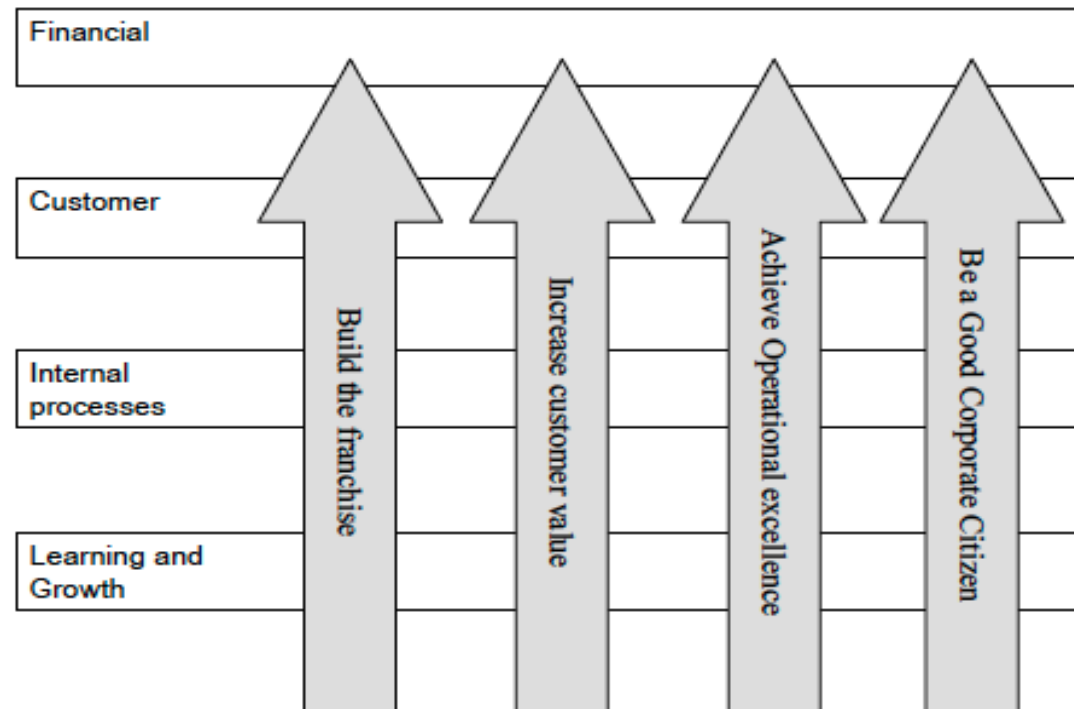


Figure 2.1: Architecture of a Strategy Map
(Source: Kaplan and Norton 2001, p. 79)

STRATEGY MAPS:

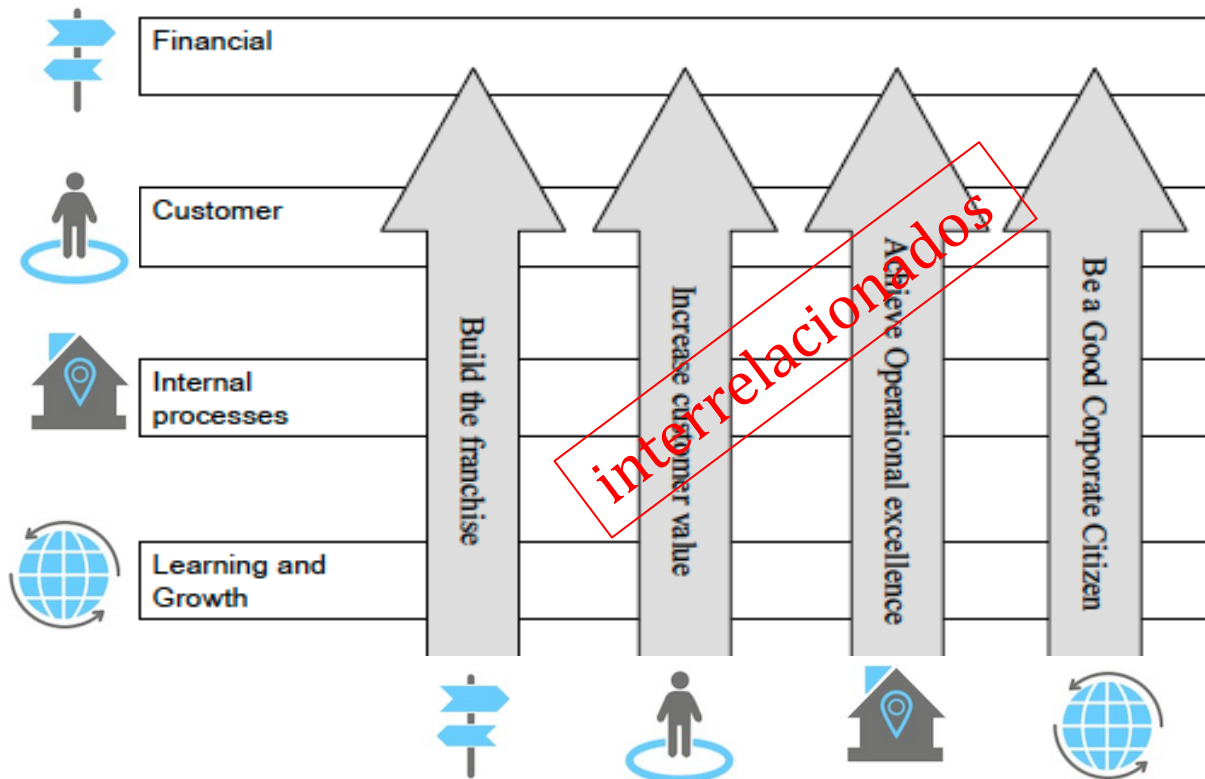


Figure 2.1: Architecture of a Strategy Map
(Source: Kaplan and Norton 2001, p. 79)

3. EXAMPLE: “VERIZON” CASE OF STUDY



Copyrighted logo from <http://www.verizon.com/>

Based on the study:

Datar, Srikant M., Marc J. Epstein, and Jeremy Cott. "Verizon Communications, Inc.: Implementing a Human Resources Balanced Scorecard." Harvard Business School Case 101-102, June 2001.
(Revised October 2001.)

