2000 Product Development Metrics Survey

INTRODUCTION

We believe it will be worth your while to complete this survey; and to request a copy of the results that will be sent to all survey participants who make an honest effort to complete this survey questionnaire.

The participants in our Biennial Survey receive a forty-plus page results document complete with graphical responses to questions. Our 1998 participants were completely satisfied with the summary they received and sent us only accolades for our research work. We will again do the right thing with this 2000 survey for those professionals who take the time to complete credible survey questionnaires within our required timeframes. We appreciate your commitment of time and rigorousness in completion of this survey. We will keep your responses confidential.

PLEASE RETURN SURVEY BY AUGUST 15, 2000. SEE DIRECTIONS ON BACK PAGE. THANK YOU.

TABLE OF CONTENTS

This survey covers five significant areas where there is currently a great deal of industry activity. The patterns that will be revealed by the results of this survey will be of significant interest to managers and decision makers in your organization.

SECTION A RESPONDENT PROFILE

The purpose of this initial section is to be able to correctly categorize your company within the population of companies that will respond to this survey. Persons, such as yourself, who wish to compare their response to the overall results, usually want to compare with other companies of similar size and type. We are trying to do a good job here on assessing one of the most sensitive up-front tasks in order to achieve the end results that most people seek. Please do your best to characterize your response. The format for Section A is the exact same format as the 1998 GGI R&D Metrics Survey which was well accepted.

This is the address to which the survey results will be mailed.

A1. Person completing survey:
Name: _____
Title: _____
Company Name: _____
Address: _____
_____

Phone: _____ Fax: _____ E-Mail: _____

Would you like a copy of the results of this survey? ☐ Yes or ☐ No

A2. Is this a ☐ public or ☐ private company?

A3. For what type/scope of company or organization will you be responding to the questions regarding metrics in this survey? [Check One That Best Applies]

- ☐ Parent Corporation [A P/L Unit]
- ☐ Strategic Business Unit/HQ [A P/L Unit]
- ☐ Division/Business Unit/Grp [A P/L Unit]
- ☐ Functional Org/Dept. [Cost Center]
- ☐ Manufacturing Plant [Cost Center]
- ☐ Other: _____

A4. Identify your company's industry or service: [Check One That Best Applies]

☐ Aerospace	☐ Defense	☐ Medical Products
☐ Automotive	☐ Durable goods	☐ Metals
☐ Chemical	☐ Education	☐ Oil/Gas
☐ College/Univ. R&D	☐ Electronics	☐ Pharmaceuticals
☐ Communications	☐ Engineering/Contract Design	☐ Research/Nat'l Labs
☐ Computers	☐ Food	☐ Semiconductors
☐ Construction	☐ Heavy Machinery	☐ Telecomm. Products
☐ Consulting/Services	☐ Industrial products	☐ Textiles
☐ Consumer Products	☐ Materials	☐ Other Ind._____
☐ Software-Web	☐ Software-Digital	☐ Software-Embedded
☐ Consulting	☐ Market Research	☐ Financial Services
☐ Government	☐ Utility	☐ Other Svc._____

A5. Sales revenue over your last full year: [Check One That Best Applies]

☐ <$25M ☐ $25-100M ☐ $100-250M ☐ $250-500M ☐ $500M-1B
☐ $1-5B ☐ >$5B

A6. Number of full-time employees: [Check One That Best Applies]

☐ 1-500 ☐ 500-1000 ☐ 1000-5000 ☐ 5000-10,000
☐ 10,000-25,000 ☐ 25,000-50,000 ☐ 50,000+

A7. Please indicate the types of manufacturing operations covered by the metrics discussed in this survey: [Check All That Apply]

☐ Process Mfg ☐ Repetitive Mfg ☐ Discrete Mfg ☐ Job Shop/Customized Mfg

A8. Places your company does business: [Check All That Apply]

	North America	Europe	Asia	Rest of World
Sales	☐	☐	☐	☐
R&D	☐	☐	☐	☐
Mfg	☐	☐	☐	☐

A9. What function do you personally perform in the company? [Check One That Best Applies]

☐ Mgt ☐ Sales ☐ Mktg ☐ R&D/Engrg ☐ Mfg-Production ☐ Mfg-Purchasing/Materials
☐ Quality ☐ Environ./Safety/Regulatory ☐ Finance ☐ Information Systems ☐ HR

SECTION B R&D LINKAGES TO CORPORATE STRATEGY

Corporate/Business-Wide Metrics

B1. How many metrics are in the set of metrics that are used to measure and/or steer the company as a whole? This question pertains to all functions across the company, i.e. the company as a whole including R&D and product development activities.

a. My company *does have* a clearly defined "set of metrics" that is known by most people.

