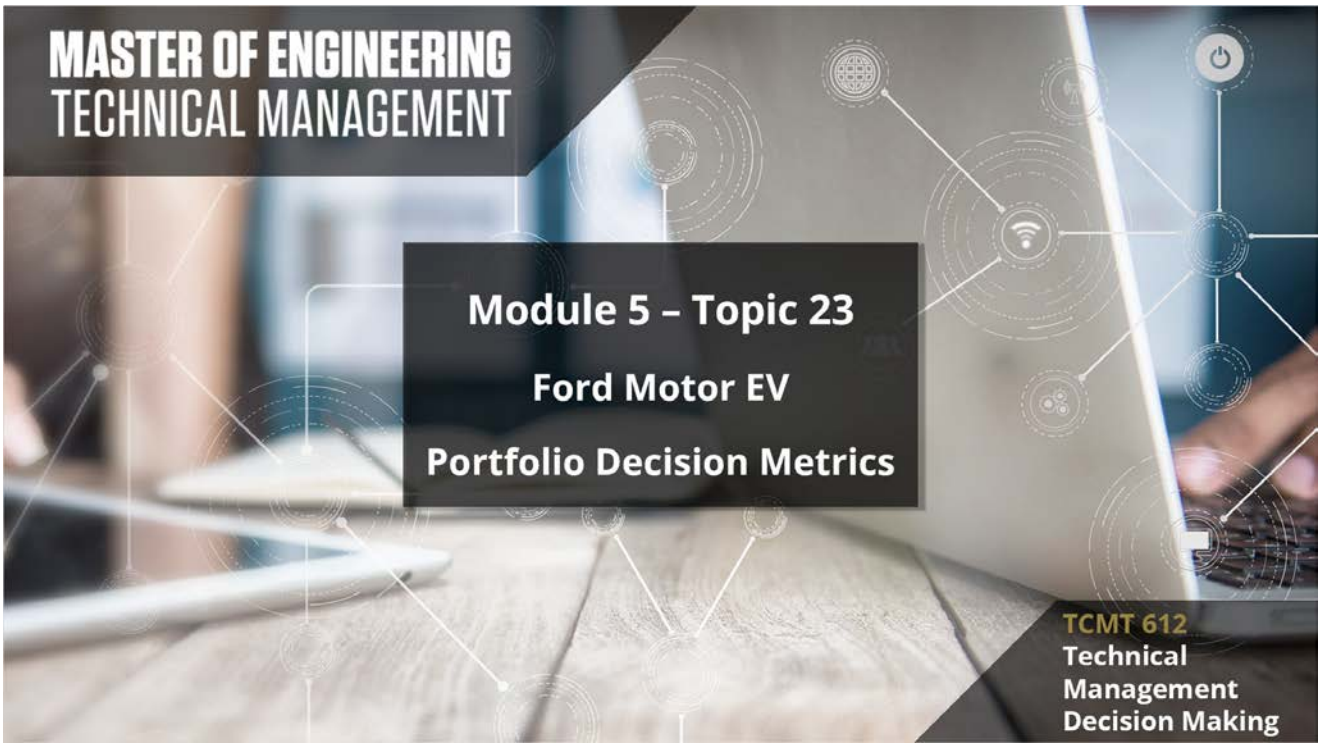
TCMT612_05M_105T_Ford-Motor-EV-portfolio-decision-metrics