- BSC in Telecommunications: VERIZON case

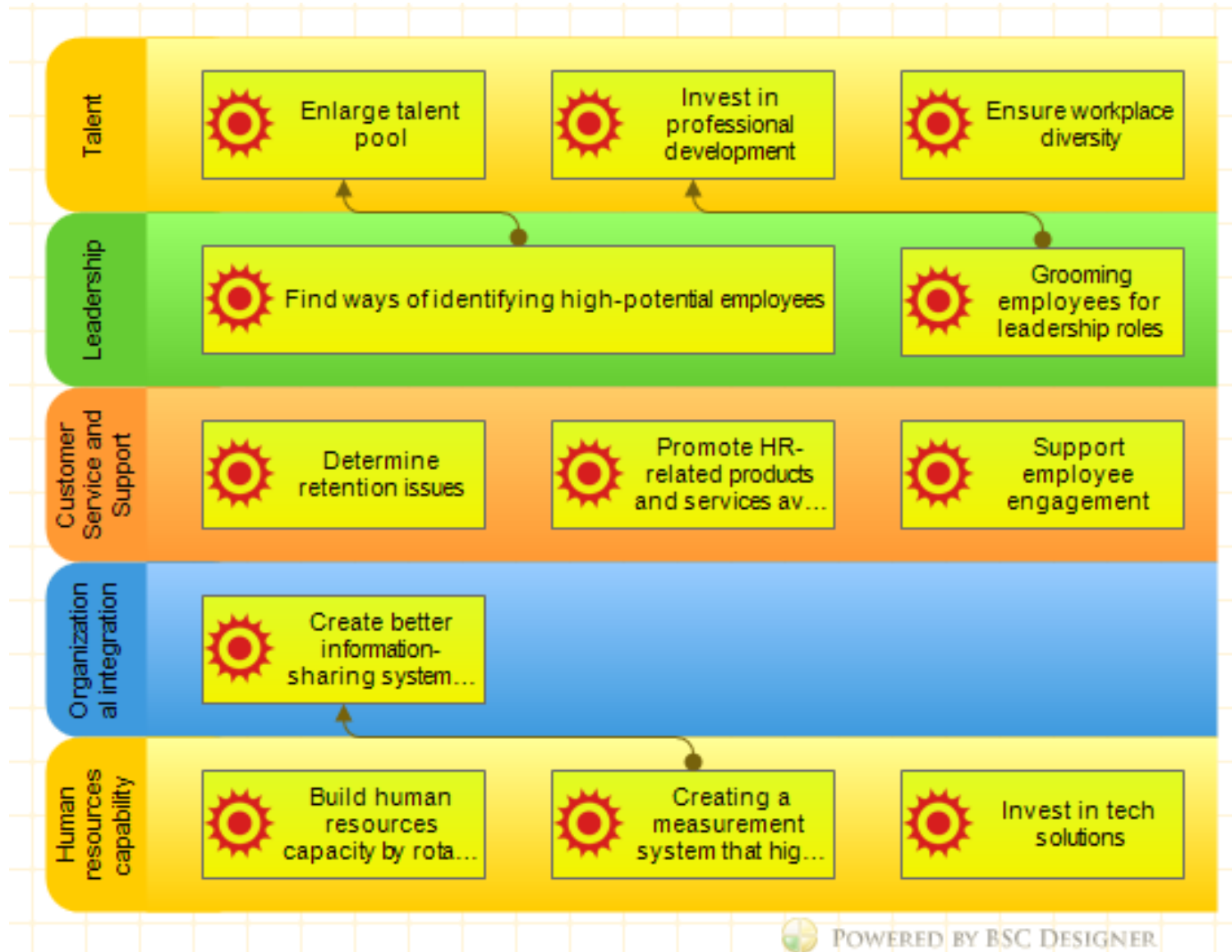
Human resources review:

Better profitability of human resources using better goals.

Strategic directions:

- Talent: professional development, workplace diversity
- Leadership: identify high potential leadership
- Customer Service & support: support employee engagement, identify retention issues
- Organizational Integration: information sharing systems btw company & unions
- Human Resources Capability: rotating key talent, measures for dept. achievements.

- BSC in Telecommunications: VERIZON case



- BSC in Telecommunications: VERIZON case

Human resources review:

Results:

- Reduce rotations of employees in the call center.
- Reduce employee dissatisfaction
- In 1% , saving \$23.6 million.

3. EXAMPLE: BSC IN HEALTHCARE

- BSC in Healthcare

To what extent has the BSC been introduced to healthcare:

Hospitals, Healthcare Systems, University medical depts., long-term care, mental health centers, pharmaceutical care, health insurance companies.

- BSC in Healthcare

Reasons to use BSC in healthcare (diversity):

1. To ensure to be a **high performing** healthcare provider (Northumbria Healthcare Foundation, United Kindgom).
2. How can we demonstrate to the community that they are getting **value for our tax payer** funded services? (>AUS\$ 1 billion). (Hunter New England Health District, Australia).
3. To take a more strategic approach to differentiate their services and **attract more business** (Mackay Memorial Hospital, Taiwan).
4. To achieve **better outcomes** for patients and staff (St Vicent's Private Hospital, Australia).
5. To combine **financial control** with quality improvement (Högland Hospital, Sweden).