The number of metrics in the set is [Number]

b. My company *does not have* a clearly defined set, but the number *can* be derived.

I have derived/estimated an answer by adding up the number of metrics reported by staff members at company meetings. Therefore, the number of metrics in the company-wide "set of metrics" determined by way of my calculation for the purposes of completing this survey is:

Ten or Less Metrics	☐	101-125 Metrics	☐
11 - 25 Metrics	☐	126-150 Metrics	☐
26- 50 Metrics	☐	150-175 Metrics	☐
51- 75 Metrics	☐	176-200 Metrics	☐
76-100 Metrics	☐	Greater Than 200 Metrics	☐

c. ☐ My company *does not have* a clearly defined set, and the number *cannot* be derived.

R&D Metrics

B2. How many metrics are in the set of metrics that are used by R&D Officers to measure and/or steer R&D as a whole? This question pertains solely to R&D and related product development activities.

a. R&D *does have* a clearly defined "set of metrics" that is known by most R&D managers.

The number of metrics in the set is [Number] .

b. R&D *does not have* a clearly defined set, but the number can be derived.

I have derived/estimated an answer by adding up the number of metrics reported by staff members at company meetings. Therefore, the number of metrics in the company-wide "set of metrics" determined by way of my calculation for the purposes of completing this survey is:

Ten or Less Metrics	☐	101-125 Metrics	☐
11 - 25 Metrics	☐	126-150 Metrics	☐
26- 50 Metrics	☐	150-175 Metrics	☐
51- 75 Metrics	☐	176-200 Metrics	☐
76-100 Metrics	☐	Greater Than 200 Metrics	☐

c. ☐ R&D *does not have* a clearly defined set, and the number *cannot* be derived.

R&D Metrics Linkages

B3. Please refer to your answers to the two questions above to answer this next two-part question.

a. Using your answer to "B2," the total number of R&D measures being used, how many of these R&D measures are also part of the overall company-wide "B1" set of metrics? [Number]

b. % R&D Metrics In Company-Wide Metrics Portfolio =

Number R&D Metrics In Company-Wide Portfolio = [B3a]= [Number] / [Number] = [ ]%

Total Number Of Metrics In Company-Wide Set [B1]

SECTION C PORTFOLIO MANAGEMENT METRICS

Portfolio Frameworks

C1. Which of the three frameworks below does your company actively use in company management reports to categorize products? For each framework used, please indicate any individual elements of the Model that closely align with the terms for the elements that your company uses. [Check All That Apply]

☐ a. Product Family Model ☐ b. Product Type Model ☐ c. Project Size Model

Line Of Business	☐	Platform	☐	Large Project/Program	☐
Product Family	☐	Major Derivative	☐	Medium Project	☐
Product Line	☐	Derivative	☐	Small Project	☐
Product	☐	Extension	☐		
		Sustaining	☐		

OR, ☐ d. My company does not use any of the 3 above frameworks for product/project analysis.

Portfolio Population

C2. a. About how many products are currently in the "released/active product portfolio." [Number]

b. The "counting method" below that most accurately represents the counting method I used is: [Check One Box Only]

1. All SKUs that the factory will produce/sell if a customer order is placed for one. ☐
2. All SKUs currently listed in the current/active sales catalog, end items and spare parts. ☐
3. All SKUs currently listed in the current/active sales catalog, end items only. ☐
4. Product Lines/Models, each of which may have many variations, colors, etc… ☐
5. Only aggregate Product Families/Lines, each of which has many end items/models. ☐
6. None of the counting systems above is analogous to the counting system I used. ☐

C3. a.. About how many products are currently in the "R&D backlog product portfolio." [Number]

b. The “counting method” below that most accurately represents the counting method I used is: [Check One Box Only]

