



# Preparing a budget for a project

ICOM5047

Prepared by J. Fernando Vega Riveros

ECE Department

University of Puerto Rico, Mayagüez

# Why is a budget important?

- The main purpose of a budget is to answer your sponsor or your boss **what your project will cost.**
- Sometimes your sponsor may provide upper limits to the cost of the project and you have to accommodate your resources and project scope accordingly – do not over commit.
- Sometimes funds for projects are allocated based on a bid – competitive.
- Budgets are negotiable in many cases but be realistic in what can be negotiated.

# Proposal evaluation

## Two main components of proposal evaluation

### •Quality

- What is offered to accomplish? (Specs, expertise, fulfills requirements or need)
- Is it technically feasible within constraints?

### •Cost

- Is it within the economic constraints?
  - compared to competition when bidding;
  - marketability – development cost vs. Expected market -> cost per unit when in the market
- Is it realistic?

Weights of these components in proposal evaluation may vary from sponsor to sponsor

# Budget

- A combination of art and science
- A great deal of decision-making is based on money matters
- Reserve resources for the project to be finished satisfactorily (money, human resources, technical, etc.)
- Most accurate estimate of expenditures to avoid (minimize) surprises
- Based on the work breakdown structure



# Budget

- Resources: dedicated to the project
  - Material, a computer or software that will be solely used for the project, otherwise depreciation or administration (indirect costs)
  - Human: based on time dedicated to project. Unit value based on qualifications, expertise, specific knowledge, type of job (designer, system architect, PM), geographical location, e.g. Puerto Rico  
[http://swz.salary.com/salarywizard/layouthtmls/swzl\\_narrowbrief\\_SM04.html](http://swz.salary.com/salarywizard/layouthtmls/swzl_narrowbrief_SM04.html)

# Budget

- Resources: dedicated to the project (cont)
  - Indirect costs: utilities, information, clerical, administration, etc.
  - Assets when available and applicable:
    - Resources available to your project already (e.g. specialized software or hardware)
    - Other sponsors, family or personal funds – specially important when searching for venture capital.

# Budget

- Human Resources:
  - Search for a job description as accurate as possible, e.g. IT – Computers Hardware, Engineer I
  - Per hour cost =  $\text{yearly salary} / 2080$  (40 hours per week, 52 weeks per year)
  - Account for benefits, e.g. Social Security, disability, healthcare, pension, bonuses, etc

# Budget

- Materials:
  - Include only those that will be purchased and used exclusively for the project (e.g. hardware components, a computer with touchscreen that is part of the prototype)