4. DASHBOARDS ESSENTIALS

- DASHBOARDS



- DASHBOARDS



FROM: ProjectManager.com

- DASHBOARDS
 - WHAT IS A DASHBOARD?
 - Something called a dashboard :
 - Includes **graphical display mechanisms**: traffic lights, gauges, meters...etc.
 - **Overviews something** going on in the business.

- DASHBOARDS

- WHAT IS A DASHBOARD?

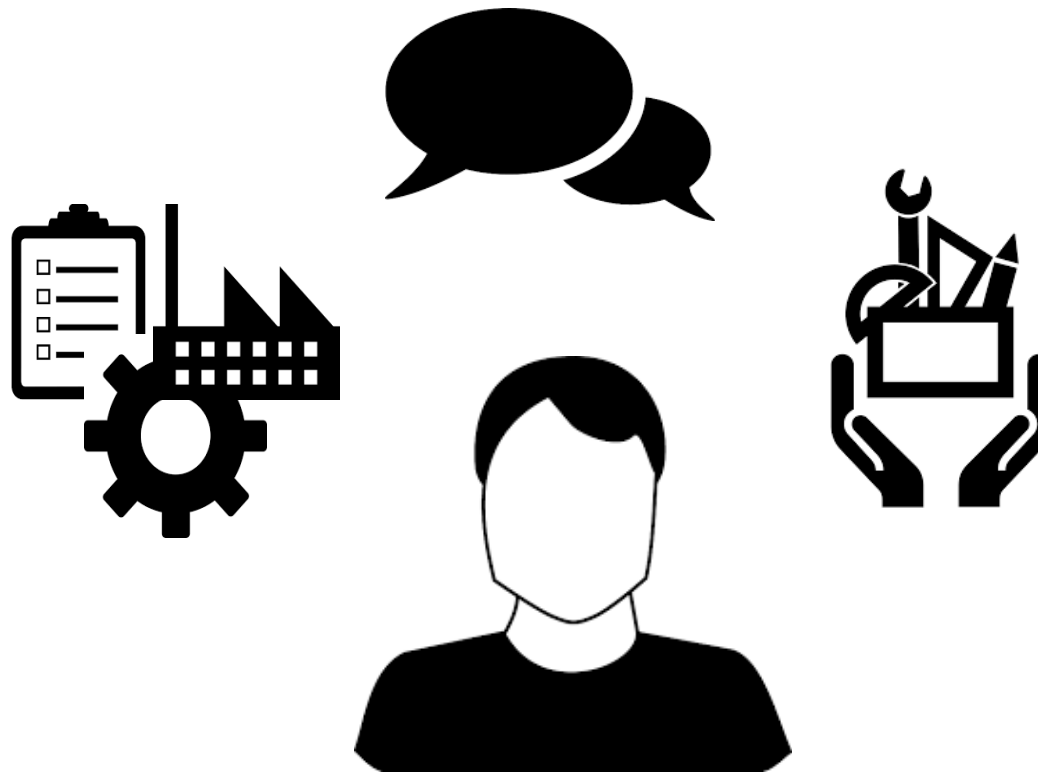
- DEFINITION:

- ‘It is a **visual display** of the most **important information** needed to achieve one or more **objectives**; arranged on a single screen so the information can be **monitored at a glance**’

*Stephen Few, "Dashboard Confusion,"
Intelligent Enterprise, March 20, 2004*

- DASHBOARDS
 - According to this definition:
 1. Dashboards display the information **to achieve an objective**.
 2. Dashboards **fits** on a single computer **screen**.
 3. Dashboards used to **monitor** information **at a glance**.

- DASHBOARDS
 - So... a Dashboard:
communication tool, good understanding, good design.