1. All SKUs that the factory will produce/sell if a customer order is placed for one. ☐
2. All SKUs to be listed in the current/active sales catalog, end items and spare parts. ☐
3. All SKUs to be listed in the current/active sales catalog, end items only. ☐
4. Product Lines/Models, each of which may have many variations, colors, etc… ☐
5. Only aggregate Product Families/Lines, each of which has many end items/models. ☐
6. None of the counting systems above is analogous to the counting system I used. ☐

Portfolio Dynamics

C4. When going through the mechanics of portfolio analysis, what product life cycle is typically assumed for decisions being made in the year 2000? The product life cycle is the length of time that the product is expected to sell in the marketplace before it needs to be replaced. Do not include spare parts support that may occur subsequent to the actual retirement of the production of the product itself. Put this answer in the first column, Then, in the second column, indicate the number of years that spare parts are produced and/or sold to support or service the product subsequent to the production of the product itself. [Single product line businesses probably need only to use one Line below. Larger companies may need to use several Lines.]

Product Life Cycle - Initial Number Of Years		Parts-Only Cycle - After Product Life Cycle End	
a. 1st Line of Business	[Years]	aa. 1st Line of Business	[Years]
b. 2nd Line of Business	[Years]	bb. 2nd Line of Business	[Years]
c. 3rd Line of Business	[Years]	cc. 3rd Line of Business	[Years]
d. 4th Line of Business	[Years]	dd. 4th Line of Business	[Years]
e. 5th Line of Business	[Years]	ee. 5th Line of Business	[Years]

OR, ☐ f. My company does not track or calculate product or parts life-cycles.

C5. Is the average product life cycle [PLC] of the products in the company portfolio currently increasing or decreasing in the year 2000? [Select One Of Three Choices]

a. PLC Is Increasing. [Sell for longer periods than in the past.] [Yes] [100 %]

b. PLC Is Decreasing. [Sell for shorter periods and get replaced sooner.] [Yes] [100 %]

c. Both Increasing and Decreasing PLC portfolio dynamics are present. About [%] of the portfolio is Increasing, and [%] of the portfolio is Decreasing.

d. PLC Neither Increasing or Decreasing. All PLC's are stable at this time. [Yes] [100 %]

C6. The "CYS/PDTPRITPNY" metric is one of the most popular R&D metrics in use by industry. It was first popularized by 3M in the late 1980s. It stands for "Current Year Sales/Profits Due To Products Released In The Prior N Years." It is an indicator of the newness of the released/active product portfolio. [If your company already maintains this metric, then the question is easy. If your company only recently started calculating the metric, then put "NC" in the boxes for the FYs that your company did not calculate the metric. If your company does not maintain the metric, then check "g" and proceed to Question C7.]

a. In FY 1995, [%] of company sales was due to new products released within the prior [Years] years.
In FY 1995, [%] of company profit was due to new products released within the prior [Years] years.

b. In FY 1996, [%] of company sales was due to new products released within the prior [Years] years.
In FY 1996, [%] of company profit was due to new products released within the prior [Years] years.

c. In FY 1997, [%] of company sales was due to new products released within the prior [Years] years.
In FY 1997, [%] of company profit was due to new products released within the prior [Years] years.

d. In FY 1998, [%] of company sales was due to new products released within the prior [Years] years.
In FY 1998, [%] of company profit was due to new products released within the prior [Years] years.

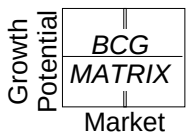
e. In FY 1999, [%] of company sales was due to new products released within the prior [Years] years.
In FY 1999, [%] of company profit was due to new products released within the prior [Years] years.

☐ f. Our company maintains this metric but does not disclose it.
☐ g. Our company does not calculate the CYS/PDTPRITPNY metric.

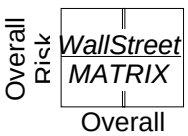
C7. Is there an active product obsolescence and/or product retirement practice at your company that occurs on a frequency of not more than every two years? [Yes] Or, do old products just sort of fade away over time as fewer and fewer orders are placed for them? [Fade] [Check Only One Box]

Portfolio Analysis

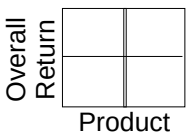
C8. Numerous frameworks for R&D and product portfolio analysis have been in use in industry for many decades. Below are some of the more popular frameworks that companies use. Which of the frameworks below, if any, does your company formally and consistently use? [Check All That Apply]



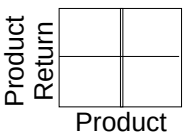
☐ a.



