

UNIVERSITY OF TURIN



## The BI experience at Turin University

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# University of Turin

The University of Turin is one of the most ancient and prominent Italian Universities



Some of the degree courses offered are unique in Italy, such as Military Strategy, Biotechnology, Sport Sciences, Restoration and Conservation

4 doctoral schools

600 years old

27 departments

80 masters post graduate

More than 150 study courses

~70.000 students

all disciplines except for engineering and architecture

450 research contracts

2.000 teaching staff

1.950 administrative and technical staff





# 120 sites spread at regional level

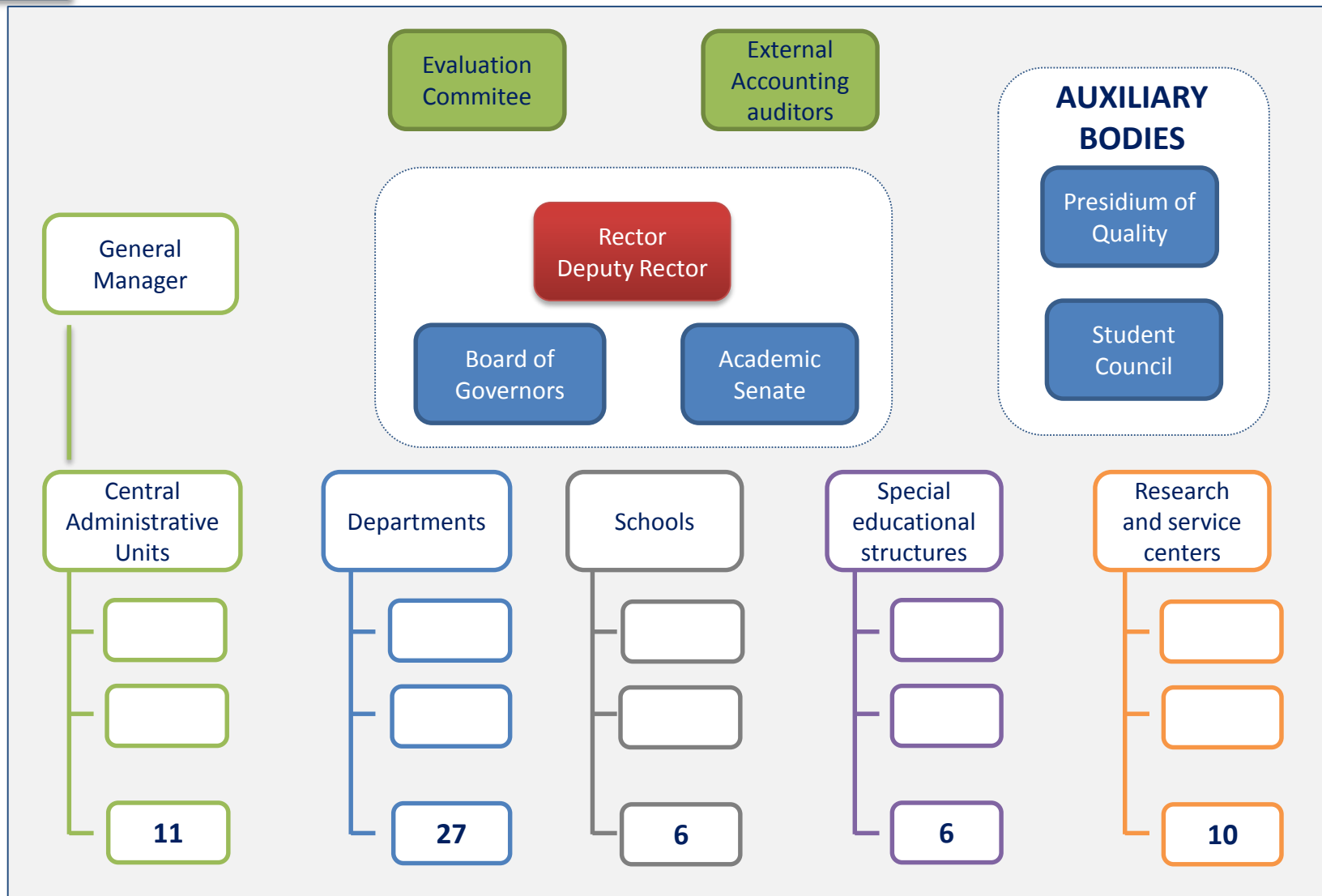


With 120 sites in different areas in Turin and in key places in Piedmont, the University of Turin can be considered as “city-within-a-city”, promoting culture and producing research, innovation, training and employment.





# Organization chart







# The importance of data and indicators

- Increased external pressure on evaluation and **accountability**
- Increasing **governmental** monitoring based on indicators and **formula-based funding**
- Recognition that **management information were patchy**
- Recognition that we needed to monitor strategic performance in increasingly competitive environment

## PRESSURES

## DATA & INDICATORS

## PURPOSES

- Help managers **monitor performance** against Strategic Plan goals
- Support governing body in monitoring University's overall performance and in **making decisions for change and improvement**
- Help in managing staff, financial resources and assets
- Send messages on **strategic priorities** within University
- Provide the University with means of **demonstrating accountability to stakeholders**





# Our design approach for data and indicators management

Phase  
1

Identifying who are the users of the P&C system, what are their goals, what kind of information they need, what are the regulatory constraints.