1. Main

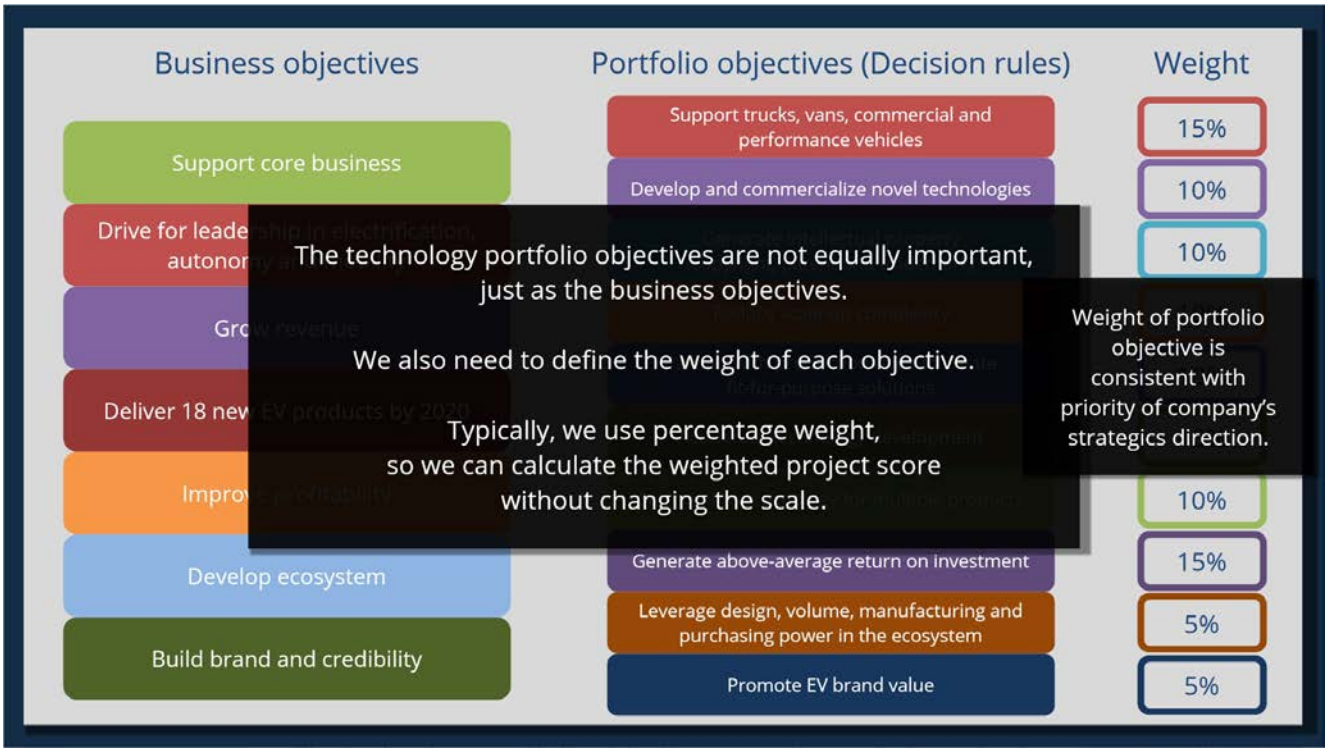
1.2 Topic title



Notes:

In this topic the professor discusses how to quantitatively evaluate technology projects using as an example the Ford Motor Electric Vehicle Division.

1.3 Objectives table



Notes:

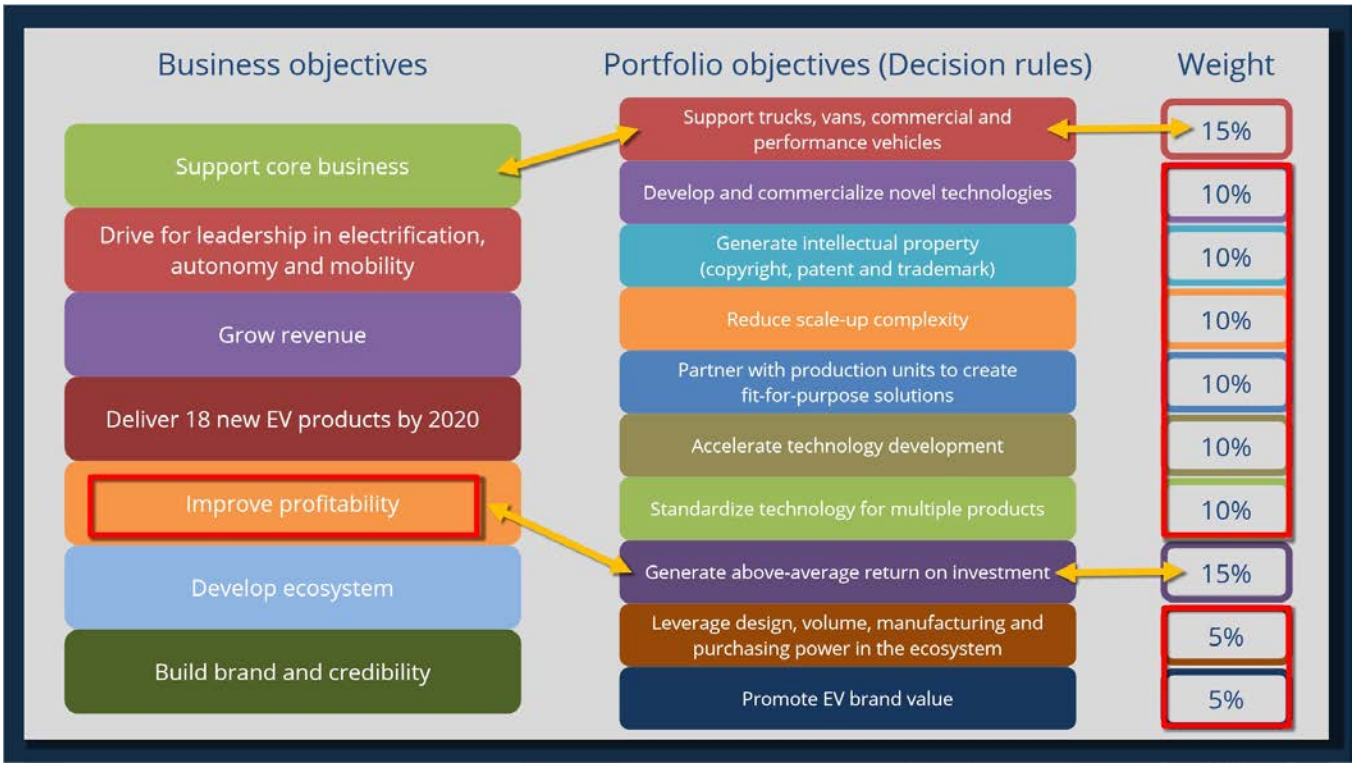
The technology portfolio objectives are not equally important, just as the business objectives.