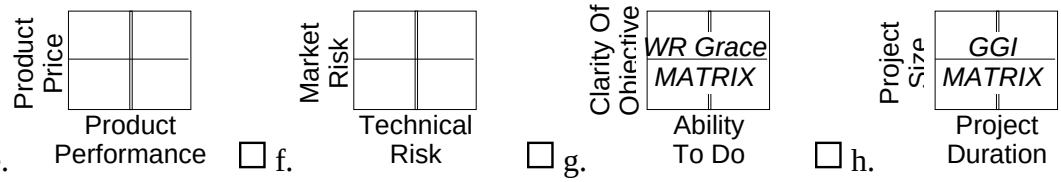
☐ b.



☐ c.



☐ d.



☐ e. ☐ f. ☐ g. ☐ h.

SECTION D PRODUCT SELECTION METRICS

Critical Selection Variable

D1. Assuming that it is always necessary to accurately determine the product requirements and specifications for any given product to be successful, which of the following execution criteria is usually the second most important factor to the financial success of products in your company. [Check One Box Only]

a.	Time-To-Market	☐	d.	Varies Widely By Product	☐
b.	Target Product Cost	☐	e.	Other: _____	☐
c.	Development/Capital Cost	☐	f.	Not sure of the answer	☐

Selection Process

D2. How many times does your company review a given idea/concept/definition/proposal before finally making a business decision to either formally approve or formally reject a proposed R&D product and/or investment project. [Check One Box Only]

a. 2.5-Step First a simple short, probably one-page, description of the idea is discussed. ☐
Little work has been performed, if any. The idea is in a highly raw state.
At this time, it is either killed, tabled, or moved forward for further analysis.

b. 2- Step First a preliminary marketing and and technical analysis is reviewed. ☐
At this time, it is either killed, tabled, or moved forward for final estimation.

c. 1- Step A single top management meeting is held for a go/no go decision. ☐
A complete comprehensive plan/analysis has been prepared for consideration.
Work leading up to this meeting has been conducted in functional organizations.

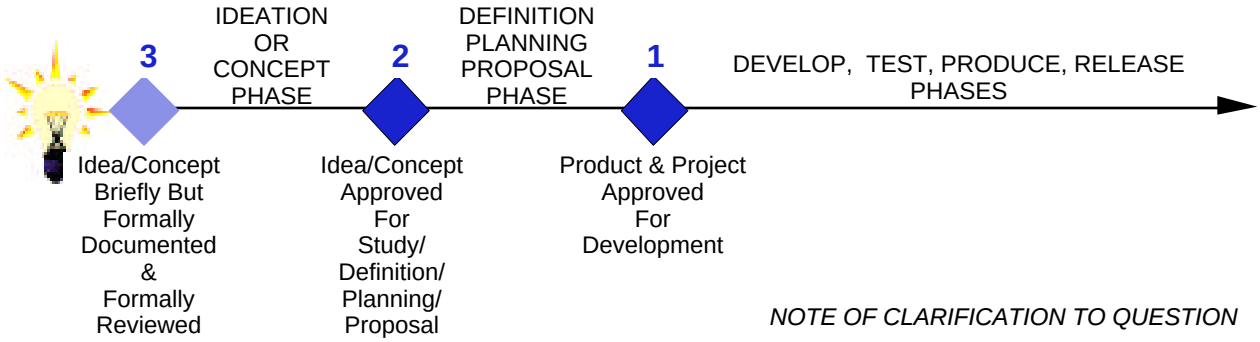
d. No Step A single organization determines the R&D products/projects to be done. ☐
There is no cross-functional multi-disciplined management team making decisions.

e. Other _____ ☐

Selection Process Metrics

D3. If you answered "d" or "e" to Question D2 above, then skip this question and continue with Question E1. If you answered Question D2 above with either "a," "b," or "c" you should be able to answer this question. This question measures “throughput and yield rate” of product selection decisions made during a one-year period. Does your company approve every product/project presented, or do some products/projects not get approved? [If you have a “1-Step Process,” fill out only “Column 2” in the box below. If you have a “2-Step or 2.5 Step Process,” fill out “Columns 1 and 2” and “Died Mid-Phase.”]