Phase  
2

Mapping the relevant data that must be delivered to managers and decision makers: performance indicators, benchmarks and historical data.

Phase  
3

Building the catalogue of indicators of the main processes (eg. education, research, support processes) and the sources of data collection.

Phase  
4

Drawing the management control chart (roles and functions in the management control process) and the information system development plan

Phase  
5

Certify indicators and reporting structures in agreement with the owner of data.

Phase  
6

Operate on the process that manages data working on improvement or different practices in data entry.

Phase  
7

Deliver reports and KPI's to decision makers, management and staff in all the university branches.



# The data measurement service

The Universities cope with maintaining the coherence to their institutional mission, controlling goals and improving quality and strengths of their learning and research environment.

These trends have been increasing the need of:



**understand how resources are used and spent**

Efficiency

**estimate and compare results achieved and quality provided by each academic unit, research group, resource manager**

Effectiveness

**activate acknowledgment and assumption of responsibility for actions, resource spending and results**

Accountability

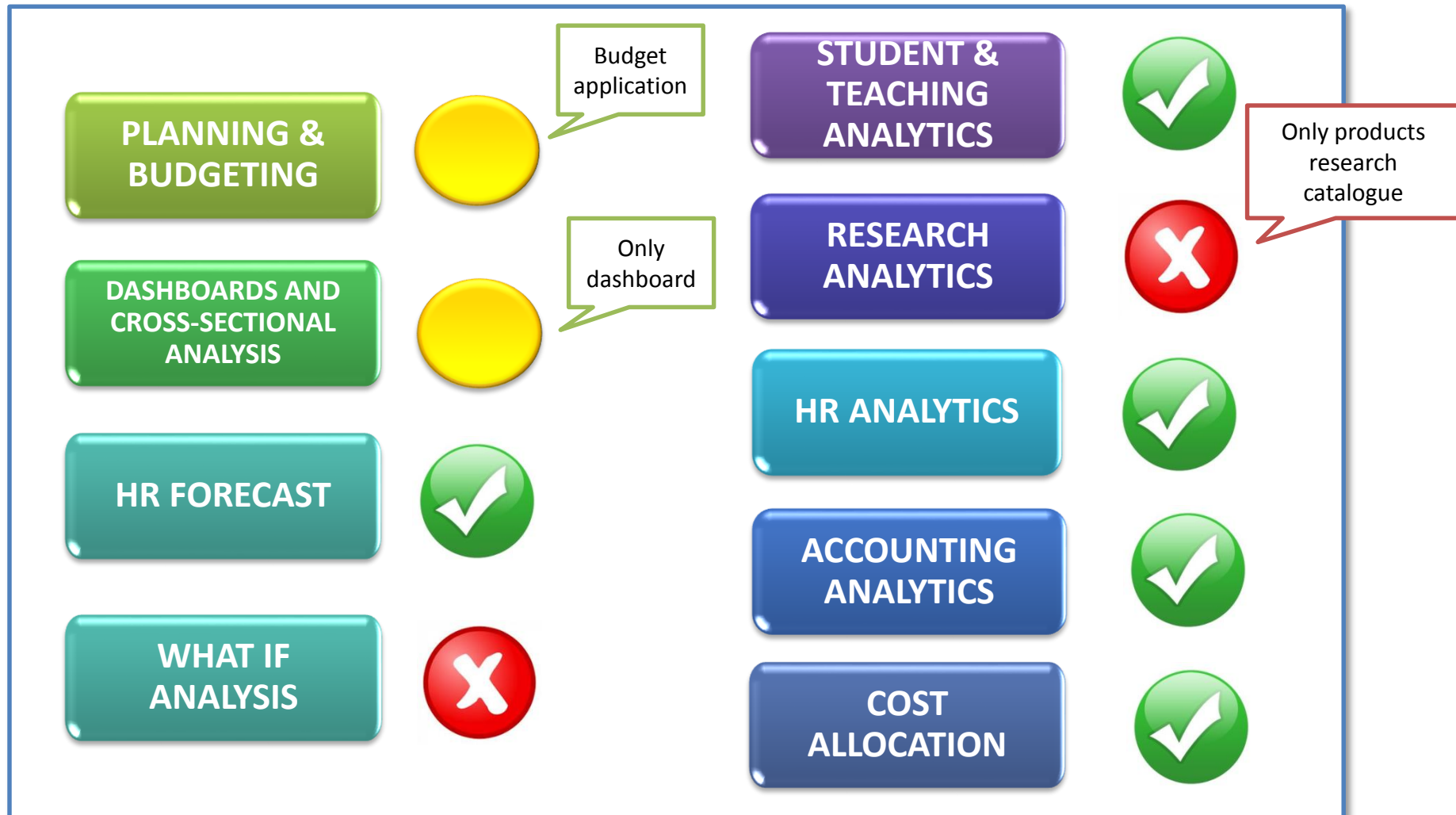
A service at the central level working with the departments and administrative units:

- to check the quality of the databases
- to collect the data from the databases necessary to build up the management indicators
- to produce and to organize indicators for the management team, for the departments or for the university's stakeholders, in relation to demands





# BI system modules: state of the art

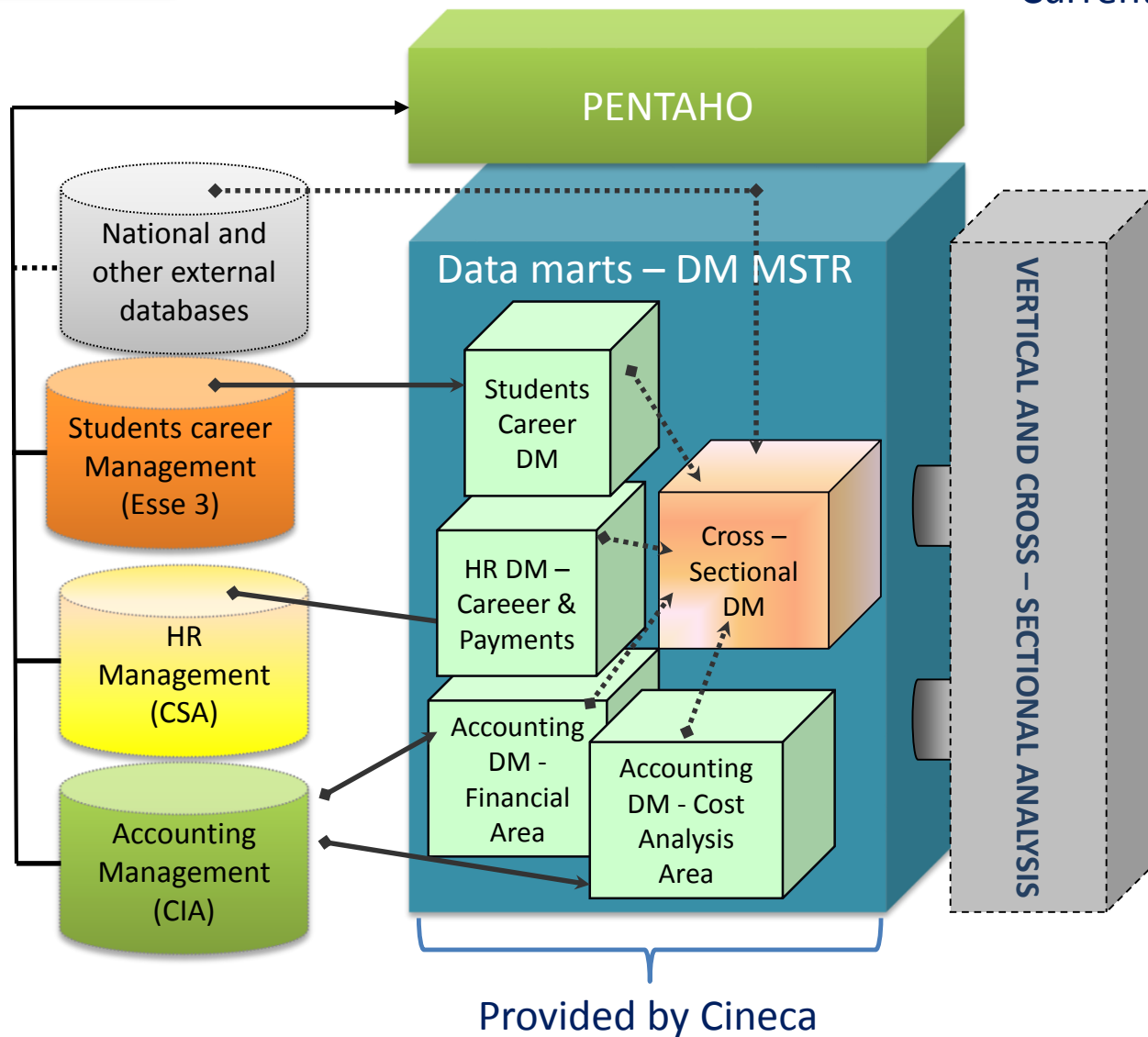






# Data Warehouse & Data Marts

## Current Data warehouse environment



### Platform and Diffusion

- Proprietary Platform (Microstrategy)
- Open source Platform (Pentaho)
- Distributed at Headquarters (P&C, Finance, Learning and Student Management, HR, EU research staff)
- ~ 10 users

### Results

- Possibility to realize complex analysis, at the request of various stakeholders
- Improvement of the efficiency of the analysis concerning Accounting, HR and Students
- Time saving procedure

### To do

- Necessity to strengthen cross-sectional analysis
- Start the deployment phase of standard reports to other central units and departments
- Development of new classes of custom reports for different stakeholders



# Examples of reports: Quality Assurance of courses

STUDENT  
ANALYTICS

**Iscritti FC LAUREA**

File Modifica Visualizza Formato Dati Tabella Sposta Finestra Guida

Salva e chiudi Accounting Righe Valori

Dettagli Report

Afferenza CdS \_2013\_14: Chimica

Corsi di Studio	A.A.	Metriche	Iscritti FC	Iscritti	Quota iscritti i FC
SCIENZA E TECNOLOGIA DEI MATERIALI 008716	2011/2012		0	40	0,0%
SCIENZA E TECNOLOGIA DEI MATERIALI 008716	2012/2013		0	134	0,0%
CHIMICA E TECNOLOGIE CHIMICHE 008717	2011/2012		0	410	0,0%
CHIMICA E TECNOLOGIE CHIMICHE 008717	2012/2013		0	357	0,0%