We also need to define the weight of each objective.

Typically, we use percentage weight, so that we can calculate the weighted project score without changing the scale.

The last column is just an example of the portfolio objective weights.
The weight of portfolio objective is consistent with the priority of company's strategic direction.

1.4 Examples



Notes:

For example, the weight of supporting core business is 15%.

It is higher than other weights because the company set the core business a priority.

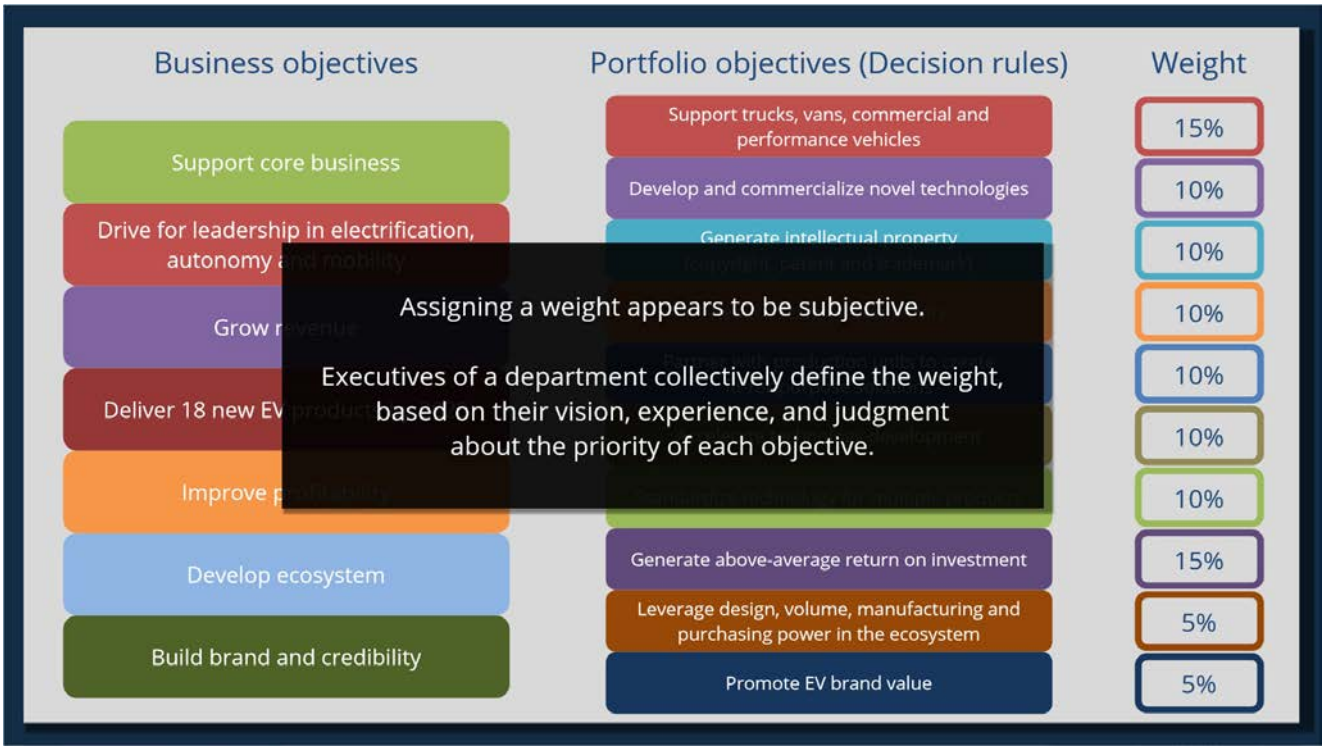
The company wants to focus on the core profitable vehicles.

Also, in the company's strategy statement it is a priority for a company the boost its profit margin.

Accordingly, we gave the project “financial return” a higher rate, a 15% weight.

For each of the remaining portfolio objectives, we gave either 5% or 10% weight.

1.5 Assign weight



Notes:

I want to point out that the assigning a weight appears to be subjective.

We typically have executives of a department collectively define the weight, based on their vision, experience, and judgment about the priority of each objective.