My Company Does Not Perform Any Of The Metrics/Activities Listed Below ☐



	COLUMN 1	COLUMN 2
# Approved		
# On Hold		
# Rejected		
# Died Mid-Phase		
TOTAL REVIEWED		

NOTE OF CLARIFICATION TO QUESTION

Often, in many companies, the specific cycle for "Capital Approval" is separated from the actual company decision to approve a Project/Product for development. Many companies wait until prototypes are built to formally approve the capital for the project. Ignore this type of a "subsequent capital process. " The question here pertains to "Product/Project Approval," not Capital Approval [unless it occurs simultaneously].

SECTION E PRODUCT SUCCESS METRICS

E1. What is the historical success rate of the products your company launches? It is well documented that company success rates range from as low as 10% success to as high as 90% success. What is your company new product success rate? [Enter Two Numbers That Total 100%]

a. Company products are successful ____ % of the time.

b. Company products are not successful ____ % of the time.

100 %

E2. What is the primary financial measure that is used to determine a product's success or failure at your company. If your company does not calculate a financial return for R&D investments, please check only the first box thereby identifying your company as a "Judgment Company." [Check One Only]

a. Judgment Companies Companies not using financial criteria ☐

b. Financial Companies

Payback		☐	Break Even Time	BET	☐
Internal Rate Of Return	IRR	☐	Time To Profit	TTP	☐
Net Present Value	NPV	☐	Composite Measure- of several above		☐
Return On Investment	ROI	☐	Other: _____		☐
Return On Assets	ROA	☐	Our primary measure not listed above		☐
Return On Net Assets	RONA	☐	Not sure of the answer		☐
Return On Capital Employed	ROCE	☐			

E3. What is the sales/revenue/profit forecast time period that is used to calculate the financial return measure identified in Question E2? What is the length of the revenue/profit stream used to justify an R&D investment? If your company does not calculate a financial return for R&D investments, please check only the first box thereby identifying your company as a "Judgment Company." [Check One Box Only]

a. Judgment Companies Companies not using financial criteria ☐

b. Financial Companies

6-Months	☐	Four Years	☐
9-Months	☐	Five Years	☐
One Year	☐	Six To Ten Years	☐
18-Months	☐	More Than Ten Years	☐
Two Years	☐	Other: _____	☐
Three Years	☐	Not sure of the answer	☐

E6. Are post-launch project/product reviews systematically conducted by a cross-functional management team consisting of marketing, engineering, manufacturing, finance, and/or other functions for each new product for the purpose of seeing if the product results met the original technical and business goals? [Check One Box Only]

Yes, all new products are systematically reviewed against their goals after launch ☐
Yes, some new products [not all] are systematically reviewed against their goals after launch ☐
....Approximate percentage with formal cross-functional post-launch review ____ %
No, individual functions and/or managers review projects separately within their functions ☐
No, cross-functional post-launch project/product reviews are not conducted ☐

If yes, are there specific target points after a product launches that reviews are conducted? Or, are reviews done during periodic and/or annual operational and planning cycles as a batch across active/key products.

As a batch across active products [Yes or No] Targeted project/product reviews** [Yes or No]

If reviews are targeted** on a per product basis, what are the common time periods that targeted reviews are conducted after any given product launches? [Check All That Apply]

Six months after product launch	☐	Four years after product launch	☐
One year after product launch	☐	Five years after product launch	☐
Two years after product launch	☐	End-of-life/Obsolescence	☐
Three years after product launch	☐	Other: _____	☐

If reviews are targeted** on a per product basis, what is the average number of times a project/product [targeted to be a reviewable one] is reviewed after it is actually launched? [Number]

SECTION F R&D METRICS USED IN INDUSTRY

Section F consists of one single long question. This question from the well regarded 1998 Survey is repeated in the 2000 Survey. The results from this question in 1998 jumped off the page. It turned out that there are very few metrics that are commonly and widely used by R&D organizations. The results of the 2000 survey will be contrasted to the 1998 findings so first time participants in the 2000 survey will get the benefits of both surveys. For those persons that simply cannot bear to wait, please refer to the February 2000 issue of CFO Magazine published by The Economist.