Proportion of failing students

**Iscritti FC LAUREA**

File Modifica Visualizza Formato Dati Tabella Sposta Finestra Guida

Salva e chiudi Accounting Righe Valori

Dettagli Report

Corsi di Studio	Cod	A.A.	Inattivi	Iscritti	Quota inattivi
SCIENZA E TECNOLOGIA DEI MATERIALI	008716	2010/2011	0	0	0%
		2011/2012	0	40	0%
		2012/2013	0	134	0%
Chimica e Tecnologie Chimiche	008717	2010/2011	0	0	0%
		2011/2012	58	410	14,1%
		2012/2013	22	357	6,2%

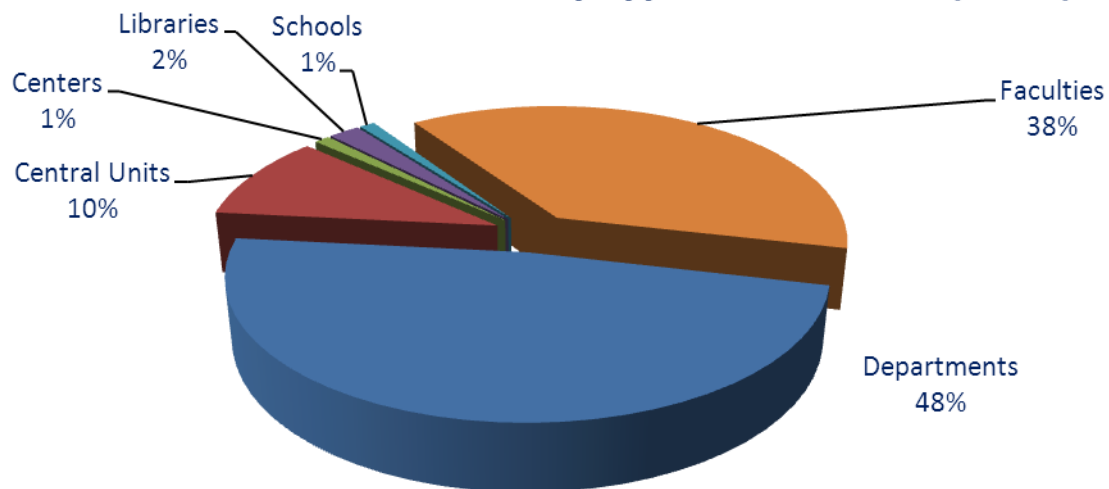
Proportion of inactive students  
(less than 5 credits per year)



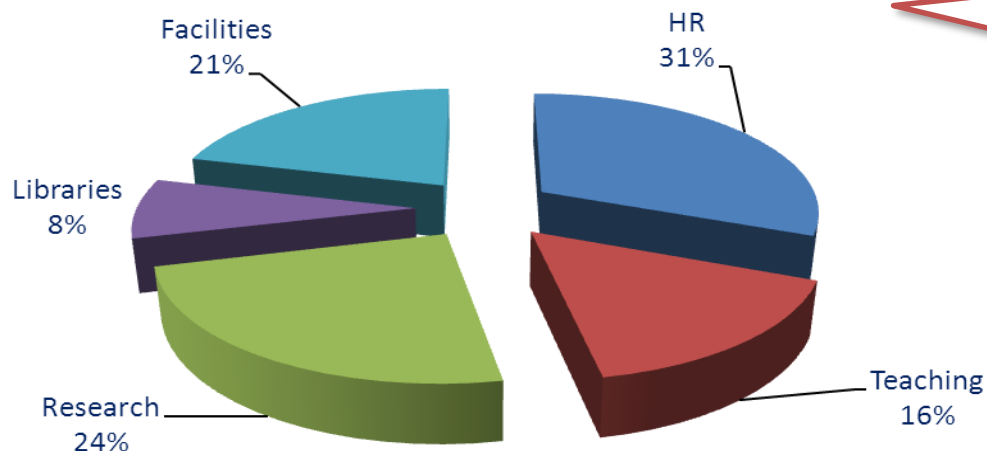
# Cost allocation: human resources cost allocation