1.6 Decision evaluation matrix

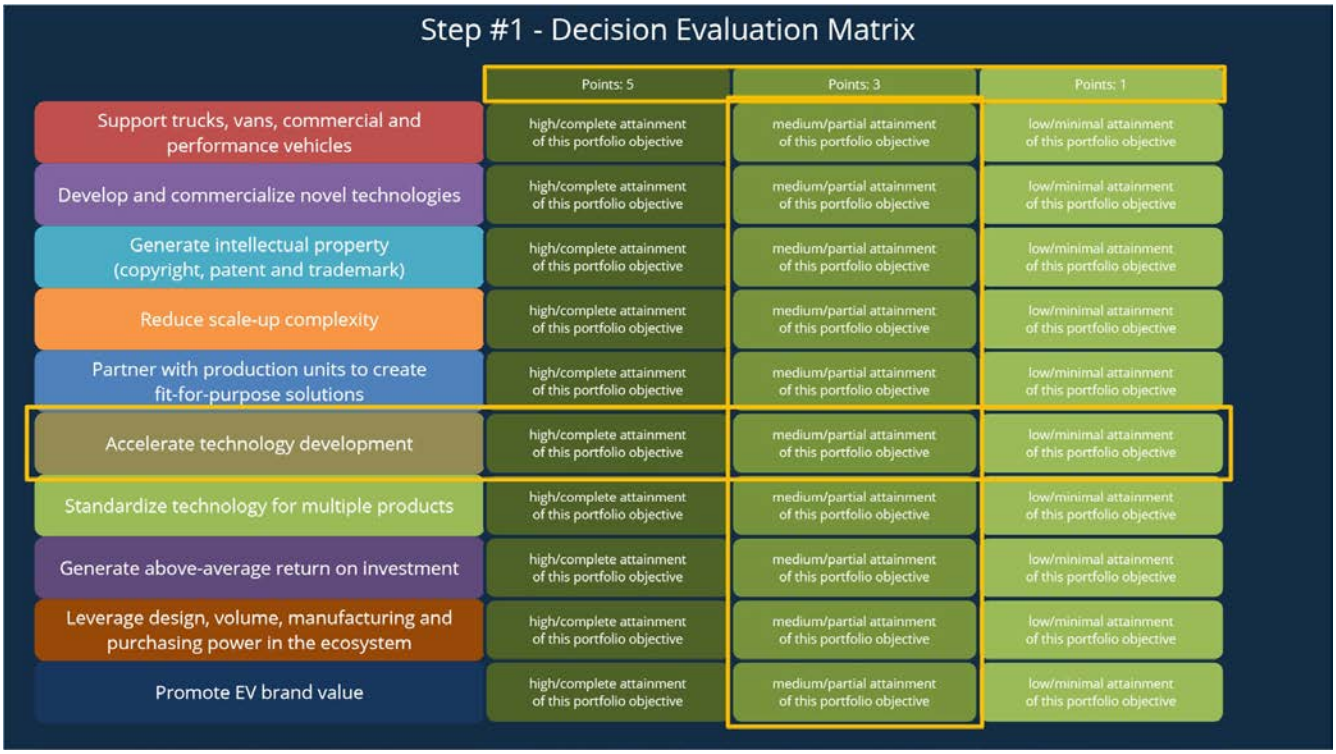
Notes:

To accomplish our set of portfolio objectives we will have a set of alternative projects.

How do we choose the most appropriate project?

This is done through a 2-step process.

1.7 Step #1



Notes:

First, we create a decision evaluation matrix.

In this matrix each row corresponds to a portfolio objective and each column to a level of accomplishment.

We will have 3 levels, the highest corresponding to high or complete attainment of the objective.