- DASHBOARDS
 - Some (obvious) Dashboard principles:
 1. Display right data to the right audience
 2. Right dashboard: adapt the dashboard model to the context
 3. Easy to find: keep the dashboard tidy
 4. Only essentials
 5. Perfection in DB design can never be achieved

- DASHBOARDS
 - Categorization of dashboards:
 - By ROLE: Strategic, Analytical or Operational.
 - By TYPE OF DATA: Quantitative, Qualitative
 - By DOMAIN: Sales, Finance, Marketing, Manufacturing
 - By TYPE OF MEASURE: **BSC**, *Six Sigma*, ...
 - By MECHANISMS OF DISPLAY: Graphical, text, integrated
 - ...etc.

5. SCORECARDS vs. DASHBOARDS

- SCORECARDS vs. DASHBOARDS
- BOTH:
 - Tools for supporting management in companies
 - Support decision making
 - Can display KPI (key performance indicators)
- KEY DIFFERENCES:
 - Methodology, users, level of details, timing

- KEY DIFFERENCES:
 - CAR METAPHOR



- SCORECARDS vs. DASHBOARDS
- SCORECARDS:
 - Controlling the progress towards the strategy
 - Formal business methodology (holistic approach)
 - No monitoring general performance
 - Periodic snapshots
 - Present summaries, not particular data
 - Can be graphically displayed

- SCORECARDS vs. DASHBOARDS
- DASHBOARDS:
 - No specific for business environments.
 - Focus on an **specific problem** (no holistic approach)
 - Measuring general performance AND its specific aspects.
 - Used by executives / specialists (no employees)
 - Not in real time but **in right-time**.
 - Concerning data but NOT summaries.
 - Data visualized nicely (raw data also available)

6. EXAMPLES OF DASHBOARDS

- DASHBOARDS IN IT INDUSTRY
 - Computer Assoc. INC.
 - Monitor & manage large number of projects
 - Dashboard: filtering, sorting, drilling down to data
 - Key Dashboards:
 - Project **watchlist dashboard**: selectable list of projects, identify if they require attention: traffic lights
 - Project **listing dashboard**: specific content, to find project with specific attributes
 - Order management list dashboard: summarize project details
 - Alert dashboard: PKI and risk indicators
 - Project list dashboard: schedule and a general summary

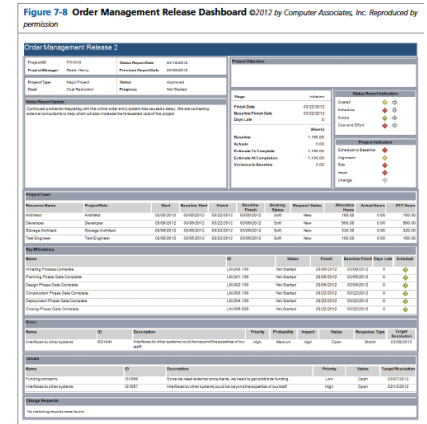
• DASHBOARDS IN IT INDUSTRY

– Computer Assoc. INC.

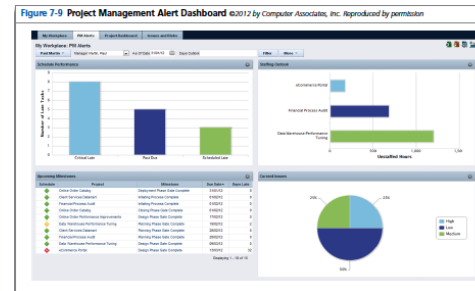
• Project watch list dashboard



• Order management list dashboard: details



• Alert dashboard: risk



• Project list dashboard: schedule



- # Alert dashboard

Project list dashboard

Figures from: Harold Kerzner. Project Management Metrics, KPIs, and Dashboards: a guide to measuring and monitoring project performance. Wiley.2 ed. 2013

- DASHBOARDS IN HEALTHCARE
 - Focused on clinical performance indicators.
 - Performance Indicator: *“a statistic or other unit of information which reflects, directly or indirectly, the performance of a health or welfare intervention, facility, service or system in maintaining or increasing the well being of its target population”*. (Armstrong, 1994)

- DASHBOARDS IN HEALTHCARE
 - Focused on clinical performance indicators.
 - Performance Indicator Properties:
 - Definable
 - Clear intent
 - Accessible
 - Reliable
 - Useful

- DASHBOARDS IN HEALTHCARE

- Types of performance indicators.