**COST  
ALLOCATION**

## Cost allocation by type of structure (2010)



## Cost allocation by macroarea (2012)

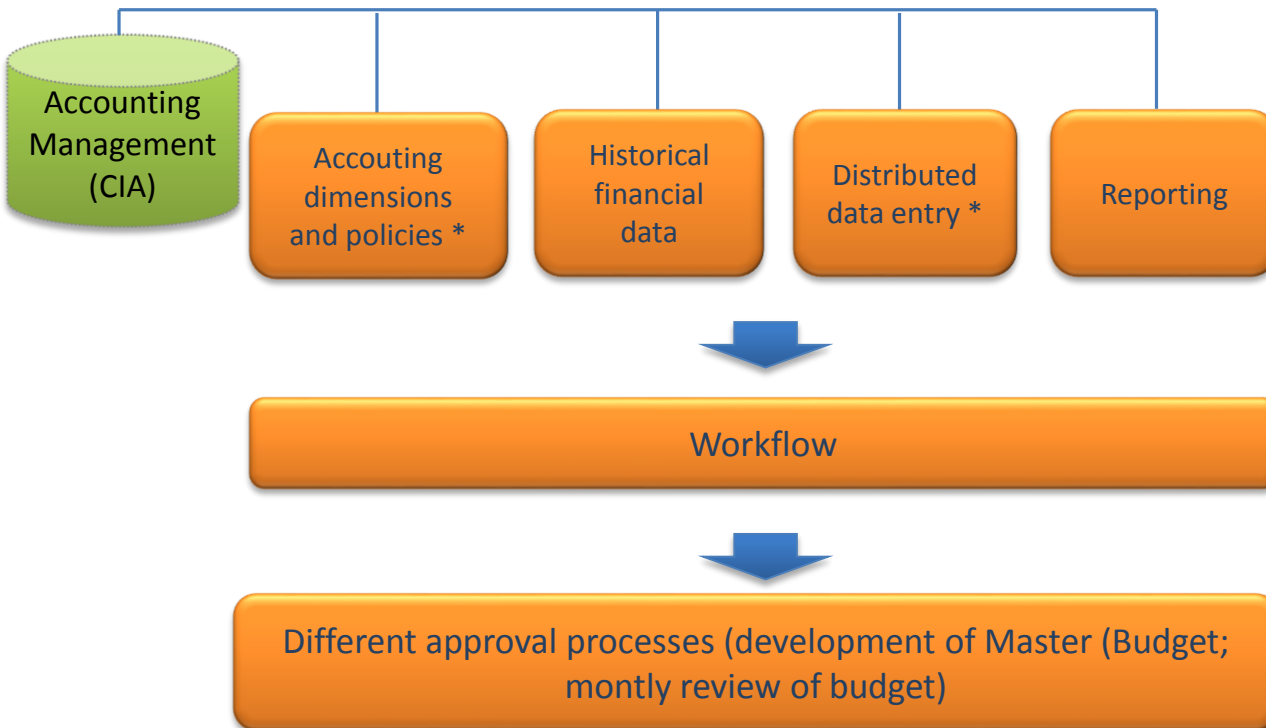


**Good Practice  
Exercise**



# Budget management system

## Current Budget management system



### Platform and Diffusion

- Proprietary Platform (Oracle Hyperion)
- Distributed to Headquarters and branch offices (all the offices that contribute to develop the master budget)
- ~ 60 users

### Results

- Development of a distributed budget process
- Improvement of transparency and uniformity of planning rules

### To do

- Improve the integration with Accounting management systems and management tools of research projects as part of the ongoing phase of transition to the new accounting sw (Ugov)

\* Based on accounting policies defined by HQ on accounting management system.



# Examples of reports: planning (1/2)

PLANNING & BUDGETING

Chart of Accounts

## TREND

## FORECAST

### A.A200 - AMMINISTRAZIONE CENTRALE

Analisi Comparativa Consuntivo - Previsione Assestata - Previsione per valori aggregati