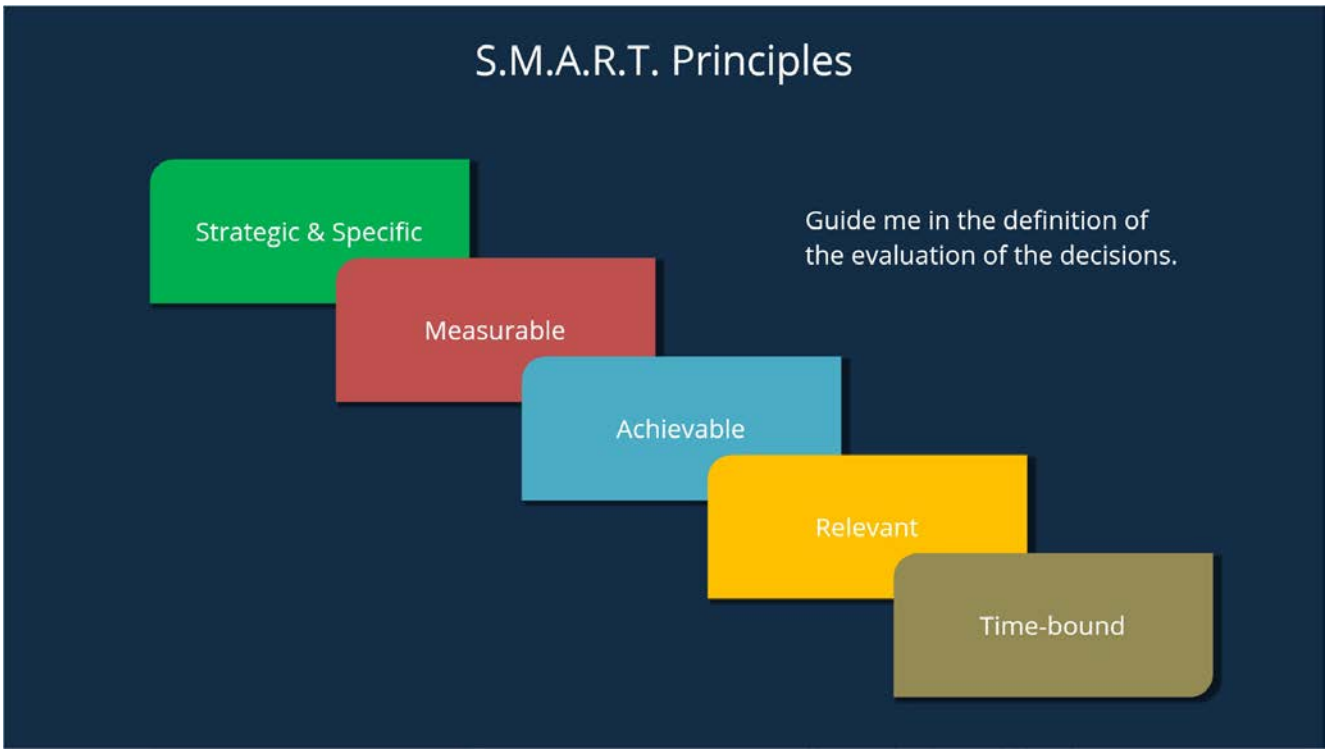
Then a medium level, where the objective is only partially met.

At the lowest level, the level of attainment is low or minimal.

We assign a score to these 3 levels.

In our case, we assign a 5 to the highest level, a 3 to the medium level, and a 1 to the lowest level.

1.8 S.M.A.R.T.

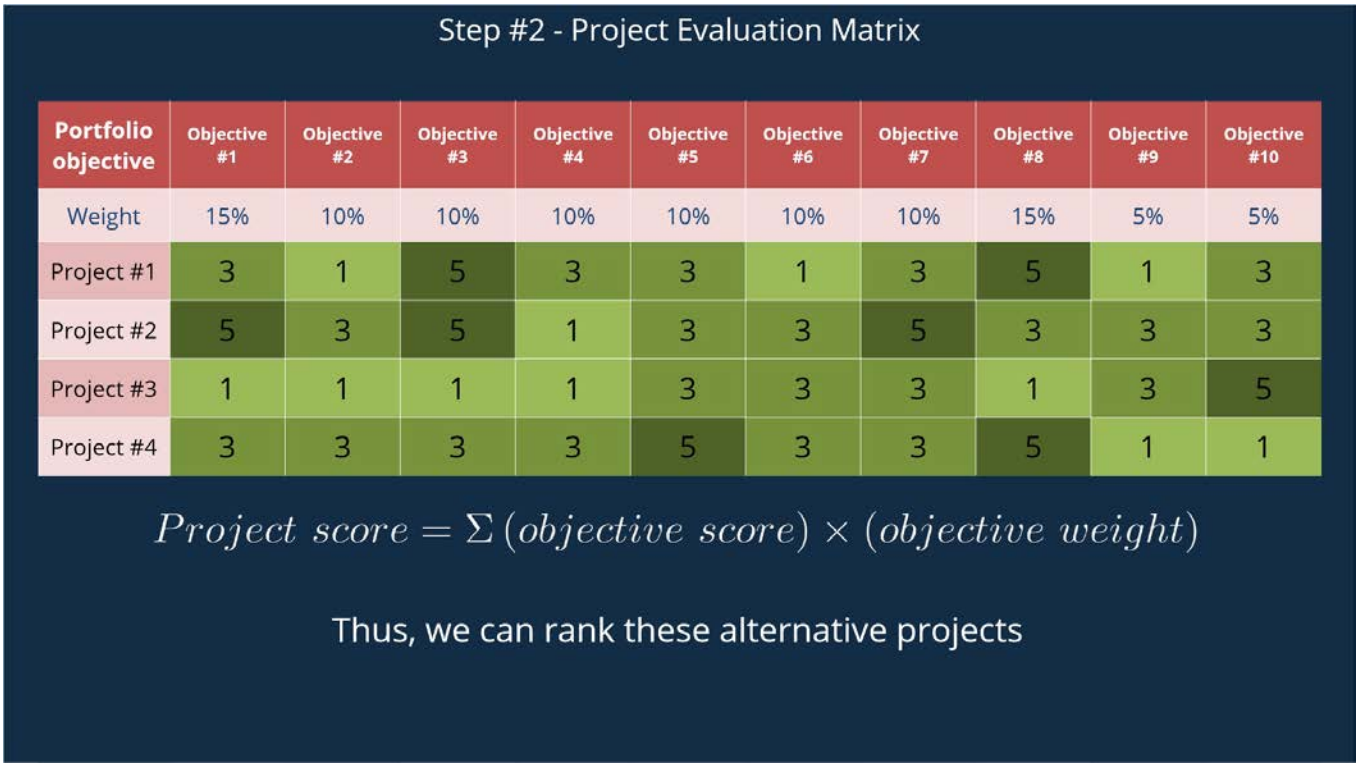


Notes:

I followed the SMART principles to guide me in the definition of the evaluation of the decisions.