(by ACHS Performance Indicators)

- Continuity of care: medical record, assessment system, consent, care evaluation, discharge, etc.
 - Access: information about services, access to the needs.
 - Effectiveness: evidence-based , process effective.
 - Patient safety: medication, infection control, blood management, etc.

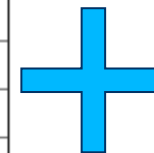
- DASHBOARDS IN HEALTHCARE
 - Examples of performance indicators.
(by ACHS Performance Indicators)
 - Regarding Medical Records:
 - Percentage of medical records where illegible writing resulted in an adverse event.
 - Percentage of medical records where care plans are not documented.
 - Regarding Blood Management:
 - Percentage of inappropriate storage
 - No. of patients transfused with Hb>100g/L

- DASHBOARDS IN HEALTHCARE
 - ICU Dashboard Example.
 - Fluid balance
 - Severity Score:
 - APACHE III :
 - [0..299]
 - Initial risk classification of severely ill hospitalized patients.
 - 20 physiologic variables

| Variables fisiológicas | Límites elevados anómalos | | | | Normal | | Límites bajos anómalos | | | |
|---|---------------------------|----------|---------|------------|---------------------|-----------------------|------------------------|-----------------------|---------------------|-----|
| | <-4 | <-3 | <-2 | <-1 | 0 | +1 | +2 | +3 | +4 | >+4 |
| Temperatura, rectal (°C) | ≥41° | 39-40,9° | --- | 38,5-38,9° | 36-38,4° | 34-34,5° | 32-33,9° | 30-31,9° | ≤29,9° | --- |
| Presión arterial media (mmHg) | ≥160 | 130-159 | 110-129 | --- | 70-109 | --- | 50-69 | --- | ≤49 | --- |
| Frecuencia cardíaca (latidos/minuto) | ≥180 | 140-179 | 110-139 | --- | 70-109 | --- | 55-69 | 40-54 | ≤39 | --- |
| Frecuencia respiratoria (resp/minuto) | ≥50 | 33-49 | --- | 25-34 | 12-24 | 10-11 | 6-9 | --- | ≤5 | --- |
| Oxigenación: AaDO ₂ o PaO ₂ (mmHg) | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| a. FIO ₂ ≥0,5, registrar AaDO ₂ | ≥500 | 350-499 | 200-349 | --- | <200 | --- | --- | --- | --- | --- |
| b. FIO ₂ <0,5, registrar sólo PaO ₂ | --- | --- | --- | --- | PO ₂ ≥70 | PO ₂ 61-70 | --- | PO ₂ 55-60 | PO ₂ ≤55 | --- |
| pH arterial | ≥7,7 | 7,6-7,69 | --- | 7,5-7,59 | 7,33-7,49 | --- | 7,25-7,32 | 7,15-7,24 | <7,15 | --- |
| Sodio sérico (mmol/l) | ≥180 | 160-179 | 155-159 | 150-154 | 130-149 | --- | 120-129 | 111-119 | ≤110 | --- |
| Potasio sérico (mmol/l) | ≥7 | 6-6,9 | --- | 5,5-5,9 | 3,5-5,4 | 3-3,4 | 2,5-2,9 | --- | <2,5 | --- |
| Creatinina sérica (mg/dl) (puntuación doble para I Renal Aguda) | ≥3,5 | 2-3,4 | 1,5-1,9 | --- | 0,8-1,4 | --- | <0,6 | --- | --- | --- |
| Hematocrito (%) | ≥60 | --- | 50-50,9 | 46-49,9 | 30-45,9 | --- | 20-20,9 | --- | <20 | --- |
| Recuento de leucocitos (total/mm ³) | ≥40 | --- | 20-39,9 | 15-19,9 | 3-14,9 | --- | 1-2,9 | --- | <1 | --- |
| Puntuación GLASGOW COMA SCORE = 15 – Puntuación GCS real | | | | | | | | | | |
| A PUNTUACIÓN FISIOLÓGICA AGUDA (PFA) total = Sumar los puntos de las 12 variables | | | | | | | | | | |
| HCO ₃ sérico (venoso, mmol/l) (no es de elección, usar si no hay GSA) | ≥52 | 41-51,9 | --- | 32-40,9 | 22-31,9 | --- | 18-21,9 | 15-17,9 | <15 | --- |