F1. Which of the following R&D metrics are "in use" at your company? To qualify as "in use," these metrics should: (1) be measured at least on an annual basis; (2) be visible to *all* members of the top management group as active ongoing tools; (3) be stored in a manner that numerous people in the organization could find them easily; and (4) have some reliability in that the method used to calculate them is consistent from year to year. Please be strict in applying this definition of "in use" when responding to the measures listed for your consideration below. [Check All That Apply]

Revenue Management

☐ Current-year % sales due to new products released in the past N-years

If used, what is N = [Number] year(s) (i.e., past 1, 2, 3, 4, 5 years)

☐ Average first- N year(s) sales of new products

If used, what is N = [Number] year(s) (i.e., past 1, 2, 3, 4, 5 years)

☐ Average N-year sales of new products

If used, what is N = [Number] year(s) (i.e., past 1, 2, 3, 4, 5 years)

☐ Current-year % sales due to total Non Recurring Engineering Billings
☐ Current-year % sales due to total technology licensing
☐ Current-year % sales due to total royalty income

Profit Management

☐ Current-year % profits due to new products released in the past N-years

If used, what is N = [Number] year(s) (i.e., past 1, 2, 3, 4, 5 years)

☐ Average first- N year(s) profits of new products

If used, what is N = [Number] year(s) (i.e., past 1, 2, 3, 4, 5 years)

☐ Average N-year profits of new products

If used, what is N = [Number] year(s) (i.e., past 1, 2, 3, 4, 5 years)

☐ Current-year % profits due to total Non Recurring Engineering Billings
☐ Current-year % profits due to total technology licensing
☐ Current-year % profits due to total royalty income

Productivity Management

- Average sales per engineer or developer or scientist ☐
- Average profits per engineer or developer or scientist ☐

- Average new products released per engineer or developer or scientist ☐
- Average new product sales per engineer or developer or scientist ☐
- Average new product profits per engineer or developer or scientist ☐

- Average number prototypes built per new product ☐
- % First pass design success ☐

Investment & Capacity & Throughput & Backlog Management

- R&D spending as a % of sales [Managed As A Single Number] ☐
  [Managed as a single number across the organization.]
- R&D spending as a % of sales ☐
  [Research spending managed separate from Development spending.]
- R&D spending as a % of sales ☐
  [Process R&D spending managed separate from R&D spending.]

- Average development cost per project/product ☐
- Average capital cost per project/product ☐

- R&D capacity plan target level ☐
- % Over/under R&D capacity plan target level ☐

- % Increase/decrease in R&D headcount ☐
- % Resources/investment dedicated to new product development ☐
- % Resources/investment dedicated to sustaining existing products ☐

- Staffing Ratios: Internal-To-Engineering staffing ratios ☐
  Cross-Functional staffing ratios ☐

- # of idea/concept screened/reviewed ☐
  % of ideas/concepts accepted/rejected ☐
- # of products in definition/planning/estimation stages ☐
  % of defined products/projects accepted/rejected ☐
- # of products/projects approved but not started [inactive backlog] ☐
- # of products/projects in active development [active backlog] ☐
- # of products released and being actively supported ☐
- # of products retired/obsoleted ☐

- Average # factory products supported per engineer or developer or scientist ☐
- Average # active projects/ products per engineer or developer or scientist ☐

Intellectual Property Management

- Total patents filed/pending/awarded ☐
- Average patents per development professional ☐

- Total industry standards planned/pending/achieved ☐

Total licenses granted and/or acquired ☐
Total value of licenses granted and/or acquired ☐

Total grants received ☐
Total value of grant revenues received ☐

PLEASE RETURN YOUR SURVEY BY AUGUST 15, 2000

SEND BY MAIL TO

Ms. Lisa Mosquera
Research Associate
Goldense Group, Inc.
6 Bigelow Street
Cambridge, MA 02139

617-876-6776 ext. 201

FAX IT TO US

617-876-6766
No cover page is necessary. Simply drop it in the fax machine. Your name and contact information is already on the first page of the questionnaire. Thank you.

IF YOU HAVE QUESTIONS OR NEED CLARIFICATION

Mr. Jonathan Gilmore
Manager, Research & Education Products
Goldense Group, Inc.
6 Bigelow Street
Cambridge, MA 02139

617-876-6776 ext. 202

!! THANK YOU FOR PARTICIPATING !!

IN THE

2000 PRODUCT DEVELOPMENT METRICS SURVEY

!! THANK YOU !!