In this case SMART means "strategic and specific", "measurable", "achievable", "relevant" and "time-bound".

1.9 Step #2



Notes:

Second, we create a project evaluation matrix.

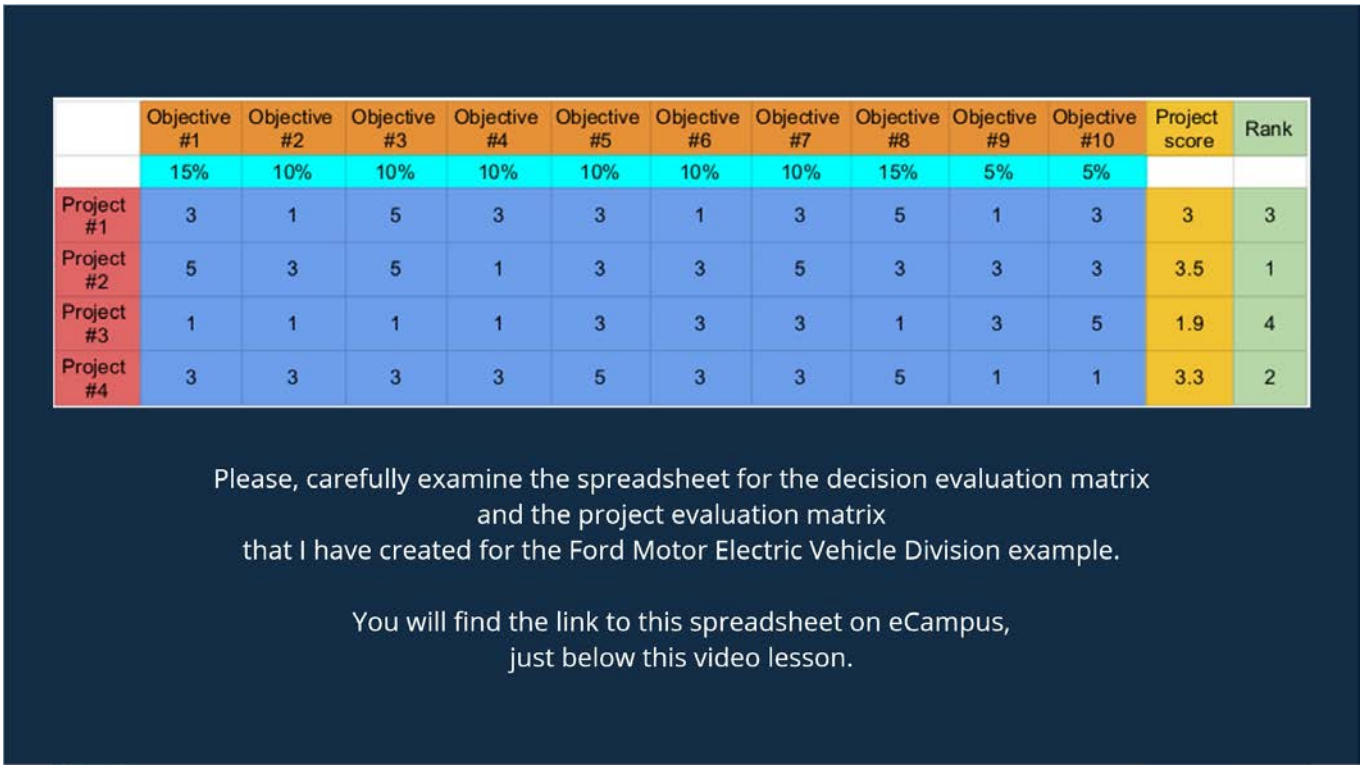
In this second matrix each row corresponds to a project alternative and each column corresponds to a portfolio objective.

We also have a row for the portfolio objective weights.
Then we use the first matrix, the decision evaluation matrix, to assign a score to each of the cells of the project evaluation matrix.

At this point we calculate the weighted sum of the scores for each project.

Thus, we can rank these alternative projects.