PIANO DEI CONTI		Consuntivo (2007-2009)			Previsione (2010-2012)		
		2007	2008	2009	2010	2011	2012
F.E.0	AVANZO	0,00	0,00	0,00	88.756.036,10	8.308.716,20	5.131.069,09
F.E.1	ENTRATE PROPRIE	137.551.230,29	132.599.020,12	134.893.510,70	173.778.308,29	140.914.315,35	136.851.205,92
F.E.2	ALTRE ENTRATE	1.531.543,20	4.805.981,67	4.486.243,64	2.506.815,90	1.319.648,06	1.321.596,54
F.E.3	ENTRATE DA TRASFERIMENTI	329.556.295,32	344.187.742,24	339.084.578,05	326.284.609,51	256.990.666,27	253.141.650,65
F.E.4	ALIENAZIONE BENI E RISCOSSIONE CREDITI	10.253,77	23.393,75	71.418,92	59.744.541,05	0,00	0,00
F.E.5	ENTRATE DERIVANTI DA ACCENSIONE DI PRESTITI	65.170.850,00	9.732.753,94	8.715.000,00	6.229.496,80	2.200.000,00	3.367.685,00
F.E.6	F.E.6 - ENTRATE AVENTI NATURA DI PARTITE DI GIRO	171.248.724,51	180.543.218,05	193.702.739,51	192.580.000,00	192.580.000,00	192.580.000,00
F.E	ENTRATE	705.068.897,09	671.892.109,77	680.953.490,82	849.879.807,65	602.313.345,88	592.393.207,20
<b>TOTALE</b>	<b>ENTRATE SENZA PARTITE DI GIRO</b>	<b>533.820.172,58</b>	<b>491.348.891,72</b>	<b>487.250.751,31</b>	<b>657.299.807,65</b>	<b>409.733.345,88</b>	<b>399.813.207,20</b>
F.S.1	RISORSE UMANE	294.191.276,38	310.223.880,39	321.962.536,48	321.297.610,44	308.923.921,73	307.415.255,23
F.S.2	SPESE DI FUNZIONAMENTO	35.588.501,61	40.640.874,29	38.572.955,55	40.762.559,42	40.357.252,27	41.074.265,91
F.S.3	INTERVENTI A FAVORE DEGLI STUDENTI	39.858.699,90	46.402.546,15	45.344.479,86	60.375.506,76	37.162.982,58	35.977.251,88
F.S.4	ONERI FINANZIARI E TRIBUTARI	4.416.605,93	7.295.333,24	7.011.482,49	8.161.878,69	8.157.191,27	8.072.478,60
F.S.5	F.S.5 - ALTRE SPESE CORRENTI	895.273,37	1.297.874,09	521.362,33	14.495.050,72	4.045.810,00	4.045.810,00
F.S.6	TRASFERIMENTI	61.163.979,61	57.445.753,29	36.414.962,75	18.174.572,76	7.806.044,44	7.806.085,64
F.S.7	ACQUISIZIONE DI BENI DUREVOLI E PARTITE FINANZIARIE	100.746.615,37	25.074.204,22	8.915.325,73	190.864.115,77	16.581.293,70	9.230.982,44
F.S.8	RIMBORSO DI PRESTITI	1.630.710,14	2.825.742,40	2.995.284,06	3.168.513,09	3.559.665,58	4.313.203,42
F.S.9	F.S.9 - SPESE AVENTI NATURA DI PARTITE DI GIRO	171.248.724,51	180.543.218,05	193.702.739,51	192.580.000,00	192.580.000,00	192.580.000,00
F.S	SPESE	709.740.386,82	671.749.426,12	655.441.128,76	849.879.807,65	619.174.161,57	610.515.333,12
<b>TOTALE</b>	<b>SPESE SENZA PARTITE DI GIRO</b>	<b>538.491.662,31</b>	<b>491.206.208,07</b>	<b>461.738.389,25</b>	<b>657.299.807,65</b>	<b>426.594.161,57</b>	<b>417.935.333,12</b>





## Examples of reports: planning (2/2)

PLANNING &  
BUDGETING

Page A.A200.A102

Responsibility Center

Destination (Research)

Degree of constraint (free/mandatory)

		FO - Ricerca		
		Libero discrezionale - Pric	Libero discrezionale - Pric	Libero Obbligatorio
F.S.1.10.01.10	LR42006			
F.S.1.10.01.11	PR.000000			
F.S.2.01.03.10	PR.000000	10.150	15.000	100.526
F.S.2.02.05.10	PR.000000			
F.S.2.02.14.12	PR.000000			
F.S.3.01.01.10	DOTTRIC	5.000.000		2.666.841
F.S.3.01.01.10	DOTTRIC.CICLOXXIII.			216.908,55
F.S.3.01.01.10	DOTTRIC.CICLOXXIV.I			200.841,25
F.S.3.01.01.10	DOTTRIC.CICLOXXV.P			

Chart of Accounts

Project

Spending motivation

	F.S.3.01.01.10 DOTTRIC	F.S.3.01.01.10 DOTTRIC.CICLO	F.S.3.01.01.10 DOTTRIC.CICLO
Borse di dottorato cicli XXII-XXIII	2666841.0		
Borse dottorato di ricerca - XXIII		216908.55	
Borse dottorato di ricerca - XXIV c			200841.25
Dottorati di ricerca finanziati con f			
Total:	2666841	216908.55	200841.25

Help Refresh Save Cancel



# Examples of reports: finance

1.4.2.3 cf\_indicatori\_spesa\_gest. bilancio\_AC per CDR\_dal 2006

File Edit View Format Data Grid Move Window Help

Save and Close <Custom> Rows Values Verdana 8 Occidentale

Report details

Esercizio: 2012

1

		Indice efficienza spesa (C) (Mandati / Impegnato)	Indice di efficienza spesa (R) (Mandati / Impegnato)	Indice di efficienza spesa (C+R) (Mandati / Impegnato)	Residui assestati / Mandati residui
<b>UD L3</b>					
Divisione Attività Istituzionali	A.A200.A100	45,8%	62,5%	52,1%	833.482
Divisione Ricerca e Relazioni Internazionali	A.A200.A102	58,8%	27,1%	45,1%	22.564.072
Divisione Area Medica	A.A200.A202	99,4%	75,3%	99,4%	30.653
Divisione Organizzazione Finanza e Programmazione	A.A200.A301	75,6%	56,0%	66,3%	1.042.184
Divisione Gestione Risorse Umane	A.A200.A401	98,5%	97,2%	98,5%	87.378
Divisione Didattica e Segreterie Studenti	A.A200.A503	29,6%	32,3%	30,8%	5.482.185
Divisione Edilizia e Grandi Infrastrutture	A.A200.A601	38,1%	67,0%	58,9%	18.884.128
Divisione Patrimonio e Contratti	A.A200.A602	93,5%	74,5%	90,0%	1.234.902
Divisione Logistica	A.A200.A700	75,1%	96,1%	79,2%	243.084
Divisione Sistemi Informativi	A.A200.A800	68,3%	90,2%	75,9%	353.680
Divisione Servizi Web Integrati d'Ateneo	A.A200.A900	59,8%	60,3%	60,0%	493.976
<b>Total</b>		<b>87,5%</b>	<b>57,3%</b>	<b>81,1%</b>	<b>51.249.723</b>