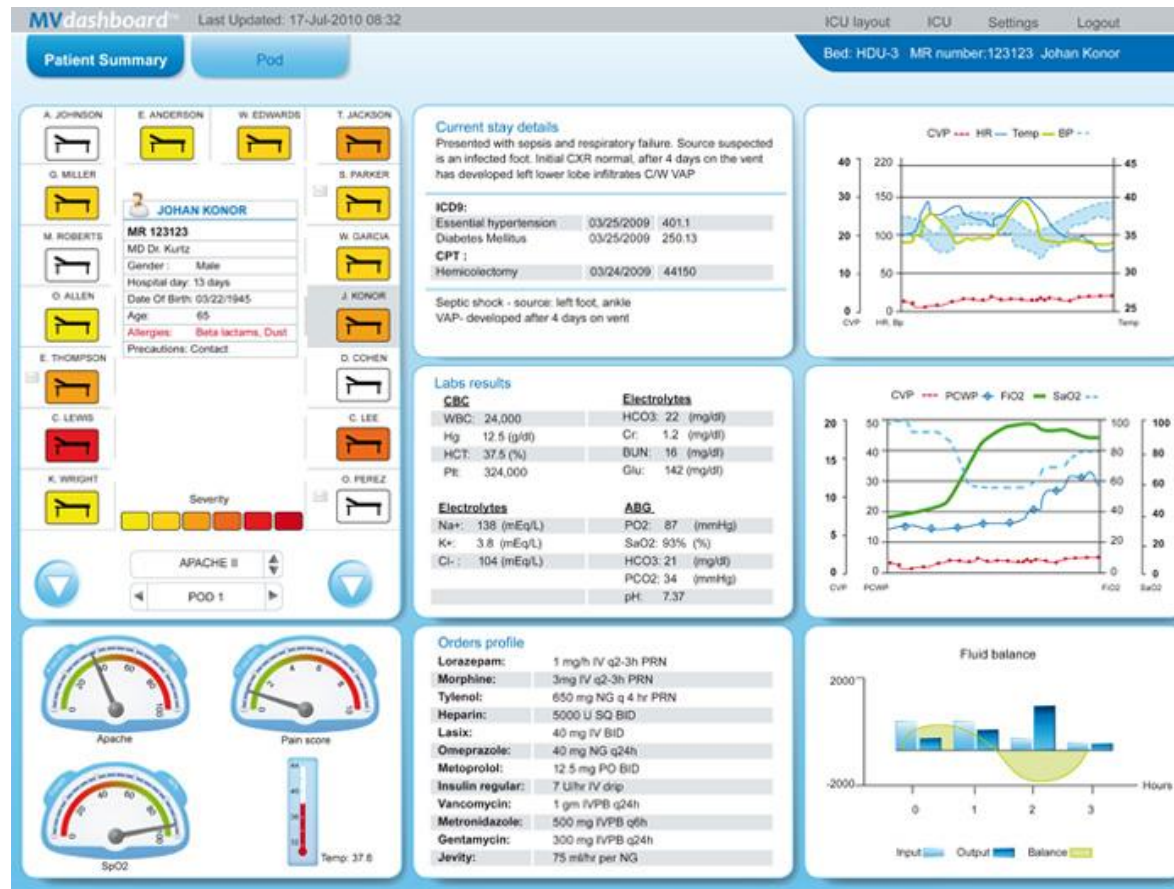


| Edad | Puntos |
|---------------|--------|
| < 44 años | 0 |
| 45 – 54 años | 2 |
| 55 – 64 años | 3 |
| 65 – 74 años | 5 |
| > o = 75 años | 6 |