1.10 Spreadsheet



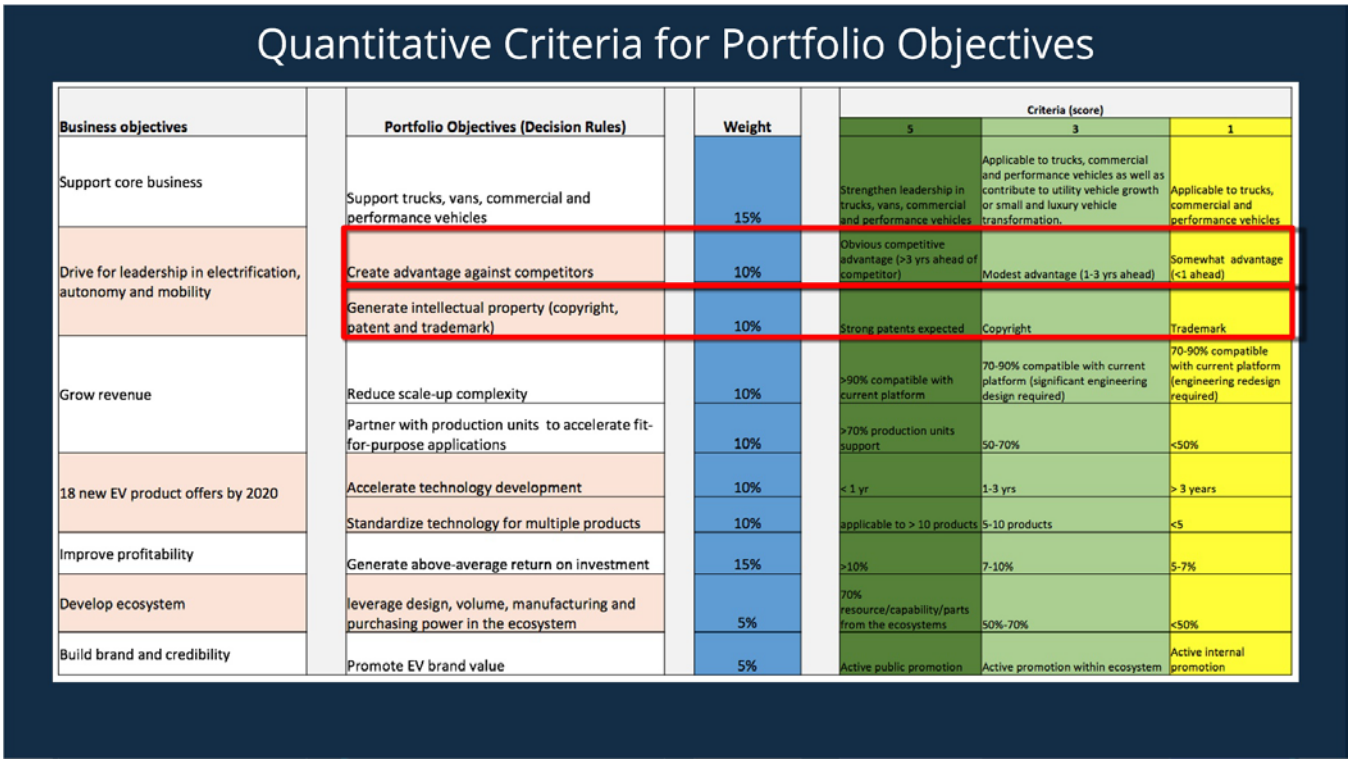
	Objective #1	Objective #2	Objective #3	Objective #4	Objective #5	Objective #6	Objective #7	Objective #8	Objective #9	Objective #10	Project score	Rank
	15%	10%	10%	10%	10%	10%	10%	15%	5%	5%		
Project #1	3	1	5	3	3	1	3	5	1	3	3	3
Project #2	5	3	5	1	3	3	5	3	3	3	3.5	1
Project #3	1	1	1	1	3	3	3	1	3	5	1.9	4
Project #4	3	3	3	3	5	3	3	5	1	1	3.3	2

Notes:

Please, carefully examine the spreadsheet for the decision evaluation matrix and the project evaluation created for the Ford Motor Electric Vehicle Division example.

You will find the link to this spreadsheet on eCampus, just below this video lesson.

1.11 Criteria example



Quantitative Criteria for Portfolio Objectives

Business objectives	Portfolio Objectives (Decision Rules)	Weight	Criteria (score) 5	3	1
Support core business	Support trucks, vans, commercial and performance vehicles	15%	Strengthen leadership in trucks, vans, commercial and performance vehicles	Applicable to trucks, commercial and performance vehicles as well as contribute to utility vehicle growth or small and luxury vehicle transformation.	Applicable to trucks, commercial and performance vehicles
Drive for leadership in electrification, autonomy and mobility	Create advantage against competitors	10%	Obvious competitive advantage (>3 yrs ahead of competitor)	Modest advantage (1-3 yrs ahead)	Somewhat advantage (<1 ahead)
	Generate intellectual property (copyright, patent and trademark)	10%	Strong patents expected	Copyright	Trademark
Grow revenue	Reduce scale-up complexity	10%	>90% compatible with current platform	70-90% compatible with current platform (significant engineering design required)	70-90% compatible with current platform (engineering redesign required)
	Partner with production units to accelerate fit-for-purpose applications	10%	>70% production units support	50-70%	<50%
18 new EV product offers by 2020	Accelerate technology development	10%	< 1 yr	1-3 yrs	> 3 years
	Standardize technology for multiple products	10%	applicable to > 10 products	5-10 products	<5
Improve profitability	Generate above-average return on investment	15%	>10%	7-10%	5-7%
Develop ecosystem	leverage design, volume, manufacturing and purchasing power in the ecosystem	5%	70% resource/capability/parts from the ecosystems	50%-70%	<50%
Build brand and credibility	Promote EV brand value	5%	Active public promotion	Active promotion within ecosystem	Active internal promotion