Efficiency  
indicators on  
budget spending  
per  
Responsability  
Center

Responsibility  
centers



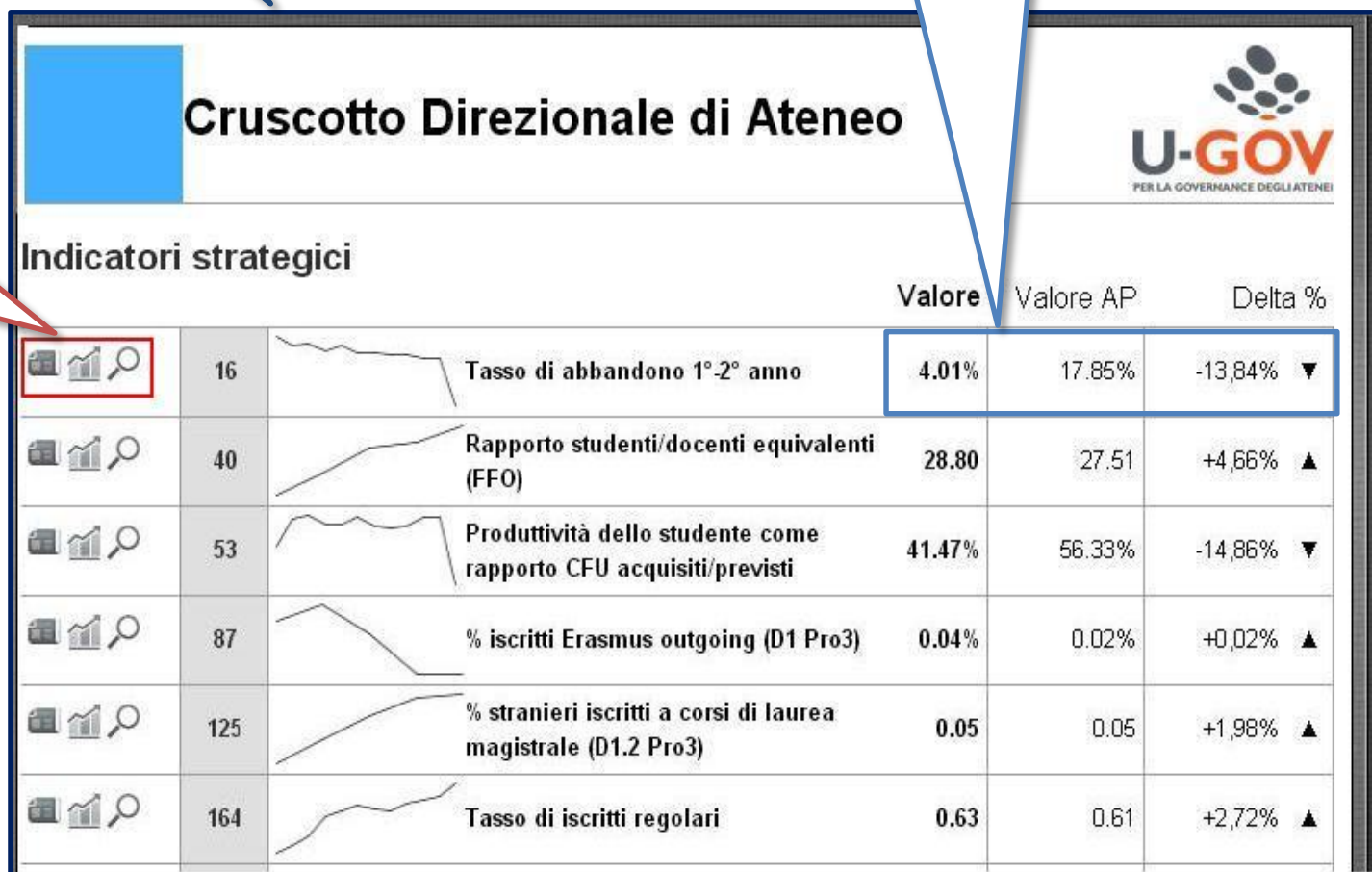
# Examples of dashboard: students careers