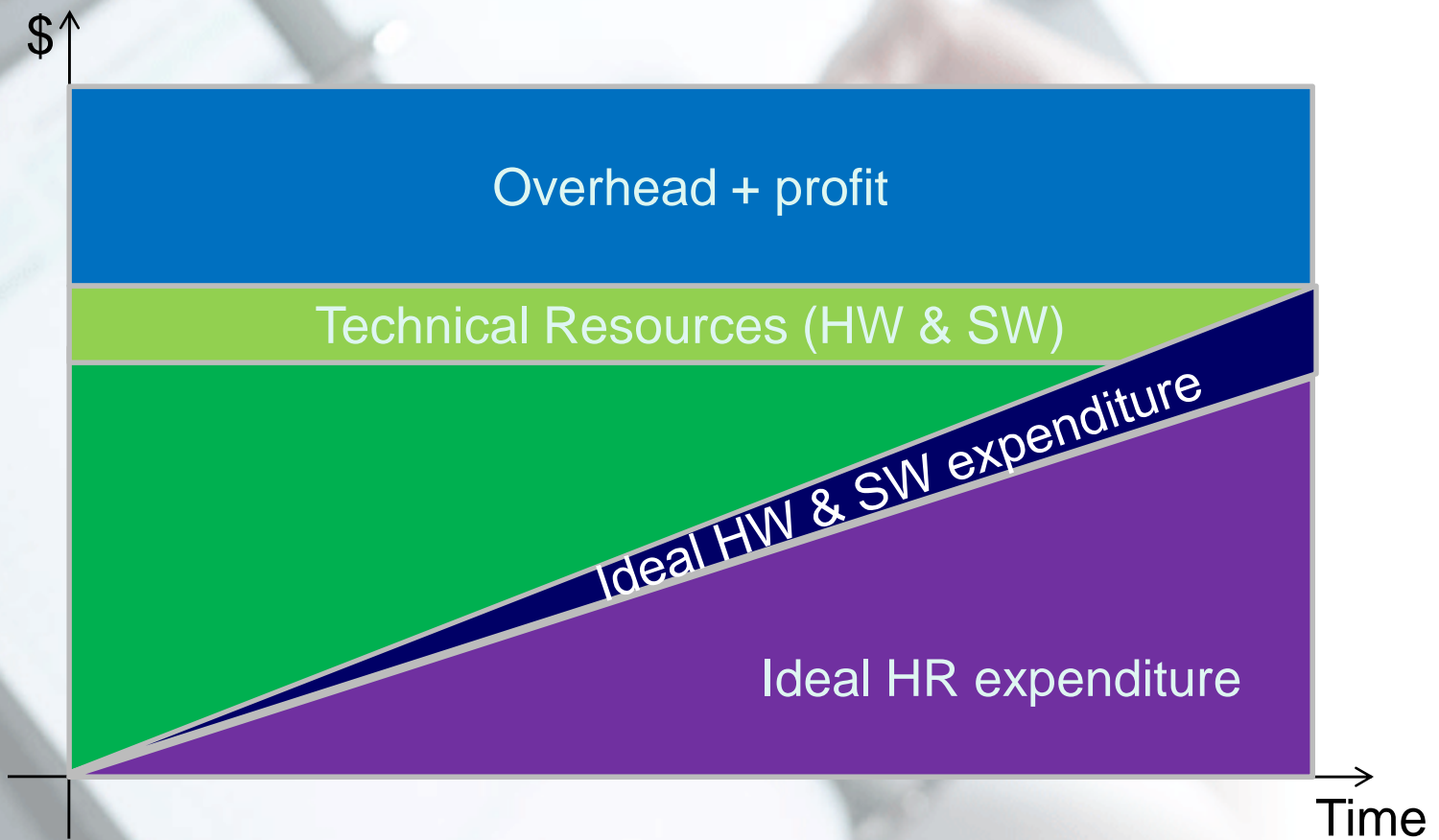
- **Indirect costs** represent the expenses of doing business that are not readily identified with a particular grant, contract, project function or activity, but are necessary for the general operation of the organization and the conduct of activities it performs. In theory, costs like heat, light, accounting and personnel might be charged directly if little meters could record minutes in a cross-cutting manner. Practical difficulties preclude such an approach. Therefore, cost allocation plans or indirect cost rates are used to distribute those costs to benefiting revenue sources.

- Indirect costs computed as a percentage of Modified total direct costs (MTDC)
- MTDC: Total direct costs excluding equipment, capital expenditures, rental costs, etc. (e.g. of rates and specifications of Indirect costs  
<http://cid.uprm.edu/Doc/ORE/ICFBI.pdf>)
- When for-profit business indirect costs or factor includes profit.