Notes:

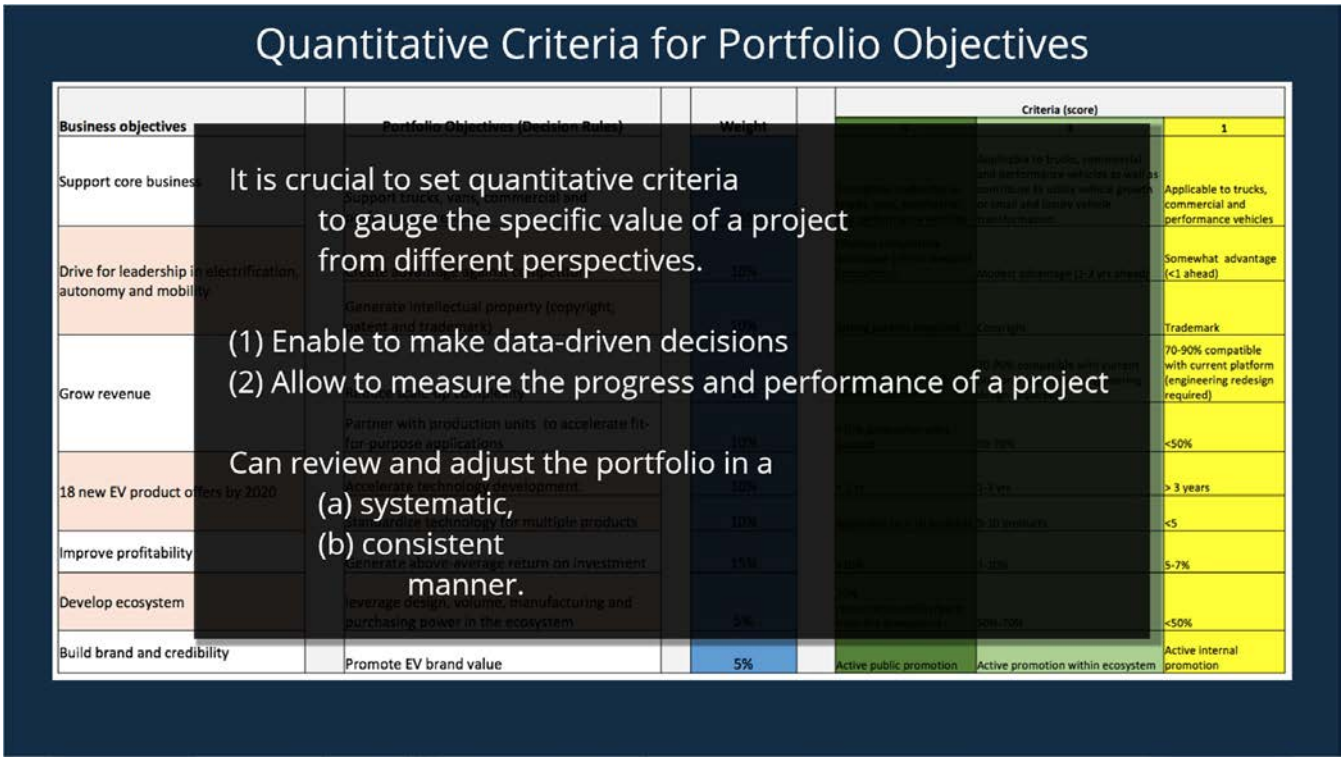
This table lists the detailed matrix of each objective.

Let me give you some examples of the criteria, for example technology leadership. If a technology can provide obvious competitive advantage, which means that our technical advance is three years ahead of our competitors, they give this project a score of 5.

If our company and competitors have a similar technical advance level, we give a score of only 1.
Patents also provide a strong protection. If we expect a strong patent coming out of a technology development project, we will give a score of 5 to this objective.

Please take some time to study the criterion table and let me know if you have any questions.

1.12 Quantitative criteria



Notes:

It is crucial to set quantitative criteria to gauge the specific value of a project from different perspectives.

Quantifying objectives, not only enable us to make data-driven decisions, but also allow us to measure the progress of a project and performance, so that we can review and adjust portfolio in a systematic and consistent manner.