DASHBOARDS

KPI dashboard

Value; Last year value;  
Percentage variation

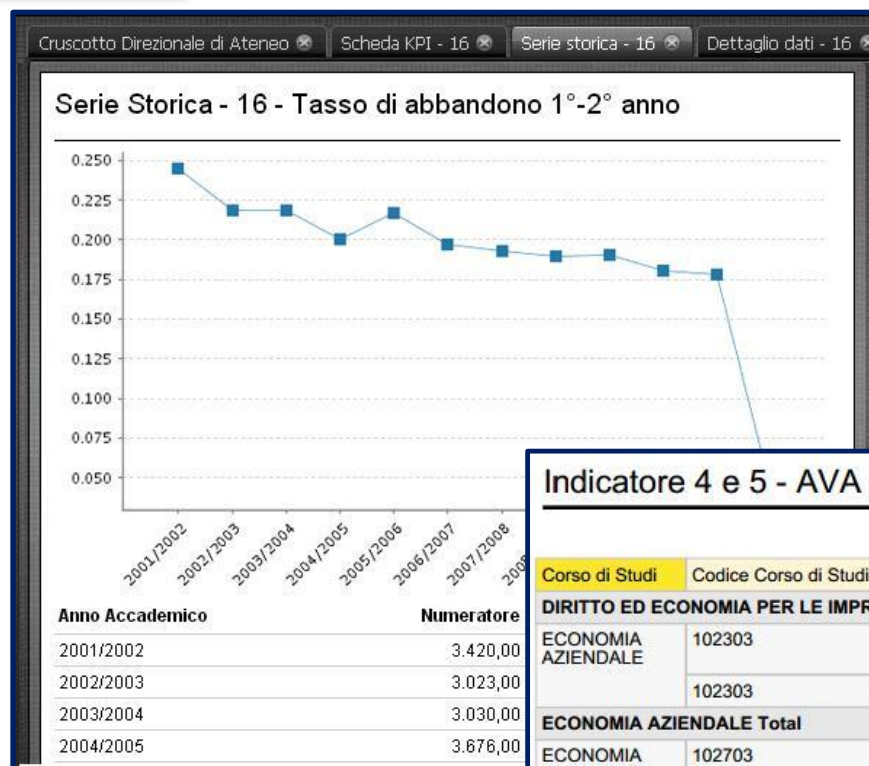
Time series;  
indicator details;





# Examples of dashboard: time series & details

DASHBOARDS



Dropout rate  
time series



## Indicatore 4 e 5 - AVA - L

Corso di Studi	Codice Corso di Studi	Tipo Corso	Numero anni coorte	Immatricolati	Abbandoni	% Abbandoni	Lauree	% Lauree
DIRITTO ED ECONOMIA PER LE IMPRESE Total				113	48	42,5%	7	6,2%
ECONOMIA AZIENDALE	102303	L2	1	4	1	25,0%	1	25,0%
	102303		2	0	1	0	1	0
ECONOMIA AZIENDALE Total				4	2	50,0%	2	50,0%
ECONOMIA AZIENDALE	102703	L	1	1.242	198	15,9%	0	0
	102703		2	0	62	0	1	0
	102703		3	0	10	0	474	0
ECONOMIA AZIENDALE Total				1.242	270	21,7%	475	38,2%
ECONOMIA E COMMERCIO	102722	L	1	290	43	14,8%	0	0
	102722		2	0	21	0	0	0
	102722		3	0	2	0	93	0
ECONOMIA E COMMERCIO Total				290	66	22,8%	93	32,1%
ECONOMIA E GESTIONE DEL TURISMO	102323	L2	1	1	0	0	0	0

Details table  
view



# Regulatory constraints and indicators

## Three-year Planning

The **three-year planning** of universities is based on the concept of monitoring a set of **indicators** (Law 43/2005; Ministerial Decree 827/2013)

## Performance Plan

The Performance Plan sets out the **indicators** for measuring and evaluating the performance of the administration (Legislative Decree 150/2009)

## AVA System (Accreditation Self-Assessment Evaluation)

The **AVA system** (Law 240/2010, Legislative Decree 19/2012, Ministerial Decree 47/2013) provides for a system of assessment and self-evaluation of quality and effectiveness of teaching and research and a system of Accreditation of Sites and of the Study Programmes based on the use of **specific indicators** defined ex ante by ANVUR (National Agency for the Evaluation of the University System and Research).



## Economic and financial sustainability

Eco-fin **indicators** monitored by the Ministry: HR costs indicator, Debt indicator, Economic and single index of financial sustainability (Legislative Decree 49/2012; Ministerial Decree 47/2013))

## Transparency

L. 190/2012 and Legislative Decree 33/2013; Civit Resolution 23/2013: the independent body of evaluation reports on the systems used to measure the performance ... specific importance is given to the system of management control and to the strategic control system.





## Issues/Lessons: political difficulties

In spite of improvement of data quality and setting up relevant indicators, we still face political difficulties as to:

- ☐ develop the culture of data spread throughout the whole organization
- ☐ follow up the evaluation results with politically informed decisions
- ☐ overcome the mistrust of some scholars and managers towards performance indicators and towards the transparency of practices and results
- ☐ convince that evaluation is necessary to set up internal quality assurance procedures and to establish mutual trust and recognition, especially in the context of the European Higher Education Area



## Issues/Lessons: technical difficulties

...and technical difficulties as:

- ☐ large amounts of data to manage
- ☐ to ensure quality and exhaustiveness of databases
- ☐ to engage the whole community: to convince various offices at the university level or in research departments to respect the procedures
- ☐ few professionals trained on data analyzing and reporting



## Issues/Lessons: needs for the future

Cross-sectional analysis

What-if analysis

Comparative data availability, particularly at national level (temporal misalignment)

Distribution of profiled sets of reports and KPI's at departments and central administrative units



Thank you  
for your  
attention