# Budget and actual expenditure

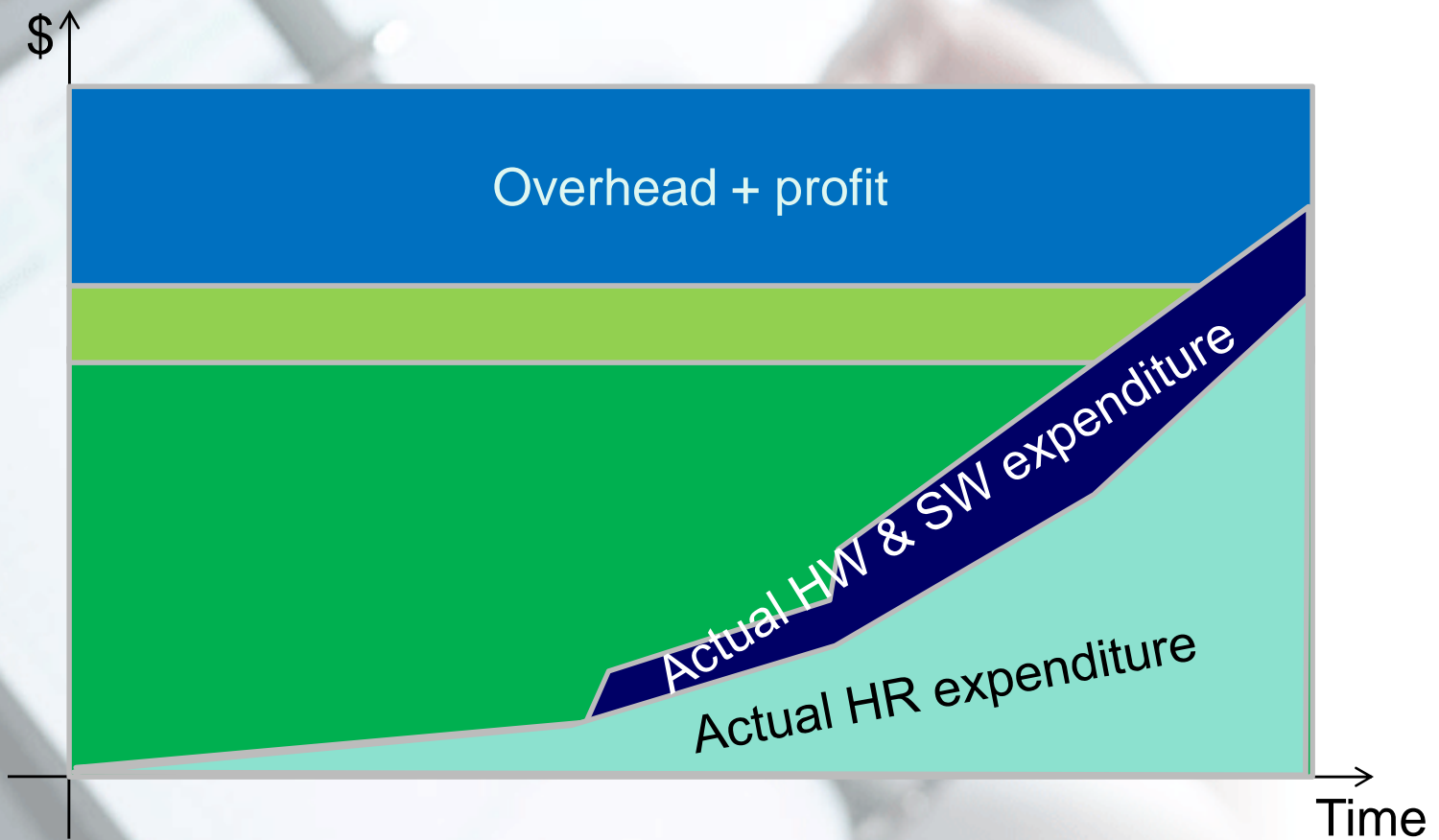


# Budget and actual expenditure





# Budget and actual expenditure



# Overhead percentages

## Nine step overhead percentage computation

1. Determine average hourly wage paid to direct labor employees
2. Estimate direct labor days available in calendar year (subtract holidays, weekends, vacations, etc)
3. Estimate billable direct labor hours for the work year (direct labor days \* (8 hours – lunch – meetings – training - etc))
4. Estimate billable direct labor dollars for the work year (billable direct labor hours \* average direct hourly wage)
5. Estimate non billable direct labor hours for the work year (total man\_hours in the work year – billable direct labor hours = 2080 – billable direct labor hours)
6. Estimate non billable direct labor dollars for the work year (non billable direct labor hours \* average hourly wage)
7. Estimate total overhead expenses for the work year (total business expenses – billable direct labor – direct material – costs subcontractors)
8. Adjust overhead expenses for inflation and expected price changes
9. Calculate the annual overhead percentage (adjusted overhead expenses / billable direct labor dollars; convert to percentage)

[http://www.missouribusiness.net/docs/calc\\_overhead\\_percentage.asp](http://www.missouribusiness.net/docs/calc_overhead_percentage.asp)

## Yet another reference on this topic

- <http://www.referenceforbusiness.com/encyclopedias/Oli-Per/Overhead-Expense.html>