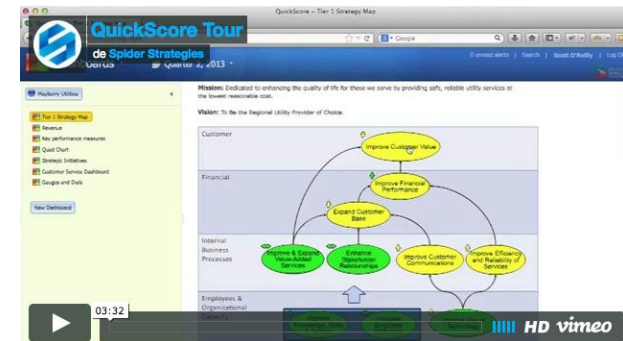
Liver
Cardiovascular
Respiratory
Renal
Immune depressed

- DASHBOARD IN HEALTHCARE

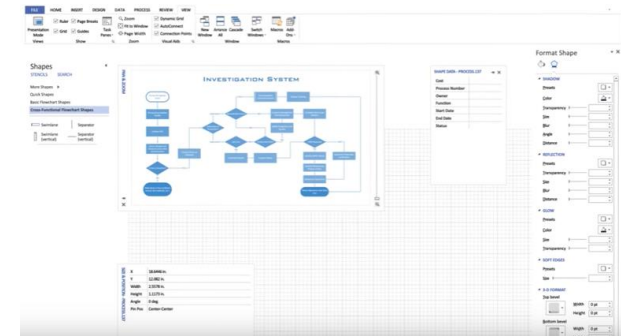


- REFERENCES & RESOURCES:
 - Robert S. Kaplan, David P. Norton The Balanced Scorecard Translating Strategy into Action.1996.
 - Stephen Few. Information Dashboard Design: the effective visual communication of data. O'Reilly. 2006.
 - Harold Kerzner. Project Management Metrics, KPIs, and Dashboards: a guide to measuring and monitoring project performance. Wiley.2 ed. 2013
- ADDITIONAL READINGS:
 - Beata Kollberg. Exploring the use of balanced scorecards in a Swedish health care organization
 - Casos de éxito con BSC: <https://balancedscorecard.org/Resources/Examples-Success-Stories>

- Examples of BSC Software (among others):
 - Quick Score™ by Spider:



- Smart Draw by www.smartdraw.com



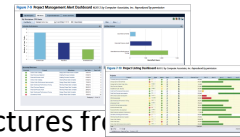
- Graphic resources used:

Diseñado por Freepik: <http://www.freepik.es/vector-gratis/conjunto-de-iconos-de-ubicacion> 968410.htm

Harold Kerzner. Project Management Metrics, KPIs, and Dashboards:



a guide to measuring and monitoring project performance. Wiley.2 ed. 2013



Strategy Maps pictures from S. Kaplan, David P. Norton

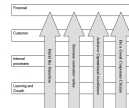


Figure 1.1. An illustration of a Strategy Map
(Source: Kaplan and Norton 2001, p. 70)

The Balanced Scorecard Translating Strategy into Action.1996

Car icons by <https://icons8.com>



<https://instituteforhomoeopathicmedicine.wordpress.com/2016/04/22/why-does-hahnemann-say/>



Captions from ProjectManager.com



<http://www.nemours.org/>



Picture of Volkswagen Polo

